FCC PART 15 B

TEST REPORT

For

SHENZHEN TENDA TECHNOLOGY CO.,LTD.

6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

FCC ID: V7TC50S

Report Type:	**Product Type:**
Original Report	IP-Camera

Test Engineer: Lion Xiao

Report Number: RDG150424004-00B

Report Date: 2015-05-06

Reviewed By: Sula Huang
RF Leader

Test Laboratory: Bay Area Compliance Laboratories Corp. (Dongguan)
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *SHENZHEN TENDA TECHNOLOGY CO.,LTD.* 's product, model number: *C50s (FCC ID: V7TC50S) or* ("EUT") in this report is a *IP-Camera* , which was measured approximately: 10.5cm (L) x 12.3 cm (W) x13.2 cm (H), rated input voltage: DC9V from adapter.

Adapter Information:
Model: TEA09U-09100
Input: AC 100-240V, 50/60Hz, 0.3A
Output: DC 9V, 1.0A

Note: The series product, model C50s and C5s are electrically identical, the difference between them is just the model name, we selected C50s for fully testing, the details was explained in the attached declaration letter

** All measurement and test data in this report was gathered from production sample serial number: 150424004 (Assigned by Applicant).The EUT was received on 2015-04-28.*

Objective

This test report is prepared on behalf of *SHENZHEN TENDA TECHNOLOGY CO.,LTD.* in accordance with Part 2, Subpart J, and Part 15-Subparts A and B of the Federal Communications Commission's rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: V7TC50S.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, 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.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications 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 February 06, 2015. 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.: 273710. 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 typical fashion (as normally used by a typical user).

EUT Exercise Software

N/A

Equipment Modifications

No modification was made to the EUT tested.

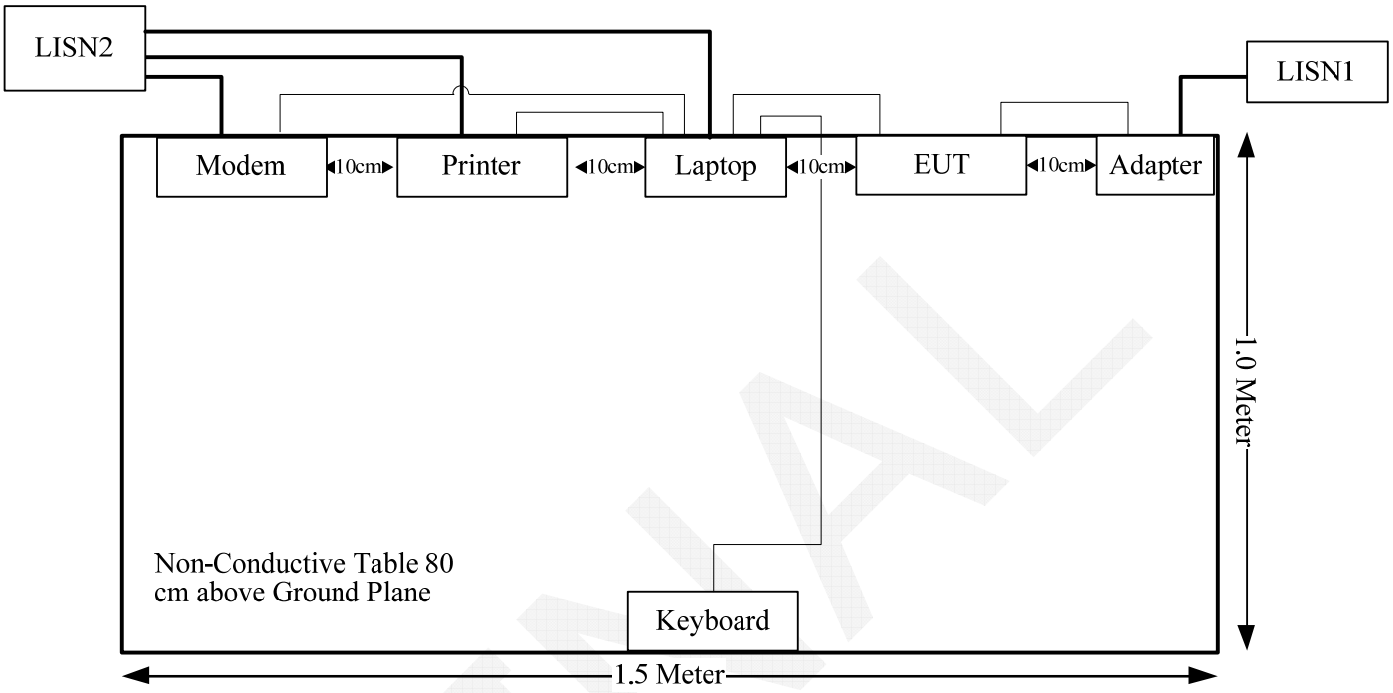
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	Yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	Yes	Yes	1.8	USB Port of Laptop	Keyboard
RJ45 Cable	No	No	1.0	LAN Port of Laptop	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

FCC§15.107 - CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are Receiver, cable loss, and LISN.

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

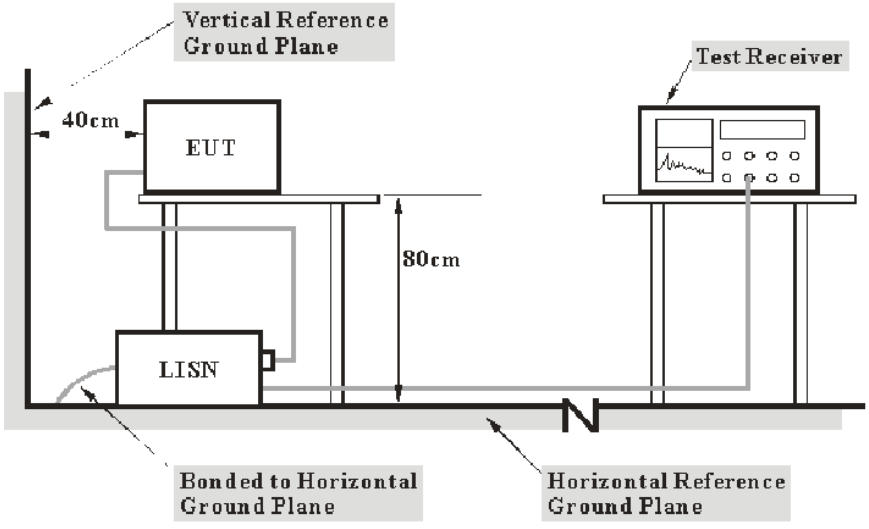
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

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 setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15 B 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 adapter was connected to a 120V/60Hz AC power source.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2014-10-20	2015-10-20
R&S	L.I.S.N	ESH2-Z5	892107/021	2014-06-09	2015-06-09
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

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

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first 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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$

Herein,
V_C: corrected voltage amplitude

V_R: reading voltage amplitude

A_c: attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

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

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B, with the worst margin reading of:

2.7 dB at **0.375019 MHz** in the **Line** conducted mode.

Test Data

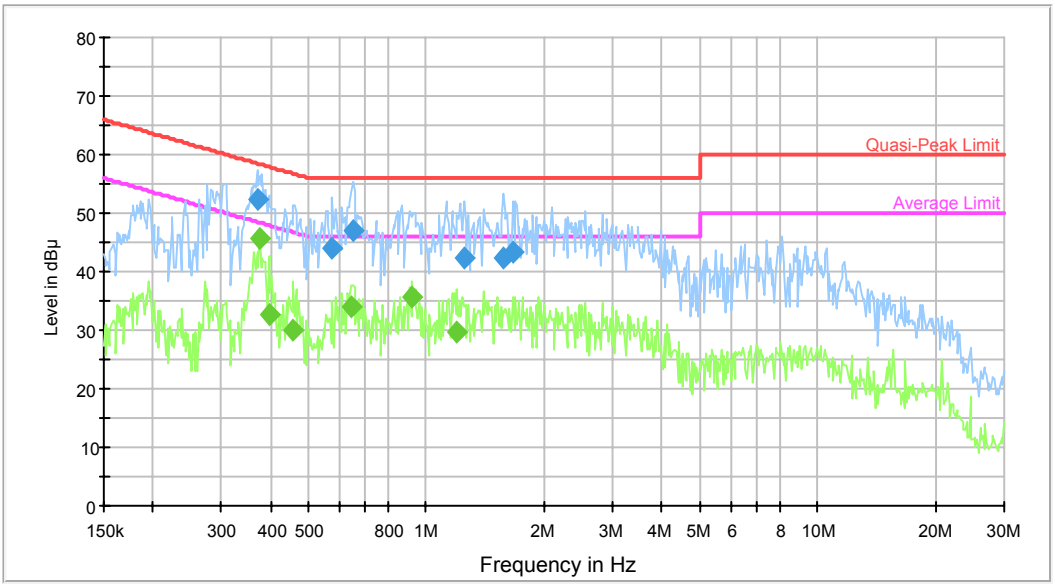
Environmental Conditions

Temperature:	28.4 °C
Relative Humidity:	63 %
ATM Pressure:	100.3kPa

The testing was performed by Lion Xiao on 2015-05-05.

Test Mode: Operating

AC120V, 60Hz, Line:

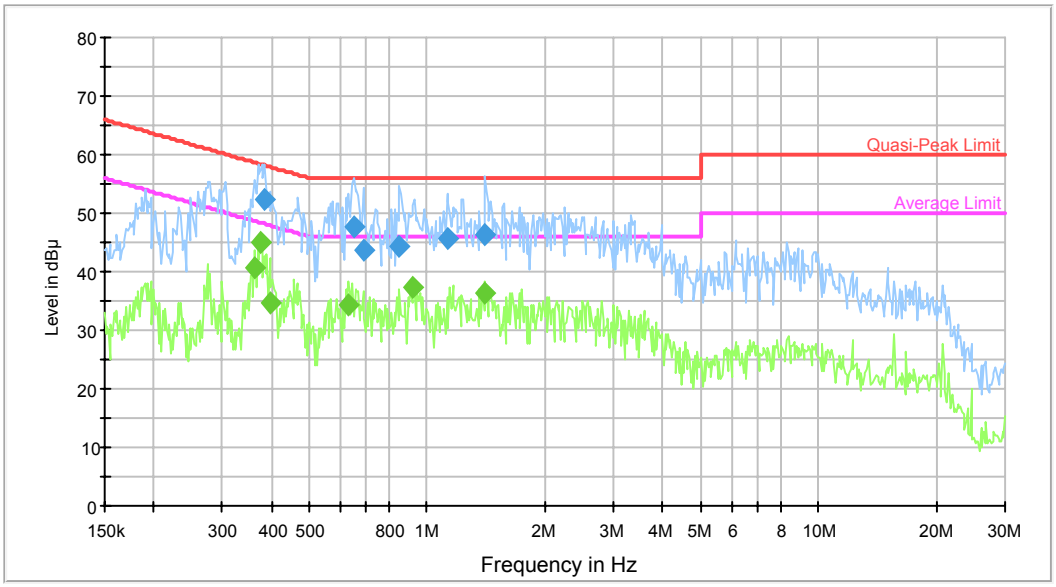


Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.369089	52.3	9.000	L1	10.3	6.2	58.5	Compliance
0.576662	44.0	9.000	L1	10.2	12.0	56.0	Compliance
0.649874	47.1	9.000	L1	10.4	8.9	56.0	Compliance
1.249088	42.5	9.000	L1	10.4	13.5	56.0	Compliance
1.573796	42.4	9.000	L1	10.4	13.6	56.0	Compliance
1.664073	43.5	9.000	L1	10.4	12.5	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.375019	45.7	9.000	L1	10.3	2.7*	48.4	Compliance
0.396530	32.5	9.000	L1	10.2	15.4	47.9	Compliance
0.457684	29.8	9.000	L1	10.2	16.9	46.7	Compliance
0.644717	34.1	9.000	L1	10.4	11.9	46.0	Compliance
0.922769	35.8	9.000	L1	10.4	10.2	46.0	Compliance
1.200302	29.8	9.000	L1	10.4	16.2	46.0	Compliance

**within measurement uncertainty!*

AC120V, 60Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.384091	52.4	9.000	N	10.2	5.8	58.2	Compliance
0.649874	47.6	9.000	N	10.4	8.4	56.0	Compliance
0.687153	43.8	9.000	N	10.4	12.2	56.0	Compliance
0.852094	44.2	9.000	N	10.4	11.8	56.0	Compliance
1.126176	45.5	9.000	N	10.4	10.5	56.0	Compliance
1.407671	46.2	9.000	N	10.4	9.8	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.363254	40.7	9.000	N	10.3	8.0	48.7	Compliance
0.375019	44.9	9.000	N	10.3	3.5*	48.4	Compliance
0.396530	34.7	9.000	N	10.2	13.2	47.9	Compliance
0.629488	34.3	9.000	N	10.3	11.7	46.0	Compliance
0.922769	37.2	9.000	N	10.4	8.8	46.0	Compliance
1.407671	36.2	9.000	N	10.4	9.8	46.0	Compliance

**within measurement uncertainty!*

FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

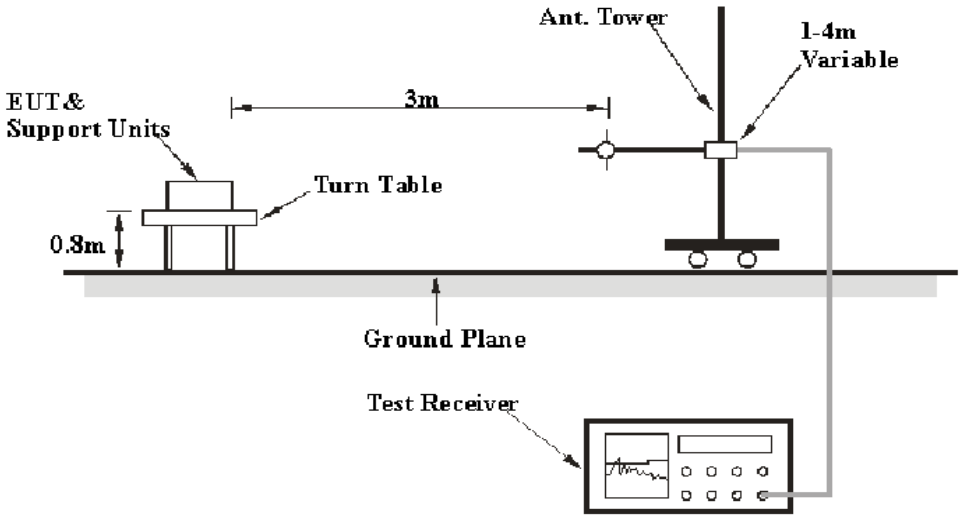
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:30M~200MHz: 5.0 dB; 200M~1GHz: 6.2 dB; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB

Table 1 – Values of U_{cispr}

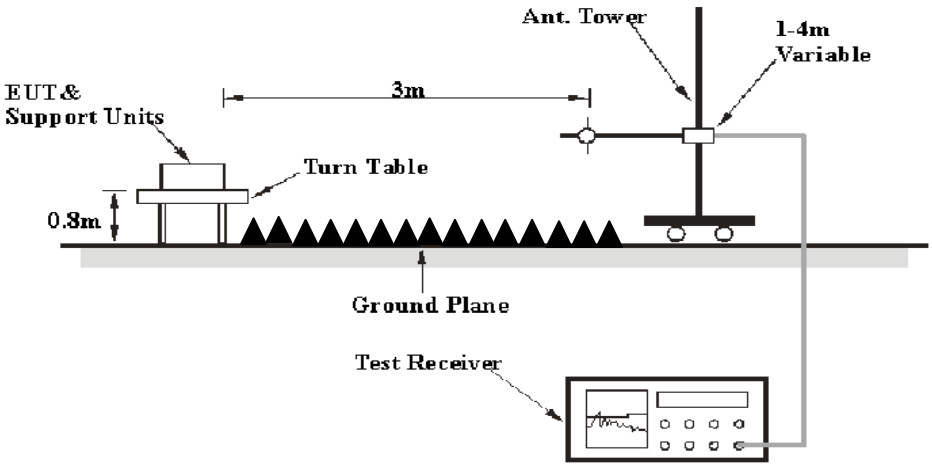
Measurement		U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC)	(30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR)	(1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR)	(6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



Above 1GHz:



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.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 6 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	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10 Hz	/	Ave.

Test Procedure

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

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2014-12-04	2015-12-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19

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

Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15 B Class B, with the worst margin reading of:

6.99 dB at **312.2700 MHz** in the **Vertical** polarization.

Test Data

Environmental Conditions

Temperature:	24.1°C
Relative Humidity:	58 %
ATM Pressure:	100.6 kPa

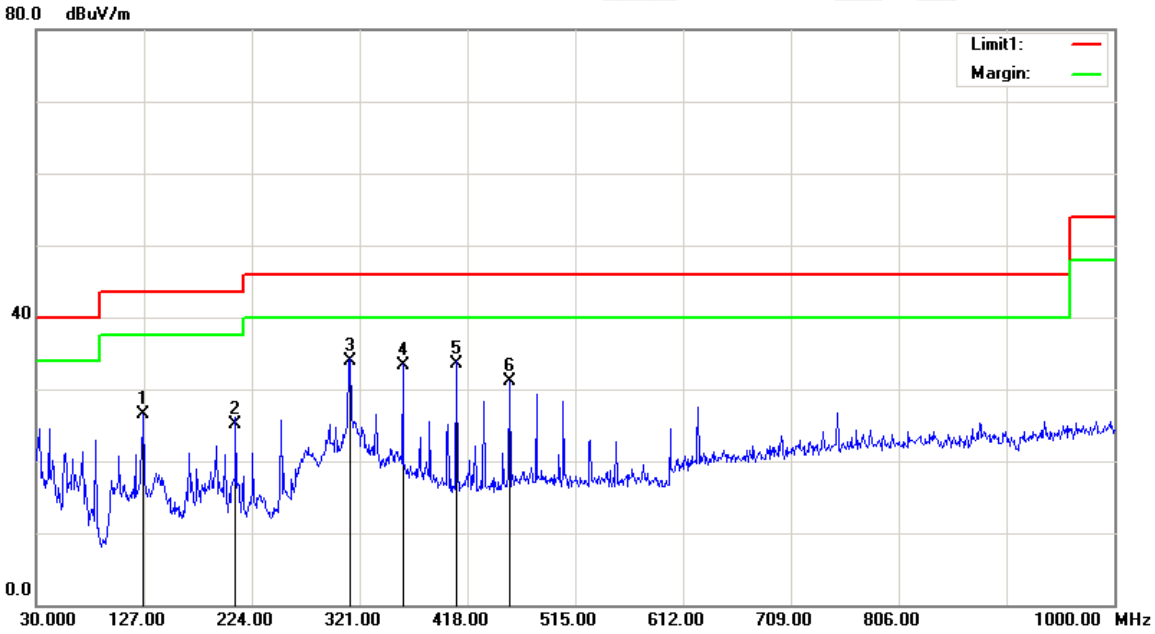
The testing was performed by Lion Xiao on 2015-04-30.

Test Result: Compliance

Test Mode: Operating

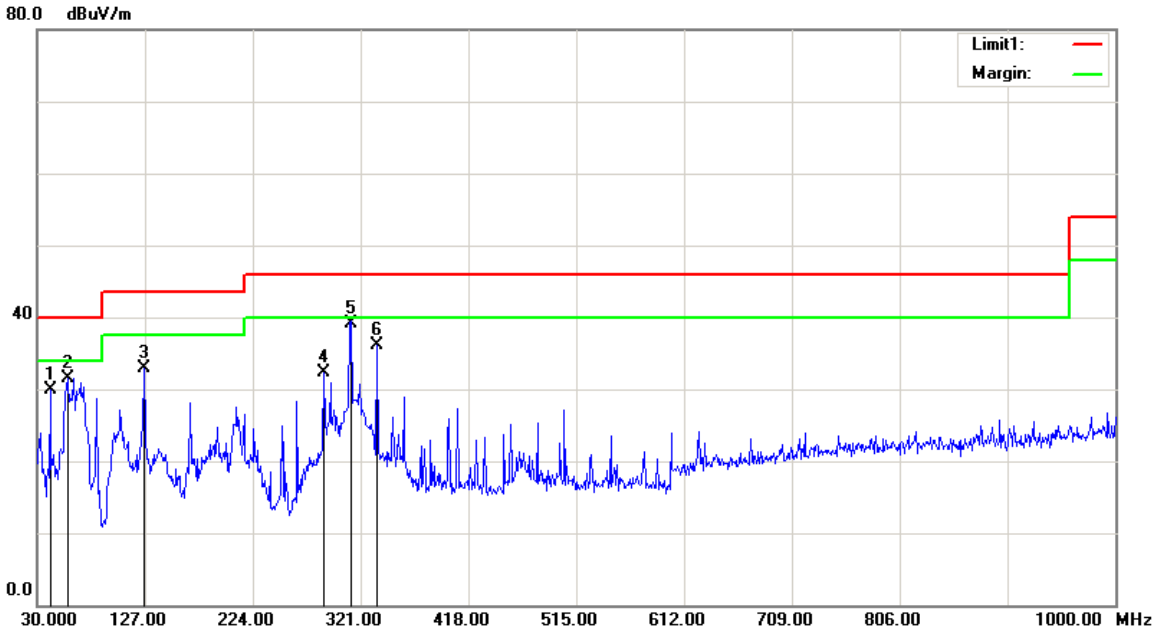
1) Below 1G:

Horizontal



Frequency (MHz)	Receiver Reading (dBµV)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
126.0300	37.47	QP	-10.89	26.58	43.50	16.92
209.4500	38.93	QP	-13.80	25.13	43.50	18.37
312.2700	44.09	QP	-10.11	33.98	46.00	12.02
359.8000	42.69	QP	-9.48	33.21	46.00	12.79
408.3000	42.07	QP	-8.63	33.44	46.00	12.56
455.8300	38.92	QP	-7.87	31.05	46.00	14.95

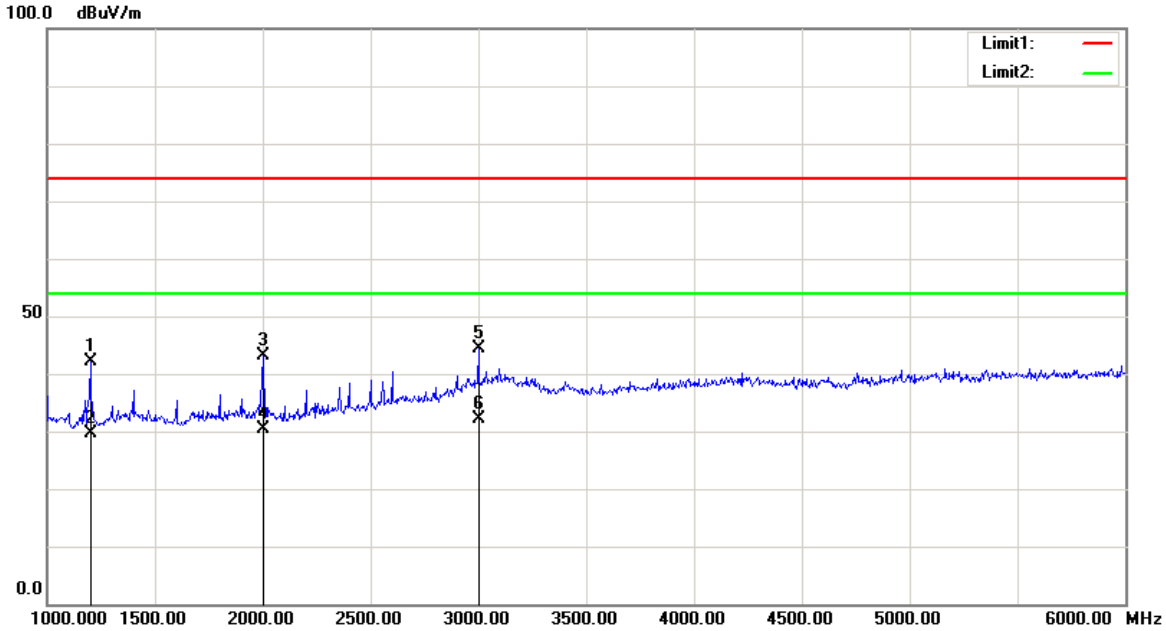
Vertical



Frequency (MHz)	Receiver Reading (dBµV)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
41.6400	43.03	QP	-13.15	29.88	40.00	10.12
57.1600	49.91	QP	-18.36	31.55	40.00	8.45
126.0300	43.85	QP	-10.89	32.96	43.50	10.54
288.0200	43.06	QP	-10.69	32.37	46.00	13.63
312.2700	49.12	QP	-10.11	39.01	46.00	6.99
335.5500	46.28	QP	-10.10	36.18	46.00	9.82

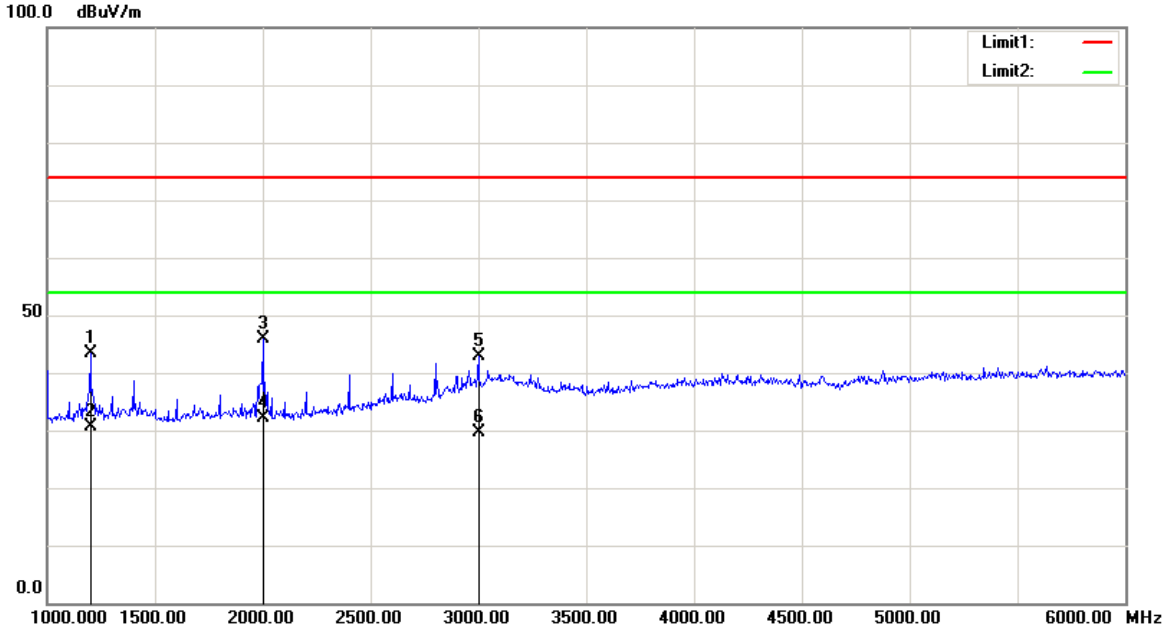
Above 1G:

Horizontal



Frequency (MHz)	Receiver Reading (dBµV)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1200.000	43.38	peak	-1.16	42.22	74.00	31.78
1200.000	30.84	AVG	-1.16	29.68	54.00	24.32
2000.000	42.84	peak	0.26	43.10	74.00	30.90
2000.000	30.02	AVG	0.26	30.28	54.00	23.72
3000.000	37.93	peak	6.46	44.39	74.00	29.61
3000.000	25.69	AVG	6.46	32.15	54.00	21.85

Vertical



Frequency (MHz)	Receiver Reading (dBµV)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1200.000	44.51	peak	-1.16	43.35	74.00	30.65
1200.000	31.74	AVG	-1.16	30.58	54.00	23.42
2000.000	45.57	peak	0.26	45.83	74.00	28.17
2000.000	31.88	AVG	0.26	32.14	54.00	21.86
3000.000	36.30	peak	6.46	42.76	74.00	31.24
3000.000	23.18	AVG	6.46	29.64	54.00	24.36

DECLARATION LETTER

SHENZHEN TENDA TECHNOLOGY CO., LTD.

Declaration of Alteration

To Whom It May Concern,

We, SHENZHEN TENDA TECHNOLOGY CO., LTD, hereby declare that there are some differences between our Multiple Models and testing model. Details as below:

Products Description	Name	IP-Camera		
	Manufacturer	SHENZHEN TENDA TECHNOLOGY CO., LTD		
Differences Description				
Testing Model		Multiple Model	Differences Items	Details
C50s		C5s	Model Name	The testing model and multiple model just have different model name

Notes: Testing model-the product's model tested by BACL
Multiple Model- have the same or similar appearance, structure, PCB, Material and function to the testing product's model, and only are different for model name.

Besides the differences in the table above, we declare the products are identical
We guarantee all the information provided above is true, and notice that we'll bear all the consequences caused by any false information or concealing.

Best Regards,

Signature: Shen Yue

Shen, Yue
Engineer

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