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RE: XM Satellite Radio, Inc.

FCC ID: BGA-XMXP02

Please see comments and attachments below regarding the above referenced Application.

Q: 1) It is my understanding that there has been some communication with the FCC regarding this device and the fact that it is tested "in situ". If so, please provide correspondence as appropriate.

A: Please refer to 15.31 (d) Measurement Standards which references systems that employ "leaky" RF coaxial cables as an antenna. In addition, please see attached FCC clarification document named Xpress_FCC_OET_Clarification_1.pdf.

Q: 2) The block diagram implies that the XM antenna contains an FM antenna as well. However the operational description mentions the RF coax is used to radiate. Please clarify these discrepancies.

A: Please see attached file named XPress_Block_Diagram_Revised_2.pdf for revised Block Diagram.

Q: 3) External Photographs do not support the ferrites used. Please comment/explain as necessary.

A: Please refer to the attached file named XPress_Photos_External_Revised_3.pdf.

Q: 4) It appears that a ferrite core(s) were used on some cables. Detail as to the exact position and attachment cables should be provided. Additionally, please note that the FCC expects the ferrites to already be placed on the cables provided to the user in a permanent manner (i.e. molded). The FCC does not want the burden of compliance to rest with the user to ensure compliance. Installation of ferrites is typically only allowed for professional installers and not end users. Please note that the manufacturer is responsible for providing these cables. Please provide further details on how this will be handled.

A: The ferrite cores will be attaching at the manufacturing site and will be configured to avoid user tampering. Please refer to the attached photos detailing the assembly named Xpress_Assembly_of_Ferrite_Bead_to_CLA4.pdf and Xpress_Assy_of_Ferrite_Bead_to_Roof_Mount_Ant4.pdf. In addition, please see to the attached file named XPRESS_Ferrite_Heat_Shink_4.JPG, showing how XM will be applying heat shrink tubing to all ferrites attached to cables.

Q: 5) Internal photographs show 2 areas that can not be determined if the shields are normally in place or not in the final device. If so, please provide additional photos with the shields intact as well.

A: Please see additional internal photographs showing shields in place named XPress_Photos_Internal_Revised_5.pdf.

Q: 6) Internal top side of the board appears to show many buttons, etc. Generally the FCC desires these to be removed for these photos. If possible, please provide a front view of PCB with these removed.

A: Please see revised Internal Photos file named XPress_Photos_Internal_Revised_5.pdf.

- Q:** 7) Several external photographs show the external view of the device, but the FCC ID appears to have a "01" instead of a "02". Please explain.
- A:** The external photographs were only intended to show location. Please note that the revised FCC ID Label Photo is correct.
- Q:** 8) The FCC ID on the 731 form appears to be missing the "-" between grantee code and equipment code as shown on the label and test report. Which version is correct? Please correct the application as necessary.
- A:** Please see attached file named XPress_ATCB_Application_8.pdf for a revised copy of the 731 Form with the "-" included.
- Q:** 9) If the transmit antenna is actually the RF coax of the XM receive antenna, it is uncertain if this antenna is variable in length or adjusted by any installer or user. If it is adjustable, then this could affect the transmission patterns, field strengths, etc. Please explain. Note that since this cable is a radiating element, it would also be recommended if it is not adjustable that further specific information (specific to antenna changes) in the manual should be provided to caution against this being changed. Please explain/comment.
- A:** The XM antenna is a unique structure for enabling the reception of the XM satellite signal. The cable length is not adjustable, neither by the installer nor the end user. In addition, it is permanently affixed to the antenna on one end, and to a unique RF Connector on the other.
- Q:** 10) Test Report shows that the lowest and highest channels do not appear to be used for testing (88.7 vs 88.1 MHz and 107.3 vs. 107.9). In absence of some compelling argument, the FCC asks that the lowest and highest actually be used – especially for occupied bandwidth tests. Note that 731 form cites 88.1 – 107.9 MHz. Please review.
- A:** Fundamental measurement frequencies were selected based upon ambient conditions (Licensed FM stations). 88.1 and 107.9 MHz were active FM stations, therefore, ambient levels were too high to perform measurements at these frequencies.
- Q:** 11) Please provide information to explain the absolute lowest and highest TX frequencies available in the device.
- A:** The lowest TX frequency is 88.1MHz and the highest TX frequency is 107.9 MHz. This range is provided to allow for the maximum potential that the end user can select a frequency not in use in their location.
- Q:** 12) The manual mentions Audio Level adjustment. Please comment on how this was adjusted to ensure maximum levels during testing (drive levels, etc.).
- A:** The audio level adjustment does control the drive level to the FM modulator and all tests were conducted with this level set to the maximum.
- Q:** 13) Given the devices were tested "in situ", further photographs, diagrams, or information showing routing of the cables should be provided to adequately document the device as tested. Please provide.
- A:** Please refer to the attached diagram named Xpress_XM_install_13.jpg, which shows the XM antenna installation procedure. This, in combination with the installation photographs contained within the Report of Measurements, should explain how the antennas were installed in the test vehicles.
- Q:** 14) Given the "in situ" test procedure, it is uncertain if the harmonics were fully maximized separately from the fundamental. Note that emissions at harmonics are frequency radiated and maximized from different locations than the fundamental. Please explain.
- A:** The Harmonics and Spurious were initially measured at 1 meter in a shielded enclosure. During formal testing, each side of the vehicle was probed to ensure maximum radiated field strength. No emissions were observed within 20 dB of the specified limit.

Q: 15) A users manual was provided. However is an installation manual also available? Given the nature of this device, this should be included if possible.

A: Please see attached file named for Xpress_Vehicle_Install_Guidelines_Rev3_15.pdf for appropriate installation manual.

Q: 16) The users manual appears to be missing the information required by 15.105. Please review/correct/ and/or explain as necessary.

A: Please refer to the attached file named Xpress_User_Guide_Revised_16.pdf with the language added from 15.105. In addition, please see attached file named Xpress_Vehicle_Install_Guidelines_Rev3_15.pdf for an updated Installation Manual containing the appropriate information for 15.19, 15.21, 15.27, and 15.105. Please note that both the Users Manual and the Installation Manual, will be provided to the end user.

Q: 17) The user manual mentions a home kit or boom box kit for connection of this device. If so, then it appears that AC powerline emission testing for 15.109 and 15.209 would apply for this configuration. Please review.

A Audiovox Electronics Corp. can provide if needed. However, the FM modulator which is covered by this application, does not function in the home dock.

Q: 18) Generally the FCC expects all inputs and outputs to be filled during testing and following published requirements of ANSI C63.4. From the review it is uncertain if the audio input port was filled during testing. It is assumed that this could be used for an MP3 player or similar device. Please explain, justify, or correct.

A: The device does contain a port for an external device, which can be used to send audio into the EUT like an MP3 player. During the "in-situ" testing, this port was not populated. Radiated Emissions Pre-scans were taken at a distance of one meter from the EUT. The pre-scans measured the device with a representative audio cable connected to the auxiliary input and one scan without it. Based on the comparison between the two scans, there was no difference in amplitude at the fundamental frequency. Therefore this would not have any effect on the fundamental emissions measurements obtained in the vehicles.

The spurious emissions comparison shows there were emissions observed between 150 MHz and 200 MHz. These emissions were measured at a 1-meter distance and were found to be well below the 3-meter distance limit. Based on the "in-situ" testing, the emissions levels would not be above the measurement system noise floor (20 dB or more below limit). The device is in compliance with or without the audio input port populated.



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