

1 Safety Human Exposure

1.1 Radio Frequency Exposure Compliance

1.1.1 Electromagnetic Fields

RESULT:

Pass

Test Specification

Test standard : CFR47 FCC Part 2: Section 2.1093 and 2.1091
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498 v06
RSS-102 Issue 5 March 2015, section 2.5

Note: When in normal use, the keypad will be Mounted it on the Panel as a **mobile use** or held remotely in your hand as **hand-held use**. Details as described in user manual. Thus, The RF exposure evaluation Performed for both mobile device exposure conditions subject to MPE limits and portable device exposure.

➤ **FCC requirements**

FCC requirement: 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 limit for maximum permissible exposure.

a) (In hand-held use) EUT RF Exposure Evaluation operations, worst-case

Test Mode	Measured conducted Power		Antenna Gain (dBi)	Threshold power @5mm, 10-g Extremity SAR		Verdict
	dBm	mW		dBm	mW	
BLE	6.20	4.17	1.0	14	25	Compliant

b) (In mobile use condition) EUT RF Exposure Evaluation operations, worst-case

As for mobile use condition, the MPE is 0.001W/m², much lower than the MPE limit under 20cm distance.

➤ **IC requirements:**

1. **(In Hand-held use)** The EUT shall comply with the requirement of RSS-102 section 2.5.1.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

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

EUT RF Exposure Evaluation standalone operations, Worst Case mode

Test Mode	Measured conducted Power		Antenna Gain (dBi)	Threshold power @5mm, 10-g Extremity SAR		Verdict
	dBm	mW		dBm	mW	
BLE	6.20	4.17	1.0	10	10	Compliant

2. **(In Mobile use)** The EUT shall comply with the requirement of RSS-102 section 2.5.1.

Exemption from Routine Evaluation Limits – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

- RF exposure evaluation exempted power for BLE: 2.670 W

Result: Pass

The highest output power is 7.2dBm EIRP, i.e. 0.00525W, which much lower than the threshold power 2.67W,