FCC RF Exposure

FCC ID: 2AIFX-OP2200V
Applicant: SHENZHEN OPURES TECHNOLOGY CO.,LTD
Exposure category: General population/uncontrolled environment
EUT Type: Production Unit
Device Type: Embedded WiFi module
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/cm2)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	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 Gain: 2dBi

Maximum Conduct output Power:

Test mode	Channel	Frequency (MHz)	ANT Gain(dBi)	Max. RF Power(dBm)	Tolerance ±(dB)
802.11b	1	2412	2.0	18.41	18±1
	6	2437	2.0	18.22	18±1
	11	2462	2.0	17.98	18±1
802.11g	1	2412	2.0	22.34	22±1
	6	2437	2.0	22.17	22±1
	11	2462	2.0	22.11	22±1
802.11n20	1	2412	2.0	22.05	22±1
	6	2437	2.0	22.01	22±1
	11	2462	2.0	21.82	22±1
802.11n40	3	2422	2.0	21.46	21±1
	6	2437	2.0	21.22	21±1
	9	2452	2.0	21.35	21±1

Test mode	Channel	Frequency (MHz)	ANT Gain(dBi)	Max. RF Power(dBm)	Tolerance ±(dB)
BLE	0	2402	2.0	-0.93	-1.0±1
	19	2441	2.0	-0.83	-1.0±1
	39	2480	2.0	-0.65	-1.0±1

EDR Test Mode	Channel	Frequency (MHz)	Max. RF Power(dBm)	ANT Gain(dBi)	Tolerance ±(dB)
GFSK	0	2402	6.67	2.0	6.5±1
	39	2441	7.04	2.0	6.5±1
	78	2480	6.95	2.0	6.5±1
π/4-DQPSK	0	2402	6.25	2.0	6.5±1
	39	2441	6.62	2.0	6.5±1
	78	2480	6.46	2.0	6.5±1
8- DPSK	0	2402	6.32	2.0	6.5±1
	39	2441	6.70	2.0	6.5±1
	78	2480	6.57	2.0	6.5±1

Calculation results (for 2.4G WIFI): pass

Mode	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Ratio	Limit (mW/cm2)
802.11b	2412	19	20	0.025	0.025	1.0
	2437	19	20	0.025	0.025	
	2462	19	20	0.025	0.025	
802.11g	2412	23	20	0.063	0.063	
	2437	23	20	0.063	0.063	
	2462	23	20	0.063	0.063	
802.11n20	2412	23	20	0.063	0.063	
	2437	23	20	0.063	0.063	
	2462	23	20	0.063	0.063	
802.11n40	2422	22	20	0.05	0.05	
	2437	22	20	0.05	0.05	
	2452	22	20	0.05	0.05	
BLE	2402	0	20	0.0003	0.0003	
	2441	0	20	0.0003	0.0003	
	2480	0	20	0.0003	0.0003	
BT EDR	2402	7.5	20	0.002	0.002	
	2441	7.5	20	0.002	0.002	
	2480	7.5	20	0.002	0.002	

Simultaneous MPE

No.	Transmitter Combinations	Scenario Supported or not
1	WIFI+BT	Yes

Max Simultaneous MPE calculation results:

No.	Mode	MPE Ratio	Results
1	WIFI+BT	0.063+0.002	0.065<1.0(pass)