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	2.4G AP PCBA
Model	CWFB122
Serial Model Numbers	CWFB122-01/ CWFB122-02/ CWFB122-03/ CWFB122-04/ CWFB122-05/ CWFB122-06/ CWFB122-07/ CWFB122-08/ CWFB122-09/ CWFB122-10/ CWFB122-S/ CWFB122-S01/ CWFB122-S02/ CWFB122-S03/ CWFB122-S04/ CWFB122-S05/ CWFB122-S06/ CWFB122-S07/ CWFB122-S08/ CWFB122-S09/ CWFB122-S10/ CWFB123/ CWFB123-01/ CWFB123-02/ CWFB123-03/ CWFB123-04/ CWFB123-05/ CWFB123-06/ CWFB123-07/ CWFB123-08/ CWFB123-09/ CWFB123-10/ CWFB125/ CWFB125-01/ CWFB125-02/ CWFB125-03/ CWFB125-04/ CWFB125-05/ CWFB125-06/ CWFB125-07/ CWFB125-08/ CWFB125-09/ CWFB125-10/ CWFB125-S
Model Discrepancy	Marketing Purpose
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	Dipole Antenna / Gain: 2dBi (Numeric gain: 1.58) PCB Antenna / Gain: 2.5dBi (Numeric gain: 1.78)
Max. output power	IEEE 802.11b : 15.68 dBm (36.982mW) IEEE 802.11g : 15.47 dBm (35.237mW) IEEE 802.11n HT20 : 14.03 dBm (25.293mW) IEEE 802.11n HT40 : 12.64 dBm (18.365mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A
Remark: *The maximum output power is 15.68dBm (36.982mW) at 2412MHz (with 1.78 numeric antenna gain.)*	

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.b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
1	2412	36.982	1.78	20	0.0131	1

IEEE 802.g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
6	2437	35.237	1.78	20	0.0125	1

IEEE 802.n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
6	2437	25.293	1.78	20	0.0090	1

IEEE 802.n HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
6	2437	18.365	1.78	20	0.0065	1