



Retlif Testing Laboratories

795 Marconi Avenue, Ronkonkoma, NY 11779
631-737-1500 - Fax: 631-737-1497

BRANCH LABORATORIES
101 New Boston Road
Goffstown, NH 03045
603-497-4600 Fax 603-497-5281
WASHINGTON
REGULATORY OFFICE
703-533-1614 Fax 703-533-1612



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RE: XM Satellite Radio, Inc.

FCC ID: RS2SA10101A

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 FCC_OET_Clarification_1.pdf.

Q: 2) Labeling must be of the Format "FCC ID:", not "FCC ID No." Please correct.

A: Please refer the attached file named SKYFi2_Label_Artwork_FCC_Rev2_2.pdf for revised label artwork.

Q: 3) If the device is larger than 8x10 cm, the FCC expects the 2 part FCC statement to be on the device instead of the manual.

A: The product does not meet this size requirement and will not allow for the additional information to be placed on the label.

Q: 4) The block diagram appears to show 2 possible FM TX antennas (one leaky coax, the other internal). Therefore TX testing should be performed for both configurations and test data, test photos, etc. should be provided for each configuration. Please review.

A: Please note that all in vehicle tests were conducted using both radiating structures (internal loop and the shield of the XM antenna coaxial cable). The user does not have any option other than this configuration. In other words, both elements are always active.

Q: 5) External Photographs do not support the ferrites used. Please comment/explain as necessary.

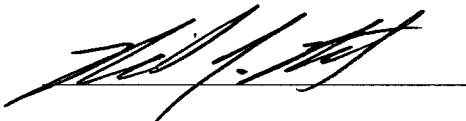
A: Please see attached file named SkyFi2_External_Photos.pdf for updated Photographs showing the cable/ferrite assemblies.

Q: 6) 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 Assy of Ferrite Bead to CLA 6.pdf and Assy of Ferrite Bead to XM Roof Mount_Ant 6.pdf. In addition, please refer to file named Ferrite_Heat_Shrink_6.JPG, showing how XM will be applying heat shrink tubing to all ferrites attached to cables.

- Q:** 7) Please provide additional internal photographs showing the shields removed from the back of the board. Additionally, please ensure photographs are clear. Current photos do not appear clear enough.
- A:** Please see additional internal photographs showing shields removed from the back of the board named SkyFi2_Internal_Photos.pdf.
- Q:** 8) Several external photographs show the device, but the FCC ID appears to be missing the "A" in many photos. Please explain.
- A:** The external photographs were only intended to show location. Please note that the revised FCC ID Label Photo is correct.
- Q:** 9) It appears that the transmit antenna is actually the shield 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 it would also be recommended if it is not adjustable, that further information in the manual should be provided to caution against this (specific to antenna changes). 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 by 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 transmit frequencies that are available to the user are: 88.1, 88.3, 88.5, 88.7, 88.9, 106.7, 106.9, 107.1, 107.3, 107.5, 107.7, and 107.9 MHz. Please note that these frequencies are fixed and are not user adjustable.
- Q:** 12) Data is required according to 15.31(m) for a low, middle and high channel. Only low and high channel are provided. Please correct.
- A:** The other units measured, used the entire FM band for operation where low, middle and high frequencies were measured. However, the SkyFi2 device does not contain any center frequency. Please see page 14 of the users guide.
- Q:** 13) 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:** 14) 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 XM_install_14.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:** 15) 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:** 16) 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 Vehicle_Install_Guidelines_Rev3_16.pdf for revised installation manual.
- Q:** 17) 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 updated Installation Manual named Vehicle_Install_Guidelines_Rev3_16.pdf with the language added from 15.105. In addition, this updated Installation Manual also contains information applicable to 15.19, 15.21, and 15.27.
- Q:** 18) The user manual mentions a home 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:** XM Satellite Radio, Inc. can provide if needed. However, the FM modulator which is covered by this application, does not function in the home dock.



Richard J. Reitz
Corporate Laboratory Manager
Retlif Testing Laboratories
795 Marconi Avenue
Ronkonkoma, NY 11779
(631) 737-1500 x28
(631) 737-1497 fax