

FCC ID: 2AX5VFHUBEN54

Maximum Permissible Exposure (MPE)

According to FCC 2.1091, FCC 1.1310 and KDB 447498 D04 Interim General RF Exposure Guidance v01: 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 Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*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 General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*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

$$E \text{ (V/m)} = \frac{\sqrt{30 * P * G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

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.

Measurement Result

SRD JWL:

Antenna gain: Antenna: -5dBi

R=20cm

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
905.00	GFSK	16.52	16±1	17	50.119	-5.00	0.32	0.0032	0.60
915.85	GFSK	16.48	16±1	17	50.119	-5.00	0.32	0.0032	0.61
926.50	GFSK	16.41	16±1	17	50.119	-5.00	0.32	0.0032	0.62

SRD WNG:

Antenna gain: Antenna: -5dBi

R=20cm

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric	(mW/cm2)	(mW/cm2)
905.00	GFSK	16.42	16±1	16	39.811	-5.00	0.32	0.0025	0.60
915.85	GFSK	16.36	15±1	16	39.811	-5.00	0.32	0.0025	0.61
926.50	GFSK	16.30	15±1	16	39.811	-5.00	0.32	0.0025	0.62

Operation Frequency: NFC: 13.56MHz

Power density limited: 1mW/ cm²

Antenna Type: Induction coil

R=20cm

Transmit power

NFC

Frequency (MHz)	Max Output power (dBuV/m)	EIRP power (dBm)
13.56	66.83	-28.43

EIRP=E-104.8+20log(D)

Mode	Channel Freq. (MHz)	EIRP power (dBm)	EIRP power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
NFC	13.56	-28.43	0.0014	-28±1	-27	0.0000003	0.99

Operation Frequency: WIFI: 2412-2462MHz

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna

Antenna gain: 3.35dBi,

R=20 cm

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric	(mW/cm2)	(mW/cm2)
2412	802.11b	13.528	13±1	14	25.119	3.35	2.16	0.01081	1
2437		15.375	15±1	16	39.811	3.35	2.16	0.01713	1
2462		15.114	15±1	16	39.811	3.35	2.16	0.01713	1
2412	802.11g	11.949	11±1	12	15.849	3.35	2.16	0.00682	1
2437		11.982	11±1	12	15.849	3.35	2.16	0.00682	1
2462		14.134	14±1	15	31.623	3.35	2.16	0.01361	1
2412	802.11n20	10.531	10±1	11	12.589	3.35	2.16	0.00542	1
2437		9.634	10±1	11	12.589	3.35	2.16	0.00542	1
2462		10.861	10±1	11	12.589	3.35	2.16	0.00542	1
2422	802.11n40	10.515	10±1	11	12.589	3.35	2.16	0.00542	1
2437		9.046	10±1	11	12.589	3.35	2.16	0.00542	1
2452		10.216	10±1	11	12.589	3.35	2.16	0.00542	1

GSM<E:

Antenna type: FPC antenna, Antenna gain: GSM 850:1dBi, PCS1900:3dBi,

Band	Frequency Band (MHz)	maximum output power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	R(cm)	S (mW/cm ²)	MPE Limit (mW/cm ²)	Conclusion
GSM850	824 ~ 849	27	1	28	630.957	20.00	0.1255	0.5493	Pass
PCS1900	1850 ~ 1910	23	3	26	398.107	20.00	0.0792	1.0000	
LTE B2	1850 ~ 1910	25.7	3	28.7	741.310	20.00	0.1475	1.0000	
LTE B4	1710 ~ 1755	25.7	2.7	28.4	691.831	20.00	0.13763	1.000	
LTE B5	824 ~ 849	25.7	1	26.7	467.735	20.00	0.09305	0.54933	
LTE B7	2500 ~ 2570	25.7	2.5	28.2	660.693	20.00	0.13144	1.0000	
LTE B66	1710 ~ 1780	25.7	2.7	28.4	691.83	20.00	0.13763	1.00	

Note1: WWAN Test data reference to FCC ID: XMR202111EG915ULA

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^2 , H^2 (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

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

Band	S (mW/cm ²)	MPE Limit (mW/cm ²)	Calculation result	Conclusion
WWAN	0.1255	0.5493	0.25094	Pass
WIFI	0.01713	1		
SRD	0.0032	0.60		
NFC	0.0000003	0.99		

Worse case: $0.25094 < 1$

Note1: Max Calculation result = $0.25094 < 1$

Note2: For SRD Module, only one module and one single antenna are active at any given time

Conclusion: Pass

Signature: 

Date: 2026-06-25

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