RF EXPOSURE

1. Regulation
The SAR exclusion table from RSS-102 issue 5 is reproduced below:

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of 50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

RF EXPOSURE

KDB447498 was used as the guidance.

SAR test exclusion considerations

Step.1 **For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion threshold are determined by the following :**

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR

Step.2 For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following

Step.2-1 {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·(f(MHz)/150)]} mW, for 100 MHz to 1500 MHz

Step.2-2 {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·10]} mW, for > 1500 MHz and ≤ 6 GHz

where
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
The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

SAR test exclusion considerations : Bluetooth

- Frequency Range : 2 402 MHz ~ 2 480 MHz

- Measured RF Maximum Output Power (Avg.) : 17.21 dBm

- Target Power & Tolerance 17.00 dBm & ± 1.00 dB

(Maximum : 18.00 dBm & Minimum : 16.00 dBm)

- Maximum Peak Antenna Gain : 1.00 dBi

- Maximum Output Power for the Calculation : 18.00 dBm

The EUT will only be used with a separation of 34.5 millimeters or lesser between the antenna and the body of the SAR Exclusion calculation for this exposure is shown below.

- EIRP = P + G = 18.00 dBm + 1.00 dBi = 19.00 dBm = 79.43 mW	- NOTE P : Max tuneup Power (dBm) G : Maximum Peak Antenna Gain (dBi)

- P = 18.00 dBm = 63.10 mW	- NOTE P : Max tuneup Power (dBm)

Estimated SAR at the specific separation

- S = [(P(mW) / R)] X [√f(GHz)] = [(63.10 / 34.50)] X [√(2.48)] = 2. 88 NOTE : f(GHz) was used as worst case is highest frequency.	- NOTE S : Maximum Estimated SAR P(mW) : Max tuneup Power (mW) R : Distance to the center of the radiation of the antenna (34.50 mm) f(GHz) : the RF channel transmit frequency in GHz

RF Exposure Compliance Issue

Therefore, EUT is not required the SAR Evaluation.