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	Wireless Network Camera
Model	iCamera2xxxxxxxx(The "x" in model name can be 0 to 9, A to Z, blank or "-" , for marking purpose)
Model Discrepancy	All the specification and layout are identical except they come with different model numbers for marketing purposes.
Frequency band (Operating)	☒ 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 　 802.11n HT40: 2.422GHz ~ 2.452GHz 　 802.11a: 5150 ~ 5250MHz / 5725 ~ 5850MHz 　 802.11 HT20: 5150 ~ 5250MHz / 5725 ~ 5850MHz 　 802.11 HT40: 5150 ~ 5250MHz / 5725 ~ 5850MHz 　 802.11AC HT80: 5170 ~ 5330 MHZ / 5490 ~ 5815 MHZ ☐ 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 :　　2.02 dBi　(Numeric gain 1.59)
Maximum Average output power	IEEE 802.11b Mode:　　　　18.10 dBm　(64.565 mW) IEEE 802.11g Mode:　　　　16.26 dBm　(42.267 mW) IEEE 802.11n HT 20 Mode 18.17 dBm　(65.615 mW) IEEE 802.11n HT 40 Mode 18.13 dBm　(65.013 mW)
Maximum Tune up Power	IEEE 802.11b Mode:　　　　19.50 dBm　(89.125 mW) IEEE 802.11g Mode:　　　　17.50 dBm　(56.234 mW) IEEE 802.11n HT 20 Mode 19.50 dBm　(89.125 mW) IEEE 802.11n HT 40 Mode 19.50 dBm　(89.125 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2014/09/29	Initial Issue	ALL	Doris Chu

TEST RESULTS

No non-compliance noted.

Calculation

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

  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:

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

Changing to units of mW and cm, using:

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

  d (cm) = d(m) / 100

Yields

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

  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:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
6	2437	89.125	1.59	20	0.0282	1

IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
6	2437	56.234	1.59	20	0.0178	1

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
6	2442	89.125	1.59	20	0.0282	1

IEEE 802.11n HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
1	2422	89.125	1.59	20	0.0282	1