

Re: 81876 – FreeLinc TDA-FMT100

Date: September 17, 2009

From: Met Labs

Request for Additional Information for EMC Certification

Technical Review:

1. (Karen) In [FMT100 Internal Photos.pdf](#), there are internal photos where the shielding of the components was not removed. It also appears that there is a separate board in the device where the close-up pictures are not provided. All parts of the EUT must be clearly shown in the pictures. Please indicate where such photos might be found.

Customer has provided new photos that have been submitted.

2. In [d0980019.FCC.Certification.15.225.pdf](#), it appears that the testing for 15.207 was done according to Class A limits. The limits for 15.207 are the same as Class B limits. Please justify why Class A limits were used or provide updated data.

Device was re-tested to the Class B limits. The test report has been updated with new test data.

3. (Karen) There appears to be no similar statement in [FMT100 User Guide.pdf](#) to one of the following two types of statements in Rule Part 15.105 for Class A or Class B digital devices:

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: --Reorient or relocate the receiving antenna. -- Increase the separation between the equipment and receiver. --Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. --Consult the dealer or an experienced radio/TV technician for help.

Although most of the statement for a Class B device is contained in the user manual, no declaration of the class (Class A or B) or where the device may be used (residential or nonresidential) appears to be indicated. Please justify the statements used or provide an updated statement in the user manual.

Revised User Guide submitted



4. FYI, in [d0980019.FCC.Certification.15.225.pdf](#), the HP8566B spectrum analyzer has a typo in its calibration statement. It appears that the calibration date and the calibration due date are the same date.

Calibration date has been corrected on report.

5. In [d0980019.FCC.Certification.15.225.pdf](#), it appears that the 20 dB bandwidth of the 13.95 MHz channel is not contained within the 13.110-14.010 MHz band. On page 24 of 25, the upper edge of the occupied bandwidth is outside of 14.01 MHz upper band limit. According to 15.215.c, the following has to be satisfied:

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in Sec.

15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage...

Please justify how the EUT complies with the FCC rule part.

The plot on page 24 of 25 is for Industry Canada RSS 210 99% OBW.

The scope of work changed during the project removing the requirement for Industry Canada filing.

The data was inadvertently added to the report.

The test report has been updated removing the IC test data.

6. In, the frequency tolerance test appears to have been performed using a DC power supply rather than a new battery for temperature variation. According to FCC rule part 15.225.e, the following needs to be satisfied:

(e) The frequency tolerance of the carrier signal shall be maintained within +/-0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery-operated equipment, the equipment tests shall be performed using a new battery.

A power supply was used because there is a requirement for frequency stability with variable voltage as well. As these are conducted measurements the UUT we were given for this was on a test PCB that does not run on batteries. This is an FCC acceptable method for testing frequency stability, as radiated measurements are not possible.

7. It appears that the frequency tolerance of the EUT does not approach the tolerance limits, and the Li-Ion battery used in the EUT should not vary its operation over the temperature range; however, please justify why this test did not apply battery operation for the EUT.

A power supply was used because there is a requirement for frequency stability with variable voltage as well.

8. It could not be found in the test report whether 15.225 testing was performed with the measuring loop antenna rotated in both the vertical and horizontal axes. Please confirm that this was done during testing.

The Loop antenna was rotated in the X,Y,Z axis during the testing of the product.

Response by: Greg Corbin/Karen Springer

Date: 9/22/09

Submitted by: Karen Springer