FCC ID: 2ASEO-HM-BT4502

RF EXPOSURE EVALUATION

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

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
	(A) Limits for O	ccupational/Controlled Exp	osure	
0.3-3.0	614	1.63	*100	6
3.0-30	1842/1	4.89/1	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
	(B) Limits for Gener	ral Population/Uncontrolled	Exposure	
0.3-1.34	614	1.63	*100	30
1.34-30	824/1	2.19/1	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

$$E (V/m) = \frac{\sqrt{30*P*G}}{d}$$
 Power Density: $Pd (W/m^2) = \frac{E^2}{377}$

E = Electric field (V/m)

P = Average RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 * P * G}{377 * D^2}$$

From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

.at MAX OUTPUT POWER

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t at	1Mbps Pow	er	of of	ot	of of	d	d	d	d.
1	Condition	Mode	Frequency	Antenna	Conducted	Duty	Total	Limit	Verdict
		, -	(MHz)		Power	Factor	Power	(dBm)	, 5
+ 4	.0	1	0 0	4	(dBm)	(dB)	(dBm)	4	4
	NVNT	BLE	2402	Ant 1	6.567	0	6.57	30	Pass
	NVNT	BLE	2440	Ant 1	6.33	0	6.33	30	Pass
	NVNT	BLE	2480	Ant 1	5.829	0	5.83	30	Pass
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4 7 4	2Mbps Pow	er		4	4		7	1	1

	INVIVI	BLE	2402	Ant 1	6.567		0.57	30	Pass
	NVNT	BLE	2440	Ant 1	6.33	0	6.33	30	Pass
× .	NVNT	BLE	2480	Ant 1	5.829	0	5.83	30	Pass
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,	2Mbps Pow	er		1	1		, ,	, ,	
*	Condition	Mode	Frequency	Antenna	Conducted	Duty	Total	Limit	Verdict
	1 1	- 4	(MHz)	1	Power	Factor	Power	(dBm)	
		, 5		1	(dBm)	(dB)	(dBm)		
-	NVNT	BLE	2402	Ant 1	6.64	0	6.64	30	Pass
11	NVNT	BLE	2440	Ant 1	6.34	0	6.34	30	Pass
1	NVNT	BLE	2480	Ant 1	5.92	0	5.92	30	Pass
5	05 05	45	45 45	.05	0 0	4	0	45	4
1	125Kbps Po	wer	1 11	2 3	1	1	1	1	1
4	Condition	Mode	Frequency	Antenna	Conducted	Duty	Total	Limit	Verdict
1	*	1	(MHz)	1	Power	Factor	Power	(dBm)	1

	INVINI	BLE	2440	Ant 1	0.34	U	0.34	30	Pass
	NVNT	BLE	2480	Ant 1	5.92	0	5.92	30	Pass
15	125Kbps Po	AT A	J 15	1	4		1	1	4
7.	Condition	Mode	Frequency	Antenna	Conducted	Duty	Total	Limit	Verdict
大	*	<i>**</i>	(MHz)	,	Power	Factor	Power	(dBm)	4
A A	Y 2 2	~ 4	4 14	X 1	(dBm)	(dB)	(dBm)	3	W 1
4	NVNT	BLE	2402	Ant 1	6.545	0	6.54	30	Pass
05	NVNT	BLE	2440	Ant 1	6.306	0	6.31	<i>_</i> 30	Pass
1, 4	NVNT	BLE	2480	Ant 1	5.810	0	5.81	30	Pass
*	500Kbps Po	wer	* *	*	* *	T.t.	T. T.	+	x
NY N	Condition	Mode	Frequency	Antenna	Conducted	Duty	Total	Limit	Verdict
3 4	4 4	4	(MHz)	4 4	Power	Factor	Power	(dBm)	, 4
*	* *	*	大 大	*	(dBm)	(dB)	(dBm)	*	1

2	INVIVI	BLE	2480	Anti	5.610	U	0.01	30	Pass
* *	500Kbps Po	wer	x x	*	* *	t	*	*	+
110	Condition	Mode	Frequency	Antenna	Conducted	Duty	Total	Limit	Verdict
- 4	4	+	(MHz)	4	Power (dBm)	Factor (dB)	Power (dBm)	(dBm)	4
	NVNT	BLE	2402	Ant 1	6.551	0	6.55	30	Pass
4	NVNT	BLE	2440	Ant 1	6.313	0	6.31	30	Pass
-0	NVNT	BLE	2480	Ant 1	5.819	0	5.82	30	Pass
4			7,	4 4	7,	4			4
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Measurement Result

Operation Frequency: GFSK: 2402 MHz~2480MHz

Power density limited: 1mW/ cm² Antenna Type: Panel Antenna

Antenna gain: 1.5 dBi, R=20cm

ASK:

-	26.7	N /		76 / 6	W. /	- 4		24.		200
4 100	Channel	modulation	conducted power	Tune-up	Ma	эх	An	tenna	Evaluation result	Power density Limits
	Freq. (MHz)		(dBm)	power (dBm)	tune-up power		Gain		(mW/cm2)	(mW/cm2)
					(dBm)	(mW)	(dBi)	Numeric	(IIIVV/CIIIZ)	(IIIVV/CIIIZ)
0	2402	1	6.64	6±1	7	5.012	1.50	1.41	0.0014	1.00
-	2440	GFSK	6.34	6±1	7	5.012	1.50	1.41	0.0014	1.00
	2480		5.92	6±1	7	5.012	1.50	1.41	0.0014	1.00

Conclusion:

For the max result : 0.0014≤ 1 for Max Power Density, compliance RF exposure.

Signature:

Date: 2019/9/30

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