

The MPE calculation of Bluetooth

1.5 Operation Description

1. Use chipset specific software to control the EUT, and makes it transmit in maximum power.
2. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.
3. During the SAR testing, the DASY 5 system checks power drift by comparing the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.
4. The device was tested based on KDB inquiry.

WLAN: 10g-SAR < 4 (extremity exposure)

- (1) Backside_0mm without modules. (Remove all the modules and make the watch's backside touch against the flat phantom.)
- (2) Backside_0mm with four modules. (Attaching four modules then make the watch's backside touch against the neck phantom region.)
- (3) Backside_0mm with six modules. (Attaching six modules then make the watch's backside touch against the neck phantom region, the remaining two modules are pasted on the neck phantom region and next/close to the watch strap.)

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Antenna location (front view)

Note:

802.11b DSSS SAR Test Requirements:

1. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
2. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

802.11g/n OFDM SAR Test Exclusion Requirements:

3. SAR is not required for 802.11g/n since the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
4. While 1-g SAR thresholds are specified in above for SAR test reduction and exclusion, these thresholds should be multiplied by 2.5 when 10-g extremity SAR is considered.
5. BT and WLAN use the same antenna path and Bluetooth can't transmit simultaneously with WLAN.
6. The device doesn't support voice communication.

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7. According to KDB447498 D01, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg (or the reported 10-g SAR for the highest output channel is ≤ 2 W/kg), when the transmission band is ≤ 100 MHz.
8. According to KDB865664 D01, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~10% from the 1-g SAR limit). The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
9. Based on KDB447498D01, BT SAR measurement for extremity is not required.
 - (1) SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\frac{\text{Max. tune up power(mW)}}{\text{Min. test separation distance(mm)}} \times \sqrt{f(\text{GHz})}$$

≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR. When the minimum test separation distance is < 5 mm, 5 mm is applied to determine SAR test exclusion.

- (2) For test separation distances > 50 mm, and the frequency at 100 MHz to 1500 MHz, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B of KDB447498 D01.
 [(Threshold at 50mm in step1) + (test separation distance-50mm) \times ($\frac{f(\text{MHz})}{180}$)](mW),
- (3) For test separation distances > 50 mm, and the frequency at > 1500 MHz to 6 GHz, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B of KDB447498 D01.
 [(Threshold at 50mm in step1) + (test separation distance-50mm) $\times 10$](mW),

Mode	Maximum power(dBm)	Maximum power(mW)	Backside_0mm without modules / with four modules / with six modules for extremity exposure		
			Test separation distance (mm)	Exclusion threshold	Require extremity SAR testing?
BT	10.08	10.186	5	3.208	No

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