RADIO FREQUENCY EXPOSURE

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 of the Commission's guidelines. See §15.247(b)(4) and §1.1307(b)(1) of this chapter.

Conducted Power Results

WIFI

Antenna	Mode	Frequency(MHz)	AVG Conducted Output Power (dBm)
Antenna 0	IEEE 802.11b	2412	17.73
		2437	19.13
		2462	17.50
Antenna 1		2412	17.81
		2437	18.65
		2462	16.53
Antenna 0	IEEE 802.11g	2412	14.38
		2437	19.58
		2462	13.13
Antenna 1		2412	15.44
		2437	19.78
		2462	14.34
Antenna 0	IEEE 802.11n HT20	2412	13.82
		2437	19.26
		2462	13.72
Antenna 1		2412	13.26
		2437	19.42
		2462	13.32
Antenna 0	IEEE 802.11n HT40	2422	12.73
		2437	19.43
		2452	13.26
Antenna 1		2422	12.15
		2437	19.27
		2452	12.81

Manufacturing tolerance

WIFI

IEEE 802.11b (Peak)				
Frequency (MHz)		2412	2437	2462
Antenna 0	Target (dBm)	17.0	19.0	17.0
Antenna 1		17.0	18.0	16.0
Tolerance ±(dB)		1.0	1.0	1.0
IEEE 802.11g (Peak)				
Frequency (MHz)		2412	2437	2462
Antenna 0	Target (dBm)	14.0	19.0	13.0
Antenna 1		15.0	19.0	14.0
Tolerance ±(dB)		1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)				
Frequency (MHz)		2412	2437	2462
Antenna 0	Target (dBm)	13.0	19.0	13.0
Antenna 1		13.0	19.0	13.0
Tolerance ±(dB)		1.0	1.0	1.0
IEEE 802.11n HT40 (Peak)				
Frequency (MHz)		2422	2437	2452
Antenna 0	Target (dBm)	12.0	19.0	13.0
Antenna 1		12.0	19.0	12.0
Tolerance ±(dB)		1.0	1.0	1.0

EUT Specification

EUT	300Mbps Wireless N DOCSIS 3.0 Cable Modem Router
Frequency band (Operating)	☒ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5825GHz ☐ Bluetooth: 2.402GHz~ 2.480GHz ☐ Others _
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others _____
Exposure classification	☐ Occupational/Controlled exposure *(S = 5mW/cm^2)* ☒ General Population/Uncontrolled exposure *(S=1mW/cm^2)*
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☒ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	22.36dBm (172.19mW)
Antenna gain (Max)	2.0dBi (Numeric gain:1.58)
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation

Note:

1. *The maximum output power(including turn tolerance) is22.36dBm (172.19mW) and maximum antenna gain is 2.0dBi*
2. *For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20 cm, even if the calculations indicate that the MPE distance would be lesser.*

TEST RESULT

No non-compliance noted.

Calculation

Given $S = \frac{P \times G}{4\Pi d^2}$ ***Equation 1***

Where d = *distance in cm*

P = *Power in mW*

G = *Numeric antenna gain*

S = *Power Density in* mW / cm^2

Maximum Permissible Exposure

EUT Output Power=172.19mW

Numeric antenna gain=1.58

Substituting the MPE safe distance using d=20 cm into ***Equation 1*** :

Fields

The power density $S = 172.19 \times 1.58 / (4\Pi \times 400)\ cm^2 = 0.05412 mW/cm^2$

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW / cm^2 even if the calculation indicates that the power density would be larger.)