



**9. RF EXPOSURE TEST**

**9.1 APPLIED PROCEDURES / LIMIT**

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 levels 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 0.2 m normally can be maintained between the user and the device.

(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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> 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
1500-100,000			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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> 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
1500-100,000			1.0	30

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

**9.1.1 MEASUREMENT INSTRUMENTS LIST**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	Feb. 10, 2011
2	Power Meter Sensor	Anritsu	MA2491A	34138	Feb. 10, 2011

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

**9.1.2 MPE CALCULATION METHOD**

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

- 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

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

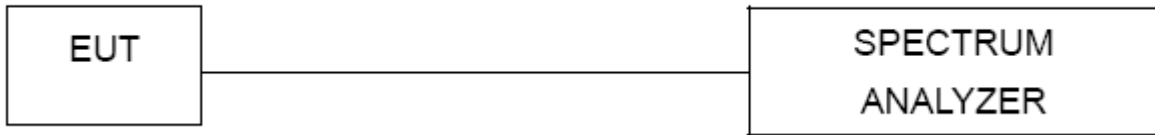
From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained



**9.1.3 DEVIATION FROM STANDARD**

No deviation.

**9.1.4 TEST SETUP**



**9.1.5 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



**9.1.6 TEST RESULTS**

EUT :	RF Module	Model Name :	J20H049
Temperature :	13°C	Relative Humidity :	64%
Test Voltage :	AC 120V/60Hz (System)		
Test Mode :	802.11b (APM6P-700096)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )
2412	2.99	1.9907	19.6200	91.6220	0.036304	1
2437	2.99	1.9907	19.9000	97.7237	0.038721	1
2462	2.99	1.9907	19.8200	95.9401	0.38015	1

EUT :	RF Module	Model Name :	J20H049
Temperature :	13°C	Relative Humidity :	64%
Test Voltage :	AC 120V/60Hz (System)		
Test Mode :	802.11g (APM6P-700096)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )
2412	2.99	1.9907	25.1800	329.6097	0.130602	1
2437	2.99	1.9907	25.0800	322.1069	0.127629	1
2462	2.99	1.9907	25.3200	340.4082	0.134881	1

EUT :	RF Module	Model Name :	J20H049
Temperature :	13°C	Relative Humidity :	64%
Test Voltage :	AC 120V/60Hz (System)		
Test Mode :	802.11n HT20 Single TX (APM6P-700096)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )
2412	2.99	1.9907	24.9200	310.4560	0.123013	1
2437	2.99	1.9907	25.0800	322.1069	0.127629	1
2462	2.99	1.9907	24.0800	255.8586	0.101380	1



EUT :	RF Module	Model Name :	J20H049
Temperature :	13°C	Relative Humidity :	64%
Test Voltage :	AC 120V/60Hz (System)		
Test Mode :	802.11b (WDAN-1PA92101-1F)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )
2412	2.52	1.7865	19.6200	91.6220	0.032580	1
2437	2.52	1.7865	19.9000	97.7237	0.034750	1
2462	2.52	1.7865	19.8200	95.9401	0.034115	1

EUT :	RF Module	Model Name :	J20H049
Temperature :	13°C	Relative Humidity :	64%
Test Voltage :	AC 120V/60Hz (System)		
Test Mode :	802.11g (WDAN-1PA92101-1F)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )
2412	2.52	1.7865	25.1800	329.6097	0.117206	1
2437	2.52	1.7865	25.0800	322.1069	0.114538	1
2462	2.52	1.7865	25.3200	340.4082	0.121046	1

EUT :	RF Module	Model Name :	J20H049
Temperature :	13°C	Relative Humidity :	64%
Test Voltage :	AC 120V/60Hz (System)		
Test Mode :	802.11n HT20 Single TX (WDAN-1PA92101-1F)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )
2412	2.52	1.7865	24.9200	310.4560	0.110395	1
2437	2.52	1.7865	25.0800	322.1069	0.114538	1
2462	2.52	1.7865	24.0800	255.8586	0.090981	1