

FCC ID: 2AABZ-CONTROLLER

Portable device

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to KDB447498 D01 General RF Exposure Guidance V06

The 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

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

- $f(\text{GHz})$ 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

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

BLE:

Modulation	Channel Freq. (GHz)	EIRP (dBm)	EIRP (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Distance (mm)	Result calculation	SAR Exclusion threshold	SAR test exclusion
Bluetooth LE (1 Mbps)	2.402	7.6	5.75	7±1	8	6.31	<5	1.95576	3.00	YES
	2.440	7.6	5.75	7±1	8	6.31	<5	1.97117	3.00	YES
	2.480	5.9	3.89	5±1	6	3.98	<5	1.25388	3.00	YES
Bluetooth LE (1 Mbps)	2.402	7.6	5.75	7±1	8	6.31	<5	1.95576	3.00	YES
	2.440	7.6	5.75	7±1	8	6.31	<5	1.97117	3.00	YES
	2.480	5.9	3.89	5±1	6	3.98	<5	1.25388	3.00	YES
Bluetooth LE (125 Mbps)	2.402	7.6	5.75	7±1	8	6.31	<5	1.95576	3.00	YES
	2.440	7.6	5.75	7±1	8	6.31	<5	1.97117	3.00	YES
	2.480	5.9	3.89	5±1	6	3.98	<5	1.25388	3.00	YES
Bluetooth LE (500 Mbps)	2.402	7.6	5.75	7±1	8	6.31	<5	1.95576	3.00	YES
	2.440	7.6	5.75	7±1	8	6.31	<5	1.97117	3.00	YES
	2.480	5.9	3.89	5±1	6	3.98	<5	1.25388	3.00	YES

Note: This EUT contains certified module.

The Output Power refer to the FCC ID: 2AABZ-MR8250B.

Conclusion:

For the max result : $1.97117 \leq 3.0$ for 1g SAR, SAR is not required.

NFC :

Antenna Type: Internal antenna

Antenna Gain: 0dBi

Nominal field strength: 49.64dBμV/m at 3m

Maximum allowed field strength of production tolerance: +/- 3dB

According to the KDB 447498:

Based on the Maximum allowed field strength of production tolerance was 50.64dBμV/m at 3m in frequency 13.56MHz, thus;

The EIRP = $[(FS \cdot D)^2 \cdot 1000 / 30] = 0.000035\text{mW}$

The SAR Exclusion Threshold Level for 13.56MHz when the minimum test separation

According to KDB447498 D01, 4.3 General SAR test exclusion guidance

distance is < 50mm:

SAR test exclusion= $[474 \cdot (1 + \log(100/f(\text{MHz})))]/2$

= 442.7mW

Conclusion:

Since the above conducted output power is well below the SAR Exclusion threshold level, so the EUT is considered to comply with SAR requirement without testing.

Simultaneous transmission :**Estimated BLE SAR: 0.24W/kg for 1-g SAR**

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{GHz}}/x}] \text{ W/kg}$, for test separation distances $\leq 50 \text{ mm}$;

where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

Estimated NFC SAR: 0W/kg for 1-g SAR

For the NFC frequency is below 100 MHz, the EIRP power is far below SAR test exclusion Power, estimated SAR value as 0 W/kg.

Estimated BLE SAR+ Estimated NFC SAR <1.6W/kg

Result: The EUT is considered to comply with SAR requirement without testing.

Signature:



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