APPENDIX I
RADIO FREQUENCY EXPOSURE

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.

EUT Specification

EUT	3G/4G Dual Band AC WiFi Router		
Model	4GM3W-01		
Brand	NetComm Wireless		
RF Module	MediaTek	**Model:**	2.4G: MT7620A 5G: MT7610EN
Frequency band (Operating)	☒ 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 802.11n HT40: 2.422GHz ~ 2.452GHz ☒ 802.11a, 802.11n HT20 : 5180MHz ~ 5240MHz; 5745 ~ 5825MHz 802.11n HT40 : 5190MHz ~ 5230MHz; 5755 ~ 5795MHz 802.11ac VHT80 : 5210MHz; 5755MHz ☐ 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 Gain 2.4GHz	1.5 dBi	(Numeric gain: 1.41)
	Antenna Gain 5GHz	2.0 dBi	(Numeric gain: 1.58)
Maximum Average output power	IEEE 802.11b Mode :	19.07 dBm	(80.724 mW)
	IEEE 802.11g Mode :	21.80 dBm	(151.356 mW)
	IEEE 802.11n HT20 Mode :	22.54 dBm	(179.473 mW)
	IEEE 802.11n HT40 Mode :	22.19 dBm	(165.577 mW)
	IEEE 802.11a Mode :	17.09 dBm	(51.168 mW)
	IEEE 802.11n HT20 Mode:	17.05 dBm	(50.699 mW)
	IEEE 802.11n HT40 Mode:	13.48 dBm	(22.284 mW)
	IEEE 802.11AC HT80 Mode:	12.62 dBm	(18.281 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A		

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June	Initial Issue	ALL	Sunny Chang

TEST RESULTS

No non-compliance noted.

Calculation

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

Where E = Field strength in Volts / meter
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power density in milliwatts / square centimeter

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

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

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

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

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 / cm^2

IEEE 802.11b mode:

IEEE 802.11b Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
6	2437	80.724	1.41	20	0.0227	1	Pass

IEEE 802.11g Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
6	2437	151.356	1.41	20	0.0425	1	Pass

IEEE 802.11n HT 20 Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
1	2452	179.473	2.83	20	0.1009	1	Pass

IEEE 802.11n HT 40 Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
9	2452	165.577	2.83	20	0.0931	1	Pass

IEEE 802.11a Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
149	5745	51.168	1.58	20	0.0161	1	Pass

IEEE 802.11n HT20 Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
149	5745	50.699	1.58	20	0.0160	1	Pass

IEEE 802.11n HT40 Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
151	5755	22.284	1.58	20	0.0070	1	Pass

IEEE 802.11AC HT80 Mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
155	5775	18.281	1.58	20	0.0058	1	Pass