- 1035. 2. Other technology for the "development" or "production" of:
  - a. Vacuum microelectronic devices;
  - b. Hetero-structure semiconductor devices such as high electron mobility transistors (HEMT), hetero-bipolar transistors (HBT), quantum well or super lattice devices;

"Superconductive" electronic devices.

### NOTES:

- Governments may permit, as administrative exceptions, the shipment to the Czech Republic, Poland, and Slovak Republic of everything embargoed by this Category, except equipment embargoed by 1032.1.b., 1032.1.c., 1032.7.a. or 1032.7.b., and "software" specially designed and technology "required" therefor embargoed by 1034 or 1035.
- Governments may permit, as administrative exceptions, the shipment to the People's Republic of China of:
  - a. Analogue instrumentation magnetic tape recorders embargoed by 1031.2.a.1, provided all of the following conditions are
    - 1. Bandwidths do not exceed:
      - a. 4 MHz per track and have up to 28 tracks; or b. 2 MHz per track and have up to 42 tracks;
    - Tape speed does not exceed 6.1 m/s;
    - 3. They are not designed for underwater use;
    - 4. They are not ruggedised for military use; and
    - 5. Recording density does not exceed 653.2 magnetic flux sine waves per mm;
  - b. Video magnetic tape recorders specially designed for civil television recording;
  - c. Instrument "frequency synthesisers" or synthesised signal generators embargoed by 1031.2.b. or 1031.2.d.2., and specially designed components or accessories therefor,
    - 1. A synthesised output frequency of 2.6 GHz or less; and 2. A "frequency switching time" of 0.3 ms or more;
  - d. Epitaxial reactors embargoed by 1032.1.a. except those also
  - embargoed by 1032.1.b. or 1032.1.c.;
  - e. Positive resists not optimized for photolithography at a wavelength of less than 365 nm, provided they are not embargoed by 1033.2.b. to d.
- The Committee will favourably consider the export to the Czech Republic, Poland, and Slovak Republic of equipment embargoed by 1032.7.b. and "software" specially designed and technology "required" therefor embargoed by 1034 or 1035. The Committee will approve exception requests tabled under the provisions of this Note if no member country has filed an objection within four weeks of the receipt of complete information on the case.

# 1040. COMPUTERS

## NOTES:

- 1. Computers, related equipment or "software" performing telecommunications or "local area network" functions must also be evaluated against the performance characteristics of Category 1050 (Telecommunications). N.B.:
  - 1. Control units which directly interconnect the buses or channels of central processing units, "main storage" or disk controllers are not regarded as telecommunications equipment described in Category 1050 (Telecommunications). N.B.:
  - 2. For the embargo status of "software" which provides routing or switching of "datagram" or "fast select" packets (i.e., packet by packet route selection) or of "software" specially designed for packet switching, see Category 1050 (Telecommunications).
- 2. Computers, related equipment or "software" performing cryptographic, cryptanalytic, certifiable multi-level security or certifiable user isolation functions, or which limit electromagnetic compatibility (EMC), must also be evaluated against the performance characteristics in Category 1150 ("Information Security").

# 1041. EQUIPMENT, ASSEMBLIES AND **COMPONENTS**

- 1041. 1. Electronic computers and related equipment, as follows, and
  - "assemblies" and specially designed components therefor: a. Specially designed to have either of the following characteristics:

- 1. Rated for operation at an ambient temperature below 228 K (-45°C) or above 343 K (70°C); or NOTE:
  - 1041.1.a.1. does not apply to computers specially designed for civil automobile or railway engine applica-
- 2. Radiation hardened to exceed any of the following specifications:
  - a. Total Dose 5 x 10<sup>5</sup> Rads (Si)
  - b. Dose Rate Upset 5 x 108 Rads (Si)/sec: or
  - c. Single Event Upset 1 x 10<sup>-7</sup> Error/bit/day;
  - (For equipment designed or rated for transient ionising radiation, see the Munitions List Group 2)).
- 1041. 1. b. Having characteristics or performing functions exceeding the limits in Category 1150 ("Information Security");
- 1041. 2. "Hybrid computers", as follows, and "assemblies" and specially designed components therefor:
  - a. Containing "digital computers" embargoed by 1041.3.;
  - b. Containing analogue-to-digital or digital-to-analogue converters having both of the following characteristics:
    - 1. 32 channels or more; and
    - A resolution of 14 bits (plus sign bit) or more with a conversion rate of 200,000 conversions/s or more;
- 1041. 3. "Digital computers", "assemblies", and related equipment therefor, as follows, and specially designed components therefor:

#### NOTES:

- 1. 1041.3. includes vector processors, array processors, logic processors, and equipment for "image enhancement" or 'signal processing'
- The embargo status of the "digital computers" or related equipment described in 1041.3 is governed by the embargo status of other equipment or systems provided:
  - a. The "digital computers" or related equipment are essential for the operation of the other equipment or systems:
  - b. The "digital computers" or related equipment are not a "principal element" of the other equipment or systems; and

#### N.B.:

1. The embargo status of "signal processing" or "image enhancement" equipment described in 1041.3.g. and specially designed for other equipment with functions limited to those required for the other equipment is determined by the embargo status of the other equipment even if it exceeds the "principal element" criterion.

# N.B.:

2. For the embargo status of "digital computers" or related equipment for telecommunications equipment, see Category 1050 (Telecommunications).

c. The technology for the "digital computers" and related equipment is governed by 1045.

- 3. "Digital computers" or related equipment are not embargoed by 1041.3 provided:
  - a. They are essential for medical applications;
  - b. The equipment is substantially restricted to medical applications by nature of its design and performance;
  - c. The equipment does not have "user-accessible programmability" other than that allowing for insertion of the original or modified "programmes" supplied by the original manufacturer;
  - d. The "composite theoretical performance" of any "digital computer" which is not designed or modified but essential for the medical application does not exceed 20 million theoretical operations per second (Mtops); and
  - e. The technology for the "digital computers" or related equipment is governed by 1045.
- 1041. 3. a. Designed for combined recognition, understanding and interpretation of image or continuous (connected) speech;
- 1041. 3. b. Designed or modified for "fault tolerance";

## NOTE:

For the purposes of 1041.3.b., "digital computers" and related equipment are not considered to be designed or modified for "fault tolerance" if they use:

1. Error detection or correction algorithms in "main storage";