

1071.3.b. notes con't.**Note 1:**

The parameters of 1071.3.a. and 1071.3.b. are applicable with any of the following environmental conditions:

1. Input random vibration with an overall magnitude of 7.7 g rms in the first half hour and a total test duration of one and one half hour per axis in each of the three perpendicular axes, when the random vibration meets the following:
 - a. A constant power spectral density (PSD) value of 0.04 g²/Hz over a frequency interval of 15 to 1,000Hz; and
 - b. The PSD attenuates with frequency from 0.04 g²/Hz to 0.01 g²/Hz over a frequency interval from 1,000 to 2,000 Hz; or
2. A roll and yaw rate of equal to or more than +2.62 radian/s (150 deg/s); or
3. According to national standards equivalent to 1. or 2. above.

Note 2:

1071.3. does not control inertial navigation systems which are certified for use on "civil aircraft" by civil authorities of a participating state.

Note 3

7.A.3. does not control inertial navigation systems specially designed for civil automobiles RU:land mobile vehicles

Technical Notes

1 1071.3.b. refers to systems in which an INS and other independent navigation aids are built into a single unit (embedded) in order to achieve improved performance.

2. 'Circular Error Probable' ('CEP') - In a circular normal distribution, the radius of the circle containing 50 percent of the individual measurements being made, or the radius of the circle within which there is a 50 percent probability of being located.

4. Gyro-astro compasses, and other devices which derive position or orientation by means of automatically tracking celestial bodies or satellites, with an azimuth accuracy of equal to or less (better) than 5 seconds of arc.
5. Global navigation satellite systems (i.e., GPS or GLONASS) receiving equipment having any of the following characteristics, and specially designed components therefore:
 - a. Employing decryption; **or**
 - b. A null-steerable antenna.
6. Airborne altimeters operating at frequencies other than 4.2 to 4.4 GHz inclusive, having any of the following characteristics:
 - a. "Power management"; **or**
 - b. Using phase shift key modulation.
7. Direction finding equipment operating at frequencies above 30 MHz and having all of the following characteristics, and specially designed components therefore:
 - a. "Instantaneous bandwidth" of 1 MHz or more;
 - b. Parallel processing of more than 100 frequency channels; **and**
 - c. Processing rate of more than 1,000 direction finding results per second and per frequency channel.

1072. Test, Inspection and Production Equipment

1. Test, calibration or alignment equipment specially designed for equipment controlled by 1071.

Note:

1072.1. does not control test, calibration or alignment equipment for Maintenance Level I or Maintenance Level II.

Technical Notes:

1. Maintenance Level I

The failure of an inertial navigation unit is detected on the aircraft by indications from the control and display unit (CDU) or by the status message from the corresponding sub-system. By following the manufacturer's manual, the cause of the failure may be localised at the level of the malfunctioning line replaceable unit (LRU). The operator then removes the LRU and replaces it with a spare.

2. Maintenance Level II

The defective LRU is sent to the maintenance workshop (the manufacturer's or that of the operator responsible for level II maintenance). At the maintenance workshop, the malfunctioning LRU is tested by various appropriate means to verify and localise the defective shop replaceable assembly (SRA) module responsible for the failure. This SRA is removed and replaced by an operative spare. The defective SRA (or possibly the complete LRU) is then shipped to the manufacturer. Maintenance Level II does not include the removal of controlled accelerometers or gyro sensors from the SRA.

2. Equipment, as follows, specially designed to characterise mirrors for ring "laser" gyros:
 - a. Scatterometers having a measurement accuracy of 10 ppm or less (better);
 - b. Profilometers having a measurement accuracy of 0.5 nm (5 angstrom) or less (better).
3. Equipment specially designed for the "production" of equipment controlled by 1071.

Note:

1072.3. includes:

- a. Gyro tuning test stations;
- b. Gyro dynamic balance stations;
- c. Gyro run-in/motor test stations;
- d. Gyro evacuation and fill stations;
- e. Centrifuge fixtures for gyro bearings;
- f. Accelerometer axis align stations.

1073. Materials

None.

1074. Software

1. "Software" specially designed or modified for the "development" or "production" of equipment controlled by 1071. or 1072.
2. "Source code" for the "use" of any inertial navigation equipment, including inertial equipment not controlled by 1071.3. or 1071.4., or Attitude and Heading Reference Systems (AHRS)

Note:

1074.2. does not control "source code" for the "use" of gimbaled AHRS.

Technical Note:

AHRS generally differ from inertial navigation systems (INS) in that an AHRS provides attitude and heading information and normally does not provide the acceleration, velocity and position information associated with an INS.

3. Other "software", as follows:
 - a. "Software" specially designed or modified to improve the operational performance or reduce the navigational error of systems to the levels specified in 1071.3. or 1071.4.;
 - b. "Source code" for hybrid systems which improves the operational performance or reduces the navigational error of systems to the level specified in 1071.3. by continuously combining inertial data with any of the following:
 1. Doppler radar velocity;
 2. Global navigation satellite systems (i.e., GPS or GLONASS) reference data; **or**
 3. Data from "Data-Based Referenced Navigation" ("DBRN") systems.
 - c. "Source code" for integrated avionics or mission systems which combine sensor data and employ "expert systems";
 - d. "Source code" for the "development" of any of the following:
 1. Digital flight management systems for "total control of flight";