Compilation of national control lists under Article 9(4) of Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items [1]

(C/2026/3577)

Article 9(4) of Regulation (EU) 2021/821 (hereunder 'the Regulation') requires the publication in the Official Journal of the European Union of a compilation of national control lists in force in the Member States and notified to the Commission and the other Member States pursuant to Article 9 of the Regulation.

Article 10(1) of the Regulation enables other Member States to impose an authorisation requirement for the export of items on the basis of a national control list adopted by a Member State and published by the Commission pursuant to Article 9(4) of the Regulation.

This compilation compiles the national control lists notified pursuant to said Article 9(2) of the Regulation.

Unless otherwise specified in the entries below, the national control lists are applicable for exports to all destinations outside the customs territory of the Union.

Unless otherwise specified in the entries below, the General Notes to Annex I, the General Technology Note (GTN), the General Software Note (GSN), the Acronyms and Abbreviations and the Definitions in Annex I of the Regulation apply *mutatis mutandis*.

CATEGORY 1 - SPECIAL MATERIALS AND RELATED EQUIPMENT

1B Test, Inspection and Production Equipment

1B904

Issued by Spain [2]

Additive manufacturing equipment designed or modified to produce, from energetic materials, explosive, pyrotechnic or propellant devices or shapes, and having any of the following characteristics:

a. Designed or modified to comply with the national safety standards applicable to environments containing potentially explosive ammunition; or

b. One or more ultrasonic extruders.

1C Materials

1C901

Issued by Spain [3]

Ammonium nitrate (CAS 6484-52-2) in an explosive degree with a concentration of nitrogen of 31.5 % or more.

Note 1:

Article 1C901 controls ammonium nitrate, technical ammonium nitrate, granulated ammonium nitrate, porous ammonium nitrate and any other presentation in which it can be used as a solid oxidiser.

[1] OJ L 206, 11.6.2021, p. 1.
[2] Equivalent national code: 1B901. Annex III.5 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 7 June 2023 (Hereafter 'Annex III.5 of the Royal Decree 679/2014').
[3] Equivalent national code: 1C901. Annex III.4 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 1 June 2022 (Hereafter 'Annex III.4 of the Royal Decree 679/2014').

Note 2:

Article 1C901 includes explosive mixtures of ammonium nitrate with fuel oils, emulsions, hydrogels and water resistant explosives.

Note 3:

Article 1C901 does not control ammonium nitrate in high density and low porosity fertiliser.

Note 4:

Article 1C901 does not control the issue of ammonium nitrate (UN 1942 and UN 2426) for the manufacture of explosives, as well as the matrices of emulsions, suspensions and gels based on ammonium nitrate (UN 3375) used for the manufacture of explosives, which shall be governed by Supplementary Technical Instruction No 30 of the Explosives Regulation, approved by Royal Decree 130/2017 of 24 February.

1C902

Issued by Spain ([4])

Potassium derived products, as indicated:

a. Potassium chloride (CAS 7447-40-7).

b. Potassium chloride fertilizers.

c. Mineral or chemical fertilizers based on phosphorus and potassium.

d. Mineral or chemical fertilizers based on nitrogen, phosphorus, and potassium.

1C903

Issued by Spain ([5])

"Energetic materials" and related substances, as indicated:

a. Nitrocellulose (CAS 9004-70-0).

b. 2,4,6-Trinitrotoluene (TNT) (CAS 118-96-7).

Technical Note:

For the purposes of 1C903, energetic materials and related substances include the products described, as well as those derived from them for the final manufacture of explosives.

CATEGORY 3 – ELECTRONICS

3A Systems, Equipment and Components

Additional information regarding 3A:

In what concerns Finland, the following note is applicable:

Integrated circuits include the following types:

— *"Monolithic integrated circuits";*

— *"Hybrid integrated circuits";*

— *"Multichip integrated circuits";*

— *"Film type integrated circuits", including silicon-on-sapphire integrated circuits;*

— *"Optical integrated circuits";*

([4]) Equivalent national code: 1C902. Annex III.5 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 5 June 2025 (Hereafter 'Annex III.5 of the Royal Decree 679/2014').

([5]) Equivalent national code: 1C903. Annex III.4 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 5 June 2025 (Hereafter 'Annex III.4 of the Royal Decree 679/2014').

— *"Three dimensional integrated circuits";*

— *"Monolithic Microwave Integrated Circuits" ("MMICs").*

3A901a16

Issued by Finland ([6])

Integrated circuits having an aggregate bidirectional transfer rate of 600 Gbyte/s or more over all inputs and outputs and to or from other integrated circuits not including volatile memories, and having or being programmable to have any of the following:

a. One or more digital processor units executing machine instructions having a 'total processing performance' of 6 000 or more;

b. One or more digital 'primitive computational units', excluding those units contributing to the execution of machine instructions specified in 3A901a16.a., having a 'total processing performance' of 6 000 or more;

c. One or more analog 'primitive computational units' having a 'total processing performance' of 6 000 or more; or

d. Any combination of digital processor units and 'primitive computational units' on an integrated circuit whose 'total processing performance' across 3A901a16.a., 3A901a16.b. and 3A901a16.c. sum to 6 000 or more.

Note 1:

Integrated circuits specified by 3A901a16 include graphical processor units (GPUs), tensor processing units (TPUs), neural processors, in-memory processors, vision processors, text processors, co-processors/accelerators, adaptive processors, field-programmable logic devices (FPLDs), and application-specific integrated circuits (ASICs).

N.B. For "digital computers" and "electronic assemblies" containing integrated circuits specified by 3A901a16, see 4A907.

Technical Notes:

For the purposes of 3A901a16:

1. *'Total processing performance' ('TPP') is the bit length per operation multiplied by the processing performance measured in Tera (10^{12}) Operations Per Second (TOPS) over all processor units on the integrated circuit. For example, the 'TPP' for an integrated circuit having two digital processor units that are each capable of 200 TOPS at 16 bits is 6 400 (2 processors x 200 TOPS x 16 bits = 6 400). In 3A901a16c, the 'TPP' of each analog 'primitive computational unit' is the processing performance expressed in TOPS multiplied by 8.*

2. *A 'primitive computational unit' is defined as containing zero or more modifiable weights, receiving one or more inputs, and producing one or more outputs. A computational unit is said to perform 2N-1 operations whenever an output is updated based on N inputs, where each modifiable weight contained in the processing element counts as an input. Each input, weight, and output might be an analog signal level or a scalar digital value represented using one or more bits. Such units include:*

   — *Artificial neurons*

   — *Multiply accumulate (MAC) units*

   — *Floating-point units (FPUs)*

   — *Analog multiplier units*

   — *Processing units using memristors, spintronics, or magnonics*

   — *Processing units using photonics or non-linear optics*

   — *Processing units using analog or multi-level nonvolatile weights*

([6]) Equivalent national code: 3A901c. Annex to Act on the Export Control of Dual-Use Items 500/2024 of 16 August 2024, with entry into force on 15 September 2024 (Hereafter 'Annex to Act 500/2024').

— *Processing units using multi-level memory or analog memory*

— *Multi-value or multi-level units*

— *Spiking units*

3. *Operations relevant to the calculation of TOPS include both scalar operations and the scalar constituents of composite operations such as vector operations, matrix operations, and tensor operations. Scalar operations include integer operations, floating-point operations (often measured by FLOPS), fixed-point operations, bit-manipulation operations, and/or bitwise operations.*

4. *The rate of TOPS is the maximum value theoretically possible when all processing units are operating simultaneously. The rate of TOPS and aggregate bidirectional transfer rate is assumed to be the highest value the manufacturer claims in a manual or brochure for the chip.*

5. *The bit length of an operation is equal to the highest bit length of any input or output of that operation. Additionally, if the processor unit is designed for operations that achieve different bits x TOPS values, the highest bits x TOPS value should be used.*

6. *For processing units that provide processing of both sparse and dense matrices, the TOPS values are the values for processing of dense matrices (e.g., without sparsity).*

3A911

Issued by Spain ([7])

Electro-optical and "optical integrated circuits" with 70 or more 'addressable optical channels', having all of the following:

a. One or more optical waveguides;

b. One or more internal optical interference devices, delay lines, beam splitters, phase shifters or ring resonators; and

c. Any of the following:

1. One or more waveguide-integrated sources of single or entangled photons; or

2. One or more waveguide-coupled photodetectors having zero-photon, single-photon, and multi-photon resolution.

Technical Note

For the purposes of 3A911, the number of 'addressable optical channels' in an "optical integrated circuit" is calculated as follows:

(the number of waveguides terminating in an output coupler) + (the number of waveguides that are coupled to a photodetector specified in 3A911).

3B Test, Inspection and Production Equipment

3B901f6

Issued by the Netherlands ([8])

Lithography equipment as follows:

Align and expose step and repeat (direct step on wafer) or step and scan (scanner) equipment for wafer processing using photo-optical or X-ray methods and having all of the following:

a. A light source wavelength equal to or longer than 193 nm;

b. The capability to produce a pattern with a 'Minimum Resolvable Feature size' ('MRF') of 45 nm or less; and

c. A maximum 'dedicated chuck overlay' (DCO) value of more than 1,50 nm and less than or equal to 2,40 nm.

([7]) Equivalent national code: 3A911. Annex III.5 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 5 June 2025 (Hereafter 'Annex III.5 of the Royal Decree 679/2014').

([8]) Equivalent national code: 3B801.f.6. Appendix to Article II of Order no. BZ2411160.

Technical Notes:

1. *The 'Minimum Resolvable Feature size' ('MRF') is calculated by the following formula:*

$$'MRF' = \frac{(an\ exposure\ light\ source\ wavelength\ in\ nm)\ x\ (K\ factor)}{Maximal\ numerical\ aperture}$$

where, the K factor = 0,25

'MRF' is also known as resolution.

2. *'Dedicated chuck overlay' is the alignment accuracy of a new pattern to an existing pattern printed on a wafer by the same lithographic system. 'Dedicated chuck overlay' is also known as single machine overlay.*

3B901f7

Issued by the Netherlands ([9])

Equipment, not specified by 3B501.f.1.b. or 3B901f6, designed or modified to increase the number of wafers processed per hour averaged over any time interval by greater than 1% of equipment controlled by 3B501.f.1.b. or 3B901f6.

3B901k

Issued by Spain ([10])

Equipment designed for dry etching having any of the following characteristics:

a. Equipment designed or modified for isotropic dry etching, having a largest silicon germanium-to-silicon (SiGe:Si) etch selectivity greater than or equal to 100:1; or

b. Equipment designed or modified for anisotropic dry etching, having all of the following characteristics;

   1. Radio frequency power sources with at least one pulsed radio frequency output;

   2. Fast gas switching valves with switching time of less than 300 milliseconds; and

   3. Electrostatic chuck with twenty or more controllable variable temperature elements.

Note 1:

3B901k includes etching by radicals, ions, sequential reactions or non-sequential reaction.

Note 2:

3B901k includes etching using RF pulse excited plasma, pulsed duty cycle excited plasma, pulsed voltage on electrodes modified plasma, cyclic injection and purging of gases combined with a plasma, plasma atomic layer etching or plasma quasi-atomic layer etching.

Technical Note 1:

For the purpose of 3B901k, silicon germanium-to-silicon (SiGe:Si) etch selectivity is measured for a Ge concentration of greater than or equal to 30% ($Si_{0.70}Ge_{0.30}$).

Technical Note 2:

For the purpose of 3B901k, radical is defined as atom, molecule, or ion that has an unpaired electron in an open electron shell configuration.

3B901o

Issued by The Netherlands ([11])

Equipment for cleaning or removal, as follows:

1. Equipment designed for removing polymeric residue and copper oxide film and enabling deposition of copper metal in a vacuum (equal to or less than 0,01 Pa) environment.

([9]) Equivalent national code: 3B801.f.7. Appendix to Article II of Order no. BZ2411160.
([10]) Equivalent national code: 3B902. Annex III.5 of the Royal Decree 679/2014.
([11]) Equivalent national code: 3B801.c. Appendix to Article II of Order no. BZ2411160.

2. Equipment with multiple chambers or multiple stations, designed for dry surface oxide removal preclean or dry surface decontamination.

Note:

Control 3B901o does not apply to deposition equipment.

3B901p1

Issued by the Netherlands ([12])

Equipment designed or modified for Atomic Layer Deposition (ALD) of Molybdenum (Mo), Ruthenium (Ru), or combinations of both materials, and having all of the following:

a. A metal precursor source designed or modified to operate at a temperature greater than 75 °C and

b. A process chamber (module) using a reducing agent containing hydrogen at a pressure greater than or equal to 30 Torr (4 kPa).

Note:

The metal precursor source does not need to be integrated with the equipment.

3B901p2

Issued by the Netherlands ([13])

Equipment designed for plasma enhanced chemical vapor deposition (PECVD) or radical assisted chemical vapor deposition and UV curing in a single platform of a dielectric film, while maintaining a substrate temperature below 500 °C, having all of the following:

a. Thickness of more than 6 nm and less than 20 nm on metal 'gaps' having less than 24 nm pitch and having an 'aspect ratio' equal to or greater than 1:1,8, and

b. A dielectric constant less than 3,0.

Technical Notes:

1. 'Gaps' is the space between the metal lines.

2. 'Aspect ratio' is the ratio of the height to depth of the hole between the metal lines.

3B901p3

Issued by the Netherlands ([14])

Deposition equipment having direct-liquid injection of more than two metal precursors, designed or modified to deposit a conformal dielectric film with a dielectric constant (K) greater than 40 in 'gaps' with 'aspect ratio' greater than 200:1 in a single deposition chamber.

Technical Notes:

1. 'Gaps' is the space between the metal lines.

2. 'Aspect ratio' is the ratio of the height to depth of the hole between the metal lines.

3B901p4

Issued by the Netherlands ([15])

Deposition equipment having direct-liquid injection of more than two metal precursors, designed or modified to deposit a conformal dielectric film with a dielectric constant (K) greater than 35 in 'gaps' with 'aspect ratio' greater than 50:1, in a single deposition chamber.

([12]) Equivalent national code: 3B801.d.3. Appendix to Article II of Order no. BZ2411160.
([13]) Equivalent national code: 3B801.d.4. Appendix to Article II of Order no. BZ2411160.
([14]) Equivalent national code: 3B801.d.5. Appendix to Article II of Order no. BZ2411160.
([15]) Equivalent national code: 3B801.d.6. Appendix to Article II of Order no. BZ2411160.

Technical Notes:

1. *'Gaps' is the space between the metal lines.*

2. *'Aspect ratio' is the ratio of the height to depth of the hole between the metal lines.*

3B901p5

Issued by the Netherlands ([16])

Semiconductor manufacturing equipment or systems designed for multistep processing in multiple chambers or stations as follows:

a. Selective tungsten (T) growth without a barrier; or

b. Selective molybdenum growth without a barrier.

3B901p6

Issued by the Netherlands ([17])

Equipment designed for deposition assisted by remotely generated radicals, enabling the fabrication of a silicon and carbon containing film, and having all of the following properties of the deposited film:

a. In 'gaps' with an 'aspect ratio' greater than 5:1 with lateral openings of less than 35 nm;

b. A dielectric constant (k) of less than 4,4; and

c. A gap-to-gap pitch of less than 45 nm.

Technical Notes:

1. *'Gaps' is the space between the metal lines.*

2. *'Aspect ratio' is the ratio of the height to depth of the hole between the metal lines.*

3B901p7

Issued by the Netherlands ([18])

Equipment, not specified by 3B901p6, designed for deposition assisted by remotely generated radicals, enabling the fabrication of a silicon and carbon containing film, and having all of the following properties of the deposited film:

a. In 'gaps' with an 'aspect ratio' greater than 5:1 with lateral openings of less than 70 nm;

b. A dielectric constant (k) of less than 5,3; and

c. A gap-to-gap pitch of less than 100 nm.

Technical Notes:

1. *'Gaps' is the space between the metal lines.*

2. *'Aspect ratio' is the ratio of the height to depth of the hole between the metal lines.*

3B903

Issued by Spain ([19])

Scanning electron microscope equipment designed for imaging semiconductor devices or integrated circuits, having all of the following characteristics:

a. Stage positioning accuracy equal to or less than 30 nm;

b. Stage positioning accuracy performed laser interferometry;

c. Position calibration within a field-of-view based on laser interferometer length-scale measurement;

([16]) Equivalent national code: 3B801.d.7. Appendix to Article II of Order no. BZ2411160.
([17]) Equivalent national code: 3B801.d.8. Appendix to Article II of Order no. BZ2411160.
([18]) Equivalent national code: 3B801.d.9. Appendix to Article II of Order no. BZ2411160.
([19]) Equivalent national code: 3B901. Annex III.5 of the Royal Decree 679/2014.

d. Ability to collect and store images having more than $2x10^8$ pixels;

e. Field-of-view overlap of less than 5% in vertical and horizontal directions;

f. Stitching overlap of field of view of less than 50 nm; and

g. Accelerating voltage more than 21 kV;

Note:

3B903 includes scanning electron microscope equipment designed for the repair of chips.

3B905

Issued by the Netherlands ([20])

Metrology or inspection equipment, as follows:

a. Patterned wafer defect metrology or patterned wafer defect inspection equipment, designed or modified to accept wafers greater than or equal to 300 mm in diameter, and having all of the following:

   1. Designed or modified to detect defects having a size equal to or less than 21 nm; and

   2. Having any of the following:

      a. A light source with an optical wavelength less than 400 nm;

      b. An electron-beam source with a resolution less (better) than or equal to 1,65 nm;

      c. A Cold Field Emission (CFE) electron-beam source; or

      d. Two or more electron-beam sources.

b. Equipment designed to measure focus or overlay after resist development or after etch on product wafers using image-based overlay or diffraction-based measurements techniques, with an overlay measurement accuracy less (better) than or equal to 0,5 nm having any of the following:

   1. Designed for integration to a 'track'; or

   2. 'Fast wavelength switching functionality'.

Technical Notes:

1. A 'track' is equipment designed for coating and developing photoresist formulated for lithography.

2. 'Fast wavelength switching functionality' is defined as having the ability to change the measurement wavelength and acquire a measurement in less than 25 ms.

3B915

Issued by Spain ([21])

Equipment designed for 'hybrid bonding' and possessing all of the following characteristics:

1. Alignment accuracy better than 1 μm; and

2. 'Mini-environment' rated to ISO 3 or better.

Note:

3B915 includes equipment designed for die-to-die (D2D) bonding, die-to-wafer with direct placement (DP-D2W) bonding, collective D2W (Co-D2W) bonding, and wafer-to-wafer (W2W) bonding.

([20]) Equivalent national code: 3B802.c. Appendix to Article II of Order no. BZ2411160.
([21]) Equivalent national code: 3B915. Annex III.5 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 5 June 2025 (Hereafter 'Annex III.5 of the Royal Decree 679/2014').

Technical Note:

For the purposes of 3B915:

1. *'Hybrid bonding' is defined as the bonding of metal to metal and dielectric to dielectric layers in the same process sequence.*

2. *The 'mini-environment' is the environment within the tool.*

3D Software

3D901-3

Issued by the Netherlands ([22])

"Software" specially designed for the "development", "production" or "use" of equipment specified in 3B901p1, 3B901p2, 3B901p3, 3B903p5 or 3B901p6.

3D901-5

Issued by the Netherlands ([23])

"Software" specially designed for the "development", "production" or "use" of equipment specified in 3B901f6.

3D901-6

Issued by the Netherlands ([24])

"Software" specially designed for the "development", "production" or "use" of equipment specified in 3B901p4, 3B901p7 or 3B905.

3D904

Issued by the Netherlands ([25])

'Computational lithography' "software" designed or modified for the "development" or “production” of patterns on DUV lithography masks.

Technical Note:

'Computational lithography' is the use of computer modelling to predict, correct, optimize and verify imaging performance of the lithography process over a range of patterns, processes, and system conditions.

3D907

Issued by Spain ([26])

"Software" designed to extract 'GDSII' or equivalent standard layout data and perform layer-to-layer alignment from Scanning Electron Microscope (SEM) images, and generate multi-layer 'GDSII' data or the circuit netlist.

Additional information:

In what concerns Spain, the following note applies:

Technical note:

'GDSII' ('Graphic Design System II') is a database file format for data exchange of integrated circuit artwork or integrated circuit layout artwork.

([22]) Equivalent national code: 3D807. Appendix to Article II of Order no. BZ2411160.
([23]) Equivalent national code: 3D806. Appendix to Article II of Order no. BZ2411160.
([24]) Equivalent national code: 3D808. Appendix to Article II of Order no. BZ2411160.
([25]) Equivalent national code: 3D809. Appendix to Article II of Order no. BZ2411160.
([26]) Equivalent national code: 3D901. Annex III.5 of the Royal Decree 679/2014.

3E Technology

1E925

Issued by Spain ([27])

"Technology" for the manufacture of equipment designed for 'hybrid bonding', specified in 3B915.

3E901-1

Issued by Spain ([28])

"Technology" for the "development" or "production" of scanning electronic microscopes specified in 3B903.

3E901-2

Issued by Finland ([29])

"Technology" according to the General Technology Note in Annex I to the Regulation for the "development" or "production" of equipment or materials specified by 3A901a16.

Technical Note:

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').

Additional information:

In what concerns Finland, the following Note applies:

Note:

3E901-2 does not control 'Process Design Kits' ('PDKs') unless they include libraries implementing functions or technologies for items specified in 3E901-2.

3E901-6

Issued by the Netherlands ([30])

"Technology" "necessary" for the "development", "production" or "use" of equipment specified in 3B901f6.

3E901-7

Issued by Spain ([31])

"Technology" for the "development" or "production" of "software" specified in 3D907.

3E901-8

Issued by Spain ([32])

"Technology" for the "development" or "production" of equipment designed for dry etching specified by 3B901k.

([27]) Equivalent national code: 1E925. Annex III.5 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 5 June 2025 (Hereafter 'Annex III.5 of the Royal Decree 679/2014').
([28]) Equivalent national: 3E901. Annex III.5 of the Royal Decree 679/2014.
([29]) Equivalent national code: 3E901. Annex to Act 500/2024.
([30]) Equivalent national code: 3E806. Appendix to Article II of Order no. BZ2411160.
([31]) Equivalent national: 3E902. Annex III.5 of the Royal Decree 679/2014.
([32]) Equivalent national: 3E903. Annex III.5 of the Royal Decree 679/2014.

3E901-9

Issued by the Netherlands ([33])

"Technology" "required" for the "development", "production" or "use" of equipment specified in 3B901p1, 3B901p2, 3B901p3, 3B901p5 or 3B901p6.

3E901-10

Issued by the Netherlands ([34])

"Technology" "required" for the "development", "production" or "use" of equipment specified in 3B901p4, 3B901p7 or 3B905.

3E905

Issued by Spain ([35])

"Technology" for the "development" or "production" of integrated circuits or devices, using "Gate-All-Around Field-Effect Transistor" structures ("GAAFET").

3E924

Issued by Spain ([36])

"Technology" for the manufacture of electro-optical circuits and "optical integrated circuits", as specified in 3A911.

CATEGORY 4 - COMPUTERS

4A Systems, Equipment and Components

4A906

Issued by Spain ([37])

Quantum computers and related electronic assemblies and components therefor, as follows:

a. Quantum computers, in accordance with the following requirements:

1. Quantum computers supporting 34 or more, but fewer than 100, fully controlled, connected and working physical qubits, and having a C-NOT error of less than or equal to 10^{-4};

2. Quantum computers supporting 100 or more, but fewer than 200, fully controlled, connected and working physical qubits, and having a C-NOT error of less than or equal to 10^{-3};

3. Quantum computers supporting 200 or more, but fewer than 350, fully controlled, connected and working physical qubits, and having a C-NOT error of less than or equal to $2x10^{-3}$;

4. Quantum computers supporting 350 or more, but fewer than 500, fully controlled, connected and working physical qubits, and having a C-NOT error of less than or equal to $3x10^{-3}$;

5. Quantum computers supporting 500 or more, but fewer than 700, fully controlled, connected and working physical qubits, and having a C-NOT error of less than or equal to $4x10^{-3}$;

6. Quantum computers supporting 700 or more, but fewer than 1 100, fully controlled, connected and working physical qubits, and having a C-NOT error of less than or equal to $5x10^{-3}$;

([33]) Equivalent national code: 3E807. Appendix to Article II of Order no. BZ2411160.
([34]) Equivalent national code: 3E808. Appendix to Article II of Order no. BZ2411160.
([35]) Equivalent national: 3E904. Annex III.5 of the Royal Decree 679/2014.
([36]) Equivalent national code: 3E924. Annex III.5 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 5 June 2025 (Hereafter 'Annex III.5 of the Royal Decree 679/2014').
([37]) Equivalent national code: 4A901. Annex III.5 of the Royal Decree 679/2014.

7. Quantum computers supporting 1 100 or more, but fewer than 2 000, fully controlled, connected and working physical qubits, and having a C-NOT error of less than or equal to $6x10^{-3}$;

8. Quantum computers supporting 2 000 or more fully controlled, connected and working physical qubits;

b. Qubit devices and qubit circuits containing or supporting arrays of physical qubits, and specially designed for items specified by 4A906;

c. Quantum control components and quantum measurement devices, specially designed for items specified by 4A906.

Notes:

1. *4A906 applies to circuit model (or 'gate-based') and one-way (or 'measurement-based' - MBQC) quantum computers.*

2. *Items specified in 4A906 need not necessarily physically contain any qubits. For example, quantum computers based on photonic schemes do not permanently contain a physical item that can be identified as a qubit. The photonic qubits are generated while the computer is operating and are then later discarded.*

3. *Items specified in 4A906 include semiconductors, superconductors, and photonic qubit chips and chip arrays; ion trap arrays; other qubit confinement technologies; and coherent interconnects between those elements.*

4. *4A906 applies to items designed for calibrating, initialising, manipulating or measuring the resident qubits of a quantum computer.*

Technical Notes:

For the purposes of 4A906:

1. *A physical qubit is a two-level quantum system used to represent the elementary unit of quantum logic by means of manipulations and measurements that are not error corrected. Physical qubits differ from logical qubits in that the latter are error-corrected qubits made up of many physical qubits.*

2. *Fully controlled means the physical qubit can be calibrated, initialised, gated and read out, as necessary.*

3. *Connected means that two-qubit gate operations can be performed between any arbitrary pair of the available working physical qubits. This does not necessarily entail 'all-to-all' connectivity.*

4. *Working means that the physical qubit performs universal quantum computational work functions according to system specifications for volume and capacity measurements, in accordance with qubit operational fidelity.*

5. *Supporting 34 or more fully controlled, connected, working physical qubits refers to the capability of a quantum computer to confine, control, measure and process the quantum information embodied in 34 or more physical qubits.*

6. *C-NOT error is the average physical gate error for the Controlled-NOT (C-NOT) nearest-neighbour gates of two physical qubits.*

4A907

Issued by Finland ([38])

Computers, "electronic assemblies" and "components" containing one or more integrated circuits described in 3A901a16.

Technical Note:

For the purposes of 4A907, computers include "digital computers", hybrid computers, and analog computers.

([38]) Equivalent national code: 4A902. Annex to Act 500/2024.

4E Technology

4E901b3

Issued by Spain ([39])

"Technology" for the "development" or "production" of quantum computers, devices and qubit circuits, as well as quantum measurement and control components specified in 4A906.

4E902

Issued by Finland ([40])

"Technology" according to the General Technology Note, for the "development", "production" or "use" of equipment or "software" specified in 4A907.

CATEGORY 5 – TELECOMMUNICATIONS AND "INFORMATION SECURITY"

Part 1 - TELECOMMUNICATIONS

5A1 Systems, Equipment and Components

5A901

Issued by Spain ([41])

Radio frequency systems and equipment not specified in 5A001.f. and 5A001.h., components and accessories, specially designed or modified to develop any of the following functions:

1. Take control and command of unmanned aeroplanes.

2. Deliberately and selectively interfere, deny, inhibit, degrade or deceive radio frequency signals for the control and command of unmanned aeroplanes.

3. Use the specific characteristics of the radio frequency protocol used by unmanned aeroplanes to interfere with their operation.

N.B. *For GNSS disturbance systems, see also Military Goods Controls, Category 11.b.*

5A902

Issued by Spain ([42])

Surveillance systems, equipment and components for public information and communication networks, not specified in 5A001 of Annex I to Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021, designed for any of the following functions:

1. Monitoring for legal interception applications (according to legal interception and telecommunications security requirements for ETSI ES 201 158 network functions, handover interface for lawful interception of telecommunications traffic ETSI ES 201 671 or equivalent standards and specifications) and specially designed components therefor.

([39]) Equivalent national code: 4E901. Annex III.5 of the Royal Decree 679/2014.
([40]) Equivalent national code: 4E902. Annex to Act 500/2024.
([41]) Equivalent national code: 5A901. Annex III.4 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 1 June 2022 (Hereafter 'Annex III.4 of the Royal Decree 679/2014').
([42]) Equivalent national code: 5A902. Annex III.5 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 1 June 2022 (Hereafter 'Annex III.5 of the Royal Decree 679/2014').

2. Call data retention (in accordance with the requirements for lawful data interception by law enforcement agencies for the handling of ETSI TS 102 656 data or equivalent standards and specifications) and specially designed components therefor.

Technical Note:

Call data includes signaling information, origin and destination (e.g. phone numbers, IP or MAC addresses, etc.), date and time and geographical origin of communication.

Note:

5A902 does not control systems, equipment or components specially designed for any of the following purposes:

a. Invoicing;

b. Data collection functions within the network elements;

c. Quality of service of the network; or

d. User satisfaction.

5D1 Software

5D902

Issued by Spain ([43])

"Software" not specified in 5D001 of Annex I to Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 specially designed or modified for the "development", "production", "use", functional configuration and performance control of surveillance systems, equipment and components specified in 5A902.

([43]) Equivalent national code: 5D902. Annex III.5 of the Royal Decree 679/2014 of 1 August 2014, with entry into force on 1 June 2022 (Hereafter 'Annex III.5 of the Royal Decree 679/2014').