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Date: October 1, 2003

RE: Thales Navigation, Inc.
FCC ID: NZI110896

In response to your comments on the above referenced Application:

General

1) The grantee code NZI on the FCC site does not match the name or address of Thales Navigation located in California. NZI is listed as Dassault Sercel Navigation-Positionnement located in France. Please explain.

The grantee code NZI is for Dassault Sercel Navigation-Positionnement, a subsidiary of Thales Navigation and the responsible party for the subject device.

2) The external photographs show various antennas. Due to the number of devices, please label various antennas as RX only, TX/RX, etc for better clarity of the device. Additionally, for any optional accessories, please label these as such. Additionally, it is not clear if the COM module is sold with the unit or is it optional? Note that the users manual appears to show several different options. Due to the number of modules possible, please provide a summary table that helps explain what modules are included, what are optional, what combinations are available, and how each module has been tested for FCC requirements. Please provide further information.

The external photographs have been revised. An additional document has been uploaded as an operational description to explain what the various options are.

3) The tune up procedure mentions that there are not any user adjustable components. Note that the tune up procedure is actually regarding the manufacturing process and how the device is set or adjusted to meet FCC regulations. However, in this case the device appears to be a module purchased from Motorola. Therefore an attestation by Thales that explains that they receive the module as adjusted by the manufacturer and do not make any adjustments themselves would be sufficient. Optionally, a tune-up procedure from Motorola could be provided.

An attestation by Thales that explains that they receive the module as adjusted by the manufacturer and do not make any adjustments themselves has been uploaded.

4) Please provide additional photographs that show a typical module with the RX installed as well.

The internal photographs of the Com Module have been revised to show the placement of the GSM module with respect to both the Thales and the Pacific Crest receivers.

5) The FCC ID listed in the operational description (IHDT6ZC1) listed on page 1 is not for a PCS module, but instead a DeskSet phone. Note that the frequency range, emissions designator and other data for this FCC ID do not appear to match the information for this application. Please explain.

The operational description has been corrected to reflect the appropriate FCC ID for the GSM module as listed at the top of each page.

6) Please provide a parts list for this application. Note that the schematic of the TX only contains reference designators.

The schematics have been updated with the appropriate parts list. As the parts list is to be held confidential, and the confidentiality request asks that the schematics be held confidential, they are to be considered a part of the schematics.

EMC

7) FYI.... The theory of operation mentions a conducted output power of +30 dBm, while the test report shows a EIRP power 5.2 dBm. The SAR report offers and explanation for this.

Portable device under Part 24 are required to list output power as EIRP. We propose that because of the difference in power, and the fact that Thales Navigation may desire to solve the EIRP problem in the future, to place the conducted power on the grant line with the EIRP power listed in the grant notes. This should allow flexibility to do a Permissive change assuming the conducted power stays the same. Otherwise by placing the EIRP on the grant line would require a new FCC ID every time the EIRP changed.

This would be appreciated. Thales is investigating the use of alternative antennas and the use of a Permissive Change rather than a new device approval would make life much easier.

8) The FCC ID on page 2 of 27 of the test report is listed as TBD. Please explain as it was assumed that the same FCC ID would be placed on each model listed.

When the report was first drafted the FCC ID was not finalized. The same FCC ID will be placed on each Com Module that contains the GSM module. The “TBD” has been replaced with the correct FCC ID.

9) Page 3 of 27 of the test report appears to contain some missing information regarding the bluetooth and PCS items listed. Please correct.

The report has been corrected to include the missing information.

10) Is any information available regarding the antenna used in the device (i.e. gain, specs, etc.).

The GSM Antenna is a HA-ED2M GSM Antenna from Hankook. The main characteristics of this antenna are:

- GSM Bandwidth: 890 - 960MHz
- DCS Bandwidth: 1710 - 1880MHz
- Impedance: 50 Ohms
- Radiation Omni-directional
- Polarization: Vertical
- GSM Gain: -1.5 dBi min
- DCS Gain: -6dBi min

The above characteristics do not take into account the fact that the distance between the Chassis and the GSM Antenna is about 7 to 8 mm. In these conditions of use (i.e. antenna in close proximity to the chassis), the characteristics of the antenna are significantly affected, in particular the Antenna gain.

11) Page 3 & 7 of 17 of the test Report shows an EIRP power of 5.2 dBm (0.003 W), while the test data appears to show 6.5 dBm (0.005 W). Please explain.

The data has been corrected to reflect power at 5.2dBm. The wrong information was reported on the data.

12) The bandedge measurements shown on page 7 of 27 does not appear to be performed for the lowest channel of 1850.2 and appear about 1 channel higher. It appears that the channel shown is around 1850.4. Note that the high channel on page 18 of 27 appears ok. Please explain.

This was due to software bugs. Although the low channel was not set at 1850.2 MHz, the amplitude of the signals are so low in level the bandedge will still be in compliance. Please state 1850.4 MHz for now, as applicant will be performing a class II permissive change in the future. Also, page 3 of 17 of report has been changed to reflect 1850.4 MHz.

13) Note that as of last week, the FCC has retracted their requirement of performing all block edge tests, however please note that bandedge tests are still required (see attachment). It is no longer required to submit this data.

Understood.

14) The conducted power listed on page 7 of 17 was listed as 28 dBm. Is this listed elsewhere in the measurement report? This is typically used for comparison of data take by the SAR facility. Note that this level must agree with SAR report and tune-up procedure however the conducted power in SAR report should be greater than or equal to what's in EMC report, but not exceeding tune-up/tolerance. Note the value appears higher than given in the SAR report.

Incorrect Power was reported. The conducted power is also reported in the test data page 6 of 27. As stated, this was done for comparison for data taken by the SAR Lab.

15) The frequency stability results shown on page 7 of 17 do not appear to match the data in the measurement report.

Frequency stability data has been corrected on page 7 of 17.

16) The test report mentions that the receivers have been tested to meet FCC requirements. However the device only meets the Class A digital device limits. Note that the RX portion of the device must meet with Class B limits, even if the total device only meets with Class A limits. Please explain.

The receivers have been evaluated against the appropriate limits of FCC Part 15.109. The digital device has also been evaluated against both Class A limits (with USB and AC-DC adapter connected) and Class B limits (USB and external power disconnected).

SAR

17) Please adjust the statement of compliance on page 4 to include FCC 47 CFR §2.1093 and that the device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01).

The report has been updated as requested. The updated report (ver2) is attached.

18) The Distance between the measurement point (distance + offset) at the probe sensor location (geometric center behind the probe tip) and the phantom surface should be < 8.0 mm and maintained at a constant distance of +/- 1.0 mm during an area scan to determine peak SAR locations as specified on page 15 of the report. However, section 6.4 (page 20) states that it was performed at 8.0 mm. Please explain.

The scan was performed at 8.0 mm, which is well within < 8.0mm +/- 1.0mm.

19) The SAR report should define if the unit under test is a production unit or identical prototype (47 CFR §2.908).

The report states which unit was tested as noted by serial number. The applicant has stated that the device was a production unit from a pilot run.

20) The SAR report included Appendix's 1, 2, 5. Are appendix's 3 & 4 missing?

The SAR report only includes Appendixes A, B and C.

21) The thermometer and dipole given in the test equipment appear to possibly be out of calibration. Please explain.

See updated Appendix C ver2. (Due dates are now reported in this Appendix)

22) The field probe calibration information/certificate does not appear to address the measurements uncertainty associated with these measurements. Please provide.

The uncertainties associated with the probe calibration are detailed in a separate document. The information is included in the updated Appendix C ver2. These uncertainties are included in the uncertainty budget.

23) Please comment on the Probe Angle between the probe axis and surface normal line. Was this maintained at < 30 degrees. Note that if the probe angle is > 30 degrees and the closest point of the probe tip housing to the phantom surface is closer than a probe diameter, the boundary effect may become large and polarization dependent. This additional uncertainty needs to be analyzed and taken into account.

This is taken into account in the measurement uncertainty budget shown in the report.

24) While all testing was performed at 1.5 cm, please provide an additional photograph to show the antenna to user distance while using the backpack is 5 cm or greater.

Photographs have been uploaded as an RF Exposure Exhibit showing the various separation distances when the device is pole-mounted and when the device is placed in a backpack. The SAR lab comments that a shorter distance was used as stated in the SAR report.

25) Please provide an explanation of procedures to establish the test signals (put phone on a call, e.g., basestation simulator vs internal test codes)?

Control test codes were input to the unit via PC, prior to performing the testing. See updated report (ver2) section 8.1.

26) Please comment on if boundary effect compensation was used. Note that when Probe boundary effect compensation is not used the probe tip should be positioned at least half a probe tip diameter from the phantom surface during area and zoom scans.

As discussed in question 18, the scan was performed at 8.0mm. The probe tip diameter is shown in the report as 5.2mm. One half of 5.2 is less than 8. Therefore no boundary compensation was needed or used.

27) Please comment on if the first 2 measurements points in a z-axis scan, closest to the phantom surface, were within 1 cm of the surface.

Cetecom, the SAR test facility, is unsure what is being asked for in this question. Please state the applicable standard and section, so we may answer accordingly. The first measurement point is at 8 mm distance, the next one at 11.4 mm.

In addition to this document, the following files have been uploaded to the ATCB website to support the above responses:

- External Photographs (Revised).pdf
- Internal Photographs (Revised).pdf
- Addendum to Operational Description.pdf
- AC-EX12 Theory of operation (Revised).pdf
- R52759-revised.pdf
- SAR Report.pdf
- SAR Report Appendix A.pdf
- SAR Report Appendix B.pdf
- SAR Report Appendix C.pdf
- AC-EX05 schematics (Revised).pdf
- Attestation Letter.pdf
- Separation Distances.pdf

If you have any additional questions please do not hesitate to contact me via doc@elliottlabs.com.

Regards,

A handwritten signature in blue ink that reads "Mark Briggs".

Mark Briggs
Director of Engineering