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	WIFI Network Camera
Model	DCS-7000L
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	5GHz:　　Antenna Gain :　　3.97 dBi　(Numeric gain: 2.49) 2.4GHz:　Antenna Gain :　　2.28 dBi　(Numeric gain: 1.69)
Maximum Average output power	IEEE 802.11b Mode:　　　　12.35 dBm　(17.179 mW) IEEE 802.11g Mode:　　　　14.53 dBm　(28.379 mW) IEEE 802.11n HT 20 Mode: 13.84 dBm　(24.210 mW) IEEE 802.11n HT 40 Mode: 14.13 dBm　(25.882 mW) IEEE 802.11a Mode:　　　　17.56 dBm　(57.016 mW) IEEE 802.11n HT20 Mode:　16.73 dBm　(47.098 mW) IEEE 802.11n HT40 Mode:　16.12 dBm　(40.926 mW) IEEE 802.11ac HT80 Mode: 15.70 dBm　(37.154 mW)

Maximum Tune up Power	IEEE 802.11b Mode: 14.00 dBm (25.119 mW) IEEE 802.11g Mode: 16.00 dBm (39.811 mW) IEEE 802.11n HT 20 Mode: 14.50 dBm (28.184 mW) IEEE 802.11n HT 40 Mode: 14.50 dBm (28.184 mW) IEEE 802.11a Mode: 18.00 dBm (63.096 mW) IEEE 802.11n HT20 Mode: 18.00 dBm (63.096 mW) IEEE 802.11n HT40 Mode: 16.50 dBm (44.668 mW) IEEE 802.11ac HT80 Mode: 16.50 dBm (44.668 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

Page 2   Rev.00

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2014/09/22	Initial Issue	ALL	Angel Cheng

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:

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

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

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

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:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
1	2412	25.119	1.69	20	0.0084	1

IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
6	2437	39.811	1.69	20	0.0134	1

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
11	2462	28.184	1.69	20	0.0095	1

IEEE 802.11n HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
6	2437	28.184	1.69	20	0.0095	1

IEEE 802.11a mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
165	5825	63.096	2.49	20	0.0313	1

IEEE 802.11a HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
165	5825	63.096	2.49	20	0.0313	1

IEEE 802.11a HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
159	5795	44.668	2.49	20	0.0221	1

IEEE 802.11ac mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
155	5775	44.668	2.49	20	0.0221	1

Page 5   Rev.00

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.