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FCC ID: SX9UHF1 & 5675A-UHF1

In response to your comments regarding the application for certification of the device referenced above please find our response below:

1.) Either provide confirmation that this frequency hopping spread spectrum (FHSS) transmitter meets the Bluetooth industry standard or provide documentation that it meets the following:

- (a) Pseudorandom hopping requirement in Section 15.247(a)(1) – describe how the hopping sequence is generated and provide an example of the hopping sequence channels,
- (b) Equal frequency use in Section 15.247(a)(1) – describe how each transmitter meets the requirement that its hopping channels are used equally on average (e.g., that each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event),
- (c) System receiver input bandwidth in Section 15.247(a)(1) – describe how the associated receiver complies with the requirement that its input bandwidth (either IF or RF) matches the bandwidth of the transmitted signal,
- (d) System receiver hopping capability in Section 15.247(a)(1) – describe how the associated receiver has the ability to shift frequencies in synchronization with the transmitted signals,
- (e) Coordination capability in Section 15.247(h) – describe if this transmitter can recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels and how this is accomplished.

(a) A cover letter has been provided explaining the hopping sequence and showing the order of channels selected

(b) The transmitter by design uses the hop table provided by exhibit (a) in the order it is presented. Transmission begins where the hop sequence left off from the previous transmission.

(c) The system is and RFID in which the tags are passive. The tags can be interrogated at any frequency close to the carrier frequency. The receive functionality of the system is based on backscatter and will only work while the TX function is tuned to that particular frequency.

- (d) *The tags used with the system are passive tags. They will accept a broad range of frequencies since they are not active.*
- (e) *This transmitter does not sense for other carriers in the band.*

2.) The radiated emission measurements on the 902 and 928 MHz band edge were made with a CISPR quasi-peak detector. The note at the end of Section 15.35(a) of the FCC Rules states “For pulse modulated devices with a pulse-repetition frequency of 20 Hz or less and for which CISPR quasi-peak measurements are specified, compliance with the regulations shall be demonstrated using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, using the same measurement bandwidths that are indicated for CISPR quasi-peak measurements.” The time of occupancy (dwell time) plots on page 23 of the test report do not support a PRF of 20 Hz or greater for this transmitter. Please describe what type of signal was being transmitted for the radiated emission measurements on page 26 of the test report to show it meets the 20 Hz requirement for quasi-peak detector use or measure these emissions with a peak detector.

The radiated emissions measurements at the band edges were performed with a peak detector. Part of PTI’s procedure in measuring emissions is to quantify the value with the peak detector function before a quasi-peak. If the peak meets the quasi-peak limit no additional measurements are performed. For simplicity of reporting the band edge measurement was left in the spurious emissions table with a header on the page that indicates quasi-peak. In the original spreadsheet it is noted that the measurement was a peak. A notation has been added to the report indicating that this measurement is a peak measurement.

3.) The submitted test report is missing data to show compliance with Section 15.247(d) of the FCC Rules. These measurements are usually an RF antenna conducted measurement with a 100 kHz resolution bandwidth (RBW) and a video bandwidth equal to or greater than the RBW. Please provide this test data.

The band edge emissions complied with 15.209 requirements therefore the band edge emission plots were not required.

4.) Please demonstrate compliance with the RF safety requirements for this transmitter in accordance with Section 15.247(i) of the FCC Rules. If this demonstration includes a separation distance of 20 cm, the user manual will need to be corrected to inform the users of this device that a 20 cm separation distance must always be maintained between the antenna and any person near the device.

An MPE calculation has been added to the report.

5.) Please provide a channel separation plot showing the distance between two adjacent channels of this FHSS transmitter. None was provided in accordance with the FCC accepted test procedure for FHSS transmitters.

The plot showing all channels in the hopping sequence also shows the channel separation. Please see the marker delta readout on the second plot, it shows 200 kHz.

6.) Please describe how the time of occupancy (dwell time) plots on page 23 of the submitted test report show compliance with the requirements of Section 15.247(a)(1)(i) of the FCC Rules.

The spectrum analyzer was tuned to a single channel and left to sweep for 1 second. The one second trace captured the width of all pulses on that particular channel. The sweep was repeated with a 30 second sweep time showing that the only emissions that happened within 30 seconds were the two pulses from the 1 second sweep. Thus the channel occupation time for any one channel within a 20 second period is 0.067 seconds.

7.) Please identify the FCC accepted test procedure used to measure the FHSS transmitter characteristics from this device. ANSI C63.4 does not contain procedures for measuring dwell time, channel separation, etc. Go to <http://www.fcc.gov/oet/ea/eameasurements.html>, find the test procedure that was used and include this information in an amended test report.

A reference to DA 00-705 has been added to the test report.

8.) FCC and Canada requirements are that both external and internal photographs must be shown. Please provide missing exhibit.

The missing exhibit has been uploaded. Please note that the enclosure is optional equipment and the user is cautioned to comply with the labeling requirements of Part 15.

9.) The operational description states that external antennas up to 6 inches in size can be used with this transmitter. Only one antenna was tested and will be approved with this transmitter. Please either amend the operational description to state one antenna is used with this transmitter or test the largest and smallest loop antenna which will be provided with this transmitter and provide the radiated emission test results.

The operational description is addressing the operational range (distance) that the device can be effectively used with tags. No revision is necessary.

10.) Section 6.4 of the user manual is missing the beginning of the compliance statement required by Section 15.19(a)(3) of the FCC Rules. Please provide an amended user manual with the complete statement required by this section of the rules.

The statement is intended to be generic and satisfy both US and Canada requirements. This has been accepted in the past.

11.) Please confirm that reverse polarity SMA connectors are used at both ends of the antenna connector cable. The FCC requires all connectors in a system to meet Section 15.203 of the FCC Rules. I believe the reverse polarity SMA connector is on the module end of this cable, but what about the antenna end of this cable?

15.203 of the FCC rules do not state that both ends must be a unique connector. The rule part implies that diligence must be taken in order to prevent the user from utilizing the device with an incorrect antenna. The antenna connector on the EUT is a reverse polarity sma, the user manual states that this device must only be used with the antenna it is sold with, and the user's will be engineers in a laboratory setting for development purposes.

12.) Please correct your FCC/IC application forms to show the exact frequency range of the transmitter. Please list from the center frequency of the lowest channel to the center frequency of the highest channel.

Application forms have been corrected to show 902.6 MHz to 927.4 MHz.

13.) Please review your conducted RF power measurements. If you recalculate, +14.4dBm is not 16mW. Please correct.

The uncorrected value of 12.08 dBm was used to calculate the power. The corrected value is 14.4 dBm which converts to 27.5 mW.

14.) Although not required for FCC Certification, Canada still requires receiver radiated data. Please provide.

There is no separate receive functionality for this device as it is an RFID. This type of RFID device employs some technique known as "back scatter" to sense the received signal. This can only be achieved while the transmitter is operating and transmitting.

15.) The test setup does not appear to comply with the requirements of ANSI C63.4. Please review, In addition, the 'blue box' (router?) seen on the table top is not even powered. Please provide a complete list of all accessories and cables used in the test setup.

Spurious emissions were repeated with the router powered. A revised report and new test setup photos have been uploaded.

16.) FYI: The Manual for this device shows this product mounted inside a plastic case. This may be more appropriate than seeking modular approval.

The intended use is for developers to be able to integrate this into existing designs.

A handwritten signature in black ink, appearing to read 'JA' followed by a stylized flourish.

Jason Anderson