

RF Exposure Evaluation Declaration

Product Name : Full HD Ultra-Wide View Wi-Fi Camera
Model No. : DCS-2630L, DCS-2630LH
FCC ID. : KA2CS2630LA1

Applicant : D-Link Corporation

Address : No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114,
Taiwan, R.O.C.

Tested : 2015/07/09~2015/07/23

Date of Declaration : 2015/07/27

Report No. : 1570078R-RF-US-Exp

Report Version : V1.0



The declaration results relate only to the samples calculated.

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1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	Full HD Ultra-Wide View Wi-Fi Camera
Test Mode	Transmit
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 3.91dBi or 2.46 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11b (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	22.5424	0.01103
6	2437	15.7036	0.00769
11	2462	56.4937	0.02765

IEEE 802.11g (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	43.4510	0.02126
6	2437	42.6580	0.02088
11	2462	43.3511	0.02122

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm².

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Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (20MHz) ANT 0			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	39.5367	0.01935
6	2437	41.6869	0.02040
11	2462	41.2098	0.02017

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm².

IEEE 802.11n (40MHz) ANT 0			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
3	2422	23.3884	0.01145
6	2437	33.0370	0.01617
9	2452	28.8403	0.01411

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Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 4.5dBi or 2.82 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11a (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180	5.9020	0.00331
44	5220	6.1235	0.00344
48	5240	6.9024	0.00387

IEEE 802.11n(20MHz) (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180	5.7016	0.00320
44	5220	6.1518	0.00345
48	5240	6.0534	0.00340

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IEEE 802.11n(40MHz)(ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
38	5190	5.7544	0.00323
46	5230	6.2951	0.00353

IEEE 802.11ac(80MHz)(ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
42	5210	6.4863	0.00364

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IEEE 802.11a (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
52	5260	6.5464	0.00367
60	5300	6.5766	0.00369
64	5320	6.4269	0.00361

IEEE 802.11n(20MHz) (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
52	5260	6.7143	0.00377
60	5300	6.6374	0.00372
64	5320	6.5163	0.00366

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WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
54	5270	6.3387	0.00356
62	5310	6.4121	0.00360

IEEE 802.11ac(80MHz)(ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
58	5290	6.8865	0.00386

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WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
100	5500	8.0910	0.00454
116	5580	8.5310	0.00479
140	5700	10.6660	0.00598

IEEE 802.11n(20MHz) (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
100	5500	8.1283	0.00456
116	5580	8.3946	0.00471
140	5700	10.2565	0.00575

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WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
102	5510	7.9799	0.00448
134	5670	9.1833	0.00515

IEEE 802.11ac(80MHz)(ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
106	5530	9.1411	0.00513
122	5610	9.0365	0.00543

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WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745	11.8577	0.00665
157	5785	11.9674	0.00671
165	5825	12.1339	0.00681

IEEE 802.11n(20MHz) (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745	11.7220	0.00658
157	5785	11.8304	0.00664
165	5825	11.6950	0.00656

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WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
151	5755	11.2460	0.00631
159	5795	12.0226	0.00674

IEEE 802.11ac(80MHz)(ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
155	5775	12.7938	0.00718

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