

SECTION RF Exposure

1. SUMMARY OF TEST RESULTS

Requirements	FCC Rule	Compliance
RF Exposure evaluation	1.1310 2.1091	Complied

2. MPE Evaluation of Mobile Device

2.1 Rule

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure		
300-1,500	f/300	6
1,500-100,000	5	6
(B) Limits for General Population/Uncontrolled Exposure		
300-1,500	f/1500	30
1,500-100,000	1.0	30

Note) f = Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

P_d = power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

$\pi = 3.1416$

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, $1 mW/cm^2$. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2 Test Results - Complied

- SAR test exclusion thresholds

Mode	Frequency (MHz)	Conducted Output Power (dBm)	Conducted Output Power (mW)	Min. Test Separation Distance (mm)	SAR Test Exclusion Thresholds ≤ 7.5 for 10-g SAR
GFSK_1 Mbps	2 480	1.00	1.26	5.00	0.40

$= [(max. \text{ power of channel, including tune-up tolerance, mW}) / (min. \text{ test separation distance, mm})] \cdot [\sqrt{f(GHz)}]$

Bluetooth Low Energy = $[(1.26) / (5)] \cdot [\sqrt{2.480}] = 0.40$

- Target power and Tolerance, Max tune up power

Mode	Frequency (MHz)	Target Power (dBm)	Tolerance (dB)	Max Tune up Power (dBm)	Average Power (dBm)	Measured Average Power (dBm)
GFSK_1 Mbps	2 402	0.0	± 1.0	1.0	-0.79	-2.82
	2 440	0.0	± 1.0	1.0	-0.39	-2.42
	2 480	0.0	± 1.0	1.0	-0.34	-2.37

Note 1): Average Power(dBm) = Measured Average Power(dBm) + D.C.C.F(dB)

Note 2): Measured Average Power was tested by Power meter & sensor(VBW = 50 MHz)

1.3 RF Exposure Compliance Issue

Therefore, EUT is not required the SAR Evaluation.