

RADIO FREQUENCY EXPOSURE

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 1.25dBi(Max.) for 2400~2483.5MHz and 3.0 for 5150~5850MHz when single antenna transmits.
2. Manufacturer declared that the nearest distance between human and the EUT is 20cm.
3. Only record worst case data.

2.Test Results

Standalone MPE

5G WIFI

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11a	36	17.51	17.0±1.0	63.0957	0.0251	1.0
	40	16.30	17.0±1.0	63.0957	0.0251	1.0
	48	16.05	17.0±1.0	63.0957	0.0251	1.0
	149	15.39	15.0±1.0	39.8107	0.0158	1.0
	157	14.95	15.0±1.0	39.8107	0.0158	1.0
	165	14.34	15.0±1.0	39.8107	0.0158	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11n20	36	16.18	16.0±1.0	50.1187	0.0200	1.0
	40	15.86	16.0±1.0	50.1187	0.0200	1.0
	48	15.67	16.0±1.0	50.1187	0.0200	1.0
	149	13.89	13.0±1.0	25.1189	0.0100	1.0
	157	13.64	13.0±1.0	25.1189	0.0100	1.0
	165	12.75	13.0±1.0	25.1189	0.0100	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11n40	38	16.48	16.0±1.0	50.1187	0.0200	1.0
	46	15.58	16.0±1.0	50.1187	0.0200	1.0
	151	14.22	14.0±1.0	31.6628	0.0126	1.0
	159	14.27	14.0±1.0	31.6628	0.0126	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11AC20	36	15.66	16.0±1.0	50.1187	0.0200	1.0
	40	16.15	16.0±1.0	50.1187	0.0200	1.0
	48	15.08	16.0±1.0	50.1187	0.0200	1.0
	149	14.43	14.0±1.0	31.6628	0.0126	1.0
	157	14.11	14.0±1.0	31.6628	0.0126	1.0
	165	13.65	14.0±1.0	31.6628	0.0126	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11AC40	38	16.55	16.0±1.0	50.1187	0.0200	1.0
	46	15.51	16.0±1.0	50.1187	0.0200	1.0
	151	14.91	15.0±1.0	39.8107	0.0158	1.0
	159	15.12	15.0±1.0	39.8107	0.0158	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11AC80	42	16.25	16.0±1.0	50.1187	0.0200	1.0
	155	15.00	15.0±1.0	39.8107	0.0158	1.0

2.4G WIFI:

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11b	1	15.14	16.0±1.0	50.1187	0.0133	1.0
	6	16.45	16.0±1.0	50.1187	0.0133	1.0
	11	16.52	16.0±1.0	50.1187	0.0133	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11g	1	13.24	14.0±1.5	35.4813	0.0094	1.0
	6	14.64	14.0±1.5	35.4813	0.0094	1.0
	11	15.22	14.0±1.5	35.4813	0.0094	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11n20	1	13.67	14.0±1.0	31.6228	0.0084	1.0
	6	13.89	14.0±1.0	31.6228	0.0084	1.0
	11	14.51	14.0±1.0	31.6228	0.0084	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
802.11n40	3	13.32	14.0±1.0	31.6228	0.0084	1.0
	6	13.44	14.0±1.0	31.6228	0.0084	1.0
	9	14.56	14.0±1.0	31.6228	0.0084	1.0

Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
GFSK	1	4.372	5.2±1.0	4.1687	0.0011	1.0
	40	5.286	5.2±1.0	4.1687	0.0011	1.0
	79	6.067	5.2±1.0	4.1687	0.0011	1.0
Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
Pi/4 DQPSK	1	3.847	4.0±1.0	3.1623	0.0008	1.0
	40	4.073	4.0±1.0	3.1623	0.0008	1.0
	79	4.811	4.0±1.0	3.1623	0.0008	1.0
Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
8DPSK	1	3.817	4.0±1.0	3.1623	0.0008	1.0
	40	4.071	4.0±1.0	3.1623	0.0008	1.0
	79	4.792	4.0±1.0	3.1623	0.0008	1.0
Test	Channel	ANT Power (dBm)	ANT Max. Tune Up Power (dBm)	ANT Max. Tune Up Power (mW)	ANT MPE (mW/cm ²)	Limit (mW/cm ²)
BT LE	1	-1.22	-1.0±1.0	1.0000	0.0003	1.0
	19	-0.34	-1.0±1.0	1.0000	0.0003	1.0
	40	-0.45	-1.0±1.0	1.0000	0.0003	1.0

Note: The estimation distance is 20cm

Conclusion

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