5 RF Exposure – FCC - for RFID Device

5.1 Exposure Requirements – FCC KDB # 447498 DO1

FCC KDB # 447498 DO1 V05r02 - Mobile and Portable Device RF Exposure and Procedures and Equipment, Appendix C shows that the SAR Text Exclusion Threshold for a device with a separation distance of ≤ 50 mm at ≤ 100 MHz is 237 mW

5.1.1 Test Procedure

If the antenna is located > 20cm from the user, then an MPE calculation is acceptable.

If the antenna is located < 20cm (portable / mobile / hand-held device) from the user, then SAR evaluation is required.

5.1.2 Evaluation

The EUT will be used as a portable device where the antenna will be located less than 20cm from the user, therefore SAR evaluation is required.

5.1.2.1 Evaluation for FCC

FCC 447498 DO1 Mobile Portable RF Exposure V05r02, Appendix C shows that the SAR Text Exclusion Threshold for a device with a worst-case separation distance of < 50 mm and < 100 MHz is 237 mW.

The minimum power that requires SAR testing with a separation distance of 50 mm at < 100 MHz is 237 mW.

The maximum EiRP peak power output of the EUT is: < 0.1 mW

The 0.1 mW EiRP of the EUT is well below the 237 mW power level that requires SAR Testing.

5.1.3 Conclusion

SAR data is not required for FCC

Note: The < 0.1 mW power level includes the 100% Duty Cycle factor.
This is considered to be the absolute worst case.

5.1.4 Calculated EiRP Level

Notes: The EUT does not have a means to make direct measurements.

This EiRP calculation was made using the maximum Peak Field value of 27.80 dBµV/m at 1m.

The Duty Cycle was at 100%

5.1.5 Antenna Gain:

The antenna used in the EUT is a Loop antenna which is etched onto a flexable PCB.

According to the manufacturer, the antenna has a theoretical gain of 0 dBi or numeric gain of 1 (unity gain).

The stated Maximum EiRP power of the EUT is < 0.1 mW (100% Duty Cycle)

6 RF Exposure – FCC for Bluetooth Device

6.1 Exposure Requirements – FCC KDB # 447498 DO1

FCC KDB # 447498 DO1 V05r02 - Mobile and Portable Device RF Exposure and Procedures and Equipment, Appendix A shows that the SAR Text Exclusion Threshold for a device with a separation distance of 5 mm at 2450 MHz is 10 mW

6.1.1 Test Procedure

If the antenna is located > 20cm from the user, then an MPE calculation is acceptable.

If the antenna is located < 20cm (portable / mobile / hand-held device) from the user, then SAR evaluation is required.

6.1.2 Evaluation

The EUT will be used as a portable device where the antenna will be located less than 20cm from the user, therefore SAR evaluation is required.

6.1.2.1 Evaluation for FCC

FCC 447498 DO1 Mobile Portable RF Exposure V05r02, Appendix C shows that the SAR Text Exclusion Threshold for a device with a worst-case separation distance of < 5 mm at 2450 MHz is 10 mW.

The minimum power that requires SAR testing with a separation distance of 5 mm at < 50 MHz is 308 mW.

The maximum EiRP peak power output of the EUT is: 7 mW

The 7 mW EiRP of the EUT is well below the 10 mW power level that requires SAR Testing.

6.1.3 Conclusion

SAR data is not required for FCC

Note: The 7 mW power level includes the 100% Duty Cycle factor.
This is considered to be the absolute worst case.

6.1.4 Calculated EiRP Level

Notes: The EUT does not have a means to make direct measurements.

This EiRP calculation was made using the maximum Peak Field value of 8.21 dBm at 3m.

The Duty Cycle was at 100%

6.1.5 Antenna Gain:

According to the manufacturer, the antenna has a theoretical gain of -0.23 dBi or numeric gain of 0.95 (unity gain).

The stated Maximum EiRP power of the EUT is 7 mW (100% Duty Cycle)