

e.3.c. Rated for a magnetic induction of more than 8 T or "overall current density" in the winding of more than 300 A/mm²;
 f. Rotary input type shaft absolute position encoders having any of the following:
 f.1. A resolution of better than 1 part in 265,000 (18 bit resolution) of full scale; or
 f.2. An accuracy better than ± 2.5 seconds of arc.

■ 13. In Supplement No. 1 to part 774 (the Commerce Control List), Category 3—Electronics, Export Control Classification Number (ECCN) 3A002 is amended by revising the "items" paragraph in the List of Items Controlled section, to read as follows:

3A002 General purpose electronic equipment, as follows (see List of Items Controlled).

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List of Items Controlled

Unit: * * *

Related Controls: * * *

Related Definitions: * * *

Items:

a. Recording equipment, as follows, and specially designed test tape therefor:
 a.1. Analog instrumentation magnetic tape recorders, including those permitting the recording of digital signals (*e.g.*, using a high density digital recording (HDDR) module), having any of the following:

a.1.a. A bandwidth exceeding 4 MHz per electronic channel or track;
 a.1.b. A bandwidth exceeding 2 MHz per electronic channel or track and having more than 42 tracks; or
 a.1.c. A time displacement (base) error, measured in accordance with applicable IRIG or EIA documents, of less than ± 0.1 μ s;

Note: Analog magnetic tape recorders specially designed for civilian video purposes are not considered to be instrumentation tape recorders.

a.2. Digital video magnetic tape recorders having a maximum digital interface transfer rate exceeding 360 Mbit/s;

Note: 3A002.a.2 does not control digital video magnetic tape recorders specially designed for television recording using a signal format, which may include a compressed signal format, standardized or recommended by the ITU, the IEC, the SMPTE, the EBU, the ETSI, or the IEEE for civil television applications.

a.3. Digital instrumentation magnetic tape data recorders employing helical scan techniques or fixed head techniques, having any of the following:

a.3.a. A maximum digital interface transfer rate exceeding 175 Mbit/s; or
 a.3.b. Being "space qualified";

Note: 3A002.a.3 does not control analog magnetic tape recorders equipped with HDDR conversion electronics and configured to record only digital data.

a.4. Equipment, having a maximum digital interface transfer rate exceeding 175 Mbit/s, designed to convert digital video magnetic tape recorders for use as digital instrumentation data recorders;

a.5. Waveform digitizers and transient recorders having all of the following:
N.B.: See also 3A292.

a.5.a. Digitizing rates equal to or more than 200 million samples per second and a resolution of 10 bits or more; and
 a.5.b. A continuous throughput of 2 Gbit/s or more;

Technical Note: For those instruments with a parallel bus architecture, the continuous throughput rate is the highest word rate multiplied by the number of bits in a word. Continuous throughput is the fastest data rate the instrument can output to mass storage without the loss of any information while sustaining the sampling rate and analog-to-digital conversion.

a.6. Digital instrumentation data recorders, using magnetic disk storage technique, having all of the following:

a.6.a. Digitizing rate equal to or more than 100 million samples per second and a resolution of 8 bits or more; and
 a.6.b. A continuous throughput of 1 Gbit/s or more;

b. "Frequency synthesizer", "electronic assemblies" having a "frequency switching time" from one selected frequency to another of less than 1 ms;

c. Radio frequency "signal analyzers", as follows:

c.1. "Signal analyzers" capable of analyzing frequencies exceeding 31.8 GHz but less than 37.5 GHz or exceeding 43.5 GHz;

c.2. "Dynamic signal analyzers" having a "real-time bandwidth" exceeding 500 kHz;

Note: 3A002.c.2 does not control those "dynamic signal analyzers" using only constant percentage bandwidth filters (also known as octave or fractional octave filters).

d. Frequency synthesized signal generators producing output frequencies, the accuracy and short term and long term stability of which are controlled, derived from or disciplined by the internal master frequency, and having any of the following:

d.1. A maximum synthesized frequency exceeding 31.8 GHz;
 d.2. A "frequency switching time" from one selected frequency to another of less than 1 ms; or
 d.3. A single sideband (SSB) phase noise better than $-(126 + 20 \log_{10} F - 20 \log_{10} f)$ in dBc/Hz, where F is the off-set from the operating frequency in Hz and f is the operating frequency in MHz;

Note: 3A002.d does not control equipment in which the output frequency is either produced by the addition or subtraction of two or more crystal oscillator frequencies, or by an addition or subtraction followed by a multiplication of the result.

e. Network analyzers with a maximum operating frequency exceeding 43.5 GHz;
 f. Microwave test receivers having all of the following:

f.1. A maximum operating frequency exceeding 43.5 GHz; and
 f.2. Being capable of measuring amplitude and phase simultaneously;
 g. Atomic frequency standards having any of the following:
 g.1. Long-term stability (aging) less (better) than 1×10^{-11} /month; or

g.2. Being "space qualified".

Note: 3A002.g.1 does not control non-"space qualified" rubidium standards.

■ 14. In Supplement No. 1 to part 774 (the Commerce Control List), Category 3—Electronics, Export Control Classification Number (ECCN) 3A991 is amended by revising the "items" paragraph in the List of Items Controlled section, to read as follows:

3A991 Electronic devices and components not controlled by 3A001.

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List of Items Controlled

Unit: * * *

Related Controls: * * *

Related Definitions: * * *

Items:

a. "Microprocessor microcircuits", "microcomputer microcircuits", and microcontroller microcircuits having any of the following:

a.1. A "composite theoretical performance" ("CTP") of 6,500 million theoretical operations per second (MTOPS) or more and an arithmetic logic unit with an access width of 32 bit or more;

a.2. A clock frequency rate exceeding 25 MHz; or

a.3. More than one data or instruction bus or serial communication port that provides a direct external interconnection between parallel "microprocessor microcircuits" with a transfer rate of 2.5 Mbyte/s.

b. Storage integrated circuits, as follows:

b.1. Electrical erasable programmable read-only memories (EEPROMs) with a storage capacity;

b.1.a. Exceeding 16 Mbits per package for flash memory types; or

b.1.b. Exceeding either of the following limits for all other EEPROM types:

b.1.b.1. Exceeding 1 Mbit per package; or
 b.1.b.2. Exceeding 256 kbit per package and a maximum access time of less than 80 ns;

b.2. Static random access memories (SRAMs) with a storage capacity:

b.2.a. Exceeding 1 Mbit per package; or
 b.2.b. Exceeding 256 kbit per package and a maximum access time of less than 25 ns;

c. Analog-to-digital converters having any of the following:

c.1. A resolution of 8 bit or more, but less than 12 bit, with a total conversion time of less than 10 ns;

c.2. A resolution of 12 bit with a total conversion time of less than 200 ns;

c.3. A resolution of more than 12 bit but equal to or less than 14 bit with a total conversion time of less than 2 μ s; or

c.4. A resolution of more than 14 bit with a total conversion time of less than 2 μ s;

d. Field programmable logic devices having either of the following:

d.1. An equivalent gate count of more than 5000 (2 input gates); or

d.2. A toggle frequency exceeding 100 MHz;

e. Fast Fourier Transform (FFT) processors having a rated execution time for a 1,024 point complex FFT of less than 1 ms.