

FCC 47 CFR MPE REPORT

Klipsch L.L.C.

The One with Google Assistant built-in

Model Number: the One

FCC ID: STI-ONEGVA

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Maximum Permissible Exposure

1. Applicable Standards

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

1.1. Limits for Maximum Permissible Exposure (MPE)

(a) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

1.2. MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: Pd (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, $d=0.2\text{m}$, as well as the gain of the used antenna, the RF power density can be obtained

2. Conducted Power Result

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
GFSK	2402	2.54	1.795	2±1	3.8	2.399
	2441	2.87	1.936	2±1	3.8	2.399
	2480	3.48	2.228	3±1	3.8	2.399
8-DPSK	2402	0.50	1.122	0±1	3.8	2.399
	2441	0.75	1.189	0±1	3.8	2.399
	2480	1.73	1.489	1±1	3.8	2.399
BLE	2402	-2.90	0.513	-3±1	3.8	2.399
	2440	-1.75	0.668	-2±1	3.8	2.399
	2480	-1.74	0.670	-2±1	3.8	2.399
IEEE 802.11b	2412	14.75	29.854	14±1	3.8	2.399
	2437	15.08	32.211	15±1	3.8	2.399
	2462	15.45	35.075	15±1	3.8	2.399
IEEE 802.11g	2412	15.84	38.371	15±1	3.8	2.399
	2437	16.27	42.364	16±1	3.8	2.399
	2462	16.42	43.853	16±1	3.8	2.399
IEEE 802.11n HT20	2412	16.04	40.179	16±1	3.8	2.399
	2437	16.66	46.345	16±1	3.8	2.399
	2462	17.25	53.088	17±1	3.8	2.399
IEEE 802.11a	5180	7.00	5.012	7±1	4.8	3.020
	5200	6.68	4.656	6±1	4.8	3.020
	5240	7.31	5.383	7±1	4.8	3.020
	5260	11.36	13.677	11±1	4.8	3.020
	5300	11.45	13.964	11±1	4.8	3.020
	5320	11.55	14.289	11±1	4.8	3.020
	5500	10.59	11.455	10±1	4.8	3.020
	5580	10.72	11.803	10±1	4.8	3.020
	5700	10.49	11.194	10±1	4.8	3.020
	5745	11.66	14.655	11±1	4.8	3.020
	5785	11.62	14.521	11±1	4.8	3.020
5825	11.05	12.735	11±1	4.8	3.020	

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11n HT20	5180	6.43	4.395	6±1	4.8	3.020
	5200	6.40	4.365	6±1	4.8	3.020
	5240	7.15	5.188	7±1	4.8	3.020
	5260	11.08	12.823	11±1	4.8	3.020
	5300	11.06	12.764	11±1	4.8	3.020
	5320	11.29	13.459	11±1	4.8	3.020
	5500	10.21	10.495	10±1	4.8	3.020
	5580	10.53	11.298	10±1	4.8	3.020
	5700	10.18	10.423	10±1	4.8	3.020
	5745	11.18	13.122	11±1	4.8	3.020
	5785	11.39	13.772	11±1	4.8	3.020
	5825	10.80	12.023	10±1	4.8	3.020
IEEE 802.11ac VHT20	5180	6.56	4.529	6±1	4.8	3.020
	5200	6.37	4.335	6±1	4.8	3.020
	5240	7.15	5.188	7±1	4.8	3.020
	5260	11.06	12.764	11±1	4.8	3.020
	5300	11.05	12.735	11±1	4.8	3.020
	5320	11.28	13.428	11±1	4.8	3.020
	5500	10.33	10.789	10±1	4.8	3.020
	5580	10.43	11.041	10±1	4.8	3.020
	5700	10.16	10.375	10±1	4.8	3.020
	5745	11.15	13.032	11±1	4.8	3.020
	5785	11.37	13.709	11±1	4.8	3.020
	5825	10.79	11.995	10±1	4.8	3.020

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11n HT40	5190	6.71	4.688	6±1	4.8	3.020
	5230	7.36	5.445	7±1	4.8	3.020
	5270	10.84	12.134	10±1	4.8	3.020
	5310	11.11	12.912	11±1	4.8	3.020
	5510	10.02	10.046	10±1	4.8	3.020
	5670	10.52	11.272	10±1	4.8	3.020
	5755	11.40	13.804	11±1	4.8	3.020
	5795	11.11	12.912	11±1	4.8	3.020
IEEE 802.11ac VHT40	5190	6.70	4.677	6±1	4.8	3.020
	5230	7.36	5.445	7±1	4.8	3.020
	5270	11.00	12.589	11±1	4.8	3.020
	5310	11.11	12.912	11±1	4.8	3.020
	5510	9.78	9.506	9±1	4.8	3.020
	5670	10.51	11.246	10±1	4.8	3.020
	5755	11.39	13.772	11±1	4.8	3.020
	5795	11.09	12.853	11±1	4.8	3.020
IEEE 802.11ac VHT80	5210	7.35	5.433	7±1	4.8	3.020
	5290	9.23	8.375	9±1	4.8	3.020
	5530	8.23	6.653	8±1	4.8	3.020
	5610	8.65	7.328	8±1	4.8	3.020
	5775	10.12	10.280	10±1	4.8	3.020

3. Calculated Result and Limit

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm ²)	Limited of Power Density (S) (mW/cm ²)	Test Result
		(dBi)	(Linear)			
2.4G Band						
GFSK	4	3.8	2.399	0.00120	1	Compiles
8-DPSK	2	3.8	2.399	0.00076	1	Compiles
BLE	-1	3.8	2.399	0.00038	1	Compiles
IEEE 802.11b	16	3.8	2.399	0.01900	1	Compiles
IEEE 802.11g	17	3.8	2.399	0.02392	1	Compiles
IEEE 802.11n HT20	18	3.8	2.399	0.03011	1	Compiles
5G Band						
IEEE 802.11a	12	4.8	3.020	0.00952	1	Compiles
IEEE 802.11n HT20	12	4.8	3.020	0.00952	1	Compiles
IEEE 802.11ac VHT20	12	4.8	3.020	0.00952	1	Compiles
IEEE 802.11n HT40	12	4.8	3.020	0.00952	1	Compiles
IEEE 802.11ac VHT40	12	4.8	3.020	0.00952	1	Compiles
IEEE 802.11ac VHT80	11	4.8	3.020	0.00756	1	Compiles

Note: 2.4 and 5GHz bands are share an antenna, Can't both the 2.4 and 5 GHz bands operate simultaneously.

End of Test Report