

Ministerial Order Specifying Goods and Technologies Pursuant to the Provisions of the Appended Table 1 of the Export Trade Control Order and the Appended Table of the Foreign Exchange Order (Part 1)

(Order of the Ministry of International Trade and Industry of No. 49 of November 14, 1991)

This Ministerial Order specifying goods and technologies pursuant to the provisions of the Appended Table 1 of the Export Trade Control Order and the Appended Table of the Foreign Exchange Control Order is enacted as stated below, pursuant to the provisions of the Export Trade Control Order (Cabinet Order No. 378, 1949) and the Appended Table of the Foreign Exchange Control Order (Cabinet Order No. 260, 1980).

(Re: Appended Table 1 of the Export Trade Control Order)

Article 1 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 2 of the Appended Table 1 of the Export Trade Control Order (referred to below as the "Export Order") are those that fall under any of the following items:

- (i) nuclear fuel materials or nuclear source materials falling under any of the following sub-items:
 - (a) uranium or uranium compounds;
 - (b) thorium or thorium compounds;
 - (c) plutonium or plutonium compounds; or
 - (d) nuclear fuel materials or nuclear source materials including one or two or more of the goods referred to in sub-items (a) through (c);
- (ii) power-generating equipment or propulsion equipment designed to be used for nuclear reactors or their components, vehicles, vessels, aircraft or for use in space, or for nuclear reactors of flying objects for launches;
- (iii) deuterium or deuterium compounds for which the ratio of the number of atoms of hydrogen to the number of atoms of deuterium exceeds 1/5,000;
- (iv) among artificial graphites weighing 1 kilogram or more with a boron content level less than 5/1,000,000 of the total weight, and, with the apparent specific gravity at 20 degrees centigrade exceeding 1.50, those falling under any of the following sub-items:
 - (a) those for nuclear reactors; or
 - (b) those usable in nuclear reactors (excluding those falling under sub-item

- (a));
- (v) devices designed for the separation or reprocessing of irradiated nuclear fuel materials or nuclear source materials, or their components or a control device;
- (vi) devices for the separation of lithium isotopes, or devices for the mold processing of nuclear fuel materials;
- (vii) devices for the separation of uranium or plutonium isotopes falling under any of the following devices or their auxiliary equipment or components of auxiliary equipment:
 - (a) those that use gas diffusion methods;
 - (b) those that use centrifuge separation methods;
 - (c) those that use nozzle separation methods;
 - (d) those that use vortex methods;
 - (e) those that use chemical exchange methods;
 - (f) those that use laser separation methods;
 - (g) those that use plasma methods; or
 - (h) those that use magnetic separation methods;
- (viii) frequency changers or their components falling under any of the following sub-items:
 - (a) frequency changers for gas centrifuges that fall under the following clauses 1. and 2., or their components:
 1. frequency changers with an output of 3 or more phases and a frequency of 600 hertz or more;
 2. frequency changers capable of controlling output frequency with an accuracy of less than plus or minus 0.2%;
 - (b) frequency changers that can be used for variable or fixed frequency motor driving, which fall under all of the following clauses 1. through 3. (excluding those that fall under sub-item (a) and those used for industrial machinery or consumer goods that become unable to satisfy any of the properties specified in the following clauses 1. through 3. due to restrictions on hardware or software):
 1. an output of three or more phases capable of yielding an output of 40 volt-amperes or more;
 2. those that operate with an output frequency of 600 hertz or more; or
 3. those capable of controlling output frequency with an accuracy of less than plus or minus 0.2%;
- (ix) nickel powders with a mean value of the diameter of less than 10 micrometers, and, a weight-based purity level of 99% or more, or porous metals produced by using nickel powders;
- (x) devices used for the production of deuterium or deuterium compounds, or their components or auxiliary equipment that falls under any of the following

devices:

(a) those for the production of deuterium or deuterium compounds (including concentration equipment), or their components or auxiliary equipment; or

(b) those used for the production of heavy water or their components or auxiliary equipment, which fall under any of the following clauses (excluding those falling under clause (a)):

1. Deleted

2. distillation columns used at low temperatures which fall under all of the following i. through iv.:

i. distillation columns that use fine-grain stainless steel without hydrogen embrittlement;

ii. distillation columns with an internal diameter of 30 centimeters or more and an effective length of 4 meters or more;

iii. distillation columns designed to be usable at -238 degrees centigrade or less; and

iv. distillation columns designed to be usable within a pressure range of 0.5 megapascals or more and 5 megapascals or less;

3. among filling materials designed to be usable in a vacuum distillation column made of phosphorus bronze which has undergone a process that chemically improves wettability, those which are mesh-shaped;

4. turboexpanders designed to be usable at -238 degrees centigrade or less, with a hydrogen emission level of 1,000 kilograms or more per hour;

5. Deleted

6. pumps capable of circulating liquefied ammonia containing potassium amide, which fall under all of the following clauses i. through iii.:

i. pumps with a sealed structure;

ii. pumps usable within a pressure range of 1.5 megapascals or more and 60 megapascals or less;

iii. pumps with discharge quantity exceeding 8.5 cubic meters per hour;

(x)-2 devices for the production of uranium trioxide, uranium hexafluoride, uranium dioxide, uranium tetrafluoride, metallic uranium, or uranium tetrachloride, which fall under any of the following devices, or their auxiliary equipment or components:

(a) devices used for the production of uranium trioxide whose raw material is uranium concentrate;

(b) devices used for the production of uranium hexafluoride whose raw material is uranium trioxide or uranium tetrafluoride;

(c) devices used for the production of uranium dioxide whose raw material is uranium trioxide or uranium hexafluoride;

(d) devices used for the production of uranium tetrafluoride whose raw material is uranium dioxide or uranium hexafluoride;

- (e) devices used for the production of metallic uranium whose raw material is uranium tetrafluoride;
- (f) devices used for the production of uranium tetrachloride whose raw material is uranium dioxide;
- (x)-3 devices used for the production of plutonium dioxide, plutonium oxalate, plutonium peroxide, plutonium trifluoride, plutonium tetrafluoride, or metallic plutonium, or their auxiliary equipment or components;
- (xi) flow-forming machines or their components which fall under either of the following sub-items:
 - (a) among shear spinning machines capable of being controlled by a numerical control equipment or computer, those with three or more rollers;
 - (b) mandrels designed to be capable of forming cylindrical rotors with an internal diameter exceeding 75 millimeters and less than 400 millimeters;
- (xii) Deleted
- (xiii) Deleted
- (xiv) among machine tools (limited to those capable of processing metals, ceramics, or composite materials) to which an electronic control device with two or more axes capable of controlling contour can be attached, those falling under any of the following sub-items (a) through (d):
 - (a) machine tools capable of lathe turning, which fall under the following clauses 1. and 2. (excluding those falling under clause 3.):
 - 1. those whose precision of positioning of the rectilinear axis is 0.006 millimeters or less when measured by the measurement method specified by the International Standards Organization (referred to as "International Standard" below) ISO 230-2:1988;
 - 2. those capable of processing objects with a diameter exceeding 35 millimeters;
 - 3. among lathes for bar work that processes materials by inserting them from a spindle hole, which fall under the following clauses i. and ii.:
 - i. those capable of processing materials with the maximum diameter of 42 millimeters or less;
 - ii. those incapable of attaching a chuck;
 - (b) machine tools capable of millworking, which fall under any of the following clauses 1. through 3. (excluding those falling under 4.):
 - 1. those whose precision of positioning of the rectilinear axis is 0.006 millimeters or less when measuring the full length of the straight axis by the measurement method specified by the International Standard ISO 230-2:1998;
 - 2. those with two or more rotational axes capable of controlling contour;
 - 3. those with five or more axes capable of controlling contour;
 - 4. milling machines that fall under the following clauses i. and ii.:

- i. those whose movement amount in the X-axis direction specified by the International Standard ISO 841 (numerical control machine tools – coordinate axis and motion symbols) exceeds 2 meters;
 - ii. those whose precision of positioning exceeds 0.03 millimeters when measuring the full length of of the X-axis specified by the International Standard ISO 841 by the measurement method specified by International Standard ISO 230-2:1998;
- (c) machine tools capable of grinding, which fall under any of the following clauses 1. through 3. (excluding those falling under clause 4. or 5.):
- 1. those whose precision of positioning is 0.004 millimeters or less when measuring the full length of of the linear axis by the measurement method specified by the International Standard ISO 230-2:1998;
 - 2. those with two or more rotational axes capable of controlling contour;
 - 3. those with five or more axes capable of controlling contour;
 - 4. an external cylindrical grinding machine, an internal cylindrical grinding machine, or an external and internal cylindrical grinding machine, which falls under the following clauses i. and ii.:
 - i. those designed to grind objects with an external diameter or length of 150 millimeters or less;
 - ii. those that possess only an X-axis, a Z-axis, and a C-axis specified by the International Standard ISO 841;
 - 5. jig grinding machines that do not fall under either of the following clause i. or ii.:
 - i. among those possessing a Z-axis specified by the International Standard ISO 841, those whose precision of positioning is less than 0.004 millimeters when measuring the full length of the Z-axis by the measurement method specified by International Standard ISO 230-2:1998;
 - ii. among those possessing a W-axis specified by the International Standard ISO 841, those whose precision of positioning is less than 0.004 millimeters when the full length of the W-axis is measured by the measurement method specified by International Standard ISO 230-2:1998;
- (d) machine tools capable of performing electrical discharge machining (excluding wire electrical discharge machining), with two or more rotational axes capable of contour control;
- (e) machine tools designed only for the production of any of the following things:
- 1. gears;
 - 2. crank shafts or cam shafts;
 - 3. tools or blades;
 - 4. extruder worms;
- (xv) Deleted

(xvi) Deleted

(xvii) measuring equipment (including machine tools usable as a measuring equipment) that falls under any of the following equipment (excluding those falling under item (xiv)):

(a) measuring equipment controlled by a computer or numerical control equipment, which falls under any of the following equipment:

1. those with two or more measurement axes, and when the measurement accuracy of each axis is measured using the measurement method specified by the International Standard, at any of the measuring points within the operating range, the numerical value of the maximum permissible error for the length of the measurement axis measured expressed in micrometers is less than the numerical value to which 1.25 is added to the numerical value obtained by multiplying the length of the measurement axis expressed in millimeters by 0.001;

2. those with three or more measurement axes, and when the measurement accuracy of space is measured using the measurement method specified by the International Standard, at any of the measuring points within the operating range, the numerical value of the maximum permissible error for the length of the measurement axis measured expressed in micrometers is less than the numerical value to which 1.7 is added to the numerical value obtained by multiplying the length of the measurement axis expressed in millimeters by 0.00125;

(b) measuring equipment for measuring displacement on a straight line, which falls under any of the following equipment:

1. non-contact type measuring equipment with a resolving power of 0.2 micrometers or less at a measuring range of up to 0.2 millimeters;

2. measuring equipment using a linear variable differential transformer (LVDT), which falls under the following clauses i. and ii.:

i. one whose linear variable differential transformer (LVDT) falls under any of the following cases:

a. an LVDT with the maximum operating range of plus or minus 5 millimeters or less, and a linearity of 0.1% or less from zero to the maximum operating range; or

b. an LVDT with the maximum operating range of more than plus or minus 5 millimeters and a linearity of 0.1% or less from zero to plus or minus 5 millimeters;

ii. one with a drift of 0.1% or less per 24 hours when measured within a temperature range of 19 degrees centigrade or more and 21 degrees centigrade or less;

3. measuring equipment that fall under the following clauses i. and ii (excluding interferometers which have no feedback function and measures

- slide movement errors of machine tools, measuring equipment, or devices similar to them by using lasers):
- i. those capable of making measurements by using laser beams;
 - ii. those capable of maintaining the properties referred to in the following clauses a. and b. for 12 hours within a temperature range of 19 degrees centigrade or more and 21 degrees centigrade or less:
 - a. those with a resolving power of 0.1 micrometers or less within the maximum measurement range in which measurement can be made;
 - b. at any single point within the measurement range, when the measurement is corrected by air refractive index, the numerical value of uncertainty of measurement of the measurement axis expressed in micrometers is less than the numerical value to which 0.2 is added to the numerical value obtained by multiplying the length of the measurement axis expressed in millimeters by 0.0005;
- (c) those for measuring angular displacement, with a maximum angular location deviation of 0.00025 degrees or less (excluding optical instruments that measure angular displacement using parallel light rays (including autocollimators));
- (d) measuring equipment capable of simultaneously measuring the length and angle of objects that have curved shapes, which fall under the following clauses 1. and 2.:
1. those with a numerical value for uncertainty of measurement for the measurement axis of 3.5 micrometers or less per 5 millimeters of measurement distance;
 2. those with a maximum value of angular position deviation of 0.02 degrees or less;
- (xviii) induction furnaces, arc furnaces or plasma melting furnaces or electron-beam melting furnaces, or their components or auxiliary equipment, which fall under any of the following sub-items:
- (a) vacuum induction furnaces or induction furnaces that use inert gases (excluding those used for processing semiconductor wafers), which fall under all of the following clauses 1. through 3. or their power units, with an output of 5 kilowatts or more:
 1. those capable of heating the interior to a temperature exceeding 850 degrees centigrade;
 2. those that have an induction coil with a diameter of 600 millimeters or less;
 3. those with an input from the power unit of 5 kilowatts or more;
 - (b) among arc melting furnaces, arc remelting furnaces or arc melting casting furnaces which melt and cast metal in a vacuum or in inert gas, those that possess consumable electrodes with a capacity exceeding 1,000 cubic

- centimeters and less than 20,000 cubic centimeters, and, are capable of melting metal at a temperature exceeding 1,700 degrees centigrade;
- (c) among electron-beam melting furnaces, plasma atomization furnaces, or plasma melting furnaces which melt and cast metal in a vacuum or in inert gas, those whose output is 50 kilowatts or more, and, are capable of melting metal at a temperature that exceeds 1,200 degrees centigrade;
 - (d) control device or monitors using a computer for the furnaces falling under sub-item (b) or (c);
 - (e) among plasma torches specially designed for the furnaces falling under sub-item (c), whose output is 50 kilowatts or more, those capable of melting metal at a temperature that exceeds 1,200 degrees centigrade; or
 - (f) an electron beam gun specially designed for the furnaces falling under sub-item (c), whose output is 50 kilowatts or more;
- (xix) an isostatic pressing machine falling under the following sub-items (a) and (b), or its control or mold designed to be used for the isostatic press:
- (a) one with a maximum pressure of 69 megapascals or more;
 - (b) one whose hollow chamber has an internal diameter that exceeds 152 millimeters;
- (xx) a robot (excluding operating robots and sequence robots) or an end effector that fall under any of the following robots or end effectors, or their control device:
- (a) those with an explosion-proof structure (excluding those used for painting) specified by the Japan Industrial Standard (simply referred to as "JIS" below) C60079-0 (Electric appliances for explosive gas atmospheres - Part 0 Equipment - General requirements) based on the Industrial Standardization Act (Act No. 185, 1949);
 - (b) those designed to be capable of withstanding irradiation with a total absorption line volume that exceeds 50,000 grays on a silicon conversion basis;
- (xxi) vibration testing device or its components that fall under any of the following devices:
- (a) those with a digital control system, and, are electrically operated which falls under the following clauses 1. and 2.:
 - 1. one with an excitation force of 50 kilonewtons or more in a state in which there is no test specimen, and capable of generating vibrations with an effective value of acceleration 98 meters per second squared or more, in a frequency range exceeding 20 hertz and less than 2,000 hertz;
 - 2. one that uses feedback control technology or closed-loop control technology;
 - (b) components of vibration testing device that fall under any of the following clauses:

1. those designed to be used for controlling vibration testing device that fall under sub-item (a), which use programs for vibration tests, and, digitally control vibration tests in real time in a bandwidth exceeding 5 kilohertz;
 2. vibration generators usable for vibration testing device that fall under sub-item (a), with an excitation force of 50 kilonewtons or more in a state in which there is no test specimen;
 3. components of vibration tables or vibration generators usable for vibration testing device that fall under sub-item (a), designed for use by connecting two or more vibration generators in order to generate vibrations with exciting force of 50 kilonewtons or more in a state in which there is no test specimen;
- (xxii) structural materials usable for gas centrifuge rotors that fall under any of the following materials:
- (a) among aluminum alloys (including forged alloys) with a tensile strength of 460 megapascals or more at 20 degrees centigrade, those with a rod or cylindrical shape and an external diameter exceeding 75 millimeters;
 - (b) prepreg made using carbon fibers, aramid fibers or glass fibers, or molded products made using carbon fibers or glass fibers, or carbon fibers or aramid fibers, which fall under any of the following clauses:
 1. carbon fibers or aramid fibers that fall under any of the following clauses:
 - i. those with a specific modulus of 12,700,000 meters or more;
 - ii. those with a specific strength of 235,000 meters or more;
 2. glass fibers that fall under the following clauses i. and ii.:
 - i. those with a specific modulus of 3,180,000 meters or more;
 - ii. those with a specific strength of 76,200 meters or more;
 3. prepreg consisting of carbon fibers or glass fibers impregnated with thermosetting resin that fall under the clause 1. or 2., which falls under any of the following prepregs:
 - i. those that are fibrous;
 - ii. those that are tape-shaped with a width of 15 millimeters or less;
 4. molded products with a cylindrical shape that use fibers falling under clause 1. or prepreg falling under clause 3. (limited to those that use carbon fiber) with an internal diameter exceeding 75 millimeters and less than 400 millimeters;
 - (c) among maraging steels with a tensile strength of 1,950 megapascals or more at 20 degrees centigrade, those whose maximum dimension exceeds 75 millimeters;
 - (d) among titanium alloys (including forged alloys) with a tensile strength of 900 megapascals or more at 20 degrees centigrade, those with a rod or cylindrical shape which has an external diameter exceeding 75 millimeters;

- (xxiii) metals or scrap of beryllium or beryllium alloys (limited to those with a beryllium content that exceeds 50% of the total weight) or beryllium compounds, or their primary or semi-processed products;
- (xxiv) substances used in alpha sources for detonating nuclear weapons, or their raw materials, which fall under any of the following sub-items:
 - (a) bismuth with a weight-based purity level of 99.99% or more, which has a silver content of less than 0.001% of the total weight;
 - (b) radium 226, radium 226 alloys, radium 226 compounds or radium 226 mixtures, or their primary or semi-processed products (excluding those incorporated and installed in medical devices, and the total amount of radioactivity per device is less than 0.37 gigabecquerels);
 - (c) radioactive nuclide suitable for generating neutron sources by alpha-neutron reaction, or its compounds or mixtures (excluding those installed in a device, for which the total amount of radioactivity per device is less than 3.7 gigabecquerels), with a total amount of radioactivity per kilogram of 37 gigabecquerels or more;
- (xxv) boron, boron compounds or boron mixtures, or their primary or semi-processed products, composed of concentrated boron with a ratio of boron 10 to boron 10 and boron 11 is greater than the ratio of boron 10 in nature, or products containing such boron;
- (xxvi) substances that are used as reducing agent or oxidizing agent for producing nuclear fuel materials, which fall under any of the following sub-items:
 - (a) calcium that fall under the following clauses 1. and 2.:
 - 1. those with a content of metals other than calcium or magnesium of less than 0.1% of the total weight;
 - 2. those with a boron content of less than 0.001% of the total weight;
 - (b) chlorotrifluorine;
 - (c) magnesium that fall under the following clauses 1. and 2.:
 - 1. those with a content of metals other than magnesium or calcium of less than 0.02% of the total weight;
 - 2. those with a boron content of less than 0.001% of the total weight;
- (xxvii) crucibles that uses materials that are corrosion-resistant against actinide, which fall under any of the following crucibles:
 - (a) those with a capacity exceeding 0.15 liters and less than 8 liters, made from or coated with materials that fall under any of the following clauses, or their combination (limited to those that has a ratio of the total weight of impurities to the total weight of the crucible of 2% or less):
 - 1. calcium fluoride;
 - 2. calcium metazirconate;
 - 3. cerium sulfide;

4. erbium oxide;
 5. hafnium oxide;
 6. magnesium oxide;
 7. nitride of alloys containing niobium, titanium and tungsten;
 8. yttrium oxide;
 9. zirconium oxide;
- (b) crucibles with a capacity exceeding 0.05 liters and less than 2 liters, made from or lined with tantalum with a weight-based purity of 99.9% or more;
- (c) among crucibles with a capacity exceeding 0.05 liters and less than 2 liters, made from or lined with tantalum with a weight-based purity of 98% or more, those that are coated with tantalum carbide, tantalum nitride, tantalum boride, or their combination;
- (xxviii) metals or scrap of hafnium or hafnium alloys (limited to those with a hafnium content that exceeds 60% of the total weight) or hafnium compounds (limited to those with a hafnium content that exceeds 60% of the total weight), or their primary products or their semi-processed products;
- (xxix) metals or scraps of lithium or lithium alloys or lithium compounds or mixtures, or their primary products or their semi-processed products, composed of concentrated lithium with a ratio of lithium 6 to lithium 7 which is greater than the ratio of lithium in nature, or containing such lithium (excluding lithium compounds and lithium mixtures incorporated in thermoluminescence dosimeters);
- (xxx) tungsten, tungsten carbide, or alloys with a tungsten content that exceeds 90% of the total weight, with a mass exceeding 20 kilograms, and, has a cylindrical shape with an internal diameter exceeding 100 millimeters and less than 300 millimeters, or has a hemispherical shape that is hollow, or their combinations (excluding those designed to be used for a weight or gamma ray collimators);
- (xxxii) metals or scraps of zirconium or zirconium alloys (limited to those with a zirconium content exceeding 50% of the total weight) or zirconium compounds (limited to those with a hafnium content of less than 1/500 of the zirconium content), or their primary products or their semi-processed products (excluding a leaf with thickness of 0.1 millimeters or less);
- (xxxiii) electrolytic cells for producing fluorine with a production capability exceeding 250 grams per hour;
- (xxxiiii) devices for producing or assembling gas centrifuge rotors, or their components, which fall under any of the following sub-items:
- (a) a device used for assembling gas centrifuge rotor tubes, baffles, and end caps;
 - (b) a device used for adjusting the center axis of gas centrifuge rotor tubes;
 - (c) mandrels or molds used for manufacturing bellows falling under all of the

- following clauses 1. through 3. (limited to those made from aluminum alloys, maraging steel, or fiber-reinforced composite materials):
1. those with an internal diameter exceeding 75 millimeters and less than 400 millimeters;
 2. those with pitch of groove which is 12.7 millimeters or more;
 3. those with depth of groove which exceeds 2 millimeters;
- (xxxiv) centrifugal balancing machines (excluding single-plane balancing machines) that fall under any of the following sub-items (excluding those that fall under Article 3, item (xvii)-3, sub-item (b)):
- (a) those that are designed to be capable of testing elastic rotors with a length of 600 millimeters or more, that fall under all of the following clauses 1. through 3.:
 1. those capable of testing elastic rotors with an external diameter that exceeds 75 millimeters or with a journal diameter that exceeds 75 millimeters;
 2. those capable of testing elastic rotors with a weight of 0.9 kilograms or more and 23 kilograms or less;
 3. those capable of conducting a test at 5,000 rounds or more per minute;
 - (b) those that are designed to be capable of testing cylindrical rotors, which fall under all of the following clauses 1. through 4.:
 1. those with a journal diameter that exceeds 75 millimeters;
 2. those capable of testing rotors a weight of 0.9 kilograms or more and 23 kilograms or less;
 3. those with a minimum achievable residual unbalance on the correction plane of less than 10 grams millimeters per kilogram;
 4. those with a belt drive mechanism;
- (xxxv) filament winding machines that fall under the following sub-items (a) and (b), or their control device or mandrel:
- (a) among those that perform positioning of filaments and conduct wrapping and winding operations, those with two or more axes that are capable of controlling those operations in correlation;
 - (b) those capable of manufacturing cylindrical tubes with an internal diameter that exceed 75 millimeters and less than 650 millimeters, and, has a length of 300 millimeters or more;
- (xxxvi) gas laser oscillators, solid-state laser oscillators, or dye laser oscillators, which fall under any of the following sub-items:
- (a) metal vapor laser oscillators (limited to copper laser oscillators) that are designed to be used within a wavelength range that exceeds 500 nanometers and less than 600 nanometers, with an average output of 30 watts or more;
 - (b) argon ion laser oscillators that are designed to be used within a

- wavelength range that exceeds 400 nanometers and less than 515 nanometers, with an average output exceeding 40 watts;
- (c) among carbon dioxide laser oscillators that are designed to be used within a wavelength range that exceeds 9,000 nanometers and less than 11,000 nanometers and are designed to generate a pulse, those falling under all of the following clauses 1. through 3.:
 - 1. those with a pulse repetition frequency that exceeds 250 hertz;
 - 2. those with an average output that exceeds 500 watts; and
 - 3. those with a pulse width of 200 nanoseconds or less;
 - (d) among excimer laser oscillators that are designed to be used within a wavelength range that exceeds 240 nanometers and less than 360 nanometers and are designed to generate a pulse, those falling under the following clauses 1. and 2.:
 - 1. those with a pulse repetition frequency that exceeds 250 hertz; and
 - 2. those with an average output that exceeds 500 watts;
 - (e) raman laser oscillators using parahydrogen that are designed to be used at a wavelength of 16 micrometers, with a pulse repetition frequency that exceeds 250 hertz;
 - (f) alexandrite laser oscillators that are designed to be used within a wavelength range that exceeds 720 nanometers and less than 800 nanometers, which fall under all of the following clauses 1. through 3.:
 - 1. those with a pulse repetition frequency that exceeds 125 hertz;
 - 2. those with an average output that exceeds 30 watts; and
 - 3. those with a laser beam spectral line width of 0.005 nanometers or less;
 - (g) fixed laser oscillators with neodymium added that are designed to be used within a wavelength range that exceeds 1,000 nanometers and less than 1,100 nanometers, which fall under any of the following oscillators (excluding neodymium glass laser oscillators):
 - 1. among those that use pulse excitation and a Q-switch which emit a pulse with a pulse width of 1 nanosecond or more, those that fall under either of the following clauses:
 - i. those that emit a single-transverse-mode pulse, with an average output that exceeds 40 watts; or
 - ii. those that emit a multi-transverse-mode pulse, with an average output that exceeds 50 watts;
 - 2. those that are designed to generate a second harmonic wave within the frequency range that exceeds 500 nanometers and less than 550 nanometers, and, with an average output that exceeds 40 watts;
 - (h) dye laser oscillators that are designed to be used within a wavelength range that exceeds 300 nanometers and less than 800 nanometers, which fall under any of the following oscillators:

1. variable wavelength laser oscillators that emits a single-mode pulse (excluding those that only amplify laser light) that fall under all of the following clauses i. through iii.:
 - i. those with a pulse repetition frequency that exceeds 1 kilohertz;
 - ii. those with an average output that exceeds 1 watt; and
 - iii. those with a pulse width of less than 100 nanoseconds;
2. variable wavelength oscillators that emit a pulse, which fall under all of the following clauses i. through iii. (excluding those that falling under clause 1.):
 - i. those with a pulse repetition frequency that exceeds 1 kilohertz;
 - ii. those with an average output that exceeds 30 watts; and
 - iii. those with a pulse width of less than 100 nanoseconds;
- (i) among carbon monoxide laser oscillators that are designed to be used within a wavelength range that exceeds 5,000 nanometers and less than 6,000 nanometers and are designed to generate a pulse, those that fall under all of the following clauses 1. through 3.:
 1. those with a pulse repetition frequency that exceeds 250 hertz;
 2. those with an average output that exceeds 200 watts; and
 3. those with a pulse width of 200 nanoseconds or less;
- (xxxvii) among mass spectrometers capable of measuring ions with a mass of more than 230 expressed in unified atomic mass units, and, have the resolving power to distinguish ions with a mass of 230 when the difference of atomic mass between the ions is less than 2, those that fall under any of the following sub-items (a) through (e) (excluding those that fall under sub-item (f)) or ion sources usable for those mass spectrometers:
 - (a) those that use inductively coupled plasma;
 - (b) those that use glow discharge; or
 - (c) those that use thermal ionization;
 - (d) those possessing an ion source that ionizes by causing electrons to collide with substances to be analyzed, which fall under the following clauses 1. and 2.:
 1. those possessing a device that irradiates parallel beams of molecules of substances to be analyzed on the ion source area where molecules are ionized using electron beams; and
 2. those possessing one or more cold traps capable of attaining temperatures of minus 80 degrees centigrade or less to capture molecules that are not ionized using electron beams in parallel beams of molecules of substances to be analyzed;
 - (e) those possessing an ion source that is designed for ionizing actinides or their fluorides;
 - (f) those that fall under all of the following clauses 1. through 5.:

1. those capable of measuring ions with a mass of 320 or more expressed in atomic weight units, which have a resolving power of more than 320 expressed in atomic weight units;
 2. those whose ion source is made from nickel, nickel copper alloys with a nickel content of 60% or more of the total weight, or nickel chrome alloys, or those protected by such materials;
 3. those possessing an ion source that ionizes by causing electrons to collide with substances to be analyzed;
 4. those possessing a collector usable for analyzing isotopes; and
 5. those that are designed so that they can collect samples without stopping the flow of uranium hexafluoride gas;
- (xxxviii) pressure gauges or bellows valves, which fall under any of the following sub-items:
- (a) pressure gauges capable of measuring absolute pressure, which fall under all of the following clauses 1. through 3. (for those that do not use a seal to tightly shut sensors, excluding clause 2.):
 1. those that use a sensor made from aluminum, aluminum alloys, aluminum oxide, nickel, nickel alloys with a nickel content exceeding 60% of the total weight or fluorinated hydrocarbon polymers, or a sensor protected by such materials; and
 2. those indispensable to tightly shut sensors, and use a seal that come into direct contact with the contents, and made from aluminum, aluminum alloys, aluminum oxide, nickel, nickel alloys with a nickel content exceeding 60% of the total weight or fluorinated hydrocarbon polymers, or a seal protected by such materials;
 3. those that fall under any of the following clauses:
 - i. when the full scale is less than 13 kilopascals, those with a precision of less than plus or minus 1% of the full scale at any full scale;
 - ii. when the full scale is 13 kilopascals or more, those with a precision of less than plus or minus 130 pascals at 13 kilopascals;
 - (b) among bellows valves with a nominal diameter of 5A or more, those with which all parts that come into contact with the contents are composed of, lined with, or coated with aluminum, aluminum alloys, nickel, or nickel alloys (limited to those with a nickel content exceeding 60% of the total weight);
- (xxxix) solenoid coil type superconducting electromagnets that fall under all of the following sub-items (a) through (d) (excluding those that are designed to be used in clinical magnetic resonance equipment):
- (a) those with magnetic flux density that exceeds 2 teslas;
 - (b) those for which the value obtained by dividing the coil length by an internal diameter exceeds 2;

- (c) those with a coil internal diameter that exceeds 300 millimeters; and
- (d) those whose magnetic field homogeneity is less than 1% within the range of a circle with a radius of 35% of the internal diameter that is centered on the center part of the coil axis which is perpendicular to the coil axis;
- (xl) among vacuum pumps that have an intake port with an internal diameter of 38 centimeters or more, those with an exhaust speed of 15,000 liters or more per second, and, an ultimate pressure of less than 13.3 millipascals;
- (xl)-2 among scroll-type compressors or vacuum pumps that use bellows seals, those that fall under all of the following sub-items (a) through (c):
 - (a) those with an air intake quantity of 50 cubic meters or more per hour;
 - (b) those that are able to make the pressure ratio 2 or more; and
 - (c) those in which all of the surfaces that come into contact with the process gas are composed of, lined with, or coated with any of the following materials:
 1. aluminum or aluminum alloys;
 2. aluminum oxide;
 3. stainless steel;
 4. nickel or nickel alloys;
 5. phosphorus bronze; or
 6. fluoropolymers;
- (xli) direct current power supply devices that fall under either of the following sub-items:
 - (a) among those with an output current of 500 amperes or more, those with a current or voltage fluctuation rate of less than 0.1%, and, are capable of being used for more than 8 consecutive hours under an output voltage of 100 volts or more; or
 - (b) among those with an output voltage of 20,000 volts or more, those with a current or voltage fluctuation rate of less than 0.1%, and, can be used for more than 8 consecutive hours with an output current of 1 ampere or more;
- (xlii) electron accelerators or flash X-ray equipment, which falls under any of the following sub-items (excluding components of electron microscopes, or medical equipment):
 - (a) those with a peak value for kinetic energy of electrons of 0.5 megaelectron volts or more and less than 25 megaelectron volts, which fall under either of the following clause:
 1. one with a beam pulse duration of 1 microsecond or less, and the value obtained by multiplying the total charge amount of accelerated electrons expressed in coulombs by the value obtained by multiplying 1,700 by the result obtained by multiplying the peak value of the electron kinetic energy expressed in mega-electron volts by 2.56 squared is 0.25 or more; or
 2. one with a beam pulse duration exceeding 1 microsecond, and the value

- obtained by multiplying the total charge amount of accelerated electrons expressed in coulombs by the value obtained by multiplying 1,700 by the result obtained by multiplying the peak value of the electron kinetic energy expressed in mega-electron volts by 2.56 squared is 0.25 or more; or
- (b) those with a peak electron kinetic energy of 25 megaelectron volts or more, and has a peak output exceeding 50 megawatts;
 - (xliii) impact testing machines capable of making the maximum velocity of a projectile 1.5 kilometers per second or more;
 - (xliv) cameras capable of high-speed shooting or their components, which fall under any of the following sub-items:
 - (a) streak cameras or their components, which fall under any of the following clauses:
 1. streak cameras with a photographing speed that exceeds 0.5 millimeters per microsecond;
 2. electronic streak cameras with a temporal resolution of 50 nanoseconds or less;
 3. streak tubes for cameras that fall under clause 2.;
 4. plug-in units that are designed to be used in streak cameras having a modular structure, which are necessary for achieving the functions or characteristics of the goods that fall under clause 1. or 2., or for exceeding them;
 5. assemblies of turbines, reflectors, and rotating reflectors composed of axis bearings, or synchronizing electronic equipment, which are designed for cameras that fall under clause 1.;
 - (b) framing cameras or their components, which fall under any of the following clauses:
 1. framing cameras with a photographing speed exceeding 225,000 frames per second;
 2. framing cameras with a shutter speed of 50 nanoseconds or less;
 3. framing tubes or solid-state image sensors that are designed for cameras falling under clause 1. or 2., with a shutter speed of less than 50 nanoseconds;
 4. plug-in units that are designed to be used in framing cameras having a modular structure, which are necessary for achieving the functions or characteristics of the goods that fall under clause 1. or 2., or for exceeding them;
 5. assemblies of rotating reflectors composed of turbines, reflectors, and axis bearings, or synchronizing electronic equipment, which are designed for cameras that fall under clause 1. or 2.;
 - (c) solid-state cameras or electron tube cameras, or their components, which fall under any of the following equipment (excluding those that fall under

- sub-item (a) or (b)):
 1. solid-state or electron tube cameras with a shutter speed of 50 nanoseconds or less;
 2. solid state image sensors or image intensifier tubes that are designed for cameras falling under clause 1. with a shutter speed of 50 nanoseconds or less;
 3. electrically triggered shutters that use Kerr cells or Pockel cells with a shutter speed of 50 nanoseconds or less; or
 4. plug-in units that are designed to be used in cameras having a modular structure, which are necessary for achieving the functions or characteristics of the goods that fall under clause 1., or for exceeding them;
- (xlv) interferometers for measuring fluid velocity, or pressure gauges capable of measuring fluid pressure or pressure transducers that use crystal piezoelectric pressure sensors, which fall under any of the following devices:
 - (a) interferometers for measuring fluid velocity, which fall under the following clauses 1. and 2.:
 1. those capable of measuring velocity that exceeds 1 kilometer per second;
 2. those capable of measuring velocity at an interval of less than 10 microseconds;
 - (b) pressure gauges capable of measuring pressures exceeding 10 gigapascals;
 - (c) pressure transducers that use crystal piezoelectric pressure sensors which are capable of measuring pressures exceeding 10 gigapascals;
- (xlvi) cold-cathode tubes having three or more electrodes, which fall under all of the following sub-items (a) through (c):
 - (a) those with a peak anode voltage of 2,500 volts or more;
 - (b) those with a peak anode current of 100 amperes or more; and
 - (c) those with an anode delay time of 10 microseconds or less;
- (xlvii) among triggered spark gaps with an anode delay time of 15 microseconds or less, those with a peak current of 500 amperes or more;
- (xlviii) assemblies having switching functions, which fall under all of the following sub-items (a) through (c):
 - (a) those with a peak anode voltage exceeding 2,000 volts;
 - (b) those with a peak anode current of 500 amperes or more; and
 - (c) those with a turn-on time of 1 microsecond or less;
- (xlix) pulse condensers that fall under either of the following sub-items:
 - (a) those with a rated voltage exceeding 1,400 volts, which fall under all of the following clauses 1. through 3.:
 1. those whose total energy exceeds 10 joules;
 2. those whose nominal capacitance exceeds 0.5 microfarads;
 3. those whose series inductance is less than 50 nanohenries;

- (b) those with a rated voltage exceeding 750 volts, which fall under the following clauses 1. and 2.:
 - 1. those whose nominal capacitance exceeds 0.25 microfarads;
 - 2. those whose series inductance is less than 10 nanohenries;
- (l) pulse generators or xenon flashlamp drivers, which fall under any of the following devices:
 - (a) modular pulse generators or xenon flashlamp drivers, which fall under all of the following clauses:
 - 1. those capable of supplying a pulse for less than 15 microseconds against a resistance load of less than 40 ohms;
 - 2. those with an output exceeding 100 amperes;
 - 3. those whose largest value of dimension is 30 centimeters or less;
 - 4. those with a weight of less than 30 kilograms;
 - 5. those that are designed to be used at a temperature of below minus 50 degrees centigrade to over 100 degrees centigrade, or designed to be used in space;
 - (b) pulse generators or pulse heads, which generate pulses with a voltage exceeding 6 volts against a resistance load of less than 55 ohms, and, require a pulse rise time of less than 500 picoseconds (excluding those that fall under sub-item (a));
- (li) components of detonators which fall under all of the following sub-items:
 - (a) those capable of controlling the ignition of explosives through electric signals;
 - (b) those that have a stripline structure;
 - (c) those with a rated voltage exceeding 2 kilovolts;
 - (d) those with an inductance path of less than 20 nanohenries;
- (lii) among photomultiplier tubes with an area of photocathode that exceeds 20 square centimeters, those with an anode pulse rise time of less than 1 nanosecond;
- (liii) neutron generators that use electrostatic acceleration induced by a tritium-deuterium nuclear reaction or deuterium-deuterium nuclear reaction, which fall under either of the following sub-items:
 - (a) neutron generators that use electrostatic acceleration induced by a tritium-deuterium nuclear reaction, which are designed to be capable of operating without using a vacuum pump; or
 - (b) among neutron generators that use electrostatic acceleration induced by a deuterium-deuterium nuclear reaction which are capable of producing neutrons with 3 gigahertz or more per second, those that are designed to be capable of operating without using a vacuum pump;
- (liv) remote control manipulators to be used for preventing radioation exposure, which may be operated from the other side of a radiation shielding wall with

- a thickness of 0.6 meters or more;
- (lv) windows that are designed to shield radiation, which fall under all of the following sub-items (a) through (c), or their frames:
 - (a) windows with an area exceeding 0.09 square meters for the surface that protrudes into the cold area;
 - (b) windows made from materials with a density exceeding 3 grams per cubic centimeter;
 - (c) windows with a thickness of 100 millimeters or more;
- (lvi) TV cameras designed to protect the influence of radiation, or their lenses, which are capable of withstanding radiation with the total absorbed dose exceeding 50,000 grays on a silicon basis;
- (lvii) tritium, tritium compounds, or tritium mixtures, with a ratio of the number of atoms of tritium to the number of atoms of hydrogen which exceeds 1/1,000 (excluding those installed in devices, with the total radioactivity per device of less than 1,480 gigabecquerels);
- (lviii) devices used for the production, collection or storage of tritium, or components of equipment used for the production of tritium, which fall under either of the following sub-items:
 - (a) devices that are designed for the production (including those used for concentration), collection, or preservation of tritium;
 - (b) devices used for the production (including purification), collection, or preservation of tritium, which fall under any of the following clauses (excluding those that fall under sub-item (a)):
 1. refrigeration devices capable of cooling hydrogen or helium to minus 250 degrees centigrade or less, with a freezing capacity exceeding 150 watts;
 2. devices for the storage or purification of hydrogen isotopes, which uses metal hydrides as storage or purification catalysts;
 - (c) devices used for the production of tritium which is an assembly (excluding one that fall under sub-items (a) and (b)) targeted to contain lithium (limited to those in which isotopes of lithium 6 have been enriched) which are specially designed to produce tritium by irradiation (including irradiation in a nuclear reactor); or
 - (d) components of devices used for the production of tritium, which are specially designed for the goods that fall under sub-item (c);
- (lix) catalysts using platinum for collecting tritium from heavy water, or for producing heavy water, which are designed to promote isotope exchange of hydrogen conducted between hydrogen and water;
- (lx) helium with a mixing rate of helium-3 that is greater than the mixing rate in nature (excluding helium-3 sealed in containers or devices, with a weight of less than 1 gram);
- (lxi) rhenium, alloys with a rhenium content of 90% or more of the total weight,

- or alloys with a content of rhenium or tungsten of 90% or more of the total weight, with a mass exceeding 20 kilograms, and, has a cylindrical shape with an internal diameter exceeding 100 millimeters and less than 300 millimeters or has a hemispherical shape and hollow, or their combination;
- (lxii) among explosion-proof containers that are designed to be used for testing explosives or explosive devices, those falling under the following sub-items (a) and (b):
- (a) those designed to be capable of fully containing explosions equivalent to 2 kilograms or more of trinitrotoluene; and
 - (b) those that have a structure or characteristics capable of transmitting analysis information or measurement information of the tests.

Article 2 (1) The goods specified by the Order of the Ministry of Economy, Trade and Industry in row 3 (i) of the Appended Table 1 of the Export Order are substances that fall under any of the following items:

- (i) substances that fall under any of the following sub-items as those that are to be raw materials of chemical preparations for military purposes, or mixtures containing those substances, for which the content of any of the substances exceeds 30 % of the total weight:
 - (a) 3-hydroxy-1-methylpiperidine;
 - (b) potassium fluoride;
 - (c) ethylene chlorohydrin;
 - (d) dimethylamine;
 - (e) dimethylamine hydrochloride;
 - (f) hydrogen fluoride;
 - (g) methyl benzilate;
 - (h) 3-quinuclidinone;
 - (i) pinacolone;
 - (j) potassium cyanide;
 - (k) potassium bifluoride;
 - (l) ammonium bifluoride;
 - (m) sodium bifluoride;
 - (n) sodium fluoride;
 - (o) sodium cyanide;
 - (p) phosphorous pentasulfide;
 - (q) diisopropylamine;
 - (r) 2-diethylamino ethanol;
 - (s) sodium sulfide;
 - (t) triethanolamine hydrochloride;
 - (u) phosphorous acid triisopropyl;
 - (v) diethyl thiophosphoric acid;

- (w) diethyl dithio phosphoric acid;
- (x) sodium hexafluorosilicic acid;
- (y) diethylamine;
- (z) methyl dichlorophosphate;
- (aa) ethyl dichlorophosphate;
- (bb) methyl difluorophosphate;
- (cc) ethyl difluorophosphate;
- (dd) diethyl chlorophosphite;
- (ee) methyl chlorofluorophosphate;
- (ff) ethyl chlorofluorophosphate;
- (gg) N,N-dimethylformamide;
- (hh) N,N-diethylformamide;
- (ii) N,N-dipropylformamide;
- (jj) N,N-diisopropylformamide;
- (kk) N,N-dimethylacetamide;
- (ll) N,N-diethylacetamide;
- (mm) N,N-dipropylacetamide;
- (nn) N,N-dimethylpropanamide;
- (oo) N,N-diethylpropanamide;
- (pp) N,N-dipropylpropanamide;
- (qq) N,N-dimethylbutanamide;
- (rr) N,N-diethylbutanamide;
- (ss) N,N-dipropylbutanamide;
- (tt) N,N-diisopropylbutanamide;
- (uu) N,N-dimethylisobutanamide;
- (vv) N,N-diethylisobutanamide;
- (ww) N,N-dipropylisobutanamide;
- (ii) substances falling under any of the following sub-items as those that have a toxicity equivalent to chemical preparations for military purposes, or mixtures containing those substances (for mixtures containing a substance that fall under sub-items (a) through (g), limited to those for which the content of any substance that fall under sub-items (a) through (c) exceeds 1% of the total weight, or those for which the content of any substance that fall under any of the sub-items (d) through (g) exceeds 30 % of the total weight):
 - (a) O,O-diethyl=S-[2-(diethylamino)ethyl] = phosphorothiolate and alkylate salts and protonate salts thereof;
 - (b) 1,1,3,3,3-pentafluoro-2-(trifluoromethyl)-1-propane;
 - (c) 3-quinuclidinyl = benzilate;
 - (d) carbonyl dichloride;
 - (e) cyanogen chloride;
 - (f) hydrogen cyanide; or

- (g) trichloronitromethane;
- (iii) substances falling under any of the following sub-items as those that have a toxicity equivalent to chemical preparations for military purposes, or mixtures containing those substances (for mixtures containing substances that fall under sub-items (f) through (cc), limited to those for which the content of any substance that fall under sub-items (f) through (p) exceeds 10 % of the total weight, or those for which the content of any substance that fall under sub-items (f) through (cc) exceeds 30% of the total weight):
 - (a) alkyl phosphonyl difluoride (limited to those that have an alkyl group carbon number of 3 or less);
 - (b) O-alkyl = O-2-dialkylaminoethyl = alkyl phosphonite (including those with alkyl group of O-alkyl is cycloalkyl group and limited to those with the number of carbon for alkyl group of O-alkyl is 10 or less, and, the number of carbon for alkyl group of O-2-dialkylaminoethyl or alkyl phosphonite is 3 or less) as well as their alkylate salts and protonate salts;
 - (c) O-2-dialkylaminoethyl = hydrogen = alkyl phosphonite (limited to those for which the number of carbon for alkyl group of O-2-dialkylaminoethyl or alkyl phosphonite is 3 or less) as well as their alkylate salts and protonate salts;
 - (d) O-isopropyl = methyl phosphonochloridate;
 - (e) O-pinacolyl = methyl phosphonochloridate;
 - (f) compounds containing a phosphorus atom that have no bond with a carbon atom other than a bond with one alkyl group for which the number of carbon is 3 or less;
 - (g) N,N-dialkyl phosphoramidic = dihalide (limited to those with the number of carbon for alkyl group is 3 or less);
 - (h) dialkyl = N,N-dialkyl phosphoramidate (limited to those with the number of carbon for alkyl group of dialkyl or N,N-dialkyl phosphoramidate is 3 or less);
 - (i) arsenic trichloride;
 - (j) 2,2-diphenyl-2-hydroxyacetic acid;
 - (k) quinuclidine-3-ol;
 - (l) N,N-dialkylaminoethyl-2-chloride (limited to those with the number of carbon for alkyl group is 3 or less) and their protonate salts;
 - (m) N,N-dialkyl aminoethane-2-ol (limited to those with the number of carbon for alkyl group is 3 or less) and their protonate salts;
 - (n) N,N-dialkyl aminoethane-2-thiol ((limited to those with the number of carbon for alkyl group is 3 or less; and including 2-diisopropylamino ethanethiol) and their protonated salts (including 2-diisopropylamino ethanethiol hydrochloride);
 - (o) bis(2-hydroxyethyl) sulfide;

- (p) 3,3-dimethylbutane-2-ol;
 - (q) phosphoryl chloride;
 - (r) phosphorous trichloride;
 - (s) phosphorous pentachloride;
 - (t) trimethyl phosphite;
 - (u) triethyl phosphite;
 - (v) dimethyl phosphite;
 - (w) diethyl phosphite;
 - (x) sulfur monochloride;
 - (y) sulfur bichloride;
 - (z) thionyl chloride;
 - (aa) ethyl diethanol amine;
 - (bb) methyl diethanol amine;
 - (cc) triethanolamine.
- (2) The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 3 (ii) of the Appended Table 1 of the Export Order are those that fall under any of the following items:
- (i) among reactors that have a capacity exceeding 0.1 cubic meters and less than 20 cubic meters, those for which all the parts that come into contact with the contents are composed of, lined with, or coated with materials falling under any of the following sub-items:
 - (a) nickel or alloys with a nickel content exceeding 40 % of the total weight;
 - (b) alloys with a nickel content exceeding 25 % of the total weight and a chrome content exceeding 20 % of the total weight;
 - (c) fluoropolymers;
 - (d) glass;
 - (e) tantalum or tantalum alloys;
 - (f) titanium or titanium alloys;
 - (g) zirconium or zirconium alloys; or
 - (h) niobium or niobium alloys;
 - (ii) among the storage containers having a capacity exceeding 0.1 cubic meters, those for which all the parts that come into contact with the contents are composed of, lined with, or coated with materials falling under any of the following sub-items:
 - (a) nickel or alloys with a nickel content exceeding 40 % of the total weight;
 - (b) alloys with a nickel content exceeding 25 % of the total weight and chrome content exceeding 20 % of the total weight;
 - (c) fluoropolymers;
 - (d) glass;
 - (e) tantalum or tantalum alloys;
 - (f) titanium or titanium alloys;

- (g) zirconium or zirconium alloys; or
- (h) niobium or niobium alloys;
- (iii) among heat exchangers or condensers having an area of heat transfer surface exceeding 0.15 square meters and less than 20 square meters, or tubes, plates, coils, or blocks that are designed as their components, those for which all the parts that come into contact with the contents are composed of, lined with, or coated with materials falling under any of the following sub-items:
 - (a) nickel or alloys with a nickel content exceeding 40% of the total weight;
 - (b) alloys with a nickel content exceeding 25% of the total weight and chrome content exceeding 20% of the total weight;
 - (c) fluoropolymers;
 - (d) glass;
 - (e) graphite or carbon graphite;
 - (f) tantalum or tantalum alloys;
 - (g) titanium or titanium alloys;
 - (h) zirconium or zirconium alloys;
 - (i) silicon carbide;
 - (j) titanium carbide; or
 - (k) niobium or niobium alloys;
- (iv) among distillation columns or absorption columns that has an internal diameter exceeding 0.1 meter, or liquid dispensers, vapor dispensers, or liquid collectors that are designed as their components, those for which all of the parts that come into contact with the contents are composed of, lined with, or coated with materials falling under any of the following sub-items:
 - (a) nickel or alloys with a nickel content exceeding 40 % of the total weight;
 - (b) alloys with a nickel content exceeding 25 % of the total weight and a chrome content exceeding 20 % of the total weight;
 - (c) fluoropolymers;
 - (d) glass;
 - (e) graphite or carbon graphite;
 - (f) tantalum or tantalum alloys;
 - (g) titanium or titanium alloys;
 - (h) zirconium or zirconium alloys;
 - (i) niobium or niobium alloys;
- (v) filling machines that can be remote controlled, and, for which all of the parts that come into contact with the contents are composed of, lined with or coated with materials falling under any of the following sub-items:
 - (a) nickel or alloys with a nickel content exceeding 40% of the total weight;
 - (b) alloys with a nickel content exceeding 25% of the total weight and a chrome content exceeding 20% of the total weight;

- (vi) among agitators that are designed to be used for the things falling under item (i), or impellers, blades, or shafts designed as the components, those for which all the parts that come into contact with the contents are composed of, lined with, or coated with materials falling under any of the following sub-items:
 - (a) nickel or alloys with a nickel content exceeding 40% of the total weight;
 - (b) alloys with a nickel content exceeding 25% of the total weight and chrome content exceeding 20% of the total weight;
 - (c) fluoropolymers;
 - (d) glass;
 - (e) tantalum or tantalum alloys;
 - (f) titanium or titanium alloys;
 - (g) zirconium or zirconium alloys; or
 - (h) niobium or niobium alloys;
- (vii) valves or their components which fall under any of the following sub-items:
 - (a) valves whose nominal diameter is over 10 A for which all of the parts that come into contact with the contents are composed of, lined with, or coated with materials falling under any of the following clauses:
 - 1. nickel or alloys with a nickel content exceeding 40% of the total weight;
 - 2. alloys with a nickel content exceeding 25% of the total weight and a chrome content exceeding 20% of the total weight;
 - 3. fluoropolymers;
 - 4. glass;
 - 5. tantalum or tantalum alloys;
 - 6. titanium or titanium alloys;
 - 7. zirconium or zirconium alloys;
 - 8. niobium or niobium alloys; or
 - 9. ceramics that fall under any of the following clauses:
 - i. those with a silicon carbide content of 80% or more of the total weight;
 - ii. those with an aluminum oxide content of 99.9% or more of the total weight; or
 - iii. zirconium oxide;
 - (b) valves with a nominal diameter of over 25 A and less than 100 A, which fall under all of the following clauses (excluding those that fall under sub-item (a)):
 - 1. among casings or casing liners for parts other than shut-off parts, those for which all of the parts that come into contact with the contents are composed of, or lined with, or coated with any of the materials specified in sub-item (a), clauses 1. through 9.; and
 - 2. those whose shut-off parts are designed to be exchangeable;

- (c) casings or casing liners designed as components for the valves that fall under sub-item (a) or (b) for which all of the parts that come into contact with the contents are composed of, or lined with, or coated with any of the materials specified in sub-item (a), clauses 1. through 9.
- (viii) multiple tubes provided with a mounting port for devices used for detecting leaks of contents for which all of the parts that come into contact with the contents are composed of, lined with, or coated with materials falling under any of the following sub-items:
 - (a) nickel or alloys with a nickel content exceeding 40% of the total weight;
 - (b) alloys with a nickel content exceeding 25% of the total weight and chrome content exceeding 20% of the total weight;
 - (c) fluoropolymers;
 - (d) glass;
 - (e) graphite or carbon graphite;
 - (f) tantalum or tantalum alloys;
 - (g) titanium or titanium alloys;
 - (h) zirconium or zirconium alloys; or
 - (i) niobium or niobium alloys;
- (ix) among pumps that are shaft sealed by two or more layers of seals or seal-less pumps with the maximum prescribed discharge quantity that exceeds 0.6 cubic meters per hour or vacuum pumps with the maximum prescribed discharge quantity that exceeds 5 cubic meters per hour, or casings, casing liners, impellers, rotors, or jet pump nozzles designed as their components, those for which all the parts that come into contact with the contents are composed of, lined with, or coated with materials falling under any of the following substances:
 - (a) nickel or alloys with a nickel content exceeding 40% of the total weight;
 - (b) alloys with a nickel content exceeding 25% of the total weight and a chrome content exceeding 20% of the total weight;
 - (c) fluoropolymers;
 - (d) glass;
 - (e) graphite or carbon graphite;
 - (f) tantalum or tantalum alloys;
 - (g) titanium or titanium alloys;
 - (h) zirconium or zirconium alloys;
 - (i) ceramic;
 - (j) ferrosilicon; or
 - (k) niobium or niobium alloys;
- (x) among incineration equipment with an average temperature of incineration chamber during use which exceeds 1,000 degrees centigrade, those for which all of the parts that come into contact with the contents for

- the parts that supply substances to be incinerated are composed of, or coated with, materials falling under any of the following sub-items:
- (a) nickel or alloys with a nickel content exceeding 40 % of the total weight;
 - (b) alloys with a nickel content exceeding 25 % of the total weight and a chrome content exceeding 20 % of the total weight; or
 - (c) ceramic;
- (xi) detectors of substances in the air which fall under any of the following devices:
- (a) those capable of detecting substances stated in the preceding paragraph even when their concentration in the air is less than 0.3 milligrams per cubic meter, and, which are designed for continuous use; or
 - (b) those designed for detecting compounds having an anticholinesterase effect;
- (xii) components of those substances stated in the preceding item, which fall under any of the following devices:
- (a) detectors;
 - (b) sensor devices; or
 - (c) sensor cartridges.
- (3) The goods with the specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row (3), (iii) of the Appended Table 1 of the Export Order are those that fall under either of the following items:
- (i) among the reactors falling under item (i) of the preceding paragraph, assemblies used for repairing those with all of the parts that come into contact with the contents are lined or coated with glass, or components specially designed for that purpose for which the metal parts that come into contact with the contents are composed of tantalum or tantalum alloy; or
 - (ii) among the storage containers falling under item (ii) of the preceding paragraph, assemblies used for repairing those with all of the parts that come into contact with the contents are lined or coated with glass, or components specially designed for that purpose for which the metal parts that come into contact with the contents are composed of tantalum or tantalum alloy.

Article 2-2 (1) The goods specified by Order of the Ministry of Economy, Trade and Industry in row 3-2 (i) of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) virus (excluding vaccines) that is African horse sickness virus, African swine fever virus, Andean potato latent virus, Andes virus, all viruses of the Ebola virus genus, the yellow fever virus, Omsk hemorrhagic fever virus, Oropouche virus, Guanarito virus, Kyasanur Forest disease virus, the cattle plague virus, Crimean-Congo hemorrhagic fever virus, the foot-and-mouth

- disease virus, the highly pathogenic avian influenza virus (limited to those having an H antigen of H5 or H7), the SARS coronavirus, the reconstructed 1918 influenza virus, Sabia virus, the monkeypox virus, the virus for pseudorinderpest of small ruminants, Sin Nombre virus, the vesicular stomatitis virus, the western equine encephalitis virus, Saint Louis encephalitis virus, Seoul virus, the tick-borne encephalitis virus (limited to the Far Eastern type), Chikungunya virus, Chapare virus, the louping ill virus, Choclo virus, the smallpox virus, the eastern equine encephalitis virus, Dobrava-Belgrade virus, Nipah virus, Japanese encephalitis virus, Newcastle disease virus, Hantan virus, the swine fever virus, the swine vesicular virus, the porcine teschovirus, Suid herpesvirus 1, Junin virus, the blue tongue virus, Venezuelan equine encephalitis virus, Hendra virus, the potato spindle tuber viroid, Powassan virus, Machupo virus, the MERS coronavirus, all viruses of the Marburgvirus genus, Murray Valley encephalitis virus, the goat pox virus, the sheep pox virus, Laguna Negra virus, Lassa virus, the lumpy skin disease virus, viruses of the Lyssavirus genus (including Rabies lyssavirus), Rift Valley fever virus, the lymphocytic choriomeningitis virus, Lujo virus, or Rocio virus;
- (ii) bacteria (excluding vaccines) that is *Clostridium argentinense* (limited to botulinum neurotoxin producing strains), *Clostridium perfringens* (limited to types producing epsilon toxins), *Brucella abortus*, *Chlamydia psittaci*, *Mycoplasma mycoides* (small colony type), *Coxiella burnetii*, the cholera bacillus, *Shigella dysenteriae*, *Bacillus anthracis*, the typhoid bacillus, enterohemorrhagic *Escherichia coli* (serotype O26, O45, O103, O104, O111, O121, O145, and O157), *Rickettsia prowazekii*, *Clostridium baratii* (limited to botulinum neurotoxin producing strains), *Actinobacillus mallei*, *Brucella suis*, *Clostridium butyricum* (limited to botulinum neurotoxin producing strains), *Bacillus pestis*, *Bacillus botulinus*, *Brucella melitensis*, *Mycoplasma capricolum* subspecies *capripneumoniae* (strain F38), *Bacillus tularensis*, or *Pseudomonas pseudomallei*;
- (iii) toxins (excluding immunotoxins) that is aflatoxin, abrin, clostridium welchii toxin (limited to alpha, beta 1, beta 2, epsilon, or iota toxin), HT-2 toxin, staphylococcal enterotoxin (enterotoxin, alpha-toxin, and toxic shock syndrome toxin), conotoxin, cholera toxin, Shiga toxin, diacetoxyscirpenol, T-2 toxin, tetrodotxin, viscumin, botulin toxin, Volkensin, microcystin, or modeccin;
- (iv) subunits of those falling under the preceding item;
- (v) bacteria or fungi that is *Clavibacter michiganensis* subspecies *sepedonicus*, *Coccidioides immitis*, *Coccidioides posadasii*, *Cochliobolus miyabeanus*, *Colletotrichum kahawae*, *Xanthomonas axonopodis* pv. *citri*, *Xanthomonas albilineans*, *Xanthomonas oryzae* pv. *oryzae*, *Synchytrium endobioticum*,

Sclerophthorarayssiae var. *zeae*, *Thecaphora solani*, *Tilletia indica*, *Puccinia graminis* variety *graminis*, *Puccinia striiformis*, *Peronosclerospora philippinensis*, *Magnaporthe oryzae*, *Microcyclus ulei*, or *Ralstonia solanacearum* race 3, or biovar 2;

(vi) genetically-modified organisms (including those for which the base sequence of their nucleic acid has been generated or modified by deliberate molecular manipulation) that have any of the following genes, or genetic elements (including inactivated organisms including chromosomes, genomes, plasmids, transposons, vectors, and recoverable nucleic acid fragments) that have any of the following base sequences:

(a) genes falling under item (i);

(b) among genes falling under item (ii) or the preceding item, those which cause serious harm to the health of humans, animals, or plants (including those which cause harm through transcribed or translated products), or those capable of giving or increasing pathogenicity (excluding genes other than those that have base sequences of nucleic acid of *Bacillus coli* which have serotype O26, O45, O103, O104, O111, O121, O145, O157 or other serotypes that produce Shiga toxins (limited to base sequences that have genetic elements of Shiga toxins or their subunits)); or

(c) those which fall under item (iii) or (iv).

(2) The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 3-2 (ii) of the Appended Table 1 of the Export Order are those that fall under any of the following items:

(i) devices used for physical containment which fall under either of the following sub-items:

(a) devices with a physical containment level of P3 or P4; or

(b) devices designed to be installed in a facility with a physical containment level of P3 or P4, which fall under any of the following devices:

1. high-pressure steam sterilizers with double-sided doors;
2. shower device for decontaminating protective suits; or
3. airtight doors with a mechanical seal or inflatable pressure seal;

(ii) fermenters or their components, which fall under any of the following sub-items:

(a) fermenters or their components that are not disposable, which fall under any of the following devices:

1. hermetically sealable fermenters with an inner capacity of 20 liters or more, which are capable of internal sterilization or disinfection in a fixed state;

2. culture vessels designed to be used for fermenters falling under clause 1. which are capable of internal sterilization or disinfection in a fixed state;

or

3. control device designed to be used for fermenters falling under clause 1. which are capable of simultaneously monitoring and controlling two or more parameters for controlling fermentation equipment;
- (b) disposable fermenters or their components, which fall under any of the following devices:
1. hermetically sealed fermenters with an inner capacity of 20 liters or more;
 2. storage apparatus for disposable culture vessels that are designed to be used for fermenters that fall under clause 1.; or
 3. control devices that are designed to be used for fermenters that fall under clause 1. which are capable of simultaneously monitoring and controlling two or more parameters for controlling fermentation equipment;
- (iii) continuous centrifuge separators falling under all of the following sub-items (a) through (d):
- (a) those with a flow volume exceeding 100 liters per hour;
 - (b) those composed of polished stainless steel or titanium;
 - (c) those that are shaft sealed with mechanical seals; and
 - (d) those capable of internal sterilization using vapor in a fixed state, and, in a closed state;
- (iv) cross flow filtration equipment falling under the following sub-items (a) and (b) (excluding those that use a reverse osmosis membrane and those that are designed to purify blood):
- (a) those with a total effective filtration area of 1 square meter or more; and
 - (b) those that fall under the following clause 1. or 2.:
 1. those capable of internal sterilization or disinfection in a fixed state; or
 2. those that use disposable components;
- (iv)-2 components that are designed to be used for the equipment stated in the preceding item, with an effective filtration area of 0.2 square meters or more;
- (v) freeze-drying equipment falling under the following sub-items (a) and (b):
- (a) those that have the capacity to create 10 kilograms or more and less than 1,000 kilograms of ice per 24 hours; and
 - (b) those capable of internal sterilization using vapor or gas;
- (v)-2 spray dryers that fall under all of the following sub-items (a) through (c):
- (a) those with a water evaporation amount of 0.4 kilograms or more and 400 kilograms or less per hour;
 - (b) those capable of manufacturing products with an average particle diameter of 10 micrometers or less, or capable of producing products with an average particle diameter of 10 micrometers or less by replacing its smallest component; and
 - (c) those capable of internal sterilization or disinfection in a fixed state;

- (vi) protective equipment used in physical containment facilities, or devices used for physical containment, which fall under any of the following sub-items:
 - (a) among clothes for the whole body or half the body or hoods with airline ventilation equipment, those capable of internally maintaining a positive pressure; or
 - (b) physical containment chambers, isolators, or safety cabinets which fall under all of the following clauses 1. through 4. (including Class III safety cabinets and excluding those that are specially designed for nursing or transporting infected patients):
 1. those that have a working space in which the operating is completely isolated by a physical protective wall;
 2. those capable of being operated in a negative pressure state;
 3. those equipped with means of operating an object safely in a working space; and
 4. those that use an HEPA filter for air supply and exhaustion in a working space;
- (vii) devices that are designed to be used for testing inhalation of particulate matters, which falls under either of the following sub-items:
 - (a) those that have an inhalation chamber capable of exposing the whole body of animals and have a volume of 1 cubic meter or more; or
 - (b) those that are capable of exposing the noses of 12 or more rodents or two or more animals other than rodents by directly causing aerosol flow, having a hermetically sealable holder for immobilizing an animal which is designed to be used for that purpose; or
- (viii) sprayers or fog machines, or their components, which fall under any of the following sub-items:
 - (a) sprayers or fog machines that are designed to be installed in aircraft, airships, balloons, or unmanned aircraft, which are capable of dispersing droplets with an initial particle size of less than 50 microns in volume median diameter from a device loaded with liquid at a rate exceeding 2 liters per minute;
 - (b) a spray boom or nozzle of an aerosol generator that is designed to be installed in aircraft, airships, balloons, or unmanned aircraft, which is capable of dispersing droplets with an initial particle size of less than 50 microns in volume median diameter from a device loaded with liquid at a rate exceeding 2 liters per minute;
 - (c) aerosol generators that are designed to be used in a device capable of dispersing droplets with an initial particle size of less than 50 microns in volume median diameter less from a device loaded with liquid at a rate exceeding 2 liters per minute;

- (ix) among devices for synthesis of nucleic acid or binding between nucleic acid and nucleic acid which are fully or partially automatized, those that are designed to generate nucleic acid with a continuous length exceeding 1.5 kilobases at an error rate of less than five percent in one operation.

Article 3 The goods with the specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 4 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) rockets, or devices or tools (including molds; the same applies below in this Article) or testing devices for manufacturing rockets capable of transporting a payload over a distance of 300 kilometers or more, or their components;
- (i)-2 unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more, or devices or tools or testing device for manufacturing the unmanned aircraft or their components;
- (i)-3 for unmanned aircraft that is designed to spray aerosol transport a payload exceeding 20 liters in a particulate or liquid form in addition to fuel, one which falls under either of the following sub-items (excluding one falling under the preceding item or model aircraft used for entertainment or sports):
 - (a) one that has an autonomous flight control and navigation capability; or
 - (b) one that has a function enabling a person to control flight exceeding the visible range;
- (ii) goods falling under any of the following goods, or devices or tools or testing device for manufacturing those goods, or their components:
 - (a) goods usable in rockets capable of transporting payloads over a distance of 300 kilometers or more, which fall under any of the following goods:
 1. individual stages of multiple-stage rockets;
 2. solid rocket propulsion systems or hybrid rocket propulsion devices, with a total impulse of 841,000 newton-seconds or more; or
 3. liquid rocket propulsion devices or gelatinous fuel rocket propulsion devices, with a total impulse of 841,000 newton-seconds or more or liquid rocket engines or gelatinous fuel rocket motor;
 - (b) goods that may be used in rockets or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more, which fall under any of the following goods:
 1. re-entry vehicles;
 2. thermal shields for re-entry vehicles (limited to those using ceramic or abrasion materials) or their components;
 3. heat sinks for re-entry vehicles or their components;
 4. electronics parts that are designed to be used for re-entry vehicles;
 5. guidance system with a ratio of average error radius to flight distance of 3.33 % or less; or

6. thrust vector control device;
- (iii) propulsion devices or their components and motor case linings or insulation materials which fall under any of the following devices, or devices or tools or testing devices for manufacturing them, or their components:
- (a) turbojet engines or turbo fan engines, which fall under any of the following engines:
1. those which fall under all of the following clauses i. through iv.:
 - i. those whose maximum thrust exceeds 400 newtons (excluding those whose maximum thrust exceeds 8,890 newtons, which a Japanese governmental organization has authorized them to be used in civilian aircraft);
 - ii. those with a fuel consumption rate of 0.15 kilograms or less per newton of thrust per hour;
 - iii. those which are less than 750 kilograms in dry weight; and
 - iv. those whose rotor of the first stage is less than 1 meter in diameter;
 2. those that are designed or modified to be used for rockets capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more, or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more (excluding those falling under clause 1.);
- (b) ramjet engines, scramjet engines, pulse jet engines, detonation engines or combined cycle engines (limited to those usable in rockets capable of transporting a payload weighing 500 kilograms or more for 300 kilometers or more, or unmanned aircraft capable of transporting payloads for 300 kilometers or more), or their components;
- (c) motor cases for solid rockets which are usable in rockets or unmanned aircraft capable of transporting payloads for 300 kilometers or more;
- (d) motor case linings for solid rockets (limited to those that may bind the propellant and motor case or insulation) usable in rockets or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more for 300 kilometers or more, or those designed to be used in rockets or unmanned aircraft capable of transporting a payload weighing less than 500 kilograms for 300 kilometers or more;
- (e) motor case insulation for solid rockets, which is usable in rockets or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more for 300 kilometers or more, or those designed to be used in rockets or unmanned aircraft capable of transporting a payload weighing less than 500 kilograms for 300 kilometers or more;
- (f) motor case nozzles for solid rockets which are usable in rockets or unmanned aircraft capable of transporting payloads for 300 kilometers or more;

- (g) control devices for propellants in a liquid, slurry, or gel state, whose frequency range is 20 hertz or more and 2,000 hertz or less, and, are designed to be capable of withstanding a vibration with an effective value of acceleration exceeding 98 meters per second squared (limited to those that may be used in rockets or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more) and their components (excluding servo valves, pumps, and gas turbines);
- (h) components of hybrid rocket propulsion devices that fall under sub-item (a), clause 2. of the preceding item;
- (i) tanks for liquid or gelatinous propellants which are designed to be used for those falling under any of the following clauses:
 1. propellants falling under item (vii) or their raw materials; or
 2. liquid or gelatinous propellants (excluding those falling under clause 1.) used in rockets capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more;
- (j) turboprop engines that are designed to be used in unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, whose maximum output is 10 kilowatts or more in a standard ambient condition on the surface of the sea specified by the International Civil Aviation Organization (excluding those certified to be used in civilian aircraft by a governmental organization of Japan) or their components;
- (k) combustion chambers or nozzles for liquid rocket propulsion devices or gelatinous fuel rocket propulsion devices, which are usable for goods falling under sub-item (a), 3. of the preceding item;
- (iv) separating devices or interstage joint for multiple-stage rockets (limited to those usable for rockets capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more), or devices or tools or testing devices for manufacturing them or their components;
- (v) among flow-forming machines capable of manufacturing propulsion devices or their components which are used for rockets or unmanned aircraft capable of transporting a payload of 500 kilograms or more over a distance of 300 kilometers or more, those falling under the following sub-items (a) and (b), or their components:
 - (a) those that can be controlled by a numerical control equipment or a computer; and
 - (b) those which have more than two shafts capable of contour control;
- (vi) among servo valves, pumps, or gas turbines used for control device of propellants which fall under the following sub-items (a) and (b), those which fall under any of the clause (c), (d), or (e):
 - (a) pumps designed to be used in control devices for propellants in liquid,

- slurry, or gel state; and
- (b) pumps whose frequency range is 20 hertz or more and 2,000 hertz or less, and, which are designed to be capable of withstanding a vibration with an effective rate of acceleration exceeding 98 meters per second squared;
- (c) servo valves that are designed to be capable of flowing propellants for 0.024 cubic meters or more per minute in a state in which the absolute pressure is 7,000 kilopascals or more and the actuator response time is less than 100 milliseconds;
- (d) pumps for liquid propellants, for which the number of shaft rotations is 8,000 or more per minute, or the discharge pressure is 7,000 kilopascals or more, at the maximum operating mode; or
- (e) gas turbines of turbo pumps for liquid propellants for which the number of shaft rotations is 8,000 or more per minute at the maximum operating mode;
- (vi)-2 among radial ball bearings usable for pumps to be used in control devices for propellants, for which the precision specified in JIS B1514-1 is class 2 or higher, those falling under all of the following clauses (a) through (c):
 - (a) those with an internal diameter of the inner wheel of 12 millimeters or more and 50 millimeters or less;
 - (b) those with an external diameter of the inner wheel of 25 millimeters or more and 100 millimeters or less;
 - (c) those with a width of 10 millimeters or more and 20 millimeters or less;
- (vii) propellants or their raw materials, which fall under any of the following substances:
 - (a) hydrazine with a concentration exceeding 70 %;
 - (b) a derivative of hydrazine;
 - (c) ammonium perchlorate;
 - (d) ammonium dinitramide;
 - (e) among aluminum powder whose particles are globular or spheroidal and has a diameter of less than 200 micrometers, with a weight-based purity level of 97% or more, the powder in which the content of particles whose diameter measured by the measurement method specified by the International Standard ISO 2591:1988 or an equivalent standards is less than 63 micrometers is 10% or more of the total weight;
 - (f) zirconium (including hafnium contained in zirconium at a natural ratio), beryllium, or magnesium with a weight-based purity level of 97% or more, or their powdered alloys, for which the content of particles whose diameter measured using a sieve, laser diffraction, optical scanning, or other means is less than 60 micrometers is 90% or more of the total volume or total weight;
 - (g) boron with a weight-based purity level of 85% or more or its powdered

- alloys, for which the content of particles whose diameter measured using a sieve, laser diffraction, optical scanning, or other means is less than 60 micrometers is 90% or more of the total volume or total weight;
- (h) fuel or oxidizer, which fall under any of the following substances:
1. a perchlorate, a chlorate, or a chromate, in which a powdered metal or fuel constituent is mixed;
 2. hydroxylammonium nitrate;
- (i) carborane, decaborane, or pentaborane, or their derivative;
- (j) a liquid oxidizer falling under any of the following clauses:
1. dinitrogen trioxide;
 2. nitrogen dioxide or dinitrogen tetroxide;
 3. dinitrogen pentoxide;
 4. a mixture of nitrogen oxide;
 5. red fuming nitric acid having resistance to corrosion;
 6. a compound made from fluorine or halogens, oxygen, or nitrogen (excluding nitrogen trifluoride gas);
- (k) polybutadiene having a carboxyl group at its terminal;
- (l) polybutadiene having a hydroxyl group at its terminal;
- (m) a glycidyl azide polymer (including those which have a hydroxyl group at its terminal);
- (n) a polymer of butadiene and acrylic acid;
- (o) a polymer of butadiene, acrylonitrile, and acrylic acid;
- (p) a propellant falling under any of the following clauses:
1. solid and liquid blended fuel with a heating value of 40,000,000 joules per kilogram
 2. fuel or fuel additives with a heating value of 37,500,000,000 joules or more per cubic meter measured at a temperature of 20 degrees centigrade and 1 atmospheric pressure (excluding those produced by using fuels manufactured by using fossil fuels or organic matters derived from plants as raw materials);
- (q) tris-1-(2-methyl) aziridinyl phosphine oxide;
- (r) reaction products of tetraethylenepentamine, acrylonitrile, and glycidol;
- (s) reaction products of tetraethylenepentamine and acrylonitrile;
- (t) a multi-functional aziridineamide having an isophthal-, trimesin-, isocyanur-, or trimethyladipin- skeleton that has a 2-methylaziridine group or a 2-ethylaziridine group;
- (u) triphenylbismuth;
- (v) a ferrocene derivative;
- (w) triethylene glycol dinitrate;
- (x) trimethylolethane trinitrate;
- (y) 1,2,4-butaneetrioltrinitrate;

- (z) diethylene glycol dinitrate;
- (aa) polytetrahydrofuran polyethylene glycol;
- (bb) 4,5-diazidomethyl-2-methyl-,2,3-triazole;
- (cc) methyl-nitrate ethyl nitramine;
- (dd) ethyl-nitrate ethyl nitramine;
- (ee) butyl-nitrate ethyl nitramine;
- (ff) bis (2,2-dinitropropyl) acetal;
- (gg) bis (2,2-dinitropropyl) formal;
- (hh) dimethylaminoethyl azide;
- (ii) polyglycidyl nitrate;
- (jj) gelatinous propellant specially compounded to be used for rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more;
- (viii) devices or tools or testing device for producing propellants or substances to be their raw materials, or their components (excluding those falling under any of the items from the following item to item (x)-2):
 - (a) goods falling under the preceding item;
 - (b) octogen or hexagen;
 - (c) a composite propellant;
 - (d) 2-nitrodiphenylamine or N-methyl-p-nitroaniline;
 - (e) hydrazine nitroformate;
 - (f) hexanitrohexaazaisowurtzitane;
- (ix) batch mixers (excluding those for liquids) that fall under all of the following sub-items (a) through (d), or their components:
 - (a) those that are designed or modified for mixing at an absolute pressure of more than 0 kilopascals and 13.326 kilopascals or less;
 - (b) those capable of controlling the temperature inside the mixing container;
 - (c) those with a total volume of 110 liters or more; and
 - (d) those having at least one mixing axis or a kneading axis away from the center axis of the mixer;
- (ix)-2 continuous mixers (excluding those for liquids) that fall under all of the following sub-items (a) through (c), or their components:
 - (a) those designed or modified for mixing at an absolute pressure of 0 kilopascals or more and 13.326 kilopascals or less;
 - (b) those capable of controlling the temperature inside the mixing container;
 - (c) those that fall under any of the following mixers:
 1. those having two or more mixing axes or kneading axes; or
 2. those falling under the following clauses i. and ii.:
 - i. those having one rotation axis with a vibration function; and
 - ii. those having projections for kneading inside the mixing containers and on the rotation axis;

- (x) jet mills capable of pulverizing propellants falling under any of item (vii) or item (viii), sub-items (b) through (f) or substances to be their raw materials, or their components;
- (x)-2 devices for producing powder (limited to atomized powders, globular powders, or spheroidal powders) of metals falling under any of item (vii), sub-items (e) through (g), or their components;
- (xi) devices for producing composites, fibers, prepregs, or preforms (limited to those usable in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more), which fall under any of the following sub-items, or their components or accessories:
 - (a) among filament winding machines, fiber placement machines, or tow placement machines, which conduct positioning of fibers, wrapping operations, and winding operations, those with three or more axes capable of controlling those operations in correlation, or their control devices;
 - (b) among tape-laying machines that conduct operations of positioning and laminating of tape to manufacture bodies of aircraft or structures of rockets that are composed of composite materials, those with two or more shafts capable of controlling those operations in correlation;
 - (c) weaving machines or interlacing machines capable of three-dimensional weaving;
 - (d) devices for producing fibers, which fall under any of the following devices:
 1. devices for producing other fibers from polymer fibers;
 2. devices for performing vapor deposition of elements or compounds on base materials in a heated filament form;
 3. wet type spinning apparatus for fire-resistant ceramics;
 - (e) devices that are designed for surface finishing of fibers or for producing prepregs or preforms;
- (xii) nozzles used for fixing substances generated from the thermal decomposition of source gas onto base materials (limited to thermal decomposition conducted in the temperature range between 1,300 degrees centigrade or more and 2,900 degrees centigrade or less, and, absolute pressure range between 130 pascals or more and 20,000 pascals or less);
- (xiii) devices for producing nozzles of rocket propulsion devices or nose of re-entry vehicles, which fall under either of the following devices or their control devices:
 - (a) those for increasing the density of carbon of structural materials; or
 - (b) those for fixing carbon generated from thermal decomposition of source gas onto base materials;
- (xiv) isostatic presses falling under all of the following sub-items (a) through (c) or their control devices:
 - (a) those with maximum pressure of 69 megapascals or more;

- (b) those capable of temperature control inside hollow chambers (limited to the case in which the temperature inside a hollow chamber is 600 degrees centigrade or more); and
- (c) those with an internal diameter of a hollow chamber of 254 millimeters or more;
- (xv) furnaces that are designed to increase the density of carbon or composite materials using carbon or carbon fibers, for chemical vapor deposition or their control devices;
- (xvi) structural materials falling under any of the following sub-items:
 - (a) composites made from organic matters reinforced by fibers with a specific strength exceeding 76,200 meters, and, specific modulus exceeding 3,180,000 meters or metal matrix composites (excluding prepregs with a glass transition point of 145 degrees centigrade or less), or their molded products (limited to those that are designed to be used in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more or goods falling under item (ii), sub-item (a) or (b));
 - (b) composite materials using carbon and carbon fibers which are designed to be used for rockets, or their molded products (limited to those usable in rockets or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more);
 - (c) artificial graphite falling under any of the following clauses (limited to those usable for nozzle of rockets or nose of re-entry vehicles):
 1. artificial graphite whose bulk density measured at 15 degrees centigrade is 1.72 grams or more per cubic centimeter, and, whose particle diameter is 100 micrometers or less, which may be processed into any of the following things:
 - i. cylinders with a diameter of 120 millimeters or more, and, a height of 50 millimeters or more, or tubes with an inner diameter of 65 millimeters or more, a thickness of 25 millimeters or more, and, a height of 50 millimeters or more;
 - ii. a rectangular parallelepiped, with each side length of 120 millimeters or more, 120 millimeters or more, and 50 millimeters or more, respectively;
 2. pyrolytic graphite (limited to one usable in rockets capable of transporting payloads over a distance of 300 kilometers or more, or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more);
 3. graphite strengthened with fibers (limited to one usable in rockets capable of transporting payloads over a distance of 300 kilometers or more or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more);
 - (d) ceramic composite materials to be used in radomes (limited to those

- usable in rockets capable of transporting payloads over a distance of 300 kilometers or more or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more) for rockets or unmanned aircraft (limited to radomes with the relative permittivity of less than 6 in any of the frequencies within the range of between 100 megahertz or more and 100 gigahertz or less);
- (e) unfired ceramics reinforced by silicon carbide or reinforced silicon carbide ceramic composite materials usable for the nose of rockets or unmanned aircraft, re-entry vehicles, or nozzle flaps (limited to those usable in rockets capable of transporting payloads over a distance of 300 kilometers or more or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more);
 - (f) ceramic composite materials usable for components of rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more (including the nose, reentry vehicles, leading edge of wings, thrust deflection plate, control surface, or the nozzle throat of rocket motors) which are composed of matrix reinforced by fibers or filaments of ultra-high temperature ceramics with a melting point of 3,000 degrees or more (including titanium diboride, zirconium diboride, niobium diboride, hafnium diboride, tantalum diboride, titanium carbide, zirconium carbide, niobium carbide, hafnium carbide, and tantalum carbide);
 - (g) powder whose main constitutive substance is tungsten, molybdenum or their alloys which fall under any of the following powder, or their solidified powder (limited to those usable as structural materials for rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more):
 1. tungsten or powder with a tungsten content of 97% or more of the total weight of alloys, with a particle whose diameter is 50 micrometers or less;
 2. molybdenum or powder with a molybdenum content of 97% or more of the total weight of alloys, with a particle whose diameter is 50 micrometers or less;
 3. solidified powder of tungsten or powder with a tungsten content of 97% or more of the total weight of its alloys (for those impregnated with copper or silver, with a tungsten content of 80% or more of the total weight of the alloys), which can be processed into any of the following things:
 - i. cylinders with a diameter of 120 millimeters or more, and, a height of 50 millimeters or more, or tubes with an inner diameter of 65 millimeters or more, a thickness of 25 millimeters or more, and a height of 50 millimeters or more;
 - ii. a rectangular parallelepiped with the length of each side of 120 millimeters or more, 120 millimeters or more, and 50 millimeters or more,

- respectively;
- (h) maraging steels usable in rockets capable of transporting payloads over a distance of 300 kilometers or more or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more, which fall under the following clauses 1. and 2.:
 - 1. those falling under either of the following clauses:
 - i. those that have a maximum tensile strength of 900,000,000 pascals or more measured at the solution heat treatment stage at 20 degrees centigrade; or
 - ii. those that have a maximum tensile strength of 1,500,000,000 pascals or more measured at the precipitation hardening treatment stage at 20 degrees centigrade;
 - 2. those falling under either of the following things:
 - i. plates or tubes with a thickness of 5 mm or less; or
 - ii. tubes with a thickness of 50 mm or less, and, an internal diameter of 270 millimeters or more;
 - (i) austenitic-ferritic stainless steel stabilized by titanium, which falls under the following clauses 1. and 2. (limited to those usable in rockets capable of transporting payloads over a distance of 300 kilometers or more or unmanned aircraft capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more):
 - 1. those falling under all of the following clauses i. through iii.:
 - i. those with a chrome content of 17% or more and 23% or less of the total weight, and, a nickel content of 4.5 % or more and 7 % or less of the total weight;
 - ii. those with a titanium content exceeding 0.1 % of the total weight; and
 - iii. those with the part that has an austenitic structure which is 10% or more of the total volume;
 - 2. those falling under any of the following clauses:
 - i. an ingots or a rod with the minimum dimension of 100 millimeters or more;
 - ii. a sheet with a width of 600 millimeters or more, and, a thickness of 3 millimeters or less; or
 - iii. a tube with an external diameter of 600 millimeters or more, and, a thickness of 3 millimeters or less;
 - (xvii) accelerometers or gyroscopes or device, navigation equipment, or magnetic director sensors using them, which fall under any of the following equipment (limited to those usable in rockets or unmanned aircraft), or their components:
 - (a) navigation equipment that are designed to be used in rockets or unmanned aircraft capable of transporting payloads over a distance of 300

- kilometers or more, which are designed to be used together with a gyrostabilizer or an automatic pilot;
- (b) gyro-astro compasses, or devices that are capable of determining positions or courses by automatically tracking celestial bodies or artificial satellites;
 - (c) among linear accelerometers that are designed to be used in inertial navigation systems or guidance equipment with scale factor repeatability of less than 0.125% per year and bias repeatability of less than 0.012263 meters per second squared per year (limited to those usable in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more);
 - (d) gyroscopes with a drift rate stability of less than 0.5 degrees per hour in a linear acceleration state of 9.81 meters per second squared (limited to those usable in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more);
 - (e) among accelerators or gyroscopes that are designed to be used in inertial navigation systems or guidance equipment, those that are designed to be capable of being used at a linear acceleration exceeding 981 meters per second squared;
 - (f) devices using an accelerometer falling under sub-item (c) or (e) or a gyroscope falling under sub-item (d) or (e) (including attitude and heading reference systems, gyro compasses, inertial measurement units, inertial navigation systems, and inertial reference systems);
 - (g) magnetic director sensors that fall under all of the following clauses 1. through 3., that has three axes:
 1. those with an internal tilt correction of pitch (plus or minus 90 degrees) and roll (plus or minus 180 degrees);
 2. those the root mean squared value of azimuth accuracy at the point of plus/minus 80 degrees latitude is less than 0.5, relative to local magnetic field;
 3. those that are designed to be integrated with flight control or navigation systems;
- (xvii)-2 integrated navigation systems that are designed to be used in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, and with an accuracy of a circular error probability of 200 meters or less;
- (xvii)-3 accelerometers or gyroscopes or devices, navigation equipment, magnetic director sensors using them, or devices or tools, testing device, calibration equipment or alignment equipment for producing integrated navigation systems, or their components, which fall under any of the following sub-items:
- (a) devices or tools, testing device, calibration equipment, or alignment

- equipment for producing the devices falling under the preceding two items (excluding those falling under any of the following sub-items (b) through (f)), or their components;
- (b) centrifugal balancing machines (excluding those designed for testing dental equipment or medical equipment) falling under all of the following clauses 1. through 4.:
 - 1. those that are not capable of testing rotors exceeding 3 kilograms;
 - 2. those capable of testing rotors with a rotation speed exceeding 12,500 rotations per minute;
 - 3. those capable of testing imbalance on two or more planes;
 - 4. those with residual unbalance for the weight of rotor of 0.2 gram - millimeters or less per kilogram;
 - (c) display device that are designed to be capable of being used in the machines falling under sub-item (b);
 - (d) motion simulators or rate tables falling under all of the following clauses 1. through 3. (excluding those that are designed to be usable for machine tools or medical devices):
 - 1. those with two or more axes;
 - 2. those that use a slip ring, or non-contact type devices capable of supplying electric power or transmitting signal information;
 - 3. those falling under any of the following clauses:
 - i. among those for which the angular velocity in any of the axis is 400 degrees or more or 30 degrees or less per second, and the resolving power of the angular velocity of 6 degrees or less per second, those with the accuracy of the angular velocity of 0.6 degrees or less per second;
 - ii. those for which the angular velocity when the rotation of any of the axes rotates 10 degrees or more is stabilized at the accuracy of 0.05% or less;
 - iii. those with an accuracy of angular positioning of 5 seconds or less;
 - (e) positioning tables falling under the following clauses 1. and 2. (excluding those designed for use in machine tools or medical devices):
 - 1. those with two or more axes; and
 - 2. those with an accuracy of angular positioning of 5 seconds or less;
 - (f) centrifugal accelerator testing machines that are capable of applying an acceleration rate exceeding 980 meters per second squared, which use a slip ring or non-contact type device capable of supplying electricity or transmitting signal information;
 - (xviii) flight control device or attitude control device that are designed to be used in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more;
 - (xviii)-2 servo valves that are designed to be used in devices stated in the preceding item, and to be able to withstand vibrations with an effective value

- of acceleration exceeding 98 meters per second squared in all the frequency ranges from 20 hertz to 2,000 hertz;
- (xviii)-3 testing device, calibration equipment, or alignment equipment for the devices stated in the preceding two items;
- (xix) avionics equipment falling under any of the following clauses:
- (a) radars (limited to those usable for rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more);
 - (b) passive sensors for detecting the direction of a specific electromagnetic wave source or landform characteristics (limited to those designed to be used in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more);
 - (c) devices for receiving radio waves from a satellite navigation system (including a global navigation satellite system and an area navigation satellite system), which falls under the following clause 1. or 2., or components specially designed for that purpose:
 - 1. those designed to be used in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more;
 - 2. those designed to be used in mobile bodies that navigate or fly, which fall under any of the following clauses:
 - i. those capable of providing information related to navigation in the speed exceeding 600 meters per second;
 - ii. those designed or improved for the purpose of being used by the military forces or governmental organizations, and, has a function for decoding codes for accessing encoded signals or data used in a satellite navigation system (including a global navigation satellite system and an area navigation satellite system) (excluding those designed to receive navigational data for private use or for ensuring the safety of human life and physical safety);
 - iii. those designed to have a null-steerable antenna, an antenna capable of electronic scanning, or other functions of impedance elimination for the purpose of functioning in an environment where intentional impedance is received (excluding those designed to receive navigational data for private use or for ensuring the safety of human life and physical safety);
 - (d) umbilical electrical connectors or staging electrical connectors (including electrical connectors between payloads and rockets) designed for use in rockets capable of transporting payloads over a distance of 300 kilometers or more;
- (xix)-2 thermal batteries designed for use in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more,

- and which contain solid non-conducting inorganic salt as the electrolyte;
- (xx) among gravity meters for aircraft or ship mounting with precision of 0.7 milligals or less, those the time required for measurement of which is within 2 minutes (limited to those usable in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more) or their components;
 - (xx)-2 gravity gradiometers for aircraft or ship (limited to those usable in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more) or their components;
 - (xxi) launch pads or ground support equipment for rockets or unmanned aircraft, which fall under either of the following sub-items:
 - (a) equipment designed for handling, controlling, operating, or launching rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more; or
 - (b) vehicles designed for transporting, handling, controlling, operating, or launching rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more;
 - (xxii) radio telemetry equipment or radio telecontroller (including ground equipment) that is designed for use in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more and that does not fall under any of the following sub-items:
 - (a) those designed for use in manned aircraft or artificial satellites;
 - (b) those designed for use in mobile bodies used on land or the sea;
 - (c) those designed to receive information from satellite navigational systems for providing navigational data for private use or for ensuring the safety of human life and physical safety;
 - (xxii)-2 tracking devices usable in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, which fall under either of the following sub-items:
 - (a) tracking devices using code converters mounted in rockets or unmanned aircraft and capable of instantly measuring flight position and speed data in a mutual coordination with linked devices on ground, the sea or flying objects, or with a satellite navigational system;
 - (b) among radars for distance measurement having a tracking device that use light, those falling under all of the following clauses 1. through 3.:
 1. radars with angular resolving power less than 1.5 milliradians;
 2. radars with the square mean value of distance resolving power less than 10 meters and capable of measuring distances 30 kilometers or more;
 3. radars with speed resolving power less than 3 meters per second;
 - (xxiii) analog computers or digital computers designed for use in a rocket

capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more, which fall under either of the following sub-items:

- (a) computers designed to be usable from below -45 degrees centigrade to over 55 degrees centigrade; or
 - (b) computers designed to be able to withstand radiation irradiation total absorbed dose which is 500,000 rads or more on a silicon conversion basis;
- (xxiv) integrated circuits for analog-to-digital conversion or analog-to-digital converters (limited to those usable in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more), which that fall under either of the following sub-items:
- (a) integrated circuits for analog-to-digital conversion which are designed to be able to withstand radiation exposure, for which the total absorbed dose is 500,000 rads or more on a silicon conversion basis, or which fall under the following clauses 1. and 2.:
 - 1. integrated circuits designed to be usable at a temperature lower than 54 degrees centigrade below zero to higher than 125 degrees centigrade;
 - 2. integrated circuits that are sealed airtight;
 - (b) assemblies or modules for electronic input-type analog-to-digital conversion which fall under the following clauses 1. and 2.:
 - 1. assemblies or modules designed to be usable at temperatures lower than 45 degrees centigrade below zero to higher than 80 degrees centigrade; and
 - 2. assemblies or modules that incorporate an integrated circuit falling under sub-item (a);
- (xxv) vibration testing device or its components, aerodynamic testing device, combustion testing device, environmental testing device, electron accelerators, or devices using them, which fall under any of the following sub-items:
- (a) vibration testing device or their components falling under any of the following clauses (limited to those usable in the development or testing of rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, or goods falling under item (ii)):
 - 1. digitally controlled vibration testing devices that fall under the following clauses i. and ii.:
 - i. those with an exciting force of 50 kilonewtons or more in a state in which there is no test specimen and capable of generating vibrations with an effective value of acceleration of 98 meters or more per second squared even at a frequency of 20 hertz or more and 2,000 hertz or less; and
 - ii. those using feedback control technology or closed-loop control technology;

2. components of vibration testing device falling under any of the following clauses (limited to those usable for the development or testing of rockets or unmanned aircraft capable of transporting payloads for 300 kilometers or more, or goods falling under item (ii)):
- i. components that are designed to be used for controlling the vibration testing device falling under clause 1. which use a program for vibration testing, and, digitally control vibration testing in real time in a bandwidth exceeding 5 kilohertz;
 - ii. vibration generators usable for vibration testing device falling under clause 1., with an exciting force of 50 kilonewtons or more in a state in which there is no test specimen;
 - iii. components of vibration tables or vibration generators usable for vibration testing device falling under clause 1., which are designed to be used by connecting two or more vibration generators in order to generate vibrations with an exciting force of 50 kilonewtons or more in a state in which there is no test specimen;
- (b) aerodynamic testing devices capable of creating a state in which the speed is Mach 0.9 or more (limited to those usable for the development or testing of rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, unmanned aircraft falling under item (i)-3, or goods falling under item (ii); excluding wind tunnels with a speed of Mach 3 or less, and, for which the length of the cross section of the measurement part is 250 millimeters or less and those falling under sub-item (f));
- (c) combustion testing device capable of testing solid rockets and liquid rockets with thrust exceeding 68 kilonewtons or rocket propulsion devices, or capable of simultaneously measuring the thrust component in the triaxial direction (limited to those usable for the development or testing of rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, or goods falling under item (ii));
- (d) environmental testing devices that are capable of simulating the flying state and fall under the following clauses 1. and 2. (limited to those usable for developing or testing rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, unmanned aircraft falling under item (i)-3, or goods falling under item (ii)):
1. those capable of simulating the state in which the altitude is 15,000 meters or more, or the state in which all the temperature range between minus 50 degrees centigrade or more and 125 degrees centigrade or less;
 2. those capable of generating a vibration in the frequency range between 20 hertz or more and 2,000 hertz or less, and, an effective value of acceleration of 98 meters or more per second squared in a state in which

- there is no test specimen (limited to those with an exciting force of 5 kilonewtons or more), or those capable of generating sounds with the sound pressure level of 140 decibels or more when the reference sound pressure is 20 micropascals or with the total rated sound output of 4 kilowatts or more;
- (e) electron accelerators capable of emitting electromagnetic waves by a bremsstrahlung from accelerated electrons that have an energy of 2 megaelectron volts or more or devices using electron accelerators (excluding those designed for medical use and limited to those usable for developing or testing rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, or goods falling under item (ii));
- (f) aerothermodynamic testing devices (including plasma arcjet equipment and plasma wind tunnels for investigating thermal and mechanical effects of air current flowing around an object) that fall under either of the following devices (limited to those usable for developing or testing rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more or goods falling under item (ii), sub-item (a) or (b)):
1. those capable of supplying electricity of 5 megawatts or more; or
 2. those capable of supplying gas with a pressure of 3 megapascals or more;
- (xxv)-2 rockets capable of transporting a payload weighing 500 kilograms or more over a distance of 300 kilometers or more, goods falling under item (ii), sub-item (a) (limited to those usable in rockets capable of transporting a payloads weighing 500 kilograms or more), or hybrid computers for designing goods falling under sub-item (b) of that item (limited to those that have programs falling under Article 16, paragraph (1), item (xi));
- (xxvi) materials or devices using stealth technology for reducing the level of reflection or emission of radio waves, sound waves (including ultrasonic waves) or light (limited to ultraviolet rays and infrared rays) which are usable in rockets or unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, unmanned aircraft falling under item (i)-3, or goods falling under item (ii), or their testing devices;
- (xxvii) integrated circuits, detectors, or radomes (limited to those usable in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more) which fall under any of the following sub-items:
- (a) integrated circuits that are designed to be capable of withstanding radiation irradiation with a total absorbed dose of 500,000 rads or more on a silicon conversion basis, which are usable for protecting rockets or unmanned aircraft from nuclear impact;
 - (b) detectors that are designed to protect rockets or unmanned aircraft from

nuclear impact;

- (c) radomes that are designed to be capable of withstanding a thermal shock exceeding 4,184 kilojoules per square meter at a pressure exceeding 50 kilopascals and usable for protecting rockets or unmanned aircraft from nuclear impact.

Article 4 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row (5) of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) among fluorine compound products that are designed to be used for aircraft, artificial satellites or other flying objects for space development, those that are seals, gaskets, sealants, or fuel storage bags with a content of fluorine compounds that fall under item (xiv), sub-item (b) or (c) exceeding 50% of the total weight;
- (ii) molded products that use fibers (including semi-finished products; the same applies below in this item) which fall under any of the following products:
 - (a) molded products manufactured using prepreg or preform that fall under item (xv), clause (e);
 - (b) molded products manufactured using fibers that fall under any of the following fibers with a matrix of metal or carbon:
 - 1. carbon fibers that fall under the following clauses i. and ii.:
 - i. those with a specific modulus exceeding 10,150,000 meters; and
 - ii. those with a specific strength exceeding 177,000 meters;
 - 2. those that fall under item (xv), sub-item (c);
- (iii) aromatic polyimide products (limited to polyimides for which polymerization or cross-linking by action through heat, radiation or catalysts or other external action is impossible, and, which do not melt without going through pyrolysis) (limited to films, sheets, tapes, or ribbon shaped products) which fall under either of the following products (excluding those which are coated or laminated with copper and are for printed electronic circuit boards):
 - (a) those with a thickness exceeding 0.254 millimeters; or
 - (b) those coated or laminated with carbon, graphite, metal, or magnetic materials;
- (iv) devices for manufacturing things that fall under item (ii), item (xv), or Article 14, item (i), which fall under any of the following sub-items, or their components or accessories (excluding those falling under Article 3, item (xi)):
 - (a) among filament winding devices that perform positioning of fibers, wrapping operations, and winding operations, those that have three or more basic axes (limited to those that operate by servocontrol) capable of controlling those operations in correlation;

- (b) among devices for manufacturing bodies of aircraft or the structures of rockets made of fibers, which position tapes, and perform laminating operations, those that have five or more basic axes (limited to those that operate by servocontrol) capable of controlling those operations in correlation;
- (c) looms or interlacing machines capable of three-dimensional weaving, which have been specially designed or modified to weave, knit, or braid fiber for molded products;
- (d) fiber manufacturing devices that fall under any of the following clauses:
 1. devices that manufacture carbon fibers or silicon carbide fibers from polymer fibers;
 2. devices that manufacture silicon carbide fibers, which perform chemical vapor deposition of elements or compounds on heated filament-shaped base materials;
 3. wet type spinning equipment for fire resistant ceramics;
 4. devices that manufacture alumina fibers from precursor fibers containing aluminum by heat treatment;
- (e) devices that manufacture prepregs that fall under item (xv), sub-item (e) by using a hot melt method;
- (f) among non-destructive inspection devices that are designed for inspecting composite materials, those that fall under any of the following devices:
 1. X-ray tomography device for three-dimensional defect inspections;
 2. ultrasonic wave testing machines capable of numerical control which the motions for positioning transmitters or receivers, or positioning transceivers are simultaneously controlled and programmed in four or more axes to follow the three dimensional contours of a component at the time of inspection;
- (g) among devices for manufacturing the bodies of aircraft or structures of rockets made of fibers which position tows and perform laminating operations, those that have two or more basic axes (limited to those that operate by servocontrol) capable of controlling those operations in correlation;
- (v) devices designed for the manufacture of alloy powders or alloy particulate matters that fall under either of the following sub-items (a) or (b);
 - (a) those specially designed to prevent contamination; or
 - (b) those specially designed to be used in any of the method that fall under item (vii), sub-item (c), 2., clauses i through xiii.
- (vi) tools (including molds) for super plastic forming or diffusion bonding of titanium, aluminum or their alloys, which are designed to manufacture things that fall under any of the following clauses:
 - (a) structures of aircraft, artificial satellites, and other flying objects for

- space development;
- (b) engines for aircraft, artificial satellites, and other flying objects for space development;
- (c) components of those things that fall under sub-item (a) or (b);
- (vii) alloys or their powders that fall under any of the following sub-items (excluding those specially compounded to be used for coating):
 - (a) alloys that have become aluminum compounds, which fall under any of the following alloys:
 1. nickel alloys with an aluminum content of 15% or more and 38% or less of the total weight, which contain alloying elements other than of aluminum or nickel;
 2. titanium alloys with an aluminum content of 10% or more of the total weight, which contain alloying elements other than aluminum or titanium;
 - (b) alloys made of metals that fall under sub-item (c), which fall under any of the following clauses:
 1. nickel alloys that fall under either of the following alloys:
 - i. those with a stress rupture time of 10,000 hours or more when a load that generates 676 megapascals stress at a temperature of 650 degrees centigrade is added;
 - ii. those with a low-cycle fatigue life of 10,000 cycles or more when a load that generates 1,095 megapascals stress at a temperature of 550 degrees centigrade is added;
 2. niobium alloys that fall under any of the following alloys:
 - i. those with a stress rupture time of 10,000 hours or more when a load that generates 400 megapascals stress at a temperature of 800 degrees centigrade is added;
 - ii. those with a low-cycle fatigue life of 10,000 cycles or more when a load that generates 700 megapascals stress at a temperature of 700 degrees centigrade is added;
 3. titanium alloys that fall under any of the following alloys:
 - i. those with a stress rupture time of 10,000 hours or more when a load that generates 200 megapascals stress at a temperature of 450 degrees centigrade is added;
 - ii. those with a low-cycle fatigue life of 10,000 cycles or more when a load that generates 400 megapascals stress at a temperature of 450 degrees centigrade is added;
 4. aluminum alloys with a tensile strength falling under either of the following clauses:
 - i. those with a tensile strength of 240 megapascals or more at a temperature of 200 degrees centigrade; or
 - ii. those with a tensile strength of 415 megapascals or more at a

- temperature of 25 degrees centigrade;
5. among magnesium alloys with a tensile strength of 345 megapascals or more, those that incur corrosion of less than 1 millimeter per year in a 3% saline solution;
- (c) alloy powders that fall under all of the following clauses 1. through 3.:
1. alloy powders made of materials that fall under any of the following:
 - i. nickel alloys with the number of particles other than metals that are mixed in during the manufacturing process of less than three per 1,000,000,000 particles (limited to those with a diameter exceeding 100 micrometers), which are made of 3 types or more elements including aluminum and nickel;
 - ii. niobium alloys composed of elements of any of aluminum, silicon, or titanium and three or more types of elements including niobium; or
 - iii. titanium alloys composed of three or more types of elements including those of aluminum and titanium;
 - iv. aluminum alloys composed of elements of magnesium, zinc, or iron and three or more types of elements including those of aluminum;
 - v. magnesium alloys composed of three or more types of elements including aluminum and magnesium;
 2. alloy powders manufactured by any of the following methods:
 - i. vacuum atomization method;
 - ii. gas atomization method;
 - iii. rotary atomization method;
 - iv. splat-quenching method;
 - v. melt-spinning method and pulverization method;
 - vi. melt-extraction method and pulverization method;
 - vii. mechanical alloy method; or
 - viii. plasma atomization method;
 3. alloy powders that are capable of manufacturing those that fall under sub-item (a) or (b);
- (d) alloy materials that fall under all of the following clauses 1. through 3.:
1. those that fall under any of (c) 1., clauses i. through v.;
 2. those that are not finely pulverized and flake shaped, ribbon shaped, or thin rod shaped;
 3. those manufactured by any of the following methods:
 - i. splat-quenching method;
 - ii. melt spinning method; or
 - iii. melt extraction method;
- (viii) metallic magnetic materials that fall under any of the following materials:
- (a) those with an initial relative permeability of 120,000 or more, and with a

- thickness of 0.05 millimeters or less;
- (b) magnetostrictive alloys that fall under any of the following clauses:
 1. those with a saturated magnetostriction exceeding 0.0005;
 2. those with an electromechanical coupling coefficient exceeding 0.8;
 - (c) strip-shaped amorphous alloys or nano crystal alloys, which fall under the following clauses 1. and 2.:
 1. those with a content of any of iron, cobalt, or nickel, or the total content of these elements, of 75% or more of the total weight;
 2. those with a saturated magnetic flux density of 1.6 teslas or more, which fall under either of the following clause:
 - i. those with a thickness of 0.02 millimeters or less; or
 - ii. those with an electrical resistivity of 2 microohm-meters or more;
 - (ix) among uranium-titanium alloys or tungsten alloys whose matrix is iron, nickel, or copper, those that fall under all of the following sub-items (a) through (d):
 - (a) those with a density exceeding 17.5 gram per cubic centimeter;
 - (b) those with an elastic limit exceeding 880 megapascals;
 - (c) those with a tensile strength exceeding 1,270 megapascals; and
 - (d) those with a coefficient of extension exceeding 8%;
 - (x) superconducting materials that fall under any of the following sub-items (limited to those with a length exceeding 100 meters or with the total weight exceeding 100 grams):
 - (a) among those that have filaments including niobium titanium filaments, those that fall under the following clauses 1. and 2.:
 1. those whose filaments are embedded in a matrix other than copper or copper alloy matrix;
 2. those with a filament cross-section area of less than 28/1,000,000 square millimeters;
 - (b) superconductive materials composed of superconductive filaments other than niobium titanium, which fall under all of the following clauses 1. through 3.:
 1. those with a critical temperature exceeding -263.31 degrees centigrade if a magnetic field is not applied;
 2. Deleted
 3. those that can hold a superconductive state at a temperature of minus 268.96 degrees centigrade, when exposed to a magnetic field corresponding to a magnetic flux density of 12 tesla in any direction perpendicular to the vertical axis of the material, and with a critical current density exceeding 1,750 amperes per square millimeter at all the cross sections;
 - (c) superconductive materials composed of superconductive filaments, which is capable of holding a superconductive state at a temperature exceeding

- minus 158.16 degrees centigrade;
- (xi) materials usable as lubricant, liquids usable for vibration prevention, or liquids for refrigerant, which fall under any of the following sub-items:
- (a) Deleted
 - (b) materials that may be used as lubricant, among phenylene ether, alkylphenylene ether, phenylene thioether, alkyl phenylene thioether or their mixtures, those for which the total number of ether group, or thioether group, or their functional groups they possess is those that have three or more substances as the main components;
 - (c) among liquids usable for vibration prevention with a purity exceeding 99.8%, and, with the number of particle impurities whose diameter is greater than 200 micrometers is less than 25 per 100 milliliters, those with a weight of the substances that fall under any of the following clauses is 85% or more of the total weight:
 - 1. dibromo tetrafluoro ethane;
 - 2. polychloro trifluoro ethylene; or
 - 3. polybromo trifluoro ethylene;
 - (d) among liquids designed for cooling electronic devices and made of fluorocarbons, those falling under the following clauses 1. and 2.:
 - 1. those with a total content of substances that fall under any of the following clauses are 85% or more of the total weight:
 - i. monomers of perfluoro polyalkyl ether triazine;
 - ii. monomers of perfluoro aliphatic ether;
 - iii. perfluoro alkylamine;
 - iv. perfluoro cycloalkane; or
 - v. perfluoro alkane;
 - 2. those that fall under all of the following clauses i. through iii.:
 - i. those with a density at the temperature of 25 degrees centigrade of 1.5 grams or more per milliliter;
 - ii. those that are liquids at the temperature of 0 degrees centigrade; and
 - iii. those with a fluorine content of 60% or more of the total weight;
- (xii) ceramic powder, ceramic composite materials, or precursors that will be material for ceramics, which fall under any of the following sub-items:
- (a) among ceramic powder manufactured using titanium diboride with a content of metallic impurities of less than 0.5% of the total weight, those for which the mean value of particle diameter is 5 micrometers or less, and, the total weight of the particles with diameters exceeding 10 micrometers is 10% or less of the total weight;
 - (b) Deleted
 - (c) among ceramic composite materials that have glass or oxides as matrix, those that fall under any of the following clauses:

1. those reinforced with continuous fiber composed of any of the following substances (excluding those with a tensile strength of less than 700 megapascals at the temperature of 1,000 degrees centigrade, or those with a creep strain exceeding 1% when a load that generates stress of 100 megapascals is added for 100 hours at the temperature of 1,000 degrees centigrade):
 - i. aluminum oxide; or
 - ii. silicon, carbon, and nitrogen;
 2. those reinforced with fiber falling under the following clauses i. and ii.:
 - i. those composed of combinations of any of the following elements:
 - a. silicon and nitrogen;
 - b. silicon and carbon;
 - c. silicon, aluminum, oxygen, and nitrogen; or
 - d. silicon, oxygen, and nitrogen;
 - ii. those with a specific strength exceeding 12,700 meters;
- (d) ceramic composite materials with a matrix of silicon, zirconium, boron carbide, or boron nitride;
- (e) precursors that will be materials for ceramics used to manufacture any of the materials referred to in sub-item (c) or (d), which fall under any of the following clauses:
1. polydiorgano silane;
 2. polysilazane; or
 3. polycarbo silazane;
- (xiii) non-fluorinated compounds for which polymerization is possible, or non-fluorinated polymers, which fall under any of the following sub-items:
- (a) bismaleimide, aromatic polyamideimide with a glass transition point exceeding 290 degrees centigrade, aromatic polyimide with a glass transition point exceeding 232 degrees centigrade, or aromatic polyetherimides with a glass transition point exceeding 290 degrees centigrade;
 - (b) Deleted
 - (c) Deleted
 - (d) polyallylene ketone;
 - (e) polyallylene sulfide that have allylene groups composed of biphenylene, tri phenylene, or their combination;
 - (f) polybiphenylene ether sulfone with a glass transition point exceeding 290 degrees centigrade;
- (xiv) fluorine compounds that fall under any of the following sub-items:
- (a) Deleted
 - (b) fluorinated polyimides with bonded fluorine content of 10% or more of the total weight;

- (c) elastic bodies of fluorinated phosphazenes with bonded fluorine content of 30% or more of the total weight;
- (xv) fibers, or prepregs or preforms that use those fibers, which fall under any of the following sub-items:
 - (a) organic fibers (excluding polyethylene fibers), which fall under any of the following clauses 1. and 2.:
 - 1. those with a specific modulus exceeding 12,700,000 meters;
 - 2. those with a specific strength exceeding 235,000 meters;
 - (b) carbon fibers that fall under the following clauses 1. and 2.:
 - 1. those with a specific modulus exceeding 14,650,000 meters;
 - 2. those with a specific strength exceeding 268,200 meters;
 - (c) inorganic fibers that fall under the following clauses 1. and 2.:
 - 1. those falling under either of the following clauses:
 - i. those with a silicon dioxide content of 50% or more of the total weight, with a specific modulus exceeding 2,540,000 meters; or
 - ii. those with a specific modulus exceeding 600,000 meters (excluding those falling under clause i.).
 - 2. those with a melting point, softening point, decomposition point, or sublimation temperature exceeding 1,649 degrees centigrade, in an inert environment; provided, however, excluding those that fall under any of the following clauses:
 - i. those with a specific modulus of less than 10,000,000 meters, which are short fibers of multiphase polycrystalline alumina fibers with a silica content of 3% or more of the total weight and are cut into short pieces or are random mat shaped;
 - ii. molybdenum fibers or molybdenum alloy fibers; or
 - iii. boron fibers;
 - iv. short fibers of ceramic fibers with a melting point, softening point, decomposition point, or sublimation temperature exceeding 1,770 degrees centigrade, in an inert environment;
 - (d) fibers made of the things that fall under any of the following clauses, or fibers woven by mixing those fibers and fibers that fall under any of the following sub-items (a) through (c):
 - 1. aromatic polyetherimides that fall under item (xiii), sub-item (a);
 - 2. those that fall under any of item (xiii), sub-items (d) through (f);
 - (e) prepregs or preforms that use the following things under 1. and 2.:
 - 1. those which fall under the following clause i. or ii.:
 - i. inorganic fibers that fall under clause (c);
 - ii. organic fibers or carbon fibers that fall under the following clauses a. and b.:
 - a. those with a specific modulus exceeding 10,150,000 meters;

- b. those with a specific strength exceeding 177,000 meters;
- 2. resins that fall under any of the following clauses:
 - i. those that fall under item (xiii) or item (xiv), sub-item (b) with a glass transition point exceeding 110 degrees centigrade;
 - ii. phenol resin with a glass transition point of 180 degrees centigrade or more when measured by dynamic mechanical analysis;
 - iii. those with a glass transition point of 232 degrees centigrade or more when measured by dynamic mechanical analysis (excluding phenol resins and those falling under clause i.);
- (xvi) boron with a particle diameter of 60 micrometers or less with a weight-based purity level of boron of 85% or more or their mixture, boron alloy with a particle diameter of 60 micrometers or less and with a weight-based purity level of boron of 85% or more or their mixture, guanidine nitrate, or nitro guanidine.

Article 5 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 6 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) axis bearings or their components, which fall under any of the following sub-items:
 - (a) among ball bearings or roller bearings (excluding tapered roller bearings) whose inner ring, outer ring and rolling element are all made of monel or beryllium, those whose precision ranking specified by the Japanese Industrial Standard No. B1514-1 is higher than Class II or Class IV;
 - (b) Deleted
 - (c) active magnetic bearing system that falls under any of the following systems or components that were specially designed for that purpose:
 - 1. those that are composed of materials with a magnetic flux density of 2 teslas or more, and, a yield point exceeding 414 megapascals;
 - 2. those that are all-electromagnetic systems and use a three-dimensional homopolar bias excitation actuator;
 - 3. those that have a position detector that can be used at the temperature of 177 degrees centigrade or more;
- (ii) among machine tools (limited to those that are capable of processing metals, ceramics, or composite materials) to which an electronic control device may be attached, those that fall under any of the following sub-items (a) through (e) (excluding those that fall under sub-item (f) and optical finishing machine tools):
 - (a) among machine tools capable of lathe turning and have two or more shafts capable of contouring control, those which fall under any of the following clauses (excluding those that fall under clause 3.):

1. among straight axes whose movement is less than 1 meter, those which the repeatability of the unidirectional positioning of any one or more axes is 0.0009 millimeters or less;
 2. among straight axes whose movement amount is 1 meter or more, those with a repeatability of the unidirectional positioning of any one or more axes is 0.0011 millimeters or less
 3. among bar work lathes those for which materials are inserted from a spindle hole for processing, which fall under the following clauses i. and ii.:
 - i. those capable of processing materials whose maximum diameter is 42 millimeters;
 - ii. those to which a chuck cannot be installed;
- (b) machine tools capable of milling, which fall under any of the following clauses:
1. those that have three straight axes capable of contouring control, and, one rotating axis capable of contouring control, which fall under either of the following clauses:
 - i. among straight axes whose movement amount is less than 1 meter, those with a repeatability of the unidirectional positioning of any one or more axes is 0.0009 millimeters or less; or
 - ii. among straight axes whose movement amount is 1 meter or more, those with a repeatability of the unidirectional positioning of any one or more axes is 0.0011 millimeters or less;
 2. among those with five or more axes capable of controlling contour, those that fall under any of the following clauses:
 - i. among straight axes whose movement amount is less than 1 meter, those with a repeatability of the unidirectional positioning of any one or more axes is 0.0009 millimeters or less;
 - ii. among straight axes whose movement amount is 1 meter or more and less than 4 meters, those with a repeatability of the unidirectional positioning of any one or more axes is 0.0014 millimeters or less; or
 - iii. among straight axes whose movement amount is 4 meters or more, those with a repeatability of the unidirectional positioning of any one or more axes is 0.006 millimeters or less;
 3. jig boring machines with a repeatability of the unidirectional positioning of any one or more straight axes is 0.0011 millimeters or less;
 4. machine tools exclusively designed for fly cutting, which fall under the following clauses i. and ii.:
 - i. those for which the deflection in the radial direction and the deflection in the axial direction are less than 0.0004 millimeters when the spindle is rotated once; and
 - ii. those with the straightness of less than 2 seconds for the movement

- distance exceeding 300 millimeters;
- (c) machine tools capable of grinding that fall under any of the following clauses (excluding those which fall under any of the clauses 3. through 5.):
1. those with a repeatability of the unidirectional positioning of any one or more axes of the straight axes is 0.0011 millimeters or less, which have three or four axes capable of contouring control;
 2. among those with five or more axes capable of controlling contour, those which fall under any of the following clauses:
 - i. among straight axes whose movement amount is less than 1 meter, those with a repeatability of the unidirectional positioning of any one or more axes is 0.0011 millimeters or less;
 - ii. among straight axes whose movement amount is 1 meter or more and less than 4 meters, those with a repeatability of the unidirectional positioning of any one or more axes is 0.0014 millimeters or less; or
 - iii. among straight axes whose movement is 4 meters or more, those with a repeatability of the unidirectional positioning of any one or more axes is 0.006 millimeters or less;
 3. external cylindrical grinders, internal cylindrical grinders, or internal-external cylindrical grinders which are designed to grind a cylinder with an external diameter or length of less than 150 millimeters;
 4. machine tools which are designed to be used as a jig grinding machine, which do not have a Z axis or W axis with a repeatability of the unidirectional positioning of less than 0.0011 millimeters;
 5. flat surface grinders;
- (d) machine tools capable of electrical discharge machining (excluding wire electrical discharge machining) with two or more rotational axes capable of controlling contour;
- (e) machine tools capable of liquid jet processing, electron beam machines, or laser processing machines, which have at least two or more rotational axes that fall under the following clause 1. or 2.:
1. those capable of controlling contour;
 2. those with a positioning precision of the rotating axis of less than 0.003 degrees;
- (f) machine tools that are exclusively designed to manufacture any of the following tools:
1. gears;
 2. crank shafts or cam shafts;
 3. tools or blades;
 4. extruder worms;
 5. gemstones; or
 6. dentures;

- (iii) among machine tools (limited to those that can process metals, ceramics, or composite materials) to which an electronic control device can be attached, those that are capable of deep bore drilling or lathe turning (limited to those that are capable of deep bore drilling), which can bore a hole with a depth exceeding 5,000 millimeters;
- (iv) among optical finishing machine tools capable of numerical control and capable of processing the surface to nonspherical optical surfaces by selectively removing materials, those which fall under all of the following sub-items (a) through (d):
 - (a) those with the dimensional tolerance of the finished shape of less than 1.0 micrometers;
 - (b) those with a root mean square of less than 100 nanometers for the finished surface roughness;
 - (c) those with four or more axes capable of controlling contour; and
 - (d) those using any of the following methods:
 1. magnetorheological polishing method;
 2. electrorheological polishing method;
 3. polishing method using energetic particle beams;
 4. inflatable membrane tool finishing method; or
 5. fluid jet polishing method;
- (v) machine tools capable of numerical control that are designed to perform finishing processing of spur gears, helical gears, or double-helical gears with a Rockwell hardness of 40 or greater measured using the C scale by the measurement method specified by Japanese Industrial Standard Z2245 (Rockwell hardness test method), which are capable of processing machine tools that fall under all of the following sub-items (a) through (c):
 - (a) those with a pitch diameter exceeding 1,250 millimeters;
 - (b) those with a face width of 15% or larger of the pitch diameter;
 - (c) those with a precision specified by the International Standard ISO 1328 (precision under the ISO method for cylindrical gears);
- (vi) isostatic presses that fall under the following sub-items (a) and (b), or their components or accessories:
 - (a) those that have hollow cavities with an internal diameter of 406 millimeters or more and capable of controlling temperature inside the hollow cavities; and
 - (b) those that fall under any of the following clauses:
 1. those with a maximum pressure exceeding 207 megapascals;
 2. those capable of controlling temperatures inside hollow cavities to a temperature exceeding 1,500 degrees centigrade; or
 3. those that have devices for injecting hydrocarbons, and for removing gaseous decomposition products;

- (vii) among coating devices for non-electronic substrates which use the coating method stated in column 2 of the Appended Table 3 and apply the coatings stated in column 4 of that Table on base materials stated in column 3 of that Table, those that fall under any of the following sub-items, or components specially designed for their automatic operation:
- (a) those that use the method of fixing to the surface of base materials coating materials that are produced by chemical reaction of source gas, which fall under the following clauses 1. and 2.:
 - 1. those that use any of the following methods:
 - i. pulse method;
 - ii. controlled nucleation thermochemical deposition method; or
 - iii. methods that fix coating materials to the surface of base materials by plasma discharge;
 - 2. those that fall under either of the following clauses:
 - i. those that have rotational axis seals that can be used at 10 millipascals or less incorporated; or
 - ii. those that have a film thickness control function inside;
 - (b) those that use the ion implantation method and have a beam current of 5 milliamperes or more;
 - (c) among those that use the method of fixing coating materials that have been vaporized by electron beams to the surface of base materials, for which power supply devices with a capacity exceeding 80 kilowatts have been incorporated, those that have the devices falling under any of the following clauses:
 - 1. devices that conduct molten liquid level control by using laser light to control feeding of ingot;
 - 2. deposition rate monitoring devices that are capable of control by using computers, which uses the principle of photoluminescence of ionized atoms in vapor flow to control the deposition rate when applying coating of two or more elements;
 - (d) those that carry out plasma spraying which fall under the following devices:
 - 1. those that can reduce the pressure in vacuum chambers to 10 millipascals before thermal spraying, which may be used at a pressure of 10 kilopascals or less (meaning those measured within 30 centimeters from the mouth of the nozzle);
 - 2. those that have a film thickness control function inside;
 - (e) those that use the sputtering method and have a current density of 10 milliamperes per square centimeter or more for deposition rate of 15 micrometers per hour or more;
 - (f) those that use the method of fix coating materials ionized by arc discharge

- to the surface of base materials, which have a magnetic field for controlling arc spots on the cathode;
- (g) ion plating production equipment that can measure any of the following matters during coating:
 - 1. thickness and deposition rate of coating materials fixed to the surface of base materials;
 - 2. optical properties of the surface of base materials;
 - (viii) measuring devices (including machine tools usable as a measuring device; the same applies below in this Article), feedback devices for positions, or assemblies of measuring devices, which fall under any of the following sub-items (excluding those falling under item (ii) or (iii)):
 - (a) coordinate measuring machines that are controlled by a computer or numerical control equipment, for which the numerical value of the maximum permissible error of the length of the measurement axis expressed in micrometers is to be equal to or less than the numerical value to which 1.7 is added to the numerical value obtained by multiplying the length of the measurement axis expressed in millimeters by 0.001, when the measurement accuracy of space is measured by the measurement method specified by an international standard, at any of the measuring points within the operating range;
 - (b) devices for measuring displacement on a straight line, feedback devices for positions on a straight line, or assemblies of measuring devices, which fall under any of the following clauses (for clauses 1. and 2., excluding laser interferometers and optical encoders using lasers):
 - 1. non-contact type measurement device with a resolving power of 0.2 micrometers or less in a measurement range of up to 0.2 millimeters;
 - 2. a feedback device for positions on a straight line, which is specially designed for machine tools with a precision of less than the numerical value obtained by adding 0.0008 millimeters to 6/100,000th percent of the effective measurement length of the devices expressed in millimeters; or
 - 3. devices falling under all of the following clauses:
 - i. those capable of measurement by using a laser beam;
 - ii. those with a resolving power of 0.2 nanometers or less in the maximum measurable range; and
 - iii. those for which the numerical value of measurement uncertainty for the measurement axis expressed in nanometers is equal to or less than the numerical value obtained by adding 1.6 to the numerical value obtained by multiplying the length of the measurement axis expressed in millimeters by 0.0005 at any of the measuring points within the operating range when corrected by air refractive index, which are capable of conducting measurement for more than 30 seconds in the temperatures range between

- 19.99 degrees centigrade or more and 20.01 degrees centigrade or less;
4. assemblies of a measuring device falling under clause 3., which are designed to add a feedback function to the device;
- (c) rotational position feedback devices or devices for measuring angle displacement, which are specially designed for machine tools, with an angular accuracy of 0.9 arc seconds or less (excluding optical instruments for measuring displacement of the angle of a mirror by using parallel rays (including autocollimators));
- (d) devices that measure surface roughness by treating the light scattering as function of angles, which have a sensitivity of 0.5 nanometers or less;
- (ix) robots (excluding operating robots and sequenced robots) that fall under any of the following robots, or their control device or end effector:
- (a) those with explosion-proof structure specified by Japanese Industrial Standard C60079-0 (excluding those used for painting);
- (b) those that are designed to withstand a total absorbed dose of radiation irradiation exceeding 5,000 grays on a silicon conversion basis;
- (c) those that are designed for use at altitudes exceeding 30,000 meters;
- (x) among compound rotary tables or spindles that can change the angle of the center line for other axes during manufacturing which are designed for machine tools, those that fall under any of the following sub-items:
- (a) Deleted
- (b) Deleted
- (c) compound rotary tables that fall under the following clauses 1. and 2.:
1. those that are designed for machine tools capable of lathe turning, milling, or grinding; and
 2. those that have two rotating axes designed to enable simultaneous control for contouring control;
- (d) spindles that can change the angle of the center line for other axes during manufacturing, which fall under the following clauses 1. and 2.:
1. those that are designed for machine tools capable of lathe turning, milling, or grinding; and
 2. those that are designed to enable simultaneous control for contouring control;
- (xi) spin-forming machines that fall under all of the following sub-items (a), (b), and (c):
- (a) those that can be controlled by a numerical control equipment or computer;
- (b) those with three or more axes capable of controlling contour;
- (c) those whose roller has a welding force exceeding 60 kilonewtons.

Article 6 The goods with specifications prescribed by Order of the Ministry of

Economy, Trade and Industry referred to in row 7 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) integrated circuits (including monolithic integrated circuits, hybrid integrated circuits, multichip integrated circuits, film integrated circuits (including silicon-on-sapphire integrated circuits), optical integrated circuits, three-dimensional integrated circuits, and monolithic microwave integrated circuits) that fall under any of the following sub-items:
 - (a) those that are designed to withstand any of the following radiation irradiation:
 - 1. those with a total absorbed dose of 5,000 grays or more on a silicon conversion basis;
 - 2. those with an absorbed dose of 5,000,000 grays or more on a silicon conversion basis in one second;
 - 3. those with a neutron flux corresponding to 1 megaelectron volt (integrated value) of 50 trillion or more per square centimeter (excluding MIS types);
 - (b) microprocessors, microcomputers, microcontrollers, those for memory elements using compound semiconductors, those for analog-to-digital conversion, those that have an analog-to-digital conversion function and capable of recording or processing digitized data, those for digital-to-analog conversion, electrooptical integrated circuits or optical integrated circuits for signal processing, field programmable logic devices, custom integrated circuits (excluding those that are possible to determine whether or not they are goods that fall under any of sub-items (c) through (h) or sub-items (k) through (m) or those that can be determined whether they are designed to be used for goods falling under any of the middle column of rows (5) through (15) of the Appended Table 1 of the Export Order; the same applies below in this Article), FFT processors, static RAM or nonvolatile memories, which fall under any of the following clauses (excluding integrated circuits designed for automobiles or railway vehicles for civilian use):
 - 1. those that are designed for use at temperatures exceeding 125 degrees centigrade;
 - 2. those that are designed for use at temperatures of less than minus 55 degrees centigrade;
 - 3. those designed for use at all temperature ranges between minus 55 degrees centigrade or more and 125 degrees centigrade or less;
 - (c) among microprocessors, microcomputers, or microcontrollers, those that use compound semiconductors with a maximum clock frequency exceeding 40 megahertz;
 - (d) Deleted

- (e) those for analog-to-digital conversion or digital-to-analog conversion, which fall under any of the following clauses:
 - 1. those for analog-to-digital conversion which fall under any of the following clauses (excluding those falling under clause (m)):
 - i. those with a resolving power of 8 bits or more and less than 10 bits and a sample rate exceeding 1.3 gigasamples per second
 - ii. those with a resolving power of 10 bits or more and less than 12 bits and with a sample rate exceeding 600 megasamples per second;
 - iii. those with a resolving power of 12 bits or more and less than 14 bits and a sample rate exceeding 400 megasamples per second;
 - iv. those with a resolving power of 14 bits or more and less than 16 bits and a sample rate exceeding 250 megasamples per second;
 - v. those with a resolving power of 16 bits or more and a sample rate exceeding 65 megasamples per second;
 - 2. those for digital-to-analogue conversion which fall under any of the following clauses:
 - i. those with a resolving power of 10 bits or more and less than 12 bits and with a regulated update rate exceeding 3,500 megasamples per second;
 - ii. circuits with a resolving power of 12 bits or more which fall under any of the following clauses:
 - a. among those with a regulated update rate exceeding 1,250 megasamples per second and 3,500 megasamples or less per second, those which fall under any of the following clauses:
 - 1 those whose settling time in which the analog output value when operated at a resolving power of 12 bits changes from the full-scale level to a level within 0.024 % of the full-scale level is less than nine nanoseconds;
 - 2 those with a spurious free dynamic range exceeding 68 decibels when a full-scale output is made by digital input signals of 100 megahertz, or when the highest full-scale output is made by digital input signals of less than 100 megahertz;
 - b. those with a regulated update rate exceeding 3,500 megasamples per second;
- (f) electro-optical integrated circuits or optical integrated circuits for signal processing, which fall under all of the following clauses 1. through 3.:
 - 1. those that have laser oscillators;
 - 2. those that have light receiving elements;
 - 3. those that have optical waveguides;
- (g) field programmable logic devices (including complex programmable logic devices, field programmable gate arrays, field programmable logic arrays, or field programmable integrated circuits for mutual connections), which fall under any of the following clauses (excluding those falling under sub-

- item (m)):
1. those with the maximum number of single-ended digital input or output exceeding 700;
 2. those with serial transceivers whose total maximum data speed is 500 gigabits or more per second;
- (h) those using neural networks;
- (i) custom integrated circuits that fall under any of the following clauses:
1. those with the number of terminals exceeding 1,500;
 2. those with a basic gate propagation delay time of less than 0.02 nanoseconds; or
 3. those with an operating frequency exceeding 3 gigahertz;
- (j) those with a digital method using compound semiconductors, which fall under any of the following clauses (excluding those which fall under any of sub-item (c), sub-items (e) through (i), or sub-item (k)):
1. those with the number of equivalent gates exceeding 3,000 on a dual-entry gate conversion basis;
 2. those with a toggle frequency exceeding 1.2 gigahertz;
- (k) FFT processors with a rated execution time for fast Fourier transformation expressed in milliseconds which is less than the value calculated by the following formula: $(\text{number of complex points}) \log 2 (\text{number of complex points}) / 20,480$;
- (l) direct digital synthesizer (DDS) integrated circuits that fall under either of the following clauses:
1. those with a digital-to-analogue conversion clock frequency of 3.5 gigahertz or more and a digital-to-analogue conversion resolving power of 10 bits or more and less than 12 bits; or
 2. those with a digital-to-analogue conversion clock frequency of 1.25 gigahertz or more and a digital-to-analogue conversion resolving power of 12 bits or more;
- (m) those that fall under the following 1. and 2., or are capable of being programmed to conduct those functions:
1. those that have an analog-to-digital conversion function, which fall under any of the following devices:
 - i. those with a resolving power of 8 bits or more and less than 10 bits, and a sample rate exceeding 1.3 gigasamples per second;
 - ii. those with a resolving power of 10 bits or more and less than 12 bits, and a sample rate exceeding 1 gigasamples per second;
 - iii. those with a resolving power of 12 bits or more and less than 14 bits, and a sample rate exceeding 1 gigasamples per second;
 - iv. devices with a resolving power of not less than 14 bits and less than 16 bits and a sample rate exceeding 400 megasamples per second; or

- v. those with a resolving power of 16 bits or more and a sample rate exceeding 180 megasamples per second;
- 2. those that fall under either of the following devices:
 - i. those that record digitized data;
 - ii. those that process digitized data;
- (ii) components of apparatus for microwaves or for millimeter waves, which fall under any of the following sub-items:
 - (a) vacuum electronic devices (including klystrons and traveling wave tubes and their derivatives; the same applies below in (b)) which fall under any of the following clauses (excluding those falling under clause 4.):
 - 1. traveling wave vacuum electronic devices that fall under any of the following devices:
 - i. those with an operating frequency exceeding 31.8 gigahertz;
 - ii. those that have a hot cathode for which the time from heating the filament to reaching the rated output is less than 3 seconds;
 - iii. cavity coupled type devices for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 7%, or the maximum output exceeding 2.5 kilowatts;
 - iv. those that are helical shaped, folded waveguide type, or have a serpentine waveguide circuit structure, which fall under any of the following clauses:
 - a. those that have an instantaneous bandwidth exceeding 1 octave, for which the numerical value obtained by multiplying the numerical value for average output expressed in kilowatts by the numerical value for operating frequency expressed in gigahertz exceeds 0.5;
 - b. those that have an instantaneous bandwidth of 1 octave or less, for which the numerical value obtained by multiplying the numerical value for average output expressed in kilowatts by the numerical value for operating frequency expressed in gigahertz exceeds 1;
 - c. those designed for space use;
 - d. those that have a grid electron gun; or
 - v. those for which the value obtained by dividing the instantaneous bandwidth by the center frequency is 10% or more, which have any of the following devices:
 - a. a cyclic electron beam;
 - b. a non-axisymmetric electron beam; or
 - c. multiple electron beams;
 - 2. crossfield amplifier vacuum electronic devices with the gain exceeding 17 decibels;
 - 3. those that are possible to be operated in a dual mode;
 - 4. those that are designed to be used in frequency bands allotted for radio

communications by the International Telecommunication Union (excluding frequency bands allotted for radio determination), which fall under any of the following clauses:

- i. those with an operating frequency of 31.8 gigahertz or less;
 - ii. those other than devices exclusively designed to be used in space, whose value for average output is 50 watts or less and an operating frequency of more than 31.8 gigahertz and 43.5 gigahertz or less;
- (b) thermionic cathodes that are designed to be used for vacuum electronic devices, whose radiation current density exceeds 5 amperes per square centimeter in a rated operating condition, or whose pulse radiation current density exceeds 10 amperes per square centimeter in a rated operating condition;
- (c) monolithic microwave integrated circuit amplifiers which fall under any of the following clauses (excluding monolithic microwave integrated circuit amplifiers that have an integrated phase shifter falling under sub-item (n)):
1. among those with an operating frequency of more than 2.7 gigahertz and 6.8 gigahertz or less, for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 15%, those that fall under any of the following clauses:
 - i. those with an operating frequency of more than 2.7 gigahertz and 2.9 gigahertz or less with a peak saturation output value of more than 75 watts (48.75 dBm) and 300 watts (54.8 dBm) or less;
 - ii. those with an operating frequency of more than 2.9 gigahertz and 3.2 gigahertz or less with a peak saturation output value of more than 55 watts (47.4 dBm) and 300 watts (54.8 dBm) or less;
 - iii. those with an operating frequency of more than 3.2 gigahertz and 3.7 gigahertz or less with a peak saturation output value of more than 40 watts (46 dBm) and 300 watts (54.8 dBm) or less;
 - iv. those with an operating frequency of more than 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value of more than 20 watts (43 dBm) and 300 watts (54.8 dBm) or less;
 - v. those with an operating frequency of more than 2.7 gigahertz and 3.7 gigahertz or less with a peak saturation output value of more than 300 watts (54.8 dBm); or
 - vi. those with an operating frequency of more than 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value of more than 120 watts (50.8 dBm);
 2. among those with an operating frequency of more than 6.8 gigahertz and 16 gigahertz or less, for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%, those

- which fall under any of the following clauses:
- i. those with an operating frequency of more than 6.8 gigahertz and 8.5 gigahertz or less with a peak saturation output value of more than 10 watts (40 dBm) and 25 watts (44 dBm) or less;
 - ii. those with an operating frequency of more than 8.5 gigahertz and 12 gigahertz or less with a peak saturation output value of more than 5 watts (37 dBm) and 25 watts (44 dBm) or less, or those with an operating frequency of more than 12 gigahertz and 16 gigahertz or less with a peak saturation output value of more than 5 watts (37 dBm); or
 - iii. those with an operating frequency or more than 6.8 gigahertz and 12 gigahertz or less with a peak saturation output value of more than 25 watts (44 dBm);
3. among those with an operating frequency over 16 gigahertz and 31.8 gigahertz or less with a peak saturation output value exceeding 3 watts (34.77 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%;
 4. those with an operating frequency of more than 31.8 gigahertz and 37 gigahertz or less, and a peak saturation output value of more than 0.1 nanowatts (minus 70 dBm);
 5. among those with an operating frequency of more than 37 gigahertz and 43.5 gigahertz or less with a peak saturation output value of more than 1.0 watts (30 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%;
 6. among those with an operating frequency of more than 43.5 gigahertz and 75 gigahertz or less with a peak saturation output value of more than 31.62 milliwatts (15 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%;
 7. among those with an operating frequency of more than 75 gigahertz and 90 gigahertz or less with a peak saturation output value of more than 10 milliwatts (10 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 5%;
 8. those with an operating frequency of more than 90 gigahertz with a peak saturation output value exceeding 0.1 nanowatts (minus 70 dBm);
- (d) microwave discrete transistors that fall under any of the following devices:
1. among those with an operating frequency of more than 2.7 gigahertz and 6.8 gigahertz or less, those which fall under any of the following devices:
 - i. those with an operating frequency of more than 2.7 gigahertz and 2.9 gigahertz or less with a peak saturation output value of more than 400 watts (56 dBm) and 600 watts (57.8 dBm) or less;
 - ii. those with an operating frequency of more than 2.9 gigahertz and 3.2

- gigahertz or less with a peak saturation output value of more than 205 watts (53.12 dBm) and 600 watts (57.8 dBm) or less;
- iii. those with an operating frequency of more than 3.2 gigahertz and 3.7 gigahertz or less with a peak saturation output value of more than 115 watts (50.61 dBm) and 600 watts (57.8 dBm) or less;
 - iv. those with an operating frequency of more than 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value of more than 60 watts (47.78 dBm) and 130 watts (51.2 dBm) or less;
 - v. those with an operating frequency of more than 2.7 gigahertz and 3.7 gigahertz or less with a peak saturation output value exceeding 600 watts (57.8 dBm); or
 - vi. those with an operating frequency of more than 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value exceeding 130 watts (51.2 dBm);
2. among those with an operating frequency of more than 6.8 gigahertz and 31.8 gigahertz or less, those which fall under any of the following clauses:
- i. those with an operating frequency over 6.8 gigahertz and 8.5 gigahertz or less and with a peak saturation output value over 50 watts (47 dBm) and 130 watts (51.2 dBm) or less;
 - ii. those with an operating frequency of more than 8.5 gigahertz and 12 gigahertz or less with a peak saturation output value of more than 15 watts (41.76 dBm) and 60 watts (47.8 dBm) or less;
 - iii. those with an operating frequency of more than 6.8 gigahertz and 8.5 gigahertz or less with a peak saturation output value of more than 130 watts (51.2 dBm);
 - iv. those with an operating frequency of more than 8.5 gigahertz and 12 gigahertz or less with a peak saturation output value exceeding 60 watts (47.8 dBm);
 - v. those with an operating frequency of more than 12 gigahertz and 16 gigahertz or less with a peak saturation output value exceeding 40 watts (46 dBm); or
 - vi. those with an operating frequency of more than 16 gigahertz and 31.8 gigahertz or less with a peak saturation output value exceeding 7 watts (38.45 dBm);
3. those with an operating frequency of more than 31.8 gigahertz and 37 gigahertz or less with a peak saturation output value exceeding 0.5 watts (27 dBm);
4. those with an operating frequency of more than 37 gigahertz and 43.5 gigahertz or less with a peak saturation output value exceeding 1 watt (30 dBm);
5. those with an operating frequency of more than 43.5 gigahertz, with a

- peak saturation output value exceeding 0.1 nanowatts (-70 dBm);
6. those with a peak saturation output value exceeding 5 watts (37 dBm) in all frequency bands with an operating frequency of more than 8.5 gigahertz and 31.8 gigahertz or less (excluding those falling under any of Article 6, item (ii), (d), clauses 1. through 5.);
- (e) solid-state amplifiers for microwaves (excluding monolithic microwave integrated circuit amplifiers and harmonic mixers, or converters) or assemblies or modules including them (excluding transmission and reception modules, and transmission modules), which fall under any of the following clauses:
1. among those with an operating frequency of more than 2.7 gigahertz and 6.8 gigahertz or less for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 15%, those which fall under any of the following devices:
 - i. those with an operating frequency of more than 2.7 gigahertz and 2.9 gigahertz or less with a peak saturation output value exceeding 500 watts (57 dBm);
 - ii. those with an operating frequency of more than 2.9 gigahertz and 3.2 gigahertz or less with a peak saturation output value exceeding 270 watts (54.3 dBm);
 - iii. those with an operating frequency of more than 3.2 gigahertz and 3.7 gigahertz or less with a peak saturation output value exceeding 200 watts (53 dBm); or
 - iv. those with an operating frequency of more than 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value exceeding 90 watts (49.54 dBm);
 2. among those with an operating frequency of more than 6.8 gigahertz and 31.8 gigahertz or less, for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%, those which fall under any of the following clauses:
 - i. those with an operating frequency of more than 6.8 gigahertz and 8.5 gigahertz or less with a peak saturation output value exceeding 70 watts (48.45 dBm);
 - ii. those with an operating frequency of more than 8.5 gigahertz and 12 gigahertz or less with a peak saturation output value exceeding 50 watts (47 dBm);
 - iii. those with an operating frequency of more than 12 gigahertz and 16 gigahertz or less with a peak saturation output value exceeding 30 watts (44.77 dBm); or
 - iv. those with an operating frequency of more than 16 gigahertz and 31.8 gigahertz or less with a peak saturation output value exceeding 20 watts

- (43 dBm);
3. those with an operating frequency of more than 31.8 gigahertz and 37 gigahertz or less with a peak saturation output value exceeding 0.5 watts (27 dBm);
 4. among those with an operating frequency of more than 37 gigahertz and 43.5 gigahertz or less with a peak saturation output value exceeding 2 watts (33 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%;
 5. among those with an operating frequency of more than 43.5 gigahertz, those which fall under any of the following clauses:
 - i. among those with an operating frequency of more than 43.5 gigahertz and 75 gigahertz or less with a peak saturation output value exceeding 0.2 watts (23 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%;
 - ii. among those with an operating frequency of more than 75 gigahertz and 90 gigahertz or less with a peak saturation output value exceeding 20 milliwatts (13 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 5%; or
 - iii. those with an operating frequency of more than 90 gigahertz with a peak saturation output value exceeding 0.1 nanowatts (minus 70 dBm);
- (f) electronically or magnetically tunable band-pass filters that fall under the following clauses 1. and 2.:
1. those that have six or more variable frequency resonators capable of tuning a frequency band of half an octave in less than 10 microseconds; and
 2. those capable of passing a band exceeding 0.5% of the center frequency;
- (g) electronically or magnetically tunable band-elimination filters that fall under the following clauses 1. and 2.:
1. those that have six or more variable frequency resonators capable of tuning a frequency band of half an octave in less than 10 microseconds; and
 2. those capable of eliminating a band of less than 0.5% of the center frequency;
- (h) Deleted
- (i) harmonic mixers or converters that fall under any of the following devices:
1. those that are designed to expand the frequency band of a spectrum analyzer to more than 90 gigahertz;
 2. those that are designed to extend the operating range of a signal generator, which fall under either of the following clauses:
 - i. those with a frequency band exceeding 90 gigahertz; or
 - ii. those with a frequency band of more than 43.5 gigahertz and 90

- gigahertz or less, whose output exceeds 100 milliwatts (20 dBm);
3. those that are designed to extend the operating range of a network analyzer, which fall under any of the following devices:
 - i. those with a frequency band of more than 110 gigahertz;
 - ii. those with a frequency band of more than 43.5 gigahertz and 90 gigahertz or less, whose output exceeds 31.62 milliwatts (15 dBm); or
 - iii. those with a frequency band of more than 90 gigahertz and 110 gigahertz or less, whose output exceeds 1 milliwatt (0 dBm);
 4. those that are designed to expand the frequency band of a microwave test receiver to more than 110 gigahertz;
- (j) microwave power amplifiers with a vacuum electronic device falling under clause (a) built in, which fall under the following clauses 1. and 2. (excluding those that are designed to be used in frequency bands allotted for radio communication by the International Telecommunication Union (excluding frequency bands allotted for radio determination)):
1. those with an operating frequency exceeding 3 gigahertz;
 2. those with the ratio to the mass of average output power that exceeds 80 watts per kilogram, with a volume of less than 400 cubic centimeters;
- (k) among microwave power modules that have a traveling wave vacuum electronic device, a monolithic microwave integrated circuit, and a power supply, those which fall under all of the following clauses 1. through 3.:
1. those for which the time between the complete shutdown state and the fully operating state is less than 10 seconds;
 2. those whose volume is less than the numerical value obtained by multiplying the maximum rated output expressed in watts by 10 cubic centimeters per watt; and
 3. those having an instantaneous bandwidth exceeding 1 octave, which fall under any of the following clauses:
 - i. for those with a frequency of 18 gigahertz or less, those with a radio frequency output exceeding 100 watts;
 - ii. those with a frequency exceeding 18 gigahertz;
- (l) oscillators or assemblies having an oscillation function, those for which the ratio of single sideband phase noise per hertz to carrier waves at any frequency band in which the interval between the operating frequency and the offset frequency is 10 hertz or more and less than 10 kilohertz, is less than the value calculated by the following formula: $20 \log_{10}(\text{operating frequency expressed in megahertz}) - 20 \log_{10}(\text{interval between the operating frequency and the offset frequency expressed in hertz}) - 126$;
- (m) among assemblies that use frequency synthesizers, those falling under any of the following clauses:
1. those for which the required time for frequency switching is 143

- picoseconds;
2. those for which the required time for switching any frequency exceeding 2.2 gigahertz in the range of combined output frequency of more than 4.8 gigahertz and 31.8 gigahertz or less, is less than 100 microseconds;
 3. Deleted
 4. those for which the required time for switching any frequency exceeding 550 megahertz in the range of combined output frequency of more than 31.8 gigahertz and 37 gigahertz or less, is less than 500 microseconds;
 5. those for which the required time for switching any frequency exceeding 2.2 gigahertz in the range of combined output frequency of more than 37 gigahertz and 75 gigahertz or less, is less than 100 microseconds;
 6. those for which the required time for switching any frequency exceeding 5.0 gigahertz in the range of combined output frequency of more than 75 gigahertz and 90 gigahertz or less, is less than 100 microseconds; or
 7. those for which the required time for switching the frequency in the range of combined output frequency exceeding 90 gigahertz, is less than 1 microsecond;
- (n) among transmission and reception modules, monolithic microwave integrated circuits for transmission and reception, transmission modules, and monolithic microwave integrated circuits for transmission, whose operating frequency exceeds 2.7 gigahertz, those which fall under all of the following clauses:
1. those whose peak saturation output value expressed in watts exceeds the value obtained by dividing 505.62 by the square of the maximum operating frequency expressed in gigahertz, at any channel;
 2. those for which the value obtained by dividing the instantaneous bandwidth by the center frequency is 5% or more, at any channel;
 3. those for which the value of the length of any side of the plane expressed in centimeters is less than the value obtained by dividing the product of the number of channels for transmission or of channels for transmission and reception and 15 by the minimum operating frequency expressed in gigahertz; and
 4. those capable of electronically making a phase shift for each channel;
- (iii) signal processing equipment that uses elastic waves or acousto-optic effects, which fall under any of the following sub-items (excluding those that only have any of the functions of specific band-pass, low band pass, high band pass, band elimination, or resonance), or their components:
- (a) those using surface elastic waves or pseudo-surface elastic waves, which fall under any of the following clauses:
1. signal processing equipment with a carrier frequency exceeding 6 gigahertz;

2. those with a carrier frequency of more than 6 gigahertz and 2.5 gigahertz or less, which falls under any of the following equipment:
 - i. those with the ratio of the main lobe power to the side lobe power that exceeds 65 decibels;
 - ii. those for which the numerical value of the maximum delay time expressed in microseconds multiplied by the numerical value of the bandwidth expressed in megahertz exceeds 100;
 - iii. those with a bandwidth exceeding 250 megahertz; or
 - iv. those for which the distributed delay time (meaning the difference between the maximum value and minimum value for the delay time in accordance with the frequency) exceeds 10 microseconds;
3. those with a carrier frequency of 1 gigahertz or less which falls under any of the following clauses:
 - i. those for which the numerical value obtained by multiplying the numerical value for the maximum delay time expressed in microseconds by the numerical value of the bandwidth expressed in megahertz exceeds 100;
 - ii. those for which the distributed delay time exceeds 10 microseconds;
 - iii. those with the ratio of the main lobe power to the side lobe power that exceeds 65 decibels, with a bandwidth exceeding 100 megahertz;
- (b) those that used bulk elastic waves, which is capable of performing direct processing of signals at frequencies exceeding 6 gigahertz;
- (c) those that use the interaction of elastic waves and light waves, which is capable of performing direct signal or image processing;
- (iv) among devices using superconductive materials, those that are electron devices or electronic circuits with components using superconductive materials, which are designed to be usable at temperatures lower than the critical temperature of the superconductive materials used, and, fall under either of the following sub-items:
 - (a) those that possess a current switching function for digital circuits with superconducting gates, for which the value obtained by multiplying the delay time per gate by the power consumption per gate is less than 1/100 billion millijoules; or
 - (b) those that have a frequency separation function and resonant circuits with a cue value exceeding 10,000;
- (v) cells (excluding those incorporated in batteries (including single cell batteries)) that fall under any of the following sub-items:
 - (a) primary cells whose energy density and power density at a temperature of 20 degrees centigrade fall under either of the following clauses:
 1. those with an energy density exceeding 550 watt-hours per kilogram, and, a continuous power density exceeding 50 watts per kilogram; or
 2. those with an energy density exceeding 50 watt-hours per kilogram, and,

- a continuous power density exceeding 350 watts per kilogram;
- (b) secondary cells with an energy density exceeding 350 watt-hours per kilogram at a temperature of 20 degrees centigrade;
- (vi) high voltage capacitors that fall under any of the following sub-items:
 - (a) capacitors with a repeat cycle of less than 10 hertz, which fall under all of the following clauses 1. through 3.:
 - 1. those with a rated voltage of 5 kilovolts or more;
 - 2. those with an energy density of 250 joules per kilogram or more; and
 - 3. those with a total energy of 25 kilojoules or more;
 - (b) capacitors with a repeat cycle of 10 hertz or more, which fall under all of the following clauses 1. through 4.:
 - 1. those with a rated voltage of 5 kilovolts or more;
 - 2. those with an energy density of 50 joules per kilogram or more;
 - 3. those with a total energy of 100 joules or more; and
 - 4. those that are designed so that they can be charged and discharged repeatedly for more than 10,000 times;
- (vii) superconducting electromagnets (including solenoid coil types) that are designed to fully generate or dissipate a magnetic field in less than one second, which fall under all of the following sub-items (a) through (c):
 - (a) those that discharge energy exceeding 10 kilojoules in the first second of demagnetization;
 - (b) those whose coil has an internal diameter exceeding 250 millimeters; and
 - (c) those with a rated maximum current density exceeding 300 amperes per square millimeter, or with a rated magnetic flux density exceeding 8 teslas;
- (vii)-2 among solar batteries, cell-interconnect-coverglass assemblies, solar panels, or solar arrays, which are designed for space use, those for which the minimum average conversion efficiency when irradiated by 1,367 watts per square meter at air mass zero exceeds 20 % at an operating temperature of 28 degrees centigrade;
- (viii) rotary input-type absolute encoders for which the absolute value of the conversion error of angles is 1 second or less, and rings, disks, or scales that are designed for those encoders;
- (viii)-2 among thyristor devices or thyristor modules that perform switching of pulse output, using an electronically or optically controlled switching method, or a switching method with a controlled electron emission, those that fall under either of the following sub-items (excluding those incorporated into a device designed to be used for railroad vehicles or aircraft for civilian use):
 - (a) those with a maximum starting current exceeding 30,000 amperes per microsecond, and an off-state voltage exceeding 1,100 volts; or
 - (b) those with a maximum starting current exceeding 2,000 amperes per microsecond, which fall under the following clauses 1. and 2.:

1. those with an off-state voltage of 3,000 volts or more; and
 2. those with a maximum current of 3,000 amperes or more;
- (viii)-3 semiconductor devices or semiconductor modules that control electric power or rectify electric signals, which fall under all of the following sub-items (a) through (c) (excluding those incorporated into a device that are designed to be used for automobiles, railroad vehicles, or aircraft, for civilian use):
- (a) those that are designed to have a maximum operating junction temperature that exceeds 215 degrees centigrade;
 - (b) those with a repetitive peak off state voltage exceeding 300 volts; and
 - (c) those with a continuous current exceeding one ampere;
- (viii)-4 optical modulators using electrooptic effects which operate the intensity, amplitude, or phases of light designed for analog signals, which fall under any of the following modulators (including those which have an optical input and output connector):
- (a) among those with a maximum operating frequency of more than 10 gigahertz and less than 20 gigahertz and with an optical insertion loss of 3 decibels or less, those which fall under any of the following clauses:
 1. those with a half-wave voltage of less than 2.7 volts measured at a frequency of 1 gigahertz or less; or
 2. those with a half-wave voltage of less than 4 volts measured at a frequency exceeding 1 gigahertz;
 - (b) among modulators with the maximum operating frequency of 20 gigahertz or more and with an optical insertion loss of 3 decibels or less, those which fall under any of the following clauses:
 1. those with a half-wave voltage of less than 3.3 volts measured at a frequency of 1 gigahertz or less; or
 2. those with a half-wave voltage of less than 5 volts measured at a frequency exceeding 1 gigahertz;
- (ix) among sampling oscilloscopes that use the method of real-time sampling, those for which the root-mean-square of noise voltage at the vertical axis range in which the noise of the channel is the smallest is less than 2% of the full scale, when the input 3-decibel bandwidth of any channel is 60 gigahertz or more;
- (x) among analog-digital converters, modules, assemblies, or devices having the function of performing analog-to-digital conversions (including analog-to-digital conversion cards, waveform digitizers, data acquisition cards, signal acquisition boards, and transient recorders), which fall under the following sub-items (a) and (b) (excluding digital recording devices, sampling oscilloscopes, spectrum analyzers, signal generators, network analyzers, and microwave test receivers):

- (a) those whose resolving power and sample rate fall under any of the following clauses:
 - 1. those with a resolving power of more than 8 bits and less than 10 bits, whose sample rate exceeds 1.3 gigasamples per second;
 - 2. those with a resolving power of more than 10 bits and less than 12 bits, whose sample rate exceeds 1 gigasample per second;
 - 3. those with a resolving power of more than 12 bits and less than 14 bits, whose sample rate exceeds 1 gigasample per second;
 - 4. those with a resolving power of more than 14 bits and less than 16 bits, whose sample rate exceeds 400 megasamples per second; or
 - 5. those with a resolving power of more than 16 bits whose sample rate exceeds 180 megasamples per second;
- (b) those that have any of the following functions:
 - 1. those that output digitized data;
 - 2. those that record digitized data; or
 - 3. those that process digitized data;
- (xi) digital recording devices that fall under the following sub-items (a) and (b):
 - (a) those capable of maintaining a speed of continuous data recording to a disk memory or a solid-state drive memory of over 6.4 gigabits per second; and
 - (b) those capable of performing signal processing of radio frequency signal data being recorded;
- (xii) spectrum analyzers that fall under any of the following sub-items:
 - (a) those for which the resolution bandwidth of 3 decibels at any frequency band of more than 31.8 gigahertz and 37 gigahertz or less exceeds 40 megahertz;
 - (b) those whose displayed average noise level at any frequency band of more than 43.5 gigahertz and 90 gigahertz or less, is less than minus 150 dBm per hertz;
 - (c) those capable of analyzing frequency that exceeds 90 gigahertz; or
 - (d) those that fall under the following clauses 1. and 2.:
 - 1. those with a real-time bandwidth that exceeds 170 megahertz; and
 - 2. those that fall under either of the following clauses:
 - i. those that detect signals with a length of 15 microseconds or less for which the damping from the total amplitude by a gap or window effect is less than 3 decibels with a 100% probability; or
 - ii. those with a frequency mask trigger function that detect signals with a length of 15 microseconds or less with a 100% probability;
- (xiii) signal generators that fall under any of the following sub-items (excluding devices that specify output frequencies by values obtained by adding or subtracting the frequencies of two or more crystal oscillators, or

values obtained by multiplying those values):

- (a) those that generate pulse modulated signals falling under the following clauses 1. and 2. at any frequency band of more than 31.8 gigahertz and 37 gigahertz or less:
 - 1. those with a pulse width of less than 25 nanoseconds; and
 - 2. those with an on/off ratio of 65 decibels or more;
- (b) those with an output exceeding 100 milliwatts (20 dBm) at any frequency band of more than 43.5 gigahertz and 90 gigahertz or less;
- (c) those that fall under any of the following clauses:
 - 1. Deleted
 - 2. those with the time required to switch any frequency exceeding 2.2 gigahertz at the output frequency band of more than 4.8 gigahertz and 31.8 gigahertz or less, is less than 100 microseconds;
 - 3. Deleted
 - 4. those with the required time to switch any frequency exceeding 550 megahertz at the output frequency band of more than 31.8 gigahertz and 37 gigahertz or less, is less than 500 microseconds;
 - 5. those with the required time to switch any frequency exceeding 2.2 gigahertz at the output frequency band of more than 37 gigahertz and 75 gigahertz or less, is less than 100 microseconds; or
 - 6. those with the required time to switch any frequency exceeding 5.0 gigahertz at the output frequency band of more than 75 gigahertz and 90 gigahertz or less, is less than 100 microseconds;
- (d) those for which the ratio of the single side band phase noise per hertz to the carrier signal falls under any of the following values:
 - 1. those for which at any output frequency band of more than 3.2 gigahertz and 90 gigahertz or less in which the interval between the operating frequency and the offset frequency at any of the frequency band of 10 hertz or more and 10 kilohertz or less, is less than the value obtained by the following formula: $20 \log_{10} (\text{operating frequency expressed in megahertz}) - 20 \log_{10} (\text{the interval between the operating frequency and the offset frequency expressed in hertz}) - 126$; or
 - 2. those for which at any output frequency band of more than 3.2 gigahertz and 90 gigahertz or less in which the interval between the operating frequency and the offset frequency at any of the frequency band of more than 10 kilohertz and 100 kilohertz or less: $20 \log_{10} (\text{operating frequency expressed in megahertz}) - 206$;
- (e) those that have a function of performing vector modulation of digital baseband signals for which the vector modulation bandwidth falls under any of the following clauses:
 - 1. vector modulation bandwidth exceeding 2.2 gigahertz at the output

- frequency band of more than 4.8 gigahertz and 31.8 gigahertz or less;
- 2. vector modulation bandwidth exceeding 550 megahertz at the output frequency band of more than 31.8 gigahertz and 37 gigahertz or less;
- 3. vector modulation bandwidth exceeding 2.2 gigahertz at the output frequency band of more than 37 gigahertz and 75 gigahertz or less;
- 4. vector modulation bandwidth exceeding 5.0 gigahertz at the output frequency band of more than 75 gigahertz and 90 gigahertz or less;
- (f) those with a maximum output frequency exceeding 90 gigahertz;
- (xiv) network analyzers that fall under any of the following sub-items:
 - (a) those with an output exceeding 31.62 milliwatts (15 dBm) at any operating frequency band of more than 43.5 gigahertz and 90 gigahertz or less;
 - (b) those with an output exceeding 1 milliwatt (0 dBm) at any operating frequency band of more than 90 gigahertz and 110 gigahertz or less;
 - (c) those with a measuring function of non-linear vectors at the frequency band of more than 50 gigahertz and 110 gigahertz or less (excluding those that fall under sub-item (a) or (b)); or
 - (d) those with a maximum operating frequency exceeding 110 gigahertz;
- (xv) microwave test receivers that fall under the following sub-items (a) and (b):
 - (a) those designed to be used at frequencies exceeding 110 gigahertz; and
 - (b) those that can simultaneously measure amplitude and phase;
- (xvi) atomic frequency standards that fall under any of the following sub-items:
 - (a) those that do not use rubidium, for which the stability when oscillated continuously for 30 days is less than 1/ 100 billion;
 - (b) those that are designed for space use;
 - (c) those that are not designed for space use, which fall under all of the following clauses 1. through 3.:
 - 1. those that use rubidium;
 - 2. those with a stability of less than 1/100 billion when oscillated continuously for 30 days;
 - 3. those with a power consumption of less than 1 watt;
- (xvi)-2 among temperature control devices by a spray cooling method which are capable of cyclically using the cooling medium inside a closed device, those having an atomizing nozzle specially designed to spray isolating cooling medium on electric components and keep those components' temperature within a fixed range, or components specially designed for that purpose;
- (xvii) devices for manufacturing semiconductor element, integrated circuits, or semiconductor materials (referred to as "semiconductor manufacturing equipment" in (e)) or testing devices or masks or reticles for manufacturing integrated circuits, which fall under any of the following sub-items, or their

components and accessories:

(a) epitaxial growth systems for crystals which fall under any of the following clauses:

1. those that are designed or modified to form films other than silicon whose absolute value of the tolerance of film thickness is less than 2.5 percent for a length of 75 millimeters or more;
2. metal-organic chemical vapor deposition reactors that epitaxially grow compound semiconductors which have two or more of any of the elements of aluminum, gallium, indium, arsenic, phosphor, antimony, or nitrogen;
3. molecular beam epitaxial growth systems using gas sources or solid sources;

(b) ion implantation equipment that fall under any of the following clauses:

1. Deleted
2. those that are designed and optimized to operate when implanting hydrogen, heavy hydrogen, or helium, at a beam energy of 20 kiloelectron volts or more, and, a beam current of 10 milliamperes or more;
3. those that are capable of direct writing;
4. those whose beam energy is 65 kiloelectron volts or more, and, beam current of 45 milliamperes or more when injecting oxygen to the substrate of a heated semiconductor material; or
5. those that are designed and optimized to operate, at a beam energy of 20 kiloelectron volts or more, and, a beam current of 10 milliamperes or more when injecting silicon to a semiconductor material substrate heated to a temperature of 600 degrees centigrade or more;

(c) Deleted

(d) Deleted

(e) multi-chamber central wafer transfer systems capable of automatically loading wafers, which fall under the following clauses 1. and 2.:

1. semiconductor manufacturing equipment that falls under any of (a), clauses 1. through 3., or (b), clauses 2. through 5. with a connecting part for input and output of wafers which is designed to be capable of connecting three or more different units of equipment (limited to those capable of connecting those with different functions);
2. those that are designed to form an integrated system in a vacuum for conducting consecutive processing of multiple wafers;

(f) lithography equipment that falls under any of the following clauses:

1. among step and repeat method or step and scan method align and expose equipment for wafer processing using photo-optical or x-ray methods, those that fall under any of the following clauses:
 - i. those with a light source wavelength of less than 193 nanometers; or
 - ii. those for which the numerical value obtained by multiplying the

- exposure light source wavelength expressed in nanometers by 0.35, then dividing that numerical value by the numerical aperture is 45 or less;
2. imprint lithography equipment capable of producing a line width of 45 nanometers or less;
 3. among devices that are designed to be capable of manufacturing masks which use electron beams, ion beams, or laser beams, those that fall under any of the following clauses:
 - i. those for which the diameter of the full-width half-maximum of its irradiation face is less than 65 nanometers, and, whose image position error (3 sigmas added to the mean value) is less than 17 nanometers;
 - ii. Deleted
 - iii. those for which the superposition error (3 sigmas added to the mean value) is less than 23 nanometers in the second layer on the mask;
 4. among devices that are designed to be capable of manufacturing semiconductor elements or integrated circuits by a line drawing method which use an electron beam, those that fall under any of the following clauses:
 - i. those whose irradiation face is 15 nanometers or less in diameter; or
 - ii. those with a superposition error (3 sigmas added to the mean value) of 27 nanometers or less;
- (g) masks or reticles for manufacturing integrated circuits that fall under any of items (i) through (viii)-4;
- (h) multilayer masks with a phase shift mask which are designed to be used in lithography equipment with a light source wavelength that is shorter than 245 nanometers (excluding those which fall under sub-item (g), and those designed for manufacturing memory elements that do not fall under any of items (i) through (viii)-4);
- (i) imprint lithography templates for manufacturing integrated circuits that fall under any of items (i) through (viii)-4;
- (j) among testing device that are semiconductor devices or integrated circuits, or their semi-finished products, those that fall under any of the following clauses:
 1. those designed to be capable of testing the S-parameters of goods falling under item (ii), sub-item (d);
 2. Deleted
 3. those designed to be capable of testing goods falling under item (ii), sub-item (c);
- (xvii)-2 among base materials to be used for manufacturing masks which are mask blanks that have a reflection structure of a multilayer film composed of molybdenum and silicon, those which fall under the following sub-items (a) and (b):

- (a) those specially designed for devices for manufacturing integrated circuits using extreme-ultraviolet; and
- (b) those which conform to the specifications of the SEMI Standards P37 specified by the Semiconductor Equipment and Materials International;
- (xviii) among substrates which have multilayer film crystals of the substance falling under any of the following substances on the substrates, and, for which those crystals have been formed through epitaxial growth, those which are to be hetero epitaxial materials (excluding those that have one or more layers of P-type epitaxial layers of compounds that fall under clause (d) (limited to gallium nitride, indium gallium nitride, aluminum gallium nitride, indium aluminum nitride, indium aluminum gallium nitride, gallium phosphide, gallium arsenide, aluminum gallium arsenide, indium phosphide, indium gallium phosphide, aluminum indium phosphide, or indium gallium aluminum phosphide) for which the P-type epitaxial layers are not wedged between N-type layers):
 - (a) silicon;
 - (b) germanium;
 - (c) silicon carbide;
 - (d) III-V compounds (limited to gallium or indium compounds);
 - (e) gallium oxide (Ga₂O₃);
 - (f) diamond;
- (xix) resists that fall under any of the following sub-items, or substrates to which the resists have been applied:
 - (a) resists used in lithography for semiconductors, which fall under any of the following resists:
 1. positive tone resists optimized to be used for light with a wavelength of 15 nanometers or more and less than 193 nanometers; or
 2. resists optimized to be used for light with a wavelength of more than 1 nanometer and less than 15 nanometers;
 - (b) resists that are designed to be used in electron beams or ion beams, which have a sensitivity of 0.01 microcoulombs per square millimeter or less;
 - (c) Deleted
 - (d) resists that are optimized for surface imaging technology;
 - (e) resists that are designed or optimized to be used in imprint lithography equipment falling under item (xvii), (f), clause 2, which are thermoplastic or photocurable;
- (xx) organometallic compounds or organic compounds that fall under either of the following sub-items:
 - (a) aluminum, gallium, or indium organic compounds with a purity exceeding 99.999%; or
 - (b) phosphorus, arsenic, or antimony organic compounds with a purity

- exceeding 99.999%;
- (xxi) phosphorus, arsenic, or antimony hydrides with a purity exceeding 99.999% (excluding those that contain inert gasses of 20 mole percent or more, or that contain hydrogen);
 - (xxii) semiconductor substrates or ingots, boules, or other preforms of silicon carbide, gallium nitride, aluminum nitride, aluminum gallium nitride, digallium trioxide, or diamond whose electrical resistivity at a temperature of 20 degrees centigrade exceeds 10,000 ohm centimeters;
 - (xxiii) among polycrystalline substrates or polycrystalline ceramic substrates whose electrical resistivity at a temperature of 20 degrees centigrade exceeds 10,000 ohm centimeters, those which have on their surface, at least one or more non-epitaxial single crystal layers of silicon, silicon carbide, gallium nitride, aluminum nitride, aluminum gallium nitride, digallium trioxide, or diamond;
 - (xxiv) substrates that fall under either of the preceding two items, which have on them at least one or more epitaxial layers of silicon carbide, gallium nitride, aluminum nitride, aluminum gallium nitride, digallium trioxide, or diamond (excluding those falling under item (xviii)).

Article 7 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 8 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) computers or their auxiliary equipment which falls under any of the following sub-items, or their components:
 - (a) those that are designed to be capable of using at temperatures exceeding 85 degrees centigrade or lower than 45 degrees below zero centigrade;
 - (b) those that are designed to prevent the impact of radiation, which fall under any of the following clauses:
 - 1. those that are designed to withstand atomic radiation with a total absorbed dose exceeding 5,000 grays on a silicon conversion basis;
 - 2. those that are designed not to cause impediment from an absorbed dose of atomic radiation exceeding 5 million grays per second on a silicon conversion basis;
 - 3. those that are designed to have an error of less than 1/100 million per 1 bit per day for a single event error;
- (ii) Deleted
- (iii) digital computers, their auxiliary equipment or components designed to improve the functions of digital computers, which fall under any of the following sub-item (b), (c), or (g), or their components (excluding those that fall under any of the following sub-items (h) through (j) and their components):

- (a) Deleted
- (b) digital computers whose adjusted peak performance exceeds 70 weighted teraFLOPS;
- (c) components that are designed to improve the functions of digital computers, whose adjusted peak performance exceeds 70 weighted teraFLOPS through gathering calculation elements (excluding digital computers whose maximum performance does not exceed 70 weighted teraFLOPS, or those specially designed for the computers of their families);
- (d) Deleted
- (e) Deleted
- (f) Deleted;
- (g) auxiliary equipment of digital computers which is designed to transfer data among several digital computers for the purpose of improving the arithmetic processing capacity of digital computers, which has a transfer rate of the data to be transferred that exceeds 2.0 gigabytes per second;
- (h) among functions that are installed in other devices and are indispensable for the operation of that device, those which are not the main element of that device;
- (i) among functions that are installed in other devices and are indispensable for the operation of that device, those whose functions are limited to signal processing or image enhancement of that device;
- (j) devices that are installed in the goods stated in row (9), (i) through (iii), or (v) through (v)-5 of the Appended Table 1 of the Export Order, which are indispensable for the operation of those devices;
- (iv) computers that fall under any of the following clauses, or their auxiliary equipment or components:
 - (a) systolic array computers;
 - (b) neural computers;
 - (c) optical computers;
- (v) computers or their auxiliary equipment, or their components, which are specially designed or modified to create, command and control, or distribute intrusion programs.

Article 8 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 9 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) telecommunication transmission equipment, electronic switching device, telecommunication optical fiber, phased array antenna, radio direction finding equipment for monitoring, radio communication interception equipment, communication jamming equipment, equipment for monitoring operation of radio communication interception equipment or communication

- jamming equipment, equipment capable of detecting positions by observing the interference of radio waves or other electromagnetic waves without transmitting radio waves or other electromagnetic waves, or equipment for monitoring communication by the means of using the internet, which falls under any of the following sub-items:
- (a) one that is designed to be capable of preventing transitional electronic effect due to nuclear explosions, or effect of electromagnetic pulses;
 - (b) one that is designed to prevent the effect of gamma rays, neutron beams, or heavy charged particle beams (excluding one that is designed or modified to be loaded on artificial satellites);
 - (c) one that is designed to be usable at temperatures of lower than 55 degrees centigrade below zero and has electronic circuits (excluding one that is designed or modified to be loaded on artificial satellites); or
 - (d) one that is designed to be usable at temperatures exceeding 124 degrees centigrade and has electronic circuits (excluding one that is designed or modified to be loaded on artificial satellites);
- (ii) telecommunication transmission equipment, or their components or accessories, which fall under any of the following sub-items:
- (a) radio transmitters or radio receivers that fall under any of the following clauses:
 - 1. those that can be used within a frequency range of 1.5 megahertz or more and 87.5 megahertz or less, which fall under the following clauses i. and ii.:
 - i. those that are capable of automatically measuring and selecting the optimum transmission frequency and the optimum general transfer rate per channel;
 - ii. those that use linear amplifiers falling under all of the following clauses a. through d.:
 - a. those that are capable of amplifying two or more signals simultaneously;
 - b. those that have an output of 1 kilowatt or more within a frequency range of 1.5 megahertz or more and less than 30 megahertz, and an output characteristics of 250 watts or more within a frequency range of 30 megahertz or more and 87.5 megahertz or less;
 - c. those that have an instantaneous bandwidth of 1 octave or more; and
 - d. those for which the ratio of harmonics or distortion component to signal waves is less than minus 80 decibels;
 - 2. those that use spread spectrum technique (including frequency hopping), which fall under any of the following clauses (excluding those falling under clause 3., or those with an output of 1.0 watts or less):
 - i. those for which the user is able to rewrite the spreading code;
 - ii. those having a transmission bandwidth that is 100 times or more of the

- bandwidth of the information channel, and, that exceeds 50 kilohertz (excluding those designed to be used for cellular radio communication for civilian use, or designed to be used for fixed or mobile satellite communication earth stations for commercial civilian communication);
3. among those that use ultra wideband modulation technique and which the user is able to rewrite the channelizing codes, scrambling codes, or network identification codes, those that fall under any of the following clauses:
 - i. those with a bandwidth exceeding 500 megahertz;
 - ii. those for which the value obtained by dividing the instantaneous bandwidth by the center frequency is 20% or more;
 - (b) among those that have a digital signal processing function and use voice band compression technique, those with a coding speed of less than 700 bits per second;
 - (c) those that are designed to be used underwater, which fall under any of the following clauses (limited to those that have a wired connection):
 1. those that use sound waves (including ultrasonic waves), which have a carrier frequency of less than 20 kilohertz or exceeding 60 kilohertz;
 2. those which use electromagnetic waves, which have a carrier frequency of less than 30 kilohertz;
 3. those that have a function of electronically scanning beams;
 4. those using laser oscillators or light emitted diodes whose output wavelength is more than 400 nanometers and 700 nanometers or less, and, which are used in local area networks;
 - (iii) Deleted
 - (iv) among communication optical fibers with a length exceeding 500 meters, those that have a tensile strength of 2 giganewtons per square meter or more;
 - (v) phased array antennas capable of electronic scanning, which are designed to be used for devices referred to in any of the following sub-items (a) through (d) (excluding those for microwave landing systems (MLS) which conform to the standards of the International Civil Aviation Organization, and those specially designed for devices falling under any of the sub-items (e) through (g));
 - (a) those whose frequencies are more than 31.8 gigahertz and 57 gigahertz or less, with an effective radiated power (ERP) of 20 dBm (equivalent isotropic radiated power (EIRP) is 22.15 dBm) or more;
 - (b) those whose frequencies are more than 57 gigahertz and 66 gigahertz or less, with an effective radiated power (ERP) of 24 dBm (equivalent isotropic radiated power (EIRP) is 26.15 dBm) or more;
 - (c) those whose frequencies are more than 66 gigahertz and 90 gigahertz or

- less, with an effective radiated power (ERP) of 20 dBm (equivalent isotropic radiated power (EIRP) is 22.15 dBm) or more;
- (d) those whose frequencies exceed 90 gigahertz;
 - (e) cellular radio communications or radio local area networks, for civilian use;
 - (f) IEEE 802.15 or wireless high-definition multimedia interfaces; or
 - (g) fixed or mobile satellite communication earth stations for commercial civilian communication;
- (v)-2 radio direction finder for monitoring with an operating frequency exceeding 30 megahertz, which falls under the following sub-items (a) and (b), or their components:
- (a) one that has an instantaneous bandwidth of 10 megahertz or more;
 - (b) one that is capable of finding an azimuth line to non-cooperating radio transmitters with a signal duration of less than 1 millisecond;
- (v)-3 radio communication interception equipment or communication jamming equipment or devices that monitor their operations, which fall under any of the following sub-items, or their components:
- (a) radio communication interception equipment that is designed to extract voice or data transmitted through radio communication;
 - (b) radio communication interception equipment that is designed to extract identification information, control signals, or other metadata that are transmitted through radio communication necessary for identifying mobile communication devices or subscribers;
 - (c) among communication jamming equipment that is designed to intentionally and selectively interfere with or intentionally or selectively hinder, block, reduce or induce mobile communication, those that falls under any of the following clauses:
 1. one that simulates the functions of radio access network;
 2. one that detects, and, utilizes the mobile telecommunications protocol used;
 3. one that utilizes the mobile telecommunications protocol used (excluding one that falls under clause 2.);
 - (d) equipment that is designed to monitor the operations of equipment that falls under any of the clauses (a) through (c);
- (v)-4 equipment capable of detecting positions by observing the interference of radio waves or other electromagnetic waves, without transmitting radio waves or other electromagnetic waves, which is designed to detect and track moving targets by measuring the reflections of ambient radio frequency emissions transmitted by non-radar transmitters;
- (v)-5 equipment for monitoring the content of communication by the means of using the internet, or its components, which fall under the following sub-

- items (a) and (b) (excluding equipment that is designed for conducting marketing activities, quality management of network services, or quality management of user experience):
- (a) those that realize all of the functions referred to in the following clauses 1. through 3. on a carrier-class IP network:
 1. analysis of the application layer;
 2. extraction of selected metadata and content of applications;
 3. indexing of extracted data;
 - (b) those that are designed to perform the functions referred to in the following clauses 1. and 2.:
 1. retrieval based on hardware selector;
 2. analysis of relationship between specific individuals or groups;
 - (vi) devices for designing, manufacturing, measuring, or testing the goods that fall under item (ii), sub-item (a), clause 2., Article 14, item (v) or (v)-2, or their components or accessories;
 - (vii) beyond what is stated in the preceding item, devices for designing, manufacturing, measuring, or testing goods (excluding optical fiber testing equipment and measuring equipment) that fall under any of item (i), item (ii), item (iv), or items (v) through (v)-5, or their components or accessories;
 - (viii) Deleted
 - (viii)-2 devices for designing telecommunication transmission equipment or electronic switching device that fall under any of the following sub-items, or their components or accessories (excluding those that fall under item (vi)):
 - (a) those using laser oscillators which fall under any of the following clauses:
 1. those that utilize laser light having a wavelength of more than 1,750 nanometers;
 2. Deleted
 3. Deleted
 4. those use an analog transmission system with a bandwidth exceeding 2.5 gigahertz (excluding devices for television broadcasting (including CATV broadcasting));
 - (b) radio transmitters or radio receivers that use quadrature amplitude modulation technology for values exceeding 1,024;
 - (ix) cryptographic equipment or components for realizing cryptographic functions, which fall under any of the following sub-items (a) through (e) (excluding those falling under Article 3, item (xix), sub-item (c), clause 2., ii., sub-item (f) of this item, item (xi), or Article 10, item (v), sub-item (a)):
 - (a) among those using a symmetric algorithm and with a symmetric key with a length exceeding 56 bits, or using an asymmetric algorithm (limited to an asymmetric algorithm for which the security of the algorithm is based on the difficulty falling under any of the following clauses 1. through 6.; the

same applies below in this item) which are designed or modified to have a cryptographic function for securing confidentiality of data (limited to those capable of using the cryptographic function (including those whose cryptographic function has been activated), or those capable of activating the cryptographic function by means other than the means of activating the cryptographic function with a safe mechanism), those which fall under any of the following clauses 7. through 10. (excluding those falling under clauses 11. through 20.):

1. prime factorization of integers exceeding 512 bits;
2. calculation of discrete logarithms in a multiplicative group of a finite field of size greater than 512 bits;
3. calculation of a discrete logarithm of a size greater than 112 bits in a group other than the group prescribed in 2.;
4. problem of the shortest vector or the closest vector associated with lattices;
5. exploration of isogenies between supersingular elliptical curves;
6. decoding random codes;
7. those that have a security management function for information systems as the primary function;
8. digital communication devices or devices for constructing, managing, or operating telecommunication lines using a wired or wireless network, or their components (excluding those falling under clause 7.);
9. computers or devices that have the primary function of recording and storing or processing information, or their components (excluding those falling under clause 7. or 8.):
10. those that fall under the following clauses i. and ii. (excluding those falling under clauses 7. through 9.):
 - i. the cryptographic function of the goods is used to support functions other than the primary function of those goods; and
 - ii. the cryptographic function of the goods is realized through smart cards incorporated in those goods (limited to those falling under any of the items from this item to item (xii)), or programs falling under any of Article 21, paragraph (1), item (vii), item (vii)-2, item (viii)-2, item (viii)-3, item (ix), item (ix)-2, or item (xvii) (excluding those opened to the public);
11. smart cards having a cryptographic function or their reader/writer, which falls under any of the following clauses, or their components:
 - i. smart cards that fall under any of the following clauses:
 - a. those that are used only for a device falling under any of the following clauses, which cannot rewrite programs for other uses:
 - 1 those that do not fall under any of clauses 7. through 10.;
 - 2 those other than those using a symmetric algorithm with a symmetric key

whose length exceeds 56 bits, or those using an asymmetric algorithm which are designed to have a cryptographic function for securing confidentiality of data;

3 those that fall under clauses 12. through 16.;

b. those on which information related to personal information (meaning information about a living individual which can identify a specific individual by the name, date of birth or other descriptions contained in that information (including information that can be easily collated with other information and identify a specific individual by the collation (including information related to authentication and monetary claims or other similar information)); the same applies in clause 11.), or organization information (including information about a corporation or other organizations which is related to authentication and monetary claims or other similar information; the same applies in clause 11.) is recorded, or are designed to record the information, which fall under all of the following clauses 1 through 3:

1 those whose cryptional function is exclusively used to protect personal information or organization information recorded in the smart card;

2 those exclusively used at public facilities or commercial facilities, or for authentication of information on the personal information or organization information recorded on the smart card; and

3 those whose cryptographic function cannot be modified by the user of the smart card;

ii. a reader/writer exclusively designed or modified to read information on personal information or organization information recorded on the smart card falling under clause i., or to record information on personal information or organization information on the smart card (including those which read or record the information through a telecommunications line);

12. cryptographic equipment designed to be used for banking business or settlement of accounts (including business related to collection and settlement of fees, or intermediation of comprehensive credit purchases as defined in Article 2, paragraph (3) of the Installment Sales Act (Act No. 159 of 1961)), or their components;

13. portable phone terminals (meaning telephones for portable phone networks or other telephones for wireless networks; the same applies in clause 15.) or mobile phone terminals (those exclusively designed to be used for automobiles or other moving bodies; the same applies in clause 15.) for civilian use, which fall under the following clauses i. and ii., or their components:

i. those incapable of transmitting encrypted data directly to another telephone terminal or other devices (excluding radio access network

equipment); and

ii. those incapable of conveying data encrypted through a radio network controller, base station controller, or other radio access network equipment;

14. cordless telephone equipment that does not have an encryption function between cordless phone terminals, whose maximum effective radio wave range is less than 400 meters in one radio section when there is no radio repeater between a cordless phone terminal and a home base station, or their components;

15. among portable phone terminals or mobile phone terminals for civilian use, or radio terminals equivalent to them, which use only encryption standards that are opened to the public or for commercial use (including those for preventing unauthorized reproduction which is not opened to the public), those for which users cannot alter the cryptographic function and are designed to not require technical assistance from suppliers or distributors in using them, and, whose design has been modified for them to be used for specific civilian use and specific industrial use (limited to those whose cryptographic function has not been modified), or their components;

16. devices used for wireless personal area networks which use only encryption standards that are opened to the public or for commercial use, or their components;

17. among wireless access network devices for mobile communications designed for civilian use, for which users cannot alter the cryptographic function and are designed not to require technical assistance from suppliers or distributors in using them, those whose radio frequency output is 0.1 watt (20 dBm) or less, and, for which the number of devices that can be simultaneously connected is sixteen or less, or their components;

18. routers, switches, gateways or relays, whose security management function for the information system is limited to that related to the operation, management or maintenance of the devices, and, which use only encryption standards that are opened to the public or for commercial use, or their components;

19. general-purpose devices or servers that have a calculation function, whose security management function for the information system falls under the following clauses i. and ii., or their components:

i. those that use only encryption standards that are opened to the public or for commercial use; and

ii. those that fall under any of the following clauses:

a. those that are realized in the central processing unit that fall under sub-item (f);

- b. those that are realized in the operating system (excluding those that fall under any of Article 21, paragraph (1), item (vii), item (vii)-2, item (viii)-2, item (viii)-3, item (ix), item (ix)-2, or item (xvii)); or
 - c. those whose function is limited to the operation, management, or maintenance of a device;
20. those that are to be connected to a network and are designed for civilian use or industrial use, which fall under the following clauses i. and ii., or their components:
- i. those which fall under any of the following clauses:
 - a. terminals connectable to a network, which fall under any of the following clauses:
 - 1 those whose security management function for the information system is limited to concealing, operating, managing, or maintaining non-arbitrary data;
 - 2 those whose use is limited to specific civilian use or specific industrial use to connect to a network:
 - b. network devices that fall under the following clauses 1 and 2:
 - 1 those designed for communicating with a terminal that fall under clause a.; and
 - 2 those whose security management function for the information system is limited to the support for civilian use or industrial use for connecting to the network of a terminal that falls under clause a., or to the operation, management, or maintenance of the network device or other goods that fall under sub-item (a), clause 20. of this item:
 - ii. those whose security management function for the information system only use encryption standards that are opened to the public or for commercial use, for which users cannot change the cryptographic function that the goods have;
 - (b) those that activate a cryptographic function of certain goods or programs only by using the means of activating the cryptographic function, which fall under any of the following clauses:
 - 1. those designed or modified to convert certain goods (limited to those that do not fall under this item through item (xii)) into those falling under sub-item (a) of this item (limited to those that do not fall under sub-item (f) of this item), or to convert certain programs (limited to those that do not fall under Article 21, paragraph (1), item (vii), item (vii)-2, item (viii)-2, item (viii)-3, item (ix), item (ix)-2, or item (xvii)) into those falling under Article 21, paragraph (1), item (ix) (limited to those related to Article 8, item (ix), sub-item (a), or sub-items (c) through (e));
 - 2. those designed or modified so as to be capable of adding a function equivalent to the function of the goods that fall under sub-item (a) of this

- item to those that fall under any of this item through item (xii), or the programs that fall under Article 21, paragraph (1), item (vii), item (vii)-2, item (viii)-2, item (viii)-3, item (ix) or item (ix)-2;
- (c) those that are designed or modified to use quantum cryptography;
- (d) those that are designed or modified to use cryptographic processing technique for generating channelizing codes, scrambling codes, or network identification codes for ultra-wideband modulation technique that fall under any of the following clauses:
1. those whose bandwidth exceeds 500 megahertz; or
 2. those for which the value obtained by dividing the instantaneous bandwidth by the center frequency is 20% or more;
- (e) those which are designed or modified to use cryptographic processing technique for generating the spreading code for spectrum spreading (including the generation of the hopping code for frequency hopping) (excluding those that fall under sub-item (d));
- (f) those that fall under either of the following clause 1. or 2. (limited to those for which the fact that they fall under the clause can be confirmed by the manufacturer, seller, or exporter of the goods in writing):
1. those that fall under all of the following clauses i. through iii.:
 - i. those that are not subject to any restrictions for purchasing, which are sold at stores, or from the store's stock by placing orders by correspondence mail as defined in Article 2, paragraph (2) of the Act on Correspondence Delivery by Private Business Operators (Act No. 99 of 2002) by a general correspondence mail delivery operator as defined in paragraph (6) of that Article or a specified correspondence mail delivery operator as defined in paragraph (9) of that Article, or through input-output equipment connected to public telecommunication lines (including telephones);
 - ii. those for which the cryptographic function of the goods cannot be changed by the user of the goods;
 - iii. those for which technical support by the supplier or distributor of the goods is not required when using the cryptographic function of the goods;
 2. components that are designed for the goods that fall under clause 1., which fall under all of the following clauses i. through iii.:
 - i. those whose security management function for the information system is not their primary function; or
 - ii. those that are not capable of changing the cryptographic function of the goods that fall under clause 1. have, and, are not capable of adding new cryptographic functions to the goods; and
 - iii. those whose functions are fixed, which are not designed or modified for specific users;
- (x) devices or components for realizing a security management function for the

information system other than cryptographic equipment or components for realizing cryptographic function, which fall under any of the following sub-items:

- (a) communication cable systems having the function of detecting wiretapping, or their components (limited to components designed or modified to realize the function of detecting wiretapping); or
 - (b) devices that are designed or modified to prevent leakage of signals for conveying information (excluding those that are designed or modified to prevent leakage of signals for the purpose of preventing harm to the human body or malfunctions of other equipment due to radiation of electromagnetic waves, or equipment designed or modified to prevent leakage of signals in conformity with electromagnetic interference prevention standards), or their components (limited to components designed or modified to realize functions of preventing leakage of signals for conveying information);
- (xi) among cryptographic equipment or components for realizing cryptographic functions, those for deactivating, degrading, or circumventing the security management function for the information system, which fall under either of the following sub-items:
- (a) those that are designed or modified to perform cryptanalysis (including those designed or modified to implement cryptanalysis functions by the method of reverse engineering); or
 - (b) those that extract raw data from computer terminals or communication terminals (excluding those that fall under clause (a) or Article 7, item (v)), which are designed to bypass the authentication or authorization control of computer terminals or communication terminals in order to achieve their functions (excluding systems or devices specially designed for designing or manufacturing computer terminals or communication terminals or those stated in the following clauses (1) through (4)):
 - 1. debuggers and hypervisors;
 - 2. those that are limited to extract logical data;
 - 3. those that extract data by using chip-off or JTAG; and
 - 4. those specially designed for jailbreaking or rooting;
- (xii) devices for designing or manufacturing goods that fall under any of item (ix) through the preceding item or measuring instruments that fall under this item, or measuring equipment for evaluating or verifying security management function for the information system which the goods falling under any of item (ix) through the preceding item have (including the function that any program referred to in Article 21, paragraph (1), item (vii), item (vii)-2, item (viii)-2, item (viii)-3, item (ix), or item (ix)-2 has).

Article 9 (1) The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 10 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) underwater detection equipment that uses sound waves (including ultrasonic waves; the same applies below in this Article), positioning device for vessels, or their components, which fall under any of the following sub-items:
 - (a) those having a transmission function, or their components, which fall under any of the following clauses (among those that may be used only in vertical directions, which do not have a scanning function exceeding plus or minus 20 degrees, excluding acoustic beacons that measure the depth of water, the distance to underwater objects or objects buried under water, or only find school of fish, which are for emergencies, or pingers that are designed so that they can be installed at any position under water):
 - 1. bathymetric survey equipment for sea bed using sound waves ,which falls under any of the following clauses:
 - i. bathymetric survey equipment for vessels for creating bathymetric charts, which falls under all of the following clauses a. through d.:
 - a. one designed so as to enable to make a measurement at angles exceeding 20 degrees from the vertical direction;
 - b. one designed so as to enable to measure undersea topography at depths exceeding 600 meters under the water;
 - c. one with a resolving power of less than 2 at the time of scanning; and
 - d. one that automatically corrects all of the actions stated in the following clauses 1 through 3 and improves the accuracy of bathymetry:
 - 1 operation of sensors;
 - 2 state of the sound waves used for scanning;
 - 3 speed of sound waves perceived by sensors;
 - ii. underwater bathymetric survey equipment for creating bathymetric charts, which falls under any of the following clauses:
 - a. those designed or modified to operate at water depths exceeding 300 meters, whose scanning efficiency exceeds 3,800 meters per second;
 - b. those that fall under all of the following clauses 1 through 4 (excluding those that fall under clause a.):
 - 1 those that are designed or modified to operate at water depths exceeding 100 meters;
 - 2 those that are designed so as to enable to make a measurement at angles exceeding 20 degrees from the vertical direction;
 - 3 those with an operating frequency of less than 350 kilohertz, or that are designed so as to enable to measure undersea topography that is more than 200 meters away from the sensor;

4 those which automatically correct all of the actions stated in the following clauses [i] through [iii], and improve the accuracy of bathymetry:

[i] operation of sensors;

[ii] state of the sound waves used for scanning and;

[iii] speed of sound waves perceived by sensors;

iii. side scan sonars or synthetic aperture sonars designed to create an image of the seabed, which fall under all of the following clauses a. through c., or transmission and reception acoustic arrays designed to be used for those devices:

a. those designed or modified to operate at water depths exceeding 500 meters;

b. those whose scanning field exceeds 570 square meters per second when they are operating at the maximum range in which they can operate in a state the resolving power in the direction of travel is less than 15 centimeters;

c. those with a resolving power in the direction perpendicular to the direction of travel of less than 15 centimeters;

2. underwater detection equipment that falls under any of the following clauses:

i. one in which the transmission frequency is less than 5 kilohertz, or the operating frequency is 5 kilohertz or more and less than 10 kilohertz, and the sound pressure level (meaning the sound pressure level when the sound pressure is 1 micropascal at a distance of 1 meter from the sound source is considered to be 0 decibels; the same applies below) exceeds 224 decibels;

ii. one with an operating frequency of 10 kilohertz or more and 24 kilohertz or less, and with the sound pressure level exceeding 224 decibels;

iii. one with an operating frequency of more than 24 kilohertz and less than 30 kilohertz, and with the sound pressure level exceeding 235 decibels;

iv. one with an operating frequency of less than 100 kilohertz, which is capable of forming acoustic beams with the beam width of less than 1 degree;

v. one that is designed so as to be capable of being used at water depths exceeding 1,000 meters, which falls under either of the following clauses:

a. one that has a transducer capable of correcting water pressure;

b. one that has a transducer with built-in transmission and reception elements other than transmission and reception elements made of lead zirconate titanate;

vi. one that is designed so that its measuring distance exceeds 5,120 meters;

3. underwater detection equipment with a transmission frequency of less than 10 kilohertz (excluding those falling under clause 2.);
4. among sound wave transmitters (including transducers) in which elements composed of piezoelectric materials that move individually, or elements that are magnetostrictive, electrostrictive, or that have electric force or liquid pressure, are incorporated, those which fall under any of the following clauses (excluding electronic sound wave generators (limited to those usable only in the vertical direction) or mechanical or chemical ones):
 - i. those usable at frequencies of less than 10 kilohertz which fall under any of the following clauses:
 - a. those that are not designed to continuously operate at a state in which the duty cycle is 100 percent, whose sound pressure level of the primary axis at the reference distance from the effective acoustic center of the transmitters in a free sound field exceeds the value obtained by the calculation using the following formula:
 $10 \log (\text{frequency in which the wave transmission voltage sensitivity of less than 10 kilohertz expressed in hertz becomes the largest}) + 169.77$
decibels; or
 - b. those that are designed to continuously operate at a state in which the duty cycle is 100 percent, whose sound pressure level of the primary axis at the reference distance from the effective acoustic center of the transmitters in a continuous free sound field exceeds the value obtained by the calculation using the following formula:
 $10 \log (\text{frequency in which the wave transmission voltage sensitivity of less than 10 kilohertz expressed in hertz becomes the largest}) + 159.77$
decibels;
 - ii. Deleted
 - iii. those for which the output ratio of the main lobe to that of the side lobe exceeds 22 decibels;
5. equipment for determining the position of vessels, which falls under the following clauses i. and ii., or their components:
 - i. one for which the distance for detecting an equipment that transmits signals received in order to determine the position of vessels (referred to as a "transponder" in clause ii.) exceeds 1,000 meters;
 - ii. one whose root mean square of a position error measured and determined at a distance of 1,000 meters or less from the transponder is less than 10 meters;
6. among sonars designed to automatically detect the position of a person engaged in underwater activities, falling under all of the following clauses i. through iii., those designed for transmitting and receiving acoustic arrays:

- i. those capable of detecting the subject at a distance exceeding 530 meters;
 - ii. those whose root mean square of a position error in detecting a person who is at a distance of 530 meters or less from the sonar is less than 15 meters; and
 - iii. those whose bandwidth of transmitted pulse exceeds 3 kilohertz;
- (b) one that has a receiving function, or its components, which fall under any of the following clauses:
- 1. among hydrophones that do not have the function of correcting the effects of acceleration, those with the sound pressure sensitivity (meaning the sensitivity when 1 volt per micropascal is considered to be 0 decibels) that exceeds minus 180 decibels (excluding fish-finders designed to be installed on surface vessels);
 - 2. among signal processing equipment that is designed for towed hydrophone arrays for which users can rewrite the programs, those that can perform processing or correlation of the time domain or frequency domain (including spectrum analysis, digital filtering, or beam formation) (excluding those that can perform real-time processing);
 - 3. among heading sensors that are designed for towed hydrophone arrays and have an absolute accuracy value of less than 0.5 degrees, those that are designed to be usable at water depths exceeding 35 meters, or those that have a water depth measuring device that may be coordinated or detached so that they may be used at water depths exceeding 35 meters;
 - 4. hydrophone arrays for the seabed or harbor cables, which incorporate underwater sound wave sensors referred to in clause 6.;
 - 5. among signal processing equipment that is designed for the seabed or harbor cable systems for which the user can rewrite the programs, those that can perform processing or correlation of the time domain or the frequency domain (spectrum analysis, digital filtering, or beam formation), (excluding those that can perform real-time processing);
 - 6. underwater sound wave sensors with accelerometers which fall under all of the following clauses (excluding particle velocity sensors or underground listening devices):
 - i. those composed of three-axis accelerometers;
 - ii. those with a total acceleration sensitivity exceeding 48 decibels;
 - iii. those designed to operate at water depths exceeding 35 meters; and
 - iv. those with an operating frequency of less than 20 kilohertz;
- (ii) measuring equipment for the ground speed for vessels (limited to those that use sound waves), which falls under either of the following sub-item (a) or (b) (excluding one specially designed to be installed on surface vessels, or one stated in the following sub-item (c)):
- (a) one using a correlation-velocity log, which fall under any of the following

- clauses:
1. one designed so that they can make a measurement at a position exceeding 500 meters from the bottom of the water;
 2. one with a speed accuracy of less than 1% of the speed;
- (b) one using a Doppler velocity log, with a speed accuracy of less than 1% of the speed;
- (c) echo sounders that may not be used for purposes other than measuring water depth, measuring the distance to underwater objects or objects buried under water, or finding schools of fish;
- (iii) photodetectors or their components, which fall under any of the following sub-items:
- (a) solid photodetectors designed for space use which fall under any of the following clauses:
1. those that have a maximum sensitivity in the wavelength range exceeding 10 nanometers and 300 nanometers or less, and, for which the sensitivity at the wavelength of more than 400 nanometers is less than 0.1% of the maximum sensitivity;
 2. those that have a maximum sensitivity in the wavelength range of more than 900 nanometers and 1,200 nanometers or less, and, with the response time constant of 95 nanoseconds or less;
 3. focal plane arrays with the number of elements exceeding 2,048, and, has the maximum sensitivity in the wavelength range of more than 300 nanometers and 900 nanometers or less;
- (b) image reinforcing tubes that fall under either of the following clause 1. or 2. (excluding non-imaging photomultiplier tubes that have an electron sensing device consisting solely of a single metal anode or metal anodes for which the distance between the centers of two adjacent anodes exceeds 500 micrometers in the vacuum):
1. imaging reinforcing tubes that fall under all of the following clauses i. through iii.:
- i. those having a maximum sensitivity in the wavelength range of more than 400 nanometers and 1,050 nanometers or less;
 - ii. those having electron image multiplication function, which use either of the following things:
 - a. microchannel plates for which the distance between the centers of two adjacent channels is 12 micrometers or less;
 - b. among electron detection elements that have been specially designed or modified to achieve charge multiplication by means other than using a microchannel plate, those for which the distance between the center of two adjacent pixels is 500 micrometers or less;
 - iii. those having a photocathode that falls under any of the following

clauses:

- a. those that use a multi-alkali as the main material, for which the luminous sensitivity exceeds 700 microamperes per lumen;
 - b. those that use gallium arsenide or indium gallium arsenide as main materials;
 - c. those that use a III-V compound semiconductor (excluding gallium arsenide or indium gallium arsenide) as the main material with a maximum radiation sensitivity exceeding 10 milliamperes per watt;
2. image reinforcing tubes that fall under all of the following clauses i. through iii.:
- i. those having a maximum sensitivity in the wavelength range of more than 1,050 nanometers and 1,800 nanometers or less;
 - ii. those having electron image multiplication function, which use either of the following things:
 - a. microchannel plates for which the distance between the centers of two adjacent channels is 12 micrometers or less;
 - b. among electron detection elements that have been specially designed or modified to achieve charge multiplication by means other than using a microchannel plate, those for which the distance between the center of two adjacent pixels is 500 micrometers or less;
 - iii. photocathodes or transferred electron photocathodes using a III-V compound semiconductor (excluding gallium arsenide or indium gallium arsenide) as the main material, which have a maximum radiant sensitivity exceeding 15 milliamperes per watt;
- (c) image reinforcing tubes or their components, which fall under any of the following clauses 1. and 2. (excluding non-imaging photomultiplier tubes that have an electron detection element consisting solely of a single metal anode or metal anodes for which the distance between the centers of two adjacent anodes exceeds 500 micrometers in the vacuum):
1. image reinforcing tubes that fall under all of the following clauses i. through iii.:
- i. those having a maximum sensitivity in the wavelength range of more than 400 nanometers and 1,050 nanometers or less;
 - ii. those having electron image multiplication function, which use any of the following things:
 - a. micro channel plates for which the distance between the centers of two adjacent channels is 12 micrometers or less;
 - b. among electron detection elements that have been specially designed or modified to achieve charge multiplication by means other than using a microchannel plate, those for which the distance between the center of two adjacent pixels is 500 micrometers or less;

iii. those having a photocathode that uses a multi-alkali as the main material, for which the luminous sensitivity of the photocathode is more than 350 microamperes per lumen and 700 microamperes per lumen or less;

2. components of image reinforcing tubes which fall under any of the following things:

i. micro channel plates for which the distance between the centers of two adjacent channels is 12 micrometers or less;

ii. among electron detection elements that have been specially designed or modified to achieve charge multiplication by means other than by using a microchannel plate, those for which the distance between the center of two adjacent pixels is 500 micrometers or less;

iii. photocathodes using a III-V compound semiconductor (excluding gallium arsenide or indium gallium arsenide) as the main material (excluding photocathodes having a maximum sensitivity in the wavelength range of more than 400 nanometers and 1,050 nanometers or less, with a maximum radiant sensitivity of 10 milliamperes per watt or less, or photocathodes having a maximum sensitivity in the wavelength range of more than 1,050 nanometers and 1,800 nanometers or less, with a maximum radiant sensitivity of 15 milliamperes per watt or less), or transferred electron photocathodes;

(d) focal plane arrays that are not designed for space use, which fall under the following clauses 1. and 2.:

1. those that fall under any of the following clauses:

focal plane arrays that are not heat-molded, which fall under any of the following focal plane arrays:

a. those with factor elements that have the maximum sensitivity in the wavelength range of more than 900 nanometers and 1,050 nanometers or less, which fall under either of the following clauses:

1 those with a response time constant of less than 0.5 nanoseconds; or

2 those specially designed or modified to achieve charge multiplication, which have the maximum radiant sensitivity of more than 10 milliamperes per watt;

b. those with factor elements that have the maximum sensitivity in the wavelength range of more than 1,050 nanometers and 1,200 nanometers or less, which fall under either of the following clauses:

1 those with a response time constant of 95 nanoseconds or less;

2 those specially designed or modified to achieve charge multiplication, which have the maximum radiant sensitivity exceeding 10 milliamperes per watt;

c. those in which the factor elements are arrayed in two dimensions and

each factor element has the maximum sensitivity in the wavelength range of more than 1,200 nanometers and 30,000 nanometers or less;

d. among those in which the factor elements are arrayed in one dimension and each factor element has the maximum sensitivity in the wavelength range of more than 1,200 nanometers and 3,000 nanometers or less, those that fall under any of the following clauses (excluding those that have factor elements using only germanium, with the number of factor elements that is 32 or less):

1 those for which the aspect ratio of the factor elements using the array direction of the factor elements as the standard is less than 3.8;

2 those that have a time delay and integrating function within the same factor element;

e. those in which the factor elements are arrayed in one dimension and each factor elements has the maximum sensitivity in the wavelength range of more than 2,500 nanometers and 30,000 nanometers or less;

f. those in which factor elements have the maximum sensitivity in the wavelength range of more than 400 nanometers and 900 nanometers or less, which fall under the following clauses 1 and 2:

1 those specially designed or modified to achieve charge multiplication, which have the maximum radiant sensitivity exceeding 10 milliamperes per watt at a wavelength exceeding 760 nanometers;

2 those with the number of factor elements exceeding 32;

ii. infrared thermal type focal plane arrays in which the factor elements are arrayed in two dimensions and each factor element has a sensitivity in the wavelength range of 8,000 nanometers or more and 14,000 nanometers or less in an unfiltered state;

2. those that fall under any of the following clauses:

i. those that use platinum silicon, with less than 10,000 factor elements;

ii. those that use iridium silicon;

iii. those that use indium antimonide or lead selenide, with less than 256 factor elements;

iv. those that use indium arsenide;

v. those that use lead sulfide;

vi. those that use indium gallium arsenide; or

vii. scanning arrays that use mercury cadmium telluride, which fall under any of the following clauses:

a. those that do not have a time delay and integrating function in the same detection factor element, with the number of factor elements of 30 or less;

b. those that have a time delay and integrating function in the same

detection factor element, with the number of factor elements of two or less;

viii. steering arrays that use mercury cadmium telluride, with the number

- of factor elements of less than 256;
- ix. quantum well focal plane arrays that use gallium arsenide or aluminum gallium arsenide, with the number of factor elements of less than 256;
 - x. thermal type focal plane arrays, with the number of factor elements of less than 8,000;
 - xi. among focal plane arrays in which the factor elements are arrayed in one dimension and each factor element has the maximum sensitivity in the wavelength range of more than 400 nanometers and 900 nanometers or less, those with the number of factor elements of 4,096 or less;
 - xii. focal plane arrays in which the factor elements are arrayed in two dimensions and each factor element has the maximum sensitivity in the wavelength range of more than 400 nanometers and 900 nanometers or less, those whose maximum number of unidirectional factor elements are 4,096 or less, and, the number of all of the factor elements are 250,000 or less;
- (e) among focal plane arrays that are not designed for space use which fall under any of the following clauses, those other than the ones that fall under clause (d):
- 1. focal plane arrays that are not thermal type, which fall under any of the following clauses:
 - i. those in which the factor elements have the maximum sensitivity in the wavelength range of more than 900 nanometers and 1,050 nanometers or less, which fall under any of the following clauses:
 - a. those with a response time constant of less than 0.5 nanoseconds;
 - b. those specially designed or modified to achieve charge multiplication, which have a maximum radiant sensitivity exceeding 10 milliamperes per watt;
 - ii. those in which the factor elements have the maximum sensitivity in the wavelength range of more than 1,050 nanometers and 1,200 nanometers or less, which fall under either of the following clauses:
 - a. those with a response time constant of 95 nanoseconds or less;
 - b. those specially designed or modified to achieve charge multiplication, which have a maximum radiant sensitivity exceeding 10 milliamperes per watt;
 - iii. those in which the factor elements are arrayed in two dimensions and each factor element has the maximum sensitivity in the wavelength range of more than 1,200 nanometers and 30,000 nanometers or less;
 - iv. among those in which the factor elements are arrayed in one dimension and each factor element has the maximum sensitivity in the wavelength range of more than 1,200 nanometers and 3,000 nanometers or less, those which fall under either of the following clauses (excluding those that have

- factor elements using only germanium, with the number of factor elements of 32 or less):
- a. those for which the aspect ratio of the factor elements using the array direction of the factor elements as the standard, is less than 3.8;
 - b. those having a time delay and integrating function in the same factor element;
 - v. those in which the factor elements are arrayed in one dimension and each factor element has the maximum sensitivity in the wavelength range of more than 2,500 nanometers and 30,000 nanometers or less;
 - vi. those in which the factor elements have the maximum sensitivity in the wavelength range of more than 400 nanometers and 900 nanometers or less, which fall under the following clauses a. and b.:
 - a. those specially designed or modified to achieve charge multiplication, which have a maximum radiant sensitivity exceeding 10 milliamperes per watt at the wavelength exceeding 760 nanometers;
 - b. those with the number of factor elements that exceeds 32;
2. infrared thermal type focal plane arrays in which the factor elements are arrayed in two dimensions and each factor element has a sensitivity in the wavelength range of more than 8,000 nanometers and 14,000 nanometers or less in an unfiltered state;
- (iv) mono-spectrum image sensors or multi-spectrum image sensors that are designed for remote sensing, which fall under any of the following sub-items:
- (a) those with an instantaneous field of view of less than 200 microradians;
 - (b) among those that are designed for use within the wavelength range of more than 400 nanometers and 30,000 nanometers or less, which output image data digitally, those which fall under any of the following clauses:
 1. those that are designed for space use;
 2. among those that are designed to be installed in aircraft and use detectors other than silicon detectors, those with an instantaneous field of view of less than 2.5 milliradians;
- (v) among devices that use photodetectors and that are direct-view type, those which fall under any of the following clauses (excluding medical equipment that do not have photocathodes using gallium arsenide or indium gallium arsenide as the main material incorporated):
- (a) those that incorporate photodetectors that fall under any of the following clauses:
 1. image reinforcing tubes that fall under item (iii), sub-item (b);
 2. focal plane arrays that fall under item (iii), sub-item (e); or
 3. solid photodetectors that fall under item (iii), sub-item (a) or Article 14, item (vii);
 - (b) those that have photodetectors that fall under any of the following things

- incorporated (excluding those that fall under sub-item (a)):
 1. image reinforcing tubes that fall under item (iii), sub-item (c), 1.;
 2. focal plane arrays that fall under item (iii), sub-item (d);
- (vi) coolers for photodetectors which fall under any of the following sub-items:
 - (a) those designed for space use;
 - (b) among those that are not designed for space use, with the temperature of the contact surface used for cooling of under minus 55 degrees centigrade, those which fall under any of the following clauses:
 1. those that are circulation type with the average breakdown life or average breakdown interval exceeding 2,500 hours;
 2. self-regulated Joule-Thomson coolers with a diameter of less than 8 millimeters;
- (vii) optical fibers for sensors which are used to measure sounds, temperature, acceleration, electromagnetism, or radiation;
- (vii)-2 readout integrated circuits that are specially designed for focal plane arrays that fall under either item (iii), clause (d) or (e) (excluding those specially designed for automobiles for civilian use);
- (viii) electronic cameras or their components, which fall under any of the following sub-items:
 - (a) those that fall under any of the following clauses:
 1. those with built-in image reinforcing tubes that fall under item (iii), sub-item (b), which fall under either of the following cameras:
 - i. those that are not designed for underwater use; or
 - ii. those that are designed for underwater use;
 2. those with built-in focal plane arrays that fall under item (iii), sub-item (e), which fall under either of the following clauses:
 - i. those that are not designed for underwater use; or
 - ii. those that are designed for underwater use;
 3. those with solid photodetectors that fall under item (iii), sub-item (a) or Article 14, item (vii) incorporated;
 - (b) those that fall under any of the following cameras (excluding those that fall under sub-item (a)):
 1. Deleted
 2. Deleted
 3. electronic streak cameras with a time resolution of less than 50 nanoseconds;
 4. electronic framing cameras with a shooting speed of more than 1 million frames per second;
 5. electronic cameras that fall under the following clauses i. and ii.:
 - i. those with a shutter speed of less than 1 microsecond; and
 - ii. those with a signal readout speed of more than 125 frames per second;

6. plug-in units that are specially designed for electronic cameras having a module-type structure (limited to those falling under clauses 3. through 5.), which are capable of making those cameras reach the functionality of the cameras that fall under any of the clauses 3. through 5.;
 7. among video cameras that have solid-state image sensors incorporated which have the maximum sensitivity in the wavelength range of more than 10 nanometers and 30,000 nanometers or less, those which fall under any of the following clauses i. through iii., and, also fall under any of the following clauses iv. through vi.:
 - i. those for black and white photography for which the number of effective pixels of the solid-state image sensor is more than 4,000,000;
 - ii. those for color photography that have three solid-state image sensors incorporated, for which the number of effective pixels of each solid-state image sensor is more than 4,000,000;
 - iii. those for color photography that have one solid-state image sensor incorporated, for which the number of effective pixels of the solid-state image sensor is more than 12,000,000;
 - iv. those having a reflector that falls under item (ix), sub-item (a);
 - v. those having a control device of the optical device or optical components that fall under item (ix), sub-item (d); or
 - vi. those having a function that can internally process tracking data for the subject of photography and make an entry of the data in the image information;
 8. scanning cameras or scanning camera equipment that fall under all of the following clauses i. through iii.:
 - i. those having a maximum sensitivity in the wavelength range of more than 10 nanometers and 30,000 nanometers or less;
 - ii. those that have solid-state image sensor in which the pixels are arrayed in a linear fashion incorporated and the number of pixels exceeds 8,192;
 - iii. those that scan mechanically in one direction;
 9. scanning cameras or scanning camera equipment that has an image reinforcing tube that falls under item (iii), sub-item (c), 1. incorporated;
 10. scanning cameras or scanning camera equipment that has a focal plane array that falls under item (iii), sub-item (d) incorporated;
- (ix) optical equipment or their components which fall under any of the following:
- (a) reflectors which fall under any of the following clauses:
 1. among those that are capable of altering the shape of the mirror surface and whose active aperture has a diameter exceeding 10 millimeters, those that fall under any of the following reflectors or their components:
 - i. those for which the resonance frequency of the machinery and tools is

- 750 hertz or more, which have more than 200 actuating devices; or
- ii. those for which the laser damage threshold falls under either of the following clauses:
 - a. those for which the laser damage threshold exceeds 1 kilowatt per square centimeter when a continuous-wave laser oscillator is used; or
 - b. those for which the laser damage threshold exceeds 2 joules per square centimeter when a laser pulse with a pulse repetition frequency of 20 hertz and a pulse width of 20 nanoseconds is used;
2. among reflectors that do not have parts made of composite materials or foams, in which the mirror surface has a mass per square meter of less than 30 kilograms, those whose total weight exceeds 10 kilograms (excluding reflectors that are designed for heliostats set up on the ground to follow solar radiation);
3. among reflectors that have parts made of composite materials or foams, in which the mirror surface has a mass per square meter of less than 30 kilograms, those whose total weight exceeds 2 kilograms (excluding reflectors that are designed for heliostats set up on the ground to follow solar radiation);
4. among reflectors that are designed for reflector stages for scanning light falling under sub-item (d), clause 2., i., whose flatness is 63.3 nanometers or less, those which fall under any of the following clauses:
- i. those whose diameter or length of the long axis is 100 millimeters or more; or
 - ii. those which fall under the following clauses a. and b.:
 - a. those whose diameter or length of the long axis is more than 50 millimeters and less than 100 millimeters; and
 - b. those for which the laser damage threshold falls under any of the following clauses:
 - 1 those for which the laser damage threshold exceeds 10 kilowatts per square centimeter when a continuous-wave laser oscillator is used; or
 - 2 those for which the laser damage threshold exceeds 20 joules per square centimeter, when a laser pulse with a pulse repetition frequency of 20 hertz and a pulse width of 20 nanoseconds is used;
- (b) among optical components composed of zinc selenide or zinc sulfide, which transmits light with a wavelength of more than 3,000 nanometers and 25,000 nanometers or less, those which fall under either of the following clauses:
- 1. those with a volume exceeding 100 cubic centimeters;
 - 2. those with the diameter or the length of long axis exceeding 80 millimeters, and, the thickness exceeding 20 millimeters;
- (c) optical components that are designed for use in space, which fall under

any of the following clauses:

1. those whose weight has been reduced to a weight of less than 20% compared to the weight when the whole component has a dense state;
2. substrates (including those that are coated or have a protective film);
3. reflectors that are designed to be assembled in space, with the total of the light receiving areas when assembled is equivalent to that for a reflector with an aperture that is greater than 1 meter;
4. those composed of composite materials whose linear coefficient of expansion in all directions is $5/1,000,000$ or less per degree of temperature;

(d) control devices for an optical device or optical components, which fall under any of the following clauses:

1. those that are designed to maintain the surface shape or direction of optical components having been designed for space use which fall under sub-item (c), clause 1. or 3.;

2. those for scanning, tracking, or stabilizing light, or adjusting optical resonators, which fall under any of the following clauses:

- i. reflector stages for scanning light which are designed to support a reflector whose diameter or length of the long axis exceeds 50 millimeters, which fall under all of the following clauses a. through c., or electronic control device designed for them:

- a. those whose maximum angular travel is plus or minus 26 milliradians or more;

- b. those for which the resonance frequency of the machine is 500 hertz or more; and

- c. those whose angular accuracy is 10 microradians or less;

- ii. devices that adjust optical resonators with a bandwidth of 100 hertz or more and accuracy of 10 microradians or less;

3. gimbals with a maximum deflection angle exceeding 5 degrees, and, can be used in bandwidths of 100 hertz or more, which fall under either of the following clauses:

- i. those with a diameter or length of the long axis of more than 0.15 meters and 1 meter or less, with an angular acceleration exceeding 2 radians per second squared, and, with an accuracy of 200 microradians or less; or

- ii. those with a diameter or length of the long axis exceeding 1 meter, with an angular acceleration exceeding 0.5 radians per second squared, and, with an accuracy of 200 microradians or less;

(ix)-2 aspheric optical elements that fall under all of the following sub-items (a) through (c):

- (a) those with the maximum measurement for the optical aperture exceeding 400 millimeters;

- (b) those that have a root mean square of the surface roughness at the

- sampling length of 1 millimeter or more of less than 1 nanometer; and
- (c) those for which the absolute value of the linear coefficient of expansion at a temperature of 25 degrees centigrade is less than $3/1,000,000$;
- (ix)-3 wavefront measuring devices that fall under the following sub-items (a) and (b):
- (a) those whose frame speed is 1 kilohertz or more; and
- (b) those with a wavefront accuracy of one-twentieth or less at a designed wavelength;
- (x) laser oscillators, or their components, accessories or testing devices, which fall under any of the following sub-items:
- (a) continuous wave laser oscillators other than variable wavelength laser oscillators, which fall under any of the following clauses (excluding those falling under sub-item (d)):
1. those designed to be used in the wavelength range of less than 150 nanometers, whose rated output exceeds 1 watt;
 2. those designed to be used in the wavelength range of 150 nanometers or more and 510 nanometers or less, whose rated output exceeds 30 watts (excluding argon laser oscillators whose rated output is 50 watts or less);
 3. those designed to be used in the wavelength range of more than 510 nanometers and 540 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate in a single transverse mode whose rated output exceeds 50 watts; or
 - ii. those that oscillate in a multiple transverse mode whose rated output exceeds 150 watts;
 4. those designed to be used in the wavelength range of more than 540 nanometers and 800 nanometers or less, whose rated output exceeds 30 watts;
 5. those designed to be used in the wavelength range of more than 800 nanometers and 975 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate in a single transverse mode whose rated output exceeds 50 watts; or
 - ii. those that oscillate in a multiple transverse mode whose rated output exceeds 80 watts;
 6. those designed to be used in the wavelength range of more than 975 nanometers and 1,150 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate in a single transverse mode which fall under either of the following clauses:
 - a. those whose rated output exceeds 1,000 watts;

- b. those that fall under the following clauses 1 and 2:
 - 1 those whose rated output exceeds 500 watts;
 - 2 those with a spectral bandwidth of less than 40 gigahertz;
 - ii. those that oscillate in a multiple transverse mode which fall under either of the following clauses (excluding industrial laser oscillators whose rated output exceeds 2 kilowatts and 6 kilowatts or less with a gross mass of greater than 1,200 kilograms):
 - a. those with a wall-plug efficiency exceeding 18%, whose rated output exceeds 1,000 watts; or
 - b. those whose rated output exceeds 2 kilowatts;
 - 7. those that are designed to be used in the wavelength range of more than 1,150 nanometers and 1,555 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate in a single transverse mode whose rated output exceeds 50 watts;
 - ii. those that oscillate in a multiple transverse mode whose rated output exceeds 80 watts;
 - 8. those that are designed to be used in the wavelength range of more than 1,555 nanometers and 1,850 nanometers or less whose rated output exceeds 1 watt;
 - 9. those that are designed to be used in the wavelength range of more than 1,850 nanometers and 2,100 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate in a single transverse mode whose rated output exceeds 1 watt; or
 - ii. those that oscillate in a multiple transverse mode whose rated output exceeds 120 watts;
 - 10. those that are designed to be used in the wavelength range of more than 2,100 nanometers whose rated output exceeds 1 watt;
- (b) continuous wave laser oscillators other than variable wavelength laser oscillators, which fall under any of the following clauses (excluding those falling under sub-item (d)):
 - 1. those designed to be used in the wavelength range of less than 150 nanometers, which fall under either of the following clauses:
 - i. those that oscillate pulses exceeding 50 millijoules per pulse, and, whose peak output exceeds 1 watt; or
 - ii. those with an average output exceeding 1 watt;
 - 2. those designed to be used in the wavelength range of more than 150 nanometers and 510 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate pulses exceeding 1.5 joules per pulse, and, whose

- peak output exceeds 30 watts; or
- ii. those with an average output exceeding 30 watts (excluding argon laser oscillators with an average output of 50 watts or less);
- 3. those that are designed to be used in the wavelength range of more than 510 nanometers and 540 nanometers or less, which fall under any of the following:
 - i. those that oscillate in a single transverse mode which fall under either of the following clauses:
 - a. those that oscillate pulses exceeding 1.5 joules per pulse, and, whose peak output exceeds 50 watts; or
 - b. those with an average output that exceeds 50 watts;
 - ii. those that oscillate in a multiple transverse mode and fall under either of the following clauses:
 - a. those that oscillate pulses exceeding 1.5 joules per pulse, and, whose peak output exceeds 150 watts; or
 - b. those with an average output exceeding 150 watts;
- 4. those designed to be used in the wavelength range of more than 540 nanometers and 800 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate pulses with a pulse width of less than 1 picosecond which fall under either of the following clauses:
 - a. those that oscillate pulses exceeding 0.005 joules per pulse whose peak output exceeds 5 gigawatts; or
 - b. those with an average output exceeding 20 watts;
 - ii. those that oscillate pulses with a pulse width of 1 picosecond or more which fall under either of the following clauses:
 - a. those that oscillate pulses exceeding 1.5 joules per pulse whose peak output exceeds 30 watts; or
 - b. those with an average output exceeding 30 watts;
- 5. those that are designed to be used in the wavelength range of more than 800 nanometers and 975 nanometers or less, which fall under any of the following clauses:
 - i. those that oscillate pulses with a pulse width of 1 picosecond or less, which fall under either of the following clauses:
 - a. those that oscillate pulses exceeding 0.005 joules per pulse whose peak output exceeds 5 gigawatts;
 - b. those that oscillate in a single transverse mode with an average output exceeding 20 watts;
 - ii. those that oscillate pulses with a pulse width of 1 picosecond or more and 1 microsecond or less, which fall under any of the following clauses:
 - a. those that oscillate pulses exceeding 0.5 joules per pulse, and, whose

- peak output exceeds 50 watts;
- b. those that oscillate in a single transverse mode with an average output exceeding 20 watts;
- c. those that oscillate in a multiple transverse mode with an average output exceeding 50 watts;
- iii. those that oscillate pulses with a pulse width of more than 1 microsecond which fall under any of the following clauses:
 - a. those that oscillate pulses exceeding 2 joules per pulse whose peak output exceeds 50 watts;
 - b. those that oscillate in a single transverse mode with an average output exceeding 50 watts;
 - c. those that oscillate in a multiple transverse mode with an average output exceeding 80 watts;
- 6. those that are designed to be used in the wavelength range of more than 975 nanometers and 1,150 nanometers or less, which fall under any of the following clauses:
 - i. those that oscillate pulses with a pulse width of less than 1 picosecond which fall under either of the following clauses:
 - a. those whose peak output exceeds 2 gigawatts per pulse;
 - b. those with an average output exceeding 30 watts;
 - c. those that generate pulses exceeding 0.002 joules per pulse;
 - ii. those that oscillate pulses with a pulse width of 1 picosecond or more and less than 1 nanosecond, which fall under any of the following clauses:
 - a. those whose peak output exceeds 5 gigawatts per pulse;
 - b. those with an average output exceeding 50 watts;
 - c. those that oscillate pulses exceeding 0.1 joules per pulse;
 - iii. those that oscillate pulses with a pulse width of 1 nanosecond or more and 1 microsecond or less, which fall under either of the following clauses:
 - a. those that oscillate in a single transverse mode which fall under any of the following clauses:
 - 1 those whose peak output exceeding 100 megawatts;
 - 2 those with an average output exceeding 20 watts, for which the maximum pulse repetition frequency is designed to be 1 kilohertz or less;
 - 3 among those with a wall-plug efficiency exceeding 12% and an average output exceeding 100 watts, those that operate at a pulse repetition frequency exceeding 1 kilohertz;
 - 4 those with an average output exceeding 150 watts, which operate at a pulse repetition frequency exceeding 1 kilohertz;
 - 5 those that oscillate pulses exceeding 2 joules per pulse:
 - b. those that oscillate in a multiple transverse mode which fall under any of the following clauses:

- 1 those whose peak output exceeds 400 megawatts;
- 2 those with a wall-plug efficiency exceeding 18% and an average output exceeding 500 watts;
- 3 those with an average output exceeding 2 kilowatts;
- 4 those that oscillate pulses exceeding 4 joules per pulse;
 - iv. those that oscillate pulses with a pulse width exceeding 1 microsecond which fall under either of the following clauses:
 - a. those that oscillate in a single transverse mode which fall under any of the following clauses:
 - 1 those whose peak output exceeds 500 kilowatts;
 - 2 those with a wall-plug efficiency exceeding 12% with an average output exceeding 100 watts;
 - 3 those with an average output exceeding 150 watts;
 - b. those that oscillate in a multiple transverse mode which fall under any of the following clauses:
 - 1 those whose peak output exceeds 1 megawatt;
 - 2 those with a wall-plug efficiency exceeding 18% with an average output exceeding 500 watts;
 - 3 those with an average output exceeding 2 kilowatts;
 - 7. those designed to be used in the wavelength range of more than 1,150 nanometers and 1,555 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate pulses with a pulse width of 1 microsecond or less which fall under any of the following clauses:
 - a. those that oscillate pulses exceeding 0.5 joules per pulse, and, whose peak output exceeds 50 watts;
 - b. those that oscillate in a single transverse mode with an average output exceeding 20 watts;
 - c. those that oscillate in a multiple transverse mode with an average output exceeding 50 watts;
 - ii. those that oscillate pulses with a pulse width exceeding 1 microsecond which fall under any of the following clauses:
 - a. those that oscillate pulses exceeding 2 joules per pulse, and, whose peak output exceeds 50 watts;
 - b. those that oscillate in a single transverse mode with an average output exceeding 50 watts;
 - c. those that oscillate in a multiple transverse mode with an average output exceeding 80 watts;
 - 8. those that are designed to be used in the wavelength range of more than 1,555 nanometers and 1,850 nanometers or less, which fall under either of the following clauses:

- i. those that oscillate pulses exceeding 100 millijoules per pulse and whose peak output exceeds 1 watt; or
- ii. those with an average output exceeding 1 watt;
- 9. those that are designed to be used in the wavelength range of more than 1,850 nanometers and 2,100 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillate in a single transverse mode which fall under either of the following clauses:
 - a. those that oscillate pulses exceeding 100 millijoules per pulse, and, whose peak output exceeds 1 watt; or
 - b. those with an average output exceeding 1 watt;
 - ii. those that oscillate in a multiple transverse mode which fall under either of the following clauses:
 - a. those that oscillate pulses exceeding 100 millijoules per pulse, and, whose peak output exceeds 10 kilowatts; or
 - b. those with an average output exceeding 120 watts;
- 10. those that are designed to be used in the wavelength range of more than 2,100 nanometers which fall under either of the following clauses:
 - i. those that oscillate pulses exceeding 100 millijoules per pulse, and, whose peak output exceeds 1 watt;
 - ii. those with an average output exceeding 1 watt;
- (c) variable wavelength laser oscillators that fall under any of the following clauses (excluding those falling under clause (d)):
 - 1. those designed to be used in the wavelength range of less than 600 nanometers, which fall under either of the following clauses:
 - i. those that oscillate pulses exceeding 50 joules per pulse, and, whose peak output exceeds 1 watt;
 - ii. those with an average output, or rated output of continuous waves, exceeding 1 watt;
 - 2. those designed to be used in the wavelength range if more than 600 nanometers and 1,400 nanometers or less, which fall under either of the following clauses:
 - i. those that oscillates pulses exceeding 1 joule per pulse, and, whose peak output exceeding 20 watts;
 - ii. those with an average output, or rated output of continuous waves, exceeding 20 watts;
 - 3. those that are designed to be used in the wavelength range exceeding 1,400 nanometers, which fall under either of the following clauses:
 - i. those that oscillate pulses exceeding 50 millijoules per pulse, and, with a peak output exceeding 1 watt;
 - ii. those with an average output, or rated output of continuous waves,

exceeding 1 watt;

(d) laser oscillators that fall under any of the following clauses:

1. semiconductor laser oscillators that fall under either of the following clauses:

i. a single semiconductor laser diode that oscillates in a single transverse mode which falls under either of the following clauses:

a. those that are designed be used in the wavelength range of 1,510 nanometers or less, with an average output, or rated output of continuous waves, exceeding 1.5 watts;

b. those that are designed to be used in the wavelength range of more than 1,510 nanometers, with an average output, or rated output of continuous waves, exceeding 500 milliwatts;

ii. a single semiconductor laser diode that oscillates in a multiple transverse mode which falls under any of the following clauses:

a. among those that are designed to be used in the wavelength range of less than 1,400 nanometers, those with an average output, or rated output of continuous waves, exceeding 25 watts;

b. among those that are designed to be used in the wavelength range of 1,400 nanometers or more and less than 1,900 nanometers, those with an average output, or rated output of continuous waves, exceeding 2.5 watts;

c. among those that are designed to be used in the wavelength range of 1,900 nanometers or more, those with an average output, or rated output of continuous waves, exceeding 1 watt;

iii. a single semiconductor laser bar that falls under any of the following clauses (excluding those incorporated in semiconductor laser stacked arrays referred to in clause iv. or v.):

a. one designed to be used in the wavelength range of less than 1,400 nanometers, with an average output, or rated output of continuous waves, exceeding 100 watts;

b. one designed to be used in the wavelength range of 1,400 nanometers or more and less than 1,900 nanometer, with an average output, or rated output of continuous waves, exceeding 25 watts;

c. one designed to be used in the wavelength range of 1,900 nanometers or more, with an average output, or a rated output of continuous waves, exceeding 10 watts;

iv. semiconductor laser stacked arrays that fall under any of the following clauses:

a. those designed to be used in the wavelength range of less than 1,400 nanometers, which fall under any of the following clauses:

1 those with a total average output, or total rated output of continuous waves, of less than 3 kilowatts, and an average output density, or rated output

- density of continuous waves, exceeding 500 watts per square meter;
- 2 those with a total average output, or total rated output of continuous waves, of 3 kilowatts or more and 5 kilowatts or less, and an average output density, or rated output density of continuous waves, exceeding 350 watts per square meter;
- 3 those with a total average output, or total rated output of continuous waves, exceeding 5 kilowatts;
- 4 those with a peak pulse output density exceeding 2,500 watts per square centimeter (excluding monolithic types formed by epitaxial growth);
- 5 those with a total average output of waves capable of spatial interference, or total rated output of continuous waves, exceeding 150 watts;
- b. those designed to be used in the wavelength range of 1,400 nanometers or more and less than 1,900 nanometers, which fall under any of the following clauses:
- 1 those with a total average output, or total rated output of continuous waves, of less than 250 watts, and an average output density, or rated output density of continuous waves, exceeding 150 watts per square meter;
- 2 those with a total average output, or total rated output of continuous waves, of 250 watts or more and 500 watts or less, and an average output density or rated output density of continuous waves, exceeding 50 watts per square meter;
- 3 those with a total average output, or total rated output of continuous waves, exceeding 500 watts;
- 4 those with a peak pulsed output density exceeding 500 watts per square centimeter (excluding monolithic types formed by epitaxial growth); or
- 5 those with a total average output of waves capable of spatial interference, or total rated output of continuous waves, exceeding 15 watts;
- c. those designed to be used in a wavelength range of 1,900 nanometers or more, which fall under any of the following clauses:
- 1 those with an average output density or a rated output density of continuous waves, exceeding 50 watts per square meter;
- 2 those with a total average output or total rated output of continuous waves, exceeding 10 watts; or
- 3 those with a total average output of waves capable of spatial interference or total rated output of continuous waves, exceeding 1.5 watts;
- d. those that contain one or more semiconductor laser bars that fall under clause iii.;
- v. among semiconductor laser stacked arrays that are designed to be combined with another semiconductor laser stacked array, those that have joining parts for sharing electronic circuits and cooling units with the other semiconductor laser stacked array (excluding those falling under clause

iv.);

2. carbon monoxide laser oscillators that fall under either of the following clauses: or

i. those that oscillate pulses exceeding 2 joules per pulse, and, with a peak output exceeding 5 kilowatts;

ii. those with an average output or a rated output of continuous waves, exceeding 5 kilowatts;

3. carbon dioxide laser oscillators that fall under any of the following clauses:

i. those with a rated output of continuous waves exceeding 15 kilowatts; or

ii. those which oscillate pulses at a pulse width exceeding 10 microseconds, which fall under either of the following clauses:

a. those with an average output exceeding 10 watts;

b. those with a peak output exceeding 100 kilowatts;

iii. those that oscillate pulses at a pulse width of 10 microseconds or less, which fall under either of the following clauses:

a. those that oscillate pulses exceeding 5 joules per pulse; or

b. those with an average output exceeding 2.5 kilowatts;

4. excimer laser oscillators that fall under any of the following clauses:

i. those that are designed to be used in a wavelength range of 150 nanometers or less which fall under either of the following clauses:

a. those that oscillate pulses exceeding 50 millijoules per pulse; or

b. those with an average output exceeding 1 watt;

ii. those that are designed to be used in a wavelength range of more than 150 nanometers and 190 nanometers or less, which fall under either of the following clauses:

a. those that oscillate pulses exceeding 1.5 joules per pulse; or

b. those with an average output exceeding 120 watts;

iii. those that are designed to be used in a wavelength range of more than 190 nanometers and 360 nanometers or less, which fall under either of the following clauses:

a. those that oscillate pulses exceeding 10 joules per pulse; or

b. those with an average output exceeding 500 watts;

iv. those that are designed to be used in a wavelength range of more than 360 nanometers, which fall under either of the following clauses:

a. those that oscillate pulses exceeding 1.5 joules per pulse; or

b. those with an average output exceeding 30 watts;

5. chemical laser oscillators that fall under any of the following clauses:

i. hydrogen fluoride laser oscillators;

ii. deuterium fluoride laser oscillators; or

iii. transfer laser oscillators that fall under either of the following

- oscillators:
- a. iodine laser oscillators that are designed to be excited by excitation transfer from oxygen; or
 - b. carbon dioxide laser oscillators that are designed to be excited by excitation transfer from deuterium fluoride;
 - 6. neodymium glass laser oscillators that oscillate non-repetitive pulses, which fall under either of the following clauses:
 - i. those that oscillate pulses at a pulse width of 1 microsecond or less, and, pulses exceeding 50 joules per pulse;
 - ii. those that oscillate pulses at a pulse width exceeding 1 microsecond, and, pulses exceeding 100 joules per pulse;
 - (e) components of laser oscillators that fall under any of the following clauses:
 - 1. reflectors that are designed to cool the oscillator by using a heat pipe or flowing fluid at a position that is less than 1 millimeter under the surface of the mirror;
 - 2. reflectors, or optical components or electro-optical components that have permeability (including those that are partially permeable), which are designed to be used in laser oscillators that fall under any of sub-items (a) through (d) (excluding fused tapered fiber combiners and multilayer dielectric gratings);
 - 3. components of fiber laser oscillators that fall under any of the following clauses:
 - i. fused tapered fiber combiners that use multimode fibers for both input and output, which fall under the following clauses a. and b.:
 - a. those whose insertion loss at the total rated average output or the total rated output of continuous waves (excluding output transmitted through a single-mode core) exceeding 1,000 watts is maintained at 0.3 decibels or less; and
 - b. those which have three or more input fibers;
 - ii. fused tapered fiber combiners that use single mode fibers for input and multimode fibers for output, which fall under all of the following clauses:
 - a. those whose insertion loss at the total rated average output or the total rated output of continuous waves exceeding 4,600 watts is maintained at less than 0.5 decibels;
 - b. those that have three or more input fibers;
 - c. those that fall under either of the following clauses:
 - 1 those that have five or less input fibers, whose beam parameter product at output is 1.5 millimeters milliradians or less; or
 - 2 those that have more than five input fibers, whose beam parameter product at output is 2.5 millimeters milliradians or less;

- iii. multilayer dielectric gratings that fall under the following clauses a. and b.:
 - a. those that are designed to spectrally or coherently combine beams emitted from five or more fiber laser oscillators; and
 - b. those for which the threshold of continuous wave laser damage is 10 kilowatts per square centimeter or more;
- (f) testing device or accessories of laser oscillators that fall under any of the following clauses:
 - 1. Deleted
 - 2. among testing device of laser oscillators which is specially designed to measure errors of the beam deflection angle of an ultra-high-power laser oscillator (meaning laser oscillators that are capable of outputting energy exceeding 1 kilojoule per 50 milliseconds, or whose average output or rated output of continuous waves exceeds 20 kilowatts; the same applies below), those whose accuracy is 10 microradians or less;
 - 3. among accessories of phased array ultra-high-power laser oscillators which are specially designed to synthesize coherent light, those which fall under either of the following clauses:
 - i. those whose accuracy in wavelength exceeding 1 micrometer is 0.1 micrometers or less; or
 - ii. those whose accuracy in wavelength of 1 micrometer or less is one-tenth of the wavelength used or less;
 - 4. projection telescopes that are designed to be used in combination with ultra-high output laser oscillators;
- (x)-2 devices for detecting sounds by using laser beams, which fall under all of the following sub-items (a) through (e):
 - (a) those whose rated output of continuous waves of the laser oscillator is 20 milliwatts or more;
 - (b) those for which stability of frequency of the laser oscillator is 10 megahertz or less;
 - (c) those for which the wavelength range of the laser oscillator is 1,000 nanometers or more and 2,000 nanometers or less;
 - (d) those for which the resolving power of the optical system is less than 1 nanometer; and
 - (e) those for which the signal noise ratio is 1,000 or more;
- (xi) magnetometers, magnetic field gradiometers (excluding those designed for medical use) or underwater electric field sensors (excluding those for fishery) or their calibration equipment, or their components, which fall under any of the following sub-items:
 - (a) magnetometers that utilize superconducting technology, which fall under any of the following clauses:

1. among those that are designed to operate in a stationary state and do not have a device that is designed to reduce noise generated when in motion, those for which the sensitivity at frequency of 1 hertz (meaning the effective value expressed per square root of the band frequency; the same applies below) is 50 femtoteslas or less;
 2. those that have a device that is designed to reduce noise generated when in motion, whose sensitivity when in motion at a frequency of 1 hertz is less than 20 picoteslas;
- (b) those that utilize optical pump technology or nuclear magnetic resonance technology, whose sensitivity at a frequency of 1 hertz is less than 2 picoteslas;
 - (c) those that utilize optical pump technology or nuclear magnetic resonance technology, whose sensitivity at a frequency of 1 hertz is 2 picoteslas or more and less than 20 picoteslas;
 - (d) those that utilize triaxial flux gate technology, whose sensitivity at a frequency of 1 hertz is 10 picoteslas or less;
 - (e) magnetometers using an induction coil, which fall under any of the following clauses:
 1. those whose sensitivity at a frequency of less than 1 hertz is less than 0.05 nanoteslas;
 2. those whose sensitivity at frequency of 1 hertz or more and 10 hertz or less is less than 0.001 nanoteslas; or
 3. those whose sensitivity at frequency exceeding 10 hertz is less than 0.0001 nanoteslas;
 - (f) magnetometers that use optical fibers whose sensitivity is less than 1 nanotesla;
 - (g) underwater electric field sensors whose sensitivity measured at a frequency of 1 hertz is less than 8 nanovolts per meter;
 - (h) magnetic field gradiometers using two or more magnetometers that fall under any of sub-items (a) through (f);
 - (i) among magnetic field gradiometers that use optical fibers which are intrinsic gradiometers (meaning those with the number of detection elements per axis of one; the same applies below in this item), those whose sensitivity is less than 0.3 nanoteslas per meter;
 - (j) among magnetic field gradiometers that do not use optical fibers which are intrinsic gradiometers, those whose sensitivity is less than 0.015 nanoteslas per meter;
 - (k) among calibration equipment for magnetometers, magnetic gradiometers, or underwater electric field sensors, those that are designed for magnetometers, magnetic field gradiometers, or underwater electric field sensors which have functions equivalent to or exceeding the functions of

- the goods that fall under any of sub-items (a) through (j) (excluding goods falling under sub-item (l));
- (l) calibration equipment for magnetometers, magnetic field gradiometers, or underwater electric field sensors, which are designed for the goods falling under any of the following clauses:
 1. magnetometers that fall under sub-item (c), which utilize optical pump technology or nuclear magnetic resonance technology to achieve a sensitivity of less than 2 picoteslas;
 2. underwater electric field sensors that fall under sub-item (g);
 3. magnetic field gradiometers that fall under any of sub-items (h) through (j), which achieve a sensitivity of less than 3 picoteslas;
 - (m) magnetic field gradiometers that use magnetometers falling under sub-item (a) or (b);
 - (xi)-2 devices for detecting magnetic fields or electric fields underwater, which fall under any of the following:
 - (a) devices that have magnetometers incorporated, which fall under item (xi), sub-item (a) or (b);
 - (b) devices that have magnetometers incorporated, which fall under any of item (xi), sub-items (c) through (f), or have underwater electric field sensors incorporated, which fall under sub-item (g) of that item;
 - (xii) gravity meters that fall under any of the following clauses, or gravity gradiometers:
 - (a) gravity meters that are designed for ground use with an accuracy of less than 10 microgals when gravity is measured in a stationary state (excluding Worden-type gravity meters);
 - (b) gravity meters that are designed to be mounted on mobile bodies, which fall under the following clauses 1. and 2.:
 1. gravity meters with an accuracy of less than 0.7 milligals when gravity is measured in a stationary state; and
 2. those with an accuracy of less than 0.7 milligals when gravity is measured in a transitory condition, and, the required measuring time is less than 2 minutes;
 - (xiii) radar that falls under any of the following sub-items, or its components (excluding secondary surveillance radar, civilian automotive radar, meteorological radar, precision approach radar that conform to the standards established by the International Civil Aviation Organization, and its components (including component of a radar which is a display equipment for air traffic control):
 - (a) radar that can be used in the frequency range of 40 gigahertz or more and 230 gigahertz or less, which fall under either of the following clauses:
 1. one with an average output exceeding 100 milliwatts;

- 2. one with a position accuracy of distance of 1 meter or less, and azimuth position accuracy of 0.2 degrees or less;
- (b) radar whose tunable bandwidth exceeds 12.5% of the center frequency;
- (c) one that is capable of using three or more carrier frequencies simultaneously;
- (d) one that may be used as synthetic aperture radar, inverse synthetic aperture radar, or side-looking radar;
- (e) one in which array antennas that are capable of electronic scanning are installed;
- (f) one that is capable of measuring the altitude of a target;
- (g) one that is designed to be installed on balloons or aircraft, which utilizes the Doppler effect to detect a moving target;
- (h) one which utilizes either of the following technologies:
 - 1. spread spectrum;
 - 2. frequency agility;
- (i) one for ground use with a measurable distance exceeding 185 km (excluding fishing ground surveillance radar, ground radar designed for air traffic control, and meteorological balloon tracking radar);
- (j) laser radar (including LiDAR) that falls under any of the following clauses:
 - 1. one designed for space use;
 - 2. one that utilizes heterodyne phase detection technology or homodyne phase detection technology, and, with an angular resolving power of less than 20 microradians;
 - 3. one that is designed for coastal surveys through bathymetry using aircraft, which has sufficient accuracy in light of the standards established by the International Hydrographic Organization for hydrographic surveys, and, uses one or more laser oscillators that is used in the wavelength range of more than 400 nanometers and 600 nanometers or less;
- (k) one utilizing pulse compression technology that falls under either of the following clauses:
 - 1. one with a pulse compression ratio exceeding 150;
 - 2. one with a compressed pulse width of less than 200 nanoseconds (excluding two-dimensional marine radar or two-dimensional radar for vessel navigation services, which falls under all of the following clauses i. through v.):
 - i. one with a pulse compression ratio of 150 or less;
 - ii. one with a compressed pulse width exceeding 30 nanoseconds;
 - iii. one that has a single rotating mechanical scanning antenna;
 - iv. one with a peak output of 250 watts or less; and
 - v. one that does not have a frequency hopping capability;

- (l) one utilizing data processing technology that falls under any of the following clauses (excluding devices that are designed for vessel navigation services, or their components):
 - 1. automatic target tracking technology that is capable of forecasting the future position of a target starting from the point where the next antenna beam will pass (excluding collision prevention functions for air traffic control or of marine radar);
 - 2. Deleted
 - 3. technology that carries out the superposition, correlation, or fusion of target data obtained from two or more radars with a distance of more than 1,500 meters from each other within 6 seconds, in order to improve the performance compared to when using of a single radar falling under item (xiii), sub-item (f) or (i);
 - 4. technology that carries out the superposition, correlation, or fusion of target data obtained from two or more radars including a radar installed on vehicles, vessels, aircraft, or artificial satellites, or other flying objects for space development within 6 seconds, in order to improve the performance compared to when using a single radar falling under item (xiii), sub-item (f) or (i);
- (xiii)-2 masks or reticles specially designed for manufacturing optical sensors that fall under either of item (iii), sub-item (a), 2. or 3.:
- (xiv) optical measuring equipment that falls under either of the following sub-items:
 - (a) measuring equipment for optical reflectance (limited to those which measure the absolute value of reflectance) whose accuracy is 0.1 percent or less; or
 - (b) among measuring equipment for the surface shape of lenses or reflectors (limited to non-contact type ones) which uses a method other than the light scattering measurement method, one that has an aperture diameter exceeding 10 centimeters, and, is designed for measuring a surface shape that is not a plane surface with an accuracy of 2 nanometers or less;
- (xv) devices for manufacturing gravity meters for ground use or calibration equipment (limited to those with a precision of less than 0.1 milligals when gravity is measured in a stationary state);
- (xvi) substances that are to be materials for optical detectors and other optical components, or crystals for laser oscillators, which fall under any of the following sub-items:
 - (a) tellurium with a purity of 99.9995% or more;
 - (b) wafers having a single crystal or epitaxial growth crystal of substances that fall under any of the following clauses:
 - 1. cadmium zinc telluride for which the mole ratio of zinc telluride to

- cadmium telluride and zinc telluride is less than 6%;
2. cadmium telluride; or
 3. cadmium mercury telluride;
- (c) among substrate materials made of zinc selenide or zinc sulfide which are manufactured by chemical vapor phase growth methods, those that fall under either of the following clauses:
1. those whose volume exceeds 100 cubic centimeters; or
 2. those whose diameter exceeds 80 millimeters, and, has a thickness of 20 millimeters or more;
- (d) electro-chemical materials or non-linear optical materials that fall under any of the following clauses:
1. potassium titanyl arsenate;
 2. silver gallium selenide;
 3. arsenic thallium selenide;
 4. zinc germanium phosphide; or
 5. gallium selenide;
- (e) non-linear optical materials that fall under any of the following clauses (excluding those that fall under sub-item (d)):
1. those whose dynamic third-order non-linear susceptibility is greater than $1/1,000,000$ per square meter per volt per volt, with a response time of less than 1 millisecond;
 2. those whose quadratic non-linear susceptibility expressed in meter per volt is $33/1,000,000,000,000$ or more,;
- (f) those made from materials having beryllium stacked on beryllium or substrate material made from silicon carbide, that have a diameter or length of the long axis that exceeds 300 millimeters;
- (g) optical glass that falls under all of the following clauses 1. through 3.:
1. one with the hydroxide ion content of less than 0.0005% of the total weight;
 2. one with the metal impurities content of less than 0.0001% of the total weight; and
 3. one with the fluctuation of the refractive index of less than $5/1,000,000$;
- (h) artificial diamonds with the absorption coefficient of less than $1/100,000$ per centimeter in the wavelength range of more than 200 nanometers and 14,000 nanometers or less;
- (i) among artificial crystals for laser oscillators which are unfinished, sapphires with titanium added;
- (j) double clad fibers to which rare-earth elements are added, which fall under any of the following clauses:
1. those for which the nominal value of the laser wavelength is 975 nanometers or more and 1,150 nanometers or less, which fall under the

- following clauses i. and ii. (excluding those with the inner glass clad is more than 150 micrometers and 300 micrometers or less in diameter):
- i. those for which the mean value of the diameter of the core is 25 micrometers or more; and
 - ii. those for which the numerical aperture of the core is less than 0.065;
2. those for which the nominal value of the laser wavelength exceeds 1,530 nanometers, which fall under the following clauses i. and ii.:
 - i. those for which the mean value of the diameter of the core is 20 micrometers or more; and
 - ii. those for which the numerical aperture of the core is less than 0.1;

Article 10 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 11 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) accelerometers that fall under any of the following sub-items, or their components:
 - (a) linear accelerometers that fall under any of the following clauses:
 1. those that are designed so that they may be used at a linear acceleration of 147.15 meters per second squared, which fall under any of the following clauses:
 - i. those with a bias stability (meaning those after calibration; the same applies below in this Article) of less than 0.00128 meters per second squared per year;
 - ii. those with a scale factor stability of less than 0.013 % per year;
 2. those that are designed so that they can be used at a linear acceleration of more than 147.15 meters per second squared and 981 meters per second squared or less, which fall under the following clauses i. and ii.:
 - i. those with a reproducibility of bias of less than 0.0122625 meters per second squared per year; and
 - ii. those with a scale-factor reproducibility of less than 0.125% per year;
 3. those that are designed to be used in inertial navigation systems or inertial guidance systems, which are designed so that they may be used at a linear acceleration exceeding 981 meters per second squared;
 - (b) angular accelerometers or rotational accelerometers that are designed so that they may be used at a linear acceleration exceeding 981 meters per second squared;
- (ii) gyroscopes or angular velocity sensors, which fall under any of the following clauses, or their components:
 - (a) those that are designed so that they can be used at a linear acceleration of 981 meters per second squared or less, which fall under any of the following clauses:

1. those whose measuring range of the angular velocity is less than 500 degrees per second, which fall under any of the following clauses:
 - i. those with a bias stability of less than 0.5 degrees per hour when measured in the state in which it is 9.81 meters per second squared for a period of one month;
 - ii. those for which the effective value of the angle random walk expressed in per square root of time is 0.0035 degrees or less (excluding spinning mass gyros);
2. those with the measuring range of the angular velocity of 500 degrees per second or more, which fall under any of the following clauses:
 - i. those with a bias stability of less than 4 degrees per hour when measured in the state in which it is 9.81 meters per second squared for three minutes;
 - ii. those for which the effective value of the angle random walk expressed in per square root of time is 0.1 degrees or less (excluding spinning mass gyros);
- (b) those that are designed so that they can be used at a linear acceleration that exceeds 981 meters per second squared;
- (iii) inertial navigation systems and other devices that utilize inertial force (including attitude and heading reference systems, gyro compasses, inertial measurement units, and inertial reference system), which fall under any of the following sub-items (excluding those certified by any of the governmental organizations of Japan or the regions stated in the Appended Table 2 that they are for civilian aircraft):
 - (a) among those that are designed for aircraft, land vehicles, or vessels which provide locational information without relying on location reference information, those for which the accuracy after normal alignment falls under any of the following clauses:
 1. those for which the circular error probability is 0.8 nautical miles per hour or less;
 2. those for which the circular error probability is 0.5% or less of the movement distance;
 3. those for which the circular error probability is total drift of 1 nautical mile or less in 24 hours;
 - (b) those that are designed for aircraft, land vehicles, or vessels, which have location reference information incorporated, which provide locational information within 4 minutes after the loss of all location reference information with the circular error probability of less than 10 meters;
 - (c) those that are designed for aircraft, land vehicles, or vessels and indicate the true north direction, which fall under any of the following clauses:
 1. those with the maximum operating angular velocity of less than 500

- degrees per second and the heading accuracy without using location reference information is less than the value obtained by dividing 0.07 degrees by the cosine of the latitude of the measurement point, or six minutes or less at the point of 45 degrees latitude;
2. those with the maximum operating angular velocity of 500 degrees per second or more and the heading accuracy without using location reference information is less than the value obtained by dividing 0.2 degrees by the cosine of the latitude of the measurement point, or 17 minutes or less at the point of 45 degrees latitude;
- (d) those that provide acceleration measurement values or angular velocity measurement values in two dimensions or more, which fall under any of the following clauses:
1. those that have the specification prescribed in item (i) or the preceding item, without using any reference information along an arbitrary axis;
 2. those that are designed for space use for which the effective value of the angle random walk along an arbitrary axis expressed in per square root of time is 0.1 degrees or less, and, which provide angular velocity measurement values (excluding inertial navigation systems that only have spinning mass gyros incorporated and other devices that utilize inertial force);
- (iv) gyro-astro compass, devices that are capable of determining positions or courses by automatically tracking celestial bodies or artificial satellites, or their components, which fall under any of the following sub-items:
- (a) gyro-astro compasses or devices that are capable of determining positions or courses by automatically tracking celestial bodies or artificial satellites, which have a bearing accuracy of 20 seconds or less;
 - (b) components that are designed for gyro-astro compasses or devices that are capable of determining positions or courses by automatically tracking celestial bodies or artificial satellites falling under sub-item (a), which fall under either of the following clauses:
 1. optical heads or baffles; or
 2. data processing units;
- (v) devices that receive radio waves from global navigation satellite systems, which fall under any of the following sub-items, or their components:
- (a) those that have a decoding algorithm for accessing the ranging code for position and time (excluding those designed for civilian use);
 - (b) those that constitute an adaptive antenna system;
- (vi) among aircraft altimeters that are designed to be used at a frequency greater than 4.4 gigahertz or at a frequency lower than 4.2 gigahertz, those which fall under either of the following sub-items:
- (a) those that have a transmission output control function; or

- (b) those that have a phase-shift keying function;
- (vii) among underwater sonar navigation equipment that use azimuth information, and, use Doppler velocity log or correlation velocity log, those that have a position accuracy of 3% or less of the distance moved by circular error probability, or their components;
- (viii) testing device, calibration equipment, alignment equipment or devices for manufacturing, which fall under any of items (i) through (vii);
- (ix) devices that are designed to confirm the characteristics of the mirror surface of a ring laser gyro, which fall under either of the following sub-items:
 - (a) scatterometers that have a measuring precision of 0.001% or less; or
 - (b) profilometers that have a measuring precision of 0.5 nanometers or less.

Article 11 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 12 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) manned and tethered type submersibles that are designed so that they may be used at water depths exceeding 1,000 meters;
- (i)-2 unmanned submersibles that fall under all of the following sub-items:
 - (a) those that are designed so that they be used as tethered submersibles;
 - (b) those that are designed so that they can be used at water depths exceeding 1,000 meters;
 - (c) those that fall under either of the following clauses:
 1. those that are designed so that they are capable of cruising underwater by their own power using direct current propulsion electric motors or thrusters; or
 2. those that are capable of sending and receiving data using optical fibers;
- (ii) devices that are used to recover objects found at water depths exceeding 250 meters that have a cargo unloading capability exceeding 5 meganewtons, and, fall under either of the following sub-items:
 - (a) those that have a dynamic positioning system capable of maintaining the position of a vessel within the range of 20 meters from a point set by the navigation equipment; or
 - (b) those capable of maintaining the position within the range of 10 meters from a predetermined point at water depths exceeding 1,000 meters;
- (iii) Deleted
- (iv) components or auxiliary equipment for submersibles, which fall under any of the following sub-items:
 - (a) those that are designed so that they may be used at water depths exceeding 1,000 meters, which fall under any of the following clauses:
 1. pressure-resistant containers or pressure-resistant shells with the

- maximum internal dimension exceeding 1.5 meters;
 - 2. direct current propulsion electric motors or thrusters;
 - 3. umbilical cables or their connectors that use optical fibers and tension members made from synthetic materials; or
 - 4. components using a material that falls under item (xii);
- (b) among automatic control devices that are designed so that they may be used in submersibles using navigation data, and, are servo controlled, those that fall under the following clauses 1. and 2.:
- 1. those that may be used in submersibles falling under item (i)-2 or Article 14, item (ix);
 - 2. those that fall under any of the following clauses:
 - i. those capable of moving submersibles to the inside of a column of water that has a radius of 10 meters with the predetermined center point in water;
 - ii. those capable of maintaining a submersible inside a column of water that has a radius of 10 meters with the predetermined center point in water;
 - iii. those capable of maintaining a submersible within 10 meters of a cable when moving the submersible along a cable that is at the bottom of the sea or under the seabed;
- (c) among automatic control devices that are designed so that they may be used in submersibles which use navigation data, and, are servo controlled, those that fall under the following clauses 1. and 2. (excluding those falling under (b)):
- 1. those that are designed so that they may be used in submersibles falling under item (i); and
 - 2. those that fall under any of the following clauses:
 - i. those capable of moving submersibles to the inside of a column having a radius of 10 meters having a preset center point in the water;
 - ii. those capable of maintaining a submersible inside a column that has a radius of 10 meters with the predetermined center point in water; or
 - iii. those capable of maintaining a submersible inside a column of water within 10 meters from the cable when the submersible moves along a cable that is at the bottom of the sea or under the seabed;
- (d) through hull fitting with a pressure hull for pulling optical fibers into the hull of a vessel;
- (e) observational equipment for underwater use which fall under all of the following clauses:
- 1. one that is designed or modified so that it may be loaded on a submersible and operated by remote control;
 - 2. one that has a function to reduce the effects of backscatter falling under

- either of the following clauses:
- i. range gate illuminators; or
 - ii. devices using a laser oscillator;
- (v) lighting equipment for underwater use which fall under either of the following sub-items:
- (a) among those using stroboscopic imaging for which the energy per flash exceeds 300 joules, those capable of emitting light more than five times per second; or
 - (b) those that use argon arcs which are designed so that they can be used at water depths exceeding 1,000 meters;
- (vi) underwater robots (excluding operating robots and sequence robots) that fall under either of the following sub-items:
- (a) those that control by using the force or torque applied to an external object, information from a sensor that measures the distance to an external object, or that measures tactile sense; or
 - (b) those that use titanium alloy or fiber reinforced composite materials as structural materials, which are capable of operating under a force of more than 250 newtons, or at a torque of more than 250 newton meters;
- (vii) remote control manipulators (limited to those that have joints) that are designed so that they may be used together with submersibles, which fall under either of the following sub-items:
- (a) those that control by using the force or torque applied to an external object, or the information from a sensor that measures tactile sense in contact with an external object; or
 - (b) those that control by using a master-slave system, with a degree of freedom of motion of 5 or more;
- (viii) power units that may be used in a condition isolated from atmosphere, which fall under any of the following sub-items:
- (a) brayton cycle engines or Rankine cycle engines that have a device that falls under any of the following clauses:
 - 1. devices that are designed that they can remove carbon monoxide, carbon dioxide, and particles from the exhaust air that is circulating;
 - 2. devices that are designed so that they can utilize monatomic gases;
 - 3. soundproofing devices or enclosures designed so that they can reduce underwater noise at frequencies of less than 10 kilohertz, or devices that are designed so that they can mitigate impacts;
 - 4. devices that are designed to be capable of compressing reaction products or recycling them as fuel, storing the reaction products, and, discharging the reaction products at pressures of more than 100 kilopascals;
 - (b) diesel engines that have devices falling under all of the following clauses
 - 1. through 4.:

1. those that are designed so that they can remove carbon monoxide, carbon dioxide, and fine particles from exhaust air that is circulating;
 2. those that are designed so that they can utilize monoatomic gases;
 3. soundproofing devices or enclosures that are designed so that they can reduce underwater noise at frequencies of less than 10 kilohertz, or devices that are designed so that they can mitigate impacts;
 4. devices that are designed so that they can intermittently discharge combustion products;
- (c) fuel cells with an output exceeding 2 kilowatts which have a device that falls under any of the following clauses:
1. soundproofing devices or enclosures that are designed so that they can reduce underwater noise at frequencies of less than 10 kilohertz or devices that are designed so that they can mitigate impacts;
 2. devices that are designed so that they can compress reaction products or recycle them as fuel, store them, and, discharge them at the pressure of 100 kilopascals or more;
- (d) sterling cycle engines that have devices that fall under the following clauses 1. and 2.:
1. soundproofing devices or enclosures that are designed so that they can reduce underwater noise at a frequency of less than 10 kilohertz, or devices that are designed so that they can mitigate impacts; and
 2. devices that are designed so that they can discharge reaction products at a pressure of 100 kilopascals or more;
- (ix) Deleted
- (x) components of a vessel which fall under any of the following sub-items:
- (a) variable pitch propellers or their hubs with a rated input exceeding 30 megawatts;
 - (b) internally liquid-cooled electric propulsion engines whose output exceeds 2.5 megawatts;
 - (c) superconductive propulsion engines or electric propulsion engines using a permanent magnet, which have an output exceeding 0.1 megawatts;
 - (d) transmission shaft devices using composite materials, which are capable of delivering output exceeding 2 megawatts;
 - (e) among screw propeller devices that are designed to discharge air from the propeller, or to supply air to the propeller, those with a rated output exceeding 2.5 megawatts;
 - (f) among soundproofing devices that can be used on vessels that have a displacement of more than 1,000 tons, which reduce sound or vibration at a frequency of less than 500 hertz generated from diesel engines, diesel generators, gas turbine engines, gas turbine generators, propulsion electric motors, or reduction gears, those made of a composite sound isolation base,

- and, with the intermediate mass weight exceeding 30% of the weight of the device installed on them;
- (g) devices that use a divergent nozzle or technology related to a rectification vane to improve the driving force of the screw propeller, or to reduce underwater noise, with an output exceeding 2.5 megawatts;
 - (xi) a circulating water tank designed to measure the noise generated from the flow of water surrounding a model propulsion device in the sound field, with a background noise of less than 100 decibels in the frequency range of more than 0 hertz and 500 hertz or less when the reference sound pressure is 1 micropascal and the frequency width is 1 hertz;
 - (xii) buoyant materials that fall under the following sub-items (a) and (b):
 - (a) those designed so that they may be used at water depths exceeding 1,000 meters; and
 - (b) those for which the density is less than 561 kilograms per cubic meter;
 - (xiii) self-contained diving equipment that is closed-circuit type or semi-closed circuit type;
 - (xiv) devices that disrupt a person's underwater activities by utilizing sound waves, which are designed to have a sound pressure level of 190 decibels or more at a frequency of the sound wave used are 200 hertz or less.

Article 12 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 13 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) gas turbine engines for aircraft, which fall under any of the following clauses:
 - (a) those that use technology (excluding programs) necessary for designing or manufacturing of things that fall under any of Article 25, paragraph (3), item (ii), clauses (a) through (g) and clause (j), item (iii) or item (iv) of that paragraph, or technology necessary for designing or manufacturing things that fall under the items of Article 27, paragraph (6); provided, however, that those falling under any of the following clauses 1. and 2. are excluded:
 1. those that fall under all of the following clauses:
 - i. those certified by a governmental organization of Japan or regions stated in the Appended Table 2; and
 - ii. gas turbine engine for supplying power to manned aircraft for civilian use, for which any of the following documents have been issued for aircraft that has the engine installed by a governmental organization of Japan or regions stated in the Appended Table 2:
 - a. a type certificate; or
 - b. a document equivalent to a type certificate, which has been approved by the International Civil Aviation Organization;

2. gas turbine engines for aircraft that are designed for auxiliary power units, which are certified by a governmental organization of Japan or regions stated in the Appended Table 2;
 - (b) those that are designed to be used for aircraft that are designed so that the cruising time at a speed greater than Mach 1 exceeds 30 minutes;
- (ii) gas turbine engines for vessels which are designed to use liquid fuel (including gas turbine engines adaptable for power generation for or propulsion of vessels, for industrial use or have derived from gas turbine engines for aircraft), which fall under the following sub-items (a) and (b), or assemblies or components specially designed for them:
 - (a) those whose maximum continuous output is 24,245 kilowatts or more when they operate in a steady state under the standard reference conditions specified by the International Standards ISO 3977-2 (1997); and
 - (b) those whose corrected fuel consumption rate when using liquid fuel is 0.219 kilograms per kWh or less at 35 percent of the maximum continuous output;
- (iii) among assemblies of gas turbine engines or their components which use technology (excluding programs) necessary for designing or manufacturing the things that fall under any of Article 25, paragraph (3), item (ii), sub-items (a) through (g) and sub-item (j), item (iii) or item (iv) of that paragraph, or technology necessary for designing or manufacturing the things that fall under the items of Article 27, paragraph (6), those designed to be used for gas turbine engines for aircraft that fall under either of the following sub-items:
 - (a)) those that fall under item (i); or
 - (b) those for which the region where they were designed or manufactured is a region other than Japan or a region stated in the Appended Table 2, or the region that cannot be specified;
- (iv) flying objects to be used in outer space or flying objects for launching them or their components, or flying objects for sub-orbital flight, which fall under any of the following sub-items:
 - (a) flying objects for launching flying objects to be used in outer space;
 - (b) flying objects to be used in outer space;
 - (c) buses for flying objects to be used in outer space;
 - (d) payloads for flying objects to be used in outer space, in which the goods falling under any of Article 6, item (ii), sub-item (a), clause 1., iv. or item (xvi), Article 8, item (i), sub-item (a), item (ii), sub-item (a), clause 2. or item (ix), sub-item (c) or (e), Article 9, item (iii), sub-item (a) or (b), item (iv), item (vi), item (viii), item (ix), sub-item (a), item (ix)-2, item (xiii), sub-item (d), sub-item (e), sub-item (k), or sub-item (l), or item (x), are incorporated;

- (e) devices that are designed to be loaded on a flying object to be used in outer space, which have any of the following functions:
 1. remote command or remote measurement data processing;
 2. payload data processing; or
 3. attitude and orbit control;
- (f) flying objects for suborbital use;
- (iv)-2 aircraft specially designed or modified, for launching flying objects for launching flying objects to be used in outer space, or flying objects for sub-orbital craft in the air;
- (iv)-3 among devices that are necessary for controlling flying objects for use in outer space or flying objects for launching them or for monitoring their operating state, which are designed to be installed on the ground, those which fall under any of the following clauses (limited to those designed to be used for controlling flying objects to be used in outer space or flying objects for launching them, or monitoring their operating state):
 - (a) wireless remote control devices, or radio telemetry equipment, which is designed to have a data processing function stated in any of the following clauses:
 1. frame synchronization and error correction processing for radio telemetry data for monitoring the operation status of buses for flying objects to be used in outer space; or
 2. formatting processing for command data transmitted to a flying object to be used in outer space to control the buses for the flying object to be used in outer space;
 - (b) simulators specially designed to verify procedures for operating a flying object to be used in outer space;
- (v) liquid rocket propulsion system that has the components falling under the following item incorporated;
- (vi) components of liquid rocket propulsion systems which fall under any of the following sub-items:
 - (a) ultra low temperature cooling devices, Dewar vessels, heat pipes or other ultra low temperature devices, which are designed to be used in flying objects for use in outer space or for flying objects for launching them, and, which have a loss of liquid in an ultra low temperature condition is less than 30% per year;
 - (b) among ultra low temperature containers or closed cycle cooling systems whose temperature can be kept at minus 173 degrees centigrade or less, those which are designed to be used in flying objects to be used in outer space, flying objects for launching, or aircraft that are capable of cruising at a speed exceeding Mach 3;
 - (c) storage containers or supply systems for hydrogen slush;

- (d) turbine pumps or their components with a discharge pressure of more than 17.5 megapascals or gas generators or expander cycle turbine driving devices for those turbine pumps;
- (e) propulsion generators that have a thrust exceeding 10.6 megapascals, or their nozzles;
- (f) propellant storage unit that utilizes capillary action, or uses flexible bladders;
- (g) liquid fuel injection devices for which the area of each orifice is 0.114 square millimeters or less; or
- (h) among thrust chambers or exit cones that are integrally formed by using a composite material of carbon and carbon fibers, whose density exceed 1.4 grams per cubic centimeter, those for which the tensile strength is more than 48 megapascals;
- (vii) solid rocket propulsion systems that fall under any of the following sub-items:
 - (a) those whose total impulse exceeds 1.1 meganewtons seconds, or whose specific impulse is 2.4 kilonewton seconds per kilogram or more when the nozzle outlet pressure is the atmospheric pressure at the sea level in a state the pressure inside the combustor is brought to 7 megapascals;
 - (b) those in which mass fraction of a stage exceeds 88% and the propellant solid ratio exceeds 86%;
 - (c) those that has the components falling under the following item incorporated; or
 - (d) those for joining insulating materials and propellants, which use a direct bonding motor designing method to obtain a mechanical bonding strength that is greater than the strength of the propellant, or to use as a barrier against the chemical migration between the solid propellant and the insulating material of the motor case;
- (viii) components for solid rocket propulsion systems, which fall under any of the following sub-items:
 - (a) those for joining insulating materials and propellants, which use liners to obtain a mechanical bonding strength that is greater than the strength of the propellant, or to use as a barrier against the chemical migration between the solid propellant and the insulating material for the motor case;
 - (b) motor cases that use composite materials formed by the filament winding method, which have a diameter exceeding 0.61 meters, or with a structural efficiency ratio of more than 25 km;
 - (c) nozzles for which the thrust exceeds 45 kilonewtons, or the nozzle throat erosion rate is less than 0.075 millimeters per second;
 - (d) movable nozzle or secondary injection trust vector control device, which

- falls under any of the following clauses:
1. those for which the absolute value for the deflection area in the thrust vector exceeds 5 degrees;
 2. those for which the angular velocity in changing the thrust vector is greater than 20 degrees per second;
 3. those for which the angular acceleration in changing the thrust vector is greater than 40 degrees per second squared;
- (ix) hybrid rocket propulsion system that falls under either of the following sub-items:
- (a) those whose total impulse exceeds 1.1 meganewton seconds; or
 - (b) those whose thrust when the outlet is in a vacuum state exceeds 220 kilonewtons;
- (x) components for flying objects used for launching or their propulsion devices, or for flying objects to be used in outer space, which fall under any of the following sub-items:
- (a) components of flying objects used for launching (for components other than nose cones, limited to those that exceed 10 kilograms in weight), which fall under any of the following clauses:
 1. composite materials composed of the fiber falling under Article 4, item (xv), clause (e), or resins falling under item (xiii) or item (xiv), clause (b) of that Article;
 2. metal matrix composite materials that are reinforced by any of the following things:
 - i. substances falling under Article 4, item (xii);
 - ii. fibers falling under Article 4, item (xv); or
 - iii. aluminum compounds falling under Article 4, item (vii), sub-item (a);
 3. ceramic matrix composite materials falling under Article 4, item (xii);
 - (b) components of propulsion devices of flying objects for launching which are designed to be used for propulsion devices falling under either item (v) or (vii), or any of the preceding items, which use any of the following things:
 1. fibers falling under Article 4, item (xv), sub-item (e) or resins falling under item (xiii) or item (xiv), sub-item (b) of that Article;
 2. metal matrix composite materials reinforced by any of the following things:
 - i. substances falling under Article 4, item (xii);
 - ii. fibers falling under Article 4, item (xv); or
 - iii. aluminum compounds falling under Article 4, item (vii), sub-item (a);
 3. ceramic matrix composite materials falling under Article 4, item (xii);
 - (c) components for flying objects to be used in outer space, which actively control dynamic response or torsion of the structure ;
 - (d) among liquid pulse rocket engines whose thrust weight ratio is 1

kilonewton per kilogram or more, those for which the response time is less than 0.030 seconds:

- (x)-2 unmanned aircraft or its components or auxiliary equipment, which fall under the following sub-item (a) or (b):
 - (a) unmanned aircraft that is designed to make a controlled flight without depending on the pilot's sense of sight, which fall under any of the following clauses:
 - 1. one that falls under the following clauses i. and ii.:
 - i. one whose maximum cruising time is 30 minutes or more and less than 1 hour; and
 - ii. one capable of taking off in a gust of wind with a speed of 46.3 kilometers (25 knots) per hour or more and make a stable controlled flight;
 - 2. one whose maximum cruise time is 1 hour or more;
 - (b) components or auxiliary equipment of unmanned aircraft, which fall under any of the following clauses:
 - 1. Deleted
 - 2. Deleted
 - 3. those designed to convert manned aircraft into unmanned aircraft that fall under sub-item (a);
 - 4. air-breathing reciprocating engines or internal combustion rotary engines, designed or modified to propel unmanned aircraft at an altitude exceeding 15,240 meters;
- (xi) devices or tools (including molds) that fall under any of the following sub-items:
 - (a) devices that are for super alloys designed for unidirectional solidification or casting of single crystals;
 - (b) tools for casting made of refractory metal or ceramics which are designed for manufacturing blades, vanes, or tip shrouds for gas turbine engines, which fall under any of the following tools:
 - 1. cores;
 - 2. shells; or
 - 3. a combination of 1. or 2.;
 - (c) devices designed for super alloys which perform unidirectional solidification or additive manufacturing of single crystals;
- (xii) devices that perform real time control, measuring instruments (including sensors), or devices that automatically collect and analyze data, which fall under the following sub-items (a) and (b):
 - (a) those specially designed for developing gas turbine engines or their components; and
 - (b) those that use technologies (excluding programs) necessary for designing or manufacturing those falling under Article 25, paragraph (3), item (iii) or

- (iv);
- (xiii) devices for manufacturing brush seals for gas turbine engines whose tip peripheral speed exceeds 335 meters per second and are designed so that they can be operated at a temperature exceeding 500 degrees centigrade or their testing devices, or components;
- (xiv) tools for performing solid phase bonding of the wing part and disk part of gas turbine engines made of intermetallic compounds, super alloys, or titanium;
- (xv) devices designed to be used together with wind tunnels or devices that fall under any of the following clauses, which perform real time control, measuring instruments (including sensors), or devices that automatically collect and analyze data:
 - (a) wind tunnels that are capable of creating a velocity condition of Mach 1.2 or more;
 - (b) devices that are capable of simulating flow environments exceeding Mach 5;
 - (c) wind tunnels or devices which are capable of simulating the flow for a Reynolds number exceeding 25,000,000; provided, however, this excludes test models that are restricted to two-dimensional sections;
- (xvi) acoustic vibration testing devices that fall under all of the following sub-items (a) through (c):
 - (a) those whose sound pressure is greater than 160 decibels when the standard sound pressure is 20 micropascals;
 - (b) those with the rated output of 4 kilowatts or more; and
 - (c) those for which the temperature of the testing room exceeds 1,000 degrees centigrade;
- (xvii) devices for testing rocket motors by using a non-destructive testing technique;
- (xviii) converters that are designed so that they can directly measure the wall friction of a flow in which the temperature at the stagnation point exceeds 560 degrees centigrade;
- (xix) tools for manufacturing components that are used for the rotating parts of a gas turbine engine and manufactured by powder metallurgy, which are usable in the state a stress of 60% or more of the ultimate tensile strength is applied at a temperature of 600 degrees centigrade or more (excluding tools for manufacturing powder);
- (xx) devices for manufacturing the things falling under item (x)-2.

Article 13 (1) The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 14 (i) of the Appended Table 1 of the Export Order are to fall under either of the following items:

- (i) aluminum powder whose particles are globular, and, with a diameter of 60 micrometers or less, which has an aluminum purity of 99% or more;
 - (ii) iron powder with a particle diameter of 3 micrometers or less (limited to those manufactured using a method of reducing iron oxide using hydrogen), which has an iron purity of 99% or more.
- (2) The goods specified by Order of the Ministry of Economy, Trade and Industry referred to in row 14 (ii) of the Appended Table 1 of the Export Order are those that fall under any of the following items:
- (i) substances that will be the main components of gunpowder or explosive compounds, which fall under any of the following sub-items (including those that are co-crystallized):
 - (a) anidine triamine nitrate;
 - (b) titanium subhydride with a chemically correct mixture ratio of 0.65 or more and 1.68 or less;
 - (c) dinitroglycolyl;
 - (d) 3-nitro-1,2,4-triazole-5-one;
 - (e) Deleted
 - (f) Deleted
 - (g) hydroxylammonium nitrate;
 - (h) hydroxyl ammonium perchlorate;
 - (i) 2-(5-cyanotetrazolate) pentaamine cobalt (III) perchlorate;
 - (j) cis-bis (5-nitrotetrazolate) tetra amine cobalt (III) perchlorate;
 - (k) amino dinitrobenzofuroxan;
 - (l) diamino dinitrobenzofuroxane;
 - (m) bis (2,2,2-trinitro ethyl) nitramine; or
 - (n) dihydroxyl ammonium 5,5'-bistetrazole-1,1'-diolate (TKX);
 - (ii) substances that will be additives or precursors of gunpowder or explosive compounds, which fall under any of the following sub-items (including those that are co-crystallized):
 - (a) azide methyl methyl oxetane or its polymer;
 - (b) basic copper salicylate;
 - (c) lead salicylate;
 - (d) Deleted
 - (e) Deleted
 - (f) bis (2,fluoro-2,2-dinitroethyl) formal;
 - (g) bis (2-hydroxyethyl) glycol amide;
 - (h) bis (2-methyl aziridinyl) methyl amino phosphine oxide;
 - (i) 3,3-bis (azidomethyl) oxetane or its polymer;
 - (j) 3,3- bis (chloromethyl) oxetane;
 - (k) butadiene nitrile oxide;
 - (l) 1,2,3-butanetriol trinitrate;

- (m) dinitro azetidine tertiary butyl salt;
 - (n) high energy monomers that have a nitro group, azide group, nitrate group, nitraza group or difluoro amino group, a plasticizer, and a polymer;
 - (o) poly-2,2,3,3,4,4-hexafluoro pentane-1,5-diol formal;
 - (p) poly-2,4,4,4,5,5,6,6-heptafluoro-2-trifluoro methyl-3-oxaheptane-1,7-diol formal;
 - (q) derivatives of polymers of glycidyl azide;
 - (r) hexabenzylhexaazaisowurtzitane;
 - (s) ultrafine powdered ferric oxide with the surface area exceeding 250 square meters per gram, and, whose average diameter of particulars is 0.003 micrometers or less;
 - (t) beta-resorcylic acid lead or beta-resorcylic acid copper;
 - (u) lead stannate;
 - (v) lead maleate;
 - (w) lead citrate;
 - (x) chelate of beta lead resorcinatate or lead-copper lead salicylate;
 - (y) polymers of nitrate methyl methyl oxetane or 3-nitrate methyl-3-methyl oxetane;
 - (z) 3-nitraza-1,5-pentane diisocyanate;
 - (aa) coupling agents for organic metal which are additive for propellant;
 - (bb) polycyano difluoroamino ethylene oxide;
 - (cc) polymers of polyglycidyl nitrate or nitrate methyl oxylane;
 - (dd) polynitro ortho carbonate;
 - (ee) propylene imine;
 - (ff) tetraacetyl benzyl hexaazoisoultrane;
 - (gg) cyanoethylated polyamine (excluding those stated in Article 3, item (vii), sub-item (s)), or cyanoethylated polyamine salts;
 - (hh) cyanoethylated poly amine with glycidol added (excluding those stated in Article 3, item (vii), sub-item (r));
 - (ii) derivatives of tris-1-(2-methyl) aziridinyl phosphine oxide;
 - (jj) additives of 1,2,3-tris (1,2-bis (difluoro amine) ethoxy) propane or tris binoxypropane;
 - (kk) 1,3,5-trichlorobenzene;
 - (ll) 1,2,4-butane triol;
 - (mm) 1,3,5,7-tetraacetyl-1,3,5,7-tetraazocyclooctane;
 - (nn) 1,4,5,8-tetraazadecaline; or
 - (oo) polyepichlorohydrin, polyepichlorohydrin diol, or polyepichlorohydrin triol that has a low-molecular weight (meaning those with a molecular weight of 10,000 or less), and, has alcohol functional groups.
- (3) The goods with specifications prescribed by Order of the Ministry, Trade and Industry referred to in row 14 (iii) of the Appended Table 1 of the Export Order

are diesel engines with an output of 37,3 kilowatts or more for which the weight of the parts composed of non-magnetic materials is more than 75% of the total weight, or their components.

- (4) The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 14 (v) of the Appended Table 1 of the Export Order are those that fall under any of the following items:
- (i) closed-circuit type self-contained diving equipment, or their components;
 - (ii) semi-closed circuit type self-contained diving equipment, or their components; or
 - (iii) components of self-contained diving equipment which are designed to be used in converting open circuit type self-contained diving equipment to closed circuit self-contained diving equipment or semi-closed circuit self-contained diving equipment.
- (5) The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 14 (vii) of the Appended Table 1 of the Export Order are robots (excluding operating robots and sequence robots; the same applies below in this paragraph) or control devices or end effectors used for robots, which fall under either of the following items, or their components (excluding end effectors for robots):
- (i) those that are designed so that they can use pressure oil with the ignition point exceeding 566 degrees centigrade; or
 - (ii) those that are designed to prevent the effect of electromagnetic pulses.
- (6) The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 14 (ix) of the Appended Table 1 of the Export Order are to fall under any of the following items:
- (i) bromobenzyl cyanide;
 - (ii) chlorobenzal malononitrile;
 - (iii) chloroacetophenone;
 - (iv) dibenzo (b,f)-1,4-oxazabine;
 - (v) N-Nonanoylmorpholine;
 - (vi) diphenyl chloroarsine;
 - (vii) diphenyl amine chloroarsine (adamsite);
 - (viii) diphenyl cyanoarsine; or
 - (ix) equipment for scattering, protecting, detecting, or identifying substances that fall under any of the preceding items, or their components.
- (7) The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 14 (x) of the Appended Table 1 of the Export Order are devices specially designed to remove or dispose of improvised explosive devices, which fall under either of the following things, or their components or accessories:
- (i) those that are vehicles for which remote control is possible; or

- (ii) those that prevent the operation of improvised explosive devices by projectiles.
- (8) Electronic equipment designed to automatically detect or identify explosives, which detects traces of explosives by one of the methods among the methods of measuring the surface acoustic wave, ion mobility spectrometry, differential mobility spectrometry, or mass spectrometry (limited to one capable of detecting vapor with a density of less than 1 ppm, or solid or liquid with a mass of less than 1 mg, and excluding one designed for the purpose of exclusively using as laboratory equipment, or designed to detect explosives without having the subject that passing through it on foot to have any contact with it).

Article 14 The goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry referred to in row 15 of the Appended Table 1 of the Export Order are those that fall under any of the following items:

- (i) molded products that are manufactured using fibers falling under Article 4, item (xv), sub-item (c) or (d) , with a matrix of organic matters;
- (ii) radio wave or infrared ray absorbers, or conductive polymers, which fall under any of the following sub-items:
 - (a) those specially designed to be used as radio wave absorbers which have a frequency of more than 200 megahertz and less than 3 terahertz; provided, however, that this excludes those falling under any of the following absorbers which are not magnetic materials having absorption performance when mixed into coating materials:
 1. non-magnetic fibrous absorbers;
 2. absorbers that do not absorb radio waves through magnetic loss, with entrance face that is not planar;
 3. planar absorbers that fall under all of the following clauses i. through iii.:
 - i. absorbers made of any of the following materials:
 - a. materials that use plastic foams containing carbon, or organic matters, which fall under the following clauses 1 and 2:
 - 1 those that have a radio wave reflectance of 5% or more of the electric wave reflectance of a metal plate measured at a frequency other than the frequency range of plus or minus 15% centered on the radio wave frequency in which the absorption rate is maximum;
 - 2 those that cannot be used at a temperature exceeding 177 degrees centigrade;
 - b. materials that use ceramics which fall under the following clauses 1 and 2:
 - 1 those that have a radio wave reflectance of 20% or more of the electric wave

- reflectance of a metal plate measured at a frequency other than the frequency range of plus or minus 15% centered on the radio wave frequency in which the absorption rate is maximum;
- 2 those that cannot be used at a temperature exceeding 527 degrees centigrade;
- ii. absorbers with a tensile strength of less than 7 meganewtons per square meter;
 - iii. absorbers with a compressive strength of less than 14 meganewtons per square meter;
4. planar absorbers made of sintered ferrites which fall under the following clauses i. and ii.:
- i. those with the specific gravity exceeding 4.4;
 - ii. those that cannot be used at a temperature exceeding 275 degrees centigrade;
5. among planar absorbers manufactured from plastic materials of open-cell foams which have a density of 0.15 grams per cubic centimeter or less, those that do not absorb radio waves through magnetic loss;
- (b) among those specially designed to be used as absorbent for near-infrared rays whose wavelength is more than 810 nanometers and less than 2,000 nanometers (meaning those whose frequency is more than 150 terahertz and less than 370 terahertz), those that do not transmit visible light;
- (c) among those that are conductive polymers with volume conductivity exceeding 10 kilosiemens per meter, or surface resistivity of less than 100 ohms, those that are composed of any of the following polymers:
1. polyaniline;
 2. polypyrrole;
 3. polythiophene;
 4. polyphenylene vinylene; or
 5. polyethylene vinylene;
- (iii) neptunium 237 separated beforehand with a weight exceeding 1 gram;
- (iv) Deleted
- (v) digitally controlled radio receivers whose number of channels exceeds 1,000 (excluding those designed for the use in cellular radio communication for civilian use), or their components or accessories, which fall under all of the following sub-items (a) through (c):
- (a) those capable of automatically scanning the electromagnetic spectrum;
 - (b) those capable of specifying the type of received signals and transmitted waves; and
 - (c) those for which the time required for channel switching is less than 1 millisecond;
- (v)-2 devices preventing detonation of improvised explosive devices or their

- auxiliary equipment, which fall under either of the following sub-items:
- (a) radio transmitting device designed to explode improvised explosive devices before they reach their target, or to prevent their explosion (excluding those that fall under Article 8, item (v)-3); or
 - (b) devices that is used together with devices stated in sub-item (a) and that uses technology designed to be able to maintain radio lines with the same frequency as that of the device;
- (vi) among underwater detection equipment that uses sound waves (including ultrasonic waves) or their components, those that fall under any of the following sub-items:
- (a) hydrophones that fall under any of the following clauses:
 1. those that incorporate flexible sensors;
 2. those that incorporate flexible sensors with a diameter or length of less than 20 millimeters conjoined at intervals of less than 20 millimeters;
 3. those that have any of the following detection elements:
 - i. optical fibers;
 - ii. piezoelectric polymer membranes (excluding vinylidene fluoride resin and their copolymers);
 - iii. flexible piezoelectric composite materials;
 - iv. piezoelectric single crystals of lead magnesium niobate-lead titanate (those that have grown from solid solution);
 - v. piezoelectric single crystals of lead indium niobate-lead magnesium niobate-lead titanate (those that have grown from solid solutions);
 4. those that have the function of correcting the effect of acceleration and are designed to be used at water depths exceeding 35 meters; or
 5. those that are designed so that they can be used at water depths exceeding 1,000 meters and so that the sound pressure sensitivity at 4 kilohertz or less will exceed minus 230 decibels;
 - (b) towed hydrophone arrays that fall under any of the following clauses:
 1. those for which the hydrophone group interval (meaning the distance between the centers of two adjacent hydrophone groups; the same applies below in this item) is less than 12.5 meters, or those for which the interval can be changed to less than 12.5 meters;
 2. those designed so that they can be used at water depths exceeding 35 meters, or those that can be so modified;
 3. those that have a heading sensor falling under Article 9, item (i), sub-item (b), 3.;
 4. those that have array hoses reinforced in the long axis direction;
 5. those with a diameter of less than 40 millimeters;
 6. Deleted
 7. those that have a hydrophones falling under sub-item (a) or Article 9,

- item (i), sub-item (b), 1.; or
- 8. underwater sound wave sensors referred to in Article 9, item (i), sub-item (b), 6.;
- (c) among signal processors that are designed for towed hydrophone arrays and for which the user can rewrite the program, those that are capable of performing real-time processing or correlation of the time domain or the frequency domain (including spectral analysis, digital filtering, or beam formation);
- (d) hydrophone arrays for the seabed or harbor cables, which fall under any of the following clauses:
 - 1. those that have hydrophones falling under clause (a) or Article 9, item (i), sub-item (b), 1. incorporated;
 - 2. those capable of processing by multiplexing hydrophone group signals, which fall under the following clauses i. and ii.:
 - i. those designed so that they can be used at water depths exceeding 35 meters, or have a water depth measuring device that can be adjusted or removed so that they can be used at water depths exceeding 35 meters; and
 - ii. those that can be converted into towed hydrophone arrays;
- (e) among signal processors designed for the seabed or harbor cable systems which the user can rewrite the program, those that are capable of performing real-time processing or correlation of the time domain or the frequency domain (including spectrum analysis, digital filtering, or beam formation);
- (f) among underwater detection equipment that has transmission function with an operating frequency range of 30 hertz or more and 2 kilohertz or less, those with the sound pressure level exceeding 210 decibels;
- (vii) solid optical detectors designed for space use with the maximum sensitivity in the range of more than 1,200 nanometers and 30,000 nanometers or less;
- (viii) pulse radar cross-section area measuring devices with pulse width transmitted of 100 nanoseconds or less, or their components;
- (ix) untethered submersibles that fall under any of the following sub-items:
 - (a) manned submersibles that fall under any of the following clauses:
 - 1. submersibles designed to be capable of autonomous underwater cruise, which has an unloading capability referred to in the following clauses i. and ii.:
 - i. 10% of the weight in air of the submersible or more; and
 - ii. 15 kilonewtons or more;
 - 2. those designed to be used at water depths exceeding 1,000 meters;
 - 3. those that fall under the following clauses i. and ii.:
 - i. those designed so that they can autonomous underwater cruise

- continuously for 10 hours or more; and
- ii. those that can travel for a distance of 50 nautical miles or more;
- (b) unmanned submersibles that fall under any of the following clauses:
 1. those that are designed to be capable of automatically determining their course in all types of topography;
 2. those that are capable of transmitting and receiving data or commands by sound waves; or
 3. those that are capable of transmitting and receiving data or commands at a distance exceeding 1,000 meters by the optical transmission method;
- (x) soundproofing devices or magnetic axis bearings that can be used for vessels whose displacement is 1,000 tons or more, which are designed to be used in transmission gears;
- (xi) ramjet engines, scramjet engines or combined cycle engines, or their components.

(Things Related to the Appended Table of the Foreign Exchange Order)

Article 15 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 2 (i) of the Appended Table of the Foreign Exchange Order (referred to below as "Foreign Exchange Order") is one that falls under any of the following items:

- (i) the technology related to designing, manufacturing, or using the goods that fall under any of Article 1, items (i) through (v), item (vi) (limited to the devices for the mold processing of nuclear fuel materials), item (vii), item (viii), sub-item (a), item (x), sub-item (a), item (x)-2, or item (x)-3;
- (ii) among programs designed to be used for goods that fall under any of Article 1, item (viii), sub-item (b), item (xi), item (xvii), item (xviii), sub-items (b) through (f), item (xix), item (xx), item (xxi), sub-item (a) or (b), 1. or 3. or item (xxxiv) or item (xxxv), or technology (excluding programs) related to designing, manufacturing, or using those programs, the technology necessary to attain or exceed the functions or characteristics of those goods;
- (iii) among programs designed for designing, manufacturing, or using the goods that fall under Article 1, item (xiv), or technology (excluding programs) related to designing, manufacturing, or using those programs, the technology necessary to attain or exceed the functions or characteristic of those goods (excluding programs for producing part programs that generate numerical-control codes, which cannot directly use devices for processing various types of components);
- (iv) among technology (excluding programs) related to designing, manufacturing, or using the goods that fall under any of Article 1, item (viii), sub-item (b), item (ix), item (x), sub-item (b), item (xi), item (xiv), items (xvii) through (xxiv), items (xxvi) through (xxviii), items (xxx) through (lii), items

- (liv) through (lviii), or items (lx) through (lxii), the technology necessary to attain or exceed the functions or characteristics of those goods;
 - (v) technology (excluding programs) related to designing, manufacturing, or using the goods that fall under any of Article 1, item (vi) (limited to devices for separating lithium isotopes), item (xxv), item (xxix), item (liii), or item (lix);
 - (vi) programs, or encryption keys or decryption codes, which are designed to fall under Article 1, item (viii), sub-item (b), by expanding the performance characteristics of frequency changers (excluding those that fall under Article 1, item (viii), sub-item (b)), or deactivating their functions;
 - (vii) programs designed to expand or release the performance characteristics of frequency changers that fall under Article 1, item (viii), sub-item (b);
 - (viii) programs, or encryption keys or decryption codes, which are designed to fall under Article 1, item (xliv), by expanding the performance characteristics of cameras capable of high-speed shooting, or their components (excluding those that fall under Article 1, item (xliv)), or deactivating their functions;
 - (ix) programs, or encryption keys or decryption codes, which are designed to expand performance characteristics of cameras capable of high-speed shooting, or their components (limited to those that fall under Article 1, item (xliv)), or deactivating their functions.
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 2 (ii) of the Appended Table of the Foreign Exchange Order is, among the technology related to programs that enable a device to function as numerical control equipment for machine tools with five or more axes capable of contour control, or the technology (excluding programs) for designing, manufacturing, or using those programs, the technology necessary for enabling the numerical control of five or more axes capable of contour control.

Article 15-2 The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (3), (ii) of Appended Table of the Foreign Exchange Order is, among the technology related to designing, manufacturing, or using the goods that fall under Article 2, paragraph (2) or (3), the technology necessary to attain or exceed the functions or characteristics of those goods.

Article 15-3 The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 3-2 (ii) of the Appended Table of the Foreign Exchange Order is, among the technology related to designing, manufacturing, or using the goods that fall under Article 2-2, paragraph (2), the technology necessary to attain or exceed the functions or characteristics of those goods.

Article 16 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 4 (i) of the Appended Table of the Foreign Exchange Order is, among the technology related to designing, manufacturing, or using the goods that fall under Article 3, the technology that falls under any of the following clauses which is necessary to attain or exceed the functions or characteristics of those goods:

- (i) programs designed for using rockets capable of transporting a payload of 500 kilograms or more over a distance of 300 kilometers or more or devices or tools for manufacturing the goods that fall under Article 3, item (ii), sub-item (b) (including molds; the same applies below in this Article) or their testing device or their components, or the goods that fall under either of sub-item (a), 2. or 3. of that item, or technology (excluding programs) related to designing, manufacturing, or using those programs;
- (i)-2 programs designed for operating, maintaining or inspecting the goods falling under any of Article 3, item (ii), sub-item (b), 4. through 6., or technology (excluding programs) related to designing, manufacturing, or using those programs;
- (ii) programs designed for using rockets capable of transporting a payload of 500 kilograms or more over a distance of 300 kilometers or more, which can adjust the functions of two or more goods (limited to those that fall under Article 3, item (ii), sub-item (a), or (b)) or technology (excluding programs) related to designing, manufacturing, or using those goods;
- (iii) programs designed for designing, manufacturing, or using devices or tools or testing devices for manufacturing the goods that fall under Article 3, item (ii), sub-item (a), or their components, or technology (excluding programs) related to designing, manufacturing, or using those programs;
- (iv) technology (excluding programs) related to designing, manufacturing, or using rockets capable of transporting 500 kilograms or more of payload over a distance of 300 kilometers or more, or devices or tools or testing devices for manufacturing those rockets, or their components, or the goods falling under Article 3, item (ii);
- (v) programs designed for using tools or testing devices for manufacturing the goods falling under any of Article 3, item (iii), sub-items (a) through (i) or their components, or goods falling under any of sub-item (a), sub-item (b), sub-item (g), sub-item (h) or sub-item (j) of that item, or items (iv) through (vi), items (xvii) through (xix), item (xxi), sub-item (a), item (xxii), item (xxii)-2, or item (xxv), or technology (excluding programs) related to designing, manufacturing, or using those programs;
- (v)-2 programs designed for operating, maintaining, or inspecting the goods that fall under Article 3, item (xi), or technology (excluding programs)

- related to designing, manufacturing, or using those programs;
 - (vi) technology (excluding programs) related to designing, manufacturing, or using rockets or unmanned aircraft that are capable of transporting a payload over a distance of 300 kilometers or more (excluding those capable of transporting a payload of 500 kilograms or more) or the goods falling under any of Article 3, items (iii) through (vi) or items (vii) through (xxvii);
 - (vii) technology (excluding programs) related to programs designed for designing the goods that fall under Article 3, item (iii), sub-item (b), sub-item (c), sub-item (e) or sub-item (f), or item (iv), or related to designing, manufacturing, or using those programs;
 - (viii) programs designed for operating, maintaining, or inspecting the goods that fall under any of Article 3, items (viii) through (x)-2;
 - (ix) programs designed for designing, manufacturing, or using goods that fall under any of Article 3, items (xiii) through (xv) or item (xxvi), or technology (excluding programs) related to designing, manufacturing, or using those programs;
 - (x) programs designed for designing or manufacturing the goods that fall under Article 3, item (xvii), sub-item (a) or (f) or item (xvii)-2, or technology (excluding programs) related to designing, manufacturing, or using those programs;
 - (xi) programs designed for designing rockets capable of transporting a payload over a distance of 300 kilometers or more, the goods that fall under Article 3, item (ii), sub-item (a) or the goods that fall under sub-item(b) of that item, or technology (excluding programs) for designing, manufacturing, or using those programs;
 - (xii) programs designed for using rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more (for programs designed to use unmanned aircraft, including those designed or modified for operating a manned aircraft as an unmanned one), which are capable of adjusting the functions of two or more goods (limited to those falling under Article 3, item (ii), sub-item (a) or (b)) (excluding those falling under item (ii));
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (4), (ii) of Appendix Table of the Foreign Exchange Order is the technology related to designing avionics device for rockets or their components, which is for preventing the effects of electromagnetic pulses or electromagnetic interference (excluding programs).
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (4), (iii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) technology (excluding programs) for integrating the airframe, propulsion

- device, and lift control surfaces to optimize the aerodynamic performance of an unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more during the flight;
- (ii) technology (excluding programs) for integrating the data related to flight control, guidance or propulsion into the flight control device, to optimize the orbit of a rocket capable of transporting a payload over a distance of 300 kilometers or more;
 - (iii) programs that enable the determination of the position of an airframe over its entire route during flight by processing the data recorded during flight (limited to those that can be used for rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more) or technology (excluding programs) related to designing, manufacturing, or using those programs.
- (4) The technology specified by Order of Ministry of Economy, Trade and Industry referred to in row 4 (iv) of the Appended Table of the Foreign Exchange Order is technology related to the use of autoclaves, and the data or procedures for specifying the environment inside the autoclaves (limited to those for using the goods that fall under Article 3, item (xvi)).
- (5) The technology specified by Order of Ministry of Economy, Trade and Industry referred to in row 4 (v) of the Appended Table of the Foreign Exchange Order is technology used to fix substances formed by thermal decomposition of source gas (limited to those performed in the temperature range from 1,300 degrees centigrade or more to 2,900 degrees centigrade or less, and, the range of absolute pressure of 130 pascals or more to 20,000 pascals or less) onto base materials.

Article 17 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 5 (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) programs designed for designing or manufacturing the things that fall under any of Article 4, items (iv) through (vi);
 - (ii) technology (excluding programs) necessary for designing or manufacturing the things that fall under Article 4, item (xii), sub-item (c) or (d), or item (xv), sub-item (c) or (d);
 - (iii) technology (excluding programs) necessary for designing or manufacturing the things that fall under any of Article 4, items (ii) through (xvi) (excluding those falling under the preceding item).
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 5 (ii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) programs designed for using a thing that falls under any of Article 4, items

- (iv) through (vi);
 - (ii) technology (excluding programs) related to the use of a thing that falls under Article 4, item (ii) or item (xii), sub-item (c) or (d) or Article 14, item (i) (limited to those related to repairs).
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (5), (iii) of the Appended Table of the Foreign Exchange Order is technology (excluding programs) for designing or manufacturing ceramic powder or ceramics (excluding composites) that fall under any of the following items:
- (i) ceramic powder that falls under all of the following sub-items (a) through (c):
 - (a) those composed of any of the following substances:
 1. single or composite oxides of zirconium, and composite oxides of silicon or aluminum;
 2. single nitrides of boron (limited to cubic crystalline boron);
 3. single or composite carbides of silicon or boron;
 4. single or composite nitrides of silicon;
 - (b) those in which the ratio of the content of metal impurities to the total weight is less than the following numerical values:
 1. 0.1% for single oxides or single carbides;
 2. 0.5% for composite compounds or single nitrides;
 - (c) those that fall under any of the following clauses:
 1. among zirconium oxides that have a mean value of the particle diameter of 1 micrometer or less, those in which the total weight of particles with a diameter exceeding 5 micrometers is 10% or less of the total weight;
 2. those that have a mean value of the particle diameter of 5 micrometers or less, in which the total weight of particles with a diameter exceeding 10 micrometers is 10% or less of the total weight (excluding those that fall under clause 1.);
 - (ii) ceramics made of substances referred to in the preceding item (excluding grinding materials).
- (4) The technology specified by Order of the Ministry of Economy, Trade and Industry in row 5 (iv) of the Appended Table of the Foreign Exchange Order is technology (excluding programs) for designing or manufacturing polybenzothiazole or polybenzoxazole.
- (5) The technology specified by Order of the Ministry of Economy, Trade and Industry in row 5 (v) of the Appended Table of the Foreign Exchange Order is technology (excluding programs) for designing or manufacturing rubber-like fluorine compounds containing vinyl ether monomers.
- (6) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (5), (vii) of the Appended Table of the Foreign

Exchange Order is one that falls under any of the following items:

- (i) programs for designing things falling under Article 4, item (xii), sub-item (c) or (d), item (xv), sub-item (c) or (d), or Article 14, item (i);
 - (ii) programs for designing composite materials with a matrix of organic matters, metals, or carbon (excluding those falling under the preceding item).
- (7) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (5), (viii) of the Appended Table of the Foreign Exchange Order is technology (excluding programs) related to the use of radio wave absorbers or conductive polymers that fall under Article 14, item (ii) (limited to those related to installations, maintenances, or repairs).

Article 18 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (6), (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) technology (excluding programs) necessary for designing or manufacturing things that fall under any of the following sub-items:
 - (a) things that fall under any of Article 5, item (ii), or sub-item (a) or sub-item (b), clause 1. or 2. of that item, for which the repeatability of unidirectional positioning of any one or more straight axes is 0.0009 millimeters or less; or
 - (b) things that fall under any of Article 5, item (ii), sub-item (b), 3. or sub-item (d), item (iii), or item (v);
 - (ii) beyond what is stated in the preceding item, technology (excluding programs) necessary for designing or manufacturing the goods that fall under Article 5;
 - (iii) programs designed for designing or manufacturing the things falling under any of the following sub-items, or technology (excluding programs) necessary for designing those programs:
 - (a) things that fall under any of Article 5, item (ii), sub-item (a), or sub-item (b), clause 1. or 2. of that item, for which the repeatability of unidirectional positioning of any one or more straight axes is 0.0009 millimeters or less; or
 - (b) things that fall under any of Article 5, item (ii), sub-item (b), 3. or sub-item (d), item (iii), or item (v);
 - (iv) beyond what is stated in the preceding item, programs designed for designing or manufacturing the goods that fall under Article 5, or the technology (excluding programs) necessary for designing those programs.
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 6 (ii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) programs designed for the use of the things that fall under any of Article 5,

- item (i), sub-item (c), item (ii), item (iii), or items (v) through (xi);
 - (ii) programs designed or modified to operate the things that fall under Article 5, item (iv), which convert optical designs, size of a workpiece, and material removal functions to numerical control commands in order to process workpieces into arbitrary shapes;
 - (iii) technology (excluding programs) necessary for designing programs stated in the preceding two items.
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 6 (iii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) programs that enable a device to function as numerical control equipment, which have five or more axes capable of controlling contour, or technology (excluding programs) necessary for designing those programs;
 - (ii) Deleted
 - (iii) Deleted
 - (iv) technology (excluding programs) related to designing programs for integrating an expert system that supports decision-making into a numerical control equipment; or
 - (v) non-electronic substrate coating technology using the coating method stated in column 2 of the Appended Table 3, related to the coatings stated in column 4 of that Table applied to base materials stated in column 3 of that Table (excluding programs).
- (4) The technology specified by Order of Ministry of Economy, Trade and Industry referred to in row 6 (iv) of the Appended Table of the Foreign Exchange Order is the technology (excluding programs) related to designing of tools for processing metals (including molds) by super-plastic molding, diffusion bonding, or direct pressure hydraulic pressing.
- (5) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 6 (v) of the Appended Table is technology (excluding programs) related to designing or manufacturing hydraulic stretch molding machines for manufacturing aircraft materials (including their molds).

Article 19 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 7 (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) technology (excluding programs) necessary for designing or manufacturing the things that fall under Article 6, item (ii), sub-item (c), clause 1., v. or vi, clause 2., iii., sub-item (d), clause 1., v. or vi., clause 2., iii. or iv., or item (xvi), sub-item (b);
- (ii) technology (excluding programs) necessary for designing or manufacturing the things that fall under Article 6 (excluding those falling under item (ii),

- sub-item (c), clause 1., v., or vi., clause 2., iii, sub-item (d), clause 1., v. or vi., clause 2. iii. or iv., or item (xvi), sub-item (b) of that Article), which do not fall under any of the following sub-items:
- (a) technology necessary for manufacturing the things that fall under item (xvi)-2 of that Article;
 - (b) technology necessary for designing or manufacturing integrated circuits that fall under any of item (i), sub-items (c) through (k) of that Article, which fall under the following clauses 1. and 2.:
 - 1. those whose minimum line width is 0.130 micrometers or more; and
 - 2. those that have a multilayered structure (limited to those in which the number of metal layers is three or less);
 - (c) process design kits (excluding those containing a library that implements a function or technology related to the goods falling under any of items (i) through (viii)-4 of that Article);
 - (iii) programs designed for designing or manufacturing things that fall under Article 6, item (xvi), sub-item (b);
 - (iv) programs designed for designing the things that fall under Article 6, item (xvi)-2;
 - (v) programs designed for designing or manufacturing the things that fall under Article 6 (excluding those that fall under any of the preceding two items or item (i) or items (xviii) through (xxii) of that Article).
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 7 (ii) of the Appended Table of the Foreign Exchange Order is programs designed for the use of the things that fall under any of Article 6, item (xvii), sub-item (a), sub-item (b), sub-item (e), sub-item (f), or sub-item (j).
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 7 (iii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) computational lithography programs specially designed for designing patterns for masks or reticles for devices used to manufacture integrated circuits using extreme ultraviolet light;
 - (ii) technology (excluding programs) related to designing or manufacturing an integrated circuit base board whose insulators are made of silicon dioxide, which has a silicon-on-insulator structure;
 - (iii) technology (excluding programs) necessary for designing or manufacturing cores of microprocessors, microcomputers, or microcontrol device with the bit count of the access width of their logic operation unit of 32 or more, which fall under any of the following sub-items:
 - (a) vector arithmetic unit that are designed to simultaneously perform more than two vector calculation processing of floating-point numbers;

- (b) those designed to perform more than four 64bit or more calculation processing of floating-point numbers per cycle;
- (c) those designed to perform more than eight 16bit fixed-point product-sum operation processing of fixed-point numbers per cycle;
- (iv) programs specially designed to restore microcomputers or microprocessors to a normal status within 1 millisecond after an interruption due to electromagnetic pulses or electrostatic discharge without losing operational continuity;
- (v) among technologies for slicing, grinding, and polishing the surface of a silicon wafer with a diameter of 300 millimeters whose exclusion area of the periphery of the wafer is 2 mm or less, the technology (excluding programs) necessary for achieving the flatness of 20 nanometers or less in any area divided into rectangles with a length of 26 millimeters and a width of 8 millimeters;
- (vi) ECAD programs specially designed for designing integrated circuits that have a structure of a gate-all-around field-effect transistor (GAAFET), which fall under any of the following sub-items:
 - (a) programs specially designed for implementing the register transfer level (RTL) to GDSII or a database file equivalent to GDSII;
 - (b) programs specially designed for optimizing power consumption for data processing in the integrated circuit to be designed, or optimizing the time required for transferring data.
- (4) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (7), (iv) of the Appended Table of the Foreign Exchange Order is technology (excluding programs) related to designing or manufacturing electronic elements that use superconductive materials.
- (5) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 7 (v) of the Appended Table of the Foreign Exchange Order is to fall under any of the following items:
 - (i) Deleted
 - (ii) technology (excluding programs) related to designing or manufacturing vacuum microelectronics devices;
 - (iii) technology (excluding programs) related to designing or manufacturing hetero-junction semiconductor devices (excluding high electron mobility transistors or hetero-junction bipolar transistors whose operating frequency is less than 31.8 gigahertz);
 - (iv) technology (excluding programs) related to designing or manufacturing substrates used as components of electronic devices that use diamond, silicon carbide, or gallium oxide;
 - (v) technology (excluding programs) related to designing or manufacturing vacuum electronic devices whose operating frequency is 31.8 gigahertz or

more (including klystrons and traveling wave tubes, and their derivatives).

Article 20 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 8 (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items (excluding technology falling under items (i) through (vi) (excluding programs) and is related to disclosure of security vulnerability or to response to cyber attacks):

- (i) technology (excluding programs) necessary for designing or manufacturing the things that fall under Article 7, item (i), sub-item (b) or item (iii), sub-item (b) of that Article;
- (ii) beyond what is stated in the preceding item, technology (excluding programs) necessary for designing or manufacturing the goods that fall under the items of Article 7;
- (iii) programs designed for designing or manufacturing the things that fall under Article 7, item (i), sub-item (b) or item (iii), sub-item (b) of that Article, or technology (excluding programs) necessary for designing or manufacturing those programs;
- (iv) technology (excluding programs) necessary for the use of the programs referred to in the preceding item;
- (v) beyond what is stated in item (iii), programs designed for designing or manufacturing the goods that fall under the items of Article 7, or technology (excluding programs) necessary for designing, manufacturing, or using those programs;
- (vi) technology (excluding programs) necessary for the use of the things that fall under Article 7;

(2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 8 (ii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items (excluding technology that falls under items (iii) through (vii) (excluding programs) and is related to disclosure of security vulnerability or to addressing cyber attacks):

- (i) technology (excluding programs) necessary for designing or manufacturing digital computers that fall under any of the following sub-items:
 - (a) those whose adjusted peak performance is more than 15 weighted teraFLOPS and 16 weighted teraFLOPS or less; or
 - (b) those whose adjusted peak performance is more than 16 weighted teraFLOPS and 70 weighted teraFLOPS or less;
- (ii) technology (excluding programs) necessary for designing or manufacturing components that are designed to improve the functions of digital computers, which falls under technology that achieves an adjusted peak performance of more than 15 weighted teraFLOPS and 70 weighted teraFLOPS or less by

- aggregating calculation elements;
- (iii) programs designed for designing or manufacturing digital computers falling under any of the following sub-items, or technology (excluding programs) necessary for designing or manufacturing those programs:
 - (a) those whose adjusted peak performance is more than 15 weighted teraFLOPS and 16 weighted teraFLOPS or less; or
 - (b) those whose adjusted peak performance is more than 16 weighted teraFLOPS and 70 weighted teraFLOPS or less;
- (iv) technology (excluding programs) necessary for the use of the programs referred to in the preceding item;
- (v) programs designed for designing or manufacturing components that are designed to improve the functions of digital computers, which fall under programs that achieve an adjusted peak performance of more than 15 weighted teraFLOPS and 70 weighted teraFLOPS or less, or technology (excluding programs) necessary for designing, manufacturing, or using those programs;
- (vi) programs designed or modified to create, command and control, or distribute intrusion software (among those that are specially designed to update or improve programs and operate only when they obtain permission from the owner or administrator of the system that receives the program, excluding those that are designed not to change the program to be updated or improved to the program falling under this item or an intrusion software), or technology (excluding programs) necessary for designing, manufacturing, or using those programs;
- (vii) technology (excluding programs) necessary for designing intrusion software;

Article 21 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 9 (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) technology (excluding programs) necessary for designing or manufacturing the things that fall under Article 8, item (ii), sub-item (a), 2.;
- (ii) technology necessary for designing or manufacturing the things that fall under any of Article 8, item (i), item (ii) or items (iv) through (v)-5 (excluding programs and things that fall under the preceding item);
- (ii)-2 technology (excluding programs) necessary for designing or manufacturing the things that fall under any of Article 8, items (ix) through (xii) (excluding those that fall under item (xi), sub-item (b) of that Article);
- (iii) technology (excluding programs) necessary for the use of the things that fall under any of Article 8, items (ix) through (xii) (excluding those that fall under item (xi), sub-item (b) of that Article);

- (iv) technology (excluding programs) necessary for the use (excluding those related to operation) of things that fall under any of Article 8, item (i), item (ii), or items (iv) through (v)-5;
- (v) programs designed for designing or manufacturing the things that fall under Article 8, item (ii), sub-item (a), 2.;
- (vi) programs designed or modified for designing or manufacturing the things that fall under any of Article 8, item (i), item (ii), or items (iv) through (v)-5 (excluding those that fall under the preceding item);
- (vii) programs designed or modified for designing or manufacturing the things that fall under any of Article 8, items (ix) through (xi), sub-item (a), or item (ix) of this paragraph;
- (vii)-2 programs designed or modified for designing or manufacturing the things that fall under Article 8, item (xi), sub-item (b), or item (ix)-2 of this paragraph;
- (viii) programs designed or modified for using the things that fall under any of Article 8, item (i), item (ii), or items (iv) through (v)-5;
- (viii)-2 programs designed or modified for using the things that fall under any of Article 8, items (ix) through (xi), sub-item (a), or item (ix) of this paragraph;
- (viii)-3 programs designed or modified for using the things that fall under Article 8, item (xi), sub-item (b), or item (ix)-2 of this paragraph;
- (ix) programs that have functions equivalent to those of the goods falling under any of Article 8, item (ix), sub-item (a) or sub-items (c) through (e), item (x) or (xi), sub-item (a), those that are for realizing those functions, or those that are capable of simulating those functions (for those concerning Article 8, item (ix), sub-item (a) or sub-items (c) through (e), excluding, among those using only encryption standards that are opened to the public or for commercial use, those whose functions are limited to those related to operation, management, or maintenance);
- (ix)-2 programs that have functions equivalent to those of the goods falling under Article 8, item (xi), sub-item (b), that are for realizing the functions, or that are capable of simulating the functions (excluding intrusion software);
- (x) Deleted
- (xi) technology (excluding programs) necessary for designing or manufacturing the programs referred to in item (v);
- (xi)-2 technology (excluding programs) necessary for the use of the programs referred to in item (v) (excluding those related to operation);
- (xii) technology (excluding programs) necessary for designing or manufacturing the programs referred to in item (vii), item (viii)-2, or item (ix);
- (xii)-2 technology (excluding programs) necessary for the use of the programs referred to in item (vii), item (viii)-2, or item (ix);

- (xiii) technology (excluding programs) necessary for designing, manufacturing, or using the programs referred to in item (vi) or (viii) (excluding those related to operation);
 - (xiv) Deleted
 - (xv) Deleted
 - (xvi) technology (excluding programs) that has the functions falling under Article 8, item (ix), sub-item (b) which activates the encryption function of certain goods or programs only by using the means of activating the encryption function;
 - (xvii) programs that have the functions falling under Article 8, item (ix), sub-item (b) which activate the encryption function of certain goods or programs only by using the means of activating the encryption function;
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 9 (ii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) Deleted
 - (ii) programs designed to provide the functions equivalent to those of goods that fall under any of Article 8, item (i), item (ii), items (iv) through (vii), or item (viii)-2;
 - (iii) Deleted
 - (iii)-2 programs for designing telecommunication transmission equipment or electronic changers that fall under sub-item (a), 1. or 5., or sub-item (d), 1., or technology (excluding programs) necessary for designing or manufacturing the things falling under any of the following sub-items:
 - (a) Deleted
 - (b) those using laser oscillators that fall under any of the following clauses:
 1. those that utilize laser light having a wavelength exceeding 1,750 nanometers;
 2. Deleted
 3. Deleted
 4. those that use light wavelength multiplex technology and for which the interval of optical carrier waves is less than 100 gigahertz;
 5. those that use an analog transmission method whose bandwidth exceeds 2.5 gigahertz (excluding devices for TV broadcasting (including cable TV broadcasting));
 - (c) those that have an optical switching function for which the switching time of optical signals is less than 1 millisecond;
 - (d) wireless transmitters or wireless receivers that fall under any of the following clauses:
 1. those that use quadrature amplitude modulation technology that exceeds the value of 1,024;

2. those that can be used at a frequency exceeding 31.8 gigahertz (excluding those that are designed to be used at frequency bands allotted for radio communications by the International Telecommunication Union (excluding the frequency bands allotted for radio determination));
 3. among those that can be used within a frequency range of 1.5 megahertz or more and 87.5 megahertz or less and use adaptive interference signal suppression technology, those that are designed to suppress an interfering signal at a level exceeding 15 decibels;
- (e) Deleted
- (f) those that are designed to be used exclusively in mobile bodies, which fall under the following clauses 1. and 2.:
1. those that can be used at a light wavelength of 200 nanometers or more and 400 nanometers or less;
 2. those used in local area networks;
- (iv) Deleted
- (v) technology (excluding programs) necessary for designing or manufacturing telecommunication transmission equipment designed to be mounted on artificial satellites;
- (vi) technology (excluding programs) related to designing or using communication technology using lasers that automatically receives or tracks signals, and, is capable of communicating outside the atmosphere or under water;
- (vii) Deleted
- (viii) Deleted
- (ix) Deleted
- (x) Deleted
- (xi) technology (excluding programs) related to designing a radio base station receiver used for digital cellular radio communication whose signal reception function can be modified so as to enable multiband, multiple channel, multimode, multi-coding algorithm, or multiprotocol operation by switching programs;
- (xii) Deleted
- (xiii) Deleted
- (xiv) the technology (excluding programs) related to designing telecommunication transmission equipment which are related to designing spread spectrum (including frequency hopping);
- (xi) programs specially designed or modified to perform surveillance or analysis by law enforcement which realizes the functions referred to in the following sub-items (a) and (b) (excluding programs exclusively designed or modified for things that fall under any of paragraph (1), item (v), item (vi), or item (viii), or item (ii) of this paragraph, or sub-items (c) through (g) of this item);

- (a) programs that perform retrievals based on hard selector for content of communications or metadata obtained from a communications service provider by using a handover interface;
 - (b) programs that analyze related human networks or track the movement of targeted individuals, based on the content of communications, metadata, or retrievals referred to in sub-item (a);
 - (c) purpose of charging fees;
 - (d) control of quality of services (QoS) of networks;
 - (e) control of quality of experience (QoE);
 - (f) mediation devices; or
 - (g) mobile payment or banking business;
 - (xvi) technology (excluding programs) necessary for designing, manufacturing, or using the programs referred to in item (xv) (excluding those related to operation).
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 9 (iii) of the Appended Table of the Foreign Exchange Order is technology (excluding programs) necessary for designing or manufacturing monolithic microwave integrated circuit amplifiers that are designed for communication which fall under any of the following items:
- (i) among those with an operating frequency of more than 2.7 gigahertz and 6.8 gigahertz or less for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 15%, those that fall under any of the following sub-items:
 - (a) those with an operating frequency of more than 2.7 gigahertz and 2.9 gigahertz or less with a peak saturation output value exceeding 75 watts (48.75 dBm);
 - (b) those with an operating frequency of more than 2.9 gigahertz and 3.2 gigahertz or less with a peak saturation output value exceeding 55 watts (47.4 dBm);
 - (c) those with an operating frequency of more than 3.2 gigahertz and 3.7 gigahertz or less with a peak saturation output value exceeding 40 watts (46 dBm);
 - (d) those with an operating frequency of more than 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value exceeding 20 watts (43 dBm);
 - (ii) among those with an operating frequency of more than 6.8 gigahertz and 16 gigahertz or less for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%, those that fall under either of the following sub-items:
 - (a) those with an operating frequency of more than 6.8 gigahertz and 8.5 gigahertz or less with a peak saturation output value exceeding 10 watts

- (40 dBm); or
- (b) those with an operating frequency of more than 8.5 gigahertz and 16 gigahertz or less with a peak saturation output value exceeding 5 watts (37 dBm);
 - (iii) among those with an operating frequency of more than 16 gigahertz and 31.8 gigahertz or less with a peak saturation output value exceeding 3.0 watts (34.77 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%;
 - (iv) those with an operating frequency of more than 31.8 gigahertz and 37 gigahertz or less with a peak saturation output value exceeding 0.1 nanowatts (minus 70 dBm);
 - (v) among those with an operating frequency of more than 37 gigahertz and 43.5 gigahertz or less with a peak saturation output value exceeding 1.0 watt (30 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%;
 - (vi) among those with an operating frequency of more than 43.5 gigahertz and 75 gigahertz or less with a peak saturation output value exceeding 31.62 milliwatts (15 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 10%;
 - (vii) among those with an operating frequency of more than 75 gigahertz and 90 gigahertz or less with a peak saturation output value exceeding 10 milliwatts (10 dBm), those for which the value obtained by dividing the instantaneous bandwidth by the center frequency exceeds 5%;
 - (viii) those with an operating frequency of more than 90 gigahertz with a peak saturation output value exceeding 0.1 nanowatts (minus 70 dBm).
- (4) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 9 (iv) of the Appended Table of the Foreign Exchange Order is the technology (excluding programs) necessary for designing or manufacturing telecommunications equipment using superconductive materials which is designed so that they can be used at a temperature lower than the critical temperature of the superconductive material used, and, which falls under either of the following items:
- (i) those that have a current switching function for digital circuits that have superconductive gates, for which the value obtained by multiplying the delay time per gate by the power consumption per gate is less than 100,000,000,000 millijoules;
 - (ii) those that have a frequency separation function and have resonant circuits with Q-values exceeding 10,000.

Article 22 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 10 (i) of the Appended Table of the

Foreign Exchange Order is one that falls under any of the following items:

- (i) the technology (excluding programs) necessary for designing the things that fall under Article 9;
 - (ii) the technology (excluding programs) necessary for manufacturing the things that fall under Article 9, item (i), sub-item (a), 2. or 6. or sub-item (b), 3., item (iii), sub-item (a), sub-item (b), or sub-item (e), item (iv), item (v), sub-item (a), item (viii), sub-item (a), 1., i. or 2., i. or 3., item (ix), sub-item (c) or (d), item (xi), sub-item (a), sub-item (b), sub-item (l), or sub-item (m), item (xi)-2, sub-item (a), or item (xiii), sub-item (d), sub-item (h), or sub-item (k);
 - (iii) the technology (excluding programs) necessary for manufacturing the things that fall under Article 9 (excluding those that fall under the preceding item);
 - (iv) programs that are designed for designing or manufacturing the things that fall under Article 9, item (ix), sub-item (c) or (d), or item (xiii), sub-item (d), sub-item (h), or sub-item (k), or technology (excluding programs) necessary for designing those programs;
 - (v) programs that are designed for designing or manufacturing the things that fall under Article 9, items (ix) through (x)-2, or item (xiii) (excluding those that fall under the preceding item);
 - (vi) technology (excluding programs) necessary for designing the programs referred to in the preceding item;
 - (vii) programs that are designed or modified for cameras incorporating focal plane arrays falling under Article 9, item (iii), sub-item (d), clause 1. ii., or sub-item (e), 2., and are designed or modified to remove the restriction of the frame rate of the camera, and, to reach the maximum frame rate exceeding 9 hertz.
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 10 (ii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following clauses:
- (i) programs that are designed for using the things that fall under Article 9, item (iv) or Article 13, or Article 14, item (viii);
 - (ii) technology (excluding programs) necessary for designing the programs referred to in the preceding item;
 - (iii) programs that fall under any of the following sub-items:
 - (a) programs that are designed for calibrating equipment of magnetometers, underwater electric field sensors, or magnetic field gradiometers, which are designed to be mounted on vehicles, vessels, aircraft, or artificial satellites, or other flying objects for space development;
 - (b) programs that are designed to detect abnormalities in the magnetic or underwater electric field on vehicles, vessels, aircraft, or artificial

- satellites, or other flying objects for space development;
 - (c) programs that are designed to correct the effect of motion on gravimeters or gravity gradiometers;
 - (d) programs that are used for air traffic control which are capable of receiving target data from five or more primary radars; or
 - (e) programs or source codes designed to perform real-time processing of data related to magnetic or electric fields by using the things that fall under Article 9, item (xi)-2;
 - (iv) the technology (excluding programs) necessary for designing the programs referred to in the preceding item.
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 10 (iii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) technology (excluding programs) necessary for manufacturing optical coatings with the diameter or length of the long axis of 500 millimeters or more, and for which the loss due to absorption and scattering is less than 0.005, which have a uniformity of the optical coating thickness of 99.5% or more;
 - (ii) technology (excluding programs) related to lathe turning using single point diamond tools, which are for finishing the curved area with the area exceeding 0.5 square meters to have the root-mean-square of surface precision of less than 10 nanometers.
 - (iii) programs that are designed to maintain the angle and phase of a reflecting mirror system consisting of multiple reflecting mirrors with the diameter or the length of the long axis of 1 meter or more;
- (4) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 10 (iv) of the Appended Table of the Foreign Exchange Order is technology (excluding programs) necessary for designing, manufacturing, or using testing device for ultra-high output laser oscillators.
- (5) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 10 (vi) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) programs for manufacturing radomes that fall under the following sub-items (a) and (b):
 - (a) radomes designed to protect array antennas capable of electronical scanning; and
 - (b) radomes that produce antenna patterns with the output ratio of main beam peak value to average side lobes exceeding 40 decibels;
 - (ii) technology (excluding programs) necessary for designing the programs referred to in the preceding item.
- (6) The technology specified by Order of the Ministry of Economy, Trade and

Industry referred to in row 10 (vii) of the Appended Table of the Foreign Exchange Order is technology necessary for designing, manufacturing, or using devices for performing a test for durability of substances against laser beams output by extra-high-output laser oscillators or the targets used for the test.

Article 23 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 11 (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) technology (excluding programs) necessary for designing or manufacturing the things that fall under Article 10;
- (ii) programs designed for designing or manufacturing items that fall under Article 10;
- (iii) technology (excluding programs) necessary for designing the programs referred to in the preceding item.

(2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 11 (ii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following clauses:

- (i) programs (limited to those with source codes) for using attitude and heading reference systems (excluding those using the gimbal method), inertial navigation systems and other inertial systems (limited to usage related to operation or maintenance (inspection)), or technology (excluding programs) necessary for designing those programs;
- (ii) technology (excluding programs) necessary for the use of the things that fall under any of Article 10, items (i) through (iv) (limited to those related to repairs or overhauls);
- (iii) technology (excluding programs) related to designing the programs that fall under any of Article 27, paragraphs (3) through (5);
- (iv) programs designed to decode ranging codes (excluding those for civilian use) of satellite navigation systems.

(3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 11 (iv) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) programs that are for devices that fall under any of the following sub-items (limited to those with source codes) and use technology (excluding programs) related to designing a device falling under any of item (ii), sub-items (a) through (d) or item (iii), sub-items (a) through (d), sub-item (g), or sub-item (h):
 - (a) digital air traffic control device for controlling the entire air flight route;
 - (b) devices for integrating propulsion control and flight control;
 - (c) fly-by-wire systems or fly-by-light systems;
 - (d) active flight control device that has a fault tolerance function or a self-

- reconfiguring function;
- (e) air data equipment that uses the static data of airframe surface as a standard;
- (f) three-dimensional displays;
- (ii) technology (excluding programs) related to designing or manufacturing the devices that fall under any of the following sub-items:
 - (a) air data equipment that uses static data of the airframe surface as a standard;
 - (b) three-dimensional display for aircraft;
 - (c) electric actuators designed for flight control;
 - (d) flight control optical sensor array designed for performing active flight control; or
 - (e) among data-based inertial navigation systems that are designed so that they can be used for underwater navigation, those that use a sonar providing a positioning accuracy of 0.4 nautical miles or less or gravity database;
- (iii) the technology related to designing active flight control device that falls under any of the following sub-items:
 - (a) technology related to optical communication for detecting the operating state of aircraft bodies or flight control system machinery and tools, transmission of flight control data, or instructions on operation of actuators (excluding programs), which are necessary for designing active flight control device for fly-by-light systems;
 - (b) real-time algorithm for analyzing information to be obtained from sensors of components of active flight control device in order to forecast the performance deterioration and failures of those components, and mitigate their degree;
 - (c) real-time algorithm for identifying failures of machinery and tools and and reconfiguring the control of force and moment in order to mitigate the performance deterioration and failures of active flight control devices;
 - (d) technology that integrates the data of digital flight control, navigation, and propulsion control into a digital flight traffic controller in order to control the entire flight route (excluding programs);
 - (e) CAD programs designed for an active flight controller that uses technology that falls under any of sub-items (a) through (d), sub-item (g), or sub-item (h);
 - (f) technology (excluding programs) necessary for designing the programs referred to in sub-item (e);
 - (g) technology (excluding programs) necessary to attain the functional requirements for fly-by-wire systems, which fall under the following 1. and 2.:

1. interior loop body control that requires closed loop control frequency of 40 hertz or more;
2. those that fall under any of the following clauses:
 - i. those that are capable of correcting the instability of an airframe that loses the restoring controlling force, if it is not corrected in 0.5 seconds or less within the flight envelope;
 - ii. those that combine control of two or more axes in correcting abnormal changes of airframe conditions;
 - iii. those that perform the functions specified in sub-item (d) (excluding the autopilot function); or
 - iv. technology for making the airframe fly in a stable and controlled manner at an angle of attack of 18 degrees or more, an angle of inclination of 15 degrees or more, a pitch rate of 15 degrees per second or more, a yaw rate of 15 degrees per second or more, or a roll rate of 90 degrees per second or more (excluding during takeoff and landing);
- (h) technology (excluding programs) necessary for attaining the functional requirements for fly-by-wire systems, which are for attaining the conditions referred to in the following clauses 1. and 2.:
 1. that the control of the airframe will not be lost even if failure consecutively occurs in any two parts in a fly-by-wire system; and
 2. that the probability of losing control of the airframe is one-billionth or less of the failure rate per flight hour;
- (iv) technology (excluding programs) related to designing a device for helicopters which falls under any of the following subitems, or a CAD program designed for those that fall under sub-item (a) or (b):
 - (a) multiaxial fly-by-wire systems or fly-by-light systems that integrate two or more functions falling under the following clauses:
 1. collective control function;
 2. cyclic control function; and
 3. yaw control function;
 - (b) devices that control counter-torque or direction which are circulation-controlled;
 - (c) rotary wings that use variable geometry wings for separately controlling each wing;
- (v) technology (excluding programs) necessary for designing the programs referred to in the preceding item.

Article 24 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 12 (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) technology necessary for designing or manufacturing the things that fall

- under Article 11, item (i)-2, item (iv), sub-item (b), item (vi), item (viii), or item (x), sub-item (f) or (g);
- (ii) technology necessary for designing or manufacturing the things that fall under Article 11 (excluding those falling under the preceding item);
 - (iii) technology (excluding programs) necessary for designing or manufacturing air cushion vessels, hydrofoil crafts, or vessels designed to reduce wave drag by decreasing the water-plane area, which falls under any of the following sub-items:
 - (a) skirt-shaped air cushion vessels (limited to those with a flexible skirt fixed to the whole circumference of the hull) that fall under all of the following clauses:
 1. those that are designed so that the maximum value of speed in a full load condition when the significant wave height is 1.25 meters or more exceeds 30 knots;
 2. those for which the cushion pressure exceeds 3,830 pascals; and
 3. those for which the ratio of the light displacement to full-load displacement is less than 70%;
 - (b) sidewall type air cushion vessels for which the maximum value of speed in a full load condition when the significant wave height is 3.25 meters or more exceeds 40 knots;
 - (c) among hydrofoil crafts that are designed so that the maximum value of speed in a full load condition when the significant wave height is 3.25 meters or more will be 40 knots or more, those which have a device that automatically controls the hydrofoil wing by measuring the shaking of the hull, wave conditions, and other data; or
 - (d) vessels that are designed to reduce wave drag by decreasing the water-plane area, which fall under any of the following clauses:
 1. those whose full load displacement exceeds 500 tons and are designed so that the maximum value of speed in a full load condition when the significant wave height is 3.25 meters or more will exceed 35 knots;
 2. those whose full load displacement exceeds 1,500 tons and are designed so that the maximum value of speed in a full load condition when the significant wave height is 4 meters or more will exceed 25 knots;
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (12), (ii) of the Appended Table of the Foreign Exchange Order is technology (excluding programs) related to the use of the programs that are designed for using the goods that fall under Article 11 or Article 14, item (ix) or (x), or the use (limited to that related to repair or overhauls) of the goods that fall under any of Article 11, item (i), item (i)-2, item (ii), item (iv), sub-item (b) or (c), item (viii) or item (x) or Article 14, item (ix) or item (x).

- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 12 (iii) of the Appended Table of the Foreign Exchange Order is technology related to designing, manufacturing, or using (limited to those related to repairs or overhauls) propellers designed for reducing underwater noise.

Article 25 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 13 (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) technology (excluding programs) necessary for designing the things that fall under any of Article 12, item (i), sub-item (b), and items (iv) through (xx);
 - (i)-2 technology (excluding programs) necessary for manufacturing the things that fall under any of Article 12, item (i), sub-item (b), items (iv) through (x), or items (xi) through (xx);
 - (ii) programs designed for designing or manufacturing the things that fall under Article 12, item (xi), sub-item (b);
 - (iii) technology (excluding programs) necessary for designing the programs referred to in the preceding item;
 - (iv) programs designed for designing or manufacturing the things that fall under Article 12 (excluding those falling under item (ii)); or
 - (v) technology (excluding programs) necessary for designing the programs referred to in the preceding item.
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 13 (ii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) programs in which the technology (excluding programs) falling under paragraph (3), item (iii) is incorporated, which are used for the full authority digital engine control system for the goods falling under Article 12;
 - (ii) technology (excluding programs) necessary for designing the programs referred to in the preceding item;
 - (iii) programs that fall under any of the following sub-items:
 - (a) programs for two-dimensional or three-dimensional viscous flow verified by the data for wind tunnel tests or flight tests, which are for modeling the flow inside an engine;
 - (b) programs for testing gas turbine engines for aircraft, or their assemblies or components, which fall under the following 1. and 2. (excluding those for operating testing devices, for securing the safety of workers, or for acceptance test for manufacturing, repairs, or maintenance (meaning tests to judge whether products are appropriately assembled or repaired)):
 - 1. those specially designed for testing the things that fall under any of the following clauses:

- i. gas turbine engines for aircraft or their assemblies or components, for which the technology falling under any of item (ii), sub-items (a) through (g) or sub-item (j) or sub-item (l) of the following paragraph, item (iii) or item (iv) of that paragraph, or Article 27, paragraph (6), item (i), is used;
- ii. multistage compressors that provide bypass flow path or core flow path, which are specially designed for gas turbine engines for aircraft that use the technology falling under any of item (ii), sub-items (a) through (g) or sub-item (j) or sub-item (l) of the following paragraph, item (iii) of that paragraph, or Article 27, paragraph (6), item (i);
- 2. those specially designed to perform the functions referred to in the following clauses i. and ii.:
 - i. gathering and processing data in real time;
 - ii. feedback control of test objects or test conditions during tests;
- (c) programs used on the goods falling under Article 12, item (xi), sub-item (a) or (c), which are designed to control the growth of unidirectional solidification materials or single crystal materials;
- (d) Deleted
- (e) programs designed for using the things falling under Article 12, item (x)-2 (limited to those related to operation);
- (f) programs designed for designing internal cooling passages of blades, vanes, or tip shrouds of gas turbine engines for aircraft;
- (g) programs falling under the following clauses 1. and 2.:
 - 1. those designed to predict the thermal state, aerodynamic state, or combustion state of air in gas turbine engines for aircraft;
 - 2. those that theoretically predict the thermal state, aerodynamic state, or combustion state of air based on performance data of actual gas turbine engines for aircraft;
- (iv) technology (excluding programs) necessary for designing the programs referred to in the preceding item.
- (v) programs designed or modified for using the things falling under Article 12, item (iv), sub-item (e) or item (iv)-3 of that Article (limited to the use related to operation).
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 13 (iii) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
 - (i) technology (excluding programs) related to the use of gas turbine engines, or their components which fall under any of Article 12, item (i), sub-item (b), items (iv) through (x), or items (xi) through (xix) (limited to those related to repairs or overhauls);
 - (ii) technology (excluding programs) necessary for designing or manufacturing components of gas turbine engines that fall under any of the following sub-

items, or programs for designing them:

- (a) combustors equipped with the things that fall under any of the following clauses:
 - 1. thermal shield liners for which the temperature of the combustor outlet exceeds 1,610 degrees centigrade;
 - 2. non-metallic liners;
 - 3. non-metallic shells;
 - 4. liners equipped with cooling holes that fall under sub-item (k) for which the temperature of the combustor outlet exceeds 1,610 degrees centigrade;
 - 5. those that use pressure-gain combustion;
- (b) those manufactured by using metal matrix composite materials reinforced with a substance that fall under Article 4, item (xii), fiber that fall under item (xv) of that Article, or aluminum compound that fall under item (vii), sub-item (a) of that Article, or ceramic matrix composite materials that fall under item (xii) of that Article as raw materials;
- (c) non-cooling type turbine blades, vanes, or chip shrouds that are designed to be used at a gas flow path temperature of 1,100 degrees centigrade or more;
- (d) cooling type blades, vanes, or tip shrouds that are designed to operate in a gas flow path temperature of 1,420 degrees centigrade or more (excluding those that fall under Article 27, paragraph (6), item (i));
- (e) components that join the wing part and the disk part by using a solid-phase bonding method;
- (f) Deleted
- (g) rotation part components with damage tolerance design, which use powder metallurgical materials (limited to those that fall under Article 4, item (vii), sub-item (b));
- (h) Deleted
- (i) Deleted
- (j) fan blades that fall under the following clauses 1 and 2:
 - 1. those with one or more closed cavities composed only of vacuum or gas, for which the total volume of the closed cavities is 20% or more of the total volume of the fan blade; and
 - 2. those with one or more closed cavities with a volume of 5 cubic centimeters or more;
- (k) technology necessary for drilling cooling holes of components of gas turbine engines that use any technology (excluding programs) that falls under sub-item (a) or (d) of this item, or Article 27, paragraph (6), item (i), which fall under any of the following clauses:
 - 1. among those with the minimum cross-section area of less than 0.45 square millimeters and with an aspect ratio exceeding 4.52, those for which

- the drilling angle is 25 degrees or less;
2. among those with the minimum cross-section area of less than 0.12 square millimeters and with an aspect ratio exceeding 5.65, those for which the drilling angle exceeds 25 degrees;
- (l) any of stators, vanes, blades, chip seals, chip shrouds, rotary blings, rotary blisks, or splitter ducts, which fall under all of the following clauses:
1. those which do not fall under Article 27, paragraph (6), item (i), sub-item (b);
 2. those designed for compressors or fans;
 3. those manufactured by using a substance falling under Article 4, item (xv), sub-item (e) and resin falling under item (xiii) of that Article, as raw materials;
- (iii) technology (excluding programs) related to designing or manufacturing components of gas turbine engines, which is a full authority digital engine control system for gas turbine engines, and falls under any of the following technology or programs for designing them:
- (a) technology related to designing components of gas turbine engines, which are for giving the functions that control engine thrust or shaft power to the components of gas turbine engines;
 - (b) technology related to designing or manufacturing components that control and diagnose engines, which are used for adjusting engine thrust or shaft output;
 - (c) technology related to designing control law algorithms (including source codes) which are used for adjusting engine thrust or shaft output;
- (iv) technology (excluding programs) related to designing or manufacturing devices for making the flow path shape variable which has been designed to maintain the stability of engines for gas generator turbines, fan turbines, power turbines or propelling nozzles, which fall under any of the following sub-items, or programs for designing it:
- (a) technology related to designing that make the components maintaining the stability of engines to fulfill their function;
 - (b) technology related to designing or manufacturing components of devices for making the flow path shape variable, which maintain the stability of engines;
 - (c) technology related to designing control law algorithms (including source codes) for devices that make the flow path shape variable, which maintain the stability of engines.
- (4) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in in row 13 (iv) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items, or programs for designing it:

- (i) among models for wind tunnels which use sensors with a shape that does not impede flow conditions, technology (excluding programs) necessary for designing or manufacturing those capable of transmitting data from sensors to data collecting devices;
 - (ii) technology (excluding programs) necessary for designing or manufacturing propeller blades or prop fans that use composite materials, which are capable of absorbing loads that exceed 2,000 kilowatts at a speed exceeding Mach 0.55;
 - (iii) technology (excluding programs) necessary for the designing or manufacturing power transmission devices for helicopters, or aircraft that use tilt rotors or tilt wings;
 - (iv) technology (excluding programs) necessary for designing a wing folding system designed for a fixed-wing aircraft equipped with a gas turbine engine.
- (5) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 13 (v) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items or programs for designing it:
- (i) technology (excluding programs) related to designing or manufacturing reciprocating diesel engines for vehicles which fall under all of the following sub-items (a) through (c):
 - (a) those with an engine volume of 1.2 cubic meters or less;
 - (b) those with a gross shaft output exceeding 750 kilowatts; and
 - (c) those for which the value obtained by dividing the gross shaft output expressed in kilowatts by the engine volume expressed in cubic meters exceeds 700;
 - (ii) technology (excluding programs) necessary for manufacturing components of high-output diesel engines (meaning diesel engines in which the rated rotation speed is 2,300 or more rotations per minute, and, the brake mean effective pressure is 1.8 megapascals or more when the number of rotations is 2,300; the same applies below in this Article), which falls under any of the following sub-items:
 - (a) technology necessary for manufacturing engines for which all components referred to in the following clauses 1. through 3. are made of ceramics that fall under Article 4, item (xii) (excluding engines for which all of the components other than those components are made of materials other than the ceramics):
 - 1. cylinder liners;
 - 2. pistons;
 - 3. cylinder heads;
 - (b) technology necessary for manufacturing turbochargers, whose compressor falls under all of the following clauses 1. through 3.:

1. those for which the pressure ratio per stage is 4 or more;
 2. those for which the flow rate per minute is 30 kilograms or more and 130 kilograms or less; and
 3. those for which the flow passage area of the compressors or their turbine parts can be changed;
- (c) technology necessary for manufacturing among fuel injection devices designed so that they can be used for any of the fuels with the dynamic viscosity at 37.8 degrees centigrade of 0.5 centistokes or more and 2.5 centistokes or less, those that fall under the following clauses 1. and 2.:
1. one in which the injection quantity exceeds 230 cubic millimeters per cylinder per injection;
 2. one that electronically controls the devices so that it is possible to automatically switch the characteristics of a governor in order to obtain the same torque characteristics in response to fuel characteristics;
- (iii) technology (excluding programs) necessary for designing or manufacturing high output diesel engines with the wall surface temperature of the cylinder measured at the top dead center of the piston top ring exceeds 450 degrees centigrade, which use solid, gas phase, or liquid lubricants on cylinder wall surfaces.

Article 26 The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 14 of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) technology (excluding programs) necessary for designing or manufacturing the things that fall under Article 13;
- (ii) programs designed for designing, manufacturing, or using the things that fall under Article 13, or technology (excluding programs) necessary for designing, manufacturing, or using those programs;
- (iii) technology specially designed so as to enable certain goods to perform the functions of the goods falling under Article 13, paragraph (8) by using that technology.

Article 27 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (15), (i) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:

- (i) technology (excluding programs) necessary for designing or manufacturing the things that fall under any of Article 14, items (i) through (iii);
- (ii) technology (excluding programs) necessary for designing or manufacturing the things that fall under Article 14, item (vi) or (vii);
- (iii) technology necessary for designing or manufacturing the things that fall under Article 14, item (v) or (v)-2;

- (iv) technology necessary for designing or manufacturing the things that fall under Article 14, item (ix) or (x);
 - (v) technology (excluding programs) necessary for designing or manufacturing programs that fall under item (iii);
 - (vi) technology necessary for designing or manufacturing the things that fall under Article 14, item (viii) or (xi); or
 - (vii) technology (excluding programs) necessary for designing the programs that fall under the preceding item.
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row (15), (iii) of the Appended Table of the Foreign Exchange Order is a program that falls under any of the following items or technology necessary for designing those programs:
- (i) those designed for performing acoustic beam forming for real time processing of sound data received by using towed hydrophone arrays;
 - (ii) source code for performing real time processing of sound data received by using towed hydrophone arrays;
 - (iii) those designed for performing acoustic beam forming for real time processing of sound data received by using the seabed or harbor cable systems;
 - (iv) source code for performing real time processing of sound data received by using the seabed or harbor cable systems; or
 - (v) those (including source codes) falling under the following sub-item (a) and (b):
 - (a) those that perform real time processing of sound data obtained from the things falling under Article 9, item (i), sub-item (a), 6.; and
 - (b) those that process data to automatically detect the position of a person engaged in underwater activities.
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 15 (iv) of the Appended Table of the Foreign Exchange Order is a program that falls under any of the following items:
- (i) programs designed so that by using inertial navigation systems or other inertial systems, those systems will fall under Article 10, item (iii);
 - (ii) by continuously integrating heading data and navigation data that falls under any of the following sub-items and using inertial navigation systems or other inertial systems, programs (limited to those that are source codes) that is capable of making those systems fall under Article 10, item (iii):
 - (a) speed data obtained from radars that utilize Doppler effects;
 - (b) navigation data obtained from GPS or GLONASS; or
 - (c) data obtained from data-based referenced navigation systems.
- (4) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 15 (v) of the Appended Table of the Foreign

Exchange Order is a program designed so that the use of gyro-astro compasses, or celestial bodies or devices that are capable of determining positions or courses by automatically tracking artificial satellites, enables the program to make them fall under Article 10, item (iv).

- (5) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 15 (v)-2 of the Appended Table of the Foreign Exchange Order is one that falls under any of the following sub-items:
- (i) programs designed so that the use of underwater sonar navigation systems enable the systems to fall under Article 10, item (vii);
 - (ii) by continuously integrating heading data and navigation data that falls under any of the following sub-items and using underwater sonar navigation systems, programs (limited to those that are source codes) that enable the systems to fall under Article 10, item (vii):
 - (a) speed data obtained from sonars that utilize Doppler effects;
 - (b) navigation data obtained from GPS or GLONASS; or
 - (c) data obtained from data-based referenced navigation systems.
- (6) The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 15 (vi) of the Appended Table of the Foreign Exchange Order is one that falls under any of the following items:
- (i) technology (excluding programs) necessary for designing or manufacturing gas turbine engine components that fall under any of the following sub-items:
 - (a) gas turbine blades, vanes, or tip shrouds cast by unidirectional solidification, or by single crystal alloys, whose stress breakage time is 400 hours or more when a load that generates a 200 megapascals stress is applied in the vertical direction to the single crystal at 1,000 degrees centigrade;
 - (b) those that are manufactured by using an organic composite designed to be usable at temperatures exceeding 315 degrees centigrade as a raw material;
 - (ii) programs necessary for designing technology that falls under the preceding item.

Article 28 The technology specified by Order of the Ministry of Economy, Trade and Industry referred to in row 16 of the Appended Table of the Foreign Exchange Order is technology related to designing, manufacturing, or using the goods that exclusively fall under Classes 25 through 40, Classes 54 through 59, Class 63, Classes 68 through 93, or Class 95 of the Appended Table of Custom Tariff Act (Act No. 54 of 1910).

Supplementary Provisions

This Ministerial Order comes into effect on November 14, 1991.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 12 of March 27, 1992]

This Ministerial Order comes into effect on April 1, 1992.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 85 of December 9, 1992]

- (1) This Ministerial Order comes into effect on December 31, 1992.
- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 30 of June 18, 1993]

This Ministerial Order comes into effect on July 16, 1993; provided, however, that the amended provisions Article 3 and Article 16, paragraph (2) come into effect on July 1, 1993.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 85 of December 1, 1993]

- (1) In this Ministerial Order, the provisions of Article 1 come into effect on the date of promulgation, and the provisions of Article 2 come into effect on December 22, 1993.
- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 3 of January 28, 1994]

This Ministerial Order comes into effect on the date of promulgation.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 10 of March 14, 1994]

- (1) This Ministerial Order comes into effect on March 28, 1994; provided, however, that the amended provisions of Article 2, the amended provisions of Article 7 (the phrase "equipment that corresponds to any of the following" in item (iii), sub-item (ii) of that Article is amended to "those for which the composite theoretical performance exceeds 260 mega calculations per second by aggregating the calculation elements", excluding the parts that delete clauses 1. and 2.) and the amended provisions of Article 8, come into effect on the date of promulgation.
- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 49 of June 24, 1994]

- (1) (1) This Ministerial Order comes into effect on July 6, 1994; provided, however, that the amended provisions of Article 7 (limited to the parts that delete item (v) and item (vi) of that Article) and the amended provisions of Article 20 (excluding the part that delete paragraph (1), items (v) through (ix) of that Article) come into effect on the date of promulgation.
- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 2 of February 27, 1995]

- (1) This Ministerial Order comes into effect on the date of promulgation.
- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 43 of May 10, 1995]

- (1) This Ministerial Order comes into effect on May 22, 1995.
- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade

and Industry No. 66 of August 9, 1995]

- (1) This Ministerial Order comes into effect on August 23, 1995.
- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 106 of December 20, 1995]

- (1) This Ministerial Order comes into effect on January 3, 1996; provided, however, that the amended provisions of Article 1, the amended provisions of Article 2-2 (limited to the parts in which the term "Fresh vaccine ingredients" in paragraph (1), item (i) and item (ii) of that Article is amended, and the term "(excluding immune toxin)" is added after the term "toxin" in item (iii) of that paragraph), the amended provisions of Article 5, the amended provisions of Article 15, and the amended provisions of Article 18, come into effect on the date of promulgation.
- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 18 of March 28, 1996]

This Ministerial Order comes into effect on October 1, 1996.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 60 of August 28, 1996] [Extract]

(Effective Date)

- (1) This Ministerial Order comes into effect on September 13, 1996.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 65 of April 3, 1997]

This Ministerial Order comes into effect on April 29, 1997.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 9 of March 12, 1998]

This Ministerial Order comes into effect on April 1, 1998.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 13 of March 25, 1998]

(Effective Date)

- (1) This Ministerial Order comes into effect on April 1, 1998.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 78 of August 26, 1998]

(Effective Date)

- (1) This Ministerial Order comes into effect on the date of promulgation.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 83 of November 5, 1998]

This Ministerial Order comes into effect on November 12, 1998.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 64 of June 18, 1999]

(Effective Date)

- (1) This Ministerial Order comes into effect on the date of promulgation; provided, however, that the provisions stated in each of the following items come into effect on the date specified in each of those items:

- (i) the amended provisions of Article 1, the amended provisions of Article 4, item (ix), the amended provisions of Article 5, item (vii), the amended provisions of Article 6, item (xvii), sub-items (a) and (f), the amended provisions of Article 9, item (x), sub-item (b), the amended provisions of Article 14-2, item (ii), the amended provisions of Article 19, paragraphs (3) and (5), the amended provisions of Article 21, paragraph (1), item (x)-2, item (xi)-2, item (xiii), and item (xv) and paragraph (2), item (iv), item (iv)-2, and item (xi) of that Article, and the amended provisions of the Appended Table 3: July 2, 1999;
- (ii) the amended provisions of Article 2, paragraph (1) and the additional provisions of Article 14-2, items (li)-2 through (li)-4: July 18, 1999.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 115 of June 23, 2000]

- (1) This Ministerial Order comes into effect on July 7, 2000; provided, however, that the amended provisions of Article 1, item (viii), item (ix), item (xi), item (xiv), item (xviii), item (xxi), item (xxii), item (xxiv), sub-items (a) and (c), item (xxvii), and item (xxxiii); the amended provisions of item (xxxiv) of that Article (limited to the part in which the phrase "those that are 75 millimeters or more" in sub-item (a), 1. and sub-item (b), 2. of that item is amended to "those that exceed 75 millimeters"); the amended provisions of item (xxxv), item (xxxvi), item (xxxviii), item (xl), item (xliv) and item (lvii) of that Article, Article 3, item (vii), sub-item (e), item (xvi), sub-items (a) and (g), item (xx), and item (xxii); the amended provisions of Article 6, item (i) (excluding the part in which the term "parallel processors" in sub-item (c), 3. of that item is amended to "devices designed for parallel processors"), the amended provisions of item (ii), sub-item (b), item (iv) and item (viii) of that Article, Article 7, Article 8, Article 9, item (i), sub-item (a), Article 12, Article 13, item (v), Article 14, item (v) and item (vi), sub-items (a) and (d), Article 14-2, item (lxxiv), Article 19, Article 20 and Article 21; and the amended provisions of Article 25 (limited to the parts in which paragraph (3), item (ii), sub-item (j) of that Article is deleted, sub-item (k) is changed to sub-item (j), and sub-item (l) is changed to (k)), come into effect on the date of promulgation.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 265 of October 31, 2000]

This Ministerial Order comes into effect on January 6, 2001.

Supplementary Provisions [Order of the Ministry of International Trade and Industry No. 408 of December 27, 2000]

(Effective Date)

- (1) This Ministerial Order comes into effect on the date of promulgation.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 163 of May 16, 2001]

(Effective Date)

- (1) This Ministerial Order comes into effect on the date of promulgation; provided, however, that the amended provisions of Article 1, item (x), sub-item (b), Article 2-2, Article 4, Article 5, item (ii), sub-item (b), item (viii), and item (x), Article 6, item (ii), item (v), item (xvii) and item (xviii); the amended provisions of Article 9, item (viii) (excluding the part in which the term "incorporated" in (b), 6. of that item is amended to "video cameras incorporated"); the amended provisions of Article 10, Article 21, paragraph (2), item (iii)-2, sub-item (d) and item (xvi) of the Remarks of the Appended Table 3, come into effect on May 30, 2001.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 247 of December 28, 2001]

(Effective Date)

(1) This Ministerial Order comes into effect on April 1, 2002.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 85 of June 14, 2002]

(Effective Date)

(1) This Ministerial Order comes into effect on July 15, 2002.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 108 of October 21, 2002]

(Effective Date)

(1) This Ministerial Order comes into effect on November 1, 2002; provided, however, that the amended provisions of Article 2 come into effect on January 1, 2003.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 52 of April 1, 2003]

This Ministerial Order comes into effect on the date of promulgation.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 159 of December 24, 2003]

(Effective Date)

- (1) This Ministerial Order comes into effect on January 20, 2004.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 104 of November 10, 2004]

(Effective Date)

- (1) This Ministerial Order comes into effect on January 1, 2005.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 116 of December 2, 2005]

(Effective Date)

- (1) This Ministerial Order comes into effect on January 1, 2006.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 97 of November 17, 2006]

This Ministerial Order comes into effect on January 1, 2007.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 21 of March 26, 2008]

(Effective Date)

- (1) This Ministerial Order comes into effect on May 15, 2008.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 55 of August 27, 2008]

This Ministerial Order comes into effect on November, 1, 2008.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 46 of August 28, 2009]

This Ministerial Order comes into effect on October 1, 2009.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 6 of March 5, 2010] [Extract]

(Effective date)

Article 1 This Ministerial Order comes into effect on April 1, 2010.

(Transitional Measures)

Article 2 Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 26 of May 18, 2011]

(Effective Date)

Article 1 This Ministerial Order comes into effect on July 1, 2011.

(Transitional Measures for Penal Provisions)

Article 2 Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 56 of July 19, 2012]

(Effective Date)

(1) This Ministerial Order comes into effect on August 1, 2012.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 51 of September 27, 2013]

(Effective Date)

(1) This Ministerial Order comes into effect on October 15, 2013.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 41 of August 14, 2014]

(Effective Date)

(1) This Ministerial Order comes into effect on September 15, 2014.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 60 of August 11, 2015]

(Effective Date)

(1) This Ministerial Order comes into effect on October 1, 2015.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and

Industry No. 107 of November 18, 2016]

(Effective Date)

- (1) This Ministerial Order comes into effect on January 7, 2017; provided, however, that the amending provisions of Article 5, item (ii) and Article 18 of the Ministerial Order Specifying Goods and Technologies Pursuant to Provisions of the Appended Table 1 of the Export Trade Control Order and the Appended Table of the Foreign Exchange Order in Article 1 come into effect on June 1, 2017.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order (for the amended provisions prescribed in the proviso to the preceding paragraph, those amended provisions).

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 87 of December 6, 2017]

(Effective Date)

- (1) This Ministerial Order comes into effect on January 22, 2018.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of Ministry of Economy, Trade and Industry No. 63 of November 16, 2018]

(Effective Date)

- (1) This Ministerial Order comes into effect on January 9, 2019.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of Economy, Trade and Industry No. 17 of July 1, 2019]

This Ministerial Order comes into effect on the date on which the Act Partially Amending the Unfair Competition Prevention Act comes into effect (July 1, 2019).

Supplementary Provisions [Order of the Ministry of Economy, Trade and Industry No. 44 of November 28, 2019]

(Effective Date)

(1) This Ministerial Order comes into effect on January 22, 2020.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of Economy, Trade and Industry No. 2 of January 14, 2020]

This Ministerial Order comes into effect on January 22, 2020.

Supplementary Provisions [Order of the Ministry of Economy, Trade and Industry No. 7 of February 5, 2020]

This Ministerial Order comes into effect on the date on which the Act Partially Amending the Act on the Prevention of Infectious Diseases in Livestock comes into effect (February 5, 2020).

Supplementary Provisions [Order of the Ministry of Economy, Trade and Industry No. 62 of July 1, 2020]

This Ministerial Order comes into effect on the date on which the Act Partially Amending the Act on the Prevention of Infectious Diseases in Livestock comes into effect (July 1, 2020).

Supplementary Provisions [Order of the Ministry of Economy, Trade and Industry No. 86 of December 10, 2020]

(Effective Date)

(1) This Ministerial Order comes into effect on January 27, 2021.

(Transitional Measures for Penal Provisions)

(2) Prior laws and regulations continue to govern the applicability of penal

provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of Economy, Trade and Industry No. 74 of October 15, 2021]

(Effective Date)

- (1) This Ministerial Order comes into effect on the day on which two months have passed from the date of promulgation.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Supplementary Provisions [Order of the Ministry of Economy, Trade and Industry No. 78 of October 16, 2022]

(Effective Date)

- (1) This Ministerial Order comes into effect on the day on which two months have passed from the date of promulgation.

(Transitional Measures for Penal Provisions)

- (2) Prior laws and regulations continue to govern the applicability of penal provisions to acts that a person has committed before the enforcement of this Ministerial Order.

Appended Table 1

Deleted

Appended Table 2 (Re: Article 10 and Article 12)

Argentina, Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, India, Ireland, Italy, Republic of Korea, Latvia, Lithuania, Luxembourg, Malta, Mexico, The Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Slovenia, Republic of South Africa, Spain, Slovakia, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and United States of America

Appended Table 3 (Re: Article 5 and Article 18)

	Coating Method	Base Material	Coating
1	Method of fixing	Super alloy	Aluminum compounds

	the coating material generated by chemical reaction of source gas onto the surface of a base material	Ceramics or low-thermal expansion glass	Silicon compounds, carbides, dielectric films, diamonds, or amorphous diamond-like carbon films
		Composite materials using carbon and carbon fibers (referred to as "carbon-carbon" below), ceramic composite materials, or metal matrix composites	Silicon compounds, carbides, refractory metals, and mixtures consisting of their combinations, dielectric films, aluminum compounds, aluminum alloy compounds, or boron nitrides
		Tungsten carbide alloys or silicon carbides	Carbides, tungsten, mixtures of carbides and tungsten, or dielectric films
		Molybdenum or molybdenum alloys	Dielectric films
		Beryllium or beryllium alloys	Dielectric films, diamonds, or amorphous diamond-like carbon films
		Sensor window materials	Dielectric films, diamonds, or amorphous diamond-like carbon films
2	Method of fixing coating material evaporated by electronic beam onto the surface of a base material	Super alloys	Silicon alloy compounds, aluminum alloy compounds, chrome aluminum alloy compounds, improved zirconias, silicon compounds, aluminum compounds, or mixtures consisting of their combination
		Ceramics or low-thermal expansion glass	Dielectric film
		Alloy steel with corrosion resistance	Chrome aluminum alloys, improved zirconia, and mixtures of chrome aluminum alloys and improved zirconia
		Carbon-carbon, ceramic composites, or metal matrix composites	Silicon compounds, carbides, refractory metals, and mixtures consisting of their combination, dielectric films, or boron nitrides

		Tungsten carbide alloys or silicon carbides	Carbides, tungsten, mixtures of carbides and tungsten, or dielectric films
		Molybdenum or molybdenum alloys	Dielectric films
		Beryllium or beryllium alloys	Dielectric films, boron alloys, or beryllium
		Sensor window materials	Dielectric films
		Titanium alloys	Boron compounds or nitrides
3	Method of fixing coating material evaporated by electrical resistance heating onto the surface of a base material (ion-plating method)	Ceramics or low-thermal expansion glass	Dielectric films or amorphous diamond-like carbon films
		Carbon-carbon, ceramic composites or metal matrix composites	Dielectric films
		Tungsten carbide alloys or silicon carbides	Dielectric films
		Molybdenum or molybdenum alloys	Dielectric films
		Beryllium or beryllium alloys	Dielectric films
		Sensor window materials	Dielectric films or amorphous diamond-like carbon films
4	Method of fixing coating material evaporated by laser onto the surface of a base material	Ceramics or low-thermal expansion glass	Silicon compounds, dielectric films, or amorphous diamond-like carbon films
		Carbon-carbon, ceramic composites, or metal matrix composites	Dielectric films
		Tungsten carbide alloys or silicon carbides	Dielectric films
		Molybdenum or molybdenum alloys	Dielectric films
		Beryllium or beryllium alloys	Dielectric films
		Sensor window materials	Dielectric films or amorphous diamond-like carbon films

5	Method of fixing coating material evaporated by arc discharge onto the surface of a base material	Super alloys	Silicon alloy compounds, aluminum alloy compounds, or chrome aluminum alloys
		Composite materials with a matrix of polymers or organic matters	Boron compounds, carbides, nitrides, or amorphous diamond-like carbon films
6	Method of fixing the coating material onto the base material surface by sealing powdered coating material and base material into a container and heating the container to 757 degrees centigrade or more	Carbon-carbon, ceramic composites, or metal matrix composites	Silicon compounds, carbides, or mixture of silicon compounds and carbides
		Titanium alloys	Silicon compounds, aluminum compounds, or aluminum alloy compounds
		Metals with fire resistance or their alloys	Silicon compounds or oxides
7	Those for which plasma spraying is performed	Super alloys	Chrome aluminum alloys, improved zirconia, mixture of chrome aluminum alloys and improved zirconia, nickel-graphite alloys that can be polished, substances containing nickel-chrome-aluminum which can be polished, aluminum-silicon polyester alloys that can be polished, or aluminum alloy compounds
		Aluminum alloys	Chrome aluminum alloys, improved zirconia, silicon compounds, or mixture consisting of their combination
		Metals with fire resistance or their alloys	Aluminum compounds, silicon compounds, or carbides
		Alloy steel with corrosion resistance	Chrome aluminum alloys, improved zirconia, or mixture of chromealuminum alloys and improved zirconia

		Titanium alloys	Carbides, aluminum compounds, silicon compounds, aluminum alloy compounds, nickel-graphite alloys that can be polished, substances containing nickel chrome aluminum which can be polished, or aluminum-silicon polyester alloys that can be polished
8	Method of fixing slurried coating material onto the surface of a base material	Metals with fire resistance or their alloys	Molten silicon compounds or molten aluminum compounds
		Carbon-carbon, ceramic composites, or metal matrix composites	Silicon compounds, carbides, or mixture of silicon compounds and carbides
9	Sputtering method	Super alloys	Silicon alloy compounds, aluminum alloy compounds, aluminum compounds containing precious metals, chromealuminum alloys, improved zirconia, platinum, or mixture of their combination
		Ceramics or low-thermal expansion glass	Silicon compounds, platinum, mixture of silicon compounds and platinum, dielectric films, or amorphous diamond-like carbon films
		Titanium alloys	Boron compounds, nitrogen compounds, oxides, silicon compounds, aluminum compounds, aluminum alloy compounds, or carbides
		Carbon-carbon, ceramic composites, or metal matrix composites	Silicon compounds, carbides, refractory metals, mixture of their combinations, dielectric films, boron nitrides
		Tungsten carbide alloys or silicon carbide	Carbides, tungsten, mixture of carbides and tungsten, dielectric films, or boron nitrides

		Molybdenum or molybdenum alloys	Dielectric films
		Beryllium or beryllium alloys	Boron compounds, dielectric films, or beryllium
		Sensor window materials	Dielectric films or amorphous diamond-like carbon films
		Metals with fire resistance or their alloys	Aluminum compounds, silicon compounds, oxides, or carbides
10	Ion implantation method	High-temperature bearing steel	Chromium, tantalum, or niobium additives
		Titanium alloys	Boron compounds or nitrogen compounds
		Beryllium or beryllium alloys	Boron compounds
		Tungsten carbide alloys	Carbides or nitrogen compounds

Remarks

- (i) Coating methods include coating repair and refurbishing in addition to initial coating.
- (ii) Aluminum alloy compound coatings include single coating of an element or multiple-step coating of elements before applying aluminum compound coating; provided, however, that the multiple use of a method of fixing the coating material onto the surface of base metal by sealing powdered coating material and base material into a container and heating the container to 757 degrees centigrade or more to obtain aluminum alloy compounds is not included in aluminum alloy compound coating.
- (iii) Aluminum alloy coating using precious metals includes multiple-step coating of precious metals before applying aluminum compound coating.
- (iv) The term "mixture" means materials containing impregnation materials, compositional gradient materials, co-covering materials, or multilayer covering materials, which are obtained by the coating methods specified in this Table.
- (v) The term "chrome aluminum alloy coating" means a coating of alloy containing cobalt, iron, nickel or their combinations, and, hafnium, yttrium, silicon, tantalum, or other additives that exceeds 0.01 weight percent in various proportions and combinations; provided, however, that this excludes coatings falling under any of the following sub-items (a) through (c):
 - (a) alloy coatings consisting of cobalt, chromium, aluminum, and yttrium which contain less than 22 weight percent of chromium, less than 7 weight percent of aluminum, and less than 2 weight percent of yttrium;

(b) alloy coatings consisting of cobalt, chromium, aluminum, and yttrium which contain 22 weight percent or more and 24 weight percent or less of chromium, 10 weight percent or more and 12 weight percent or less of aluminum, and 0.5 weight percent or more and 0.7 weight percent or less of yttrium; or

(c) alloy coatings consisting of nickel, chromium, aluminum, and yttrium which contain 21 weight percent or more and 23 weight percent or less of chromium, 10 weight percent or more and 12 weight percent or less of aluminum, and 0.9 weight percent or more and 1.1 weight percent or less of yttrium.

(vi) The term "aluminum alloy base material" means those having a tensile strength measured at 20 degrees centigrade of 190 megapascals or more.

(vii) The term "alloy steel base material with corrosion resistance" means American Iron and Steel Institute (AISI) 300 series or steel with an equivalent standard.

(vii)-2 Fire resistant metals or their alloys include niobium, molybdenum, tungsten, or tantalum, or their alloys.

(viii) The term "sensor window materials" means alumina, silicon, germanium, zinc sulphide, zinc selenide, gallium arsenide, diamond, gallium phosphide, or sapphire, or among metal halides consisting of zirconium fluoride and hafnium fluoride, those with more than 40 millimeters in diameter.

(ix) The method of fixing the coating material onto the surface of the base metal by sealing powdered coating material and base material into a container and heating the container to 757 degrees centigrade or more does not include the single-step coating method of solid wings.

(x) The term "polymers" means polyimide, polyester, polysulphide, polycarbonates, or polyurethanes.

(xi) The term "improved zirconia" means zirconia whose crystallographic structure and phase composition have been stabilized by using calcium oxide, magnesium oxide, yttrium oxide, hafnium oxide, rare earth oxide, and other metal oxides to zirconia; provided, however, that this excludes thermal barrier coatings by zirconia improved using calcium oxide or magnesium oxide.

(xii) The term "titanium alloy base material" means alloys for aerospace that have a tensile strength measured at 20 degrees centigrade of 900 megapascals or more.

(xiii) The term "low-thermal expansion glass base material" means glass that has a thermal expansion coefficient measured at 20 degrees centigrade of 0.000001 or less.

(xiv) The term "dielectric film" means dielectric film with more than four layers of dielectrics, or composite material film made of dielectrics and

metals.

- (xv) Tungsten carbide alloy base materials do not include materials for cutting tools and plastic processing tools for alloys consisting of tungsten carbide and cobalt or nickel, alloys consisting of titanium carbide and cobalt or nickel, alloys consisting of chromium carbide and nickelchromium alloys, and alloys consisting of chromium carbide and nickel.
- (xvi) Coatings on amorphous diamond-like carbon films do not include coatings on magnetic disk drive mechanism, magnetic heads, devices used for manufacturing disposable containers, water faucets, diaphragm for speakers, components of engines for automobiles, cutting tools, cutting or molding dies, office equipment, microphones, or medical devices, or resin molding dies manufactured using alloys with a beryllium content of less than 5%.
- (xvii) Silicon carbide base materials do not include materials for cutting and plastic processing tools.
- (xviii) Ceramic base materials do not include ceramic materials containing 5 weight percent or more of clay or cement (including their compounds).