

MPE Calculation for FCC Uncontrolled Environment

Formula from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

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
 R = distance to the center of radiation of the antenna



Source Based Time Averaged Duty Cycle is 100% in calculation below

All Power values are Average Power

		Cellular Technology														
Mobile Technology:		2G				3G				4G						
Mobile Band:		B02	B05	B02	B04	B05	B02	B04	B05	B10	B12	B17	B25	B26	B41	B66
Prediction frequency (MHz):		1950	880	1950	2130	880	1950	2130	880	2150	735	740	1950	880	2600	2140
Maximum output power (dBm):		42.00	42.00	43.00	42.00	42.00	42.00	41.00	41.00	41.00	41.00	41.00	42.00	41.00	40.00	42.00
Maximum output power (W):		15.85	15.85	19.95	15.85	15.85	15.85	12.59	12.59	12.59	12.59	12.59	15.85	12.59	10.00	15.85
Prediction distance (cm):		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
MPE limit at prediction frequency (W/m^2):		10.00	5.87	10.00	10.00	5.87	10.00	10.00	5.87	10.00	4.90	4.93	10.00	5.87	10.00	10.00
Power density at prediction frequency (W/m^2):		1.261	1.261	1.588	1.261	1.261	1.261	1.002	1.002	1.002	1.002	1.002	1.261	1.002	0.796	1.261
Ratio of Compliance (PD/MPE Limit)		0.13	0.21	0.16	0.13	0.21	0.13	0.10	0.17	0.10	0.20	0.20	0.13	0.17	0.08	0.13

		WiFi Module 1 FCC ID: PD98265NG Ref Intel Test Report No 160321-01.TR05				WiFi Module 2 FCC ID: RYK-WUBR508N REF MRT Test Report No 2005RSU029-U3	
		WiFi 2.4	WiFi 5G	BT	BLE	WiFi 2.4	WiFi 5G
Prediction frequency (MHz):		2400	5500	2400	2400	2400	5500
Maximum output power (dBm):		20.30	20.30	10.40	3.61	19.00	18.50
Maximum output power (W):		0.11	0.107	0.011	0.002	0.079	0.071
Prediction distance (cm):		20	20	20	20	20	20
MPE limit at prediction frequency (W/m^2):		10.00	10.00	10.00	10.00	10.00	10.00
Power density at prediction frequency (W/m^2):		0.213	0.213	0.022	0.005	0.158	0.141
Ratio of Compliance (PD/MPE Limit)		0.021	0.021	0.002	0.000	0.016	0.014

Worst Case:

2G B05 and 3G B05: 0.215
 Module 1 WiFi 2.4 or 5 GHz: 0.021
 Module 2 WiFi 2.4 GHz: 0.016

Calculation assumes antenna is kept at least 100 cm away from any persons
 Calculation assumes antenna is kept at least 20 cm away from any persons

Total Ratio of Compliance: 0.252

Requirement: Total Ratio of Compliance must be Less than 1

Verdict: Pass