

a.2.b.6. Multiplexed hydrophone group signals designed to operate at depths exceeding 35 m or having an adjustable or removable depth sensing device in order to operate at depths exceeding 35 m; or

a.2.b.7. Hydrophone characteristics controlled by 6A001.a.2.a;

a.2.c. Processing equipment, specially designed for towed acoustic hydrophone arrays, having "user accessible programmability" and time or frequency domain processing and correlation, including spectral analysis, digital filtering and beamforming using Fast Fourier or other transforms or processes;

a.2.d. Heading sensors having all of the following:

a.2.d.1. An accuracy of better than $\pm 0.5^\circ$; and

a.2.d.2. Designed to operate at depths exceeding 35 m or having an adjustable or removable depth sensing device in order to operate at depths exceeding 35 m;

a.2.e. Bottom or bay cable systems having any of the following:

a.2.e.1. Incorporating hydrophones controlled by 6A001.a.2.a; or

a.2.e.2. Incorporating multiplexed hydrophone group signal modules having all of the following characteristics:

a.2.e.2.a. Designed to operate at depths exceeding 35 m or having an adjustable or removable depth sensing device in order to operate at depths exceeding 35 m; and

a.2.e.2.b. Capable of being operationally interchanged with towed acoustic hydrophone array modules;

a.2.f. Processing equipment, specially designed for bottom or bay cable systems, having "user accessible programmability" and time or frequency domain processing and correlation, including spectral analysis, digital filtering and beamforming using Fast Fourier or other transforms or processes;

b. Correlation-velocity sonar log equipment designed to measure the horizontal speed of the equipment carrier relative to the sea bed at distances between the carrier and the sea bed exceeding 500 m.

6A005 "Lasers", components and optical equipment, as follows (see List of Items Controlled).

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List of Items Controlled

Unit: Equipment in number; components and accessories in \$ value

Related Controls: * * *

Related Definitions: * * *

Items:

a. Gas "lasers", as follows:

a.1. Excimer "lasers", having any of the following:

a.1.a. An output wavelength not exceeding 150 nm and having any of the following:

a.1.a.1. An output energy exceeding 50 mJ per pulse; or

a.1.a.2. An average output power exceeding 1 W;

a.1.b. An output wavelength exceeding 150 nm but not exceeding 190 nm and having any of the following:

a.1.b.1. An output energy exceeding 1.5 J per pulse; or

a.1.b.2. An average output power exceeding 120 W;

a.1.c. An output wavelength exceeding 190 nm but not exceeding 360 nm and having any of the following:

a.1.c.1. An output energy exceeding 10 J per pulse; or

a.1.c.2. An average output power exceeding 500 W; or

a.1.d. An output wavelength exceeding 360 nm and having any of the following:

a.1.d.1. An output energy exceeding 1.5 J per pulse; or

a.1.d.2. An average output power exceeding 30 W;

N.B. For excimer "lasers" specially designed for lithography equipment, see 3B001.

a.2. Metal vapor "lasers", as follows:

a.2.a. Copper (Cu) "lasers" having an average output power exceeding 20 W;

a.2.b. Gold (Au) "lasers" having an average output power exceeding 5 W;

a.2.c. Sodium (Na) "lasers" having an output power exceeding 5 W;

a.2.d. Barium (Ba) "lasers" having an average output power exceeding 2 W;

a.3. Carbon monoxide (CO) "lasers" having any of the following:

a.3.a. An output energy exceeding 2 J per pulse and a pulsed "peak power" exceeding 5 kW; or

a.3.b. An average or CW output power exceeding 5 kW;

a.4. Carbon dioxide (CO₂) "lasers" having any of the following:

a.4.a. A CW output power exceeding 15 kW;

a.4.b. A pulsed output having a "pulse duration" exceeding 10 μ s and having any of the following:

a.4.b.1. An average output power exceeding 10 kW; or

a.4.b.2. A pulsed "peak power" exceeding 100 kW; or

a.4.c. A pulsed output having a "pulse duration" equal to or less than 10 μ s; and having any of the following:

a.4.c.1. A pulse energy exceeding 5 J per pulse; or

a.4.c.2. An average output power exceeding 2.5 kW;

a.5. "Chemical lasers", as follows:

a.5.a. Hydrogen Fluoride (HF) "lasers";

a.5.b. Deuterium Fluoride (DF) "lasers";

a.5.c. "Transfer lasers", as follows:

a.5.c.1. Oxygen Iodine (O₂-I) "lasers";

a.5.c.2. Deuterium Fluoride-Carbon dioxide (DF-CO₂) "lasers";

a.6. Krypton ion or argon ion "lasers" having any of the following:

a.6.a. An output energy exceeding 1.5 J per pulse and a pulsed "peak power" exceeding 50 W; or

a.6.b. An average or CW output power exceeding 50 W;

a.7. Other gas "lasers", having any of the following:

Note: 6A005.a.7 does not control nitrogen "lasers".

a.7.a. An output wavelength not exceeding 150 nm and having any of the following:

a.7.a.1. An output energy exceeding 50 mJ per pulse and a pulsed "peak power" exceeding 1 W; or

a.7.a.2. An average or CW output power exceeding 1 W;

a.7.b. An output wavelength exceeding 150 nm but not exceeding 800 nm and having any of the following:

a.7.b.1. An output energy exceeding 1.5 J per pulse and a pulsed "peak power" exceeding 30 W; or

a.7.b.2. An average or CW output power exceeding 30 W;

a.7.c. An output wavelength exceeding 800 nm but not exceeding 1,400 nm and having any of the following:

a.7.c.1. An output energy exceeding 0.25 J per pulse and a pulsed "peak power" exceeding 10 W; or

a.7.c.2. An average or CW output power exceeding 10 W; or

a.7.d. An output wavelength exceeding 1,400 nm and an average or CW output power exceeding 1 W.

b. Semiconductor "lasers", as follows:

b.1. Individual single-transverse mode semiconductor "lasers" having any of the following:

b.1.a. A wavelength equal to or less than 1510 nm, and having an average or CW output power exceeding 1.5 W; or

b.1.b. A wavelength greater than 1510 nm, and having an average or CW output power exceeding 500 mW;

b.2. Individual, multiple-transverse mode semiconductor "lasers" having all of the following:

b.2.a. A wavelength of less than 950 nm or more than 2000 nm; and

b.2.b. An average or CW output power exceeding 10 W.

b.3. Individual arrays of individual semiconductor "lasers", having any of the following:

b.3.a. A wavelength of less than 950 nm and an average or CW output power exceeding 60 W; or

b.3.b. A wavelength equal to or greater than 2000 nm and an average or CW output power exceeding 10 W;

Technical Note: Semiconductor "lasers" are commonly called "laser" diodes.

Note 1: 6A005.b includes semiconductor "lasers" having optical output connectors (e.g. fiber optic pigtails).

Note 2: The control status of semiconductor "lasers" specially designed for other equipment is determined by the control status of the other equipment.

c. Solid state "lasers", as follows:

c.1. "Tunable" "lasers" having any of the following:

Note: 6A005.c.1 includes titanium—sapphire (Ti: Al₂O₃), thulium—YAG (Tm: YAG), thulium—YSGG (Tm: YSGG), alexandrite (Cr: BeAl₂O₄) and color center "lasers".

c.1.a. An output wavelength less than 600 nm and having any of the following:

c.1.a.1. An output energy exceeding 50 mJ per pulse and a pulsed "peak power" exceeding 1 W; or

c.1.a.2. An average or CW output power exceeding 1 W;

c.1.b. An output wavelength of 600 nm or more but not exceeding 1,400 nm and having any of the following:

c.1.b.1. An output energy exceeding 1 J per pulse and a pulsed "peak power" exceeding 20 W; or