



**SGS-CSTC Standards Technical Services
(Shanghai) Co., Ltd.**

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Telephone: +86 (0) 21 6191 5666

Fax: +86 (0) 21 6191 5678

ee.shanghai@sgs.com

Report No.: SHEM171200867001

Page: 1 of 77

TEST REPORT

Application No.: SHEM1712008670IT
Applicant: Zhejiang Dahua Vision Technology Co., Ltd.
Address of Applicant: No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
Manufacturer: Zhejiang Dahua Vision Technology Co., Ltd.
Address of Manufacturer: No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
Factory: 1, ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.
 2, ZHEJIANG DAHUA ZHILIAN CO.,LTD.
Address of Factory: 1, No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
 2, No.28, Dongqiao Road, Dongzhou Street, Fuyang District, Hangzhou, P.R. China.

Equipment Under Test (EUT):

EUT Name: HDCVI CAMERA

Model No.: Refer to page 2nd

☐ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

Trade Mark: 

Standard(s) : EN 55032:2015 (Class A), EN 61000-3-2:2014,
 EN 61000-3-3:2013, EN 55024:2010 +A1:2015,
 EN 50130-4:2011 +A1:2014

Date of Receipt: 2017-12-18

Date of Test: 2017-12-20 to 2018-01-19

Date of Issue: 2018-02-01

Test Result:	Pass*
---------------------	--------------

* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.



Parlam Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



Model No.:

HAC-HDW2802TP-A, HAC-HDW2802TN-A, DH-HAC-HDW2802TP-A, DH-HAC-HDW2802TN-A,
HAC-HDW2601TP-A, HAC-HDW2601TN-A, DH-HAC-HDW2601TP-A, DH-HAC-HDW2601TN-A,
A82AG52



Revision Record				
Version	Chapter	Date	Modifier	Remark
01	/	2018-02-01	/	Original

Authorized for issue by:				
				
		<hr/>		
		Bruce Tang /Project Engineer		
				
		<hr/>		
		Zenger Zhang /Reviewer		

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	EN 55032:2015	EN 55032:2015	Class A	Pass
Radiated Emissions (30MHz-1GHz)	EN 55032:2015	EN 55032:2015	Class A	Pass
Radiated Emissions (above 1GHz)	EN 55032:2015	EN 55032:2015	Class A	Pass
Harmonic Current Emission	EN 61000-3-2:2014	EN 61000-3-2:2014	Class A	N/A
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	EN 61000-3-3:2013	Clause 5 of EN 61000-3-3	Pass

N/A: Please refer to Section 6.4 of this report for details.

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN 55024:2010 +A1:2015	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Electrostatic Discharge	EN 50130-4:2011 +A1:2014	EN 61000-4-2:2009	6kV Contact Discharge 2,4,8kV Air Discharge	Pass
Radiated Immunity (80MHz-1GHz)	EN 55024:2010 +A1:2015	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass
Radiated Immunity (80MHz-2.7GHz)	EN 50130-4:2011 +A1:2014	EN 61000-4-3:2006 +A1:2008+A2:2010	10V/m, 80%, 1kHz sinusoidal Amp. Mod.	Pass
Electrical Fast Transients/Burst at Power Port	EN 55024:2010 +A1:2015	EN 61000-4-4:2012	1kV5/50ns Tr/Td5kHz Repetition Frequency	Pass
Electrical Fast Transients/Burst at Power Port	EN 50130-4:2011 +A1:2014	EN 61000-4-4:2012	2kV5/50ns Tr/Td100kHz Repetition Frequency	Pass
Electrical Fast Transients/Burst at Signal Port	EN 55024:2010 +A1:2015	EN 61000-4-4:2012	0.5kV5/50ns Tr/Td5kHz Repetition Frequency	Pass
Electrical Fast Transients/Burst at Signal Port	EN 50130-4:2011 +A1:2014	EN 61000-4-4:2012	1kV5/50ns Tr/Td100kHz Repetition Frequency	Pass
Surge at Power Port	EN 55024:2010 +A1:2015	EN 61000-4-5:2014	1.2/50 μ s Tr/Td1kV Line to Line 2kV Line to Ground	Pass



Immunity Part				
Item	Standard	Method	Requirement	Result
Surge at Power Port	EN 50130-4:2011 +A1:2014	EN 61000-4-5:2014	1.2/50µs Tr/Td0.5,1kV Line to Line0.5,1,2kV Line to Ground	Pass
Surge at Signal Port	EN 55024:2010 +A1:2015	EN 61000-4-5:2014	1.2/50µs Tr/Td1kV Line to Ground	Pass
Surge at Signal Port	EN 50130-4:2011 +A1:2014	EN 61000-4-5:2014	1.2/50µs Tr/Td0.5,1kV Line to Ground	Pass
Conducted Immunity at Power Port (150kHz-80MHz)	EN 55024:2010 +A1:2015	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass
Conducted Immunity at Signal Port (150kHz-80MHz)	EN 55024:2010 +A1:2015	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass
Conducted Immunity at Power Port (150kHz-100MHz)	EN 50130-4:2011 +A1:2014	EN 61000-4-6:2014	10Vrms (emf),80%,1kHz sinusoidal Amp. Mod.	Pass
Conducted Immunity at Signal Port (150kHz-100MHz)	EN 50130-4:2011 +A1:2014	EN 61000-4-6:2014	10Vrms (emf),80%,1kHz sinusoidal Amp. Mod.	Pass
Voltage Dips and Interruptions	EN 55024:2010 +A1:2015	EN 61000-4-11:2004	0 % UT for 0.5per0 % UT for 250per70 % UT for 25perUT is Supply Voltage	Pass
Voltage Dips and Interruptions	EN 50130-4:2011 +A1:2014	EN 61000-4-11:2004	80 % UT for 250per70 % UT for 25per40 % UT for 10per0 % UT for 250perUT is Supply Voltage	Pass
Mains Supply Voltage Variations- Conditioning	EN 50130-4:2011 +A1:2014	EN 50130- 4:2011+A1:2014	Unom+10%Unom- 15%	Pass

InternalSource	UpperFrequency
Below 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5 times the highest frequency or 6 GHz, whichever is less

Declaration of EUT Family Grouping:

There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model HAC-HDW2802TP-A was tested since their differences are pixels and sales area.



3 Contents

	Page
1 COVER PAGE.....	1
2 TEST SUMMARY	4
3 CONTENTS.....	6
4 GENERAL INFORMATION	9
4.1 DETAILS OF E.U.T.....	9
4.2 DESCRIPTION OF SUPPORT UNITS	9
4.3 MEASUREMENT UNCERTAINTY	9
4.4 TEST LOCATION	10
4.5 TEST FACILITY	10
4.6 DEVIATION FROM STANDARDS	10
4.7 ABNORMALITIES FROM STANDARD CONDITIONS	10
4.8 MONITORING OF EUT FOR ALL IMMUNITY TEST.....	10
5 EQUIPMENT LIST	11
6 EMISSION TEST RESULTS.....	15
6.1 CONDUCTED EMISSIONS AT MAINS TERMINALS (150KHz-30MHz)	15
6.1.1 <i>E.U.T. Operation</i>	15
6.1.2 <i>Test Setup Diagram</i>	15
6.1.3 <i>Measurement Data</i>	15
6.2 RADIATED EMISSIONS (30MHz-1GHz)	24
6.2.1 <i>E.U.T. Operation</i>	24
6.2.2 <i>Test Setup Diagram</i>	24
6.2.3 <i>Measurement Data</i>	24
6.3 RADIATED EMISSIONS (ABOVE 1GHz).....	33
6.3.1 <i>E.U.T. Operation</i>	33
6.3.2 <i>Test Setup Diagram</i>	33
6.3.3 <i>Measurement Data</i>	33
6.4 HARMONIC CURRENT EMISSION	42
6.5 VOLTAGE FLUCTUATIONS AND FLICKER.....	43
6.5.1 <i>E.U.T. Operation</i>	43
6.5.2 <i>Test Setup Diagram</i>	43
6.5.3 <i>Measurement Data</i>	43
7 IMMUNITY TEST RESULTS.....	45
7.1 PERFORMANCE CRITERIA DESCRIPTION IN EN 55024:2010 +A1:2015	45
7.2 PERFORMANCE CRITERIA DESCRIPTION IN EN 50130-4:2011 +A1:2014	45
7.3 ELECTROSTATIC DISCHARGE	46
7.3.1 <i>Test Setup Diagram</i>	46
7.3.2 <i>E.U.T. Operation</i>	46
7.3.3 <i>Test Results:</i>	46
7.4 ELECTROSTATIC DISCHARGE	47
7.4.1 <i>Test Setup Diagram</i>	47
7.4.2 <i>E.U.T. Operation</i>	47
7.4.3 <i>Test Results:</i>	47
7.5 RADIATED IMMUNITY (80MHz-1GHz)	48
7.5.1 <i>Test Setup Diagram</i>	48
7.5.2 <i>E.U.T. Operation</i>	48



- 7.5.3 Test Results: 48
- 7.6 RADIATED IMMUNITY(80MHZ-2.7GHZ)..... 49
 - 7.6.1 Test Setup Diagram 49
 - 7.6.2 E.U.T. Operation..... 49
 - 7.6.3 Test Results: 49
- 7.7 ELECTRICAL FAST TRANSIENTS/BURST AT POWER PORT..... 50
 - 7.7.1 Test Setup Diagram 50
 - 7.7.2 E.U.T. Operation..... 50
 - 7.7.3 Test Results: 50
- 7.8 ELECTRICAL FAST TRANSIENTS/BURST AT POWER PORT..... 51
 - 7.8.1 Test Setup Diagram 51
 - 7.8.2 E.U.T. Operation..... 51
 - 7.8.3 Test Results: 51
- 7.9 ELECTRICAL FAST TRANSIENTS/BURST AT SIGNAL PORT 52
 - 7.9.1 Test Setup Diagram 52
 - 7.9.2 E.U.T. Operation..... 52
 - 7.9.3 Test Results: 52
- 7.10 ELECTRICAL FAST TRANSIENTS/BURST AT SIGNAL PORT 53
 - 7.10.1 Test Setup Diagram 53
 - 7.10.2 E.U.T. Operation..... 53
 - 7.10.3 Test Results: 53
- 7.11 SURGE AT POWER PORT 54
 - 7.11.1 Test Setup Diagram 54
 - 7.11.2 E.U.T. Operation..... 54
 - 7.11.3 Test Results: 54
- 7.12 SURGE AT POWER PORT 55
 - 7.12.1 Test Setup Diagram 55
 - 7.12.2 E.U.T. Operation..... 55
 - 7.12.3 Test Results: 55
- 7.13 SURGE AT SIGNAL PORT 56
 - 7.13.1 Test Setup Diagram 56
 - 7.13.2 E.U.T. Operation..... 56
 - 7.13.3 Test Results: 56
- 7.14 SURGE AT SIGNAL PORT 57
 - 7.14.1 Test Setup Diagram 57
 - 7.14.2 E.U.T. Operation..... 57
 - 7.14.3 Test Results: 57
- 7.15 CONDUCTED IMMUNITY AT POWER PORT (150KHZ-80MHZ) 58
 - 7.15.1 Test Setup Diagram 58
 - 7.15.2 E.U.T. Operation..... 58
 - 7.15.3 Test Results: 58
- 7.16 CONDUCTED IMMUNITY AT SIGNAL PORT (150KHZ-80MHZ)..... 59
 - 7.16.1 Test Setup Diagram 59
 - 7.16.2 E.U.T. Operation..... 59
 - 7.16.3 Test Results: 59
- 7.17 CONDUCTED IMMUNITY AT POWER PORT (150KHZ-100MHZ) 60
 - 7.17.1 Test Setup Diagram 60
 - 7.17.2 E.U.T. Operation..... 60
 - 7.17.3 Test Results: 60
- 7.18 CONDUCTED IMMUNITY AT SIGNAL PORT (150KHZ-100MHZ) 61
 - 7.18.1 Test Setup Diagram 61
 - 7.18.2 E.U.T. Operation..... 61
 - 7.18.3 Test Results: 61
- 7.19 VOLTAGE DIPS AND INTERRUPTIONS 62
 - 7.19.1 Test Setup Diagram 62



7.19.2	E.U.T. Operation.....	62
7.19.3	Test Results:	62
7.20	VOLTAGE DIPS AND INTERRUPTIONS	63
7.20.1	Test Setup Diagram	63
7.20.2	E.U.T. Operation.....	63
7.20.3	Test Results:	63
7.21	MAINS SUPPLY VOLTAGE VARIATIONS-CONDITIONING	64
7.21.1	Test Setup Diagram	64
7.21.2	E.U.T. Operation.....	64
7.21.3	Test Results:	64
8	PHOTOGRAPHS.....	65
8.1	CONDUCTED EMISSIONS AT MAINS TERMINALS (150kHz-30MHz) TEST SETUP	65
8.2	RADIATED EMISSIONS (30MHz-1GHz) TEST SETUP	65
8.3	RADIATED EMISSIONS (ABOVE 1GHz) TEST SETUP.....	66
8.4	VOLTAGE FLUCTUATIONS AND FLICKER TEST SETUP	66
8.5	ELECTROSTATIC DISCHARGE TEST SETUP	67
8.6	RADIATED IMMUNITY (80MHz-1GHz) TEST SETUP	68
8.7	RADIATED IMMUNITY(80MHz-2.7GHz) TEST SETUP.....	69
8.8	ELECTRICAL FAST TRANSIENTS/BURST AT POWER PORT TEST SETUP.....	69
8.9	ELECTRICAL FAST TRANSIENTS/BURST AT SIGNAL PORT TEST SETUP	70
8.10	SURGE AT POWER PORT TEST SETUP	70
8.11	SURGE AT SIGNAL PORT TEST SETUP	71
8.12	CONDUCTED IMMUNITY AT POWER PORT (150kHz-80MHz) TEST SETUP	71
8.13	CONDUCTED IMMUNITY AT SIGNAL PORT (150kHz-80MHz) TEST SETUP.....	72
8.14	CONDUCTED IMMUNITY AT POWER PORT (150kHz-100MHz) TEST SETUP	72
8.15	CONDUCTED IMMUNITY AT SIGNAL PORT (150kHz-100MHz) TEST SETUP.....	73
8.16	VOLTAGE DIPS AND INTERRUPTIONS TEST SETUP	73
8.17	MAINS SUPPLY VOLTAGE VARIATIONS-CONDITIONING TEST SETUP	74
8.18	EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS).....	75-77

4 General Information

4.1 Details of E.U.T.

Power supply: DC12V
 Cable: Signal cable : 0.5m

4.2 Description of Support Units

7"LCD HD DVR	Hikvision	DS-8104AHQLI-E4
Switching Adapter 3	HOIOTO	ADS-25FSG-12
iPoD	Apple	Nano 7

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	3.2dB (9kHz to 150kHz)
		3.0dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	1.9 dB(9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	2.4 dB(150kHz to 30MHz)
4	Radiated Power	3.5dB
5	Radiated emission	4.4dB (30MHz-1GHz)
		4.6dB (1GHz-6GHz)

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868,C-4336,T-2221,G-830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: work status and video quality

5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESR7	SHEM162-1	2017-12-26	2018-12-25
Line impedance stabilization network	SCHWARZBECK	NSLK8127	SHEM061-1	2017-05-17	2018-05-16
Line impedance stabilization network	EMCO	3816/2	SHEM019-1	2017-12-26	2018-12-25
Pulse limiter	Rohde & Schwarz	ESH3-Z2	SHEM029-1	2017-08-01	2018-07-31
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2016-12-29	2019-12-28
CE test Cable	/	/	CE01	2017-12-26	2018-12-25

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2017-09-26	2018-09-25
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2017-02-28	2020-02-27
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2018-07-21
Low Amplifier	CLAVIO	BDLNA-0001-412010	SHEM164-1	2017-08-22	2018-08-21

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2017-09-26	2018-09-25
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Double ridged broadband horn ANTENNA	SCHWARZBECK	BBHA9120D	SHEM050-1	2017-01-14	2020-01-13
High-amplifier	SCHWARZBECK	SCU-F0118-G40-BZ4-CS	SHEM050-2	2017-01-14	2020-01-13
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2018-07-21

Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Harmonic&Flicker analyzer	AMETEK	PACS-1	SHEM024-2	2017-08-22	2018-08-21
AC Power Source 5KVA	AMETEK	5001iX	SHEM025-2	2017-08-22	2018-08-21

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-1	2017-09-26	2018-09-25



Radiated Immunity (80MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2017-09-26	2018-09-25
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2017-12-26	2018-12-25
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2017-12-26	2018-12-25
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	N/A	N/A
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2017-07-22	2018-07-21
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6113	SHEM134-1	2017-09-07	2018-09-06
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2018-07-21

Radiated Immunity(80MHz-2.7GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2017-09-26	2018-09-25
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2017-12-26	2018-12-25
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2017-12-26	2018-12-25
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Antenna	SCHWARZBECK	STLP9149	SHEM131-1	N/A	N/A
Amplifier	MILMEGA	80RF1000-250	SHEM132-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	N/A	N/A
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2017-07-22	2018-07-21
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6113	SHEM134-1	2017-09-07	2018-09-06
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2018-07-21

Electrical Fast Transients/Burst at Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2017-12-26	2018-12-25

Electrical Fast Transients/Burst at Signal Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2017-12-26	2018-12-25
Capacitive coupling clamp	EM test	HFK	SHEM026-2	2017-08-12	2018-08-11
Data coupling network 4 line	EM test	CNV 504	SHEM026-3	2017-08-12	2018-08-11

Surge at Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2017-12-26	2018-12-25



Surge at Signal Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2017-12-26	2018-12-25
Data coupling network 4 line	EM test	CNV 504	SHEM026-3	2017-08-12	2018-08-11

Conducted Immunity at Power Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2017-09-26	2018-09-25
PAMP Conducted RF test system	HAEFFLY	PAMP250	SHEM023-1	2017-12-26	2018-12-25
6dB Attenuator	HUAXIANG	TST-150-761	SHEM151-1	N/A	N/A
Coupling clamp	LIITHI	EM 101	SHEM027-1	2015-05-03	2018-05-02
CDN impedance and K-factor	LUTHI	L-801 M1	SHEM023-5	2017-12-26	2018-12-25
CDN impedance and K-factor	LUTHI	L-801 M2/M3	SHEM023-6	2017-12-26	2018-12-25
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2016-12-29	2019-12-28

Conducted Immunity at Signal Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2017-09-26	2018-09-25
PAMP Conducted RF test system	HAEFFLY	PAMP250	SHEM023-1	2017-12-26	2018-12-25
6dB Attenuator	HUAXIANG	TST-150-761	SHEM151-1	N/A	N/A
Coupling clamp	LIITHI	EM 101	SHEM027-1	2015-05-03	2018-05-02
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2016-12-29	2019-12-28

Conducted Immunity at Power Port (150kHz-100MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2017-09-26	2018-09-25
PAMP Conducted RF test system	HAEFFLY	PAMP250	SHEM023-1	2017-12-26	2018-12-25
6dB Attenuator	HUAXIANG	TST-150-761	SHEM151-1	N/A	N/A
CDN impedance and K-factor	LUTHI	L-801 M1	SHEM023-5	2017-12-26	2018-12-25
CDN impedance and K-factor	LUTHI	L-801 M2/M3	SHEM023-6	2017-12-26	2018-12-25
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2016-12-29	2019-12-28

Conducted Immunity at Signal Port (150kHz-100MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2017-09-26	2018-09-25
PAMP Conducted RF test system	HAEFFLY	PAMP250	SHEM023-1	2017-12-26	2018-12-25
6dB Attenuator	HUAXIANG	TST-150-761	SHEM151-1	N/A	N/A
Coupling clamp	LIITHI	EM 101	SHEM027-1	2015-05-03	2018-05-02



CDN impedance and K-factor	LUTHI	L-801 M1	SHEM023-5	2017-12-26	2018-12-25
CDN impedance and K-factor	LUTHI	L-801 M2/M3	SHEM023-6	2017-12-26	2018-12-25

Voltage Dips and Interruptions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2017-12-26	2018-12-25

Mains Supply Voltage Variations-Conditioning

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2017-12-26	2018-12-25

General used equipment

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2017-03-03	2018-03-02
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2017-09-13	2018-09-12
Digital Multimeter	FLUKE	17B	SHEM043-5	2017-09-13	2018-09-12
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2017-01-29	2018-01-28

6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	EN 55032:2015
Test Method:	EN 55032:2015
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	79dB(μV) quasi-peak, 66dB(μV) average
0.5M-30MHz	73dB(μV) quasi-peak, 60dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

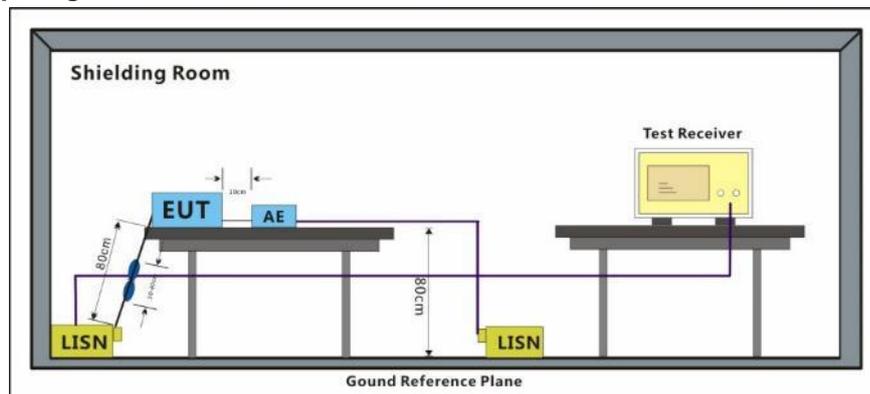
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

6.1.2 Test Setup Diagram

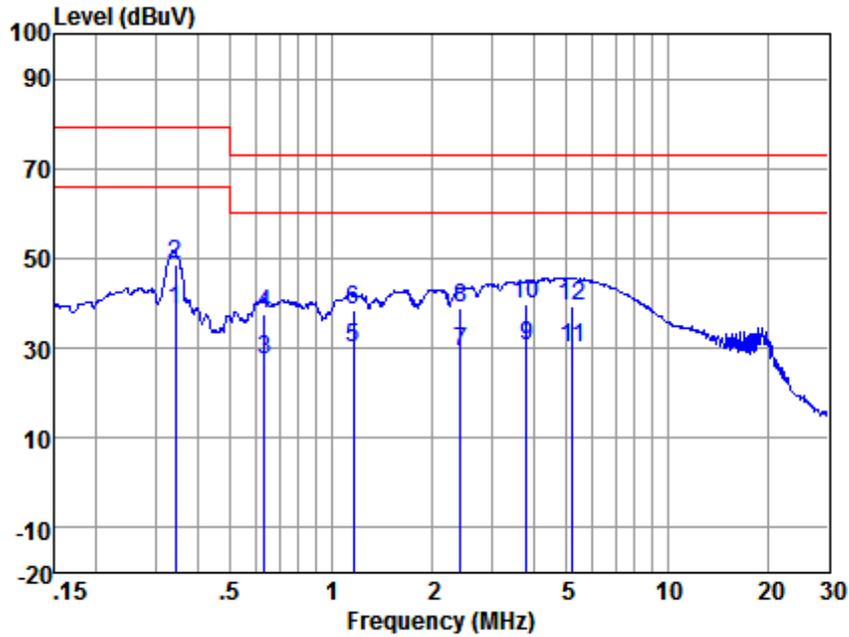


6.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

Mode:a; Line:Live Line

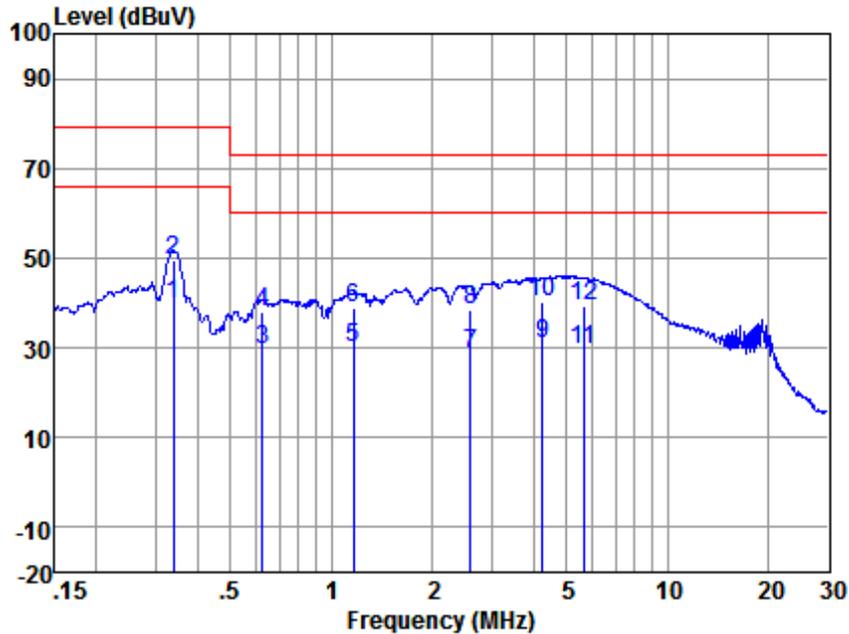


Site : chamber
 Condition : LISN-L-2017
 EUT/Project No: 8670IT
 Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.343	28.41	0.11	9.81	38.33	66.00	-27.67	Average
2	0.343	38.59	0.11	9.81	48.51	79.00	-30.49	QP
3	0.630	17.60	0.11	9.82	27.53	60.00	-32.47	Average
4	0.630	27.50	0.11	9.82	37.43	73.00	-35.57	QP
5	1.166	19.87	0.11	9.84	29.82	60.00	-30.18	Average
6	1.166	28.65	0.11	9.84	38.60	73.00	-34.40	QP
7	2.422	19.13	0.12	9.85	29.10	60.00	-30.90	Average
8	2.422	29.11	0.12	9.85	39.08	73.00	-33.92	QP
9	3.820	20.34	0.12	9.85	30.31	60.00	-29.69	Average
10	3.820	29.87	0.12	9.85	39.84	73.00	-33.16	QP
11	5.221	20.20	0.11	9.86	30.17	60.00	-29.83	Average
12	5.221	29.34	0.11	9.86	39.31	73.00	-33.69	QP

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

Mode:a; Line:Neutral Line

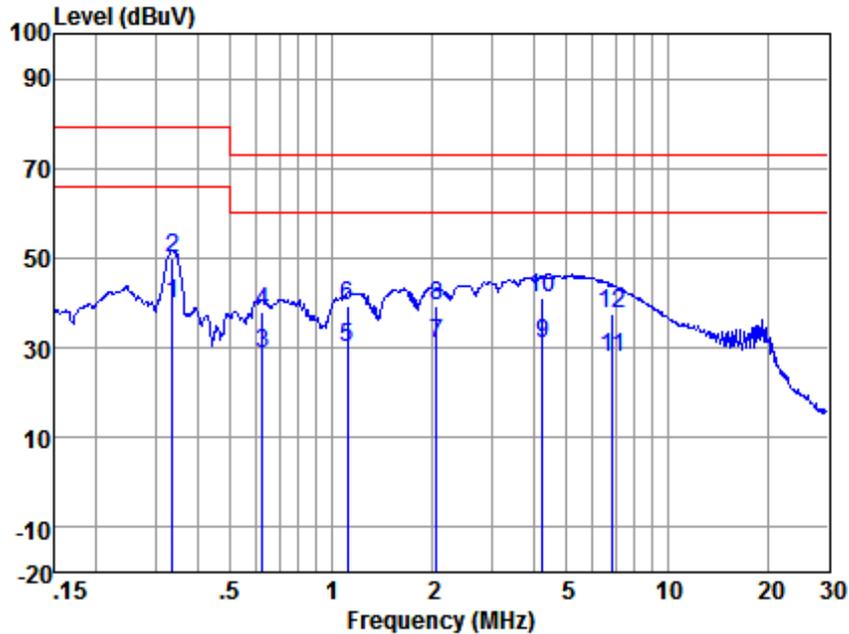


Site : chamber
 Condition : LISN-N-2017
 EUT/Project No: 8670IT
 Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.339	29.75	0.11	9.81	39.67	66.00	-26.33	Average
2	0.339	39.58	0.11	9.81	49.50	79.00	-29.50	QP
3	0.624	19.70	0.11	9.82	29.63	60.00	-30.37	Average
4	0.624	28.24	0.11	9.82	38.17	73.00	-34.83	QP
5	1.166	20.29	0.11	9.84	30.24	60.00	-29.76	Average
6	1.166	28.91	0.11	9.84	38.86	73.00	-34.14	QP
7	2.594	18.89	0.13	9.85	28.87	60.00	-31.13	Average
8	2.594	28.42	0.13	9.85	38.40	73.00	-34.60	QP
9	4.269	20.92	0.13	9.85	30.90	60.00	-29.10	Average
10	4.269	30.14	0.13	9.85	40.12	73.00	-32.88	QP
11	5.623	19.48	0.13	9.86	29.47	60.00	-30.53	Average
12	5.623	29.16	0.13	9.86	39.15	73.00	-33.85	QP

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

Mode:b; Line:Live Line

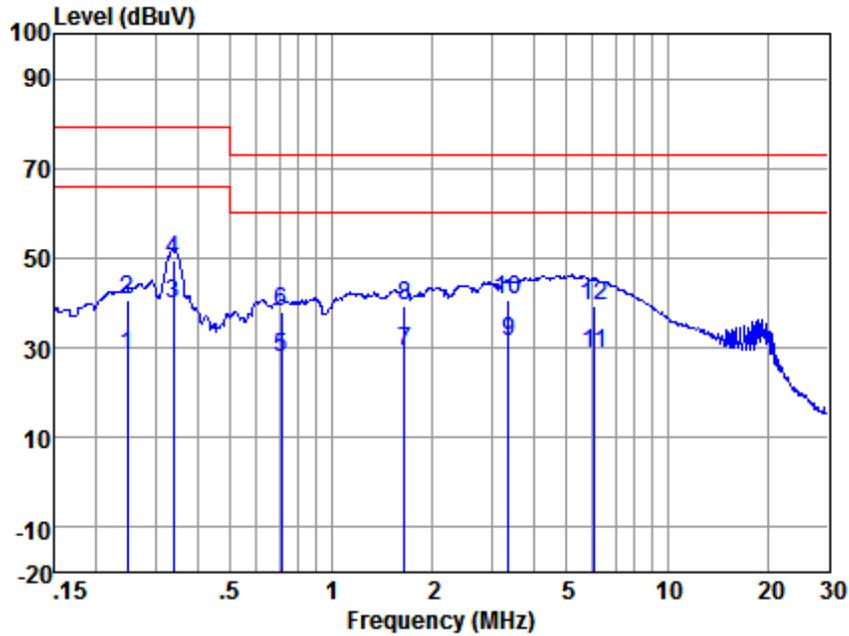


Site : chamber
 Condition : LISN-L-2017
 EUT/Project No: 8670IT
 Test mode : b

	Freq	Read Level	LISN Factor	Cable Loss	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.337	29.84	0.11	9.81	39.76	66.00	-26.24	Average
2	0.337	39.97	0.11	9.81	49.89	79.00	-29.11	QP
3	0.624	18.61	0.11	9.82	28.54	60.00	-31.46	Average
4	0.624	28.15	0.11	9.82	38.08	73.00	-34.92	QP
5	1.117	19.94	0.11	9.84	29.89	60.00	-30.11	Average
6	1.117	29.41	0.11	9.84	39.36	73.00	-33.64	QP
7	2.055	20.96	0.12	9.85	30.93	60.00	-29.07	Average
8	2.055	29.33	0.12	9.85	39.30	73.00	-33.70	QP
9	4.247	20.97	0.11	9.85	30.93	60.00	-29.07	Average
10	4.247	31.05	0.11	9.85	41.01	73.00	-31.99	QP
11	6.878	18.01	0.11	9.86	27.98	60.00	-32.02	Average
12	6.878	27.73	0.11	9.86	37.70	73.00	-35.30	QP

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

Mode:b; Line:Neutral Line

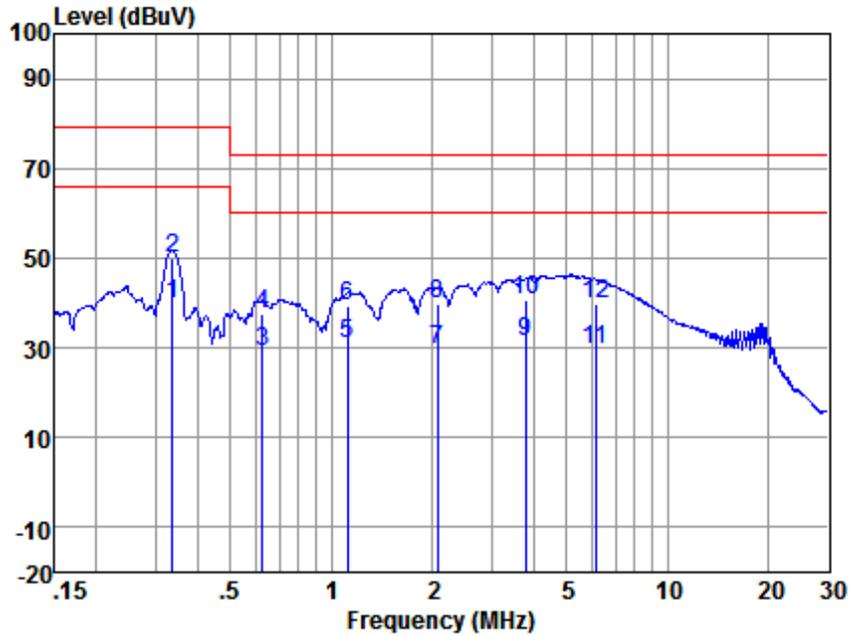


Site : chamber
 Condition : LISN-N-2017
 EUT/Project No: 8670IT
 Test mode : b

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.247	18.27	0.11	9.81	28.19	66.00	-37.81	Average
2	0.247	30.84	0.11	9.81	40.76	79.00	-38.24	QP
3	0.339	29.87	0.11	9.81	39.79	66.00	-26.21	Average
4	0.339	39.60	0.11	9.81	49.52	79.00	-29.48	QP
5	0.712	17.77	0.11	9.83	27.71	60.00	-32.29	Average
6	0.712	27.97	0.11	9.83	37.91	73.00	-35.09	QP
7	1.654	19.30	0.12	9.84	29.26	60.00	-30.74	Average
8	1.654	29.26	0.12	9.84	39.22	73.00	-33.78	QP
9	3.381	21.55	0.13	9.85	31.53	60.00	-28.47	Average
10	3.381	30.67	0.13	9.85	40.65	73.00	-32.35	QP
11	6.089	18.87	0.13	9.86	28.86	60.00	-31.14	Average
12	6.089	29.31	0.13	9.86	39.30	73.00	-33.70	QP

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

Mode:c; Line:Live Line

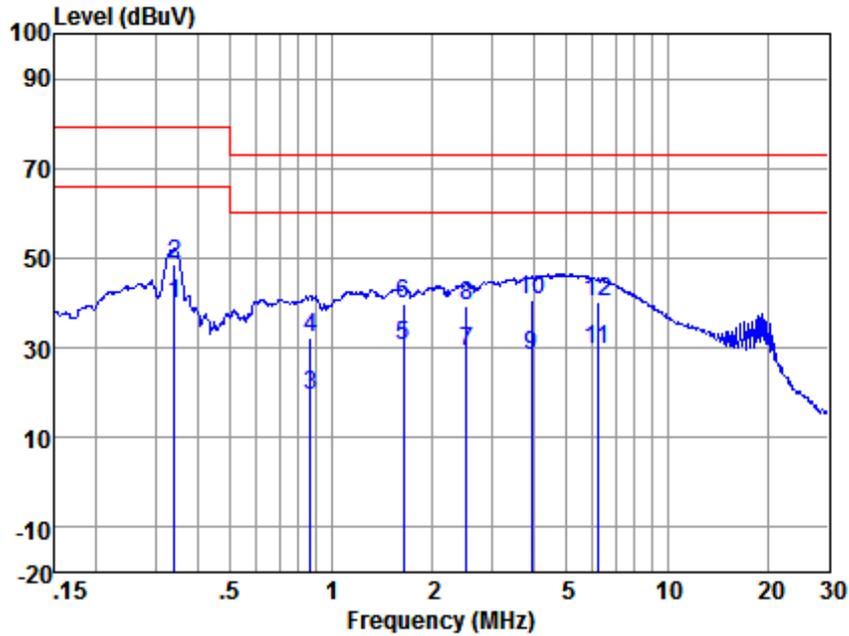


Site : chamber
 Condition : LISN-L-2017
 EUT/Project No: 8670IT
 Test mode : c

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.337	29.98	0.11	9.81	39.90	66.00	-26.10	Average
2	0.337	39.84	0.11	9.81	49.76	79.00	-29.24	QP
3	0.624	19.28	0.11	9.82	29.21	60.00	-30.79	Average
4	0.624	27.83	0.11	9.82	37.76	73.00	-35.24	QP
5	1.117	20.82	0.11	9.84	30.77	60.00	-29.23	Average
6	1.117	29.42	0.11	9.84	39.37	73.00	-33.63	QP
7	2.066	19.83	0.12	9.85	29.80	60.00	-30.20	Average
8	2.066	29.62	0.12	9.85	39.59	73.00	-33.41	QP
9	3.799	21.29	0.12	9.85	31.26	60.00	-28.74	Average
10	3.799	30.85	0.12	9.85	40.82	73.00	-32.18	QP
11	6.121	19.65	0.11	9.86	29.62	60.00	-30.38	Average
12	6.121	29.63	0.11	9.86	39.60	73.00	-33.40	QP

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

Mode:c; Line:Neutral Line

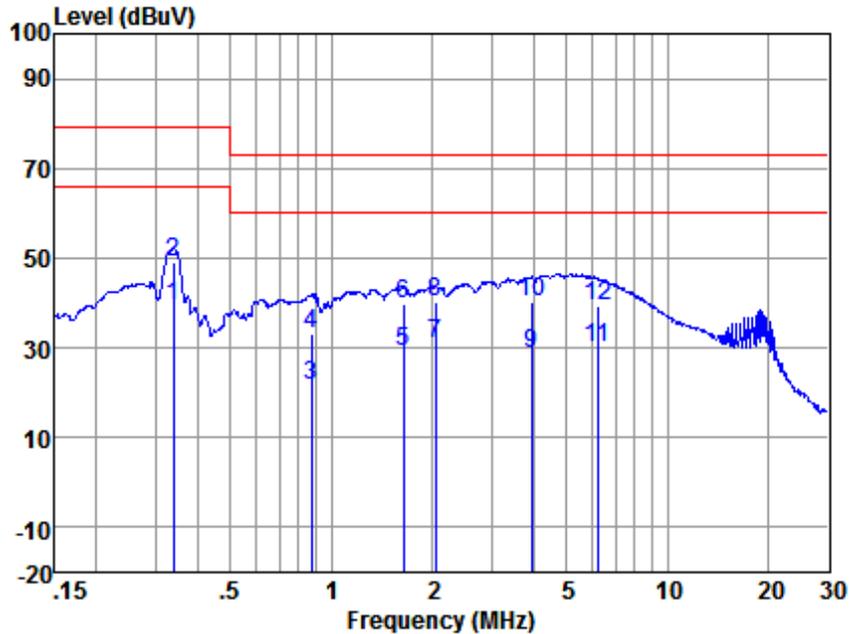


Site : chamber
 Condition : LISN-N-2017
 EUT/Project No: 8670IT
 Test mode : c

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.341	30.07	0.11	9.81	39.99	66.00	-26.01	Average
2	0.341	38.74	0.11	9.81	48.66	79.00	-30.34	QP
3	0.866	9.61	0.11	9.83	19.55	60.00	-40.45	Average
4	0.866	22.15	0.11	9.83	32.09	73.00	-40.91	QP
5	1.636	20.30	0.12	9.84	30.26	60.00	-29.74	Average
6	1.636	29.94	0.12	9.84	39.90	73.00	-33.10	QP
7	2.527	19.27	0.13	9.85	29.25	60.00	-30.75	Average
8	2.527	29.43	0.13	9.85	39.41	73.00	-33.59	QP
9	3.943	18.40	0.13	9.85	28.38	60.00	-31.62	Average
10	3.943	30.68	0.13	9.85	40.66	73.00	-32.34	QP
11	6.186	19.63	0.13	9.86	29.62	60.00	-30.38	Average
12	6.186	30.07	0.13	9.86	40.06	73.00	-32.94	QP

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

Mode:d; Line:Live Line

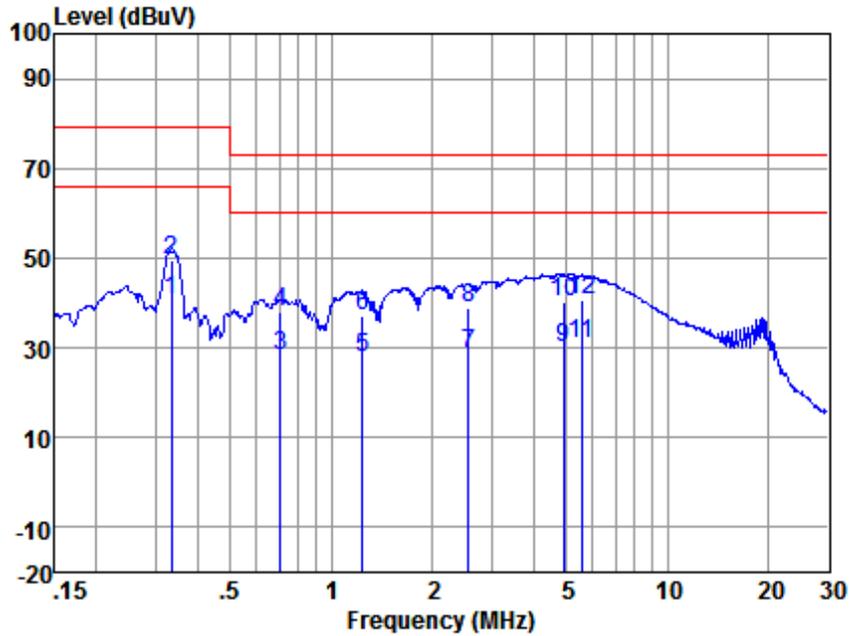


Site : chamber
 Condition : LISN-L-2017
 EUT/Project No: 8670IT
 Test mode : d

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.339	29.64	0.11	9.81	39.56	66.00	-26.44	Average
2	0.339	39.29	0.11	9.81	49.21	79.00	-29.79	QP
3	0.876	11.87	0.11	9.83	21.81	60.00	-38.19	Average
4	0.876	23.25	0.11	9.83	33.19	73.00	-39.81	QP
5	1.645	19.34	0.11	9.84	29.29	60.00	-30.71	Average
6	1.645	29.81	0.11	9.84	39.76	73.00	-33.24	QP
7	2.044	20.81	0.12	9.85	30.78	60.00	-29.22	Average
8	2.044	30.15	0.12	9.85	40.12	73.00	-32.88	QP
9	3.943	18.95	0.12	9.85	28.92	60.00	-31.08	Average
10	3.943	30.20	0.12	9.85	40.17	73.00	-32.83	QP
11	6.186	20.15	0.11	9.86	30.12	60.00	-29.88	Average
12	6.186	29.58	0.11	9.86	39.55	73.00	-33.45	QP

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

Mode:d; Line:Neutral Line



Site : chamber
 Condition : LISN-N-2017
 EUT/Project No: 8670IT
 Test mode : d

	Freq	Read Level	LISN Factor	Cable Loss	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.334	30.60	0.11	9.81	40.52	66.00	-25.48	Average
2	0.334	39.64	0.11	9.81	49.56	79.00	-29.44	QP
3	0.705	18.35	0.11	9.83	28.29	60.00	-31.71	Average
4	0.705	27.86	0.11	9.83	37.80	73.00	-35.20	QP
5	1.236	18.06	0.11	9.84	28.01	60.00	-31.99	Average
6	1.236	26.97	0.11	9.84	36.92	73.00	-36.08	QP
7	2.567	18.65	0.13	9.85	28.63	60.00	-31.37	Average
8	2.567	29.13	0.13	9.85	39.11	73.00	-33.89	QP
9	4.900	20.02	0.13	9.86	30.01	60.00	-29.99	Average
10	4.900	30.38	0.13	9.86	40.37	73.00	-32.63	QP
11	5.564	20.79	0.13	9.86	30.78	60.00	-29.22	Average
12	5.564	30.63	0.13	9.86	40.62	73.00	-32.38	QP

Notes: Emission Level=Read Level + LISN Factor + Cable Loss

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	EN 55032:2015
Test Method:	EN 55032:2015
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz-230MHz	50 dB(μV/m) quasi-peak
230MHz-1GHz	57 dB(μV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

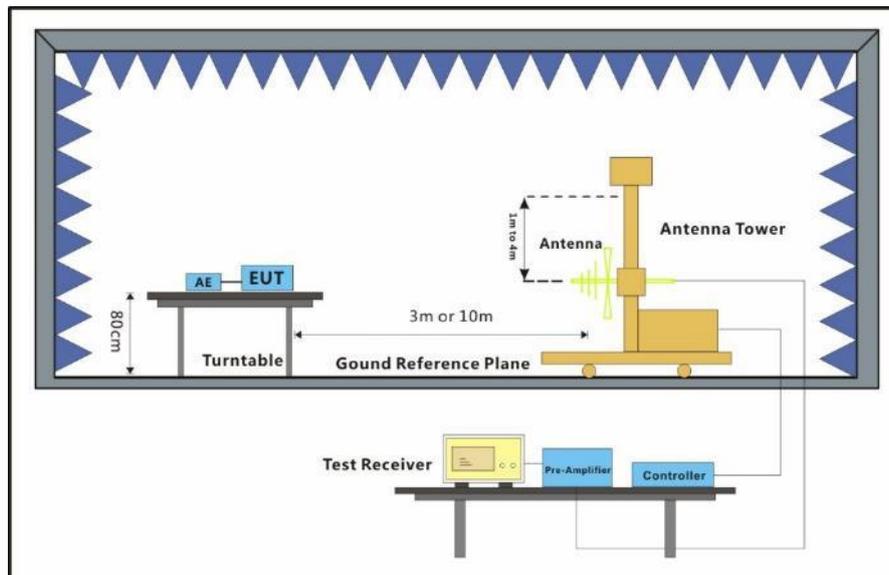
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

6.2.2 Test Setup Diagram

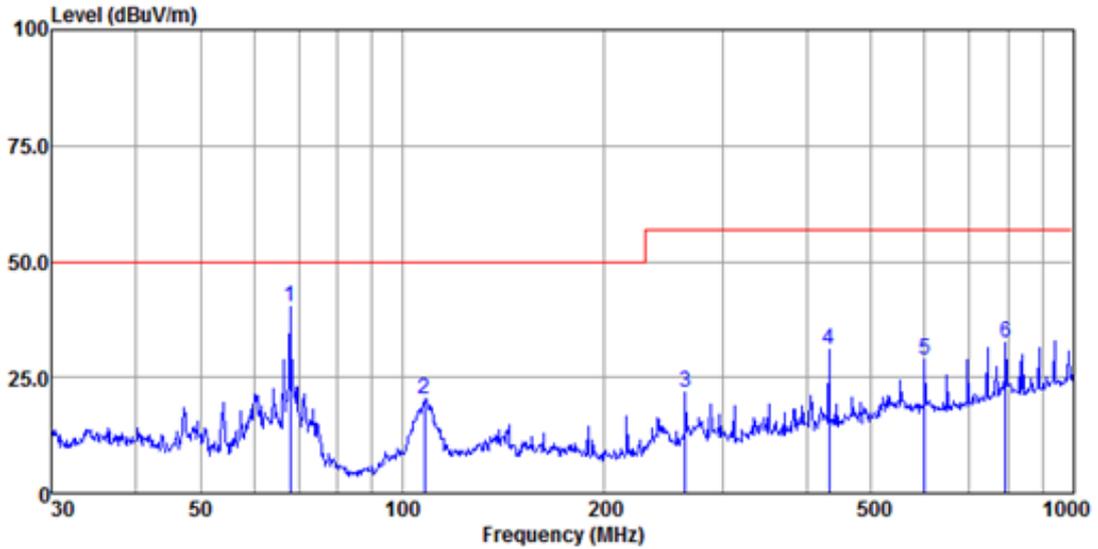


6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



Mode:a; Polarization:Horizontal



Antenna Polarity :HORIZONTAL

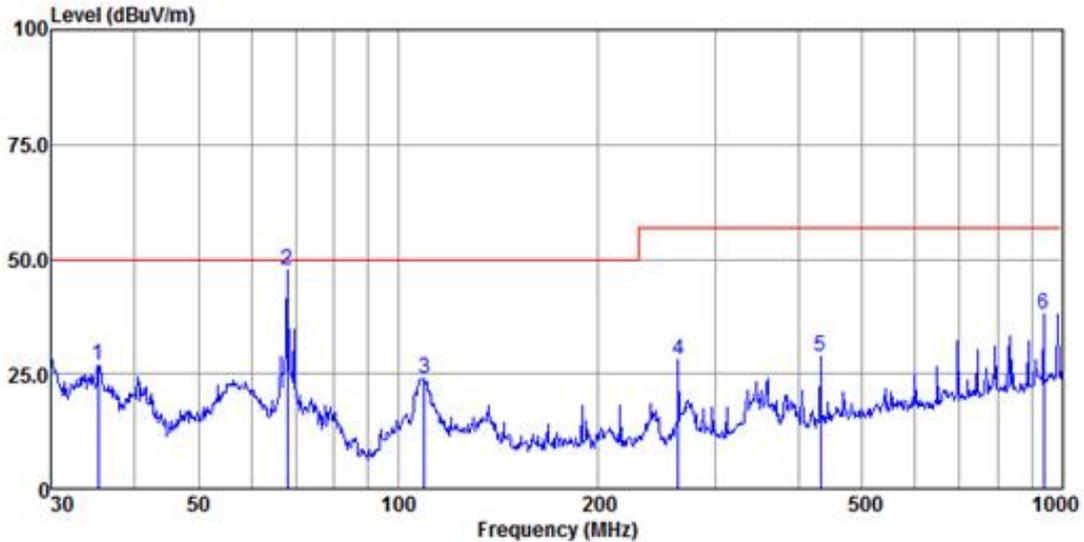
EUT/Project :8670IT

Test mode :a

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 67.91	11.65	0.33	42.66	71.00	40.32	50.00	-9.68	QP
2 107.89	9.58	0.49	42.70	52.94	20.31	50.00	-29.69	QP
3 263.82	11.99	0.79	42.44	51.28	21.62	57.00	-35.38	QP
4 432.55	15.83	1.06	42.11	56.14	30.92	57.00	-26.08	QP
5 601.43	19.42	1.38	42.19	50.08	28.69	57.00	-28.31	QP
6 793.40	21.81	2.05	42.45	50.96	32.37	57.00	-24.63	QP

Note:Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

Mode:a; Polarization:Vertical

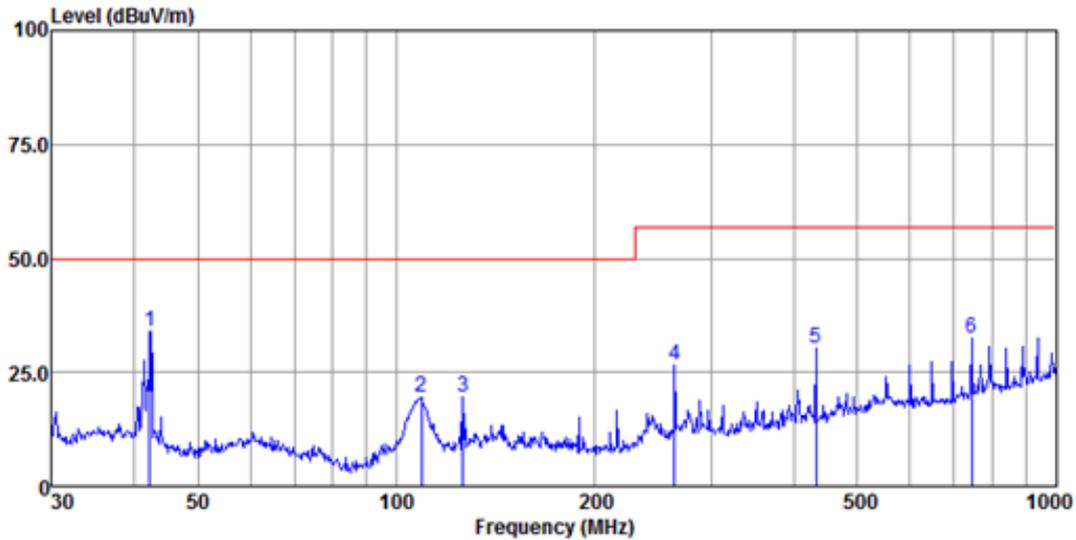


Antenna Polarity :VERTICAL
 EUT/Project :8670IT
 Test mode :a

	Read	Antenna	Cable	Preamp	Emission	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB		
1	35.25	15.86	0.20	42.61	53.65	27.10	50.00	-22.90	QP
2	67.91	11.65	0.33	42.66	78.11	47.43	50.00	-2.57	QP
3	109.41	9.59	0.49	42.70	56.66	24.04	50.00	-25.96	QP
4	263.82	11.99	0.79	42.44	57.85	28.19	57.00	-28.81	QP
5	432.55	15.83	1.06	42.11	53.98	28.76	57.00	-28.24	QP
6	938.83	23.14	2.56	41.60	53.76	37.86	57.00	-19.14	QP

Note:Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

Mode:b; Polarization:Horizontal



Antenna Polarity :HORIZONTAL

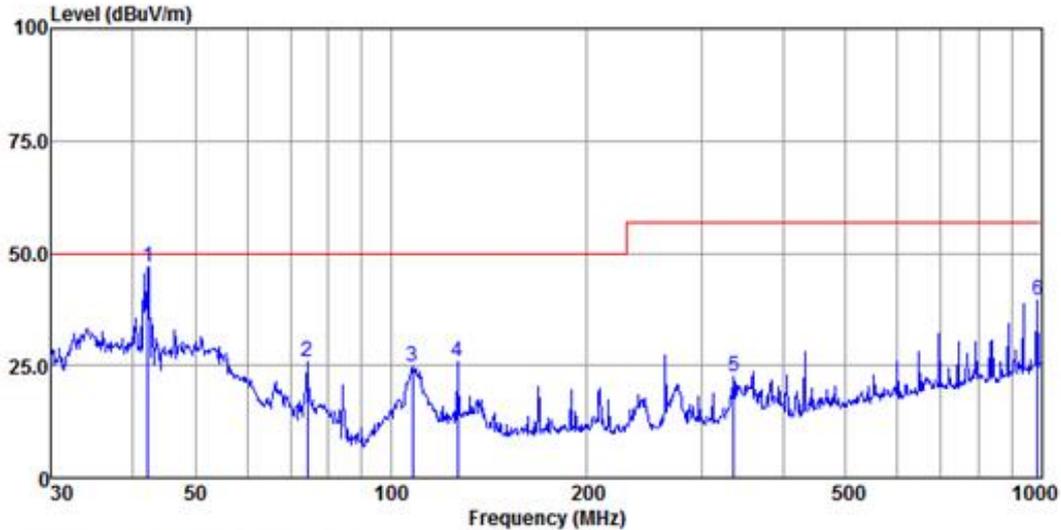
EUT/Project :8670IT

Test mode :b

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	42.15	14.96	0.23	42.63	61.54	34.10	50.00	-15.90 QP
2	109.03	9.59	0.49	42.70	52.17	19.55	50.00	-30.45 QP
3	125.89	11.70	0.56	42.67	50.12	19.71	50.00	-30.29 QP
4	263.82	11.99	0.79	42.44	56.07	26.41	57.00	-30.59 QP
5	432.55	15.83	1.06	42.11	55.48	30.26	57.00	-26.74 QP
6	744.87	21.01	1.85	42.55	52.05	32.36	57.00	-24.64 QP

Note:Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

Mode:b; Polarization:Vertical



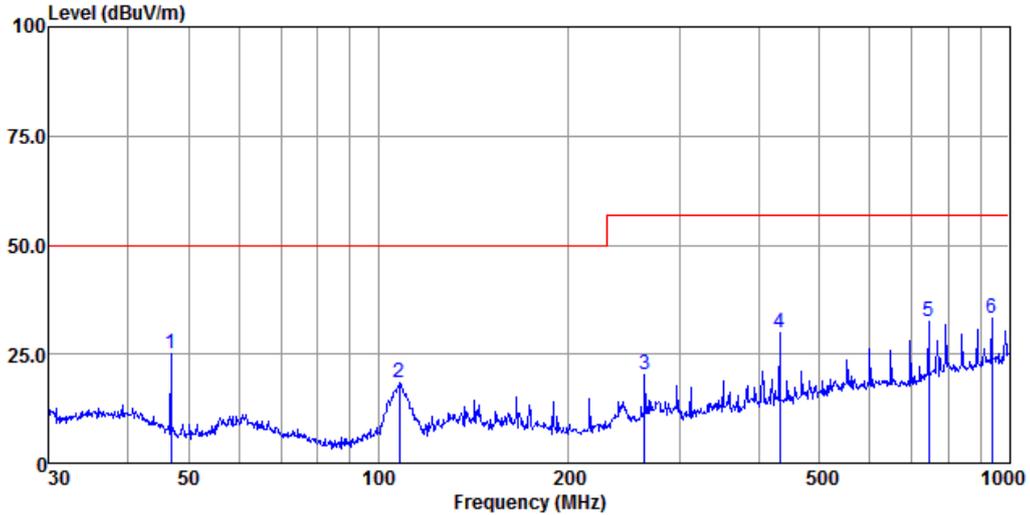
Antenna Polarity :VERTICAL
 EUT/Project :8670IT
 Test mode :b

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	42.15	14.96	0.23	42.63	74.25	46.81	50.00	-3.19 QP
2	74.14	9.97	0.35	42.67	58.00	25.65	50.00	-24.35 QP
3	107.89	9.58	0.49	42.70	57.50	24.87	50.00	-25.13 QP
4	126.33	11.83	0.56	42.66	56.19	25.92	50.00	-24.08 QP
5	336.04	13.94	0.90	42.28	50.00	22.56	57.00	-34.44 QP
6	986.07	23.65	2.76	41.30	54.38	39.49	57.00	-17.51 QP

Note:Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor



Mode:c; Polarization:Horizontal



Antenna Polarity :HORIZONTAL

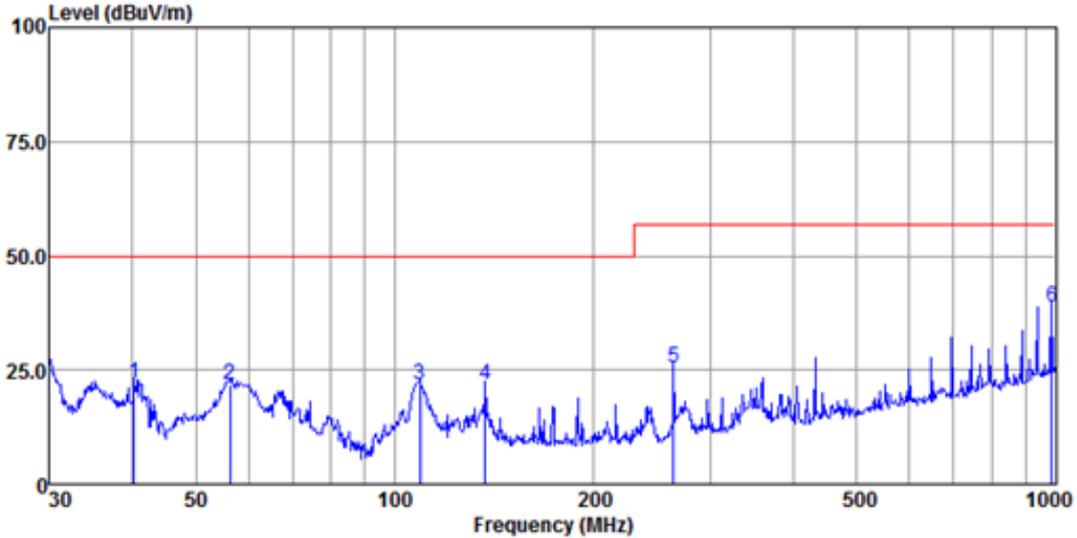
EUT/Project :8670IT

Test mode :c

	Read	Antenna	Cable	Preamp	Emission	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB		
1	46.83	12.29	0.25	42.63	55.16	25.07	50.00	-24.93	QP
2	107.89	9.58	0.49	42.70	51.21	18.58	50.00	-31.42	QP
3	263.82	11.99	0.79	42.44	49.99	20.33	57.00	-36.67	QP
4	432.55	15.83	1.06	42.11	55.14	29.92	57.00	-27.08	QP
5	744.87	21.01	1.85	42.55	52.14	32.45	57.00	-24.55	QP
6	938.83	23.14	2.56	41.60	49.17	33.27	57.00	-23.73	QP

Note:Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

Mode:c; Polarization:Vertical

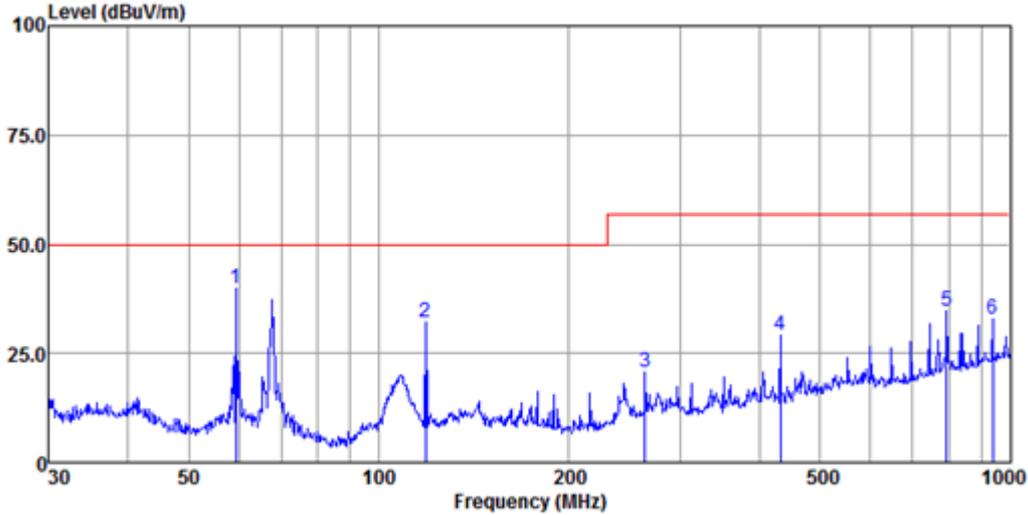


Antenna Polarity :VERTICAL
 EUT/Project :8670IT
 Test mode :c

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Emission Factor	Limit Level	Over Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	40.28	16.12	0.22	42.62	48.38	22.10	50.00	-27.90	QP
2	56.20	11.87	0.28	42.65	52.33	21.83	50.00	-28.17	QP
3	109.03	9.59	0.49	42.70	54.42	21.80	50.00	-28.20	QP
4	136.94	11.73	0.60	42.64	51.95	21.64	50.00	-28.36	QP
5	263.82	11.99	0.79	42.44	55.25	25.59	57.00	-31.41	QP
6	986.07	23.65	2.76	41.30	53.67	38.78	57.00	-18.22	QP

Note:Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

Mode:d; Polarization:Horizontal



Antenna Polarity :HORIZONTAL

EUT/Project :8670IT

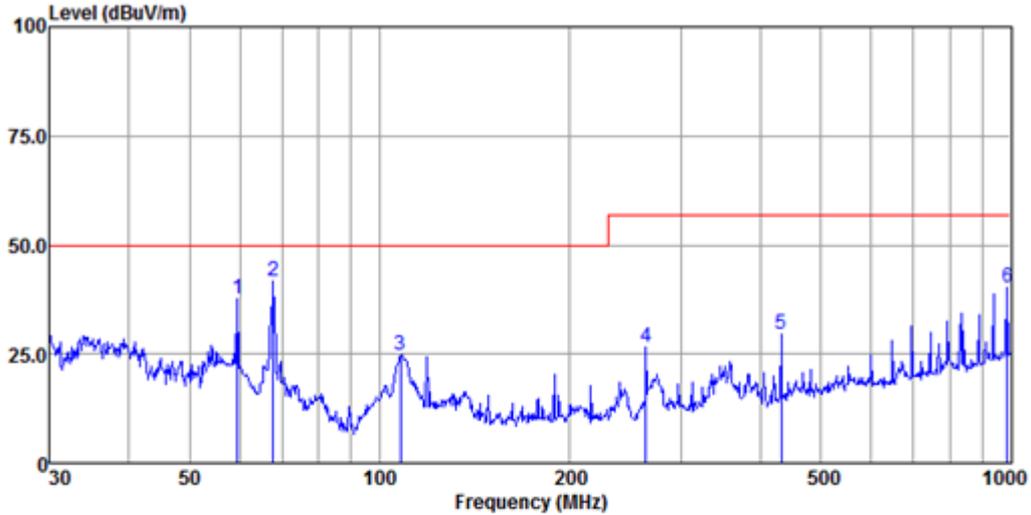
Test mode :d

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Emission Factor	Limit Level	Over Line	Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	59.23	12.45	0.30	42.65	69.73	39.83	50.00	-10.17	QP
2	118.60	9.95	0.53	42.68	64.18	31.98	50.00	-18.02	QP
3	263.82	11.99	0.79	42.44	50.37	20.71	57.00	-36.29	QP
4	432.55	15.83	1.06	42.11	54.36	29.14	57.00	-27.86	QP
5	793.40	21.81	2.05	42.45	53.31	34.72	57.00	-22.28	QP
6	938.83	23.14	2.56	41.60	48.80	32.90	57.00	-24.10	QP

Note:Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor



Mode:d; Polarization:Vertical



Antenna Polarity :VERTICAL
 EUT/Project :8670IT
 Test mode :d

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Emission Factor	Limit Level	Over Line	Limit	Over Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	59.44	12.48	0.30	42.65	67.66	37.79	50.00	-12.21	QP
2	67.68	11.67	0.33	42.66	72.32	41.66	50.00	-8.34	QP
3	107.89	9.58	0.49	42.70	57.28	24.65	50.00	-25.35	QP
4	263.82	11.99	0.79	42.44	56.37	26.71	57.00	-30.29	QP
5	432.55	15.83	1.06	42.11	54.71	29.49	57.00	-27.51	QP
6	986.07	23.65	2.76	41.30	54.99	40.10	57.00	-16.90	QP

Note:Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

6.3 Radiated Emissions (above 1GHz)

Test Requirement: EN 55032:2015
 Test Method: EN 55032:2015
 Frequency Range: Above 1GHz
 Measurement Distance: 3m
 Limit:
 1GHz-3GHz 76 dB(μV/m) peak, 56 dB(μV/m) average
 3GHz-6GHz 80 dB(μV/m) peak, 60dB(μV/m) average
 Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 6000MHz

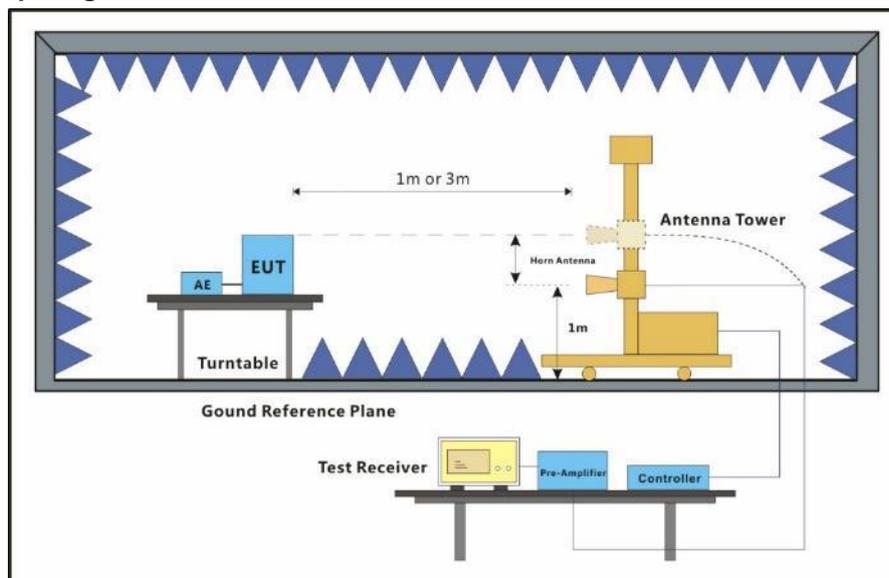
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

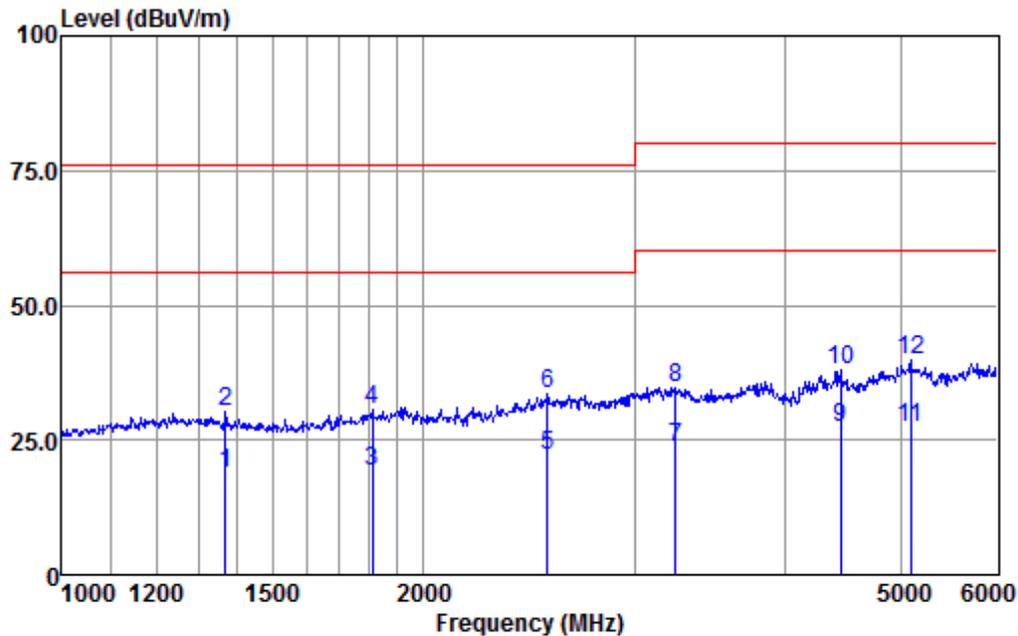
6.3.2 Test Setup Diagram



6.3.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Mode:a; Polarization:Horizontal

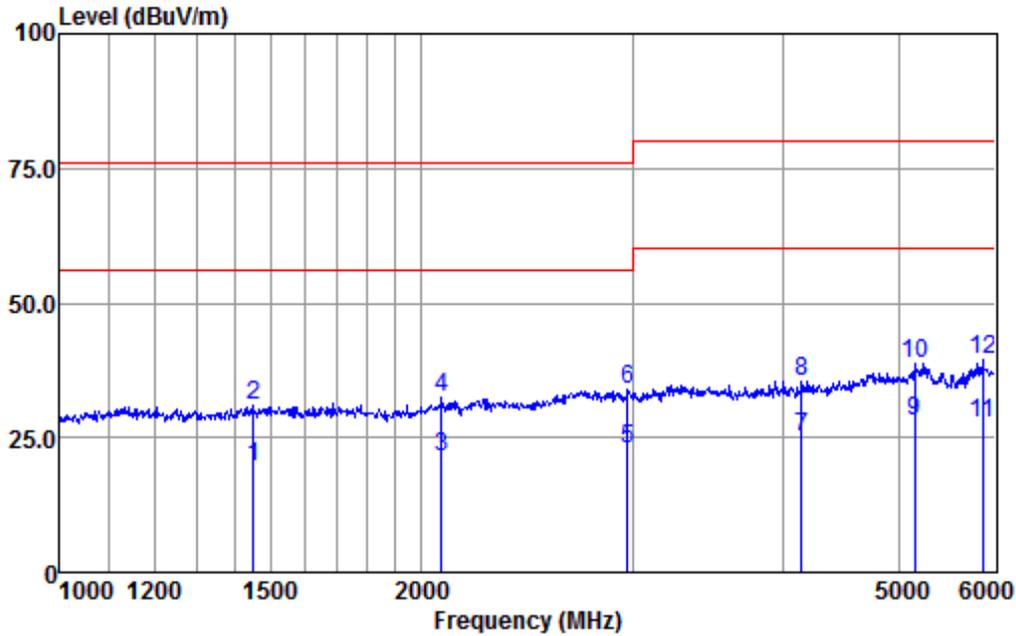


Condition : HORIZONTAL
 EUT/Project: 8670IT
 Test mode : a

	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1368.29	32.17	24.95	3.66	41.89	18.89	56.00	-37.11	Average
2	1368.29	43.42	24.95	3.66	41.89	30.14	76.00	-45.86	Peak
3	1812.79	31.26	25.73	4.23	42.12	19.10	56.00	-36.90	Average
4	1812.79	42.63	25.73	4.23	42.12	30.47	76.00	-45.53	Peak
5	2538.86	31.45	27.49	5.37	42.13	22.18	56.00	-33.82	Average
6	2538.86	42.68	27.49	5.37	42.13	33.41	76.00	-42.59	Peak
7	3245.23	30.88	28.65	6.02	41.79	23.76	60.00	-36.24	Average
8	3245.23	41.98	28.65	6.02	41.79	34.86	80.00	-45.14	Peak
9	4456.34	30.73	30.53	7.70	41.68	27.28	60.00	-32.72	Average
10	4456.34	41.48	30.53	7.70	41.68	38.03	80.00	-41.97	Peak
11	5088.17	29.06	31.65	8.21	41.68	27.24	60.00	-32.76	Average
12 p	5088.17	41.63	31.65	8.21	41.68	39.81	80.00	-40.19	Peak

Notes: Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

Mode:a; Polarization:Vertical



Condition : VERTICAL

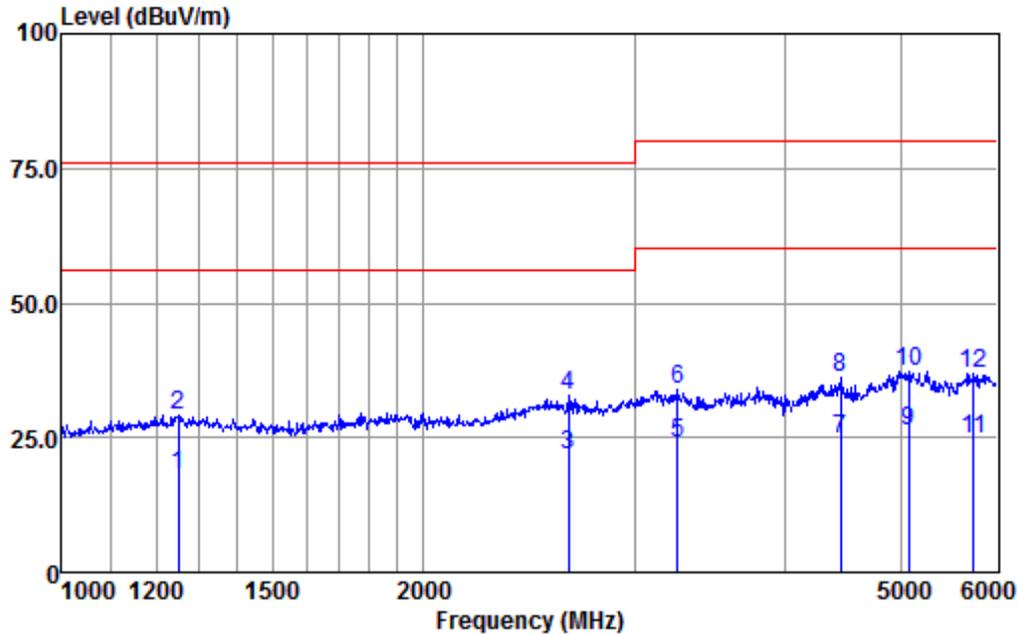
EUT/Project: 8670IT

Test mode : a

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	dB
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1449.03	32.79	25.11	3.75	41.91	19.74	56.00	-36.26	Average
2	1449.03	43.89	25.11	3.75	41.91	30.84	76.00	-45.16	Peak
3	2080.96	32.83	26.25	4.60	42.21	21.47	56.00	-34.53	Average
4	2080.96	43.77	26.25	4.60	42.21	32.41	76.00	-43.59	Peak
5	2972.46	30.31	28.45	5.79	41.73	22.82	56.00	-33.18	Average
6	2972.46	41.54	28.45	5.79	41.73	34.05	76.00	-41.95	Peak
7	4148.13	29.71	29.97	7.32	41.87	25.13	60.00	-34.87	Average
8	4148.13	40.04	29.97	7.32	41.87	35.46	80.00	-44.54	Peak
9	5152.39	29.75	31.69	8.22	41.73	27.93	60.00	-32.07	Average
10	5152.39	40.72	31.69	8.22	41.73	38.90	80.00	-41.10	Peak
11	5872.37	28.78	32.41	8.40	41.88	27.71	60.00	-32.29	Average
12 p	5872.37	40.67	32.41	8.40	41.88	39.60	80.00	-40.40	Peak

Notes: Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

Mode:b; Polarization:Horizontal



Condition : HORIZONTAL

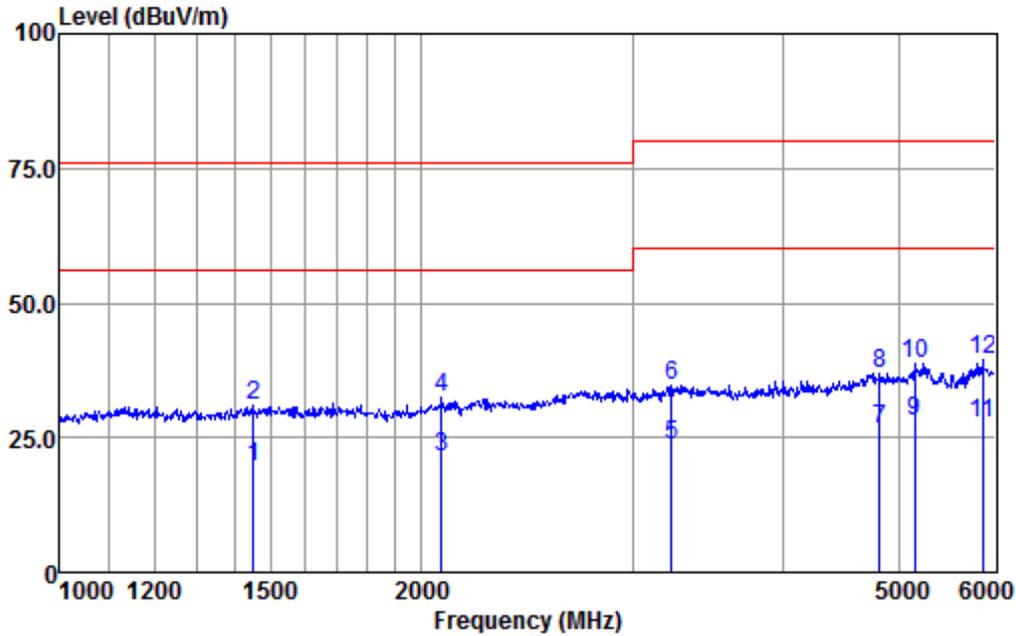
EUT/Project: 8670IT

Test mode : b

	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1251.03	31.75	24.70	3.45	41.84	18.06	56.00	-37.94	Average
2	1251.03	42.74	24.70	3.45	41.84	29.05	76.00	-46.95	Peak
3	2640.94	30.45	27.73	5.52	42.03	21.67	56.00	-34.33	Average
4	2640.94	41.68	27.73	5.52	42.03	32.90	76.00	-43.10	Peak
5	3256.88	30.98	28.66	6.02	41.79	23.87	60.00	-36.13	Average
6	3256.88	41.11	28.66	6.02	41.79	34.00	80.00	-46.00	Peak
7	4448.36	28.36	30.51	7.70	41.69	24.88	60.00	-35.12	Average
8	4448.36	39.65	30.51	7.70	41.69	36.17	80.00	-43.83	Peak
9	5069.97	28.03	31.65	8.21	41.67	26.22	60.00	-33.78	Average
10	5069.97	39.15	31.65	8.21	41.67	37.34	80.00	-42.66	Peak
11	5747.46	26.18	32.25	8.36	41.92	24.87	60.00	-35.13	Average
12	5747.46	38.39	32.25	8.36	41.92	37.08	80.00	-42.92	Peak

Notes: Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

Mode:b; Polarization:Vertical

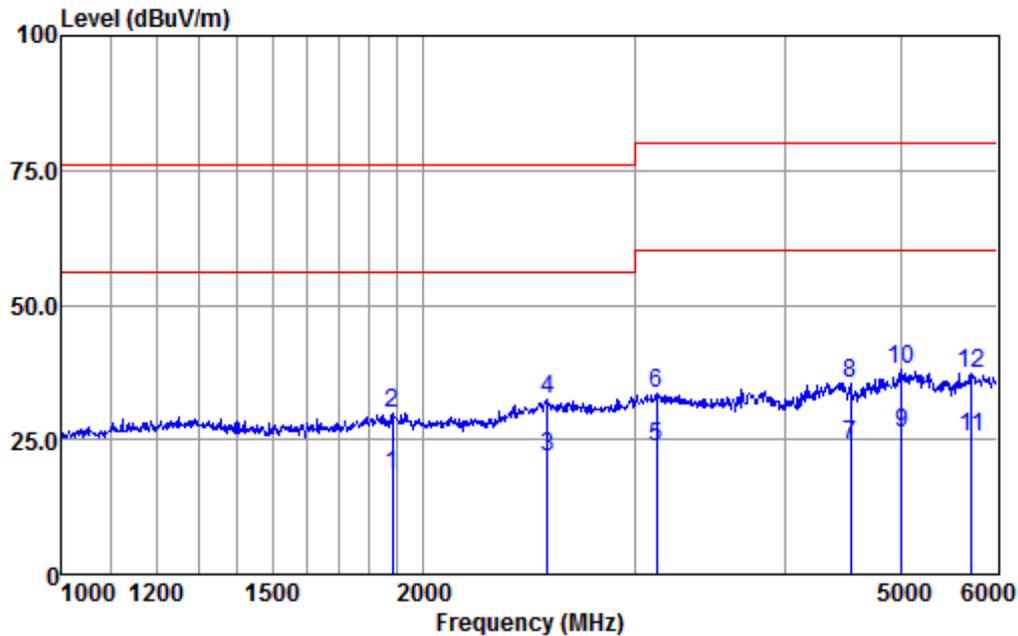


Condition : VERTICAL
 EUT/Project: 8670IT
 Test mode : b

	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1449.03	32.79	25.11	3.75	41.91	19.74	56.00	-36.26	Average
2	1449.03	43.89	25.11	3.75	41.91	30.84	76.00	-45.16	Peak
3	2080.96	32.83	26.25	4.60	42.21	21.47	56.00	-34.53	Average
4	2080.96	43.77	26.25	4.60	42.21	32.41	76.00	-43.59	Peak
5	3233.62	30.85	28.65	6.02	41.78	23.74	60.00	-36.26	Average
6	3233.62	41.79	28.65	6.02	41.78	34.68	80.00	-45.32	Peak
7	4813.25	28.75	31.25	8.13	41.63	26.50	60.00	-33.50	Average
8	4813.25	39.27	31.25	8.13	41.63	37.02	80.00	-42.98	Peak
9	5152.39	29.75	31.69	8.22	41.73	27.93	60.00	-32.07	Average
10	5152.39	40.72	31.69	8.22	41.73	38.90	80.00	-41.10	Peak
11	5872.37	28.78	32.41	8.40	41.88	27.71	60.00	-32.29	Average
12 p	5872.37	40.67	32.41	8.40	41.88	39.60	80.00	-40.40	Peak

Notes: Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

Mode:c; Polarization:Horizontal

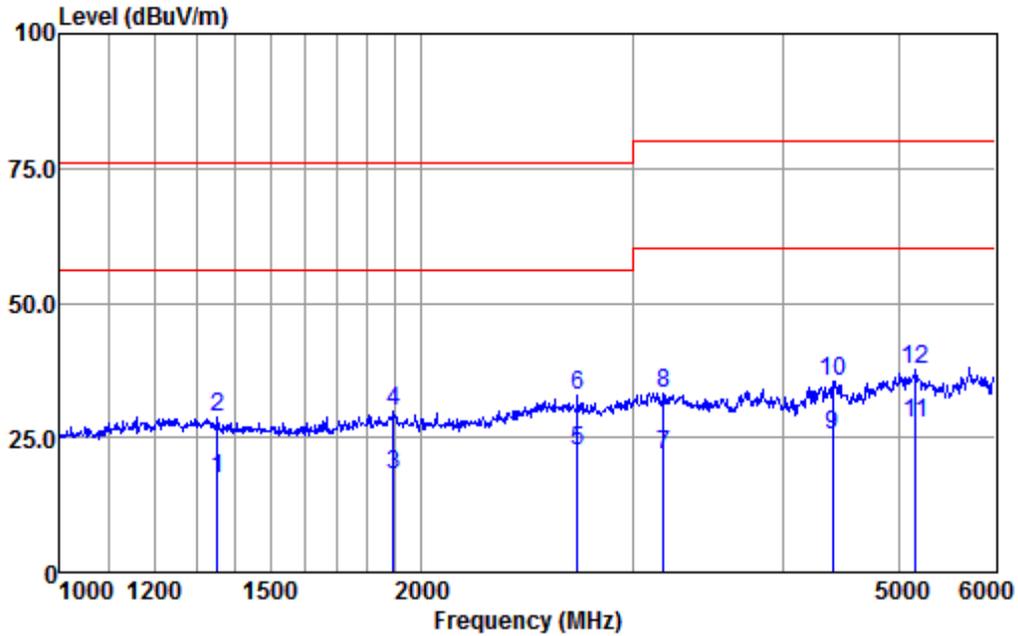


Condition : HORIZONTAL
 EUT/Project: 8670IT
 Test mode : c

	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1885.67	30.29	25.83	4.33	42.16	18.29	56.00	-37.71	Average
2	1885.67	41.74	25.83	4.33	42.16	29.74	76.00	-46.26	Peak
3	2538.86	30.87	27.49	5.37	42.13	21.60	56.00	-34.40	Average
4	2538.86	41.73	27.49	5.37	42.13	32.46	76.00	-43.54	Peak
5	3131.00	30.99	28.58	5.89	41.75	23.71	60.00	-36.29	Average
6	3131.00	41.01	28.58	5.89	41.75	33.73	80.00	-46.27	Peak
7	4536.91	27.33	30.68	7.80	41.66	24.15	60.00	-35.85	Average
8	4536.91	38.67	30.68	7.80	41.66	35.49	80.00	-44.51	Peak
9	5006.77	28.09	31.60	8.19	41.61	26.27	60.00	-33.73	Average
10 p	5006.77	39.84	31.60	8.19	41.61	38.02	80.00	-41.98	Peak
11	5726.90	26.94	32.23	8.36	41.93	25.60	60.00	-34.40	Average
12	5726.90	38.63	32.23	8.36	41.93	37.29	80.00	-42.71	Peak

Notes: Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

Mode:c; Polarization:Vertical

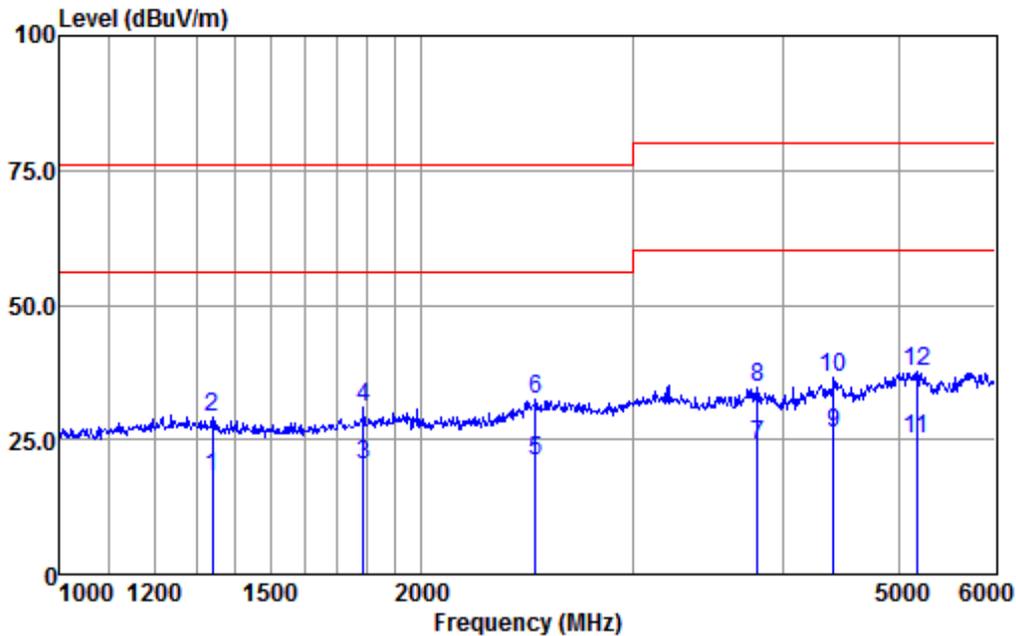


Condition : VERTICAL
 EUT/Project: 8670IT
 Test mode : c

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	dB
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1353.65	30.66	24.93	3.66	41.88	17.37	56.00	-38.63	Average
2	1353.65	41.94	24.93	3.66	41.88	28.65	76.00	-47.35	Peak
3	1895.83	30.21	25.85	4.33	42.16	18.23	56.00	-37.77	Average
4	1895.83	41.76	25.85	4.33	42.16	29.78	76.00	-46.22	Peak
5	2698.33	30.96	27.85	5.57	41.98	22.40	56.00	-33.60	Average
6	2698.33	41.22	27.85	5.57	41.98	32.66	76.00	-43.34	Peak
7	3181.89	29.13	28.61	5.96	41.77	21.93	60.00	-38.07	Average
8	3181.89	40.57	28.61	5.96	41.77	33.37	80.00	-46.63	Peak
9	4400.79	28.99	30.44	7.64	41.71	25.36	60.00	-34.64	Average
10	4400.79	39.12	30.44	7.64	41.71	35.49	80.00	-44.51	Peak
11	5161.63	29.67	31.70	8.22	41.74	27.85	60.00	-32.15	Average
12 p	5161.63	39.31	31.70	8.22	41.74	37.49	80.00	-42.51	Peak

Notes: Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

Mode:d; Polarization:Horizontal



Condition : HORIZONTAL

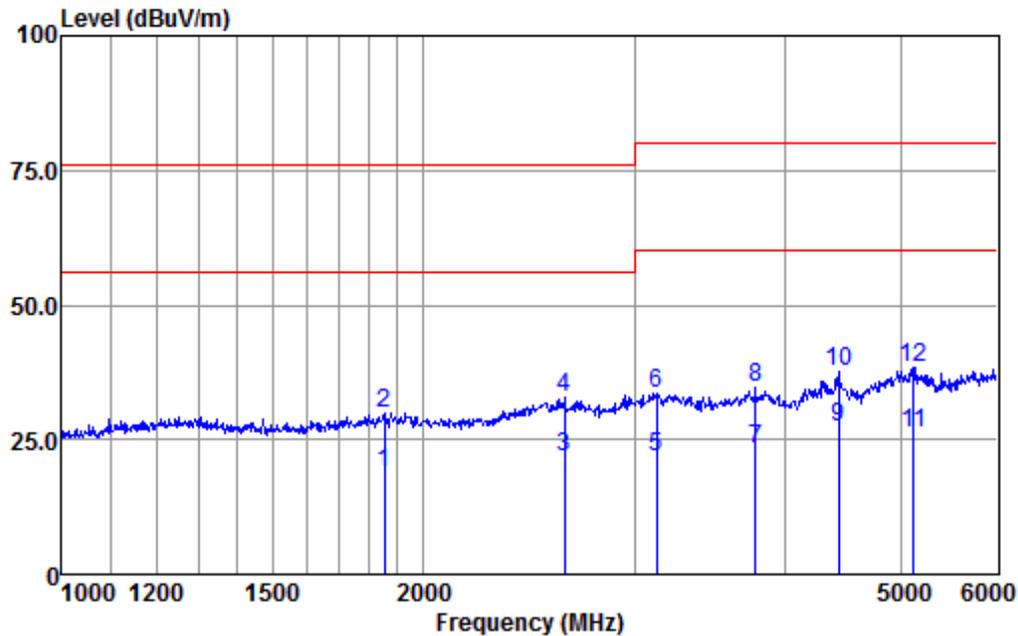
EUT/Project: 8670IT

Test mode : d

	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1339.18	31.49	24.89	3.60	41.88	18.10	56.00	-37.90 Average
2	1339.18	42.64	24.89	3.60	41.88	29.25	76.00	-46.75 Peak
3	1790.19	32.56	25.69	4.21	42.11	20.35	56.00	-35.65 Average
4	1790.19	43.09	25.69	4.21	42.11	30.88	76.00	-45.12 Peak
5	2489.31	30.41	27.38	5.32	42.17	20.94	56.00	-35.06 Average
6	2489.31	41.86	27.38	5.32	42.17	32.39	76.00	-43.61 Peak
7	3813.11	29.86	29.37	6.70	41.92	24.01	60.00	-35.99 Average
8	3813.11	40.44	29.37	6.70	41.92	34.59	80.00	-45.41 Peak
9	4408.69	29.75	30.44	7.64	41.71	26.12	60.00	-33.88 Average
10	4408.69	40.22	30.44	7.64	41.71	36.59	80.00	-43.41 Peak
11	5170.88	27.05	31.70	8.22	41.74	25.23	60.00	-34.77 Average
12 p	5170.88	39.64	31.70	8.22	41.74	37.82	80.00	-42.18 Peak

Notes: Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

Mode:d; Polarization:Vertical



Condition : VERTICAL
 EUT/Project: 8670IT
 Test mode : d

	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1855.51	30.97	25.79	4.27	42.14	18.89	56.00	-37.11	Average
2	1855.51	41.88	25.79	4.27	42.14	29.80	76.00	-46.20	Peak
3	2622.08	30.57	27.70	5.47	42.05	21.69	56.00	-34.31	Average
4	2622.08	41.87	27.70	5.47	42.05	32.99	76.00	-43.01	Peak
5	3131.00	29.02	28.58	5.89	41.75	21.74	60.00	-38.26	Average
6	3131.00	40.87	28.58	5.89	41.75	33.59	80.00	-46.41	Peak
7	3779.10	29.14	29.32	6.60	41.92	23.14	60.00	-36.86	Average
8	3779.10	40.53	29.32	6.60	41.92	34.53	80.00	-45.47	Peak
9	4432.45	30.84	30.49	7.64	41.70	27.27	60.00	-32.73	Average
10	4432.45	41.15	30.49	7.64	41.70	37.58	80.00	-42.42	Peak
11	5124.77	28.08	31.67	8.21	41.71	26.25	60.00	-33.75	Average
12 p	5124.77	40.29	31.67	8.21	41.71	38.46	80.00	-41.54	Peak

Notes: Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor



6.4 Harmonic Current Emission

Test Requirement: EN 61000-3-2:2014

Test Method: EN 61000-3-2:2014

Frequency Range: 100Hz to 2kHz

There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2:2014.

For further details, please refer to Clause 7 of EN 61000-3-2 which states:

"For the following categories of equipment, limits are not specified in this standard.- equipment with a rated power of 75W or less, other than lighting equipment."

6.5 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013

Test Method: EN 61000-3-3:2013

6.5.1 E.U.T. Operation

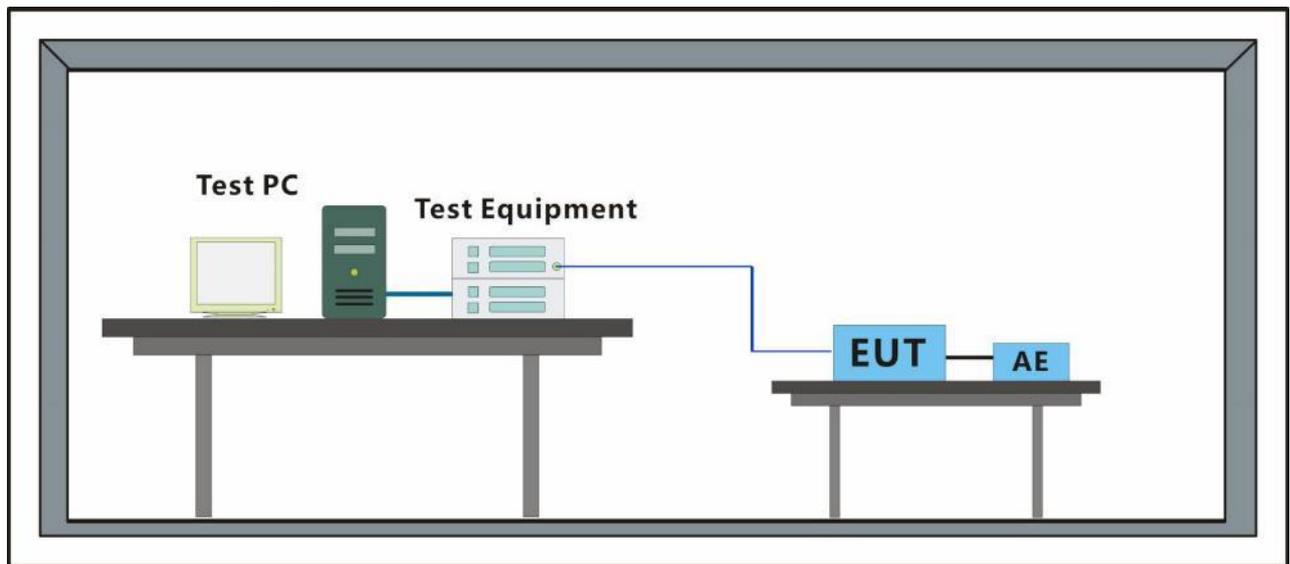
Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1020 mbar

Test mode:

- a: CVI preview : keep EUT preview with CVI output .
- b: AHD preview : keep EUT preview with AHD output .
- c: CVBS preview : keep EUT preview with CVBS output .
- d: TVI preview : keep EUT preview with TVI output .

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Mode:a

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.86		
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.20	Test limit (%):	3.30 Pass
Highest dmax (%):	0.25	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.102	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.058	Test limit:	0.650 Pass

Mode:b

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.86		
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.20	Test limit (%):	3.30 Pass
Highest dmax (%):	0.23	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.102	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.053	Test limit:	0.650 Pass



Mode:c

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.86		
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.20	Test limit (%):	3.30 Pass
Highest dmax (%):	0.21	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.107	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.062	Test limit:	0.650 Pass

Mode:d

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.86		
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.22	Test limit (%):	3.30 Pass
Highest dmax (%):	0.25	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.103	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.065	Test limit:	0.650 Pass

7 Immunity Test Results

7.1 Performance Criteria Description in EN 55024:2010 +A1:2015

Criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

7.2 Performance Criteria Description in EN 50130-4:2011 +A1:2014

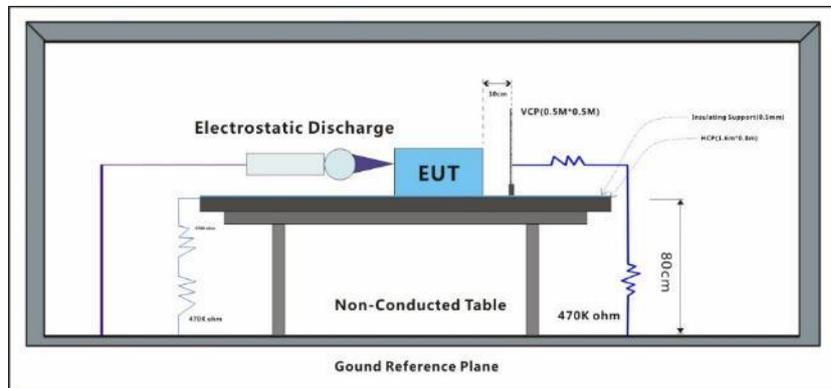
There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

For further details, please refer to Clause 7.4, 8.4, 9.4, 10.4, 11.4, 12.4 and 13.4, of EN 50130-4.

7.3 Electrostatic Discharge

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-2:2009
 Performance Criterion: B
 Discharge Impedance: 330Ω/150pF
 Number of Discharge: Minimum of four test points (a minimum of 50 discharges at each point)
 Discharge Mode: Single Discharge
 Discharge Period: 1 second minimum

7.3.1 Test Setup Diagram



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.3.3 Test Results:

- Observations: Test Point:
1. All insulated enclosure and seams.
 2. All accessible metal parts of the enclosure.
 3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

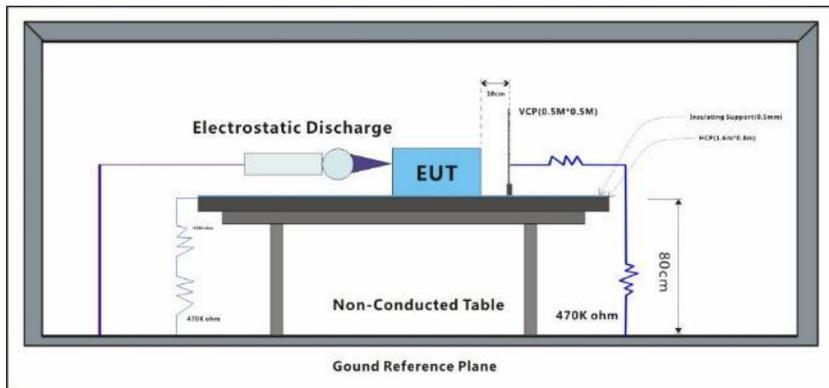
Results:

A: No degradation in the performance of the EUT was observed.

7.4 Electrostatic Discharge

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-2:2009
 Number of Discharge: Minimum 10 times at each test point for Air Discharge
 Minimum 50 times at each test point for Contact or VCP & HCP Discharge
 Discharge Mode: Single Discharge
 Discharge Period: 1 second minimum
 Criteria for compliance: There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residu

7.4.1 Test Setup Diagram



7.4.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar
 Test mode:
 a: CVI preview : keep EUT preview with CVI output .
 b: AHD preview : keep EUT preview with AHD output .
 c: CVBS preview : keep EUT preview with CVBS output .
 d: TVI preview : keep EUT preview with TVI output .

7.4.3 Test Results:

Observations: Test Point:
 1. All insulated enclosure and seams.
 2. All accessible metal parts of the enclosure.
 3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	6	+	2	A
Contact Discharge	6	-	2	A
Horizontal Coupling	6	+	3	A
Horizontal Coupling	6	-	3	A
Vertical Coupling	6	+	3	A
Vertical Coupling	6	-	3	A

Results:

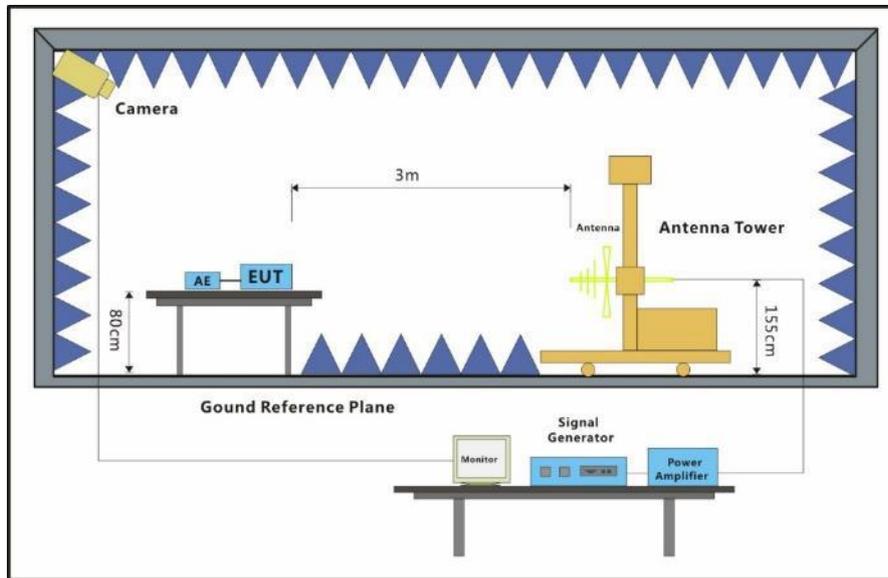
A: No degradation in the performance of the EUT was observed.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

7.5 Radiated Immunity (80MHz-1GHz)

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010
 Performance Criterion: A
 Frequency Range: 80MHz to 1GHz
 Antenna Polarisation: Vertical and Horizontal
 Modulation: 1kHz,80% Amp. Mod,1% increment

7.5.1 Test Setup Diagram



7.5.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.5.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	3s	A
80MHz-1GHz	3	Back	3s	A
80MHz-1GHz	3	Left	3s	A
80MHz-1GHz	3	Right	3s	A
80MHz-1GHz	3	Top	3s	A
80MHz-1GHz	3	Underside	3s	A

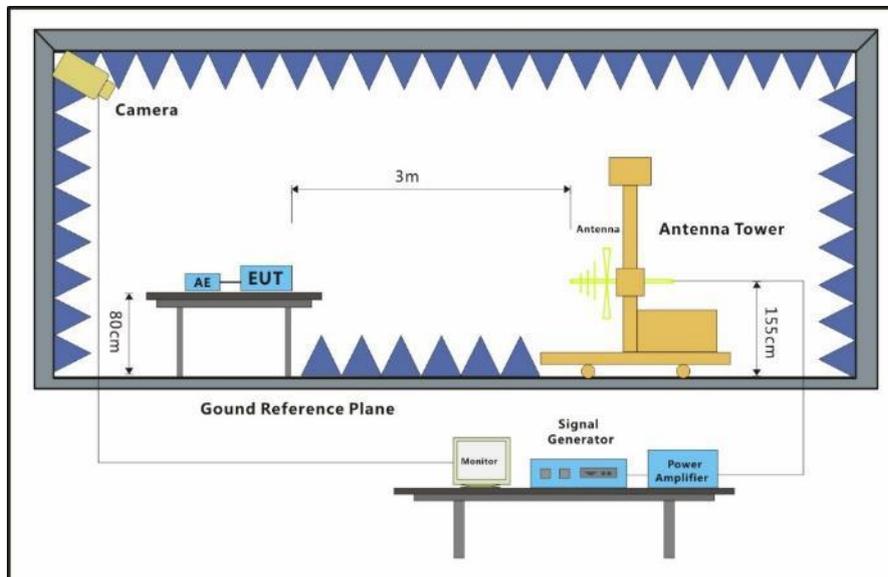
Results:

A: No degradation in the performance of the EUT was observed.

7.6 Radiated Immunity(80MHz-2.7GHz)

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010
 Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation
 Criteria for compliance: There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the

7.6.1 Test Setup Diagram



7.6.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
 Test mode:
 a: CVI preview : keep EUT preview with CVI output .
 b: AHD preview : keep EUT preview with AHD output .
 c: CVBS preview : keep EUT preview with CVBS output .
 d: TVI preview : keep EUT preview with TVI output .

7.6.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-2.7GHz	10	Front	3s	A
80MHz-2.7GHz	10	Back	3s	A
80MHz-2.7GHz	10	Left	3s	A
80MHz-2.7GHz	10	Right	3s	A
80MHz-2.7GHz	10	Top	3s	A
80MHz-2.7GHz	10	Underside	3s	A

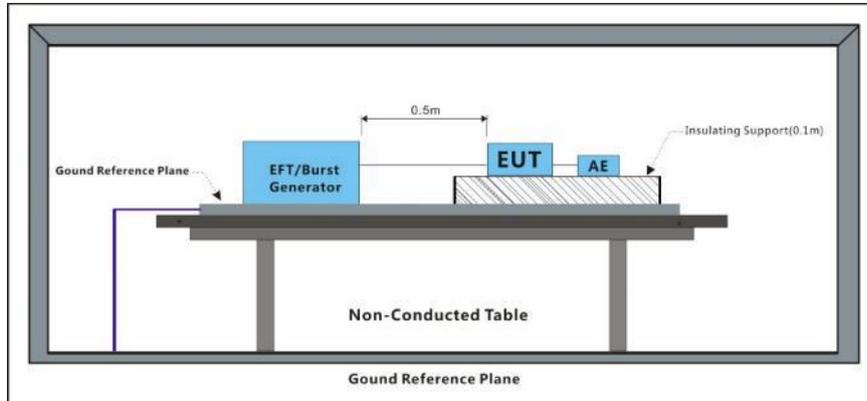
Results:

A: No degradation in the performance of the EUT was observed.

7.7 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-4:2012
 Performance Criterion: B
 Repetition Frequency: 5kHz
 Burst Period: 300ms
 Test Duration: 2 minute per level & polarity

7.7.1 Test Setup Diagram



7.7.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar
 Test mode:
 a: CVI preview : keep EUT preview with CVI output .
 b: AHD preview : keep EUT preview with AHD output .
 c: CVBS preview : keep EUT preview with CVBS output .
 d: TVI preview : keep EUT preview with TVI output .

7.7.3 Test Results:

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

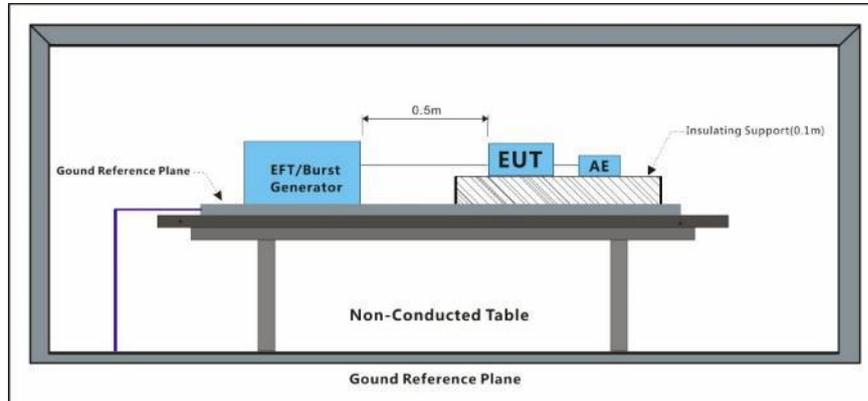
Results:

A: No degradation in the performance of the EUT was observed.

7.8 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-4:2012
 Repetition Frequency: 100kHz
 Burst Period: 300ms
 Test Duration: 1 minute per level & polarity

7.8.1 Test Setup Diagram



7.8.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.8.3 Test Results:

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	2	+	CDN	A
AC power port	2	-	CDN	A

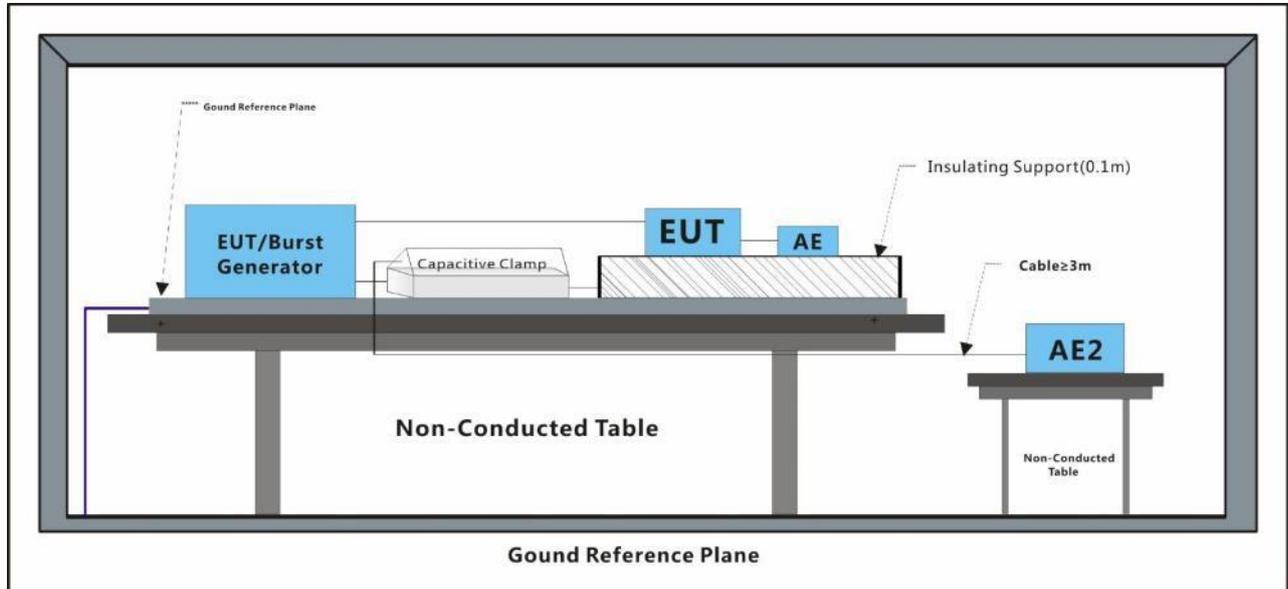
Results:

A: No degradation in the performance of the EUT was observed.

7.9 Electrical Fast Transients/Burst at Signal Port

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-4:2012
 Performance Criterion: B
 Repetition Frequency: 5kHz
 Burst Period: 300ms
 Test Duration: 2 minute per level & polarity

7.9.1 Test Setup Diagram



7.9.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.9.3 Test Results:

Port	Level (kV)	Polarity	CDN/Clamp	Result / Observations
Signal port	0.5	+	Clamp	A
Signal port	0.5	-	Clamp	A

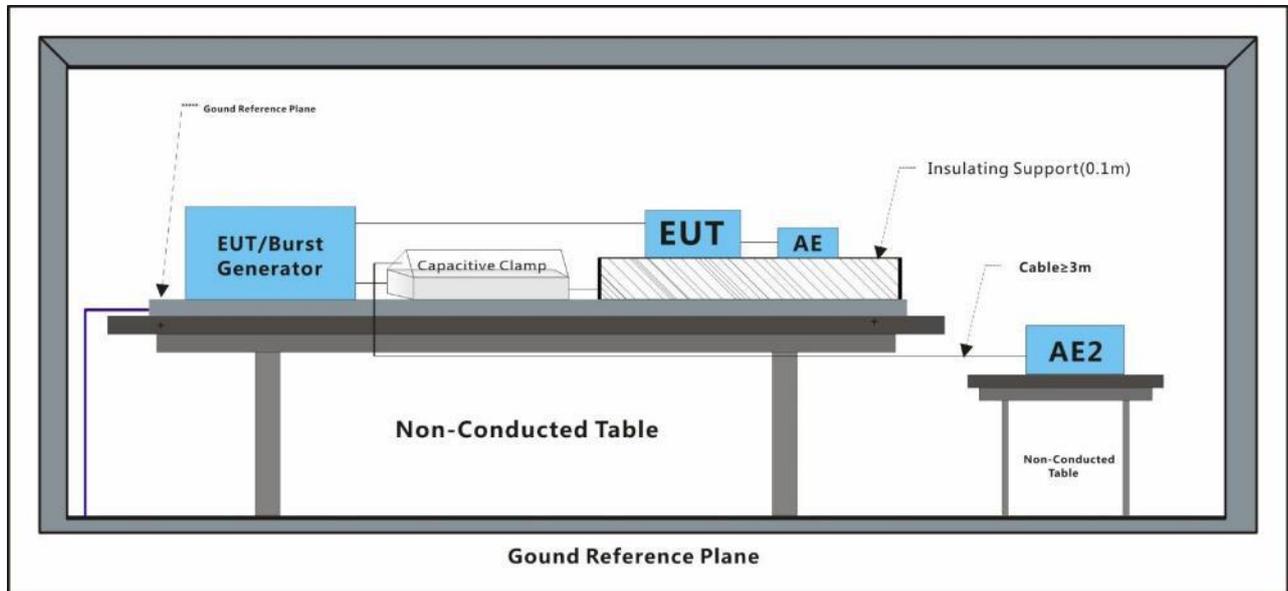
Results:

A: No degradation in the performance of the EUT was observed.

7.10 Electrical Fast Transients/Burst at Signal Port

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-4:2012
 Repetition Frequency: 100kHz
 Burst Period: 300ms
 Test Duration: 1 minute per level & polarity

7.10.1 Test Setup Diagram



7.10.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.10.3 Test Results:

Port	Level (kV)	Polarity	CDN/Clamp	Result / Observations
Signal port	1	+	Clamp	A
Signal port	1	-	Clamp	A

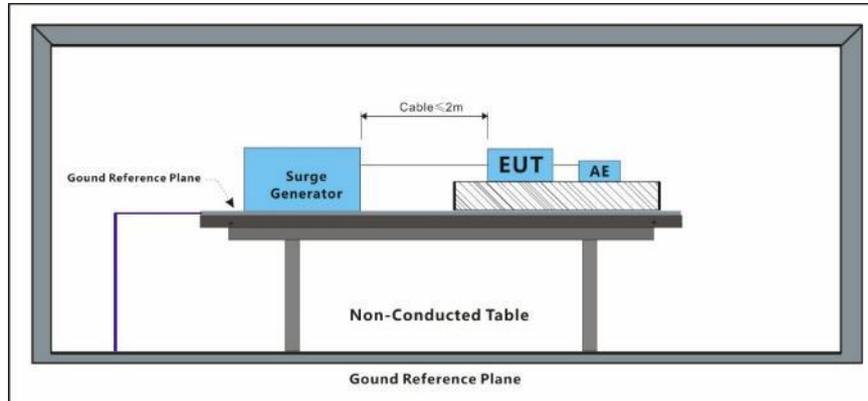
Results:

A: No degradation in the performance of the EUT was observed.

7.11 Surge at Power Port

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-5:2014
 Performance Criterion: B
 Interval: 60s between each surge
 No. of surges: 5 positive, 5 negative at 0°, 90°, 180°, 270°.

7.11.1 Test Setup Diagram



7.11.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar
 Test mode:
 a: CVI preview : keep EUT preview with CVI output .
 b: AHD preview : keep EUT preview with AHD output .
 c: CVBS preview : keep EUT preview with CVBS output .
 d: TVI preview : keep EUT preview with TVI output .

7.11.3 Test Results:

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	0°	A
L-N	1	-	0°	A
L-N	1	+	90°	A
L-N	1	-	90°	A
L-N	1	+	180°	A
L-N	1	-	180°	A
L-N	1	+	270°	A
L-N	1	-	270°	A

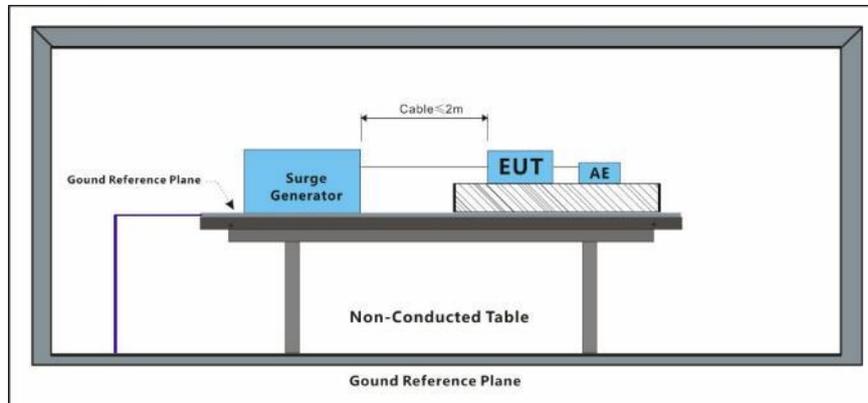
Results:

A: No degradation in the performance of the EUT was observed.

7.12 Surge at Power Port

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-5:2014
 Interval: 60s between each surge
 No. of surges: 5 positive, 5 negative
 Criteria for compliance: There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residu

7.12.1 Test Setup Diagram



7.12.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.12.3 Test Results:

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	0.5,1	+	0°	A
L-N	0.5,1	-	0°	A
L-N	0.5,1	+	90°	A
L-N	0.5,1	-	90°	A
L-N	0.5,1	+	180°	A
L-N	0.5,1	-	180°	A
L-N	0.5,1	+	270°	A
L-N	0.5,1	-	270°	A

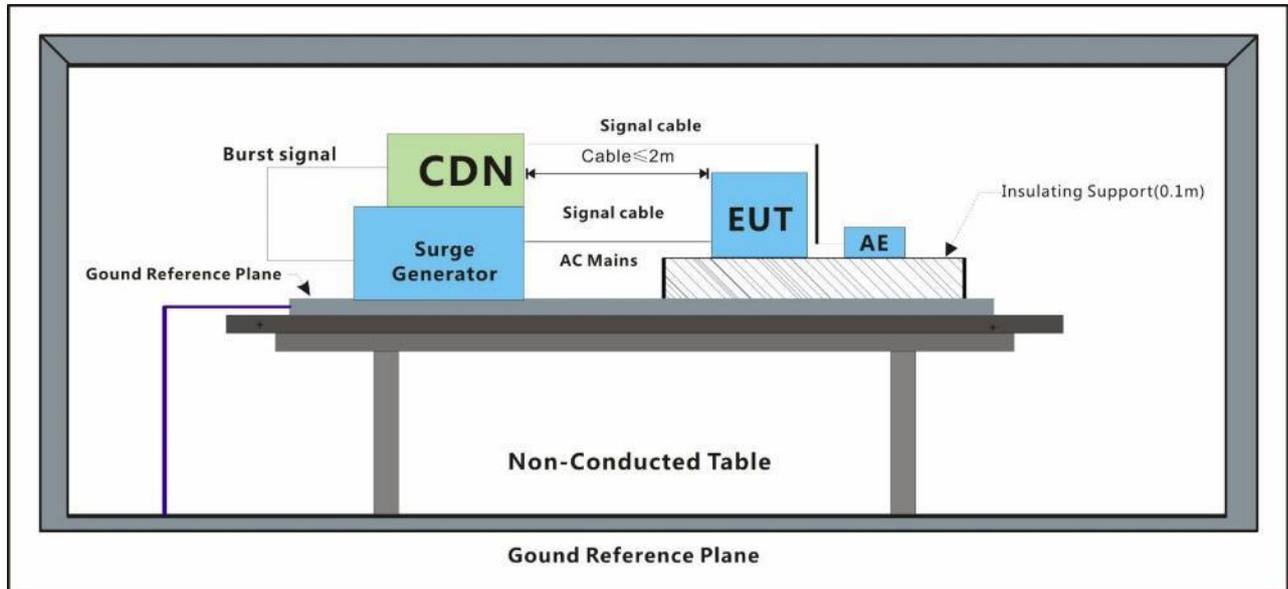
Results:

A: No degradation in the performance of the EUT was observed.

7.13 Surge at Signal Port

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-5:2014
 Performance Criterion: B
 Interval: 60s between each surge

7.13.1 Test Setup Diagram



7.13.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.13.3 Test Results:

Port	Line	Level (kV)	Polarity	Result / Observations
Signal port	Line-Ground	1	+	A
Signal port	Line-Ground	1	-	A

Results:

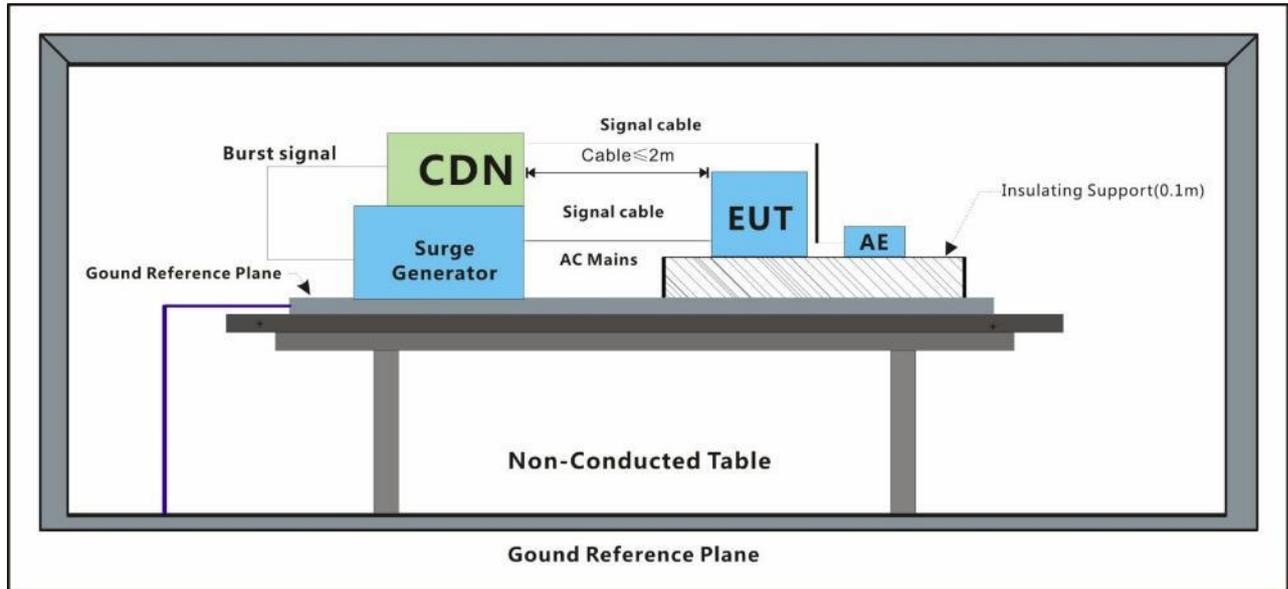
A: No degradation in the performance of the EUT was observed.

7.14 Surge at Signal Port

Test Requirement: EN 50130-4:2011 +A1:2014

Test Method: EN 61000-4-5:2014

7.14.1 Test Setup Diagram



7.14.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.14.3 Test Results:

Port	Line	Level (kV)	Polarity	Result / Observations
Signal port	Line-Ground	0.5	+	A
Signal port	Line-Ground	0.5	-	A
Signal port	Line-Ground	1	+	A
Signal port	Line-Ground	1	-	A

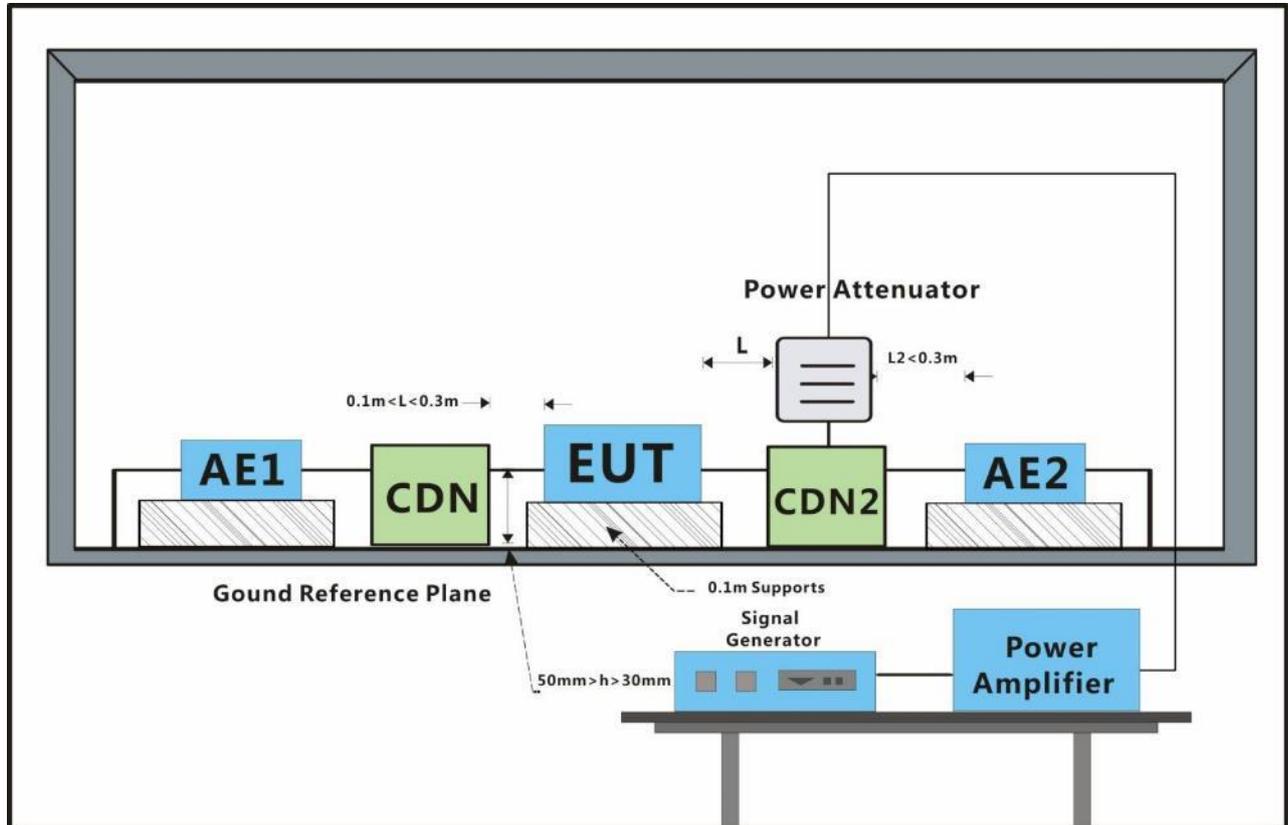
Results:

A: No degradation in the performance of the EUT was observed.

7.15 Conducted Immunity at Power Port (150kHz-80MHz)

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-6:2014
 Performance Criterion: A
 Frequency Range: 0.15MHz to 80MHz
 Modulation: 80%, 1kHz Amplitude Modulation
 Step Size: 1%

7.15.1 Test Setup Diagram



7.15.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.15.3 Test Results:

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A

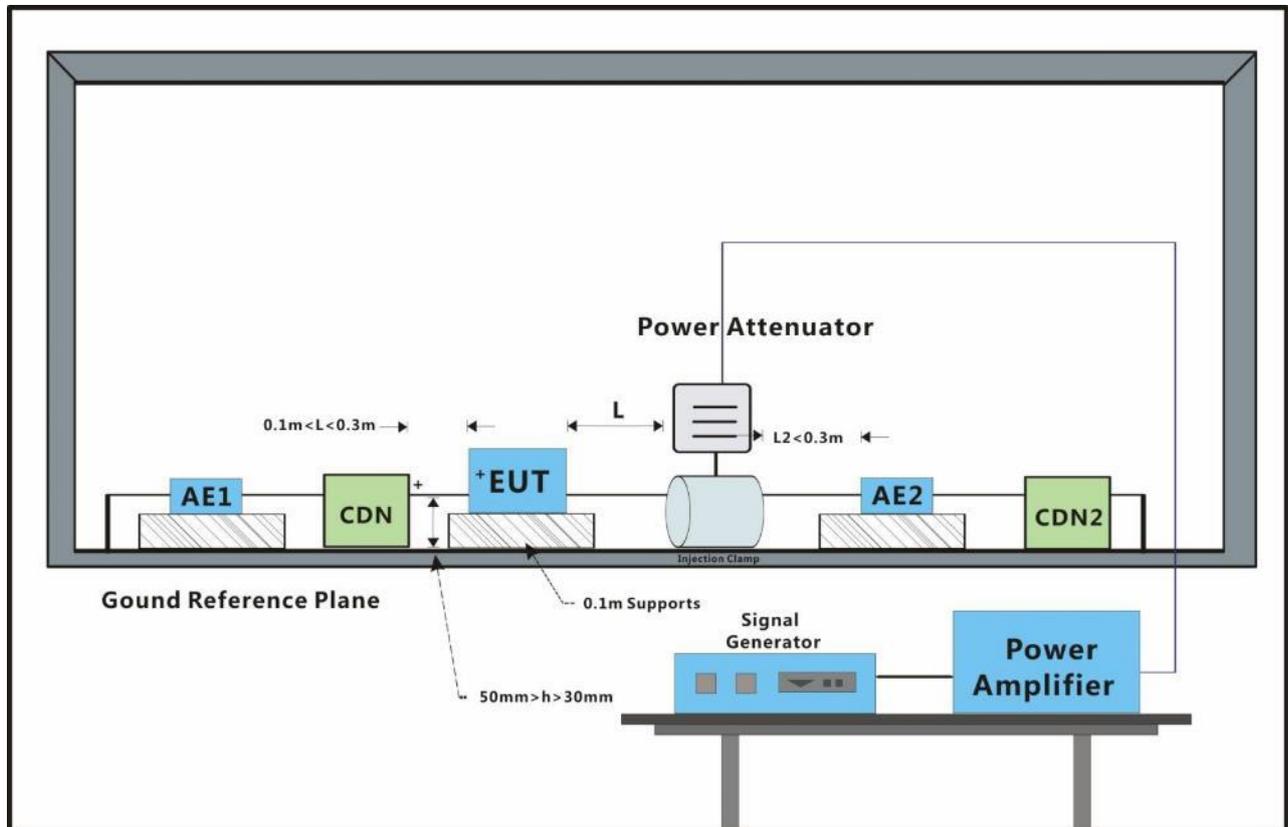
Results:

A: No degradation in the performance of the EUT was observed.

7.16 Conducted Immunity at Signal Port (150kHz-80MHz)

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-6:2014
 Performance Criterion: A
 Frequency Range: 0.15MHz to 80MHz
 Modulation: 80%, 1kHz Amplitude Modulation
 Step Size 1%

7.16.1 Test Setup Diagram



7.16.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.16.3 Test Results:

Port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
Signal port	3	Coupling	2s	A

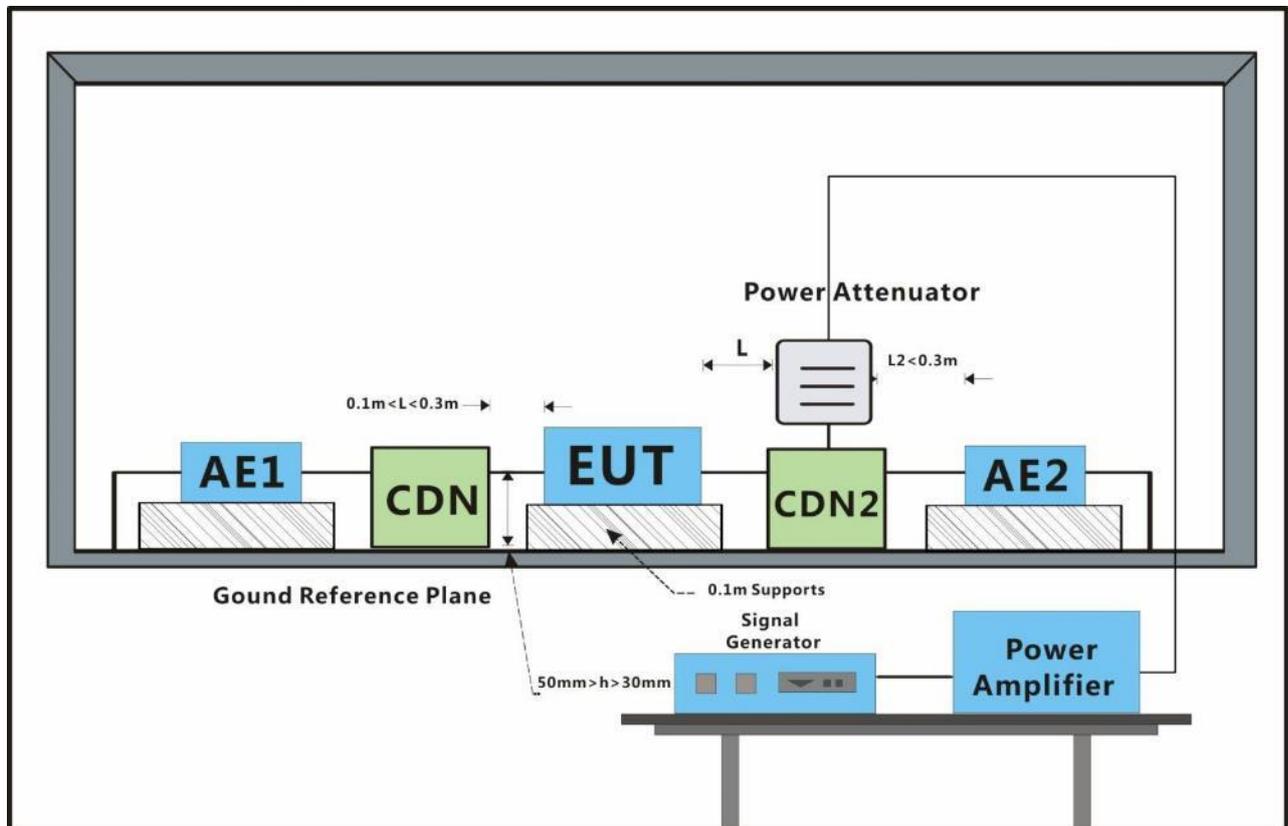
Results:

A: No degradation in the performance of the EUT was observed.

7.17 Conducted Immunity at Power Port (150kHz-100MHz)

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-6:2014
 Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation
 Criteria for compliance: There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the

7.17.1 Test Setup Diagram



7.17.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.17.3 Test Results:

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	10	CDN	3s	A

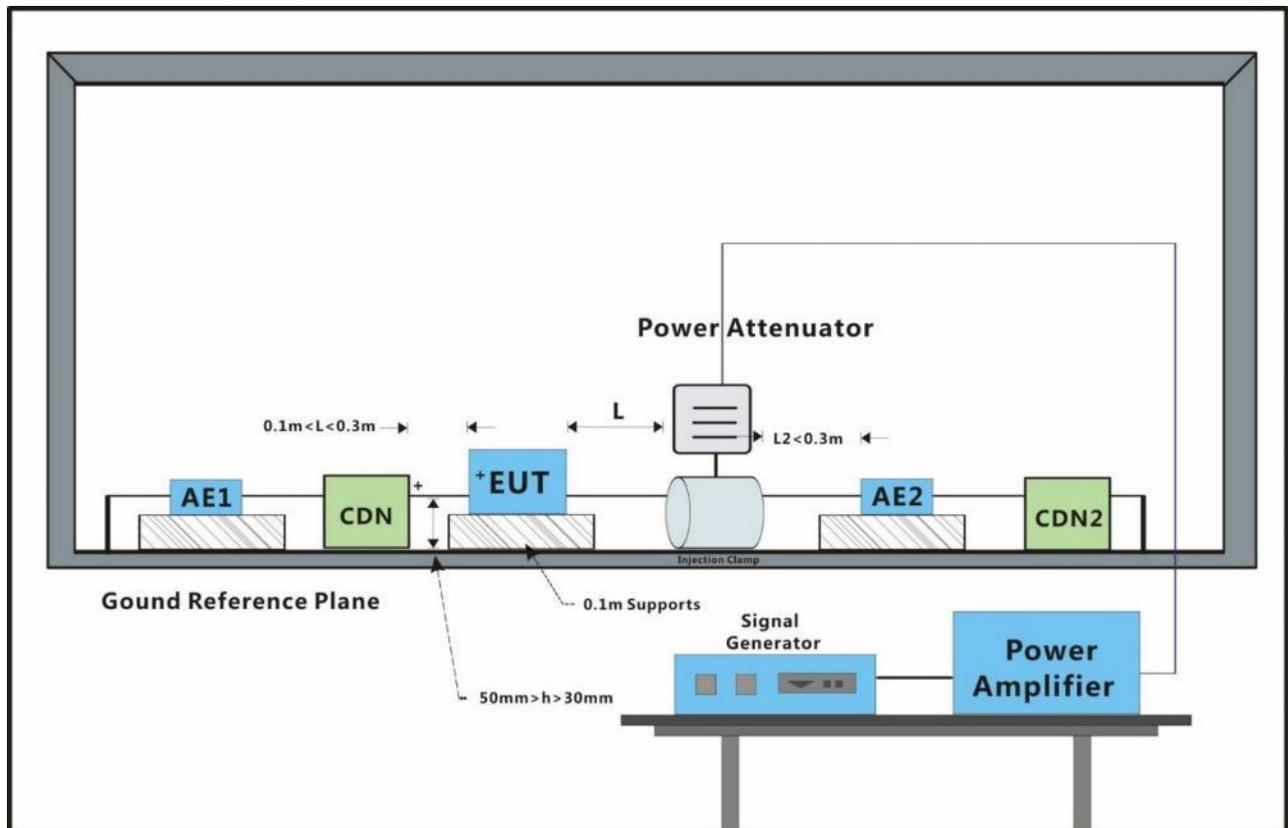
Results:

A: No degradation in the performance of the EUT was observed.

7.18 Conducted Immunity at Signal Port (150kHz-100MHz)

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-6:2014
 Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation
 Criteria for compliance: There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the

7.18.1 Test Setup Diagram



7.18.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
 Test mode:
 a: CVI preview : keep EUT preview with CVI output .
 b: AHD preview : keep EUT preview with AHD output .
 c: CVBS preview : keep EUT preview with CVBS output .
 d: TVI preview : keep EUT preview with TVI output .

7.18.3 Test Results:

Port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
Signal port	10	Coupling	3s	A

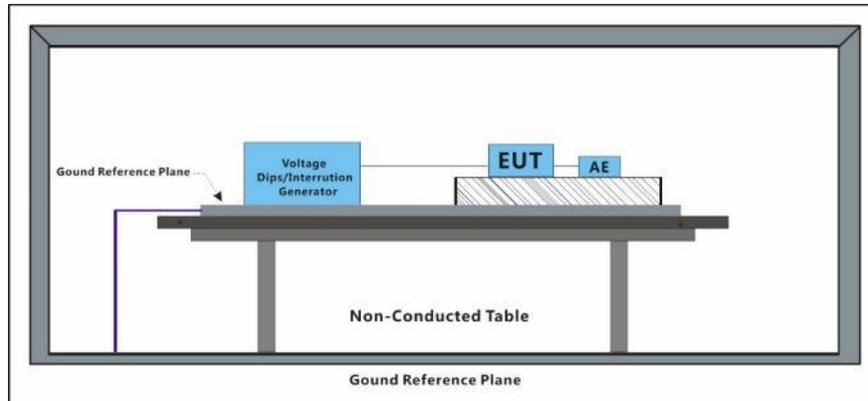
Results:

A: No degradation in the performance of the EUT was observed.

7.19 Voltage Dips and Interruptions

Test Requirement: EN 55024:2010 +A1:2015
 Test Method: EN 61000-4-11:2004
 Performance Criterion: 0% of UT (Supply Voltage) for 0.5 Periods:B; 0% of UT for 250 Periods:C; 70 % of UT for 25 Periods:C
 No. of Dips / Interruptions: 3 per Level
 Time between dropout 10s

7.19.1 Test Setup Diagram



7.19.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

- Test mode:
- a: CVI preview : keep EUT preview with CVI output .
 - b: AHD preview : keep EUT preview with AHD output .
 - c: CVBS preview : keep EUT preview with CVBS output .
 - d: TVI preview : keep EUT preview with TVI output .

7.19.3 Test Results:

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycles	3	A
0	180°	0.5 Cycles	3	A
0	0°	250 Cycles	3	B
0	180°	250 Cycles	3	B
70	0°	25 Cycles	3	A
70	180°	25 Cycles	3	A

Results:

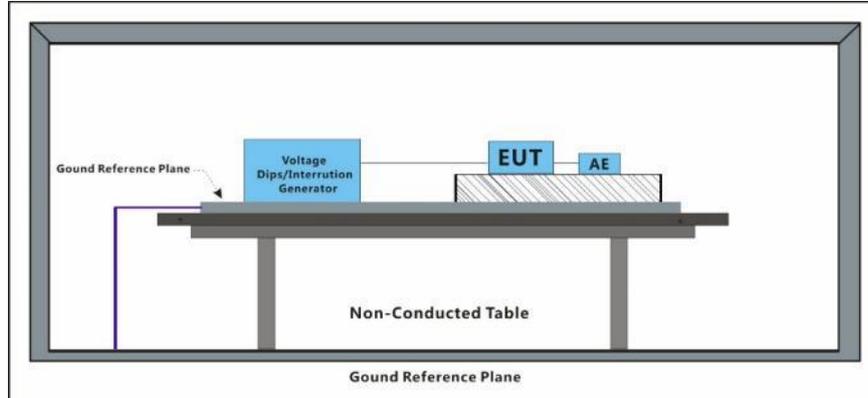
A: No degradation in the performance of the EUT was observed.

B: During test, EUT stop work, After test, which the equipment under test recovers its normal

7.20 Voltage Dips and Interruptions

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-11:2004
 Performance Criterion: 0% of UT (Supply Voltage) for 250 Periods; 40% of UT for 10 Periods; 70% of UT for 25 Periods; 80% of UT for 250 Periods;
 No. of Dips / Interruptions: 3 per Level
 Time between dropout 10s

7.20.1 Test Setup Diagram



7.20.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode:
 a: CVI preview : keep EUT preview with CVI output .
 b: AHD preview : keep EUT preview with AHD output .
 c: CVBS preview : keep EUT preview with CVBS output .
 d: TVI preview : keep EUT preview with TVI output .

7.20.3 Test Results:

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
80	0°	250 Cycles	3	B
80	180°	250 Cycles	3	B
70	0°	25 Cycles	3	A
70	180°	25 Cycles	3	A
40	0°	10 Cycles	3	A
40	180°	10 Cycles	3	A
0	0°	250 Cycles	3	B
0	180°	250 Cycles	3	B

Results:

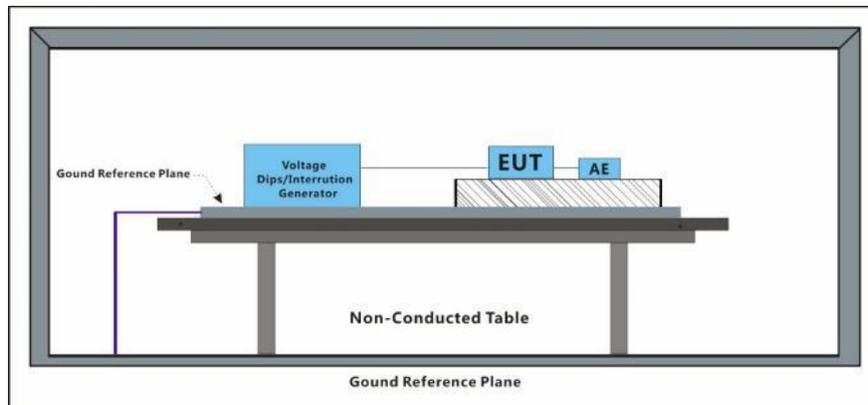
A: No degradation in the performance of the EUT was observed.

B: During test, EUT stop work, After test, which the equipment under test recovers its normal

7.21 Mains Supply Voltage Variations-Conditioning

Test Requirement:	EN 50130-4:2011 +A1:2014
Test Method:	EN 50130-4:2011+A1:2014
Voltage max.:	AC 253V (Umax: Unom + 10%)
Voltage min.:	AC 195.55V (Umin: Unom - 15%)
Unom Voltage:	AC 230V
Criteria:	There shall be no damage, malfunction or change of status due to the different supply voltage conditions. The EUT shall meet the acceptance criteria for the functional test (see Clause 6 of EN 50130-4

7.21.1 Test Setup Diagram



7.21.2 E.U.T. Operation

Operating Environment:			
Temperature:	22 °C	Humidity:	50 % RH
		Atmospheric Pressure:	1020 mbar
Test mode:	a: CVI preview : keep EUT preview with CVI output .		
	b: AHD preview : keep EUT preview with AHD output .		
	c: CVBS preview : keep EUT preview with CVBS output .		
	d: TVI preview : keep EUT preview with TVI output .		

7.21.3 Test Results:

Test phenomenon description for the EUT:

1. The EUT working normal, before the conditioning.
2. Monitor the EUT during the conditioning period and detected no any changes in states, during the conditioning.
3. No degradation in the performance of the EUT was observed, after the conditioning.

8 Photographs

8.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup



8.2 Radiated Emissions (30MHz-1GHz) Test Setup



8.3 Radiated Emissions (above 1GHz) Test Setup



8.4 Voltage Fluctuations and Flicker Test Setup



8.5 Electrostatic Discharge Test Setup





8.6 Radiated Immunity (80MHz-1GHz) Test Setup



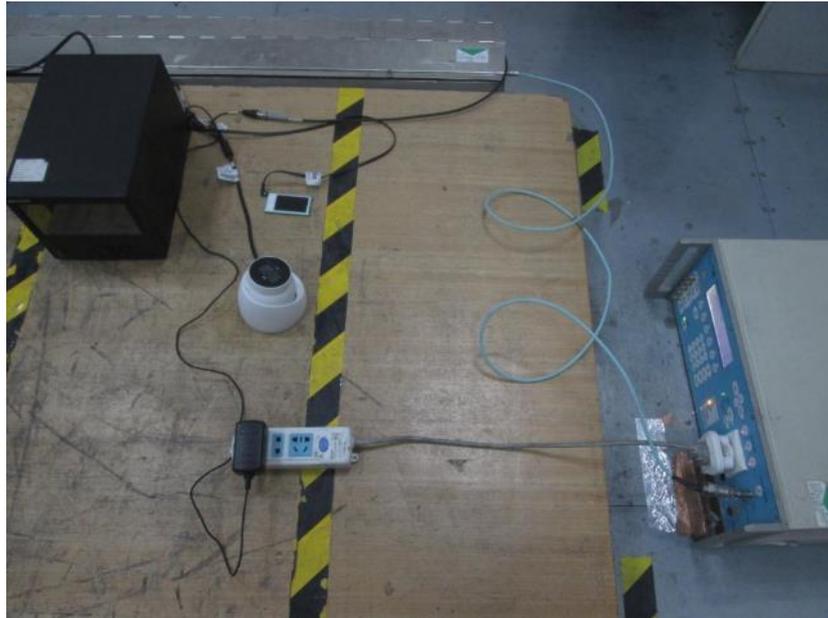
8.7 Radiated Immunity(80MHz-2.7GHz) Test Setup



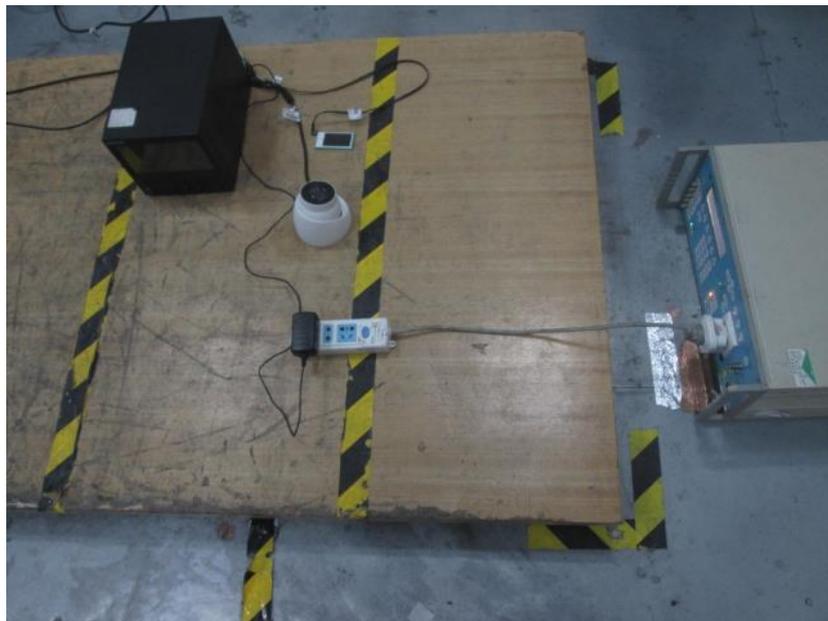
8.8 Electrical Fast Transients/Burst at Power Port Test Setup



8.9 Electrical Fast Transients/Burst at Signal Port Test Setup



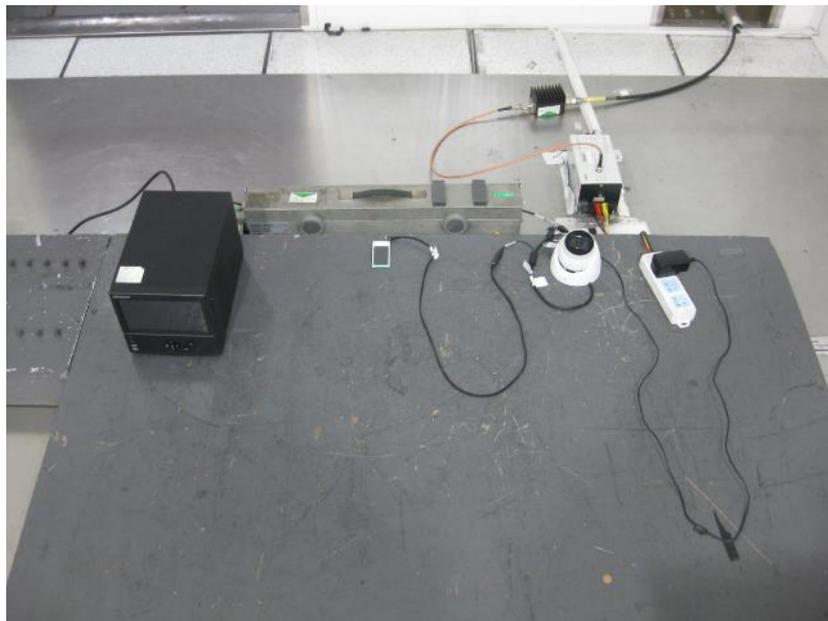
8.10 Surge at Power Port Test Setup



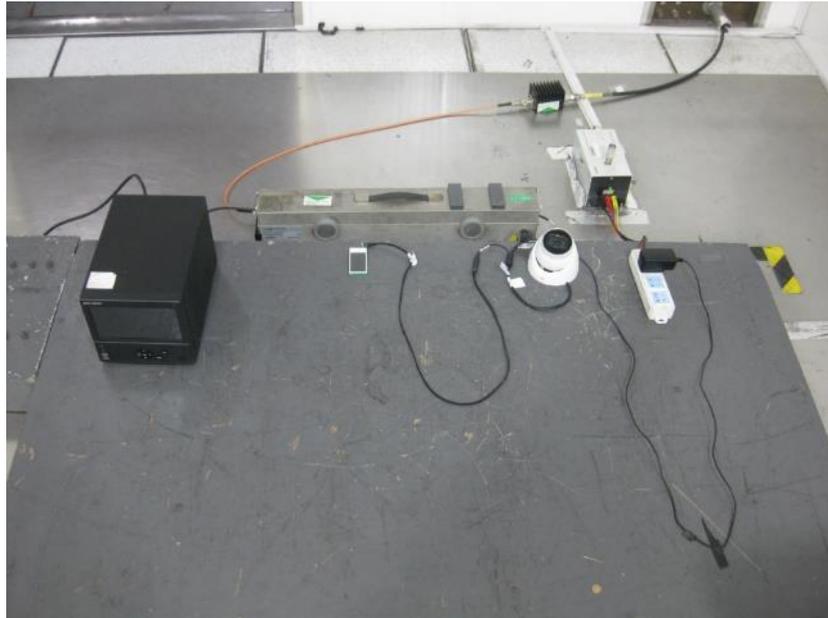
8.11 Surge at Signal Port Test Setup



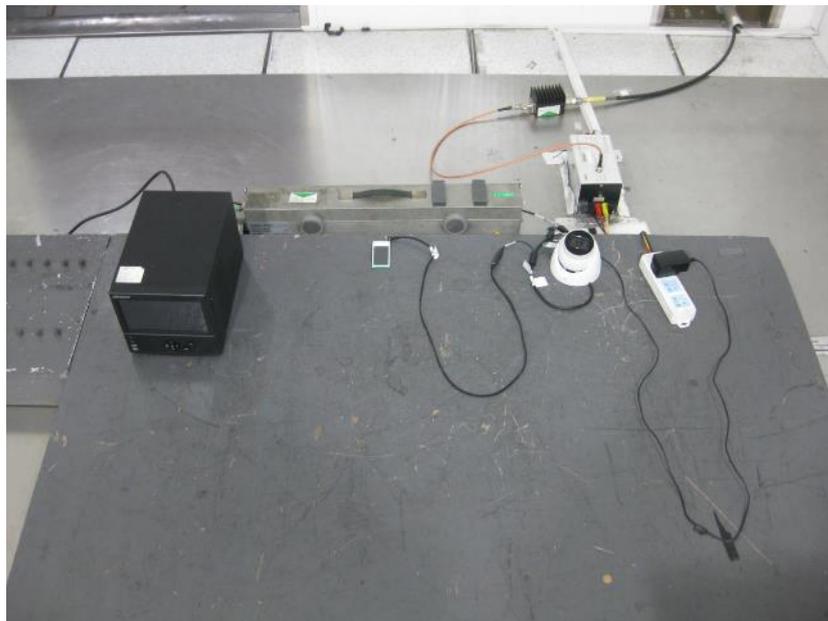
8.12 Conducted Immunity at Power Port (150kHz-80MHz) Test Setup



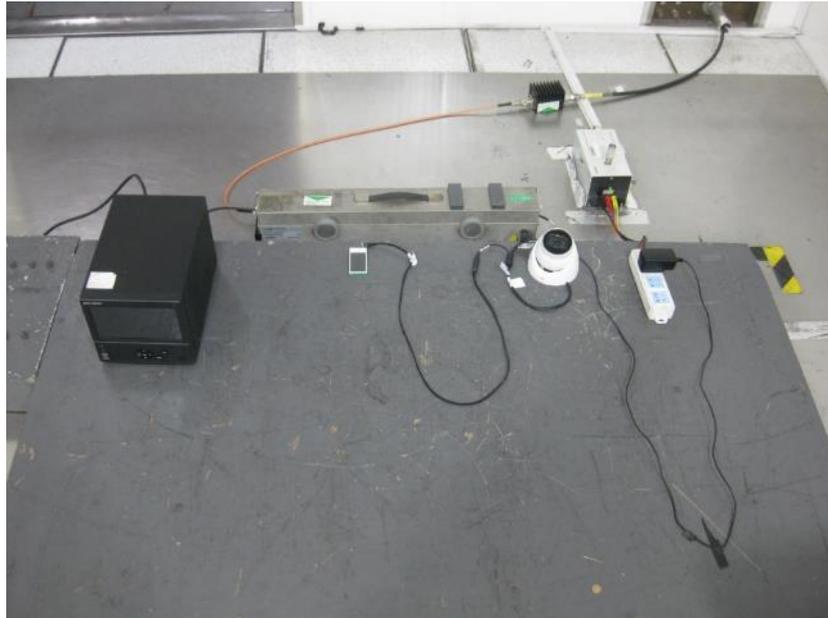
8.13 Conducted Immunity at Signal Port (150kHz-80MHz) Test Setup



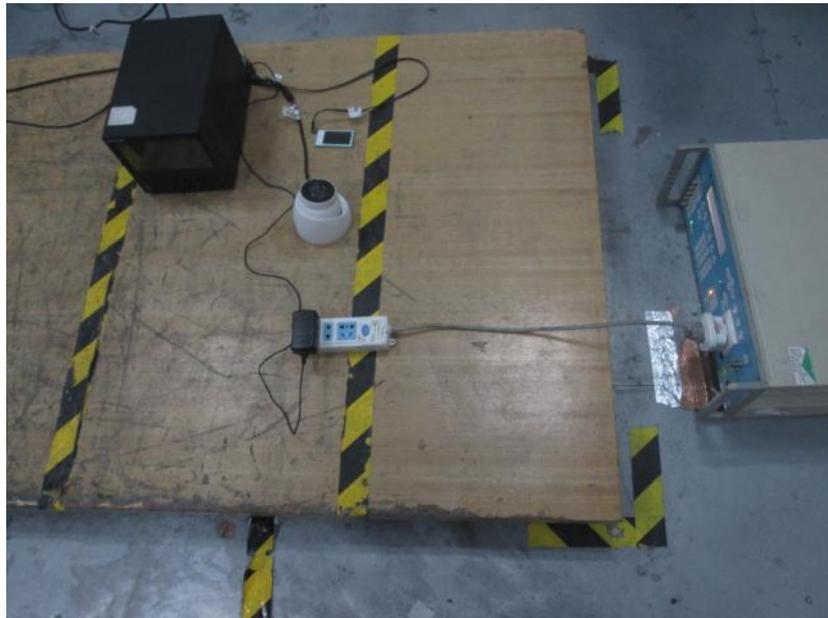
8.14 Conducted Immunity at Power Port (150kHz-100MHz) Test Setup



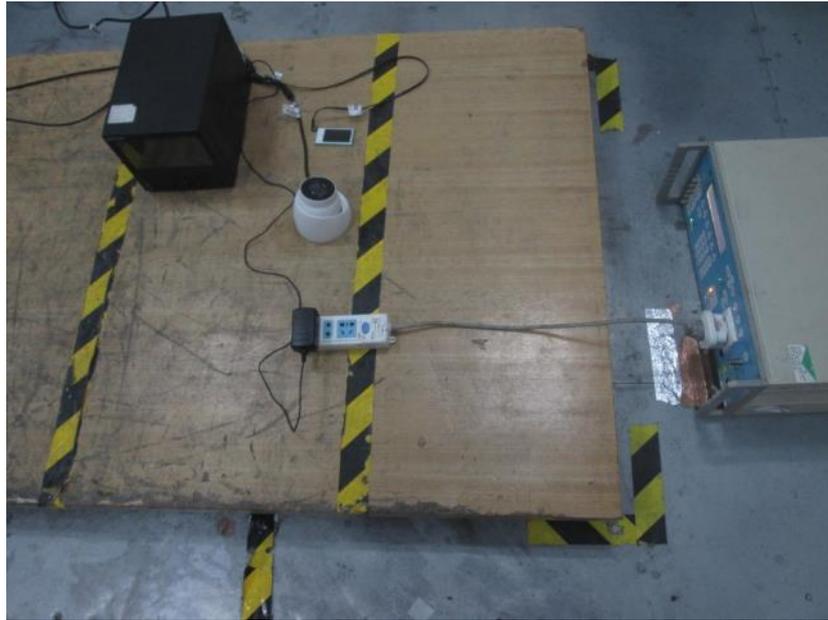
8.15 Conducted Immunity at Signal Port (150kHz-100MHz) Test Setup



8.16 Voltage Dips and Interruptions Test Setup



8.17 Mains Supply Voltage Variations-Conditioning Test Setup



8.18 EUT Constructional Details (EUT Photos)







- End of the Report -