

# FCC ID:2AX5VHUB4GNA

## Maximum Permissible Exposure (MPE)

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 <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	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

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

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.

Operation Frequency: GFSK: 905 MHz~926.5MHz  
 Antenna Type: Antenna 1Type: Inverted-L Antenna (ocw=120k)  
 Antenna 2Type: Inverted-F Antenna (ocw=120k)  
 Antenna gain: Antenna1:-4.6 dBi  
 Antenna2:-5.6 dBi  
 R=20cm

SRD

ant 1

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
905.00	GFSK-120K	15.637	15.5±1	16.5	44.668	-4.60	0.35	0.0031	0.60
915.85		15.428	15.5±1	16.5	44.668	-4.60	0.35	0.0031	0.61
926.50		15.714	15.5±1	16.5	44.668	-4.60	0.35	0.0031	0.62

ant 2

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
905.00	GFSK-120K	10.802	10.5±1	11.5	14.125	-5.60	0.28	0.0008	0.60
915.85		9.133	9.5±1	10.5	11.220	-5.60	0.28	0.0006	0.61
926.50		8.292	8.5±1	9.5	8.913	-5.60	0.28	0.0005	0.62

**Conclusion:**

For the max result :  $0.0031 \leq 0.60$  for Max Power Density, compliance RF exposure..

Note: This product does not support simultaneous delivery.

**GSM/LTE**

GSM/LTE Antenna Type: Flexible multiband Antenna  
 Antenna Gain: GSM: -2dBi  
 LTE:3 dBi

modulation	Max		Antenna		Evaluation result	Power density
	tune-up power		Gain			
	(dBm)	(mW)	(dBi)	Numeric	(mW/cm2 )	(mW/cm2)
GPRS850	33.5	2238.721	-2	0.63	0.2810	0.558
GPRS1900	30	1000.000	-2	0.63	0.1255	1
LTE Band 2	24	251.189	3	2.00	0.0997	1
LTE Band 4	23.5	223.872	3	2.00	0.0889	1
LTE Band 5	24	251.189	3	2.00	0.0997	0.55
LTE Band 7	24	251.189	3	2.00	0.0997	1
LTE Band 66	24.5	281.838	3	2.00	0.1119	1

**SIMULTANEOUS TRANSMISSIONS**

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE. To comply with the MPE, the fraction of the MPE in terms of E<sup>2</sup>, H<sup>2</sup> (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity. In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^n \frac{S_i}{MPE_i} \leq 1$$

**Max. SIMULTANEOUS TRANSMISSIONS MODE**

Band	SISO					MIMO		Verdict
	Max power	Antenna	Separation distance (cm)	Evaluation result	Power density	Evaluation result	Power density Limits	
	(dBm)	Gain (dBi)		(mW/cm2 )	(mW/cm2)			
SRD ant1 905	15.637	-4.6	20	0.007285	0.6	0.723918	1	PASS
+ant2 905+	10.802	-5.6	20	0.002393	0.6			
GPRS 850	33.04	-2	20	0.400608	0.566			

**Signature:**  
**Date:** 2024-2-29



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