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RF EXPOSURE REPORT

For

MT7620 WIFI Module

Model: IWM-7620

Trade Name: ORing

Issued for

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Revision History

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1. LIMIT

According to §15.247(i), 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 § 1.1307(b)(1) of this chapter.

2. EUT SPECIFICATION

EUT	MT7620 WIFI Module
Model	IWM-7620
Frequency band (Operating)	☒ 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 802.11n HT40: 2.422GHz ~ 2.452GHz ☐ 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 Specification	Antenna 1 2.4GHz: Antenna 0 / Chain 0 Gain 4.00 dBi (Numeric gain 2.51) 2.4GHz: Antenna 1 / Chain 1 Gain 4.00 dBi (Numeric gain 2.51) Antenna 2: 2.4GHz: Antenna 0 / Chain 0 Gain 3.00 dBi (Numeric gain 2.00) 2.4GHz: Antenna 1 / Chain 1 Gain 3.00 dBi (Numeric gain 2.00) Antenna 3: 2.4GHz: Antenna 0 / Chain 0 Gain 2.00 dBi (Numeric gain 1.58) 2.4GHz: Antenna 1 / Chain 1 Gain 2.00 dBi (Numeric gain 1.58)
Maximum Average output power	IEEE 802.11b Mode: 23.54 dBm (225.944 mW) IEEE 802.11g Mode: 26.36 dBm (432.514 mW) IEEE 802.11n HT 20 Mode: 25.66 dBm (368.129 mW) IEEE 802.11n HT 40 Mode: 24.00 dBm (251.189 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

3. TEST RESULTS

No non-compliance noted.

Calculation

$$\text{Given } E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{377}$$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in watts / meter

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

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

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \textbf{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

4. MAXIMUM PERMISSIBLE EXPOSURE

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

$$S = 0.000199 \times P \times G$$

Where

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

IEEE 802.11b mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
2412	225.944	2.51	20	0.1129	1

IEEE 802.11g mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
2437	432.514	2.51	20	0.2160	1

IEEE 802.11n HT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
2437	368.129	2.51	20	0.1839	1

IEEE 802.11n HT40 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
2437	251.189	2.51	20	0.1255	1