FCC 47 CFR MPE REPORT

Moka Technology(Guangdong)Co.,Ltd.

Interactive Display

Model Number: IFP6504E-AE

Additional Model: ****65**** (* can be A-Z,0-9 or “-”or blank)

FCC ID: 2BFQX-IFP65A

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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.o	30

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

1.2. MPE Calculation Method

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

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=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

2. Conducted Power Result

Mode	Frequency (MHz)	Antenna	Peak output power (dBm)	Peak output power (mW)
IEEE 802.11b	2412	ant 1	20.43	110.408
		ant 2	15.12	32.509
	2437	ant 1	19.9	97.724
		ant 2	15.19	33.037
	2462	ant 1	19.15	82.224
		ant 2	15.74	37.497
IEEE 802.11g	2412	ant 1	24.47	279.898
		ant 2	19.4	87.096
	2437	ant 1	23.94	247.742
		ant 2	19.58	90.782
	2462	ant 1	23.17	207.491
		ant 2	19.95	98.855
IEEE 802.11n HT20	2412	ant 1	23.17	207.491
		ant 2	17.37	54.576
	2437	ant 1	22.68	185.353
		ant 2	17.61	57.677
	2462	ant 1	21.86	153.462
		ant 2	18.05	63.826
IEEE 802.11n HT40	2422	ant 1	23.02	200.447
		ant 2	17.35	54.325
	2437	ant 1	21.1	128.825
		ant 2	18.91	77.804
	2452	ant 1	20.65	116.145
		ant 2	19.12	81.658
IEEE 802.11a	5180	ant 1	17.69	58.749
		ant 2	16.15	41.210
	5200	ant 1	17.57	57.148
		ant 2	15.33	34.119
	5240	ant 1	16.59	45.604
		ant 2	15.8	38.019
	5745	ant 1	17.07	50.933
		ant 2	17.2	52.481
	5785	ant 1	16.51	44.771
		ant 2	16.92	49.204

	5825	ant 1	15.96	39.446
		ant 2	16.71	46.881
IEEE 802.11n HT20	5180	ant 1	16.13	41.020
		ant 2	14.28	26.792
	5200	ant 1	15.88	38.726
		ant 2	13.5	22.387
	5240	ant 1	14.66	29.242
		ant 2	13.89	24.491
	5745	ant 1	14.56	28.576
		ant 2	14.15	26.002
	5785	ant 1	13.71	23.496
		ant 2	13.81	24.044
	5825	ant 1	13.43	22.029
		ant 2	13.67	23.281
IEEE 802.11ac VHT20	5180	ant 1	15.81	38.107
		ant 2	13.92	24.660
	5200	ant 1	15.65	36.728
		ant 2	13.3	21.380
	5240	ant 1	14.53	28.379
		ant 2	13.77	23.823
	5745	ant 1	14.51	28.249
		ant 2	14.12	25.823
	5785	ant 1	13.52	22.491
		ant 2	13.74	23.659
	5825	ant 1	13.12	20.512
		ant 2	13.55	22.646
IEEE 802.11n HT40	5190	ant 1	15.77	37.757
		ant 2	14.11	25.763
	5230	ant 1	14.91	30.974
		ant 2	13.85	24.266
	5755	ant 1	14.16	26.062
		ant 2	13.84	24.210
	5795	ant 1	13.66	23.227
		ant 2	13.79	23.933
IEEE 802.11ac VHT40	5190	ant 1	15.66	36.813
		ant 2	13.96	24.889
	5230	ant 1	14.76	29.923
		ant 2	13.78	23.878

	5755	ant 1	14.18	26.182
		ant 2	13.93	24.717
	5795	ant 1	13.6	22.909
		ant 2	13.73	23.605
IEEE 802.11ac VHT80	5210	ant 1	15.58	36.141
		ant 2	14.57	28.642
	5775	ant 1	14.37	27.353
		ant 2	14.37	27.353

3. Calculated Result and Limit

Module NXP-88W8997-SISO

The Worst Mode	Antenna	Peak output power (dBm)	Target power (dBm)	MAX 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									
IEEE 802.11b	ant 1	20.43	20±1	12	1.72	1.486	0.0047	1	Complies
	ant 2	15.74	15±1	16	1.72	1.486	0.0118	1	Complies
IEEE 802.11g	ant 1	24.47	24±1	25	1.72	1.486	0.0935	1	Complies
	ant 2	19.95	19±1	20	1.72	1.486	0.0296	1	Complies
IEEE 802.11n HT20	ant 1	23.17	23±1	24	1.72	1.486	0.0743	1	Complies
	ant 2	18.05	18±1	19	1.72	1.486	0.0235	1	Complies
IEEE 802.11n HT40	ant 1	23.02	23±1	24	1.72	1.486	0.0743	1	Complies
	ant 2	19.12	19±1	20	1.72	1.486	0.0296	1	Complies
5G Band									
IEEE 802.11a	ant 1	17.69	17±1	18	2.57	1.807	0.0227	1	Complies
	ant 2	17.2	17±1	18	2.57	1.807	0.0227	1	Complies
IEEE 802.11n HT20	ant 1	16.13	16±1	17	2.57	1.807	0.0180	1	Complies
	ant 2	14.28	14±1	15	2.57	1.807	0.0114	1	Complies
IEEE 802.11ac VHT20	ant 1	15.81	15±1	16	2.57	1.807	0.0143	1	Complies
	ant 2	14.12	14±1	15	2.57	1.807	0.0114	1	Complies
IEEE 802.11n HT40	ant 1	15.77	15±1	16	2.57	1.807	0.0143	1	Complies
	ant 2	14.11	14±1	15	2.57	1.807	0.0114	1	Complies
IEEE 802.11ac VHT40	ant 1	15.66	15±1	16	2.57	1.807	0.0143	1	Complies
	ant 2	13.96	13±1	14	2.57	1.807	0.0090	1	Complies
IEEE 802.11ac VHT80	ant 1	15.58	15±1	16	2.57	1.807	0.0143	1	Complies
	ant 2	14.57	14±1	15	2.57	1.807	0.0114	1	Complies

Module NXP-88W8997-MIMIO

Mode	Power Density (S) (mW /cm2) Antenna 0	Power Density (S) (mW /cm2) Antenna 1	Power Density (S) (mW /cm2) Total	Limited of Power Density (S) (mW /cm2)	Test Result
2.4G Band					
IEEE 802.11n HT20	0.0743	0.0235	0.0977	1	Complies
IEEE 802.11n HT40	0.0743	0.0296	0.1038	1	Complies
5G Band					
IEEE 802.11n HT20	0.0180	0.0114	0.0294	1	Complies
IEEE 802.11ac VHT20	0.0143	0.0114	0.0257	1	Complies
IEEE 802.11n HT40	0.0143	0.0114	0.0257	1	Complies
IEEE 802.11ac VHT40	0.0143	0.0090	0.0233	1	Complies
IEEE 802.11ac VHT80	0.0143	0.0114	0.0257	1	Complies

Module NXP-88W8997+RTL8852BE

MAX Power Density (S) (mW/cm^2) **NXP-88W8997**	MAX PowerDensity (S) (mW/cm^2) **RTL8852BE**	Total Ratio	Limit Ratio	Test Result
0.1038	0.44553	0.54933	1	Complies

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

End of Test Report