

Singapore Customs

Amendments to Strategic Goods
(Control) Order (SGCO)

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Introduction

As part of Singapore's international obligation to prevent the proliferation of weapons of mass destruction, Singapore Customs regularly updates our Strategic Goods Control List ("Control List") prescribed in the Schedule to the Strategic Goods (Control) Order (SGCO). With effect from 1 October 2019, the SGCO 2019 will replace the SGCO 2018.

The SGCO 2019 brings our Control List up to date with 2018 Wassenaar Arrangement Munition List ("WAML") and 2018 European Union List of Dual-Use Items ("EUDL").

This document presents the amendments to the SGCO 2018 in a table with side by side comparison of the legal text in the 2018 and 2019 versions.

List of Military Goods

Definitions

Category Code	SGCO 2018	SGCO 2019
New definition for “Satellite navigation system”	-	“Satellite navigation system” (ML11) a system consisting of ground stations, a constellation of satellites, and receivers, that enables receiver locations to be calculated on the basis of signals received from the satellites. It includes Global Navigation Satellite Systems (GNSS) and Regional Navigation Satellite Systems (RNSS).

ML4

Category Code	SGCO 2018	SGCO 2019
ML4.a. Note b	<p>Bombs, torpedoes, rockets, missiles, other explosive devices and charges and related equipment and accessories, as follows, and specially designed components therefor:</p> <p>---</p> <p>a. Bombs, torpedoes, grenades, smoke canisters, rockets, mines, missiles, depth charges, demolition-charges, demolition-devices, demolition-kits, “pyrotechnic” devices, cartridges and simulators (i.e. equipment simulating the characteristics of any of these items), specially designed for military use;</p> <p><u>Note</u></p> <p><i>Category Code ML4.a. includes:</i></p> <p>a. <i>Smoke grenades, fire bombs, incendiary bombs and explosive devices;</i></p> <p>b. <i>Missile rocket nozzles and re-entry vehicle nosetips.</i></p>	<p>Bombs, torpedoes, rockets, missiles, other explosive devices and charges and related equipment and accessories, as follows, and specially designed components therefor:</p> <p>---</p> <p>a. Bombs, torpedoes, grenades, smoke canisters, rockets, mines, missiles, depth charges, demolition-charges, demolition-devices, demolition-kits, “pyrotechnic” devices, cartridges and simulators (i.e. equipment simulating the characteristics of any of these items), specially designed for military use;</p> <p><u>Note</u></p> <p><i>Category Code ML4.a. includes:</i></p> <p>a. <i>Smoke grenades, fire bombs, incendiary bombs and explosive devices;</i></p> <p>b. <i>Missile or rocket nozzles and re-entry vehicle nosetips.</i></p>

ML5

Category Code	SGCO 2018	SGCO 2019
ML5	Fire control, and related alerting and warning equipment, and related systems, test and alignment and countermeasure equipment, as follows, specially designed for military use, and specially designed components and accessories therefor:	Fire control, surveillance and warning equipment, and related systems, test and alignment and countermeasure equipment, as follows, specially designed for military use, and specially designed components and accessories therefor:
ML5.b.	<p>Fire control, and related alerting and warning equipment, and related systems, test and alignment and countermeasure equipment, as follows, specially designed for military use, and specially designed components and accessories therefor:</p> <p>---</p> <p>b. Target acquisition, designation, range-finding, surveillance or tracking systems; detection, data fusion, recognition or identification equipment; and sensor integration equipment;</p>	<p>Fire control, surveillance and warning equipment, and related systems, test and alignment and countermeasure equipment, as follows, specially designed for military use, and specially designed components and accessories therefor:</p> <p>---</p> <p>b. Other fire control, surveillance and warning equipment, and related systems, as follows:</p> <ol style="list-style-type: none"> 1. Target acquisition, designation, range-finding, surveillance or tracking systems; 2. Detection, recognition or identification equipment; 3. Data fusion or sensor integration equipment;

ML6

Category Code	SGCO 2018	SGCO 2019
ML6	<p>Ground vehicles and components, as follows:</p> <p><u>N.B.</u></p> <p><i>For guidance and navigation equipment, see Category Code ML11.</i></p> <p>a. Ground vehicles and components therefor, specially designed or modified for military use;</p> <p><u>Technical Note</u></p> <p><i>For the purpose of Category Code ML6.a., the term ground vehicles includes trailers.</i></p> <p>b. Other ground vehicles and components, as follows:</p> <ol style="list-style-type: none"> 1. Vehicles having all of the following characteristics: 	<p>Ground vehicles and components, as follows:</p> <p><u>N.B.</u></p> <p><i>For guidance and navigation equipment, see Category Code ML11.</i></p> <p>a. Ground vehicles and components therefor, specially designed or modified for military use;</p> <p><u>Note 1</u></p> <p><i>Category Code ML6.a. includes:</i></p> <p><i>a. Tanks and other military armed vehicles and military vehicles fitted with mountings for arms or equipment for mine laying or the launching of munitions specified in Category</i></p>

Category Code	SGCO 2018	SGCO 2019
	<ul style="list-style-type: none"> a. Manufactured or fitted with materials or components to provide ballistic protection to level III (NIJ 0108.01, September 1985, or comparable national standard) or better; b. Have a transmission to provide drive to both front and rear wheels simultaneously, including those vehicles having additional wheels for load bearing purposes whether driven or not; c. Gross Vehicle Weight Rating (GVWR) greater than 4,500 kg; <u>and</u> d. Designed or modified for off-road use; <p>2. Components having both of the following characteristics:</p> <ul style="list-style-type: none"> a. Specially designed for vehicles specified in Category Code ML6.b.1.; <u>and</u> b. Providing ballistic protection to level III (NIJ 0108.01, September 1985, or comparable national standard) or better. <p><u>N.B.</u> See also Category Code ML13.a.</p> <p><u>Note 1</u> Category Code ML6.a. includes:</p> <ul style="list-style-type: none"> a. Tanks and other military armed vehicles and military vehicles fitted with mountings for arms or equipment for mine laying or the launching of munitions specified in Category Code ML4; b. Armoured vehicles; c. Amphibious and deep water fording vehicles; d. Recovery vehicles and vehicles for towing or transporting ammunition or weapon systems and associated load handling equipment. <p><u>Note 2</u></p>	<p><i>Code ML4;</i></p> <ul style="list-style-type: none"> <i>b. Armoured vehicles;</i> <i>c. Amphibious and deep water fording vehicles;</i> <i>d. Recovery vehicles and vehicles for towing or transporting ammunition or weapon systems and associated load handling equipment;</i> <i>e. Trailers.</i> <p><u>Note 2</u> <i>Under Category Code ML6.a., modification of a ground vehicle for military use entails a structural, electrical or mechanical change involving one or more components that are specially designed for military use. Such components include:</i></p> <ul style="list-style-type: none"> <i>a. Pneumatic tyre casings of a kind specially designed to be bullet-proof;</i> <i>b. Armoured protection of vital parts (e.g. fuel tanks or vehicle cabs);</i> <i>c. Special reinforcements or mountings for weapons;</i> <i>d. Black-out lighting.</i> <p>b. Other ground vehicles and components, as follows:</p> <ul style="list-style-type: none"> 1. Vehicles having all of the following characteristics: <ul style="list-style-type: none"> a. Manufactured or fitted with materials or components to provide ballistic protection equal to or better than level III (NIJ 0108.01, September 1985, or comparable national standard); b. Have a transmission to provide drive to both front and rear wheels simultaneously, including those vehicles having additional wheels for load bearing purposes whether driven or not; c. Gross Vehicle Weight Rating (GVWR) greater than 4,500 kg; <u>and</u> d. Designed or modified for off-road use;

Category Code	SGCO 2018	SGCO 2019
	<p><i>Under Category Code ML6.a., modification of a ground vehicle for military use entails a structural, electrical or mechanical change involving one or more components that are specially designed for military use. Such components include:</i></p> <ol style="list-style-type: none"> <i>Pneumatic tyre casings of a kind specially designed to be bullet-proof;</i> <i>Armoured protection of vital parts (e.g. fuel tanks or vehicle cabs);</i> <i>Special reinforcements or mountings for weapons;</i> <i>Black-out lighting.</i> <p><u>Note 3</u> <i>Category Code ML6 does not apply to civil vehicles designed or modified for transporting money or valuables.</i></p> <p><u>Note 4</u> <i>Category Code ML6 does not apply to vehicles that meet all of the following:</i></p> <ol style="list-style-type: none"> <i>Were manufactured before 1946;</i> <i>Do not have items specified in any part of this Division and manufactured after 1945, except for reproductions of original components or accessories for the vehicle; <u>and</u></i> <i>Do not incorporate weapons specified in Category Code ML1, ML2 or ML4 unless they are inoperable and incapable of discharging a projectile.</i> 	<ol style="list-style-type: none"> Components having both of the following characteristics: <ol style="list-style-type: none"> Specially designed for vehicles specified in Category Code ML6.b.1.; <u>and</u> Providing ballistic protection equal to or better than level III (NIJ 0108.01, September 1985, or comparable national standard). <p><u>N.B.</u> <i>See also Category Code ML13.a.</i></p> <p><u>Note 1</u> <i>Category Code ML6 does not apply to civil vehicles designed or modified for transporting money or valuables.</i></p> <p><u>Note 2</u> <i>Category Code ML6 does not apply to vehicles that meet all of the following:</i></p> <ol style="list-style-type: none"> <i>Were manufactured before 1946;</i> <i>Do not have items specified in any part of this Division and manufactured after 1945, except for reproductions of original components or accessories for the vehicle; and</i> <i>Do not incorporate weapons specified in Category Code ML1, ML2 or ML4 unless they are inoperable and incapable of discharging a projectile.</i>

ML8

Category Code	SGCO 2018	SGCO 2019
ML8.a.6.	<p>“Energetic materials” and related substances, as follows: --- a. “Explosives” as follows, and ‘mixtures’ thereof: --- 6. DADE (1,1-diamino-2,2-dinitroethylene, FOX7) (145250-81-3);</p>	<p>“Energetic materials” and related substances, as follows: --- a. “Explosives” as follows, and ‘mixtures’ thereof: --- 6. DADE (1,1-diamino-2,2-dinitroethylene, FOX-7) (145250-81-3);</p>

Category Code	SGCO 2018	SGCO 2019
ML8.a.33.	<p>“Energetic materials” and related substances, as follows:</p> <p>---</p> <p>a. “Explosives” as follows, and ‘mixtures’ thereof:</p> <p>---</p> <p>33. Explosives not listed elsewhere in Category Code ML8.a. and having either of the following characteristics:</p>	<p>“Energetic materials” and related substances, as follows:</p> <p>--</p> <p>a. “Explosives” as follows, and ‘mixtures’ thereof:</p> <p>---</p> <p>33. “Explosives” not listed elsewhere in Category Code ML8.a. and having either of the following characteristics:</p>
(New ML8.a.43.)	<p>a. “Explosives” as follows, and ‘mixtures’ thereof:</p> <p>---</p> <p>42. EDNA (Ethylenedinitramine) (505-71-5);</p>	<p>a. “Explosives” as follows, and ‘mixtures’ thereof:</p> <p>---</p> <p>42. EDNA (Ethylenedinitramine) (505-71-5);</p> <p>43. TKX-50 (Dihydroxylammonium 5,5'-bistetrazole-1,1'-diolate);</p>
(New ML8.c.12. Note)	<p>c. “Pyrotechnics”, fuels and related substances, as follows, and ‘mixtures’ thereof:</p> <p>---</p> <p>12. Fuel mixtures, “pyrotechnic” mixtures or “energetic materials”, not specified elsewhere in Category Code ML8, having all of the following characteristics:</p>	<p>c. “Pyrotechnics”, fuels and related substances, as follows, and ‘mixtures’ thereof:</p> <p>---</p> <p>12. Fuel mixtures, “pyrotechnic” mixtures or “energetic materials”, not specified elsewhere in Category Code ML8, having all of the following characteristics:</p> <p>---</p> <p><i>Note</i> Category Code ML8.c.12 includes thermites</p>

ML9

Category Code	SGCO 2018	SGCO 2019
ML9.a.1. (New Note)	<p>Vessels of war (surface or underwater), special naval equipment, accessories, components and other surface vessels, as follows:</p> <p>...</p> <p>a. Vessels and components, as follows:</p> <ol style="list-style-type: none"> Vessels (surface or underwater) specially designed or modified for military use, regardless of current state of repair or operating condition, and whether or not they contain weapon delivery systems or armour, and hulls or parts of hulls for such vessels, and components therefor specially designed for military use; 	<p>Vessels of war (surface or underwater), special naval equipment, accessories, components and other surface vessels, as follows:</p> <p>...</p> <p>a. Vessels and components, as follows:</p> <ol style="list-style-type: none"> Vessels (surface or underwater) specially designed or modified for military use, regardless of current state of repair or operating condition, and whether or not they contain weapon delivery systems or armour, and hulls or parts of hulls for such vessels, and components therefor specially designed for military use; <p><i>Note</i> Category Code ML9.a.1. includes vehicles specially designed or modified for the delivery of divers.</p>
ML9.a.2.	<p>Vessels of war (surface or underwater), special naval equipment, accessories, components and other surface vessels, as follows:</p> <p>---</p> <p>a. Vessels and components, as follows:</p> <p>---</p> <ol style="list-style-type: none"> Surface vessels, other than those specified in Category Code ML9.a.1., having any of the following, fixed or integrated into the vessel: 	<p>Vessels of war (surface or underwater), special naval equipment, accessories, components and other surface vessels, as follows:</p> <p>---</p> <p>a. Vessels and components, as follows:</p> <p>---</p> <ol style="list-style-type: none"> Surface vessels, not specified in Category Code ML9.a.1., having any of the following, fixed or integrated into the vessel:
ML9.b.3.	<p>Vessels of war (surface or underwater), special naval equipment, accessories, components and other surface vessels, as follows:</p> <p>---</p> <p>b. Engines and propulsion systems, as follows, specially designed for military use, and components therefor specially designed for military use:</p> <p>---</p> <ol style="list-style-type: none"> Non-magnetic diesel engines having both of the following characteristics: 	<p>Vessels of war (surface or underwater), special naval equipment, accessories, components and other surface vessels, as follows:</p> <p>---</p> <p>b. Engines and propulsion systems, as follows, specially designed for military use, and components therefor specially designed for military use:</p> <p>---</p> <ol style="list-style-type: none"> Diesel engines having both of the following characteristics:

Category Code	SGCO 2018	SGCO 2019
	a. Power output of 37.3 kW (50 hp) or more; <u>and</u> b. Non-magnetic content in excess of 75% of total mass;	a. Power output of 37.3 kW (50 hp) or more; <u>and</u> b. 'Non-magnetic' content in excess of 75% of total mass; <u>Technical Note</u> <i>For the purpose of Category Code ML9.b.3., 'non-magnetic' means the relative permeability is less than 2.</i>
(New ML9.h.)	-	h. Naval nuclear equipment and related equipment and components, as follows: 1. Nuclear power generating equipment or propulsion equipment, specially designed for vessels specified in Category Code ML9.a. and components therefor specially designed or 'modified' for military use. <u>Technical Note</u> <i>For the purpose of Category Code ML9.h.1., 'modified' means any structural, electrical, mechanical, or other change that provides a non-military item with military capabilities equivalent to an item which is specially designed for military use.</i> <u>Note</u> <i>Category Code ML9.h.1. includes "nuclear reactors".</i>

ML10

Category Code	SGCO 2018	SGCO 2019
ML10 Note 5	<p>“Aircraft”, “lighter-than-air vehicles”, “unmanned aerial vehicles” (“UAVs”), aero-engines and “aircraft” equipment, related equipment and components, as follows, specially designed or modified for military use:</p> <p>---</p> <p><u>Note 5</u></p> <p><i>Category Code ML10.a. does not apply to “aircraft” that meet all of the following:</i></p>	<p>“Aircraft”, “lighter-than-air vehicles”, “unmanned aerial vehicles” (“UAVs”), aero-engines and “aircraft” equipment, related equipment and components, as follows, specially designed or modified for military use:</p> <p>---</p> <p><u>Note 5</u></p> <p><i>Category Code ML10.a. does not apply to “aircraft” or “lighter-than-air vehicles” that meet all of the following:</i></p>
ML10 (New Note 6)	<p>“Aircraft”, “lighter-than-air vehicles”, “unmanned aerial vehicles” (“UAVs”), aero-engines and “aircraft” equipment, related equipment and components, as follows, specially designed or modified for military use:</p> <p>---</p> <p><u>Note 5</u></p> <p><i>Category Code ML10.a. does not apply to “aircraft” that meet all of the following:</i></p>	<p>“Aircraft”, “lighter-than-air vehicles”, “unmanned aerial vehicles” (“UAVs”), aero-engines and “aircraft” equipment, related equipment and components, as follows, specially designed or modified for military use:</p> <p>---</p> <p><u>Note 5</u></p> <p><i>Category Code ML10.a. does not apply to “aircraft” or “lighter-than-air vehicles” that meet all of the following:</i></p> <p>---</p> <p><u>Note 6</u></p> <p><i>Category Code ML10.d. does not apply to propulsion aero-engines that were first manufactured before 1946.</i></p>

ML11

Category Code	SGCO 2018	SGCO 2019
ML11.b.	Electronic equipment, “spacecraft” and components, not specified elsewhere in any part of this Division, as follows: --- b. Global Navigation Satellite Systems (GNSS) jamming equipment and specially designed components therefor;	Electronic equipment, “spacecraft” and components, not specified elsewhere in any part of this Division, as follows: --- b. “Satellite navigation system” jamming equipment and specially designed components therefor;

ML13

Category Code	SGCO 2018	SGCO 2019
ML13. Note 4	Armoured or protective equipment, constructions and components, as follows: --- <u>Note 4</u> <i>The only helmets specially designed for bomb disposal personnel that are specified in Category Code ML13 are those specially designed for military use.</i>	Armoured or protective equipment, constructions and components, as follows: --- <u>Note 4</u> <i>The only helmets specially designed for bomb disposal personnel that are specified in Category Code ML13.c. are those specially designed for military use.</i>

ML17

Category Code	SGCO 2018	SGCO 2019
ML17.g. (New Note)	Miscellaneous equipment, materials and “libraries”, as follows, and specially designed components therefor: ... g. Nuclear power generating equipment or propulsion equipment, including “nuclear reactors”, specially designed for military use and components therefor specially designed or ‘modified’ for military use;	Miscellaneous equipment, materials and “libraries”, as follows, and specially designed components therefor: ... g. Nuclear power generating equipment or propulsion equipment, not specified elsewhere in this division, specially designed for military use and components therefor specially designed or 'modified' for military use; <u>Note</u> <i>Category Code ML17.g. includes “nuclear reactors”.</i>

Category Code	SGCO 2018	SGCO 2019
ML17.h.	<p>Miscellaneous equipment, materials and “libraries”, as follows, and specially designed components therefor:</p> <p>...</p> <p>h. Equipment and material, coated or treated for signature suppression, specially designed for military use, other than those specified elsewhere in this Division;</p>	<p>Miscellaneous equipment, materials and “libraries”, as follows, and specially designed components therefor:</p> <p>...</p> <p>h. Equipment and material, coated or treated for signature suppression, specially designed for military use, not specified elsewhere in this Division;</p>
ML17.m.	<p>Miscellaneous equipment, materials and “libraries”, as follows, and specially designed components therefor:</p> <p>...</p> <p>m. Ferries, other than those specified elsewhere in this Division, bridges and pontoons, specially designed for military use;</p>	<p>Miscellaneous equipment, materials and “libraries”, as follows, and specially designed components therefor:</p> <p>...</p> <p>m. Ferries, not specified elsewhere in this Division, bridges and pontoons, specially designed for military use;</p>
ML17.p.	<p>Miscellaneous equipment, materials and “libraries”, as follows, and specially designed components therefor:</p> <p>...</p> <p>p. “Fuel cells”, other than those specified elsewhere in this Division, specially designed or ‘modified’ for military use.</p>	<p>Miscellaneous equipment, materials and “libraries”, as follows, and specially designed components therefor:</p> <p>...</p> <p>p. “Fuel cells”, not specified elsewhere in this Division, specially designed or ‘modified’ for military use.</p>

List of Dual-Use Goods

Definitions

Category Code	SGCO 2018	SGCO 2019
“automatic target tracking” (Category 6)	“automatic target tracking” (Category 6) means a processing technique that automatically determines and provides as output an extrapolated value of the most probable position of the target in real time;	<u>Technical Note</u> <i>‘Automatic target tracking’ is a processing technique that automatically determines and provides as output an extrapolated value of the most probable position of the target in real-time.</i>
“carbon fibre preforms” (Category 1)	“carbon fibre preforms” (Category 1) means an ordered arrangement of uncoated or coated fibres intended to constitute a framework of a part before the “matrix” is introduced to form a “composite”;	<u>Technical Notes</u> 1. <i>‘Carbon fibre preforms’ are an ordered arrangement of uncoated or coated fibres intended to constitute a framework of a part before the “matrix” is introduced to form a “composite”.</i>
“commingled” (Category 1)	“commingled” (Category 1) means filament to filament blending of thermoplastic fibres and reinforcement fibres in order to produce a fibre reinforcement “matrix” mix in total fibre form;	<u>Technical Note</u> <i>‘Commingled’ is filament to filament blending of thermoplastic fibres and reinforcement fibres in order to produce a fibre reinforcement “matrix” mix in total fibre form.</i>
“comminution” (Category 1)	“comminution” (Category 1) means a process to reduce a material to particles by crushing or grinding;	<u>Technical Note</u> 6. <i>‘Comminution’ is a process to reduce a material to particles by crushing or grinding.</i>
“compound rotary table” (Category 2)	“compound rotary table” (Category 2) means a table allowing the workpiece to rotate and tilt about two non-parallel axes, which can be coordinated simultaneously for “contouring control”;	<u>Technical Note</u> <i>A ‘compound rotary table’ is a table allowing the workpiece to rotate and tilt about two non-parallel axes</i>
“deformable mirrors” (Category 6)	“deformable mirrors” (Category 6) (also known as adaptive optic mirrors) means mirrors having: <ol style="list-style-type: none"> a. A single continuous optical reflecting surface which is dynamically deformed by the application of individual torques or forces to compensate for distortions in the optical waveform incident upon the mirror; <u>or</u> 	<u>Technical Note</u> <i>‘Deformable mirrors’ are mirrors having either of the following:</i> <ol style="list-style-type: none"> a. <i>A single continuous optical reflecting surface which is dynamically deformed by the application of individual torques or forces to compensate for distortions in the optical waveform incident upon the mirror; or</i> b. <i>Multiple optical reflecting elements that can be individually and dynamically repositioned by the application of torques or forces to compensate for distortions in the optical waveform incident upon the mirror.</i> <i>‘Deformable mirrors’ are also known as adaptive optic mirrors.</i>

Category Code	SGCO 2018	SGCO 2019
	b. Multiple optical reflecting elements that can be individually and dynamically repositioned by the application of torques or forces to compensate for distortions in the optical waveform incident upon the mirror;	
“direct-acting hydraulic pressing” (Category 2)	“direct-acting hydraulic pressing” (Category 2) means a deformation process which uses a fluid-filled flexible bladder in direct contact with the workpiece;	<u>Technical Notes</u> 1. ‘Direct-acting hydraulic pressing’ is a deformation process which uses a fluid-filled flexible bladder in direct contact with the workpiece.
“electronically steerable phased array antenna” (Categories 5, 6)	“electronically steerable phased array antenna” (Categories 5, 6) means an antenna which forms a beam by means of phase coupling, i.e. the beam direction is controlled by the complex excitation coefficients of the radiating elements and the direction of that beam can be varied in azimuth or in elevation, or both, by application, both in transmission and reception, of an electrical signal;	<u>Technical Note</u> For the purpose of Category Code 5A001.d. ‘electronically steerable phased array antenna’ is an antenna which forms a beam by means of phase coupling, (i.e., the beam direction is controlled by the complex excitation coefficients of the radiating elements) and the direction of that beam can be varied (both in transmission and reception) in azimuth or in elevation, or both, by application of an electrical signal.
“flight control optical sensor array” (Category 7)	“flight control optical sensor array” (Category 7) means a network of distributed optical sensors, using “laser” beams, to provide real-time flight control data for on-board processing;	<u>Technical Note</u> A ‘flight control optical sensor array’ is a network of distributed optical sensors, using “laser” beams, to provide real-time flight control data for on-board processing.
“flight path optimisation” (Category 7)	“flight path optimisation” (Category 7) means a procedure that minimises deviations from a four-dimensional (space and time) desired trajectory based on maximising performance or effectiveness for mission tasks;	<u>Technical Note</u> ‘Flight path optimisation’ is a procedure that minimises deviations from a four-dimensional (space and time) desired trajectory based on maximising performance or effectiveness for mission tasks.
“frequency mask trigger” (Category 3)	“frequency mask trigger” (Category 3) for “signal analysers” means a mechanism where the trigger function is able to select a frequency range to be triggered on as a subset of the acquisition bandwidth while ignoring other signals that may also be present within the same acquisition bandwidth. A “frequency mask trigger” may contain more than one independent set of limits;	<u>Technical Notes</u> --- 4. A ‘frequency mask trigger’ is a mechanism where the trigger function is able to select a frequency range to be triggered on as a subset of the acquisition bandwidth while ignoring other signals that may also be present within the same acquisition bandwidth. A ‘frequency mask trigger’ may contain more than one independent set of limits.

Category Code	SGCO 2018	SGCO 2019
“frequency synthesiser” (Category 3)	“frequency synthesiser” (Category 3) means any kind of frequency source, regardless of the actual technique used, providing a multiplicity of simultaneous or alternative output frequencies, from one or more outputs, controlled by, derived from or disciplined by a lesser number of standard (or master) frequencies;	<u>Technical Note</u> <i>A 'frequency synthesiser' is any kind of frequency source, regardless of the actual technique used, providing a multiplicity of simultaneous or alternative output frequencies, from one or more outputs, controlled by, derived from or disciplined by a lesser number of standard (or master) frequencies.</i>
“gas atomisation” (Category 1)	“gas atomisation” (Category 1) means a process to reduce a molten stream of metal alloy to droplets of 500 micrometre diameter or less by a high pressure gas stream;	<u>Technical Notes</u> --- 2. ‘Gas atomisation’ is a process to reduce a molten stream of metal alloy to droplets of 500 µm diameter or less by a high pressure gas stream
“geographically dispersed” (Category 6)	“geographically dispersed” (Category 6) means a state where each location is distant from any other location by more than 1,500 m in any direction. Mobile sensors are always considered “geographically dispersed”;	<u>Technical Note</u> <i>Sensors are considered ‘geographically dispersed’ when each location of a sensor is more than 1,500 m away from any other sensor in any direction. Mobile sensors are always considered ‘geographically dispersed’.</i>
“hot isostatic densification” (Category 2)	“hot isostatic densification” (Category 2) means the process of pressurising a casting at temperatures exceeding 375 K (102°C) in a closed cavity through various media (gas, liquid, solid particles, etc.) to create equal force in all directions to reduce or eliminate internal voids in the casting;	<u>Technical Notes</u> --- 2 ‘Hot isostatic densification’ is a process of pressurising a casting at temperatures exceeding 375 K (102°C) in a closed cavity through various media (gas, liquid, solid particles, etc.) to create equal force in all directions to reduce or eliminate internal voids in the casting
“Interleaved Analogue-to-Digital Converter (ADC)” (Category 3)	-	“Interleaved Analogue-to-Digital Converter (ADC)” (Category 3) means devices that have multiple ADC units that sample the same analogue input at different times such that when the outputs are aggregated, the analogue input has been effectively sampled and converted at a higher sampling rate.
“laser” (Categories 0, 1, 2, 3, 5, 6, 7, 8, 9)	“laser” (Categories 0, 1, 2, 3, 5, 6, 7, 8, 9) means an item that produces spatially and temporally coherent light through amplification by stimulated emission of radiation;	“laser” (Categories 0, 1, 2, 3, 5, 6, 7, 8, 9) means an item that produces spatially and temporally coherent light through amplification by stimulated emission of radiation;

Category Code	SGCO 2018	SGCO 2019
	<p><u>N.B.</u></p> <p>See also:</p> <ul style="list-style-type: none"> - “Chemical laser”; - “CW laser”; - “Pulsed laser”; - “Super High Power Laser”; - “Transfer Laser”; 	<p><u>N.B.</u></p> <p>See also:</p> <ul style="list-style-type: none"> - “Chemical laser”; - “CW laser”; - “Pulsed laser”; - “Super High Power Laser”;
“linearity”	<p>“linearity” (Category 2) (usually measured in terms of non-linearity) means the maximum deviation of the actual characteristic (average of upscale and downscale readings), positive or negative, from a straight line so positioned as to equalise and minimise the maximum deviations;</p>	<p><u>Technical Notes</u></p> <p>---</p> <p>2. ‘linearity’ (usually measured in terms of non-linearity) means the maximum deviation of the actual characteristic (average of upscale and downscale readings), positive or negative, from a straight line so positioned as to equalise and minimise the maximum deviations.</p>
“main storage” (Category 4)	<p>“main storage” (Category 4) means the primary storage for data or instructions for rapid access by a Central Processing Unit (CPU). It consists of the internal storage of a “digital computer” and any hierarchical extension thereto, such as cache storage or non-sequentially accessed extended storage;</p>	<p><u>Technical Note</u></p> <p>‘Main storage’ is the primary storage for data or instructions for rapid access by a central processing unit. It consists of the internal storage of a “digital computer” and any hierarchical extension thereto, such as cache storage or non-sequentially accessed extended storage.</p>
“mechanical alloying” (Category 1)	<p>“mechanical alloying” (Category 1) means an alloying process resulting from the bonding, fracturing and rebonding of elemental and master alloy powders by mechanical impact. Non-metallic particles may be incorporated in the alloy by addition of the appropriate powders;</p>	<p><u>Technical Notes</u></p> <p>---</p> <p>8 ‘Mechanical alloying’ is an alloying process resulting from the bonding, fracturing and rebonding of elemental and master alloy powders by mechanical impact. Non-metallic particles may be incorporated in the alloy by addition of the appropriate powders.</p>
“melt extraction” (Category 1)	<p>“melt extraction” (Category 1) means a process to ‘solidify rapidly’ and extract a ribbon-like alloy product by the insertion of a short</p>	<p><u>Technical Notes</u></p> <p>---</p>

Category Code	SGCO 2018	SGCO 2019
	<p>segment of a rotating chilled block into a bath of a molten metal alloy;</p> <p><u>Technical Note</u></p> <p><i>‘Solidify rapidly’ means solidification of molten material at cooling rates exceeding 1,000 K/s.</i></p>	<p>2 <i>‘Melt extraction’ is a process to ‘solidify rapidly’ and extract a ribbon-like alloy product by the insertion of a short segment of a rotating chilled block into a bath of a molten metal alloy.</i></p> <p>-</p> <p>-</p> <p>-</p> <p>10 <i>‘Solidify rapidly’ is a process involving the solidification of molten material at cooling rates exceeding 1,000 K/sec..</i></p>
“melt spinning” (Category 1)	<p>“melt spinning” (Category 1) means a process to ‘solidify rapidly’ a molten metal stream impinging upon a rotating chilled block, forming a flake, ribbon or rod-like product;</p> <p><u>Technical Note</u></p> <p><i>‘Solidify rapidly’ means solidification of molten material at cooling rates exceeding 1,000 K/s.</i></p>	<p><u>Technical Notes</u></p> <p>---</p> <p>5 <i>‘Melt spinning’ is a process to ‘solidify rapidly’ a molten metal stream impinging upon a rotating chilled block, forming a flake, ribbon or rod-like product.</i></p> <p>-</p> <p>-</p> <p>-</p> <p>10 <i>‘Solidify rapidly’ is a process involving the solidification of molten material at cooling rates exceeding 1,000 K/sec..</i></p>
“multiple channel Analogue-to-Digital Converter (ADC)” (Category 3)	-	<p>“multiple channel Analogue-to-Digital Converter (ADC)” (Category 3) means devices that integrate more than one ADC, designed so that each ADC has a separate analogue input.</p>
“neural computer” (Category 4)	<p>“neural computer” (Category 4) means a computational device designed or modified to mimic the behaviour of a neuron or a collection of neurons, i.e. a computational device which is distinguished by its hardware capability to modulate the weights and numbers of the interconnections of a multiplicity of computational components based on previous data;</p>	<p><u>Technical Notes</u></p> <p>---</p> <p>2 <i>‘Neural computers’ are computational devices designed or modified to mimic the behaviour of a neuron or a collection of neurons, i.e., computational devices which are distinguished by their hardware capability to modulate the weights and numbers of the interconnections of a multiplicity of computational components based on previous data.</i></p>

Category Code	SGCO 2018	SGCO 2019
“optical computer” (Category 4)	“optical computer” (Category 4) means a computer designed or modified to use light to represent data, and the computational logic elements of which are based on directly coupled optical devices;	<u>Technical Notes</u> --- 3 ‘Optical computers’ are computers designed or modified to use light to represent data and whose computational logic elements are based on directly coupled optical devices.
“plasma atomisation” (Category 1)	“plasma atomisation” (Category 1) means a process to reduce a molten stream or solid metal to droplets of 500 µm diameter or less, using plasma torches in an inert gas environment;	<u>Technical Notes</u> --- 9 ‘Plasma atomisation’ is a process to reduce a molten stream or solid metal to droplets of 500 µm diameter or less, using plasma torches in an inert gas environment.
“power management” (Category 7)	“power management” (Category 7) means changing the transmitted power of the altimeter signal so that received power at the “aircraft” altitude is always at the minimum necessary to determine the altitude;	<u>Technical Note</u> ‘Power management’ is changing the transmitted power of the altimeter signal so that received power at the “aircraft” altitude is always at the minimum necessary to determine the altitude.
“primary flight control” (Category 7)	“primary flight control” (Category 7) means an “aircraft” stability or manoeuvring control using force or moment generators, i.e. aerodynamic control surfaces or propulsive thrust vectoring;	<u>Technical Note</u> ‘Primary flight control’ is “aircraft” stability or manoeuvring control using force or moment generators, i.e. aerodynamic control surfaces or propulsive thrust vectoring.
“real-time bandwidth” (Category 3)	“real-time bandwidth” (Category 3) for “signal analysers” means the widest frequency range for which the analyser can continuously transform time-domain data entirely into frequency-domain results using a Fourier or other discrete time transformation that processes every incoming time point, without a reduction of measured amplitude of more than 3 dB below the actual signal amplitude caused by gaps or windowing effects, while outputting or displaying the transformed data;	<u>Technical Note</u> 1 ‘Real-time bandwidth’ is the widest frequency range for which the analyser can continuously transform time-domain data entirely into frequency-domain results, using a Fourier or other discrete time transform that processes every incoming time point, without a reduction of measured amplitude of more than 3 dB below the actual signal amplitude caused by gaps or windowing effects, while outputting or displaying the transformed data.
“rotary atomisation” (Category 1)	“rotary atomisation” (Category 1) means a process to reduce a stream or pool of molten metal to droplets to a diameter of 500 micrometre or less by centrifugal force;	<u>Technical Note</u> 9 ‘Rotary atomisation’ is a process to reduce a stream or pool of molten metal to droplets to a diameter of 500 µm or less by centrifugal force.
“Sample rate” (Category 3)	-	“Sample rate” (Category 3), in the case of an Analogue-to-Digital Converter (ADC) that is not an oversampling ADC, means the maximum number of samples that are measured at the analogue

Category Code	SGCO 2018	SGCO 2019
		input over a period of one second. For an oversampling ADCs, the “sample rate” is taken to be its output word rate. “Sample rate” may also be referred to as sampling rate (usually specified in Mega Samples Per Second (MSPS) or Giga Samples Per Second (GSPS)) or conversion rate (usually specified in Hertz (Hz)).
“settling time” (Category 3)	“settling time” (Category 3) means the time required for the output to come within one-half bit of the final value when switching between any two levels of the converter;	<i>‘settling time’ means the time required for the output to come within one-half bit of the final value when switching between any two levels of the converter.</i>
“Steady State Mode” (Category 9)	-	“Steady State Mode” (Category 9) defines engine operation conditions, where the engine parameters, such as thrust/power, revolution per minute and others, have no appreciable fluctuations, when the ambient air temperature and pressure at the engine inlet are constant.
“splat quenching” (Category 1)	<p>“splat quenching” (Category 1) means a process to ‘solidify rapidly’ a molten metal stream impinging upon a chilled block, forming a flake-like product;</p> <p><u>Technical Note</u> <i>‘Solidify rapidly’ means solidification of molten material at cooling rates exceeding 1,000 K/s.</i></p>	<p><u>Technical Notes</u></p> <p>---</p> <p>4 <i>‘Splat quenching’ is a process to ‘solidify rapidly’ a molten metal stream impinging upon a chilled block, forming a flake-like product.</i></p> <p>-</p> <p>-</p> <p>-</p> <p>10 <i>‘Solidify rapidly’ is a process involving the solidification of molten material at cooling rates exceeding 1,000 K/sec..</i></p>
“systolic array computer” (Category 4)	“systolic array computer” (Category 4) means a computer where the flow and modification of the data is dynamically controllable at the logic gate level by the user;	<p><u>Technical Notes</u></p> <p>1 <i>‘Systolic array computers’ are computers where the flow and modification of the data is dynamically controllable at the logic gate level by the user.</i></p>
“Time-to-steady-state registration” (Category 6)	<p><u>Technical Note</u></p> <p><i>For the purpose of Category Code 6A007.b., ‘time-to-steady-state registration’ (also referred to as the gravimeter’s response time) is the time over which the disturbing effects of platform induced accelerations (high frequency noise) are reduced.</i></p>	“Time-to-steady-state registration” (Category 6) (also referred to as the gravimeter’s response time) means the time over which the disturbing effects of platform induced accelerations (high frequency noise) are reduced.

Category Code	SGCO 2018	SGCO 2019
“transfer laser” (Category 6)	“transfer laser” (Category 6) means a “laser” in which the lasing species is excited through the transfer of energy by collision of a non-lasing atom or molecule with a lasing atom or molecule species;	<u>Technical Note</u> <i>‘Transfer lasers’ are “lasers” in which the lasing species are excited through the transfer of energy by collision of a non- lasing atom or molecule with a lasing atom or molecule species.</i>
“vacuum atomisation” (Category 1)	“vacuum atomisation” (Category 1) means a process to reduce a molten stream of metal to droplets of a diameter of 500 micrometre or less by the rapid evolution of a dissolved gas upon exposure to a vacuum;	<u>Technical Notes</u> <i>1 ‘Vacuum atomisation’ is a process to reduce a molten stream of metal to droplets of a diameter of 500 µm or less by the rapid evolution of a dissolved gas upon exposure to a vacuum.</i>
“variable geometry airfoils” (Category 7)	“variable geometry airfoils” (Category 7) means the use of trailing edge flaps or tabs, or leading edge slats or pivoted nose droop, the position of which can be controlled in flight;	<u>Technical Note</u> <i>‘Variable geometry airfoils’ use trailing edge flaps or tabs, or leading edge slats or pivoted nose droop, the position of which can be controlled in flight.</i>

Category 1

1A002

Category Code	SGCO 2018	SGCO 2019
1A002.a. and 1A002.b.	<p>“Composite” structures or laminates, having either of the following characteristics:</p> <p><u>N.B.</u></p> <p><i>See also Category Codes 1A202, 9A010 and 9A110.</i></p> <ol style="list-style-type: none"> Consisting of an organic “matrix” and materials specified in Category Code 1C010.c., 1C010.d. or 1C010.e.; <u>or</u> Consisting of a metal or carbon “matrix”, and either of the following: <ol style="list-style-type: none"> Carbon “fibrous or filamentary materials” having both of the following characteristics: <ol style="list-style-type: none"> A “specific modulus” exceeding 10.15×10^6 m; <u>and</u> A “specific tensile strength” exceeding 17.7×10^4 m; <u>or</u> Materials specified in Category Code 1C010.c. 	<p>“Composite” structures or laminates, as follows:</p> <p><u>N.B.</u></p> <p><i>See also Category Codes 1A202, 9A010 and 9A110.</i></p> <ol style="list-style-type: none"> Made from either of the following: <ol style="list-style-type: none"> An organic “matrix” and “fibrous or filamentary materials” specified in Category Code 1C010.c. or 1C010.d.; <u>or</u> Prepregs or preforms specified in Category Code 1C010.e.; Made from a metal or carbon “matrix”, and either of the following: <ol style="list-style-type: none"> Carbon “fibrous or filamentary materials” having both of the following characteristics: <ol style="list-style-type: none"> A “specific modulus” exceeding 10.15×10^6 m; <u>and</u> A “specific tensile strength” exceeding 17.7×10^4 m; <u>or</u> Materials specified in Category Code 1C010.c.

1B117

Category Code	SGCO 2018	SGCO 2019
1B117	<p>Batch mixers with provision for mixing under vacuum in the range of zero to 13.326 kPa and with temperature control capability of the mixing chamber and having both of the following characteristics, and specially designed components therefor:</p> <ol style="list-style-type: none"> A total volumetric capacity of 110 litres or more; <u>and</u> At least one ‘mixing/kneading shaft’ mounted off centre. <p><u>Note</u></p> <p><i>In Category Code 1B117.b., ‘mixing/kneading shaft’ does not refer to deagglomerators or knife-spindles.</i></p>	<p>Batch mixers having all of the following characteristics, and specially designed components therefor:</p> <ol style="list-style-type: none"> Designed or modified for mixing under vacuum in the range of zero to 13.326 kPa; Capable of controlling the temperature of the mixing chamber; A total volumetric capacity of 110 litres or more; <u>and</u> At least one ‘mixing/kneading shaft’ mounted off centre. <p><u>Note</u></p>

Category Code	SGCO 2018	SGCO 2019
		<i>In Category Code 1B117.d., 'mixing/kneading shaft' does not refer to deagglomerators or knife-spindles.</i>

1B118

Category Code	SGCO 2018	SGCO 2019
1B118	<p>Continuous mixers with provision for mixing under vacuum in the range of zero to 13.326 kPa and with a temperature control capability of the mixing chamber and having either of the following, and specially designed components therefor:</p> <ol style="list-style-type: none"> Two or more mixing/kneading shafts; <u>or</u> A single rotating shaft which oscillates and having kneading teeth/pins on the shaft as well as inside the casing of the mixing chamber. 	<p>Continuous mixers having all of the following characteristics, and specially designed components therefor:</p> <ol style="list-style-type: none"> Designed or modified for mixing under vacuum in the range of zero to 13.326 kPa; Capable of controlling the temperature of the mixing chamber; <u>and</u> Having either of the following characteristics: <ol style="list-style-type: none"> Two or more mixing/kneading shafts; <u>or</u> Both of the following characteristics: <ol style="list-style-type: none"> A single rotating and oscillating shaft with kneading teeth/pins; <u>and</u> Kneading teeth/pins inside the casing of the mixing chamber.

1B228

Category Code	SGCO 2018	SGCO 2019
1B228.c.1. and 1B228.c.2.	<p>Hydrogen-cryogenic distillation columns having all of the following characteristics:</p> <ol style="list-style-type: none"> Designed for operation with internal temperatures of 35 K (-238°C) or less; Designed for operation at an internal pressure of 0.5 MPa to 5 MPa; Constructed of either: <ol style="list-style-type: none"> Stainless steel of the 300 series with low sulphur content and with an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; <u>or</u> Equivalent materials which are both cryogenic and H₂-compatible; <u>and</u> With internal diameters of 30 cm or greater and ‘effective lengths’ of 4 m or greater. <p><u>Technical Note</u> <i>In Category Code 1B228, ‘effective length’ means the active height of packing material in a packed-type column, or the active height of internal contactor plates in a plate-type column.</i></p>	<p>Hydrogen-cryogenic distillation columns having all of the following characteristics:</p> <ol style="list-style-type: none"> Designed for operation with internal temperatures of 35 K (-238°C) or less; Designed for operation at an internal pressure of 0.5 MPa to 5 MPa; Constructed of either: <ol style="list-style-type: none"> Stainless steel of the Society of Automotive Engineers International (SAE) 300 series with low sulphur content and with an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; <u>or</u> Equivalent materials which are both cryogenic and hydrogen(H₂)- compatible; and With internal diameters of 30 cm or greater and ‘effective lengths’ of 4 m or greater. <p><u>Technical Note</u> <i>In Category Code 1B228, ‘effective length’ means the active height of packing material in a packed-type column, or the active height of internal contactor plates in a plate-type column.</i></p>

1B229

Category Code	SGCO 2018	SGCO 2019
1B229	<p>Water-hydrogen sulphide exchange tray columns and ‘internal contactors’, as follows:</p> <p><u>N.B.</u></p> <p><i>For columns which are specially designed or prepared for the production of heavy water, see Category Code 0B004.</i></p> <p>a. Water-hydrogen sulphide exchange tray columns, having all of the following characteristics:</p> <ol style="list-style-type: none"> 1. Can operate at pressures of 2 MPa or greater; 2. Constructed of carbon steel having an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; <u>and</u> 3. With a diameter of 1.8 m or greater; <p>b. ‘Internal contactors’ for the water-hydrogen sulphide exchange tray columns specified in Category Code 1B229.a.</p> <p><u>Technical Note</u></p> <p><i>‘Internal contactors’ of the columns are segmented trays which have an effective assembled diameter of 1.8 m or greater, are designed to facilitate countercurrent contacting and are constructed of stainless steels with a carbon content of 0.03% or less. These may be sieve trays, valve trays, bubble cap trays, or turbogrid trays.</i></p>	-

1B234

Category Code	SGCO 2018	SGCO 2019
1B234.a.	<p>High explosive containment vessels, chambers, containers and other similar containment devices designed for the testing of high explosives or explosive devices and having both of the following characteristics:</p> <p><u>N.B.</u></p> <p><i>See also Division 2 of Part 1 of this Schedule.</i></p> <ol style="list-style-type: none"> Designed to fully contain an explosion equivalent to 2 kg of TNT or greater; and Having design elements or features enabling real time or delayed transfer of diagnostic or measurement information. 	<p>High explosive containment vessels, chambers, containers and other similar containment devices designed for the testing of high explosives or explosive devices and having both of the following characteristics:</p> <p><u>N.B.</u></p> <p><i>See also Division 2 of Part 1 of this Schedule.</i></p> <ol style="list-style-type: none"> Designed to fully contain an explosion equivalent to 2 kg of trinitrotoluene (TNT) or greater; and Having design elements or features enabling real time or delayed transfer of diagnostic or measurement information.

1B235(New Category Code)

Category Code	SGCO 2018	SGCO 2019
(New 1B235)	-	<p>Target assemblies and components for the production of tritium as follows:</p> <ol style="list-style-type: none"> Target assemblies made of or containing lithium enriched in the lithium-6 isotope specially designed for the production of tritium through irradiation, including insertion in a nuclear reactor; Components specially designed for the target assemblies specified in Category Code 1B235.a. <p><u>Technical Note</u></p> <p><i>Components specially designed for target assemblies for the production of tritium may include lithium pellets, tritium getters, and specially-coated cladding.</i></p>

1C001

Category Code	SGCO 2018	SGCO 2019
1C001	Materials specially designed for use as absorbers of electromagnetic waves, or intrinsically conductive polymers, as follows: ---	Materials specially designed for absorbing electromagnetic radiation, or intrinsically conductive polymers, as follows: ---
1C001.b.	b. Materials for absorbing frequencies exceeding 1.5×10^{14} Hz but less than 3.7×10^{14} Hz and not transparent to visible light	b. Materials not transparent to visible light and specially designed for absorbing near-infrared radiation having a wavelength exceeding 810 nm but less than 2,000 nm (frequencies exceeding 150 THz but less than 370 THz);

1C002

Category Code	SGCO 2018	SGCO 2019
1C002.c.2. and 1C002.d.3. (New Technical Notes)	Metal alloys, metal alloy powder and alloyed materials, as follows: --- c. Metal alloy powder or particulate material, having all of the following characteristics: --- 2. Made in a controlled environment by any of the following processes: a. "Vacuum atomisation"; b. "Gas atomisation"; c. "Rotary atomisation"; d. "Splat quenching"; e. "Melt spinning" and "comminution"; f. "Melt extraction" and "comminution"; g. "Mechanical alloying"; or h. "Plasma atomisation"; and 3. Capable of forming materials specified in Category Code 1C002.a. or 1C002.b.; d. Alloyed materials having all of the following characteristics:	Metal alloys, metal alloy powder and alloyed materials, as follows: --- c. Metal alloy powder or particulate material, having all of the following characteristics: --- 2. Made in a controlled environment by any of the following processes: a. 'Vacuum atomisation'; b. 'Gas atomisation'; c. 'Rotary atomisation'; d. 'Splat quenching'; e. 'Melt spinning' and 'comminution'; f. 'Melt extraction' and 'comminution'; g. 'Mechanical alloying'; or h. 'Plasma atomisation'; and 3. Capable of forming materials specified in Category Code 1C002.a. or 1C002.b.; d. Alloyed materials having all of the following characteristics:

Category Code	SGCO 2018	SGCO 2019
	<ol style="list-style-type: none"> 1. Made from any of the composition systems specified in Category Code 1C002.c.1.; 2. In the form of uncomminuted flakes, ribbons or thin rods; <u>and</u> 3. Produced in a controlled environment by any of the following: <ol style="list-style-type: none"> a. “Splat quenching”; b. “Melt spinning”; <u>or</u> c. “Melt extraction”. 	<ol style="list-style-type: none"> 1. Made from any of the composition systems specified in Category Code 1C002.c.1.; 2. In the form of uncomminuted flakes, ribbons or thin rods; <u>and</u> 3. Produced in a controlled environment by any of the following: <ol style="list-style-type: none"> a. ‘Splat quenching’; b. ‘Melt spinning’; <u>or</u> c. ‘Melt extraction’. <p><i><u>Technical Notes</u></i></p> <ol style="list-style-type: none"> 1. ‘Vacuum atomisation’ is a process to reduce a molten stream of metal to droplets of a diameter of 500 µm or less by the rapid evolution of a dissolved gas upon exposure to a vacuum.. 2. ‘Gas atomisation’ is a process to reduce a molten stream of metal alloy to droplets of 500 µm diameter or less by a high pressure gas stream. 3. ‘Rotary atomisation’ is a process to reduce a stream or pool of molten metal to droplets to a diameter of 500 µm or less by centrifugal force.. 4. ‘Splat quenching’ is a process to ‘solidify rapidly’ a molten metal stream impinging upon a chilled block, forming a flake-like product. 5. ‘Melt spinning’ is a process to ‘solidify rapidly’ a molten metal stream impinging upon a rotating chilled block, forming a flake, ribbon or rod-like product. 6. ‘Comminution’ is a process to reduce a material to particles by crushing or grinding. 7. ‘Melt extraction’ is a process to ‘solidify rapidly’ and extract a ribbon-like alloy product by the insertion of a short segment of a rotating chilled block into a bath of a molten metal alloy. 8. ‘Mechanical alloying’ is an alloying process resulting from the bonding, fracturing and rebonding of elemental and

Category Code	SGCO 2018	SGCO 2019
		<p><i>master alloy powders by mechanical impact. Non-metallic particles may be incorporated in the alloy by addition of the appropriate powders.</i></p> <p>9. <i>'Plasma atomisation' is a process to reduce a molten stream or solid metal to droplets of 500 µm diameter or less, using plasma torches in an inert gas environment.</i></p> <p>10. <i>'Solidify rapidly' is a process involving the solidification of molten material at cooling rates exceeding 1000 K/sec.</i></p>

1C010

Category Code	SGCO 2018	SGCO 2019
1C010.d.2.	<p>“Fibrous or filamentary materials”, as follows:</p> <p>---</p> <p>d. “Fibrous or filamentary materials”, having either of the following characteristics:</p> <p>---</p> <p>2. Composed of materials specified in Category Code 1C010.d.1.a. or 1C010.d.1.b. and “commingled” with other fibres specified in Category Code 1C010.a., 1C010.b. or 1C010.c.;</p>	<p>“Fibrous or filamentary materials”, as follows:</p> <p>---</p> <p>d. “Fibrous or filamentary materials”, having either of the following characteristics:</p> <p>---</p> <p>2. Composed of materials specified in Category Code 1C010.d.1.a. or 1C010.d.1.b. and ‘commingled’ with other fibres specified in Category Code 1C010.a., 1C010.b. or 1C010.c.;</p> <p><u>Technical Note</u></p> <p><i>‘Commingled’ is filament to filament blending of thermoplastic fibres and reinforcement fibres in order to produce a fibre reinforcement “matrix” mix in total fibre form.</i></p>

Category Code	SGCO 2018	SGCO 2019
1C010.e.	<p>“Fibrous or filamentary materials”, as follows:</p> <p>---</p> <p>e. Fully or partially resin-impregnated or pitch-impregnated “fibrous or filamentary materials” (prepregs), metal or carbon-coated “fibrous or filamentary materials” (preforms) or “carbon fibre preforms”, having both of the following characteristics:</p>	<p>“Fibrous or filamentary materials”, as follows:</p> <p>---</p> <p>e. Fully or partially resin-impregnated or pitch-impregnated “fibrous or filamentary materials” (prepregs), metal or carbon-coated “fibrous or filamentary materials” (preforms) or ‘carbon fibre preforms’, having both of the following characteristics:</p>
(New Technical Note 1)	<p><u>Note 1</u></p> <p><i>Metal or carbon-coated “fibrous or filamentary materials” (preforms) or “carbon fibre preforms”, not impregnated with resin or pitch, are specified by “fibrous or filamentary materials” in Category Code 1C010.a., 1C010.b. or 1C010.c</i></p> <p>---</p> <p><u>Technical Note</u></p> <p><i>The ‘Dynamic Mechanical Analysis glass transition temperature (DMA T_g)’ for materials specified by Category Code 1C010.e. is determined using the method described in ASTM D 7028-07, or equivalent national standard, on a dry test specimen. In the case of thermoset materials, degree of cure of a dry test specimen is a minimum of 90% as defined by ASTM E 2160-04 or equivalent national standard.</i></p>	<p><u>Note 1</u></p> <p><i>Metal or carbon-coated “fibrous or filamentary materials” (preforms) or ‘carbon fibre preforms’, not impregnated with resin or pitch, are specified by “fibrous or filamentary materials” in Category Code 1C010.a., 1C010.b. or 1C010.c</i></p> <p>---</p> <p><u>Technical Note</u></p> <ol style="list-style-type: none"> <i>‘Carbon fibre preforms’ are an ordered arrangement of uncoated or coated fibres intended to constitute a framework of a part before the “matrix” is introduced to form a “composite”.</i> <i>The ‘Dynamic Mechanical Analysis glass transition temperature (DMA T_g)’ for materials specified in Category Code 1C010.e. is determined using the method described in ASTM D 7028-07, or equivalent national standard, on a dry test specimen. In the case of thermoset materials, degree of cure of a dry test specimen shall be a minimum of 90% as defined by ASTM E 2160-04 or equivalent national standard.</i>

1C111

Category Code	SGCO 2018	SGCO 2019
1C111.a.4.	<p>Propellants and constituent chemicals for propellants, other than those specified in Category Code 1C011, as follows:</p> <p>a. Propulsive substances:</p> <p>---</p> <p>4. Hydrazine derivatives as follows:</p> <p>---</p> <p>c. N,N diallylhydrazine (5164-11-4);</p> <p>---</p> <p>q. 3,6-dihydrazino tetrazine nitrate (1,4-dihydrazine nitrate) (DHTN);</p>	<p>Propellants and constituent chemicals for propellants, other than those specified in Category Code 1C011, as follows:</p> <p>a. Propulsive substances:</p> <p>---</p> <p>4. Hydrazine derivatives as follows:</p> <p>---</p> <p>c. N,N-Diallylhydrazine (5164-11-4);</p> <p>---</p> <p>q. 3,6-Dihydrazino tetrazine nitrate (1,4-dihydrazine nitrate) (DHTN);</p>

1C118

Category Code	SGCO 2018	SGCO 2019
1C118.a.	<p>Titanium stabilised duplex stainless steel (Ti-DSS) having both of the following characteristics:</p> <p>a. Having all of the following characteristics:</p> <ol style="list-style-type: none"> 1. Containing 17-23% by weight chromium and 4.5-7% by weight nickel; 2. Having a titanium content of greater than 0.10% by weight; and 3. A ferritic austenitic microstructure (also referred to as a two phase microstructure) of which at least 10% is austenite by volume (according to ASTM E-1181-87 or national equivalents); and 	<p>Titanium stabilised duplex stainless steel (Ti-DSS) having both of the following characteristics:</p> <p>a. Having all of the following characteristics:</p> <ol style="list-style-type: none"> 1. Containing 17%-23% by weight of chromium and 4.5%-7% by weight of nickel; 2. Having a titanium content of greater than 0.1% by weight; and 3. A ferritic austenitic microstructure (also referred to as a two phase microstructure) of which at least 10% by volume (according to ASTM E-1181-87 or national equivalents) is austenite; and

1C226

Category Code	SGCO 2018	SGCO 2019
1C226	Tungsten, tungsten carbide, and alloys containing more than 90% tungsten by weight, other than that specified by Category Code 1C117, having both of the following characteristics:	Tungsten, tungsten carbide, and alloys containing more than 90% tungsten by weight, other than that specified in Category Code 1C117, having both of the following characteristics:

1C236

Category Code	SGCO 2018	SGCO 2019
1C236 Technical Note	<p>‘Radionuclides’ appropriate for making neutron sources based on alpha-n reaction, other than those specified in Category Codes 0C001 and 1C012.a., in the following forms:</p> <p>---</p> <p><u>Technical Note</u></p> <p><i>In Category Code 1C236, ‘radionuclides’ are any of the following:</i></p> <ul style="list-style-type: none"> – Actinium-225 (Ac-225) – Actinium-227 (Ac-227) – Californium-253 (Cf-253) – Curium-240 (Cm-240) – Curium-241 (Cm-241) – Curium-242 (Cm-242) – Curium-243 (Cm-243) – Curium-244 (Cm-244) – Einsteinium-253 (Es-253) – Einsteinium-254 (Es-254) – Gadolinium-148 (Gd-148) – Plutonium-236 (Pu-236) – Plutonium-238 (Pu-238) – Polonium-208 (Po-208) – Polonium-209 (Po-209) – Polonium-210 (Po-210) – Radium-223 (Ra-223) – Thorium-227 (Th-227) – Thorium-228 (Th-228) – Uranium-230 (U-230) 	<p>‘Radionuclides’ appropriate for making neutron sources based on alpha-n reaction, other than those specified in Category Codes 0C001 and 1C012.a., in the following forms:</p> <p>---</p> <p><u>Technical Note</u></p> <p><i>In Category Code 1C236, ‘radionuclides’ are any of the following:</i></p> <ul style="list-style-type: none"> – Actinium-225 (^{225}Ac) – Actinium-227 (^{227}Ac) – Californium-253 (^{253}Cf) – Curium-240 (^{240}Cm) – Curium-241 (^{241}Cm) – Curium-242 (^{242}Cm) – Curium-243 (^{243}Cm) – Curium-244 (^{244}Cm) – Einsteinium-253 (^{253}Es) – Einsteinium-254 (^{254}Es) – Gadolinium-148 (^{148}Gd) – Plutonium-236 (^{236}Pu) – Plutonium-238 (^{238}Pu) – Polonium-208 (^{208}Po) – Polonium-209 (^{209}Po) – Polonium-210 (^{210}Po) – Radium-223 (^{223}Ra) – Thorium-227 (^{227}Th) – Thorium-228 (^{228}Th) – Uranium-230 (^{230}U)

Category Code	SGCO 2018	SGCO 2019
	– Uranium-232 (U-232)	– Uranium-232 (²³² U)

1C350

Category Code	SGCO 2018	SGCO 2019
1C350	<p>Chemicals, which may be used as precursors for toxic chemical agents, as follows, and “chemical mixtures” containing one or more thereof:</p> <p><u>N.B</u> See also Division 2 of Part 1 of this Schedule and Category Code 1C450</p> <p>---</p> <p>63. Methylphosphonothioic dichloride (676-98-2); 64. Diethylamine (109-89-7).</p>	<p>Chemicals, which may be used as precursors for toxic chemical agents, as follows, and “chemical mixtures” containing one or more thereof:</p> <p><u>N.B</u> See also Division 2 of Part 1 of this Schedule and Category Code 1C450</p> <p>---</p> <p>63. Methylphosphonothioic dichloride (676-98-2); 64. Diethylamine (109-89-7); 65. N,N-Diisopropylaminoethanethiol hydrochloride (41480-75-5).</p>

1C353

Category Code	SGCO 2018	SGCO 2019
1C353	<p>Genetic elements and genetically modified organisms, as follows:</p> <p>a. Genetically modified organisms or genetic elements that contain nucleic acid sequences associated with pathogenicity of organisms specified in Category Code 1C351.a., 1C351.c., 1C351.e. or 1C354;</p> <p>b. Genetically modified organisms or genetic elements that contain nucleic acid sequences coding for any of the “toxins” specified in Category Code 1C351.d. or “sub-units of toxins” thereof.</p>	<p>‘Genetic elements’ and ‘genetically-modified organisms’, as follows:</p> <p>a. Any ‘genetically-modified organism’ which contains, or ‘genetic element’ that codes for, any of the following:</p> <ol style="list-style-type: none"> Any gene or genes specific to any virus specified in Category Code 1C351.a. or 1C354.a.; Any gene or genes specific to bacterium specified in Category Code 1C351.c. or 1C354.b. or fungus specified in Category Code 1C351.e. or 1C354.c., and which is either of the following:

Category Code	SGCO 2018	SGCO 2019
		<ul style="list-style-type: none"> a. In itself or through its transcribed or translated products represents a significant hazard to human, animal or plant health, <u>or</u> b. Could ‘endow or enhance pathogenicity’, <u>or</u> 3. Any “toxins” specified in Category Code 1C351.d. or “sub-units of toxins” therefor.
1C353 Technical Notes	<u>Technical Notes</u> <ul style="list-style-type: none"> 1. Genetically modified organisms include organisms in which the genetic material (nucleic acid sequences) has been altered in a way that does not occur naturally by mating and/or natural recombination, and encompasses those produced artificially in whole or in part. 2. Genetic elements include inter alia chromosomes, genomes, plasmids, transposons, and vectors whether genetically modified or unmodified, or chemically synthesised in whole or in part. 3. Nucleic acid sequences associated with the pathogenicity of any of the “microorganisms” specified in Category Code 1C351.a., 1C351.c., 1C351.e. or 1C354 means any sequence specific to the specified “microorganism” that: <ul style="list-style-type: none"> a. In itself or through its transcribed or translated products represents a significant hazard to human, animal or plant health; or b. Is known to enhance the ability of a specified “microorganism”, or any other organism into which it may be inserted or otherwise integrated, to cause serious harm to humans, animals or plant health. 	<u>Technical Notes</u> <ul style="list-style-type: none"> 1. ‘Genetically-modified organisms’ include organisms in which the nucleic acid sequences have been created or altered by deliberate molecular manipulation. 2. ‘Genetic elements’ include chromosomes, genomes, plasmids, transposons, vectors and inactivated organisms containing recoverable nucleic acid fragments, whether genetically modified or unmodified, or chemically synthesised in whole or in part. For the purposes of the genetic elements control, nucleic acids from an inactivated organism, virus, or sample are considered recoverable if the inactivation and preparation of the material is intended or known to facilitate isolation, purification, amplification, detection, or identification of nucleic acids. 3. ‘Endow or enhance pathogenicity’ is defined as when the insertion or integration of the nucleic acid sequence or sequences are likely to enable or increase a recipient organism’s ability to be used to deliberately cause disease or death. This might include alterations to, virulence, transmissibility, stability, route of infection, host range, reproducibility, ability to evade or suppress host immunity, resistance to medical countermeasures, or detectability.

Category Code	SGCO 2018	SGCO 2019
	<p><u>Note</u></p> <p>Category Code 1C353 does not extend to nucleic acid sequences associated with the pathogenicity of enterohaemorrhagic <i>Escherichia coli</i>, serotype O157 and other verotoxin producing strains, other than those coding for the verotoxin, or for its sub-units.</p>	<p><u>Note</u></p> <p>Category Code 1C353 does not extend to nucleic acid sequences of shiga toxin producing <i>Escherichia coli</i> of serogroups O26, O45, O103, O104, O111, O121, O145, O157, and other shiga toxin producing serogroups, other than those genetic elements coding for shiga toxin, or for its subunits.</p>

1C450

Category Code	SGCO 2018	SGCO 2019
1C450	<p>Toxic chemicals and toxic chemical precursors, as follows, and “chemical mixtures” containing one or more thereof:</p> <p>---</p> <p>b. Toxic chemical precursors, as follows:</p> <p>---</p> <p>6. N,N-Dialkyl [methyl, ethyl or propyl (normal or iso)] aminoethane-2-thiols and corresponding protonated salts, other than N,N-Diisopropyl-(beta)-aminoethane thiol which is specified in Category Code 1C350;</p>	<p>Toxic chemicals and toxic chemical precursors, as follows, and “chemical mixtures” containing one or more thereof:</p> <p>---</p> <p>b. Toxic chemical precursors, as follows:</p> <p>---</p> <p>6. N,N-Dialkyl [methyl, ethyl or propyl (normal or iso)] aminoethane-2-thiols and corresponding protonated salts, other than N,N-Diisopropyl-(beta)-aminoethane thiol (5842-07-9) and N,N-Diisopropylaminoethanethiol hydrochloride (41480-75-5) which is specified in Category Code 1C350</p>

1E104

Category Code	SGCO 2018	SGCO 2019
1E104	<p>“Technology” relating to the “production” of pyrolytically derived materials formed on a mould, mandrel or other substrate from precursor gases which decompose in the 1,573 K (1,300 °C) to 3,173 K (2,900°C) temperature range at pressures of 130 Pa to 20 kPa.</p>	<p>“Technology” for the “production” of pyrolytically derived materials formed on a mould, mandrel or other substrate from precursor gases which decompose in the 1,573 K (1,300°C) to 3,173 K (2,900°C) temperature range at pressures of 130 Pa to 20 kPa.</p>

Category 2**2A001**

Category Code	SGCO 2018	SGCO 2019
2A001 Note	<u>Note</u> Category Code 2A001 does not include balls with tolerances specified by the manufacturer in accordance with Ref. ISO 3290 as grade 5 or worse.	<u>Note</u> Category Code 2A001 does not include balls with tolerances specified by the manufacturer in accordance with Ref. ISO 3290 as grade 5 (or national equivalents) or worse.

2B Technical Note

Category Code	SGCO 2018	SGCO 2019
2B Technical Note	<u>Technical Notes</u> --- 5. Stated “Unidirectional Positioning Repeatability”(“UPR”) may be used for each machine tool model as an alternative to individual machine tests and is determined as follows: --- e. If any axis of a machine model not included under Category Codes 2B001.a. to 2B001.c. has a stated “Unidirectional Positioning Repeatability” (“UPR”) equal to or less than the specified “Unidirectional Positioning Repeatability” (“UPR”) of each machine tool model plus 0.7 µm, the builder should be required to reaffirm the accuracy level once every eighteen months.	<u>Technical Notes</u> --- 5. Stated “Unidirectional Positioning Repeatability”(“UPR”) may be used for each machine tool model as an alternative to individual machine tests and is determined as follows: --- e. If any axis of a machine model not specified in Category Codes 2B001.a. to 2B001.c. has a stated “Unidirectional Positioning Repeatability” (“UPR”) equal to or less than the specified “Unidirectional Positioning Repeatability” (“UPR”) of each machine tool model plus 0.7 µm, the builder should be required to reaffirm the accuracy level once every eighteen months.

2B001

Category Code	SGCO 2018	SGCO 2019
2B001.a Note 2	Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or “composites”, which, according to the manufacturer’s technical specification, can be equipped with electronic devices for “numerical control”, as follows:	Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or “composites”, which, according to the manufacturer’s technical specification, can be equipped with electronic devices for “numerical control”, as follows:

Category Code	SGCO 2018	SGCO 2019
	<p>---</p> <p>a. Machine tools for turning having two or more axes which can be coordinated simultaneously for “contouring control” having either of the following characteristics:</p> <p>---</p> <p><u>Note 2</u></p> <p><i>Category Code 2B001.a. does not include bar machines (Swissturn), limited to machining only bar feed through, if maximum bar diameter is equal to or less than 42 mm and there is no capability of mounting chucks. Machines may have drilling and/or milling capabilities for machining parts with diameters less than 42 mm.</i></p>	<p>---</p> <p>a. Machine tools for turning having two or more axes which can be coordinated simultaneously for “contouring control” having either of the following characteristics:</p> <p>---</p> <p><u>Note 2</u></p> <p><i>Category Code 2B001.a. does not include bar machines (Swissturn), limited to machining only bar feed through, if maximum bar diameter is equal to or less than 42 mm and there is no capability of mounting chucks. Machines may have drilling or milling capabilities for machining parts with diameters less than 42 mm</i></p>
2B001.c.1.b.	<p>Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or “composites”, which, according to the manufacturer’s technical specification, can be equipped with electronic devices for “numerical control”, as follows:</p> <p>---</p> <p>c. Machine tools for grinding having either of the following characteristics:</p> <p>1. Having both of the following characteristics:</p> <p>a. “Unidirectional Positioning Repeatability” (“UPR”) equal to or less (better) than 1.1 µm along one or more linear axes; <u>and</u></p> <p>b. Three or more axes which can be coordinated simultaneously for “contouring control”; <u>or</u></p>	<p>Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or “composites”, which, according to the manufacturer’s technical specification, can be equipped with electronic devices for “numerical control”, as follows:</p> <p>---</p> <p>c. Machine tools for grinding having either of the following characteristics:</p> <p>1. Having both of the following characteristics:</p> <p>a. “Unidirectional Positioning Repeatability” (“UPR”) equal to or less (better) than 1.1 µm along one or more linear axes; <u>and</u></p> <p>b. Three or four axes which can be coordinated simultaneously for “contouring control”; <u>or</u></p>

2B006

Category Code	SGCO 2018	SGCO 2019
2B006.a.	<p>Dimensional inspection or measuring systems, equipment and “electronic assemblies”, as follows:</p> <p>a. Computer controlled or “numerically controlled” Coordinate Measuring Machines (CMM), having a three dimensional</p>	<p>Dimensional inspection or measuring systems, equipment, position feedback units and “electronic assemblies”, as follows:</p> <p>a. Computer controlled or “numerical controlled” Coordinate Measuring Machines (CMM), having a three dimensional</p>

Category Code	SGCO 2018	SGCO 2019
	(volumetric) maximum permissible error of length measurement ($E_{0,MPE}$) at any point within the operating range of the machine (i.e. within the length of axes) equal to or less (better) than $(1.7 + L/1,000) \mu\text{m}$ (L is the measured length in mm), according to Ref. ISO 10360-2 (2009);	(volumetric) maximum permissible error of length measurement ($E_{0,MPE}$) at any point within the operating range of the machine (i.e. within the length of axes) equal to or less (better) than $(1.7 + L/1,000) \mu\text{m}$ (L is the measured length in mm), according to Ref. ISO 10360-2:2009;
2B006.b.	<p>b. Linear and angular displacement measuring instruments, as follows:</p> <ol style="list-style-type: none"> 1. 'Linear displacement' measuring instruments having any of the following: <p><u>Note</u> <i>Interferometer and optical-encoder displacement measuring systems containing a "laser" are only included in Category Codes 2B006.b.1.c. and 2B206.c.</i></p> <p><u>Technical Note</u> <i>For the purpose of Category Code 2B006.b.1., 'linear displacement' means the change of distance between the measuring probe and the measured object.</i></p> <ol style="list-style-type: none"> a. Non-contact type measuring systems with a "resolution" equal to or less (better) than $0.2 \mu\text{m}$ within a measuring range up to 0.2 mm; b. Linear Variable Differential Transformer (LVDT) systems having both of the following characteristics: <ol style="list-style-type: none"> 1. Having either of the following characteristics: <ol style="list-style-type: none"> a. "Linearity" equal to or less (better) than 0.1% measured from 0 to the 'full operating range', for LVDTs with a 'full operating range' up to and including $\pm 5 \text{ mm}$; <u>or</u> b. "Linearity" equal to or less (better) than 0.1% measured from 0 to 5 mm 	<p>b. Linear displacement measuring instruments or systems, linear position feedback units, and "electronic assemblies", as follows:</p> <p><u>Note</u> <i>Interferometer and optical-encoder measuring systems containing a "laser" are only specified in Category Codes 2B006.b.3. and 2B206.c.</i></p> <ol style="list-style-type: none"> 1. 'Non-contact type measuring systems' with a "resolution" equal to or less (better) than $0.2 \mu\text{m}$ within a measuring range up to 0.2 mm; <p><u>Technical Note</u> <i>For the purposes of Category Code 2B006.b.1., 'non-contact type measuring systems' are designed to measure the distance between the probe and measured object along a single vector, where the probe or measured object is in motion.</i></p> <ol style="list-style-type: none"> 2. Linear position feedback units specially designed for machine tools and having an overall "accuracy" less (better) than $(800 + (600 \times L/1\,000)) \text{ nm}$ (L equals effective length in mm); 3. Measuring systems having all of the following characteristics: <ol style="list-style-type: none"> a. Containing a "laser"; b. A "resolution" over their full scale of 0.2 nm or less (better); and

Category Code	SGCO 2018	SGCO 2019
	<p>for LVDTs with a ‘full operating range’ greater than ± 5 mm; <u>and</u></p> <p>2. Drift equal to or less (better) than 0.1% per day at a standard ambient test room temperature ± 1 K;</p> <p><i>Technical Note</i> <i>For the purpose of Category Code 2B006.b.1.b., ‘full operating range’ is half of the total possible linear displacement of the LVDT. For example, LVDTs with a ‘full operating range’ up to and including ± 5 mm can measure a total possible linear displacement of 10 mm.</i></p> <p>c. Measuring systems having all of the following characteristics:</p> <ol style="list-style-type: none"> 1. Containing a “laser”; 2. A “resolution” over their full scale of 0.2 nm or less (better); and 3. Capable of achieving a “measurement uncertainty” equal to or less (better) than $(1.6 + L/2,000)$ nm (L is the measured length in mm) at any point within a measuring range, when compensated for the refractive index of air and measured over a period of 30 seconds at a temperature of $20 \pm 0.01^\circ\text{C}$; or <p>d. “Electronic assemblies” specially designed to provide feedback capability in systems specified in Category Code 2B006.b.1.c.;</p> <p><i>Note</i> <i>Category Code 2B006.b.1. does not include measuring interferometer systems, with an automatic control system that is designed to use no feedback techniques,</i></p>	<p>c. Capable of achieving a “measurement uncertainty” equal to or less (better) than $(1.6 + L/2,000)$ nm (L is the measured length in mm) at any point within a measuring range, when compensated for the refractive index of air and measured over a period of 30 seconds at a temperature of $20 \pm 0.01^\circ\text{C}$; <u>or</u></p> <p>4. “Electronic assemblies” specially designed to provide feedback capability in systems specified in Category Code 2B006.b.3.;</p>

Category Code	SGCO 2018	SGCO 2019
	<p><i>containing a “laser” to measure slide movement errors of machine-tools, dimensional inspection machines or similar equipment.</i></p> <p>2. Angular displacement measuring instruments having an angular position “accuracy” equal to or less (better) than 0.00025°; <u>Note</u> <i>Category Code 2B006.b.2. does not include optical instruments, such as autocollimators, using collimated light (e.g. “laser light”) to detect angular displacement of a mirror.</i></p>	
2B006.c.	<p>c. Equipment for measuring surface roughness (including surface defects), by measuring optical scatter with a sensitivity of 0.5 nm or less (better).</p>	<p>c. Rotary position feedback units specially designed for machine tools or angular displacement measuring instruments, having an angular position “accuracy” equal to or less (better) than 0.9 second of arc;</p> <p><u>Note</u> <i>Category Code 2B006.c. does not include optical instruments, such as autocollimators, using collimated light (e.g. “laser” light) to detect angular displacement of a mirror.</i></p>
(New 2B006.d.)	-	<p>d. Equipment for measuring surface roughness (including surface defects), by measuring optical scatter with a sensitivity of 0.5 nm or less (better).</p>

2B007

Category Code	SGCO 2018	SGCO 2019
2B007.a.	<p>“Robots” having any of the following characteristics and specially designed controllers and “end-effectors” therefor:</p> <p><u>N.B.</u></p> <p><i>See also Category Code 2B207.</i></p> <p>a. Capable in real-time of full three-dimensional image processing or full three-dimensional ‘scene analysis’ to generate or modify “programs” or to generate or modify numerical program data;</p> <p><u>Technical Note</u></p> <p><i>The ‘scene analysis’ limitation does not include approximation of the third dimension by viewing at a given angle, or limited grey scale interpretation for the perception of depth or texture for the approved tasks (2½ D).</i></p>	<p>“Robots” having any of the following characteristics and specially designed controllers and “end-effectors” therefor:</p> <p><u>N.B.</u></p> <p><i>See also Category Code 2B207.</i></p> <p>a. Not Used;</p>

2B008

Category Code	SGCO 2018	SGCO 2019
2B008	<p>Assemblies or units, specially designed for machine tools, or dimensional inspection or measuring systems and equipment, as follows:</p> <p>a. Linear position feedback units having an overall “accuracy” less (better) than $(800 + (600 \times L/1,000))$ nm (L equals the effective length in mm); <u>N.B.</u> <i>For “laser” systems, see also Category Codes 2B006.b.1.c., 2B006.b.1.d. and 2B206.c.</i></p> <p>b. Rotary position feedback units having an “accuracy” less (better) than 0.00025°; <u>N.B.</u> <i>For “laser” systems, see also Note to Category Code 2B006.b.2.</i> <u>Note</u> <i>Category Codes 2B008.a. and 2B008.b. include units, which are designed to determine the positioning information for feedback control, such as inductive type devices, graduated scales, infrared systems or “laser” systems.</i></p> <p>c. “Compound rotary tables” and “tilting spindles”, capable of upgrading, according to the manufacturer’s specifications, machine tools to or above the levels specified in Category 2B.</p>	<p>Compound rotary tables’ and “tilting spindles”, specially designed for machine tools, as follows:</p> <p>a. Not used;</p> <p>b. Not used;</p> <p>c. ‘Compound rotary tables’ having both of the following characteristics:</p> <ol style="list-style-type: none"> 1. Designed for machine tools for turning, milling or grinding; and 2. Two rotary axes designed to be coordinated simultaneously for “contouring control”; <p><u>Technical Note</u> <i>A ‘compound rotary table’ is a table allowing the workpiece to rotate and tilt about two non-parallel axes</i></p> <p>d. “Tilting spindles” having both of the following characteristics:</p> <ol style="list-style-type: none"> 1. Designed for machine tools for turning, milling or grinding; and 2. Designed to be coordinated simultaneously for “contouring control”.

2B109

Category Code	SGCO 2018	SGCO 2019
2B109	<p>Flow forming machines, other than those specified in Category Code 2B009, and specially designed components as follows: <u>N.B.</u> <i>See also Category Code 2B209.</i></p> <p>a. Flow-forming machines having both of the following characteristics:</p> <ol style="list-style-type: none"> 1. According to the manufacturer's technical specification, can be equipped with "numerical control" units or a computer control, even when not equipped with such units; <u>and</u> 2. With more than two axes which can be coordinated simultaneously for "contouring control"; <p>b. Specially designed components for flow forming machines specified in Category Code 2B009 or 2B109.a.</p> <p><u>Note</u> <i>Category Code 2B109 does not include machines that are not usable in the production of propulsion components and equipment (e.g. motor cases and interstages) for systems specified in Category Code 9A005, 9A007.a. or 9A105.a.</i></p> <p><u>Technical Note</u> <i>Machines combining the function of spin-forming and flow-forming are for the purpose of Category Code 2B109 regarded as flow-forming machines.</i></p>	<p>Flow-forming machines, other than those specified in Category Code 2B009, usable in the "production" of propulsion components and equipment (e.g. motor cases and interstages) for "missiles", and specially designed components as follows: <u>N.B.</u> <i>See also Category Code 2B209.</i></p> <p>a. Flow-forming machines having both of the following characteristics:</p> <ol style="list-style-type: none"> 1. Equipped with, or according to the manufacturer's technical specification are capable of being equipped with "numerical control" units or computer control; <u>and</u> 2. More than two axes which can be coordinated simultaneously for "contouring control". <p>b. Specially designed components for flow forming machines specified in Category Code 2B009 or 2B109.a.</p> <p><u>Technical Note</u> <i>Machines combining the function of spin-forming and flow-forming are for the purpose of Category Code 2B109 regarded as flow-forming machines.</i></p>

2B120

Category Code	SGCO 2018	SGCO 2019
2B120	<p>Motion simulators or rate tables having all of the following characteristics:</p> <p>a. Two axes or more;</p>	<p>Motion simulators or rate tables having all of the following characteristics:</p> <p>a. Two or more axes;</p>

2B121

Category Code	SGCO 2018	SGCO 2019
2B121	Positioning tables (equipment capable of precise rotary positioning in any axes), other than those specified in Category Code 2B120, having both of the following characteristics: a. Two axes or more; <u>and</u>	Positioning tables (equipment capable of precise rotary positioning in any axes), other than those specified in Category Code 2B120, having both of the following characteristics: a. Two or more axes; <u>and</u>

2B122

Category Code	SGCO 2018	SGCO 2019
2B122	Centrifuges capable of imparting accelerations above 100 g and designed or modified to incorporate slip rings or integrated non-contact devices capable of transferring electrical power, signal information, or both.	Centrifuges capable of imparting accelerations greater than 100 g and designed or modified to incorporate slip rings or integrated non-contact devices capable of transferring electrical power, signal information, or both.

2B201

Category Code	SGCO 2018	SGCO 2019
2B201 Technical Note f	<i>f. If any axis of a machine tool not included in Category Code 2B201.a., 2B201.b. or 2B201.c. has a stated positioning accuracy of 6 µm or better (less) for grinding machines, and 8 µm or better (less) for milling and turning machines, both according to Ref. ISO 230-2:1988, then the builder should be required to reaffirm the accuracy level once every eighteen months.</i>	<i>f. If any axis of a machine tool not specified in Category Code 2B201.a., 2B201.b. or 2B201.c. has a stated positioning accuracy of 6 µm or better (less) for grinding machines, and 8 µm or better (less) for milling and turning machines, both according to Ref. ISO 230-2:1988, then the builder should be required to reaffirm the accuracy level once every eighteen months</i>
2B201 Note 3	<u>Note 3</u> <i>Category Codes 2B201.a.3. and 2B201.b.3. include machines based on a parallel linear kinematic design (e.g. hexapods) that have 5 or more axes none of which are rotary axes.</i>	<u>Note 3</u> <i>Category Codes 2B201.a.3. and 2B201.b.3. include machines based on a parallel linear kinematic design (e.g. hexapods) that have 5 or more axes, none of which is a rotary axis.</i>
2B201.b. Note b	<i>b. Jig grinders that do not have a z-axis or a w-axis with an overall 'positioning accuracy' less (better) than 4 µm according to Ref. ISO 230-2:1988 or national equivalents.</i>	<i>b. Jig grinders that do not have a z-axis or a w-axis with an overall positioning accuracy less (better) than 4 µm according to Ref. ISO 230-2:1988 or national equivalents.</i>

2B206

Category Code	SGCO 2018	SGCO 2019
2B206.c.2.	<p>Dimensional inspection machines, instruments or systems, other than those specified in Category Code 2B006, as follows:</p> <p>---</p> <p>c. 'Linear displacement' measuring systems having both of the following characteristics:</p> <p>---</p> <p>2. Maintaining, for at least 12 hours, at a temperature of ± 1 K around a standard temperature and standard pressure, both of the following:</p>	<p>Dimensional inspection machines, instruments or systems, other than those specified in Category Code 2B006, as follows:</p> <p>---</p> <p>c. 'Linear displacement' measuring systems having both of the following characteristics:</p> <p>---</p> <p>2. Capable of maintaining, for at least 12 hours, at a temperature of ± 1 K ($\pm 1^\circ\text{C}$); around a standard temperature and standard pressure, both of the following:</p>
(New 2B206.d.)	-	<p>d. Linear variable differential transformer (LVDT) systems having both of the following characteristics:</p> <p><u>Technical Note</u></p> <p><i>For the purpose of Category Code 2B206.d., 'linear displacement' means the change of distance between the measuring probe and the measured object.</i></p> <p>1. Having either of the following:</p> <p>a. 'Linearity' equal to or less (better) than 0.1% measured from 0 to the full operating range, for LVDTs with an operating range up to 5 mm; <u>or</u></p> <p>b. 'Linearity' equal to or less (better) than 0.1% measured from 0 to 5 mm for LVDTs with an operating range greater than 5 mm; and</p> <p>2. Drift equal to or better (less) than 0.1% per day at a standard ambient test room temperature ± 1 K ($\pm 1^\circ\text{C}$).</p> <p>----</p> <p><u>Technical notes</u></p> <p>1. All parameters of measurement values in Category Code 2B206 represent plus/minus i.e. not total band.</p>

Category Code	SGCO 2018	SGCO 2019
		2. 'linearity' (usually measured in terms of non-linearity) means the maximum deviation of the actual characteristic (average of upscale and downscale readings), positive or negative, from a straight line so positioned as to equalise and minimise the maximum deviations.

2B226

Category Code	SGCO 2018	SGCO 2019
2B226	<p>Controlled atmosphere (vacuum or inert gas) induction furnaces, other than those specified in Category Codes 3B001 and 9B001 and power supplies therefor, as follows:</p> <p><u>N.B.</u></p> <p>See also Category Codes 3B001 and 9B001.</p> <p>a. Furnaces having all of the following characteristics:</p> <ol style="list-style-type: none"> 1. Capable of operation above 1,123 K (850°C); 2. Induction coils 600 mm or less in diameter; <u>and</u> 3. Designed for power inputs of 5 kW or more; <p>b. Power supplies, with a specified power output of 5 kW or more, specially designed for furnaces specified in Category Code 2B226.a.</p> <p><u>Note</u></p> <p><i>Category Code 2B226.a. does not include furnaces designed for the processing of semiconductor wafers.</i></p>	<p>Controlled atmosphere (vacuum or inert gas) induction furnaces, other than those specified in Category Codes 3B001 and 9B001 and power supplies therefor, as follows:</p> <p><u>N.B.</u></p> <p>See also Category Codes 3B001 and 9B001.</p> <p>a. Furnaces having all of the following characteristics:</p> <ol style="list-style-type: none"> 1. Capable of operation above 1,123 K (850°C); 2. Induction coils 600 mm or less in diameter; <u>and</u> 3. Designed for power inputs of 5 kW or more; <p><u>Note</u></p> <p><i>Category Code 2B226.a. does not include furnaces designed for the processing of semiconductor wafers.</i></p> <p>b. Power supplies, with a specified power output of 5 kW or more, specially designed for furnaces specified in Category Code 2B226.a.</p>

2B227

Category Code	SGCO 2018	SGCO 2019
2B227.a. and 2B227.b.	<p>Vacuum or other controlled atmosphere metallurgical melting and casting furnaces and related equipment as follows:</p> <p>a. Arc remelt and casting furnaces having both of the following characteristics:</p> <p>---</p> <p>b. Electron beam melting furnaces and plasma atomisation and melting furnaces, having both of the following characteristics</p>	<p>Vacuum or other controlled atmosphere metallurgical melting and casting furnaces and related equipment as follows:</p> <p>a. Arc remelt furnaces, arc melt furnaces and arc melt and casting furnaces having both of the following characteristics:</p> <p>---</p> <p>b. Electron beam melting furnaces, plasma atomisation furnaces and plasma melting furnaces, having both of the following characteristics:</p>

2B350

Category Code	SGCO 2018	SGCO 2019
2B350.a. N.B.	<p>Chemical manufacturing facilities, equipment and components, as follows:</p> <p>a. Reaction vessels or reactors, with or without agitators, with total internal (geometric) volume greater than 0.1 m³ (100 litres) and less than 20 m³ (20,000 litres), where all surfaces that come in direct contact with the chemical(s) being processed or contained are made from any of the following materials:</p>	<p>Chemical manufacturing facilities, equipment and components, as follows:</p> <p>a. Reaction vessels or reactors, with or without agitators, with total internal (geometric) volume greater than 0.1 m³ (100 litres) and less than 20 m³ (20,000 litres), where all surfaces that come in direct contact with the chemical(s) being processed or contained are made from any of the following materials:</p> <p><u>N.B.</u> <i>For prefabricated repair assemblies, see also Category Code 2B350.k.</i></p>
2B350.c. N.B.	<p>Chemical manufacturing facilities, equipment and components, as follows:</p> <p>---</p> <p>c. Storage tanks, containers or receivers with a total internal (geometric) volume greater than 0.1 m³ (100 litres) where all surfaces that come in direct contact with the chemical(s) being processed or contained are made from any of the following materials:</p>	<p>Chemical manufacturing facilities, equipment and components, as follows:</p> <p>---</p> <p>c. Storage tanks, containers or receivers with a total internal (geometric) volume greater than 0.1 m³ (100 litres) where all surfaces that come in direct contact with the chemical(s) being processed or contained are made from any of the following materials:</p>

Category Code	SGCO 2018	SGCO 2019
		<i><u>N.B.</u> For prefabricated repair assemblies, see also Category Code 2B350.k.</i>
(New 2B350.k.)	-	k. Prefabricated repair assemblies having metallic surfaces that come in direct contact with the chemical(s) being processed which are made from tantalum or tantalum alloys as follows, and specially designed components therefor: <ol style="list-style-type: none"> 1. Designed for mechanical attachment to glass-lined reaction vessels or reactors specified in Category Code 2B350.a.; or 2. Designed for mechanical attachment to glass-lined storage tanks, containers or receivers specified in Category Code 2B350.c.

2B351

Category Code	SGCO 2018	SGCO 2019
2B351	Toxic gas monitoring systems and their dedicated detecting components, other than those specified in Category Code 1A004, as follows; and detectors; sensor devices; and replaceable sensor cartridges therefor:	Toxic gas monitors and monitoring systems and their dedicated detecting components, other than those specified in Category Code 1A004, as follows; and detectors; sensor devices; and replaceable sensor cartridges therefor:

2B352

Category Code	SGCO 2018	SGCO 2019
2B352	Equipment capable of use in handling biological materials as follows:	Biological manufacturing and handling equipment, as follows:
2B352.a.2.	2. Equipment designed for fixed installation in containment facilities included in Category Code 2B352.a., as follows:	2. Equipment designed for fixed installation in containment facilities specified in Category Code 2B352.a., as follows:
2B352.b.	b. Fermenters and components as follows:	b. Fermenters and components as follows:

Category Code	SGCO 2018	SGCO 2019
	<ol style="list-style-type: none"> 1. Fermenters capable of cultivation of “microorganisms” or of live cells for the production of viruses or toxins, without the propagation of aerosols, having a total capacity of 20 litres or more; 2. Components designed for fermenters in Category Code 2B352.b.1. as follows: <ol style="list-style-type: none"> a. Cultivation chambers designed to be sterilised or disinfected in situ; b. Cultivation chamber holding devices; c. Process control units capable of simultaneously monitoring and controlling two or more fermentation system parameters (e.g. temperature, pH, nutrients, agitation, dissolved oxygen, air flow, foam control); 	<ol style="list-style-type: none"> 1. Fermenters capable of cultivation of “microorganisms” or of live cells for the production of viruses or toxins, without the propagation of aerosols, having a total internal volume of 20 litres or more; 2. Components designed for fermenters specified in Category Code 2B352.b.1. as follows: <ol style="list-style-type: none"> a. Cultivation chambers designed to be sterilised or disinfected in situ; b. Cultivation chamber holding devices; c. Process control units capable of simultaneously monitoring and controlling two or more fermentation system parameters (e.g. temperature, pH, nutrients, agitation, dissolved oxygen, air flow, foam control);
(New 2B352.i.)	-	<ol style="list-style-type: none"> i. Nucleic acid assemblers and synthesisers, which are partly or entirely automated, and designed to generate continuous nucleic acids greater than 1.5 kilobases in length with error rates less than 5% in a single run.

2E003

Category Code	SGCO 2018	SGCO 2019
2E003.a.	<p>Other “technology” as follows:</p> <ol style="list-style-type: none"> a. “Technology” for the “development” of interactive graphics as an integrated part in “numerical control” units for preparation or modification of part programs; 	<p>Other “technology” as follows:</p> <ol style="list-style-type: none"> a. Not used;

Category Code	SGCO 2018	SGCO 2019
2E003.b (New technical Notes 1 and 2)	<p>b. “Technology” for metal working manufacturing processes, as follows:</p> <ol style="list-style-type: none"> 1. “Technology” for the design of tools, dies or fixtures specially designed for any of the following processes: <ol style="list-style-type: none"> a. “Superplastic forming”; b. “Diffusion bonding”; or c. “Direct-acting hydraulic pressing”; 2. Technical data consisting of process methods or parameters as listed below used to control: <ol style="list-style-type: none"> a. “Superplastic forming” of aluminium alloys, titanium alloys or “superalloys”: <ol style="list-style-type: none"> 1. Surface preparation; 2. Strain rate; 3. Temperature; 4. Pressure; b. “Diffusion bonding” of “superalloys” or titanium alloys: <ol style="list-style-type: none"> 1. Surface preparation; 2. Temperature; 3. Pressure; c. “Direct acting hydraulic pressing” of aluminium alloys or titanium alloys: <ol style="list-style-type: none"> 1. Pressure; 2. Cycle time; d. “Hot isostatic densification” of titanium alloys, aluminium alloys or “superalloys”: <ol style="list-style-type: none"> 1. Temperature; 2. Pressure; 3. Cycle time; 	<p>b. “Technology” for metal working manufacturing processes, as follows:</p> <ol style="list-style-type: none"> 1. “Technology” for the design of tools, dies or fixtures specially designed for any of the following processes: <ol style="list-style-type: none"> a. “Superplastic forming”; b. “Diffusion bonding”; or c. ‘Direct-acting hydraulic pressing’; 2. Technical data consisting of process methods or parameters as listed below used to control: <ol style="list-style-type: none"> a. “Superplastic forming” of aluminium alloys, titanium alloys or “superalloys”: <ol style="list-style-type: none"> 1. Surface preparation; 2. Strain rate; 3. Temperature; 4. Pressure; b. “Diffusion bonding” of “superalloys” or titanium alloys: <ol style="list-style-type: none"> 1. Surface preparation; 2. Temperature; 3. Pressure; c. ‘Direct acting hydraulic pressing’ of aluminium alloys or titanium alloys: <ol style="list-style-type: none"> 1. Pressure; 2. Cycle time; d. ‘Hot isostatic densification’ of titanium alloys, aluminium alloys or “superalloys”: <ol style="list-style-type: none"> 1. Temperature; 2. Pressure; 3. Cycle time; <p><u>Technical Notes</u></p> <ol style="list-style-type: none"> 1. ‘Direct-acting hydraulic pressing’ is a deformation process which uses a fluid-filled

Category Code	SGCO 2018	SGCO 2019
		<p><i>flexible bladder in direct contact with the workpiece.</i></p> <p>2. <i>'Hot isostatic densification' is a process of pressurising a casting at temperatures exceeding 375 K (102°C) in a closed cavity through various media (gas, liquid, solid particles, etc.) to create equal force in all directions to reduce or eliminate internal voids in the casting</i></p>
2E003.d.	d. “Technology” for the “development” of generators of machine tool instructions (e.g. part programs) from design data residing inside “numerical control” units;	d. Not used;

Category 3**3A Note**

Category Code	SGCO 2018	SGCO 2019
3A Note 1	Systems, Equipment and Components <u>Note 1</u> <i>Equipment and components described in Category Code 3A001 or 3A002, other than those described in Category Code 3A001.a.3. to 3A001.a.10., 3A001.a.12. or 3A001.a.14., which are specially designed for or which have the same functional characteristics as other equipment are treated as coming within that description only if that other equipment is included in Division 2 of this Part.</i>	Systems, Equipment and Components <u>Note 1</u> <i>Equipment and components described in Category Code 3A001 or 3A002, other than those described in Category Code 3A001.a.3. to 3A001.a.10., or 3A001.a.12. to 3A001.a.14., which are specially designed for or which have the same functional characteristics as other equipment are treated as coming within that description only if that other equipment is included in Division 2 of this Part.</i>
3A Note 2	<u>Note 2</u> <i>Integrated circuits described in Category Code 3A001.a.3. to 3A001.a.9., 3A001.a.12. or 3A001.a.14., which are unalterably programmed or designed for a specific function for another equipment are treated as coming within that description only if that other equipment is included in Division 2 of this Part.</i> <u>N.B.</u> <i>Where it is unclear if the other equipment is included in Division 2 of this Part, then the integrated circuit is treated as falling within Category Codes 3A001.a.3. to 3A001.a.9., 3A001.a.12. and 3A001.a.14. if it comes within the relevant description therein.</i>	<u>Note 2</u> <i>Integrated circuits described in Category Code 3A001.a.3. to 3A001.a.9., or 3A001.a.12. to 3A001.a.14., which are unalterably programmed or designed for a specific function for another equipment are treated as coming within that description only if that other equipment is included in Division 2 of this Part.</i> <u>N.B.</u> <i>Where it is unclear if the other equipment is included in Division 2 of this Part, then the integrated circuit is treated as falling within Category Codes 3A001.a.3. to 3A001.a.9., and 3A001.a.12. to 3A001.a.14. if it comes within the relevant description therein.</i>

3A001

Category Code	SGCO 2018	SGCO 2019
3A001.a.2	Electronic items as follows: a. General purpose integrated circuits, as follows: ---	Electronic items as follows: a. General purpose integrated circuits, as follows: ---

	<p>2. “Microprocessor microcircuits”, “microcomputer microcircuits”, microcontroller microcircuits, storage integrated circuits manufactured from a compound semiconductor, analogue to digital converters, integrated circuits that contain Analogue to Digital Converters (ADCs) and store or process the digitised data, Digital to Analogue Converters (DACs), electro optical or “optical integrated circuits” designed for “signal processing”, field programmable logic devices, custom integrated circuits for which either the function is unknown or the control status of the equipment in which the integrated circuit will be used is unknown, Fast Fourier Transform (FFT) processors, Electrical Erasable Programmable Read Only Memories (EEPROMs), flash memories, Static Random Access Memories (SRAMs), or Magnetic Random Access Memories (MRAMs), having any of the following characteristics:</p>	<p>2. “Microprocessor microcircuits”, “microcomputer microcircuits”, microcontroller microcircuits, storage integrated circuits manufactured from a compound semiconductor, ADCs, integrated circuits that contain Analogue-to-Digital Converters (ADCs) and store or process the digitised data, Digital-to-Analogue Converters (DACs), electro-optical or “optical integrated circuits” designed for “signal processing”, field programmable logic devices, custom integrated circuits for which either the function is unknown or the control status of the equipment in which the integrated circuit will be used is unknown, Fast Fourier Transform (FFT) processors, Static Random Access Memories (SRAMs), or ‘non-volatile memories’, having any of the following characteristics:</p>
3A001.a.2. (New Technical Note)	<p><u>Note</u> <i>Category Code 3A001.a.2. does not include integrated circuits for civil automobiles or railway train applications.</i></p>	<p><u>Note</u> <i>Category Code 3A001.a.2. does not include integrated circuits for civil automobiles or railway train applications.</i> <u>Technical Notes</u> <i>‘Non-volatile memories’ are memories with data retention over a period of time after a power shutdown.</i></p>
3A001.a.5.a.	<p>5. Analogue-to-Digital Converter (ADC) and Digital-to-Analogue Converter (DAC) integrated circuits, as follows:</p> <p>a. ADCs having any of the following characteristics: <u>N.B.</u> <i>See also Category Code 3A101.</i></p> <ol style="list-style-type: none"> 1. A resolution of 8 bit or more, but less than 10 bit, with an output rate greater than 1.3 giga samples per second (GSPS); 2. A resolution of 10 bit or more, but less than 12 bit, with an output rate greater than 600 mega samples per second (MSPS); 	<p>5. Analogue-to-Digital Converter (ADC) and Digital-to-Analogue Converter (DAC) integrated circuits, as follows:</p> <p>a. ADCs having any of the following characteristics: <u>N.B.</u> <i>See also Category Code 3A101.</i></p> <ol style="list-style-type: none"> 1. A resolution of 8 bit or more, but less than 10 bit, with a “sample rate” greater than 1.3 giga samples per second (GSPS); 2. A resolution of 10 bit or more, but less than 12 bit, with a “sample rate” greater than 600 mega samples per second (MSPS);

	<ol style="list-style-type: none"> 3. A resolution of 12 bit or more, but less than 14 bit, with an output rate greater than 400 mega samples per second (MSPS); 4. A resolution of 14 bit or more, but less than 16 bit, with an output rate greater than 250 mega samples per second (MSPS); or 5. A resolution of 16 bit or more with an output rate greater than 65 mega samples per second (MSPS); 	<ol style="list-style-type: none"> 3. A resolution of 12 bit or more, but less than 14 bit, with a “sample rate” greater than 400 mega samples per second (MSPS); 4. A resolution of 14 bit or more, but less than 16 bit, with a “sample rate” greater than 250 mega samples per second (MSPS); or 5. A resolution of 16 bit or more with a “sample rate” greater than 65 mega samples per second (MSPS);
3A001.a.5.a Technical Notes	<p><u>Technical Notes</u></p> <ol style="list-style-type: none"> 1. A resolution of n bit corresponds to a quantisation of 2^n levels. 2. The number of bits in the output word is equal to the resolution of the ADC. 3. The output rate is the maximum output rate of the converter, regardless of the architecture or oversampling. 4. For ‘multiple channel ADCs’, the outputs are not aggregated and the output rate is the maximum output rate of any single channel. 5. For ‘interleaved ADCs’ or for ‘multiple channel ADCs’ that are specified to have an interleaved mode of operation, the outputs are aggregated and the output rate is the maximum combined total output rate of all of the outputs. 6. Vendors may also refer to the output rate as sampling rate, conversion rate or throughput rate. It is often specified in megahertz (MHz), mega words per second or mega samples per second (MSPS). 7. For the purpose of measuring output rate, one sample per second is equivalent to one Hertz or one output word per second. 8. ‘Multiple channel ADCs’ are defined as devices which integrate more than one ADC, designed so that each ADC has a separate analogue input. 	<p><u>Technical Notes</u></p> <ol style="list-style-type: none"> 1. A resolution of n bit corresponds to a quantisation of 2^n levels. 2. The resolution of the ADC is the number of bits of the digital output that represents the measured analogue input. Effective Number of Bits (ENOB) is not used to determine the resolution of the ADC. 3. For “multiple channel ADCs”, the “sample rate” is not aggregated and the “sample rate” is the maximum rate of any single channel. 4. For “interleaved ADCs” or for “multiple channel ADCs” that are specified to have an interleaved mode of operation, the “sample rates” are aggregated and the “sample rate” is the maximum combined total rate of all of the interleaved channels.

	9. <i>'Interleaved ADCs' are defined as devices which have multiple ADC units that sample the same analogue input at different times such that when the outputs are aggregated, the analogue input has been effectively sampled and converted at a higher sampling rate.</i>	
3A001.a.5.b.2.a. (New Technical Note)	2. A resolution of 12 bit or more with an 'adjusted update rate' of greater than 1,250 MSPS and having either of the following characteristics: a. A "settling time" less than 9 ns to 0.024% of full scale from a full scale step; <u>or</u>	2. A resolution of 12 bit or more with an 'adjusted update rate' of greater than 1,250 MSPS and having either of the following characteristics: a. A 'settling time' less than 9 ns to arrive at or within 0.024% of full scale from a full scale step; <u>or</u> ---- <u>Technical notes</u> --- 5. <i>'Settling time' means the time required for the output to come within one half bit of the final value when switching between any two levels of the converter.</i>
3A001.a.7. Note	<u>Note</u> Category Code 3A001.a.7. includes: - Simple Programmable Logic Devices (SPLDs) - Complex Programmable Logic Devices (CPLDs) - Field Programmable Gate Arrays (FPGAs) - Field Programmable Logic Arrays (FPLAs) - Field Programmable Interconnects (FPICs)	<u>Note</u> Category Code 3A001.a.7. includes: - Complex Programmable Logic Devices (CPLDs) - Field Programmable Gate Arrays (FPGAs) - Field Programmable Logic Arrays (FPLAs) - Field Programmable Interconnects (FPICs)
3A001.a.14.	14. Integrated circuits that perform both of the following: a. Analogue-to-digital conversions meeting any of the following: 1. A resolution of 8 bit or more, but less than 10 bit, with an input sample rate greater than 1.3 giga samples per second (GSPS); 2. A resolution of 10 bit or more, but less than 12 bit, with an input sample rate greater than 1 giga samples per second (GSPS);	14. Integrated circuits that perform or are programmable to perform both of the following: a. Analogue-to-digital conversions meeting any of the following: 1. A resolution of 8 bit or more, but less than 10 bit, with a "sample rate" a "sample rate" greater than 1.3 giga samples per second (GSPS);

	<ol style="list-style-type: none"> 3. A resolution of 12 bit or more, but less than 14 bit, with an input sample rate greater than 1 giga samples per second (GSPS); 4. A resolution of 14 bit or more, but less than 16 bit, with an input sample rate greater than 400 mega samples per second (MSPS); <u>or</u> 5. A resolution of 16 bit or more with an input sample rate greater than 180 mega samples per second (MSPS); <u>and</u> 	<ol style="list-style-type: none"> 2. A resolution of 10 bit or more, but less than 12 bit, with a “sample rate” greater than 1 giga samples per second (GSPS); 3. A resolution of 12 bit or more, but less than 14 bit, with a “sample rate” greater than 1 giga samples per second (GSPS); 4. A resolution of 14 bit or more, but less than 16 bit, with a “sample rate” greater than 400 mega samples per second (MSPS); <u>or</u> 5. A resolution of 16 bit or more with a “sample rate” greater than 180 mega samples per second (MSPS); <u>and</u>
3A001.a.14. (New Technical Note)	-	<p><u>Technical Notes</u></p> <ol style="list-style-type: none"> 1. A resolution of n bit corresponds to a quantisation of 2^n levels. 2. The resolution of the ADC is the number of bits of the digital output that represents the measured analogue input. Effective Number of Bits (ENOB) is not used to determine the resolution of the ADC. 3. For “multiple channel ADCs”, the “sample rate” is not aggregated and the “sample rate” is the maximum rate of any single channel. 4. For “interleaved ADCs” or for “multiple channel ADCs” that are specified to have an interleaved mode of operation, the “sample rates” are aggregated and the “sample rate” is the maximum combined total rate of all of the interleaved channels.
3A001.b.2. Notes 2 & 3	<p><u>Note 2</u></p> <p>Whether any MMIC whose rated operating frequency includes frequencies listed in more than one frequency range, as defined by Category Codes 3A001.b.2.a. to 3A001.b.2.h., is included in that Category is determined by the lowest peak saturated power output threshold.</p>	<p><u>Note 2</u></p> <p>Whether any “MMIC” whose rated operating frequency includes frequencies listed in more than one frequency range, as defined by Category Codes 3A001.b.2.a. to 3A001.b.2.h., is included in that Category is determined by the lowest peak saturated power output threshold.</p>

	<p><u>Note 3</u> <i>Notes 1 and 2 in Category 3A mean that Category Code 3A001.b.2. does not include MMICs if they are specially designed for other applications, e.g. telecommunications, radar, automobiles.</i></p>	<p><u>Note 3</u> <i>Notes 1 and 2 in Category 3A mean that Category Code 3A001.b.2. does not include “MMICs” if they are specially designed for other applications, e.g. telecommunications, radar, automobiles.</i></p>
3A001.b.4. (new N.B 3)	-	<p><u>N.B.3.</u> <i>For converters and harmonic mixers, designed to extend the operating or frequency range of signal analysers, signal generators, network analysers or microwave test receivers, see Category Code 3A001.b.7.</i></p>
3A001.b.11. (New Technical Note)	<p>11. “Frequency synthesiser” “electronic assemblies” having a “frequency switching time” as specified by any of the following: ---</p>	<p>11. ‘Frequency synthesiser’ “electronic assemblies” having a “frequency switching time” as specified by any of the following: ----</p> <p><u>Technical Note</u> <i>A ‘frequency synthesiser’ is any kind of frequency source, regardless of the actual technique used, providing a multiplicity of simultaneous or alternative output frequencies, from one or more outputs, controlled by, derived from or disciplined by a lesser number of standard (or master) frequencies.</i></p>
3A001.e.1.a.	<p>e. High energy devices, as follows: 1. ‘Cells’, as follows: a. ‘Primary cells’ having an ‘energy density’ exceeding 550 Wh/kg at 20°C; b. ‘Secondary cells’ having an ‘energy density’ exceeding 350 Wh/kg at 20°C;</p>	<p>e. High energy devices, as follows: 1. ‘Cells’, as follows: a. ‘Primary cells’ having either of the following characteristics at 20°C; 1. ‘Energy density’ exceeding 550 Wh/kg and a ‘continuous power density’ exceeding 50 W/kg; <u>or</u> 2. ‘Energy density’ exceeding 50 Wh/kg and a ‘continuous power density’ exceeding 350 W/kg; <u>or</u></p>

		b. 'Secondary cells' having an 'energy density' exceeding 350 Wh/kg at 20°C;
3A001.e.1. (New Technical Note 5)	-	5. <i>For the purpose of Category Code 3A001.e.1.a., 'continuous power density' (W/kg) is calculated from the nominal voltage multiplied by the specified maximum continuous discharge current in ampere (A) divided by the mass in kilograms. 'Continuous power density' is also referred to as specific power.</i>
(New 3A001.i.)	-	<p>i. Intensity, amplitude, or phase electro-optic modulators, designed for analogue signals and having either of the following characteristics:</p> <ol style="list-style-type: none"> 1. A maximum operating frequency of more than 10 GHz but less than 20 GHz, an optical insertion loss equal to or less than 3 dB and having either of the following characteristics: <ol style="list-style-type: none"> a. A 'half-wave voltage' ($V\pi$) less than 2.7 V when measured at a frequency of 1 GHz or below; <u>or</u> b. A '$V\pi$' of less than 4 V when measured at a frequency of more than 1 GHz; <u>or</u> 2. A maximum operating frequency equal to or greater than 20 GHz, an optical insertion loss equal to or less than 3 dB and having either of the following characteristics: <ol style="list-style-type: none"> a. A '$V\pi$' less than 3.3 V when measured at a frequency of 1 GHz or below; <u>or</u> b. A '$V\pi$' less than 5 V when measured at a frequency of more than 1 GHz. <p><u>Note</u> Category Code 3A001.i. includes electro-optic modulators having optical input and output connectors (e.g. fibre-optic pigtails).</p>

		<p><u>Technical Note</u></p> <p>For the purposes of Category Code 3A001.i., a 'half-wave voltage' ($V\pi$) is the applied voltage necessary to make a phase change of 180 degrees in the wavelength of light propagating through the optical modulator.</p>
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3A002

Category Code	SGCO 2018	SGCO 2019
3A002.c.1.	c. "Signal analysers", as follows: 1. "Signal analysers" having a 3 dB resolution bandwidth (RBW) exceeding 10 MHz anywhere within the frequency range exceeding 31.8 GHz but not exceeding 37 GHz;	c. "Signal analysers", as follows: 1. "Signal analysers" having a 3 dB resolution bandwidth (RBW) exceeding 40 MHz anywhere within the frequency range exceeding 31.8 GHz but not exceeding 37 GHz;
3A002.c.4.a	4. "Signal analysers" having both of the following characteristics: a. "Real time bandwidth" exceeding 170 MHz; and	4. "Signal analysers" having both of the following characteristics: a. 'Real time bandwidth' exceeding 170 MHz; and
3A002.c.4.b.2	2. A "frequency mask trigger" function with 100% probability of trigger (capture) for signals having a duration of 15 μ s or less;	2. A 'frequency mask trigger' function with 100% probability of trigger (capture) for signals having a duration of 15 μ s or less;
3A002.c.4. Technical Notes	<p><u>Technical Notes</u></p> <p>1. Probability of discovery in Category Code 3A002.c.4.b.1. is also referred to as probability of intercept or probability of capture.</p> <p>2. For the purpose of Category Code 3A002.c.4.b.1., the duration for 100% probability of discovery is equivalent to the minimum signal duration necessary for the specified level measurement uncertainty.</p>	<p><u>Technical Notes</u></p> <p>1. 'Real-time bandwidth' is the widest frequency range for which the analyser can continuously transform time-domain data entirely into frequency-domain results, using a Fourier or other discrete time transform that processes every incoming time point, without a reduction of measured amplitude of more than 3 dB below the actual signal amplitude caused by gaps or windowing effects, while outputting or displaying the transformed data.</p> <p>2. Probability of discovery in Category Code 3A002.c.4.b.1. is also referred to as probability of intercept or probability of capture.</p>

Category Code	SGCO 2018	SGCO 2019
		<p>3. For the purpose of Category Code 3A002.c.4.b.1., the duration for 100% probability of discovery is equivalent to the minimum signal duration necessary for the specified level measurement uncertainty.</p> <p>4. A 'frequency mask trigger' is a mechanism where the trigger function is able to select a frequency range to be triggered on as a subset of the acquisition bandwidth while ignoring other signals that may also be present within the same acquisition bandwidth. A 'frequency mask trigger' may contain more than one independent set of limits.</p>
3A002.h.	<p>h. "Electronic assemblies", modules, or equipment, specified to perform both of the following:</p> <ol style="list-style-type: none"> 1. Analogue-to-digital conversions meeting any of the following: <ol style="list-style-type: none"> a. A resolution of 8 bit or more, but less than 10 bit, with an input sample rate greater than 1,300 million samples per second; b. A resolution of 10 bit or more, but less than 12 bit, with an input sample rate greater than 1,000 million samples per second; c. A resolution of 12 bit or more, but less than 14 bit, with an input sample rate greater than 1,000 million samples per second; d. A resolution of 14 bit or more but less than 16 bit, with an input sample rate greater than 400 million samples per second; <u>or</u> e. A resolution of 16 bit or more with an input sample rate greater than 180 million samples per second; <u>and</u> 	<p>h. "Electronic assemblies", modules, or equipment, specified to perform both of the following:</p> <ol style="list-style-type: none"> 1. Analogue-to-digital conversions meeting any of the following: <ol style="list-style-type: none"> a. A resolution of 8 bit or more, but less than 10 bit, with a "sample rate" greater than 1.3 giga samples per second (GSPS); b. A resolution of 10 bit or more, but less than 12 bit, with a "sample rate" greater than 1 giga samples per second (GSPS); c. A resolution of 12 bit or more, but less than 14 bit, with a "sample rate" greater than 1 giga samples per second (GSPS); d. A resolution of 14 bit or more but less than 16 bit, with a "sample rate" greater than 400 mega samples per second (MSPS); <u>or</u> e. A resolution of 16 bit or more with a "sample rate" greater than 180 mega samples per second (MSPS); <u>and</u>
3A002.h. Technical Notes	<p><u>Technical note</u></p> <p>For multiple-channel "electronic assemblies" or modules, control status is determined by the highest single-channel specified performance of such multiple-channel "electronic assemblies" or modules.</p>	<p><u>Technical Notes</u></p> <ol style="list-style-type: none"> 1. A resolution of n bit corresponds to a quantisation of 2^n levels.

Category Code	SGCO 2018	SGCO 2019
		<ol style="list-style-type: none"> 2. <i>The resolution of the ADC is the number of bits of the digital output of the ADC that represents the measured analogue input. Effective Number of Bits (ENOB) is not used to determine the resolution of the ADC.</i> 3. <i>For non-interleaved multiple-channel “electronic assemblies”, modules, or equipment, the “sample rate” is not aggregated and the “sample rate” is the maximum rate of any single-channel.</i> 4. <i>For interleaved channels on multiple-channel “electronic assemblies”, modules, or equipment, the “sample rates” are aggregated and the “sample rate” is the maximum combined total rate of all the interleaved channels.</i>

3A233

Category Code	SGCO 2018	SGCO 2019
3A223	Mass spectrometers, other than those specified in Category Code 0B002.g., capable of measuring ions of 230 atomic mass units or greater and having a resolution of better than 2 parts in 230, as follows, and ion sources therefor:	Mass spectrometers, other than those specified in Category Code 0B002.g., capable of measuring ions of 230 u or greater and having a resolution of better than 2 parts in 230 u, as follows, and ion sources therefor:

3B001

Category Code	SGCO 2018	SGCO 2019
(New 3B001.j.)	-	<ol style="list-style-type: none"> j. Mask “substrate blanks” with multilayer reflector structure consisting of molybdenum and silicon, and having both of the following characteristics: <ol style="list-style-type: none"> 1. Specially designed for ‘Extreme Ultraviolet’ (‘EUV’) lithography; <u>and</u> 2. Compliant with SEMI Standard P37.

Category Code	SGCO 2018	SGCO 2019
		<p><i>Technical Note</i></p> <p><i>‘Extreme Ultraviolet’ (‘EUV’) refers to electromagnetic spectrum wavelengths greater than 5 nm and less than 124 nm.</i></p>

3B002

Category Code	SGCO 2018	SGCO 2019
3B002.a. and 3B002.c.	<p>Test equipment specially designed for testing finished or unfinished semiconductor devices as follows and specially designed components and accessories therefor:</p> <ol style="list-style-type: none"> For testing S parameters of transistor devices at frequencies exceeding 31.8 GHz; Not used; For testing microwave integrated circuits specified in Category Code 3A001.b.2. 	<p>Test equipment specially designed for testing finished or unfinished semiconductor devices as follows and specially designed components and accessories therefor:</p> <ol style="list-style-type: none"> For testing S parameters of items specified in Category Code 3A001.b.3; Not used; For testing items specified in Category Code 3A001.b.2.

3C002

Category Code	SGCO 2018	SGCO 2019
3C002a.1.	<p>Resist materials as follows and “substrates” coated with the following resists:</p> <ol style="list-style-type: none"> Resists designed for semiconductor lithography as follows: <ol style="list-style-type: none"> Positive resists adjusted (optimised) for use at wavelengths less than 245 nm but equal to or greater than 15 nm; 	<p>Resist materials as follows and “substrates” coated with the following resists:</p> <ol style="list-style-type: none"> Resists designed for semiconductor lithography as follows: <ol style="list-style-type: none"> Positive resists adjusted (optimised) for use at wavelengths less than 193 nm but equal to or greater than 15 nm;

3C005

Category Code	SGCO 2018	SGCO 2019
3C005 (New 3C005.b.)	Silicon carbide (SiC), gallium nitride (GaN), aluminium nitride (AlN) or aluminium gallium nitride (AlGaN) semiconductor “substrates”, or ingots, boules, or other preforms of those materials, having resistivities greater than 10,000 ohm-cm at 20°C.	High resistivity materials as follows: a. Silicon carbide (SiC), gallium nitride (GaN), aluminium nitride (AlN) or aluminium gallium nitride (AlGaN) semiconductor “substrates”, or ingots, boules, or other preforms of those materials, having resistivities greater than 10,000 ohm-cm at 20°C; b. Polycrystalline “substrates” or polycrystalline ceramic “substrates”, having resistivities greater than 10 000 ohm-cm at 20°C and having at least one non-epitaxial single-crystal layer of silicon (Si), silicon carbide (SiC), gallium nitride (GaN), aluminium nitride (AlN), or aluminium gallium nitride (AlGaN) on the surface of the “substrate”.

3C006

Category Code	SGCO 2018	SGCO 2019
3C006	“Substrates” specified in Category Code 3C005 with at least one epitaxial layer of silicon carbide, gallium nitride, aluminium nitride or aluminium gallium nitride.	Materials, not specified in Category Code 3C001, consisting of a “substrate” specified in Category Code 3C005 with at least one epitaxial layer of silicon carbide, gallium nitride, aluminium nitride or aluminium gallium nitride.

3E001

Category Code	SGCO 2018	SGCO 2019
(3E001 Note 3 and Technical Note)	-	<u>Note 3</u> <i>Category Code 3E001 does not include ‘Process Design Kits’ (‘PDKs’) unless they include libraries implementing functions or technologies for items specified in Category Code 3A001.</i> <u>Technical Note</u>

Category Code	SGCO 2018	SGCO 2019
		<p><i>A 'Process Design Kit' ('PDK') is a software tool provided by a semiconductor manufacturer to ensure that the required design practices and rules are taken into account in order to successfully produce a specific integrated circuit design in a specific semiconductor process, in accordance with technological and manufacturing constraints (each semiconductor manufacturing process has its particular 'PDK').</i></p>

Category 4**Category 4 Note 2**

Category Code	SGCO 2018	SGCO 2019
Note 2 (New Technical Note)	<u>Note 2</u> <i>Control units which directly interconnect the buses or channels of Central Processing Units (CPUs), “main storage” or disk controllers are not regarded as telecommunications equipment described in Category 5 – Part 1 (Telecommunications).</i>	<u>Note 2</u> <i>Control units which directly interconnect the buses or channels of Central Processing Units (CPUs), ‘main storage’ or disk controllers are not regarded as telecommunications equipment described in Category 5 – Part 1 (Telecommunications).</i> --- <u>Technical Note</u> <i>‘Main storage’ is the primary storage for data or instructions for rapid access by a central processing unit. It consists of the internal storage of a “digital computer” and any hierarchical extension thereto, such as cache storage or non-sequentially accessed extended storage.</i>

4A003

Category Code	SGCO 2018	SGCO 2019
4A003.b.	“Digital computers”, “electronic assemblies”, and related equipment therefor, as follows, and specially designed components therefor: ... b. “Digital computers” having an “Adjusted Peak Performance” (“APP”) exceeding 16 Weighted TeraFLOPS (WT);	“Digital computers”, “electronic assemblies”, and related equipment therefor, as follows, and specially designed components therefor: ... b. “Digital computers” having an “Adjusted Peak Performance” (“APP”) exceeding 29 Weighted TeraFLOPS (WT);

4A004

Category Code	SGCO 2018	SGCO 2019
4A004	Computers as follows and specially designed related equipment, “electronic assemblies” and components therefor:	Computers as follows and specially designed related equipment, “electronic assemblies” and components therefor:

Category Code	SGCO 2018	SGCO 2019
(New Technical Notes)	a. “Systolic array computers”; b. “Neural computers”; c. “Optical computers”.	a. ‘Systolic array computers’; b. ‘Neural computers’; c. ‘Optical computers’. <u>Technical Notes</u> 1. ‘Systolic array computers’ are computers where the flow and modification of the data is dynamically controllable at the logic gate level by the user. 2. ‘Neural computers’ are computational devices designed or modified to mimic the behaviour of a neuron or a collection of neurons, i.e., computational devices which are distinguished by their hardware capability to modulate the weights and numbers of the interconnections of a multiplicity of computational components based on previous data. 3. ‘Optical computers’ are computers designed or modified to use light to represent data and whose computational logic elements are based on directly coupled optical devices.

4D001

Category Code	SGCO 2018	SGCO 2019
4D001.b.1.	<p>“Software” as follows:</p> <p>...</p> <p>b. “Software”, other than that specified in Category Code 4D001.a., specially designed or modified for the “development” or “production” of equipment, as follows:</p> <p>1. “Digital computers” having an “Adjusted Peak Performance” (“APP”) exceeding 8 Weighted TeraFLOPS (WT);</p>	<p>“Software” as follows:</p> <p>...</p> <p>b. “Software”, other than that specified in Category Code 4D001.a., specially designed or modified for the “development” or “production” of equipment, as follows:</p> <p>1. “Digital computers” having an “Adjusted Peak Performance” (“APP”) exceeding 15 Weighted TeraFLOPS (WT);</p>

4D004

Category Code	SGCO 2018	SGCO 2019
4D004 (New Note)	-	<p><u>Note</u></p> <p><i>Category Code 4D004 does not include “software” specially designed and limited to providing “software” updates or upgrades having both of the following characteristics:</i></p> <p><i>a. The update or upgrade operates only with the authorisation of the owner or administrator of the system receiving it; and</i></p> <p><i>b. After the update or upgrade, the “software” updated or upgraded is not any of the following:</i></p> <p><i>1. “Software” specified in Category Code 4D004; or</i></p> <p><i>2. “Intrusion software”.</i></p>

4E001

Category Code	SGCO 2018	SGCO 2019
4E001.b.1.	<p>b. “Technology”, other than that specified in Category Code 4E001.a., specially designed or modified for the “development” or “production” of equipment as follows:</p>	<p>b. “Technology” (according to the General Technology Note), other than that specified in Category Code 4E001.a., for the “development” or “production” of equipment as follows:</p>

Category Code	SGCO 2018	SGCO 2019
	1. “Digital computers” having an “Adjusted Peak Performance” (“APP”) exceeding 8 Weighted TeraFLOPS (WT);	1. “Digital computers” having an “Adjusted Peak Performance” (“APP”) exceeding 15 Weighted TeraFLOPS (WT);
4E001 Note 1	<p><u>Note</u> Please see Technical Note on calculation of “APP” immediately after Category Code 4E001.</p>	<p><u>Note 1</u> Category Codes 4E001.a. and 4E001.c. do not include ‘vulnerability disclosure’ or ‘cyber incident response’.</p> <p><u>Note 2</u> Note 1 does not diminish the rights of the competent authority of the country in which the exporter is established to ascertain compliance with Category Codes 4E001.a. and 4E001.c.</p> <p><u>Note 3</u> Please see Technical Note on calculation of “APP” immediately after Category Code 4E001.</p> <p><u>Technical Notes</u></p> <ol style="list-style-type: none"> 1. ‘Vulnerability disclosure’ means the process of identifying, reporting, or communicating a vulnerability to, or analysing a vulnerability with, individuals or organisations responsible for conducting or coordinating remediation for the purpose of resolving the vulnerability. 2. ‘Cyber incident response’ means the process of exchanging necessary information on a cyber security incident with individuals or organisations responsible for conducting or coordinating remediation to address the cyber security incident.

Technical Note on ‘APP’

Category Code	SGCO 2018	SGCO 2019
Technical Note on ‘APP’	<p><u>Note</u></p> <p><i>In determining FPO, include only 64 bit or larger floating point additions and/or multiplications. All Floating Point Operations (FPO) must be expressed in operations per processor cycle; operations requiring multiple cycles may be expressed in fractional results per cycle. For processors not capable of performing calculations on floating-point operands of 64-bit or more, the effective calculating rate R is zero.</i></p>	<p><u>Note</u></p> <p><i>In determining FPO, include only 64 bit or larger floating point additions or multiplications. All Floating Point Operations (FPO) must be expressed in operations per processor cycle; operations requiring multiple cycles may be expressed in fractional results per cycle. For processors not capable of performing calculations on floating-point operands of 64-bit or more, the effective calculating rate R is zero.</i></p>

Category 5 Part 1

5A001

Category Code	SGCO 2018	SGCO 2019
5A001.a.3. (New 5A001.a.4.)	Telecommunications systems, equipment, components and accessories, as follows: a. Any type of telecommunications equipment having any of the following characteristics, functions or features: 1. Specially designed to withstand transitory electronic effects or electromagnetic pulse effects, both arising from a nuclear explosion; 2. Specially hardened to withstand gamma, neutron or ion radiation; <u>or</u> 3. Specially designed to operate outside the temperature range from 218 K (-55°C) to 397 K (124°C);	Telecommunications systems, equipment, components and accessories, as follows: a. Any type of telecommunications equipment having any of the following characteristics, functions or features: 1. Specially designed to withstand transitory electronic effects or electromagnetic pulse effects, both arising from a nuclear explosion; 2. Specially hardened to withstand gamma, neutron or ion radiation; 3. Specially designed to operate below 218 K (-55°C) ; <u>or</u> 4. Specially designed to operate above 397 K (124°C);
5A001.a. Note 1 & 2	<u>Note</u> <i>Category Code 5A001.a.3. applies only to electronic equipment.</i> <u>Note</u> <i>Category Codes 5A001.a.2. and 5A001.a.3. do not include equipment designed or modified for use on board satellites.</i>	<u>Note 1</u> <i>Category Codes 5A001.a.3. and 5A001.a.4. applies only to electronic equipment.</i> <u>Note 2</u> <i>Category Codes 5A001.a.2. , 5A001.a.3. and 5A001.a.4. do not include equipment designed or modified for use on board satellites.</i>
5A001.d. (New 5A001.d. Note 2) (New 5A001.d. Technical Note)	d. “Electronically steerable phased array antennae” having any of the following characteristics: --- <u>Note</u> <i>Category Code 5A001.d. does not include “electronically steerable phased array antennae” for landing systems with</i>	d. ‘Electronically steerable phased array antennae’ having any of the following characteristics: --- <u>Note 1</u> <i>Category Code 5A001.d. does not include ‘electronically steerable phased array antennae’ for landing systems with</i>

Category Code	SGCO 2018	SGCO 2019
	<p><i>instruments meeting ICAO standards covering Microwave Landing Systems (MLS).</i></p>	<p><i>instruments meeting ICAO standards covering Microwave Landing Systems (MLS).</i></p> <p><u>Note 2</u></p> <p><i>Category Code 5A001.d. does not include antennae specially designed for any of the following:</i></p> <ul style="list-style-type: none"> <i>a. Civil cellular or WLAN radio-communications systems;</i> <i>b. IEEE 802.15 or wireless HDMI; or</i> <i>c. Fixed or mobile satellite earth stations for commercial civil telecommunications.</i> <p><u>Technical Note</u></p> <p><i>For the purposes of Category Code 5A001.d., ‘electronically steerable phased array antenna’ is an antenna which forms a beam by means of phase coupling, (i.e., the beam direction is controlled by the complex excitation coefficients of the radiating elements) and the direction of that beam can be varied (both in transmission and reception) in azimuth or in elevation, or both, by application of an electrical signal.</i></p>

Category 5 Part 2

5A002

Category Code	SGCO 2018	SGCO 2019
5A002.a. 5A002.a.4.b.	<p>“Information security” systems, equipment and components, as follows:</p> <p><u>N.B.</u> <i>For Global Navigation Satellite Systems (GNSS) receiving equipment containing or employing decryption, see Category Code 7A005 and for related decryption “software” and “technology”, see Category Codes 7D005 and 7E001.</i></p> <p>a. Designed or modified to use ‘cryptography for data confidentiality’ having ‘in excess of 56 bits of symmetric key length, or equivalent’ where that cryptographic capability is usable without “cryptographic activation” or has been activated, as follows:</p> <p>---</p> <p>4. Items, not specified in Category Codes 5A002.a.1. to 5A002.a.3., where the ‘cryptography for data confidentiality’ having ‘in excess of 56 bits of symmetric key length, or equivalent’ meets all of the following:</p> <p>a. It supports a non-primary function of the item; <u>and</u> b. It is performed by incorporated equipment or “software” that would, as a standalone item, be specified by Category 5 – Part 2.</p>	<p>“Information security” systems, equipment and components, as follows: <u>N.B.</u> <i>For Global Navigation Satellite Systems (GNSS) receiving equipment containing or employing decryption, see Category Code 7A005 and for related decryption “software” and “technology”, see Category Codes 7D005 and 7E001.</i></p> <p>a. Designed or modified to use ‘cryptography for data confidentiality’ having ‘in excess of 56 bits of symmetric key length, or equivalent’, where that cryptographic capability is usable, has been activated, or can be activated by means of “cryptographic activation” not employing a secure mechanism, as follows:</p> <p>---</p> <p>4. Items, not specified in Category Codes 5A002.a.1. to 5A002.a.3., where the ‘cryptography for data confidentiality’ having ‘in excess of 56 bits of symmetric key length, or equivalent’ meets all of the following:</p> <p>a. It supports a non-primary function of the item; <u>and</u> b. It is performed by incorporated equipment or “software” that would, as a standalone item, be specified in Category 5 – Part 2.</p>
5A002.a. Note 1.b	<p><u>Note 1</u> <i>When necessary as determined by the appropriate authority in the exporter's country, details of items must be accessible and provided to the authority upon request, in order to establish any of the following:</i></p> <p>a. <i>Whether the item meets the criteria of Category Codes 5A002.a.1. to 5A002.a.4.; <u>or</u></i></p>	<p><u>Note 1</u> <i>When necessary as determined by the appropriate authority in the exporter's country, details of items must be accessible and provided to the authority upon request, in order to establish any of the following:</i></p> <p>a. <i>Whether the item meets the criteria of Category Codes 5A002.a.1. to 5A002.a.4.; <u>or</u></i></p>

Category Code	SGCO 2018	SGCO 2019
	<i>b. Whether the cryptographic capability for data confidentiality specified by Category Code 5A002.a. is usable without “cryptographic activation”.</i>	<i>b. Whether the cryptographic capability for data confidentiality specified in Category Code 5A002.a. is usable without “cryptographic activation”.</i>
5A002.a. Note 2.i.2.b.	<p><i>i. General purpose computing equipment or servers, where the “information security” functionality meets both of the following:</i></p> <ol style="list-style-type: none"> <i>1. Uses only published or commercial cryptographic standards; <u>and</u></i> <i>2. Is any of the following:</i> <ol style="list-style-type: none"> <i>a. Integral to a CPU that meets the provisions of Note 3 to Category 5 – Part 2;</i> <i>b. Integral to an operating system that is not specified by Category Code 5D002; <u>or</u></i> <i>c. Limited to “OAM” of the equipment.</i> 	<p><i>i. General purpose computing equipment or servers, where the “information security” functionality meets both of the following:</i></p> <ol style="list-style-type: none"> <i>1. Uses only published or commercial cryptographic standards; <u>and</u></i> <i>2. Is any of the following:</i> <ol style="list-style-type: none"> <i>a. Integral to a CPU that meets the provisions of Note 3 to Category 5 – Part 2;</i> <i>b. Integral to an operating system that is not specified in Category Code 5D002; <u>or</u></i> <i>c. Limited to “OAM” of the equipment.</i>
5A002.b	<i>b. Designed or modified to enable, by means of “cryptographic activation” an item to achieve or exceed the controlled performance levels for functionality specified in Category Code 5A002.a. that would not otherwise be enabled;</i>	<i>b. Designed or modified for converting, by means of “cryptographic activation”, an item not specified in Category 5 – Part 2 into an item specified in Category Code 5A002.a. or 5D002.c.1., and not excluded by the Cryptography Note (Note 3 in Category 5 – Part 2), or for enabling, by means of “cryptographic activation”, additional functionality specified in Category Code 5A002.a. of an item already specified in Category 5 – Part 2;</i>

5D002

Category Code	SGCO 2018	SGCO 2019
5D002.b.	<p>“Software” as follows:</p> <p>---</p> <p><i>b. “Software” designed or modified to enable by means of “cryptographic activation”, an item to meet the criteria for functionality specified by Category Code 5A002.a., that would not otherwise be met;</i></p>	<p>“Software” as follows:</p> <p>---</p> <p><i>b. “Software” designed or modified for converting, by means of “cryptographic activation”, an item not specified in Category 5 – Part 2 into an item specified in Category Code 5A002.a. or 5D002.c.1., and not excluded by the Cryptography Note (Note 3 in Category 5 – Part 2), or for enabling, by means of</i></p>

Category Code	SGCO 2018	SGCO 2019
		“cryptographic activation”, additional functionality specified in Category Code 5A002.a. of an item already specified in Category 5 – Part 2;

5E002

Category Code	SGCO 2018	SGCO 2019
5E002.b.	<p>“Technology” as follows:</p> <p>---</p> <p>b. “Technology” to enable, by means of “cryptographic activation”, an item to meet the criteria for functionality specified by Category Code 5A002.a., that would not otherwise be met.</p>	<p>“Technology” as follows:</p> <p>---</p> <p>b. “Technology” for converting, by means of “cryptographic activation”, an item not specified in Category 5 – Part 2 into an item specified in Category Code 5A002.a. or 5D002.c.1., and not excluded by the Cryptography Note (Note 3 in Category 5 – Part 2), or for enabling, by means of “cryptographic activation”, additional functionality specified in Category Code 5A002.a. of an item already specified in Category 5 – Part 2;</p>

Category 6**6A002**

Category Code	SGCO 2018	SGCO 2019
(New 6A002.f.)	-	<p>f. 'Read-out integrated circuits' ('ROIC') specially designed for "focal plane arrays" specified in Category Code 6A002.a.3.</p> <p><u>Note</u> <i>Category Code 6A002.f. does not include 'read-out integrated circuits' specially designed for civil automotive applications.</i></p> <p><u>Technical Note</u> <i>A 'Read-Out Integrated Circuit' ('ROIC') is an integrated circuit designed to underlie or be bonded to a "focal plane array" ("FPA") and used to read-out (i.e., extract and register) signals produced by the detector elements. At a minimum the 'ROIC' reads the charge from the detector elements by extracting the charge and applying a multiplexing function in a manner that retains the relative spatial position and orientation information of the detector elements for processing inside or outside the 'ROIC'.</i></p>

6A003

Category Code	SGCO 2018	SGCO 2019
6A003.a.1	<p>Cameras, systems or equipment, and components therefor, as follows:</p> <p>---</p> <p>a. Instrumentation cameras and specially designed components therefor, as follows:</p> <p>1. High-speed cinema recording cameras using any film format from 8 mm to 16 mm inclusive, in which the film is continuously advanced throughout the recording period, and that are capable of recording at framing rates exceeding 13,150 frames/s;</p> <p><u>Note</u></p>	<p>Cameras, systems or equipment, and components therefor, as follows:</p> <p>---</p> <p>a. Instrumentation cameras and specially designed components therefor, as follows:</p> <p>1. Not used;</p>

Category Code	SGCO 2018	SGCO 2019
	<i>Category Code 6A003.a.1. does not include cinema recording cameras designed for civil purposes.</i>	
6A003.a.2.	<p>Cameras, systems or equipment, and components therefor, as follows:</p> <p>---</p> <p>a. Instrumentation cameras and specially designed components therefor, as follows:</p> <p>---</p> <p>2. Mechanical high speed cameras, in which the film does not move, capable of recording at rates exceeding 1,000,000 frames/s for the full framing height of 35 mm film, or at proportionately higher rates for lesser frame heights, or at proportionately lower rates for greater frame heights;</p>	<p>Cameras, systems or equipment, and components therefor, as follows:</p> <p>---</p> <p>a. Instrumentation cameras and specially designed components therefor, as follows:</p> <p>---</p> <p>2. Not used;</p>
6A003.a.3.	<p>Cameras, systems or equipment, and components therefor, as follows:</p> <p>---</p> <p>a. Instrumentation cameras and specially designed components therefor, as follows:</p> <p>---</p> <p>3. Mechanical or electronic streak cameras, as follows:</p> <p>a. Mechanical streak cameras having writing speeds exceeding 10 mm/μs;</p> <p>b. Electronic streak cameras having temporal resolution better than 50 ns;</p>	<p>Cameras, systems or equipment, and components therefor, as follows:</p> <p>---</p> <p>a. Instrumentation cameras and specially designed components therefor, as follows:</p> <p>---</p> <p>3. Electronic streak cameras having temporal resolution better than 50 ns;</p>

6A004

Category Code	SGCO 2018	SGCO 2019
6A004.a.	<p>Optical equipment and components, as follows:</p> <p>a. Optical mirrors (reflectors) as follows:</p> <p>---</p>	<p>Optical equipment and components, as follows:</p> <p>a. Optical mirrors (reflectors) as follows:</p> <p>---</p>

Category Code	SGCO 2018	SGCO 2019
	<p>1. “Deformable mirrors” having an active optical aperture greater than 10 mm and having either of the following characteristics, and specially designed components therefor:</p>	<p>1. ‘Deformable mirrors’ having an active optical aperture greater than 10 mm and having either of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p><u>Technical Note</u></p> <p><i>‘Deformable mirrors’ are mirrors having either of the following characteristics:</i></p> <p><i>a. A single continuous optical reflecting surface which is dynamically deformed by the application of individual torques or forces to compensate for distortions in the optical waveform incident upon the mirror; <u>or</u></i></p> <p><i>b. Multiple optical reflecting elements that can be individually and dynamically repositioned by the application of torques or forces to compensate for distortions in the optical waveform incident upon the mirror.</i></p> <p><i>‘Deformable mirrors’ are also known as adaptive optic mirrors.</i></p>
(New 6A004.f.)	-	<p>f. Dynamic wavefront measuring equipment having both of the following characteristics:</p> <p>1. ‘Frame rates’ equal to or more than 1 kHz; <u>and</u></p> <p>2. A wavefront accuracy equal to or less (better) than $\lambda/20$ at the designed wavelength.</p> <p><u>Technical Note</u></p> <p><i>For the purposes of Category Code 6A004.f., ‘frame rate’ is a frequency at which all “active pixels” in the “focal plane array” are integrated for recording images projected by the wavefront sensor optics.</i></p>

6A005

Category Code	SGCO 2018	SGCO 2019
6A005.a.6.b.2. Note 1	<p>“Lasers”, other than those specified in Category Code 0B001.g.5. or 0B001.h.6., components and optical equipment, as follows:</p> <p>...</p> <p>a. Non-“tunable” continuous wave “(CW) lasers” having any of the following characteristics:</p> <p>...</p> <p>6. Output wavelength exceeding 975 nm but not exceeding 1,150 nm, and any of the following characteristics:</p> <p>a. Single transverse mode output and output power exceeding 500 W; <u>or</u></p> <p>b. Multiple transverse mode output, and either of the following characteristics:</p> <p>---</p> <p><u>Note 1</u> Category Code 6A005.a.6.b. does not include multiple transverse mode, industrial “lasers” with output power exceeding 2 kW and not exceeding 6 kW with a total mass greater than 1,200 kg. For the purpose of this Note, total mass includes all components required to operate the “laser”, e.g. “laser”, power supply, heat exchanger, but excludes external optics for beam conditioning and/or delivery.</p>	<p>“Lasers”, other than those specified in Category Code 0B001.g.5. or 0B001.h.6., components and optical equipment, as follows:</p> <p>...</p> <p>a. Non-“tunable” continuous wave “(CW) lasers” having any of the following characteristics:</p> <p>...</p> <p>6. Output wavelength exceeding 975 nm but not exceeding 1,150 nm, and any of the following characteristics:</p> <p>a. Single transverse mode output and output power exceeding 500 W; <u>or</u></p> <p>b. Multiple transverse mode output, and either of the following characteristics:</p> <p>---</p> <p><u>Note 1</u> Category Code 6A005.a.6.b. does not include multiple transverse mode, industrial “lasers” with output power exceeding 2 kW and not exceeding 6 kW with a total mass greater than 1,200 kg. For the purpose of this Note, total mass includes all components required to operate the “laser”, e.g. “laser”, power supply, heat exchanger, but excludes external optics for beam conditioning or delivery.</p>
6A005.d.1.e.2. Note 1 & 2	<p>d. Other “lasers”, not specified in Category Code 6A005.a., 6A005.b. or 6A005.c. as follows:</p> <p>1. Semiconductor “lasers” as follows:</p> <p>---</p> <p>e. Semiconductor “laser” ‘stacked arrays’, other than those specified in Category Code 6A005.d.1.d., having both of the following characteristics:</p> <p>---</p> <p><u>Note 1</u></p>	<p>d. Other “lasers”, not specified in Category Code 6A005.a., 6A005.b. or 6A005.c. as follows:</p> <p>1. Semiconductor “lasers” as follows:</p> <p>---</p> <p>e. Semiconductor “laser” ‘stacked arrays’, other than those specified in Category Code 6A005.d.1.d., having both of the following characteristics:</p> <p>---</p> <p><u>Note 1</u></p>

Category Code	SGCO 2018	SGCO 2019
	<p><i>‘Stacked arrays’, formed by combining semiconductor “laser” ‘stacked arrays’ specified by Category Code 6A005.d.1.e., that are not designed to be further combined or modified are specified by Category Code 6A005.d.1.d.</i></p> <p><u>Note 2</u></p> <p><i>‘Stacked arrays’, formed by combining semiconductor “laser” ‘stacked arrays’ specified by Category Code 6A005.d.1.e., that are designed to be further combined or modified are specified by Category Code 6A005.d.1.e.</i></p>	<p><i>‘Stacked arrays’, formed by combining semiconductor “laser” ‘stacked arrays’ specified in Category Code 6A005.d.1.e., that are not designed to be further combined or modified are specified in Category Code 6A005.d.1.d.</i></p> <p><u>Note 2</u></p> <p><i>‘Stacked arrays’, formed by combining semiconductor “laser” ‘stacked arrays’ specified in Category Code 6A005.d.1.e., that are designed to be further combined or modified are specified in Category Code 6A005.d.1.e.</i></p>
<p>6A005.d.5.c.</p> <p>(New Technical Note)</p>	<p>d. Other “lasers”, not specified in Category Code 6A005.a., 6A005.b. or 6A005.c. as follows:</p> <p>--</p> <p>5. “Chemical lasers” as follows:</p> <ol style="list-style-type: none"> Hydrogen Fluoride (HF) “lasers”; Deuterium Fluoride (DF) “lasers”; “Transfer lasers”, as follows: <ol style="list-style-type: none"> Oxygen Iodine (O₂-I) “lasers”; Deuterium Fluoride-Carbon dioxide (DF-CO₂) “lasers”; 	<p>d. Other “lasers”, not specified in Category Code 6A005.a., 6A005.b. or 6A005.c. as follows:</p> <p>--</p> <p>5. “Chemical lasers” as follows:</p> <ol style="list-style-type: none"> Hydrogen Fluoride (HF) “lasers”; Deuterium Fluoride (DF) “lasers”; “Transfer lasers”, as follows: <ol style="list-style-type: none"> Oxygen Iodine (O₂-I) “lasers”; Deuterium Fluoride-Carbon dioxide (DF-CO₂) “lasers”; <p><u>Technical Note</u></p> <p><i>‘Transfer lasers’ are “lasers” in which the lasing species are excited through the transfer of energy by collision of a non-lasing atom or molecule with a lasing atom or molecule species.</i></p>
<p>6A005.f.1.</p>	<p>f. Optical equipment as follows:</p> <p>--</p> <ol style="list-style-type: none"> Dynamic wavefront (phase) measuring equipment capable of mapping at least 50 positions on a beam wavefront, and either of the following: 	<p>f. Optical equipment as follows:</p> <p>--</p> <ol style="list-style-type: none"> Not Used;

Category Code	SGCO 2018	SGCO 2019
	<ul style="list-style-type: none"> a. Frame rates equal to or more than 100 Hz and phase discrimination of at least 5% of the beam's wavelength; <u>or</u> b. Frame rates equal to or more than 1,000 Hz and phase discrimination of at least 20% of the beam's wavelength; 	
6A005.f.2.	<ul style="list-style-type: none"> f. Optical equipment as follows: <ul style="list-style-type: none"> -- 2. "Laser" diagnostic equipment capable of measuring "SHPL" system angular beam steering errors of equal to or less than 10 μrad; 	<ul style="list-style-type: none"> f. Optical equipment as follows: <ul style="list-style-type: none"> -- 2. "Laser" diagnostic equipment specially designed for dynamic measurement of "SHPL" system angular beam steering errors and having an angular "accuracy" of 10 μrad (micro radians) or less (better);
6A005.f.3.	<ul style="list-style-type: none"> f. Optical equipment as follows: <ul style="list-style-type: none"> -- 3. Optical equipment and components, specially designed for a phased-array "SHPL" system for coherent beam combination to an "accuracy" of $\lambda/10$ at the designed wavelength, or 0.1 μm, whichever is the smaller; 	<ul style="list-style-type: none"> f. Optical equipment as follows: <ul style="list-style-type: none"> -- 3. Optical equipment and components, specially designed for coherent beam combination in a phased-array "SHPL" system and having any of the following characteristics: <ul style="list-style-type: none"> a. An "accuracy" of 0.1 μm or less, for wavelengths greater than 1 μm; <u>or</u> b. An "accuracy" of $\lambda/10$ or less (better) at the designed wavelength, for wavelengths equal to or less than 1 μm;

6A006

Category Code	SGCO 2018	SGCO 2019
6A006.e.	<p>"Magnetometers", "magnetic gradiometers", "intrinsic magnetic gradiometers", underwater electric field sensors, "compensation systems", and specially designed components therefor, as follows:</p> <ul style="list-style-type: none"> -- e. Underwater electromagnetic receivers incorporating magnetic field sensors specified by Category Code 6A006.a. or 	<p>"Magnetometers", "magnetic gradiometers", "intrinsic magnetic gradiometers", underwater electric field sensors, "compensation systems", and specially designed components therefor, as follows:</p> <ul style="list-style-type: none"> -- e. Underwater electromagnetic receivers incorporating magnetic field sensors specified in Category Code 6A006.a. or

Category Code	SGCO 2018	SGCO 2019
	underwater electric field sensors specified by Category Code 6A006.b.	underwater electric field sensors specified in Category Code 6A006.b.

6A007

Category Code	SGCO 2018	SGCO 2019
6A007.b.2	<p>Gravity meters (gravimeters) and gravity gradiometers, as follows: ---</p> <p>b. Gravity meters designed for mobile platforms and having both of the following characteristics:</p> <ol style="list-style-type: none"> 1. A static “accuracy” of less (better) than 0.7 mGal; <u>and</u> 2. An in-service (operational) “accuracy” of less (better) than 0.7 mGal having a ‘time-to-steady-state registration’ of less than 2 minutes under any combination of attendant corrective compensations and motional influences; <p><i><u>Technical Note</u></i> <i>For the purpose of Category Code 6A007.b., ‘time-to-steady-state registration’ (also referred to as the gravimeter’s response time) is the time over which the disturbing effects of platform induced accelerations (high frequency noise) are reduced.</i></p>	<p>Gravity meters (gravimeters) and gravity gradiometers, as follows: ---</p> <p>b. Gravity meters designed for mobile platforms and having both of the following characteristics:</p> <ol style="list-style-type: none"> 1. A static “accuracy” of less (better) than 0.7 mGal; <u>and</u> 2. An in-service (operational) “accuracy” of less (better) than 0.7 mGal having a “time-to-steady-state registration” of less than 2 minutes under any combination of attendant corrective compensations and motional influences;

6A008

Category Code	SGCO 2018	SGCO 2019
6A008.e (New Technical Note)	<p>Radar systems, equipment and assemblies, having any of the following characteristics, and specially designed components therefor:</p> <p>--</p> <p>e. Incorporating electronically steerable array antennae;</p>	<p>Radar systems, equipment and assemblies, having any of the following characteristics, and specially designed components therefor:</p> <p>--</p> <p>e. Incorporating electronically scanned array antennae;</p> <p><i><u>Technical Note</u></i></p>

Category Code	SGCO 2018	SGCO 2019
		<i>Electronically scanned array antennae are also known as electronically steerable array antennae</i>
6A008.1.1. (New Technical Note)	<p>Radar systems, equipment and assemblies, having any of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p>1. Having data processing sub-systems, and having either of the following characteristics:</p> <p>1. “Automatic target tracking” providing, at any antenna rotation, the predicted target position beyond the time of the next antenna beam passage; <u>or</u></p> <p>---</p> <p><u>Note</u></p> <p><i>Category Code 6A008.1.1. does not include conflict alert capability in ATC systems, or ‘marine radar’.</i></p>	<p>Radar systems, equipment and assemblies, having any of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p>1. Having data processing sub-systems, and having either of the following characteristics:</p> <p>1. ‘Automatic target tracking’ providing, at any antenna rotation, the predicted target position beyond the time of the next antenna beam passage; or</p> <p>---</p> <p><u>Note</u></p> <p><i>Category Code 6A008.1.1. does not include conflict alert capability in ATC systems, or ‘marine radar’.</i></p> <p><u>Technical Note</u></p> <p><i>‘Automatic target tracking’ is a processing technique that automatically determines and provides as output an extrapolated value of the most probable position of the target in real-time.</i></p>
6A008.1.4. (New Technical Note)	<p>Radar systems, equipment and assemblies, having any of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p>1. Having data processing sub-systems, and having either of the following characteristics:</p> <p>---</p> <p>4. Configured to provide superposition and correlation, or fusion, of target data within six seconds from two or more “geographically dispersed” radar sensors to improve the aggregate performance beyond that of any single sensor specified in Category Code 6A008.f. or 6A008.i.</p> <p><u>N.B.</u></p>	<p>Radar systems, equipment and assemblies, having any of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p>1. Having data processing sub-systems, and having either of the following characteristics:</p> <p>---</p> <p>4. Configured to provide superposition and correlation, or fusion, of target data within six seconds from two or more ‘geographically dispersed’ radar sensors to improve the aggregate performance beyond that of any single sensor specified in Category Code 6A008.f. or 6A008.i.</p> <p><u>N.B.</u></p>

Category Code	SGCO 2018	SGCO 2019
	<p><i>See also Division 2 of Part 1 of this Schedule.</i></p> <p><u>Note</u></p> <p><i>Category Code 6A008.1.4. does not include systems, equipment and assemblies used for 'vessel traffic service'.</i></p>	<p><i>See also Division 2 of Part 1 of this Schedule.</i></p> <p><u>Note</u></p> <p><i>Category Code 6A008.1.4. does not include systems, equipment and assemblies used for 'vessel traffic service'.</i></p> <p><u>Technical Note</u></p> <p><i>Sensors are considered 'geographically dispersed' when each location of a sensor is more than 1,500 m away from any other sensor in any direction. Mobile sensors are always considered 'geographically dispersed'.</i></p>

6A108

Category Code	SGCO 2018	SGCO 2019
6A108.a Note	<p>Radar systems and tracking systems, other than those specified in Category Code 6A008, as follows:</p> <p>a. Radar and laser radar systems designed or modified for use in space launch vehicles specified in Category Code 9A004 or sounding rockets specified in Category Code 9A104;</p> <p><u>Note</u></p> <p><i>Category Code 6A108.a. includes the following:</i></p> <p>a. <i>Terrain contour mapping equipment</i></p> <p>b. <i>Imaging sensor equipment;</i></p> <p>c. <i>Scene mapping and correlation (both digital and analogue) equipment;</i></p> <p>d. <i>Doppler navigation radar equipment.</i></p>	<p>Radar systems and tracking systems, other than those specified in Category Code 6A008, as follows:</p> <p>a. Radar and laser radar systems designed or modified for use in space launch vehicles specified in Category Code 9A004 or sounding rockets specified in Category Code 9A104;</p> <p><u>Note</u></p> <p><i>Category Code 6A108.a. includes the following:</i></p> <p>a. <i>Terrain contour mapping equipment</i></p> <p>b. <i>Imaging sensor equipment;</i></p> <p>c. <i>Scene mapping and correlation (both digital and analogue) equipment;</i></p> <p>d. <i>Doppler navigation radar equipment;</i></p> <p>e. <i>Imaging sensor equipment (both active and passive).</i></p>

6A203

Category Code	SGCO 2018	SGCO 2019
6A203 Note	<p>Cameras and components, other than those specified in Category Code 6A003, as follows:</p> <p>---</p> <p><u>Note</u></p> <p><i>Category Codes 6A203.a. to 6A203.c. do not include cameras or imaging devices if they have hardware, “software” or “technology” constraints that limit the performance to less than that specified above, provided they meet any of the following:</i></p>	<p>Cameras and components, other than those specified in Category Code 6A003, as follows:</p> <p>---</p> <p><u>Note</u></p> <p><i>Category Codes 6A203.a. to 6A203.c. do not include cameras or imaging devices if they have hardware, “software” or “technology” constraints that limit the performance to less than that specified below, provided they meet any of the following:</i></p>

6A205

Category Code	SGCO 2018	SGCO 2019
6A205.d.	<p>“Lasers”, “laser” amplifiers and oscillators, other than those specified in Category Codes 0B001.g.5., 0B001.h.6. and 6A005, as follows:</p> <p>---</p> <p>d. Pulsed carbon dioxide “lasers” having all of the following characteristics:</p>	<p>“Lasers”, “laser” amplifiers and oscillators, other than those specified in Category Codes 0B001.g.5., 0B001.h.6. and 6A005, as follows:</p> <p>---</p> <p>d. Pulsed carbon dioxide (CO₂) “lasers” having all of the following characteristics:</p>
6A205.g.	<p>“Lasers”, “laser” amplifiers and oscillators, other than those specified in Category Codes 0B001.g.5., 0B001.h.6. and 6A005, as follows:</p> <p>---</p> <p>g. Pulsed carbon monoxide lasers, other than those specified in Category Code 6A005.d.2., having all of the following characteristics:</p>	<p>“Lasers”, “laser” amplifiers and oscillators, other than those specified in Category Codes 0B001.g.5., 0B001.h.6. and 6A005, as follows:</p> <p>---</p> <p>g. Pulsed carbon monoxide (CO) “lasers”, other than those specified in Category Code 6A005.d.2., having all of the following characteristics:</p>

6D003

Category Code	SGCO 2018	SGCO 2019
6D003.a.5.a	<p>Other “software” as follows:</p> <p>a. “Software” as follows:</p> <p>---</p> <p>5. “Software” or “source code”, specially designed for both of the following:</p> <p>a. “Real-time processing” of acoustic data from sonar systems specified by Category Code 6A001.a.1.e.; <u>and</u></p>	<p>Other “software” as follows:</p> <p>a. “Software” as follows:</p> <p>---</p> <p>5. “Software” or “source code”, specially designed for both of the following:</p> <p>a. “Real-time processing” of acoustic data from sonar systems specified in Category Code 6A001.a.1.e.; <u>and</u></p>
6D003.h.	<p>Other “software” as follows:</p> <p>h. “Software” as follows:</p> <p>--</p> <p>2. “Software” for the design or “production” of radomes and having both of the following characteristics:</p> <p>a. Specially designed to protect the “electronically steerable phased array antennae” specified in Category Code 6A008.e.; <u>and</u></p>	<p>Other “software” as follows:</p> <p>h. “Software” as follows:</p> <p>--</p> <p>2. “Software” for the design or “production” of radomes and having both of the following characteristics:</p> <p>a. Specially designed to protect the electronically scanned array antennae specified in Category Code 6A008.e.; <u>and</u></p>

Category 7

7A003

Category Code	SGCO 2018	SGCO 2019
7A003.d.1.	<p>‘Inertial measurement equipment or systems’, having any of the following characteristics:</p> <p>--</p> <p>d. Providing acceleration measurements or angular rate measurements, in more than one dimension, and having either of the following characteristics:</p> <p>1. Performance specified by Category Code 7A001 or 7A002 along any axis, without the use of any aiding references; <u>or</u></p>	<p>‘Inertial measurement equipment or systems’, having any of the following characteristics:</p> <p>---</p> <p>d. Providing acceleration measurements or angular rate measurements, in more than one dimension, and having either of the following characteristics:</p> <p>1. Performance specified in Category Code 7A001 or 7A002 along any axis, without the use of any aiding references; <u>or</u></p>

7A006

Category Code	SGCO 2018	SGCO 2019
7A006 (New Technical Note)	<p>Airborne altimeters operating at frequencies other than 4.2 GHz to 4.4 GHz inclusive and having either of the following characteristics:</p> <p><u>N.B.</u></p> <p><i>See also Category Code 7A106.</i></p> <p>a. “Power management”; <u>or</u></p> <p>b. Using phase shift key modulation.</p>	<p>Airborne altimeters operating at frequencies other than 4.2 GHz to 4.4 GHz inclusive and having either of the following characteristics:</p> <p><u>N.B.</u></p> <p><i>See also Category Code 7A106.</i></p> <p>a. ‘Power management’; <u>or</u></p> <p>b. Using phase shift key modulation.</p> <p><u>Technical Note</u></p> <p><i>‘Power management’ is changing the transmitted power of the altimeter signal so that received power at the "aircraft" altitude is always at the minimum necessary to determine the altitude.</i></p>

7A103

Category Code	SGCO 2018	SGCO 2019
7A103.d.	<p>Instrumentation, navigation equipment and systems, other than those specified in Category Code 7A003, as follows; and specially designed components therefor:</p> <p>--</p> <p>d. Three axis magnetic heading sensors, designed or modified to be integrated with flight control and navigation systems, other than those specified in Category Code 6A006, having both of the following characteristics, and specially designed components therefor:</p> <ol style="list-style-type: none"> 1. Internal tilt compensation in pitch (± 90 degrees) and roll (± 180 degrees) axes; <u>and</u> 2. Capable of providing azimuthal accuracy better (less) than 0.5 degrees rms at latitude of ± 80 degrees, reference to local magnetic field. 	<p>Instrumentation, navigation equipment and systems, other than those specified in Category Code 7A003, as follows; and specially designed components therefor:</p> <p>--</p> <p>d. Three axis magnetic heading sensors, designed or modified to be integrated with flight control and navigation systems, other than those specified in Category Code 6A006, having both of the following characteristics, and specially designed components therefor:</p> <ol style="list-style-type: none"> 1. Internal tilt compensation in pitch (± 90 degrees) and roll (± 180 degrees) axes; <u>and</u> 2. Azimuthal accuracy better (less) than 0.5 degrees rms at latitude of ± 80 degrees, reference to local magnetic field.

7A105

Category Code	SGCO 2018	SGCO 2019
7A105	Receiving equipment for Global Navigation Satellite Systems (GNSS; e.g. GPS or Galileo), other than those specified in Category Code 7A005, having either of the following characteristics, and specially designed components therefor:	Receiving equipment for 'navigation satellite systems', other than those specified in Category Code 7A005, having either of the following characteristics, and specially designed components therefor:
7A105.b.2.	<p>Receiving equipment for Global Navigation Satellite Systems (GNSS; e.g. GPS or Galileo), other than those specified in Category Code 7A005, having either of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p>b. Designed or modified for airborne applications and having any of the following characteristics:</p> <ol style="list-style-type: none"> 1. Capable of providing navigation information at speeds in excess of 600 m/s; 	<p>Receiving equipment for 'navigation satellite systems', other than those specified in Category Code 7A005, having either of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p>b. Designed or modified for airborne applications and having any of the following characteristics:</p> <ol style="list-style-type: none"> 1. Capable of providing navigation information at speeds in excess of 600 m/s;

Category Code	SGCO 2018	SGCO 2019
	2. Employing decryption, designed or modified for military or governmental services, to gain access to GNSS secured signal/data; <u>or</u>	2. Employing decryption, designed or modified for military or governmental services, to gain access to 'navigation satellite systems' secured signal/data; <u>or</u>
7A105.b. Note (New Technical Note)	<p>Receiving equipment for Global Navigation Satellite Systems (GNSS; e.g. GPS or Galileo), other than those specified in Category Code 7A005, having either of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p>b. Designed or modified for airborne applications and having any of the following characteristics:</p> <ol style="list-style-type: none"> 1. Capable of providing navigation information at speeds in excess of 600 m/s; 2. Employing decryption, designed or modified for military or governmental services, to gain access to GNSS secured signal/data; <u>or</u> <p>---</p> <p><u>Note</u></p> <p><i>Category Codes 7A105.b.2. and 7A105.b.3. do not include equipment designed for commercial, civil or 'Safety of Life' (e.g. data integrity, flight safety) GNSS services.</i></p>	<p>Receiving equipment for 'navigation satellite systems', other than those specified in Category Code 7A005, having either of the following characteristics, and specially designed components therefor:</p> <p>---</p> <p>b. Designed or modified for airborne applications and having any of the following characteristics:</p> <ol style="list-style-type: none"> 1. Capable of providing navigation information at speeds in excess of 600 m/s; 2. Employing decryption, designed or modified for military or governmental services, to gain access to a 'navigation satellite systems' secured signal/data; <u>or</u> <p>---</p> <p><u>Note</u></p> <p><i>Category Codes 7A105.b.2. and 7A105.b.3. do not include equipment designed for commercial, civil or 'Safety of Life' (e.g. data integrity, flight safety) 'navigation satellite systems' services.</i></p> <p><u>Technical Note</u></p> <p><i>In Category Code 7A105, 'navigation satellite system' includes Global Navigation Satellite Systems (GNSS; e.g. GPS, GLONASS, Galileo or BeiDou) and Regional Navigation Satellite Systems (RNSS; e.g. NavIC, QZSS).</i></p>

7A115

Category Code	SGCO 2018	SGCO 2019
7A115 Note	Passive sensors for determining bearing to specific electromagnetic source (direction finding equipment) or terrain characteristics, designed or modified for use in space launch vehicles specified in	Passive sensors for determining bearing to specific electromagnetic source (direction finding equipment) or terrain characteristics, designed or modified for use in space launch vehicles specified in

Category Code	SGCO 2018	SGCO 2019
	<p>Category Code 9A004 or sounding rockets specified in Category Code 9A104.</p> <p><u>Note</u></p> <p>Category Code 7A115 includes sensors for the following equipment:</p> <ol style="list-style-type: none"> Terrain contour mapping equipment; Imaging sensor equipment (both active and passive); Passive interferometer equipment. 	<p>Category Code 9A004 or sounding rockets specified in Category Code 9A104.</p> <p><u>Note</u></p> <p>Equipment specified in Category Codes 7A105, 7A106 and 7A115 includes the following:</p> <ol style="list-style-type: none"> Terrain contour mapping equipment; Scene mapping and correlation (both digital and analogue) equipment; Doppler navigation radar equipment; Passive interferometer equipment; Imaging sensor equipment (both active and passive).

7A116

Category Code	SGCO 2018	SGCO 2019
(7A116 New Note)	-	<p><u>Note</u></p> <p>For conversion of manned aircraft to operate as “missiles”, Category Code 7A116 includes the systems, equipment and valves designed or modified to enable operation of manned aircraft as unmanned aerial vehicles.</p>

7E004

Category Code	SGCO 2018	SGCO 2019
7E004.a.5. (New Technical Note)	<p>Other “technology” as follows:</p> <ol style="list-style-type: none"> “Technology” for the “development” or “production” of any of the following: <p>--</p> <ol style="list-style-type: none"> Electric actuators (i.e. electromechanical, electrohydrostatic and integrated actuator package) specially designed for “primary flight control”; 	<p>Other “technology” as follows:</p> <ol style="list-style-type: none"> “Technology” for the “development” or “production” of any of the following: <p>--</p> <ol style="list-style-type: none"> Electric actuators (i.e. electromechanical, electrohydrostatic and integrated actuator package) specially designed for ‘primary flight control’; <p><u>Technical Note</u></p>

Category Code	SGCO 2018	SGCO 2019
		<i>‘Primary flight control’ is “aircraft” stability or manoeuvring control using force or moment generators, i.e. aerodynamic control surfaces or propulsive thrust vectoring.</i>
7E004.a.6. (New Technical Note)	Other “technology” as follows: a. “Technology” for the “development” or “production” of any of the following: -- 6. “Flight control optical sensor array” specially designed for implementing “active flight control systems”; or	Other “technology” as follows: a. “Technology” for the “development” or “production” of any of the following: -- 6. ‘Flight control optical sensor array’ specially designed for implementing “active flight control systems”; or <u>Technical Note</u> <i>A ‘flight control optical sensor array’ is a network of distributed optical sensors, using “laser” beams, to provide real-time flight control data for on-board processing.</i>
7E004.b.5. (New Technical Note)	Other “technology” as follows: ... b. “Development” “technology”, as follows, for “active flight control systems” (including “fly by wire systems” or “fly by light systems”): --- 5. Integration of digital flight control, navigation and propulsion control data, into a digital flight management system for “total control of flight”; <u>Note</u> <i>Category Code 7E004.b.5. does not include:</i> a. “Technology” for integration of digital flight control, navigation and propulsion control data, into a digital flight management system for “flight path optimisation”;	Other “technology” as follows: ... b. “Development” “technology”, as follows, for “active flight control systems” (including “fly by wire systems” or “fly by light systems”): --- 5. Integration of digital flight control, navigation and propulsion control data, into a digital flight management system for “total control of flight”; <u>Note</u> <i>Category Code 7E004.b.5. does not include:</i> a. “Technology” for integration of digital flight control, navigation and propulsion control data, into a digital flight management system for ‘flight path optimisation’; <u>Technical Note</u> <i>‘Flight path optimisation’ is a procedure that minimises deviations from a four-dimensional (space</i>

Category Code	SGCO 2018	SGCO 2019
		<i>and time) desired trajectory based on maximising performance or effectiveness for mission tasks.</i>
7E004.c.3.	<p>Other “technology” as follows:</p> <p>---</p> <p>c. “Technology” for the “development” of helicopter systems, as follows:</p> <p>---</p> <p>3. Rotor blades incorporating “variable geometry airfoils”, for use in systems using individual blade control.</p>	<p>Other “technology” as follows:</p> <p>---</p> <p>c. “Technology” for the “development” of helicopter systems, as follows:</p> <p>---</p> <p>3. Rotor blades incorporating ‘variable geometry airfoils’, for use in systems using individual blade control.</p> <p><u>Technical Note</u></p> <p><i>‘Variable geometry airfoils’ use trailing edge flaps or tabs, or leading edge slats or pivoted nose droop, the position of which can be controlled in flight.</i></p>

Category 9

9A002

Category Code	SGCO 2018	SGCO 2019
9A002	<p>‘Marine gas turbine engines’ with an ISO standard continuous power rating of 24,245 kW or more and a specific fuel consumption not exceeding 0.219 kg/kWh in the power range from 35% to 100%, and specially designed assemblies and components therefor.</p> <p><u>Note</u></p> <p><i>The term ‘marine gas turbine engines’ includes those industrial, or aero-derivative, gas turbine engines adapted for a ship’s electric power generation or propulsion.</i></p>	<p>‘Marine gas turbine engines’ designed to use liquid fuel and having both of the following characteristics, and specially designed assemblies and components therefor:</p> <ol style="list-style-type: none"> Maximum continuous power when operating in “steady state mode” at standard reference conditions specified in Ref. ISO 3977-2:1997 (or national equivalent) of 24,245 kW or more; <u>and</u> ‘Corrected specific fuel consumption’ not exceeding 0.219 kg/kWh at 35% of the maximum continuous power when using liquid fuel. <p><u>Note</u></p> <p><i>The term ‘marine gas turbine engines’ includes those industrial, or aero-derivative, gas turbine engines adapted for a ship’s electric power generation or propulsion.</i></p> <p><u>Technical Note</u></p> <p><i>For the purpose of Category Code 9A002, ‘corrected specific fuel consumption’ is the specific fuel consumption of the engine corrected to a marine distillate liquid fuel having a net specific energy (i.e. net heating value) of 42MJ/kg (Ref. ISO 3977-2:1997).</i></p>

9A004

Category Code	SGCO 2018	SGCO 2019
9A004.f.1.	<p>Space launch vehicles, “spacecraft”, “spacecraft buses”, “spacecraft payloads”, “spacecraft” on-board systems or equipment, and terrestrial equipment, as follows:</p> <p>---</p>	<p>Space launch vehicles, “spacecraft”, “spacecraft buses”, “spacecraft payloads”, “spacecraft” on-board systems or equipment, and terrestrial equipment, as follows:</p> <p>---</p>

Category Code	SGCO 2018	SGCO 2019
	f. Terrestrial equipment specially designed for “spacecraft”, as follows: <ol style="list-style-type: none"> 1. Telemetry and telecommand equipment; 2. Simulators. 	f. Terrestrial equipment specially designed for “spacecraft”, as follows: <ol style="list-style-type: none"> 1. Telemetry and telecommand equipment specially designed for any of the following data processing functions: <ol style="list-style-type: none"> a. Telemetry data processing of frame synchronisation and error corrections, for monitoring of operational status (also known as health and safe status) of the “spacecraft bus”; <u>or</u> b. Command data processing for formatting command data being sent to the “spacecraft” to control the “spacecraft bus”; 2. Simulators specially designed for ‘verification of operational procedures’ of “spacecraft”. <u>Technical Note</u> <i>For the purpose of Category Code 9A004.f.2., ‘verification of operational procedures’ is any of the following:</i> <ol style="list-style-type: none"> 1. <i>Command sequence confirmation;</i> 2. <i>Operational training;</i> 3. <i>Operational rehearsals; <u>or</u></i> 4. <i>Operational analysis.</i>

9A101

Category Code	SGCO 2018	SGCO 2019
9A101.a. (New 9A101.a.3. and 9A101.a.4)	Turbojet and turbofan engines, other than those specified in Category Code 9A001, as follows: <ol style="list-style-type: none"> a. Engines having both of the following characteristics: <ol style="list-style-type: none"> 1. ‘Maximum thrust value’ greater than 400 N (achieved un-installed) excluding civil certified engines with a 	Turbojet and turbofan engines, other than those specified in Category Code 9A001, as follows: <ol style="list-style-type: none"> a. Engines having all of the following characteristics: <ol style="list-style-type: none"> 1. ‘Maximum thrust value’ greater than 400 N (achieved un-installed) excluding civil certified engines with a

Category Code	SGCO 2018	SGCO 2019
(New Technical Notes 2 and 3)	<p data-bbox="495 233 1182 295">‘maximum thrust value’ greater than 8,890 N (achieved un-installed); <u>and</u></p> <p data-bbox="432 300 1182 394">2. Specific fuel consumption of 0.15 kg/N/hr or less (at maximum continuous power at sea level static conditions using the ICAO standard atmosphere);</p> <p data-bbox="432 408 611 438"><u>Technical Note</u></p> <p data-bbox="432 451 1151 614"><i>For the purpose of Category Code 9A101.a.1., ‘maximum thrust value’ is the manufacturer’s demonstrated maximum thrust for the engine type un-installed. The civil type certified thrust value will be equal to or less than the manufacturer’s demonstrated maximum thrust for the engine type.</i></p>	<p data-bbox="1373 233 2047 295">‘maximum thrust value’ greater than 8,890 N (achieved un-installed);</p> <p data-bbox="1310 300 2047 394">2. Specific fuel consumption of 0.15 kg/N/hr or less (at maximum continuous power at sea level static conditions using the ICAO standard atmosphere);</p> <p data-bbox="1310 408 1780 438">3. ‘Dry weight’ less than 750 kg; <u>and</u></p> <p data-bbox="1310 451 1861 481">4. ‘First-stage rotor diameter’ less than 1 m;</p> <p data-bbox="1310 496 1503 526"><u>Technical Notes</u></p> <p data-bbox="1310 539 2047 774">1. <i>For the purpose of Category Code 9A101.a.1., ‘maximum thrust value’ is the manufacturer’s demonstrated maximum thrust for the engine type un-installed at sea level static conditions using the ICAO standard atmosphere. The civil type certified thrust value will be equal to or less than the manufacturer’s demonstrated maximum thrust for the engine type.</i></p> <p data-bbox="1310 788 2018 882">2. <i>‘Dry weight’ is the weight of the engine without fluids (fuel, hydraulic fluid, oil, etc.) and does not include the nacelle (housing).</i></p> <p data-bbox="1310 896 2018 1027">3. <i>‘First-stage rotor diameter’ is the diameter of the first rotating stage of the engine, whether a fan or compressor, measured at the leading edge of the blade tips.</i></p>

9A106

Category Code	SGCO 2018	SGCO 2019
(New 9A106.b.)	Systems or components, other than those specified in Category Code 9A006 as follows, specially designed for liquid rocket propulsion or gel propellant rocket systems: a. Not used; b. Not used;	Systems or components, other than those specified in Category Code 9A006 as follows, specially designed for liquid rocket propulsion or gel propellant rocket systems: a. Not used; b. Rocket motor cases and insulation components and nozzles therefor, usable in rocket propulsion subsystems specified in Category Code 9A007 or 9A107;

9A115

Category Code	SGCO 2018	SGCO 2019
9A115 (New Technical Note)	Launch support equipment as follows: a. Apparatus and devices for handling, control, activation or launching, designed or modified for space launch vehicles specified in Category Code 9A004, sounding rockets specified in Category Code 9A104 or unmanned aerial vehicles specified in Category Code 9A012 or 9A112.a.;	Launch support equipment as follows: a. Apparatus and devices for handling, control, activation or launching, designed or modified for space launch vehicles specified in Category Code 9A004, sounding rockets specified in Category Code 9A104 or ‘missiles’; <i>Technical Notes</i> <i>In Category Code 9A115.a., ‘missile’ means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.</i>
9A115.b.	b. Vehicles for transport, handling, control, activation or launching, designed or modified for space launch vehicles specified in Category Code 9A004 or sounding rockets specified in Category Code 9A104.	b. Vehicles for transport, handling, control, activation or launching, designed or modified for space launch vehicles specified in Category Code 9A004, sounding rockets specified in Category Code 9A104 or “missiles”.

9D001

Category Code	SGCO 2018	SGCO 2019
9D001	“Software” specially designed or modified for the “development” of equipment or “technology”, specified in Category Codes 9A001 to 9A119, Category 9B or Category Code 9E003.	“Software”, not specified in Category Code 9D003 or 9D004, specially designed or modified for the “development” of equipment

Category Code	SGCO 2018	SGCO 2019
		or “technology”, specified in Category Codes 9A001 to 9A119, Category 9B or Category Code 9E003.

9D002

Category Code	SGCO 2018	SGCO 2019
9D002	“Software” specially designed or modified for the “production” of equipment specified in Category Codes 9A001 to 9A119 or Category 9B.	“Software”, not specified in Category Code 9D003 or 9D004, specially designed or modified for the “production” of equipment specified in Category Codes 9A001 to 9A119 or Category 9B.

9D004

Category Code	SGCO 2018	SGCO 2019
9D004	<p>Other “software” as follows:</p> <p>---</p> <p>b. “Software” for testing aero gas turbine engines, assemblies or components, specially designed to collect, reduce and analyse data in real time and capable of feedback control, including the dynamic adjustment of test articles or test conditions, as the test is in progress;</p>	<p>Other “software” as follows:</p> <p>---</p> <p>b. “Software” for testing aero gas turbine engines, assemblies or components, having both of the following characteristics:</p> <ol style="list-style-type: none"> 1. Specially designed for testing either of the following: <ol style="list-style-type: none"> a. Aero gas turbine engines, assemblies or components, incorporating “technology” specified in Category Code 9E003.a., 9E003.h. or 9E003.i.; <u>or</u> b. Multi-stage compressors providing either bypass or core flow, specially designed for aero gas turbine engines incorporating “technology” specified in Category Code 9E003.a. or 9E003.h.; <u>and</u> 2. Specially designed for both of the following: <ol style="list-style-type: none"> a. Acquisition and processing of data, in real time; <u>and</u>

Category Code	SGCO 2018	SGCO 2019
		<p>b. Feedback control of the test article or test conditions (e.g. temperature, pressure, flow rate) while the test is in progress;</p> <p><u>Note</u></p> <p><i>Category Code 9D004.b. does not include software for operation of the test facility or operator safety (e.g. overspeed shutdown, fire detection and suppression), or production, repair or maintenance acceptance-testing limited to determining if the item has been properly assembled or repaired.</i></p>

9E003

Category Code	SGCO 2018	SGCO 2019
9E003.a.2.d.	<p>Other “technology” as follows:</p> <p>---</p> <p>a. “Technology” “required” for the “development” or “production” of any of the following gas turbine engine components or systems:</p> <p>---</p> <p>2. Combustors having any of the following characteristics:</p> <p>---</p> <p>d. Liners designed to operate at ‘combustor exit temperature’ exceeding 1,883 K (1,610°C) and having holes that meet the parameters specified by Category Code 9E003.c.;</p>	<p>Other “technology” as follows:</p> <p>---</p> <p>a. “Technology” “required” for the “development” or “production” of any of the following gas turbine engine components or systems:</p> <p>---</p> <p>2. Combustors having any of the following characteristics:</p> <p>---</p> <p>d. Liners designed to operate at ‘combustor exit temperature’ exceeding 1,883 K (1,610°C) and having holes that meet the parameters specified in Category Code 9E003.c.;</p>
9E003.a.2. Technical Note 2	<p><u>Technical Notes</u></p> <p>--</p> <p>2. ‘Combustor exit temperature’ is the bulk average gas path total (stagnation) temperature between the combustor exit plane and the leading edge of the turbine inlet guide vane (i.e. measured at engine station T40 as defined in SAE ARP 755A) when the</p>	<p><u>Technical Notes</u></p> <p>--</p> <p>2. ‘Combustor exit temperature’ is the bulk average gas path total (stagnation) temperature between the combustor exit plane and the leading edge of the turbine inlet guide vane (i.e. measured at engine station T40 as defined in SAE ARP 755A)</p>

Category Code	SGCO 2018	SGCO 2019
	<p><i>engine is running in a ‘steady state mode’ of operation at the certificated maximum continuous operating temperature.</i></p> <p><u>Technical Note</u></p> <p><i>The term ‘steady state mode’ defines engine operation conditions, where the engine parameters, such as thrust/power, rpm and others, have no appreciable fluctuations, when the ambient air temperature and pressure at the engine inlet are constant.</i></p>	<p><i>when the engine is running in a “steady state mode” of operation at the certificated maximum continuous operating temperature.</i></p>
9E003.a.4. Technical Note	<p>Other “technology” as follows:</p> <p>a. “Technology” “required” for the “development” or “production” of any of the following gas turbine engine components or systems:</p> <p>---</p> <p>4. Uncooled turbine blades, vanes or “tip shrouds”, designed to operate at a ‘gas path temperature’ of 1,373 K (1,100°C) or more;</p> <p><u>Technical Note</u></p> <p><i>‘Gas path temperature’ is the bulk average gas path total (stagnation) temperature at the leading edge plane of the turbine component when the engine is running in a ‘steady state mode’ of operation at the certificated or specified maximum continuous operating temperature.</i></p> <p><u>Technical Note</u></p> <p><i>The term ‘steady state mode’ defines engine operation conditions, where the engine parameters, such as thrust/power, rpm and others, have no appreciable fluctuations, when the ambient air temperature and pressure at the engine inlet are constant.</i></p>	<p>Other “technology” as follows:</p> <p>a. “Technology” “required” for the “development” or “production” of any of the following gas turbine engine components or systems:</p> <p>---</p> <p>4. Uncooled turbine blades, vanes or “tip shrouds”, designed to operate at a ‘gas path temperature’ of 1,373 K (1,100°C) or more;</p> <p><u>Technical Note</u></p> <p><i>‘Gas path temperature’ is the bulk average gas path total (stagnation) temperature at the leading edge plane of the turbine component when the engine is running in a “steady state mode” of operation at the certificated or specified maximum continuous operating temperature.</i></p>
9E003.a.5. Technical Note	Other “technology” as follows:	Other “technology” as follows:

Category Code	SGCO 2018	SGCO 2019
	<p>a. “Technology” “required” for the “development” or “production” of any of the following gas turbine engine components or systems:</p> <p>---</p> <p>5. Cooled turbine blades, vanes, “tip shrouds” other than those described in Category Code 9E003.a.1., designed to operate at a ‘gas path temperature’ of 1,693 K (1,420°C) or more;</p> <p><u>Technical Note</u></p> <p><i>‘Gas path temperature’ is the bulk average gas path total (stagnation) temperature at the leading edge plane of the turbine component when the engine is running in a ‘steady state mode’ of operation at the certificated or specified maximum continuous operating temperature.</i></p> <p><u>Technical Note</u></p> <p><i>The term ‘steady state mode’ defines engine operation conditions, where the engine parameters, such as thrust/power, rpm and others, have no appreciable fluctuations, when the ambient air temperature and pressure at the engine inlet are constant.</i></p>	<p>a. “Technology” “required” for the “development” or “production” of any of the following gas turbine engine components or systems:</p> <p>---</p> <p>5. Cooled turbine blades, vanes, “tip shrouds” other than those described in Category Code 9E003.a.1., designed to operate at a ‘gas path temperature’ of 1,693 K (1,420°C) or more;</p> <p><u>Technical Note</u></p> <p><i>‘Gas path temperature’ is the bulk average gas path total (stagnation) temperature at the leading edge plane of the turbine component when the engine is running in a “steady state mode” of operation at the certificated or specified maximum continuous operating temperature.</i></p>
9E003.c.	<p>Other “technology” as follows:</p> <p>---</p> <p>c. “Technology” “required” for manufacturing cooling holes, in gas turbine engine components incorporating any of the “technologies” specified by Category Code 9E003.a.1., 9E003.a.2. or 9E003.a.5., and having either of the following characteristics:</p>	<p>Other “technology” as follows:</p> <p>---</p> <p>c. “Technology” “required” for manufacturing cooling holes, in gas turbine engine components incorporating any of the “technologies” specified in Category Code 9E003.a.1., 9E003.a.2. or 9E003.a.5., and having either of the following characteristics:</p>
9E003.c. Technical Note 4	<p>Other “technology” as follows:</p> <p>---</p> <p>c. “Technology” “required” for manufacturing cooling holes, in gas turbine engine components incorporating any of the</p>	<p>Other “technology” as follows:</p> <p>---</p> <p>c. “Technology” “required” for manufacturing cooling holes, in gas turbine engine components incorporating any of the</p>

Category Code	SGCO 2018	SGCO 2019
	<p>“technologies” specified by Category Code 9E003.a.1., 9E003.a.2. or 9E003.a.5., and having either of the following characteristics:</p> <p>---</p> <p><u>Technical Notes</u></p> <p>---</p> <p>4. <i>Techniques for manufacturing holes in Category Code 9E003.c. include “laser”, water jet, Electro-Chemical Machining (ECM) or Electrical Discharge Machining (EDM) methods.</i></p>	<p>“technologies” specified in Category Code 9E003.a.1., 9E003.a.2. or 9E003.a.5., and having either of the following characteristics:</p> <p>---</p> <p><u>Technical Notes</u></p> <p>---</p> <p>4. <i>Methods for manufacturing holes in Category Code 9E003.c. include “laser” beam machining, water jet machining, Electro-Chemical Machining (ECM) or Electrical Discharge Machining (EDM).</i></p>

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