



07/30/2018

Product: Entry Standard Panel

FCC ID: USE377420A

Analysis for FCC standalone SAR evaluation

Standalone SAR test exclusion considerations are defined in KDB 447498D01 (v06) Chapter 4.3.1 where the 1-g head or body and 10-g extremity SAR exclusion threshold is defined by the following formula:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] * [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}$$

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

For Entry Standard Panel, the worst case maximum conducted power is $4.53\text{dBm} + 5\text{dBm}^* = 9.53\text{dBm}$ (8.97 mW) including tune-up tolerance (Bluetooth)

Plus 1mW (RFID)

*=Tune up tolerance

Appendix A Photo 1 shows the photo of the antenna (Bluetooth) in relationship to the enclosure. The nominal distance between the antenna and the edge of the enclosure is 13.5mm. This is the shortest distance measured between the antenna and any enclosure surface

Applying the above data to the given formula, the following result for assessment against the $\leq 3.0\text{mm}$ limit is achieved:

$$(8.97 \text{ mW} / 13.5 \text{ mm}) \times \sqrt{2.440 \text{ GHz}} \leq 3.0$$

$$0.66 \times 1.562 = 1.03$$

Result rounded to 1.1 for comparison.



Appendix A Photo 2 shows the photo of the antenna (RFID) in relationship to the enclosure. The nominal distance between the antenna and the edge of the enclosure is 10mm. This is the shortest distance measured between the antenna and any enclosure surface

Applying the above data to the given formula, the following result for assessment against the $\leq 3.0\text{mm}$ limit is achieved:

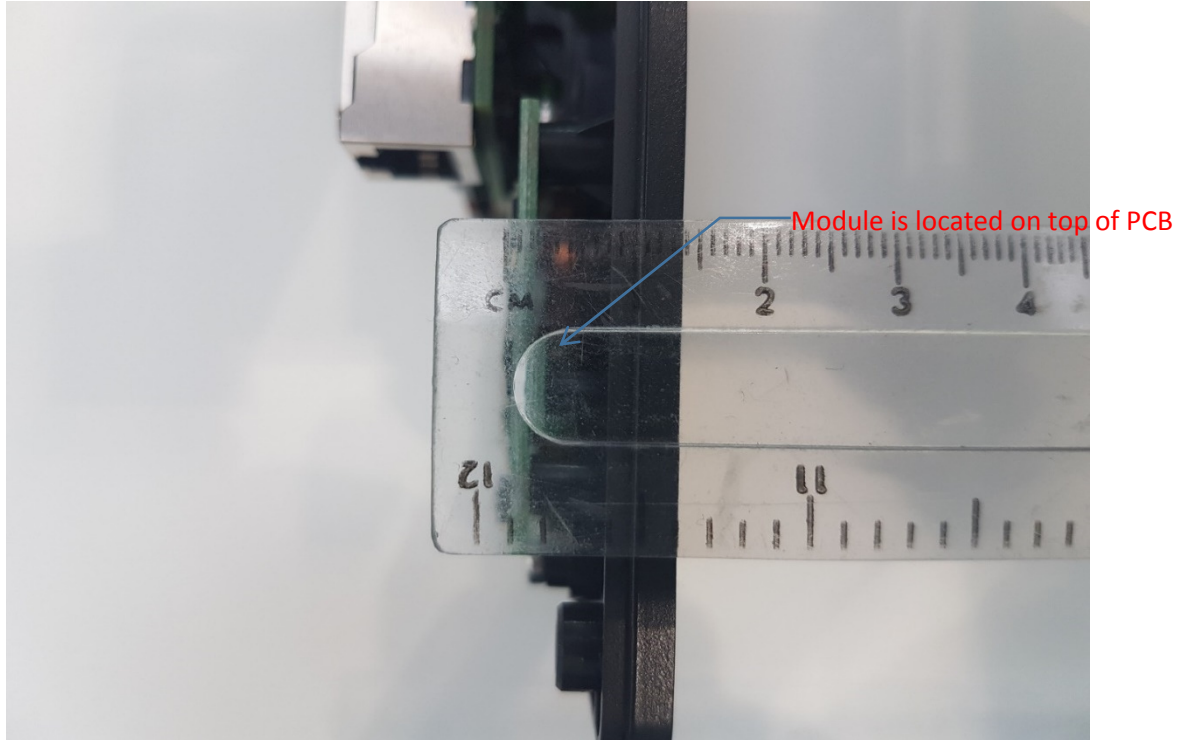
$$(1 \text{ mW} / 10 \text{ mm}) \times \sqrt{0.01356 \text{ GHz}} \leq 3.0$$

$$0.1 \times 1.562 = 0.12$$

Therefore the resultant value of 1.22 is < 3.0 limit for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, meaning RF exposure exemption (head, body and extremity) is applicable in the use of this product.

Appendix A

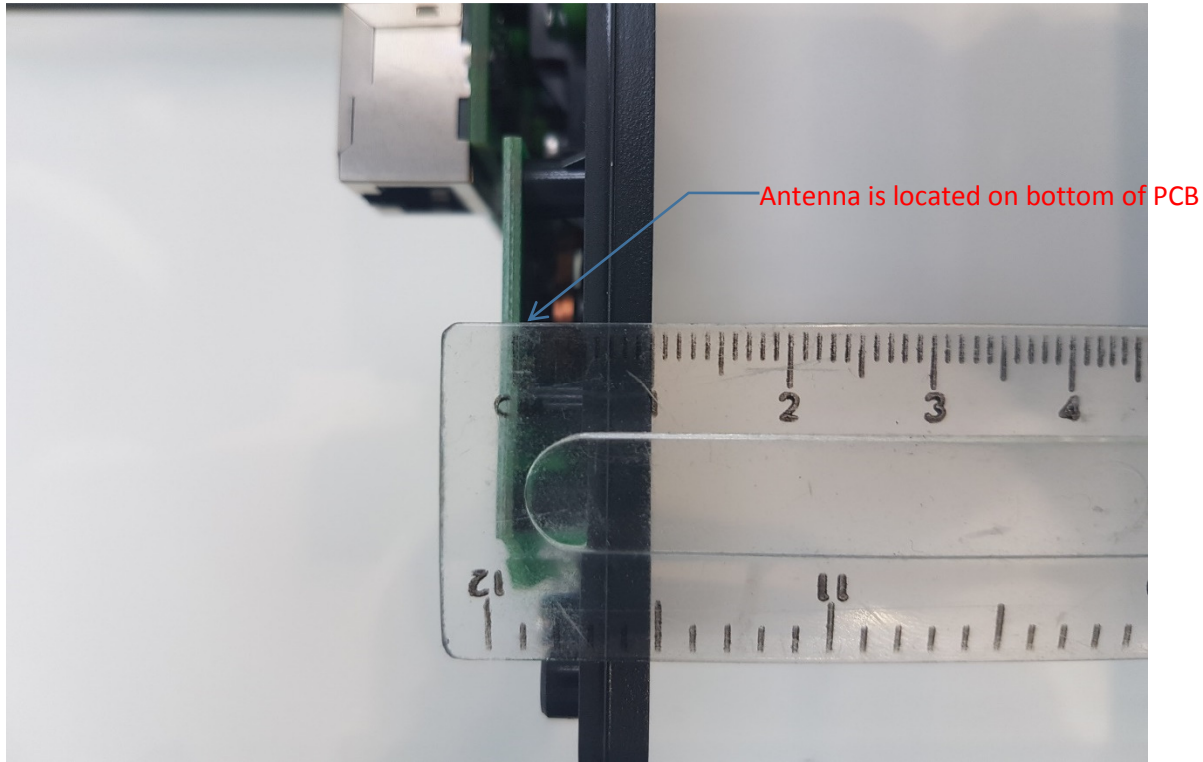
Photo 1 Bluetooth Module location



Shortest distance from the Antenna to the case – this is to the edge of the front panel and is 13.5mm



Photo 2 RFID Antenna location



Shortest distance from the Antenna to the case – this is to the edge of the front panel and is 10mm