

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 (Tentative translation))

(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 set forth hereinafter, 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 Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 2 of the appended table 1 of the Export Trade Control Order (referred to hereinafter as the "Export Order") fall under any of the following:

- (i) nuclear fuel materials or nuclear source materials falling under any of the following:
 - (a) uranium or uranium compounds;
 - (b) thorium or thorium compounds;
 - (c) plutonium or plutonium compounds;
 - (d) nuclear fuel materials or nuclear source materials including 1 or 2 or more of the goods in (a) through (c);
- (ii) nuclear reactors, components or auxiliaries thereof, or power-generating or propulsion equipment specially designed for use in vehicles, vessels, aircraft or space use, or for nuclear reactors for launching space craft;
- (iii) deuterium or deuterium compounds with a hydrogen to deuterium atom number ratio exceeding 1/5,000;
- (iv) among artificial graphite weighing 1 kilogram or more with a boron content level less than 5/1,000,000 of the total weight and apparent specific gravity exceeding 1.50 at 20 degrees centigrade, those falling under any of the following:
 - (a) artificial graphite for use in nuclear reactors;
 - (b) artificial graphite usable in nuclear reactors (excluding those falling

- under (a));
- (v) equipment specially designed for the separation or reprocessing of irradiated nuclear fuel materials or nuclear source materials, or components or controllers thereof;
- (vi) equipment for the separation of lithium isotopes, or equipment for the fabrication of nuclear fuel materials;
- (vii) equipment for the separation of uranium or plutonium isotopes falling under any of the following, or auxiliaries thereof or components thereof:
 - (a) equipment utilizing gas diffusion methods;
 - (b) equipment utilizing centrifuge separation methods;
 - (c) equipment utilizing nozzle separation methods;
 - (d) equipment utilizing vortex methods;
 - (e) equipment utilizing chemical exchange methods;
 - (f) equipment utilizing laser separation methods;
 - (g) equipment utilizing plasma methods;
 - (h) equipment utilizing magnetic separation methods;
- (viii) frequency changers or components thereof falling under any of the following:
 - (a) frequency changers for gas centrifuges that fall under the following 1. and 2. or components thereof:
 - 1. frequency changers with output of 3 or more phases and a frequency of 600 hertz or more;
 - 2. frequency changers capable of controlling output frequency with accuracy less than plus/minus 0.2%;
 - (b) among frequency changers that can be used for variable or fixed frequency motor driving, those falling under all of the following 1. through 3. (excluding those falling under (a) and those used for industrial machinery or consumer goods that become unable to satisfy, when removed from the relevant machinery or goods, any of the properties specified in the following 1. through 3. due to hardware or software restrictions):
 - 1. frequency changers with output of 3 or more phases capable of yielding output of 40 volt-amperes or more;
 - 2. frequency changers operating with an output frequency of 600 hertz or more;
 - 3. frequency changers capable of controlling output frequency with accuracy less than plus/minus 0.2%;
- (ix) nickel powders with an average diameter less than 10 micrometers and a weight-based purity level of 99% or more, or porous metals produced thereof;
- (x) equipment used for the production of deuterium or deuterium compounds, or components or auxiliaries thereof that fall under any of the following:
 - (a) equipment for the production of deuterium or deuterium compounds,

- (including concentration equipment), or components or auxiliaries thereof;
- (b) equipment used for the production of heavy water or components or auxiliaries thereof falling under any of the following (excluding those falling under (a)):
1. deleted;
 2. distillation columns used at low temperatures that fall under all of the following i. through iv.:
 - i. fine-grain stainless steel using steels without hydrogen embrittlement;
 - ii. distillation columns with an internal diameter 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;
 - iv. distillation columns designed to be usable within a pressure range from 0.5 megapascals or more to 5 megapascals or less;
 3. among filling materials designed to be usable in a vacuum distillation column, and phosphorus bronze subjected to a process that chemically improves wettability, those that are mesh-shaped;
 4. turboexpanders designed to be usable at -238 degrees centigrade or less with a hydrogen emission level of 1,000 kilograms per hour or more;
 5. deleted;
 6. pumps capable of circulating liquid ammonia containing potassium amide, which fall under all of the following i. through iii.:
 - i. pumps with a sealed structure;
 - ii. pumps usable within a pressure range from 1.5 megapascals or more to 60 megapascals or less;
 - iii. pumps with discharge exceeding 8.5 cubic meters per hour;
- (x)-2 equipment for the production of uranium trioxide, uranium hexafluoride, uranium dioxide, uranium tetrafluoride, metallic uranium or uranium tetrachloride, falling under any of the following, or auxiliaries or components thereof:
- (a) equipment used for the production of uranium trioxide using uranium concentrate as raw materials;
 - (b) equipment used for the production of uranium hexafluoride using uranium trioxide or uranium tetrafluoride as raw materials;
 - (c) equipment used for the production of uranium dioxide using uranium trioxide or uranium hexafluoride as raw materials;
 - (d) equipment used for the production of uranium tetrafluoride using uranium dioxide or uranium hexafluoride as raw materials;
 - (e) equipment used for the production of metallic uranium using uranium tetrafluoride as raw materials;
 - (f) equipment used for the production of uranium tetrachloride using

- uranium dioxide as raw materials;
- (x)-3 equipment used for the production of plutonium dioxide, plutonium oxalate, plutonium peroxide, plutonium trifluoride, plutonium tetrafluoride or metallic plutonium, or auxiliaries or components thereof;
 - (xi) flow-forming machines or components thereof that fall under any of the following:
 - (a) among flow-forming machines capable of being controlled by numerically-controlled coordinate measurement equipment or computer, those with 3 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 and composite materials) to which an electronic controller with 2 or more axes capable of performing contour control can be attached, those falling under any of the following (a) through (d):
 - (a) machine tools capable of lathe turning that fall under the following 1. and 2. (excluding those falling under 3.):
 - 1. machine tools in which the precision of positioning of the rectilinear axes is 0.006 millimeters or less when measured by the measurement method specified by the International Standards Organization (ISO) (hereinafter referred to as "International Standard") ISO 230-2:1988;
 - 2. machine tools capable of processing items with a diameter exceeding 35 millimeters;
 - 3. bar work lathes materials are inserted from a spindle hole of which for process, and that fall under the following i. and ii.:
 - i. bar work lathes with the maximum diameter of material to be processed of 42 millimeters or less;
 - ii. bar work lathes incapable of having a chuck attached;
 - (b) machine tools capable of milling that fall under any of the following 1. through 3. (excluding those falling under 4.):
 - 1. machine tools in which the precision of positioning of the rectilinear axes is 0.006 millimeters or less when measured by the measurement; method specified by International Standard ISO 230-2:1998
 - 2. machine tools with 2 or more rotational axes capable of controlling contour;
 - 3. machine tools with 5 or more axes capable of controlling contour;
 - 4. milling machines falling under the following i. and ii.:
 - i. milling machines exhibiting a range of motion in the X-axis direction exceeding 2 meters specified by ISO 841 (numerically-controlled machine

- tools - axis and motion nomenclature);
- ii. milling machines in which the precision of positioning of the X-axis specified by ISO 841 exceeds 0.03 millimeters when measured by the measurement method specified by International Standard ISO 230-2:1998;
- (c) machine tools capable of grinding that fall under any of the following 1. through 3. (excluding those falling under 4. or 5.):
- 1. machine tools in which the precision of positioning of the rectilinear axes is 0.004 millimeters or less when measured by the measurement method specified by International Standard ISO 230-2:1998;
 - 2. machine tools with 2 or more rotational axes capable of controlling contour;
 - 3. machine tools with 5 or more axes capable of controlling contour;
 - 4. a cylindrical exterior grinding machine, a cylindrical interior grinding machine, or a cylindrical interior-exterior grinding machine that falls under the following i. and ii.:
 - i. a machine designed to grind objects with an external diameter or length of 150 millimeters or less;
 - ii. a machine possessing only X-axis, Z-axis and C-axis as specified by ISO 841;
 - 5. jig grinding machines that do not fall under the following i. nor ii.:
 - i. among jig grinding machines possessing Z-axis specified by ISO 841, those the precision of positioning of the Z-axis of which is less than 0.004 millimeters when measured by the measurement method specified by International Standard ISO 230-2:1998;
 - ii. among jig grinding machines possessing W-axis specified by ISO 841, those the precision of positioning of the W-axis of which is less than 0.004 millimeters when 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 2 or more rotational axes capable of contour control;
- (e) machine tools designed only for the production of any of the following:
- 1. gears;
 - 2. crank shafts or cam shafts;
 - 3. tools or blades;
 - 4. extruder worms;
- (xv) deleted;
- (xvi) deleted;
- (xvii) measurement equipment (including machine tools usable as a measuring device) that falls under any of the following (excluding those falling under item (xiv)):

- (a) measurement equipment controlled by computers or numerically-controlled coordinate measurement equipment, which falls under any of the following:
1. measurement equipment with 2 or more measurement axes that possesses measurement axes for which, when the precision of measurement of intervals is measured using a method specified by an international standard for any of the points of measurement within the limits of operation, the numerical value of the maximum permissible error for measuring length, expressed in micrometers, is less than the numerical value of the length of the measurement axis, expressed in millimeters, multiplied by 0.001 and a value of 1.25 added;
 2. measurement equipment with three or more measurement axes for which, when the precision of measurement of intervals is measured using a method specified by an international standard the numerical value of the maximum permissible error for measuring length, expressed in micrometers at any of the points of measurement within the limits of operation, is not more than a numerical value obtained by adding 1.7 to the numerical value obtained by multiplying the length of that measurement axis in millimeters by 0.00125;
- (b) measurement equipment measuring displacement along a straight line that falls under any of the following:
1. non-contact type measurement equipment with a resolution of 0.2 micrometers or less in a measurement range of up to 0.2 millimeters;
 2. measurement equipment using linear variable differential transformers (LVDT) that falls under the following i. and ii.:
 - i. systems with a linear variable differential transformer (LVDT) that falls under any of the following:
 - a. an LVDT with the maximum operating range of plus/minus 5 millimeters or less and a linearity of 0.1% or less from zero to the maximum operating range;
 - b. an LVDT with the maximum operating range of more than plus/minus 5 millimeters and a linearity of 0.1% or less from zero to plus/minus 5 millimeters;
 - ii. systems exhibiting a drift of 0.1% per 24 hours or less when measured within a temperature range of 19 degrees centigrade or more and 21 degrees centigrade or less;
 3. measurement equipment falling under the following i. and ii (excluding interferometers which have no feedback function and with which slide movement errors of machine tools, measurement equipment or those similar thereto are measured by using lasers):
 - i. measurement equipment capable of measuring using a laser beam;

- ii. measurement equipment capable of maintaining the properties in the following a. and b. for 12 hours within a temperature range of 19 degrees centigrade or more and 21 degrees centigrade or less:
 - a. measurement equipment with a resolution of 0.1 micrometers or less within the largest measurement range over which measurement is capable of being performed;
 - b. measurement equipment possessing a numerical value of measurement uncertainty for the measurement axis, expressed in micrometers, less than the value obtained by multiplying the length of that measurement axis, expressed in millimeters, by 0.0005, and then adding 0.2 thereto, when compensated for by the refractive index of air at any single point within the measurement range;
- (c) measurement equipment that measures angular displacement, and with a maximum angular location deviation of 0.00025 degrees or less (excluding optical instruments that measure angular displacement using parallel light beams (including autocollimators));
- (d) measurement equipment capable of simultaneously measuring the length and angle of objects having curved shapes and that fall under the following 1. and 2.:
 - 1. measurement equipment with a numerical value for the measurement uncertainty for measurement axes of 3.5 micrometers or less per 5 millimeters of measurement distance;
 - 2. measurement equipment with a maximum angular position deviation of 0.02 degrees or less;
- (xviii) induction furnaces, arc furnaces or plasma melting furnaces or electron-beam melting furnaces or components thereof or auxiliaries therefor that fall under any of the following:
 - (a) vacuum induction furnaces or induction furnaces utilizing non-volatile gases (excluding those used for process of semiconductor wafers) and that fall under all of the following 1. through 3., or power units thereof with output of 5 kilowatts or more:
 - 1. furnaces capable of heating the interior thereof exceeding 850 degrees centigrade;
 - 2. furnaces having an induction coil with a diameter of 600 millimeters or less;
 - 3. furnaces with input from the power units of 5 kilowatts or more;
 - (b) of arc melting furnaces, arc remelting furnaces or arc melting casting furnaces that melt and cast metal in a vacuum or inert gas, those which possess consumable electrodes with a capacity of over 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) of electron-beam melting furnaces, plasma atomization furnaces or plasma melting furnaces that melt and cast metal in a vacuum or inert gas, those whose output is not less than 50 kilowatts and which are capable of melting metal at a temperature exceeding 1,200 degrees centigrade;
- (d) controllers or monitors using a computer for the furnaces falling under (b) or (c);
- (e) of plasma torches specifically designed for the furnaces falling under (c) whose output is not less than 50 kilowatts, those capable of melting metal at a temperature exceeding 1,200 degrees centigrade; or
- (f) electron beam guns specifically designed for the furnaces falling under (c) whose output is not less than 50 kilowatts.
- (xix) isostatic presses falling under the following (a) and (b) or controllers thereof or molds designed to be capable of use with isostatic presses:
 - (a) isostatic presses with a maximum pressure of 69 megapascals or more;
 - (b) isostatic presses with hollow cavities possessing an internal diameter which exceeds 152 millimeters;
- (xx) robots (excluding operating robots and sequence robots) or end effectors that fall under any of the following, or controllers thereof:
 - (a) explosion-proof robots or end effectors as specified by Japan Industrial Standard C6007910 (Electric machine and appliances used in explosive atmospheres Part 0: General requirements) based on the Industrial Standardization Act (Act No. 185, 1949) (hereinafter referred to as "Japan Industrial Standard") (excluding those used for painting);
 - (b) robots or end effectors designed to be able to withstand irradiation with total absorption line volume exceeding 50,000 grays on a silicon conversion basis;
- (xxi) vibration test equipment or components thereof that fall under any of the following:
 - (a) vibration test equipment digitally controlled and electrically powered that fall under the following 1. and 2.:
 1. equipment with an excitation force of 50 kilonewtons or more in a state with no test object present, and capable of generating vibrations with an acceleration effective value of 98 meters per second squared or more, in a frequency range from exceeding 20 hertz and less than 2,000 hertz;
 2. equipment utilizing feedback control technology or closed-loop control technology;
 - (b) components of vibration test equipment and that fall under any of the following:
 1. components designed for use in control of vibration test equipment falling under (a), using programs for a vibration test, and performing digital control of vibration tests in real time in bandwidth exceeding 5

- kilohertz;
2. vibration generators usable for vibration test equipment falling under (a), with an excitation force of 50 kilonewtons or more in a state with no test object present;
 3. parts of vibration tables or vibration generators capable of use for vibration test equipment falling under (a) and designed for use by connecting 2 or more vibration generators in order to generate vibrations with exciting force of 50 kilonewtons or more in a state with no test object present;
- (xxii) structural materials capable of use for gas centrifuge rotors that fall under any of the following:
- (a) among aluminum alloys (including forged alloy) with a tensile strength of 460 megapascals or more at 20 degrees centigrade, those with a shaft-like or cylindrical shape and an external diameter exceeding 75 millimeters;
 - (b) carbon fibers, aramid fibers or glass fibers, or prepreg made from carbon fibers or glass fibers, or molded products made with carbon fibers or aramid fibers, falling under any of the following:
 1. carbon fibers or aramid fibers that fall under any of the following:
 - i. fibers with a specific elastic modulus of 12,700,000 meters or more;
 - ii. fibers with a specific strength of 235,000 meters or more;
 2. glass fibers falling under the following i. and ii.:
 - i. glass fibers with a specific elastic modulus of 3,180,000 meters or more;
 - ii. glass fibers with a specific strength of 76,200 meters or more;
 3. prepreg consisting of carbon fibers or glass fibers falling under 1. or 2. and impregnated with thermosetting resin that falls under any of the following:
 - i. fibrous prepreg;
 - ii. tape-shaped prepreg with a width of 15 millimeters or less;
 4. cylindrical formed goods utilizing fibers falling under 1. or prepreg falling under 3. (limited to goods utilizing 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 with the greatest value of dimensions exceeding 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 shaft-like or cylindrical shape and an external diameter exceeding 75 millimeters;
- (xxiii) metals, waste, or scrap of beryllium and beryllium alloys (limited to those with a beryllium content exceeding 50% of the total weight) or beryllium compounds, or primary or semi-finished products thereof;
- (xxiv) substances used as alpha sources for the detonation of nuclear weapons,

- or raw materials thereof that fall under any of the following:
- (a) bismuth with a weight-based purity level of 99.99% or more and a silver content less than 0.001% of the total weight;
 - (b) radium 226, radium 226 alloys, radium 226 compounds or radium 226 mixtures, or primary or semi-finished products thereof (excluding those incorporated into and installed in medical devices, where the total radioactivity per device is less than 0.37 gigabecquerels);
 - (c) radionuclide suitable for alpha-neutron reaction to generate neutron sources, or compounds or mixtures thereof (excluding those installed in equipment, for which the total radiation per device is less than 3.7 gigabecquerels), and with total radiation per kilogram of 37 gigabecquerels or more;
- (xxv) boron, boron compounds or boron mixtures, or primary or semi-finished products thereof, comprised of concentrated boron with a boron 10 to boron 10 and boron 11 ratio greater than the ratio in nature, or anything containing such boron;
- (xxvi) substances used as reducing or oxidizing agents for the production of nuclear fuel materials and that fall under any of the following:
- (a) calcium falling under the following 1. and 2.:
 - 1. calcium with a content ratio of metals other than calcium or magnesium less than 0.1% of the total weight;
 - 2. calcium with a boron content ratio less than 0.001% of the total weight;
 - (b) chlorotrifluorine;
 - (c) magnesium falling under the following 1. and 2.:
 - 1. magnesium with a content ratio of metals other than magnesium or calcium less than 0.02% of the total weight;
 - 2. magnesium with a boron content ratio less than 0.001% of the total weight;
- (xxvii) crucibles made with materials corrosion-resistant against actinide that fall under any of the following:
- (a) crucibles with a capacity exceeding 0.15 liters and less than 8 liters, made from or coated with any of the following, or a combination thereof (limited to those with a ratio of the total weight of impurities to the total weight of the relevant 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 level 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 level of 98% or more, those that are coated with tantalum carbide, tantalum nitride, tantalum boride, or a combination thereof;
- (xxviii) metals, waste, or scrap of hafnium and hafnium alloys (limited to those with a hafnium content exceeding 60% of the total weight) or hafnium compounds (limited to those with hafnium content level exceeding 60% of the total weight), or primary or semi-finished products thereof;
- (xxix) metals, waste or scraps of lithium or lithium alloys or lithium compounds or mixtures, or primary or semi-finished products thereof, comprising concentrated lithium with a lithium 6 to lithium 6 and lithium 7 ratio greater than the ratio in nature, or containing the lithium (excluding lithium compounds and lithium mixtures incorporated into thermo-luminescence dosimeters);
- (xxx) tungsten, tungsten carbide, or alloys with a tungsten content exceeding 90% of the total weight, weighing in excess of 20 kilograms, with a cylindrical shape and internal diameter exceeding 100 millimeters and less than 300 millimeters, or with a hollow hemispherical shape, and combinations of both shapes (excluding those designed for use in dead weight or gamma ray collimators);
- (xxxii) metals, waste, or scraps of zirconium or zirconium alloys (limited to alloys with a zirconium content exceeding 50% of the total weight), or zirconium compounds (limited to those with a hafnium content level less than 1/500 the zirconium content level), and primary or semi-finished products thereof (excluding leaf with a thickness 0.1 millimeters or less);
- (xxxiii) electrolytic cells for fluorine production with a production capability exceeding 250 grams per hour;
- (xxxiiii) equipment for the production or assembly of gas centrifuge rotors, or components thereof, which fall under any of the following:
 - (a) equipment used for assembly gas centrifuge rotor tubes, baffle and end caps;
 - (b) equipment used to adjust the center axis of gas centrifuge separator rotor tubes;
 - (c) mandrels or molds used for manufacture of bellows (limited to those made from aluminum alloys, maraging steel, or fiber-reinforced composite materials) falling under the following all of 1. through 3.:

1. mandrels or molds with an internal diameter exceeding 75 millimeters and less than 400 millimeters;
 2. mandrels or molds with a groove pitch of 12.7 millimeters or more;
 3. mandrels or molds with a groove depth exceeding 2 millimeters;
- (xxxiv) centrifugal balancing machines (excluding balancing machines that can measure unbalance on one plane) that fall under any of the following (excluding those falling under Article 3, item (xvii)-3, (b)):
- (a) centrifugal balancing machines designed to be capable of testing elastic rotors with a length of 600 millimeters or more that fall under all of the following 1. through 3.:
 1. centrifugal balancing machines capable of testing elastic rotors with an external diameter exceeding 75 millimeters or centrifugal balancing machines with a journal diameter exceeding 75 millimeters;
 2. centrifugal balancing machines capable of testing elastic rotors with a weight of 0.9 kilograms or more and 23 kilograms or less;
 3. centrifugal balancing machines capable of testing at 5,000 rounds per minute or more;
 - (b) centrifugal balancing machines designed to be capable of testing cylindrical rotors, and that fall under all of the following 1. through 4.:
 1. machines with a journal diameter exceeding 75 millimeters;
 2. machines capable of testing rotors of 0.9 kilograms or more and 23 kilograms or less;
 3. machines with a minimum achievable residual ratio unbalance of not more than 10 grams millimeters per kilogram on the balancing plane;
 4. machines with a belt drive mechanism;
- (xxxv) filament winding machines falling under the following (a) and (b), or controllers thereof or mandrels:
- (a) among machines that perform positioning on filaments and carry out wrapping and winding operations, those with 2 or more axes capable of controlling both these operations in coordination;
 - (b) machines capable of manufacturing cylindrical tubes with an internal diameter exceeding 75 millimeters and less than 650 millimeters and a length of 300 millimeters or more;
- (xxxvi) gas laser oscillators, solid-state laser oscillators or dye laser oscillators that fall under any of the following:
- (a) metal vapor laser oscillators (limited to copper laser oscillators) designed for use within a wavelength range exceeding 500 nanometers and less than 600 nanometers, with an average output of 30 watts or more;
 - (b) argon ion laser oscillators designed for use within a wavelength range exceeding 400 nanometers and less than 515 nanometers, with an average output exceeding 40 watts;

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

- fall under all of the following i. through iii.:
- i. oscillators with a pulse repetition frequency exceeding 1 kilohertz;
 - ii. oscillators with an average output exceeding 1 watt;
 - iii. oscillators with a pulse width less than 100 nanoseconds;
2. variable wavelength oscillator emitting a pulse that fall under all of the following i. through iii. (excluding those falling under 1.):
- i. oscillators with a pulse repetition frequency exceeding 1 kilohertz;
 - ii. oscillators with an average output exceeding 30 watts;
 - iii. oscillators with a pulse width less than 100 nanoseconds;
- (i) among carbon monoxide laser oscillators designed for use within a wavelength range exceeding 5,000 nanometers and less than 6,000 nanometers, designed to generate a pulse, those falling under all of the following 1. through 3.:
1. oscillators with a pulse repetition frequency exceeding 250 hertz;
 2. oscillators with an average output exceeding 200 watts;
 3. oscillators with a pulse width of 200 nanoseconds or less;
- (xxxvii) of mass spectrometers capable of measuring ions with a mass of not less than 230 in unified atomic mass units and having the resolving power to distinguish ions with a mass of 230 when a difference of atomic mass between those ions is less than 2, those falling under any of (a) through (e) below (excluding those falling under (f)) or ion sources usable for those mass spectrometers:
- (a) mass spectrometers utilizing inductively-coupled plasma;
 - (b) mass spectrometers utilizing glow discharge;
 - (c) mass spectrometers utilizing thermal ionization;
 - (d) among mass spectrometers possessing an ion source that ionizes by bombarding the materials under analysis with electrons, those which fall under the following 1. and 2.:
1. mass spectrometers with equipment that delivers parallel beams of molecules of the materials under analysis to the area of an ion source where molecules ionize using electron beams;
 2. mass spectrometers with one or more cold traps capable of attaining temperatures at -80 degrees centigrade or less to capture molecules that do not ionize using electron beams in parallel beams of molecules of the materials under analysis;
- (e) mass spectrometers possessing an ion source designed for ionization of actinides or fluorides thereof;
- (f) mass spectrometers that fall under all of the following 1. through 5.:
1. mass spectrometers capable of measuring ions with a mass of 320 or more, expressed in atomic weight units, which have a resolution of more than 320, expressed in atomic weight units;

2. mass spectrometers possessing an ion source made from, or protected with, nickel, nickel copper alloys with a nickel content of 60% or more of the total weight, or nickel chrome alloys;
 3. mass spectrometers possessing an ion source that ionizes by bombarding the materials under analysis with electrons;
 4. mass spectrometers possessing a collector usable for isotope analysis;
 5. mass spectrometers capable of taking samples without stopping the flow of uranium hexafluoride gas;
- (xxxviii) pressure gauges or bellows valves that fall under any of the following:
- (a) pressure gauges capable of measuring absolute pressure that fall under all of the following 1. through 3. (excluding 2. for those using no seal to cover up sensors tight):
 1. pressure gauges utilizing a sensor made from, or protected with, aluminum, aluminum alloys, aluminum oxide, nickel, nickel alloys with a nickel content exceeding 60% of the total weight, or fluorinated hydrocarbon polymers;
 2. pressure gauges indispensable to cover up sensors tight and coming into direct contact with the contents which utilize a seal made from, or protected with, aluminum, aluminum alloys, aluminum oxide, nickel, nickel alloys with a nickel content exceeding 60% of the total weight, or fluorinated hydrocarbon polymers;
 3. pressure gauges that fall under any of the following:
 - i. when the full scale is less than 13 kilopascals, pressure gauges with a precision of less than plus/minus 1% of the full scale, in any full scale;
 - ii. when the full scale is 13 kilopascals or more, pressure gauges 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 for which all portions that come into contact with the contents comprising, 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) superconducting solenoid electromagnets that fall under all of the following (a) through (d) (excluding those designed for use of clinical magnetic resonance equipment):
- (a) superconducting solenoid electromagnets with magnetic flux density exceeding 2 teslas;
 - (b) superconducting solenoid electromagnets, the coil length of which divided by an internal diameter exceeds 2;
 - (c) superconducting solenoid electromagnets with a coil internal diameter exceeding 300 millimeters;
 - (d) a circle with the radius of 35% of the internal diameter, centered on the

- center of the coil axis, and with a magnetic field homogeneity less than 1% within the range of those perpendicular to the coil axis;
- (xl) among vacuum pumps with an intake internal diameter of 38 centimeters or more, those with an exhaust speed of 15,000 liters or more per second and an ultimate pressure less than 13.3 millipascals;
 - (xl)-2 among scroll-type compressors or vacuum pumps that use bellows seals, those falling under all of the following (a) through (c):
 - (a) those with a capacity of air-intake of 50 cubic meters per hour or more;
 - (b) those with a capacity of pressure ratio of 2 or more;
 - (c) those in which all surfaces that come into contact with the contents which 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;
 6. fluoropolymers;
 - (xli) direct current power units falling under any of the following:
 - (a) among direct current power units with an output current of 500 amperes or more, those with a current or voltage fluctuation rate less than 0.1%, and capable of use for exceeding 8 consecutive hours under an output voltage of 100 volts or more;
 - (b) among direct current power units with an output voltage of 20,000 volts or more, those with a current or voltage fluctuation rate less than 0.1%, and capable of use for exceeding 8 consecutive hours with an output current of 1 ampere or more;
 - (xlii) electron accelerators or flash X-ray generators falling under any of the following (excluding electron microscope components and medical equipment):
 - (a) electron accelerators or flash X-ray generators with a peak value for electron kinetic energy of 0.5 megaelectron volts or more and less than 25 megaelectron volts, and that fall under any of the following:
 1. electron accelerators or flash X-ray generators with a beam pulse duration of 1 microsecond or less, and with a value of 0.25 or more when 1,700 is multiplied by the result of multiplying the peak value of electron kinetic energy expressed in megaelectron volts raised to the 2.65 power by the total charge quantity of accelerated electrons, expressed in coulombs;
 2. electron accelerators or flash X-ray generators with a beam pulse duration exceeding 1 microsecond, and having a value of 0.25 or more when 1,700 is multiplied by the result of multiplying the peak value of electron kinetic energy expressed in megaelectron volts raised to the 2.65 power is

- multiplied by the maximum charge quantity of electrons accelerated for 1 microsecond, expressed in coulombs;
- (b) electron accelerators or flash X-ray generators with a peak electron kinetic energy of 25 megaelectron volts or more and a peak output exceeding 50 megawatts;
 - (xliii) impact testing machines capable of supporting a maximum projectiles velocity of 1.5 kilometers per second or more;
 - (xliv) high speed cameras or components thereof that fall under any of the following:
 - (a) streak cameras or components thereof that fall under any of the following:
 1. streak cameras with a photographing speed exceeding 0.5 millimeters per microsecond;
 2. electronic streak cameras with a time resolution of 50 nanoseconds or less;
 3. streak tubes for cameras that fall under 2.;
 4. plugging units designed to be used in streak cameras having a module type structure which need to attain or exceed the functions or characteristics of the goods that fall under 1. or 2.;
 5. assemblies of rotating reflectors composed of turbines, reflectors, and bearings, or synchronizing electronic equipment designed for cameras that fall under 1.;
 - (b) framing cameras or components thereof and that fall under any of the following:
 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 designed for cameras falling under 1 or 2. and with a shutter speed less than 50 nanoseconds;
 4. plugging units designed for use in framing cameras having a module type structure which need to attain or exceed the functions or characteristics of the goods that fall under 1. or 2.;
 5. assemblies of rotating reflectors composed of turbines, reflectors, and bearings, or synchronizing electronic equipment designed for cameras that fall under 1. or 2.;
 - (c) solid-state or electron tube cameras, or components thereof that fall under any of the following excluding those falling under (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 designed for cameras falling under 1. with a shutter speed of 50 nanoseconds or less;
 3. electrically triggered shutters utilizing Kerr cells or Pockel cells with a

- shutter speed of 50 nanoseconds or less;
- 4. plugging units designed to be used in cameras having a module type structure which need to attain or exceed the functions or characteristics of the goods that fall under 1.;
- (xlv) interferometers for measuring fluid velocities or pressure gauges capable of measuring fluid pressure, or quartz pressure transducers that fall under any of the following:
 - (a) interferometers for measuring fluid speeds falling under the following 1. and 2.:
 - 1. interferometers capable of measuring speeds exceeding 1 kilometer per second;
 - 2. interferometers capable of measuring speeds at intervals less than 10 microseconds;
 - (b) pressure gauges capable of measuring pressures exceeding 10 gigapascals;
 - (c) quartz pressure transducers capable of measuring pressures exceeding 10 gigapascals;
- (xlvi) cold-cathode tubes having 3 or more electrodes and that fall under all of the following (a) through (c):
 - (a) cold-cathode tubes with a peak anode voltage of 2,500 volts or more;
 - (b) cold-cathode tubes with a peak anode current of 100 amperes or more;
 - (c) cold-cathode tubes with an anode delay time of 10 microseconds or less;
- (xlvii) among trigger spark gaps with a cathode delay time of 15 microseconds or less, those with a peak current of 500 amperes or more;
- (xlviii) assemblies having switching capabilities that fall under all of the following (a) through (c):
 - (a) assemblies with a peak anode voltage exceeding 2,000 volts;
 - (b) assemblies with a peak anode current of 500 amperes or more;
 - (c) assemblies with a turn-on time of 1 microsecond or less;
- (xlix) pulse condensers falling under any of the following:
 - (a) pulse condensers possessing a rated voltage exceeding 1,400 volts that fall under all of the following 1. through 3.:
 - 1. pulse condensers with a total energy exceeding 10 joules;
 - 2. pulse condensers with a nominal capacitance exceeding 0.5 microfarads;
 - 3. pulse condensers with series inductance less than 50 nanohenries;
 - (b) pulse condensers with a rated voltage exceeding 750 volts, and that fall under the following 1. and 2.:
 - 1. pulse condensers with a nominal capacitance exceeding 0.25 microfarads;
 - 2. pulse condensers with series inductance less than 10 nanohenries;
- (l) pulse generators or xenon flashlamp drivers that fall under any of the

following:

- (a) modular pulse generators or xenon flashlamp drivers that fall under all of the following:
 - 1. modular pulse generators or xenon flashlamp drivers capable of supplying a pulse for less than 15 microseconds against a resistance load less than 40 ohms;
 - 2. modular pulse generators or xenon flashlamp drivers with an output exceeding 100 amperes;
 - 3. modular pulse generators or xenon flashlamp drivers having a largest dimensional value of 30 centimeters or less;
 - 4. modular pulse generators or xenon flashlamp drivers with a weight less than 30 kilograms;
 - 5. modular pulse generators or xenon flashlamp drivers designed to be usable from below -50 degrees centigrade to over 100 degrees centigrade, or designed to be usable for space use;
- (b) pulse generators or pulse heads generating pulses with voltage exceeding 6 volts against a resistance load less than 55 ohms, and requiring a pulse rise time less than 500 picoseconds (excluding those falling under (a));
- (li) components of detonators that fall under all of the following:
 - (a) components of detonators capable of controlling the ignition of explosives through electric signals;
 - (b) components of detonators that have the stripline structure;
 - (c) components of detonators with a rated voltage exceeding 2 kilovolts;
 - (d) components of detonators with an inductance path of less than 20 nanohenries;
- (lii) among photomultiplier tubes with photocathode area exceeding 20 square centimeters, those with an anode pulse rise time less than 1 nanosecond;
- (liii) neutron generators utilizing electrostatic acceleration to induce a tritium-deuterium or deuterium-deuterium nuclear reaction that fall under any of the following:
 - (a) neutron generators utilizing electrostatic acceleration to induce a tritium-deuterium nuclear reaction designed to be operable without using a vacuum pump;
 - (b) among neutron generators utilizing electrostatic acceleration to induce a deuterium-deuterium nuclear reaction that are capable of producing 3 Giga neutrons or more per second, those designed to be operable without using a vacuum pump;
- (liv) remote manipulators used in the prevention of radioactive exposure, and operable behind a radiation shielding wall with a thickness of 0.6 meters or more;
- (lv) radiation shielding windows and that fall under all of the following (a)

- through (c), or frames thereof:
- (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 centimeters;
 - (c) windows with a thickness of 100 millimeters or more;
- (lvi) TV cameras or lenses specially designed for protection from the influence of radiation, and capable of withstanding radiation with total absorption exceeding 50,000 grays on a silicon conversion basis;
- (lvii) tritium, tritium compounds or tritium mixtures, with a ratio of tritium atomicity to hydrogen atomicity exceeding 1/1,000 (excluding those installed in equipment, with total radioactivity per 1 equipment less than 1,480 gigabecquerels);
- (lviii) equipment used for the production, collection or storage of tritium or components of equipment used for the production of tritium that fall under any of the following:
- (a) equipment designed for the production (including that for concentration), collection or preservation of tritium;
 - (b) equipment used for the production (including purification), collection or preservation of tritium that falls under any of the following (excluding that falling under (a)):
 - 1. freezing equipment capable of cooling hydrogen or helium to -250 degrees centigrade or less, and with a freezing capacity exceeding 150 watts;
 - 2. equipment for the storage or purification of hydrogen isotopes that utilizes metal hydrides as storage or purification catalyst;
 - (c) equipment used for the production of tritium which are target assemblies containing lithium (limited to those composed of enriched isotopes of lithium 6) specifically designed to produce tritium by irradiation (including irradiation in a nuclear reactor) (excluding those falling under (a) and (b));
or
 - (d) components of equipment used for the production of tritium which are specifically designed for goods falling under (c).
- (lix) platinized catalysts for the collection of tritium from heavy water or for the production of heavy water, and designed to promote hydrogen isotope exchange between hydrogen and water;
- (lx) helium with a helium-3 mixing rate greater than the mixing rate in nature (excluding helium-3 sealed in containers or equipment with a weight less than 1 gram);
- (lxi) rhenium, alloys with a rhenium content of 90% or more of the total weight, or alloys with a rhenium or tungsten content of 90% or more of the total

- weight weighing in excess of 20 kilograms, with a cylindrical shape and internal diameter exceeding 100 millimeters and less than 300 millimeters, or with a hollow hemispherical shape, and combinations of both shapes;
- (lxii) explosion-proof containers designed to be used for the testing of explosives or explosive devices which fall under any of the following (a) and (b):
- (a) explosion-proof containers designed to be capable of fully containing explosions equivalent to 2 kilograms or more of trinitrotoluene;
 - (b) explosion-proof containers that have a structure or properties to transmit analysis or measurement information of relevant tests.

Article 2 (1) 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 fall under any of the following:

- (i) substances for raw materials of chemical warfare agents falling under any of the following or mixtures containing the substances, wherein 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-dimethylformamidine;
- (hh) N,N-diethylformamidine;
- (ii) N,N-dipropylformamidine;
- (jj) N,N-diisopropylformamidine;
- (kk) N,N-dimethylacetamidine;
- (ll) N,N-diethylacetamidine;
- (mm) N,N-dipropylacetamidine;
- (nn) N,N-dimethylpropanamidine;
- (oo) N,N-diethylpropanamidine;
- (pp) N,N-dipropylpropanamidine;
- (qq) N,N-dimethylbutanamidine;
- (rr) N,N-diethylbutanamidine;
- (ss) N,N-dipropylbutanamidine;
- (tt) N,N-diisopropylbutanamidine;
- (uu) N,N-dimethylisobutanamidine;
- (vv) N,N-diethylisobutanamidine;
- (ww) N,N-dipropylisobutanamidine;
- (ii) substances having equivalent toxic ability with chemical warfare agents falling under any of the following or mixtures containing such a substance (for mixtures containing a substance falling under (a) through (g), limited to those for which the content of a substance falling under any of (a) through (c) exceeds 1 % of the total weight, or those for which the content of the substance falling under any of (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;
 - (g) trichloronitromethane;
- (iii) substances having equivalent toxic ability with chemical warfare agents

falling under any of the following or mixtures containing the substances (for mixtures containing substances falling under (f) through (cc), limited to those for which the content of any of the substances falling under (f) through (p) exceeds 10 % of the total weight, or those for which the content of any of the substances falling under (f) through (cc) exceeds 30 % of the total weight):

- (a) alkyl phosphonyl difluoride (limited to those having an alkyl group carbon number of 3 or less);
- (b) O-alkyl = O-2-dialkylaminoethyl = alkyl phosphonite (including those O-alkyl alkyl group of which is a cycloalkyl group, though limited to those O-alkyl alkyl group carbon number of which is 10 or less and O-2-dialkylaminoethyl or alkyl phosphonite alkyl group carbon number of which is 3 or less) as well as alkylate salts and protonate salts thereof;
- (c) O-2-dialkylaminoethyl = hydrogen = alkyl phosphonite (limited to those O-2-dialkylaminoethyl or alkyl phosphonite alkyl group carbon number of which is 3 or less) as well as alkylate salts and protonate salts thereof;
- (d) O-isopropyl = methyl phosphonochloridate;
- (e) O-pinacolyl = methyl phosphonochloridate;
- (f) compounds containing phosphorus atoms having no bond with a carbon atom other than a bond with one alkyl group carbon number of which is 3 or less;
- (g) N,N-dialkyl phosphoramidic = dihalide (limited to those with alkyl group carbon number of 3 or less);
- (h) dialkyl = N,N-dialkyl phosphoramidate (limited to those with dialkyl or N,N-dialkyl phosphoramidate alkyl group carbon number of 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 alkyl group carbon number of which is 3 or less) and protonate salts thereof;
- (m) N,N-dialkyl aminoethane-2-ol (limited to those alkyl group carbon number of which is 3 or less) and protonate salts thereof;
- (n) N,N-dialkyl aminoethane-2-thiol (limited to those the carbon number of whose alkyl group is not more than 3 and including 2-diisopropylamino ethanethiol) and protonated salts thereof (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) Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 3 (ii) of the appended table 1 of the Export Order fall under any of the following:

- (i) among reactor vessels or reactors having a capacity exceeding 0.1 cubic meters and less than 20 cubic meters of which all portions that come into contact with the contents, those composed of, lined with or coated with materials falling under any of the following:
 - (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;
 - (h) niobium or niobium alloys;
- (ii) among storage tanks, containers or receivers having a capacity exceeding 0.1 cubic meters, those all portions that come into contact with the contents of which are composed of, lined with or coated with materials falling under any of the following:
 - (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;
 - (h) niobium or niobium alloys;
- (iii) among heat exchangers or condensers having a heat transfer area exceeding 0.15 square meters and less than 20 square meters, or tubes,

- plates, coils or blocks designed as components thereof, those all portions that come into contact with the contents of which are composed of, lined with or coated with materials falling under any of the following:
- (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;
 - (k) niobium or niobium alloys;
- (iv) of distillation or absorption columns whose inside diameter exceeds 0.1 meter, or liquid dispensers, vapor dispensers or liquid collectors designed as components thereof, those all of whose parts in contact with the contents are composed of or lined or coated with materials falling under any of the following:
- (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) niobium or niobium alloys;
- (v) filling equipment capable of remote operation all portions that come into contact with the contents of which are composed of, lined with or coated with materials falling under any of the following:
- (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 designed to be used for those falling under item (i), or impellers, blades, or shafts designed as components thereof, those all portions that come into contact with the contents of which are composed of, lined with or coated with materials falling under any of the following:
- (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;
 - (h) niobium or niobium alloys;
- (vii) valves or components thereof that fall under any of the following:
- (a) valves whose nominal diameter is over 10 A and all of whose parts in contact with the contents are composed of or lined or coated with materials falling under any of the following:
 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:
 - i. ceramics with a silicon carbide content of 80 % or more of the total weight;
 - ii. ceramics 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 not less than 25 A and not more than 100 A that fall under all of the following (excluding those falling under (a)):
 1. of casings or casing liners for other parts than shut-off parts, those all of whose parts in contact with the contents are composed of or lined or coated with any of the materials specified in (a), 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 (a) or (b) and all of whose parts in contact with the contents are composed of or lined or coated with any of the materials specified in (a), 1. through 9.
- (viii) multi-walled piping provided with a port for equipment for detecting content leaks all portions that come into contact with the contents of which are composed of, lined with or coated with materials falling under any of the following:

- (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) niobium or niobium alloys;
- (ix) among pumps axes of which are sealed by 2 or more layers or seal-less pumps the maximum specified discharge volume of which exceeds 0.6 cubic meters per hour, or vacuum pumps the maximum specified discharge volume of which exceeds 5 cubic meters per hour, or casings, casing liners, impellers, rotors, or jet pump nozzles designed as components thereof, those in which all portions that come into contact with the contents of which are composed of, lined with, or coated with materials falling under any of the following:
- (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;
 - (k) niobium or niobium alloys;
- (x) among incinerators average temperature of incineration chamber during use of which exceeds 1,000 degrees centigrade, those which have portions for supplying the substance to be incinerated for which all portions that come into contact with the contents are composed of or coated with materials falling under any of the following:
- (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) ceramic;
- (xi) gas monitoring systems that fall under any of the following:
- (a) systems capable of detecting those listed in the preceding paragraph even when the concentration in the air is less than 0.3 milligrams per cubic

- meter and designed for continuous use;
- (b) systems designed for detecting compounds having an anticholinesterase effect;
- (xii) components of those listed in the preceding item and that fall under any of the following:
 - (a) detectors;
 - (b) sensor devices;
 - (c) sensor cartridges.
- (3) Goods with the specifications specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (3), (iii) of Appended Table 1 of the Export Order shall fall under any of the following:
 - (i) assemblies used to repair reactors falling under item (i) of the preceding paragraph all of whose parts in contact with the contents are lined or coated with glass or components specifically designed for the assemblies whose metal parts in contact with the contents are composed of tantalum or tantalum alloy; or
 - (ii) assemblies used to repair storage tanks, containers or receivers falling under item (ii) of the preceding paragraph all of whose parts in contact with the contents are lined or coated with glass or components specifically designed for the assemblies whose metal parts in contact with the contents are composed of tantalum or tantalum alloy.

Article 2-2 (1) Goods specified by the Order of the Ministry of Economy, Trade and Industry in row 3-2 (i) of the appended table 1 of the Export Order fall under any of the following:

- (i) viruses (excluding vaccines): the African horse sickness virus, the African swine fever virus, the Andean potato latent virus, the Andes virus, all viruses of the genus Ebola virus, the yellow fever virus, the Omsk hemorrhagic fever virus, the Oropouche virus, the Guanarito virus, the Kyasanur Forest disease virus, the cattle plague virus, the 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, the Sabia virus, the monkeypox virus, the peste des petits ruminants virus, the Sin Nombre virus, the vesicular stomatitis virus, the western equine encephalitis virus, the Saint Louis encephalitis virus, the Seoul virus, the tick-borne encephalitis virus (limited to the Far Eastern type), the Chikungunya virus, the Chapare virus, the louping ill virus, the Choclo virus, the smallpox virus, the eastern equine encephalitis virus, the Dobrava-Belgrade virus, the Nipah virus, the Japanese encephalitis virus, the Newcastle disease virus, the Hantan virus, the swine fever virus, the swine

vesicular virus, the porcine teschovirus, the Suid herpesvirus 1, the Junin virus, the blue tongue virus, the Venezuelan equine encephalitis virus, the Hendra virus, the potato spindle tuber viroid, the Powassan virus, the Machupo virus, the MERS coronavirus, all viruses of the genus Marburg virus, the Murray Valley encephalitis virus, the goat pox virus, the sheep pox virus, the Laguna Negra virus, the Lassa virus, the lumpy skin disease virus, viruses of the genus Lyssavirus (including the rabies virus), the Rift Valley fever virus, the lymphocytic choriomeningitis virus, the Lujo virus, or the Rocio virus;

- (ii) bacteria (excluding vaccines): *Clostridium argentinense* (limited to botulinum neurotoxin producing strains), *Clostridium perfringens* (limited to types producing epsilon toxins), *Brucella abortus*, *Chlamydia psittaci*, *Mycoplasma mycoides* (small colony), *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): aflatoxin, abrin, clostridium welchii toxin (limited to alpha, beta 1, beta 2, epsilon or iota toxins), HT-2 toxin, staphylococcal enterotoxin (enterotoxin, alpha-toxin, and toxic shock syndrome toxin), conotoxin, cholera toxin, Shiga toxin, diacetoxyscirpenol, T-2 toxin, tetrodotoxin, viscumin, botulin toxin, Volkensin, microcystin, or modeccin;
- (iv) subunits of those falling under the preceding item;
- (v) bacteria or fungi: *Clavibacter michiganensis* ssp. *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* var. *graminis*, *Puccinia striiformis*, *Peronosclerospora philippinensis*, *Magnaporthe oryzae*, *Microcyclus ulei*, or *Ralstonia solanacearum* race 3 or biovar 2;
- (vi) genetically-modified organisms (including those the base sequence of whose nucleic acid has been formed or modified by intentional molecular manipulation) which have any of the following or genetic elements (including chromosomes, genomes, plasmids, transposons, vectors, and inactivated organisms, including restorable nucleic acid fragments) which have any of

the following base sequences:

- (a) genes falling under item (i);
 - (b) of 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 which have the base sequence of the nucleic acid of a colon bacillus with a serotype to produce Shiga toxins, such as those with serotype O26, O45, O103, O104, O111, O121, O145 and O157 (limited to those which have genetic elements of Shiga toxins or their subunits)); or
 - (c) those which fall under item (iii) or (iv).
- (2) Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 3-2 (ii) of the appended table 1 of the Export Order fall under any of the following:
- (i) physical containment facilities falling under any of the following:
 - (a) equipment with a physical containment level of P3 or P4
 - (b) equipment designed to be installed in a facility with a physical containment level of P3 or P4 and falling under any of the following:
 - 1. high-pressure steam sterilizers with doors on both sides;
 - 2. shower baths for decontaminating protective suits; or
 - 3. airtight doors with a mechanical seal or inflatable pressure seal;
 - (ii) fermenters or components thereof that fall under any of the following:
 - (a) fermenters or components thereof, other than disposables, which fall under any of the following:
 - 1. hermetically sealed fermenters with an internal cubic volume 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 1. which are capable of internal sterilization or disinfection in a fixed state; or
 - 3. controllers designed to be used for fermenters falling under 1. which are capable of simultaneously monitoring and controlling two parameters or more for controlling fermentation equipment;
 - (b) disposable fermenters or components thereof that fall under any of the following:
 - 1. hermetically sealed fermenters with an internal cubic volume of 20 liters or more;
 - 2. containers for disposable culture vessels designed to be used for fermenters that fall under 1.; or
 - 3. controllers which are designed to be used for fermenters that fall under 1. and capable of simultaneously monitoring and controlling two or more parameters for controlling fermentation equipment;

- (iii) continuous centrifuge separators falling under all of the following (a) through (d):
 - (a) separators with a flow volume exceeding 100 liters per hour;
 - (b) separators comprised of polished stainless steel or titanium;
 - (c) separators having an axle sealed with a mechanical seal; and
 - (d) separators capable of internal sterilization using vapor when fixed and in a closed state;
- (iv) cross (tangential) flow filtration equipment falling under (a) and (b) below (excluding those using a reverse penetration membrane and designed to purify blood):
 - (a) equipment with a total effective filtering area of 1 square meter or more; and
 - (b) equipment that falls under the following 1. or 2.:
 - 1. equipment capable of internal sterilization or disinfection in a fixed state; or
 - 2. equipment using disposable components;
- (iv)-2 components designed for use for those set forth in the preceding item with an effective filtering area of 0.2 square meters or more;
- (v) freeze-drying equipment falling under the following (a) and (b):
 - (a) equipment having the capacity to create 10 kilogram or more and less than 1,000 kilograms of ice in a 24-hour period; and
 - (b) equipment capable of internal sterilization using vapor or gas;
- (v)-2 spray-drying equipment that falls under all of the following (a) through (c):
 - (a) spray-drying equipment with a moisture evaporation of 0.4 kilograms or more and 400 kilograms or less per hour;
 - (b) spray-drying equipment capable of manufacturing products with an average particle diameter of 10 micrometers or less, or spray-drying equipment, by replacing its smallest components, capable of producing products with an average particle diameter of 10 micrometers or less; and
 - (c) equipment capable of internal sterilization or disinfection in a fixed state;
- (vi) protective equipment used in physical containment facilities or equipment used for physical containment which falls under any of the following:
 - (a) of whole or half body clothing or hoods with airline ventilation use equipment, those capable of maintaining a positive internal pressure; or
 - (b) physical containment chambers, isolators or safety cabinets which fall under all of 1. through 4. below (including Class III safety cabinets and excluding those specifically designed to nurse or carry infected patients):
 - 1. those which have a working space in which the operator is completely isolated with physical barriers;
 - 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 which use an HEPA filter for air supply and exhaust in a working space;
- (vii) equipment designed to be used for testing of inhalation of particulate matter which falls under any of the following:
 - (a) those which have an inhalation chamber capable of exposing the whole body of an animal and having a capacity of 1 cubic meter or more; or
 - (b) those which are capable of exposing the noses of 12 or more rodents or two or more animals other than rodents by directly flowing aerosol and have a sealed holder to bind an animal that is designed to be used for the exposure; or
- (viii) spraying, fogging systems or their components thereof and falling under any of the following:
 - (a) spraying or fogging systems designed to be mounted in aircraft, airship, balloon, or unmanned aerial vehicles capable of dispersing droplets initial particles of which have a median cubic diameter less than 50 microns from an on-board liquid device at a rate exceeding 2 liters per minute;
 - (b) a spray boom or nozzle for an aerosol generator designed to be mounted in aircraft, airship, balloon, or unmanned aerial vehicles capable of dispersing droplets, the initial particles of which have a median cubic diameter less than 50 microns from an on-board liquid spraying device at a rate exceeding 2 liters per minute;
 - (c) aerosol generators designed to be used in a device capable of dispersing droplets initial particles of which have a median cubic diameter less than 50 microns from an on-board liquid spraying device at a rate exceeding 2 liters per minute.
- (ix) of equipment for biosynthesizing nucleic acid or combining nucleic acids in an automatized way in whole or in part, those designed to form nucleic acid with a continuous length exceeding 1.5 kilobases at an error rate of less than five percent in one operation.

Article 3 Goods with the specifications specified by Order of the Ministry of Economy, Trade and Industry as referred to in row 4 of the appended table Appended Table 1 of the Export Order shall fall under any of the following:

- (i) rockets or equipment or tools (including molds; hereinafter the same applies in this Article) or test equipment for the manufacture of rockets capable of transporting a payload over a distance of 300 kilometers or more or components thereof;
- (i)-2 unmanned aircraft capable of transporting a payload over a distance of

- 300 kilometers or more or equipment or tools for the manufacture of that aircrafts or test equipment or components thereof;
- (i)-3 of unmanned aircraft designed to spray aerosol and designed to be capable of transporting a payload exceeding 20 liters in a particulate or liquid form in addition to fuel, those which fall under any of the following (excluding those falling under the preceding item or model aircraft used for entertainment or sports):
 - (a) vehicles having an autonomous flight control or navigation capability; or
 - (b) vehicles having a function enabling flight control by a person exceeding the visible range;
 - (ii) goods falling under any of the following or equipment or tools or test equipment for the manufacture of the goods or components thereof:
 - (a) goods usable in rockets capable of transporting payloads over a distance of 300 kilometers or more, and falling under any of the following:
 - 1. individual stages of multiple-stage rockets;
 - 2. solid rocket propulsion units or hybrid rocket propulsion unit with a total impulse of 841,000 Newton-seconds or more; or
 - 3. liquid rocket propulsion units or gelatinous fuel rocket propulsion units with a total impulse of 841,000 Newton-seconds or more or liquid rocket engines or gelatinous fuel rocket motor;
 - (b) goods capable of use in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more, falling under any of the following:
 - 1. re-entry vehicles;
 - 2. thermal shields (limited to those using ceramic or abrasion materials) for re-entry vehicles or components thereof;
 - 3. heat sinks for re-entry vehicles or components thereof;
 - 4. electronics parts designed for use for re-entry vehicles;
 - 5. guidance equipment with a ratio of average error radius to flight distance of 3.33 % or less; or
 - 6. thrust vector controllers;
 - (iii) propulsion units or components thereof, motor case linings or insulation materials therefor which fall under any of the following or equipment or tools or test equipment for the manufacture of them or components thereof:
 - (a) turbojet engines or turbo fan engines falling under any of the following:
 - 1. those which fall under all of i. through iv. below:
 - i. engines the maximum thrust of which exceeds 400 newtons (excluding those the maximum thrust of which exceeds 8,890 newtons the use of which in private aircraft has been authorized by a Japanese governmental organization);
 - ii. engines the fuel consumption rate of which is 0.15 kilograms per newton

- of thrust per hour or less;
- iii. engines which are less than 750 kilograms in dry weight; and
 - iv. those the rotor of whose first stage is less than 1 meter in diameter;
2. those designed or altered to be used for rockets capable of transporting 500 kilograms or more of payload over a distance of 300 kilometers or more or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more (excluding those falling under 1.);
- (b) ramjet engines, scramjet engines, pulse jet engines, detonation engines, or combined cycle engines (limited to those usable in rockets capable of transporting payloads weighing 500 kilograms or more for 300 kilometers or more or unmanned aerial vehicles capable of transporting payloads for 300 kilometers or more) or components thereof;
 - (c) motor cases for solid rockets usable in rockets or unmanned aerial vehicles capable of transporting payloads for 300 kilometers or more;
 - (d) motor case linings for solid rockets (limited to those in which the propellant and motor case or insulation can be combined) usable in rockets or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more for 300 kilometers or more or designed for use in rockets or unmanned aircraft capable of transporting payloads weighing less than 500 kilograms for 300 kilometers or more;
 - (e) motor case insulation for solid rockets, usable in rockets or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more for 300 kilometers or more or designed for use in rockets or unmanned aircraft capable of transporting payloads weighing less than 500 kilograms for 300 kilometers or more;
 - (f) motor case nozzles for solid rockets usable in rockets or unmanned aerial vehicles capable of transporting payloads for 300 kilometers or more;
 - (g) controllers for propellants in a liquid, slurry or gel state, the frequency range of which is 20 hertz or more and 2,000 hertz or less and designed to be capable of withstanding vibrations with an effective acceleration rate exceeding 98 meters per second squared (limited to control equipment which can be used in rockets or unmanned aircraft capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more) and components thereof (excluding servo valves, pumps, and gas turbines);
 - (h) components of hybrid rocket propulsion units that fall under (a), 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:
 - 1. propellants falling under item (vii) or raw materials therefor;
 - 2. liquid or gelatinous propellants (excluding those falling under 1.) used in

- rockets capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more;
- (j) turboprop engines designed for use in unmanned aircraft capable of transporting payloads over a distance of 300 kilometers or more, and whose maximum output is 10 kilowatts or more in standard atmospheric conditions above the sea as defined by the International Civil Aviation Organization (excluding those certified for use in civil aircraft by the governmental organizations of Japan) or components thereof;
 - (k) combustion chambers or nozzles for liquid rocket propulsion units or gelatinous fuel rocket propulsion units which are usable for goods falling under (a), 3. of the preceding item;
 - (iv) separation mechanisms or staging mechanisms for multiple-stage rockets (limited to those usable for a rocket capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more), or equipment or tools for the manufacture thereof, or test equipment or components thereof;
 - (v) of flow-forming machines capable of manufacturing propulsion units or components thereof that are used for rockets or unmanned aircraft capable of transporting 500 kilograms or more of payload over a distance of 300 kilometers or more, those falling under (a) and (b) below or components thereof:
 - (a) those which can be controlled with a numerical controller or computer; and
 - (b) those which have more than two shafts capable of contouring control;
 - (vi) among servo valves, pumps or gas turbines used for controllers for propellants that fall under (a) and (b) below, those which fall under any of (c), (d), or (e):
 - (a) pumps designed for use in controllers for propellants in liquid, slurry, or gel states; and
 - (b) pumps frequency range of which is 20 hertz or more and 2,000 hertz or less and designed to be able to withstand vibrations with an effective acceleration rate exceeding 98 meters per second squared;
 - (c) pumps designed to allow a flow of 0.024 cubic meters per minute or more in a state wherein the absolute pressure is 7,000 kilopascals or more and the actuator response time of which is less than 100 milliseconds;
 - (d) pumps for liquid propellant the number of rotations of whose shaft is not less than 8,000 per minute or whose discharge pressure is 7,000 kilopascals or more, at the maximum operating time; or
 - (e) gas turbines for turbo pumps for liquid propellant the number of rotations of whose shaft is not less than 8,000 per minute at the maximum operating time;

- (vi)-2 of radial ball bearings usable for pumps used for controllers for propellants the precision of which is class 2 or more as specified in Japanese Industrial Standards B1514-1, those falling under all of the following (a) through (c):
 - (a) bearings with an inner wheel internal diameter of 12 millimeters or more and 50 millimeters or less;
 - (b) bearings with an outer wheel external diameter of 25 millimeters or more and 100 millimeters or less;
 - (c) bearings with a width of 10 millimeters or more and 20 millimeters or less;
- (vii) propellants or raw material thereof falling under any of the following:
 - (a) hydrazine with concentration exceeding 70 %;
 - (b) a derivative of hydrazine;
 - (c) ammonium perchlorate;
 - (d) ammonium dinitramide;
 - (e) among aluminum powder the particles of which are globular or spheroidal and with diameter thereof less than 200 micrometers and with a weight-based purity level of 97% or more, those the content of those diameter of which is less than 63 micrometers as measured by measurement method specified in International Organization for Standardization ISO 2591:1988 or standards equivalent thereto is 10% or more of the total weight;
 - (f) zirconium (including hafnium contained in the zirconium at a natural ratio), beryllium or magnesium with a weight-based purity level of 97% or more, or powdered alloys thereof for which the content of particles with a diameter of less than 60 micrometers as measured using a sieve, laser diffraction, optical scanning or other means is 90% or more of the total volume or total weight;
 - (g) boron with a weight-based purity level of 85% or more or powdered alloys thereof for which the content of particles with a diameter of less than 60 micrometers as measured using a sieve, laser diffraction, optical scanning or other means is 90% or more of the total volume or total weight;
 - (h) fuel or oxidizer falling under any of the following:
 - 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 a derivative thereof;
 - (j) a liquid oxidizer falling under any of the following:
 - 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 other 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:
 1. solid and liquid blended fuel with heating value of 40,000,000
 2. fuel or fuel additives (excluding those produced by using fuels manufactured by using fossil fuels or organic substances derived from plants as raw materials) with a heating value of 37,500,000,000 joules per cubic meter when measured at a temperature of 20 degrees centigrade and 1 atmospheric pressure;
- (q) tris-1-(2-methyl) aziridinyl phosphine oxide;
- (r) a reaction product of tetraethylenepentamine, acrylonitrile, and glycidol;
- (s) a reaction product of tetraethylenepentamine and acrylonitrile;
- (t) a multi-functional aziridineamide having an isophthal-, trimesin-, isocyanur-, or trimethyladipin- skeleton having 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-butanetrioltrinitrate;
- (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 specifically compounded to be used for rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more;
- (viii) equipment or tools for the production of propellants or raw materials

- thereof, or test equipment or components thereof (excluding those falling under any of the next items through item (x), (ii)):
- (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 liquid) that fall under all of (a) through (d) below or components thereof:
- (a) mixers designed or altered for mixture at an absolute pressure of not less than 0 kilopascals and not more than 13.326 kilopascals;
 - (b) mixers capable of controlling the temperature in their mixing containers;
 - (c) mixers with a total volume of 110 liters or more; and
 - (d) mixers having at least one mixing axis or a kneading axis separated from the center axis thereof;
- (ix)-2 continuous mixers (excluding those for liquid) that fall under all of (a) through (c) below or components thereof:
- (a) mixers designed or altered for mixture at an absolute pressure of not less than 0 kilopascals and not more than 13.326 kilopascals;
 - (b) mixers capable of controlling the temperature in their mixing containers;
 - (c) mixers which fall under any of the following:
 1. mixers having two or more mixing axles or kneading axles; or
 2. mixers falling under i. and ii. below:
 - i. mixers having one rotation axis with vibration function; and
 - ii. mixers having projections for kneading in their mixing containers and on the rotation axis;
- (x) jet mills capable of pulverizing propellants falling under any of item (vii) or item (viii), (b) through (f) or raw materials thereof or components thereof;
- (x)-2 equipment for the production of powder (limited to atomized powders, globular powders, or spheroidal powders) of metals falling under any of item (vii), (e) through (g) or components thereof;
- (xi) equipment for the production of composites, fibers, prepregs, or preforms (limited to those usable in rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more) and that falls under any of the following or parts or accessories thereof:
- (a) among filament winding machines, fiber placement machines or tow placement machines for positioning fibers and carrying out wrapping operations and winding operations, those with three or more axles capable of controlling those operations in a correlated manner or controllers thereof;

- (b) of tape-laying machines to carry out operations of positioning and laminating tape to manufacture airframes of aircrafts or structures of rockets that are composed of composites, those with two or more shafts capable of controlling those operations in a correlated manner;
- (c) weaving machines or interlacing machines capable of three-dimensional weaving;
- (d) equipment for the production of fibers that falls under any of the following:
 1. equipment for the production of other fibers from polymer fibers;
 2. equipment for vapor depositing elements or compounds on substrates in a heated filament form;
 3. wet spinning apparatus for fire-resistant ceramics;
- (e) equipment designed for surface treating of fibers or the production of prepregs or preforms;
- (xii) nozzles used in fixing substances generated from the thermal decomposition of gas onto substrates (limited to that carried out in the temperature range 1,300 degrees centigrade or more and 2,900 degrees centigrade or less and the absolute pressure range of 130 pascals or more and 20,000 pascals or less) to substrates;
- (xiii) equipment for the production of nozzle of rocket propulsion systems or re-entry vehicle nose tips, and that falls under any of the following or process controls thereof:
 - (a) equipment for the densification of carbon of structural materials;
 - (b) equipment for fixing carbon generated from the thermal decomposition of gas onto substrates;
- (xiv) isostatic presses falling under all of the following (a) through (c) or controllers thereof:
 - (a) isostatic presses with maximum pressure of 69 megapascals or more;
 - (b) isostatic presses capable of temperature control in hollow cavities (limited to the case when the temperature of hollow cavities is 600 degrees centigrade or more);
 - (c) isostatic presses, with an internal diameter of hollow cavities of 254 millimeters or more;
- (xv) furnaces designed for the densification of carbon of composites using carbon or carbon fibers for chemical vapor deposition or controllers thereof;
- (xvi) structural materials falling under any of the following:
 - (a) composites (excluding prepregs with glass transition points of 145 degrees centigrade or less) made from organic substances reinforced with fibers with a specific strength exceeding 76,200 meters and specific elastic modulus exceeding 3,180,000 meters or those with metal in the matrix phase, or molded products thereof (limited to those designed for use in

- rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more, or goods falling under item (ii), (a) or (b));
- (b) composites using carbon and carbon fibers designed for rocket use or molded products thereof (limited to those usable in rockets or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more);
 - (c) artificial graphite falling under any of the following (limited to artificial graphite usable for rocket nozzles or re-entry vehicles nose tips):
 - 1. artificial graphite, the bulk density of which measured at 15 degrees centigrade is 1.72 grams per cubic centimeter or more and the particle diameter of which is 100 micrometers or less and which is capable of being processed into any of the following:
 - 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, each of the dimensions of which is respectively 120 millimeters or more, 120 millimeters or more, and 50 millimeters or more;
 - 2. pyrolytic graphite (limited to that usable in rockets capable of transporting payloads over a distance of 300 kilometers or more, or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more);
 - 3. graphite strengthened with fibers (limited to that usable in rockets capable of transporting payloads over a distance of 300 kilometers or more or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more);
 - (d) composites of ceramics (limited to those with relative permittivity less than 6 in frequencies within the range of 100 megahertz or more and 100 gigahertz or less) for use in radomes (limited to those usable in rockets capable of transporting payloads over a distance of 300 kilometers or more or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more) of rockets or unmanned aerial vehicles;
 - (e) unfired ceramics reinforced by silicon carbide or reinforced silicon carbide ceramic composites usable for nose tips of rockets or unmanned aerial vehicles, 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 aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more);

- (f) ceramic composites usable for components (including the nose tips, reentry vehicles, the leading edges of wings, thrust deflectors, control surfaces, or the nozzle throats of rocket motors) of rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more which are composed of a matrix of very high temperature ceramics (including titanium diboride, zirconium diboride, niobium diboride, hafnium diboride, tantalum diboride, titanium carbide, zirconium carbide, niobium carbide, hafnium carbide, and tantalum carbide) that is reinforced with fiber or filaments;
- (g) powders whose principal constitutive substances are tungsten, molybdenum or alloys thereof that fall under any of the following or lumps of those powders (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 powders with a tungsten content of 97 % or more of the total weight of alloys, with a particle diameter of 50 micrometers or less;
 2. molybdenum or powders with a molybdenum content of 97 % or more of the total weight of alloys, and a particle diameter of 50 micrometers or less;
 3. consolidated tungsten or powders with a tungsten content of 97 % or more of the total weight of the alloys (for those impregnated with copper or silver, with a tungsten content of 80 % or more of the total weight of the alloys), and which is capable of being processed into any of the following:
 - 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, each of the dimensions of which is respectively 120 millimeters or more, 120 millimeters or more, and 50 millimeters or more;
- (h) maraging steels usable in rockets capable of transporting a payload 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 1. and 2.:
1. maraging steels falling under any of the following:
 - i. maraging steels with a maximum tensile strength as measured at the solution heat treatment stage at 20 degrees centigrade of 900,000,000 pascals or more;
 - ii. maraging steels with a maximum tensile strength as measured at the precipitation hardening heat treatment stage at 20 degrees centigrade of 1,500,000,000 pascals or more;

2. maraging steels falling under any of the following:
 - i. plates or tubes with a thickness of 5 mm or less;
 - ii. tubes with a thickness of 50 mm or less and with an internal diameter of 270 millimeters or more;
- (i) austenitic-ferritic stainless steels stabilized by titanium, and that fall under the following 1. and 2. (limited to those usable in rockets capable of transporting a payload 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. steels falling under all of the following i. through iii.:
 - i. steels 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. steels with a titanium content exceeding 0.1 % of the total weight;
 - iii. steels with parts indicating an austenite structure of 10% or more of the total volume;
 2. steels falling under any of the following:
 - i. ingots or rods with a smallest dimension value of 100 millimeters or more;
 - ii. sheets with a width of 600 millimeters or more and a thickness of 3 millimeters or less;
 - iii. tubes with an external diameter of 600 millimeters or more and a thickness of 3 millimeters or less;
- (xvii) accelerometers or gyroscopes, or equipment, navigation equipment or magnetic director sensors using them, which fall under any of the following (limited to those usable in rockets or unmanned aerial vehicles) or components thereof:
 - (a) navigation equipment designed for use in rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more and designed for use in a gyrostabilizer or automated flight controller;
 - (b) gyro-astro compasses, or devices that derive position or orientation by means of automatically tracking celestial bodies or satellites;
 - (c) linear accelerometers designed for use in inertial navigation systems or guidance systems with scale factor reproducibility less than 0.125 % per year and bias reproducibility less than 0.012263 meters per second squared per year (limited to those usable in rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more);
 - (d) gyroscopes with drift rate stability less than 0.5 degrees per hour in a state of linear acceleration of 9.81 meters per second squared (limited to

- those usable in rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more);
- (e) accelerators or gyroscopes designed for use in inertial navigation systems or guidance systems, which are designed to be capable of use with linear acceleration exceeding 981 meters per second squared;
 - (f) equipment using an accelerometer falling under (c) or (e) or a gyroscope falling under (d) or (e) (including attitude and heading reference system, gyro compasses, inertial measurement units, inertial navigation systems, and inertial reference systems);
 - (g) magnetic director sensors that fall under all of the following 1. through 3., with 3 or more axes:
 1. magnetic director sensors with an internal tilt compensation in the pitch angle (plus/minus 90-degrees) and in the roll angle (plus/minus 180-degree angle);
 2. magnetic director sensors of which the effective value of the azimuthal precision at the point of plus/minus 80 degrees latitude is less than 0.5, reference to local magnetic field;
 3. magnetic director sensors designed for integration with flight control or navigation systems;
- (xvii)-2 integrated navigation systems designed for use in rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more, and with precision of an average error radius of 200 meters or less;
- (xvii)-3 equipment or tools for the production of accelerometers or gyroscopes or equipment using those, or navigation systems, magnetic director sensors, or integrated navigation system, or test equipment, calibration equipment, or alignment equipment thereof, or components thereof, falling under any of the following:
- (a) production equipment or tools or test equipment, calibration equipment, or alignment equipment for those falling under preceding two items (excluding those falling under any of the following (b) through (f)), or components thereof;
 - (b) centrifugal balancing machines (excluding those designed for testing dental equipment or medical equipment) falling under all of the following 1. through 4.:
 1. machines that are not capable of testing rotors exceeding 3 kilograms;
 2. machines capable of testing rotors with speed exceeding 12,500 rotations per minute;
 3. machines capable of testing imbalance on 2 or more planes;
 4. machines with residual imbalance with respect to the rotor weight of 0.2 gram-millimeters per kilogram or less;

- (c) display equipment designed to be capable of use in machines falling under (b);
- (d) motion simulators or rate tables falling under all of the following 1. through 3. (excluding those designed to be usable for machine tools or medical devices):
 - 1. motion simulators or rate tables with 2 or more axles;
 - 2. motion simulators or rate tables using a slip ring or non-contact type equipment capable of supplying electric power or transmitting signal information;
 - 3. motion simulators or rate tables falling under any of the following:
 - i. motion simulators or rate tables the angular velocity in any axles of which is 400 degrees or more or 30 degrees or less per second, wherein the resolution of the angular velocity is 6 degrees per second or less, and the precision of the angular velocity is 0.6 degrees per second or less;
 - ii. motion simulators or rate tables angular velocity of which is stabilized at the precision of 0.05 % or less when the rotation of any axes is 10 degrees or more;
 - iii. motion simulators or rate tables with angular positioning precision of 5 seconds or less;
- (e) positioning tables falling under the following 1. and 2. (excluding those designed for use in machine tools or medical devices):
 - 1. positioning tables with 2 or more axles;
 - 2. positioning tables with angular positioning precision of 5 seconds or less;
- (f) centrifugal accelerator testing machines capable of applying an acceleration rate exceeding 980 meters per second squared and that uses a slip ring or non-contact-type equipment capable of supplying electricity and transmitting signal information;
- (xviii) flight controllers or attitude controllers designed for use in a rocket or unmanned aerial vehicle capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more;
- (xviii)-2 servo valves designed for use for those listed in the preceding item, and designed to be able to withstand vibrations with the effective rate of acceleration exceeding 98 meters per second squared within the frequency range from 20 hertz to 2,000 hertz;
- (xviii)-3 test equipment, calibration equipment, or alignment equipment for those listed in preceding two items;
- (xix) avionics equipment falling under any of the following:
 - (a) radars (limited to those usable for rockets or unmanned aerial vehicles 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 for use in rockets or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more);
- (c) equipment 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 1. or 2. or components especially designed therefor:
1. equipment designed for use in rockets or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more;
 2. equipment designed for use in mobile bodies that navigate or fly and that falls under any of the following:
 - i. equipment capable of providing information pertaining to navigation based on speeds exceeding 600 meters per second;
 - ii. equipment designed or improved for the purpose of use by the military or a governmental organization, and that 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. equipment designed such as 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 so as 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 aerial vehicles 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 aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more) or components thereof;
- (xx)-2 gravity gradiometers for aircraft or ship (limited to those usable in rockets or unmanned aerial vehicles capable of transporting payloads

- weighing 500 kilograms or more over a distance of 300 kilometers or more) or components thereof;
- (xxi) launch pads or associated ground launch support equipment for rockets or unmanned aerial vehicles falling under any of the following:
 - (a) equipment designed for handling, controlling, operating, or launching rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more;
 - (b) vehicles designed for transporting, handling, controlling, operating, or launching rockets or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more;
 - (xxii) radio telemetry equipment or radio telecontrollers (including ground equipment) designed for use in rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more and that does not fall under any of the following:
 - (a) equipment designed for use in manned aircraft or artificial satellites;
 - (b) equipment designed for use in mobile bodies used on land or the sea;
 - (c) equipment 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 aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more, falling under any of the following:
 - (a) tracking devices using code converters mounted in rockets or unmanned aerial vehicles and capable of instantly measuring flight position and speed data in a mutual coordination with linked devices on ground, the sea or aircraft, or with a satellite navigational system;
 - (b) among radars for distance measurement having a tracking device utilizing light, those falling under all of the following 1. through 3.:
 1. radars with angular resolution less than 1.5 milliradians;
 2. radars with the square mean value of distance resolution less than 10 meters and capable of measuring distances 30 kilometers or more;
 3. radars with speed resolution 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 falling under any of the following:
 - (a) computers designed to be usable from below -45 degrees centigrade to over 55 degrees centigrade;
 - (b) computers designed to be able to withstand radiation irradiation total absorbed dose of which on a silicon conversion basis is 500,000 rads or more;

- (xxiv) integrated circuits for analog-to-digital conversion or analog-to-digital converters (limited to those usable in rockets or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more), and that fall under any of the following:
- (a) integrated circuits for analog-to-digital conversion which are designed to be able to withstand radiation exposure, the total absorbed dose of which is 500,000 rads or more on a silicon conversion basis, or which fall under 1. and 2. below:
 - 1. integrated circuits designed to be usable at temperatures lower than 54 degrees centigrade below zero through 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 1. and 2. below
 - 1. assemblies or modules designed to be usable at temperatures lower than 45 degrees centigrade below zero through higher than 80 degrees centigrade; and
 - 2. assemblies or modules that incorporate integrated circuit falling under (a);
- (xxv) vibration test equipment or components thereof, aerodynamic test equipment, combustion test equipment, environmental test equipment, electron accelerators or equipment using those, and that fall under any of the following:
- (a) vibration test equipment or components thereof falling under any of the following (limited to those usable in the development or testing of rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more, or goods falling under item (ii)):
 - 1. digitally controlled vibration test equipment that falls under i. and ii. below:
 - i. equipment with exciting force of 50 kilonewtons or more in a state with no test object present and capable of generating vibrations with effective rate of acceleration of 98 meters per second squared or more even at a frequency of 20 hertz or more and 2,000 hertz or less;
 - ii. equipment using feedback control technology or closed loop control technology;
 - 2. components of vibration test equipment falling under any of the following (limited to those usable in the development or testing of rockets or unmanned aerial vehicles capable of transporting payloads for 300 kilometers or more, or goods falling under item (ii)):
 - i. components designed for use in controlling the vibration test equipment falling under 1 and that 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 test equipment falling under 1., with exciting force of 50 kilonewtons or more in a state with no test object present;
 - iii. parts of vibration tables or vibration generators usable for vibration test equipment falling under 1. and designed for use by connecting 2 or more vibration generators in order to generate vibrations with exciting force of 50 kilonewtons or more in a state with no test object present;
- (b) aerodynamic test equipment for creating a state wherein the speed is Mach 0.9 or more (limited to those usable in the development or testing of rockets or unmanned aerial vehicles capable of transporting a payload 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 the cross section of whose measurement part is not more than 250 millimeters in length and those falling under (f);
- (c) combustion test equipment capable of testing solid rockets, liquid rockets with thrust exceeding 68 kilonewtons or rocket propulsion units or capable of measuring the thrust components in the three axial directions simultaneously (limited to those usable in the development or testing of rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more, or goods falling under item (ii));
- (d) environmental test equipment capable of simulating flying state and that falls under the following 1. and 2. (limited to those usable in the development or testing of rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more, unmanned aerial vehicles falling under item (i)-3, or goods falling under item (ii)):
- 1. equipment capable of simulating states wherein the altitude is 15,000 meters or more or states with temperatures throughout the range of -50 degrees centigrade or more and 125 degrees centigrade or less;
 - 2. equipment (limited to those with exciting force of 5 kilonewtons or more) capable of generating vibrations with frequency range between 20 hertz and 2,000 hertz and effective rate of acceleration of 98 meters per second squared or more in a state with no test object present, or those capable of generating sounds with sound pressure level of 140 decibels or more when the reference sound pressure is 20 micropascals, or those with total rated acoustic output of 4 kilowatts or more;
- (e) electron accelerators capable of emitting electromagnetic waves by means of a bremsstrahlung from accelerated electrons having energy of 2 mega electron volts or more or equipment using those (excluding those designed for medical use and limited to those usable in the development or testing of rockets or unmanned aerial vehicles capable of transporting payloads over

- a distance of 300 kilometers or more, or goods falling under item (ii));
- (f) aerothermodynamic test equipment (including plasma arcjet equipment and plasma wind tunnels for researching the thermal and mechanical effects of air flows around an object) that falls under any of the following (limited to those usable for developing or testing rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more or goods falling under item (ii), (a) or (b)):
1. test equipment capable of supplying electricity of 5 megawatts or more; or
 2. test equipment capable of supplying gas with a pressure of 3 megapascals or more;
- (xxv)-2 rockets capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more, goods (limited to those usable in rockets capable of transporting payloads weighing 500 kilograms or more) falling under item (ii) (a), or hybrid computers (limited to those having programs falling under Article 16, paragraph (1), item (xi)) for the design of goods falling under item (ii) (b);
- (xxvi) materials or equipment using stealth technology for reducing the level of the reflection or emission of radio waves, acoustic waves (including ultrasound), or light (limited to ultraviolet and infrared light) usable in rockets or unmanned aerial vehicles capable of transporting payloads over a distance of 300 kilometers or more, unmanned aerial vehicles falling under item (i)-3, or goods falling under item (ii), or test equipment thereof;
- (xxvii) integrated circuits, detectors, or radomes (limited to those usable in rockets or unmanned aerial vehicles capable of transporting payloads weighing 500 kilograms or more over a distance of 300 kilometers or more) that fall under any of the following:
- (a) integrated circuits designed to be able to withstand radiation exposure with total absorbed dose of 500,000 rads or more on a silicon conversion basis, and usable for protecting rockets or unmanned aerial vehicles from a nuclear impact;
 - (b) detectors designed to protect rockets or unmanned aerial vehicles from a nuclear impact;
 - (c) radomes designed to be able to withstand a thermal shock exceeding 4,184 kilojoules per square meter at a pressure exceeding 50 kilopascals and usable to protect rockets or unmanned aerial vehicles from a nuclear impact.

Article 4 Goods with specifications specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (5) of Appended Table 1 of the Export Order shall fall under any of the following:

- (i) fluorine compound products designed to be used for aircraft or satellites or other flying objects for space development, that are seals, gaskets, sealants or fuel storage bags with a content of fluorine compounds falling under item (xiv), (b) or (c) exceeding 50% of the total weight;
- (ii) molded products that use fibers (including semi-finished products; hereinafter the same applies in this item) that fall under any of the following:
 - (a) molded products manufactured using prepreg or preform falling under item (xv), (e);
 - (b) molded products manufactured using fiber that falls under any of the following and whose matrix is a metal or carbon:
 - 1. carbon fibers that fall under any of i. or ii.:
 - i. carbon fibers with a specific elastic modulus exceeding 10,150,000 meters;
 - ii. carbon fibers with a specific strength exceeding 177,000 meters;
 - 2. those that fall under item (xv), (c);
- (iii) aromatic polyimide (limited to those for which polymerization or crosslink by action through heat, radiation or catalysts or other external action is impossible and which do not melt without pyrolysis) products (limited to films, sheets, tapes or ribbon shaped ones) and that fall under any of the following (excluding those which are coated or laminated with copper and are for printed boards of electronic circuits):
 - (a) products with a thickness exceeding 0.254 millimeters;
 - (b) products coated or laminated with carbon, graphite, metals or magnetic materials;
- (iv) devices for the manufacture of items that fall under item (ii), item (xv), or Article 14, item (i) and that fall under any of the following, or components or accessories thereof (excluding those falling under Article 3, item (xi)):
 - (a) among filament winding devices that perform fiber positioning or wrapping operations or winding operations, those that have 3 or more primary axes (limited to those that operate by servocontrol) and are capable of controlling and correlating those operations;
 - (b) among devices for the manufacture of airframes of aircraft or the structure of rockets made of fibers that position tapes, and perform laminating operations, those that have 5 or more primary axes (limited to those that operate by servocontrol) capable of controlling and correlating those operations;
 - (c) looms or interlacing machines capable of weaving three dimensionally, and which have been specially designed or modified to weave, knit or braid fiber for molded goods;
 - (d) fiber manufacturing devices that fall under any of the following:

1. devices that manufacture carbon fibers or silicon carbide fibers from polymer fibers;
 2. devices that manufacture silicon carbide fibers and that chemically vapor deposit elements or compounds on heated filament-shaped substrates;
 3. wet 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 use a hot melt method and fall under item (xv), (e);
- (f) non-destructive inspection devices designed for inspecting composite materials, and that fall under any of the following:
1. X-ray tomography systems for three-dimensional defect inspection;
 2. numerically controlled ultrasonic testing machines of 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 the component at the time of inspection;
- (g) among devices for the manufacture of airframes for aircrafts or the structure of rockets made of fibers that position tows and perform laminating operations, those that have two or more primary axes (limited to those that operate by servocontrol) capable of controlling and correlating those operations;
- (v) devices designed for the manufacture of alloy powders or alloy particulate matter that fall under either of (a) or (b);
- (a) Those specifically designed to prevent contamination; or
- (b) Those designed specifically for use in the methods that fall under any of items (vii), (c), 2. i through xiii.
- (vi) tools (including molds) for super plastic forming or diffusion bonding of titanium, aluminum or alloys thereof and designed to manufacture things that fall under any of the following:
- (a) structures of aircraft, satellites and other types of spacecraft for space development;
 - (b) engines for aircraft, satellites and other types of spacecraft for space development;
 - (c) components of those falling under (a) or (b);
- (vii) alloys or powders thereof that fall under any of the following (excluding those specifically compounded to be used for coating):
- (a) alloys that have become aluminum compounds that fall under any of the following:
 1. nickel alloys that contains alloy elements other than aluminum or nickel with a content of aluminum of 15% or more and 38% or less of the total

- weight;
2. titanium alloys that contain alloy elements other than aluminum or titanium with a content of aluminum of 10% or more of the total weight;
- (b) alloys made of metals that fall under (c) and that fall under any of the following:
1. nickel alloys that fall under any of the following:
 - i. nickel alloys with a stress breakage time of 10,000 hours or more when a load is added that generates 676 megapascals stress at a temperature of 650 degrees centigrade;
 - ii. nickel alloys with a low cycle fatigue life of 10,000 cycles or more when a load is added that generates 1,095 megapascals stress at a temperature of 550 degrees centigrade;
 2. niobium alloys that fall under any of the following:
 - i. niobium alloys with a stress breakage time of 10,000 hours or more when a load is added that generates 400 megapascals stress at a temperature of 800 degrees centigrade;
 - ii. niobium alloy with a low cycle fatigue life of 10,000 cycles or more when a load is added that generates 700 megapascals stress at a temperature of 700 degrees centigrade;
 3. titanium alloys that fall under any of the following:
 - i. titanium alloys with a stress breakage time of 10,000 hours or more when a load is added that generates 200 megapascals stress at a temperature of 450 degrees centigrade;
 - ii. titanium alloys with a low cycle fatigue life of 10,000 cycles or more when a load is added that generates 400 megapascals stress at a temperature of 450 degrees centigrade;
 4. aluminum alloys with a tensile strength falling under any of the following:
 - i. aluminum alloys with a tensile strength of 240 megapascals or more at a temperature of 200 degrees centigrade;
 - ii. aluminum alloys 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 when immersed in 3% brine;
- (c) alloy powders that fall under all of 1. through 3. below:
1. alloy powders made of materials that fall under any of the following:
 - i. nickel alloys with a number of particles other than metals mixed during the manufacturing process of less than 3 per 1,000,000,000 particles (limited to those with a diameter exceeding 100 micrometers) and made of elements of 3 types or more including aluminum and nickel;

- ii. niobium alloys comprised of 3 types or more of elements including niobium and any of aluminum, silicon or titanium;
- iii. titanium alloys comprised of 3 or more types of elements including aluminum or titanium;
- iv. aluminum alloys comprised of 3 types or more of elements including aluminum and any of the elements of magnesium, zinc or iron;
- v. magnesium alloys comprised of 3 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;
 - viii. plasma atomization method;
- 3. alloy powders that can manufacture the alloys that fall under (a) or (b);
- (d) alloy materials that fall under all of the following 1. through 3.:
 - 1. alloy materials made of alloy powders that fall under any of (c) 1. i. through v.;
 - 2. alloy materials that are not finely pulverized but flake shaped, ribbon shaped or thin rod shaped;
 - 3. alloy materials manufactured by any of the following methods:
 - i. splat-quenching method;
 - ii. melt spinning method;
 - iii. melt extraction method;
- (viii) metallic magnetic materials that fall under any of the following:
 - (a) metallic magnetic materials 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:
 - 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 that fall under the following 1. and 2.:
 - 1. those with a content of any of iron, cobalt or nickel, or with a total content thereof, of 75% or more of the total weight;
 - 2. those with a saturated magnetic flux density of 1.6 teslas or more that fall under any of the following:
 - i. those with a thickness of 0.02 millimeters or less;
 - ii. those with an electrical resistivity of 2 microohm-meters or more;

- (ix) among uranium-titanium alloys or tungsten alloys whose matrix is of iron, nickel or copper, those that fall under all of the following (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;
 - (d) those with a coefficient of extension exceeding 8 %;
- (x) superconductive materials that fall under any of the following (limited to those with a length exceeding 100 meters or with the total weight exceeding 100 grams):
 - (a) among superconductive materials that have multiple filaments including niobium titanium filaments, those that fall under the following 1. and 2.:
 - 1. those the filaments of which are embedded in a matrix other than copper or copper alloy;
 - 2. those with a filament cross-section area less than 28/1,000,000 square millimeters;
 - (b) superconductive materials comprised of superconductive filaments other than niobium titanium that fall under all of the following 1. through 3.:
 - 1. those with a critical temperature exceeding -263.31 degrees centigrade and where a magnetic field is not applied;
 - 2. deleted;
 - 3. those that can hold a superconductive state at a temperature of -268.96 degrees centigrade, when exposed to a magnetic field oriented in any direction perpendicular to the longitudinal axis of the material and corresponding to a magnetic flux density of 12 tesla, with a critical current density exceeding 300 amperes per square millimeter on an overall cross-section of the material;
 - (c) superconductive materials comprised of superconductive filaments, which can hold a superconductive state at a temperature exceeding -158.16 degrees centigrade;
- (xi) materials usable as lubricant, liquids usable for vibration prevention, or liquids for refrigerant that fall under any of the following:
 - (a) deleted;
 - (b) materials that can be used as a lubricant and the primary component of which is phenylene ether, alkylphenylene ether, phenylene thioether, alkyl phenylene thioether or mixtures thereof, in which the total number of ether groups, or thioether groups or of these functional groups together is 3 or more;
 - (c) among liquids usable for vibration prevention with a purity exceeding 99.8% and in which the number of particle impurities of diameter greater than 200 micrometers is less than 25 per 100 milliliters, those with a total content of substances that fall under any of the following that is 85% or

- more of the total weight:
 1. dibromo tetrafluoro ethane;
 2. polychloro trifluoro ethylene;
 3. polybromo trifluoro ethylene;
- (d) among liquids designed for cooling electronic devices and made of fluorocarbons, those falling under the following 1. and 2.:
 1. liquids with a total content of substances that fall under any of the following that is 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;
 - v. perfluoro alkane;
 2. liquids that fall under all of the following i. through iii.:
 - i. those with a density at a temperature of 25 degrees centigrade of 1.5 grams or more per 1 milliliter;
 - ii. those that are liquids at the temperature of 0 degrees centigrade;
 - iii. those with a fluorine content of 60% or more of the total weight;
- (xii) ceramic powder, ceramic composite materials, or precursors usable as material for ceramics that fall under any of the following:
 - (a) of ceramic powder manufactured using titanium diboride with a content of metallic impurities less than 0.5% of the total weight, those of which an average value of particle diameter are 5 micrometers or less and those of which a total weight of the particles with diameters exceeding 10 micrometers are 10% or less of the total weight;
 - (b) deleted;
 - (c) among ceramic composite materials that have glass or oxides as a matrix, those that fall under any of the following:
 1. those reinforced with continuous fiber composed of any of the following (excluding those with a tensile strength less than 700 megapascals at a temperature of 1,000 degrees centigrade or those with a creep distortion exceeding 1% when a load that generates stress of 100 megapascals is added for 100 hours at a temperature of 1,000 degrees centigrade):
 - i. aluminum oxide; or
 - ii. silicon, carbon and nitrogen;
 2. those reinforced with fiber falling under i. and ii. below:
 - i. those composed of any of the following combinations of 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 whose matrix is silicon, zirconium or boron carbide or nitride;
- (e) precursors usable as materials for ceramics used to manufacture any of the substances referred to in (c) or (d) which fall under any of the following:
 - 1. polydiorgano silane;
 - 2. polysilazane; or
 - 3. polycarbo silazane;
- (xiii) non-fluorinated compounds for which polymerization is possible, or non-fluorinated polymers that fall under any of the following:
 - (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 having allylene groups comprised of biphenylene, triphenylene or the combination thereof;
 - (f) polybiphenylene ether sulfone with a glass transition point exceeding 290 degrees centigrade;
- (xiv) fluorine compounds that fall under any of the following:
 - (a) deleted;
 - (b) fluorinated polyimides with a content of bonded fluorine of 10% or more of the total weight;
 - (c) elastic bodies of fluorinated phosphazenes with a content of bonded fluorine of 30 % or more of the total weight;
- (xv) fibers or prepregs or preforms that use the fibers that fall under any of the following:
 - (a) organic fibers (excluding polyethylene fibers) that fall under any of the following 1. and 2.:
 - 1. those with a specific elastic modulus exceeding 12,700,000 meters;
 - 2. those with a specific strength exceeding 235,000 meters;
 - (b) carbon fibers that fall under the following 1. and 2.:
 - 1. those with a specific elastic modulus exceeding 14,650,000 meters;
 - 2. those with a specific strength exceeding 268,200 meters;
 - (c) Inorganic fibers that fall under the following 1. and 2.:
 - 1. those falling under either of the following:
 - i. Those with a silicon dioxide content of 50% or more of the total weight

- and with a specific elastic modulus exceeding 2,540,000 meters; or
- ii. Those with a specific elastic modulus exceeding 600,000 meters (excluding those falling under i).
- 2. those with melting points, softening points, decomposition points or sublimating temperature exceeding 1,649 degrees centigrade in an inactive environment, but excluding those that fall under any of the following:
 - i. those with a specific elastic modulus of less than 10,000,000 meters, and that are the short fibers of multiphase polycrystalline alumina fibers with a content of silica of 3% or more of the total weight and that are cut up in short pieces or are random mat shaped;
 - ii. molybdenum fibers or molybdenum alloy fibers;
 - iii. boron fibers;
 - iv. short fibers of ceramic fibers with melting points, softening points, decomposition points or sublimating temperature exceeding 1,770 degrees centigrade in an inactive environment;
- (d) fibers made of those that fall under any of the following, or fibers woven by mixing those fibers and fibers that fall under any of (a) through (c) above:
 - 1. aromatic polyetherimides that fall under item (xiii), (a);
 - 2. fibers that fall under any of item (xiii), (d) through (f);
- (e) preregs or preforms that use 1. and 2. below:
 - 1. those which fall under i. or ii. below:
 - i. inorganic fibers that fall under (c);
 - ii. organic fibers or carbon fibers that fall under the following a. and b.:
 - a. those with a specific elastic 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:
 - i. those that fall under item (xiii) or item (xiv), (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 resin and those falling under i.);
- (xvi) boron with a particle diameter of 60 micrometers or less and with a weight-based purity level of boron of 85% or more, or a mixture thereof, 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 guanidine nitrate or nitro guanidine.

Article 5 Goods with specifications prescribed by the Order of the Ministry of

Economy, Trade and Industry in row 6 of appended table 1 of the Export Order fall under any of the following:

- (i) bearings or their components that fall under any of the following:
 - (a) ball bearings or roller bearings (excluding tapered roller bearings) whose inner rings, outer rings and rolling elements are all made of monel or beryllium and whose precision is ranked Grade 2 or Grade 4 or higher as specified by Japanese Industrial Standards No. B1514-1;

- (b) deleted;

- (c) active magnetic bearing systems that fall under any of the following or that were specifically designed for that purpose:
 - 1. systems composed of materials with a magnetic flux density of 2 teslas or more and a yield point exceeding 414 megapascals;
 - 2. systems that are entirely electromagnetic and employ a three-dimensional homopolar bias excitation actuator;
 - 3. systems having a position detector that can be used at temperatures of 177 degrees centigrade and higher;

- (ii) among machine tools (limited to those that can process metals, ceramics or composite materials) to which an electronic controller can be attached, those that fall under any of the following (a) through (e) (excluding those that fall under (f) and optical finishing machine tools):

- (a) machine tools capable of lathe turning and having two or more shafts capable of contouring control, those which fall under any of the following (excluding those falling under 3.):
 - 1. machine tools of straight axes whose movement is less than 1 meter, which repeatability of the unidirectional positioning regarding any one or more axes is 0.0009 millimeters or less;
 - 2. machine tools of straight axes whose movement is 1 meter or more, which repeatability of the unidirectional positioning regarding any one or more axes is 0.0011 millimeters or less
 - 3. bar work lathes in which materials are inserted from a spindle hole for processing and which fall under i. and ii. below:
 - i. bar work lathes capable of processing materials with a diameter of 42 millimeters maximum;
 - ii. bar work lathes to which a chuck cannot be fitted;

- (b) machine tools capable of milling that fall under any of the following:
 - 1. machine tools with three straight axes capable of contouring control and one rotating axis capable of contouring control and that fall under any of the following:
 - i. machine tools of straight axes whose movement is less than 1 meter, which repeatability of the unidirectional positioning regarding any one or more axes is 0.0009 millimeters or less; or

- ii. machine tools of straight axes whose movement is 1 meter or more, which repeatability of the unidirectional positioning regarding at any one or more axes is 0.0011 millimeters or less;
- 2 among machine tools with five or more axes capable of controlling contour, those which fall under any of the following:
- i. machine tools of straight axes whose movement is less than 1 meter, which repeatability of the unidirectional positioning regarding any one or more axes is 0.0009 millimeters or less;
 - ii. machine tools of straight axes whose movement is not less than 1 meter and less than 4 meters, which repeatability of the unidirectional positioning regarding any one or more axes is 0.0014 millimeters or less; or
 - iii. machine tools of straight axes whose movement is 4 meters or more, which repeatability of the unidirectional positioning regarding any one or more axes is 0.006 millimeters or less;
3. jig boring machines of straight axes, which repeatability of the unidirectional positioning regarding any one or more straight axes is 0.0011 millimeters or less;
4. machine tools exclusively designed for fly cutting that fall under any of the following i. and ii.:
- i. machine tools for which both the radial direction deflection and axial direction deflection are less than 0.0004 millimeters per single rotation of the spindle;
 - ii. machine tools with straightness of less than 2 seconds over a travel distance exceeding 300 millimeters;
- (c) machine tools capable of grinding that fall under any of the following (excluding those which fall under any of 3. through 5. below):
- 1. machine tools, which repeatability of the unidirectional positioning regarding one or more axes of their straight axes is 0.0011 millimeters or less and which have three or four axes capable of contouring control;
 - 2. among machine tools with five or more axes capable of controlling contour, those which fall under any of the following:
 - i. machine tools of straight axes whose movement is less than 1 meter, which repeatability of the unidirectional positioning regarding any one or more axes is 0.0011 millimeters or less;
 - ii. machine tools of straight axes whose movement is not less than 1 meter and less than 4 meters, which repeatability of the unidirectional positioning regarding any one or more axes is 0.0014 millimeters or less; or
 - iii. machine tools of straight axes whose movement is 4 meters or more, which repeatability of the unidirectional positioning regarding any one or more axes is 0.006 millimeters or less;
 - 3. external cylindrical grinders, internal cylindrical grinders or internal-

- external cylindrical grinders 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 and do not have a Z axis or W axis, which repeatability of the unidirectional positioning is less than 0.0011 millimeters;
 5. flat surface grinders;
- (d) machine tools capable of electrical discharge machining (excluding wire electrical discharge machining) with 2 or more rotational axes capable of controlling contour;
- (e) machine tools capable of liquid jet machining, electron beam machines or laser beam machines with two or more rotational axes that fall under any of the following categories 1. or 2.:
1. machine tools or machines capable of controlling contour;
 2. machine tools or machines whose positioning precision of rotating axis is less than 0.003 degrees;
- (f) machine tools that were designed exclusively for the manufacture of any of the following:
1. gears;
 2. crank shafts or cam shafts;
 3. tools or blades;
 4. extruder worms;
 5. gemstones;
 6. dentures;
- (iii) among machine tools (limited to those that can process metals, ceramics or composite materials) to which an electronic controller can be attached and are capable of deep bore drilling or lathe turning (limited to those that are capable of deep bore drilling), those that can bore a hole to a depth exceeding 5,000 millimeters;
- (iv) of optical finishing machine tools capable of numerical control and of manufacturing nonspherical optical surfaces by selectively removing materials, those which fall under all of (a) through (d) below:
- (a) those with a finishing shape and dimensional tolerance of less than 1.0 micrometers;
 - (b) those with a root mean square of less than 100 nanometers regarding surface roughness in finishing;
 - (c) those with four or more axes capable of controlling contour;
 - (d) those using any of the following methods:
 1. magnetorheological finishing;
 2. electrorheological finishing;
 3. energy particle beam finishing;
 4. inflatable membrane tool finishing;

- 5. fluid jet finishing;
- (v) machine tools capable of numerical control that are designed for finish processing of spur gears, helical gears, or double-helical gears with a Rockwell hardness of 40 or greater as measured by the C scale according to the measurement methods specified in Japanese Industrial Standard Z2245 (Rockwell hardness testing method), which are capable of processing those falling under all of (a) to (c) below:
 - (a) gears with a pitch diameter exceeding 1,250 millimeters;
 - (b) gears with a face width being 15% or larger of the pitch diameter;
 - (c) gears with a precision grade of 3 or higher as specified by International Standard ISO 1328 (ISO system of precision for cylindrical gears);
- (vi) isostatic presses that fall under any of the following categories (a) and (b), or the components or accessories thereof:
 - (a) isostatic presses having hollow cavities with an internal diameter of 406 millimeters or more and capable of controlling temperature inside the hollow cavities;
 - (b) isostatic presses that fall under any of the following:
 1. isostatic presses with a maximum pressure exceeding 207 megapascals;
 2. isostatic presses capable of controlling temperatures exceeding 1,500 degrees centigrade in hollow cavities;
 3. isostatic presses that incorporate devices to inject hydrocarbons and devices to remove gaseous decomposition products;
- (vii) among coating devices for non-electronic substrates which utilize the coating method listed in column 2 of the appended table 3 and perform the coatings listed in column 4 of the same table on base materials listed in column 3 in the same table, those which fall under any of the following, or the components especially designed for the automatic operation thereof:
 - (a) coating devices that employ methods of fixing to the substrate surface coating materials that are produced by the chemical reaction of source gases, and that fall under any of the following 1. and 2.:
 1. coating devices that employ any of the following methods:
 - i. pulse method;
 - ii. controlled nucleation thermochemical deposition method;
 - iii. methods that fix coating materials to the substrate surface by plasma arc;
 2. coating devices that fall under any of the following:
 - i. coating devices incorporating rotational axis seals that can be used at 10 millipascals or less;
 - ii. coating devices that have internal film thickness control functions;
 - (b) coating devices that employ ion implantation method and with a beam current of 5 milliamperes or more;

- (c) among coating devices that employ methods of affixing to the substrate surface coating materials that have been vaporized by electron beams, and that incorporate power supply devices with a capacity exceeding 80 kilowatts, those that have the equipment falling under any of the following:
 - 1. coating devices that effects molten liquid level control by employing laser light to control ingot feeding;
 - 2. deposition rate monitoring devices capable of achieving control by employing computers and that utilize the principle of ionized atom photoluminescence of ionized atoms occurring in vapor flow to control the rate of deposition when coating with two or more elements;
- (d) plasma spray coating devices that fall under the following:
 - 1. plasma spray coating devices that can reduce pressure in vacuum chambers prior to plasma spraying to 10 millipascals and that can be used at a pressure of 10 kilopascals or less (referring to plasma spraying within 30 centimeters measured from the mouth of the nozzle);
 - 2. plasma spray coating devices with internal film thickness control function;
- (e) coating devices that use the sputtering method and has a current density of 10 milliamperes per square centimeter or more for hourly deposition rates of 15 micrometers or more;
- (f) coating devices that employ methods to fix coating materials ionized by arc discharge to the substrate surface and that have a magnetic field to control arc spots on the cathodes;
- (g) ion plating production equipment that can measure the following characteristics of the coating:
 - 1. thickness and deposition rate of coating materials fixed to the substrate surface;
 - 2. the optical properties of the substrate surface;
- (viii) measuring devices (including machine tools usable as a measuring device; hereinafter the same applies in this Article) or feedback devices for positions, or assemblies of measuring devices which fall under any of the following (excluding those falling under item (ii) or (iii)):
 - (a) coordinate measuring instruments that are controlled by computer or numerically- controlled coordinate measuring equipment and that, when the precision of measurement of intervals is measured according to the measurement method specified in International Standard ISO 10360-2:2001 for any of the points of measurement within the limits of operation, have a maximum permissible error of length measurement of the axis displayed in micrometers that is equal to or less than the value obtained by multiplying the length of the measured axis in millimeters by 0.001 and

- then adding 1.7;
- (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 (excluding laser interferometers and optical encoders in the cases of 1. and 2.):
 1. non-contact type measurement devices with a resolution of 0.2 micrometers or less in a measurement range of up to 0.2 millimeters;
 2. feedback devices for positions on a straight line which are specifically designed for machine tools and whose precision is less than a numerical value obtained by adding 0.0008 millimeters to six over one hundred thousand percent of the effective measurement length of those devices in millimeters; or
 3. devices falling under all of the following:
 - i. devices capable of measurement using a laser beam;
 - ii. devices with a resolution of 0.2 nanometers or less in the maximum measurable range; and
 - iii. devices of which the numerical value in nanometers of measurement uncertainty for measurement axis, when it is corrected by a refractive index of air at any one point in the measurement range, is not more than a numerical value obtained by adding 1.6 to a numerical value obtained by multiplying the length of that measurement axis in millimeters by 0.0005, and which are capable of a measurement of over 30 seconds in the range of temperatures of not less than 19.99 and not more than 20.01 degrees centigrade;
 4. assemblies of measuring devices falling under 3. which are designed to add a feedback function to those devices;
 - (c) rotational displacement feedback devices or devices for measuring angle displacement which are specifically designed for machine tools whose angle precision is 0.9 arc seconds or less (excluding optical instruments for measuring the displacement of the angle of a mirror using parallel rays (including autocollimators));
 - (d) measuring devices that measure surface roughness by treating the angles of the scattering of light as functions and that have a sensitivity of 0.5 nanometers or less;
 - (ix) robots (excluding operating robots and sequenced robots) that fall under any of the following, or the control equipment or end effectors thereof:
 - (a) robots of explosion-proof construction as specified in Japanese Industrial Standard C60079-0 (excluding those used for painting);
 - (b) robots designed to withstand a total absorbed atomic radiation dose exceeding 5,000 grays on a silicon conversion basis;
 - (c) devices designed for use at altitudes exceeding 30,000 meters;

- (x) compound rotary tables or spindles that can change angles of center line to other axes during a manufacturing operation, which are designed for machine tools and which fall under any of the following:
 - (a) deleted;
 - (b) deleted;
 - (c) compound rotary tables which fall under 1. and 2. below:
 - 1. tables designed for machine tools capable of lathe turning, milling or grinding; and
 - 2. tables which have two rotating axes designed to allow their simultaneous control for contouring control;
 - (d) spindles that can change angles of center line to other axes during a manufacturing operation and which fall under 1. and 2. below:
 - 1. spindles designed for machine tools capable of lathe turning, milling or grinding; and
 - 2. spindles designed to allow their simultaneous control for contouring control;
- (xi) spin-forming machines that fall under all of the following (a), (b), and (c):
 - (a) spin-forming machines or flow-forming machines that are capable of exerting control by numerically - controlled coordinate measuring equipment or computers;
 - (b) spin-forming machines or flow-forming machines with 3 or more axes capable of controlling contour;
 - (c) spin-forming machines or flow-forming machines with a roller welding force exceeding 60 kilonewtons.

Article 6 Goods with specifications prescribed by Order of the Ministry of Economy, Trade and Industry in row 7 of appended table 1 of the Export Order fall under any of the following:

- (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) which fall under any of the following:
 - (a) integrated circuits designed to withstand any of the following categories of atomic radiation:
 - 1. integrated circuits with a total absorbed dose of 5,000 grays or more on a silicon conversion basis;
 - 2. integrated circuits with an absorbed dose of 5,000,000 grays or more in one second on a silicon conversion basis;
 - 3. integrated circuits with a neutron flux corresponding to 1 megaelectron volt (integrated value) of 50 trillion or more per square centimeter

- (excluding MIS type);
- (b) microprocessors, microcomputers, microcontrollers, integrated circuits for storage elements using compound semiconductors, integrated circuits for analog-to-digital conversion, integrated circuits having an analog-to-digital conversion function and capable of recording or processing digitized data, integrated circuits for digital-to-analog conversion, electrooptical integrated circuits or optical integrated circuits for signal processing, field programmable logic devices, custom integrated circuits (excluding those for which it is possible to determine whether or not they are goods that fall under any of (c) through (h) or (k) through (m) or those capable of deciding whether they are designed to be used for goods falling under any of the middle column of rows (5) through (15) of Appended Table 1 of the Export Order; hereinafter the same applies in this Article), FFT processors, static RAM or nonvolatile memories that fall under any of the following (excluding integrated circuits designed for automobiles or railway vehicles for civilian use):
1. devices designed for use at temperatures exceeding 125 degrees centigrade;
 2. devices designed for use at temperatures of less than -55 degrees centigrade;
 3. devices designed for use at all temperatures in a range from -55 degrees centigrade or more to 125 degrees centigrade or less;
- (c) microprocessors, microcomputers or microcontrollers employing compound semiconductors with a maximum clock frequency exceeding 40 megahertz;
- (d) deleted;
- (e) integrated circuits for analog-to-digital conversion or digital-to-analog conversion that fall under any of the following:
1. circuits for analog-to-digital conversion that fall under any of the following (excluding those falling under (m)):
 - i. circuits with a resolution of not less than 8 bits and less than 10 bits and a sample rate exceeding 1.3 gigasamples per second
 - ii. circuits with a resolution of not less than 10 bits and less than 12 bits and with a sample rate exceeding 600 megasamples per second;
 - iii. circuits with a resolution of not less than 12 bits and less than 14 bits and a sample rate exceeding 400 megasamples per second;
 - iv. circuits with a resolution of not less than 14 bits and less than 16 bits and a sample rate exceeding 250 megasamples per second;
 - v. circuits with a resolution of not less than 16 bits and a sample rate exceeding 65 megasamples per second;
 2. circuits for digital-to-analogue conversion which fall under any of the following:

- i. circuits with a resolution of 10 bits or more and less than 12 bits and with a coordinated update rate exceeding 3,500 megasamples per second;
- ii. circuits with a resolution of 12 bits or more which fall under any of the following:
 - a. circuits with a coordinated update rate exceeding 1,250 megasamples per second and 3,500 megasamples or less per second which fall under any of the following:
 - 1 those whose settling time in which the analog output level changes to a level within 0.024 % of full scale from the full-scale level is less than nine nanoseconds when they work at a resolution of 12 bits;
 - 2 those with a spurious free dynamic range exceeding 68 decibels in cases where a full-scale output is made by digital input signals of 100 megahertz or where the maximum full-scale output is made by digital input signals of less than 100 megahertz;
 - b. circuits with a coordinated update rate exceeding 3,500 megasamples per second;
- (f) electro-optical integrated circuits or optical integrated circuits used for signal processing that fall under all of the following 1. through 3.:
 - 1. integrated circuits possessing laser oscillators;
 - 2. integrated circuits possessing photo-detectors;
 - 3. integrated circuits possessing optical waveguides;
- (g) field programmable logic devices (including complex programmable logic devices, field programmable gate arrays, field programmable logic arrays, or integrated circuits for field programmable interconnections) which fall under any of the following (excluding those falling under (m)):
 - 1. devices with a maximum number of single-ended digital input and output exceeding 700;
 - 2. devices with serial transceivers which have a total maximum data speed of not less than 500 gigabits per second;
- (h) devices employing neural networks;
- (i) custom integrated circuits that fall under any of the following:
 - 1. custom integrated circuits with terminals exceeding 1,500;
 - 2. custom integrated circuits with a basic gate propagation delay time of less than 0.02 nanoseconds;
 - 3. custom integrated circuits with an operating frequency exceeding 3 gigahertz;
- (j) digital devices employing compound semiconductors that fall under any of the following (excluding those which fall under any of (c), (e) through (i), and (k)):
 - 1. digital devices with a number of equivalent gates exceeding 3,000 on a dual-entry gate conversion basis;

- 2. digital devices with a toggle frequency exceeding 1.2 gigahertz;
- (k) FFT processors with a Fast Fourier Transformation rated execution time expressed in milliseconds that is less than the value calculated by the following expression: $(\text{number of complex points}) \log_2 (\text{number of complex points}) / 20,480$;
- (l) direct digital synthesizer (DDS) integrated circuits that fall under any of the following:
 - 1. direct digital synthesizer (DDS) integrated circuits with a digital-to-analogue conversion clock frequency of 3.5 gigahertz or more and with a digital-to-analogue conversion resolution of 10 bits or more and less than 12 bits;
 - 2. direct digital synthesizer (DDS) integrated circuits with a digital-to-analogue conversion clock frequency of 1.25 gigahertz or more and with a digital-to-analogue conversion resolution of or more than 12 bits;
- (m) devices which fall under 1. and 2. below or are capable of being programmed to carry out them:
 - 1. devices which have an analog-to-digital conversion function and fall under any of the following:
 - i. devices with a resolution of not less than 8 bits and less than 10 bits and a sample rate exceeding 1.3 gigasamples per second;
 - ii. devices with a resolution of not less than 10 bits and less than 12 bits and a sample rate exceeding 1 gigasamples per second;
 - iii. devices with a resolution of not less than 12 bits and less than 14 bits and a sample rate exceeding 1 gigasamples per second;
 - iv. devices with a resolution of not less than 14 bits and less than 16 bits and a sample rate exceeding 400 megasamples per second;
 - v. devices with a resolution of not less than 16 bits and a sample rate exceeding 180 megasamples per second;
 - 2. devices which fall under any of the following:
 - i. devices for recording digitized data;
 - ii. devices for processing digitized data;
- (ii) components of devices using microwaves or millimeter waves that fall under any of the following:
 - (a) vacuum electronic devices (including klystrons and traveling wave tubes and derivatives thereof; hereinafter the same applies in (b)) which fall under any of the following (excluding those falling under 4.):
 - 1. traveling wave vacuum electronic devices that fall under any of the following:
 - i. traveling wave tubes with an operating frequency exceeding 31.8 gigahertz;
 - ii. traveling wave tubes having a hot cathode for which the time from the

- heating of the filament to attainment of the rated output is less than 3 seconds;
- iii. traveling wave tubes with cavity coupling in which the value for the instantaneous bandwidth divided by the center frequency exceeds 7% or a maximum output exceeding 2.5 kilowatts;
 - iv. helical form-shaped devices, folded waveguide-shaped devices or serpentine waveguide circuit-shaped devices that fall under any of the following:
 - a. devices having an instantaneous bandwidth exceeding 1 octave, and for which the value obtained by multiplying the average output value expressed in kilowatts by the operating frequency value expressed in gigahertz exceeds 0.5;
 - b. devices having an instantaneous bandwidth of 1 octave or less, and for which the value obtained by multiplying the average output value expressed in kilowatts by the operating frequency value expressed in gigahertz exceeds 1;
 - c. devices designed for space use;
 - d. devices which have a grid electron gun;
 - v. devices for which a value obtained by dividing the instantaneous bandwidth by the center frequency is 10% or more and which have any of the following:
 - a. an annular electron beam;
 - b. a non-axisymmetric electron beam; or
 - c. multiple electron beams;
 - 2. crossfield amplifier vacuum electronic devices with a gain exceeding 17 decibels;
 - 3. devices which can be operated in a dual mode;
 - 4. devices designed to use frequency bands allotted for wireless transmission by the International Telecommunication Union (excluding frequency bands allotted for wireless radio determination) that fall under any of the following:
 - i. devices with an operating frequency of 31.8 gigahertz or less;
 - ii. devices other than those designed exclusively for use in space that have an average output of 50 watts or less and an operating frequency exceeding 31.8 gigahertz and 43.5 gigahertz or less;
 - (b) thermionic cathodes 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 (excluding monolithic microwave integrated circuit amplifiers

that have an integrated phase shifter falling under (n)):

1. among devices with an operating frequency exceeding 2.7 gigahertz and 6.8 gigahertz or less for which the value of the instantaneous bandwidth divided by the center frequency exceeds 15%, those which that fall under any of the following:

i. devices with an operating frequency exceeding 2.7 gigahertz and 2.9 gigahertz or less with a peak saturation output value exceeding 75 watts (48.75 dBm) and 300 watts (54.8 dBm) or less;

ii. devices with an operating frequency exceeding 2.9 gigahertz and 3.2 gigahertz or less with a peak saturation output value exceeding 55 watts (47.4 dBm) and 300 watts (54.8 dBm) or less;

iii. devices with an operating frequency exceeding 3.2 gigahertz and 3.7 gigahertz or less with a peak saturation output value exceeding 40 watts (46 dBm) and 300 watts (54.8 dBm) or less;

iv. devices with an operating frequency exceeding 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value exceeding 20 watts (43 dBm) and 300 watts (54.8 dBm) or less;

v. devices with an operating frequency exceeding 2.7 gigahertz and 3.7 gigahertz or less with a peak saturation output value exceeding 300 watts (54.8 dBm);

vi. devices with an operating frequency exceeding 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value exceeding 120 watts (50.8 dBm);

2. among devices with an operating frequency exceeding 6.8 gigahertz and 16 gigahertz or less for which the value of the instantaneous bandwidth divided by the center frequency exceeds 10%, those which that fall under any of the following:

i. devices with an operating frequency exceeding 6.8 gigahertz and 8.5 gigahertz or less with a peak saturation output value exceeding 10 watts (40 dBm) and 25 watts (44 dBm) or less;

ii. devices with an operating frequency exceeding 8.5 gigahertz and 12 gigahertz or less with a peak saturation output value exceeding 5 watts (37 dBm) and 25 watts (44 dBm) or less, or devices with an operating frequency exceeding 12 gigahertz and 16 gigahertz or less with a peak saturation output value exceeding 5 watts (37 dBm);

iii. devices with an operating frequency exceeding 6.8 gigahertz and 12 gigahertz or less with a peak saturation output value exceeding 25 watts (44 dBm);

3. among devices with an operating frequency exceeding 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 of the instantaneous

- bandwidth divided by the center frequency exceeds 10%;
4. devices with an operating frequency exceeding 31.8 gigahertz and 37 gigahertz or less, and a peak saturation output value exceeding 0.1 nanowatts (-70 dBm);
 5. among devices with an operating frequency exceeding 37 gigahertz and 43.5 gigahertz or less and with a peak saturation output value exceeding 1.0 watts (30 dBm), those for which the value of the instantaneous bandwidth divided by the center frequency exceeds 10%;
 6. devices with an operating frequency exceeding 43.5 gigahertz, and 75 gigahertz or less and with a peak saturation output value exceeding 31.62 milliwatts (15 dBm), those for which the value of the instantaneous bandwidth divided by the center frequency exceeds 10%;
 7. devices with an operating frequency exceeding 75 gigahertz and 90 gigahertz or less and with a peak saturation output value exceeding 10 milliwatts (10 dBm), those for which the value of the instantaneous bandwidth divided by the center frequency exceeds 5%;
 8. devices with an operating frequency exceeding 90 gigahertz, and a peak saturation output value exceeding 0.1 nanowatts (-70 dBm);
- (d) microwave discrete transistors that fall under any of the following:
1. among devices with an operating frequency exceeding 2.7 gigahertz and 6.8 gigahertz or less, those which fall under any of the following:
 - i. devices with an operating frequency exceeding 2.7 gigahertz and 2.9 gigahertz or less and with a peak saturation output value exceeding 400 watts (56 dBm) and 600 watts (57.8 dBm) or less;
 - ii. devices with an operating frequency exceeding 2.9 gigahertz and 3.2 gigahertz or less and with a peak saturation output value exceeding 205 watts (53.12 dBm) and 600 watts (57.8 dBm) or less;
 - iii. devices with an operating frequency exceeding 3.2 gigahertz and 3.7 gigahertz or less and with a peak saturation output value exceeding 115 watts (50.61 dBm) and 600 watts (57.8 dBm) or less;
 - iv. devices with an operating frequency exceeding 3.7 gigahertz and 6.8 gigahertz or less and with a peak saturation output value exceeding 60 watts (47.78 dBm) and 130 watts (51.2 dBm) or less;
 - v. devices with an operating frequency exceeding 2.7 gigahertz and 3.7 gigahertz or less and with a peak saturation output value exceeding 600 watts (57.8 dBm);
 - vi. devices with an operating frequency exceeding 3.7 gigahertz and 6.8 gigahertz or less and with a peak saturation output value exceeding 130 watts (51.2 dBm);
 2. among devices with an operating frequency exceeding 6.8 gigahertz and 31.8 gigahertz or less, those which fall under any of the following:

- i. devices with an operating frequency exceeding 6.8 gigahertz and 8.5 gigahertz or less and with a peak saturation output value exceeding 50 watts (47 dBm) and 130 watts (51.2 dBm) or less;
- ii. devices with an operating frequency exceeding 8.5 gigahertz and 12 gigahertz or less and with a peak saturation output value exceeding 15 watts (41.76 dBm) and 60 watts (47.8 dBm) or less;
- iii. devices with an operating frequency exceeding 6.8 gigahertz and 8.5 gigahertz or less and with a peak saturation output value exceeding 130 watts (51.2 dBm);
- iv. devices with an operating frequency exceeding 8.5 gigahertz and 12 gigahertz or less and with a peak saturation output value exceeding 60 watts (47.8 dBm);
- v. devices with an operating frequency exceeding 12 gigahertz and 16 gigahertz or less and with a peak saturation output value exceeding 40 watts (46 dBm);
- vi. devices with an operating frequency exceeding 16 gigahertz and 31.8 gigahertz or less and with a peak saturation output value exceeding 7 watts (38.45 dBm);
- 3. devices with an operating frequency exceeding 31.8 gigahertz and 37 gigahertz or less and with a peak saturation output value exceeding 0.5 watts (27 dBm);
- 4. devices with an operating frequency exceeding 37 gigahertz and 43.5 gigahertz or less and with a peak saturation output value exceeding 1 watt (30 dBm);
- 5. devices with an operating frequency exceeding 43.5 gigahertz, and a peak saturation output value exceeding 0.1 nanowatts (-70 dBm);
- 6. devices with a peak saturation output value exceeding 5 watts (37 dBm) in all frequency bands where an operating frequency exceeds 8.5 gigahertz and 31.8 gigahertz or less (excluding those falling under any of Article 6, item (ii), (d) 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 transmitter and receiver modules and transmitter modules) which fall under any of the following:
 - 1. among devices with an operating frequency exceeding 2.7 gigahertz and 6.8 gigahertz or less for which the value of the instantaneous bandwidth divided by the center frequency exceeds 15%, those which fall under any of the following:
 - i. devices with an operating frequency exceeding 2.7 gigahertz and 2.9 gigahertz or less and with a peak saturation output value exceeding 500 watts (57 dBm);

- ii. devices with an operating frequency exceeding 2.9 gigahertz and 3.2 gigahertz or less and with a peak saturation output value exceeding 270 watts (54.3 dBm);
 - iii. devices with an operating frequency exceeding 3.2 gigahertz and 3.7 gigahertz or less and with a peak saturation output value exceeding 200 watts (53 dBm);
 - iv. devices with an operating frequency exceeding 3.7 gigahertz and 6.8 gigahertz or less and with a peak saturation output value exceeding 90 watts (49.54 dBm);
2. among devices with an operating frequency exceeding 6.8 gigahertz and 31.8 gigahertz or less for which the value of the instantaneous bandwidth divided by the center frequency exceeds 10%, those which fall under any of the following:
- i. devices with an operating frequency exceeding 6.8 gigahertz and 8.5 gigahertz or less and with a peak saturation output value exceeding 70 watts (48.45 dBm);
 - ii. devices with an operating frequency exceeding 8.5 gigahertz and 12 gigahertz or less and with a peak saturation output value exceeding 50 watts (47 dBm);
 - iii. devices with an operating frequency exceeding 12 gigahertz and 16 gigahertz or less and with a peak saturation output value exceeding 30 watts (44.77 dBm);
 - iv. devices with an operating frequency exceeding 16 gigahertz and 31.8 gigahertz or less and with a peak saturation output value exceeding 20 watts (43 dBm);
3. devices with an operating frequency exceeding 31.8 gigahertz and 37 gigahertz or less, and a peak saturation output value exceeding 0.5 watts (27 dBm);
4. among devices with an operating frequency exceeding 37 gigahertz and 43.5 gigahertz or less and with a peak saturation output value exceeding 2 watts (33 dBm), those for which the value of the instantaneous bandwidth divided by the center frequency exceeds 10%;
5. among devices with an operating frequency exceeding 43.5 gigahertz, those which fall under any of the following:
- i. among devices with an operating frequency exceeding 43.5 gigahertz and 75 gigahertz or less and with a peak saturation output value exceeding 0.2 watts (23 dBm), those for which the value of the instantaneous bandwidth divided by the center frequency exceeds 10%;
 - ii. among devices with an operating frequency exceeding 75 gigahertz and 90 gigahertz or less and with a peak saturation output value exceeding 20 milliwatts (13 dBm), those for which the value of the instantaneous

- bandwidth divided by the center frequency exceeds 5%;
- iii. devices with an operating frequency exceeding 90 gigahertz and with a peak saturation output value exceeding 0.1 nanowatts (-70 dBm);
- (f) electronically or magnetically tunable band-pass filters that fall under the following 1. and 2.:
 - 1. devices having 6 or more variable frequency resonators capable of tuning across a half-octave frequency band in less than 10 microseconds;
 - 2. devices capable of band-passing in excess of 0.5% of the center frequency;
- (g) electronically or magnetically tunable band-elimination filters that fall under the following 1. and 2.:
 - 1. devices having 6 or more variable frequency resonators capable of tuning across a half-octave frequency band in less than 10 microseconds;
 - 2. devices capable of eliminating a band less than 0.5% of the center frequency;
- (h) deleted;
- (i) harmonic mixers or converters that fall under any of the following:
 - 1. devices designed to extend the frequency band of a spectrum analyzer to over 90 gigahertz;
 - 2. devices which are designed to extend the operating range of a signal generator and fall under any of the following:
 - i. devices with a frequency band exceeding 90 gigahertz; or
 - ii. devices with a frequency band of more than 43.5 gigahertz and not more than 90 gigahertz whose output exceeds 100 milliwatts (20 dBm);
 - 3. devices which are designed to extend the operating range of a network analyzer and fall under any of the following:
 - i. devices with a frequency band exceeding 110 gigahertz;
 - ii. devices with a frequency band of more than 43.5 gigahertz and not more than 90 gigahertz whose output exceeds 31.62 milliwatts (15 dBm); or
 - iii. devices with a frequency band of more than 90 gigahertz and not more than 110 gigahertz whose output exceeds 1 milliwatt (0 dBm);
 - 4. devices designed to extend the frequency band of a test receiver for microwaves to over 110 gigahertz;
- (j) microwave power amplifiers equipped with a vacuum electronic device falling under (a) and that fall under the following categories 1. and 2. (excluding equipment used on frequency bands allotted for wireless transmission by the International Telecommunication Union (excluding frequency bands allotted for wireless radio determination)):
 - 1. devices with an operating frequency exceeding 3 gigahertz;
 - 2. devices with a mass ratio(k) of average output power exceeding 80 watts per kilogram and with a volume of less than 400 cubic centimeters;

- (k) microwave power modules which have a traveling wave vacuum electronic device, a monolithic microwave integrated circuit, and a power supply and which fall under all of 1. through 3. below:
1. those having a turn-on time from off to fully operational in less than 10 seconds;
 2. those of which the volume is less than the numerical value obtained by multiplying the maximum rated output expressed in watts by 10 cubic centimeters per watt;
 3. those having an instantaneous bandwidth of 1 octave or more, which fall under any of the following:
 - 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 for which the ratio of single sideband phase noise per hertz to carrier waves in any frequency band where the difference between the operating frequency and the offset frequency is not less than 10 hertz and less than 10 kilohertz is less than a value calculated using the following expression: $20 \log_{10} (\text{operating frequency in megahertz}) - 20 \log_{10} (\text{a distance between operating frequency and offset frequency in hertz}) - 126$;
- (m) among assemblies employing frequency synthesizers, those falling under any of the following:
1. assemblies which take less than 143 picoseconds to vary the frequency;
 2. assemblies which take less than 100 microseconds to vary any frequency exceeding 2.2 gigahertz in the range of combined output frequencies of more than 4.8 gigahertz and not more than 31.8 gigahertz;
 3. deleted;
 4. assemblies which take less than 500 microseconds to vary any frequency exceeding 550 megahertz in the range of combined output frequencies of more than 31.8 gigahertz and not more than 37 gigahertz;
 5. assemblies which take less than 100 microseconds to vary any frequency exceeding 2.2 gigahertz in the range of combined output frequencies of more than 37 gigahertz and not more than 75 gigahertz;
 6. assemblies which take less than 100 microseconds to vary any frequency exceeding 5.0 gigahertz in the range of combined output frequencies of more than 75 gigahertz and not more than 90 gigahertz;
 7. assemblies which take less than 1 millisecond to vary the frequency in the range of combined output frequencies exceeding 90 gigahertz;
- (n) of transmitter and receiver modules, monolithic microwave integrated circuits for transmission and reception, transmitter modules and monolithic microwave integrated circuits for transmission whose operating

- frequency exceeds 2.7 gigahertz, those which fall under all of the following:
1. devices whose peak saturation output level in watts exceeds a value obtained by dividing 505.62 by the square of the maximum operating frequency in gigahertz, on any channel;
 2. devices for which a value obtained by dividing the instantaneous bandwidth by the center frequency is 5% or more, on any channel;
 3. devices for which a value of the length of any side of the plane in centimeters is not more than a value obtained by dividing the product of the number of transmitting channels or transmitting and receiving channels and 15 by the minimum operating frequency in gigahertz; and
 4. devices capable of electronic phase shift for each channel;
- (iii) signal processing equipment utilizing elastic waves or acousto-optic effects that fall under any of the following (excluding those solely having any of the function of specific band-pass, low band pass, high band pass, band elimination, or resonance), or the components thereof:
- (a) signal processing equipment using surface elastic waves or pseudo-surface elastic waves that fall under any of the following:
 1. signal processing equipment with a carrier frequency exceeding 6 gigahertz;
 2. signal processing equipment with a carrier frequency exceeding 6 gigahertz and 2.5 gigahertz or less that falls under any of the following:
 - i. signal processing equipment with a main lobe to side lobe power ratio exceeding 65 decibels;
 - ii. signal processing equipment for which the numeric value of the maximum delay time expressed in microseconds multiplied by the value of the bandwidth expressed in megahertz exceeds 100;
 - iii. signal processing equipment with a bandwidth exceeding 250 megahertz;
 - iv. signal processing equipment for which the distributed delay time (this refers to the difference between the maximum and minimum delay time values for a frequency) exceeds 10 microseconds;
 3. signal processing equipment with a carrier frequency of 1 gigahertz or less that falls under any of the following:
 - i. signal processing equipment for which the numeric value obtained by multiplying the maximum delay time expressed in microseconds by the value of the bandwidth expressed in megahertz exceeds 100;
 - ii. signal processing equipment for which the distributed delay time exceeds 10 microseconds;
 - iii. signal processing equipment with a main lobe to side lobe power ratio exceeding 65 decibels and with a bandwidth exceeding 100 megahertz;
 - (b) signal processing equipment that utilizes bulk elastic waves and that is

- capable of performing direct signal processing at frequencies exceeding 6 gigahertz;
- (c) signal processing that utilizes the interaction of elastic waves and light waves and that is capable of performing direct signal or image processing;
 - (iv) among devices using superconductive material that are electron devices or electronic circuits with components using superconductive materials, those designed for use at temperatures lower than the critical temperature of the superconductive materials used and that fall under any of the following:
 - (a) devices possessing a current switching function for use in 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;
 - (b) devices having frequency separation function and having 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:
 - (a) primary cells whose energy density and power density at a temperature of 20 degrees centigrade fall under any of the following:
 1. cells with an energy density exceeding 550 watt-hours per kilogram and a continuous power density exceeding 50 watts per kilogram;
 2. cells 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:
 - (a) capacitors with a repeated cycle of less than 10 hertz that fall under all of the following categories 1. to 3.:
 1. capacitors with a rated voltage of 5 kilovolts or more;
 2. capacitors with an energy density of 250 joules per kilogram or more;
 3. capacitors with a total energy of 25 kilojoules or more;
 - (b) capacitors with a repetitive cycle of 10 hertz or more and that fall under all of the following categories 1. to 4.:
 1. capacitors with a rated voltage of 5 kilovolts or more;
 2. capacitors with an energy density of 50 joules per kilogram or more;
 3. capacitors with a total energy of 100 joules or more;
 4. capacitors designed for a charge/discharge cycle life equal to or more than 10,000 cycles;
 - (vii) superconducting magnets (including solenoid coil types) designed to fully generate or dissipate a complete magnetic field in less than one second that fall under all of the following categories (a) to (c):
 - (a) superconducting magnets that discharge energy exceeding 10 kilojoules in

- the first second of demagnetization;
- (b) superconducting magnets with a coil internal diameter exceeding 250 millimeters;
- (c) superconducting magnets 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 (CIC) 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 under 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 designed for those encoders;
- (viii)-2 among thyristor devices or thyristor modules switching pulse output, which employ a switching method controlled electronically or optically or a switching method with a controlled electron emission, those that fall under any of the following (excluding those incorporated into a device designed for use in civil railway vehicles or civil aircraft):
 - (a) those with a maximum turn-on current exceeding 30,000 amperes per microsecond, and off-state voltage exceeding 1,100 volts;
 - (b) those with a maximum turn-on current exceeding 2,000 amperes per microsecond, and that fall under the following 1. and 2.:
 1. those with an off-state voltage of 3,000 volts or more;
 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, and that fall under all of the following (a) through (c) (excluding those incorporated into a device designed for use in civil automobiles, civil railway vehicles, or civil aircraft):
 - (a) those designed for a maximum operating junction temperature to exceed 215 degrees centigrade;
 - (b) those with a repetitive peak off-state voltage exceeding 300 volts;
 - (c) those with a continuous current exceeding one ampere;
- (viii)-4 optical modulators using electrooptic effects to operate the intensity, amplitude or phases of light and designed for analog signals which fall under any of the following (including those which have an optical input and output connector):
 - (a) of modulators with a maximum operating frequency of over 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:
 1. modulators with a half-wave voltage of less than 2.7 volts when it is

- measured at frequencies of 1 gigahertz or less;
- 2. modulators with a half-wave voltage of less than 4 volts when it is measured at frequencies exceeding 1 gigahertz;
- (b) of 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:
 - 1. modulators with a half-wave voltage of less than 3.3 volts when it is measured at frequencies of 1 gigahertz or less;
 - 2. modulators with a half-wave voltage of less than 5 volts when it is measured at frequencies exceeding 1 gigahertz;
- (ix) among sampling oscilloscopes utilizing the method of real-time sampling, those for which, where the input 3-decibel bandwidth of any channel is 60 gigahertz or more, the root-mean-square of noise voltage at the longitudinal axis range where noise of the channel is the smallest is less than 2% of the full scale;
- (x) of 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 (a) and (b) below (excluding digital method recording devices, sampling oscilloscopes, spectrum analyzers, signal generators, network analyzers, and test receivers for microwaves):
 - (a) modules, assemblies or devices whose resolution and sample rate fall under any of the following:
 - 1. those with a resolution of not less than 8 bits and less than 10 bits whose sample rate exceeds 1.3 gigasamples per second
 - 2. those with a resolution of not less than 10 bits and less than 12 bits whose sample rate exceeds 1 gigasamples per second;
 - 3. those with a resolution of not less than 12 bits and less than 14 bits whose sample rate exceeds 1 gigasamples per second;
 - 4. those with a resolution of not less than 14 bits and less than 16 bits whose sample rate exceeds 400 megasamples per second; or
 - 5. those with a resolution of not less than 16 bits whose sample rate exceeds 180 megasamples per second;
 - (b) modules, assemblies or devices which have any of the following functions:
 - 1. those for outputting digitized data;
 - 2. those for recording digitized data; or
 - 3. those for processing digitized data;
- (xi) digital method recording devices that fall under (a) and (b) below:
 - (a) devices capable of maintaining a speed of data continuous recording to disk memory or solid-state drive memory of over 6.4 gigabits per second;

- and
- (b) devices which are capable of performing signal processing of radio frequency signal data during a recording operation;
 - (xii) spectrum analyzers that fall under any of the following:
 - (a) analyzers for which the resolution bandwidth for 3 decibels in any frequency band of over 31.8 gigahertz and 37 gigahertz or less exceeds 40 megahertz;
 - (b) analyzers whose displayed average noise level in any frequency band of over 43.5 gigahertz and 90 gigahertz or less is less than -150 dBm per hertz;
 - (c) analyzers capable of analyzing frequencies exceeding 90 gigahertz; or
 - (d) analyzers that fall under 1. and 2. below:
 - 1. analyzers with a real time bandwidth exceeding 170 megahertz; and
 - 2. analyzers which fall under any of the following:
 - i. analyzers that detect signals with a length of 15 microseconds or less with a probability of 100%, with a damping, due to gap or window effect, of less than 3 decibels from the total amplitude; or
 - ii. analyzers with a frequency mask trigger function that detect signals with a length of 15 microseconds or less with a probability of 100%;
 - (xiii) signal generators which fall under any of the following (excluding generators which set 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) signal generators which generate, in any frequency band of over 31.8 gigahertz and 37 gigahertz or less, pulse modulated signals that fall under the following 1. and 2.:
 - 1. signal generators with a pulse width of less than 25 nanoseconds; and
 - 2. signal generators with an on/off ratio of 65 decibels or more;
 - (b) signal generators with an output exceeding 100 milliwatts (20 dBm), in any frequency band of over 43.5 gigahertz and 90 gigahertz or less;
 - (c) generators which fall under any of the following:
 - 1. deleted;
 - 2. generators which take less than 100 microseconds to vary any frequency exceeding 2.2 gigahertz in the output frequency band of over 4.8 gigahertz and 31.8 gigahertz or less;
 - 3. deleted;
 - 4. generators which take less than 500 microseconds to vary any frequency exceeding 550 megahertz in the output frequency band of over 31.8 gigahertz and 37 gigahertz or less;
 - 5. generators which take less than 100 microseconds to vary any frequency exceeding 2.2 gigahertz in the output frequency band of over 37 gigahertz

- and 75 gigahertz or less; or
6. generators which take less than 100 microseconds to vary any frequency exceeding 5.0 gigahertz in the output frequency band of over 75 gigahertz and 90 gigahertz or less;
- (d) signal generators for which the value of the single side band phase noise ratio per hertz relative to carrier signal falls under any of the following:
1. signal generators for which the difference between operating frequency and offset frequency in any output frequency band of over 3.2 gigahertz and 90 gigahertz or less is less than a value calculated using the following expression in any frequency band of 10 hertz or more and 10 kilohertz or less: $20 \log_{10}(\text{operating frequency in megahertz}) - 20 \log_{10}(\text{a difference between operating frequency and offset frequency in hertz}) - 126$; or
 2. signal generators for which the difference between operating frequency and offset frequency in any output frequency band of over 3.2 gigahertz and 90 gigahertz or less is less than a value calculated using the following expression in any frequency band of over 10 kilohertz and 100 kilohertz or less: $20 \log_{10}(\text{operating frequency in megahertz}) - 206$;
- (e) signal generators having a function to perform vector modulation of digital baseband signals for which the vector modulation bandwidth falls under any of the following:
1. vector modulation bandwidth exceeding 2.2 gigahertz in the output frequency band of over 4.8 gigahertz and 31.8 gigahertz or less;
 2. vector modulation bandwidth exceeding 550 megahertz in the output frequency band of over 31.8 gigahertz and 37 gigahertz or less;
 3. vector modulation bandwidth exceeding 2.2 gigahertz in the output frequency band of over 37 gigahertz and 75 gigahertz or less;
 4. vector modulation bandwidth exceeding 5.0 gigahertz in the output frequency band of over 75 gigahertz and 90 gigahertz or less;
- (f) signal generators with a maximum output frequency exceeding 90 gigahertz;
- (xiv) network analyzers that fall under any of the following:
- (a) network analyzers with an output exceeding 31.62 milliwatts (15 dBm) in any operating frequency band of over 43.5 gigahertz and 90 gigahertz or less;
 - (b) network analyzers with an output exceeding 1 milliwatt (0 dBm) in any operating frequency band of over 90 gigahertz and 110 gigahertz or less;
 - (c) network analyzers with a function of non-linear vector measurement within the frequency band exceeding 50 gigahertz and 110 gigahertz or less (excluding those which fall under (a) or (b));
 - (d) signal generators with a maximum combined output frequency exceeding 110 gigahertz;

- (xv) microwave receivers that fall under the following (a) and (b):
 - (a) devices designed for use at frequencies exceeding 110 gigahertz;
 - (b) devices that can simultaneously measure amplitude and phase;
- (xvi) atomic frequency standards that fall under any of the following:
 - (a) atomic frequency standards not employing rubidium and for which stability when oscillated continuously for a 30-day period is less than 1/100 billion;
 - (b) atomic frequency standards designed for space use;
 - (c) atomic frequency standards not designed for space use and which fall under all of the following 1. through 3.:
 - 1. atomic frequency standards employing rubidium;
 - 2. atomic frequency standards with a stability of less than 1/100 billion when oscillated continuously for a 30-day period;
 - 3. atomic frequency standards with the power consumption of less than 1 watt;
- (xvi)-2 among spray cooling method temperature control devices that are capable of cyclic use of the cooling medium within a closed device, those having atomizing nozzles specifically designed to spray isolating cooling medium on electric components and bring the components' temperature to within a fixed range, or the components specifically designed for that purpose;
- (xvii) equipment for the manufacture or test of semiconductor devices, integrated circuits or semiconductor materials (referred to as "semiconductor manufacturing equipment" in (e)), or masks or reticles for the manufacture of integrated circuits, which fall under any of the following, or the components and accessories thereof:
 - (a) crystal epitaxial growth systems that fall under any of the following:
 - 1. systems designed or altered to form other films than silicon whose absolute value of the tolerance of film thickness is less than 2.5 percent over a length of 75 millimeters or more;
 - 2. metal-organic chemical vapor deposition reactors that epitaxially grow compound semiconductors containing any two or more of the elements among aluminum, gallium, indium, arsenic, phosphor, antimony, and nitrogen;
 - 3. molecular beam epitaxial growth systems employing gas sources or solid sources;
 - (b) ion implanters that fall under any of the following:
 - 1. deleted;
 - 2. ion implanters designed and optimized to operate when implanting hydrogen, heavy hydrogen, or helium, at beam energies of 20 kiloelectron volts or more and a beam current of 10 milliamperes or more;

3. ion implanters which are capable of direct writing;
 4. ion implanters implanting oxygen on a heated semiconductor material substrate at beam energies of 65 kiloelectron volts or more and beam currents of 45 milliamperes or more;
 5. ion implanters designed and optimized to operate, when implanting silicon on a semiconductor material substrate heated to a temperature of 600 degrees centigrade or more, at beam energies of 20 kiloelectron volts or more and a beam current of 10 milliamperes or more;
- (c) deleted;
- (d) deleted;
- (e) automatic loading multi-chamber central wafer handling systems that fall under the following 1. and 2.:
1. semiconductor manufacturing equipment that falls under any of (a), 1. through 3. or (b), 2. through 5. with wafer input and output designed to be capable of connecting three or more different units of semiconductor manufacturing equipment (limited to those capable of connecting semiconductor manufacturing equipment with different functions);
 2. equipment designed to form an integrated system in a vacuum environment for consecutive multiple wafer processing;
- (f) lithography equipment that falls under any of the following:
1. step and repeat method or step and scan method align and expose equipment for wafer processing using photo-optical or x-ray methods, which falls under any of the following:
 - i. equipment with a light source wavelength of less than 193 nanometers;
 - ii. equipment for which the value obtained by multiplying the exposure light source wavelength expressed in nanometers by 0.35, then dividing that 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. of equipment designed to be capable of manufacturing masks and using electron beams, ion beams or laser beams, those that fall under any of the following:
 - i. equipment the full width at half the maximum of whose irradiation face is less than 65 nanometers in diameter and whose image position error (which is the mean value plus 3 sigmas) is less than 17 nanometers;
 - ii. deleted;
 - iii. equipment for which the superposition error (which is the mean value plus 3 sigmas) is less than 23 nanometers in the second layer on the mask;
 4. of equipment which are designed to be capable of manufacturing semiconductor elements or integrated circuits by a line drawing method and which use an electron beam, those which fall under any of the

- following:
- i. equipment whose irradiation face is 15 nanometers or less in diameter;
 - or
 - ii. equipment with a superposition error (which is the mean value plus 3 sigmas) 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 layer that are designed to be used in lithography equipment with a light source wavelength shorter than 245 nanometers (excluding those which fall under (g) and those designed to manufacture storage 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 test equipment for testing semiconductor devices or integrated circuits or those semi-finished products, those that fall under any of the following:
1. test equipment designed to be capable of testing the S-parameters of goods falling under item (ii), (d);
 2. deleted;
 3. test equipment designed to be capable of testing goods falling under item (ii), (c);
- (xvii)-2 of mask blanks having a reflection structure of a multilayer film composed of molybdenum and silicon, which are base materials used for manufacturing masks, those which fall under (a) and (b) below:
- (a) mask blanks specifically designed for devices for manufacturing integrated circuits using extreme-ultraviolet; and
- (b) mask blanks which conform to the specifications of the SEMI Standards P37 established by the Semiconductor Equipment and Materials International;
- (xviii) of substrates which have on those substrates multilayer film crystals of a substance falling under any of the following and in which those crystals have been formed through epitaxial growth, those which can be used as a hetero epitaxial material ((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) and in which those P-type epitaxial layers do not get caught 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 or the substrates to which they have been applied:
 - (a) resists used in semiconductor lithography that fall under any of the following:
 1. positive resists optimized to be used for light with a wavelength of not less than 15 nanometers and less than 193 nanometers; or
 2. resists optimized to be used at light with a wavelength of over 1 nanometer and less than 15 nanometers;
 - (b) resists that are designed for use in electron beams or ion beams and have a sensitivity of 0.01 microcoulombs per square millimeter or less;
 - (c) deleted;
 - (d) resists optimized for surface imaging technology;
 - (e) resists designed or optimized for use in imprint lithography equipment falling under item (xvii), (f), 2, which are thermoplastic or photocrosslinkable;
- (xx) organic metallic compounds or organic compounds that fall under any of the following:
 - (a) aluminum, gallium or indium organic compounds with a purity exceeding 99.999%;
 - (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 less, or hydrogen);
- (xxii) semiconductor substrates or ingots, boules or other preforms of silicon carbide, gallium nitride, aluminum nitride, aluminum gallium nitride, gallium oxide (Ga₂O₃) or diamond whose electrical resistivity exceeds 10,000 ohm centimeters at a temperature of 20 degrees centigrade;
- (xxiii) of polycrystalline substrates or polycrystalline ceramic substrates whose electrical resistivity exceeds 10,000 ohm centimeters at a temperature of 20 degrees centigrade, those which have on the surface of those substrates at least one or more non-epitaxial single crystal layer of silicon, silicon carbide, gallium nitride, aluminum nitride, aluminum gallium nitride, gallium oxide (Ga₂O₃) or diamond;
- (xxiv) substrates which fall under either of the preceding two items and have on those substrates at least one or more epitaxial layer of silicon carbide, gallium nitride, aluminum nitride, aluminum gallium nitride, gallium oxide

(Ga₂O₃) or diamond (excluding those falling under item (xviii)).

Article 7 Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 8 of the appended table 1 of the Export Order fall under any of the following:

- (i) computers or electronic assemblies thereof that fall under any of the following, or the components thereof:
 - (a) electronic computers or electronic assemblies thereof designed for use at temperatures exceeding 85 degrees centigrade or below -45 degrees centigrade;
 - (b) electronic computers or electronic assemblies thereof designed to prevent the impact of radiation and that fall under any of the following:
 - 1. electronic computers or electronic assemblies thereof designed to withstand atomic radiation with a total absorbed dose exceeding 5,000 grays on a silicon conversion basis;
 - 2. electronic computers or electronic assemblies thereof designed not to malfunction from an absorbed dose of atomic radiation exceeding 5 million grays per second on a silicon conversion basis;
 - 3. electronic computers or electronic assemblies thereof designed for a rate of error of less than 1/100 million per 1 bit per day from a single event error;
- (ii) deleted;
- (iii) digital computers, electronic assemblies thereof or components designed to improve the functions of digital electronic computers that fall under any of (b), (c) or (g), or the component thereof (excluding those and components thereof that fall under any of (h) through (j)):
 - (a) deleted;
 - (b) digital computers whose adjusted peak performance exceeds 70 weighted teraFLOPS;
 - (c) components designed to improve digital computer functions whose adjusted peak performance exceeds 70 weighted teraFLOPS through gathering calculation elements (excluding digital computers whose maximum performance is not over 70 weighted teraFLOPS or those specifically designed for family computers thereof);
 - (d) deleted;
 - (e) deleted;
 - (f) deleted;
 - (g) digital computer assemblies designed to transfer data among several digital computers for the purpose of improving the arithmetic processing capacity of digital computers, with a transfer rate of the data to be transferred exceeding 2.0 gigabytes per second;

- (h) of devices that are embedded in other equipment and that are indispensable for the operation of that equipment, those which are not key elements of that equipment;
- (i) of devices that are embedded in other equipment and that are indispensable to the operation of that equipment, those the functions of which are limited to signal processing or image enhancement of that equipment;
- (j) devices embedded in goods set forth in row (9), (i) to (iii), or (v) to (v)-5 of Appended Table 1 of the Export Order and that are indispensable to the operation of those devices;
- (iv) computers that fall under any of the following, or the electronic assemblies or components thereof:
 - (a) systolic array computers;
 - (b) neural computers;
 - (c) optical computers;
- (v) computers, or the electronic assemblies or components thereof which are specifically designed or altered to create, command and control or distribute hacking programs.

Article 8 Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 9 of the appended table 1 of the Export Order fall under any of the following:

- (i) telecommunication transmission equipment, electronic changers, telecommunication optical fibers, phased array antennas, radio direction finding equipment for monitoring use, radio communication interception equipment, communication jamming equipment, equipment monitoring operation of radio communication interception equipment or communication jamming equipment, equipment capable of detecting the position of objects by observing the interference of radio waves or other electromagnetic waves, without transmitting radio waves or other electromagnetic waves, or equipment monitoring communication by the method of using the Internet, which fall under any of the following:
 - (a) equipment which is designed to be able to guard against transient electronic influence or pulses due to nuclear explosions;
 - (b) equipment which is designed to prevent the effect of gamma rays, neutron beams or heavy electric particle rays (excluding equipment designed or altered for mounting on satellites);
 - (c) equipment which is designed to be usable at temperatures of lower than 55 degrees centigrade below zero and has electronic circuits (excluding those designed or altered to be mounted on satellites);
 - (d) equipment which is designed to be usable at temperatures exceeding 124

- degrees centigrade and has electronic circuits (excluding those designed or altered to be mounted on satellites);
- (ii) telecommunication transmission equipment, or components thereof or accessories that fall under any of the following:
- (a) radio transmitters or radio receivers that fall under any of the following:
1. telecommunication transmission equipment which can be used within a frequency range of 1.5 megahertz or more and 87.5 megahertz or less that fall under the following i. and ii.:
 - i. telecommunication transmission equipment which is capable of automatically measuring and selecting the optimum transmission frequency and the optimum general transfer rate per channel;
 - ii. telecommunication transmission equipment which uses linear amplifiers that falls under all of the following a. through d.:
 - a. telecommunication transmission equipment which are capable of amplifying two or more signals simultaneously;
 - b. telecommunication transmission equipment having output characteristics of at least 1 kilowatts within a frequency range of 1.5 megahertz or more and less than 30 megahertz, and of at least 250 watts within a frequency range of 30 megahertz or more and 87.5 megahertz or less;
 - c. telecommunication transmission equipment having an instantaneous bandwidth of 1 octave or more;
 - d. telecommunication transmission equipment for which the high frequency or distortion component ratio relative to signal waves is less than - 80 decibels;
 2. telecommunication transmission equipment which uses spread spectrum (including frequency hopping) and which fall under any of the following (excluding those falling under 3. or with an output of 1.0 watts or less):
 - i. telecommunication transmission equipment in which diffusion code is capable of being rewritten by the user;
 - ii. telecommunication transmission equipment having a transmission bandwidth of 100 times or more the bandwidth of the information channel and exceeding 50 kilohertz (excluding those designed to be used for public cellular radio communication, or fixed or mobile satellite communication earth stations for commercial public communication);
 3. telecommunication transmission equipment which uses ultra wideband modulation techniques having channelizing codes, scrambling codes or network identification codes that are capable of being rewritten by the user, and which falls under any of the following:
 - i. telecommunication transmission equipment with a bandwidth exceeding 500 megahertz;

- ii. telecommunication transmission equipment for which the value obtained by dividing the instantaneous bandwidth by the center frequency is 20 % or more;
- (b) of telecommunication transmission equipment which has a digital signal processing function and uses voice band compression technology, those with a coding speed of less than 700 bits per second;
- (c) communication equipment designed for use under water that falls under any of the following (limited to those not wired):
 1. communication equipment which utilizes acoustic waves (including ultrasound) having a carrier frequency of less than 20 kilohertz or exceeding 60 kilohertz;
 2. communication equipment which utilizes electromagnetic waves and has a carrier frequency of less than 30 kilohertz;
 3. communication equipment having a function whereby beams are scanned electronically;
 4. communication equipment using laser oscillators or light emitted diode[s] of which the output wavelength is exceeding 400 nanometers and 700 nanometers or less, and which is 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 and designed to be usable for a device referred to in any of (a) through (d) below (excluding those for microwave landing systems (MLS) which conform to the standards of the International Civil Aviation Organization and those specifically designed for an item falling under any of (e) through (g));
 - (a) devices whose frequencies are over 31.8 gigahertz and 57 gigahertz or less and whose effective radiated power (ERP) is 20 dBm (equivalent isotropic radiated power (EIRP) is 22.15 dBm) or more;
 - (b) devices whose frequencies are over 57 gigahertz and 66 gigahertz or less and whose effective radiated power (ERP) is 24 dBm (equivalent isotropic radiated power (EIRP) is 26.15 dBm) or more;
 - (c) devices whose frequencies are over 66 gigahertz and 90 gigahertz or less and whose effective radiated power (ERP) is 20 dBm (equivalent isotropic radiated power (EIRP) is 22.15 dBm) or more;
 - (d) devices whose frequencies exceeds 90 gigahertz;
 - (e) cellular radio communications or wireless local area networks for civilian use;
 - (f) IEEE 802.15 or wireless high-definition multimedia interfaces;
 - (g) fixed or mobile satellite communication earth stations for commercial

- communication for civilian use;
- (v)-2 radio direction finding equipment for monitoring with an operating frequency exceeding 30 megahertz that falls under the following (a) and (b), or components thereof:
 - (a) radio direction finding equipment having an instantaneous bandwidth of 10 megahertz or more;
 - (b) radio direction finding equipment which is capable of finding a line of bearing 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 equipment monitoring operation of such equipment that falls under any of the following, or components thereof:
 - (a) radio communication interception equipment designed to extract voice or data transmitted through wireless communication;
 - (b) radio communication interception equipment designed to extract identification information, control signals, or other metadata that are transmitted through wireless communication and needed to identify mobile communication devices or subscribers;
 - (c) communication jamming equipment designed to intentionally and selectively interfere with or intentionally or selectively inhibit, block, reduce, or induce mobile communication that falls under any of the following:
 1. communication jamming equipment simulating the functions of radio access network equipment;
 2. communication jamming equipment detecting and exploiting the mobile telecommunications protocol employed;
 3. communication jamming equipment exploiting the mobile telecommunications protocol employed (excluding that which falls under 2.);
 - (d) equipment designed to monitor operation of equipment that falls under any of (a) through (c);
- (v)-4 equipment capable of detecting the position of objects by observing the interference of radio waves or other electromagnetic waves, without transmitting radio waves or other electromagnetic waves, and which is designed to detect and track moving objects by measuring the reflections of ambient radio frequency emissions transmitted by non-radar transmitters;
- (v)-5 equipment monitoring communication by the method of using the Internet or components thereof that fall under the following (a) and (b) (excluding equipment designed for marketing activity, quality management of network services, or quality management of user experience):
 - (a) equipment that realizes all functions from the following 1. through 3. on

- carrier-class IP networks:
 1. analysis of the application layer;
 2. extraction of selected metadata and contents of applications;
 3. indexing of extracted data;
- (b) equipment designed to execute the following 1. and 2.:
 1. retrieval based on hard selector;
 2. analysis of relationship between specific individuals or groups;
- (vi) equipment for the design, manufacture, measurement, or testing of goods that fall under item (ii), (a), 2., Article 14, item (v) or item (v)-2, or components or accessories thereof;
- (vii) beyond what is listed in the preceding item, equipment for the design, manufacture, measurement, or testing of goods (excluding optical fiber testing equipment and measuring equipment) that fall under any of item (i), item (ii), item (iv), or item (v) through (v)-5, or components or accessories thereof;
- (viii) deleted;
- (viii)-2 equipment for the design of telecommunication transmission equipment or electronic changers that falls under any of the following, or components or accessories thereof (excluding those that fall under item (vi)):
 - (a) equipment using laser oscillators that falls under any of the following:
 1. laser oscillators which utilize laser light having a wavelength of more than 1,750 nanometers;
 2. deleted;
 3. deleted;
 4. laser oscillators which use an analog transmission system with a bandwidth exceeding 2.5 gigahertz (excluding television broadcasts (including CATV broadcasts));
 - (b) radio transmitters or radio receivers which use quadrature amplitude modulation technology for values exceeding 1,024;
- (ix) cryptographic equipment or components for realizing a cryptographic function which falls under any of (a) through (e) below (excluding those falling under Article 3, item (xix), (c), 2., ii., (f) of this item, item (xi) or Article 10, item (v), (a):
 - (a) of equipment or components using a symmetric algorithm and with a symmetric key being over 56 bits in length or using an asymmetric algorithm (limited to an asymmetric algorithm where the security of the algorithm is based on the difficulty falling under any of 1. through 6. below; hereinafter the same applies in this item) which are designed or altered to have a cryptographic function for securing data confidentiality (limited to those capable of using that cryptographic function (including those whose cryptographic function has been activated) or those capable of

activating a cryptographic function by means other than cryptographic function activation with a safe mechanism), those which fall under any of 7. through 10. below (excluding those falling under 11. through 20.):

1. factorization of integers in excess of 512 bits;
2. computation of discrete logarithms in a multiplicative group of a finite field of size greater than 512 bits;
3. computation of discrete logarithms in a group other than that prescribed in 2. of size greater than 112 bits;
4. a problem of the shortest vector or the closest vector associated with the grid;
5. exploration of homogeneous images between superspecific elliptical curves;
6. random sign decryption;
7. those which 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 wire or wireless network, or components thereof (excluding those falling under 7.);
9. computers, or devices which have the primary function of recording and storing or processing information, or components thereof (excluding those falling under 7. or 8.):
10. those which fall under i. and ii. below (excluding those falling under 7. through 9.):
 - i. goods whose cryptographic function is used to support functions other than the primary function of those goods; and
 - ii. goods whose cryptographic function is realized through an item incorporated in those goods (limited to those falling under any item from this item to item (xii)) or a program falling under any of Article 21, paragraph (1), items (vii), (vii)-2, (viii)-2, (viii)-3, (ix), (ix)-2 or (xvii) (excluding those open to the public);
11. smart cards having a cryptographic function or readers/writers thereof which fall under any of the following or components thereof:
 - i. smart cards that fall under any of the following:
 - a. smart cards which are used only for a device falling under any of the following and whose program cannot be rewritten for other uses:
 - 1 smart cards which do not fall under any of 7. through 10.;
 - 2 smart cards other than those using a symmetric algorithm and with a symmetric key being over 56 bits in length or using an asymmetric algorithm which are designed to have a cryptographic function for securing data confidentiality;
 - 3 smart cards which fall under 12. through 16.;

b. smart cards on which information pertaining to personal information (which means information about a living individual which can identify a specific individual by name, date of birth or other description contained in that information (including information which can be readily collated with other information and thereby identify a specific individual (including information relating to authentication and monetary claims and other information similar thereto)); the same applies in 11.) or organization information (including information about a corporation or other organization that is relating to authentication and monetary claims and other information similar thereto; the same applies in 11.) is recorded or which are designed to record personal information or organization information in them and which fall under all of 1 through 3 below:

1 smart cards whose cryptographic function is used exclusively for protecting personal information or organization information recorded in those smart cards;

2 smart cards used exclusively at public facilities or commercial facilities or for authentication of information pertaining to the personal information or organization information recorded on those smart cards;

3 smart cards whose cryptographic function cannot be altered by the user of those smart cards;

ii. readers/writers exclusively designed or altered to read information pertaining to personal information or organization information recorded on smart cards falling under i. or to record information pertaining to personal information or organization information on those smart cards (including those which read or record it through a telecommunications line);

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

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

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

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 which does not have an encryption

function between cordless phone terminals and 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 components thereof;

15. of portable phone terminals or mobile phone terminals for civilian use or radio terminals equivalent thereto which employ only open or commercial cryptographic standards (including those for preventing unauthorized reproduction and not opened to the public), those which are designed not to allow users to alter their cryptographic function and to require no technical assistance from suppliers or dealers in using them and whose design has been altered to be used for specific civilian industrial use (limited to those whose cryptographic function has not been altered), or components thereof;

16. equipment used for wireless personal area networks that employ only open or commercial cryptographic standards or components thereof;

17. of wireless access network devices for mobile communication designed for civilian use and designed not to allow users to alter their cryptographic function and to require no technical assistance from suppliers or dealers in using them, those whose radio frequency output is 0.1 watts (20 dBm) or less and which are connectable with sixteen or less devices simultaneously, or components thereof;

18. routers, switches, gateways or relays whose security management function for information systems is limited to that relating to the operation, management or maintenance of the devices and which employ only open or commercial cryptographic standards, or components thereof;

19. devices or servers which have a computing facility for general purpose and whose security management function for information systems falls under i. and ii. below, or components thereof:

i. those which employ only open or commercial cryptographic standards;
and

ii. those which fall under any of the following:

- a. those which are realized in a central processing unit falling under (f);
- b. those which are realized in an operating system (excluding those falling under any of Article 21, paragraph (1), items (vii), (vii)-2, (viii)-2, (viii)-3, (ix), (ix)-2 or (xvii)); or
- c. those whose function is limited to the operation, management or maintenance of devices;

20. those which are designed for civilian industrial use to connect to a network which fall under i. and ii. below, or components thereof:

i. those which fall under any of the following:

- a. terminals connectable to a network which fall under any of the

following:

1 those whose security management function for information systems is limited to the suppression, operation, management or maintenance of non-optional data;

2 those whose use is limited to specific civilian industrial use to connect to a network;

b. network devices which fall under 1 and 2 below:

1 those designed for communicating with a terminal falling under a. above;

2 those whose security management function for information systems is limited to the support for civilian industrial use to connect to a network of a terminal falling under a. above or is limited to the operation, management or maintenance of the relevant network device or other goods falling under (a), 20. of this item;

ii. those whose security management function for information systems employ only open or commercial cryptographic standards and which are designed not to allow users to alter their cryptographic function;

(b) those that activate a cryptographic function of certain goods or programs only by using means of cryptographic function activation and which fall under any of the following:

1. those designed or altered to convert certain goods (limited to those not falling under this item through item (xii)) into the item falling under (a) of this item (limited to those not falling under (f) of this item) or to convert certain programs (limited to those not falling 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 the item falling under Article 21, paragraph (1), item (ix) (limited to those relating to Article 8, item (ix), (a) or (c) through (e));

2. those designed or altered to be capable of adding a function equivalent to the function of the goods falling under (a) of this item to those falling under any of this item through item (xii) or the programs falling under Article 21, paragraph (1), item (vii), item (vii)-2, item (viii)-2, item (viii)-3, item (ix) or item (ix)-2;

(c) equipment or components which are designed or altered to use quantum cryptography;

(d) equipment or components which are designed or altered to use cryptographic processing techniques to generate channelizing codes, scrambling codes or network identification codes for ultra-wideband modulation techniques which fall under any of the following:

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 altered to use a cryptographic processing

- technique to generate the spreading code for spread spectrum (including the generation of the hopping code for frequency hopping systems) (excluding those that fall under (d));
- (f) those which fall under either of: the following 1. or 2. (limited to those for which their so falling thereunder can be confirmed by the manufacturer, seller or exporter of the goods through a document):
1. those that fall under all of the following i. through iii.:
 - i. those that can be purchased with no restrictions and are sold in stores, or from the inventory of stores by placing orders by mail, by letter prescribed in Article 2, paragraph (2) of the Act on the Service of Letters by Private Business Operators (Act No. 99 of 2002) by a general letter services operator prescribed in paragraph (6) of the same Article or a specified letter service operator prescribed in paragraph (9) of the same Article, or through input-output equipment connected to public telecommunication lines (including telephone);
 - ii. those whose cryptographic functionality cannot be changed by the user of the goods;
 - iii. those whose cryptographic function can be used without technical support by the supplier or sales agency of the goods;
 2. components designed for the goods that falls under 1. which fall under all of the following i. through iii.:
 - i. components whose security management function for information systems is not the primary function of those components; or
 - ii. components that are neither capable of changing any cryptographic functions that the goods that fall under 1. have, nor capable of adding any new cryptographic functions thereto;
 - iii. components whose functions are fixed and are not designed or altered for specific users;
- (x) equipment or components for realizing a security management function for information systems other than cryptographic equipment or components for realizing a cryptographic function, which fall under any of the following:
- (a) communication cable systems having a wiretapping detection function or components thereof (limited to components designed or altered to realize a wiretapping detection function); or
 - (b) equipment designed or altered to prevent leakage of signals for conveying information (excluding equipment designed or altered 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 altered to prevent leakage of signals in conformity with electromagnetic interference prevention standards) or components thereof (limited to components designed or altered to realize

- functions to prevent leakage of signals for conveying information);
- (xi) of cryptographic equipment or components for realizing a cryptographic function, those which are for deactivating, degrading or circumventing a security management function for information systems that fall under either of the following:
- (a) Items designed or modified to perform cryptanalysis (including items designed or modified to perform cryptanalysis functions by means of reverse engineering);
 - (b) Items that extract raw data from computer terminals or communication terminals (excluding items that fall under (a) or Article 7, item (v)) that 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 specifically designed for the design or manufacture of computer terminals or communication terminals or items listed in (1) to (4) below:
 - 1. Debuggers and hypervisors;
 - 2. Items limited to logical data extraction;
 - 3. Data extraction using chip-off or JTAG; and
 - 4. Items specially designed for jailbreaking or rooting.
- (xii) equipment for the design or manufacture of goods that fall under any item from item (ix) to the preceding item, measuring instruments that fall under this item, or measurement equipment for evaluating or verifying a security management function for information systems which the goods falling under any of item (ix) to the preceding item have (including the function which any program as referred to in Article 21, paragraph (1), items (vii), (vii)-2, (viii)-2, (viii)-3, (ix) or (ix)-2 has).

Article 9 Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 10 of the appended table 1 of the Export Order fall under any of the following:

- (i) underwater acoustic equipment utilizing acoustic waves (including ultrasound; hereinafter the same applies in this Article), positioning device for vessels or components thereof which fall under any of the following:
 - (a) those having a transmission function or components thereof which fall under any of the following (excluding those used solely for ocean depth measurement, for measuring underwater objects or the distance to objects buried under water or for finding schools of fish, as well as acoustic beacons, and emergency items and pingers designed to be installed at any position under water, among those used solely for vertical direction not having a scanning function exceeding plus/minus 20 degrees):
 - 1. bathymetric survey systems for sea bed using acoustic waves that fall

under any of the following:

i. bathymetric survey systems for vessels for sea bed topographic mapping that fall under all of the following a. through d.:

a. bathymetric survey systems designed for measurement at angles which exceed 20 degrees from the vertical direction;

b. bathymetric survey systems designed to enable the measurement of sea bed topography at depths exceeding 600 meters beneath the surface of the water;

c. bathymetric survey systems with a resolution at the time of scanning of less than 2;

d. bathymetric survey systems that automatically compensate all of the following 1 through 3 and improve sounding precision:

1 action of sensor;

2 state of the acoustic wave used in scanning;

3 speed of acoustic wave perceived by the sensor;

ii. bathymetric survey systems for underwater for sea bed topographic mapping that fall under any of the following:

a. those designed or modified to operate at depths exceeding 300 meters whose scanning efficiency exceeds 3,800 meters per second;

b. those which fall under all of the following 1 through 4 (excluding those which fall under a.):

1 those designed or modified to operate at depths exceeding 100 meters;

2 those designed for measurement at angles which exceed 20 degrees from the vertical direction;

3 those with an operating frequency less than 350 kilohertz, or those designed to enable the measurement of sea bed topography more than 200 meters away from the sensor;

4 those which automatically compensate all of the following [i] through [iii] and improve sounding precision:

[i] action of sensor;

[ii] state of the acoustic wave used in scanning;

[iii] speed of acoustic wave perceived by the sensor;

iii. side scan sonars or synthetic aperture sonars designed to prepare an image of the sea bed that fall under all of a. through c. below, or transmitter receiver acoustic arrays designed to be used for those devices:

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

b. those whose scanning field exceeds 570 square meters per second when operating at the maximum range and for which the resolution in the traveling direction can be less than 15 centimeters;

c. those with a resolution in the direction perpendicular to the traveling direction of less than 15 centimeters;

2. underwater acoustic equipment which falls under any of the following:
 - i. underwater acoustic equipment in which the transmission frequency is less than 5 kilohertz or in which the operating frequency is 5 kilohertz or more and less than 10 kilohertz, and the acoustic compression level (0 decibels when the acoustic compression is 1 micropascal at a distance of 1 meter from the source of the sound; the same applies hereinafter) of which exceeds 224 decibels;
 - ii. underwater acoustic equipment with an operating frequency of 10 kilohertz or more and 24 kilohertz or less and with an acoustic compression level exceeding 224 decibels;
 - iii. underwater acoustic equipment, the operating frequency of which exceeds 24 kilohertz and is less than 30 kilohertz and the acoustic compression level of which exceeds 235 decibels;
 - iv. underwater acoustic equipment, the operating frequency of which is less than 100 kilohertz and the beam width of which is capable of forming acoustic beams of less than 1 degree;
 - v. underwater acoustic equipment which is designed for use at depths exceeding 1,000 meters which falls under any of the following:
 - a. underwater acoustic equipment having a transducer which is capable of compensating for water pressure;
 - b. underwater acoustic equipment having a transducer (an echo sender and receiver) with built-in transmitting and receiving element other than sending and receiving elements made of lead zirconate titanate;
 - vi. underwater acoustic equipment designed so that the measuring distance exceeds 5,120 meters;
3. underwater acoustic equipment with a transmission frequency of less than 10 kilohertz (excluding those falling under 2.);
4. of acoustic transmitters (including echo sounder transducers) in which elements composed of individually moving piezoelectric substances or elements having magnetostriction, electrostriction, electric force or liquid pressure are incorporated, those which fall under any of the following (excluding sound wave generators which are electronic ones (limited to those usable only in a vertical direction) or mechanical or chemical ones):
 - i. acoustic transmitters usable at frequencies of less than 10 kilohertz which fall under any of the following:
 - a. acoustic transmitters not designed to be continuously operated with a duty cycle of 100 percent whose sound pressure level on the principal axis at a reference distance from the effective acoustic center of the transmitters in a free sound field exceeds a value calculated using the following expression:
 $10 \log$ (frequency in hertz at which wave transmission voltage sensitivity

- under 10 kilohertz is maximized) + 169.77 decibels; or
- b. acoustic transmitters designed to be continuously operated with a duty cycle of 100 percent whose sound pressure level on the principal axis at a reference distance from the effective acoustic center of the transmitters in a continuous free sound field exceeds a value calculated using the following expression:
- 10 log (frequency in hertz at which wave transmission voltage sensitivity under 10 kilohertz is maximized) + 159.77 decibels;
- ii. deleted;
- iii. acoustic transmitters in which the main rope output ratio to that of the side rope exceeds 22 decibels;
5. equipment for determining the position of vessels that falls under the following i. and ii. or components thereof:
- i. those capable of detecting equipment transmitting signals to be received to determine the position of vessels (referred to as a "transponder" in ii. below), at a distance exceeding 1,000 meters;
- ii. those whose root mean square of a position error measured and set at a distance of 1,000 meters or less from a transponder is less than 10 meters;
6. among sonars designed to automatically detect the position of the person active under water that fall under all of the following i. through iii., those designed for sending 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 at a distance of 530 meters or less from those sonars is less than 15 meters;
- iii. those whose bandwidth of transmitted pulse exceeds 3 kilohertz;
- (b) acoustic equipment possessing a receiving function or components thereof that fall under any of the following:
1. among hydrophones without a function of correcting the effects of acceleration, those with an acoustic compression sensitivity (0 decibels with 1 volt per micropascal) which exceeds minus 180 decibels (excluding fish-finders designed for installation on surface ships);
2. among signal processing equipment designed for towed hydrophone arrays and the programs of which are capable of being rewritten by the user, those which can carry out processing or correlation of the time domain or frequency domain (including spectrum analysis, digital filtering or beam formation) (excluding those which can process in real-time);
3. among heading sensors which are designed for use in towed hydrophone arrays and having an absolute precision value of less than 0.5 degrees, those which are designed for use at depths exceeding 35 meters or those having a depth sounding device which are capable of being coordinated or removed so that heading sensors can be used at depths exceeding 35

- meters;
4. hydrophone arrays for ocean bottom or harbor/port cable which incorporate underwater acoustic wave sensors in 6.;
 5. among signal processing equipment which are designed for sea floor or harbor cable systems and the programs of which are capable of being rewritten by the user, those which carry out processing or correlation of the time domain or the frequency domain (spectrum analysis, digital filtering or beam formation), (excluding real-time processing);
 6. underwater acoustic wave sensors with accelerometers which fall under all of the following (excluding grain velocity sensors or underground sound detectors):
 - i. those composed of three-axis accelerometers;
 - ii. those with a total acceleration sensitivity exceeding 48 decibels;
 - iii. those designed to operate at depths exceeding 35 meters;
 - iv. those with an operating frequency of less than 20 kilohertz;
- (ii) measuring equipment for the horizontal speed of the equipment carrier relative to the seabed at distances between the carrier and the seabed (limited to those utilizing acoustic waves) that fall under any of the following (a) or (b) (excluding those specially designed for installation on surface ships, or those set forth in the following (c)):
- (a) those using a correlation-velocity log, which fall under any of the following:
 1. those designed so that measurements are capable of being carried out at a position exceeding 500 meters from the bottom of the water;
 2. those with a speed accuracy better than 1%;
 - (b) those using a Doppler-velocity log, with a speed accuracy better than 1%;
 - (c) echo sounding devices which cannot be used other than for ocean depth measurement, for measuring underwater objects or the distance to objects buried under water or for finding schools of fish;
- (iii) optical detectors or components thereof that fall under any of the following:
- (a) solid optical detectors designed for space use that fall under any of the following:
 1. solid optical detectors having a maximum sensitivity within a wavelength range exceeding 10 nanometers and 300 nanometers or less and the sensitivity at wavelengths exceeding 400 nanometers is less than 0.1% of a maximum sensitivity;
 2. solid optical detectors having a maximum sensitivity within a wavelength range exceeding 900 nanometers and 1,200 nanometers or less, and with a response time constant of 95 nanoseconds or less;
 3. focal plane arrays with elements exceeding 2,048, and a maximum

sensitivity within the wavelength range exceeding 300 nanometers and 900 nanometers or less;

- (b) image reinforcing tubes which fall under any of the following 1. and 2. (excluding non-imaging photomultiplier tubes having in the vacuum space an electron sensing device consisting solely of a single metal anode or metal anodes where the distance between the centers of two anodes is exceeding 500 micrometers):
1. imaging reinforcing tubes that fall under all of the following i. through iii.:
 - i. image reinforcing tubes having a maximum sensitivity within a wavelength range exceeding 400 nanometers and 1,050 nanometers or less;
 - ii. image reinforcing tubes having electron image amplification and using any of the following:
 - a. microchannel plates where the distance between the centers of two adjoining channels is 12 micrometers or less;
 - b. among electron sensing devices which have been specially designed or modified to achieve charge multiplication other than by a microchannel plate, those where the distance between the center of two adjoining pixels is 500 micrometers or less;
 - iii. image reinforcing tubes having a photocathode which falls under any of the following:
 - a. photocathodes which use a multi-alkali for the main material and in which lumen sensitivity exceeds 700 microamperes per lumen;
 - b. photocathodes which use gallium arsenide or indium gallium arsenide as the main material;
 - c. photocathodes which 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, which fall under all of the following i. through iii.:
 - i. image reinforcing tubes having a maximum sensitivity within a wavelength range exceeding 1,050 nanometers and 1,800 nanometers or less;
 - ii. image reinforcing tubes having electron image amplification and using any of the following:
 - a. microchannel plates where the distance between the centers of two adjoining channels is 12 micrometers or less;
 - b. among electron sensing devices which have been specially designed or modified to achieve charge multiplication other than by a microchannel plate, those where the distance between the center of two adjoining 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 and having a maximum radiant sensitivity exceeding 15 milliamperes per watt;
- (c) image reinforcing tubes or components thereof which fall under any of the following 1. and 2. (excluding non-imaging photomultiplier tubes having in the vacuum space an electron sensing device consisting solely of a single metal anode or metal anodes where the distance between the centers of two anodes is exceeding 500 micrometers):
- 1. image reinforcing tubes which fall under all of the following i. through iii.:
 - i. image reinforcing tubes having a maximum sensitivity within a wavelength range exceeding 400 nanometers and 1,050 nanometers or less;
 - ii. image reinforcing tubes having electron image amplification and using any of the following:
 - a. micro channel plates where the distance between the centers of two adjoining channels is 12 micrometers or less;
 - b. among electron sensing devices which have been specially designed or modified to achieve charge multiplication other than by a microchannel plate, those where the distance between the center of two adjoining pixels is 500 micrometers or less;
 - iii. image reinforcing tubes having a photocathode which uses a multi-alkali as the primary material and in which lumen sensitivity in the photocathode exceeds 350 microamperes per lumen and is 700 microamperes per lumen or less;
 - 2. Components of image reinforcing tubes which fall under any of the following:
 - i. micro channel plates wherein the distance between the centers of two adjoining channels is 12 micrometers or less;
 - ii. among electron sensing devices which have been specially designed or modified to achieve charge multiplication other than by a microchannel plate, those where the distance between the center of two adjoining 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 within a wavelength range exceeding 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 within a wavelength range exceeding 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;
- (e) focal plane arrays not designed for space which fall under any of the following
1. focal plane arrays which fall under any of the following:
 - i. focal plane arrays which are not heat-molded and which fall under any of the following:
 - a. focal plane arrays in which factor elements have a maximum sensitivity within a wavelength range exceeding 900 nanometers and 1,050 nanometers or less, and which fall under any of the following:
 - 1 focal plane arrays with a response time constant of less than 0.5 nanoseconds;
 - 2 focal plane arrays specially designed or modified to achieve charge multiplication, having a maximum radiant sensitivity exceeding 10 milliamperes per watt;
 - b. focal plane arrays in which factor elements have a maximum sensitivity within a wavelength range exceeding 1,050 nanometers and 1,200 nanometers or less, and which fall under any of the following:
 - 1 focal plane arrays with a response time constant of 95 nanoseconds or less;
 - 2 focal plane arrays specially designed or modified to achieve charge multiplication, having a maximum radiant sensitivity exceeding 10 milliamperes per watt;
 - c. focal plane arrays in which factor elements are arrayed two-dimensionally and in which the respective factor elements have a maximum sensitivity within a wavelength range exceeding 1,200 nanometers and 30,000 nanometers or less;
 - d. among focal plane arrays in which factor elements are arrayed one-dimensionally and in which the respective factor elements have a maximum sensitivity within a wavelength range exceeding 1,200 nanometers and 3,000 nanometers or less, those which fall under any of the following (excluding those having factor elements limited solely to germanium material, with 32 factor elements or less):
 - 1 focal plane arrays wherein the aspect ratio of the factor elements using the array direction of the factor elements is less than 3.8;
 - 2 focal plane arrays having a time delay and integrating function inside the same factor element;
 - e. focal plane arrays in which factor elements are arrayed one-dimensionally and in which the respective factor elements have a maximum sensitivity within a wavelength range exceeding 2,500 nanometers and 30,000 nanometers or less;
 - f. focal plane arrays in which factor elements have a maximum sensitivity within a wavelength range exceeding 400 nanometers and 900 nanometers

- or less, and which fall under the following 1 and 2:
- 1 focal plane arrays specially designed or modified to achieve charge multiplication, and having a maximum radiant sensitivity exceeding 10 milliamperes per watt at wavelengths exceeding 760 nanometers;
 - 2 focal plane arrays with factor elements exceeding 32;
 - ii. infrared ray heat-molded focal plane arrays in which factor elements are arrayed two-dimensionally and in which the respective factor elements have a sensitivity within a wavelength range of 8,000 nanometers or more and 14,000 nanometers or less in an unfiltered state;
 2. focal plane arrays which fall under any of the following:
 - i. focal plane arrays which use platinum silicon with less than 10,000 factor elements;
 - ii. focal plane arrays which use iridium silicon;
 - iii. focal plane arrays which use indium antimonide or lead selenide with less than 256 factor elements;
 - iv. focal plane arrays which use indium arsenide;
 - v. focal plane arrays which use lead sulfide;
 - vi. focal plane arrays which use indium gallium arsenide;
 - vii. scanning arrays which use mercury cadmium telluride and which fall under any of the following:
 - a. scanning arrays which do not have a time delay and integrating function inside the same detection factor element with 30 or less factor elements;
 - b. scanning arrays which have a time delay and integrating function inside the same detection factor element with 2 or less factor elements;
 - viii. steering arrays which use mercury cadmium telluride with less than 256 factor elements;
 - ix. quantum well focal plane arrays which use gallium arsenide or aluminum gallium arsenide with less than 256 factor elements;
 - x. heat-molded focal plane arrays with less than 8,000 factor elements;
 - xi. among focal plane arrays in which factor elements are arrayed one-dimensionally, and in which the respective factor elements have a maximum sensitivity within a wavelength range exceeding 400 nanometers and 900 nanometers or less, those with 4,096 factor elements or less;
 - xii. focal plane arrays in which factor elements are arrayed two-dimensionally and in which the respective factor elements have a maximum sensitivity within a wavelength range exceeding 400 nanometers and 900 nanometers or less, those whose maximum number of unidirectional factor elements are 4,096 or less and all of the factor elements are 250,000 or less;
- (e) among focal plane arrays which are not designed for space use that fall under any of the following, those other than items that fall under (d):

1. focal plane arrays which are not heat-molded which fall under any of the following:
 - i. focal plane arrays in which factor elements have a maximum sensitivity within a wavelength range exceeding 900 nanometers and 1,050 nanometers or less, and which fall under any of the following:
 - a. focal plane arrays with a response time constant of less than 0.5 nanoseconds;
 - b. focal plane arrays specially designed or modified to achieve charge multiplication, and having a maximum radiant sensitivity exceeding 10 milliamperes per watt;
 - ii. focal plane arrays in which factor elements have a maximum sensitivity within a wavelength range exceeding 1,050 nanometers and 1,200 nanometers or less, and which fall under any of the following:
 - a. focal plane arrays with a response time constant of 95 nanoseconds or less;
 - b. focal plane arrays specially designed or modified to achieve charge multiplication, having a maximum radiant sensitivity exceeding 10 milliamperes per watt;
 - iii. focal plane arrays in which factor elements are arrayed two-dimensionally and in which the respective factor elements have a maximum sensitivity within a wavelength range exceeding 1,200 nanometers and 30,000 nanometers or less;
 - iv. among focal plane arrays in which factor elements are arrayed one-dimensionally, and in which the respective factor elements have a maximum sensitivity within a wavelength range exceeding 1,200 nanometers and 3,000 nanometers or less, those which fall under any of the following (excluding those having factor elements limited solely to germanium material, with 32 factor elements or less):
 - a. focal plane arrays wherein the aspect ratio of the factor elements having a factor element array direction as a standard is less than 3.8;
 - b. focal plane arrays having a time delay and integrating function inside the same factor element;
 - v. focal plane arrays in which factor elements are arrayed one-dimensionally and in which respective factor elements have a maximum sensitivity within a wavelength range exceeding 2,500 nanometers and 30,000 nanometers or less;
 - vi. focal plane arrays in which factor elements have a maximum sensitivity within a wavelength range exceeding 400 nanometers and 900 nanometers or less, and which fall under the following a. and b.:
 - a. focal plane arrays specially designed or modified to achieve charge multiplication, having a maximum radiant sensitivity exceeding 10

- milliamperes per watt at wavelengths exceeding 760 nanometers;
- b. focal plane arrays with factor elements exceeding 32;
- 2. infrared heat-molded focal plane arrays in which factor elements are arrayed two-dimensionally and in which the respective factor elements have a sensitivity within a wavelength range exceeding 8,000 nanometers and 14,000 nanometers or less in an unfiltered state;
- (iv) mono-spectrum image sensors or multi-spectrum image sensors designed for remote sensing which fall under any of the following:
 - (a) mono-spectrum image sensors or multi-spectrum image sensors with an instant visual field of less than 200 microradians;
 - (b) among mono-spectrum image sensors or multi-spectrum image sensors designed for use within a wavelength range exceeding 400 nanometers and 30,000 nanometers or less, in which image data are output digitally, those which fall under any of the following:
 - 1. mono-spectrum image sensors or multi-spectrum image sensors designed for space use;
 - 2. among mono-spectrum image sensors or multi-spectrum image sensors designed for installation in aircraft using non-silicon detectors, those the instant field of vision of which is less than 2.5 milliradians;
- (v) among equipment which uses optical detectors having a direct field of vision, that which falls under any of the following (excluding medical equipment which do not have built-in photocathodes and which uses gallium arsenide or indium gallium arsenide as the main material):
 - (a) equipment that incorporates optical detectors that fall under any of the following:
 - 1. image reinforcing tubes that fall under item (iii), (b);
 - 2. focal plane arrays that fall under item (iii), (e);
 - 3. solid optical detectors falling under item (iii), (a) or Article 14, item (vii);
 - (b) equipment with built-in optical detectors which fall under any of the following (excluding those that fall under (a)):
 - 1. image reinforcing tubes which fall under item (iii), (c), 1.;
 - 2. focal plane arrays which fall under item (iii), (d);
- (vi) coolers for optical detectors which fall under any of the following:
 - (a) coolers for optical detectors designed for space use;
 - (b) among coolers for optical detectors which are not designed for space use, wherein the temperature of the contact surface used for cooling is less than -55 degrees centigrade, those which fall under any of the following:
 - 1. circulation type coolers, the average breakdown life or average breakdown interval of which exceeds 2,500 hours;
 - 2. joule-Thompson self-regulating coolers having a diameter of less than 8 millimeters;

- (vii) optical fibers for use in sensors used to measure sound, temperature, acceleration, electromagnetism or radioactive rays;
- (vii)-2 readout integrated circuits specifically designed for focal plane arrays falling under either of item (iii), (d) or (e) (excluding those specifically designed for automobiles for civilian use);
- (viii) electronic cameras or components thereof which fall under any of the following:
 - (a) cameras which fall under any of the following:
 1. cameras with built-in image reinforcing tubes which fall under item (iii), (b), and that fall under any of the following:
 - i. those not designed for underwater use;
 - ii. those designed for underwater use;
 2. cameras with built-focal plane arrays which fall under item (iii), (e), and that fall under any of the following:
 - i. those not designed for underwater use;
 - ii. those designed for underwater use;
 3. those with built-in solid optical detectors which fall under item (iii), (a) or Article 14, item (vii);
 - (b) cameras which fall under any of the following (excluding those which fall under (a)):
 1. deleted;
 2. deleted;
 3. electronic streak cameras with a time resolution of less than 50 nanoseconds;
 4. electronic framing cameras, the shutter speed of which exceeds 1 million frames per second;
 5. electronic cameras which fall under the following i. and ii.:
 - i. electronic cameras in which shutter speed is less than 1 microsecond;
 - ii. electronic cameras in which signal read-out speed exceeds 125 frames per second;
 6. plug-in units which are specifically designed for electronic cameras having a module type structure (limited to those falling under 3. through 5.) and which are capable of making these cameras reach the functions that cameras falling under any of 3. through 5. have;
 7. among video cameras that incorporate solid-state image sensors having a maximum sensitivity within a wavelength range exceeding 10 nanometer and 30,000 nanometers or less, those which fall under any of the following i. through iii. and also fall under any of the following iv. through vi.:
 - i. video cameras used for black and white photography in which solid-state image sensor have exceeding 4,000,000 effective pixels;
 - ii. video cameras used for color photography that incorporate three solid-

- state image sensors, in which the respective solid-state image sensor have exceeding 4,000,000 effective pixels;
- iii. video cameras for color photography that incorporate one solid-state image sensor, in which the solid-state image sensor have exceeding 12,000,000 effective pixels;
 - iv. video cameras having a reflector that fall under item (ix), (a);
 - v. video cameras having a control device having an optical device or optical components which fall under item (ix), (d);
 - vi. video cameras having a function which enables them to internally process tracking data for the object to be photographed by the camera and to record these in the image information;
8. scanning cameras or scanning camera equipment that fall under all of the following i. through iii.:
- i. scanning cameras or scanning camera equipment having a maximum sensitivity within a wavelength range exceeding 10 nanometers and 30,000 nanometers or less;
 - ii. scanning cameras or scanning camera equipment that incorporates solid-state image sensor in which the pixels are arrayed in a linear fashion and the number of pixels is exceeding 8,192;
 - iii. scanning cameras or scanning camera equipment which scan mechanically in one direction;
9. scanning cameras or scanning camera equipment with a built-in image reinforcing tube which fall under item (iii), (c), 1.;
10. scanning cameras or scanning camera equipment with a built-in focal plane array which falls under item (iii), (d);
- (ix) optical equipment or components thereof which fall under any of the following:
- (a) reflectors which fall under any of the following:
 - 1. of reflectors which are capable of changing the shape of their mirror surface and whose active aperture exceeds 10 millimeters in diameter, those which fall under any of the following or components thereof:
 - i. those for which the resonance frequencies of the machine are 750 hertz or more and which have more than 200 actuators; or
 - ii. those whose laser damage threshold falls under any of the following:
 - a. those whose laser damage threshold exceeds 1 kilowatt per square centimeter when a continuous wave laser oscillator is used; or
 - b. those whose 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 which 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 in which the total weight exceeds 10 kilograms (excluding reflectors designed for a heliostat installed on the ground to follow solar radiation);
3. among reflectors which 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 in which the total weight exceeds 2 kilograms (excluding reflectors designed for a heliostat installed on the ground to follow solar radiation);
 4. of reflectors falling under (d), 2., i. and designed for reflector stages for scanning light whose flatness is 63.3 nanometers or less, those which fall under any of the following:
 - i. those whose diameter or length of the major axis is 100 millimeters or more; or
 - ii. those which fall under a. and b. below:
 - a. those whose diameter or length of the major axis is over 50 millimeters and less than 100 millimeters; and
 - b. those whose laser damage threshold falls under any of the following:
 - 1 those whose laser damage threshold exceeds 10 kilowatts per square centimeter when a continuous wave laser oscillator is used; or
 - 2 those whose laser damage threshold exceeds 20 joules per square centimeter when a laser pulse with a pulse repetition frequency of 20 hertz and the pulse width of 20 nanoseconds is used;
 - (b) among optical components made up of zinc selenide or zinc sulfide, which are permeable to light with a wavelength exceeding 3,000 nanometers and 25,000 nanometers or less, those which fall under any of the following:
 1. optical components with a volume exceeding 100 cubic centimeter;
 2. optical components, the diameter or major axis length of which exceeds 80 millimeters and the thickness of which exceeds 20 millimeters;
 - (c) optical components designed for space use which fall under any of the following:
 1. optical components which have been made lighter for weights which are less than 20 % compared to the condition of full density of the body;
 2. substrates (including coating substrates or substrates having a protective film);
 3. reflectors which are designed so that they are capable of being assembled during space flight and components which are equivalent to reflecting mirrors the sum of the light receiving surface areas when assembled of which is an aperture greater than 1 meter;
 4. optical components made of composite materials, the linear coefficient of expansion in all directions of which is not more than 5/1,000,000 per degree of temperature;

- (d) controllers for an optical device or optical components which fall under any of the following:
 - 1. controllers which are designed to maintain the surface shape or direction of optical components which have been designed for space use which fall under (c), 1. or (c), 3.;
 - 2. controllers which are scanning, tracking or stabilizing light or regulating optical resonators, and which fall under any of the following:
 - i. reflector stages for scanning light which are designed to support a reflector whose diameter or length of the major axis exceeds 50 millimeters which fall under all of a. through c. below, or electronic controllers designed therefor:
 - a. those whose maximum angular travel is plus or minus 26 milliradians or more;
 - b. those for which the resonance frequencies of the machine is 500 hertz or more; and
 - c. those whose angular precision is 10 microradians or less;
 - ii. controllers which are for regulating optical resonators and have a bandwidth of 100 hertz or more and precision of 10 microradians or less;
 - 3. gimbals with a maximum deflection angle exceeding 5 degrees, which are capable of being used in bandwidths of 100 hertz or more which fall under any of the following:
 - i. gimbals with a length of diameter or major axis exceeding 0.15 meters and 1 meter or less, and with an angular acceleration exceeding 2 radians per second squared and with a precision of 200 microradians or less;
 - ii. gimbals with a length of diameter or major axis exceeding 1 meter, and with an angular acceleration exceeding 0.5 radians per second squared and with a precision of 200 microradians or less;
- (ix)-2 aspherical optical elements which fall under all of (a) through (c):
 - (a) aspherical optical elements, the maximum measurement for the optical aperture of which exceeds 400 millimeters;
 - (b) aspherical optical elements having a root mean square surface roughness of less than 1 nanometer at a sampling length of 1 millimeter or more;
 - (c) aspherical optical elements 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 wave front measuring devices which fall under (a) and (b) below:
 - (a) those whose frame rate is 1 kilohertz or more; and
 - (b) those whose wave front precision is one-twentieth or less at designed wavelengths;
- (x) laser oscillators or components thereof, accessories or test equipment that fall under any of the following:

- (a) continuous wave laser oscillators other than variable wavelength laser oscillators, which fall under any of the following (excluding those falling under (d)):
1. those designed for use within a wavelength range of less than 150 nanometers, with a rated output exceeding 1 watt;
 2. those designed for use at a wavelength range of 150 nanometers or more and 510 nanometers or less, with a rated output exceeding 30 watts (excluding argon laser oscillators with a rated output of 50 watts or less);
 3. those designed for use within a wavelength range exceeding 510 nanometers and 540 nanometers or less and which fall under any of the following:
 - i. those that oscillate in a single transverse mode with a rated output exceeding 50 watts;
 - ii. those that oscillate in a multiple transverse mode with a rated output exceeding 150 watts;
 4. those designed for use within a wavelength range exceeding 540 nanometers and 800 nanometers or less, with a rated output exceeding 30 watts;
 5. those designed for use within a wavelength range exceeding 800 nanometers and 975 nanometers or less and which fall under any of the following:
 - i. those that oscillate in a single transverse mode with a rated output exceeding 50 watts;
 - ii. those that oscillate in a multiple transverse mode with a rated output exceeding 80 watts;
 6. those designed for use within a wavelength range exceeding 975 nanometers and 1,150 nanometers or less which fall under any of the following:
 - i. those that oscillate in a single transverse mode which fall under any of the following:
 - a. those with a rated output exceeding 1,000 watts;
 - b. those falling under 1 and 2 below:
 - 1 those with a rated output exceeding 500 watts;
 - 2 those with a spectral bandwidth less than 40 gigahertz;
 - ii. those that oscillate in a multiple transverse mode which fall under any of the following (excluding industrial laser oscillators with a rated output exceeding 2 kilowatts and 6 kilowatts or less with a total mass greater than 1,200 kilograms):
 - a. those with a wall-plug efficiency exceeding 18%, and a rated output exceeding 1,000 watts;
 - b. those with a rated output exceeding 2 kilowatts;

7. those designed for use within a wavelength range exceeding 1,150 nanometers and 1,555 nanometers or less, which fall under any of the following:
 - i. those that oscillate in a single transverse mode with a rated output exceeding 50 watts;
 - ii. those that oscillate in a multiple transverse mode with a rated output exceeding 80 watts;
 8. those which are designed to be used in the range of wavelengths of more than 1,555 nanometers and not more than 1,850 nanometers and whose rated output exceeds 1 watt;
 9. those which are designed to be used in the range of wavelengths of more than 1,850 nanometers and not more than 2,100 nanometers and fall under any of the following:
 - i. those which oscillate in a single transverse mode and whose rated output exceeds 1 watt; or
 - ii. those which oscillate in a multiple transverse mode and whose rated output exceeds 120 watts;
 10. those which are designed to be used in the range of wavelengths of over 2,100 nanometers and whose rated output exceeds 1 watt;
- (b) continuous wave laser oscillators other than variable wavelength laser oscillators, which fall under any of the following (excluding those falling under (d)):
1. those designed for use within a wavelength range of less than 150 nanometers, which fall under any of the following:
 - i. those which generate pulses exceeding 50 millijoules per pulse and whose peak output exceeds 1 watt;
 - ii. those with an average output exceeding 1 watt;
 2. those designed for use within a wavelength range exceeding 150 nanometers and 510 nanometers or less and which fall under any of the following:
 - i. those which generate pulses exceeding 1.5 joules per pulse and with a peak output exceeding 30 watts;
 - ii. those with an average output exceeding 30 watts (excluding argon laser oscillators with an average output of 50 watts or less);
 3. those which are designed for use within a wavelength range exceeding 510 nanometers and 540 nanometers or less and which fall under any of the following:
 - i. those that oscillate in a single transverse mode and fall under any of the following:
 - a. those which generate pulses exceeding 1.5 joules per pulse and with a peak output exceeding 50 watts;

- b. those with an average output exceeding 50 watts;
- ii. those that oscillate in a multiple transverse mode and fall under any of the following:
 - a. those which generate pulses exceeding 1.5 joules per pulse and with a peak output exceeding 150 watts;
 - b. those with an average output exceeding 150 watts;
- 4. those designed for use within a wavelength range exceeding 540 nanometers and 800 nanometers or less, which fall under any of the following:
 - i. those which generate pulses with a pulse width of less than 1 picosecond and fall under any of the following:
 - a. those which generate pulses exceeding 0.005 joules per pulse and with a peak output exceeding 5 gigawatts;
 - b. those with an average output exceeding 20 watts;
 - ii. those that generate pulses with a pulse width of 1 picosecond or more and fall under any of the following:
 - a. those which generate pulses exceeding 1.5 joules per pulse and with a peak output exceeding 30 watts;
 - b. those with an average output exceeding 30 watts;
- 5. those designed for use within a wavelength range exceeding 800 nanometers and 975 nanometers or less that fall under any of the following:
 - i. those that generate pulses with a pulse width of 1 picosecond or less and fall under any of the following:
 - a. those which generate pulses exceeding 0.005 joules per pulse and with a peak output exceeding 5 gigawatts;
 - b. those that oscillate in a single transverse mode with an average output exceeding 20 watts;
 - ii. those which generate pulses with a pulse width of 1 picosecond or more and 1 microsecond or less and fall under any of the following:
 - a. those which generate pulses exceeding 0.5 joules per pulse and with a peak output exceeding 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 which generate pulses with a pulse width of more than 1 microsecond and fall under any of the following:
 - a. those which generate pulses exceeding 2 joules per pulse and with a peak output exceeding 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 designed for use in a wavelength range exceeding 975 nanometers and 1,150 nanometers or less, which fall under any of the following:
 - i. those which generate pulses with a pulse width of less than 1 picosecond and fall under any of the following:
 - a. those with a peak output exceeding 2 gigawatts per pulse;
 - b. those with an average output exceeding 30 watts;
 - c. those which generate pulses exceeding 0.002 joules per pulse;
 - ii. those which generate pulses with a pulse width of 1 picosecond or more and less than 1 nanosecond and fall under any of the following:
 - a. those with a peak output exceeding 5 gigawatts per pulse;
 - b. those with an average output exceeding 50 watts;
 - c. those which generate pulses exceeding 0.1 joules per pulse;
 - iii. those which generate pulses with a pulse width of 1 nanosecond or more and 1 microsecond or less and fall under any of the following:
 - a. those that oscillate in a single transverse mode and fall under any of the following:
 - 1 those with a peak output exceeding 100 megawatts;
 - 2 those with an average output exceeding 20 watts, of 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 operating 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 which generate pulses exceeding 2 joules per pulse:
 - b. those that oscillate in a multiple transverse mode and fall under any of the following:
 - 1 those with a peak output exceeding 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 which generate pulses exceeding 4 joules per pulse:
 - iv. those which generate pulses with a pulse width exceeding 1 microsecond and fall under any of the following:
 - a. those that oscillate in a single transverse mode that fall under any of the following:
 - 1 those with a peak output exceeding 500 kilowatts;
 - 2 those with a wall-plug efficiency exceeding 12% and an average output

exceeding 100 watts;

3 those with an average output exceeding 150 watts;

b. those that oscillate in a multiple transverse mode and fall under any of the following:

1 those with a peak output exceeding 1 megawatt;

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;

7. those designed for use within a wavelength range exceeding 1,150 nanometers and 1,555 nanometers or less, which fall under any of the following:

i. those which generate pulses with a pulse width of 1 microsecond or less and fall under any of the following:

a. those which generate pulses exceeding 0.5 joules per pulse and with a peak output exceeding 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 which generate pulses with a pulse width exceeding 1 microsecond and fall under any of the following:

a. those which generate pulses exceeding 2 joules per pulse and with a peak output exceeding 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 which are designed to be used in the range of wavelengths of more than 1,555 nanometers and not more than 1,850 nanometers and which fall under any of the following:

i. those which generate 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 which are designed to be used in the range of wavelengths of more than 1,850 nanometers and not more than 2,100 nanometers and which fall under any of the following:

i. those which oscillate in a single transverse mode and which fall under any of the following:

a. those which generate 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 which oscillate in a multiple transverse mode and which fall under any of the following:
 - a. those which generate 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 which are designed to be used in the range of wavelengths exceeding 2,100 nanometers and which fall under any of the following:
 - i. those which generate pulses exceeding 100 millijoules per pulse and with a peak output exceeding 1 watt;
 - ii. those with an average output exceeding 1 watt;
- (c) variable wavelength laser oscillators that fall under any of the following (excluding those falling under (d)):
 - 1. those designed for use in a wavelength range of less than 600 nanometers, which fall under any of the following:
 - i. those which generate pulses exceeding 50 joules per pulse and with a peak output exceeding 1 watt;
 - ii. those with an average output or continuous wave rated output exceeding 1 watt;
 - 2. those designed for use within a wavelength range exceeding 600 nanometers and 1,400 nanometers or less which fall under any of the following:
 - i. those which generate pulses exceeding 1 joules per pulse and with a peak output exceeding 20 watts;
 - ii. those with an average output or continuous wave rated output exceeding 20 watts;
 - 3. those designed for use in a wavelength range exceeding 1,400 nanometers, which fall under any of the following:
 - i. those which generate pulses exceeding 50 millijoules per pulse and with a peak output exceeding 1 watt;
 - ii. those with an average output or continuous wave rated output exceeding 1 watt;
- (d) laser oscillators that fall under any of the following:
 - 1. semiconductor laser oscillators which fall under any of the following:
 - i. a single semiconductor laser diode that oscillates in a single transverse mode and falls under any of the following:
 - a. those which are designed for use within a wavelength range of 1,510 nanometers or less, those with an average output or continuous wave rated output exceeding 1.5 watts;
 - b. those which are designed for use within a wavelength range exceeding 1,510 nanometers, those with an average output or continuous wave rated output exceeding 500 milliwatts;

- ii. a single semiconductor laser diode that oscillates in a multiple transverse mode and falls under any of the following:
 - a. among those which are designed for use within a wavelength range of less than 1,400 nanometers, those with an average output or continuous wave rated output exceeding 25 watts;
 - b. among those which are designed for use within a wavelength range of 1,400 nanometers or more and less than 1,900 nanometers, those with an average output or continuous wave rated output exceeding 2.5 watts;
 - c. among those which are designed for use within a wavelength range of 1,900 nanometers or more, those with an average output or continuous wave rated output exceeding 1 watt;
- iii. a single semiconductor laser bar that falls under any of the following (excluding those incorporated into semiconductor laser stacked arrays referred to in iv. or v.):
 - a. a single semiconductor laser bar designed for use within a wavelength range of less than 1,400 nanometers, with an average output or continuous wave rated output exceeding 100 watts;
 - b. a single semiconductor laser bar designed for use within a wavelength range of 1,400 nanometers or more and less than 1,900 nanometer, with an average output or continuous wave rated output exceeding 25 watts;
 - c. a single semiconductor laser bar designed for use within a wavelength range of 1,900 nanometers or more, with an average output or a continuous wave rated output exceeding 10 watts;
- iv. semiconductor laser stacked arrays which fall under any of the following:
 - a. semiconductor laser stacked arrays designed for use in a wavelength range of less than 1,400 nanometers, which fall under any of the following:
 - 1 semiconductor laser stacked arrays with a total average output or continuous wave rated output of less than 3 kilowatts, and an average output density or continuous wave rated output density exceeding 500 watts per square meter;
 - 2 semiconductor laser stacked arrays with a total average output or total continuous wave rated output of 3 kilowatts or more and 5 kilowatts or less, and an average output density or continuous wave rated output density exceeding 350 watts per square meter;
 - 3 semiconductor laser stacked arrays with a total average output or total continuous wave rated output exceeding 5 kilowatts;
 - 4 semiconductor laser stacked arrays with a peak pulsed output density exceeding 2,500 watts per square centimeter (excluding monolithic ones formed through epitaxial growth);
 - 5 semiconductor laser stacked arrays with a spatially coherent total average

output or total continuous wave rated output exceeding 150 watts;

b. semiconductor laser stacked arrays designed for use in a wavelength range of 1,400 nanometers or more and less than 1,900 nanometers, which fall under any of the following:

1 semiconductor laser stacked arrays with a total average output or total continuous wave rated output of less than 250 watts, and an average output density or continuous wave rated output density exceeding 150 watts per square meter;

2 semiconductor laser stacked arrays with a total average output or continuous wave rated output of 250 watts or more and 500 watts or less, and an average output density or continuous wave rated output density exceeding 50 watts per square meter;

3 semiconductor laser stacked arrays with a total average output or continuous wave rated output exceeding 500 watts;

4 semiconductor laser stacked arrays with a peak pulsed output density exceeding 500 watts per square centimeter (excluding monolithic ones formed through epitaxial growth);

5 semiconductor laser stacked arrays with a spatially coherent total average output or total continuous wave rated output exceeding 15 watts;

c. semiconductor laser stacked arrays designed for use in a wavelength range of 1,900 nanometers or more, which fall under any of the following:

1 semiconductor laser stacked arrays with an average output density or continuous wave rated output density exceeding 50 watts per square meter;

2 semiconductor laser stacked arrays with a total average output or total continuous wave rated output exceeding 10 watts;

3 semiconductor laser stacked arrays with a spatially coherent total average output or continuous wave rated output exceeding 1.5 watts;

d. semiconductor laser stacked arrays that contain one or more semiconductor laser bars that fall under iii.;

v. among semiconductor laser stacked arrays that are designed to be combined with other semiconductor laser stacked arrays, those having integrated connections to share electronic circuits and cooling units with other semiconductor laser stacked arrays (excluding those falling under iv.);

2. carbon monoxide laser oscillators which fall under any of the following:

i. carbon monoxide laser oscillators which generate pulses exceeding 2 joules per pulse, with a peak output exceeding 5 kilowatts;

ii. carbon monoxide laser oscillators with an average output or continuous wave rated output exceeding 5 kilowatts;

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

i. carbon dioxide laser oscillators with a continuous wave rated output

- exceeding 15 kilowatts;
- ii. carbon dioxide laser oscillators which generate pulses at a pulse width exceeding 10 microseconds and fall under any of the following:
 - a. carbon dioxide laser oscillators with an average output exceeding 10 watts;
 - b. carbon dioxide laser oscillators with a peak output exceeding 100 kilowatts;
 - iii. carbon dioxide laser oscillators which generate pulses at a pulse width of 10 microseconds or less, and fall under any of the following:
 - a. carbon dioxide laser oscillators which generate pulses exceeding 5 joules per pulse;
 - b. carbon dioxide laser oscillators with an average output exceeding 2.5 kilowatts;
- 4. excimer laser oscillators which fall under any of the following:
 - i. excimer laser oscillators designed for use within a wavelength range of 150 nanometers or less that fall under any of the following:
 - a. excimer laser oscillators which generate pulses exceeding 50 millijoules per pulse;
 - b. excimer laser oscillators with an average output exceeding 1 watt;
 - ii. excimer laser oscillators which are designed for use within a wavelength range exceeding 150 nanometers and 190 nanometers or less and which fall under any of the following:
 - a. excimer laser oscillators which generate pulses exceeding 1.5 joules per pulse;
 - b. excimer laser oscillators with an average output exceeding 120 watts;
 - iii. excimer laser oscillators which are designed for use within a wavelength range exceeding 190 nanometers and 360 nanometers or less and which fall under any of the following:
 - a. excimer laser oscillators which generate pulses exceeding 10 joules per pulse;
 - b. excimer laser oscillators with an average output exceeding 500 watts;
 - iv. excimer laser oscillators which are designed for use at a wavelength range exceeding 360 nanometers and which fall under any of the following:
 - a. excimer laser oscillators which generate pulses exceeding 1.5 joules per pulse;
 - b. excimer laser oscillators with an average output exceeding 30 watts;
- 5. chemical laser oscillators which fall under any of the following:
 - i. hydrogen fluoride laser oscillators;
 - ii. deuterium fluoride laser oscillators;
 - iii. transfer laser oscillators which fall under any of the following:
 - a. iodine laser oscillators designed to be capable of being excited by

- excitation transfer from oxygen;
- b. carbon dioxide laser oscillators designed to be capable of being excited by excitation transfer from deuterium fluoride;
- 6. neodymium glass laser oscillators which generate non-repetitive pulses and fall under any of the following:
 - i. neodymium glass laser oscillators which generate pulses at a pulse width of 1 microsecond or less, and pulses exceeding 50 joules per pulse;
 - ii. neodymium glass laser oscillators which generate pulses at a pulse width exceeding 1 microsecond and pulses exceeding 100 joules per pulse;
- (e) components for laser oscillators which fall under any of the following:
 - 1. reflectors which are designed for cooling by using a heat pipe or by passing a fluid at a position which is less than 1 millimeter beneath the surface of the mirror;
 - 2. reflectors or optical components or electro-optical components which are permeable (including partially permeable), and which are designed for use in laser oscillators which fall under any of (a) through (d) (excluding fusion taper fiber combiners and multilayer dielectric gratings);
 - 3. components of fiber laser oscillators which fall under any of the following:
 - i. fusion taper fiber combiners which use multimode fiber for both input and output and which fall under a. and b. below:
 - 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. fusion taper fiber combiners which use single mode fiber for input and multimode fiber for output and which fall under all of the following:
 - 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 which have three or more input fibers;
 - c. those which fall under any of the following:
 - 1 those which have five or less input fibers and whose beam parameter product at output is 1.5 millimeters milliradians or less; or
 - 2 those which have more than five input fibers and whose beam parameter product at output is 2.5 millimeters milliradians or less;
 - iii. multilayer dielectric gratings which fall under a. and b. below:
 - a. those designed to spectrally or coherently combine beams from five or more fiber laser oscillators; and
 - b. those for which the threshold of continuous wave laser damage is not

- less than 10 kilowatts per square centimeter;
- (f) test equipment or accessories for laser oscillators which fall under any of the following:
1. deleted;
 2. of test equipment for laser oscillators which is specifically designed to measure errors in the beam deflection angle of an ultra-high-power laser oscillator (which means laser oscillators that are capable of outputting energy exceeding 1 kilojoule per 50 milliseconds or whose average output or continuous wave rated output exceeds 20 kilowatts; the same applies hereinafter), those whose precision is 10 microradians or less;
 3. of accessories for phased array ultra-high-power laser oscillators which are specifically designed to synthesize coherent light, those which fall under any of the following:
 - i. those whose precision at wavelengths of over 1 micrometer is 0.1 micrometers or less; or
 - ii. those whose precision at wavelengths of 1 micrometer or less is not more than one-tenth of the wavelength used;
 4. projection telescopes which are designed for use in combination with ultra-high output laser oscillators;
- (x)-2 equipment to detect sounds by using laser beams, which falls under all of the following (a) through (e):
- (a) those with a continuous wave rated output of the laser oscillator of 20 milliwatts or more;
 - (b) those where frequency stability 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 resolution of the optical system is less than 1 nanometer;
 - (e) those for which the signal noise ratio is 1,000 or more;
- (xi) magnetometers, magnetic gradiometers (excluding those designed for medical use), or underwater electric field sensors (excluding those for fishery) or calibration equipment or components thereof which fall under any of the following (excluding those designed for medical purposes):
- (a) magnetometers which utilize superconducting technology which fall under any of the following:
 1. among magnetometers which utilize superconducting technology designed so that they are capable of being operated in a stationary state, not having a device which is designed to reduce noise occurring during operations, those for which the sensitivity at a 1 hertz frequency (the effective value indicated per square root of the band frequency; the same

- applies hereinafter) is 50 femtoteslas or less;
2. magnetometers which have a device designed to reduce noise during movement and whose sensitivity during movement at a frequency of 1 hertz is less than 20 picoteslas;
- (b) magnetometers which utilize an optical pump or nuclear magnetic resonance technology, the sensitivity at a 1 hertz frequency of which is less than 2 picoteslas;
 - (c) magnetometers which utilize an optical pump or nuclear magnetic resonance technology, the sensitivity at a 1 hertz frequency of which is 2 picoteslas or more and less than 20 picoteslas;
 - (d) magnetometers which utilize triaxial flux gate technology, the sensitivity at a 1 hertz frequency of which is 10 picoteslas or less;
 - (e) magnetometers using an induction coil which fall under any of the following:
 1. magnetometers which use an induction coil, the sensitivity at a frequency of less than 1 hertz of which is less than 0.05 nanoteslas;
 2. magnetometers which use an induction coil, the sensitivity at frequencies of 1 hertz or more and 10 hertz or less of which is less than 0.001 nanoteslas;
 3. magnetometers which use an induction coil, the sensitivity at frequencies exceeding 10 hertz of which is less than 0.0001 nanoteslas;
 - (f) magnetometers which use optical fibers, the sensitivity of which is less than 1 nanotesla;
 - (g) underwater electric field sensors, the sensitivity where measured at a frequency of 1 hertz is less than 8 nanovolts per meter;
 - (h) magnetic gradiometers using two or more magnetometers which fall under any of (a) through (f) above;
 - (i) among magnetic gradiometers which use optical fibers and intrinsic type gradiometers (those having a single detection element per axle; hereinafter the same applies in this item), those the sensitivity of which is less than 0.3 nanoteslas per meter;
 - (j) among magnetic gradiometers which do not use optical fibers and which are intrinsic gradiometers, those the sensitivity of which is less than 0.015 nanoteslas per meter;
 - (k) among calibration equipment for magnetometers, magnetic gradiometers or underwater electric field sensors, those designed for magnetometers, magnetic gradiometers or underwater electric field sensors having the functions equivalent or more to the functions held by the goods that fall under any of (a) through (j) (excluding goods falling under (l) below));
 - (l) calibration equipment for magnetometers or magnetic gradiometers or underwater electric field sensors which are designed for goods falling

- under any of the following:
1. magnetometers which fall under (c) and utilize an optical pump or nuclear magnetic resonance technology to achieve a sensitivity of less than 2 picoteslas;
 2. underwater electric field sensors which fall under (g);
 3. magnetic gradiometers which fall under any of (h) through (j), and which achieve a sensitivity of less than 3 picoteslas;
- (m) magnetic gradiometers using magnetometers which fall under (a) or (b);
- (xi)-2 equipment to detect magnetic fields or electric fields underwater, which falls under any of the following:
- (a) equipment that incorporates magnetometers that fall under (a) or (b) of item (xi);
 - (b) equipment that incorporates magnetometers that fall under any of (c) through (f) of item (xi) or underwater electric field sensors that fall under (g) of the same item;
- (xii) gravity meters that fall under any of the following or gravity gradiometers:
- (a) gravity meters designed for ground use with a precision of less than 10 microgals when gravity is measured in a stationary state (excluding Woldon types);
 - (b) gravity meters designed for mounting on movable bodies that fall under the following 1. and 2.:
 1. gravity meters the precision of which when gravity is measured in a stationary state is less than 0.7 milligals;
 2. gravity meters the precision of which when gravity is measured in a fluctuating state is less than 0.7 milligals and for which required measuring time is less than 2 minutes;
- (xiii) radar that falls under any of the following or components thereof (excluding secondary supervisory radars, civil automotive radars, meteorological radars, precision approach radars based on International Civil Aviation Organization standards and components thereof (including components for a radar that are display equipment for air traffic control):
- (a) radar that can be used within a frequency range of 40 gigahertz or more and 230 gigahertz or less and fall under any of the following:
 1. radar with an average output exceeding 100 milliwatts;
 2. radar with a locating accuracy of 1 meter or less in range, and a locating accuracy of 0.2 degrees or less in azimuth;
 - (b) radar having a bandwidth capable of being tuned that exceeds the center frequency by 12.5 %;
 - (c) radar which is capable of using three or more carrier frequencies simultaneously;

- (d) radar which is capable of being used as synthetic aperture radar, reverse synthetic radar or supervisory radar;
- (e) radar with built-in array antennas which are capable of electronic scanning;
- (f) radar which is capable of measuring a target altitude;
- (g) radar which is designed to be mounted on balloons or aircraft and which utilize the Doppler effect to detect a moving target;
- (h) radar which utilizes any of the following technologies:
 1. spread spectrum;
 2. frequency agility;
- (i) radar for ground use, the measured distance of which exceeds 185 km (excluding fishing ground supervisory radar and ground radar and meteorological balloon tracking radar designed for air traffic control);
- (j) laser radar (including lidar) which falls under any of the following:
 1. laser radar designed for space use;
 2. laser radar which utilizes heterodyne phase detection or homodyne phase detection technology and the angular resolution of which is less than 20 microradians;
 3. laser radar designed for implementing bathymetric littoral surveys using aircraft, which has sufficient precision in light of the standard specified by the International Hydrographic Organization (IHO) for hydrographic surveys, and which uses one or more of the laser oscillators used within a wavelength exceeding 400 nanometers and 600 nanometers or less;
- (k) radar which utilizes pulse compression technology which fall under any of the following:
 1. radar with a pulse compression ratio exceeding 150;
 2. radar with a compressed pulse width less than 200 nanoseconds (excluding two-dimensional marine radar or two-dimensional radar for ship navigation services which falls under all of the following i. through v.):
 - i. radar with a pulse compression ratio of 150 or less;
 - ii. radar with a compressed pulse width exceeding 30 nanoseconds;
 - iii. radar with a single rotating mechanical scanning antenna;
 - iv. radar with a peak output of 250 watts or less;
 - v. radar without the capability of frequency hopping;
- (l) radar which utilizes data processing technology which falls under any of the following (excluding equipment designed for ship navigation services or components thereof):
 1. automatic target tracking technology which is capable of estimating the future position of a target starting from the point where the next antenna beam passes (excluding collision prevention functions for air traffic control

- or marine radar);
2. deleted;
 3. technology which carries out the superposition, correlation, or fusion of target data obtained from two or more radars with a mutual distance exceeding 1,500 meters within 6 seconds, for the purpose of improving the aggregate performance beyond that of any single radar falling under (f) or (i) of item (xiii);
 4. technology which carries out the superposition, correlation, or fusion of target data obtained from two or more types of radar which include radar installed on airframes for vehicles, vessels, aircraft or satellites or other types of spacecraft for space development within 6 seconds, for the purpose of improving the aggregate performance beyond that of any single radar falling under (f) or (i) of item (xiii);
- (xiii)-2 masks or reticles specifically designed for the manufacture of optical sensors which fall under either of item (iii), (a), 2. or 3.:
- (xiv) optical measuring equipment that falls under any of the following:
- (a) equipment for measuring light reflectance (limited to those which measure the absolute value of reflectance) the precision of which is 0.1 percent or less;
 - (b) among equipment (limited to non-contact type) for measuring the surface shape of lenses or reflectors, which uses a method other than measurement of light scattering, that having an aperture diameter exceeding 10 centimeters and designed for measuring surface shapes which are not planar at a precision of 2 nanometers or less;
- (xv) equipment for the manufacture or calibration equipment of gravity meters for ground use (limited to those the precision of which, when gravity is measured in a stationary state, is less than 0.1 milligals);
- (xvi) crystals for optical detectors and other material or laser oscillators made of a material for optical components that falls under any of the following:
- (a) tellurium with a purity of 99.9995 % or more;
 - (b) wafers having a single crystal or epitaxial growth crystal which fall under any of the following:
 1. cadmium zinc telluride the mole ratio for zinc telluride relative to cadmium telluride and zinc telluride for which is less than 6 %;
 2. cadmium telluride;
 3. cadmium mercury telluride;
 - (c) among substrate materials made up of zinc selenide or zinc sulfide manufactured by the chemical vapor phase growth methods, those which fall under any of the following:
 1. substrate materials, the volume of which exceeds 100 cubic centimeters;
 2. substrate materials, the diameter of which exceeds 80 millimeters and

- the thickness of which is 20 millimeters or more;
- (d) electro-chemical materials or non-linear optical materials which fall under any of the following:
1. potassium titanyl arsenate;
 2. silver gallium selenide;
 3. arsenic thallium selenide;
 4. zinc germanium phosphide;
 5. gallium selenide;
- (e) non-linear optical materials which fall under any of the following (excluding those which fall under (d)):
1. non-linear optical materials whose dynamic cubic non-linear susceptibility is greater than $1/1,000,000$ per square meter per volt per volt and whose response time is less than 1 millisecond;
 2. non-linear optical materials whose quadratic non-linear susceptibility is $33/1,000,000,000,000$ or more, expressed in meter per volt;
- (f) substrate materials made up of materials having beryllium stacked on beryllium or substrate material made up of silicon carbide having a diameter or major axis length which exceeds 300 millimeters;
- (g) optical glass which falls under all of the following 1. through 3.:
1. optical glass the hydroxide ion content of which is less than 0.0005 % of the total weight;
 2. optical glass the metal impurities content of which is less than 0.0001 % of the total weight;
 3. optical glass the refractive index variation of which is less than $5/1,000,000$;
- (h) artificial diamonds the absorption coefficient of which is less than $1/100,000$ per centimeter within a wavelength range exceeding 200 nanometers and 14,000 nanometers or less;
- (i) among artificial crystals for laser oscillators that are unfinished, sapphires with titanium added.
- (j) double clad fibers to which rare-earth elements are added and which fall under any of the following:
1. double clad fibers the nominal values of whose laser wavelengths are 975 nanometers or more and 1,150 nanometers or less and which fall under i. and ii. below (excluding those whose inner glass clad is more than 150 micrometers and not more than 300 micrometers in diameter):
 - i. those the mean value of whose core is 25 micrometers or more in diameter; and
 - ii. those the numerical aperture of whose core is less than 0.065;
 2. double clad fibers the nominal values of whose laser wavelengths exceed 1,530 nanometers and which fall under i. and ii. below:

- i. those the mean value of whose core is 20 micrometers or more in diameter; and
- ii. those the numerical aperture of whose core is less than 0.1;

Article 10 Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 11 of the appended table 1 of the Export Order fall under any of the following:

- (i) accelerometers that fall under any of the following or components thereof:
 - (a) linear accelerometers that fall under any of the following:
 - 1. linear accelerometers designed to be capable of being used at a linear acceleration of 147.15 meters per second squared, which fall under any of the following:
 - i. linear accelerometers with a bias stability (following calibration; hereinafter the same applies in this Article) of less than 0.00128 meters per second squared per year;
 - ii. linear accelerometers with a scale factor stability of less than 0.013 % per year;
 - 2. linear accelerometers designed to be capable of being used at a linear acceleration exceeding 147.15 meters per second squared and 981 meters per second squared or less, and that fall under the following i. and ii.:
 - i. linear accelerometers with a bias reproducibility of less than 0.0122625 meters per second squared per year;
 - ii. linear accelerometers with a scale factor reproducibility of less than 0.125% per year;
 - 3. linear accelerometers designed for use in inertial navigation systems or guidance systems, and designed to be capable of being used at a linear acceleration exceeding 981 meters per second squared;
 - (b) angular accelerometers or rotary accelerometers designed to be capable of being used at a linear acceleration exceeding 981 meters per second squared;
- (ii) gyroscopes or angular velocity sensors which fall under any of the following or components thereof:
 - (a) gyroscopes or angular accelerometers designed to be capable of being used at a linear acceleration of 981 meters per second squared or less, and that fall under any of the following:
 - 1. gyroscopes or angular accelerometers with an angular velocity measuring range of less than 500 degrees per second, which fall under any of the following:
 - i. gyroscopes or angular accelerometers with a bias stability of less than 0.5 degrees per hour when measured in a 9.81 meters per second squared environment over a period of one month;

- ii. gyroscopes or angular accelerometers the effective value of which indicates the angular random walk in degrees per square root of hours of 0.0035 degrees or less (excluding spinning mass gyro);
- 2. gyroscopes or angular accelerometers with an angular velocity measuring range of 500 degrees per second or more, which fall under any of the following:
 - i. gyroscopes or angular accelerometers with a bias stability of less than 4 degrees per hour when measured in a 9.81 meters per second squared environment over three minutes;
 - ii. gyroscopes or angular accelerometers the effective value of which indicates the angle random walk in degrees per square root of hours of 0.1 degrees or less (excluding spinning mass gyro);
- (b) gyroscopes, angular accelerometers or rotary accelerometer designed so that they are capable of being used at a linear acceleration which exceeds 981 meters per second squared;
- (iii) inertial navigation systems and other systems utilizing inertia force (including attitude/heading reference units, gyro compasses, inertial measurement units, and inertial reference units) which fall under any of the following (excluding those certified for civil aviation use by Japan or by any of the government organizations indicated in the regions set forth in the appended table 2):
 - (a) those designed for aircraft use, land vehicle use, or ship use that provide location information without relying on location reference information, and with an accuracy after normal alignment that falls under any of the following:
 - 1. those in which mean error radius is 0.8 nautical miles per hour or less;
 - 2. those in which mean error radius is 0.5% or less of a travel distance;
 - 3. those in which mean error radius is 1 nautical mile or less in total drift per 24 hours;
 - (b) those designed for aircraft use, land vehicle use, or ship use which incorporate location reference information and provide location information within 4 minutes after the loss of all location reference information, and with a mean error radius of less than 10 meters;
 - (c) those designed for aircraft use, land vehicle use, or ship use which indicate the true north direction and fall under any of the following:
 - 1. those with a maximum operating angular velocity of less than 500 degrees per second and in which the accuracy of nose direction without using location reference information is the value obtained by dividing 0.07 degrees by the cosine of latitude or less, or six minutes or less at 45 degrees latitude;
 - 2. those with a maximum operating angular velocity of 500 degrees or more

- per second and in which the accuracy of nose direction without using location reference information is the value obtained by dividing 0.2 degrees by the cosine of latitude or less, or 17 minutes or less at 45 degrees latitude;
- (d) those which provide acceleration measurement values or angular velocity measurement values in two dimensions or more and fall under any of the following:
 1. those of specifications specified in item (i) or the preceding item along any axis, without using any reference information;
 2. those designed for space use whose effective value indicates the angular random walk along any axis in degrees per square root of hours of 0.1 degrees or less, and which provide angular velocity measurement values (excluding inertial navigation systems and other systems utilizing inertia force that incorporate spinning mass gyros only);
 - (iv) gyroscopes for celestial navigation, devices that derive position or orientation by means of automatically tracking celestial bodies or satellites, or components thereof which fall under any of the following:
 - (a) gyroscopes for celestial navigation or devices that derive position or orientation by means of automatically tracking celestial bodies or satellites and which have a bearing accuracy of 20 seconds or less;
 - (b) among components designed for gyroscopes for celestial navigation or devices that derive position or orientation by means of automatically tracking celestial bodies or satellites and which fall under (a), those which fall under any of the following:
 1. optical heads or baffles;
 2. data processing units;
 - (v) devices which receive radio waves from global navigation satellite systems that fall under any of the following, or components thereof:
 - (a) those having a decoding algorithm to access the ranging code for position and time (excluding those designed for civil use);
 - (b) those constituting an adaptive antenna system;
 - (vi) among aircraft altimeters which are designed for use at frequencies greater than 4.4 gigahertz or at frequencies lower than 4.2 gigahertz, those which fall under any of the following:
 - (a) aircraft altimeters having a transmission output control function;
 - (b) aircraft altimeters having a phase deviation modulation function;
 - (vii) among underwater sonar navigation systems using azimuth information and using Doppler velocity or correlation velocity, those having a positioning accuracy of 3 % or less of distance travelled by circular error probability, or components thereof;
 - (viii) test equipment, calibration equipment, alignment equipment or

- equipment for manufacture that fall under any of item (i) through item (vii);
- (ix) devices which are designed to confirm the characteristics of the mirror surface of a ring laser gyro that fall under any of the following:
 - (a) scatterometers having a measuring precision of 0.001 % or less;
 - (b) profilometers having a measuring precision of 0.5 nanometers or less.

Article 11 Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 12 of the appended table 1 of the Export Order fall under any of the following:

- (i) manned small mooring-rope type submersible boats which are designed so that they are capable of being used at depths exceeding 1,000 meters;
- (i)-2 unmanned submersible vessels which fall under all of the following:
 - (a) those which are designed for use as a small mooring-rope type submersible boat;
 - (b) those which are designed so that they are capable of being used at depths exceeding 1,000 meters;
 - (c) those which fall under any of the following:
 1. small unmanned submersible vessels which use direct current propulsion electric motors and which are designed so that they are capable of being used for navigation unaided;
 2. small unmanned submersible boats capable of transmitting and receiving data using optical fiber;
- (ii) equipment which is used to recover objects at depths exceeding 250 meters having a cargo unloading capability exceeding 5 meganewtons and which fall under any of the following:
 - (a) equipment having an automatic ship position maintaining device which is capable of maintaining the position of the ship within a range of 20 meters from a point set by the navigation device;
 - (b) equipment which is capable of maintaining a position within a range of 10 meters from a preset point at depths exceeding 1,000 meters;
- (iii) deleted;
- (iv) components or auxiliaries for submersible vessels which fall under any of the following:
 - (a) components for submersible vessels which are designed so that they are capable of being used at depths exceeding 1,000 meters which fall under any of the following:
 1. pressure-resistant containers or pressure-resistant shells in which maximum internal dimensions exceed 1.5 meters;
 2. direct current propulsion electric motors or thrusters;
 3. umbilical cables or connectors which use tension members made of optical fiber and synthetic materials;

4. components using material that falls under item (xii);
- (b) among automatic control devices which are designed so that they are capable of being used in submersible vessels which use navigation data and which are servo control systems, those that fall under the following 1. and 2.:
1. automatic control devices which are capable of being used for submersible vessels which fall under item (i)-2 or Article 14, item (ix);
 2. automatic control devices which fall under any of the following:
 - i. automatic control devices which are capable of moving submersible vessels inside a water column having a radius of 10 meters having a preset center point in the water;
 - ii. automatic control devices which are capable of holding a submersible vessel inside a water column having a radius of 10 meters having a preset center point in the water;
 - iii. automatic control devices which are capable of holding a small submersible vessel to within 10 meters of a cable when moving along a cable which is at the bottom of the sea or beneath the sea;
- (c) among automatic control devices which are designed so that they are capable of being used in submersible vessels, which use navigation data and which are servo control systems, those that fall under 1. and 2. (excluding those falling under (b)):
1. automatic control devices which are designed so that they are capable of being used in submersible vessels and which fall under item (i);
 2. automatic control devices that fall under any of the following:
 - i. automatic control devices which are capable of moving submersible vessels inside a water column having a radius of 10 meters having a preset center point in the water;
 - ii. automatic control devices which are capable of holding submersible vessels within a water column having a radius of 10 meters having a present center point in the water;
 - iii. automatic control devices which are capable of holding submersible vessels inside a water column within 10 meters from the cable when moving along a cable which is on the sea floor or beneath the sea;
- (d) lead-through hardware of pressure-resistant shells used to draw optical fiber inside the hull of a ship;
- (e) observation devices for underwater use which fall under all of the following:
1. those which are designed or altered to be capable of being loaded on a submersible vessel and operated by remote control;
 2. those which have a function to reduce the effects of backscattering and which fall under any of the following:

- i. range gate illuminators;
 - ii. devices using a laser oscillator;
- (v) lighting systems for underwater use which fall under any of the following:
- (a) among lighting systems which use the stroboscopic method, in which energy per flash exceeds 300 joules, those that are capable of emitting light in excess of five times per second;
 - (b) lighting systems which use argon arcs which are designed so that they are capable of being used at depths exceeding 1,000 meters;
- (vi) underwater robots (excluding maneuvering robots and sequence robots) which fall under any of the following:
- (a) underwater robots which control use of information from a sensor which measures the force or torque applied to an external object or the distance to tactual sense with the external object;
 - (b) underwater robots which use titanium alloy or fiber reinforced composite materials as structural materials and which are capable of being operated under a force of more than 250 newtons or at a torque greater than 250 newton meters;
- (vii) remote control manipulators (limited to those which are articulated) which are designed so that they can be used together with submersible vessels which fall under any of the following:
- (a) remote control manipulators which use information from a sensor which measures the force applied to an external object or the torque or the tactual sense upon the external object;
 - (b) remote control manipulators which control by the use of a master-slave system with a degree of freedom of motion of 5 or more;
- (viii) power units which are capable of being used when they are cut off from the air that fall under any of the following:
- (a) brayton cycle engines or Rankine cycle engines having a device that falls under any of the following:
 1. equipment which is designed so that it is capable of removing carbon monoxide, carbon dioxide as well as particles from the exhaust air which is circulating;
 2. equipment designed so that it is capable of utilizing monoatomic gases;
 3. soundproofing devices or enclosures designed so that they are capable of reducing underwater noise at frequencies of less than 10 kilohertz or equipment which is designed so that it is capable of mitigating; collisions;
 4. equipment designed so that it is 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 having equipment that falls under all of the following 1.

through 4.:

1. equipment designed so that it is capable of removing carbon monoxide, carbon dioxide and fine particles from exhaust air which is circulating;
2. equipment which is designed so that it is capable of utilizing monoatomic gases;
3. soundproofing devices or enclosures which are designed so that they are capable of reducing underwater noise at frequencies of less than 10 kilohertz or equipment which is designed so that it is capable of mitigating collisions;
4. equipment which is designed so that it is capable of discharging combustion products intermittently;

(c) fuel cells with an output exceeding 2 kilowatts and having a device that falls under any of the following:

1. soundproofing devices or enclosures which are designed so that they are capable of reducing underwater noise at frequencies of less than 10 kilohertz or equipment designed so that it is capable of mitigating collisions;
2. equipment which is designed so that it is capable of compressing reaction products or recycling them as fuel, which are capable of storing the reaction products and discharging reaction products at pressures greater than 100 kilopascals;

(d) sterling cycle engines having equipment which falls under any of the following 1. and 2.:

1. soundproofing devices or enclosures which are designed so that they are capable of reducing underwater noise at frequencies of less than 10 kilohertz or equipment which is designed so that it is capable of mitigating collisions;
2. equipment which is designed so that it is capable of discharging reaction products at pressures greater than 100 kilopascals;

(ix) deleted;

(x) vessel components which fall under any of the following:

- (a) variable pitch propellers or hubs thereof with a rated output exceeding 30 megawatts;
- (b) internal liquid-cooling type electric propulsion engines in which output exceeds 2.5 megawatts;
- (c) superconductive propulsion engines or electric propulsion engines using a permanent magnet having an output greater than 0.1 megawatts;
- (d) power transmission shaft equipment using a composite material which is capable of transmitting output exceeding 2 megawatts;
- (e) among screw propeller devices which are designed so that air from the propeller is capable of being discharged or so that air is capable of being

- supplied to the propeller, those with a rated output exceeding 2.5 megawatts;
- (f) among soundproofing devices which are capable of being used on vessels in which the displacement is greater than 1,000 tons which reduces sound or vibration at frequencies of less than 500 hertz generated from diesel engines, diesel generators, gas turbine engines, gas turbine generators, propulsion electric motors, reducers, those made of a composite sound insulating base the intermediate mass weight of which exceeds 30 % of the weight of the device installed on it;
 - (g) equipment which uses a divergent nozzle or which uses technology relating to a straightening vane to upgrade the driving force of the screw propeller or to reduce underwater noise in which the output exceeds 2.5 megawatts;
 - (xi) a rotation current water tank designed to measure noise coming from the stream around a model propeller in a sound field, with a background noise of less than 100 decibels within a frequency range exceeding 0 hertz and 500 hertz or less when the standard sound pressure is 1 micropascal and the frequency width is 1 hertz;
 - (xii) buoyant materials which fall under the following (a) and (b):
 - (a) buoyant materials designed so they are capable of being used at depths exceeding 1,000 meters;
 - (b) buoyant materials the density of which is less than 561 kilograms per cubic meter;
 - (xiii) closed-circuit or semi-closed circuit self-contained diving equipment;
 - (xiv) equipment that disrupts a person's underwater activities by utilizing acoustic waves, and that is designed to have a sound pressure level of 190 decibels or more where frequencies of the acoustic wave used are 200 hertz or less.

Article 12 Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 13 of appended table 1 of the Export Order fall under any of the following:

- (i) gas turbine engines for aircraft which fall under any of the following:
 - (a) gas turbine engines for aircraft using technology (excluding programs) required for the design or manufacture of those which fall under any of Article 25, paragraph (3), item (ii), (a) through (g) and (j), item (iii) of the same paragraph, or item (iv) of the same paragraph or technology required for the design or manufacture of those which fall under the items of Article 27, paragraph (6); provided, however, that those falling under any of the following 1. and 2. are excluded:
 - 1. gas turbine engines for aircraft which fall under all of the following:

- i. gas turbine engines for aircraft certified by the governmental organization in Japan or in the region listed in the appended Table 2;
- ii. gas turbine engines for supplying power to manned aircraft for civilian use for which any of the following documents have been issued for aircraft equipped therewith by a governmental organization of Japan or the regions set forth 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 which are designed for auxiliary power units and certified by the governmental organization in Japan or in the region set forth in the appended table 2;
- (b) gas turbine engines which are designed for use in aircraft designed so that the cruising time at speeds greater than Mach 1 exceeds 30 minutes;
- (ii) gas turbine engines for vessels which are designed to use liquid fuel (including gas turbine engines which are adapted for power generation for or propulsion of vessels and which are for industrial use or are derived from gas turbine engines for aircraft) and which fall under (a) and (b) below, or assemblies or components specifically designed for those gas turbine engines:
 - (a) those whose maximum continuous output is 24,245 kilowatts or more when they operate in a steady state on the standard reference conditions set by the International Standards ISO 3977-2 (1997);
 - (b) those whose contingency fuel consumption rate is 0.219 kilograms per kWh or less at 35 percent of the maximum continuous output when they use liquid fuel;
- (iii) of assemblies of gas turbine engines or components thereof which use techniques (excluding programs) required for design or manufacture of those which fall under any of Article 25, paragraph (3), item (ii), (a) through (g) and (j), item (iii) of the same paragraph, or item (iv) of the same paragraph or techniques required for designing or manufacturing those which fall under the items of Article 27, paragraph (6), those designed to be used for gas turbine engines for aircraft which fall under any of the following:
 - (a) those which fall under item (i); or
 - (b) those for which the region where they were designed or manufactured is a region other than Japan or any region set forth in the appended table 2 or not specified;
- (iv) flying objects for outer space or flying objects for launching them or components thereof or sub-orbital craft which fall under any of the following:
 - (a) flying objects for launching flying objects for outer space;
 - (b) flying objects for outer space;
 - (c) buses for flying objects for outer space;

- (d) payloads for flying objects for outer space in which goods falling under any of Article 6, item (ii), (a), 1., iv. or item (xvi), Article 8, item (i), (a), item (ii), (a), 2. or item (ix), (c) or (e), Article 9, item (iii), (a) or (b), item (iv), (vi) or (viii), item (ix), (a), item (ix)-2, item (xiii), (d), (e), (k) or (l) or item (x) are incorporated;
- (e) devices which are designed to be loaded on a flying object for outer space and 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) spacecraft for suborbital use.
- (iv)-2 aircraft specifically designed or altered for air launch of flying objects for the launch of flying objects for outer space or sub-orbital craft;
- (iv)-3 of devices which are necessary for controlling flying objects for outer space or flying objects for launching them or for monitoring their operating state and which are designed to be installed on the ground, those which fall under any of the following (limited to those designed to be used to control flying objects for outer space or flying objects for launching them or to monitor their operating state):
 - (a) wireless remote controllers or radiotelemetry devices which are designed to have a data processing function set forth in any of the following:
 1. frame synchronization and error correction processing for radiotelemetry data for monitoring the operation status of buses for flying objects for outer space; or
 2. formatting processing for command data transmitted to a flying object for outer space to control the buses of the flying object for outer space;
 - (b) simulators specifically designed to verify procedures for operating a flying object for outer space;
- (v) internally stored liquid rocket propulsion units which fall under the next item;
- (vi) components of liquid rocket propulsion units which fall under any of the following:
 - (a) very low temperature cooling systems, Dewar vessels, heat pipes and other very low temperature systems which are designed for use in spacecraft for aerospace or for spacecraft for launching thereto and with a liquid loss at very low temperatures of less than 30 % per year;
 - (b) among very low temperature containers or closed cycle cooling systems for use at temperatures of -173 degrees centigrade or less, those which are designed for use in spacecraft for aerospace, spacecraft for launch or aircraft which are capable of cruising at speeds exceeding Mach 3;

- (c) storage containers or supply systems for hydrogen slush;
- (d) gas generators or expander cycle turbine drive units for turbine pumps or components thereof with a discharge pressure of more than 17.5 megapascals or for turbine pumps therefor;
- (e) propulsion generators or nozzles therefor having a thrust exceeding 10.6 megapascals;
- (f) propellant storage equipment which utilizes capillary action or flexible bladders;
- (g) liquid fuel injection devices in which individual orifice areas are 0.114 square millimeters or less;
- (h) among thrust chambers or exit cones which are formed integrally of a single piece using a composite material of carbon and carbon fiber, and the density of which is exceeding 1.4 grams per cubic centimeter, those the tensile strength of which is exceeding 48 megapascals;
- (vii) solid rocket propulsion units which fall under any of the following:
 - (a) solid rocket propulsion units whose total impulse capacity exceeds 1.1 meganewtons second or whose specific impulse is 2.4 kilonewtons second per kilogram or more when the outlet pressure of the nozzle is brought to atmospheric pressure at sea level and the pressure inside the combustor is 7 megapascals;
 - (b) solid rocket propulsion units in which stage mass fraction exceeds 88 % and in which propellant solid ratio exceeds 86 %;
 - (c) solid rocket propulsion units internally stored which fall under the next item;
 - (d) solid rocket propulsion units used to join the insulating material and propellant which use direct bonding motor design methods to obtain a mechanical joining strength which is greater than the strength of the propellant or to make a barrier for the chemical migration between the solid propellant and the insulating material of the motor case;
- (viii) components for solid rocket propulsion units which fall under any of the following:
 - (a) components which join insulating material and propellant and which use liners to obtain a mechanical bonding strength which is greater than the strength of the propellant and to make a barrier against chemical migration between the solid propellant and the insulating material for the motor case;
 - (b) motor cases which use composite materials made using the filament winding method having a diameter greater than 0.61 meters or in which structural efficiency ratio is greater than 25 km;
 - (c) nozzles the thrust of which is greater than 45 kilonewtons or in which nozzle throat erosion ratio is less than 0.075 millimeters per second;

- (d) movable nozzle or secondary injection propulsion direction control equipment which falls under any of the following:
 1. those in which absolute value for the deflection range in the thrust vector is exceeding 5 degrees;
 2. those in which angular velocity when changing the thrust vector is greater than 20 degrees per second;
 3. those in which angular acceleration when changing the thrust vector is greater than 40 degrees per second squared;
- (ix) hybrid rocket propulsion units which fall under any of the following:
 - (a) those whose total impulse capacity exceeds 1.1 meganewtons second; or
 - (b) those the thrust of which when the outlet is in a vacuum is greater than 220 kilonewtons;
- (x) components for spacecraft used for launching or propulsion equipment thereof or spacecraft for aerospace use which fall under any of the following:
 - (a) components of flying objects for launch (limited to those which exceed 10 kilograms in weight for other components than nose cones) which fall under any of the following:
 1. composite materials composed of the fiber falling under Article 4, item (xv), (e) or resins falling under item (xiii) or item (xiv), (b) of the said Article;
 2. metal matrix composites reinforced with any of the following:
 - 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), (a);
 3. ceramic matrix composites falling under Article 4, item (xii);
 - (b) components of the propulsion device of a flying object for launch which are designed to be used for a propulsion device falling under any of item (v) or (vii) or any of the preceding items and which use any of the following:
 1. fibers falling under Article 4, item (xv), (e) or resins falling under item (xiii) or item (xiv), (b) of the said Article;
 2. metal matrix composites reinforced with any of the following:
 - 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), (a);
 3. ceramic matrix composites falling under Article 4, item (xii);
 - (c) components for spacecraft for aerospace use which are used to control dynamic response for structures or to actively control torsion;
 - (d) among liquid pulse rocket engines in which the thrust weight ratio is 1 kilonewton per kilogram or more, those engines whose response time is less than 0.030 seconds;
- (x)-2 unmanned aircraft or components thereof or accessory devices therefor

which fall under (a) or (b) below:

- (a) unmanned aircraft which are designed to fly in a controlled way without depending on the pilot's sense of sight and which fall under any of the following:
 - 1. those which fall under i. and ii. below:
 - i. those whose maximum endurance is not less than 30 minutes and less than 1 hour; and
 - ii. those capable of taking off in a gust of wind at a speed of not less than 46.3 kilometers (25 knots) per hour and flying in a stable and controlled way;
 - 2. those whose maximum endurance is 1 hour or more;
- (b) components of or accessory devices for unmanned aircraft which fall under any of the following:
 - 1. deleted;
 - 2. deleted;
 - 3. components or auxiliaries for unmanned aerial vehicles designed to convert manned aerial vehicles to unmanned aerial vehicles that fall under (a);
 - 4. air breathing reciprocating engines or rotary internal combustion type engines, designed or modified to propel unmanned aerial vehicles at altitudes above 15,240 meters;
- (xi) equipment or tools (including molds) which fall under any of the following:
 - (a) equipment designed for super alloys for unidirectional solidification or for 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 and which fall under any of the following:
 - 1. cores;
 - 2. shells;
 - 3. a combination of 1. or 2.;
 - (c) equipment designed for super alloys for unidirectional solidification or for laminating shaping of single crystals which are designed for manufacturing blades, vanes or tip shrouds for gas turbine engines;
- (xii) real time controlling devices, measuring instruments (including sensors) or devices which collect and analyze data automatically, which fall under the following (a) and (b):
 - (a) those specially designed for the development of gas turbine engines or components therefor;
 - (b) those using technologies (excluding programs) necessary for the design or manufacture of those falling under Article 25, paragraph (3), item (iii) or (iv);

- (xiii) devices for manufacturing brush seals for gas turbine engines or test equipment or components thereof whose peripheral speed when tipped exceeds 335 meters per second and are designed so that they are capable of being operated at temperatures exceeding 500 degrees centigrade;
- (xiv) tools used for solid phase joining of wing and disk parts of gas turbine engines made of intermetallic compounds, super alloys or titanium;
- (xv) devices for real-time control, measuring instruments (including sensors) or devices which collect and analyze data automatically which are designed for use in wind tunnels or devices which fall under any of the following:
 - (a) wind tunnels which are capable of creating conditions for velocities of Mach 1.2 or more;
 - (b) equipment which is capable of simulating flow environments exceeding Mach 5;
 - (c) wind tunnels or equipment which are capable of simulating the flow for a Reynolds number exceeding 25,000,000. However, this does not include test models which are restricted to two-dimensional sections;
- (xvi) acoustic vibration test equipment which falls under all of the following (a) through (c):
 - (a) acoustic vibration test machines the sound pressure of which when the standard sound pressure is 20 micropascals is greater than 160 decibels;
 - (b) acoustic vibration test machines, the rated output of which is greater than 4 kilowatts;
 - (c) acoustic vibration test machines in which the laboratory temperature exceeds 1,000 degrees centigrade;
- (xvii) equipment used to test rocket motors using non-destructive examination technology;
- (xviii) converters which are designed so that they are capable of directly measuring the wall friction of a flow in which temperatures at stagnation point are greater than 560 degrees centigrade;
- (xix) tools which are used to manufacture components which are used for the rotating parts of gas turbine engines and manufactured by powder metallurgy, and which are usable under the stress with 60 % or more of an ultimate tensile strength of at temperatures of 600 degrees centigrade or more (excluding tools for manufacturing powder);
- (xx) devices for the manufacture of those falling under item (x)-2.

Article 13 (1) Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry with row 14 (i) of appended table 1 of the Export Order fall under any of the following:

- (i) aluminum powder, the particles of which are globular with a diameter of 60 micrometers or less and with 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 which reduces iron oxide using hydrogen) and with an iron purity of 99 % or more.
- (2) Goods specified by the Order of the Ministry of Economy, Trade and Industry in row 14 (ii) of the appended table 1 of the Export Order fall under any of the following:
 - (i) substances having low explosives or high explosives as their major components which fall under any of the following (including those 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;
 - (n) dihydroxyl ammonium 5,5'-bistetrazole-1,1'-diolate (TKX);
 - (ii) substances which are additives or precursors to low explosives or high explosives which fall under any of the following (including those co-crystallized):
 - (a) azide methyl methyl oxetane or polymers thereof;
 - (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 polymers thereof;
 - (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 having a nitro group, azide group, nitrate group,

- nitraza group or a difluoro amino group;
- (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 in which the surface area exceeds 250 square meters per gram and in which average particle diameter 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 listed in Article 3, item (vii), (s)) or cyanoethylated polyamine salts;
 - (hh) cyanoethylated poly amine with added glycidol (excluding those listed in Article 3, item (vii), (r));
 - (ii) derivatives of tris-1-(2-methyl) aziridinyl phosphine oxide;
 - (jj) adducts 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;
 - (oo) polyepichlorohydrin, polyepichlorohydrin diol or polyepichlorohydrin triol having a low-molecular weight (molecular weight of 10,000 or less) and alcohol functional groups.
- (3) Goods with specifications prescribed by the Order of the Ministry, Trade and Industry in row 14 (iii) of the appended table 1 of the Export Order which are diesel engines with an output of 37,3 kilowatts or more in which parts were made of non-magnetic materials weighting more than 75 % of the total weight,

- or components thereof.
- (4) Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 14 (v) of the appended table 1 of the Export Order fall under any of the following:
- (i) closed-circuit type self-contained diving equipment or components thereof;
 - (ii) semi-closed circuit type self-contained diving equipment or components thereof;
 - (iii) components for self-contained diving equipment, those designed for use 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) Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 14 (vii) of appended table 1 of the Export Order are robots (excluding maneuvering robots and sequence robots; hereinafter the same applies in this paragraph) or controller or end effectors used for robots, and those which fall under the following or components thereof (excluding end effectors for robots):
- (i) robots which are designed so that they are capable of using pressure oil in which ignition point is exceeding 566 degrees centigrade;
 - (ii) those which are designed to prevent the effect of electromagnetic pulses.
- (6) Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 14 (ix) of appended table 1 of the Export Order fall under any of the following:
- (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;
 - (ix) equipment for application, protection, location or identification of substances which fall under any of the preceding items, or components thereof.
- (7) Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 14 (x) of the appended table 1 of the Export Order are equipment specially designed to remove or dispose of improvised explosive devices, which fall under any of the following, or components or accessories thereof:
- (i) those which are remotely operated vehicles;
 - (ii) those preventing the operation of improvised explosive devices by

projectiles.

- (8) Electronic equipment designed to automatically detect or identify explosives, which detects traces of explosives by utilizing any of the methods such as the measurement of surface acoustic waves, ion mobility spectrometry, differential mobility spectrometry, or mass spectrometry (limited to equipment capable of detecting less than 1 ppm vapor, or 1 mg solid or liquid, and excluding equipment designed solely for use as laboratory equipment or that designed to detect explosives without having the object passing through the equipment have any contact with such equipment).

Article 14 Goods with specifications prescribed by the Order of the Ministry of Economy, Trade and Industry in row 15 of the appended table 1 of the Export Order fall under any of the following:

- (i) molded goods (including semi-finished goods) which are manufactured using fibers falling under Article 4, item (xv), (c) or (d) and whose matrix is an organic matter;
- (ii) radio wave or infrared ray absorbers or conductive polymers which fall under any of the following:
- (a) absorbers specifically designed to be used as radio wave absorbers and that have a frequency exceeding 200 megahertz and less than 3 terahertz. However, this excludes those falling under any of the following that 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 the entrance face being not planate;
 3. planar absorbers that fall under all of the following i. through iii.:
 - i. absorbers made of any of the following:
 - a. materials that use plastic foams containing carbon or organic matter and fall under 1 or 2:
 - 1 materials having radio wave reflectivity, measured for frequencies other than the frequency range of plus/minus 15% centered on the radio wave frequency for which absorption is a maximum, of 5% or more of the electric wave reflectivity of a metal plate;
 - 2 materials that cannot be used under exceeding 177 degrees centigrade;
 - b. materials that use ceramics and fall under the following 1 and 2:
 - 1 materials having radio wave reflectivity, measured for frequencies other than the frequency range of plus/minus 15% centered on the radio wave frequency for which absorption is a maximum, of 20% or more of the electric wave reflectivity of a metal plate;
 - 2 materials that cannot be used at temperatures exceeding 527 degrees

- centigrade;
 - ii. absorbers with a tensile strength less than 7 meganewtons per square meter;
 - iii. absorbers with a compression strength less than 14 meganewtons per square meter;
- 4. planar absorbers made of sintered ferrites that fall under the following i. and ii.:
 - i. absorbers with the specific gravity exceeding 4.4;
 - ii. absorbers that cannot be used under temperatures exceeding 275 degrees centigrade;
- 5. among open-cell foam planar absorbers manufactured from plastics material that have a density of 0.15 grams per cubic centimeter or less, those that do not absorb radio waves through magnetic loss;
- (b) of those specifically designed to be used as an absorbent for near-infrared rays whose wavelengths are over 810 nanometers and less than 2,000 nanometers (which means those whose frequencies are over 150 terahertz and less than 370 terahertz), those that do not transmit visible light;
- (c) among absorbers that are conductive polymers with volume conductivity exceeding 10 kilosiemens per meter or surface electrical resistivity less than 100 ohms, those comprising any of the following polymers:
 - 1. polyaniline;
 - 2. polypyrrole;
 - 3. polythiophene;
 - 4. polyphenylene vinylene;
 - 5. polyethylene vinylene;
- (iii) pre-separated neptunium 237 with a weight exceeding 1 gram;
- (iv) deleted;
- (v) digitally controlled radio receivers with exceeding 1,000 channels (excluding those designed for the use in public cellular wireless communication) or components or accessories thereof that fall under all of the following (a) through (c):
 - (a) receivers capable of automatically scanning the electromagnetic spectrum;
 - (b) receivers capable of specifying the type of signals received and waves transmitted;
 - (c) receivers in which the time required for channel switching is less than 1 millisecond;
- (v)-2 equipment preventing the operation of improvised explosive devices or auxiliaries thereof which fall under any of the following:
 - (a) radio transmitters designed to explode improvised explosive devices before they reach their target or to prevent the explosion thereof (excluding

- those which fall under Article 8, item (v)-3);
- (b) equipment which is used together with radio transmitters listed in (a) and uses technologies designed to be capable of maintaining radio lines with the same frequency as that of the transmitters;
- (vi) among underwater acoustic equipment utilizing acoustic waves (including ultrasound) or components thereof and that fall under any of the following:
 - (a) hydrophones that fall under any of the following:
 1. hydrophones that incorporate flexible sensors;
 2. hydrophones that incorporate devices consisting of flexible sensors less than 20 millimeters in diameter or length connected at intervals less than 20 millimeters;
 3. hydrophones that have any of the following detecting elements:
 - i. optical fibers;
 - ii. piezoelectric polymer membrane (excluding vinylidene fluoride resin and copolymers thereof);
 - iii. flexible piezoelectric composite materials;
 - iv. piezoelectric single crystals of lead magnesium niobate-lead titanate (those growing from solid solution);
 - v. piezoelectric single crystals of lead indium niobate-lead magnesium niobate -lead titanate (those growing from solid solution);
 4. hydrophones that have the function of compensating for the effects of acceleration and designed for the use at water depths exceeding 35 meters;
 5. hydrophones that are designed for the use at water depths exceeding 1,000 meters and are designed so that an acoustic compression sensitivity at 4 kilohertz or less will exceed -230 decibels;
 - (b) towed hydrophone arrays that fall under any of the following:
 1. arrays in which the hydrophone group interval (referring to the distance between the centers of two adjacent hydrophone groups; hereinafter the same applies in the same item) is less than 12.5 meters or those wherein the interval can be altered to less than 12.5 meters;
 2. arrays designed to be capable of use at water depths exceeding 35 meters or that can be so modified;
 3. arrays having a heading sensor that falls under Article 9, item (i), (b), 3.;
 4. arrays having array hoses reinforced in the long axis direction;
 5. arrays with diameter less than 40 millimeters;
 6. deleted;
 7. arrays that have hydrophones that fall under (a) or Article 9, item (i), (b), 1.;
 8. hydroacoustic sensors in Article 9, item (i), (b), 6.;
- (c) among signal processors designed for towed hydrophone arrays and capable of being reprogrammed by the user, those which are capable of

- real-time processing of process or correlation of the time domain or the frequency domain (including spectral analysis, digital filtering or beam formation);
- (d) hydrophone arrays for ocean bottom or harbor/bay cable that fall under any of the following:
1. cable systems that incorporate hydrophones that fall under (a) or Article 9, item (i), (b), 1.;
 2. cable systems that can process by multiplexing hydrophone group signals and that fall under the following i. and ii.:
 - i. cable systems designed to be capable of use at water depths exceeding 35 meters or those having a depth sounding device that can be adjusted or removed to be used at water depths exceeding 35 meters to make the array capable of use at water depth exceeding 35 meters;
 - ii. cable systems that can be converted into a towed hydrophone array;
- (e) among signal processors reprogrammable by the user and designed for the use in ocean bottom or a harbor/ bay cable system, which are capable of real-time processing of process or correlation of the time domain or the frequency domain (include spectrum analysis, digital filtering or beam formation);
- (f) among underwater acoustic equipment having transmission functions and an operating frequency range of 30 hertz or more and 2 kilohertz or less, those with the sound pressure levels exceeding 210 decibels;
- (vii) solid optical detectors designed for space applications with the maximum sensitivity within the range exceeding 1,200 nanometers to 30,000 nanometers or less;
- (viii) pulse radar cross-section area measuring devices with pulse duration transmitted of 100 nanoseconds or less, or components thereof;
- (ix) untethered submersible vessels that fall under any of the following:
- (a) manned submersible vessels that fall under any of the following:
 1. submersible vessels designed to be capable of independent submerged travel submerged and that possess a load lifting capability of the following i. and ii.:
 - i. 10% or more of the weight-in-air of the submersible vessel;
 - ii. 15 kilonewtons or more;
 2. submersible vessels designed for the use at water depths exceeding 1,000 meters;
 3. submersible vessels that fall under the following i. and ii.:
 - i. submersible vessels designed to be capable of independent submerged travel continuously for 10 hours or more;
 - ii. submersible vessels capable of traveling submerged for a distance of 50 nautical miles or more;

- (b) unmanned submersible vessels that fall under any of the following:
 1. unmanned submersible vessels designed to automatically determine their own course over all types of seafloor terrain;
 2. unmanned submersible vessels capable of transmitting and receiving data or command by acoustic waves;
 3. unmanned submersible vessels capable of transmitting and receiving data or commands at a distance exceeding 1,000 meters by optical transmission;
- (x) sound proofing devices or magnetic bearings capable of being used for vessels whose displacement is 1,000 tons or more, and that are designed for use in transmission gears;
- (xi) ramjet engines, scramjet engines, combined cycle engines, or components thereof.

(Foreign Exchange Order, pertaining to the Appended Table)

Article 15 (1) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 2 (i) of the appended table of the Foreign Exchange Order (hereinafter referred to as "Foreign Exchange Order") falls under any of the following:

- (i) the technology pertaining to the design, manufacture or use of goods that fall under any of Article 1, item (i) through item (v), item (vi) (limited to the devices of mold processing of nuclear fuels), item (vii), item (viii), (a), item (x), (a), item (x)-2, or item (x)-3;
- (ii) of programs designed for the use of goods that fall under any of Article 1, item (viii), (b), item (xi), item (xvii), item (xviii), (b) through (f), item (xix), item (xx), item (xxi), (a) or (b), 1. or 3. or item (xxxiv) or item (xxxv), or techniques (excluding programs) pertaining to the design, manufacture, or use of those programs, those necessary to attain or exceed the functions or characteristics of those goods;
- (iii) among programs designed for the design, manufacture or use of goods that fall under Article 1, item (xiv), or technologies (excluding programs) pertaining to the design, manufacture, or use of those programs, the technology necessary to attain or exceed the functions or characteristic of those goods (excluding programs to produce part programs generating numerical-control codes which cannot directly use equipment to process types of components);
- (iv) of techniques (excluding programs) pertaining to the design, manufacture, or use of goods that fall under any of Article 1, item (viii), (b), item (ix), item (x), (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 techniques necessary to attain or exceed the functions or

- characteristics of those goods;
- (v) the technology (excluding programs) pertaining to the design, manufacture or use of goods that fall under any of Article 1, item (vi) (limited to the device for separation lithium isotopes), item (xxv), item (xxix), item (liii) or item (lix);
 - (vi) programs, or cryptographic keys or cryptographic codes designed to extend performance characteristics, or deactivate functions, of frequency changers (excluding those fall under Article 1, item (viii), (b)), so that the frequency changers will fall under Article 1, item (viii), (b);
 - (vii) programs designed to extend or release performance characteristics of frequency changers that fall under Article 1, item (viii), (b);
 - (viii) programs, or cryptographic keys or cryptographic codes designed to extend performance characteristics, or deactivate functions, of high speed cameras or components thereof (excluding those fall under Article 1, item (xliv)), so that the high speed cameras or components thereof will fall under Article 1, item (xliv);
 - (ix) programs, or cryptographic keys or cryptographic codes designed to extend performance characteristics, or deactivate functions, of high speed cameras or components thereof (limited to those fall under Article 1, item (xliv)).
- (2) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 2 (ii) of the appended table of the Foreign Exchange Order is, among those pertaining to programs that enable a device to function as numerically-controlled coordinate measuring equipment for machine tools with 5 or more axes capable of contour control or the technology (excluding programs) for design, manufacture or use of those programs, technology necessary for enabling the numerical-control of 5 or more axes capable of contour control.

Article 15-2 The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (3), (ii) of Appended Table of the Foreign Exchange Order shall be, among those pertaining to the design, manufacture or use of goods that fall under Article 2, paragraph (2) or (3), technology necessary to attain or exceed the functions or characteristics of those goods.

Article 15-3 The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 3-2 (ii) of the appended table of the Foreign Exchange Order is, among those pertaining to the design, manufacture or use of goods that fall under Article 2-2, paragraph (2), technology necessary to attain or exceed the functions or characteristics of the goods.

Article 16 (1) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 4 (i) of the appended table of the Foreign Exchange Order is, among those pertaining to the design, manufacture, or use of goods that fall under Article 3, technology that falls under any of the following and is necessary to attain or exceed the functions or characteristics of the goods:

- (i) programs designed for the use of rockets capable of transporting a payload of 500 kilograms or more over a distance of 300 kilometers or more or equipment or tools (including molds; hereinafter the same applies in this Article) for manufacturing goods that fall under Article 3, item (ii), (b) or test equipment therefor, or the components thereof, or goods that fall under any of (a), 2. or 3. of the same item, or techniques (excluding programs) pertaining to the design, manufacturing or use of those programs;
- (i)-2 programs designed to operate, maintain or inspect goods falling under any of Article 3, item (ii), (b), 4. through 6., or techniques (excluding programs) pertaining to the design, manufacture or use of those programs;
- (ii) programs designed for the use of rockets capable of carrying a payload of 500 kilograms or more a distance of 300 kilometers or more, and which can adjust the functions of two or more goods (limited to those that fall under Article 3, item (ii), (a), or (b)) or the technology (excluding programs) pertaining to the design, manufacture or use thereof;
- (iii) programs designed to design, manufacture or use equipment or tools or test equipment for manufacturing the goods that fall under Article 3, item (ii), (a) or components thereof or techniques (excluding programs) pertaining to the design, manufacture or use of those programs;
- (iv) techniques (excluding programs) pertaining to the design, manufacture or use of rockets capable of transporting 500 kilograms or more of payload over a distance of 300 kilometers or more, or equipment or tools or test equipment for manufacturing those rockets, or components thereof, or goods falling under Article 3, item (ii);
- (v) programs designed to use equipment or tools or test equipment for manufacturing goods falling under any of Article 3, item (iii), (a) through (i) or components thereof or goods falling under any of (a), (b), (g), (h) or (j) of the said item, or items (iv) through (vi), items (xvii) through (xix), item (xxi), (a), item (xxii), item (xxii)-2 or item (xxv), or techniques (excluding programs) pertaining to the design, manufacture or use of those programs;
- (v)-2 programs designed for the operation, maintenance, or inspection of goods that fall under Article 3, item (xi), or technologies (excluding programs) pertaining to the design, manufacture, or use of such programs;
- (vi) the technology (excluding programs) pertaining to the design, manufacture or use of rockets or unmanned aircraft that are capable of carrying a payload over a distance of 300 kilometers or more (excluding those capable of

- carrying a payload of 500 kilograms or more) or the goods that fall under any of Article 3, items (iii) through (vi) or items (vii) through (xxvii);
- (vii) the technology (excluding programs) pertaining to programs designed for the design of the goods that fall under Article 3, item (iii), (b), (c), (e) or (f), or item (iv), or the design, manufacture, or use of those programs;
- (viii) programs designed for the operation, maintenance, or inspection of goods that fall under any of Article 3, item (viii) through item (x)-2;
- (ix) programs designed for the design, manufacture, or use of goods that fall under any of Article 3, item (xiii) through item (xv) or item (xxvi) or technology (excluding programs) pertaining to the design, manufacture, or use of those programs;
- (x) programs designed for the design or manufacture of goods that fall under Article 3, item (xvii), (a) or (f) or item (xvii)-2 or technology (excluding programs) pertaining to the design, manufacture, or use of those programs;
- (xi) programs designed for the design of rockets capable of carrying a payload over a distance of 300 kilometers or more, or goods that fall under Article 3, item (ii), (a) or goods that fall under (b) of the same item, or technology (excluding programs) for the design, manufacture, or use of those programs;
- (xii) programs designed to use rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more (including those designed or altered to operate a manned aircraft as an unmanned one in the case of programs designed to use unmanned aircraft) which are capable of regulating functions of two or more goods (limited to those falling under Article 3, item (ii), (a) or (b)) (excluding those falling under item (ii));
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (4), (ii) of Appendix Table of the Foreign Exchange Order shall be techniques pertaining to the design of the avionics device for rockets or parts thereof and 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 as referred to in row (4), (iii) of Appended Table of the Foreign Exchange Order shall fall under any of the following:
- (i) techniques (excluding programs) for integrating an airframe, a propulsion unit, and lift controlling surfaces to optimize the aerodynamic performance of an unmanned aircraft in flight capable of transporting a payload over a distance of 300 kilometers or more;
- (ii) techniques (excluding programs) that integrates data pertaining to flight control, guidance or propulsion into the flight control device, in order to optimize the flight path 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 programs that can be used for rockets or unmanned aircraft capable of transporting a payload over a distance of 300 kilometers or more) or techniques (excluding programs) pertaining to the design, manufacture, or use of those programs.

- (4) The technology specified by the Order of Ministry of Economy, Trade and Industry in row 4 (iv) of the appended table of the Foreign Exchange Order is technology pertaining to the use of autoclaves, and the data or procedures to provide for the environment inside the autoclaves (limited to those that use goods that fall under Article 3, item (xvi)).
- (5) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 4 (v) of the appended table of the Foreign Exchange Order is technology used to fix onto substrates substances formed by thermal decomposition of raw gas (limited to execution within the temperature range from 1,300 degrees centigrade to 2,900 degrees centigrade inclusive and the range of absolute pressure from 130 pascals to 20,000 pascals inclusive).

Article 17 (1) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 5 (i) of the appended table of the Foreign Exchange Order falls under any of the following:

- (i) programs designed for the design or manufacture of items that fall under any of Article 4, item (iv) through item (vi);
 - (ii) techniques (excluding programs) necessary for the design or manufacture of items that fall under Article 4, item (xii), (c) or (d) or item (xv), (c) or (d);
 - (iii) techniques (excluding programs) necessary for the design or manufacture of items that fall under any of Article 4, items (ii) through (xvi) (excluding those falling under the preceding item).
- (2) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 5 (ii) of the appended table of the Foreign Exchange Order falls under any of the following:
 - (i) programs designed to use an item that falls under any of Article 4, item (iv) through item (vi);
 - (ii) techniques (excluding programs) pertaining to the use of an item that falls under Article 4, item (ii) or item (xii), (c) or (d) or Article 14, item (i) (limited to those pertaining to repairs).
 - (3) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (5), (iii) of Appended Table of Foreign Exchange Order shall be techniques (excluding programs) pertaining to the design or manufacture of ceramic powder or ceramics (excluding composites) that fall under any of the following:
 - (i) ceramic powder which falls under all of (a) through (c) below:

- (a) ceramic materials consisting of any of the following:
 - 1. single or composite oxides of zirconium and silicon or aluminum composite oxides;
 - 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) items in which the ratio of the content of metal impurities as a part of the total weight is less than following numeric values:
 - 1. 0.1% with respect to single oxides or single carbides;
 - 2. 0.5% with respect to composite compounds or single nitrides;
- (c) ceramic materials that fall under any of the following:
 - 1. among zirconium oxides, having particles the diameter of which is 1 micrometer or less, and wherein the total weight of particles exceeding 5 micrometers in diameter is 10% or less of total weight;
 - 2. those having particles the average diameter of which is 5 micrometers or less and wherein the total particle weight of particles exceeding 10 micrometers in diameter is 10% or less of total weight (excluding those that fall under 1.);
- (ii) ceramic made of substances in the preceding item (excluding grinding materials).
- (4) The technology specified by the 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) pertaining to the design or manufacture of polybenzothiazole or polybenzoxazole.
- (5) The technology specified by the 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) pertaining to the design or manufacture of rubber-like fluorine compounds including vinyl ether monomers.
- (6) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (5), (vii) of Appended Table of the Foreign Exchange Order shall fall under any of the following:
 - (i) programs for designing items falling under Article 4, item (xii), (c) or (d), item (xv), (c) or (d), or Article 14, item (i);
 - (ii) programs for designing composite materials whose matrix is organic matter, metal 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 Appended Table of the Foreign Exchange Order shall be techniques (excluding programs) pertaining to the use of radio wave absorbers or conductive polymers that fall under Article 14, item (ii) (limited to those pertaining to installation, maintenance or repair).

- Article 18 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (6), (i) of Appended Table of the Foreign Exchange Order shall fall under any of the following:
- (i) techniques (excluding programs) necessary for the design or manufacture of items that fall under any of the following:
 - (a) items which fall under any of Article 5, item (ii), (a) or (b), 1. or 2. of the said item for which the repeatability in unidirectional positioning of at least one straight axes is 0.0009 millimeters or less; or
 - (b) items which fall under any of Article 5, item (ii), (b), 3. or (d) or item (iii) or (v);
 - (ii) beyond what is set forth in the preceding item, techniques (excluding programs) necessary for the design or manufacture of the goods that fall under Article 5;
 - (iii) programs designed to design or manufacture items falling under any of the following, or techniques (excluding programs) necessary for designing those programs:
 - (a) items which fall under any of Article 5, item (ii), (a) or (b), 1. or 2. of the said item for which the repeatability in unidirectional positioning of at least one straight axes is 0.0009 millimeters or less; or
 - (b) items which fall under any of Article 5, item (ii), (b), 3. or (d) or item (iii) or (v);
 - (iv) beyond what is listed in the preceding item, programs designed for the design or manufacture of goods that fall under Article 5, or the technology (excluding programs) necessary for the design of those programs.
- (2) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 6 (ii) of the appended table of the Foreign Exchange Order is those which fall under any of the following:
- (i) programs designed for the use of those which fall under any of Article 5, item (i), (c), item (ii), item (iii), or item (v) through item (xi);
 - (ii) programs designed or modified to operate those which fall under Article 5, item (iv) which, in order to process workpieces into any shapes, convert optical design, sizes of workpieces, and material removal functions to numerical controlling commands;
 - (iii) technology (excluding programs) required for design of programs listed in the preceding two items.
- (3) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 6 (iii) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) programs that enable a device to function as numerically-controlled coordinate measuring equipment with 5 or more axes capable of controlling contour or the technology (excluding programs) necessary for the design of

- those programs;
- (ii) deleted;
 - (iii) deleted;
 - (iv) the technology (excluding programs) pertaining to the design of programs that integrate into the numerically-controlled coordinate measuring equipment an expert system that supports decision-making;
 - (v) the technology (excluding programs) for non-electronic substrates pertaining to the coating method listed in column 2 of the appended table 3 and the coatings listed in column 4 of the same table and executed in respect to substrates listed in column 3 in the same table.
- (4) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 6 (iv) of the appended table of the Foreign Exchange Order is the technology (excluding programs) pertaining to the design of tools (including molds) for processing metals by super-plastic molding, diffusion bonding or direct pressure hydraulic press.
- (5) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 6 (v) of the appended table is technology (excluding programs) pertaining to the design or manufacture of hydraulic stretch molding devices (including the mold thereof) for manufacture of aircraft materials.

Article 19 (1) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 7 (i) of the appended table of the Foreign Exchange Order falls under any of the following:

- (i) the technology (excluding programs) necessary for the design or manufacture of items that fall under Article 6, item (ii), (c), 1., v. or vi, 2., iii., (d), 1., v. or vi., 2., iii. or iv., or item (xvi), (b);
- (ii) the technology (excluding programs) necessary for the design or manufacture of items that fall under Article 6 (excluding those falling under item (ii), (c), 1., v., or vi., 2., iii, (d), 1., v. or vi., 2. iii. or iv., or item (xvi), (b) of the same Article), and do not fall under any of the following:
 - (a) the technology necessary for manufacturing items that fall under item (xvi)-2 of the same Article;
 - (b) the technology necessary for design or manufacture of integrated circuits that fall under any of item (i), (c) through (k) of the said Article and that fall under 1. and 2. below:
 1. integrated circuits whose minimum line width is 0.130 micrometers or more; and
 2. integrated circuits that possess 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 in which a function or technique relating to goods falling under any of items (i)

- through (viii)-4 of the said Article is implemented);
- (iii) programs designed for the design or manufacture of circuits that fall under Article 6, item (xvi), (b);
 - (iv) programs designed for the design of integrated circuits that fall under Article 6, item (xvi)-2;
 - (v) programs designed for the design or manufacture of integrated circuits 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 the same Article).
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row 7 (ii) of the Appended Table to the Foreign Exchange Order shall be programs designed for the use of items that fall under any of Article 6, item (xvii), (a), (b), (e), (f) or (j).
- (3) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 7 (iii) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) Computational lithography programs specifically designed to design patterns for masks or reticles for equipment used to manufacture integrated circuits using extreme ultraviolet light;
 - (ii) the technology (excluding programs) pertaining to the design or manufacture of substrates of integrated circuits whose insulators are made of silicon dioxide and that have silicon-on-insulator structure;
 - (iii) techniques (excluding programs) necessary for designing or manufacturing the cores of microprocessors, microcomputers or microcontrollers the bit count of the access width of whose logic operation unit is 32 or more and which fall under any of the following
 - (a) vector processor unit designed to simultaneously perform more than two calculations on floating-point vectors;
 - (b) those designed to perform more than four 64 bit or larger floating-point operation results per cycle;
 - (c) those designed to perform more than eight 16 bit fixed-point multiply-accumulate results per cycle;
 - (iv) programs specifically designed to restore microcomputers or microprocessors to a normal status within 1 millisecond from an interruption due to electromagnetic pulses or electrostatic discharge without losing operational continuity.
 - (v) Of the technologies for slicing, grinding, and polishing the surface of a silicon wafer with a diameter of 300 mm and an exclusion area of the periphery of the wafer of 2 mm or less, the technologies necessary to achieve a flatness of 20 nanometers or less in any area divided into rectangles with a length of 26 mm and a width of 8 mm (excluding programs);
 - (vi) ECAD programs specifically 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:

- (a) programs specifically designed for implementing the register transfer level (RTL) for GDSII or equivalent database file;
 - (b) programs specifically designed for optimizing power consumption for data processing in the integrated circuit to be designed or the time required for data transfer.
- (4) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (7), (iv) of Appended Table of the Foreign Exchange Order shall be technology (excluding programs) pertaining to the design or manufacture of electronic elements using superconductive materials.
- (5) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 7 (v) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) Deleted;
 - (ii) the technology (excluding programs) pertaining to the design or manufacture of vacuum microelectronics devices;
 - (iii) the technology (excluding programs) pertaining to the design or manufacture of hetero-junction microchips (excluding high electron mobility transistors or hetero-junction bipolar transistors whose operating frequency is less than 31.8 gigahertz);
 - (iv) the technology (excluding programs) pertaining to the design or manufacture of substrates used as components of electronic devices that use diamond, silicon carbide or gallium oxide;
 - (v) techniques (excluding programs) pertaining to the design or manufacture of vacuum electronic devices (including klystrons and traveling wave tubes and derivatives thereof) whose operating frequency is 31.8 gigahertz or more.

Article 20 (1) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row 8 (i) of the Appended Table to the Foreign Exchange Order shall fall under any of the following (except for techniques falling under items (i) through (vi) (excluding programs) and relating to disclosure of security vulnerability or response to cyber attacks):

- (i) techniques (excluding programs) necessary for the design or manufacture of items falling under Article 7, item (i), (b) or item (iii), (b) of the said Article;
- (ii) beyond what is listed in the preceding item, technology (excluding programs) necessary for the design or manufacture of goods that fall under the items of Article 7;
- (iii) programs designed for the design or manufacture of items falling under Article 7, item (i), (b) or item (iii), (b) of the said Article or techniques (excluding programs) necessary for the design or manufacture of those

- programs;
 - (iv) the technology (excluding programs) necessary for the use of the programs in the preceding item;
 - (v) beyond what is listed in item (iii), programs designed for the design or manufacture of goods that fall under the items of Article 7, or technology (excluding programs) necessary for the design, manufacture, or use of those programs;
 - (vi) the technology (excluding programs) necessary for the use of items falling under Article 7;
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row 8 (ii) of the appended table of Appended Table to the Foreign Exchange Order shall fall under any of the following (except for techniques falling under items (iii) through (vii) (excluding programs) and relating to disclosure of security vulnerability or response to cyber attacks):
- (i) techniques (excluding programs) necessary for the design or manufacture of digital computers that fall under any of the following:
 - (a) those whose adjusted peak performance is over 15 weighted teraFLOPS and not more than 16 weighted teraFLOPS; or
 - (b) those whose adjusted peak performance is over 16 weighted teraFLOPS and not more than 70 weighted teraFLOPS;
 - (ii) techniques (excluding programs) necessary for the design or manufacture of components which are designed to improve the functions of digital computers and fall into the category of items that, by aggregating calculation elements, achieve an adjusted peak performance of over 15 weighted teraFLOPS and not more than 70 weighted teraFLOPS;
 - (iii) programs designed to design or manufacture digital computers falling under any of the following, or techniques (excluding programs) necessary for designing or manufacturing those programs:
 - (a) those whose adjusted peak performance is over 15 weighted teraFLOPS and not more than 16 weighted teraFLOPS; or
 - (b) those whose adjusted peak performance is over 16 weighted teraFLOPS and not more than 70 weighted teraFLOPS;
 - (iv) techniques (excluding programs) necessary for the use of the programs in the preceding item;
 - (v) programs designed for the design or manufacture of components which are designed to improve the functions of digital computers and, by aggregating calculation elements, achieve an adjusted peak performance of over 15 weighted teraFLOPS and not more than 70 weighted teraFLOPS or techniques (excluding programs) necessary for the design, manufacture or use of those programs;
 - (vi) programs designed or altered to create, command and control or distribute

hacking programs (excluding, of those which are specifically designed to update or improve a program and work only when they gain permission from the owner or administrator of the system that receives the program, those designed not to alter the program so updated or improved to the program falling under this item or a hacking program) or techniques (excluding programs) necessary for designing, manufacturing or using those programs;
(vii) techniques (excluding programs) necessary for the design of intrusion programs;

Article 21 (1) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 9 (i) of the appended table of the Foreign Exchange Order falls under any of the following:

- (i) the technology (excluding programs) necessary for the design or manufacture of items that fall under Article 8, item (ii), (a), 2.;
- (ii) techniques necessary for the design or manufacture of items falling under any of Article 8, item (i), item (ii) or items (iv) through (v)-5 (excluding programs and items falling under the preceding item);
- (ii)-2 techniques (excluding programs) necessary for the design or manufacture of items falling under any of Article 8, items (ix) through (xii) (excluding those falling under item (xi), (b) of that Article);
- (iii) techniques (excluding programs) necessary for the use of items falling under any of Article 8, items (ix) through (xii) (excluding those falling under item (xi), (b) of that Article);
- (iv) technology (excluding programs) necessary for the use (excluding those pertaining to operations) of items that fall under any of Article 8, item (i), item (ii), or items (iv) through (v)-5;
- (v) programs designed for the design or manufacture of items that fall under Article 8, item (ii), (a), 2.;
- (vi) programs designed or modified for the design or manufacture of items that fall under any of Article 8, item (i), item (ii), or items (iv) through (v)-5 (excluding those falling under the preceding item);
- (vii) programs designed or modified for the design or manufacture of items that fall under any of Article 8, items (ix) through (xi) (a) or item (ix) of this paragraph;
- (vii)-2 programs designed or modified for the purpose of designing or manufacturing items that fall under Article 8, item (xi), (b) or item (ix)-2 of this paragraph;
- (viii) programs designed or modified for the use of items that fall under any of Article 8, item (i), item (ii), or items (iv) through (v)-5;
- (viii)-2 programs designed or modified for the use of items that fall under any of Article 8, items (ix) through (xi), (a) or any item of item, (ix) of this

- paragraph;
- (viii)-3 programs designed or modified for the purpose of uses that fall under Article 8, item (xi), (b) or item (ix)-2 of this paragraph;
 - (ix) programs which have functions equivalent to those of goods falling under any of Article 8, item (ix), (a) or (c) through (e) or item (x) or (xi), (a), those which are for realizing those functions, or those which are capable of simulating the functions (excluding, of those which use only open or commercial cryptographic standards, those whose functions are limited to those relating to operation, management or maintenance in the case of goods pertaining to Article 8, item (ix), (a) or (c) through (e));
 - (ix)-2 programs that have functions equivalent to those of goods falling under Article 8, item (xi), (b) that are designed to realize such functions or that are capable of simulating said functions (excluding intrusion programs);
 - (x) deleted;
 - (xi) the technology (excluding programs) necessary for the design or manufacture of the programs in item (v);
 - (xi)-2 the technology (excluding programs) necessary for the use of the program in item (v) (excluding those pertaining to operations);
 - (xii) techniques (excluding programs) necessary for the design or manufacture of the programs referred to in item (vii), (viii)-2 or (ix);
 - (xii)-2 techniques (excluding programs) necessary for the use of the programs as referred to in item (vii), (viii)-2 or (ix);
 - (xiii) the technology (excluding programs) necessary for the design, manufacture or use (excluding those that pertains to operations) of the programs in item (vi) or item (viii);
 - (xiv) deleted;
 - (xv) deleted;
 - (xvi) techniques (excluding programs) having a function falling under Article 8, item (ix), (b) which activate a cryptographic function of certain goods or programs only by using means of cryptographic function activation;
 - (xvii) programs having a function falling under Article 8, item (ix), (b) which activate a cryptographic function of certain goods or programs only by using means of cryptographic function activation;
- (2) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 9 (ii) of the appended table of the Foreign Exchange Order falls under any of the following:
- (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), item (iv) through item (vii) or item (viii)-2;
 - (iii) deleted;

- (iii)-2 programs for the design of transmission communication devices or electronic interchanging devices that fall under (a); (b), 1. or 5.; (c) or (d), 1., or the technology (excluding programs) necessary for the design or manufacture of those falling under any of the following:
 - (a) deleted;
 - (b) equipment using laser oscillators that falls under any of the following:
 - 1. those which utilize laser light having a wavelength exceeding 1,750 nanometers;
 - 2. deleted;
 - 3. deleted;
 - 4. those that use light wavelength multiplex technology and wherein the spacing 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 having an optical switching function and an optical signal switching time of less than 1 millisecond;
 - (d) wireless transmitters or wireless receivers that fall under any of the following:
 - 1. wireless transmitters or wireless receivers that use quadrature amplitude modulation technique that exceeds the value of 1,024;
 - 2. wireless transmitters or wireless receivers that can be used at frequencies that exceed 31.8 gigahertz (excluding frequency bands allocated for wireless communication by the International Telecommunication Union (excluding the frequency bands allocated for radio determinations));
 - 3. among wireless transmitters or wireless receivers that can be used within a frequency range of 1.5 megahertz or more and 87.5 megahertz or less and are incorporating adaptive techniques for the suppression of an interfering signal, those designed to suppress an interfering signal by decibels exceeding 15;
 - (e) deleted;
 - (f) those exclusively designed for use in mobile bodies, which fall under the following 1. and 2.:
 - 1. those that can be used at an optical wavelength of 200 nanometers or more and 400 nanometers or less;
 - 2. those used in local area networks;
- (iv) deleted;
- (v) the technology (excluding programs) necessary for the design or manufacture of transmission communication devices designed to be mounted on satellites;

- (vi) technology (excluding programs) pertaining to the design or use of communication technology that uses lasers and receives or tracks signals automatically and is also capable of communicating outside the atmosphere or under water;
 - (vii) deleted;
 - (viii) deleted;
 - (ix) deleted;
 - (x) deleted;
 - (xi) the technology (excluding programs) pertaining to the design of the wireless base station receiver used for digital cellular wireless communication and signal reception functions of which is capable of modifying in order to enable multiband, multiple channels, multimode, multi-coding algorithms or multiprotocol operation by switching programs;
 - (xii) deleted;
 - (xiii) deleted;
 - (xiv) the technology (excluding programs) pertaining to the design of transmission communication devices and to the design of spread spectrum (including frequency hopping);
 - (xi) programs specifically designed or modified to perform surveillance or analysis by law enforcement which realizes the functions in (a) or (b) below (excluding programs specifically designed or modified to fall under paragraph (1), item (v), item (vi), or item (viii), item (ii) of this paragraph, or any of (c) through (g) of this item);
 - (a) programs that perform searches based on a hard selector for communication content or metadata obtained from a communications service provider using a handover interface;
 - (b) programs that analyze human networks or tracking the movements of targeted individuals based on the content of communications, metadata, or a search specified in (a);
 - (c) billing purposes;
 - (d) network service quality control (QoS);
 - (e) user quality of experience (QoE);
 - (f) intermediary devices; or
 - (g) mobile payment of banking operations;
 - (xvi) technology (excluding programs) necessary to design, produce or use the programs specified in (xv) (excluding those relating to operation).
- (3) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row 9 (iii) of Appended Table to the Foreign Exchange Order shall be techniques (excluding programs) necessary for the design or manufacture of monolithic microwave integrated circuit amplifiers which are designed for communication and fall under any of the following:

- (i) among microwave monolithic integrated circuit power amplifiers with an operating frequency exceeding 2.7 gigahertz and 6.8 gigahertz or less for which the value of the instantaneous bandwidth divided by the center frequency exceeds 15%, those which fall under any of the following:
 - (a) those with an operating frequency exceeding 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 exceeding 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 exceeding 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 exceeding 3.7 gigahertz and 6.8 gigahertz or less with a peak saturation output value exceeding 20 watts (43 dBm);
- (ii) among microwave monolithic integrated circuit power amplifiers with an operating frequency exceeding 6.8 gigahertz and 16 gigahertz or less for which the value of the instantaneous bandwidth divided by the center frequency exceeds 10%, those which fall under any of the following:
 - (a) amplifiers with an operating frequency of over 6.8 gigahertz and 8.5 gigahertz or less and with a peak saturation output value exceeding 10 watts (40 dBm);
 - (b) those with an operating frequency exceeding 8.5 gigahertz and 16 gigahertz or less with a peak saturation output value exceeding 5 watts (37 dBm);
- (iii) among microwave monolithic integrated circuit power amplifiers with an operating frequency exceeding 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) microwave monolithic integrated circuit power amplifiers with an operating frequency exceeding 31.8 gigahertz and 37 gigahertz or less with a peak saturation output value exceeding 0.1 nanowatts (-70 dBm);
- (v) among microwave monolithic integrated circuit power amplifiers with an operating frequency exceeding 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) microwave monolithic integrated circuit power amplifiers with an operating frequency exceeding 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) microwave monolithic integrated circuit power amplifiers with an operating frequency exceeding 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) microwave monolithic integrated circuit power amplifiers with an operating frequency exceeding 90 gigahertz with a peak saturation output value exceeding 0.1 nanowatts (-70 dBm).
- (4) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 9 (iv) of the appended table of the Foreign Exchange Order is the technology (excluding programs) necessary for the design or manufacture of telecommunications equipment using superconductive materials that is designed to be capable of being used at temperatures below the critical temperature of the superconductive material used, and that falls under any of the following:
- (i) those having current switching for digital circuits using superconductive gates with a value obtained by multiplying the delay time per gate by the power dissipation per gate being less than 100,000,000,000 millijoules;
 - (ii) those having a frequency separation function and resonant circuits with Q-values exceeding 10,000.

Article 22 (1) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 10 (i) of the appended table of the Foreign Exchange Order falls under any of the following:

- (i) the technology (excluding programs) necessary for the design of items that fall under Article 9;
- (ii) the technology (excluding programs) necessary for the manufacture of items that fall under Article 9, item (i), (a), 2. or 6. or (b), 3., item (iii), (a), (b) or (e), item (iv), item (v), (a), item (viii), (a), 1., i. or 2., i. or 3., item (ix), (c) or (d), item (xi), (a), (b), (l) or (m), item (xi)-2, (a), or item (xiii), (d), (h) or (k);
- (iii) the technology (excluding programs) necessary for manufacture of items that fall under Article 9 (excluding those falling under the preceding item);
- (iv) programs designed for the design or manufacture of items that fall under Article 9, item (ix), (c) or (d) or item (xiii), (d), (h) or (k) or technology (excluding programs) necessary for the design of those programs;
- (v) programs designed for the design or manufacture of items that fall under Article 9, item (ix) through item (x)-2 or item (xiii) (excluding those falling under the preceding item);

- (vi) the technology (excluding programs) necessary for the design of the programs of the preceding item;
 - (vii) programs designed or modified for cameras incorporating focal plane arrays falling under Article 9, item (iii), (d), 1. ii. or (e), 2., and designed or modified to remove the frame rate restriction of the camera and allow the camera to have its maximum frame rate exceed 9 hertz.
- (2) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 10 (ii) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) programs designed for the use of items that fall under Article 9, item (iv) or Article 13 or Article 14, item (viii);
 - (ii) the technology (excluding programs) necessary for the design of the programs in the preceding item;
 - (iii) programs that fall under any of the following:
 - (a) programs for magnetometer, underwater electric field sensor or magnetic field gradiometer calibrating equipment and designed to be mounted on vehicles, vessels, aircraft or satellites or other spacecraft for space development;
 - (b) programs designed to detect abnormalities in the magnetic or underwater electric field on vehicles, vessels, aircraft, satellites or other spacecraft for space development;
 - (c) programs designed to compensate for the impact of movement on gravimeters or gravity gradiometer;
 - (d) programs used for air traffic control that are capable of accepting target data from five or more primary radars;
 - (e) programs or source code designed to achieve real time processing of data pertaining to magnetic or electric fields by utilizing those falling under Article 9, item (xi)-2;
 - (iv) the technology (excluding programs) necessary for the design of the programs in the preceding item.
- (3) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 10 (iii) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) technology (excluding programs) necessary for the manufacture, among optical coatings, the diameter or long axis length of which is 500 millimeters or more and the loss due to absorption and scatter of which is less than 0.005, those having a uniformity of the optical coating thickness of 99.5% or more;
 - (ii) techniques (excluding programs) pertaining to lathe turning using single point diamond tools and for finishing such that the root-mean-square of surface precision for curved surface areas exceeding 0.5 square meters is less than 10 nanometers.

- (iii) programs designed to maintain the angles and phases of a reflecting mirror system consisting of multiple reflecting mirrors whose diameter or the length of whose major axis is 1 meter or more;
- (4) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 10 (iv) of the appended table Foreign Exchange Order is technology (excluding programs) necessary for the design, manufacture or use of test equipment for extra high output laser oscillators.
- (5) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 10 (vi) of the appended table of the Foreign Exchange Order falls under any of the following:
 - (i) programs for manufacturing radomes that fall under following (a) and (b):
 - (a) radomes designed to protect array antennas capable of electronical scanning;
 - (b) radomes that produce antenna patterns with the output ratio of main beam peak value to average side lobes exceeding 40 decibels;
 - (ii) the technology (excluding programs) necessary for the design of the programs of the preceding item.
- (6) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 10 (vii) of the appended table of the Foreign Exchange Order is technology necessary for the design, manufacture or use of devices to perform tests of the 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 the Order of the Ministry of Economy, Trade and Industry in row 11 (i) of the appended table of the Foreign Exchange Order falls under any of the following:

- (i) the technology (excluding programs) necessary for the design or manufacture of items that fall under Article 10;
- (ii) programs designed for the design or manufacture of items that fall under Article 10;
- (iii) the technology (excluding programs) necessary for the design of the programs in the preceding item.
- (2) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 11 (ii) of the appended table of the Foreign Exchange Order falls under any of the following:
 - (i) programs for using (limited to those pertaining to operation or maintenance (inspection)) an attitude direction reference system (excluding those using the gimbal method), inertial navigation systems, and other inertial systems (limited to those with source code) or technology (excluding programs) necessary for the design of those programs;
 - (ii) technology (excluding programs) necessary for the use of items that fall

- under any of Article 10, items (i) through (iv) (limited to those pertaining to repairs or overhauls);
 - (iii) the technology (excluding programs) pertaining to the design of 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 the Order of the Ministry of Economy, Trade and Industry in row 11 (iv) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) programs which are for items that fall under any of the following (limited to those which are source codes) and which use techniques (excluding programs) pertaining to the design of an item falling under any of item (ii), (a) through (d) or item (iii), (a) through (d), (g) or (h):
 - (a) digital air traffic controllers for controlling the entire air flight route;
 - (b) equipment to integrate propulsion control and flight control;
 - (c) fly-by-wire systems or fly-by-light systems;
 - (d) active flight controllers having a fault tolerance function or a self-reconfiguring function;
 - (e) air data equipment that uses the static data of airframe surface as a reference;
 - (f) three-dimensional displays;
 - (ii) the technology (excluding programs) pertaining to the design or manufacture of items that fall under any of the following:
 - (a) air data equipment that uses static data on the airframe surface as a reference;
 - (b) three-dimensional display for aircraft;
 - (c) electric actuators designed for flight control;
 - (d) flight control optical sensor array designed for conducting active flight control;
 - (e) among data-based referenced navigation systems designed to be capable of being used in underwater navigation, those using a sonar or gravity database providing a positioning accuracy of 0.4 nautical miles or less;
 - (iii) the technology pertaining to the design of active flight controllers that falls under any of the following:
 - (a) techniques (excluding programs) pertaining to optical communication for detection of the operation status of aircraft airframes or flight controller system equipment, transmission of flight control data, or instruction to actuators on operation which are necessary for designing active flight controllers for fly-by-light systems;
 - (b) real-time algorithm to analyze information obtained from sensors of components of active flight controllers for forecasting, and mitigating the

- degree of, performance deterioration and failures thereof;
- (c) real-time algorithm to identify failures of equipment for mitigating the degree of performance deterioration and failures of active flight controllers, and reconfigure force and moment control;
 - (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 techniques that fall under any of (a) through (d), (g) or (h);
 - (f) techniques (excluding programs) necessary for the design of the programs referred to in (e);
 - (g) techniques (excluding programs) which are necessary to attain the functional requirements for fly-by-wire systems and which fall under 1. and 2. below:
 - 1. interior loop body control which requires closed loop control frequencies of 40 hertz or more;
 - 2. devices which fall under any of the following:
 - i. those which are capable of correcting the unstableness of an airframe that is to lose the righting controlling force, if it is not corrected within 0.5 seconds, within flight envelopes;
 - ii. those which combine control of two or more shafts in correcting abnormal changes in airframe conditions;
 - iii. those which perform the functions specified in (d) (excluding autopilot); or
 - iv. techniques for making the airframe fly in a stable and controlled way at an angle of attack of 18 degrees or more, an angle of slideslip 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 (except at takeoff and landing);
 - (h) techniques (excluding programs) which are necessary for attaining the functional requirements for fly-by-wire systems and which are for attaining the conditions referred to in 1. and 2. below:
 - 1. a condition in which control of the airframe is not lost even if trouble occurs consecutively in any two parts in a fly-by-wire system; and
 - 2. a condition in which a probability that control of the airframe will be lost is not more than one-billionth of the failure rate per flying hours;
 - (iv) the technology (excluding programs) pertaining to devices for helicopters that falls under any of the following or a CAD programs designed for items that fall under (a) or (b):
 - (a) multiaxial fly-by-wire systems or fly-by-light systems which integrate two or more of the functions falling under the following:

1. collective control function;
 2. cyclic control function;
 3. yaw control function;
- (b) devices that control counter torque or direction and by a means of a circulation control method;
- (c) rotors that use blades of variable shape in order to control each aerofoil blade separately;
- (v) the technology (excluding programs) necessary for the design of the programs of the preceding item.

Article 24 (1) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 12 (i) of the appended table of the Foreign Exchange Order falls under any of the following:

- (i) the technology necessary for the design or manufacture of items that fall under Article 11, item (i)-2, item (iv), (b), item (vi), item (viii) or item (x), (f) or (g);
- (ii) the technology necessary for the design or manufacture of items that fall under Article 11 (excluding those falling under the preceding item).
- (iii) techniques (excluding programs) necessary for designing or manufacturing air cushion vehicles, hydrofoil boats or vessels designed to reduce wave resistance by reducing the waterplane area which fall under any of the following:
 - (a) skirt-shaped air cushion vehicles (limited to those with a flexible skirt fixed to the whole circumference of the hull) which fall under all of the following:
 1. vehicles which are designed so that the maximum value of speed will exceed 30 knots with a full load when the significant wave height is 1.25 meters or more;
 2. vehicles the pressure of whose cushion exceeds 3,830 pascals; and
 3. vehicles for which the ratio of light load displacement to full load displacement is less than 70 percent;
 - (b) side-wall-type air cushion vehicles the maximum value of whose speed exceeds 40 knots with a full load when significant wave height is 3.25 meters or more;
 - (c) of hydrofoil boats which are designed so that the maximum value of their speed is 40 knots or more with a full load when significant wave height is 3.25 meters or more, those which have a device for automatically controlling their hydrofoil by measuring the rock of the hull, wave conditions and other data; or
 - (d) vessels which are designed to reduce wave resistance by reducing the area of waterplane area and which fall under any of the following:

1. vessels whose full load displacement exceeds 500 tons and which are designed so that the maximum value of speed will exceed 35 knots with a full load when significant wave height is 3.25 meters or more;
 2. vessels whose full load displacement exceeds 1,500 tons and which are designed so that the maximum value of speed will exceed 25 knots with a full load when significant wave height is 4 meters or more;
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (12), (ii) of Appended Table of the Foreign Exchange Order shall be programs designed to use the goods that fall under Article 11 or Article 14, item (ix) or (x) or techniques (excluding programs) relating to the use (limited to that pertaining to repair or overhauls) of goods that fall under any of Article 11, item (i), item (i)-2, item (ii), item (iv), (b) or (c), item (viii) or (x) or Article 14, item (ix) or item (x).
- (3) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 12 (iii) of the appended table of the Foreign Exchange Order is technology pertaining to the design or manufacture or use (limited to those pertaining to repairs or overhauls) of propellers designed for reducing underwater noise.

Article 25 (1) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 13 (i) of the appended table of the Foreign Exchange Order falls under any of the following:

- (i) the technology (excluding programs) necessary for the design of items that fall under any of Article 12, item (i), (b), and items (iv) through (xx);
 - (i)-2 the technology (excluding programs) necessary for the manufacture of items that fall under any of Article 12, item (i), (b), items (iv) through (x), or items (xi) through (xx);
 - (ii) programs designed for the design or manufacture of items that fall under Article 12, item (xi), (b);
 - (iii) the technology (excluding programs) necessary for the design of the programs of the preceding item;
 - (iv) programs designed for the design or manufacture of items that fall under Article 12 (excluding those falling under item (ii));
 - (v) the technology (excluding programs) necessary for the design of the programs in the preceding item.
- (2) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 13 (ii) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) programs into which the technique (excluding programs) falling under paragraph (3), item (iii) is incorporated and which are used for full authority digital engine control systems for goods falling under Article 12;

- (ii) techniques (excluding programs) necessary for the design of the programs referred to in the preceding item;
- (iii) programs that fall under any of the following:
 - (a) programs for two dimensional or three dimensional viscous flows verified by the data of wind tunnel tests or flight tests and that model the flow inside engines;
 - (b) programs for testing gas turbine engines for aircraft or assemblies or components thereof which fall under 1. and 2. below (excluding those for operating test equipment, for securing safety for workers or for acceptance testing in manufacture, repair or maintenance (which means testing to decide whether products are assembled or repaired appropriately)):
 - 1. programs specifically designed to test items that fall under any of the following:
 - i. gas turbine engines for aircraft or assemblies or components thereof for which the technique falling under any of item (ii), (a) through (g) or (j) or (l) of the following paragraph, item (iii) or (iv) of the said paragraph or Article 27, paragraph (6), item (i) are used;
 - ii. multistage compressors which provide bypass flow channels or core flow channels and are specifically designed for gas turbine engines for aircraft for which the technique falling under any of item (ii), (a) through (g) or (j) or (l) of the following paragraph, item (iii) of the said paragraph or Article 27, paragraph (6), item (i) are used;
 - 2. programs specifically designed to perform the functions referred to in i. and ii. below:
 - i. gathering and processing of data in real time;
 - ii. feedback control of test articles or test conditions during a test;
 - (c) program used for goods falling under Article 12, item (xi), (a) or (c) and designed to control the growth of unidirectional solidification materials or single crystal materials;
 - (d) deleted;
 - (e) programs designed to be used in the items falling under Article 12, item (x)-2 (limited to those pertaining to operation);
 - (f) programs designed to design the internal cooling passages of aero gas turbine blades, vanes or tip shrouds;
 - (g) programs falling under the following 1. and 2.:
 - 1. programs designed to predict the thermal state, aerodynamic state or fired conditions of air in gas turbine engines for aircrafts;
 - 2. programs for theoretical model prediction of the thermal state, aerodynamic state or fired conditions of air based on actual performance data on gas turbine engines for aircrafts;
- (iv) the technology (excluding programs) necessary for the design of the

- programs in the preceding item.
- (v) programs designed or altered to use the items falling under Article 12, item (iv), (e) or item (iv)-3 of the said Article (limited to the use pertaining to operation).
- (3) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 13 (iii) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) the technology (excluding programs) pertaining to use of gas turbine engines or components thereof that fall under any of Article 12, item (i), (b), item (iv) through item (x) or item (xi) through item (xix) (limited to those pertaining to repairs or overhauls);
 - (ii) the technology (excluding programs) necessary for the design or manufacture of components of gas turbine engines that fall under any of the following or programs for the design thereof:
 - (a) combustors equipped with items that fall under any of the following:
 1. thermal shield liners the temperature of whose combustor outlet exceeds 1,610 degrees centigrade;
 2. non-metallic liners;
 3. non-metallic shells;
 4. liners equipped with cooling holes that fall under (k) where the temperature at the combustor outlet exceeds 1,610 degrees centigrade;
 5. combustors that use pressure-gain combustion;
 - (b) components manufactured using metal matrix composite materials reinforced with a substance falling under Article 4, item (xii), fiber falling under item (xv) of the said Article or aluminum compound falling under item (vii), (a) of the said Article or ceramic matrix composite materials falling under item (xii) of the said Article as raw materials;
 - (c) uncooled turbine blades, vanes or chip shrouds designed to be used at a gas path temperature of 1,100 degrees centigrade or more;
 - (d) cooling type blades, vanes, or tip shrouds designed to operate in a gas path temperature at 1,420 degrees centigrade or more (excluding those that fall under Article 27, paragraph (6), item (i));
 - (e) components that join a wing part and a disk part using a solid phase bonding method;
 - (f) deleted;
 - (g) rotation part components that are designed for damage tolerance and that use powdered metallurgical materials (limited to those that fall under Article 4, item (vii), (b));
 - (h) deleted;
 - (i) deleted;
 - (j) fan blades that fall under 1 and 2 below:

1. Those with one or more closed cavities comprising only vacuum or gas where 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) the technology necessary for boring of cooling holes on components of gas turbine engines that use any technology (excluding programs) that falls under (a) or (d) of this item or Article 27, paragraph (6), item (i) which fall under any of the following:
1. among cooling holes 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 boring angle is 25 degrees or less;
 2. among cooling holes 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 boring angle exceeds 25 degrees;
- (l) stators, vanes, blades, chip seals, chip shrouds, rotary blings, rotary blisks, or splitter ducts which fall under all of the following:
1. those which do not fall under Article 27, paragraph (6), item (i), (b);
 2. those designed for compressors or fans;
 3. those manufactured using a substance falling under Article 4, item (xv), (e) and resin falling under item (xiii) of the said Article as a raw material;
- (iii) techniques (excluding programs) which pertain to the design or manufacture of a component of a gas turbine engine, which is a full authority digital engine control system for gas turbine engines, and which fall under any of the following or programs for the design of those techniques:
- (a) techniques pertaining to the design of components of gas turbine engines, to furnish the components of gas turbine engines with the functions for regulating engine thrust or shaft power;
 - (b) techniques pertaining to the design or manufacture of components that control and diagnose engines which are used to regulate engine thrust or shaft power;
 - (c) the technology pertaining to the design of control law algorithms (including source codes) which are used to regulate engine thrust or shaft power;
- (iv) the technology (excluding programs) pertaining to the design or manufacture of equipment to enable the adjustment of flow path shapes, which has been designed to maintain engine stability for gas generator turbines, fan turbines, power turbines or propelling nozzles and which fall under any of the following, or programs for design thereof:
- (a) the technology pertaining to the design for the components maintaining engine stability to fulfill its function;

- (b) the technology pertaining to the design or manufacture of components for equipment to enable adjustments of flow path shapes, which maintain engine stability;
 - (c) the technology pertaining to the design of control law algorithms (including source codes) for the equipment to enable adjustments of flow path shapes, which maintain the stability of engines.
- (4) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 13 (iv) of the appended table of the Foreign Exchange Order falls under any of the following, or under programs for the design thereof:
- (i) technology (excluding programs) necessary for the design or manufacture of, among wind tunnel models that use sensors that do not impede flow conditions, those capable of transmitting data from sensors to data collecting devices;
 - (ii) techniques (excluding programs) necessary for the design or manufacture of propeller blades or prop fans that use composite materials and that are capable of absorbing loads that exceed 2,000 kilowatts at speeds exceeding Mach 0.55;
 - (iii) techniques (excluding programs) necessary for the design or manufacture of power transmission devices for helicopters or aircraft that use tilt rotors or tilt wings;
 - (iv) techniques (excluding programs) necessary for designing a wing folding system designed for fixed wing aircraft equipped with a gas turbine engine.
- (5) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 13 (v) of the appended table of the Foreign Exchange Order falls under any of the following or the programs for the design thereof:
- (i) the technology (excluding programs) pertaining to the design or manufacture of reciprocating diesel engines for vehicles that fall under all of the following (a) through (c):
 - (a) diesel engines with the engine volume of 1.2 cubic meters or less;
 - (b) diesel engines with a gross shaft power exceeding 750 kilowatts;
 - (c) diesel engines for which the gross brake power expressed in kilowatts divided by the engine volume expressed in cubic meters exceeds 700;
 - (ii) technology (excluding programs) necessary for the manufacture of the components of high-output diesel engines (this means diesel engines in which the rated rotational speed is 2,300 or more revolutions per minute (RPM) and in which the brake average effective pressure is 1.8 megapascals or more when the RPM is 2,300; hereinafter the same applies in this Article), which falls under any of the following:
 - (a) technology necessary for the manufacture of engines all components of which, from the following 1. through 3., are made of ceramics that fall under Article 4, item (xii) (excluding those all components of which, other

than the components are made of materials other than the ceramics):

1. cylinder liners;
2. pistons;
3. cylinder heads;

(b) the technology necessary for the manufacture of turbochargers, the compressor of which falls under all of following 1. through 3.:

1. turbosuperchargers Compressors the pressure ratio per stage of which is 4 or more;
2. turbosuperchargers Compressors the flow volume per minute of which is 30 kilograms or more and 130 kilograms or less;
3. turbosuperchargers Compressors flow area of compressors of which or that of its turbine parts can be modified;

(c) technology necessary for the manufacture of, among fuel injection devices designed so as to use any of the fuels the dynamic viscosity of which at 37.8 degrees centigrade is 0.5 centistokes or more and 2.5 centistokes or less, those that fall under the following 1. and 2.:

1. fuel injection devices in which the injection amount exceeds 230 cubic millimeters per cylinder injection;
2. fuel injection devices that are controlled electronically so that adjuster characteristics can be automatically switched in order to obtain the same torque characteristics in response to fuel characteristics;

(iii) technology (excluding programs) necessary for the design or manufacture of high output diesel engines the wall surface temperature of which exceeds 450 degrees centigrade measured at the top dead center of the piston top ring and that use solid, gas phase or liquid lubricants on cylinder wall surfaces.

Article 26 The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 14 of the appended table of the Foreign Exchange Order falls under any of the following:

- (i) the technology (excluding programs) necessary for the design or manufacture of items that fall under Article 13;
- (ii) programs designed for the design, manufacture or use of items that fall under Article 13 or technology (excluding programs) necessary for the design, manufacture or use of those programs;
- (iii) techniques specifically designed to enable certain goods to perform the functions of the goods falling under Article 13, paragraph (8) by using those techniques.

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

- (i) techniques (excluding programs) necessary for the design or manufacture of items that fall under any of Article 14, item (i) through item (iii);
 - (ii) techniques (excluding programs) necessary for the design or manufacture of items that fall under Article 14, item (vi) or item (vii);
 - (iii) techniques necessary for the design or manufacture of items that fall under Article 14, item (v) or (v)-2;
 - (iv) techniques necessary for the design or manufacture of items that fall under Article 14, item (ix) or item (x);
 - (v) techniques (excluding programs) necessary for the design or manufacture of programs that fall under item (iii).
 - (vi) techniques necessary for the design or manufacture of items that fall under Article 14, item (viii) or (xi); or
 - (vii) techniques (excluding programs) necessary for the design of programs that fall under the preceding item.
- (2) The technology specified by Order of the Ministry of Economy, Trade and Industry as referred to in row (15), (iii) of Appended Table of the Foreign Exchange Order shall be programs that fall under any of the following or techniques necessary for the design of those programs:
- (i) programs designed for carrying out acoustic beam molding for real time processing of sound data received by using towed hydrophone arrays;
 - (ii) source code for executing real time processing of sound data received by using towed hydrophone arrays;
 - (iii) programs designed for carrying out acoustic beam molding for real time processing of sound data received by using ocean bottom or harbor/port cable systems;
 - (iv) source code for executing real time processing of sound data received by using ocean bottom or harbor/ bay cable systems;
 - (v) programs (including source codes) falling under the following (a) or (b):
 - (a) those that carry out real time processing of sound data obtained from those falling under Article 9, item (i), (a), 6.;
 - (b) those that process data to automatically detect the position of the person active underwater.
- (3) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 15 (iv) of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) programs designed so that these systems can fall under Article 10, item (iii) due to their using inertial navigation systems or other inertial systems;
 - (ii) programs that enable devices to fall under Article 10, item (iii) due to their using inertial navigation systems or other inertial systems and continuously integrating heading data and navigation data that falls under any of the following (limited to those with source code):

- (a) speed data from radars that utilize Doppler effects;
 - (b) navigation data from GPS or Glonass;
 - (c) data from data-based referenced navigation systems.
- (4) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 15 (v) of the appended table of the Foreign Exchange Order, is programs designed so that the devices can fall under Article 10, item (iv) due to its using in Gyro-astro compasses, or devices that derive position or orientation by means of automatically tracking celestial bodies or satellites.
- (5) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 15 (v)-2 of the appended table of the Foreign Exchange Order falls under any of the following:
- (i) programs designed to enable the equipment to fall under Article 10, item (vii) by using underwater sonar navigation systems;
 - (ii) programs that enable the equipment to fall under Article 10, item (vii) by continuously combining the heading data and the navigation data which falls under any of the following and using them in underwater sonar navigation systems (limited to those with source code):
 - (a) speed data from sonars that utilize Doppler effects;
 - (b) navigation data from GPS or Glonass;
 - (c) data from data-based referenced navigation systems.
- (6) The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 15 (vi) of the appended table of the Foreign Exchange Order is technology that falls under any of the following:
- (i) the technology (excluding programs) necessary for the design or manufacture of gas turbine engine components that fall under any of the following:
 - (a) gas turbine blades, vanes, or tip shrouds cast by unidirectional solidification or single crystal alloy methods, the stress breakage time of which 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) components which are manufactured using, as a raw material, an organic composite designed to be usable at temperatures exceeding 315 degrees centigrade;
 - (ii) programs necessary for the design of techniques that falls under the preceding item.

Article 28 The technology specified by the Order of the Ministry of Economy, Trade and Industry in row 16 of the appended table of the Foreign Exchange Order is technology exclusively pertaining to the design, manufacture or use of goods that exclusively fall under Class 25 through Class 40, Class 54 through

59, Class 63, Class 68 through Class 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 as of 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 as of 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 as of December 31, 1992.
- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of July 16, 1993; provided, however, that the provisions for amending Article 3 and Article 16, paragraph (2) come into effect as of 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 as of the date of promulgation, and the provisions of Article 2 come into effect as of December 22, 1993.
- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of March 28, 1994; provided, however, that the revised provisions of Article 2, the revised provisions of Article 7 (in item (iii), (ii) of the same Article, "equipment that corresponds to any of the following" is revised to "equipment the composite theoretical performance of which exceeds 260 mega calculations per seconds by aggregating calculation elements", and except for the part that deletes 1. and 2.) and the revised provisions of Article 8 come into effect as of the date of promulgation.
- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of July 6, 1994; provided, however, that the revised provisions of Article 7 (limited to the part deleting item (v) and item (vi) of the same Article) and the revised provisions of Article 20 (excluding the part deleting paragraph (1), item (v) through item (ix) of the same Article) come into effect as of the date of promulgation.
- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of the date of promulgation.
- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of May 22, 1995.
- (2) Prior ministerial orders continue to govern the applicability of penal

provisions to the conduct that a person engages in 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 as of August 23, 1995.
- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of January 3, 1996; provided, however, that the revised provisions of Article 1, the revised provisions of Article 2-2 (limited to the parts in which "Fresh vaccine ingredients" in paragraph (1), item (i) and item (ii) of the same Article is revised to "vaccine" and "(excluding immune toxin)" is added under "toxin" in item (iii) of the same Article), and the revised provisions of Article 5, the revised provisions of Article 15 and the revised provisions of Article 18 come into effect as of the date of promulgation.
- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of September 13, 1996.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of 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 as of April 1, 1998.

(Transitional Measures pertaining to Penal Provisions)

(2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of the date of promulgation.

(Transitional Measures pertaining to Penal Provisions)

(2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of the date of promulgation; provided, however, that the provisions listed in each of the following those come into effect as from the date to be determined for each item:
- (i) the revised provisions of Article 1, the revised provisions of Article 4, item (ix), the revised provisions of Article 5, item (vii), the revised provisions to Article 6, item (xvii), (a) and (f), the revised provisions of Article 9, item (x), (b), the revised provisions of Article 14-2, item (ii), the revised provisions of Article 19, paragraph (3) and paragraph (5), the revised 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 the same Article, the revised provisions of the appended table 3: July 2, 1999;
 - (ii) the revised provisions of Article 2, paragraph (1) and the additional provisions from Article 14-2, item (li)-2 through item (li)-4: July 18, 1999.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of July 7, 2000; provided, however, that the following comes into effect as of the date of promulgation: the revised provisions of Article 1, item (viii), item (ix), item (xi), item (xiv), item (xviii), item (xxi), item (xxii), item (xxiv), (a) and (c), item (xxvii) and item (xxxiii); the revised provisions of item (xxxiv) of the same Article (limited to the part in which "those that are 75 millimeters or more" in (a), 1. and (b), 2. of the same item is revised to "those that exceed 75 millimeters"); the revised provisions of item (xxxv), item (xxxvi), item (xxxviii), item (xl), item (xliv) and also item (lvii) of the same Article, Article 3, item (vii), (e), item (xvi), (a) and (g), item (xx) and item (xxii); the revised provisions of Article 6, item (i) (excluding the part in which "parallel processors" in (c), 3. of the same item is revised to "devices designed for parallel processors"); and the revised provisions of item (ii), (b), item (iv) and item (viii) of the same Article, Article 7, Article 8, Article 9, item (i), (a), Article 12, Article 13, item (v), Article 14, item (v) and item (vi), (a) and (d), Article 14-2, item (lxxiv), Article 19, Article 20 and Article 21; and the revised provisions of Article 25 (limited to the part in which paragraph (3), item (ii), (j) of the same Article is deleted and (k) is changed to (j) and (l) is changed to (k)).

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of the date of promulgation.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of the date of promulgation; provided, however, that Article 1, item (x), (b), Article 2-2), Article 4, Article 5, item (ii), (b), item (viii) and item (x), Article 6, item (ii), item (v), item (xvii) and item (xviii); the revised provisions of Article 9, item (viii) (excluding the part in which "built-in devices" in (b), 6. of the same item is revised to "built-in video cameras"); the revised provisions of Article 10, Article 21, paragraph (2), item (iii)-2, (d) and item (xvi) of the comments of the appended table 3 come into effect as of May 30, 2001.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of April 1, 2002.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of July 15, 2002.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of November 1, 2002; provided, however, that the revised provisions of Article 2 come into effect as of January 1, 2003.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of January 20, 2004.

(Transitional Measures pertaining to Penal Provisions)

(2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of January 1, 2005.

(Transitional Measures pertaining to Penal Provisions)

(2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of January 1, 2006.

(Transitional Measures pertaining to Penal Provisions)

(2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of May 15, 2008.

(Transitional Measures pertaining to Penal Provisions)

(2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of 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 as of April 1, 2010.

(Transitional Measures)

Article 2 Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of July 1, 2011.

(Transitional Measures pertaining to Penal Provisions)

Article 2 Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of August 1, 2012.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of October 15, 2013.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of September 15, 2014.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of October 1, 2015.

(Transitional Measures pertaining to Penal Provisions)

- Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of January 7, 2017; provided, however, that, in Article 1, the provisions for amending Article 5, item (ii) and Article 18 of the Ministerial Order, which specify goods or techniques pursuant to the provisions of Appended Table 1 of the Export Trade Control Order and Appended Table of the Foreign Exchange Order come into effect as of June 1, 2017.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in before the enforcement of this Ministerial Order (or, in the case of the amendment provisions as prescribed in the proviso of the preceding paragraph, those amendment 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 as of January 22, 2018.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of January 9, 2019.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of January 22, 2020.

(Transitional Measures pertaining to Penal Provisions)

(2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of 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 as of 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 as of 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 as of January 27, 2021.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of the day on which two months have elapsed from the date of promulgation.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in 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 as of the day on which two months have elapsed from the date of promulgation.

(Transitional Measures pertaining to Penal Provisions)

- (2) Prior ministerial orders continue to govern the applicability of penal provisions to the conduct that a person engages in before the enforcement of this Ministerial Order.

Appended Table 1

Deleted

Appended Table 2 (Re: Articles 10 and 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, the Republic of South Africa, Spain, Slovakia, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States of America

Appended Table 3 (Re: Articles 5 and 18)

	Coating Method	Base Material	Coating
1	Method of fixing the coating material generated by chemical reaction of raw material gas onto the base material surface.	Super alloy	Aluminum compounds
		Ceramics or low-thermal expansion glasses	Silicon compounds, carbides, dielectric film, diamonds and non-crystalline diamond-like carbon films
		Composite material using carbon and carbon fibers (referred to hereinafter as "carbon-carbon"), ceramic composites and metal matrix composites	Silicon compounds, carbides, refractory metals, and mixtures that come from combining these; dielectric film, aluminum compounds, aluminum alloy compounds and boron nitride
		Tungsten carbide alloys and silicon carbide	Carbides, tungsten, mixtures of carbides and tungsten, and dielectric film
		Molybdenum and molybdenum alloys	Dielectric film
		Beryllium and beryllium alloys	Dielectric film, diamonds and non-crystalline diamond-like carbon films
		Sensor window material	Dielectric film, diamonds and non-crystalline diamond-like carbon films
2	Method of fixing coating material volatilized by electronic beam onto the base material surface	Super alloys	Silicon alloy compounds, aluminum alloy compounds, chromium-aluminum alloy compounds, improved zirconia, silicon compounds, aluminum compounds and mixtures combining thereof
		Ceramics or low-thermal expansion glasses	Dielectric film
		Alloy steel with corrosion resistance	Chromium-aluminum alloys, improved zirconia and mixtures of chromium-aluminum alloys and improved zirconia

		Carbon-carbon, ceramic composites and metal matrix composites	Silicon compounds, carbides, refractory metals, and mixtures that come from combining them; dielectric film and boron nitride
		Tungsten carbide alloys and silicon carbide	Carbides, tungsten, mixtures of carbides and tungsten, and dielectric film
		Molybdenum and molybdenum alloys	Dielectric film
		Beryllium and beryllium alloys	Dielectric film, boron alloys and beryllium
		Sensor window material	Dielectric film
		Titanium alloys	Boron compounds and nitrides
3	Method of fixing coating material volatilized by electric resistance heating onto the base material surface (Method of ion plating)	Ceramics or low-thermal expansion glasses	Dielectric film and non-crystalline diamond-like carbon film
		Carbon-carbon, ceramic composites and metal matrix composites	Dielectric film
		Tungsten carbide alloys and silicon carbide	Dielectric film
		Molybdenum and molybdenum alloys	Dielectric film
		Beryllium and beryllium alloys	Dielectric film
		Sensor window material	Dielectric film and non-crystalline diamond-like carbon film
4	Method of fixing coating material volatilized by laser onto the base material surface	Ceramics or low-thermal expansion glasses	Silicon compounds, dielectric film and non-crystalline diamond-like carbon film
		Carbon-carbon, ceramic composites and metal matrix composites	Dielectric film
		Tungsten carbide alloys and silicon carbide	Dielectric film
		Molybdenum and molybdenum alloys	Dielectric film
		Beryllium and beryllium alloys	Dielectric film

		Sensor window material	Dielectric film and non-crystalline diamond-like carbon film
5	Method of fixing coating material volatilized by arc discharge onto the base material surface	Super alloys	Silicon alloy compounds, aluminum alloy compounds and chromium-aluminum alloys
		Composite material with polymer or organic compound matrix	Boron compounds, carbides, nitrides and non-crystalline diamond-like carbon film
6	Method of fixing the coating material onto the base material surface by placing powdered coating material and the base material into a container and heating to 757 degrees centigrade or more	Carbon-carbon, ceramic composites or metal matrix composites	Silicon compounds, carbides and mixtures of silicon compounds and carbides
		Titanium alloys	Silicon compounds, aluminum compounds and aluminum alloy compounds
		Metals and metal alloys with fire resistance	Silicon compounds and oxides
7	Method using plasma spray coating	Super alloys	Chromium-aluminum alloys, improved zirconia, mixtures of chromium-aluminum alloys and improved zirconia, nickel-graphite alloys capable of being polished, substances containing nickel-chromium-aluminum capable of being polished, and aluminum-silicon polyester alloys and aluminum alloy compounds capable of being polished
		Aluminum alloys	Chromium-aluminum alloys, improved zirconia, silicon compounds and mixtures that come from combining them
		Metals and metal alloys with fire resistance	Aluminum compound, silicon compounds and carbides

		Alloy steel with corrosion resistance	Chromium-aluminum alloys, improved zirconia and mixtures of chromium-aluminum alloys and improved zirconia
		Titanium alloys	Carbides, aluminum compounds, silicon compounds, aluminum alloy compounds, nickel-graphite alloys capable of being polished, substances containing nickel-chromium-aluminum capable of being polished, and aluminum-silicon polyester alloys capable of being polished
8	Method of fixing slurried coating material onto the surface of base material	Metals and metal alloys with fire resistance	Molten silicon compounds and molten aluminum compounds
		Carbon-carbon, ceramic composites and metal matrix composites	Silicon compounds, carbides and mixtures of silicon compounds and carbides
9	Method of spattering	Super alloys	Silicon alloy compounds, aluminum alloy compounds, aluminum compounds containing precious metals, chromium-aluminum alloys, improved zirconia, platinum and mixtures that come from combining them
		Ceramics or low-thermal expansion glasses	Silicon compounds, platinum, mixtures of silicon compounds and platinum, dielectric film and non-crystalline diamond-like carbon film
		Titanium alloys	Boron compounds, nitrides, oxides, silicon compounds, aluminum compounds, aluminum alloy compounds and carbides

		Carbon-carbon, ceramic composites and metal matrix composites	Silicon compounds, carbides, refractory metals and mixtures that come from combining them; dielectric film and boron nitride
		Tungsten carbide alloys and silicon carbide	Carbides, tungsten and mixtures of carbides and tungsten; dielectric film and boron nitride
		Molybdenum and molybdenum alloys	Dielectric film
		Beryllium and beryllium alloys	Boron compounds, dielectric film and beryllium
		Sensor window material	Dielectric film and non-crystalline diamond-like carbon film
		Metals and metal alloys with fire resistance	Aluminum compounds, silicon compounds, oxides and carbides
10	Method of ion implantation	High temperature bearing steel	Chromium, tantalum and niobium additives
		Titanium alloys	Boron compounds and nitrides
		Beryllium and beryllium alloys	Boron compounds
		Tungsten carbide alloys	Carbides and nitrides

Notes

- (i) Coating method includes coating repair and refurbishing as well as original coating.
- (ii) Alloyed aluminide coating includes single or multiple-step coatings in which an element or elements are deposited to coating prior to application of the aluminide coating; provided, however, that the multiple use of a method of fixing the coating material onto the surface of base metal by placing powdered coating material and the base material into a container and heating to 757 degrees centigrade or more, to achieve alloyed aluminides, is not included in aluminum alloy compound coating.
- (iii) Noble metal modified aluminide coating includes multiple-step coatings in which the noble metal or noble metals are laid down by some other coating process prior to application of the aluminide coating.
- (iv) The term "mixture" means impregnated material, graded compositions, co-deposits and multilayer deposits which are obtained by the coating methods specified in this table.
- (v) The term "Chromium-aluminum alloy coating" means a coating alloy

including cobalt, iron, nickel or combinations thereof, as well as hafnium, yttrium, silicon, tantalum in any amount or other intentional additions over 0.01 % by weight in various proportions and combinations; provided, however, that coatings falling under any of the following (a) through (c) are excluded:

(a) alloy coatings consisting of cobalt, chromium, aluminum and yttrium which contain less than 22 % by weight of chromium, less than 7 % by weight of aluminum and less than 2 % by weight of yttrium;

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

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

(vi) The term "aluminum alloy substrate" means alloys having an ultimate tensile strength of 190 megapascals or more measured at 20 degrees centigrade.

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

(vii)-2 Metals and metal alloys with fire resistance include niobium, molybdenum, tungsten and tantalum or alloys of these metals.

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

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

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

(xi) The term "improved zirconia" means zirconia whose crystallographic phases and phase compositions have been stabilized, by the additions of calcium oxide, magnesium oxide, yttrium oxide, hafnium oxide, rare earth oxide and other metal oxides to zirconia; provided, however, that thermal barrier coatings made of zirconia, modified with calcium oxide or magnesium oxide, are excluded.

(xii) The term "titanium alloy substrate" means aerospace alloys having an ultimate tensile strength of 900 megapascals or more measured at 20

- degrees centigrade.
- (xiii) The term "low-thermal expansion glasses" means glasses which have a coefficient of a thermal expansion of 0.0000001 or less measured at 20 degrees centigrade.
 - (xiv) The term "dielectric film" means dielectric film with four layers or film made of metal composite material.
 - (xv) The term "tungsten carbide alloy substrate" does not include cutting and plastic forming tool materials consisting of 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, and alloys consisting of chromium carbide and nickel.
 - (xvi) Coatings on non-crystalline diamond-like carbon films do not include coatings on magnetic disk drives, magnetic heads, equipment for the manufacture of disposables, valves for faucets, acoustic diaphragms for speakers, engine parts for automobiles, cutting tools, punching-pressing dies, office automation equipment, microphones or medical devices or molds, for casting or molding of plastics, manufactured from alloys containing less than 5% beryllium.
 - (xvii) Silicon carbide substrates do not include cutting and plastic forming tool materials.
 - (xviii) Ceramic substrates do not include ceramic materials containing 5 % or more by weight of a clay or cement content (including the compounds thereof).