

RF Exposure

FCC ID: SRQ-MF256

Applicant: ZTE Corporation

Exposure category: General population/uncontrolled environment

EUT Type: Production Unit

Device Type: LTE CAT6 CPE Outdoor

Refer Standard: FCC Part 2.1091: Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

FCC MPE Limited:

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
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
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

2.4G WLAN Antenna Gain information

Antenna 1: 2.5dBi

Antenna 2: 2.5dBi

Directional Gain=5.51dBi

5G WLAN Antenna Gain information

Antenna 1: 3dBi

Antenna 2: 3dBi

Directional Gain=6.01dBi_{note1}

Note 1: According to KDB 662911, all transmit signals are completely correlated with each other.

2. Directional gain = $G_{ANT} + 10 \log(N_{ANT})$ dBi

Worst-Case mode Conducted Output Power Results for 2.4G WIFI**802.11b mode**

Channel	Frequency (MHz)	Output Power(dBm)		Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	
1	2412	16.97	16.98	16 ± 1
6	2437	16.54	15.65	16 ± 1
11	2462	16.70	15.54	16 ± 1

802.11g Test mode

Channel	Frequency (MHz)	Output Power(dBm)		Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	
1	2412	15.54	14.45	15 ± 1
6	2437	14.94	14.38	15 ± 1
11	2462	15.10	14.32	15 ± 1

802.11n-20MHz Test mode

Channel	Frequency (MHz)	Output Power(dBm)			Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	Ant. 0+1	
1	2412	11.12	12.89	15.10	15 ± 1
6	2437	10.69	11.46	14.10	15 ± 1
11	2462	10.95	11.54	14.27	15 ± 1

802.11n-40MHz Test mode

Channel	Frequency (MHz)	Output Power(dBm)			Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	Ant. 0+1	
3	2422	12.06	11.74	14.91	14 ± 1
6	2437	11.40	10.22	13.86	14 ± 1
9	2452	11.04	11.08	14.07	14 ± 1

Conducted Power Test results of band U-NII-1 (5150 ~ 5250 MHz)

802.11a mode			
Frequency (MHz)	Conducted Output Power (dBm)		Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	
5180	15.98	15.70	15 ± 1

5220	15.83	14.59	15±1	
5240	15.91	14.76	15±1	
802.11n-HT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5180	12.25	12.12	15.20	15±1
5220	11.95	12.41	15.20	15±1
5240	12.03	12.18	15.12	15±1
802.11n-HT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5190	11.97	11.55	14.78	15±1
5230	12.24	11.79	15.03	15±1
802.11ac-VHT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5180	11.55	11.04	14.31	14±1
5220	11.19	11.22	14.22	14±1
5240	10.56	11.32	13.97	14±1
802.11ac-VHT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5190	12.52	11.43	15.02	15±1
5230	12.07	11.49	14.80	15±1
802.11ac-VHT80 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5210	12.05	11.46	14.78	14±1

Conducted Power Test results of band U-NII-3 (5725 ~ 5850 MHz)

802.11a mode			
Frequency (MHz)	Conducted Output Power (dBm)		Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	

5745	17.16	16.04	17 ± 1	
5785	15.16	14.64	15 ± 1	
5825	14.19	15.86	15 ± 1	
802.11n-HT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5745	13.86	12.26	16.14	16 ± 1
5785	12.33	13.32	15.86	16 ± 1
5825	10.88	12.24	14.62	15 ± 1
802.11n-HT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5755	13.03	12.47	15.77	15 ± 1
5795	11.84	13.22	15.59	15 ± 1
802.11ac-VHT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5745	12.23	12.55	15.40	15 ± 1
5785	11.45	12.66	15.11	15 ± 1
5825	11.15	12.33	14.79	15 ± 1
802.11ac-VHT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5755	12.72	13.13	15.94	15 ± 1
5795	11.95	12.36	15.17	15 ± 1
802.11ac-VHT80 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5775	12.79	12.99	15.90	15 ± 1

Calculation results (for 2.4G WIFI): Worst-case mode

Antenna	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
0+1(MIMO)	2412	16	20	0.035	1.0
	2437	16	20	0.035	
	2462	16	20	0.035	

Antenna	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
	2422	16	20	0.035	
	2452	16	20	0.035	

Calculation results (for 5.0G WIFI band U-NII-1): Worst-Case mode

Antenna	Mode	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
0+1(MIMO)	N20	5180	16	20	0.032	1.0
		5220	16	20	0.032	
		5240	16	20	0.032	
		5745	17	20	0.040	
		5785	17	20	0.040	
		5825	16	20	0.032	
	N40	5190	16	20	0.032	
		5230	16	20	0.032	
		5755	16	20	0.032	
		5795	16	20	0.032	
	AC20	5180	15	20	0.025	
		5220	15	20	0.025	
		5240	15	20	0.025	
		5745	16	20	0.032	
		5785	16	20	0.032	
		5825	16	20	0.032	
	AC40	5190	16	20	0.032	
		5230	16	20	0.032	
		5755	16	20	0.032	
		5795	16	20	0.032	
	AC80	5210	16	20	0.032	
		5775	16	20	0.032	

Simultaneous Transmission Calculation : N/A