

#### 1061. cont'd.

8. j. "Laser" radar or Light Detection and Ranging (LIDAR) equipment, having either of the following:
1. "Space-qualified"; or
  2. Employing coherent heterodyne or homodyne detection techniques and having an angular resolution of less (better) than 20 microradians;

#### Note:

1061.8.j. does not embargo LIDAR equipment specially designed for surveying or for meteorological observation.

- k. Having signal processing sub-systems using "pulse compression" with:
1. A "pulse compression" ratio exceeding 150; or
  2. A pulse width of less than 200 ns; or
- l. Having data processing sub-systems with:
1. "Automatic target tracking" providing, at any antenna rotation, the predicted target position beyond the time of the next antenna beam passage;

#### Note:

1061.8.l.1. does not embargo conflict alert capability in ATC systems, or marine or harbour radar.

2. Calculation of target velocity from primary radar having non-periodic (variable) scanning rates;
3. Processing for automatic pattern recognition (feature extraction) and comparison with target characteristic data bases (waveforms or imagery) to identify or classify targets; or
4. Superposition and correlation, or fusion, of target data from two or more "geographically dispersed" and "interconnected radar sensors" to enhance and discriminate targets.

#### Note:

1061.8.l.4. does not embargo systems, equipment and assemblies used for marine traffic control.

### 1062. Test, Inspection and Production Equipment

1. Acoustics – None
2. Optical Sensors – None
3. Cameras – None
4. Optics

- a. Equipment for measuring absolute reflectance to an accuracy of  $\pm 0.1\%$  of the reflectance value;
- b. Equipment other than optical surface scattering measurement equipment, having an unobscured aperture of more than 10 cm, specially designed for the non-contact optical measurement of a non-planar optical surface figure (profile) to an "accuracy" of 2 nm or less (better) against the required profile.

#### Note:

1062.4. does not embargo microscopes.

#### 5. Lasers

Specially designed or modified equipment, including tools, dies, fixtures or gauges, as follows, and other specially designed components and accessories therefor:

- a. For the manufacture or inspection of:
  1. Free electron "laser" magnet wigglers;
  2. Free electron "laser" photo injectors;
- b. For the adjustment, to required tolerances, of the longitudinal magnetic field of free electron "lasers".

#### 6. Magnetometers – None

#### 7. Gravimeters

Equipment to produce, align and calibrate land-based gravity meters with a static accuracy of better than 0.1 milligal;

#### 8. Radar

Pulse radar cross-section measurement systems having transmit pulse widths of 100 ns or less and specially designed components therefor.

### 1063. Materials

1. Acoustics • None
2. Optical Sensors
  - a. Elemental tellurium (Te) of purity levels equal to or more than 99.9995%;

- b. Single crystals of cadmium telluride (CdTe), cadmium zinc telluride (CdZnTe) or mercury cadmium telluride (HgCdTe) of any purity level, including epitaxial wafers thereof;
- c. "Optical fibre preforms" specially designed for the manufacture of high birefringence fibres embargoed by 1061.2.d.3;

#### 3. Cameras – None

#### 4. Optics

- a. Zinc selenide (ZnSe) and zinc sulphide (ZnS) "substrate blanks" produced by the chemical vapour deposition process:
  1. Larger than 100 cm<sup>3</sup> in volume; or
  2. Larger than 80 mm in diameter with a thickness equal to or more than 20 mm;
- b. Boules of the following electro-optic materials:
  1. Potassium titanyl arsenate (KTA);
  2. Silver gallium selenide (AgGaSe<sub>2</sub>);
  3. Thallium arsenic selenide (Tl<sub>3</sub>AsSe<sub>3</sub>, also known as TAS);
- c. Non-linear optical materials having:
  1. Third order susceptibility ( $\chi^3$ ) equal to or less than 1 W/m<sup>2</sup>; and
  2. A response time of less than 1 ms;
- d. "Substrate blanks" of silicon carbide or beryllium beryllium (Be/Be) deposited materials exceeding 300 mm in diameter or major axis length;
- e. Low optical absorption materials, as follows:
  1. Bulk fluoride compounds containing ingredients with a purity of 99.999% or better;

#### Note:

1063.4.e.1. embargoes fluorides of zirconium or aluminium and variants.

2. Bulk fluoride glass made from compounds embargoed by 1063.4.e.1.;
- f. Glass, including fused silica, phosphate glass, fluorophosphate glass, zirconium fluoride (ZrF<sub>4</sub>) and hafnium fluoride (HfF<sub>4</sub>), with:
  1. A hydroxyl ion (OH<sup>-</sup>) concentration of less than 5 ppm;
  2. Integrated metallic purity levels of less than 1 ppm; and
  3. High homogeneity (index of refraction variance) less than  $5 \times 10^{-6}$ ;
- g. Synthetically produced diamond material with an absorption of less than 10<sup>-5</sup> cm<sup>-1</sup> for wavelengths exceeding 200 nm but not exceeding 14,000 nm;
- h. "Optical fibre preforms" made from bulk fluoride compounds containing ingredients with a purity of 99.999% or better, specially designed for the manufacture of "fluoride fibres" embargoed by 1061.4.f.;

#### 5. Lasers

Synthetic crystalline "laser" host material in unfinished form, as follows:

- a. Titanium doped sapphire;
- b. Alexandrite;

#### 6. Magnetometers – None

#### 7. Gravimeters – None

#### 8. Radar - None

### 1064. Software

1. "Software" specially designed for the "development" or "production" of equipment embargoed by 1061.4, 1061.5, 1061.8 or 1062.8.;
2. "Software" specially designed for the "use" of equipment embargoed by 1061.2.b., 1061.8 or 1062.8.;
3. Other "software", as follows:
  - a. Acoustics
    1. "Software" specially designed for acoustic beam forming for the "real time processing" of acoustic data for passive reception using towed hydrophone arrays;
    2. "Source code" for the "real time processing" of acoustic data for passive reception using towed hydrophone arrays;
  - b. Optical Sensors – None
  - c. Cameras – None
  - d. Optics – None
  - e. Lasers – None
  - f. Magnetometers
    1. "Software" specially designed for magnetic compensation systems for magnetic sensors designed to operate on mobile platforms;
    2. "Software" specially designed for magnetic anomaly detection on mobile platforms;