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American TCB

August 23, 2007

RE: Trimble Navigation. FCC ID: JUP-5935524-B1
Attention: Timothy R. Johnson

Please find our responses to your comments on this application below:

1. Frequency Range for the WIT TX on 731 cites 2401.945 – 2469.8138, while the block diagram shows 2401.6896 – 2469.888. What is correct? Please confirm nominal frequency range.

The correct frequency range is 2401-6896 – 2469.888. A revised Form 731 has been uploaded.

2. Operational description for the WIT TX shows an operational range of 2401 – 2495 MHz. Please explain.

We received a new operational description from Cirronet, the vendor for this radio and it has been uploaded. FYI: The documents originally submitted in this application are the same as those submitted for the modular approval for Cirronet.

3. Due to various concerns recently seen about proper authority being given to others for FCC and/or IC matters, the agency letter should be signed by someone traceable to have the proper authority. For instance, the FCC site shows Patrick Deane as the correct contact of authority for FCC matters. Therefore the agency letters should be signed by this contact or alternatively a letter showing who he has “deputized” to sign on his behalf may be provided as well (i.e. Roy Urbach). Please correct.

Understood, a letter has been uploaded to clarify authority.

4. The label is required to be on a permanent part of the devices housing. Currently the label appears to be on an access door of some types. From 2.925 - As used here, permanently affixed means that the required nameplate data is etched, engraved, stamped, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment enclosure. Note that the access door appears to use typical Phillips head screws and is reasonable for the user to access or open.

Trimble responds: “The cover is part of the radio. A person would have to disassemble the radio, remove the door, figure out how to reassemble the radio without the door as a mounting platform, try to reassemble the radio (with the antenna connector dangling), try to manually line up and insert the radio data connector, mount an antenna and prevent it from ripping the connector off the radio, then hope the radio still works, won't get damaged, and won't fall out while moving around doing a survey. The idea is absurd. This product costs several tens-of-thousands of dollars. Our customers are not so stupid as to ruin their investment in order to get unbelievable inconvenience and degraded performance. This is not some simple consumer product, but a very sophisticated and expensive engineering tool.”

5. Page 4 of the users manual cites 8 dBi, but then the next pages cites not to use greater than 5 dBi. Note that it appears that the 2.4 GHz radio modem was tested with 8 dBi.

The user's manual has been corrected and uploaded.

6. Currently internal photographs only appear to show detail of 2 TX boards. The internal photographs should include sufficient views of the overall internal construction, top and bottom views of all boards, and any additional views necessary to define the component placement of the RF devices within the chassis (reference 2.1033 (b)(3)). Please update.

An additional photograph of the unit showing the location of the bluetooth module and the other side of the bluetooth module has been uploaded.

7. Internal photographs show the Bluetooth area, but also need to show the Bluetooth circuitry. Please adjust.

It does not appear that you were provided with an internal photo showing how the bluetooth module is located in the EUT. See answer to item 6 above. The internal photos you did receive showed one side of the circuitry of the bluetooth module.

8. It is uncertain where the Bluetooth antenna is located. Kindly provide information or photographs to show this information.

The antenna is the component designated E1 on the photo of the bluetooth module that was originally provided.

9. The original module appears to show copper tape around one side of the shields – however when installed within this device, this modification cannot be confirmed. Please explain.

An additional photo showing the side of the 2.4GHz radio mounted to the cover has been uploaded showing the tin plated copper tape on the module.

10. Page 78 of the manual does not appear to list the radio being certified. Please explain.

The user's manual has been revised and uploaded.

11. It appears that the manual may not adequately address the 2.4 GHz Data Modem TX. It is recommended that the manual is carefully reviewed.

The user's manual has been revised and uploaded.

12. Elliott Report – Emissions appear to be tested to only 7 GHz, while 15.33 requires testing of the TX to the 10th Harmonic. Please explain.

The Elliott report only covers the receiver requirements of RSS-GEN for receivers and the conducted emissions requirements for intentional radiators found in FCC 15.207 thus measurements were only made to the third harmonic of the 2.4 GHz receiver.

13. Many different test reports have been provided. Please explain the basis of compliance with the variety of test reports. Please note that this approval is for the device as a whole, and not a module. Therefore radiated spurious testing applies only to the whole device and not stand alone as a module. It does not appear that spurious emissions have therefore been completed as a whole. Note that the Elliott report does mention that the TX was on by mistake for radiated tests, but did not measure the harmonics. Additionally, it is uncertain if one or both TX were even active in this configuration. Assuming the modular reports have been provided to show compliance in part (i.e. RF conducted measurements) – it still appears that radiated spurious TX and bandedge testing has not been performed for this device. Additionally, there needs to be an explanation to confirm that the other reports are even applicable and/or the TX portion is identical. Depending on the manufacturers intent, this approval may be better suited as a PC to the BT for co-location (RF Exposure), and Change of ID to the WIT TX and also a PC for co-location. However this would leave 2 modular FCC ID's on the device and also depends on if any changes have been made (i.e. different antennas, etc.). This may also allow greater flexibility to have various TX options for the final device if each is approved modularly. Please call to discuss further if necessary.

The modular approval reports for the 2.4 GHz hopper and bluetooth radios in this device are being submitted to obtain approval for the composite device because the new device is using the modules unmodified and with the antennas approved under the individual modular approvals. In addition to the module level data for rf conducted measurements (which is still be valid based on the modules being used without modifications to output power levels or hardware), radiated spurious emissions (valid as the same antennas are being used and the modules were tested outside of a host chassis), we are submitting AC conducted emissions for the new combination of hardware and rf exposure evaluation to account for both transmitters being operational simultaneously. While radiated emissions with both Tx operating are recommended by the FCC, they are not required for a formal application.

14. FYI...Ideally in a situation where multiple reports are provided, a table showing all the requirements and pointing to which report/location each of the requirements can be found is very helpful to aide in reviewing. In future such applications it is recommended to provided such a table.

Understood. In this case, the application is for the main unit with a BT and 2.4GHz hopper. Other approvals have been obtained for the main unit with BT and 450MHz transceiver.



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15. For AC powerline conducted results provided in the Elliott Report, it is not certain if TX's were active during this test to shown compliance to 15.207. Please review.

The purpose of the conducted emissions test for this application per 15.207 was to verify the emissions with the radios operating do comply with the limits.

16. FYI...Radiated WIT (U.S. Tech) and Bluetooth (AT4 Wireless & BACL) measurements have been ignored since the FCC would require these to be tested as a final device if this is what is being approved.

See response to item 13 above.

17. FYI...Due to that nature of above questions and depending on the response – further review is still necessary.

Understood.

Regards,

A handwritten signature in black ink that reads "David W. Bare".

David W. Bare
CTO