

MPE

FCC ID: ZYAWONDERPRO

Applicant: XTREAMER LIMITED

Exposure category: General population/uncontrolled environment

EUT Type: Production Unit

Device Type: Mobile Device

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)

Conducted Output Power Results

Test mode	Channel	Frequency (MHz)	RF Power(dBm)
802.11b	1	2412	19.34
	6	2437	19.79
	11	2462	19.88
802.11g	1	2412	18.69
	6	2437	18.57
	11	2462	18.74
802.11n20	1	2412	17.94
	6	2437	17.82
	11	2462	17.56
802.11n40	3	2422	16.57
	6	2437	16.64
	9	2452	16.59
GFSK	0	2402	0.8
	39	2441	1.0
	78	2480	0.7
$\pi/4$ -DQPSK	0	2402	0.3
	39	2441	0.6
	78	2480	0.8
8- DPSK	0	2402	0.6
	39	2441	1.1
	78	2480	1.3
BLE	0	2402	3.66
	20	2442	5.27
	39	2480	4.50

Manufacturing tolerance

Test mode	Channel	Frequency (MHz)	Target (dBm)	Tolerance $\pm$ (dB)
802.11b	1	2412	19	1
	6	2437	19	1
	11	2462	19	1
802.11g	1	2412	18	1
	6	2437	18	1
	11	2462	18	1
802.11n20	1	2412	18	1
	6	2437	18	1
	11	2462	18	1
802.11n40	3	2412	17	1
	6	2437	17	1

Test mode	Channel	Frequency (MHz)	Target (dBm)	Tolerance $\pm$ (dB)
	9	2452	17	1
GFSK	0	2402	1	1
	39	2441	1	1
	78	2480	1	1
$\pi/4$ -DQPSK	0	2402	1	1
	39	2441	1	1
	78	2480	1	1
8- DPSK	0	2402	1	1
	39	2441	1	1
	78	2480	1	1
BLE	0	2402	4	1
	20	2442	5	1
	39	2480	5	1

Calculation results (for FCC): pass

Test mode	Channel	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
802.11b	1	2412	20	20	0.063	1.0
	6	2437	20	20	0.063	
	11	2462	20	20	0.063	
802.11g	1	2412	19	20	0.050	
	6	2437	19	20	0.050	
	11	2462	19	20	0.050	
802.11n20	1	2412	19	20	0.050	
	6	2437	19	20	0.050	
	11	2462	19	20	0.050	
802.11n40	3	2422	18	20	0.040	
	6	2437	18	20	0.040	
	9	2452	18	20	0.040	
GFSK	0	2402	2	20	0.001	
	39	2441	2	20	0.001	
	78	2480	2	20	0.001	
$\pi/4$ -DQPSK	0	2402	2	20	0.001	
	39	2441	2	20	0.001	
	78	2480	2	20	0.001	
8- DPSK	0	2402	2	20	0.001	
	39	2441	2	20	0.001	
	78	2480	2	20	0.001	
BLE	0	2402	5	20	0.002	
	20	2442	6	20	0.003	

Test mode	Channel	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
	39	2480	6	20	0.003	

NOTE:

Antenna Gain 5dBi=3.16