

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 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

Operation Frequency: BLE: 2402-2480MHz

Power density limited: 1mW/ cm²

Antenna Type: FPC antenna

Antenna gain:4.09dBi,

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)	(dBm)	(mW)	(dBi)	Numeric	(mW/cm2)
2402	BLE	8.16	8±1	9	7.943	4.09	2.56	0.0041	1
2440		7.62	7±1	8	6.310	4.09	2.56	0.0032	1
2480		6.99	6±1	7	5.012	4.09	2.56	0.0026	1

Operation Frequency: EDR: 2402-2480MHz

Power density limited: 1mW/ cm²

Antenna Type: FPC antenna

Antenna gain:4.09dBi,

R=20cm

Channel Freq. (MHz)	modulation	conducted pow er	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
				(dBm)	(mV)	(dBi)	Numeric		
2402	1-DH5	4.45	4±1	5	3.162	4.09	2.56	0.0016	1
2441		4.74	4±1	5	3.162	4.09	2.56	0.0016	1
2480		3.14	4±1	5	3.162	4.09	2.56	0.0016	1
2402	2-DH5	6.24	6±1	7	5.012	4.09	2.56	0.0026	1
2441		5.09	5±1	6	3.981	4.09	2.56	0.0020	1
2480		3.44	4±1	5	3.162	4.09	2.56	0.0016	1
2402	3-DH5	8.45	8±1	9	7.943	4.09	2.56	0.0041	1
2441		8.52	8±1	9	7.943	4.09	2.56	0.0041	1
2480		8.66	8±1	9	7.943	4.09	2.56	0.0041	1

Operation Frequency: WIFI: 2412-2462MHz for 802.11b/g/11n(HT20);

2422-2452MHz for 802.11n(HT40);

Power density limited: 1mW/ cm²

Antenna Type: FPC antenna

Antenna gain:4.09dBi,

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)
2412	802.11b	14.09	14±1	15	31.623	4.09	2.56	0.0161	1
2437		16.11	17±1	18	63.096	4.09	2.56	0.0322	1
2462		17.06	17±1	18	63.096	4.09	2.56	0.0322	1
2412	802.11g	8.93	8±1	9	7.943	4.09	2.56	0.0041	1
2437		13.62	13±1	14	25.119	4.09	2.56	0.0128	1
2462		13.87	13±1	14	25.119	4.09	2.56	0.0128	1
2412	802.11n HT20	8.96	8±1	9	7.943	4.09	2.56	0.0041	1
2437		14.48	14±1	15	31.623	4.09	2.56	0.0161	1
2462		14.64	14±1	15	31.623	4.09	2.56	0.0161	1
2422	802.11n HT40	9.13	9±1	10	10.000	4.09	2.56	0.0051	1
2437		14.71	15±1	16	39.811	4.09	2.56	0.0203	1
2452		15.01	15±1	16	39.811	4.09	2.56	0.0203	1

Operation Frequency: WIFI: U-NII-1: 5150 MHz ~5250MHz;

Power density limited: 1mW/ cm²

Antenna Type: FPC antenna

Antenna gain:5.3dBi,

R=20cm

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up pow er		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
5180	802.11a	9.23	9±1	10	10.000	5.30	3.39	0.0067	1
5200		12.02	12±1	13	19.953	5.30	3.39	0.0134	1
5240		10.62	10±1	11	12.589	5.30	3.39	0.0085	1
5180	802.11HT20	9.12	9±1	10	10.000	5.30	3.39	0.0067	1
5200		12.75	12±1	13	19.953	5.30	3.39	0.0134	1
5240		11.48	11±1	12	15.849	5.30	3.39	0.0107	1
5190	802.11HT40	7.26	7±1	8	6.310	5.30	3.39	0.0043	1
5230		12.1	12±1	13	19.953	5.30	3.39	0.0134	1
5180	802.11AC20	9.13	9±1	10	10.000	5.30	3.39	0.0067	1
5200		12.78	12±1	13	19.953	5.30	3.39	0.0134	1
5240		11.79	11±1	12	15.849	5.30	3.39	0.0107	1
5190	802.11AC40	7.32	7±1	8	6.310	5.30	3.39	0.0043	1
5230		7.5	7±1	8	6.310	5.30	3.39	0.0043	1
5210	802.11AC80	10.07	10±1	11	12.589	5.30	3.39	0.0085	1

Operation Frequency: WIFI: U-NII-2A: 5250 MHz ~5350MHz;

Power density limited: 1mW/ cm²

Antenna Type: FPC antenna

Antenna gain:5.3dBi,

R=20cm

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up pow er		Gain			
				(dBm)	(dBm)	(mW)	(dBi)	Numeric	(mW/cm2)
5260	802.11a	11.15	11±1	12	15.849	5.30	3.39	0.0107	1
5280		11.1	11±1	12	15.849	5.30	3.39	0.0107	1
5320		10.36	10±1	11	12.589	5.30	3.39	0.0085	1
5260	802.11HT20	11.35	11±1	12	15.849	5.30	3.39	0.0107	1
5280		11.02	11±1	12	15.849	5.30	3.39	0.0107	1
5320		8.96	8±1	9	7.943	5.30	3.39	0.0054	1
5270	802.11HT40	11.64	11±1	12	15.849	5.30	3.39	0.0107	1
5310		11.03	11±1	12	15.849	5.30	3.39	0.0107	1
5260	802.11AC20	11.36	11±1	12	15.849	5.30	3.39	0.0107	1
5280		10.85	10±1	11	12.589	5.30	3.39	0.0085	1
5320		8.99	8±1	9	7.943	5.30	3.39	0.0054	1
5270	802.11AC40	10.26	10±1	11	12.589	5.30	3.39	0.0085	1
5310		7.41	7±1	8	6.310	5.30	3.39	0.0043	1
5290	802.11AC80	11.74	11±1	12	15.849	5.30	3.39	0.0107	1

Operation Frequency: WIFI: U-NII-2C: 5470MHz~5725MHz;
Power density limited: 1mW/ cm²
Antenna Type: FPC antenna
Antenna gain:5.3dBi,
R=20cm

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
5500	802.11a	10.42	10±1	11	12.589	5.30	3.39	0.0085	1
5600		8.88	8±1	9	7.943	5.30	3.39	0.0054	1
5700		10.99	10±1	11	12.589	5.30	3.39	0.0085	1
5500	802.11HT20	11.58	11±1	12	15.849	5.30	3.39	0.0107	1
5600		10.24	10±1	11	12.589	5.30	3.39	0.0085	1
5700		5.41	5±1	6	3.981	5.30	3.39	0.0027	1
5510	802.11HT40	11.79	11±1	12	15.849	5.30	3.39	0.0107	1
5590		10.75	10±1	11	12.589	5.30	3.39	0.0085	1
5670		5.93	5±1	6	3.981	5.30	3.39	0.0027	1
5500	802.11AC20	11.69	11±1	12	15.849	5.30	3.39	0.0107	1
5600		10.16	10±1	11	12.589	5.30	3.39	0.0085	1
5700		5.57	5±1	6	3.981	5.30	3.39	0.0027	1
5510	802.11AC40	8.6	8±1	9	7.943	5.30	3.39	0.0054	1
5590		9.39	9±1	10	10.000	5.30	3.39	0.0067	1
5670		5.89	5±1	6	3.981	5.30	3.39	0.0027	1
5530	802.11AC80	10.53	10±1	11	12.589	5.30	3.39	0.0085	1
5610		9.88	9±1	10	10.000	5.30	3.39	0.0067	1

Operation Frequency: WIFI: U-NII-3: 5725 MHz ~5825 MHz ;
Power density limited: 1mW/ cm²
Antenna Type: FPC antenna
Antenna gain:5.3dBi,
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		
5745	802.11a	6.01	6±1	7	5.012	5.30	3.39	0.0034	1
5785		6.3	6±1	7	5.012	5.30	3.39	0.0034	1
5825		6.38	6±1	7	5.012	5.30	3.39	0.0034	1
5745	802.11HT20	7.87	7±1	8	6.310	5.30	3.39	0.0043	1
5785		6.34	6±1	7	5.012	5.30	3.39	0.0034	1
5825		8.33	8±1	9	7.943	5.30	3.39	0.0054	1
5755	802.11HT40	6.19	6±1	7	5.012	5.30	3.39	0.0034	1
5795		6.22	6±1	7	5.012	5.30	3.39	0.0034	1
5745	802.11AC20	7.68	7±1	8	6.310	5.30	3.39	0.0043	1
5785		8.12	8±1	9	7.943	5.30	3.39	0.0054	1
5825		8.4	8±1	9	7.943	5.30	3.39	0.0054	1
5755	802.11AC40	6.57	6±1	7	5.012	5.30	3.39	0.0034	1
5795		6.55	6±1	7	5.012	5.30	3.39	0.0034	1
5775	802.11AC80	9.28	9±1	10	10.000	5.30	3.39	0.0067	1

LTE Module Evaluation Result:

R=20cm

Channel Freq. (MHz)	modulation	conducted power	Max		Antenna		Evaluation result	Power density Limits
		(dBm)	tune-up power		Gain		(mW/cm2)	(mW/cm2)
			(dBm)	(mW)	(dBi)	Numeric		
1880	LTE Band 2	25	25	316.228	1.41	1.38	0.0870	1.0000
1732.5	LTE Band 4	25	25	316.228	1.41	1.38	0.0870	1.0000
836.5	LTE Band 5	25	25	316.228	1.41	1.38	0.0870	0.5577
707.5	LTE Band 12	25	25	316.228	1.41	1.38	0.0870	0.4717
782	LTE Band 13	25	25	316.228	1.41	1.38	0.0870	0.5213
1745	LTE Band 66	25	25	316.228	1.41	1.38	0.0870	1.0000

Note: The antenna gain specified in the table is based on the antenna configured for the finished product.

LTE power results are derived from the module report, FCC ID: XMR2023EG915QNA
grant data: 08/14/2024

simultaneous emission

Power density Limits (mW/cm2) BLE	Power density Limits (mW/cm2) EDR	Power density Limits (mW/cm2) WIFI	Power density Limits (mW/cm2) LTE	Power density Limits (mW/cm2) U-NII	Calculate Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
0.0041	0.0041	0.0322	0.0870	0.0134	0.1408	1

Conclusion:

For the max result : $0.1408 \leq 1$ for Max Power Density, compliance RF exposure.



Signature:

Date: 2026-08-19

NAME AND TITLE (Please print or type): Jason Chen /Manager

COMPANY (Please print or type): Shenzhen ATA Testing Lab. Inc./ 4th Floor, Building 10, No.60 Nanchang Road, Nanchang Community, Xixiang Street, Bao'an District, Shenzhen City, China