RF Exposure Report

FCC ID: 2AG32EP3011

IC: 20982-EP3011

Applicant: Baicells Technologies Co., Ltd.

Exposure category: General population/uncontrolled environment

EUT Type: Stand alone

Device Type: PoE Router

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)

Antenna Gain information

2.4GHz/5GHz)Antenna Gain0: 5.0dBi

2.4GHz/5GHz)Antenna Gain1: 5.0dBi

2.4GHz/5GHz)Antenna Gain0+1: 8.01dBi

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

Conducted Output Power (dBm)

802.11b mode

Channel	Frequency (MHz)	Output Power(dBm)		Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	
1	2412	13.74	13.19	13±1
6	2437	13.39	13.41	13±1
11	2462	13.13	13.41	13±1

802.11g Test mode

Channel	Frequency (MHz)	Output Power(dBm)		Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	
1	2412	14.20	14.31	14±1
6	2437	14.28	13.81	14±1
11	2462	14.15	14.04	14±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	13.79	14.06	16.94	16±1
6	2437	13.09	14.05	16.61	16±1
11	2462	13.13	14.08	16.64	16±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	13.54	13.96	16.77	16±1
6	2437	13.05	13.86	16.48	16±1
9	2452	13.14	13.90	16.55	16±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	13.30	13.90	14±1
5220	12.27	14.11	14±1
5240	12.00	14.06	14±1

802.11n-HT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5180	11.27	10.99	14.14	14±1
5220	11.81	10.17	14.08	14±1
5240	11.25	10.91	14.09	14±1

802.11n-HT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5190	11.67	10.81	14.27	14±1
5230	11.54	10.70	14.15	14±1

802.11ac-VHT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5180	11.53	10.68	14.14	14±1
5220	11.74	10.88	14.34	14±1
5240	11.65	10.88	14.29	14±1

802.11ac-VHT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5190	11.06	10.84	13.96	14±1
5230	11.70	10.28	14.06	14±1

802.11ac-VHT80 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5210	11.56	10.49	14.07	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	13.05	11.61	12.5±1
5785	12.37	13.50	12.5±1
5825	11.51	12.64	12.5±1

802.11n-HT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5745	13.30	12.69	16.02	16±1
5785	12.24	13.07	15.69	16±1
5825	12.93	12.17	15.58	16±1

802.11n-HT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5755	13.51	11.06	15.47	15±1
5795	13.73	11.30	15.69	15±1

802.11ac-VHT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5745	13.58	11.24	15.58	15±1
5785	12.13	13.39	15.82	15±1
5825	11.32	12.50	14.96	15±1

802.11ac-VHT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5755	13.65	11.18	15.60	15±1
5795	13.32	11.72	15.60	15±1

802.11ac-VHT80 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5775	13.26	13.24	16.26	16±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	17	20	0.063	1.0
	2437	17	20	0.063	
	2462	17	20	0.063	
	2422	17	20	0.063	
	2452	17	20	0.063	

Calculation results (for 5.2G 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	15	20	0.040	1.0
		5220	15	20	0.040	
		5240	15	20	0.040	
	N40	5190	15	20	0.040	
		5230	15	20	0.040	
	AC20	5180	15	20	0.040	
		5220	15	20	0.040	
		5240	15	20	0.040	
	AC40	5190	15	20	0.040	
		5230	15	20	0.040	
	AC80	5210	15	20	0.040	

Calculation results (for 5.8G WIFI band U-NII-3): 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	5745	17	20	0.063	1.0
		5785	17	20	0.063	
		5825	17	20	0.063	
	N40	5755	16	20	0.050	
		5795	16	20	0.050	
	AC20	5745	16	20	0.050	
		5785	16	20	0.050	
		5825	16	20	0.050	
	AC40	5755	16	20	0.050	
		5795	16	20	0.050	
	AC80	5775	17	20	0.063	

Note: 2.4GHz WLAN and 5GHz WLAN cannot transmit at the same time.