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 Pan & Tilt Wi-Fi Day/Night Camera
Model	DCS-5030L,DCS-5030LA1
Data Applies To	DCS-5025L,DCS-5025LA1
Frequency band (Operating)	☒ 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz ☐ 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 : 1.91 dBi (Numeric gain 1.55)
Maximum Average output power	IEEE 802.11b Mode: 22.59 dBm (181.552 mW) IEEE 802.11g Mode: 26.05 dBm (402.717 mW) IEEE 802.11n HT 20 Mode: 25.83 dBm (382.825 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

The difference of the series model

Model Number	Product Name	Trade Name	Difference
DCS-5030L,DCS-5030LA1	HD Pan & Tilt Wi-Fi Day/Night Camera	D-Link	With SD Card
DCS-5025L,DCS-5025LA1	HD Pan, Tilt & Zoom Wi-Fi Camera		Without SD Card

Remark : *1.The model DCS-5030L,DCS-5030LA1 was considered the main model for testing.*
2. The only difference between DCS-5030L & DCS-5030LA1 is the market segmentation.
3. The only difference between DCS-5025L & DCS-5025LA1 is the market segmentation.

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	04/21/2015	Initial Issue	ALL	Michelle Chiu

TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

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:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

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

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ ***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:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
2412~2462	181.552	1.55	20	0.0560	1

IEEE 802.11g mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
2412~2462	402.717	1.55	20	0.1242	1

IEEE 802.11n HT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
2412~2462	382.825	1.55	20	0.1181	1