

FCC PART 15, CLASS B TEST REPORT

For

ShenZhen Foscam Intelligent Technology Co., Ltd.

5/F, Block 1, Vision Business Park, Nanshan District, Shenzhen, PRC

FCC ID : ZDEC1

Report Type: Original Report	Product Type: HD Wireless IP Camera
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Report Number: RSZ150119002-00	
Report Date: 2014-12-08	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ShenZhen Foscam Intelligent Technology Co., Ltd.*'s product, model number: *C1* (FCC ID: *ZDEC1*) or the "EUT" in this report was a *HD Wireless IP Camera*, which was measured approximately: .6.8 cm (L) x 7.0 cm (W) x 12.0 cm (H), rated with input voltage: DC 5.0V from adapter. The highest operating frequency is 400MHz.

Adapter Information:

Model: SAW06-050-1000U

Input: AC 100-240V, 50/60 Hz, 0.3A

Output: DC 5V, 1000mA

Note: The product, series models C1, IQ, FC1406P, EH8115, FI9809P, FI9809W, C1S, FC1405P, FC1405PC, FC1406P, EH8105 and C1E are identical schematics. The model C1 was selected for fully testing. The difference among of them is the model number, the detailed information can be referred to the attached declaration letter that stated and guaranteed by the applicant.

**All measurement and test data in this report was gathered from production sample serial number: 1501238 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2015-01-19.*

Objective

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

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15 B.

Related Submittal(s)/Grant(s)

Part 15.247 DSS and DTS, Part 22H/24E PCE submissions with FCC ID: ZDEC1.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a manufacturer testing fashion.

EUT operation mode: Downloading (data transfer with computer)

EUT Exercise Software

“BurnIn test, IP Camera.

Special Accessories

No special accessory.

Equipment Modifications

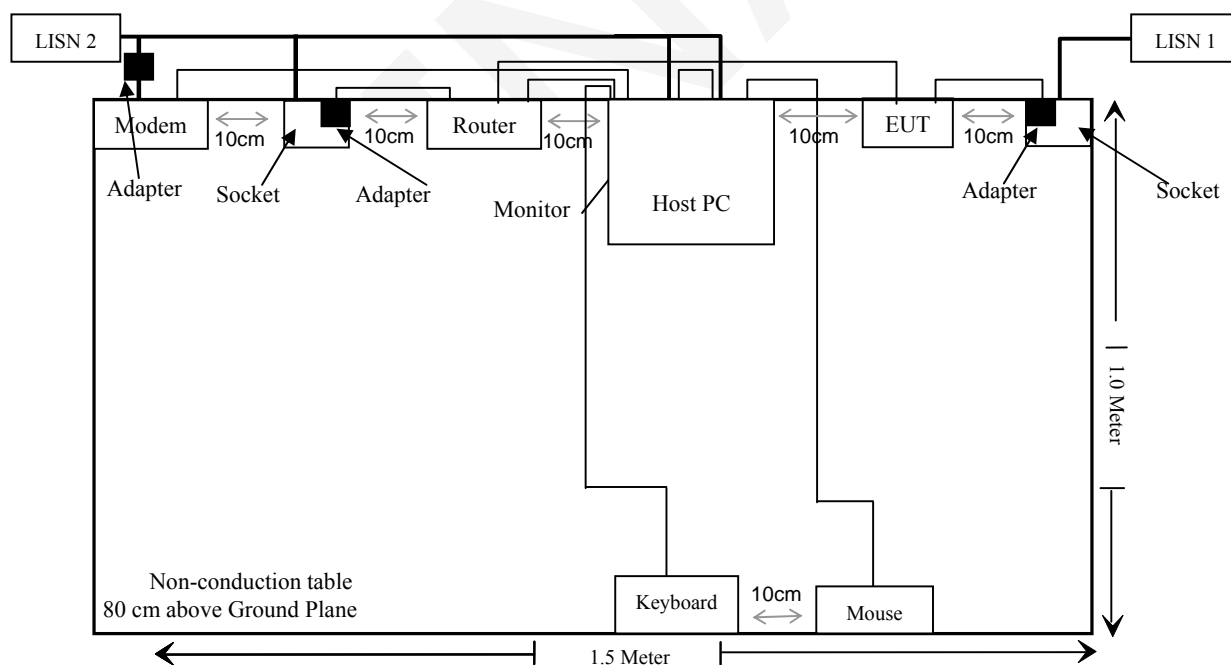
No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	Remark
BULL	Socket	GN-415K	5503290068073	/
DELL	PC	DCSCSF	127BPX2	/
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH	/
DELL	Keyboard	L100	CNORH656658907BL05DC	/
DELL	Mouse	MOC5UO	G1900NKD	/
SAST	Modem	AEM-2100	0293	/
TP-Link	Router	TL-WR847N	13203838617	/

Cable Description	Length (m)	From/Port	To
Un-shielding Un-detachable AC Power Cable	1.0	Mains	Socket
Un-shielding Detachable USB Cable	1.4	EUT	adapter
Unshielded Detachable AC Cable	1.0	Main	Monitor
Unshielded Detachable AC Cable	1.0	Main	PC
Shielded Detachable VGA Cable	1.5	Monitor	PC
Unshielded Detachable RS232 Cable	1.5	Modem	PC
Shielded Un-detachable K/B Cable	1.5	Keyboard	PC
Shielded Un-detachable Mouse Cable	1.5	Mouse	PC
Un-shielding detachable RJ45 Cable	1.5	PC	Router
Un-shielding detachable RJ45 Cable	1.0	EUT	Router
Un-shielding Un-detachable AC Power Cable	1.2	Modem	Main

For conducted emission



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC §15.107

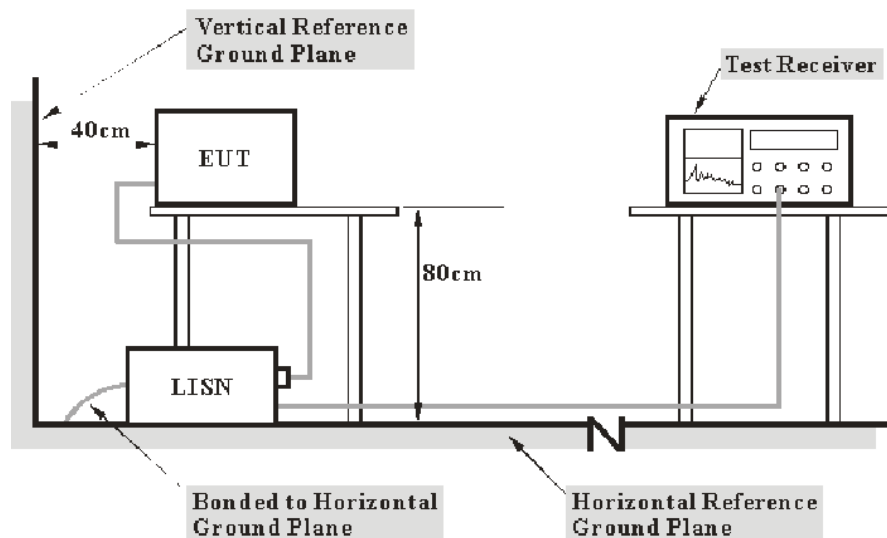
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN/ISN and receiver, LISN/ISN voltage division factor, LISN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Expanded Measurement uncertainty
AC Mains	3.26 dB (k=2, 95% level of confidence)
CAT 3	3.70 dB (k=2, 95% level of confidence)
CAT 5	3.86 dB (k=2, 95% level of confidence)
CAT 6	4.64 dB (k=2, 95% level of confidence)

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with per ANSI C63.4-2009. The related limit was specified in FCC Part 15.107 Class B.

The spacing between the peripherals was 10 cm.

The host PC was connected to a 120 VAC/60 Hz power source.

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

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the host PC was connected to the first LISN and the other relevant equipments were connected to the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2014-06-17	2015-06-17
Rohde & Schwarz	LISN	ESH2-Z5	892107/021	2014-08-22	2015-08-22
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2014-10-15	2015-10-15
Rohde & Schwarz	CE Test software	EMC 32	V8.53	NCR	NCR

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107, the worst margin as below:

1.0 dB at 0.514290 MHz in the Line conducted mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL., $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

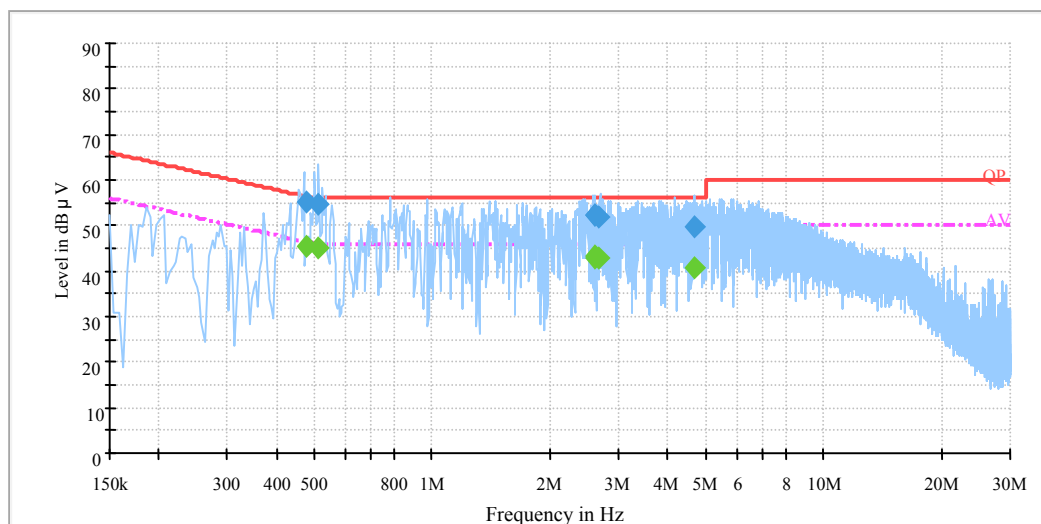
Temperature:	24
Relative Humidity:	35 %
ATM Pressure:	101.0 kPa

The testing was performed by Joson xiao on 2015-01-23

EUT Operation Mode: Monitoring & recording

AC 120V/60 Hz, Line

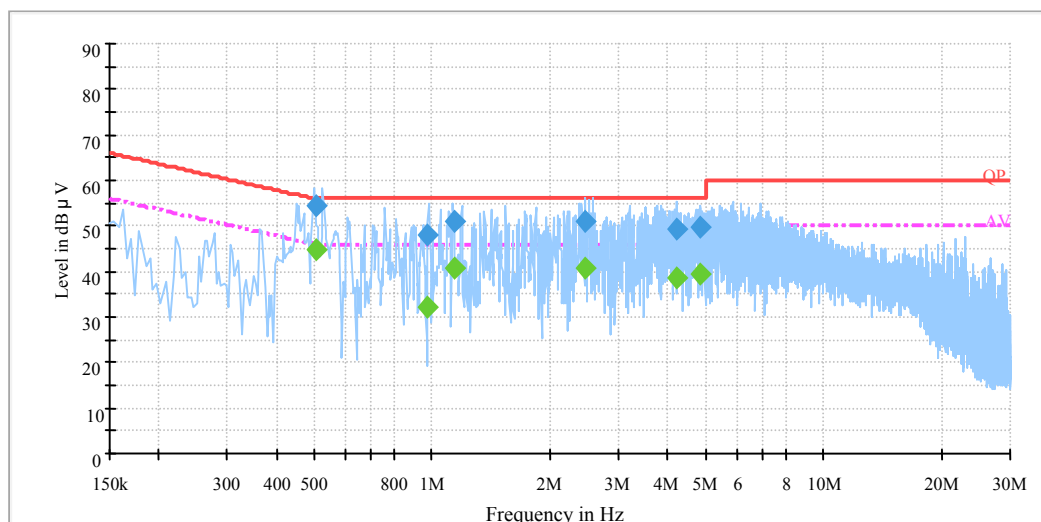
EMI Auto Test L



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.477050	55.1	19.3	56.4	1.3	QP
0.477050	45.1	19.3	46.4	1.3	Ave.
0.514290	55.0	19.3	56.0	1.0	QP
0.514290	45.0	19.3	46.0	1.0	Ave.
2.594730	52.2	19.4	56.0	3.8	QP
2.594730	42.9	19.4	46.0	3.1	Ave.
2.616670	52.3	19.4	56.0	3.7	QP
2.616670	43.2	19.4	46.0	2.8	Ave.
2.677710	51.9	19.4	56.0	4.1	QP
2.677710	42.7	19.4	46.0	3.3	Ave.
4.695890	49.8	19.5	56.0	6.2	QP
4.695890	40.9	19.5	46.0	5.1	Ave.

AC 120V/60 Hz, Neutral

EMI Auto Test N



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.506470	54.9	19.2	56.0	1.1	QP
0.506470	44.9	19.2	46.0	1.1	Ave.
0.971270	48.2	19.4	56.0	7.8	QP
0.971270	32.2	19.4	46.0	13.8	Ave.
1.137050	51.0	19.4	56.0	5.0	QP
1.137050	40.7	19.4	46.0	5.3	Ave.
2.449010	50.9	19.4	56.0	5.1	QP
2.449010	40.9	19.4	46.0	5.1	Ave.
4.222730	49.5	19.4	56.0	6.5	QP
4.222730	38.6	19.4	46.0	7.4	Ave.
4.829070	49.9	19.4	56.0	6.1	QP
4.829070	39.4	19.4	46.0	6.6	Ave.

Note:

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
The corrected factor has been input into the transducer of the test software.
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

FCC §15.109

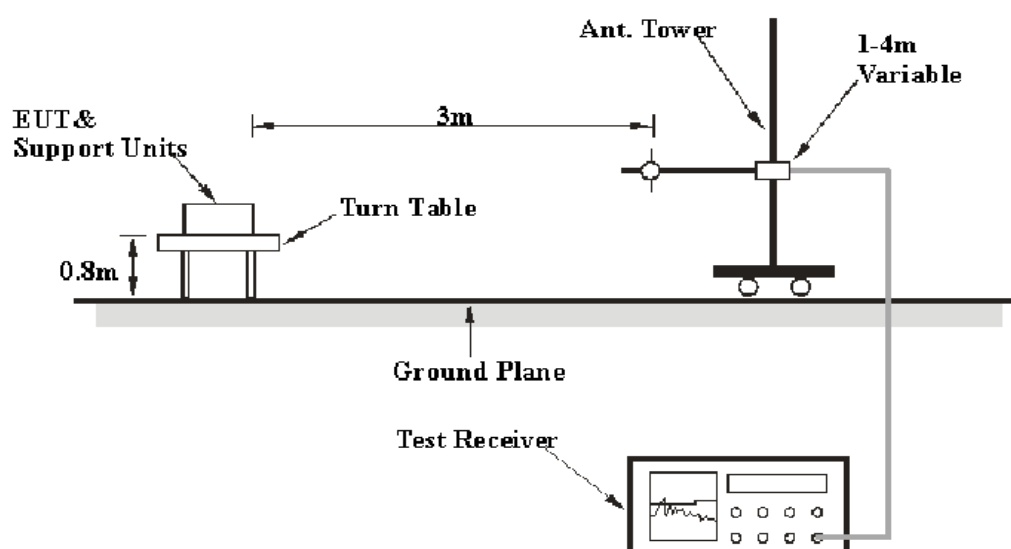
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report

Frequency	Polarity	Measurement uncertainty
30 MHz~200 MHz	Horizontal	4.62 dB (k=2, 95% level of confidence)
	Vertical	4.54 dB (k=2, 95% level of confidence)
200 MHz~1 GHz	Horizontal	4.84 dB (k=2, 95% level of confidence)
	Vertical	5.91 dB (k=2, 95% level of confidence)
1 GHz~6 GHz	Horizontal/Vertical	4.68 dB (k=2, 95% level of confidence)
Above 6 GHz	Horizontal/Vertical	4.92 dB (k=2, 95% level of confidence)

EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109 Class B limits.

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.

The host PC was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 2.0 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2014-09-30	2015-09-30
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2014-11-12	2015-11-12
Sunol Sciences	Broadband Antenna	JB3	A111513	2014-06-18	2017-06-17
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2015-02-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-11-12	2015-11-12
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2014-04-03	2015-04-03
TDK	Chamber	Chamber A	2#	2012-10-15	2015-10-15
TDK	Chamber	Chamber B	1#	2012-07-23	2015-07-22
R&S	Auto test Software	EMC32	V9.10	NCR	NCR

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Amplitude & Margin Calculation

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

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B, with the worst margin reading of:

1.71dB at 798.00 MHz in the Horizontal polarization mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

Temperature:	23
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Joson xiao on 2015-01-21.

EUT Operation Mode: Monitoring & recording

30 MHz – 2 GHz

Frequency (MHz)	Reading (dBμV)	Detector (PK/QP/Ave.)	Degree	Height (m)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
39.64	31.44	QP	273.0	1.42	V	-13.10	18.34	40.00	8.56
43.78	33.80	QP	92.0	1.07	V	-16.20	17.60	40.00	6.20
45.26	36.46	QP	354.0	1.00	V	-17.10	19.36	40.00	3.54
569.99	43.22	QP	200.0	1.53	H	-7.80	35.42	46.00	2.78
721.98	41.88	QP	132.0	1.06	V	-5.20	36.68	46.00	4.12
798.00	44.29	QP	284.0	2.17	H	-4.40	39.89	46.00	1.71
1490.98	40.06	PK	59.0	1.50	V	0.74	40.80	74.00	33.2
1490.98	25.87	Ave.	59.0	1.50	V	0.74	26.61	54.00	27.39
1865.73	42.68	PK	281.0	1.20	V	2.63	45.31	74.00	28.69
1865.73	26.49	Ave.	281.0	1.20	V	2.63	29.12	54.00	24.88
1993.99	43.68	PK	227.0	1.00	V	3.07	46.75	74.00	27.25
1993.99	27.05	Ave.	227.0	1.00	V	3.07	30.12	54.00	23.88

Note:

- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude

PRODUCT SIMILARITY DECLARATION LETTER



ShenZhen Foscam Intelligent Technology Co.,Ltd.
5/F, Block 1, Vision Business Park, Nanshan District, Shenzhen, PRC
Tel: 86-0755-26720367-8306

FCC Authorization

2015-2-2

FEDERAL COMMUNICATIONS COMMISSIONS

Authorization and Evaluation Division

7435 Oakland Mills Road

Columbia, MD 21046

Subject: Agent Authorization

To whom it may concern:

We, ShenZhen Foscam Intelligent Technology Co.,Ltd., the undersigned, hereby authorize Bay Area Compliance Laboratories Corporation to act on its behalf in all matters relating to application for Equipment authorization, including the signing of all documents relating to these matters. All acts carried out by Bay Area Compliance Laboratories Corp. on our behalf shall have the same effect as our own action.

We, the undersigned, hereby certify that we are not subject to a denial of federal benefits, that includes FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

This authorization is valid until further written notice from the applicant.

Sincerely Yours,

Signature:

Yidong Xu

Manager

QA-FR-170-B

A handwritten signature in black ink that reads "Yi dong Xu". The signature is written in a cursive, slightly slanted style.

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