

CATEGORY 5-TELECOMMUNICATIONS AND "INFORMATION SECURITY"

Part 1-Telecommunications

Notes:

1. The control status of components, "lasers", test and "production" equipment and "software" therefor which are specially designed for telecommunications equipment or systems is determined in Category 5, Part 1.
2. "Digital computers", related equipment or "software", when essential for the operation and support of telecommunications equipment described in this Category, are regarded as specially designed components, provided they are the standard models customarily supplied by the manufacturer. This includes operation, administration, maintenance, engineering or billing computer systems.

5A1 SYSTEMS, EQUIPMENT AND COMPONENTS

5A001 (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; or
- (3) Specially designed to operate outside the temperature range from 218 K (-55⁰C) to 397 K (124⁰C);

Note:

5A001(a)(3) applies only to electronic equipment.

Note:

5A001(a)(2) and 5A001(a)(3) do not control equipment designed or modified for use on board satellites.

(b) Telecommunications transmission equipment and systems, and specially designed components and accessories therefor, having any of the following characteristics, functions or features: (36 of 2000 s. 28)

- (1) Being underwater communications systems having any of the following characteristics:
 - (a) An acoustic carrier frequency outside the range from 20 kHz to 60 kHz;
 - (b) Using an electromagnetic carrier frequency below 30 kHz; or
 - (c) Using electronic beam steering techniques;
- (2) Being radio equipment operating in the 1.5 MHz to 87.5 MHz band and having any of the following characteristics:
 - (a) Incorporating adaptive techniques providing more than 15 dB suppression of an interfering signal; or
 - (b) Having all of the following:
 - (1) Automatically predicting and selecting frequencies and "total digital transfer rates" per

channel to optimize the transmission; and

- (2) Incorporating a linear power amplifier configuration having a capability to support multiple signals simultaneously at an output power of 1 kW or more in the frequency range of 1.5 MHz or more but less than 30 MHz, or 250 W or more in the frequency range of 30 MHz or more but not exceeding 87.5 MHz, over an "instantaneous bandwidth" of one octave or more and with an output harmonic and distortion content of better than -80 dB; (L.N. 65 of 2004)
- (3) Being radio equipment employing "spread spectrum" techniques, including "frequency hopping" techniques, not controlled by 5A001(b)(4), and having any of the following characteristics: (L.N. 132 of 2001; L.N. 95 of 2006)
 - (a) User programmable spreading codes; or
 - (b) A total transmitted bandwidth which is 100 or more times the bandwidth of any one information channel and in excess of 50 kHz;

Note:

5A001(b)(3)(b) does not control radio equipment specially designed for use with civil cellular radiocommunications systems. (L.N. 132 of 2001)

Note:

5A001(b)(3) does not control equipment designed to operate at an output power of 1.0 Watt or less.

- (4) Being radio equipment employing ultra-wideband modulation techniques, having user programmable channelizing codes, scrambling codes or network identification codes, and having any of the following characteristics:
 - (a) A bandwidth exceeding 500 MHz; or
 - (b) A "fractional bandwidth" of 20% or more. (L.N. 95 of 2006)
- (5) Being digitally controlled radio receivers having all of the following: (L.N. 65 of 2004)
 - (a) More than 1000 channels;
 - (b) A "frequency switching time" of less than 1 ms;
 - (c) Automatic searching or scanning of a part of the electromagnetic spectrum; and
 - (d) Identification of the received signals or the type of transmitter;

5A001(b)(5) does not control radio equipment specially designed for use with civil cellular radiocommunications systems. (L.N. 132 of 2001; L.N. 65 of 2004)

- (6) Employing functions of digital "signal processing" to provide 'voice coding' output at rates of less than 2400 bit/s; (L.N. 65 of 2004; L.N. 95 of 2006)

Technical Notes:

1. For variable rate 'voice coding', 5A001(b)(6) applies to the voice coding output of continuous speech.
2. For the purpose of 5A001(b)(6), 'voice coding' is defined as the technique to take samples of human voice and then convert these samples into a digital signal, taking into account specific

characteristics of human speech. (L.N. 95 of 2006)

(c) Optical fibre communication cables, optical fibres and accessories, as follows:

- (1) Optical fibres of more than 500 m in length, specified by the manufacturer as being capable of withstanding a proof test tensile stress of 2×10^9 N/m² or more;

Technical Note:

Proof Test: on-line or off-line production screen testing that dynamically applies a prescribed tensile stress over a 0.5 to 3 m length of fibre at a running rate of 2 to 5 m/s while passing between capstans approximately 150 mm in diameter. The ambient temperature is a nominal 293 K and relative humidity 40%. Equivalent national standards may be used for executing the proof test. (L.N. 132 of 2001)

- (2) Optical fibre cables and accessories designed for underwater use;

Note:

5A001(c)(2) does not control standard civil telecommunications cables and accessories. (36 of 2000 s. 28)

N.B.:

1. For underwater umbilical cables, and connectors therefor, see 8A002(a)(3).
2. For fibre optic hull penetrators or connectors, see 8A002(c).

(d) "Electronically steerable phased array antennae" operating above 31.8 GHz; (L.N. 95 of 2006)

Note:

5A001(d) does not control "electronically steerable phased array antennae" for landing systems with instruments meeting ICAO standards covering microwave landing systems (MLS).

(e) Radio direction finding equipment operating at frequencies above 30 MHz and having all of the following characteristics, and specially designed components therefor:

- (1) "Instantaneous bandwidth" of 10 MHz or more; and
- (2) Capable of finding a line of bearing (LOB) to non-cooperating radio transmitters with a signal duration of less than 1 ms; (L.N. 95 of 2006)

(f) Jamming equipment specially designed or modified to intentionally and selectively interfere with, deny, inhibit, degrade or seduce cellular mobile telecommunications services, and having any of the following characteristics, and specially designed components therefor:

- (1) Simulating the functions of Radio Access Network (RAN) equipment; or
- (2) Detecting and exploiting specific characteristics of the mobile telecommunications protocol employed (e.g., GSM);

N.B.:

For GNSS jamming equipment, see the Munitions List. (L.N. 95 of 2006)

5A101 Telemetry and telecontrol equipment, including ground equipment, designed or modified for 'missiles';

Technical Note:

In 5A101, 'missiles' means complete rocket systems and "unmanned aerial vehicle" systems capable of a

range exceeding 300 km.

Note:

5A101 does not control:

- (a) Equipment designed or modified for manned aircraft or satellites;
- (b) Ground based equipment designed or modified for terrestrial or marine applications;
- (c) Equipment designed for commercial, civil or safety of life (e.g. data integrity, flight safety) GNSS services.

(L.N. 95 of 2006)

5B1 TEST, INSPECTION, AND PRODUCTION EQUIPMENT

- 5B001 (a) Equipment and specially designed components or accessories therefor, specially designed for the "development", "production" or "use" of equipment, functions or features controlled by Category 5-Part 1;

Note:

5B001(a) does not control optical fibre characterization equipment.

- (b) Equipment and specially designed components or accessories therefor, specially designed for the "development" of any of the following telecommunications transmission or switching equipment: (36 of 2000 s. 28; L.N. 65 of 2004)

- (1) Equipment employing digital techniques designed to operate at a "total digital transfer rate" exceeding 15 Gbit/s;

Technical Note:

For switching equipment, the "total digital transfer rate" is measured at the highest speed port or line. (L.N. 65 of 2004)

- (2) Equipment employing a "laser" and having any of the following:
- (a) A transmission wavelength exceeding 1750 nm;
 - (b) Performing "optical amplification";
 - (c) Employing coherent optical transmission or coherent optical detection techniques (also called optical heterodyne or homodyne techniques); or
 - (d) Employing analogue techniques and having a bandwidth exceeding 2.5 GHz;

Note:

5B001(b)(2)(d) does not control equipment specially designed for the "development" of commercial TV systems.

- (3) Equipment employing "optical switching";
- (4) Radio equipment employing quadrature-amplitude-modulation (QAM) techniques above level 256; or (L.N. 132 of 2001)
- (5) Equipment employing "common channel signalling" operating in non-associated mode of operation;

5C1 MATERIALS

None;

5D1 SOFTWARE

- 5D001 (a) "Software" specially designed or modified for the "development", "production" or "use" of equipment, functions or features controlled by Category 5-Part 1;
- (b) "Software" specially designed or modified to support "technology" controlled by 5E001;
- (c) Specific "software" specially designed or modified to provide characteristics, functions or features of equipment controlled by 5A001 or 5B001; (L.N. 95 of 2005)
- (d) "Software" specially designed or modified for the "development" of any of the following telecommunications transmission or switching equipment: (36 of 2000 s. 28; L.N. 65 of 2004)
- (1) Equipment employing digital techniques designed to operate at a "total digital transfer rate" exceeding 15 Gbit/s; (L.N. 65 of 2004)
- Technical Note:*
- For switching equipment, the "total digital transfer rate" is measured at the highest speed port or line. (L.N. 65 of 2004)
- (2) Equipment employing a "laser" and having any of the following:
- (a) A transmission wavelength exceeding 1750 nm; or
- (b) Employing analogue techniques and having a bandwidth exceeding 2.5 GHz;
- Note:*
- 5D001(d)(2)(b) does not control "software" specially designed for the "development" of commercial TV systems. (L.N. 132 of 2001)
- (3) Equipment employing "optical switching"; or
- (4) Radio equipment employing quadrature-amplitude-modulation (QAM) techniques above level 256; (L.N. 132 of 2001; L.N. 65 of 2004)

- 5D101 "Software" specially designed or modified for the "use" of equipment controlled by 5A101;
- (L.N. 65 of 2004; L.N. 95 of 2006)

5E1 TECHNOLOGY

- 5E001 (a) "Technology" according to the General Technology Note for the "development", "production" or "use" (excluding operation) of equipment, functions or features or "software" controlled by Category 5-Part 1;
- (b) Specific "technologies", as follows:
- (1) "Required" "technology" for the "development" or "production" of telecommunications

equipment specially designed to be used on board satellites;

- (2) "Technology" for the "development" or "use" of "laser" communication techniques with the capability of automatically acquiring and tracking signals and maintaining communications through exoatmosphere or sub-surface (water) media;
 - (3) "Technology" for the "development" of digital cellular radio base station receiving equipment whose reception capabilities that allow multi-band, multi-channel, multi-mode, multi-coding algorithm or multi-protocol operation can be modified by changes in "software"; (L.N. 65 of 2004)
 - (4) "Technology" for the "development" of "spread spectrum" techniques, including "frequency hopping" techniques; (L.N. 132 of 2001)
- (c) "Technology" according to the General Technology Note for the "development" or "production" of any of the following telecommunications transmission or switching equipment, functions or features: (36 of 2000 s. 28; L.N. 65 of 2004)
- (1) Equipment employing digital techniques designed to operate at a "total digital transfer rate" exceeding 15 Gbit/s; (L.N. 65 of 2004)

Technical Note:

For switching equipment, the "total digital transfer rate" is measured at the highest speed port or line. (L.N. 65 of 2004)

- (2) Equipment employing a "laser" and having any of the following:
 - (a) A transmission wavelength exceeding 1750 nm;
 - (b) Performing "optical amplification" using praseodymium-doped fluoride fibre amplifiers (PDFFA);
 - (c) Employing coherent optical transmission or coherent optical detection techniques (also called optical heterodyne or homodyne techniques);
 - (d) Employing wavelength division multiplexing techniques exceeding 8 optical carriers in a single optical window; or
 - (e) Employing analogue techniques and having a bandwidth exceeding 2.5 GHz;

Note:

5E001(c)(2)(e) does not control "technology" for the "development" or "production" of commercial TV systems. (L.N. 132 of 2001)

- (3) Equipment employing "optical switching";
- (4) Radio equipment having any of the following:
 - (a) Quadrature-amplitude-modulation (QAM) techniques above level 256; or (L.N. 65 of 2004)
 - (b) Operating at input or output frequencies exceeding 31.8 GHz; (L.N. 65 of 2004)

Note:

5E001(c)(4)(b) does not control "technology" for the "development" or "production" of equipment designed or modified for operation in any frequency band which is "allocated by

the ITU" for radiocommunications services, but not for radio-determination. (L.N. 132 of 2001)

- (5) Equipment employing "common channel signalling" operating in non-associated mode of operation; (L.N. 65 of 2004)

5E101 "Technology" according to the General Technology Note for the "development", "production" or "use" of equipment controlled by 5A101;