

11.MPE ESTIMATION

11.1.Limit for General Population/ Uncontrolled Exposures

Frequency	Power density (mW/ cm ²)	Averaging time(minutes)
300MHz----1.5GHz	F/1500	30
1.5GHz---100GHz	1.0	30

Frequency(MHz)	Power density (mW/ cm ²)	Averaging time(minutes)
2412	1	30
2437	1	30
2462	1	30

Note: F= Frequency in MHz

11.2. Estimation Result

EUT: A8-Ein Super WiFi Base Station		
M/N: WA8011N		
Test date: 2012-11-25	Pressure: 101.4±1.0 kpa	Humidity: 55.6±3.0%
Tested by: Leo-Li	Test site: RF Site	Temperature : 22.4±0.6 °C

2.4GHz

Cable loss: 1 dB		Attenuator loss: 20 dB				Antenna Gain: 19 dBi	
Test Mode	CH	Frequency (MHz)	Peak Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (Linear)	MPE
11b	CH1	2412	16.08	40.55	19	79.43	0.6411
	CH6	2437	16.14	41.11	19	79.43	0.6501
	CH11	2462	16.08	40.55	19	79.43	0.6411
11g	CH1	2412	16.14	41.11	19	79.43	0.6501
	CH6	2437	16.17	41.40	19	79.43	0.6546
	CH11	2462	16.16	41.30	19	79.43	0.6531
11n HT20	CH1	2412	16.01	39.90	19	79.43	0.6309
	CH6	2437	16.12	40.93	19	79.43	0.6471
	CH11	2462	16.16	41.30	19	79.43	0.6531
11n HT40	CH1	2422	16.26	42.27	19	79.43	0.6683
	CH4	2437	16.45	44.16	19	79.43	0.6982
	CH7	2452	16.29	42.56	19	79.43	0.6729

5.8GHz

Cable loss: 1 dB		Attenuator loss: 20 dB				Antenna Gain: 20 dBi	
Test Mode	CH	Frequency (MHz)	Peak Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (Linear)	MPE
11a	CH149	5745	15.05	31.99	20	100.00	0.6367
	CH157	5785	15.96	39.45	20	100.00	0.7851
	CH165	5825	15.98	39.63	20	100.00	0.7888
11n HT20	CH149	5745	14.66	29.24	20	100.00	0.5820
	CH157	5785	14.68	29.38	20	100.00	0.5847
	CH165	5825	14.64	29.11	20	100.00	0.5794
11n HT40	CH151	5755	15.02	31.77	20	100.00	0.6323
	CH155	5775	15.07	32.14	20	100.00	0.6397
	CH159	5795	15.05	31.99	20	100.00	0.6367

11.3.This device have 2.4GHz and 5.8GHz frequency band,and those two band can work simultaneously,so need to do MPE Evaluation to the condition that 2.4GHz and 5.8GHz work simultaneously.

11.4.RF exposure limit

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
(A) Limits for Occupational / Control Exposures				
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				
30-300	27.5	0.073	0.2	30
300-1500	-	-	F/1500	30
1500-100,000	-	-	1.0	30

F= Frequency in MHz

11.5. RF exposure calculations

Power density (S) is calculated by the following formula:

$$S = (P * G) / 4\pi R^2$$

where, S = Power density (mW/cm²)

P = Output power to antenna (mW)

R = Distance between radiating structure and observation point (cm)

G = Gain of antenna in numeric

$\pi = 3.1416$

11.6. Test result

Antenna No.		Total	1	2	3	4	5	6
Tx Status			On	On	Off	Off	Off	Off
Frequency	MHz		2450	5825	1900	2450	2450	5800
MPE Limit	mW/cm ²		1.00	1.00	0.00	0.00	0.00	0.00
Max % MPE	%	142.1	69.5	79.6	0.0	0.0	0.0	0.0
Power	(W)	0.084	0.044	0.040	0.000	0.000	0.000	0.000
Antenna Gain	dBi		19.00	20.00	3.00	1.50	0.50	1.00
EIRP	(W)	7.50	3.495	4.000	0.000	0.000	0.000	0.000
X	(cm)		-3.0	-9.0	9.0	4.0	-8.0	8.0
Y	(cm)		16.0	11.0	11.0	0.0	0.0	0.0
Sector			FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Arc			FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
θ_1	degs	input	-120	-120	-120	-120	-120	-120
θ_2			60	60	60	60	60	60
θ_1	degs	actual	-120	-120	-120	-120	-120	-120
θ_2			60	60	60	60	60	60

% MPE Contour

