

RF Exposure Report

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Test Model: C6220

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Release Control Record

Issue No.	Description	Date Issued
SA161017C17	Original release.	Nov. 23, 2016

2 RF Exposure

2.1 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)
Limits For General Population / Uncontrolled Exposure				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.

So, this device is classified as **Mobile Device**.

Antenna No.	Brand	Model	Antenna Gain(dBi)	Frequency range	Antenna connector	Antenna Type
ant_1	NA	NA	1.67	2.4~2.4835GHz	R-SMA	Dipole
			2.26	5.15~5.25GHz		
			2.41	5.725~5.85GHz		
ant_2	NA	NA	2.46	2.4~2.4835GH	R-SMA	Dipole
			3.69	5.15~5.25GHz		
			3.73	5.725~5.85GHz		

2.4 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	355.656	5.08	20	0.22791	1
5180-5240	563.676	6.01	20	0.11214	1
5745-5825	709.626	6.11	20	0.57645	1

NOTE: This power include tune-up tolerance range that specified in C6220 Tune Up power table

NOTE:

2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 5.08\text{dBi}$

5GHz:

UNII-1: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.01\text{dBi}$

UNII-3: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.11\text{dBi}$

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$WLAN\ 2.4GHz + WLAN\ 5GHz = 0.22791 / 1 + 0.57645 / 1 = 0.80436$

Therefore the maximum calculations of above situations are less than the "1" limit.

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