7. RADIO FREQUENCY EXPOSURE

7.1. Limit

According to §1.1310 and §2.1091 RF exposure is calculated.

Table: Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Power Density (S) (mW/cm2)
0.3–1.34	*(100)
1.34–30	*($180/f^2$)
30–300	0.2
300–1500	f/1500
1500–100,000	1.0

F = frequency in MHz
* = Plane-wave equivalent power density

Maximum Permissible Exposure

The MPE was calculated at 20cm to show compliance with the power density limit.

$S = PG/4\pi R^2$

S = Power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna.

Note:

1. Manufacturer declared that the maximum antenna gain is 1.0dBi(Max.).

2. Manufacturer declared that the nearest distance between human and the EUT is 20cm.

3. Only record worst case data.

Test Mode	Channel	Frequency (MHz)	Power (dBm, Average)		Power Tune Up (dBm)	
			Chain0	Chain1	Chain0	Chain1
802.11b	Low	2412	16.29	17.25	16.0±1.0	17.0±1.0
	Middle	2437	16.52	17.36	16.0±1.0	17.0±1.0
	High	2462	16.43	17.41	16.0±1.0	17.0±1.0
802.11g	Low	2412	13.83	14.46	13.0±1.0	14.0±1.0
	Middle	2437	13.90	14.59	13.0±1.0	14.0±1.0
	High	2462	14.06	14.52	14.0±1.0	14.0±1.0
802.11n HT20	Low	2412	13.61	14.75	13.0±1.0	14.0±1.0
	Middle	2437	13.70	14.83	13.0±1.0	14.0±1.0
	High	2462	13.66	14.77	13.0±1.0	14.0±1.0

7.2 Test Results

Standalone MPE

Test Mode	Channel	Max. Tune Up Power (dBm, Average)		Max. Tune Up Power (mW)		MPE (mW/cm^2)		Limit (mW/cm^2)
		Chain0	Chain1	Chain0	Chain1	Chain0	Chain1	
802.11b	Low	17.0	18.0	50.12	63.10	0.0126	0.0158	1.0
	Middle	17.0	18.0	50.12	63.10	0.0126	0.0158	1.0
	High	17.0	18.0	50.12	63.10	0.0126	0.0158	1.0
802.11g	Low	14.0	15.0	25.12	31.62	0.0063	0.0079	1.0
	Middle	14.0	15.0	25.12	31.62	0.0063	0.0079	1.0
	High	15.0	15.0	31.62	31.62	0.0079	0.0079	1.0
802.11n HT20	Low	14.0	15.0	25.12	31.62	0.0063	0.0079	1.0
	Middle	14.0	15.0	25.12	31.62	0.0063	0.0079	1.0
	High	14.0	15.0	25.12	31.62	0.0063	0.0079	1.0

Antenna Gain (typical): 1.0dBi, 1.259(numeric)

Prediction distance: >=20cm

Simultaneous transmission MPE

According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;

∑ of MPE ratios ≤ 1.0

Mode	Channel No.	Frequency (MHz)	∑ MPE ratios	Limit	Results
Chain 0+Chain 1					
IEEE 802.11b	1	2412	N/A	1.000	Pass
	6	2442	N/A	1.000	Pass
	11	2462	N/A	1.000	Pass
IEEE 802.11g	1	2412	N/A	1.000	Pass
	6	2442	N/A	1.000	Pass
	11	2462	N/A	1.000	Pass
IEEE 802.11n HT20	1	2412	0.0142	1.000	Pass
	6	2442	0.0142	1.000	Pass
	11	2462	0.0142	1.000	Pass

Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.