EN 55022:2010
EN 55024:2010
EN 61000-3-2:2006 + A1:2009 + A2:2009
EN 61000-3-3:2008

TEST REPORT

For

YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.

4th-5th Floor, South Building, NO. 63 WangHai Road, 2nd Software Park, Xiamen, China

Model: SIP-T20P, SIP-T20

Report Type:	**Product Type:**
Amended Report	IP PHONE

Test Engineer:	Joson Xiao Lebron Wang
Report Number:	RSZ130618001-01A2
Report Date:	2013-07-12
Reviewed By:	Dick Zhang EMC Leader
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Issue
0	RSZ110725002-01	Original Report	2011-09-16
1	RSZ121211010-01A1	First Amended Report	2012-12-18
2	RSZ130618001-01A2	Second Amended Report	2013-07-12

Note:

This is a second amended report application based on the first amended report RSZ121211010-01A1, the details as below

Adding two types of adapter, the details as below:

Original Adapter 1 information (AC/DC Switching Adapter):
Model: OH-1048A0501200U2-VDE
Input: AC 100-240V, 50/60Hz, 250mA
Output: DC 5V, 1.2A

New Adapter 2 information (AC Adaptor):
Model: NSA6EE-050120
Input: AC 100-240V, 50/60Hz, 0.2A
Output: DC 5V, 1.2A

New Adapter 3 information (AC/DC Switching Adapter):
Model: OH-1006B0501200U-VDE
Input: AC 100-240V, 50/60Hz, 250mA
Output: DC 5V, 1.2A

Based on the above difference, it will affect the test items “Conducted Disturbance” and “Radiated Disturbance”, so the related test items were performed, related setup photos and EUT photos were updated, and the other data and photos were copied from the first amended report RSZ121211010-01A1 that issued on 2012-12-18.

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.*'s product, model number: *SIP-T20P* (the "EUT") in this report is a *IP PHONE,* which was measured approximately: 20.3 cm (L) x 18.5 cm (W) x 13.0 cm (H), rated input voltage: DC 5V from adapter. The highest operating frequency is 125 MHz.

Adapter 1 (Original) information:
Model: OH-1048A0501200U2-VDE
Input: AC 100-240V, 50/60Hz, 250mA
Output: DC 5V, 1.2A

Adapter 2 (New) information:
Model: NSA6EE-050120
Input: AC 100-240V, 50/60Hz, 0.2A
Output: DC 5V, 1.2A

Adapter 3 (New) information:
Model: OH-1006B0501200U-VDE
Input: AC 100-240V, 50/60Hz, 250mA
Output: DC 5V, 1.2A

Note: The series product, model SIP-T20P and SIP-T20 are electrically identical, the model SIP-T20P was selected for fully testing, and the difference between them was explained in the attached declaration letter which was provided and guaranteed by applicant.

**All measurement and test data in this report was gathered from production sample serial number: 1306033 (Assigned by BACL, Shenzhen). The EUT supplied by applicable was received on 2013-06-18.*

Objective

This test report is prepared on behalf of *YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.* in accordance with EN 55022: Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement. EN 55024: Information technology equipment- Immunity characteristics – Limits and methods of measurement, EN 61000-3-2, Limits – Limits for harmonic current emissions (equipment input current up to and including 16 A per phase), and also in accordance with EN 61000-3-3, Limits Section 3; Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current<16A.

The objective of the manufacturer is to determine compliance with EN 55022, EN 55024, EN 61000-3-2 and EN 61000-3-3.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with CISPR 16-1-1:2010, specification for radio disturbance and immunity measuring apparatus and methods P1-1: radio disturbance and immunity measuring apparatus measuring apparatus. CISPR 16-1-4:2012, Specification for radio disturbance and immunity measuring apparatus and methods-Part 1-4: Radio disturbance and immunity measuring apparatus -Ancillary equipment -Radiated disturbances. CISPR 16-2-1:2010, specification for radio disturbance and immunity measuring apparatus and methods P2-1: methods of measurement of disturbance and immunity conducted disturbance measurements. CISPR 16-2-3:2010, specification for radio disturbance and immunity measuring apparatus and methods P2-3 methods of measurement of disturbances and immunity radiated disturbance measurements. CISPR 16-4-2:2011, Specification for radio disturbance and immunity measuring apparatus and methods-Part 4-2: Uncertainties, statistics and limit modeling-Uncertainty in EMC measurements

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 Meters.

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

Justification

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

Equipment Modifications

No modification was made to the EUT tested.

Local Support Equipment List and Details

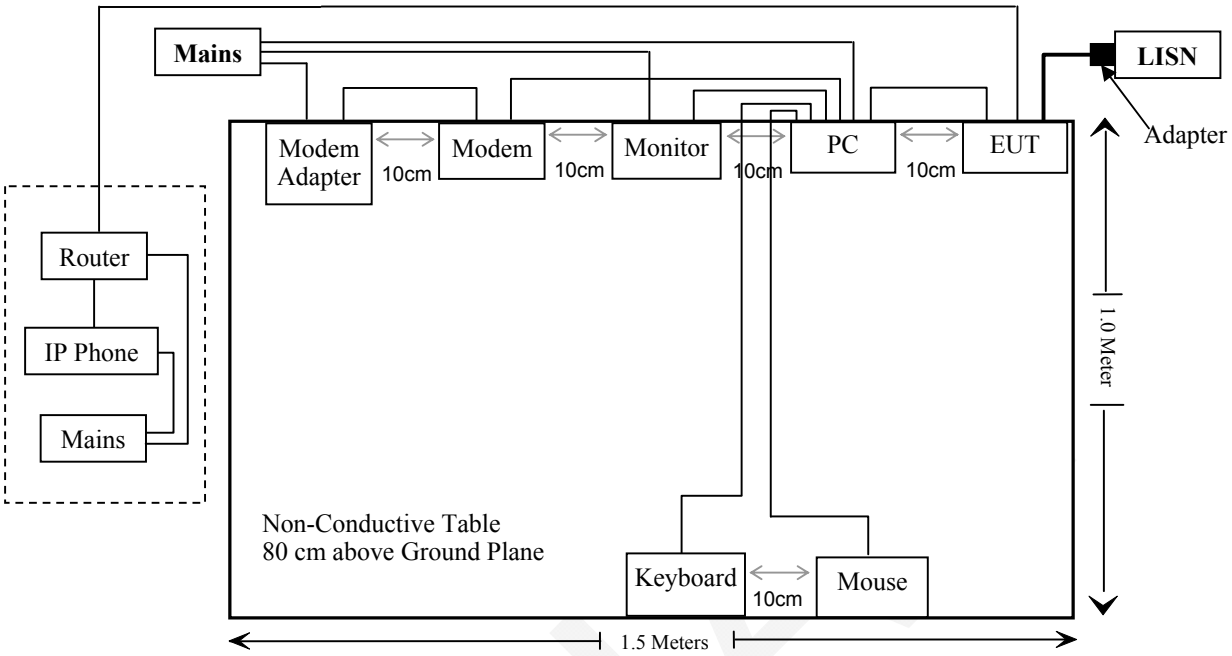
Manufacturer	Description	Model	Serial Number
DELL	PC	127BPX2	N/A
DELL	Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
DELL	Mouse	MOC5UO	G1B0096D
DELL	Keyboard	L100	CNORH656658907BL04TY
Sagemcom	Router	N/A	N/A
Yealink	IP phone 2	SIP-T41P	N/A
ECOM	Modem	5600pbs	N/A
NETGEAR	Prosafe 8 port 10/100 Switch with 4 port PoE	FS108P	272-10168-02
NETGEAR	Switching Adapter	DSA-0421S-501	N/A

External I/O Cable

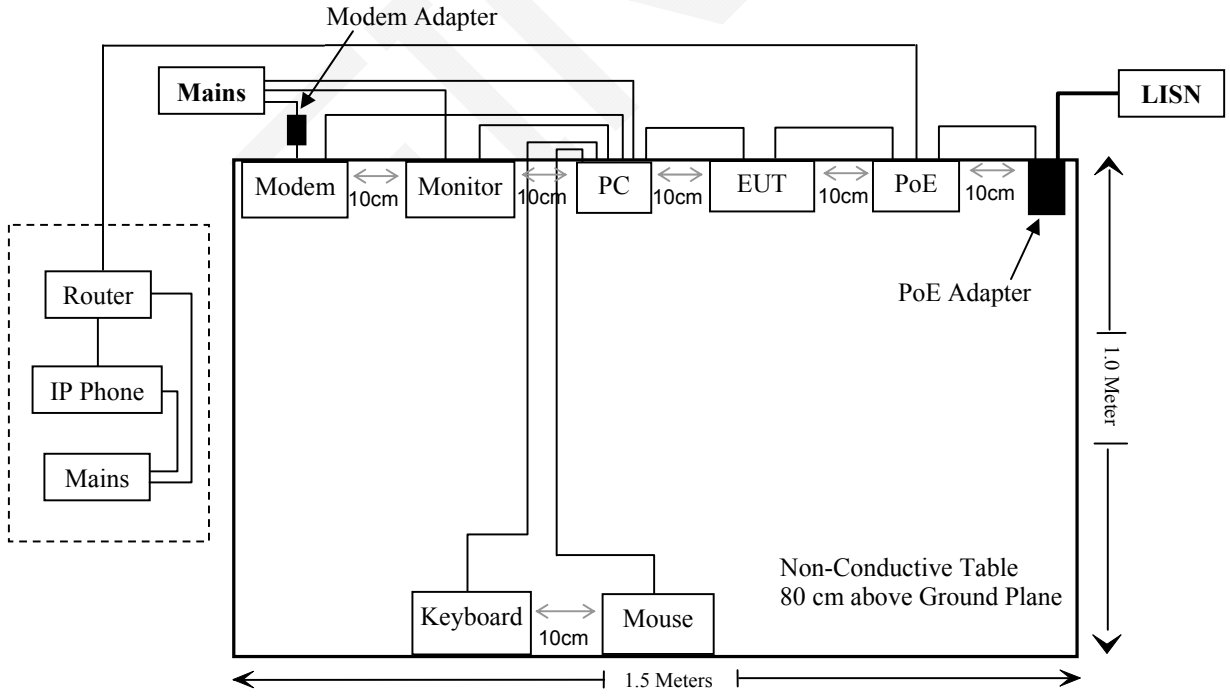
Cable Description	Length (m)	From/Port	To
Unshielded Undetachable DC Cable with a core	1.8	EUT	Adapter
Shielded Undetachable K/B Cable	1.5	K/B	PC
Shielded Undetachable Mouse Cable	1.5	Mouse	PC
Shielded Undetachable VGA Cable	1.5	Monitor	PC
Unshielded Detachable AC Cable	1.0	Main	Monitor
Unshielded Detachable RS232 Cable	1.5	Modem	PC
Unshielded Detachable RJ45 Cable	1.5	EUT	PC
Unshielded Detachable DC Cable	1.8	Main	EUT
Unshielded Detachable AC Cable	1.0	Main	PC
Unshielded Detachable RJ45 Cable	10	EUT	Router
Unshielded Detachable DC Cable	1.5	Main	Router
Unshielded Detachable DC Cable	1.8	Main	IP Phone
Unshielded Detachable RJ45 Cable	1.5	Router	IP Phone
Unshielded Detachable DC Cable	1.5	Modem	Modem Adapter
Unshielded Detachable AC Cable	1.5	Modem Adapter	Main
Unshielded Detachable RJ45 Cable	1.5	EUT	PoE

Block Diagram of Test Setup

1) Adapter power supply:



2) PoE power supply:



SUMMARY OF TEST REPORT

EN 55022

RULE	DESCRIPTION	RESULTS
§ 5.1	Conducted Disturbance at Mains Terminals	Compliance
§ 5.2	Conducted Disturbance at Telecommunication Port	Compliance
§ 6	Radiated Disturbance	Compliance

EN 55024

RULE	DESCRIPTION	RESULTS
§4.2.1	Electrostatic Discharge IEC 61000-4-2	Compliance
§4.2.2	Electrical Fast Transients IEC 61000-4-4	Compliance
§4.2.3.1	Continuous Radiated Disturbance IEC 61000-4-3	Compliance
§4.2.3.2	Continuous Conducted Disturbance IEC 61000-4-6	Compliance
§4.2.4	Power Frequency Magnetic Fields IEC 61000-4-8	Compliance
§4.2.5	Surges IEC 61000-4-5	Compliance
§4.2.6	Voltage Dips And Interruptions, IEC 61000-4-11	Compliance

EN 61000-3-2

RULE	DESCRIPTION	RESULTS
	Harmonic Current Emissions	Compliance

EN 61000-3-3

RULE	DESCRIPTION	RESULTS
	Voltage Fluctuation and Flicker	Compliance

EN 55022 §5.1 & §5.2 - CONDUCTED DISTURBANCE AT MAINS TERMINALS AND TELECOMMUNICATION PORT

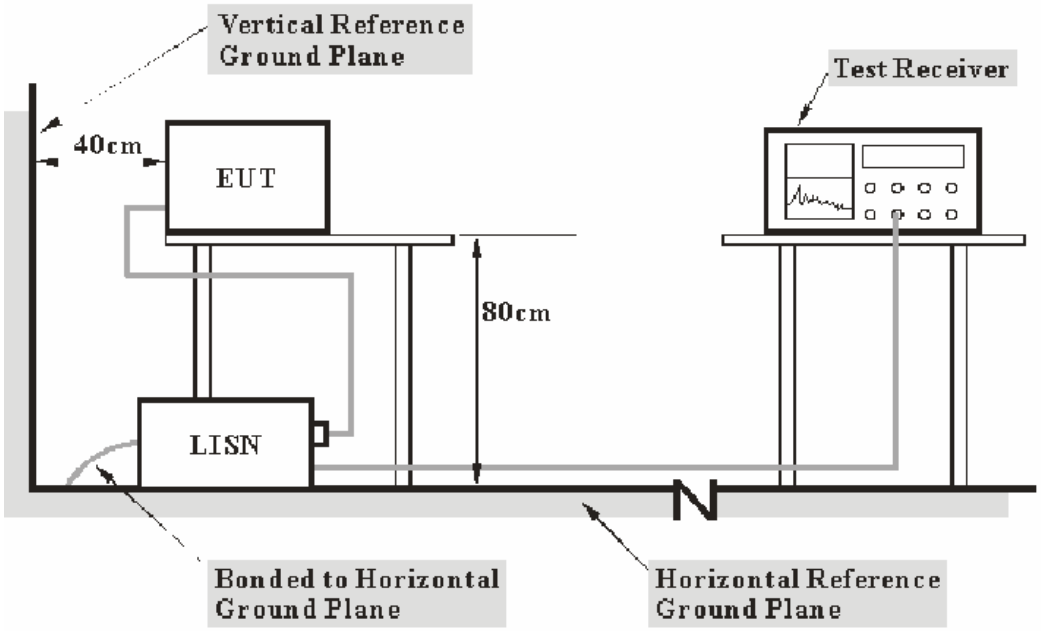
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between AMN/ISN and receiver, AMN/ISN voltage division factor, AMN/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	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)

Test System 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 CISPR 16-2-1:2010 measurement procedure. The related limit was specified in the EN 55022 Class B.

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 adapter was connected to an AC 230V/50 Hz 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

Tested on 2011-09-02：

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2011-03-03	2012-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-03-09	2012-03-08
SCHWARZBECK	8 WIRE ISN CAT 5	NTFM 8158	8158-0010	2010-10-19	2011-10-18

Tested on 2013-07-04：

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2013-06-17	2014-06-17
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2013-05-07	2014-05-07
Rohde & Schwarz	2nd LISN	ESH2-Z5	892107/021	2012-08-22	2013-08-22
Schwarzbeck	ISN	NTFM 8158	cat 5-8158-0010	2012-11-05	2013-11-05
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2012-08-09	2013-08-09

*** 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).

Test Procedure

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

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

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

Test Results Summary

According to the recorded data in following table, with the worst margin reading of:

0.5 dB at 4.158000 MHz in the **Neutral** conducted mode (adapter 2 power supply)

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance 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

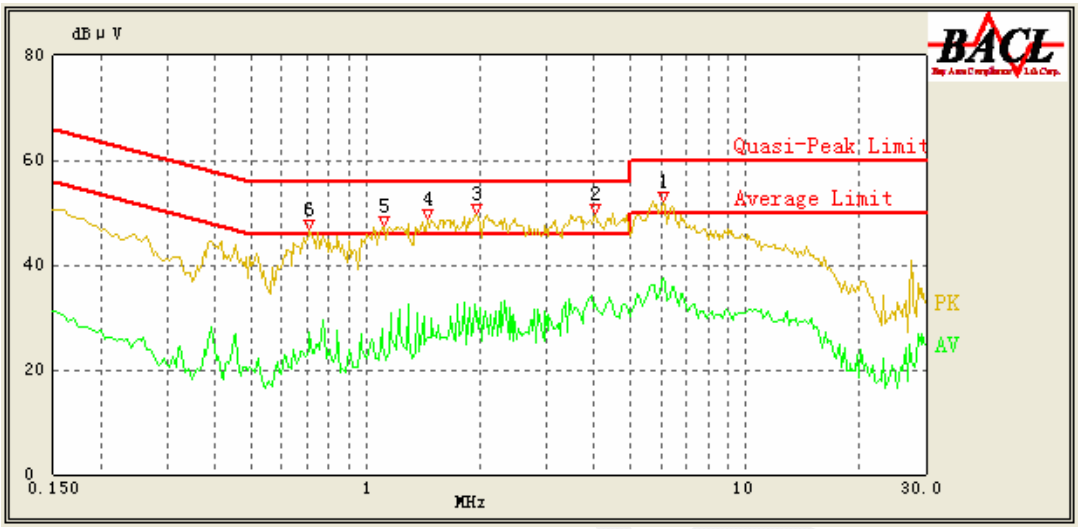
Temperature:	25~26 °C
Relative Humidity:	48~55 %
ATM Pressure:	100.0~101.1 kPa

The testing was performed by Lebron Wang on 2011-09-02 and Joson on 2013-07-04.

Test Mode: Talking

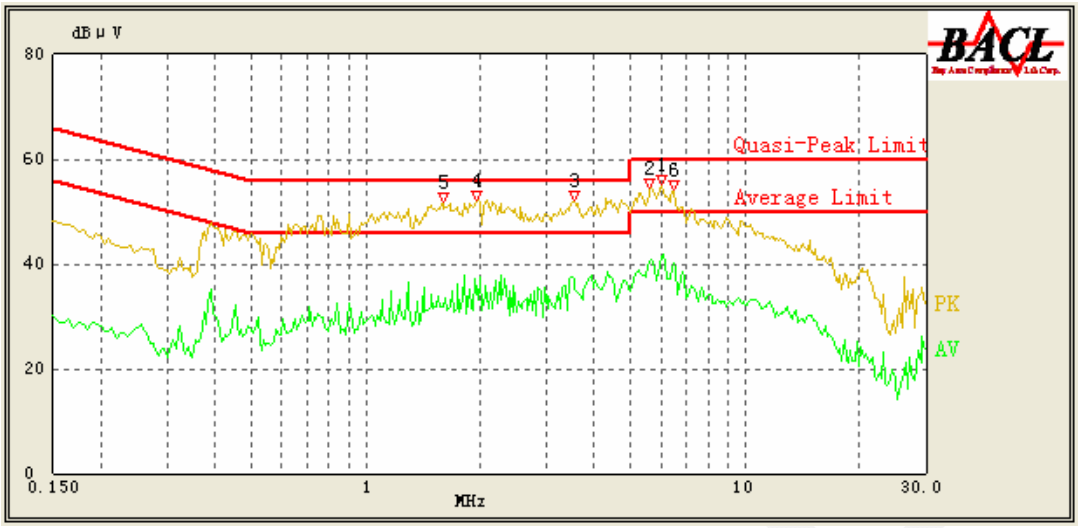
1) Adapter 1 power supply:

AC 230V/50 Hz, Line:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
6.085	37.53	10.10	50.00	12.47	Ave.
4.010	43.31	10.10	56.00	12.69	QP
4.010	32.60	10.10	46.00	13.40	Ave.
6.080	46.29	10.10	60.00	13.71	QP
1.965	40.31	10.10	56.00	15.69	QP
1.115	40.02	10.10	56.00	15.98	QP
0.710	39.71	10.10	56.00	16.29	QP
1.460	39.45	10.10	56.00	16.55	QP
1.970	27.80	10.10	46.00	18.20	Ave.
0.710	27.21	10.10	46.00	18.79	Ave.
1.460	26.14	10.10	46.00	19.86	Ave.
1.110	24.95	10.10	46.00	21.05	Ave.

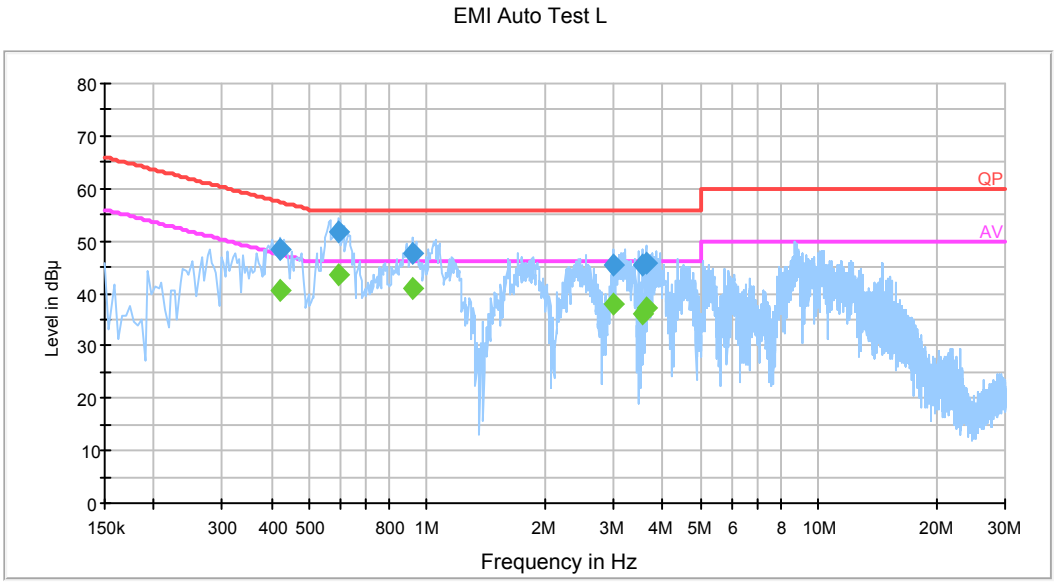
AC 230V/50 Hz, Neutral:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
6.015	41.63	10.10	50.00	8.37	Ave.
3.555	37.08	10.10	46.00	8.92	Ave.
5.625	40.77	10.10	50.00	9.23	Ave.
6.505	40.25	10.10	50.00	9.75	Ave.
3.555	45.39	10.10	56.00	10.61	QP
1.595	45.00	10.10	56.00	11.00	QP
6.030	48.15	10.10	60.00	11.85	QP
1.965	44.00	10.10	56.00	12.00	QP
5.615	47.60	10.10	60.00	12.40	QP
1.970	33.03	10.10	46.00	12.97	Ave.
6.470	47.02	10.10	60.00	12.98	QP
1.600	31.84	10.10	46.00	14.16	Ave.

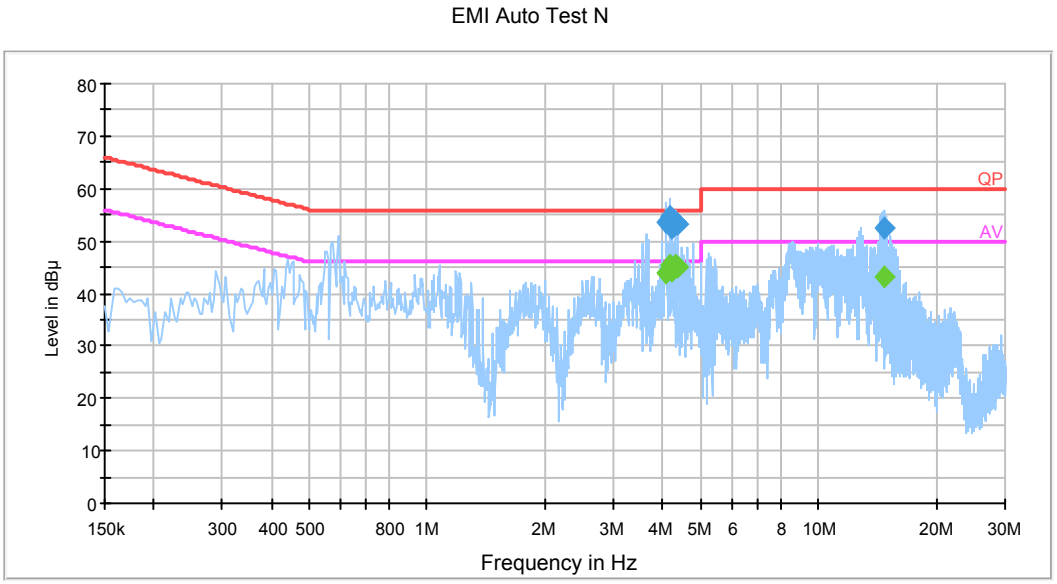
2) Adapter 2 power supply:

AC 230V/50 Hz, Line:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
0.594000	43.6	19.5	46.0	2.4*	Ave.
0.594000	51.9	19.5	56.0	4.1	QP
0.918000	40.9	19.5	46.0	5.1	Ave.
0.422000	40.7	19.5	47.4	6.7	Ave.
3.002000	37.9	19.6	46.0	8.1	Ave.
0.918000	47.7	19.5	56.0	8.3	QP
3.618000	37.4	19.6	46.0	8.6	Ave.
0.422000	48.2	19.5	57.4	9.2	QP
3.538000	36.1	19.6	46.0	9.9	Ave.
3.618000	45.8	19.6	56.0	10.2	QP
3.002000	45.5	19.6	56.0	10.5	QP
3.538000	45.5	19.6	56.0	10.5	QP

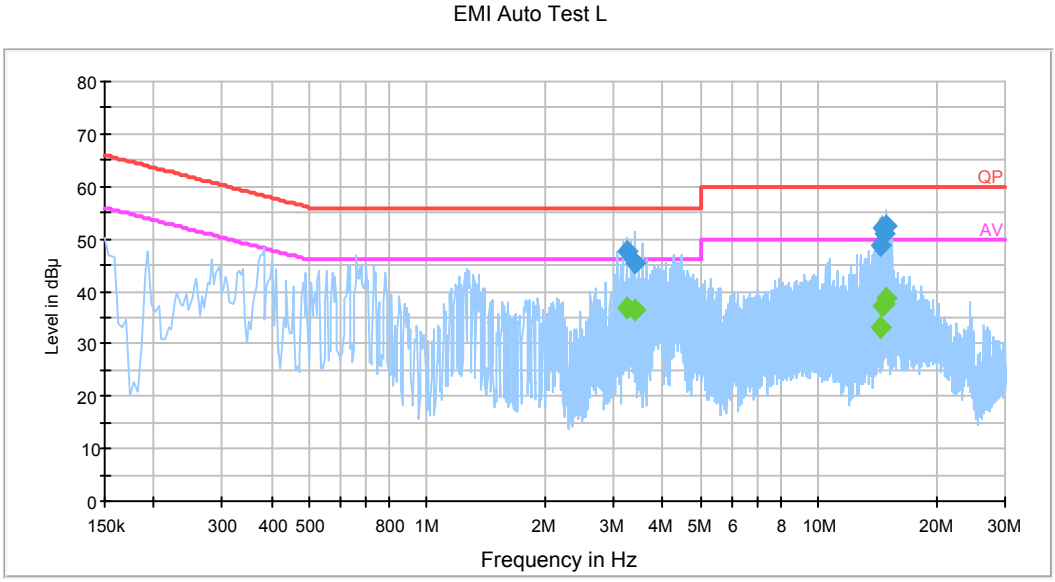
AC 230V/50 Hz, Neutral:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
4.158000	45.5	19.7	46.0	0.5*	Ave.
4.314000	45.3	19.7	46.0	0.7*	Ave.
4.390000	45.0	19.7	46.0	1.0*	Ave.
4.158000	54.8	19.7	56.0	1.2*	QP
4.238000	44.3	19.7	46.0	1.7*	Ave.
4.082000	43.7	19.7	46.0	2.3*	Ave.
4.314000	53.5	19.7	56.0	2.5*	QP
4.082000	53.4	19.7	56.0	2.6*	QP
4.390000	53.1	19.7	56.0	2.9*	QP
4.238000	52.6	19.7	56.0	3.4	QP
14.782000	43.2	20.0	50.0	6.8	Ave.
14.782000	52.3	20.0	60.0	7.7	QP

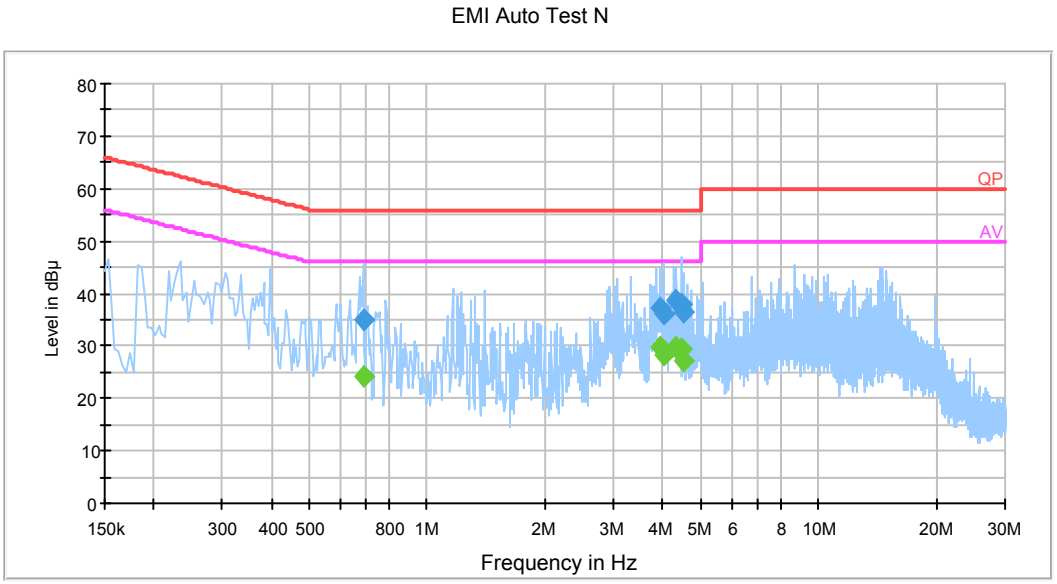
3) Adapter 3 power supply:

AC 230V/50 Hz, Line:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
14.858000	52.5	20.0	60.0	7.5	QP
14.546000	52.1	19.9	60.0	7.9	QP
3.234000	47.8	19.6	56.0	8.2	QP
14.706000	51.1	19.9	60.0	8.9	QP
3.234000	37.0	19.6	46.0	9.0	Ave.
3.390000	36.5	19.6	46.0	9.5	Ave.
3.390000	45.5	19.6	56.0	10.5	QP
14.466000	48.8	19.9	60.0	11.2	QP
14.858000	38.8	20.0	50.0	11.2	Ave.
14.706000	37.4	19.9	50.0	12.6	Ave.
14.546000	37.2	19.9	50.0	12.8	Ave.
14.466000	33.0	19.9	50.0	17.0	Ave.

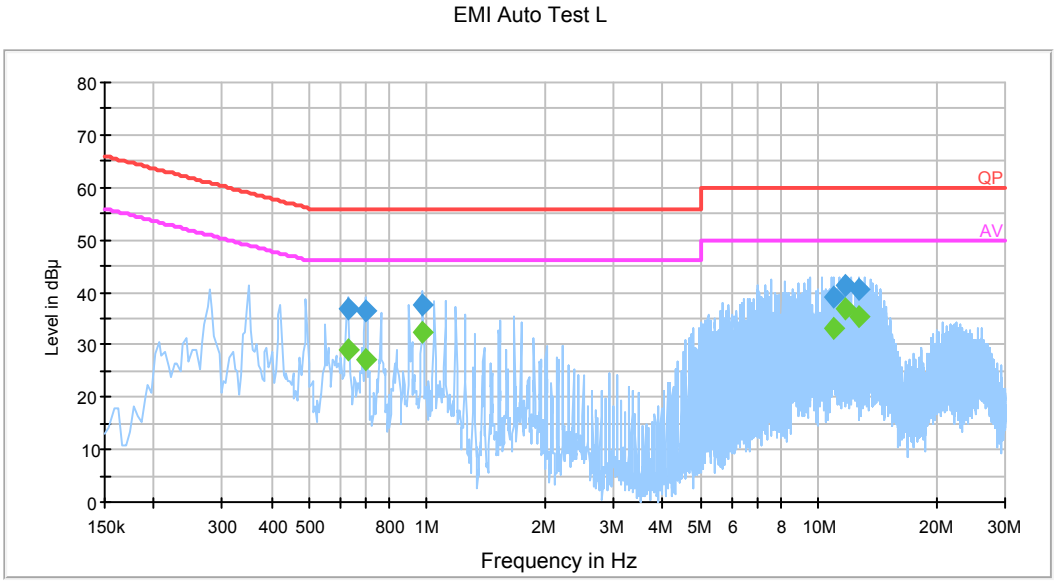
AC 230V/50 Hz, Neutral:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
3.938000	29.8	19.6	46.0	16.2	Ave.
4.342000	29.7	19.7	46.0	16.3	Ave.
4.462000	29.5	19.7	46.0	16.5	Ave.
4.342000	38.6	19.7	56.0	17.4	QP
4.026000	28.2	19.7	46.0	17.8	Ave.
4.462000	38.1	19.7	56.0	17.9	QP
3.938000	37.2	19.6	56.0	18.8	QP
4.514000	27.2	19.7	46.0	18.8	Ave.
4.514000	36.4	19.7	56.0	19.6	QP
4.026000	36.2	19.7	56.0	19.8	QP
0.686000	35.0	19.5	56.0	21.0	QP
0.686000	24.3	19.5	46.0	21.7	Ave.

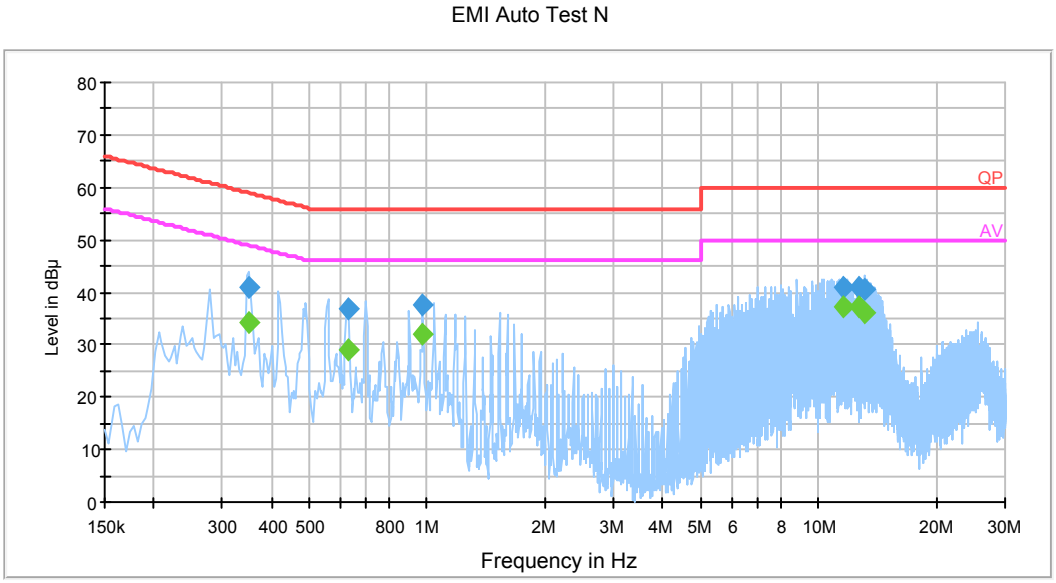
4) PoE power supply:

AC 230V/50 Hz, Line:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
11.694000	37.0	19.9	50.0	13.0	Ave.
0.974000	32.3	19.6	46.0	13.7	Ave.
12.666000	35.5	20.0	50.0	14.5	Ave.
0.626000	29.2	19.6	46.0	16.8	Ave.
10.994000	33.1	19.9	50.0	16.9	Ave.
0.974000	37.6	19.6	56.0	18.4	QP
0.694000	27.3	19.6	46.0	18.7	Ave.
11.694000	41.2	19.9	60.0	18.8	QP
0.626000	36.8	19.6	56.0	19.2	QP
12.666000	40.7	20.0	60.0	19.3	QP
0.694000	36.6	19.6	56.0	19.4	QP
10.994000	39.2	19.9	60.0	20.8	QP

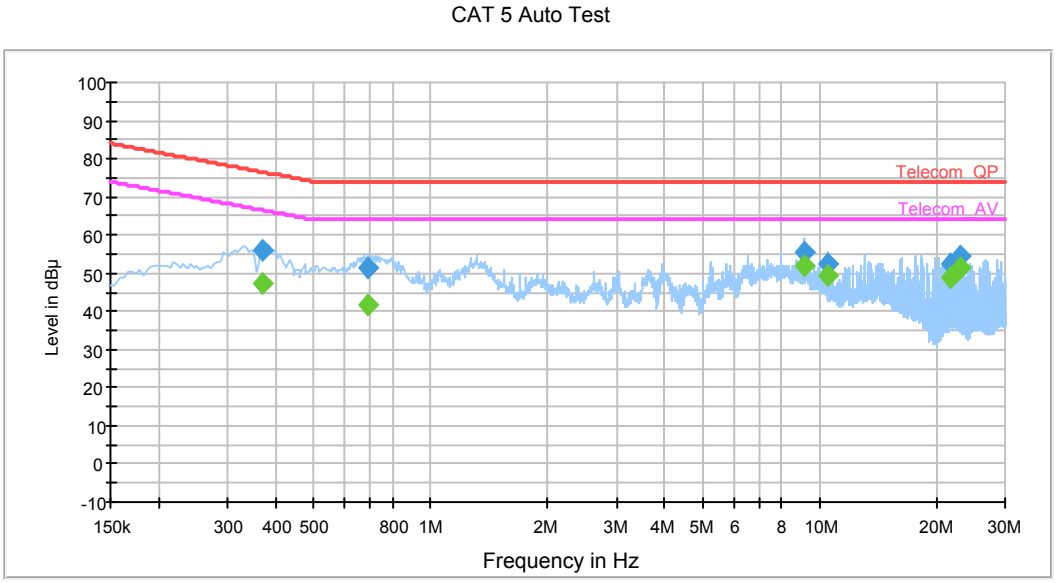
AC 230V/50 Hz, Neutral:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
12.670000	37.3	20.1	50.0	12.7	Ave.
11.626000	37.2	20.0	50.0	12.8	Ave.
13.086000	36.2	20.1	50.0	13.8	Ave.
0.974000	32.0	19.7	46.0	14.0	Ave.
0.350000	34.2	19.6	49.0	14.8	Ave.
0.626000	29.1	19.6	46.0	16.9	Ave.
0.350000	40.8	19.6	59.0	18.2	QP
0.974000	37.5	19.7	56.0	18.5	QP
11.626000	41.0	20.0	60.0	19.0	QP
12.670000	41.0	20.1	60.0	19.0	QP
0.626000	36.7	19.6	56.0	19.3	QP
13.086000	40.5	20.1	60.0	19.5	QP

5) Telecommunication Port:

RJ45 Port:



Conducted Disturbance			EN 55022 Class B		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
9.182000	51.9	19.4	64.0	12.1	Ave.
23.130000	51.3	19.7	64.0	12.7	Ave.
10.498000	49.6	19.4	64.0	14.4	Ave.
21.662000	49.0	19.6	64.0	15.0	Ave.
9.182000	55.3	19.4	74.0	18.7	QP
0.370000	47.3	19.8	66.5	19.2	Ave.
23.130000	54.5	19.7	74.0	19.5	QP
0.370000	56.1	19.8	76.5	20.5	QP
10.498000	52.6	19.4	74.0	21.4	QP
21.662000	52.4	19.6	74.0	21.6	QP
0.690000	41.6	19.6	64.0	22.4	Ave.
0.690000	51.5	19.6	74.0	22.5	QP

Note:
1) Corrected Amplitude = Reading + Correction Factor
2) Correction Factor =LISN/ISN VDF (Voltage Division Factor) + Cable Loss + Pulse Limiter Attenuation
The corrected factor has been input into the transducer of the test software.
3) Margin = Limit – Corrected Amplitude
4) *within measurement uncertainty!

EN 55022 §6-RADIATED DISTURBANCE

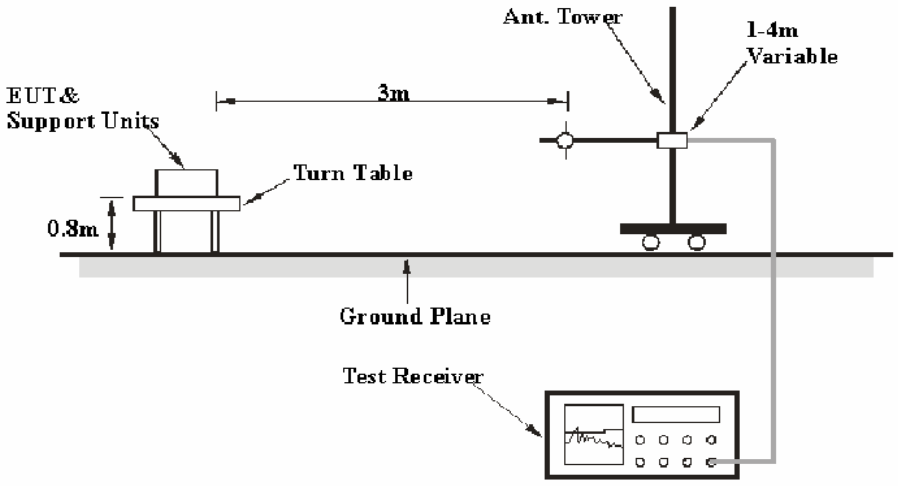
Measurement Uncertainty

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
30MHz~200MHz	Horizontal	4.62 dB (k=2, 95% level of confidence)
	Vertical	4.54 dB (k=2, 95% level of confidence)
200MHz~1GHz	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)

Test System Setup



The radiated emission tests were performed in the 3 meters chamber A test site, using the setup accordance with the CISPR16-1-4:2012, CISPR 16-2-3:2010. The limit was specified in EN 55022 Class B.

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 adapter was connected to a 230 VAC/50 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 2 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	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	/	Ave.

Test Equipment List and Details

Tested on 2011-09-14:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2011-08-02	2012-08-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-11	2011-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-07-05	2012-07-04
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-05-05	2012-05-04
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-07-08	2012-07-07

Tested on 2013-07-02.:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2012-11-24	2013-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2013-05-09	2014-05-09
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Mini-Circuits	Amplifier	ZVA-213+	N/A	2012-11-24	2013-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2014-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
R&S	Auto test Software	EMC32	V6.30	-	-

*** 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).

Test Procedure

During the radiated emissions, the adapter was connected to the AC floor outlet.

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

Data was recorded in Quasi-peak detection mode from 30 MHz to 1 GHz, peak and average detection modes for frequencies above 1 GHz.

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:

Corrected Amplitude = Meter Reading + Antenna Factor + 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 for Class B. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude.

Test Results Summary

According to the data in the following table, with the worst margin reading of:

1.22 dB at **1591.1 MHz** in the **Vertical** polarization (Adapter 2)

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

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

inBACL, $U_{(Lm)}$ 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

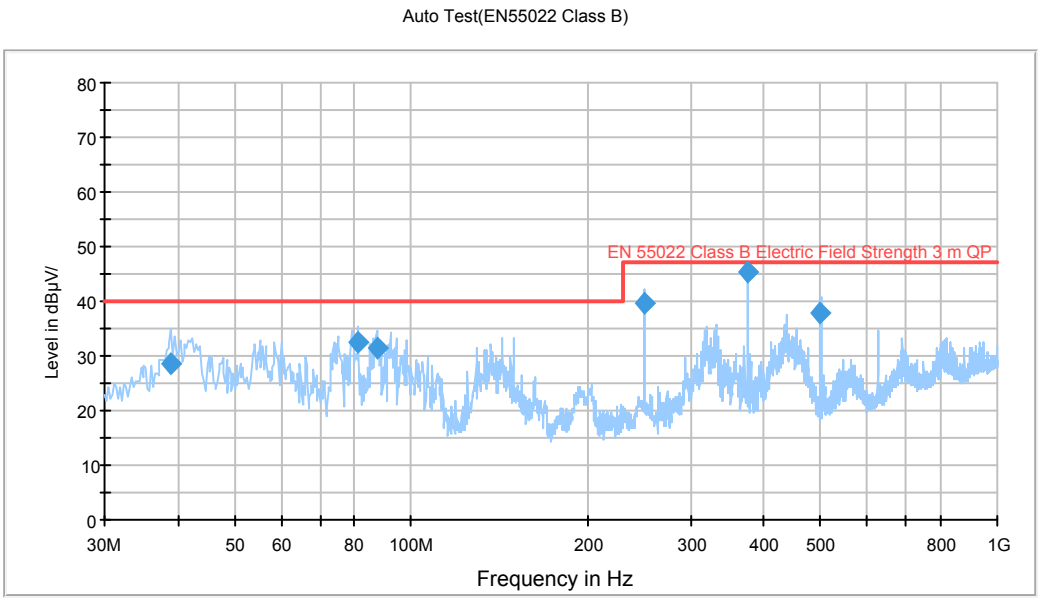
Temperature:	25~26 °C
Relative Humidity:	48~55 %
ATM Pressure:	100.0~101.1 kPa

The testing was performed by Lebron Wang on 2011-09-14 and Joson Xiao on 2013-07-02.

Test Mode: Talking

1) Adapter 1 power supply:

Below 1 GHz:



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
375.036500	45.3	186.0	V	262.0	-10.5	47.0	1.7*
81.192250	32.6	103.0	V	233.0	-18.1	40.0	7.4
250.007250	39.5	210.0	V	64.0	-13.5	47.0	7.5
87.620250	31.3	133.0	V	109.0	-17.7	40.0	8.7
500.018000	37.8	102.0	V	169.0	-8.4	47.0	9.2
38.887500	28.6	104.0	V	50.0	-11.4	40.0	11.4

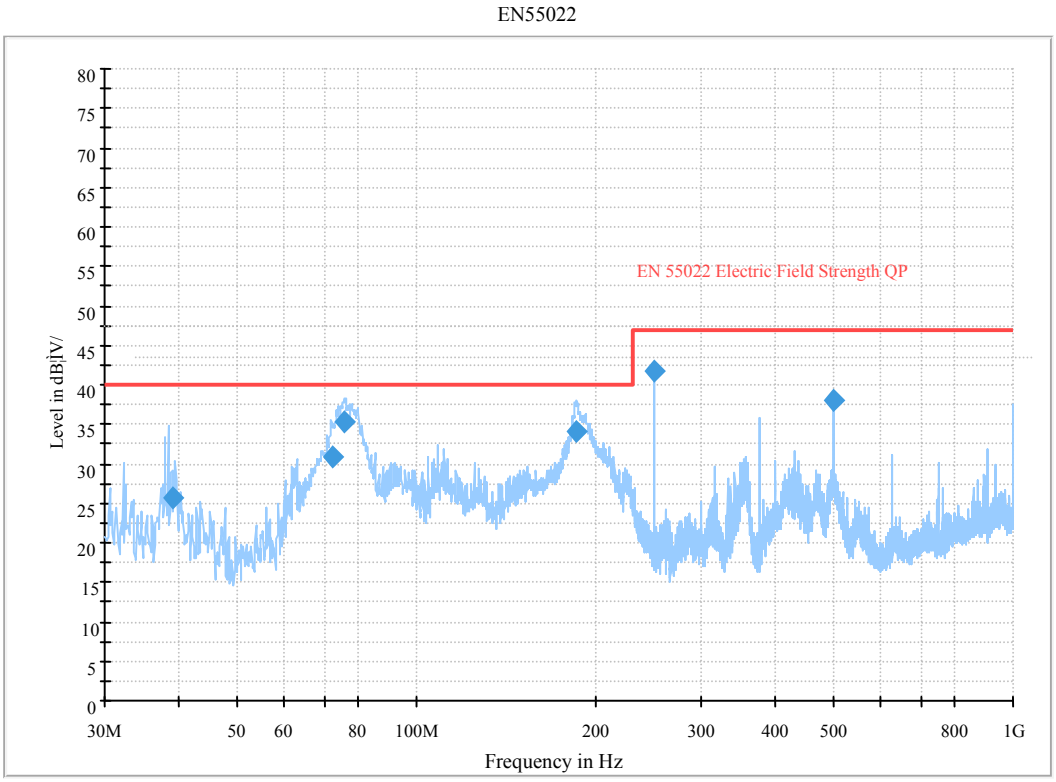
Above 1 GHz:

Frequency (MHz)	S.A Reading (dBµV/m)	Detector (PK /Ave.)	Direction Degree	Antenna Height (m)	Polarity (H/V)	Antenna Factor (dB/m)	Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	EN55022	
										Limit (dBµV/m)	Margin (dB)
1374.7	40.91	Ave.	330	1.0	V	24.9	2.17	26.63	41.35	50	8.65
1186.4	32.57	Ave.	330	1.0	H	24.2	2.02	26.52	32.27	50	17.73
1186.4	43.36	PK	330	1.0	H	24.2	2.02	26.52	43.06	70	26.94
1374.7	42.49	PK	330	1.0	V	24.9	2.17	26.63	42.93	70	27.07

Note: The data which below the limit 20 dB was not recorded.

2) Adapter 2 power supply:

Below 1 GHz:



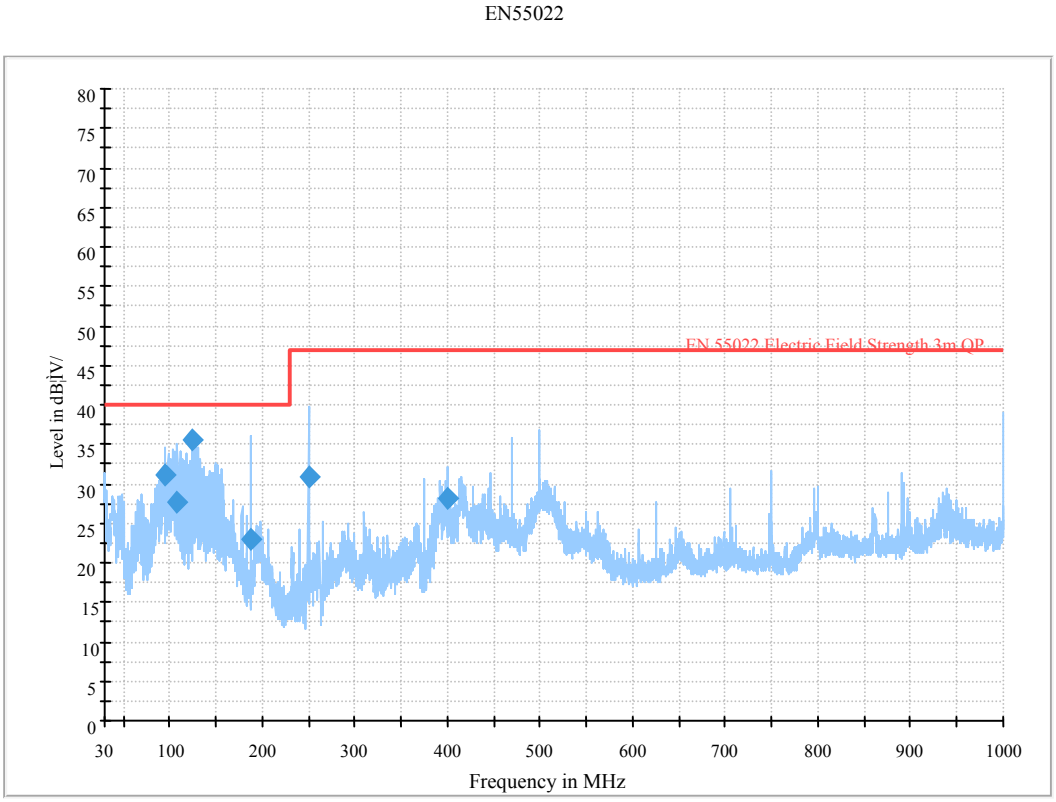
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
75.965650	35.2	98.0	V	90.0	-20.2	40.0	4.8
250.016950	41.8	164.0	H	43.0	-15.8	47.0	5.2
185.517200	34.2	98.0	V	42.0	-16.1	40.0	5.8
499.998650	38.1	98.0	V	145.0	-10.1	47.0	8.9
72.096400	30.8	118.0	V	34.0	-20.5	40.0	9.2
38.951100	25.6	98.0	V	42.0	-13.6	40.0	14.4

Above 1 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	EN 55022	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
1591.1	67.08	PK	16	1.4	V	1.70	68.78	70	1.22*
1294.1	66.65	PK	340	1.4	V	0.19	66.84	70	3.16*
1294.1	43.51	Ave.	340	1.4	V	0.19	43.70	50	6.30
1831.6	60.11	PK	87	1.2	V	2.63	62.74	70	7.26
1591.1	40.23	Ave.	16	1.4	V	1.70	41.93	50	8.07
1831.6	37.28	Ave.	87	1.2	V	2.63	39.91	50	10.09

3) Adapter 3 power supply:

Below 1 GHz:



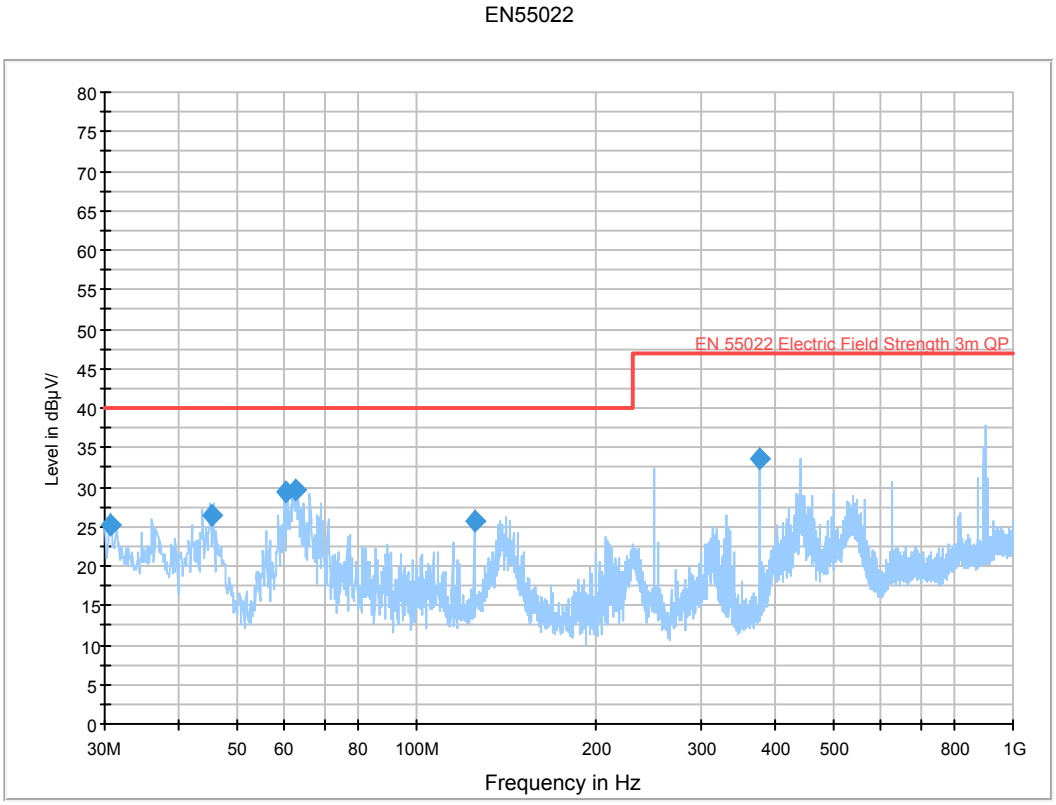
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
125.008800	35.5	98.0	V	144.0	-13.4	40.0	4.5
94.364400	31.1	105.0	V	253.0	-18.9	40.0	8.9
108.792400	27.7	98.0	V	51.0	-15.2	40.0	12.3
250.068750	30.8	165.0	V	198.0	-15.8	47.0	16.2
187.479000	22.9	201.0	H	76.0	-16.1	40.0	17.1
399.630950	28.1	98.0	H	35.0	-11.8	47.0	18.9

Above 1 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	EN 55022	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
1501.0	37.96	Ave.	58	1.4	V	1.15	39.11	50	10.89
1464.9	35.92	Ave.	317	1.4	V	0.74	36.66	50	13.34
1166.3	35.92	Ave.	258	1.5	V	0.13	36.05	50	13.95
1464.9	53.08	PK	317	1.4	V	0.74	53.82	70	16.18
1501.0	46.59	PK	58	1.4	V	1.15	47.74	70	22.26
1166.3	47.28	PK	258	1.5	V	0.13	47.41	70	22.59

4) PoE power supply:

Below 1 GHz:



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
62.774950	29.7	147.0	V	8.0	-20.8	40.0	10.3
60.210900	29.4	100.0	V	0.0	-20.7	40.0	10.6
374.956250	33.6	126.0	V	225.0	-12.9	47.0	13.4
45.229550	26.3	100.0	V	10.0	-17.8	40.0	13.7
125.007300	25.7	105.0	V	6.0	-13.4	40.0	14.3
30.607600	25.1	100.0	V	320.0	-7.2	40.0	14.9

Above 1 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Correction Factor (dB/m)	Corrected Amplitude (dBµV/m)	EN 55022	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
1501.0	40.23	Ave.	69	1.5	V	1.15	41.38	50	8.62
1599.1	39.60	Ave.	345	1.3	H	1.70	41.30	50	8.70
1458.9	37.42	Ave.	215	1.4	V	0.74	38.16	50	11.84
1458.9	53.39	PK	215	1.4	V	0.74	54.13	70	15.87
1501.0	48.74	PK	69	1.5	V	1.15	49.89	70	20.11
1599.1	46.39	PK	345	1.3	H	1.70	48.09	70	21.91

Note:
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + Cable loss – Amplifier Factor
Margin = Limit - Corrected Amplitude

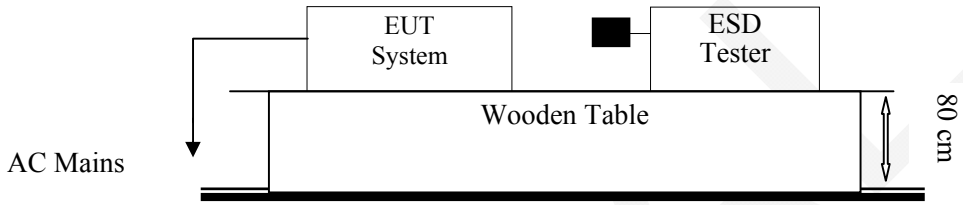
EN 55024 §4.2.1-ELECTROSTATIC DISCHARGES (IEC 61000-4-2)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	ESD Tester	Dito	302105	2010-10-27	2011-10-26

*** 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).

Test System Setup



Remark: ■ is the tip of the electrode

IEC 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.5 by 1.0-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by *0.5-millimeter* thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Standard

EN 55024:2010 (IEC 61000-4-2:2008)
Test level 3 for Air Discharge at ±8 kV
Test level 2 for Contact Discharge at ±4 kV

Test Level

Level	Test Voltage Contact Discharge (±kV)	Test Voltage Air Discharge (±kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

Performance criterion: B

Test Procedure

Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Contact Discharge:

All the procedure shall be same as Section 8.3.1 of IEC 61000-4-2, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1 m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane

At least 20 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m × 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Lebron Wang on 2011-09-15.

Test Mode: Talking

1) Adapter power supply:

Table 1: Electrostatic Discharge Immunity (Air Discharge)

IEC 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-8 kV	+8 kV	-15 kV	+15 kV
LCD (10 point)	A	A	A	A	A	A	/	/
Surface crack (8 points)	A	A	A	A	A	A	/	/
Key (49 points)	A	A	A	A	A	A	/	/
Speaker (5 points)	A	A	A	A	A	A	/	/
RJ11 Port (3 points)	A	A	A	A	A	A	/	/
RJ45 Port (2 points)	A	A	A	A	A	A	/	/
Microphone (1 point)	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

IEC 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
/	/	/	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

IEC 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

IEC 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	/	/	/	/

Air Discharge

Indirect Contact

Test Setup Photos

2) PoE power supply:

Table 1: Electrostatic Discharge Immunity (Air Discharge)

IEC 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-8 kV	+8 kV	-15 kV	+15 kV
LCD (10 points)	A	A	A	A	A	A	/	/
Surface Crack (8 points)	A	A	A	A	A	A	/	/
Key (49 points)	A	A	A	A	A	A	/	/
Speaker (5 points)	A	A	A	A	A	A	/	/
RJ11 Port (3 points)	A	A	A	A	A	A	/	/
RJ45 Port (2 points)	A	A	A	A	A	A	/	/
Microphone (1 point)	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

IEC 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
/	/	/	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

IEC 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

IEC 61000-4-2 Test Points Location	Test Levels							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	/	/	/	/

Air Discharge

Indirect Contact

Test Setup Photos

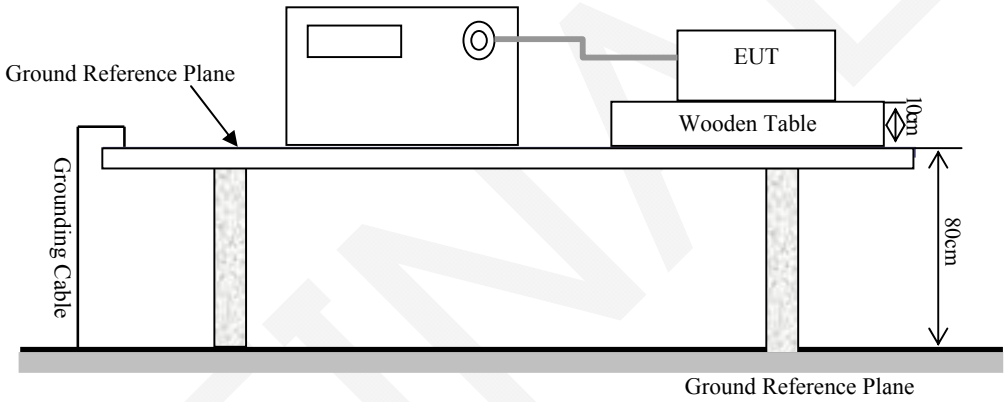
EN 55024 §4.2.2-ELECTRICAL FAST TRANSIENTS (IEC 61000-4-4)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-N5	V0939105172	2011-07-04	2012-07-03
EM Test	Auto-transformer	MV2616	V0939105173	2011-07-04	2012-07-03
EM Test	EFT Clamp	N/A	300886	2011-07-04	2012-07-03

*** 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).

Test System Setup



Test Standard

EN 55024:2010 (IEC 61000-4-4:2004)
AC mains: Test level 2 at 1 kV
Signal port: Test level 2 at 0.5 kV

Test Level

Open Circuit Output Test Voltage ±10%		
Level	**On Power Supply Lines**	**On I/O (Input/Output) Signal data and control lines**
1	0.5 kV	0.25 kV
2	1 kV	0.5 kV
3	2 kV	1 kV
4	4 kV	2 kV
X	Special	Special

Performance Criterion: B

Test Procedure

The EUT was arranged for Power Line Coupling and for I/O Line Coupling through a capacitive clamp, where applicable. (Note: The I/O coupling test using a capacitive clamp is performed on the I/O interface cables that are longer in length than 3 meters.) A metal ground plane 2.4 meter by 2.0 meter was placed between the floor and the table and is connected to the earth by a 2.0 meter ground rod. The ground rod is connected to the test facility's electrical earth.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Lebron Wang on 2011-09-15.

.Test Mode: Talking

1) Adapter power supply:

IEC 61000-4-4 Test Points		Test Levels (kV)							
		+0. 5	-0. 5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
AC mains power input ports	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	Earth	/	/	/	/	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + Earth	/	/	/	/	/	/	/	/
	L2 + Earth	/	/	/	/	/	/	/	/
	L1+L2+Earth	/	/	/	/	/	/	/	/
Signal ports	RJ45	A	A	/	/	/	/	/	/

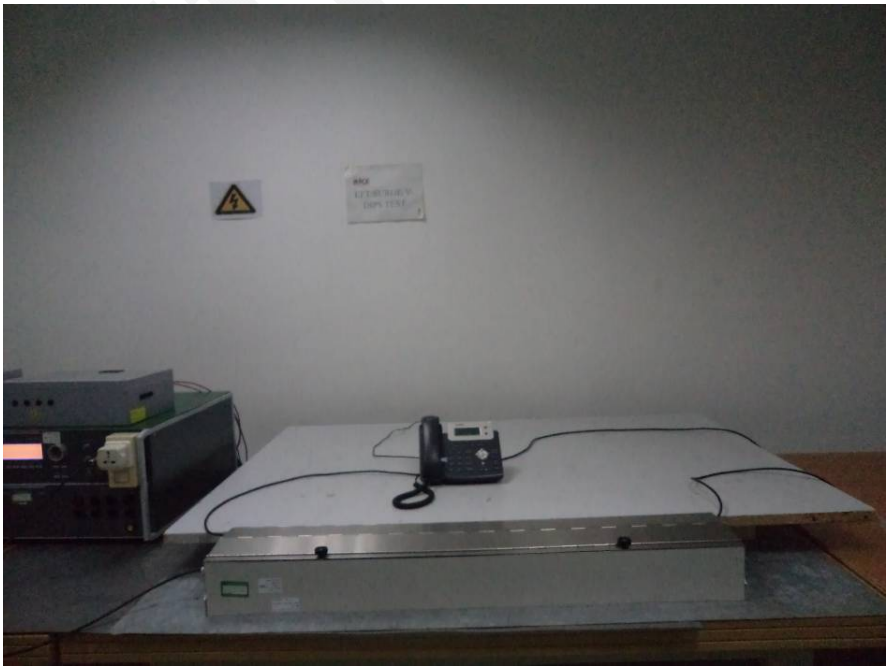
2) PoE power supply:

IEC 61000-4-4 Test Points		Test Levels (kV)							
		+0. 5	-0. 5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
AC mains power input ports	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	Earth	A	A	A	A	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + Earth	A	A	A	A	/	/	/	/
	L2 + Earth	A	A	A	A	/	/	/	/
	L1+L2+Earth	A	A	A	A	/	/	/	/
Signal ports	RJ45	A	A	/	/	/	/	/	/

1) Adapter power supply

AC Mains

RJ45 port



2) PoE power supply

AC Mains

RJ45 port

Test Setup Photos

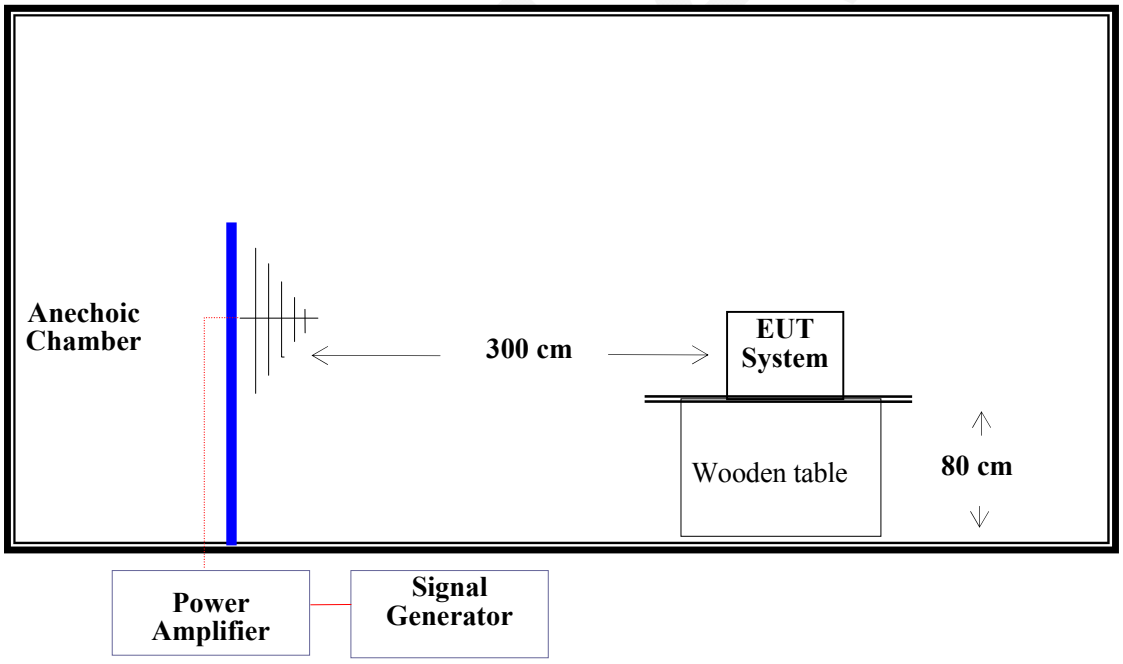
EN 55024 §4.2.3.1-CONTINUOUS RADIATED DISTURBANCES (IEC 61000-4-3)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Amplifier Research	Amplifier	200W1000/M2	15893	2011-01-14	2012-01-13
Amplifier Research	Field Meter	FM5004	302149	2011-03-31	2012-03-30
ETS-LINDGREN	Sensor	HI-6005	N/A	2011-03-31	2012-03-30
HP	Signal Generator	HP8657A	2849U00982	2010-10-28	2011-10-27
Amplifier Research	Biconilog Antenna	AT1080	301902	N/A	N/A

*** 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).

Test System Setup



Test Standard

EN 55024:2010 (IEC 61000-4-3: 2006 + A1:2007 + A2:2010)
Test level 2 at 3V / m

Test Level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

Performance Criterion: A

Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD camera is used to monitor the EUT.
All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3 V/m (Test level 2)
2.	Radiated Signal	AM 80%, 1 kHz Modulation
3.	Scanning Frequency	80 – 1000 MHz
4.	Sweeping time of radiated	0.0015decade/s
5.	Dwell Time	1Sec.

Test Data and Setup Photo

Environmental Conditions

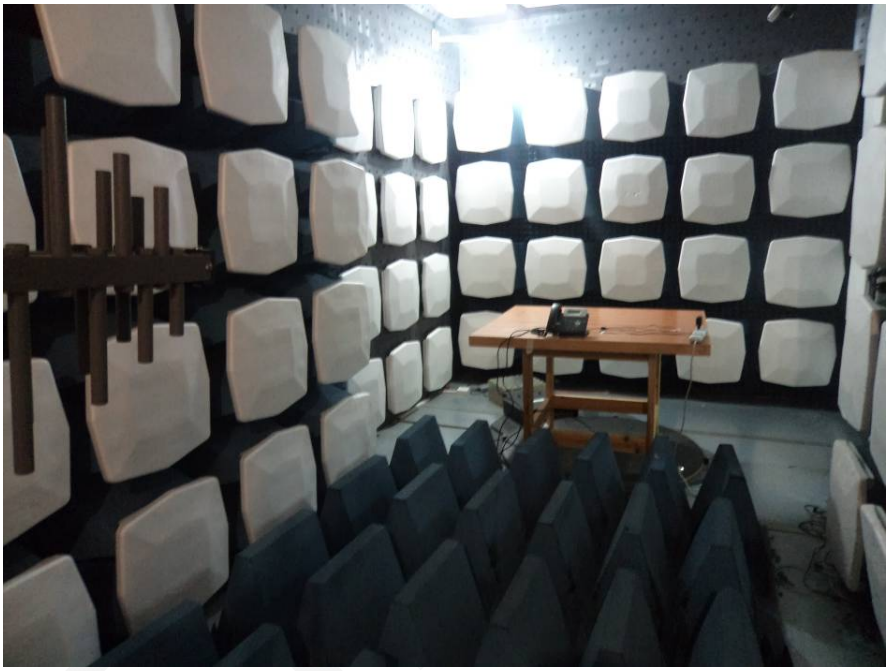
Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Lebron Wang on 2011-09-15.

Test Mode: Talking

1) Adapter power supply:

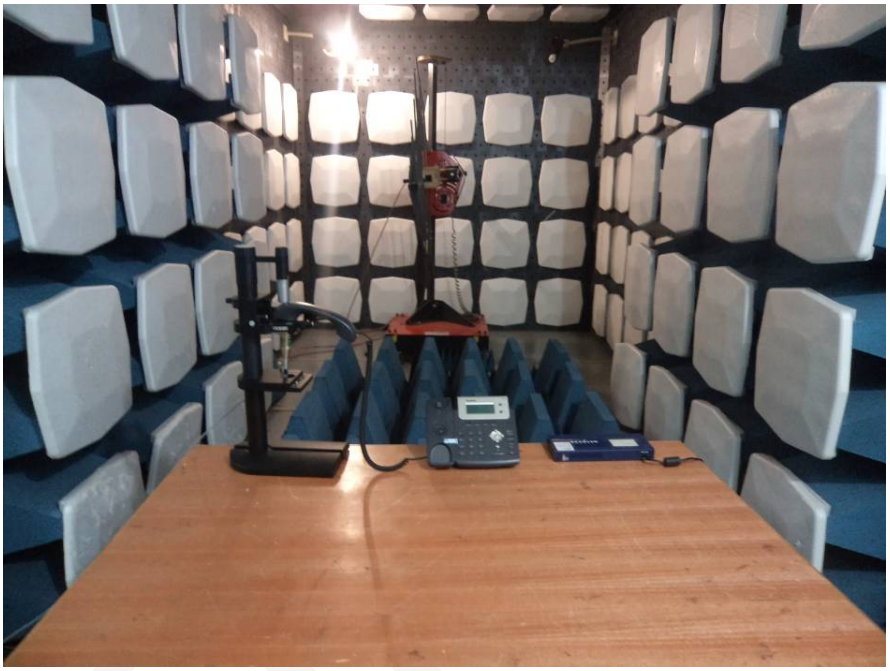
Frequency Range (MHz)	Front Side (3 V/m)		Rear Side (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A



Test Setup Photo

2) PoE power supply:

Frequency Range (MHz)	Front Side (3 V/m)		Rear Side (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A



Test Setup Photo

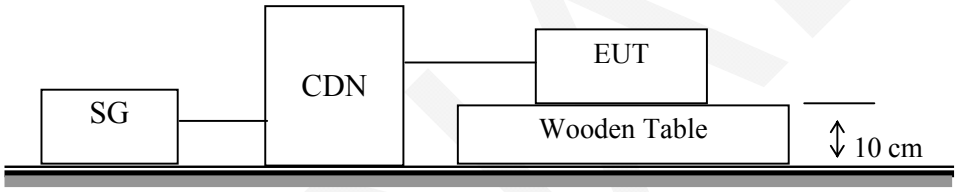
EN 55024 §4.2.3.2-CONTINUOUS CONDUCTED DISTURBANCES (IEC 61000-4-6)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	CDN	M3	1201-05	2011-03-09	2012-03-08
EM Test	C/S Tester	CWS500	303277	2010-11-03	2011-11-02
EM Test	Attenuator	6dB	303282	2010-11-15	2011-11-14

*** 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).

Test Setup



Test Standard

EN 55024:2010 (IEC 61000-4-6:2008)
Test level 2 at 3 V r.m.s. (unmodulated), 0.15 MHz ~ 80 MHz,

Test Level

Level	Voltage Level (r.m.s.) (V)
1	1
2	3
3	10
X	Special

Performance Criterion: A

Test Procedure

1) Let the EUT work in test mode and test it.
2) The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3 m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
3) The disturbance signal described below is injected to EUT through CDN.
4) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
5) The frequency range is swept from 150 kHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
6) The rate of sweep shall not exceed 1.5*10-3decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
7) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Lebron Wang on 2011-09-15.

.

Test Mode: Talking

1) Adapter power supply:

Table 1: AC mains power input port
Modulation: Amplitude 80%, 1 kHz sine wave
Test level: 3V r.m.s.

Level	Voltage Level (r.m.s.) U_0	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

Table 2: RJ45 port
Modulation: Amplitude 80%, 1 kHz sine wave
Test level: 3V r.m.s.

Level	Voltage Level (r.m.s.) U_0	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

AC Mains

RJ45 Port

Test Setup Photos

2) PoE power supply:

Table 1: AC mains power input port
Modulation: Amplitude 80%, 1 kHz sine wave
Test level: 3V r.m.s.

Level	Voltage Level (r.m.s.) U_0	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

Table 2: RJ45 port
Modulation: Amplitude 80%, 1 kHz sine wave
Test level: 3V r.m.s.

Level	Voltage Level (r.m.s.) U_0	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

AC Mains

RJ45 Port

Test Setup Photos

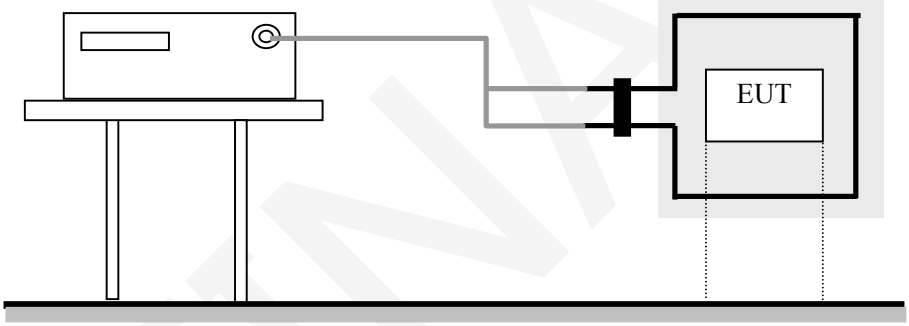
EN 55024 §4.2.4-POWER FREQUENCY MAGNETIC FIELDS (IEC 61000-4-8)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-N5	V0939105172	2011-07-04	2012-07-03
EM Test	Auto-transformer	MV2616	V0939105173	2011-07-04	2012-07-03
EM Test	Current Transformer	MC2630	0309-59	2011-03-09	2012-03-08
EM Test	Loop Antenna	MS100	0809-05	2011-03-09	2012-03-08

*** 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).

Test Setup



Test Standard

EN 55024:2010 (IEC 61000-4-8:2009)
Test level 1 at 1A/m

Test Level

Level	Magnetic Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X.	Special

Performance criterion: A

Test Procedure

The EUT shall be subjected to the test magnetic field by using the induction coil of standard dimensions (1 m*1 m). The induction coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Lebron Wang on 2011-09-15.

.

Test Mode: Talking

1) Adapter power supply:

Level	Magnetic Field Strength A/m	X (Horizontal)	Y (Vertical)	Z (Special)
1	1	A	A	A
2	3	/	/	/
3	10	/	/	/
4	30	/	/	/
5	100	/	/	/
X	Special	/	/	/

2) PoE power supply:

Level	Magnetic Field Strength A/m	X (Horizontal)	Y (Vertical)	Z (Special)
1	1	A	A	A
2	3	/	/	/
3	10	/	/	/
4	30	/	/	/
5	100	/	/	/
X	Special	/	/	/

Adapter power supply:

PoE power supply:

Test Setup Photos

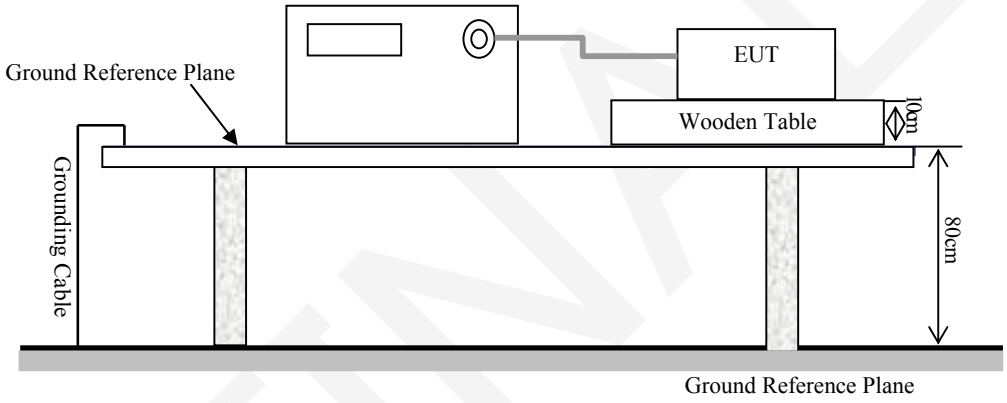
EN 55024 §4.2.5-SURGES (IEC 61000-4-5)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-N5	V0939105172	2011-07-04	2012-07-03
EM Test	Auto-transformer	MV2616	V0939105173	2011-07-04	2012-07-03
EM Test	CDN	CNV 504S1	V0939105175	2011-07-04	2012-07-03

*** 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).

Test System Setup



Test Standard

EN 55024:2010 (IEC 61000-4-5:2005)
AC Mains: L-N: Test level 2 at 1 kV
L-PE, N-PE: Test level 1 at 0.5 kV
Signal port: Test level 2 at 1 kV

Test Level

Level	Open Circuit Output Test Voltage ±10%
1	0.5 kV
2	1 kV
3	2 kV
4	4 kV
X	Special

Performance criterion: B

Test Procedure

1) For line to line coupling mode, provide a 0.5 kV 1.2/50us voltage surge (at open-circuit condition).
2) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
3) Different phase angles are done individually.
4) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Lebron Wang on 2011-09-15.

.

Test Mode: Talking

1) Adapter power supply:

Table 1: AC mains power input port

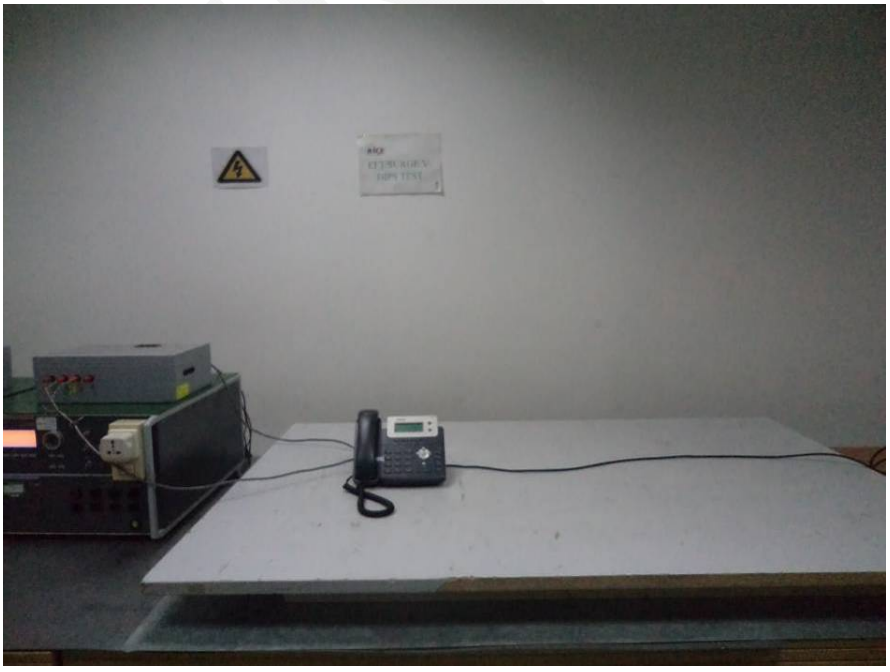
Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	A	/
2	1kV	±	L-N	A	/
3	2kV	±	L-N, L-PE, N-PE	/	/
4	4kV	±	L-N, L-PE, N-PE	/	/

Table 2: RJ45 port

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	Line-Ground	A	/
2	1kV	±	Line-Ground	A	/
3	2kV	±	Line-Line, Line-Ground	/	/
4	4kV	±	Line-Line, Line-Ground	/	/

AC mains

RJ45 port



Test Setup Photos

2) PoE power supply:

Table 1: AC mains power input port

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N,L-PE, N-PE,L-N-PE	A	/
2	1kV	±	L-N,L-PE, N-PE,L-N-PE	A	/
3	2kV	±	L-PE, N-PE,L-N-PE	A	/
4	4kV	±	L-N, L-PE, N-PE	/	/

Table 2: RJ45 port

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	Line-Ground	A	/
2	1kV	±	Line-Ground	A	/
3	2kV	±	Line-Line, Line-Ground	/	/
4	4kV	±	Line-Line, Line-Ground	/	/

AC mains

RJ45 port

Test Setup Photos

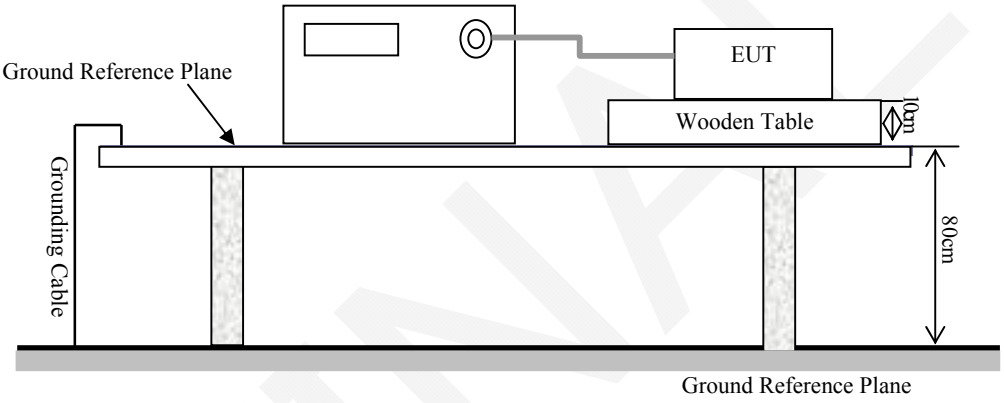
EN 55024 §4.2.6-VOLTAGE DIPS AND INTERRUPTIONS (IEC 61000-4-11)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-N5	V0939105172	2011-07-04	2012-07-03
EM Test	Auto-transformer	MV2616	V0939105173	2011-07-04	2012-07-03

*** 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).

Test Setup



Test Standard

EN 55024:2010 (IEC 61000-4-11:2004)
Test levels and Performance Criterion

Test Level

Test Level	Voltage dip and short interruptions %UT	Duration (Periods)	Performance Criterion
1	>95	0.5	B
2	30	25	C
3	>95	250	C

Test Procedure

1) The interruption is introduced at selected phase angles with specified duration.
2) Record any degradation of performance.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Lebron Wang on 2011-09-15.

Test Mode: Talking

1) Adapter power supply:

Level	U2 (% Reduction)	Td(Periods)	Phase Angle	N	Pass	Fail
1	>95	0.5	0/90/180/270	3	A	/
2	30	25	0/90/180/270	3	B	/
3	>95	250	0/90/180/270	3	B	/

Test Setup Photo

2) PoE power supply:

Level	U2 (% Reduction)	Td(Periods)	Phase Angle	N	Pass	Fail
1	>95	0.5	0/90/180/270	3	A	/
2	30	25	0/90/180/270	3	A	/
3	>95	250	0/90/180/270	3	B	/

Test Setup Photo

EN 61000-3-2-HARMONIC CURRENT EMISSIONS

According to EN 61000-3-2:2006 + A1:2009 + A2:2009 section 7: Equipment with a rated power of 75 W or less, other than discharge lighting equipment, are not included in this standard.

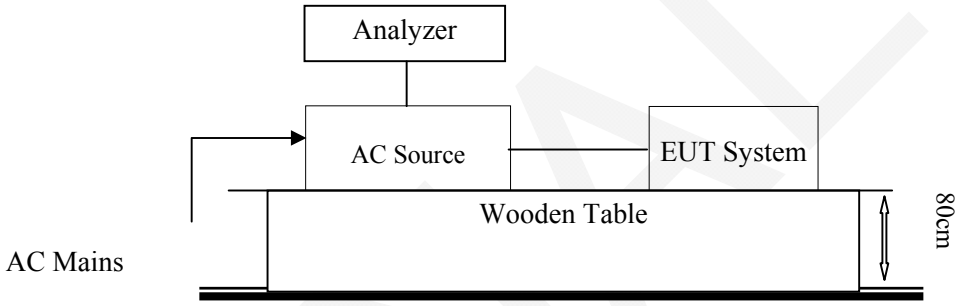
EN 61000-3-3- VOLTAGE FLUCTUATION AND FLICKER

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Harmonic/Flicker Analyzer	DPA 500N	V0939105176	2010-11-11	2011-11-10
EM Test	AC Source	ACS500	1101-02	2011-03-25	2012-03-24

*** 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).

Test System Setup



Test Standard

EN 61000-3-3:2008

Flicker Test Limits :

The limits shall be applicable to voltage fluctuations and flicker at the supply terminals of the equipment under test, measured or calculated according to clause 4 under test conditions described in clause 6 and annex A. Tests made to prove compliance with the limits are considered to be type tests.
The following limits apply:
– the value of Pst shall not be greater than 1,0;
– the value of Plt shall not be greater than 0,65;
– the value of d(t) during a voltage change shall not exceed 3,3 % for more than 500 ms;
– the relative steady-state voltage change, dc, shall not exceed 3,3 %;
– the maximum relative voltage change dmax, shall not exceed
a) 4 % without additional conditions;
b) 6 % for equipment which is:

– switched manually, or
– switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

Note: The cycling frequency will be further limited by the Pst and Plt limit. For example: a dmax of 6 % producing a rectangular voltage change characteristic twice per hour will give a Plt of about 0,65.

c) 7 % for equipment which is
– attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
– switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

In the case of equipment having several separately controlled circuits in accordance with 6.6, limits b) and c) shall apply only if there is delayed or manual restart after a power supply interruption; for all equipment with automatic switching which is energized immediately on restoration of supply after a power supply interruption, limits a) shall apply; for all equipment with manual switching, limits b) or c) shall apply depending on the rate of switching. Pst and Plt requirements shall not be applied to voltage changes caused by manual switching. The limits shall not be applied to voltage changes associated with emergency switching or emergency interruptions.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25°C
Relative Humidity:	50 %
ATM Pressure:	100.0 kPa

Date of test:	16:50 19 Aug. 2011
Tester:	Lebron Wang
Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flicker meter:	230V / 50Hz
Customer:	YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.
E. U. T.:	IP PHONE
Model:	SIP-T20P
Test Mode:	Talking (adapter power supply)

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.028	0.65	PASS
dmax [%]	0.012	3.30	PASS
dt [s]	0.261	4.00	PASS

Test Setup Photo

Date of test:	15:19 19 Aug. 2011
Tester:	Lebron Wang
Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flicker meter:	230V / 50Hz
Customer:	YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.
E. U. T.:	IP PHONE
Model:	SIP-T20P
Test Mode:	Talking (PoE power supply)

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	Pass
dc [%]	0.028	0.065	Pass
dmax [%]	0.013	3.30	Pass
dt [s]	0.054	4.00	Pass

Test Setup Photo

EXHIBIT A - PRODUCT LABELING

Label Specification

Specification: The marking set out above must be affixed to the apparatus or to its data plate and have a minimum height of 5 mm. The elements should be easily readable and indelible. They may be placed anywhere on the apparatus case or in its battery compartment. No tool should be needed to view the marking.

Label Location on EUT

EXHIBIT B - EUT PHOTOGRAPHS

EUT – All View

EUT – Top View

EUT – Bottom View

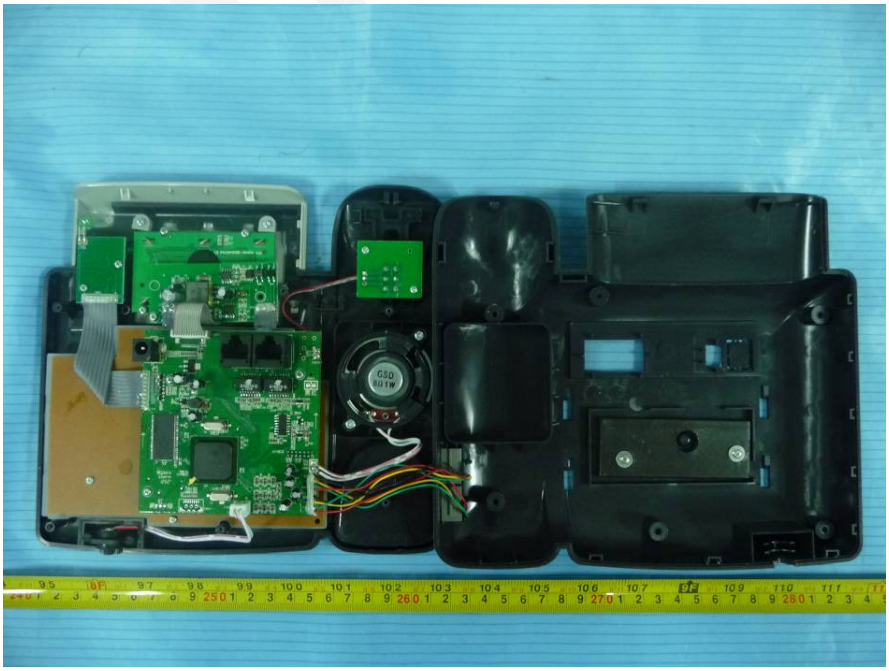
EUT – Front View

EUT – Rear View

EUT – Left View

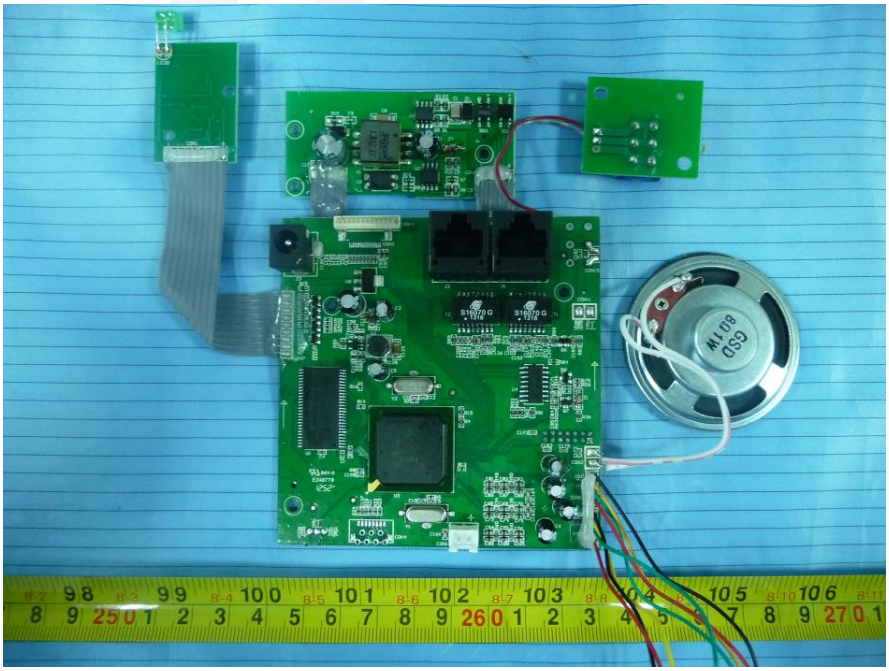
EUT – Right View

EUT – Cover off View

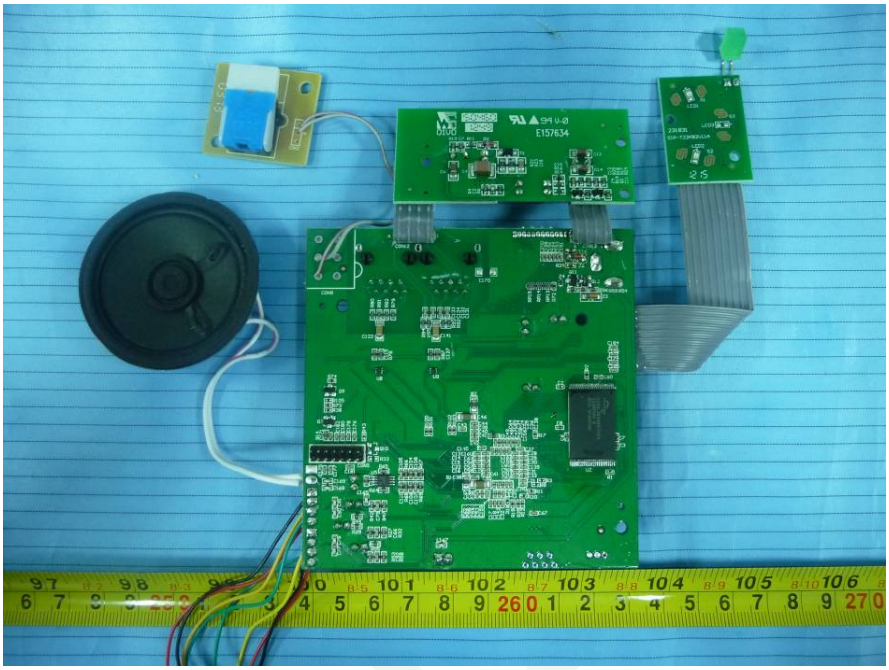


EUT – Handset cover off View

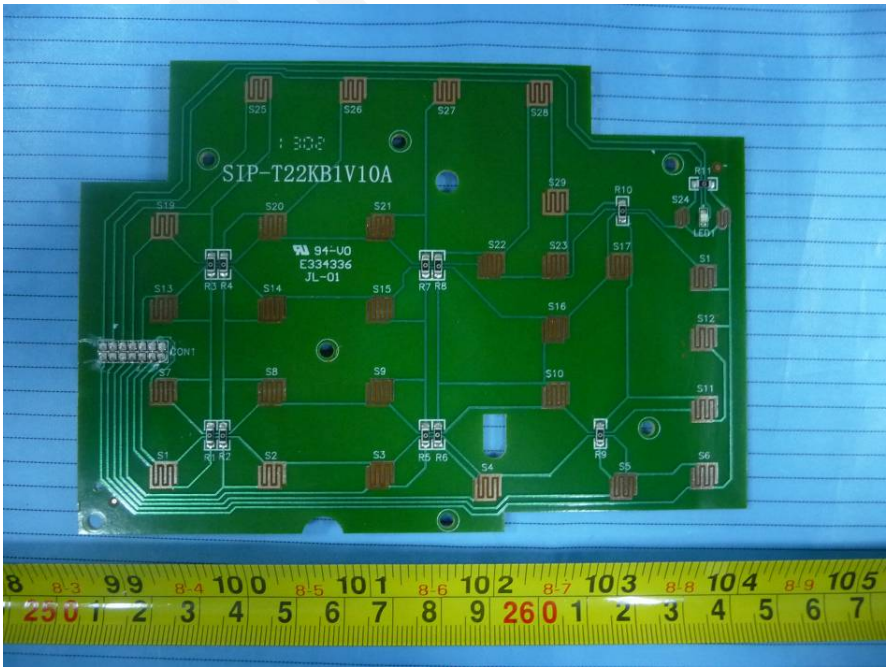
EUT – Main Board Top View



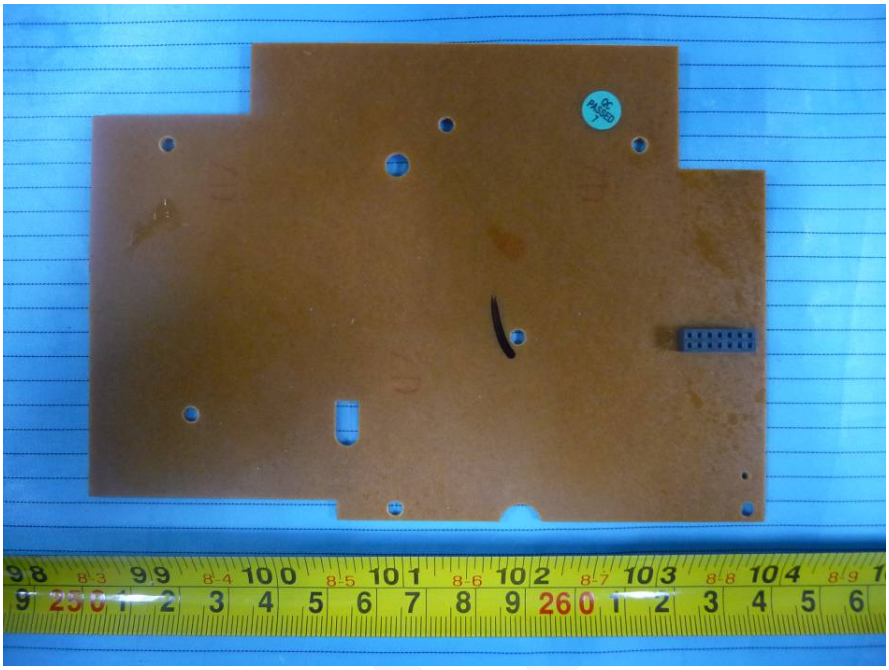
EUT – Main Board Bottom View



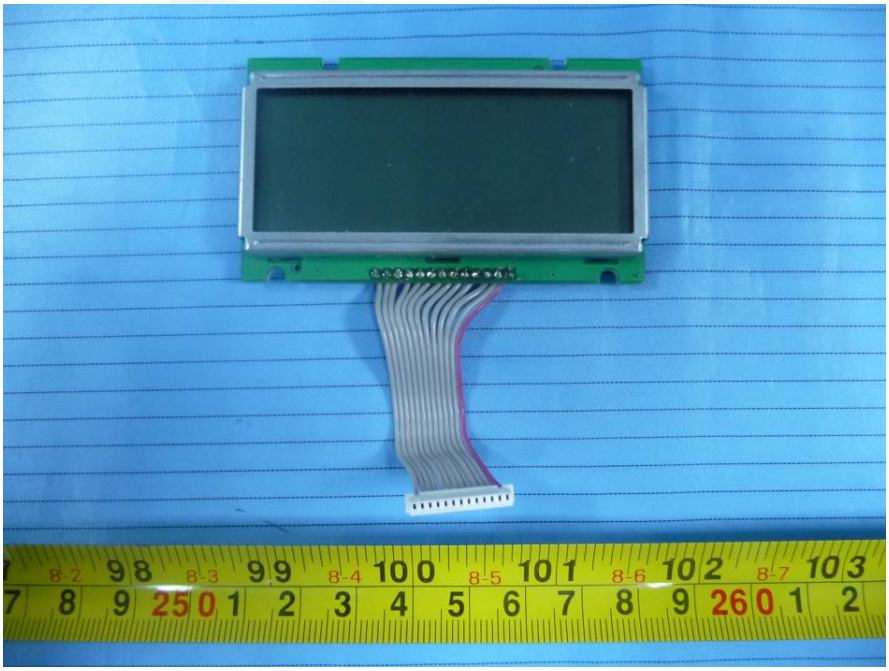
EUT – Key Board Top View



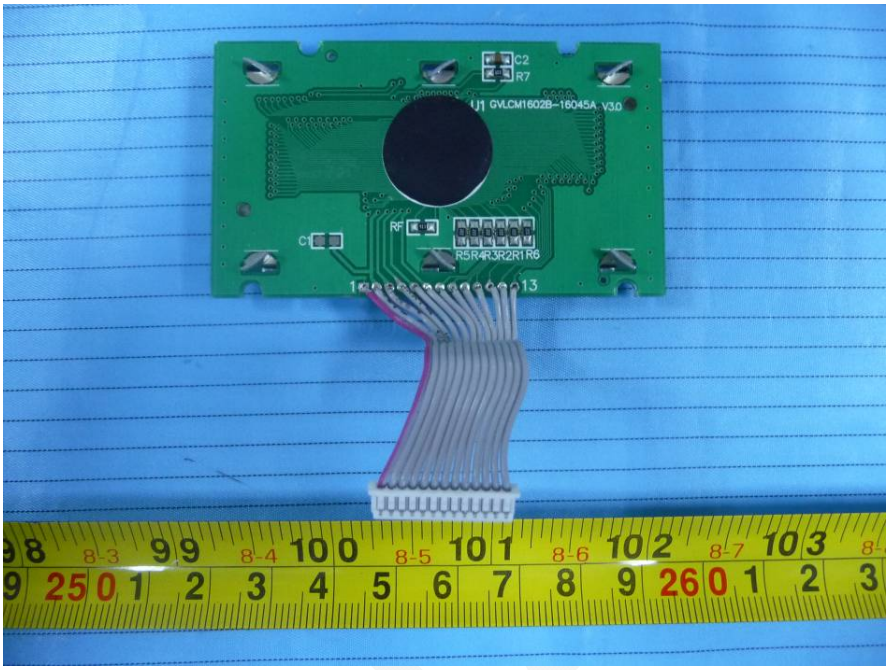
EUT –Key Board Bottom View



EUT – LCD Screen Top View



EUT –LCD Screen Bottom View



EUT – Adapter 1 Label View

EUT – Adapter 2 Label View

EUT – Adapter 3 Label View

EXHIBIT C - TEST SETUP PHOTOGRAPHS

Conducted Disturbance at Mains Terminals - Front View (Adapter power supply)

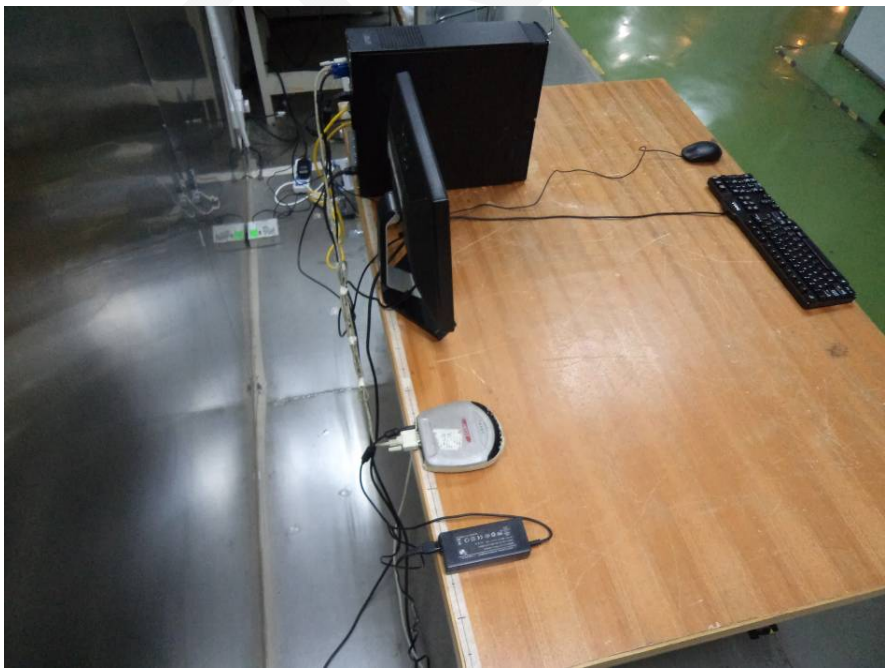
Conducted Disturbance at Mains Terminals - Side View (Adapter power supply)

Conducted Disturbance at Mains Terminals - Front View (PoE power supply)

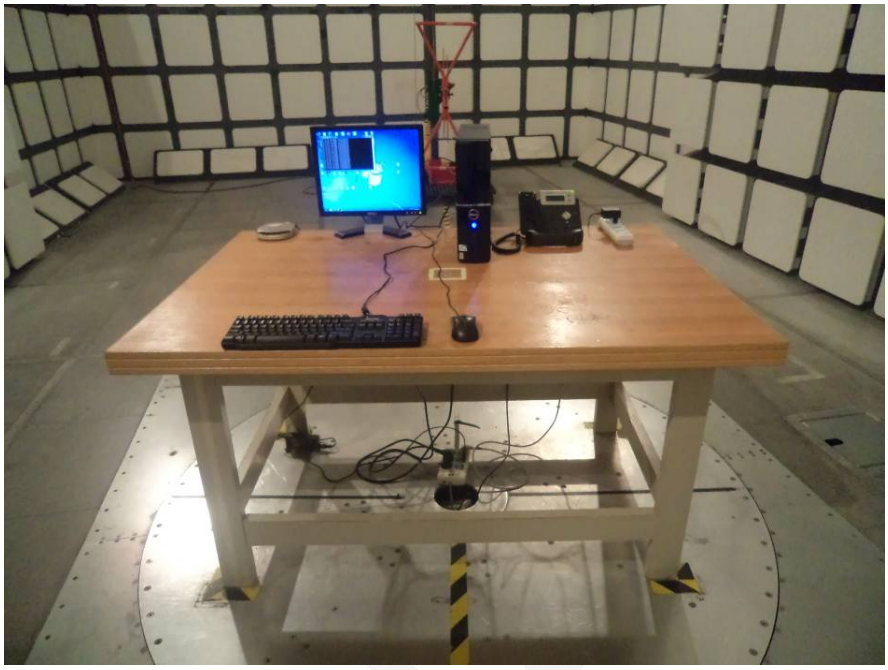
Conducted Disturbance at Mains Terminals - Side View (PoE power supply)

Conducted Disturbance at Telecommunication Port - Front View

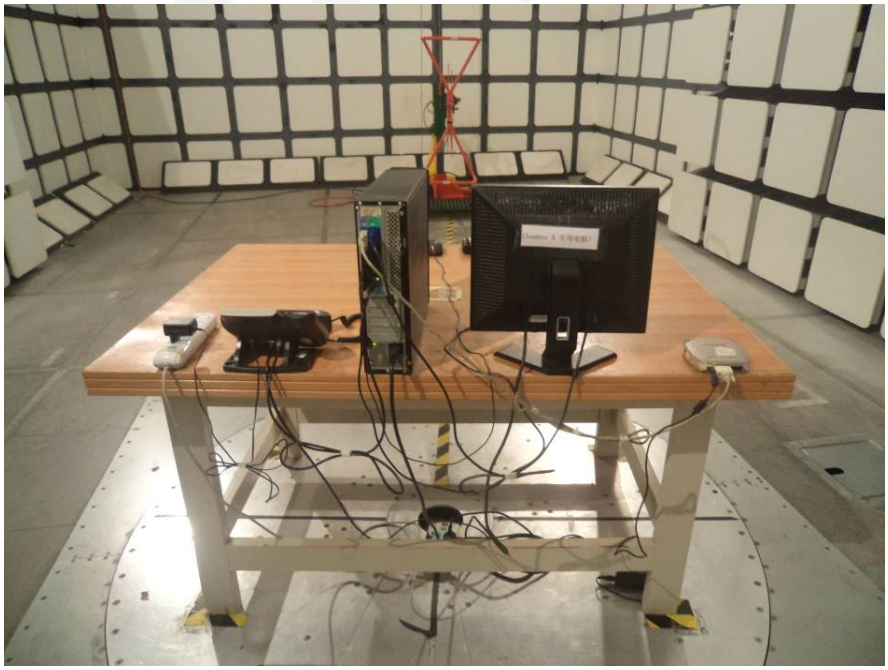
Conducted Disturbance at Telecommunication Port - Side View



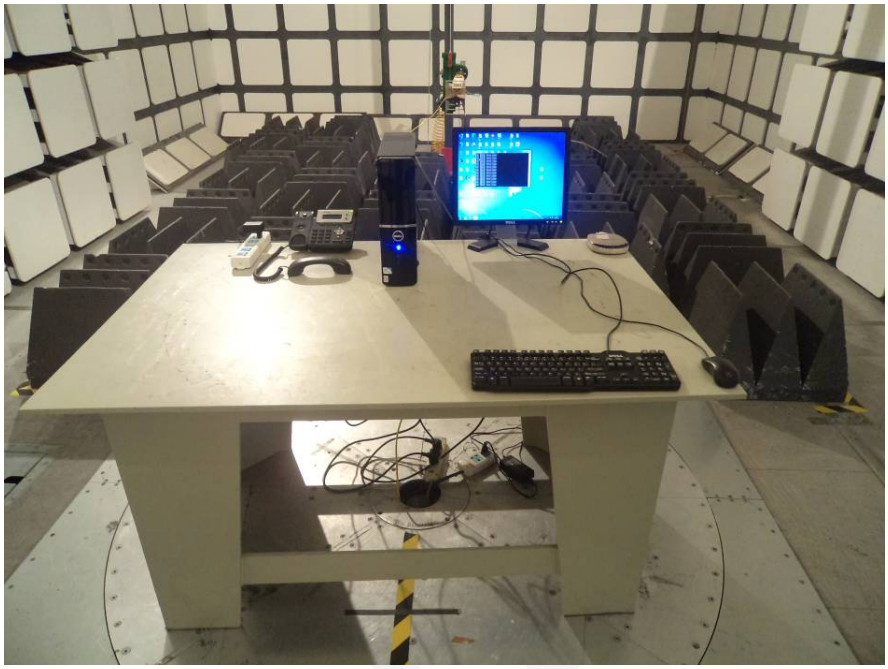
Below 1 GHz: Radiated Disturbance - Front View (Adapter power supply)



Below 1 GHz: Radiated Disturbance - Rear View (Adapter power supply)

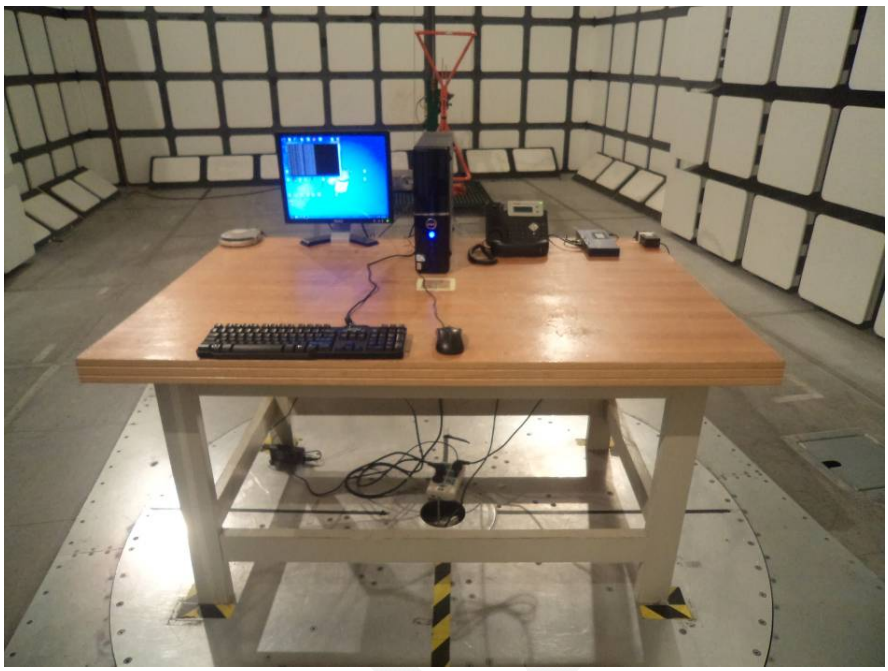


Above 1 GHz: Radiated Disturbance - Front View (Adapter power supply)

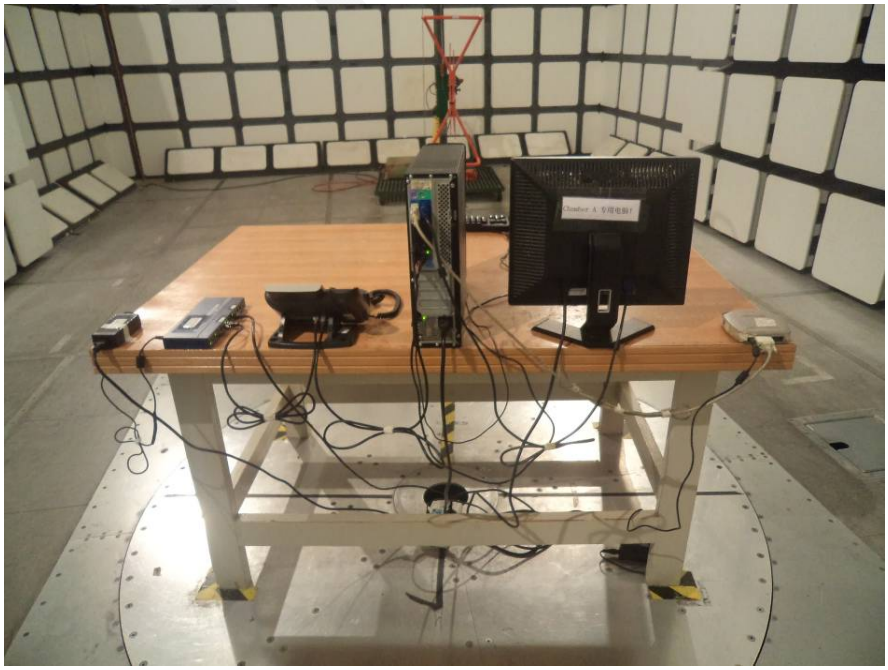


Above 1 GHz: Radiated Disturbance - Rear View (Adapter power supply)

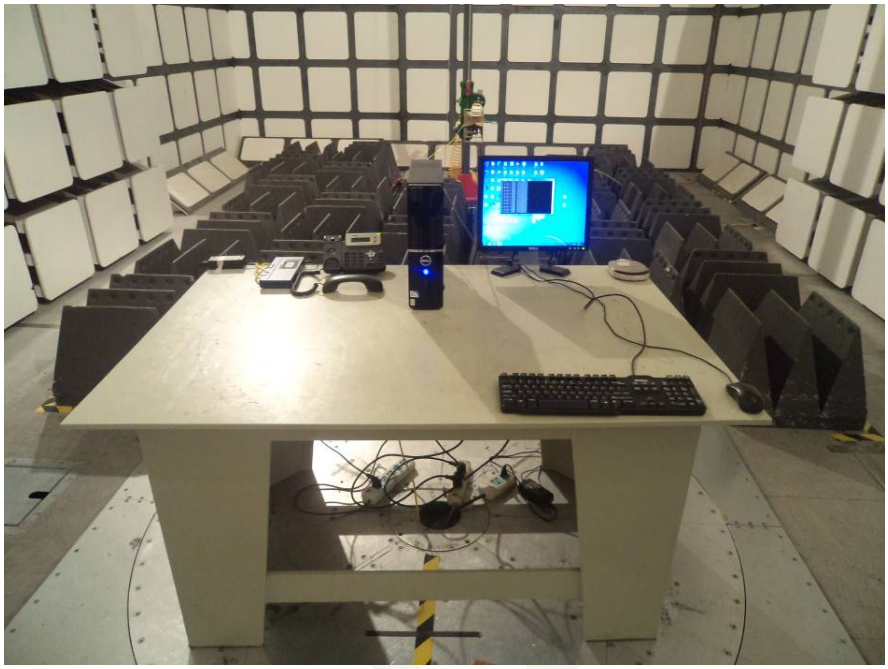
Below 1 GHz: Radiated Disturbance - Front View (PoE power supply)



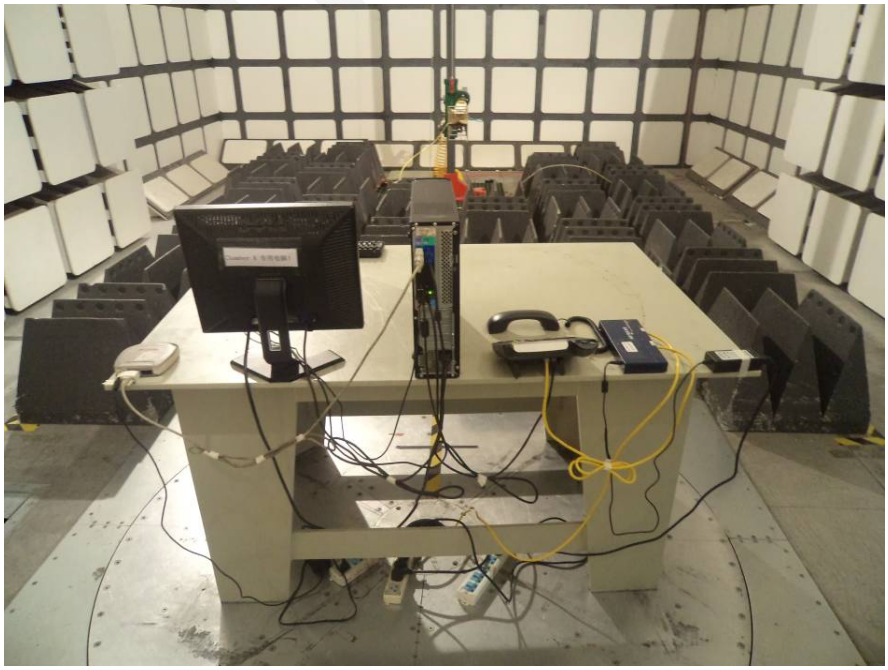
Below 1 GHz: Radiated Disturbance - Rear View (PoE power supply)



Above 1 GHz: Radiated Disturbance - Front View (PoE power supply)



Above 1 GHz: Radiated Disturbance - Rear View (PoE power supply)



PRODUCT SIMILARITY DECLARATION

Yealink (Xiamen) Network Technology Co., LTD
4th-5th Floor, South Building,NO.63 WangHai Road, 2nd Software Park, Xiamen, China
Tel: 86-592-5702000 Fax: 86-592-5702455

2013-6-21

Product Similarity Declaration Letter

To Whom It May Concern,

We, Yealink (Xiamen) Network Technology Co., LTD. hereby declare that our product IP Phone, the model SIP-T20P and SIP-T20 are electrically identical, they have the same PCB layout and schematic, the only difference is the model T20P with POE circuit,the model T20 without POE circuit . SIP-T20P was tested by BACL.

Please contact me if you have any question.

Signature:

Stone Lu
Vice General Manager

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