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	HD Wirless N 360° Home Network Camera
Model	DCS-6010L
RF Module	Realtek Model: RT8188CUS
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	2.4GHz: Antenna Gain : 2.40 dBi (Numeric gain 1.74)
Maximum Average output power	IEEE 802.11b Mode: 13.72 dBm (23.55 mW) IEEE 802.11g Mode: 19.96 dBm (99.08 mW) IEEE 802.11n HT 20 Mode 20.21 dBm (104.95 mW) IEEE 802.11n HT 40 Mode 19.56 dBm (90.36 mW)
Maximum Tune up Power	IEEE 802.11b Mode: 13.72 dBm (23.55 mW) IEEE 802.11g Mode: 19.96 dBm (99.08 mW) IEEE 802.11n HT 20 Mode 20.21 dBm (104.95 mW) IEEE 802.11n HT 40 Mode 19.56 dBm (90.36 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2014/11/16	Initial Issue	ALL	Angel Cheng

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Rev.00

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TEST RESULTS

No non-compliance noted.

Calculation

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

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:

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

Changing to units of mW and cm, using:

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

   d (cm) = d(m) / 100

Yields

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

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	23.55	1.74	20	0.0082	1

IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
11	2462	99.08	1.74	20	0.0343	1

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
11	2462	104.95	1.74	20	0.0363	1

IEEE 802.11n HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
6	2437	90.36	1.74	20	0.0313	1