

FCC Part 15B

Measurement and Test Report

For

ShenZhen Foscam Intelligent Technology Co., Ltd.

Room A,9/F,Block F5, TCL International E City, No. 1001

Zhongshanyuan Road, Xili Shenzhen, China

FCC ID: ZDE-C1

FCC Rule(s): FCC Part 15 Subpart B

Product Description: FHD Wireless IP Camera

Tested Model: C1

Report No.: STRD1706014I-2

Tested Date: 2017-06-06 to 2017-06-29

Issued Date: 2017-06-29

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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: ShenZhen Foscam Intelligent Technology Co., Ltd.
Address of applicant: Room A,9/F,Block F5, TCL International E City, No. 1001 Zhongshanyuan Road, Xili Shenzhen, China

Manufacturer: ShenZhen Foscam Intelligent Technology Co., Ltd.
Address of manufacturer: Room A,9/F,Block F5, TCL International E City, No. 1001 Zhongshanyuan Road, Xili Shenzhen, China

General Description of EUT	
Product Name:	FHD Wireless IP Camera
Trade Name:	FOSCAM
Model No.:	C1
Adding Model(s):	IQ, FC1406P, EH8115, FI9809P, FI9809W, C1S, FC1405P,FC1405PC, FC1406P, EH8105, C1E, C1 Lite, IQ Lite, C1 Plus, IQ Plus, C1 V2, C1 Lite V2, C1 Plus V2
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model C1, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V
Rated Current:	/
Rated Power:	/
Power Adapter #1:	SAW06B-050-10000
	Input: 100-240V 50/60HZ 0.3A, Output: 5V 1000mA
Power Adapter #2:	FP01030
	Input: 100-240V 50/60HZ 0.3A, Output: 5V 2.0A
Highest Internal Frequency:	440MHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the ShenZhen Foscam Intelligent Technology Co., Ltd. in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Working	Test with adaptor & router

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Adaptor 1	Szyingyuan	SAW06B-050-1000U	
Adaptor 2	FOSCAM	SAW06B-050-1000U	
Wireless router	/	/	

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.0	Unshielded	Without Ferrite

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2017-06-12	2018-06-11
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2017-06-12	2018-06-11
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2017-06-12	2018-06-11
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2017-06-12	2018-06-11
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2017-06-12	2018-06-11
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-12	2018-06-11
SEMT-1042	Horn Antenna	ETS	3117	00086197	2017-06-12	2018-06-11
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-12	2018-06-11
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2017-06-12	2018-06-11
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2017-06-12	2018-06-11
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2017-06-12	2018-06-11

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 (a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

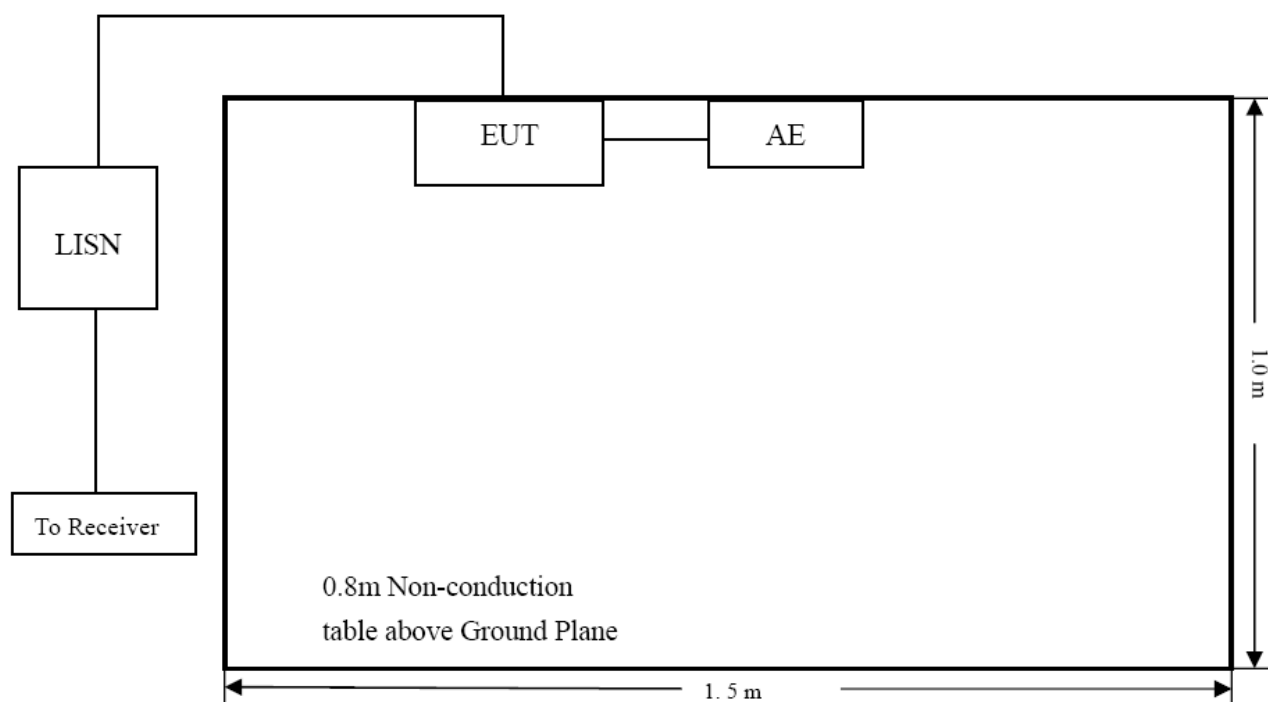
N/A: not applicable

3. Conducted Emissions

3.1 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.4 Summary of Test Results/Plots

According to the data in section 3.5, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

-6.66 dB at 0.4220 MHz in the Line, QP detector, Power Adapter #1, 0.15-30MHz

3.5 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

Power Adapter #1

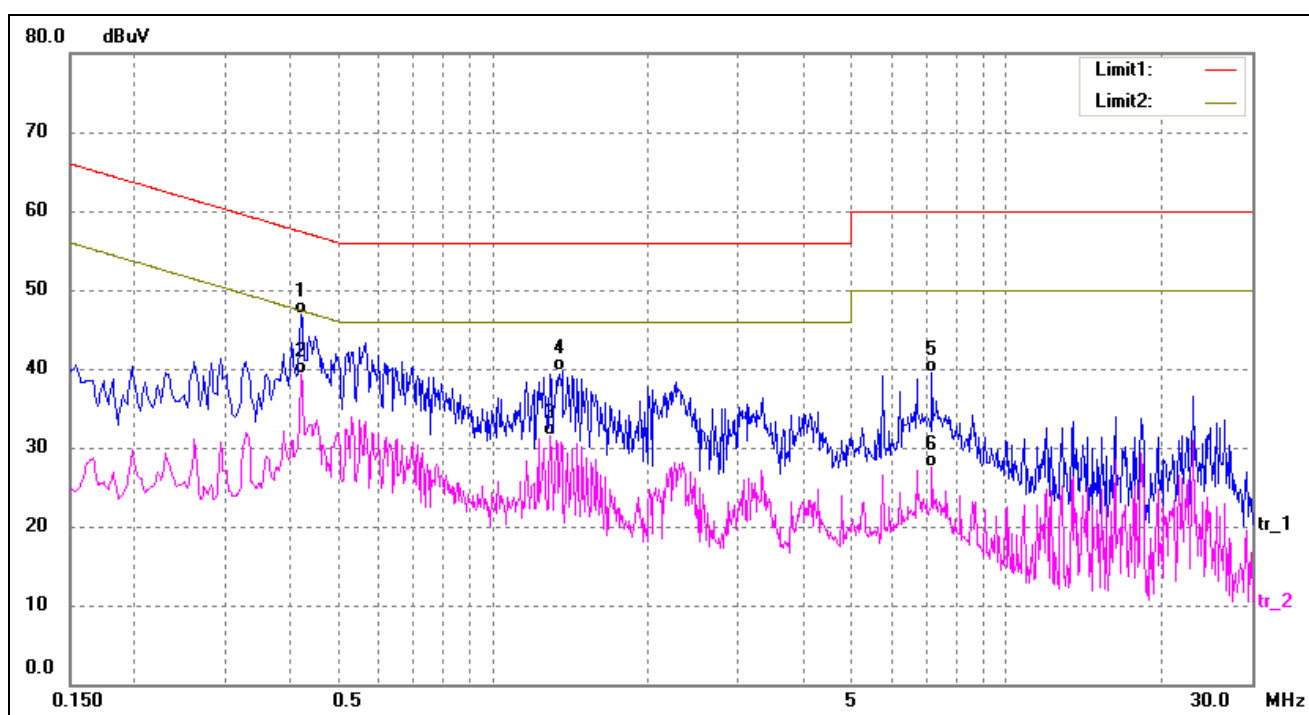
EUT: FHD Wireless IP Camera

Tested Model: C1

Operating Condition: TM1

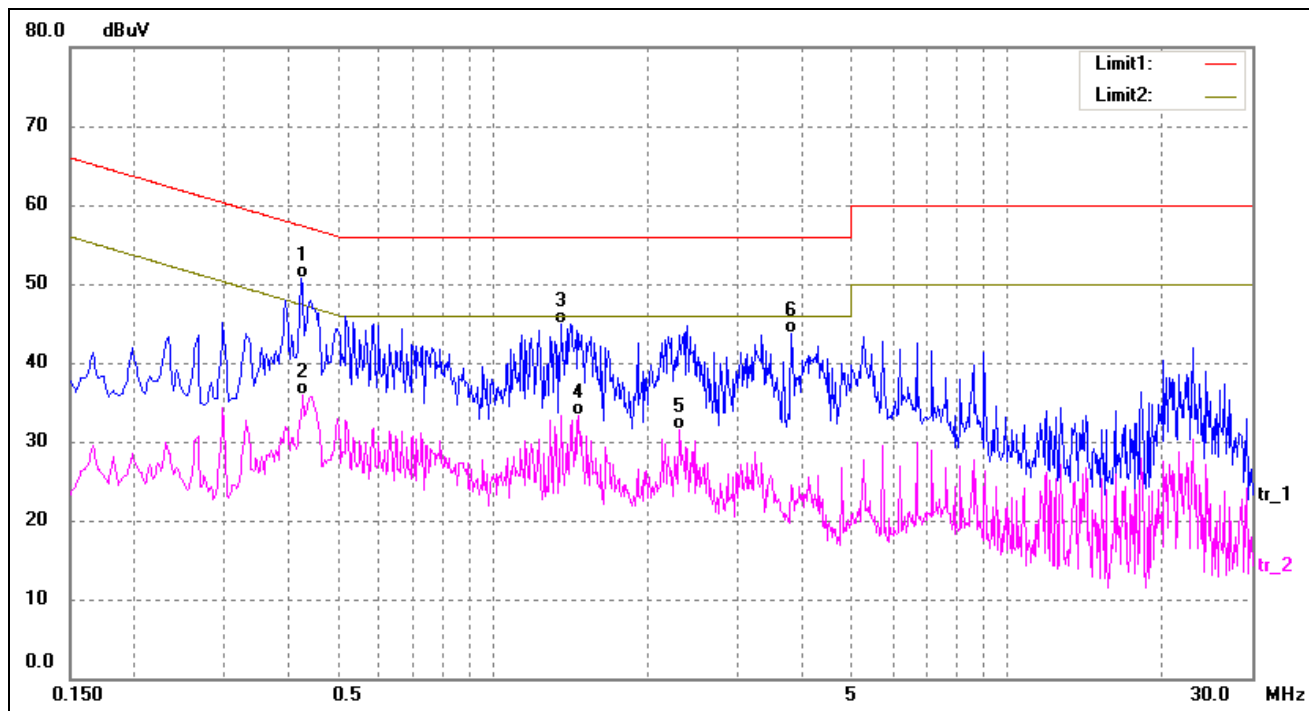
Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4220	37.18	9.80	46.98	57.41	-10.43	QP
2*	0.4220	29.42	9.80	39.22	47.41	-8.19	AVG
3	1.2940	21.77	9.75	31.52	46.00	-14.48	AVG
4	1.3620	29.86	9.75	39.61	56.00	-16.39	QP
5	7.1580	29.87	9.60	39.47	60.00	-20.53	QP
6	7.1580	17.95	9.60	27.55	50.00	-22.45	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.4220	40.95	9.80	50.75	57.41	-6.66	QP
2	0.4260	26.12	9.80	35.92	47.33	-11.41	AVG
3	1.3580	35.13	9.75	44.88	56.00	-11.12	QP
4	1.4700	23.63	9.75	33.38	46.00	-12.62	AVG
5	2.3020	21.73	9.73	31.46	46.00	-14.54	AVG
6	3.8180	34.09	9.69	43.78	56.00	-12.22	QP

Plot of Conducted Emissions Test Data

Power Adapter #2

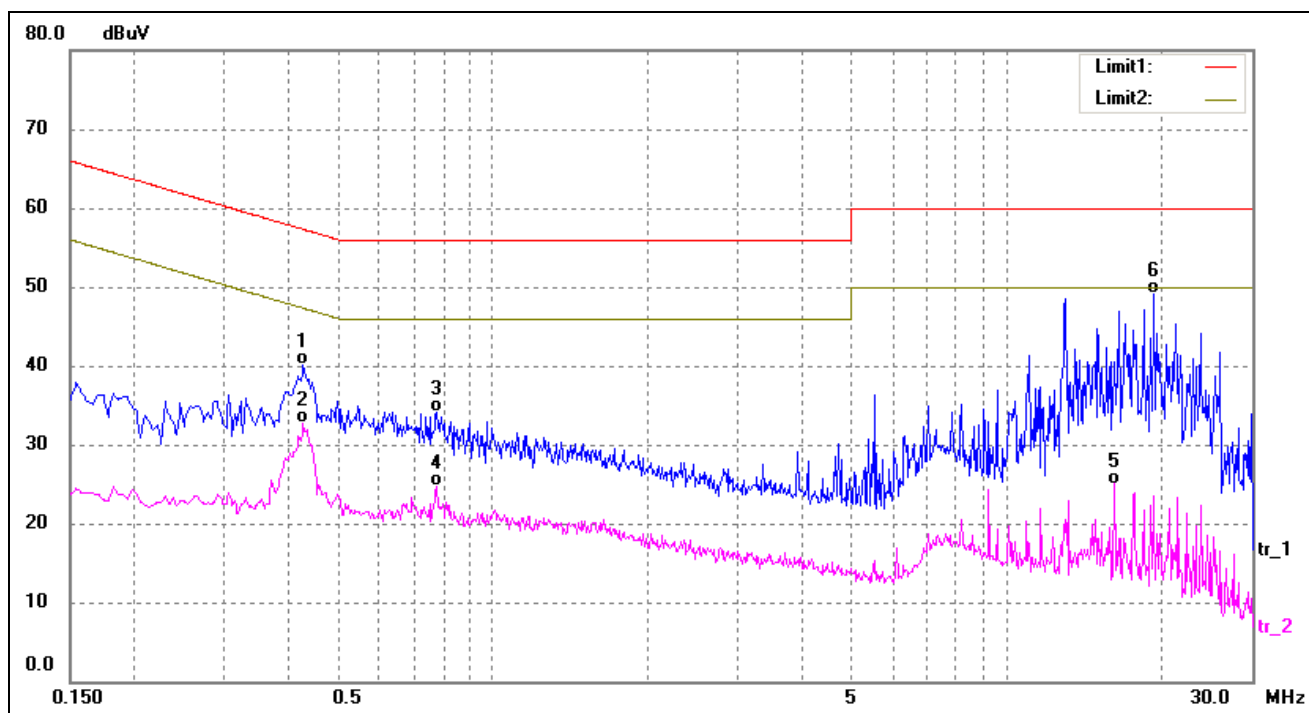
EUT: FHD Wireless IP Camera

Tested Model: C1

Operating Condition: TM1

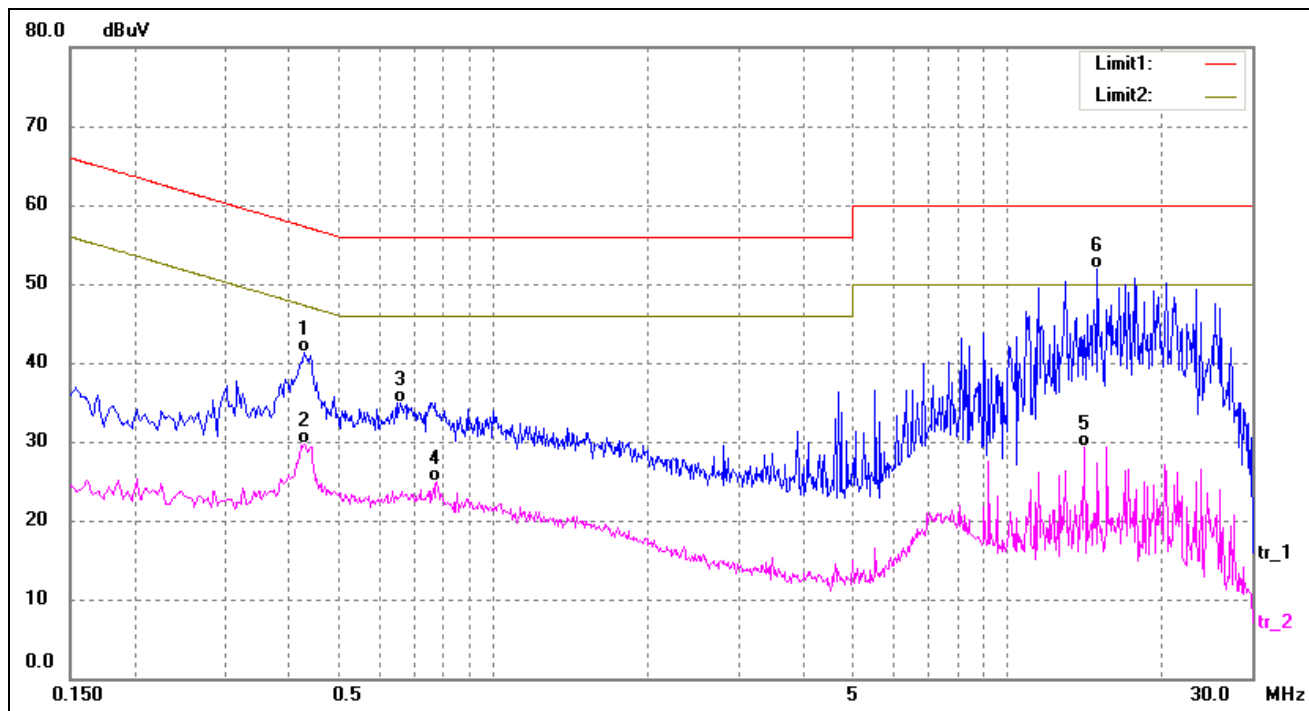
Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.4260	30.26	9.80	40.06	57.33	-17.27	QP
2	0.4260	22.97	9.80	32.77	47.33	-14.56	AVG
3	0.7780	24.31	9.78	34.09	56.00	-21.91	QP
4	0.7780	14.90	9.78	24.68	46.00	-21.32	AVG
5	16.2100	15.37	9.63	25.00	50.00	-25.00	AVG
6*	19.3580	39.41	9.67	49.08	60.00	-10.92	QP

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4300	31.50	9.80	41.30	57.25	-15.95	QP
2	0.4300	19.87	9.80	29.67	47.25	-17.58	AVG
3	0.6580	25.16	9.79	34.95	56.00	-21.05	QP
4	0.7780	15.17	9.78	24.95	46.00	-21.05	AVG
5	14.1740	19.66	9.60	29.26	50.00	-20.74	AVG
6*	15.0220	42.38	9.61	51.99	60.00	-8.01	QP

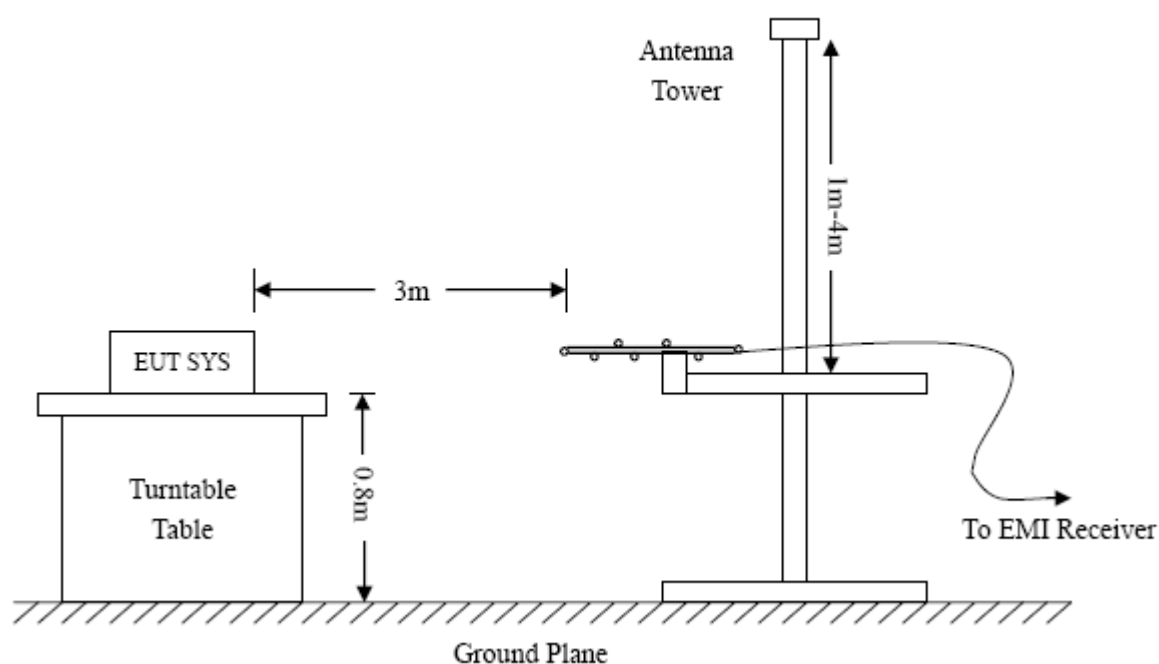
4. RADIATED EMISSION

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



4.2 Test Receiver Setup

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.4 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.5 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-2.42 dB at 649.6597 MHz in the Vertical polarization, Power Adapter #1, 30 MHz to 12.75 GHz, 3Meters

Plot of Radiated Emissions Test Data

Power Adapter #1

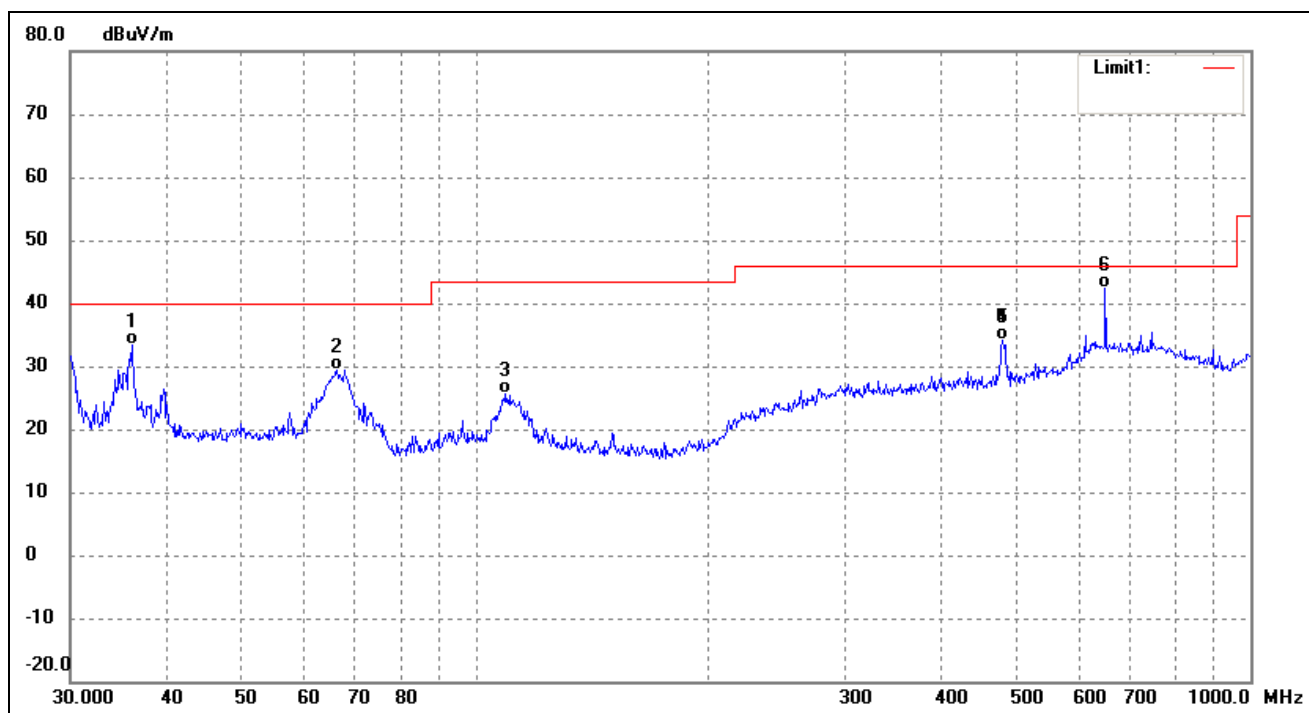
EUT: FHD Wireless IP Camera

Tested Model: C1

Operating Condition: TM1

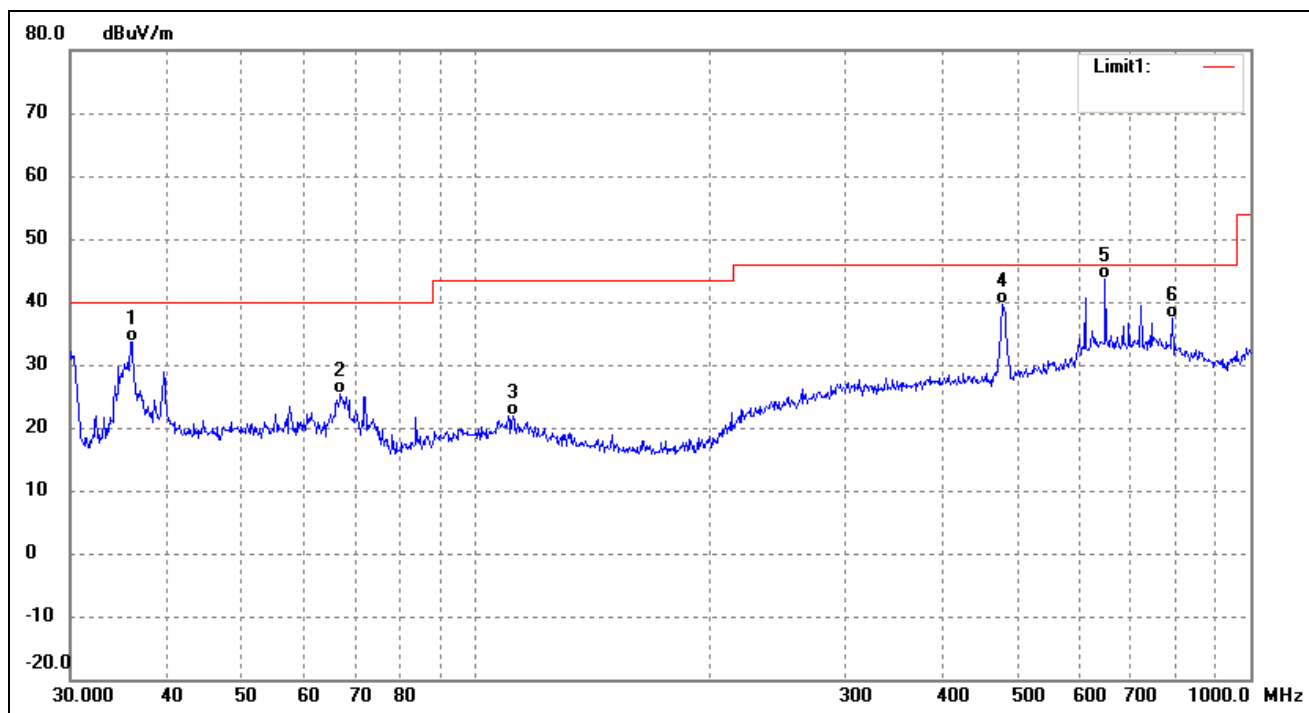
Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	36.0007	28.99	4.33	33.32	40.00	-6.68	25	100	QP
2	66.2662	25.55	3.71	29.26	40.00	-10.74	347	100	QP
3	109.4116	20.83	4.87	25.70	43.50	-17.80	91	100	QP
4	478.8456	21.46	12.59	34.05	46.00	-11.95	326	100	QP
5	478.8456	21.46	12.59	34.05	46.00	-11.95	113	100	QP
6	649.6597	24.55	17.84	42.39	46.00	-3.61	288	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.0007	29.33	4.33	33.66	40.00	-6.34	97	100	QP
2	66.9669	21.75	3.56	25.31	40.00	-14.69	186	100	QP
3	111.7380	17.13	4.86	21.99	43.50	-21.51	77	100	QP
4	478.8456	27.15	12.59	39.74	46.00	-6.26	174	100	QP
5	649.6597	25.74	17.84	43.58	46.00	-2.42	98	100	QP
6	793.3960	20.84	16.48	37.32	46.00	-8.68	219	100	QP

Plot of Radiated Emissions Test Data

Power Adapter #2

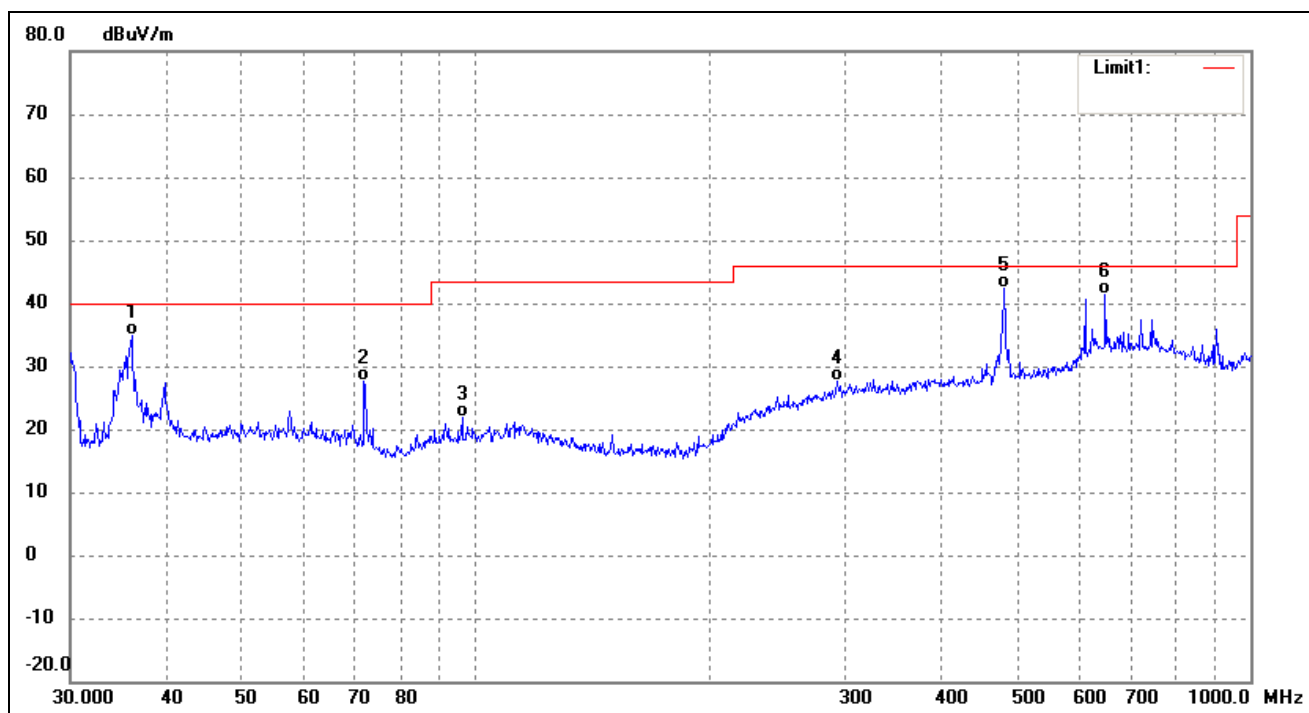
EUT: FHD Wireless IP Camera

Tested Model: C1

Operating Condition: TM1

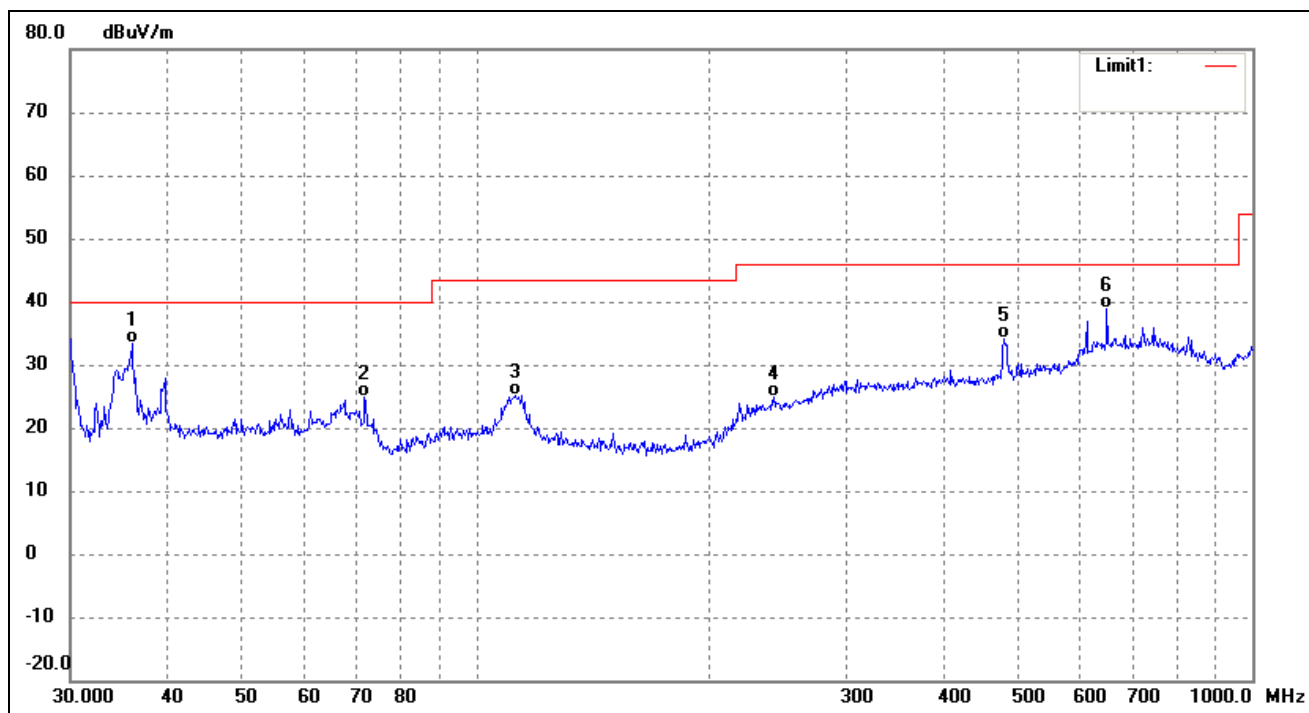
Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.0007	30.67	4.33	35.00	40.00	-5.00	85	100	QP
2	71.8320	25.09	2.65	27.74	40.00	-12.26	124	100	QP
3	96.0986	17.52	4.34	21.86	43.50	-21.64	122	100	QP
4	293.0842	15.97	11.69	27.66	46.00	-18.34	98	100	QP
5	480.5276	29.89	12.58	42.47	46.00	-3.53	259	100	QP
6	649.6597	23.61	17.84	41.45	46.00	-4.55	270	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.0007	28.95	4.33	33.28	40.00	-6.72	146	100	QP
2	71.8320	22.22	2.65	24.87	40.00	-15.13	105	100	QP
3	112.1305	20.30	4.86	25.16	43.50	-18.34	63	100	QP
4	241.6763	15.88	9.00	24.88	46.00	-21.12	146	100	QP
5	478.8456	21.63	12.59	34.22	46.00	-11.78	285	100	QP
6	649.6597	20.96	17.84	38.80	46.00	-7.20	174	100	QP

Note: Testing is carried out with frequency rang 30MHz to the 12.75GHz, which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

***** END OF REPORT *****