



FCC RF EXPOSURE REPORT

EUT	Promethean WiFi Module (Nickel/Cobalt)
FCC ID	QAM-AP-WIFI-A
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A

TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

- Where E = Field strength in Volts / meter
- P = Power in Watts
- G = Numeric antenna gain
- d = Distance in meters
- S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770d^2}$$

Changing to units of mW and cm, using:

$P (mW) = P (W) / 1000$ and
 $d (cm) = d(m) / 100$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

- Where d = Distance in cm
- P = Power in mW
- G = Numeric antenna gain
- S = Power density in mW / cm²

**Maximum Permissible Exposure**

Modulation Mode	Frequency band (MHz)	Peak output power(dBm)	Peak output power(mW)	Antenna Gain (dBi)	Antenna gain (Numeric)	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
802.11b	2412-2462	16.81	47.97334486	2	1.58	20	0.015130493	1
802.11g	2412-2462	24.13	258.8212915	2	1.58	20	0.081630616	1
802.11n HT20	2412-2462	24.93	311.1716337	2	1.58	20	0.098141587	1
802.11n HT40	2422-2452	24.00	251.1886432	2	1.58	20	0.079223327	1
802.11a	5180-5240	11.41	13.83566379	2	1.5848932	20	0.004363682	1
802.11an HT20	5180-5240	11.89	15.4525444	2	1.5848932	20	0.004873636	1
802.11an HT40	5190-5230	11.17	13.09181923	2	1.5848932	20	0.004129078	1
802.11ac VHT20	5180-5240	11.97	15.73982864	2	1.5848932	20	0.004964244	1
802.11ac VHT40	5190-5230	10.01	10.02305238	2	1.5848932	20	0.003161208	1
802.11ac VHT80	5210	9.55	9.015711376	2	1.5848932	20	0.002843499	1
802.11a	5260-5320	11.65	14.62177174	2	1.5848932	20	0.004611615	1
802.11an HT20	5260-5320	11.88	15.41700453	2	1.5848932	20	0.004862427	1
802.11an HT40	5270-5310	10.65	11.61448614	2	1.5848932	20	0.003663136	1
802.11ac VHT20	5260-5320	11.91	15.5238701	2	1.5848932	20	0.004896132	1
802.11ac VHT40	5270-5310	10.72	11.80320636	2	1.5848932	20	0.003722657	1
802.11ac VHT80	5290	8.95	7.852356346	2	1.5848932	20	0.002476584	1
802.11a	5500-5700	11.62	14.52111618	2	1.5848932	20	0.004579869	1
802.11an HT20	5500-5700	12.13	16.33051948	2	1.5848932	20	0.005150544	1
802.11an HT40	5510-5670	10.41	10.99005839	2	1.5848932	20	0.003466196	1
802.11ac VHT20	5500-5700	12.24	16.74942876	2	1.5848932	20	0.005282665	1
802.11ac VHT40	5510-5670	10.44	11.06623784	2	1.5848932	20	0.003490222	1
802.11ac VHT80	5530	10.04	10.09252886	2	1.5848932	20	0.00318312	1
802.11a	5745-5825	12.79	19.0107828	2	1.5848932	20	0.005995882	1
802.11an HT20	5745-5825	12.55	17.98870915	2	1.5848932	20	0.005673526	1
802.11an HT40	5755-5795	12.99	19.90673339	2	1.5848932	20	0.006278459	1
802.11ac VHT20	5745-5825	12.54	17.94733627	2	1.5848932	20	0.005660478	1
802.11ac VHT40	5755-5795	12.58	18.11340093	2	1.5848932	20	0.005712853	1
802.11ac VHT80	5775	13.87	24.37810818	2	1.5848932	20	0.007688703	1

Maximum Permissible Exposure (Co-location)

Modulation Mode	Frequency band (MHz)	Peak output power(dBm)	Peak output power(mW)	Antenna Gain (dBi)	Antenna gain (Numeric)	Distance (cm)	Power density (mW/cm ²)
802.11n HT40	2412-2462	24.93	311.1716337	2	1.58	20	0.098141587
802.11ac VHT80	5725-5850	13.87	24.37810818	2	1.58	20	0.007688703
Co-location Total							0.10583029
Maximum Permissible Exposure Limit							1