EMC TEST REPORT

Report No.: 17020741-CE-E
Supersede Report No.: N/A

Applicant	SAHAB TECHNOLOGY
Product Name	EXPANSION MODULE
Main Model No.	XT-23EXP
Serial Model	N/A
Test Standard	EN 55032: 2015, EN 55024: 2010, EN 61000-3-2:2014, EN 61000-3-3:2013
Test Date	7th August to 8th August, 2016
Issue Date	29th June, 2017
Test Result	☑ **Pass** ☐ **Fail**
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Louise Tu		
Louise Tu **Test Engineer**	**Deon Dai** **Engineer Reviewer**	

This test report may be reproduced in full only
Test result presented in this test report is applicable to the tested sample only

Issued by:
SIEMIC (Nanjing-China) Laboratories
2-1 Longcang Avenue Yuhua Economic and
Technology Development Park, Nanjing, China
Tel:+86(25)86730128/86730129 Fax:+86(25)86730127 Email: China@siemic.com.cn

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

This page has been left blank intentionally.

CONTENTS

1. Report Revision History

Report No.	Report Version	Description	Issue Date
16020960-CE-E	NONE	Original	9th August, 2016
17020741-CE-E	NONE	Multiple Listing	29th June, 2017

2. Customer information

Applicant Name	SAHAB TECHNOLOGY
Applicant Address	Ofiice 21,Qibla Tower,Fahad Al Salem St.,Qibla, State of KUWAIT
Manufacturer Name	SAHAB TECHNOLOGY
Manufacturer Address	Ofiice 21,Qibla Tower,Fahad Al Salem St.,Qibla, State of KUWAIT

3. Test site information

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	986914
IC Test Site No.	4842B-1
Test Software	EZ_EMC (Ver.ICP-03A1)

4. Equipment Under Test (EUT) Information

Description of EUT:	EXPANSION MODULE
Main Model:	XT-23EXP
Serial Model:	N/A
Date EUT received:	25th July, 2016
Test Date(s):	7th August to 8th August, 2016
Port:	Power Port、Downlink Port, Uplink Port
Power:	SWITCHING Power Adapter: MODEL: RD0501200-C55-KOG INPUT: 100-240V~50/60Hz 250Ma OUTPUT: DC 5V 1.2A
Trade Name :	XonTel
Highest Operate Frequency	133MHz

5. Test Summary

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

Test Results Summary

Test Standard	Description	Product Class	Pass / Fail
EN 55032:2015	Conducted Emissions	Class B	Pass
EN 55032:2015	Radiated Emissions	Class B	Pass
EN 61000-3-2: 2014	Harmonic Current Emissions	Class A	N/A*
EN 61000-3-3: 2013	Limit of Voltage Change, Fluctuation & Flicker	Meets the requirements	Pass

Test Standard	Description	Criterion	Pass / Fail
EN 55024: 2010			
EN 61000-4-2: 2009	Electrostatic Discharge Immunity	B	Pass
EN 61000-4-3: 2006+A1:2008+A2: 2010	RF Electromagnetic Field Immunity	A	Pass
EN 61000-4-4: 2004+A1: 2010	Electrical Fast Transient / Burst Immunity	B	Pass
EN 61000-4-5: 2006	Voltage Surge Immunity	B	Pass
EN 61000-4-6: 2009	Conducted Disturbance Immunity	A	Pass
EN 61000-4-11: 2004	Voltage Dips And Interruption Immunity	B/C/C	Pass
EN 61000-4-8: 2010	Power-frequency Magnetic Fields Immunity	A	N/A

All measurement uncertainty is not taken into consideration for all presented test result.

*Note: There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2.

6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

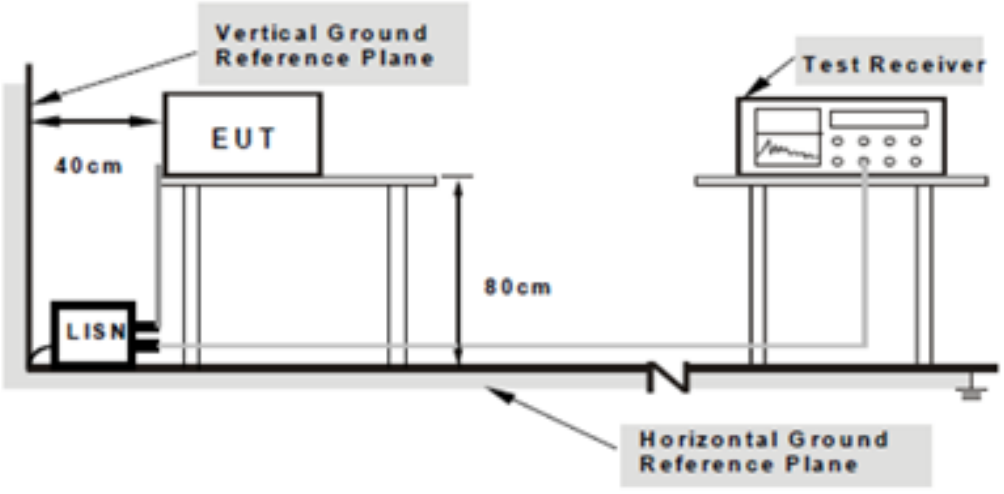
6.1 Conducted Emissions Test Result

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	7th August, 2016
Tested By :	Louise Tu

Conducted Emission Limit

FREQUENCY (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE:
(1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

Spec	Item	Requirement	Applicable
EN 55032 Class B	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu]H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.	☑
Test Setup	 Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.		
Procedure	- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B. - The power supply for the EUT was fed through a 50 [mu]H/50 EUT LISN, connected to filtered mains.		

	- The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. - All other supporting equipment were powered separately from another main supply.
Result	☑ Pass ☐ Fail
Test Data	☑ Yes ☐ N/A
Test Plot	☑ Yes (See below) ☐ N/A

Data sample

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Comment
		(MHz)	(dBuV)	QP	(dB}	(dBuV)	(dBuV)	(dB)	

P/L=Phase Line or Neutral

Frequency (MHz) = Emission frequency in MHz

Reading (dBμV) = Receiver Reading Value

Detector=Quasi Peak Detector or Average Detector

Corrected (dB) = cable loss+ Insertion loss of LISN+ Insertion loss of transient limiter (The transient limiter included 10dB attenuation)

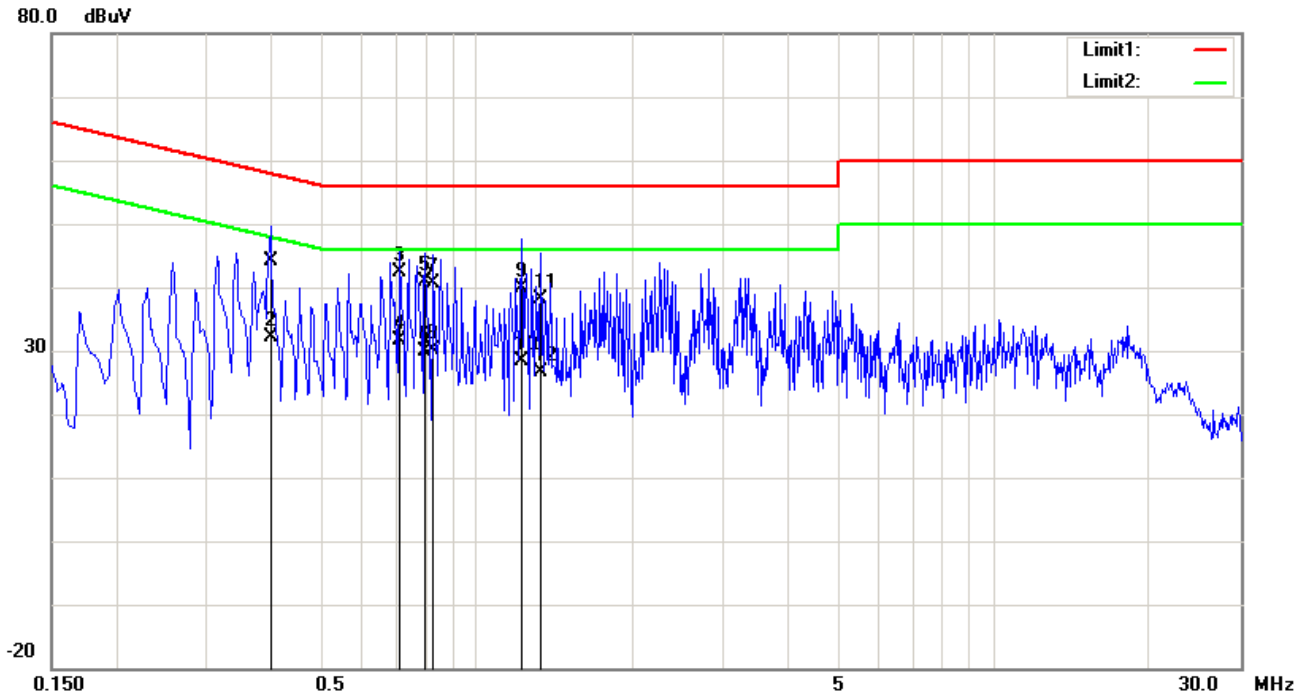
Result (dBμV) = Reading Value + Corrected Value

Limit (dBμV) = Limit stated in standard

Calculation Formula:

Margin (dB) = Result (dBμV) – limit (dBμV)

Test Mode:	Normal Working Mode

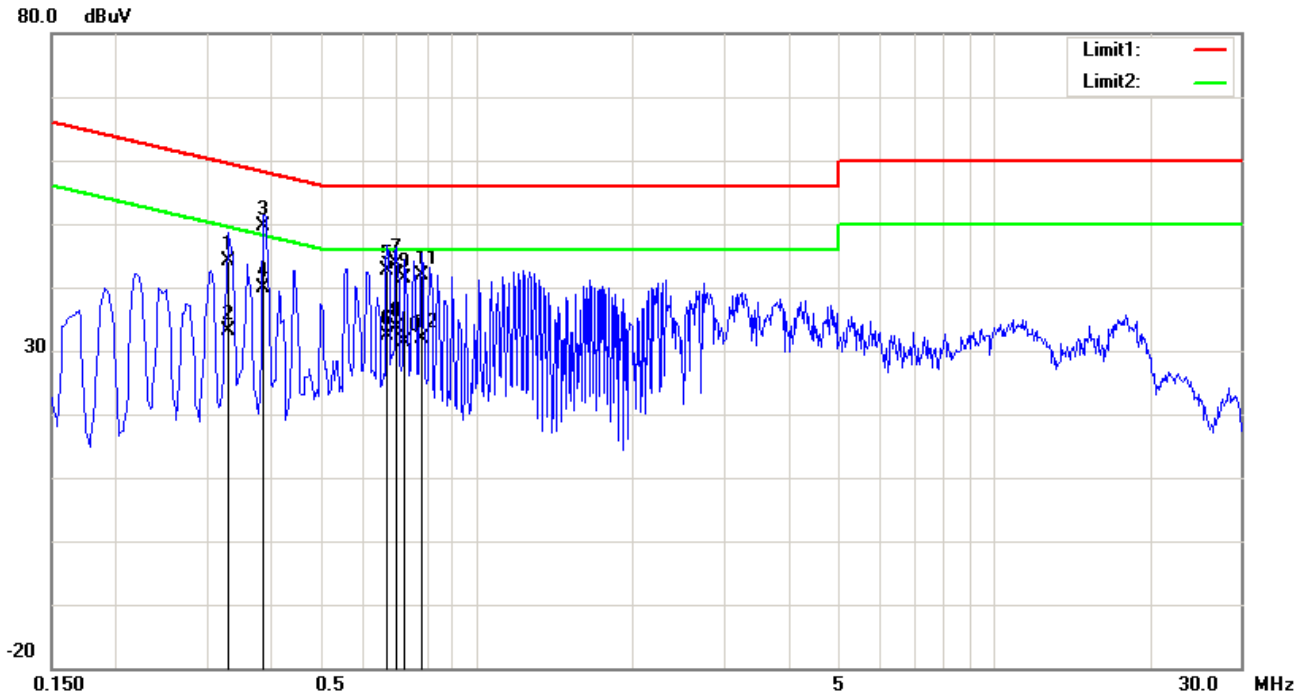


Test Data

Phase Line Plot at 230Vac, 50Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB}	Result (dBµV)	Limit (dBµV)	Margin (dB)	Comment
1		0.3980	32.88	QP	11.23	44.11	57.90	-13.79	
2		0.3980	20.96	AVG	11.23	32.19	47.90	-15.71	
3		0.7100	31.58	QP	10.91	42.49	56.00	-13.51	
4		0.7100	20.74	AVG	10.91	31.65	46.00	-14.35	
5		0.7940	30.00	QP	10.84	40.84	56.00	-15.16	
6		0.7940	19.10	AVG	10.84	29.94	46.00	-16.06	
7		0.8220	29.93	QP	10.82	40.75	56.00	-15.25	
8		0.8220	19.22	AVG	10.82	30.04	46.00	-15.96	
9		1.2180	29.04	QP	10.72	39.76	56.00	-16.24	
10		1.2180	17.55	AVG	10.72	28.27	46.00	-17.73	
11		1.3300	27.36	QP	10.75	38.11	56.00	-17.89	
12		1.3300	15.93	AVG	10.75	26.68	46.00	-19.32	

Test Mode:	Normal Working Mode



Test Data

Phase Neutral Plot at 230Vac, 50Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB}	Result (dBµV)	Limit (dBµV)	Margin (dB)	Comment
1		0.3300	32.88	QP	11.33	44.21	59.45	-15.24	
2		0.3300	21.88	AVG	11.33	33.21	49.45	-16.24	
3		0.3860	38.33	QP	11.24	49.57	58.15	-8.58	
4		0.3860	28.65	AVG	11.24	39.89	48.15	-8.26	
5		0.6700	31.73	QP	10.93	42.66	56.00	-13.34	
6		0.6700	21.40	AVG	10.93	32.33	46.00	-13.67	
7		0.6980	32.81	QP	10.91	43.72	56.00	-12.28	
8		0.6980	22.77	AVG	10.91	33.68	46.00	-12.32	
9		0.7220	30.46	QP	10.88	41.34	56.00	-14.66	
10		0.7220	20.44	AVG	10.88	31.32	46.00	-14.68	
11		0.7820	31.13	QP	10.84	41.97	56.00	-14.03	
12		0.7820	21.06	AVG	10.84	31.90	46.00	-14.10	

6.2 Radiated Emissions

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	7th August, 2016
Tested By :	Louise Tu

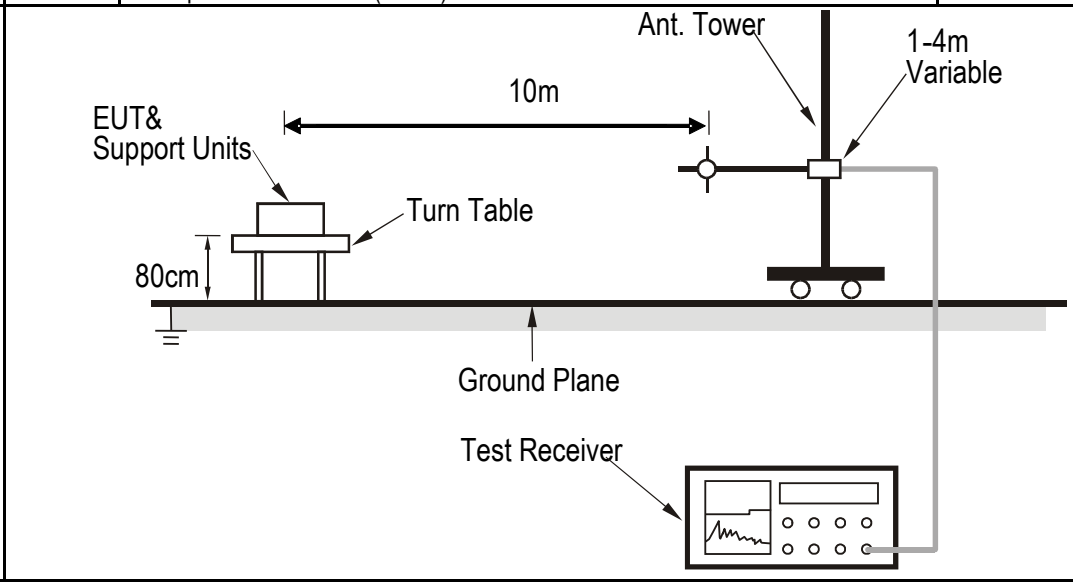
Limits below 1 GHz

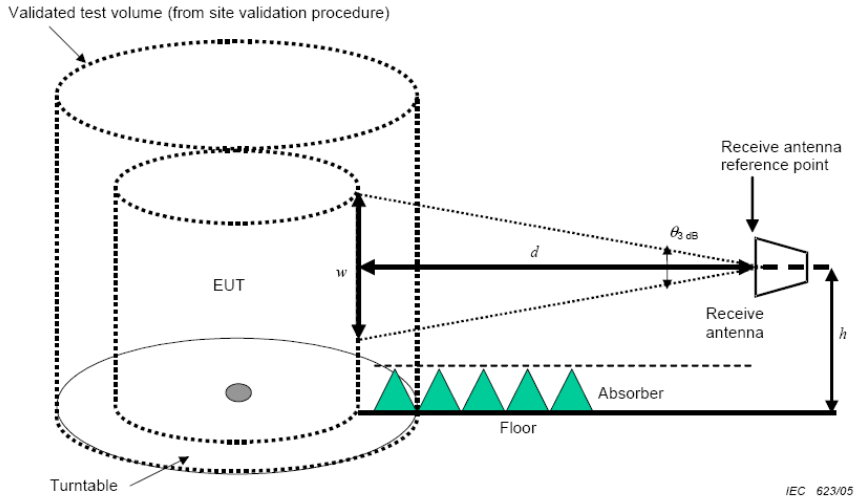
FREQUENCY (MHz)	dB(μV/m) (At 3m/10m)	dB(μV/m) (At3m/10m)
	Class A	Class B
30 to 230	50/40	40/30
230 to 1000	57/47	47/37

Limits above 1 GHz

FREQUENCY (GHz)	Class A dB(μV/m) (At 3m)		Class B dB(μV/m) (At 3m)	
	Average limit	Peak limit	Average limit	Peak limit
1 to 3	56	76	50	70
3 to 6	60	80	54	74

NOTE: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level dB (μV/m) = 20 log Emission level (μV/m)

Spec	Item	Requirement	Applicable
EN 55032: Class B	a)	EUT characterisation, over the frequency range from 30 MHz to 1 GHz (for FCC tests, until the 5th harmonic for operating frequencies ≥ 108MHz),, was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results. The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m or 10m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS) or EMC chamber.	☒
Test Setup			

Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. A Quasi-peak measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
Above 1GHz	The radiated field measurement method above 1 GHz is based on measurement of the maximum electric field emitted from the EUT as shown below  **Measurement method above 1 GHz, receive antenna in vertical polarization** ● **Definitions referring to Figure** Validated test volume: The volume validated during the site validation procedure (see8.3.3of CISPR 16-1-4:2010). Typically, this is the largest diameter EUT that can be used in the test facility. EUT: The smallest diameter cylinder that will fully encompass all portions of the actual EUT, including cable racks and a minimum length of 30 cm of cables. The EUT that is located within this cylinder must be capable of rotating about its centre (typically by a remotely controlled turntable). The EUT must be located within the validated test volume. A maximum of 30 cm of ω (see definition of ω below) may be below the height of absorbers on the floor only when the EUT is floor standing and cannot be raised above the height of the absorbers (see 7.3.3). θ3 dB: The minimum 3 dB beamwidth of the receive antenna at each frequency of interest. θ3 dB is the minimum of both the E-plane and H-plane values at each frequency. θ 3dB may be obtained from manufacturer provided data for the receive antenna. d: The measurement distance (in meters). This is measured as the horizontal distance between the periphery of the EUT and the reference point of the receive antenna. ω: The dimension of the line tangent to the EUT formed by θ3 dB at the measurement distance d. Equation (10) shall be used to calculate ω for each actual antenna and measurement distance used. The values of ω shall be included in the test report. This calculation may be based on the manufacturer-provided receive-antenna beamwidth specifications : $\omega = 2 \times d \times \tan(0{,}5 \times \theta 3\ dB)$ DRG Horn Antenna（M/N：3117）test dimension of ω

Frequency GHz	θ3 dB (min) °	ω m
1	90	6.00
2	60	3.46
3	75	4.60
4	60	3.46
5	60	3.46
6	50	2.80
7	45	2.49
8	40	2.18
9	35	1.89
10	30	1.61
11	35	1.89
12	40	2.18
13	35	1.89
14	35	1.89
15	35	1.89
16	35	1.89
17	30	1.61
18	20	1.06

Note: The antenna's moving up and down is determined by ω value for above 1GHz, to ensure that the acceptable range of the testing antenna can cover the whole range of EUT.

Result	☒ Pass ☐ Fail
Test Data	☒ Yes ☐ N/A
Test Plot	☒ Yes (See below) ☐ N/A

Data sample

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree	Comment
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	( )	

P/L=Vertical or Horizontal of Receiver antenna

Frequency (MHz) = Emission frequency in MHz

Reading (dBμV/m) = Receiver Reading Value

Detector= Peak Detector or Quasi Peak Detector

Corrected (dB) = Antenna factor + cable loss- antenna gain

Result (dBμV/m) = Reading Value + Corrected Value

Limit (dBμV/m) = Limit stated in standard

Height (cm) = Height of Receiver antenna

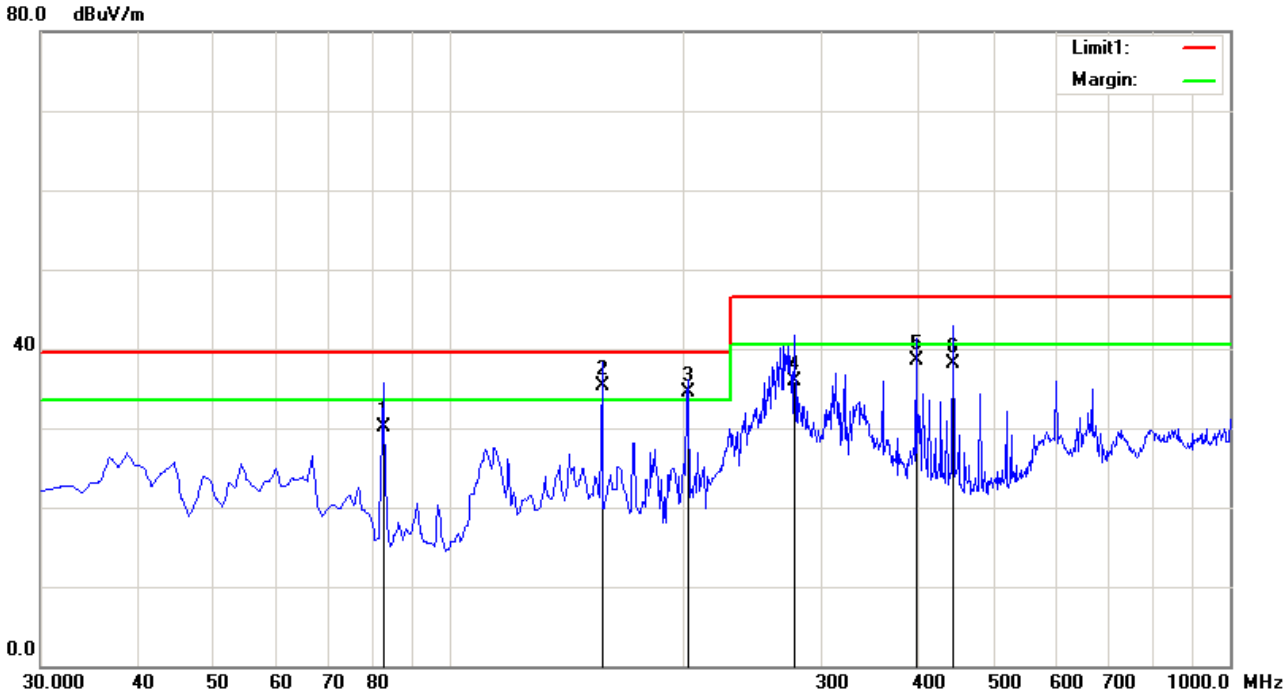
Degree = Turn table degree

Calculation Formula:

Margin (dB) = Result (dBμV/m) – limit (dBμV/m)

Test Mode:	Normal Working Mode

Below 1GHz



Test Data

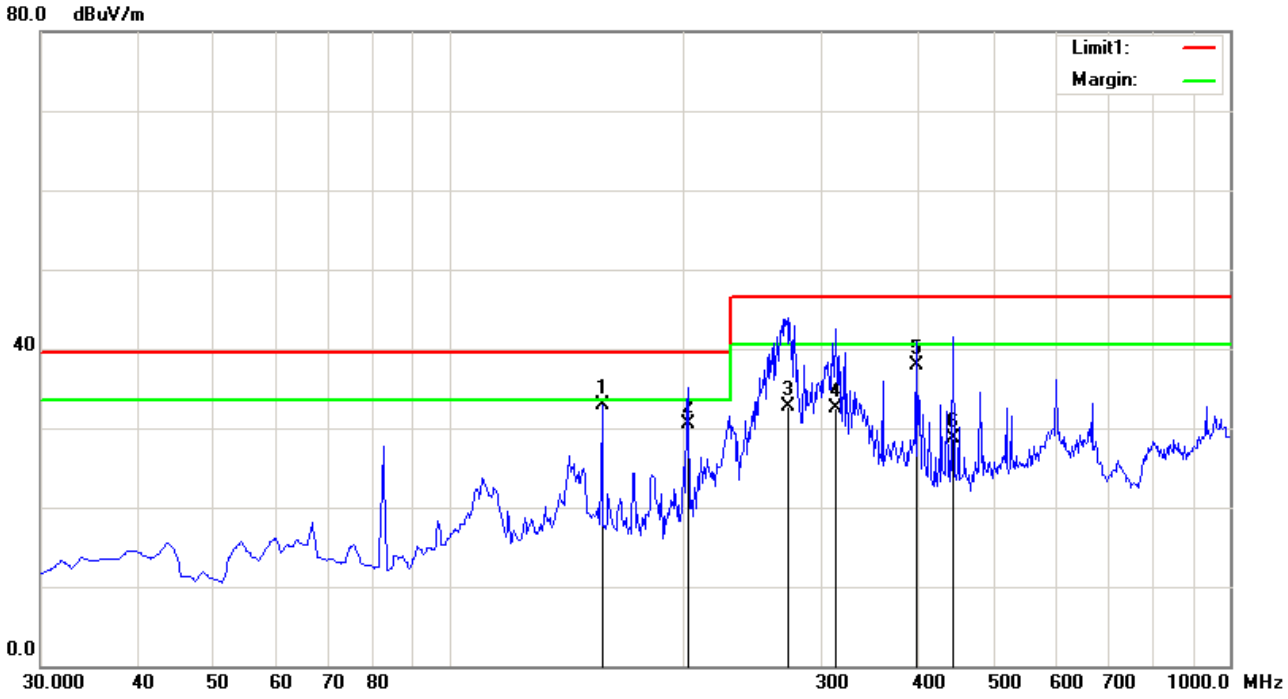
Vertical Polarity Plot @3m

No.	P/L	Frequency (MHz)	Reading (dBμV/m)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (°)	Comment
1	V	82.3800	66.97	QP	-36.93	30.04	39.50	-9.46	140	360	
2	V	157.0700	66.65	QP	-31.32	35.33	39.50	-4.17	99	119	
3	V	202.6600	66.32	QP	-31.90	34.42	39.50	-5.08	100	134	
4	V	277.3500	65.68	QP	-29.73	35.95	46.50	-10.55	200	15	
5	V	397.6300	66.79	QP	-28.36	38.43	46.50	-8.07	200	176	
6	V	442.2500	66.45	QP	-28.37	38.08	46.50	-8.42	99	79	

Note: The data above 1GHz which below 20 dB to the limit was not recorded.

Test Mode:	Normal Working Mode

Below 1GHz



Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency (MHz)	Reading (dBμV/m)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (°)	Comment
1	H	157.0700	64.38	peak	-31.47	32.91	39.50	-6.59	100	74	
2	H	202.6600	61.90	QP	-31.34	30.56	39.50	-8.94	200	343	
3	H	271.5300	61.59	QP	-28.83	32.76	46.50	-13.74	200	323	
4	H	314.2100	61.98	QP	-29.46	32.52	46.50	-13.98	99	124	
5	H	397.6300	65.75	QP	-27.93	37.82	46.50	-8.68	99	285	
6	H	442.2500	57.30	QP	-28.66	28.64	46.50	-17.86	99	347	

Note: The data above 1GHz which below 20 dB to the limit was not recorded.

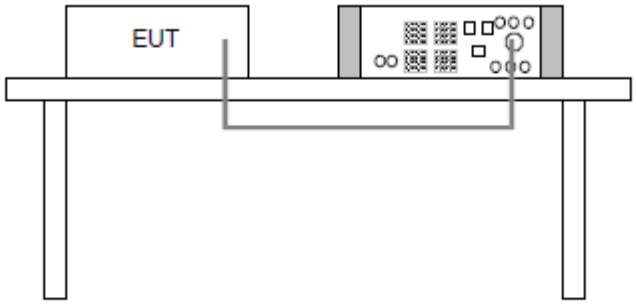
6.3 Voltage Fluctuation and Flicker Test Result

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	8th August, 2016
Tested By :	Louise Tu

Limits of voltage fluctuation and flicks measurement

Test item	Limit	Remark
P_{st}	1.0	P_{st} means short-term flicker indicator.
P_{lt}	0.65	P_{lt} means long-term flicker indicator.
T_{dt} (ms)	500	T_{dt} means maximum time that dt exceeds 3.3 %.
d_{max} (%)	4%	d_{max} means maximum relative voltage change.
dc (%)	3.3%	dc means relative steady-state voltage change

Spec	Item	Requirement	Applicable
EN 61000-3-3:2013	a)	See Above Limits of voltage fluctuation and flicks measurement	☑

Test Setup	 For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.
Procedure	1. The power supply to EUT was switched on and allowed to warm up to its normal operating condition. 2. The voltage fluctuations and flickers measuring equipment was set to 230 Vac with 50 Hz. 3. The EUT was observed during, and checked after the test to determine the result.
Result	☑ Pass ☐ Fail
Test Data	☑ Yes ☐ N/A
Test Plot	☑ Yes (See below) ☐ N/A

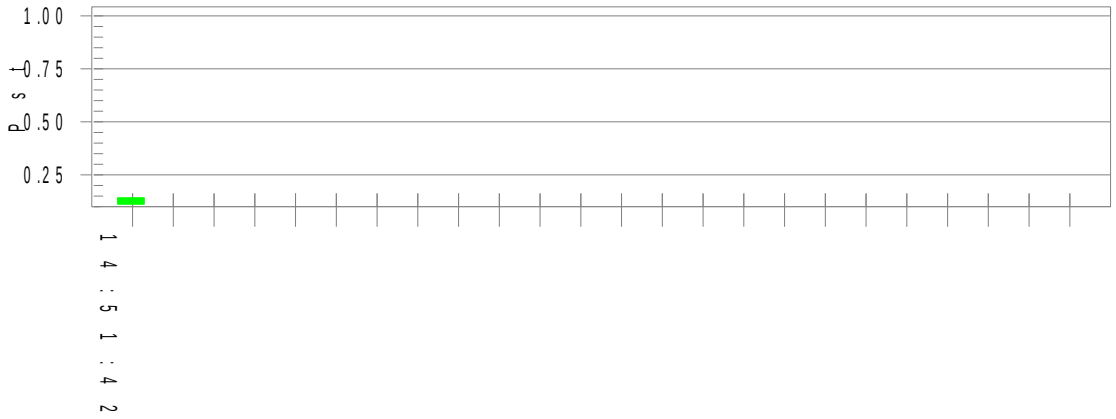
Test Mode:	Normal Working Mode

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT: 16020960 **Tested by: louise**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2016-8-8 **Start time: 14:41:12** **End time: 14:51:43**
Test duration (min): 10 **Data file name: F-000036.cts_data**
Comment: Expansion module
Customer: hanlong

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



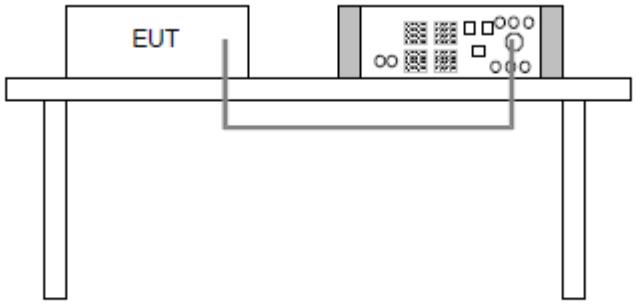
Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.63**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.04**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.142**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.062**	**Test limit:**	**0.650**	**Pass**

6.4 Harmonic Current Emission Test Result

Temperature	---
Relative Humidity	---
Atmospheric Pressure	---
Test date :	---
Tested By :	---

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>EN 61000-3-2:2014</td><td>a)</td><td>
<table>
<tr><th colspan="2">Limits for Class A equipment</th><th colspan="3">Limits for Class D equipment</th></tr>
<tr><td>Harmonics Order n</td><td>Max. permissible harmonics current A</td><td>Harmonics Order n</td><td>Max. permissible harmonics current per watt mA/W</td><td>Max. permissible harmonics current A</td></tr>
<tr><td colspan="2">Odd harmonics</td><td colspan="3">Odd Harmonics only</td></tr>
<tr><td>3</td><td>2.30</td><td>3</td><td>3.4</td><td>2.30</td></tr>
<tr><td>5</td><td>1.14</td><td>5</td><td>1.9</td><td>1.14</td></tr>
<tr><td>7</td><td>0.77</td><td>7</td><td>1.0</td><td>0.77</td></tr>
<tr><td>9</td><td>0.40</td><td>9</td><td>0.5</td><td>0.40</td></tr>
<tr><td>11</td><td>0.33</td><td>11</td><td>0.35</td><td>0.33</td></tr>
<tr><td>13</td><td>0.21</td><td>13</td><td>0.30</td><td>0.21</td></tr>
<tr><td>15<=n<=39</td><td>0.15x15/n</td><td>15<=n<=39</td><td>3.85/n</td><td>0.15x15/n</td></tr>
<tr><td colspan="2">Even harmonics</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td>1.08</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>0.43</td><td></td><td></td><td></td></tr>
<tr><td>6</td><td>0.30</td><td></td><td></td><td></td></tr>
<tr><td>8<=n<=40</td><td>0.23x8/n</td><td></td><td></td><td></td></tr>
</table>
NOTE: 1. Class A and Class D are classified according to item 4.4.3.
2. According to section 7 of EN 61000-3-2, the above limits for all equipment except for lighting equipment having an active input power > 75 W and no limits apply for equipment with an active input power up to and including 75 W.
</td><td>N/A</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 

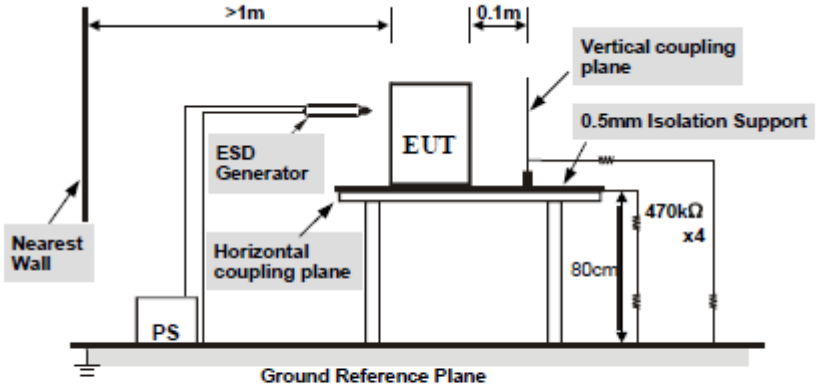
For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.</td></tr>
</table>

Procedure	1 The power supply to EUT was switched on and allowed to warm up to its normal operating condition. 2 The voltage fluctuations and flickers measuring equipment was set to 230 Vac with 50 Hz. 3 The EUT was observed during, and checked after the test to determine the result.
Result	☒N/A ☐Fail
Test Data	☒N/A ☐Fail
Test Plot	☒N/A ☐Fail

6.5 Electrostatic Discharge Immunity Test Result

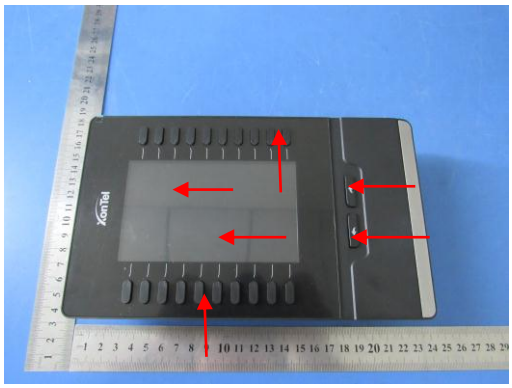
Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	8th August, 2016
Tested By :	Louise Tu

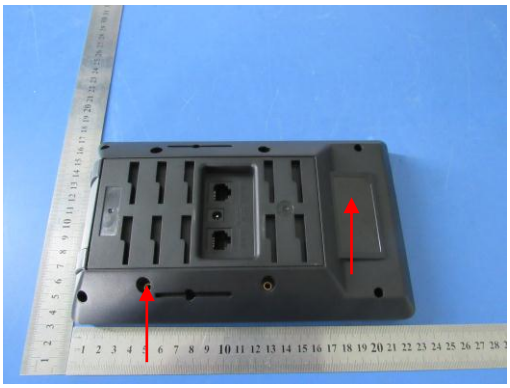
Discharge Type	Test Severity Level	Performance Criteria	Result
Air Discharges	±2kV, ±4kV, ±8kV	B	A
Indirect Discharge HCP	±2kV, ±4kV	B	A
Indirect Discharge VCP	±2kV, ±4kV	B	A

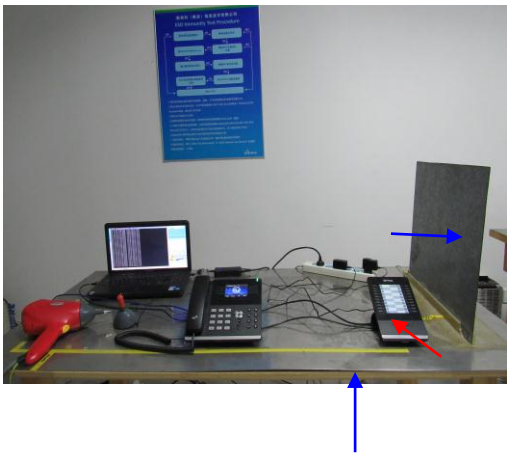
Spec	Item	Requirement	Applicable
EN 61000-4-2:2009	a)	1. The test set-up was in accordance with the standard. 2. The electrostatic discharge (ESD) gun was loaded with the correct charging / discharge network specified by the standard. 3. A 0.8m high, non-metallic table, with a Horizontal Coupling Plane (HCP) placed on the tabletop, was used as a test bench. The EUT and supporting equipment were placed on the test bench, isolated from the HCP by a thin insulating sheet (0.5mm thick). 4. The HCP was grounded to the ground plane via two 470 k "bleed" resistors at each end of the ground cable. 5. A Vertical Coupling Plane (VCP) was also used during the test. The VCP was also grounded to the ground plane in a similar manner as the HCP.	☑
Test Setup		 For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.	
Procedure		- Direct Air & Contact Discharges - - Applications of direct air and contact discharges to the discharge points specified by the customer were carried out in the following manner: - The EUT was switched on and allowed to warm up to its normal operating condition. The test discharge points are shown in the ESD Test Points Section of Annex B. For air discharges, the charged rounded electrode was positioned at a distance away from the test point and moved towards the EUT at a steady rate until a discharge was made or until the electrode touched the EUT, whichever occurs first. For contact discharges, the pointed electrode was applied directly to the test point, in contact with the conductive surface of the EUT. The discharges were then made with the electrode in	

	contact with the EUT. The required number of positive and negative discharges was applied at each test point; with a one second interval between discharges. The EUT was monitored during the test in accordance with the Pass / Fail criteria declared by the customer. - - Indirect Coupling Plane Discharges - - Indirect applications of discharges using the HCP & VCP were performed on the sides of the EUT in the following manner: - The EUT was switched on and allowed to warm up to its normal operating condition. The discharges to the HCP / VCP were made 0.1m away from one side of the EUT. The required numbers of positive and negative discharges were applied at each test point; with a one second interval between discharges. The EUT was monitored during the test in accordance with the Pass / Fail criteria declared by the customer. The test was then repeated on the remaining necessary sides of the EUT.
Test Mode	Normal Working
Result	☑ Pass ☐ Fail

Air Discharge:
Contact Discharge:







For Air Discharge: (20 times per point and polarity and test level)

1 Plastic surface include EUT (20 points)
2 Slot in the EUT(20 points)
3 Screen in the EUT(20 points)

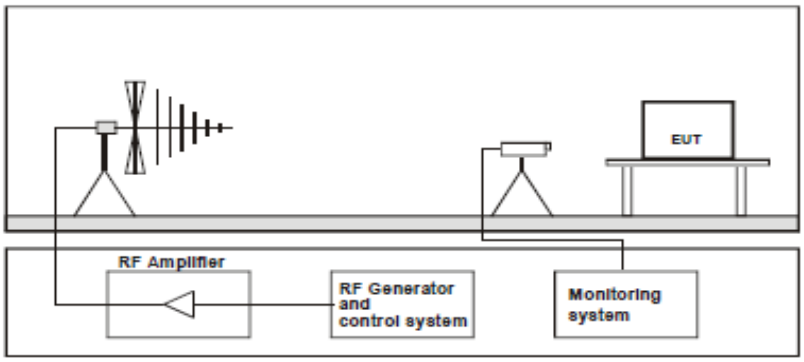
For Contact Discharge: (20 times per point and polarity and test level)
1 HCP
2 VCP

6.6 RF Radiated Immunity Test Result

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	8th August, 2016
Tested By :	Louise Tu

Spec	Item	Requirement	Applicable
EN 61000-4-3:2006+A2:2010	a)	All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range from 80MHz-2.7GHz, test level ranges from 3V/m to 10V/m, is ±0.74V/m.	☑

Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

Procedure

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The EUT was exercised and monitored in the manner specified by the customer.
3. All test instruments were PC controlled, via their IEEE 488.2 bus interfaces, and the test conducted in the following manner:
   a. The testing frequencies were swept over the required frequency range, with a step frequency equal to 1% of fundamental. The sweep rate was 1.0×10^{-3} decades/s.
   b. For each frequency tested, the signal generator output level was adjusted automatically until the unmodulated field strength registered by the field monitor reached the desired level. This level was held constant for the specified dwell time.
4. The EUT was continuously monitored during the test in accordance with the Pass / Fail criteria declared by the customer.
5. The test was done in both horizontal and vertical antenna polarizations, and for all necessary sides of the EUT.

Test Mode: Normal Working Mode

Result: ☑ Pass ☐ Fail

Test Result:

EUT AC Voltage Rating: 230Vac, 50Hz

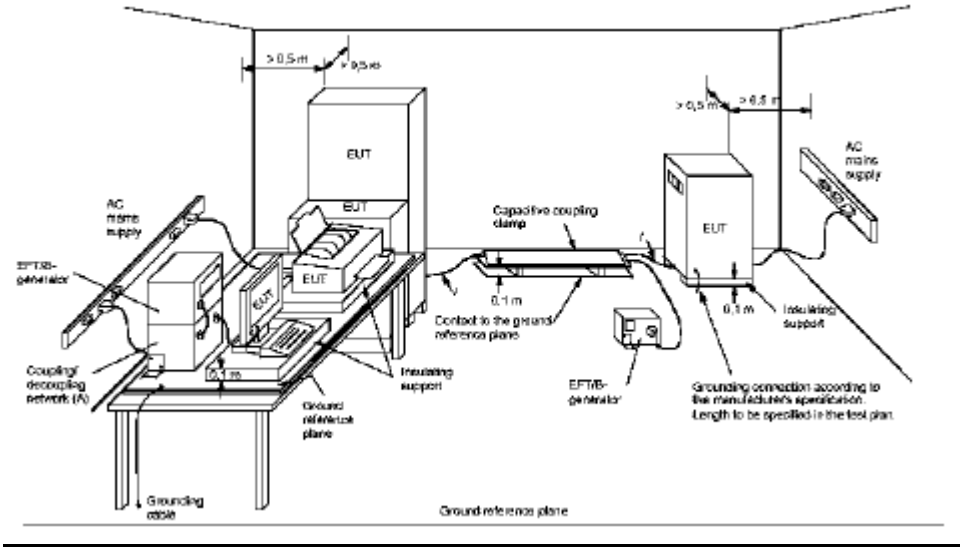
Sides Tested	Frequency Range	Test Severity Level	Performance Criteria	Result
Front (H)	80 MHz – 1 GHz	3V/m, 80% AM (1kHz)	A	A
Front (V)	80 MHz – 1 GHz	3V/m, 80% AM (1kHz)	A	A
Back (H)	80 MHz – 1 GHz	3V/m, 80% AM (1kHz)	A	A
Back (V)	80 MHz – 1 GHz	3V/m, 80% AM (1kHz)	A	A
Right (H)	80 MHz – 1 GHz	3V/m, 80% AM (1kHz)	A	A
Right (V)	80 MHz – 1 GHz	3V/m, 80% AM (1kHz)	A	A
Left (H)	80 MHz – 1 GHz	3V/m, 80% AM (1kHz)	A	A
Left (V)	80 MHz – 1 GHz	3V/m, 80% AM (1kHz)	A	A

6.7 Electrical Fast Transient/Burst Immunity Test Result

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	8th August, 2016
Tested By :	Louise Tu

Spec	Item	Requirement	Applicable
EN 61000-4-4:2004+A1:2010	a)	All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, test level ranges from ±0.5kV to ±1kV, is ±1.2%.	☑

Test Setup



Procedure

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. D.C./A.C. Power Line Test
   a. The EFT/B test system has a built-in coupling/decoupling network which couples the generated EFT bursts into the EUT power supply lines connected to it.
   b. The EFT bursts were coupled to the selected lines (one at a time) of the EUT for the necessary test duration.
3. I/O Signal & Control Line Test
   The interference impulses were capacitively coupled to the EUT's signal cables for the necessary test duration.
4. The EUT was monitored during the test in accordance with the Pass / Fail criteria declared by the customer.
5. The test was performed with EFT bursts in the positive and negative polarities and repeated on all necessary lines.

Test Mode: Normal Working Mode

Result: ☑ Pass ☐ Fail

Test Result:

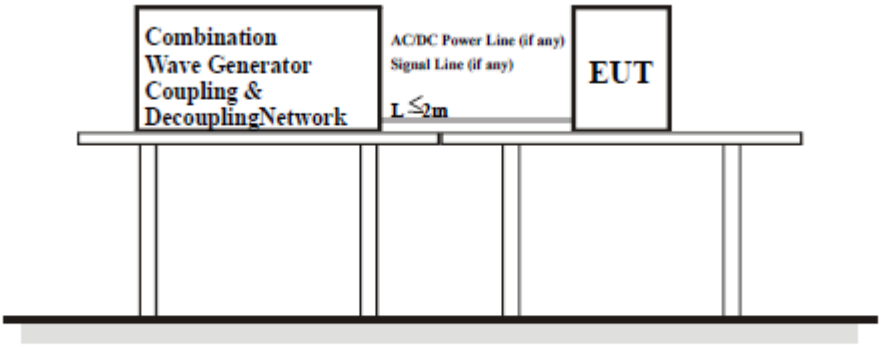
EUT AC Voltage Rating: 230Vac, 50Hz

Test Point	Polarity	Test Level (kV)	Injected Method	Performance Criterion	Result
☒ L	+/-	1	Direct	B	B
☒ N	+/-	1	Direct	B	B
☒ L–N	+/-	1	Direct	B	B

6.8 Surge Immunity Test Result

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	8th August, 2016
Tested By :	Louise Tu

Spec	Item	Requirement	Applicable
EN 61000-4-5:2006	a)	1. The EUT was placed on a 0.8m high, non-conductive table. 2. The test was performed using a voltage surge generator, mains, and signal line coupling/decoupling networks that were compliant with the standard. 3. The voltage surge generator and coupling/decoupling networks were connected to the same protective earth. 4. The test level was set with the surge generator's HV output open-circuited. 5. For testing of the mains line, the mains coupling/decoupling network was inserted into the line. The voltage surge generator HV output cables were connected to the mains coupling/decoupling network, which has the necessary resistor/capacitor configurations (as required by the standard) built-in. The settings on the mains coupling/decoupling network were selected to give the required resistor/capacitor configuration as follows: a. An 18µF capacitor in series with the output of the generator for differential (line-to-line) mode testing. b. A 10 Ohm resistor and 9µF capacitor in series with the output of the generator for common (line-to-ground) mode testing 6. For testing of the signal lines, the signal line coupling/decoupling network was inserted into the line. The voltage surge generator HV output cables were connected to the signal line coupling/decoupling network, which has the necessary resistor/capacitor/gas arrestor configurations (as required by the standard) built-in. The settings on this network were selected to give the required resistor/capacitor/gas arrestor configuration as reflected in the standard.	☑

Test Setup	 For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.
Procedure	1. The power supply to EUT was switched on and allowed to warm up to its normal operating condition. 2. The surge generator phase shifter was set to 90° (for positive surges) or 270° (for negative surges). 3. The correct open-circuit test level was set with the surge generator disconnected from the coupling network. 4. The output of the generator was then reconnected back to the coupling network. 5. Five discharges, generated by the voltage surge generator, were made on each relevant line, for each polarity, at each test level, with the relevant discharge interval. 6. The EUT was observed during, and checked after the test to determine the result.
Test Mode	Normal Working Mode
Result	☑ Pass ☐ Fail

Test Result:

EUT AC Voltage Rating: 230Vac, 50Hz

The worst Phase angle is 90°

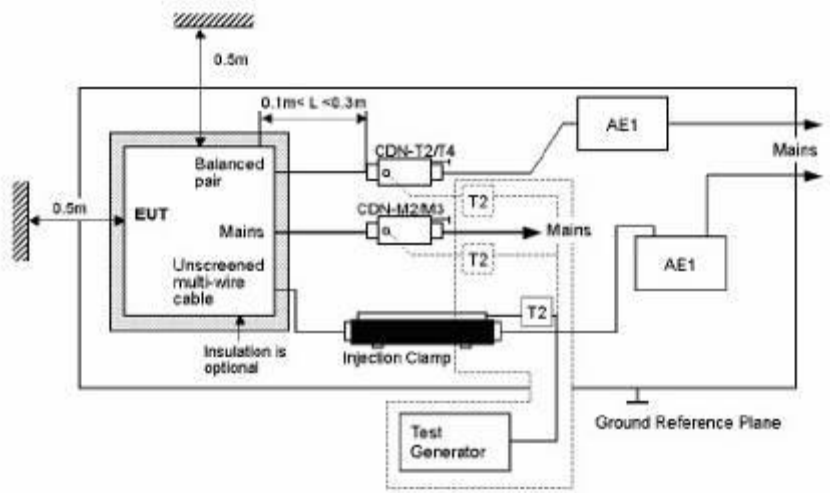
Cable AC Power Input Port	Test Severity Level	Performance Criterion	Result
L1 + L2	1 kV	B	A

6.9 Conducted Disturbance Immunity Test Result

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	8th August, 2016
Tested By :	Louise Tu

Spec	Item	Requirement	Applicable
EN 61000-4-6: 2009	a)	1. The EUT and auxiliary equipment were placed on top of the GRP and isolated from it by a 0.1m thick insulating support as shown in Annex B. 2. The test system includes a RF signal generator, a power amplifier, attenuators, a spectrum analyzer and various types of Coupling and Decoupling Networks (CDNs). 3. The EUT's Cables under Test (CUT) were cut in order to insert the CDNs into the line. The cable lengths were kept as short as possible to maintain a distance of 0.1m to 0.3m between the EUT and the CDNs. 4. The interconnecting cables between the EUT, CDNs and auxiliary equipment were kept at a height of 3cm to 5cm above the GRP. 5. The CDNs were placed on the GRP, in direct electrical contact with it.	☑

Test Setup



NOTE: The EUT clearance from any metallic obstacles shall be at least 0.5m.
All non-excited input ports of the CDNs shall be terminated by 50Ω loads.

Procedure

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The interfering signal was swept from 150 kHz to 80 MHz, with a step frequency equal to 1% of fundamental. The sweep rate was $\leq 1.5 \times 10^{-3}$ decades/s.
3. The output power level from the power amplifier to the CDN was adjusted through the signal generator so that the incident power reached the same level as that established during calibration. Once the incident power to the CDN reached the calibrated level, the 80% AM 1 kHz AF was switched on for the specified dwell time.
4. The EUT was continuously monitored during the test in accordance with the PASS/FAIL criteria declared by the customer.

Test Mode: Normal Working Mode

Result: ☑ Pass ☐ Fail

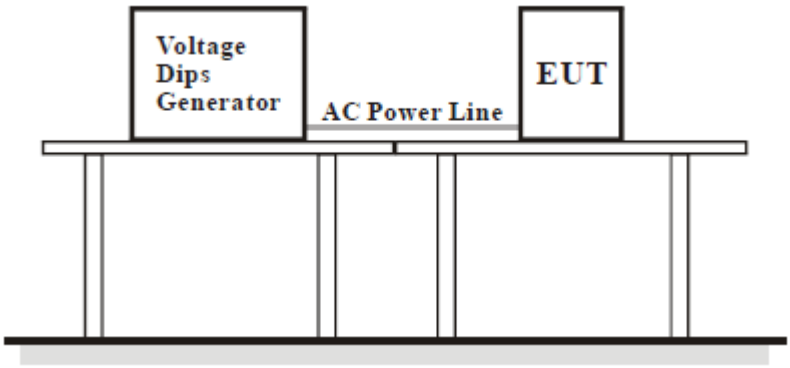
Test Result:

EUT AC Voltage Rating: 230Vac, 50Hz

Frequency Band (MHz)	Field Strength (Vrms)	Cable	Injection Method	Performance Criterion	Result
0.15 ~ 80	3	Power Line	CDN-M2	A	A

6.10 Voltage Dips And Interruption Immunity Test Result

Temperature	250°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	8th August, 2016
Tested By :	Louise Tu

Spec	Item	Requirement	Applicable
EN 61000-4-11: 2004	a)	1. The proper severity level shall be selected before performing this testing. 2. SIEMIC Work Instruction on this test must be referenced for the table of the Summary of Test Levels.	☑
Test Setup			
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The EUT shall continue to work as normal during the testing		
Test Mode	Normal Working Mode		
Result	☑ Pass ☐ Fail		

Test Result:

EUT AC Voltage Rating: 230Vac, 50Hz

	Duration (in Period)	Reduction (%)	Performance Criterion	Result
Voltage Dips	0.5 cycle	>95	B	A
Voltage Dips	25 cycle	30	C	B
Short Interruptions	250 cycle	>95	C	B

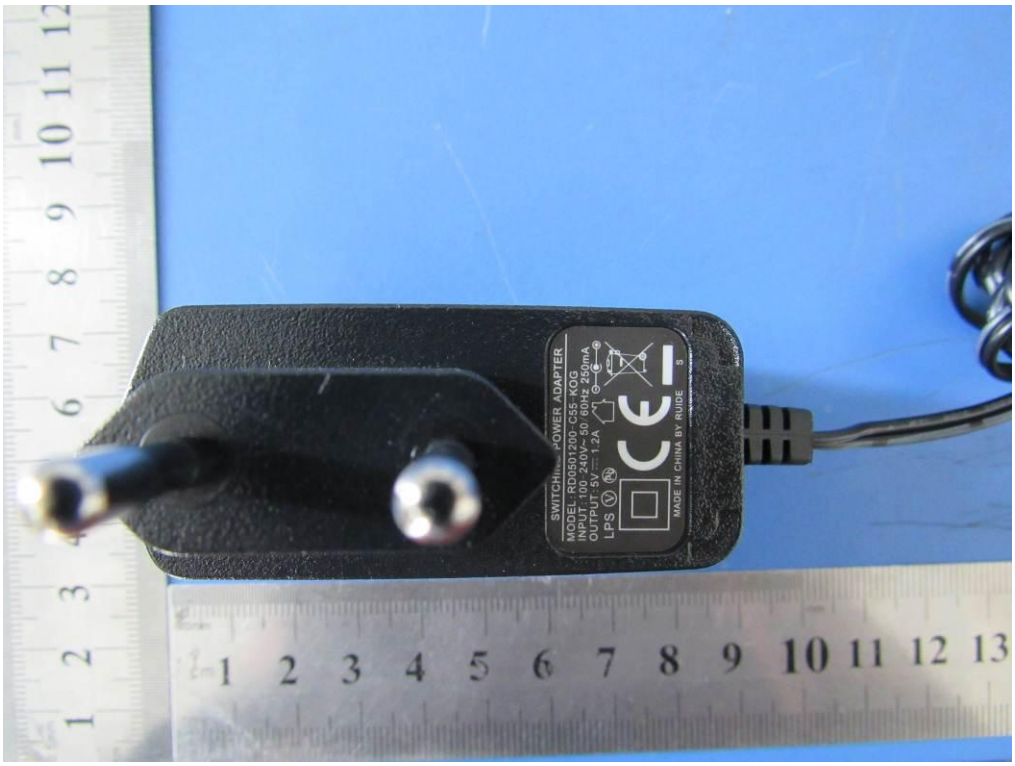
Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
Conducted Emissions					
R&S Receiver	ESPI3	101216	03/31/2016	03/31/2017	☑
Transient Limiter	LIT-153	531021	10/30/2015	10/30/2016	☑
TESEQ ISN	ISN T800	27093	03/31/2016	03/31/2017	N/A
R&S LISN(9k-30MHz)	ESH3-Z5	838979/005	03/31/2016	03/31/2017	☑
SIEMIC EZ_EMC Conducted Emissions software	Ver.ICP-03A1	N/A	N/A	N/A	☑
Radiated Emissions					
R&S Receiver	ESPI3	101216	03/31/2016	03/31/2017	☑
Hp Spectrum Analyzer	N9010A	MY47191130	03/31/2016	03/31/2017	☑
HP Pre-amplifier	8447F	1937A01160	10/30/2015	10/30/2016	☑
MITEQ Pre-Amplifier(0.1 ~ 18GHz)	AMF-7D-00101800-30-10P	1451710	10/27/2015	10/26/2016	☑
Sunol Sciences, Inc. antenna (30MHz~6GHz)	JB6	A121411	10/31/2015	10/31/2016	☑
EMCO Horn Antenna (1~18GHz)	3115	N/A	10/09/2015	10/08/2016	☑
SIEMIC EZ_EMC Radiated Emissions software	Ver.ICP-03A1	N/A	N/A	N/A	☑
Electrostatic Discharge Immunity					
ESD Generator	NSG 437	285	04/01/2016	04/01/2017	☑
RF Electromagnetic Field Immunity					
Agilent Signal Generator	8665B	3744A01862	03/31/2016	03/31/2017	☑
AR Power Amplifier	50W1000B	311309	Functional Verification		☑
OPHIR Power Amplifier	5162R	1067	Functional Verification		☑
Sunol Sciences, Inc. antenna (30MHz~6GHz)	JB6	A121411	10/31/2015	10/31/2016	☑
Fast Transients Common Mode					
EMC Immunity Test System	EMC PRO Plus	1111214	03/31/2016	03/31/2017	☑
Surges Immunity					
EMC Immunity Test System	EMC PRO Plus	1111214	03/31/2016	03/31/2017	☑
RF Common Mode Immunity					
Agilent Signal Generator	8665B	3744A01862	03/31/2016	03/31/2017	☑
AR Power Amplifier	75A250	311662	Functional Verification		☑
Com-Power CDN	CDN M2	N/A	05/26/2016	05/25/2017	☑
COM-POWER CDN T8	CDN T8	581540	05/24/2016	05/23/2017	N/A
Harmonic/ Fluctuations & Flicker/ Voltage Dips Immunity					
California Instruments	3001 IX	58487	03/31/2016	03/31/2017	☑
California Instruments	PACS-1	72634	04/01/2016	04/01/2017	☑

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph EUT External Photo

The Whole Package – Front View

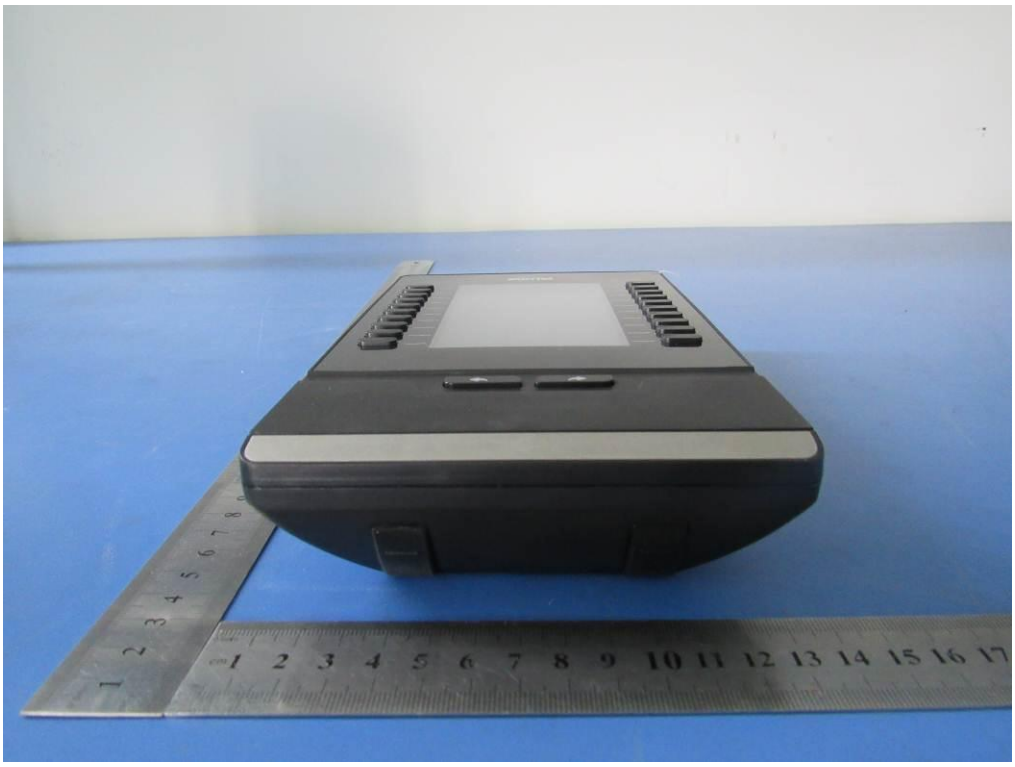


Adapter – Front View

Front View of EUT

Rear View of EUT

Top View of EUT

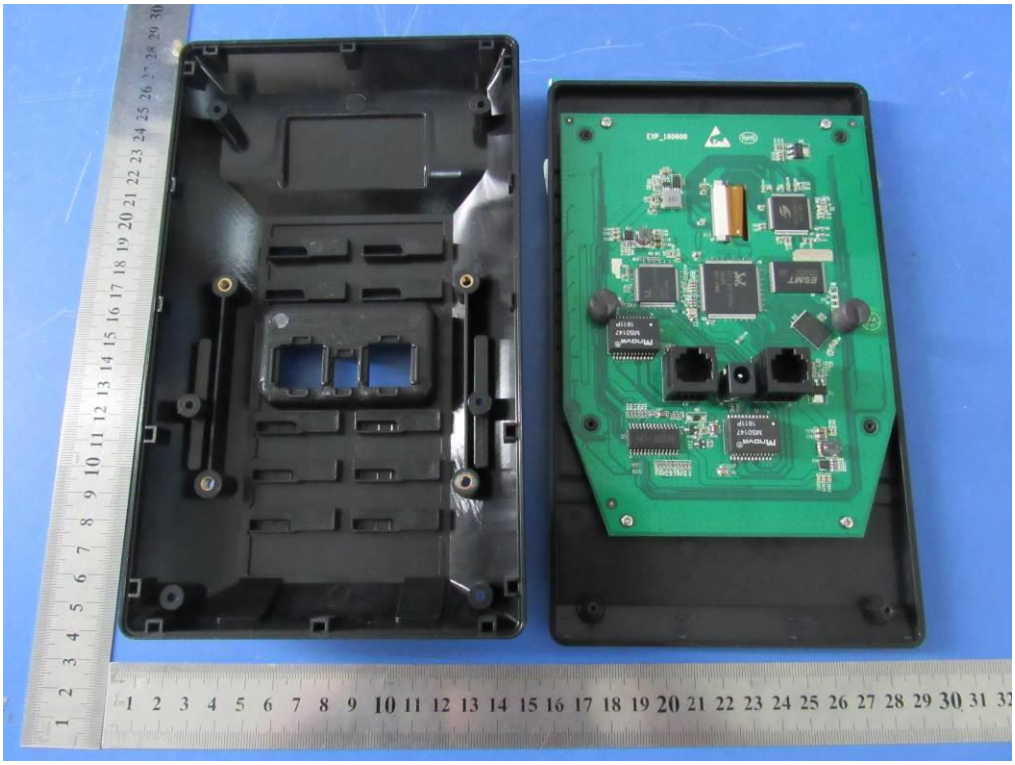


Bottom View of EUT

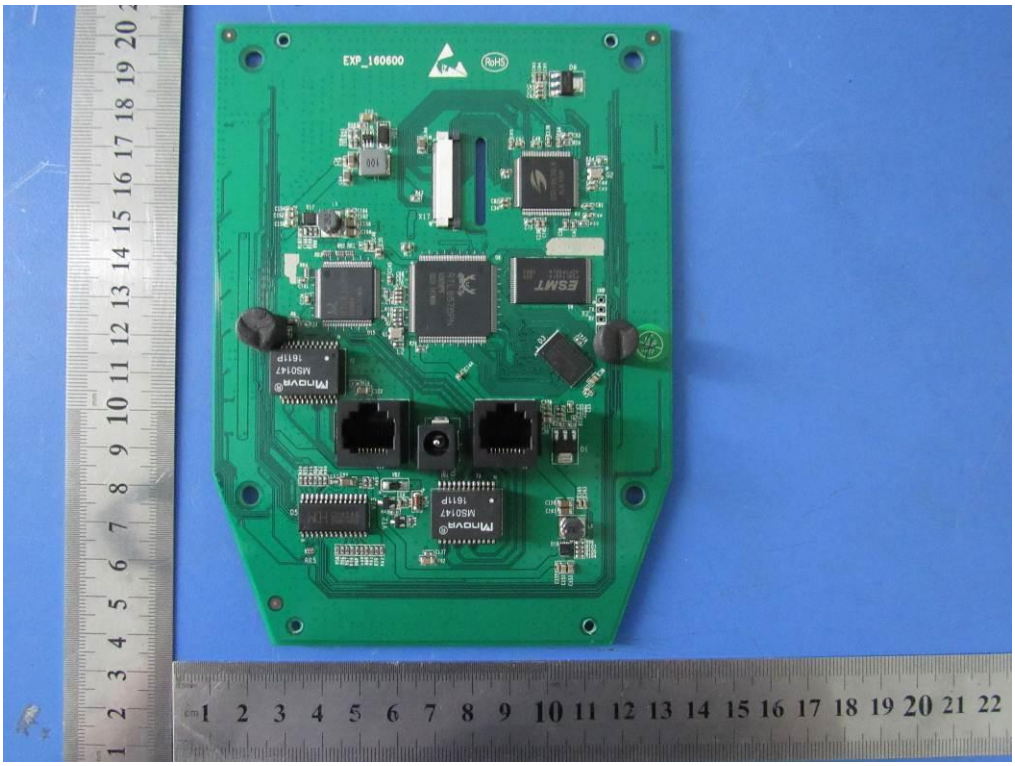
Left View of EUT

Right View of EUT

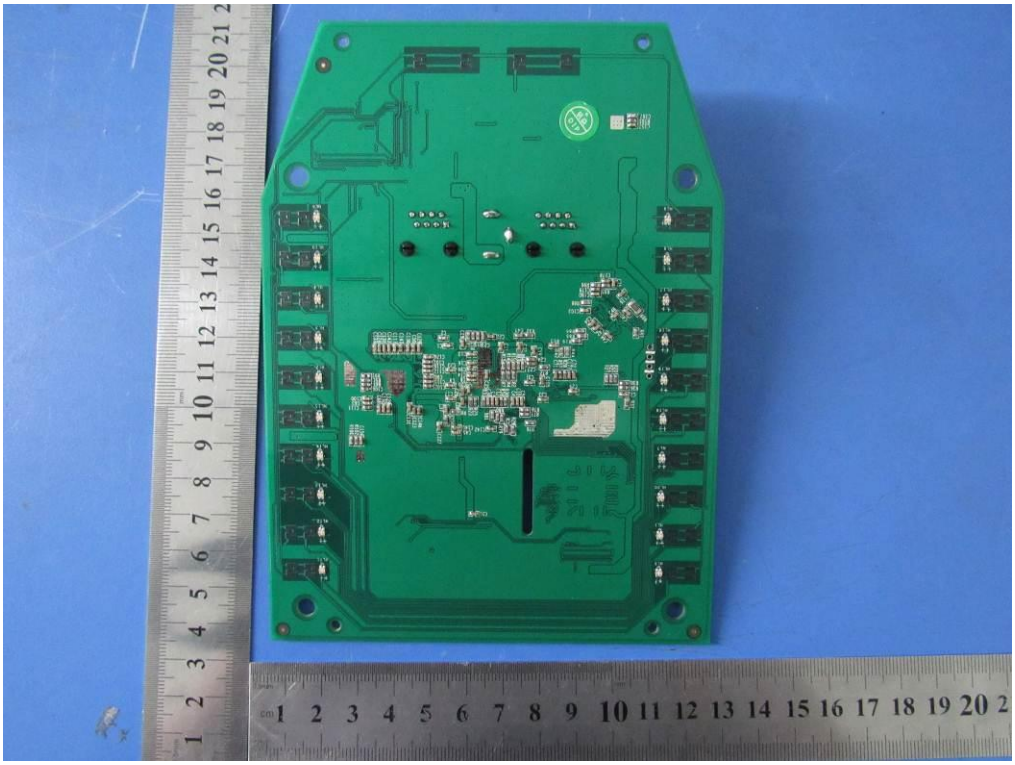
Annex B.ii. Photograph EUT Internal Photo



EUT –Uncover Front View



PCB– Front View

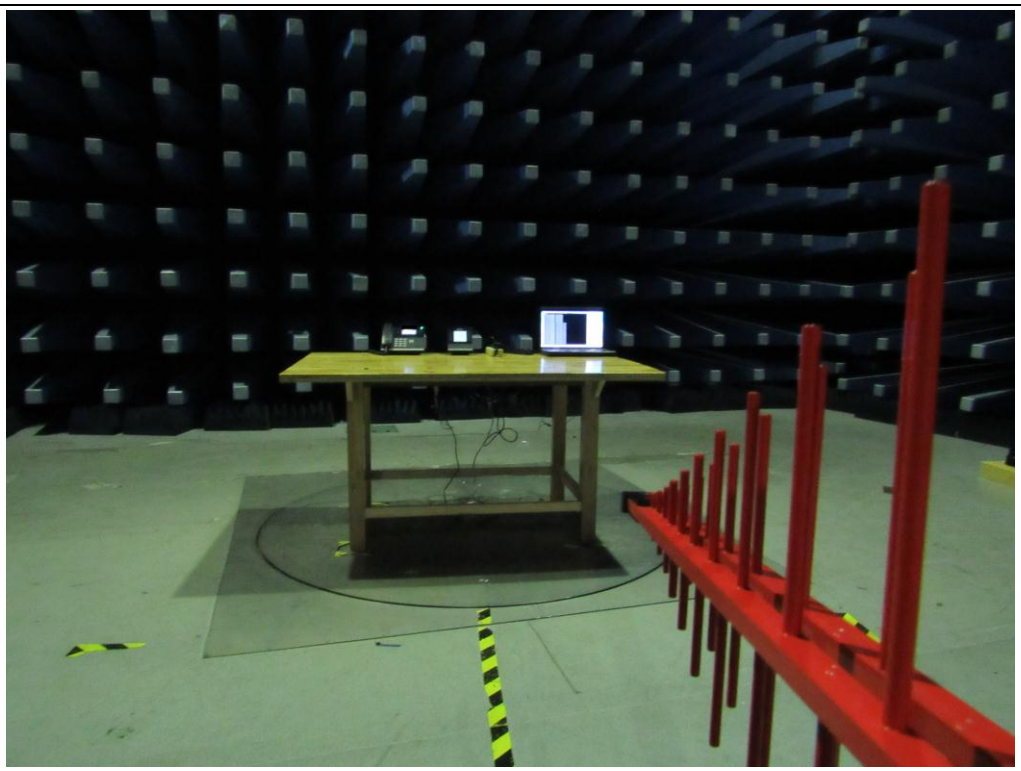


PCB– Rear View

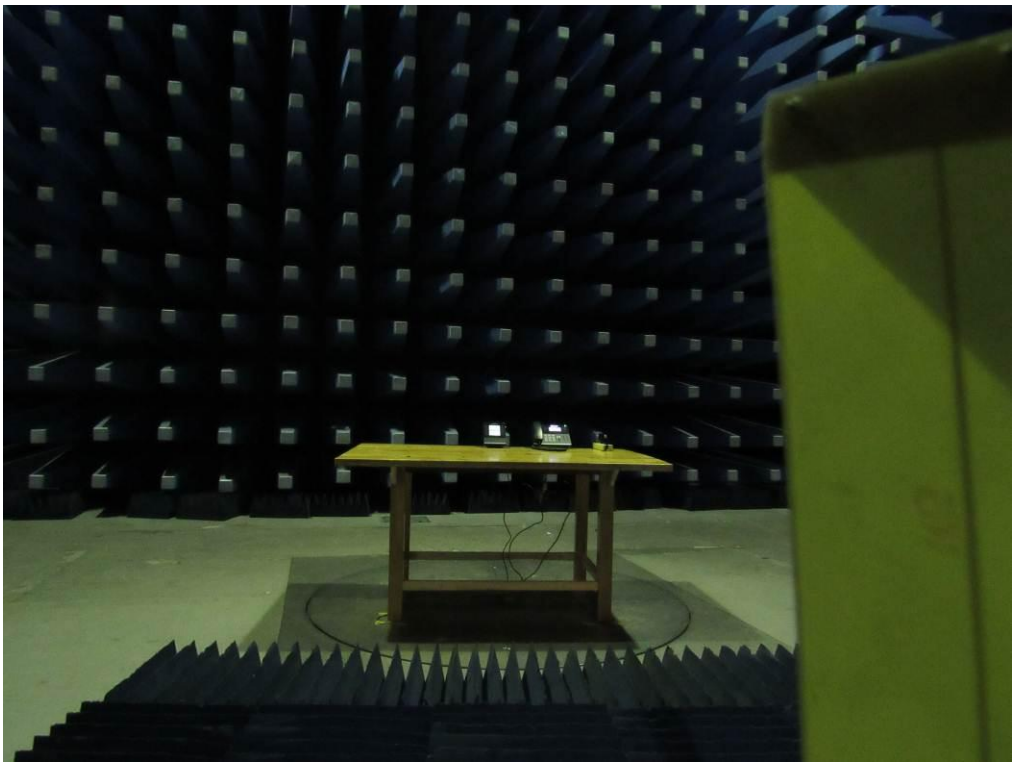
Annex B.iii. Photograph Test Setup Photo

Conducted Emissions Test Setup - Front View

Conducted Emissions Test Setup - Side View

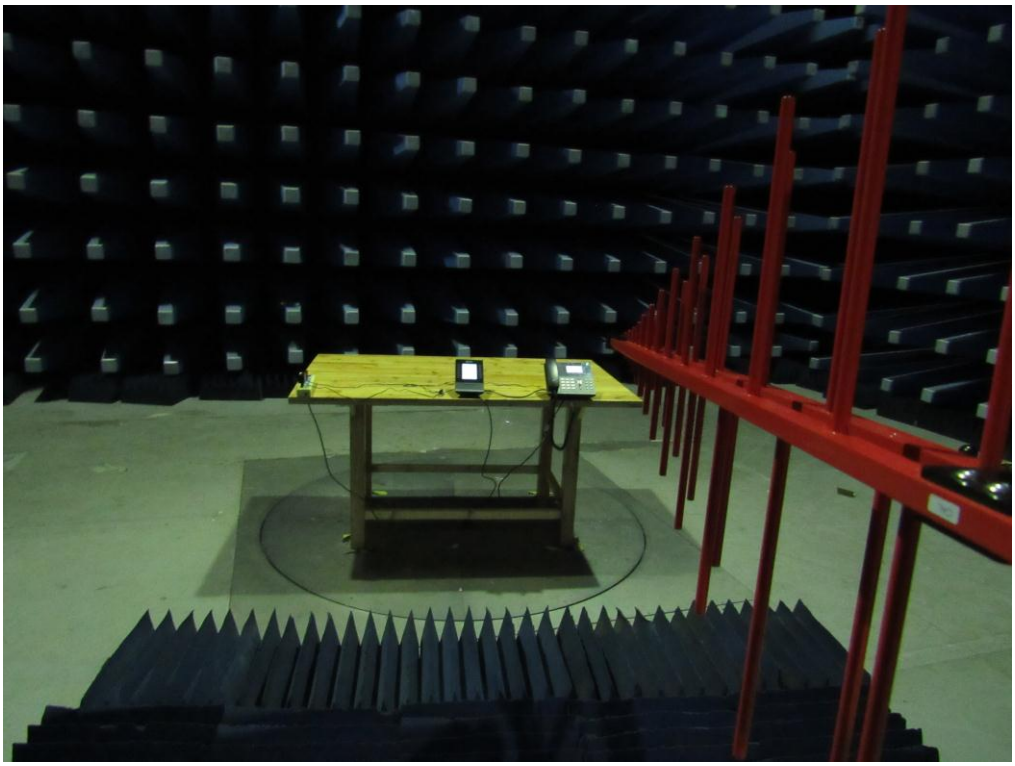


Radiated Emissions Test Setup Below 1GHz - Front View



Radiated Emissions Test Setup Above 1GHz - Front View

Electrostatic Discharge Test Setup - Front View(Charging Mode)



RF Electromagnetic Field Immunity Test Setup - Rear View

Surge & Fast Transients Common Mode Immunity Test Setup - Front View

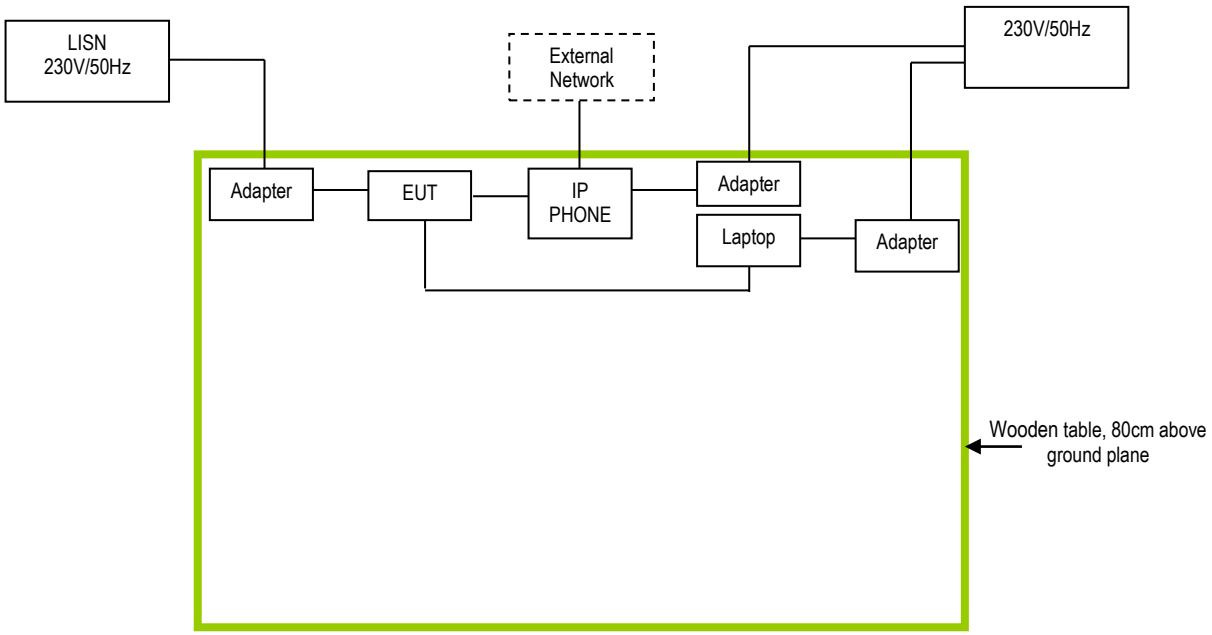
Conducted Disturbance Immunity Test Setup - Front View

Voltage Fluctuations And Flicker Test Setup Front View

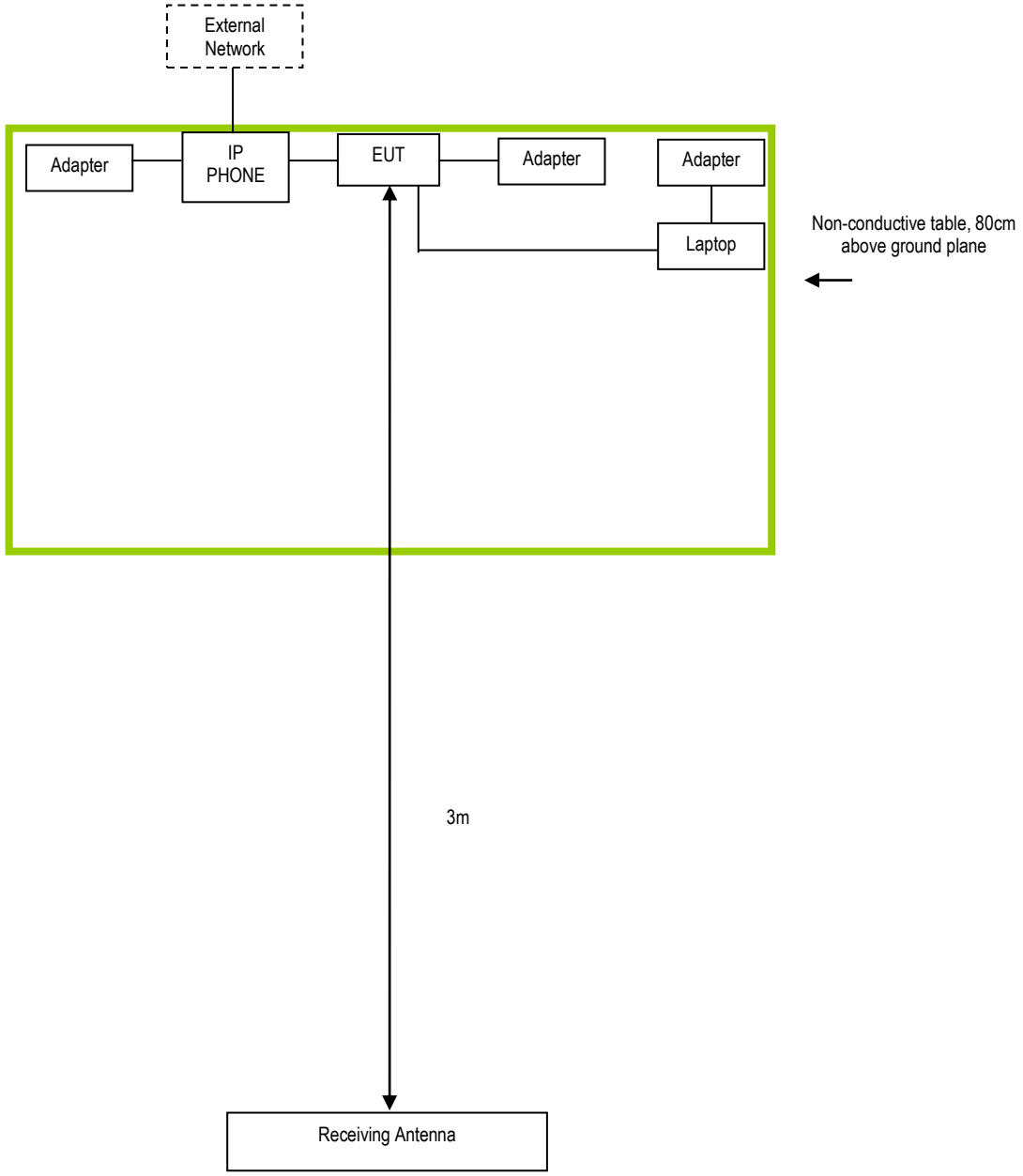
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.i. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description	Model
Dell	Laptop	3421
N/A	IP PHONE	S500

Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see attachment

Annex E. DECLARATION OF SIMILARITY

Nanjing Hanlong Technology Co., Ltd.

Statement

We Nanjing Hanlong Technology Co., Ltd. agree SAHAB TECHNOLOGY to use below information on file to apply a multiple-listing certification.

Original Information:
Model name: UC46
Product Description: EXPANSION MODULE
Brand: Htek
Applicant name: Nanjing Hanlong Technology Co., Ltd.
Applicant address: 5th Floor, 1st Building, Huashen Tech Park, 10 Huashen Temple, Yuhuatai Dis, Nanjing China
Manufacturer name: Nanjing Hanlong Technology Co., Ltd.
Manufacturer address: 5th Floor, 1st Building, Huashen Tech Park, 10 HuashenTemple, Yuhuatai Dis, Nanjing China

New Information:
Model name: XT-23EXP
Product Description: EXPANSION MODULE
Brand: XonTel
Applicant name: SAHAB TECHNOLOGY
Applicant address: Office 21,Qibla Tower,Fahad Al Salem St.,Qibla, State of KUWAIT
Manufacturer name: SAHAB TECHNOLOGY
Manufacturer address: Office 21,Qibla Tower,Fahad Al Salem St.,Qibla, State of KUWAIT

We hereby state that these models are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.
Your assistance on this matter is highly appreciated.

Sincerely,
Name: Julex
Title: Marketing Director
Signature: