

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				WiFi Module 2		
	FCC ID: PD98265NG				FCC ID: RYK-WUBR508N		
	Ref Intel Test Report No 160321-01.TR05				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

Total Ratio of Compliance: 0.252**Requirement: Total Ratio of Compliance must be Less than 1****Verdict: Pass**

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