



TEST REPORT

Application No.: SHEM1812002131AT
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
Equipment Under Test (EUT):
EUT Name: IP CAMERA
Model No.: Refer to Page 2
α Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standards: EN 55032:2015, EN 61000-3-2:2014,
EN 61000-3-3:2013, EN 55024:2010 +A1:2015,
EN 50130-4:2011 +A1:2014
Date of Receipt: 2017-06-14
Date of Test: 2017-06-14 to 2017-07-06
Date of Issue: 2018-12-18

Test Result :	Pass*
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* 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.

parlan zhan

Parlan 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.



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Model No.:

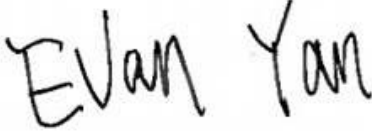

DH-IPC-HDW5231RP-Z, DH-IPC-HDW5231RP-ZE-27135, DH-IPC-HDW5231RP-ZE,
DH-IPC-HDW5231RN-ZE-27135, DH-IPC-HDW5231RN-ZE, IPC-HDW5231RP-ZE-27135,
IPC-HDW5231RP-ZE, IPC-HDW5231RN-ZE-27135, IPC-HDW5231RN-ZE,
DH-IPC-HDW5431RP-ZE-27135, DH-IPC-HDW5431RP-ZE, DH-IPC-HDW5431RN-ZE-27135,
DH-IPC-HDW5431RN-ZE, IPC-HDW5431RP-ZE-27135, IPC-HDW5431RP-ZE,
IPC-HDW5431RN-ZE-27135, IPC-HDW5431RN-ZE, DH-IPC-HDW5631RP-ZE-27135,
DH-IPC-HDW5631RP-ZE, DH-IPC-HDW5631RN-ZE-27135, DH-IPC-HDW5631RN-ZE,
IPC-HDW5631RP-ZE-27135, IPC-HDW5631RP-ZE, IPC-HDW5631RN-ZE-27135,
IPC-HDW5631RN-ZE, DH-IPC-HDW5831RP-Z, DH-IPC-HDW5831RP-ZE-2712,
DH-IPC-HDW5831RP-ZE, DH-IPC-HDW5831RN-ZE-2712, DH-IPC-HDW5831RN-ZE,
IPC-HDW5831RP-ZE-2712, IPC-HDW5831RP-ZE, IPC-HDW5831RN-ZE-2712,
IPC-HDW5831RN-ZE, IPC-HDW2430RP-ZS, IPC-HDW2430RN-ZS, IPC-HDW2230RP-ZS,
IPC-HDW2230RN-ZS, IPC-HDW2230RP-L-ZS, IPC-HDW2230RN-L-ZS; N85CM5Z,
DH-IPC-HDW2430RP-ZS, DH-IPC-HDW2430RN-ZS, DH-IPC-HDW2230RP-ZS,
DH-IPC-HDW2230RN-ZS, DH-IPC-HDW2230RP-L-ZS, DH-IPC-HDW2230RN-L-ZS

Add Model No.:

DH-IPC-HDW4231TP-Z-S4, DH-IPC-HDW4231TN-Z-S4, DH-IPC-HDW4431TP-Z-S4,
DH-IPC-HDW4431TN-Z-S4



Revision Record			
Version	Description	Date	Remark
00	Add Models	2018-12-15	Based on SHEM180800666201

Authorized for issue by:				
				
		<hr/>		
		Evan Yan / Project Engineer		
				
		<hr/>		
		Bruce Tang / 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 B	Pass
Asymmetric Mode Conducted Emissions (150kHz-30MHz)	EN 55032:2015	EN 55032:2015	Class B	Pass
Radiated Emissions (30MHz-1GHz)	EN 55032:2015	EN 55032:2015	Class B	Pass
Radiated Emissions (above 1GHz)	EN 55032:2015	EN 55032:2015	Class B	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 6.5 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	1kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Electrical Fast Transients/Burst at Power Port	EN 50130-4:2011 +A1:2014	EN 61000-4-4:2012	2kV 5/50ns Tr/Td 100kHz Repetition Frequency	Pass
Electrical Fast Transients/Burst at Signal Port	EN 55024:2010 +A1:2015	EN 61000-4-4:2012	0.5kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Electrical Fast Transients/Burst at Signal Port	EN 50130-4:2011 +A1:2014	EN 61000-4-4:2012	1kV 5/50ns Tr/Td 100kHz Repetition Frequency	Pass
Surge at Power Port	EN 55024:2010 +A1:2015	EN 61000-4-5:2014	1.2/50µs Tr/Td 1kV Line to Line 2kV Line to Ground	Pass



Emission Part				
Item	Standard	Method	Requirement	Result
Surge at Power Port	EN 50130-4:2011 +A1:2014	EN 61000-4-5:2014	1.2/50 μ s Tr/Td 0.5,1kV Line to Line 0.5,1,2kV Line to Ground	Pass
Surge at Signal Port	EN 55024:2010 +A1:2015	EN 61000-4-5:2014	1.2/50 μ s Tr/Td 1kV Line to Ground	Pass
Surge at Signal Port	EN 50130-4:2011 +A1:2014	EN 61000-4-5:2014	1.2/50 μ s Tr/Td 0.5,1kV 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 0.5per 0 % UT for 250per 70 % UT for 25per UT is Supply Voltage	Pass
Voltage Dips and Interruptions	EN 50130-4:2011 +A1:2014	EN 61000-4-11:2004	80 % UT for 250per 70 % UT for 25per 40 % UT for 10per 0 % UT for 250per UT 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

Note1: 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 DH-IPC-HDW5831RP-Z was tested since their differences are sales area and pixel



Note2: We add some models (refer to page 2) in this report. The new models added in this report are the same Electronic or Electrical characters as the models in the report SHEM170600370301, so the new models in this report are deemed to fulfill the EMC requirements without testing.

Note2: We add models DH-IPC-HDW4231TP-Z-S4, DH-IPC-HDW4231TN-Z-S4, DH-IPC-HDW4431TP-Z-S4, DH-IPC-HDW4431TN-Z-S4 in this report. The new models mentioned in this report are the same as the original models, in Electronic or Electrical characters. Which were already EMC tested in the report SHEM180800666201, So the new models in this report are deemed to fulfil the EMC requirements without testing.



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4 General Information

4.1 Details of E.U.T.

Power supply: DC12V/1A or POE
Cable: signal cable : about 0.4m

4.2 Description of Support Units

Description	Manufacturer	Model No.
Laptop 1	LENOVO	R400

4.3 Measurement Uncertainty

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

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



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.

• **NVLAP (Certificate No. 201034-0)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program(NVLAP). Certificate No. 201034-0.

• **FCC –Designation Number: CN5033**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

• **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-13868,C-14336,T-12221,G-10830 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	2016-12-29	2017-12-28
Line impedance stabilization network	SCHWARZBECK	NSLK8127	SHEM061-1	2016-12-29	2017-12-28
Line impedance stabilization network	EMCO	3816/2	SHEM019-1	2016-12-29	2017-12-28
Pulse limiter	Rohde & Schwarz	ESH3-Z2	SHEM029-1	2016-08-12	2017-08-11
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2016-08-17	2017-08-16

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2016-08-12	2017-08-11
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	2016-12-29	2017-12-28
Low Frequency Amplifier	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2016-08-12	2017-08-11
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2016-08-17	2017-08-16

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2016-08-12	2017-08-11
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	2017-01-16	2018-01-15
High-amplifier	SCHWARZBECK	SCU-F0118-G40-BZ4-CS	SHEM050-2	2017-01-14	2018-01-13
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2016-08-17	2017-08-16

Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Harmonic&Flicker analyzer	AMETEK	PACS-1	SHEM024-2	2016-09-06	2017-09-05
AC Power Source 5KVA	AMETEK	5001iX	SHEM025-2	2016-09-06	2017-09-05



Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-1	2016-08-15	2017-08-14

Radiated Immunity (80MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2016-12-29	2017-12-28
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2016-12-29	2017-12-28
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2016-12-29	2017-12-28
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	2016-08-12	2017-08-11
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6113	SHEM134-1	2016-08-12	2017-08-11
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2016-08-17	2017-08-16

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	2016-12-29	2017-12-28
Matching resistors for EFT/burst generators	EM test	KW50	SHEM026-4	2016-12-29	2017-12-28
Matching resistors for EFT/burst generators	EM test	KW1000	SHEM026-5	2016-12-29	2017-12-28

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	2016-12-29	2017-12-28
Capacitive coupling clamp	EM test	HFK	SHEM026-2	2016-08-12	2017-08-11
Data coupling network 4 line	EM test	CNV 504	SHEM026-3	2016-08-12	2017-08-11
Matching resistors for EFT/burst generators	EM test	KW1000	SHEM026-5	2016-12-29	2017-12-28

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	2016-12-29	2017-12-28



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	2016-12-29	2017-12-28
Data coupling network 4 line	EM test	CNV 504	SHEM026-3	2016-08-12	2017-08-11

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	2016-12-29	2017-12-28
PAMP Conducted RF test system	HAEFFLY	PAMP250	SHEM023-1	2016-12-29	2017-12-28
6dB Attenuator	HUAXIANG	TST-150-761	SHEM151-1	N/A	N/A
Coupling clamp	LIITHI	EM 101	SHEM027-1	2016-12-29	2017-12-28
CDN impedance and K-factor	LUTHI	L-801 M1	SHEM023-5	2016-12-29	2017-12-28
CDN impedance and K-factor	LUTHI	L-801 M2/M3	SHEM023-6	2017-01-14	2018-01-13
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2016-08-17	2017-08-16

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	2016-12-29	2017-12-28
PAMP Conducted RF test system	HAEFFLY	PAMP250	SHEM023-1	2016-12-29	2017-12-28
Coupling clamp	LIITHI	EM 101	SHEM027-1	2016-12-29	2017-12-28
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2016-08-17	2017-08-16

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	2016-12-29	2017-12-28

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	2016-12-29	2017-12-28



Radiated Immunity(80MHz-2.7GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2016-12-29	2017-12-28
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2016-12-29	2017-12-28
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2016-12-29	2017-12-28
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	2016-08-12	2017-08-11
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6113	SHEM134-1	2016-08-12	2017-08-11
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2016-08-17	2017-08-16

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	2016-12-29	2017-12-28
PAMP Conducted RF test system	HAEFFLY	PAMP250	SHEM023-1	2016-12-29	2017-12-28
6dB Attenuator	HUAXIANG	TST-150-761	SHEM151-1	N/A	N/A
CDN impedance and K-factor	LUTHI	L-801 M1	SHEM023-5	2016-12-29	2017-12-28
CDN impedance and K-factor	LUTHI	L-801 M2/M3	SHEM023-6	2017-01-14	2018-01-13
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2016-08-17	2017-08-16

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	2016-08-19	2017-08-18
Digital Multimeter	FLUKE	17B	SHEM043-5	2016-08-15	2017-08-14
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	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.1.1 E.U.T. Operation

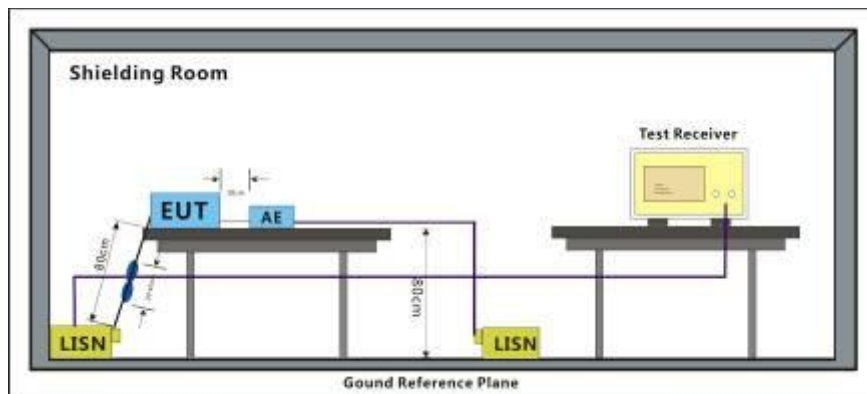
Operating Environment:

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

Pretest these mode to find the worst case:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

The worst case for final test:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

6.1.2 Test Setup Diagram

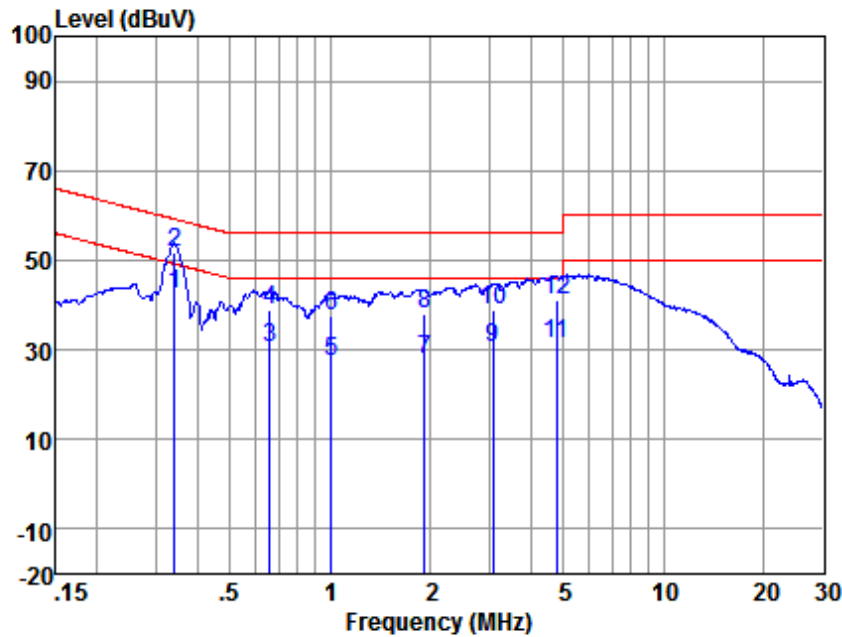


6.1.3 Measurement Data

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.



Mode:a, Line:Live Line

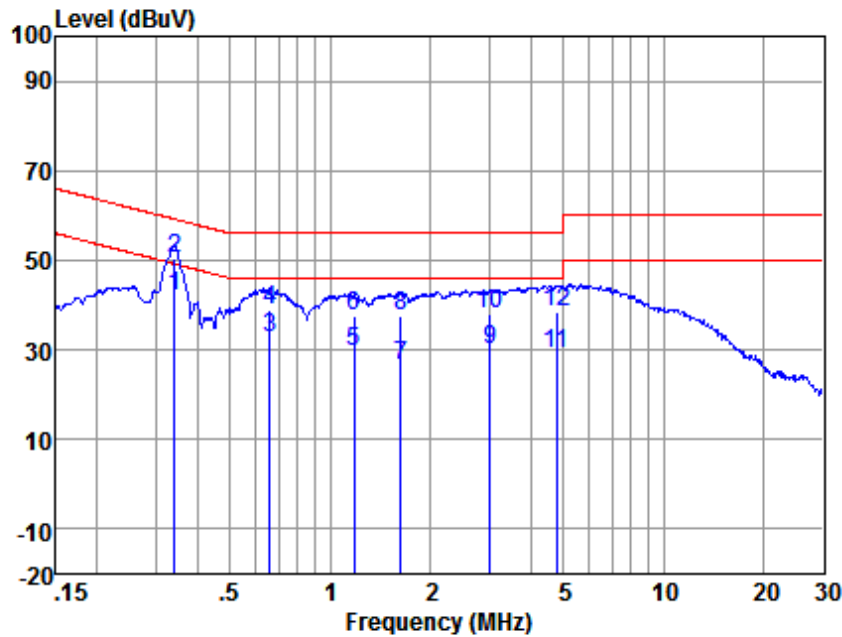


Site : chamber
Condition : LISN-L-2016
EUT/Project No: 3703IT
Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.341	32.35	0.09	9.81	42.25	49.18	-6.93	Average
2	0.341	41.63	0.09	9.81	51.53	59.18	-7.65	QP
3	0.658	20.48	0.10	9.82	30.40	46.00	-15.60	Average
4	0.658	28.90	0.10	9.82	38.82	56.00	-17.18	QP
5	1.010	17.66	0.08	9.84	27.58	46.00	-18.42	Average
6	1.010	27.50	0.08	9.84	37.42	56.00	-18.58	QP
7	1.918	18.08	0.08	9.85	28.01	46.00	-17.99	Average
8	1.918	28.28	0.08	9.85	38.21	56.00	-17.79	QP
9	3.090	20.30	0.11	9.85	30.26	46.00	-15.74	Average
10	3.090	29.02	0.11	9.85	38.98	56.00	-17.02	QP
11	4.772	21.36	0.15	9.86	31.37	46.00	-14.63	Average
12	4.772	30.96	0.15	9.86	40.97	56.00	-15.03	QP



Mode:a, Line:Neutral Line

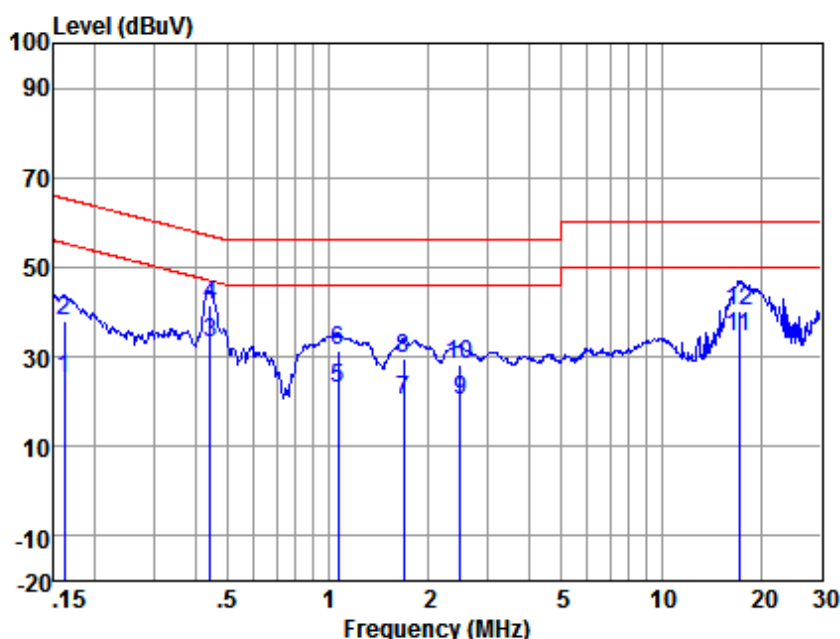


Site : chamber
Condition : LISN-N-2016
EUT/Project No: 3703IT
Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.341	32.10	0.04	9.81	41.95	49.18	-7.23	Average
2	0.341	40.55	0.04	9.81	50.40	59.18	-8.78	QP
3	0.658	22.61	0.05	9.82	32.48	46.00	-13.52	Average
4	0.658	29.01	0.05	9.82	38.88	56.00	-17.12	QP
5	1.178	19.87	0.05	9.84	29.76	46.00	-16.24	Average
6	1.178	27.82	0.05	9.84	37.71	56.00	-18.29	QP
7	1.628	16.80	0.06	9.84	26.70	46.00	-19.30	Average
8	1.628	27.78	0.06	9.84	37.68	56.00	-18.32	QP
9	3.025	19.98	0.11	9.85	29.94	46.00	-16.06	Average
10	3.025	27.91	0.11	9.85	37.87	56.00	-18.13	QP
11	4.797	19.01	0.17	9.86	29.04	46.00	-16.96	Average
12	4.797	28.20	0.17	9.86	38.23	56.00	-17.77	QP



Mode:b, Line:Live Line

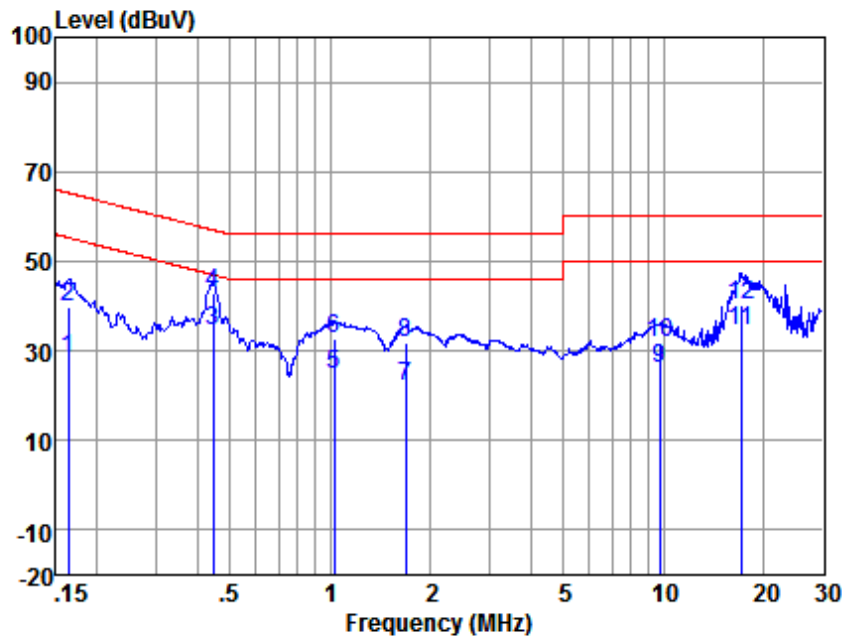


Site : chamber
Condition : LISN-L-2016
EUT/Project No: 3703IT
Test mode : b

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.162	15.27	0.06	9.81	25.14	55.38	-30.24	Average
2	0.162	28.21	0.06	9.81	38.08	65.38	-27.30	QP
3	0.442	23.35	0.10	9.82	33.27	47.02	-13.75	Average
4	0.442	31.73	0.10	9.82	41.65	57.02	-15.37	QP
5	1.071	13.10	0.08	9.84	23.02	46.00	-22.98	Average
6	1.071	21.38	0.08	9.84	31.30	56.00	-24.70	QP
7	1.680	10.46	0.08	9.84	20.38	46.00	-25.62	Average
8	1.680	19.53	0.08	9.84	29.45	56.00	-26.55	QP
9	2.500	10.55	0.10	9.85	20.50	46.00	-25.50	Average
10	2.500	18.30	0.10	9.85	28.25	56.00	-27.75	QP
11	17.109	24.34	0.23	10.03	34.60	50.00	-15.40	Average
12	17.109	29.88	0.23	10.03	40.14	60.00	-19.86	QP



Mode:b, Line:Neutral Line



Site : chamber
Condition : LISN-N-2016
EUT/Project No: 3703IT
Test mode : b

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.163	18.36	0.05	9.81	28.22	55.30	-27.08	Average
2	0.163	29.89	0.05	9.81	39.75	65.30	-25.55	QP
3	0.444	24.62	0.04	9.82	34.48	46.98	-12.50	Average
4	0.444	32.96	0.04	9.82	42.82	56.98	-14.16	QP
5	1.032	14.78	0.05	9.84	24.67	46.00	-21.33	Average
6	1.032	23.00	0.05	9.84	32.89	56.00	-23.11	QP
7	1.680	12.23	0.06	9.84	22.13	46.00	-23.87	Average
8	1.680	21.91	0.06	9.84	31.81	56.00	-24.19	QP
9	9.757	16.00	0.21	9.87	26.08	50.00	-23.92	Average
10	9.757	21.63	0.21	9.87	31.71	60.00	-28.29	QP
11	17.109	24.31	0.28	10.03	34.62	50.00	-15.38	Average
12	17.109	30.12	0.28	10.03	40.43	60.00	-19.57	QP



6.2 Asymmetric Mode Conducted Emissions (150kHz-30MHz)

Test Requirement:	EN 55032:2015
Test Method:	EN 55032:2015
Limit:	
0.15M-0.5MHz(Voltage)	84-74(dB μ V) quasi-peak,74-64(dB μ V) average
0.5M-30MHz(Voltage)	74(dB μ V) quasi-peak,64(dB μ V) average
0.15M-0.5MHz(Current)	40-30(dB μ V) quasi-peak,30-20(dB μ V) average
0.5M-30MHz(Current)	30(dB μ V) quasi-peak,20(dB μ V) average
Detector:	9kHz resolution bandwidth 0.15M to 30MHz
Remark:	The voltage measured shall be corrected at each frequency of interest as follows: if the current margin with respect to the current limit is ≤ 6 dB, the actual current margin shall be subtracted from the measured voltage; if the current margin with respect to the current limit is > 6 dB, 6 dB shall be subtracted from the measured voltage.

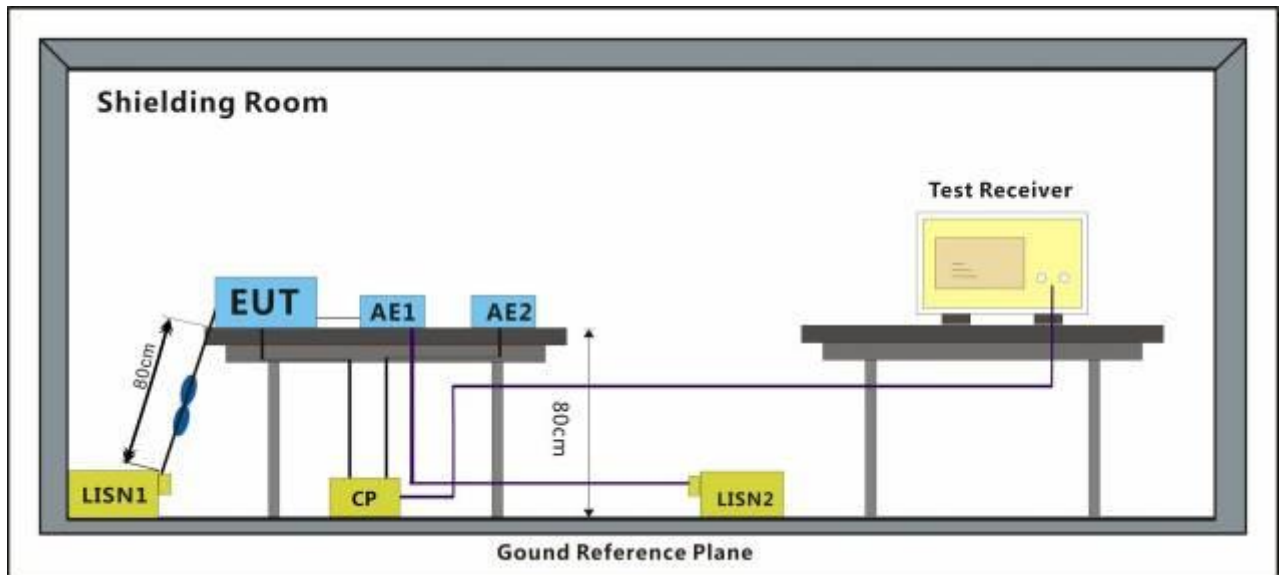
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1003 mbar

Test Mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

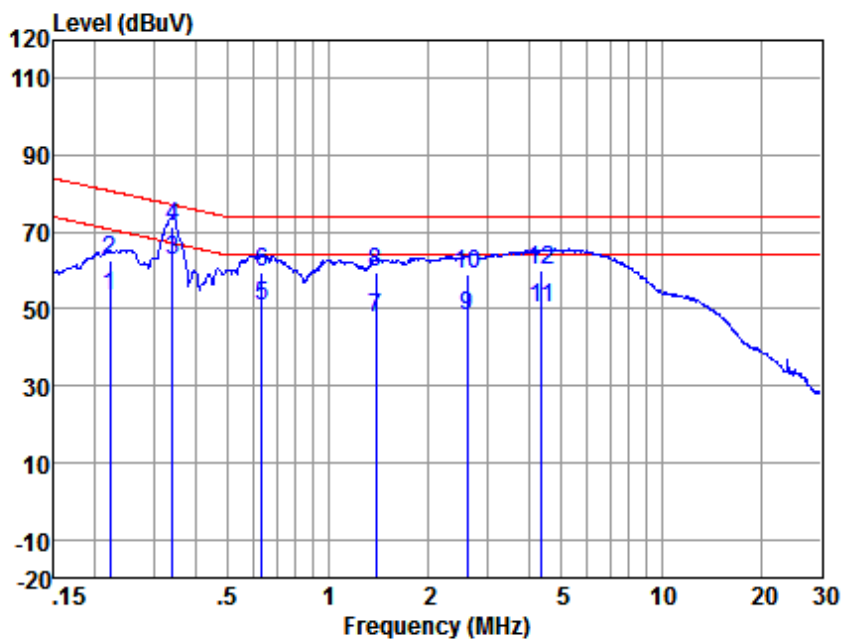
6.2.2 Test Setup Diagram





6.2.3 Measurement Data

Mode:a

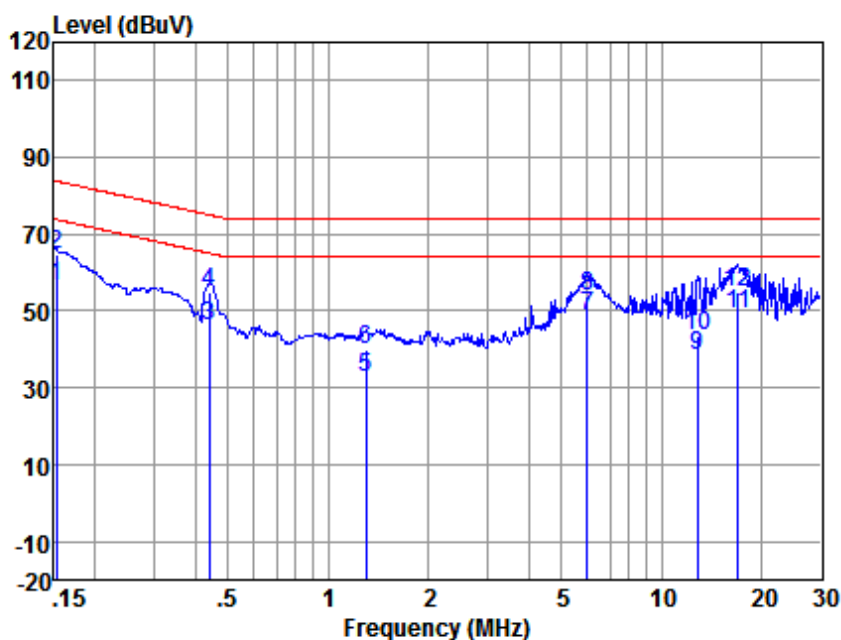


Site : chamber
Condition : ISN CAT5
Model number: 3703IT
Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.222	33.87	9.63	9.81	53.31	70.74	-17.43	Average
2	0.222	43.15	9.63	9.81	62.59	80.74	-18.15	QP
3	0.341	43.10	9.52	9.81	62.43	67.18	-4.75	Average
4	0.341	51.90	9.52	9.81	71.23	77.18	-5.95	QP
5	0.630	31.58	9.41	9.82	50.81	64.00	-13.19	Average
6	0.630	40.33	9.41	9.82	59.56	74.00	-14.44	QP
7	1.388	28.39	9.31	9.84	47.54	64.00	-16.46	Average
8	1.388	40.32	9.31	9.84	59.47	74.00	-14.53	QP
9	2.608	29.32	9.25	9.85	48.42	64.00	-15.58	Average
10	2.608	39.84	9.25	9.85	58.94	74.00	-15.06	QP
11	4.384	30.97	9.21	9.86	50.04	64.00	-13.96	Average
12	4.384	41.10	9.21	9.86	60.17	74.00	-13.83	QP



Mode:b



Site : chamber
Condition : ISN CAT5
Model number: 3703IT
Test mode : b

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.152	36.69	9.74	9.81	56.24	73.87	-17.63	Average
2	0.152	45.11	9.74	9.81	64.66	83.87	-19.21	QP
3	0.440	26.73	9.47	9.82	46.02	65.07	-19.05	Average
4	0.440	35.52	9.47	9.82	54.81	75.07	-20.26	QP
5	1.296	13.57	9.32	9.84	32.73	64.00	-31.27	Average
6	1.296	20.61	9.32	9.84	39.77	74.00	-34.23	QP
7	5.993	29.45	9.20	9.86	48.51	64.00	-15.49	Average
8	5.993	34.71	9.20	9.86	53.77	74.00	-20.23	QP
9	12.852	19.04	9.22	9.94	38.20	64.00	-25.80	Average
10	12.852	24.30	9.22	9.94	43.46	74.00	-30.54	QP
11	17.018	30.04	9.27	10.02	49.33	64.00	-14.67	Average
12	17.018	35.71	9.27	10.02	55.00	74.00	-19.00	QP

6.3 Radiated Emissions (30MHz-1GHz)

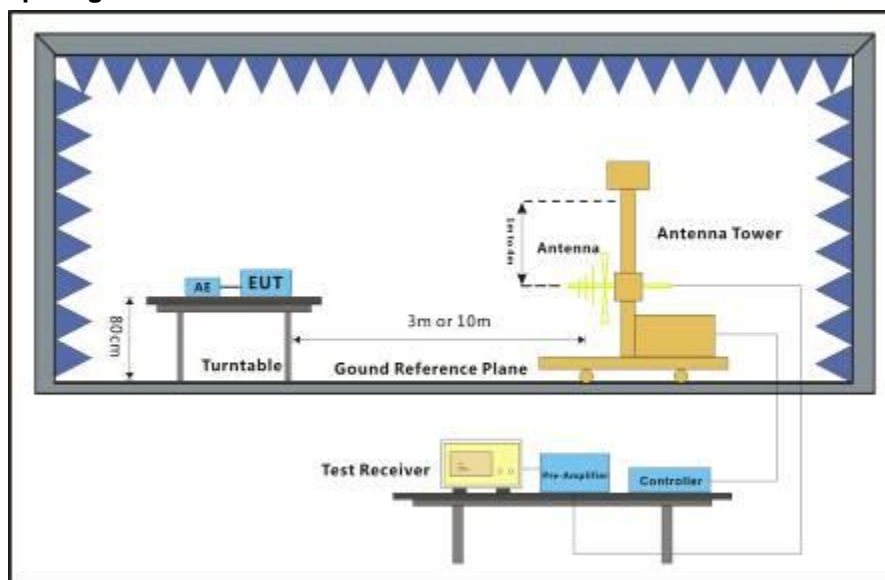
Test Requirement:	EN 55032:2015
Test Method:	EN 55032:2015
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz-230MHz	40 dB(μ V/m) quasi-peak
230MHz-1GHz	47 dB(μ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

6.3.1 E.U.T. Operation

Operating Environment:

Temperature:	22 °C	Humidity:	50 % RH	Atmospheric Pressure:	1002 mbar
Test mode:	a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual b:PoE monitoring : the EUT powered by PoE and keep monitoring continual				

6.3.2 Test Setup Diagram

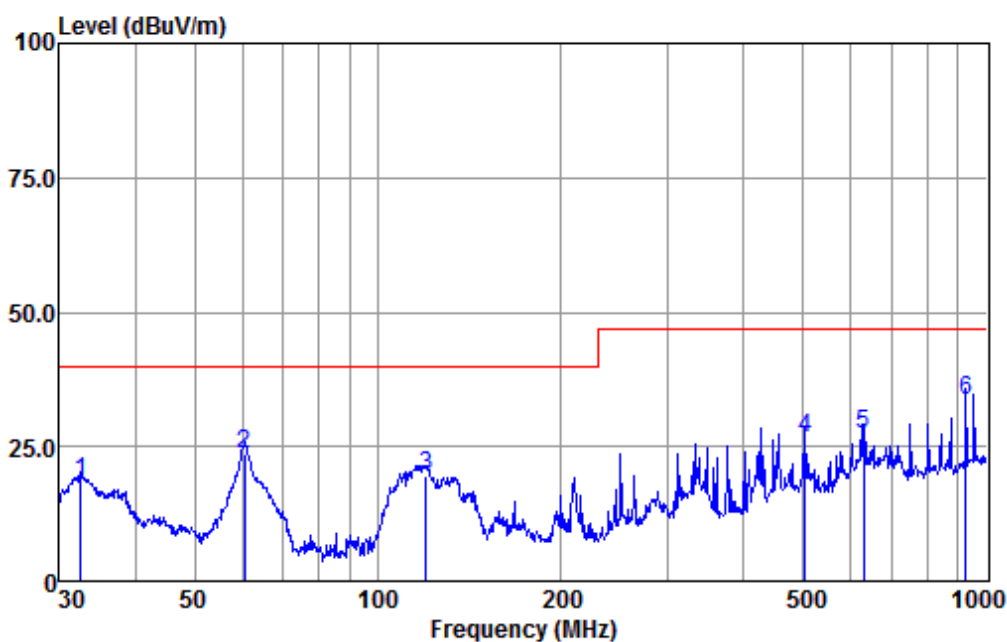


6.3.3 Measurement Data

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

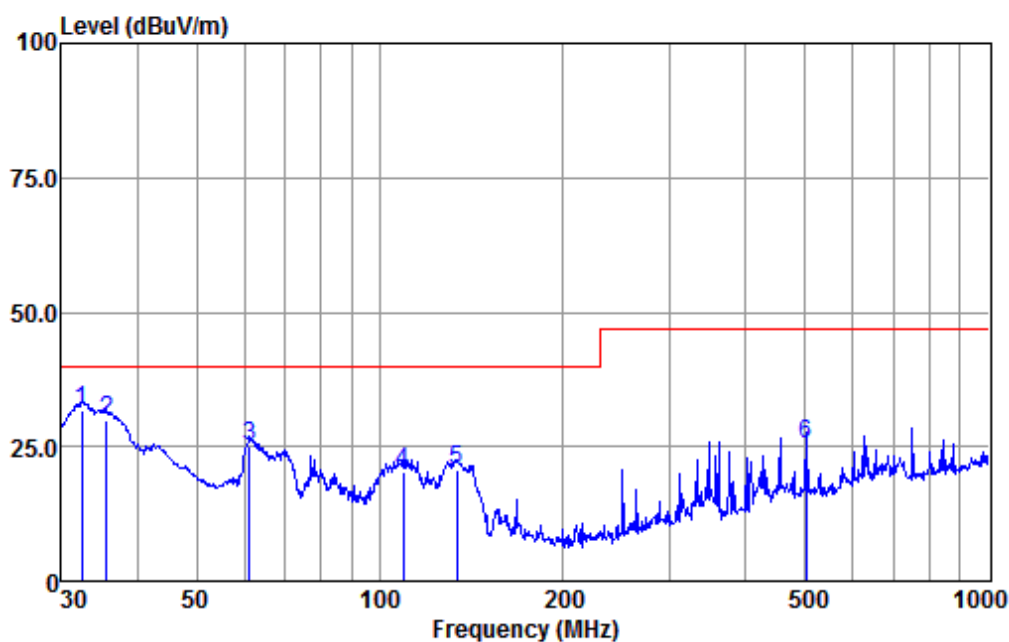


Condition : HORIZONTAL
EUT/Project: 3703IT
Test mode : a

	Freq	ReadAntenna	Cable	Preamp		Limit	Over	
		Level	Factor	Loss	Factor	Level	Line	Limit
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	32.52	45.20	15.58	0.19	42.67	18.30	40.00	-21.70 QP
2	60.49	53.58	12.55	0.30	42.69	23.74	40.00	-16.26 QP
3	120.28	51.57	10.12	0.54	42.67	19.56	40.00	-20.44 QP
4	504.71	50.25	17.33	1.20	42.13	26.65	47.00	-20.35 QP
5	629.48	48.29	19.65	1.45	42.25	27.14	47.00	-19.86 QP
6 q	925.76	50.10	22.99	2.49	41.88	33.70	47.00	-13.30 QP



Mode:a, Polarization:Vertical

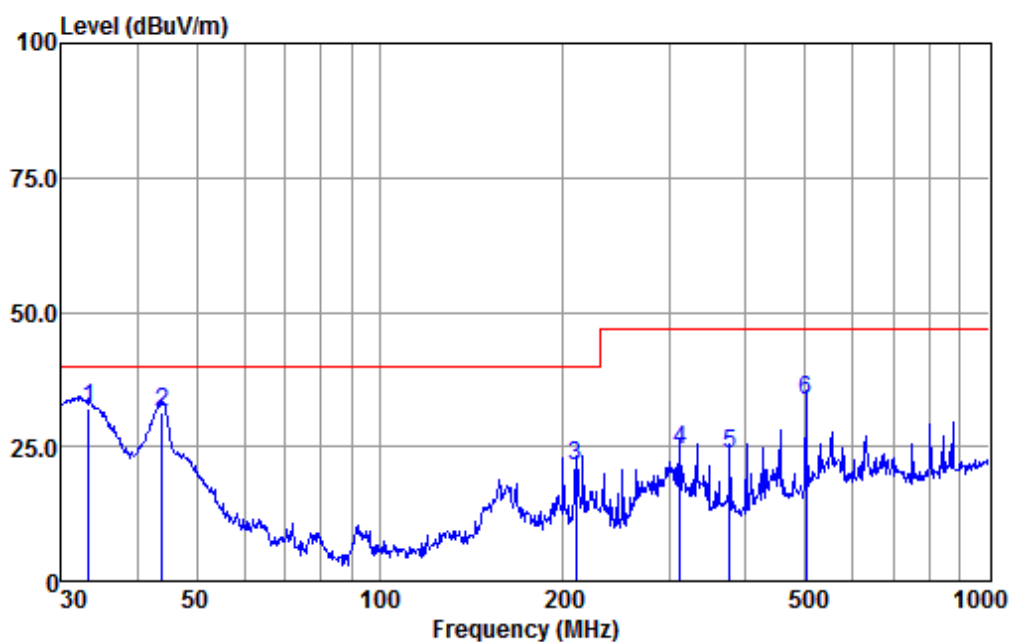


Condition : VERTICAL
EUT/Project: 3703IT
Test mode : a

		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 q	32.41	58.54	15.57	0.19	42.67	31.63	40.00	-8.37	QP
2	35.62	56.54	15.90	0.21	42.68	29.97	40.00	-10.03	QP
3	61.13	55.04	12.46	0.30	42.69	25.11	40.00	-14.89	QP
4	109.41	53.05	9.59	0.49	42.70	20.43	40.00	-19.57	QP
5	134.09	50.39	12.16	0.59	42.61	20.53	40.00	-19.47	QP
6	501.18	49.31	17.24	1.18	42.13	25.60	47.00	-21.40	QP



Mode:b, Polarization:Horizontal

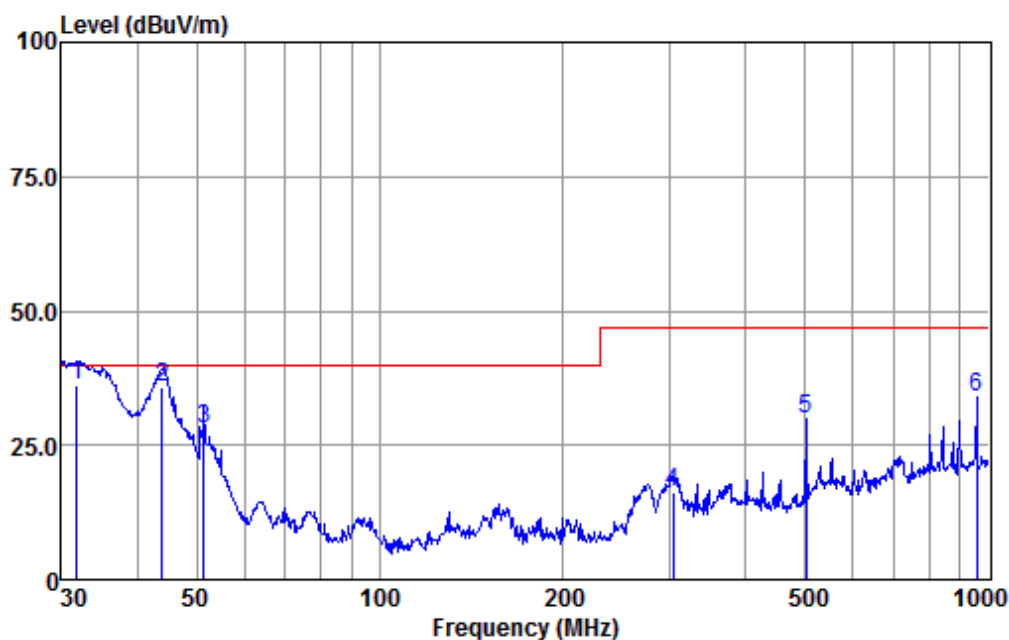


Condition : HORIZONTAL
EUT/Project: 3703IT
Test mode : b

		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 q	33.33	58.93	15.67	0.20	42.67	32.13	40.00	-7.87	QP
2	43.97	60.00	13.90	0.23	42.68	31.45	40.00	-8.55	QP
3	210.05	53.33	9.86	0.71	42.48	21.42	40.00	-18.58	QP
4	312.18	52.32	13.45	0.86	42.31	24.32	47.00	-22.68	QP
5	375.94	50.06	14.68	0.95	42.15	23.54	47.00	-23.46	QP
6	501.18	57.27	17.24	1.18	42.13	33.56	47.00	-13.44	QP



Mode:b, Polarization:Vertical



Condition : VERTICAL
EUT/Project: 3703IT
Test mode : b

		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 q	31.77	63.03	15.50	0.19	42.61	36.11	40.00	-3.89	QP
2	43.91	64.35	13.90	0.23	42.63	35.85	40.00	-4.15	QP
3	51.48	59.55	10.91	0.26	42.64	28.08	40.00	-11.92	QP
4	303.54	44.52	13.27	0.85	42.39	16.25	47.00	-30.75	QP
5	501.18	53.78	17.24	1.18	42.14	30.06	47.00	-16.94	QP
6	958.79	49.34	23.36	2.66	41.50	33.86	47.00	-13.14	QP

6.4 Radiated Emissions (above 1GHz)

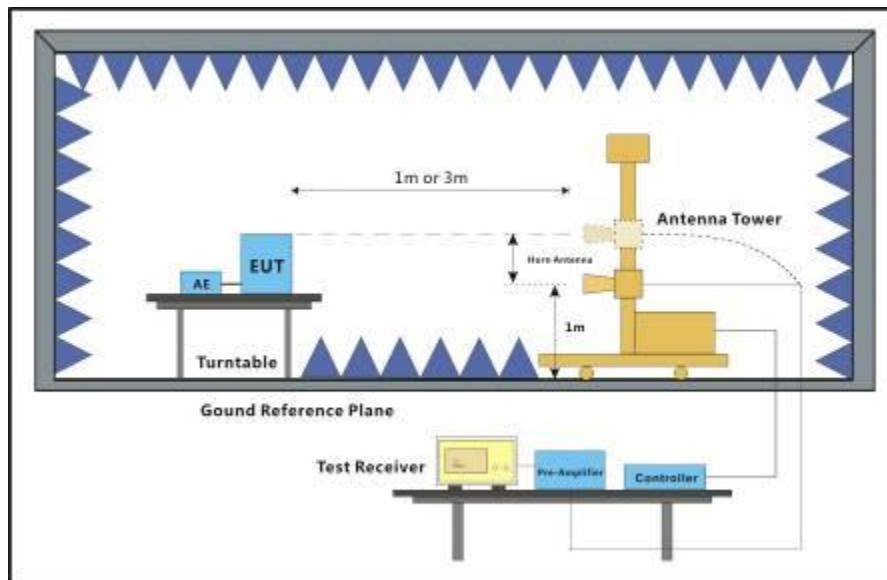
Test Requirement:	EN 55032:2015
Test Method:	EN 55032:2015
Frequency Range:	Above 1GHz
Measurement Distance:	3m
Limit:	
1GHz-3GHz	70 dB(μ V/m) peak, 50 dB(μ V/m) average
3GHz-6GHz	74 dB(μ V/m) peak, 54dB(μ V/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 6000MHz

6.4.1 E.U.T. Operation

Operating Environment:

Temperature:	22 °C	Humidity:	50 % RH	Atmospheric Pressure:	1002 mbar
Test Mode:	a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual b:PoE monitoring : the EUT powered by PoE and keep monitoring continual				

6.4.2 Test Setup Diagram

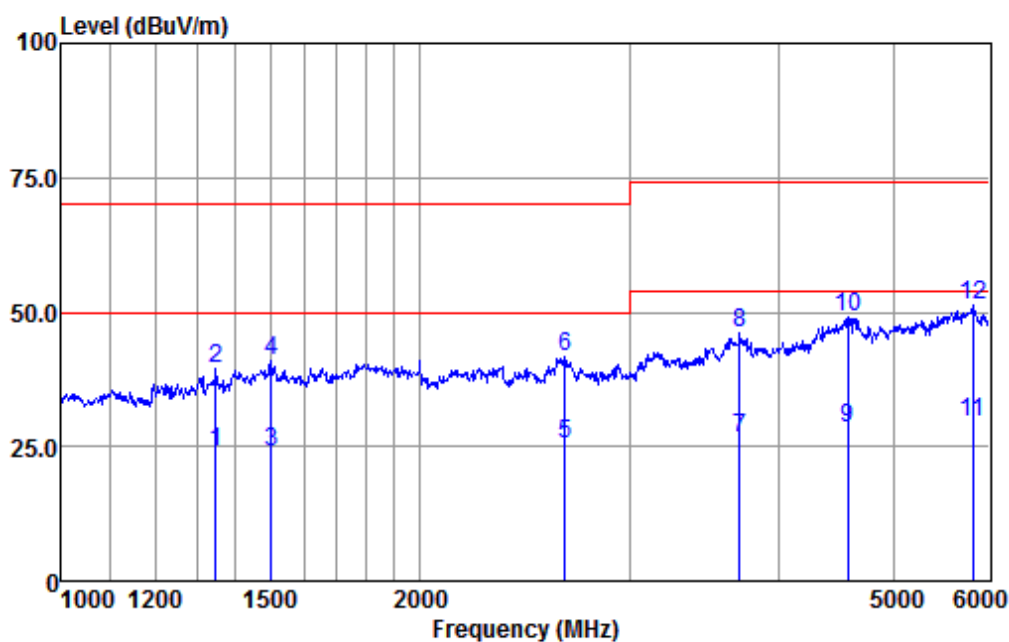


6.4.3 Measurement Data

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

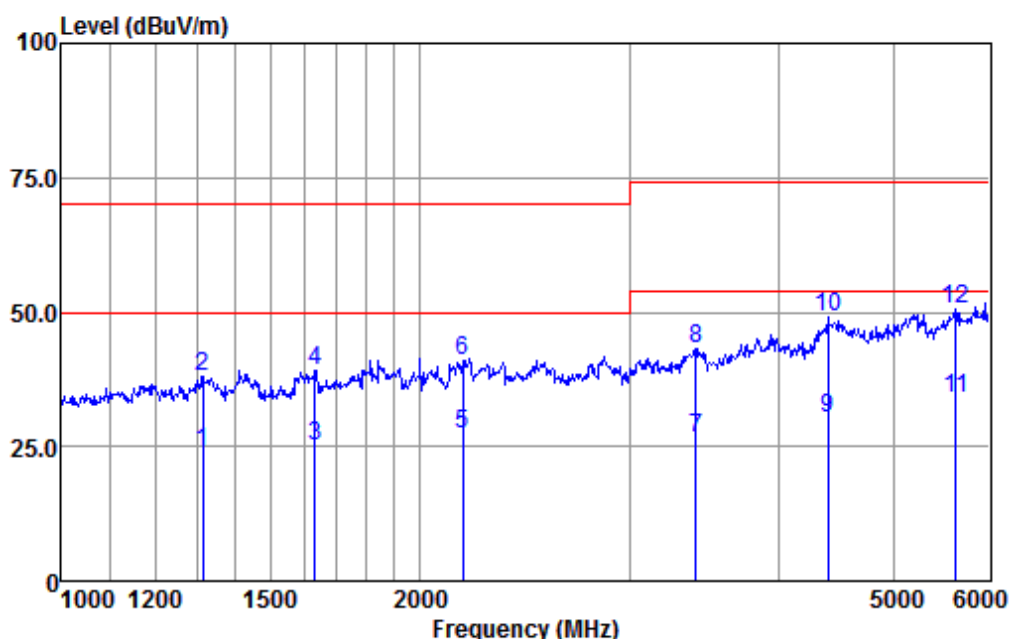


Condition : HORIZONTAL
EUT/Project: 3703IT
Test Mode : a

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1346.79	37.39	24.91	3.60	41.88	24.02	50.00	-25.98	Average
2	1346.79	52.78	24.91	3.60	41.88	39.41	70.00	-30.59	Peak
3	1501.85	36.72	25.21	3.85	41.93	23.85	50.00	-26.15	Average
4	1501.85	53.92	25.21	3.85	41.93	41.05	70.00	-28.95	Peak
5	2645.75	34.09	27.75	5.52	42.02	25.34	50.00	-24.66	Average
6	2645.75	50.38	27.75	5.52	42.02	41.63	70.00	-28.37	Peak
7	3711.90	32.58	29.20	6.51	41.90	26.39	54.00	-27.61	Average
8	3711.90	52.18	29.20	6.51	41.90	45.99	74.00	-28.01	Peak
9	4571.11	31.28	30.76	7.89	41.65	28.28	54.00	-25.72	Average
10	4571.11	52.15	30.76	7.89	41.65	49.15	74.00	-24.85	Peak
11	5818.54	30.74	32.34	8.38	41.90	29.56	54.00	-24.44	Average
12 p	5818.54	52.42	32.34	8.38	41.90	51.24	74.00	-22.76	Peak



Mode:a, Polarization:Vertical

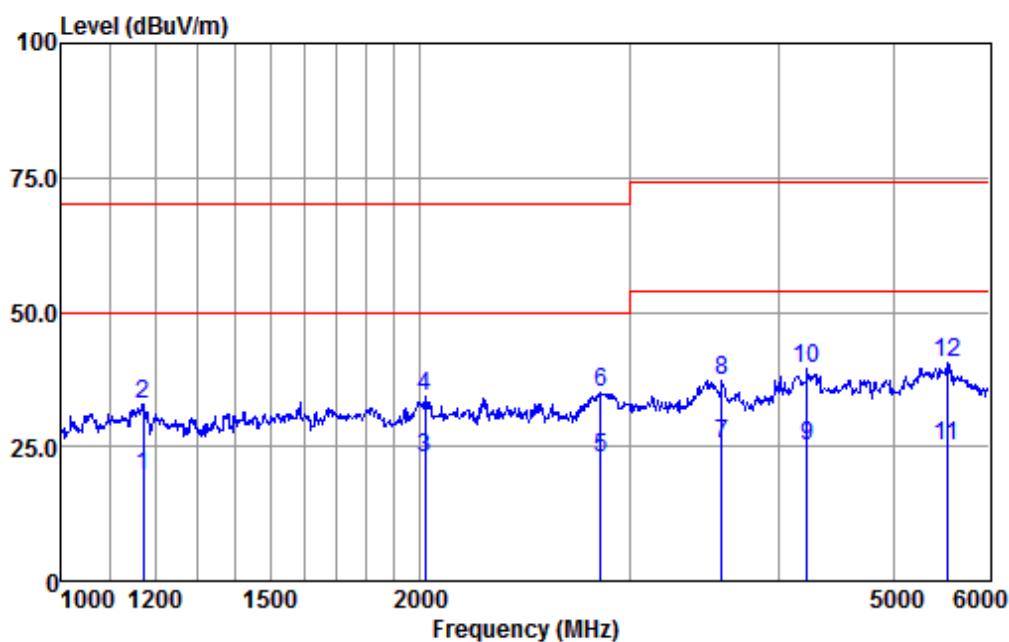


Condition : VERTICAL
EUT/Project: 3703IT
Test Mode : a

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1315.71	37.51	24.85	3.57	41.87	24.06	50.00	-25.94	Average
2	1315.71	51.41	24.85	3.57	41.87	37.96	70.00	-32.04	Peak
3	1632.92	37.83	25.44	4.01	42.02	25.26	50.00	-24.74	Average
4	1632.92	51.79	25.44	4.01	42.02	39.22	70.00	-30.78	Peak
5	2173.67	38.11	26.53	4.78	42.20	27.22	50.00	-22.78	Average
6	2173.67	51.91	26.53	4.78	42.20	41.02	70.00	-28.98	Peak
7	3407.31	33.43	28.75	6.18	41.83	26.53	54.00	-27.47	Average
8	3407.31	50.13	28.75	6.18	41.83	43.23	74.00	-30.77	Peak
9	4405.19	33.77	30.44	7.64	41.71	30.14	54.00	-23.86	Average
10	4405.19	52.82	30.44	7.64	41.71	49.19	74.00	-24.81	Peak
11	5640.17	35.56	32.11	8.34	41.96	34.05	54.00	-19.95	Average
12 p	5640.17	52.00	32.11	8.34	41.96	50.49	74.00	-23.51	Peak



Mode:b, Polarization:Horizontal

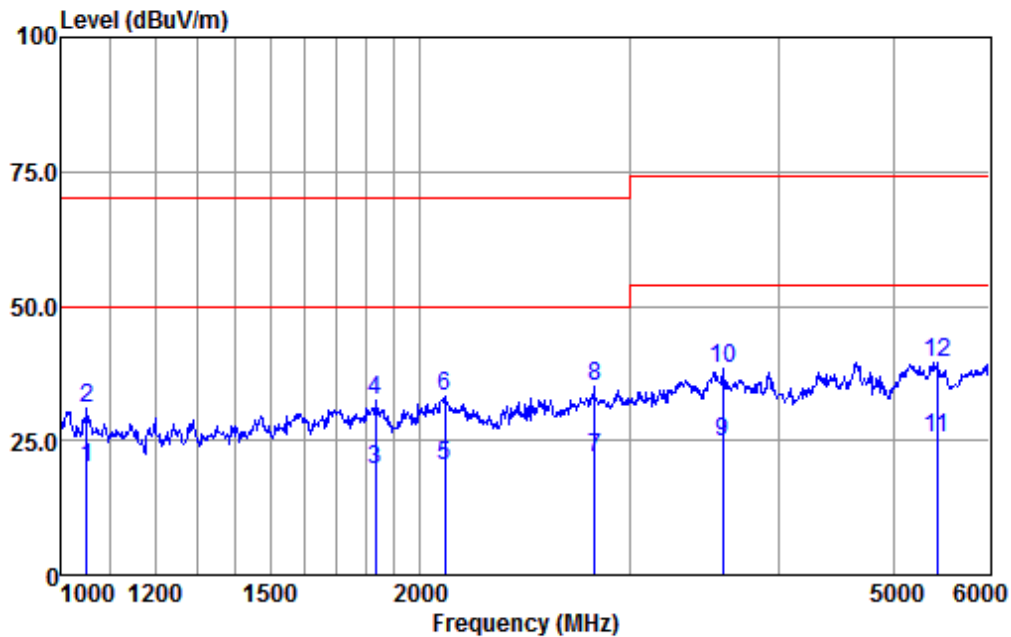


Condition : HORIZONTAL
EUT/Project: 3703IT
Test Mode : a

		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	1170.79	33.32	24.53	3.34	41.81	19.38	50.00	-30.62	Average
2	1170.79	46.79	24.53	3.34	41.81	32.85	70.00	-37.15	Peak
3	2018.53	34.65	26.05	4.50	42.22	22.98	50.00	-27.02	Average
4	2018.53	45.98	26.05	4.50	42.22	34.31	70.00	-35.69	Peak
5	2837.16	30.80	28.17	5.69	41.85	22.81	50.00	-27.19	Average
6	2837.16	43.10	28.17	5.69	41.85	35.11	70.00	-34.89	Peak
7	3587.75	31.87	28.97	6.39	41.88	25.35	54.00	-28.65	Average
8	3587.75	43.85	28.97	6.39	41.88	37.33	74.00	-36.67	Peak
9	4230.70	29.27	30.13	7.39	41.82	24.97	54.00	-29.03	Average
10	4230.70	43.63	30.13	7.39	41.82	39.33	74.00	-34.67	Peak
11	5535.21	26.85	31.95	8.32	42.00	25.12	54.00	-28.88	Average
12 p	5535.21	42.18	31.95	8.32	42.00	40.45	74.00	-33.55	Peak



Mode:b, Polarization:Vertical

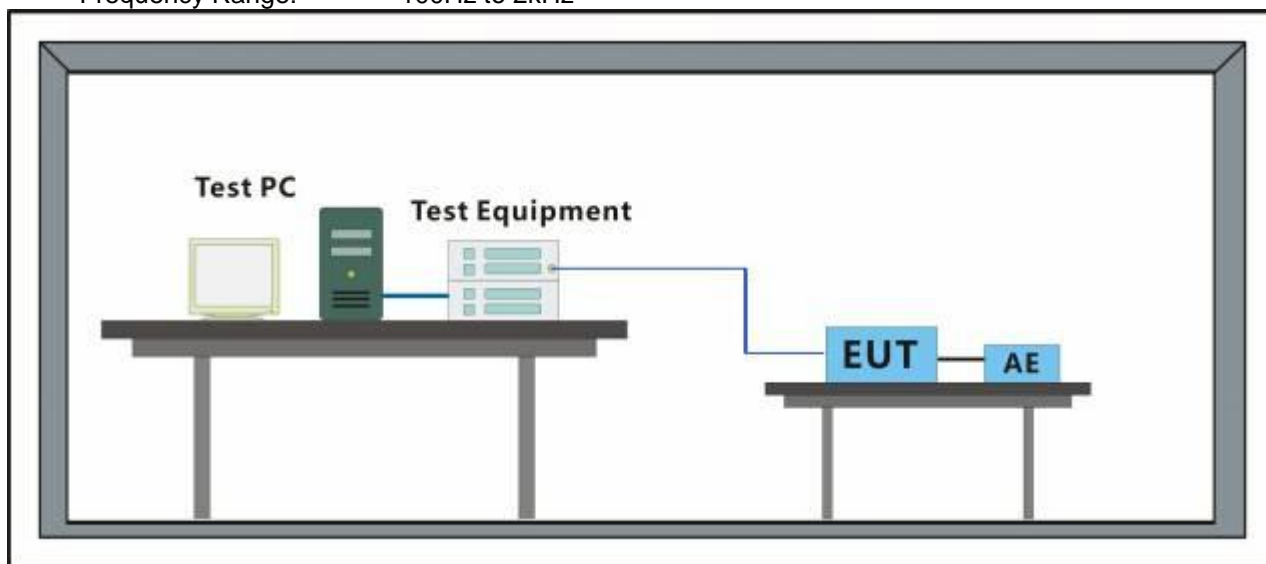


Condition : VERTICAL
EUT/Project: 3703IT
Test Mode : b

		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	1049.57	34.48	24.23	2.97	41.76	19.92	50.00	-30.08	Average
2	1049.57	45.67	24.23	2.97	41.76	31.11	70.00	-38.89	Peak
3	1835.66	31.81	25.76	4.27	42.13	19.71	50.00	-30.29	Average
4	1835.66	44.59	25.76	4.27	42.13	32.49	70.00	-37.51	Peak
5	2099.69	31.71	26.31	4.67	42.21	20.48	50.00	-29.52	Average
6	2099.69	44.34	26.31	4.67	42.21	33.11	70.00	-36.89	Peak
7	2801.80	29.89	28.08	5.67	41.89	21.75	50.00	-28.25	Average
8	2801.80	43.20	28.08	5.67	41.89	35.06	70.00	-34.94	Peak
9	3594.18	31.38	28.99	6.39	41.88	24.88	54.00	-29.12	Average
10	3594.18	44.71	28.99	6.39	41.88	38.21	74.00	-35.79	Peak
11	5436.92	27.41	31.86	8.28	41.96	25.59	54.00	-28.41	Average
12 p	5436.92	41.32	31.86	8.28	41.96	39.50	74.00	-34.50	Peak

6.5 Harmonic Current Emission

Test Requirement: EN 61000-3-2:2014
Test Method: EN 61000-3-2:2014
Frequency Range: 100Hz to 2kHz



6.5.1 Measurement Data

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."

6.6 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013

Test Method: EN 61000-3-3:2013

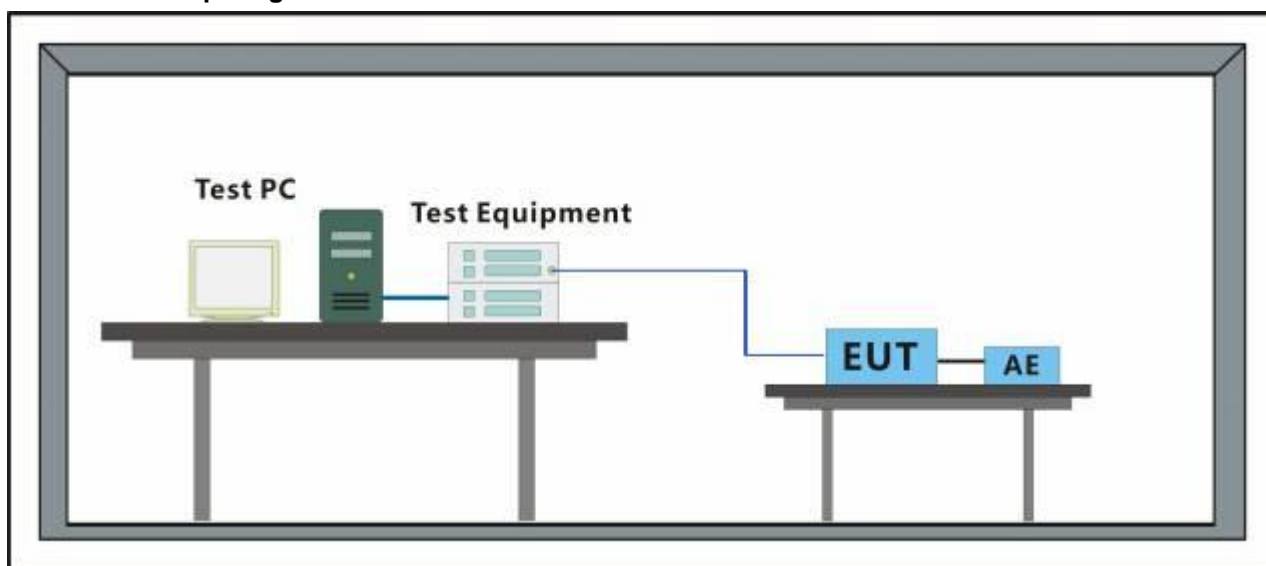
6.6.1 E.U.T. Operation

Operating Environment:

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

Test Mode: a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

6.6.2 Test Setup Diagram



6.6.3 Measurement Data

Mode:a

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.79			
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.80	Test limit (%):	3.30	Pass
Highest dmax (%):	0.98	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.392	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.167	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 (%):	0.70	Test limit (%):	3.30	Pass
Highest dmax (%):	0.88	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.314	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.181	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

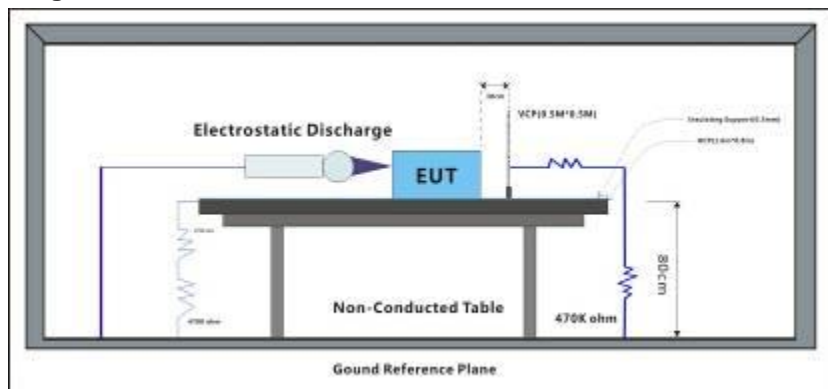
There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as 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: 51 % RH Atmospheric Pressure: 1002 mbar
Test mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

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:

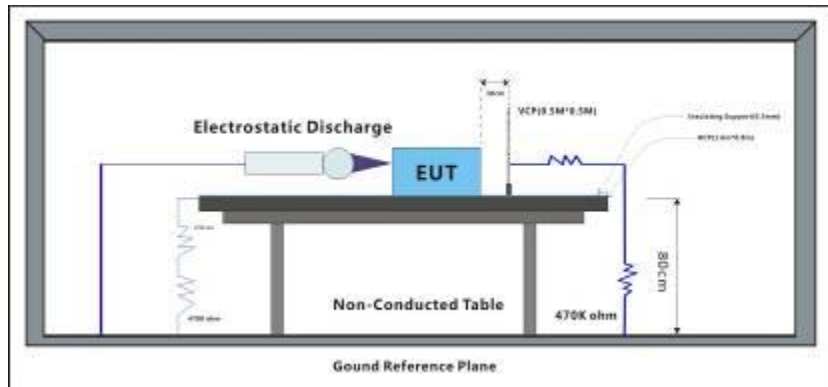
A: No degradation in the performance of the EUT was observed.

7.4 Electrostatic Discharge

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

Test Method: EN 61000-4-2:2009

7.4.1 Test Setup Diagram



7.4.2 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Test mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

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

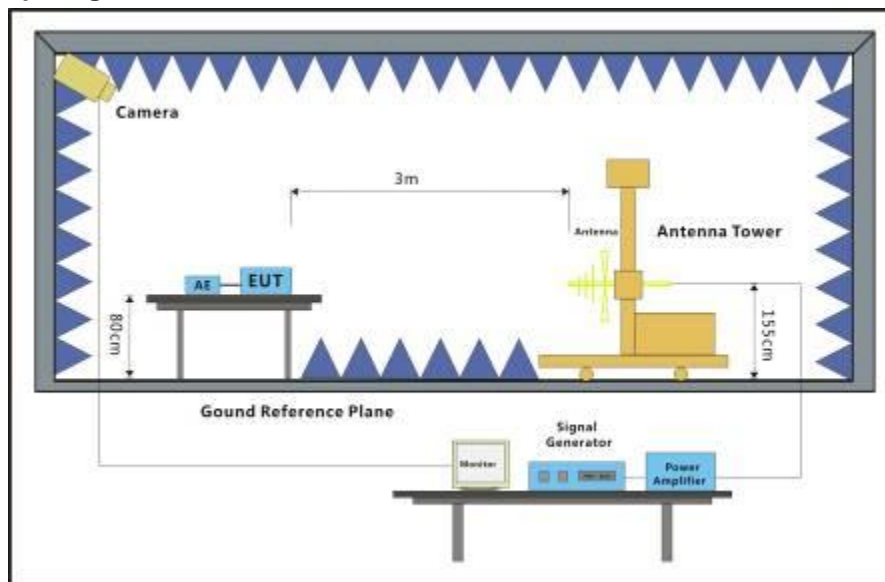
Results:

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

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:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.5.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Underside	2s	A

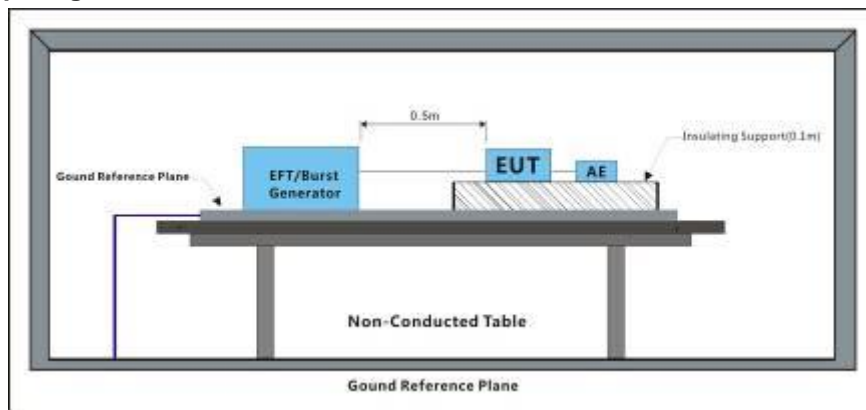
Results:

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

7.6 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

7.6.1 Test Setup Diagram



7.6.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar

Test mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.6.3 Test Results:

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

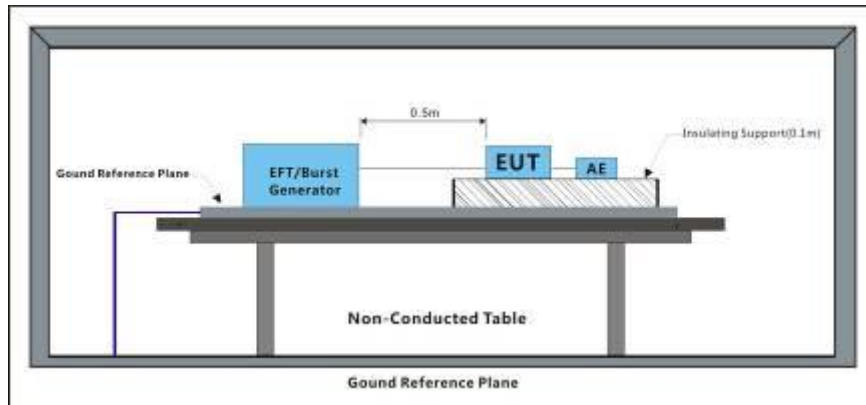
Results:

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

7.7 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

7.7.1 Test Setup Diagram



7.7.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar

Test mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.7.3 Test Results:

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

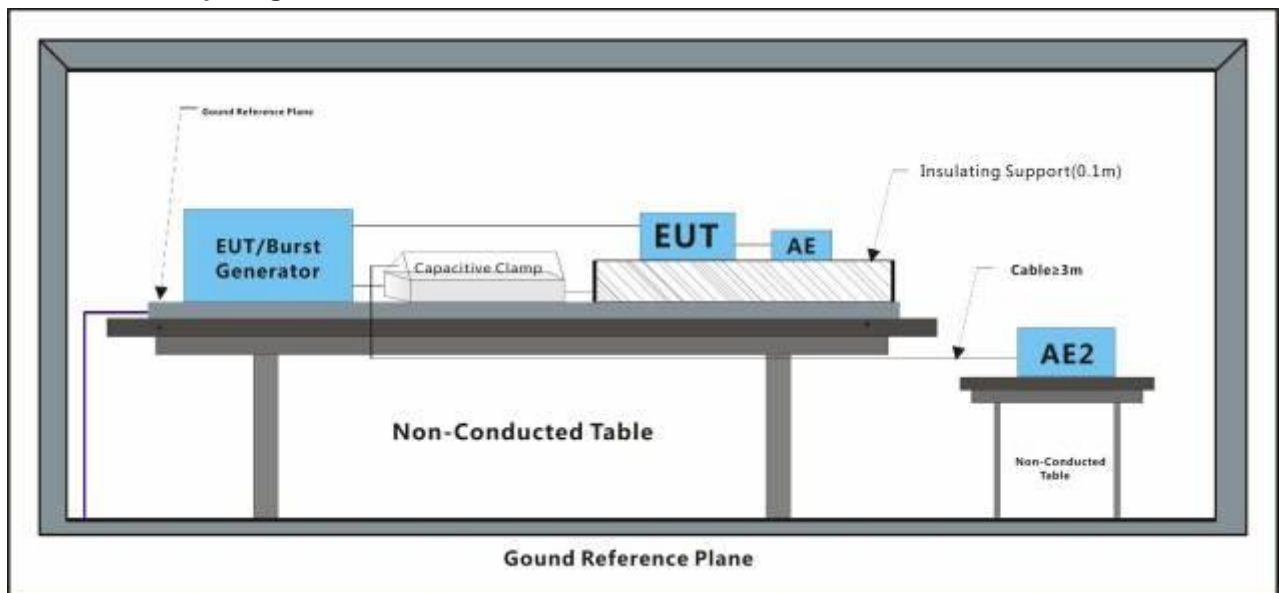
Results:

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

7.8 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

7.8.1 Test Setup Diagram



7.8.2 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Test mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.8.3 Test Results:

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

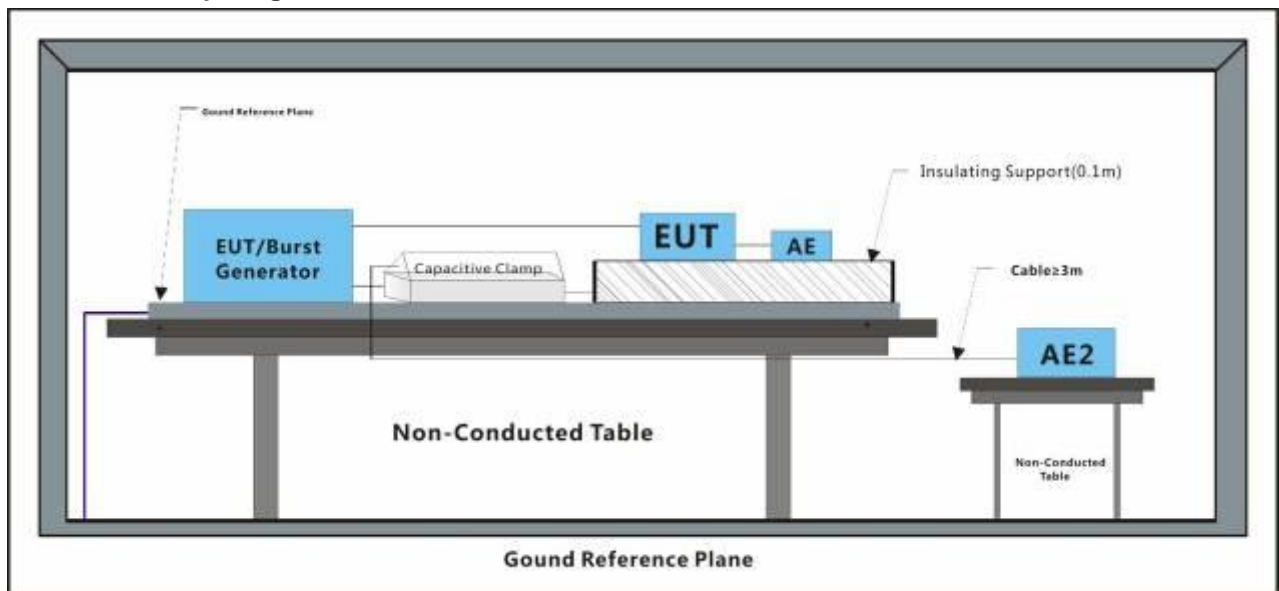
Results:

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

7.9 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

7.9.1 Test Setup Diagram



7.9.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar

Test mode:
a: DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b: PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.9.3 Test Results:

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

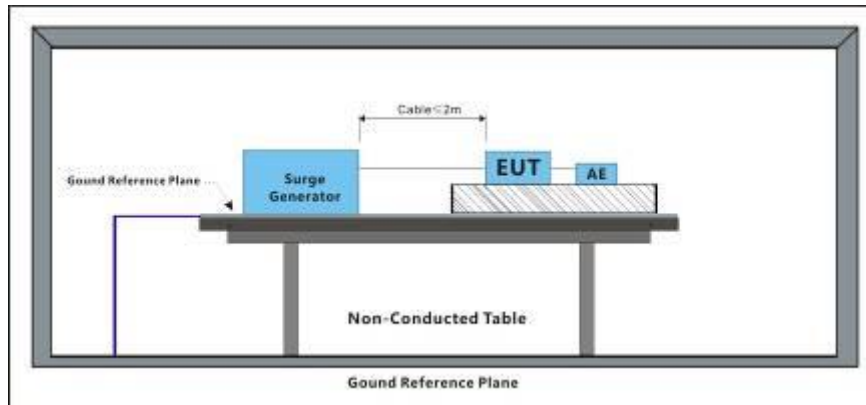
Results:

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

7.10 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°.

7.10.1 Test Setup Diagram



7.10.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar

Test mode: a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.10.3 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:

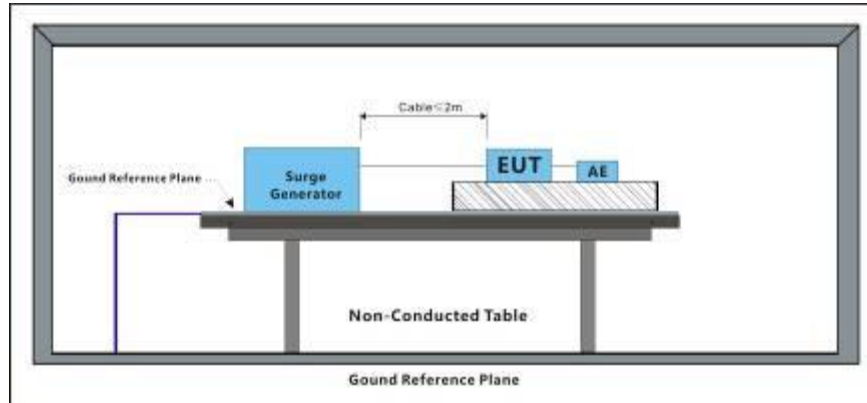
A: No degradation in the performance of the EUT was observed.

7.11 Surge at Power Port

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

Test Method: EN 61000-4-5:2014

7.11.1 Test Setup Diagram



7.11.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar

Test mode:
a: DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b: PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.11.3 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

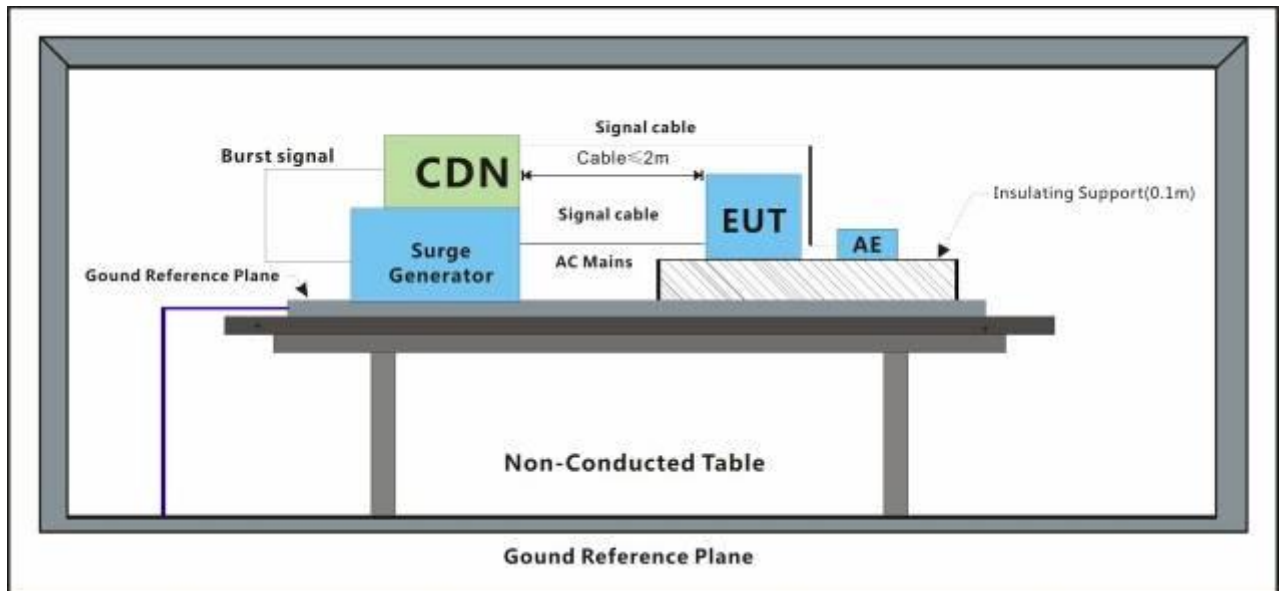
Results:

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

7.12 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

7.12.1 Test Setup Diagram



7.12.2 E.U.T. Operation

Operating Environment:
Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar
Test mode:
a: DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b: PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.12.3 Test Results:

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

Results:

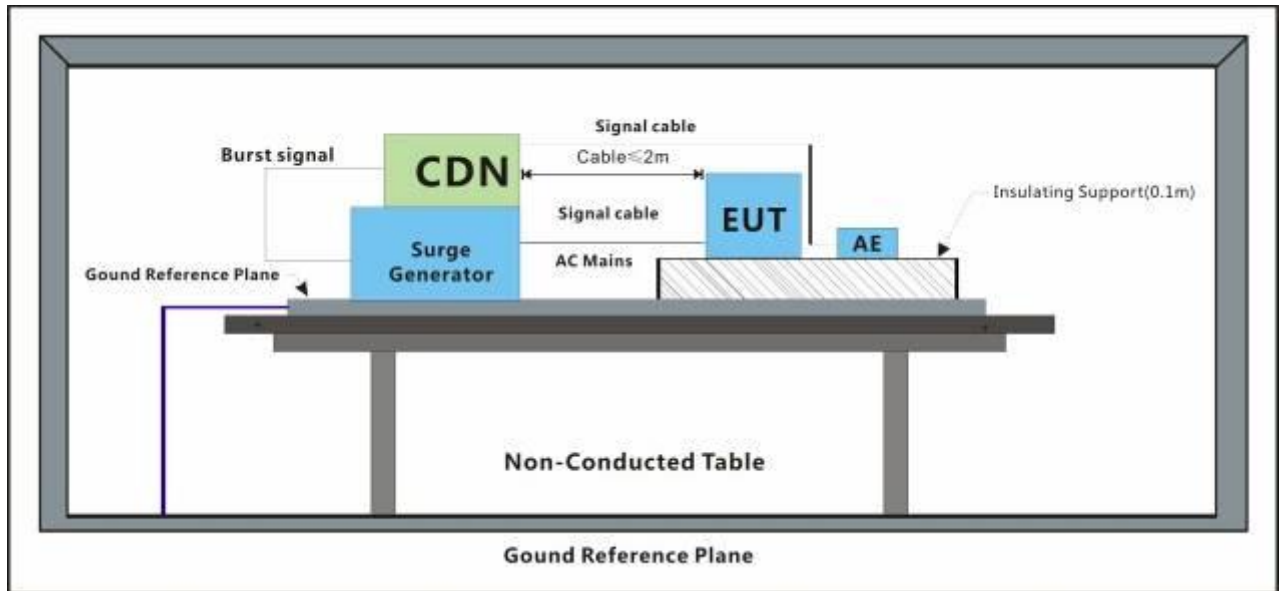
A: No degradation in the performance of the EUT was observed.

7.13 Surge at Signal Port

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

Test Method: EN 61000-4-5:2014

7.13.1 Test Setup Diagram



7.13.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar

Test mode:
a: DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b: PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.13.3 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

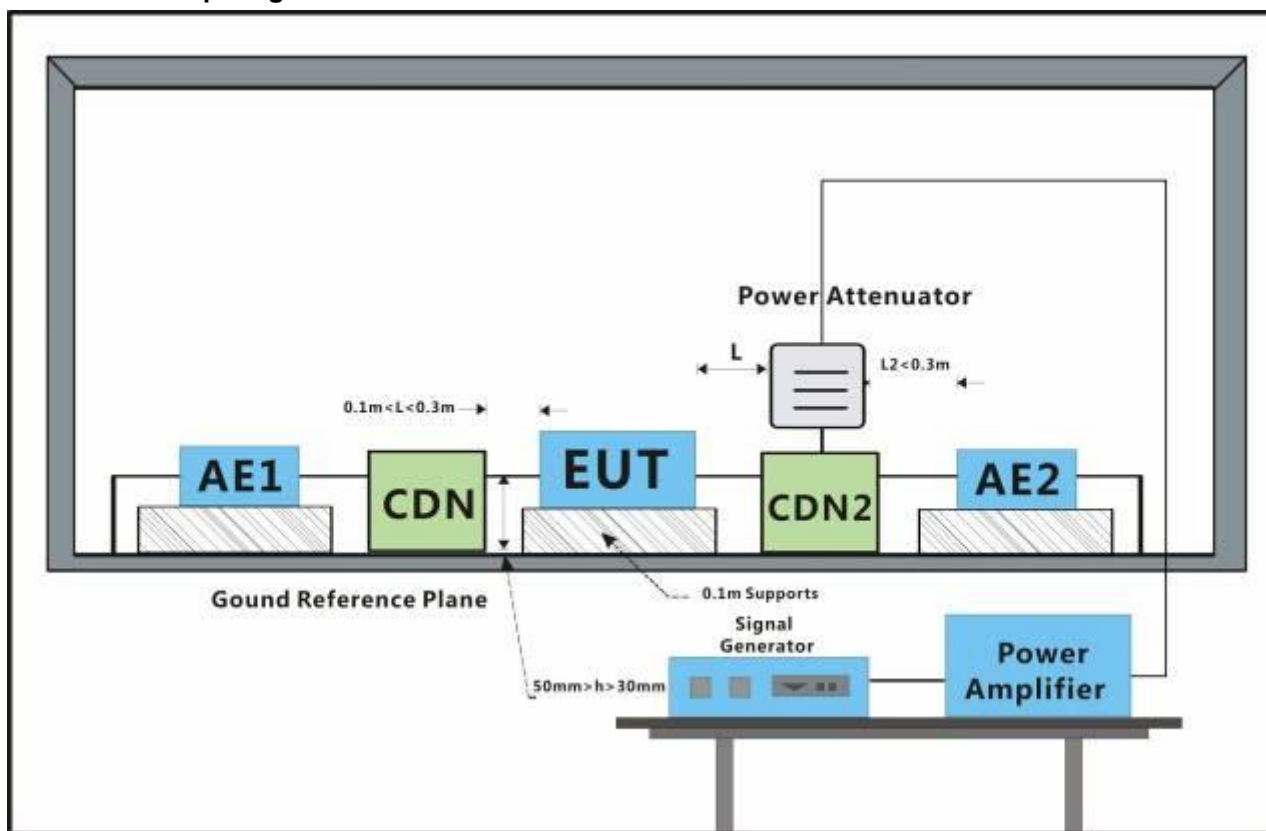
Results:

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

7.14 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%

7.14.1 Test Setup Diagram



7.14.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
Test mode: a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.14.3 Test Results:

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

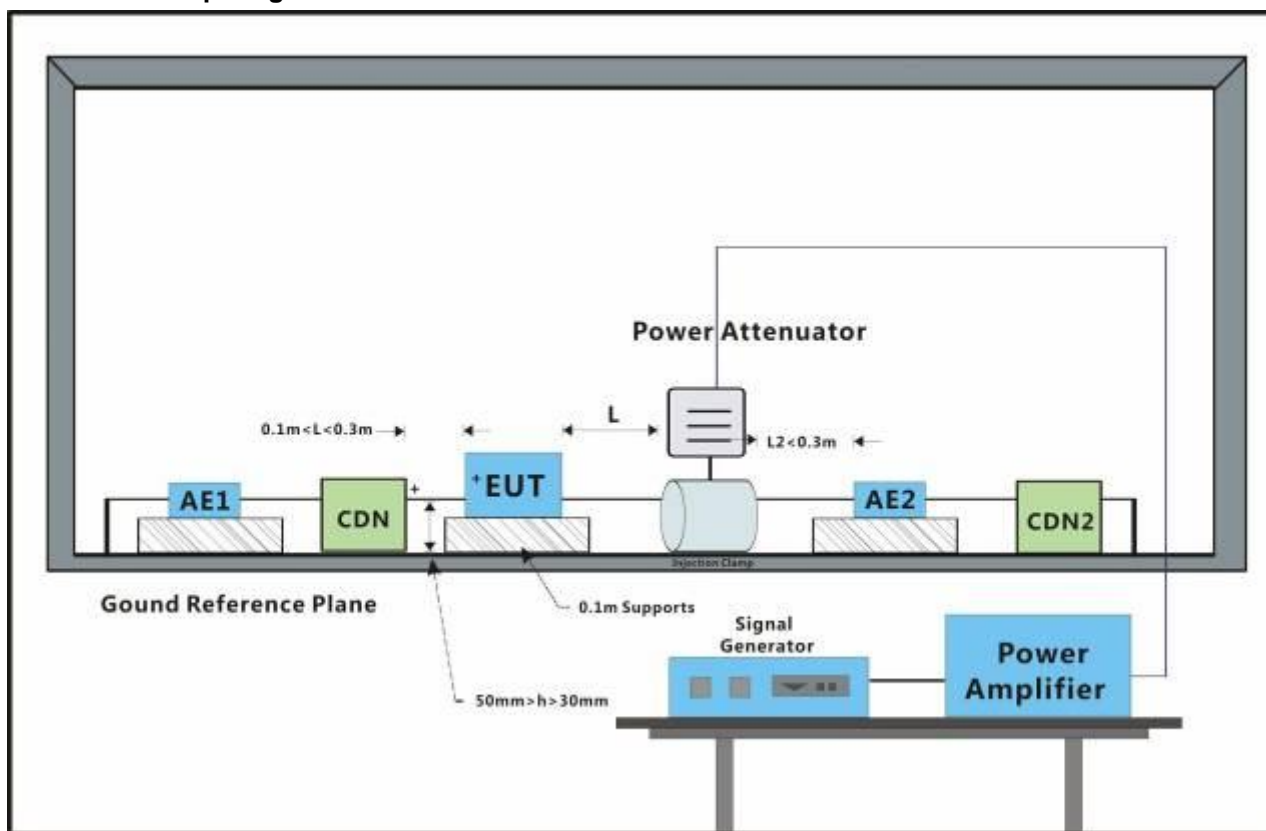
Results:

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

7.15 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%

7.15.1 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: DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b: PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.15.3 Test Results:

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

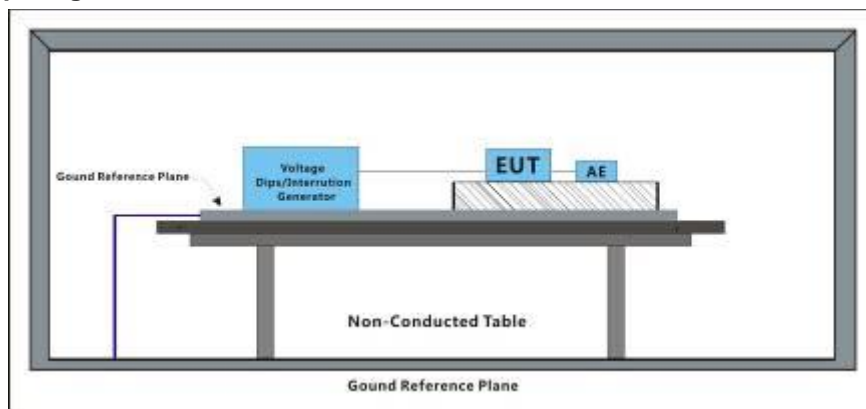
Results:

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

7.16 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

7.16.1 Test Setup Diagram



7.16.2 E.U.T. Operation

Operating Environment:
Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar
Test mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.16.3 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:

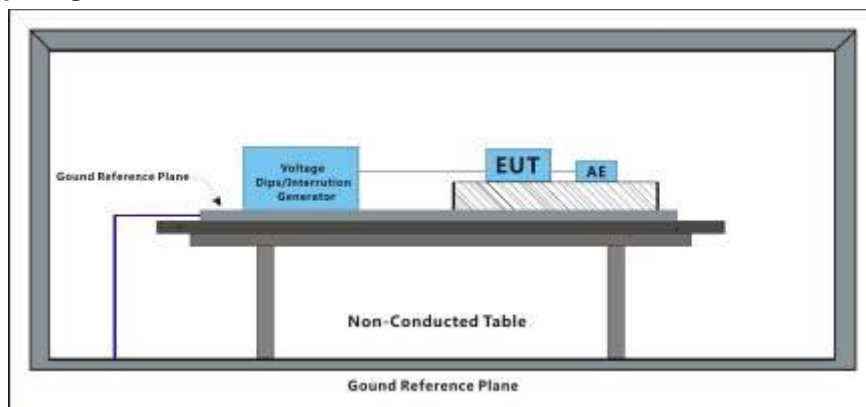
A: No degradation in the performance of the EUT was observed.

B: During test, EUT stop work, After test ,the EUT restarted automatically

7.17 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

7.17.1 Test Setup Diagram



7.17.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar

Test mode: a: DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b: PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.17.3 Test Results:

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
80	0°	250 Cycles	3	A
80	180°	250 Cycles	3	A
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 ,the EUT restarted automatically

7.18 Mains Supply Voltage Variations-Conditioning

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

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

7.18.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 51 % RH Atmospheric Pressure: 1002 mbar

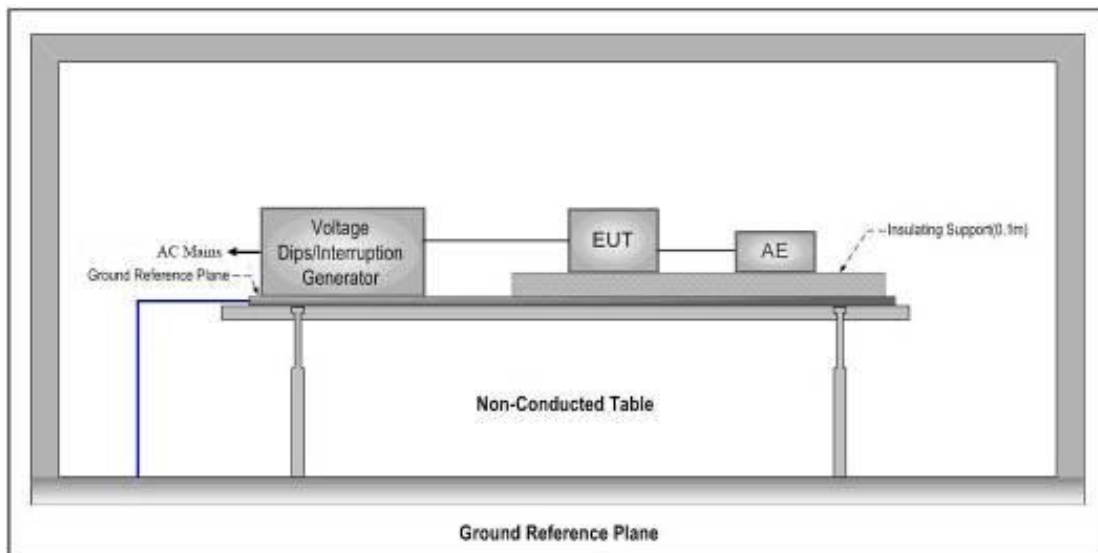
Test mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.18.2 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.

Test Setup:

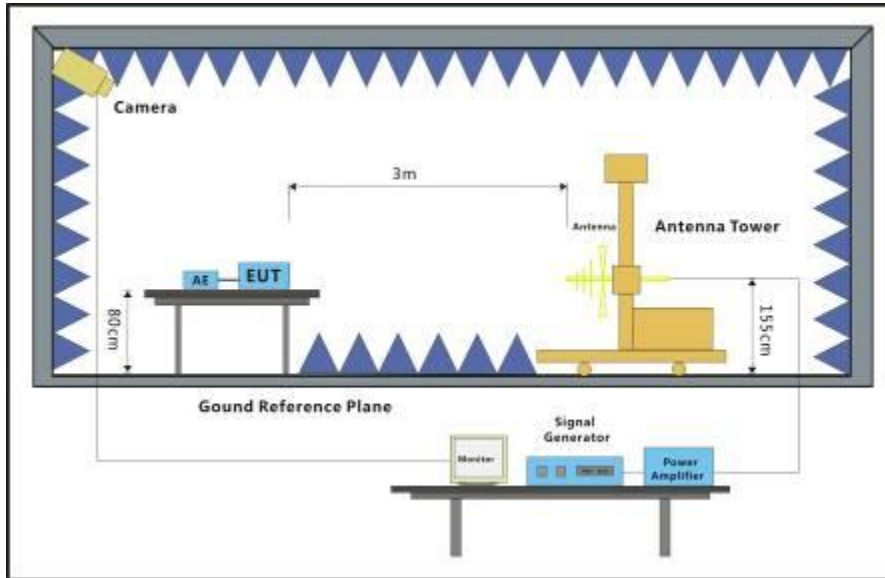


7.19 Radiated Immunity(80MHz-2.7GHz)

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

Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010

7.19.1 Test Setup Diagram



7.19.2 E.U.T. Operation

Operating Environment:

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

Test mode:
a:DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b:PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.19.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-2.7GHz	10	Front	2s	A
80MHz-2.7GHz	10	Back	2s	A
80MHz-2.7GHz	10	Left	2s	A
80MHz-2.7GHz	10	Right	2s	A
80MHz-2.7GHz	10	Top	2s	A
80MHz-2.7GHz	10	Underside	2s	A

Results:

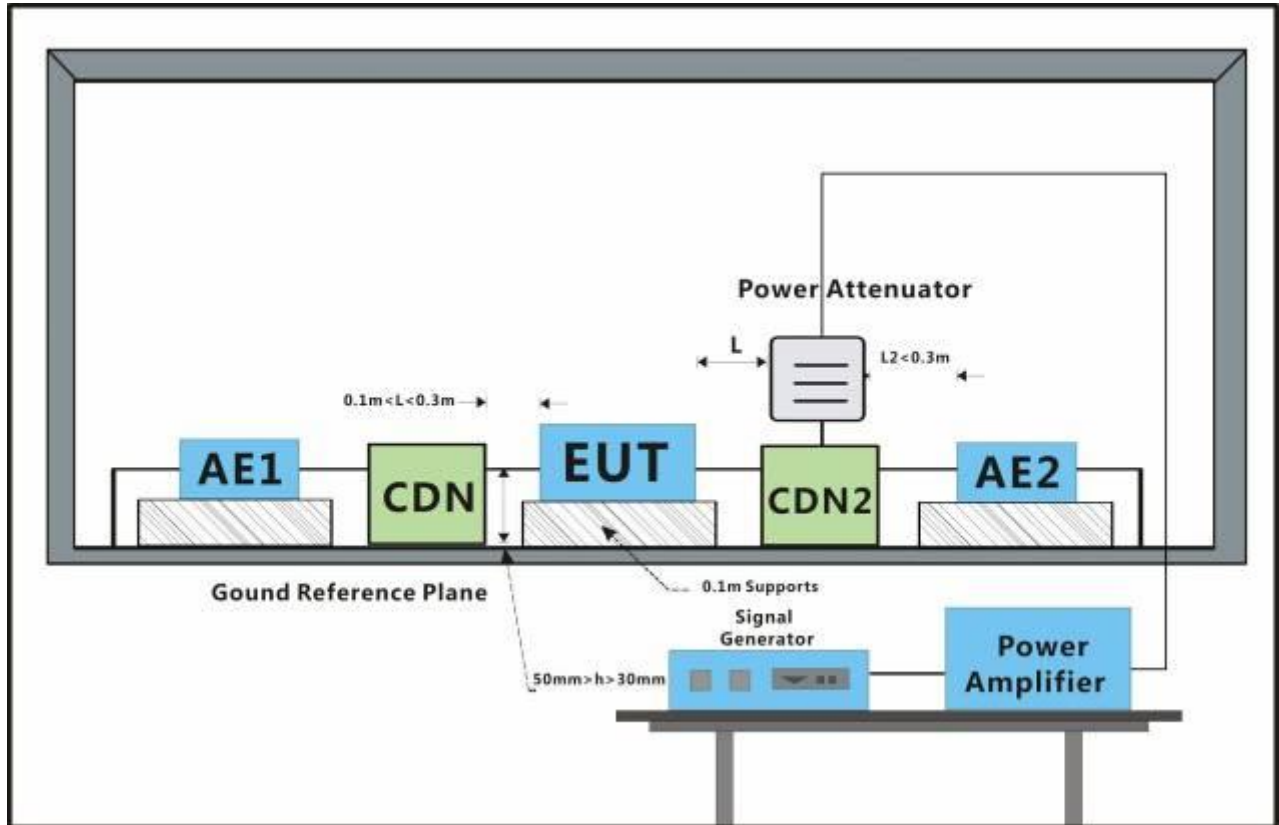
A: No degradation in the performance of the EUT was observed.

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

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

Test Method: EN 61000-4-6:2014

7.20.1 Test Setup Diagram



7.20.2 E.U.T. Operation

Operating Environment:

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

Test mode:
a: DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b: PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.20.3 Test Results:

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	10	CDN	2s	A

Results:

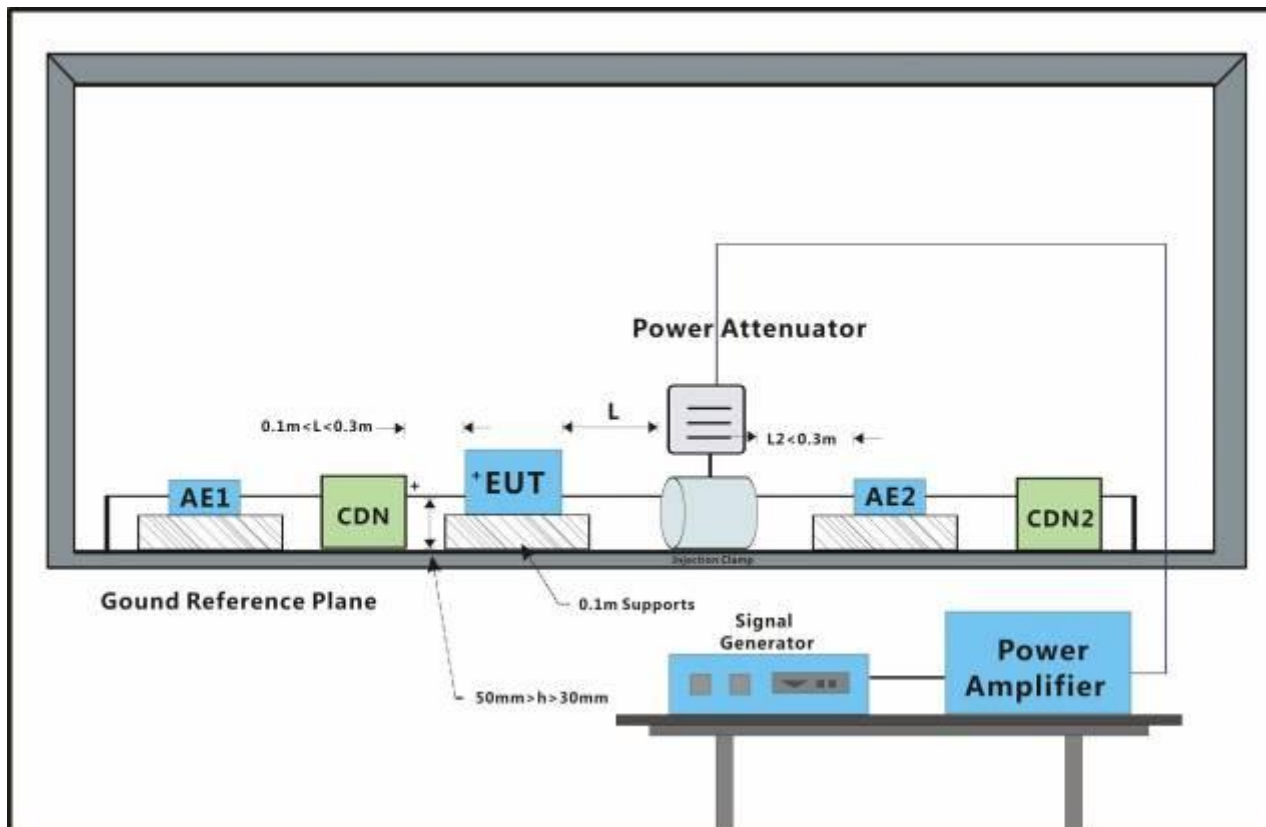
A: No degradation in the performance of the EUT was observed.

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

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

Test Method: EN 61000-4-6:2014

7.21.1 Test Setup Diagram



7.21.2 E.U.T. Operation

Operating Environment:

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

Test mode:
a: DC12V monitoring : the EUT powered by DC12V and keep monitoring continual
b: PoE monitoring : the EUT powered by PoE and keep monitoring continual

7.21.3 Test Results:

Port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
Signal port	10	Coupling	2s	A

Results:

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

8 Photographs

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



8.2 Asymmetric Mode Conducted Emissions (150kHz-30MHz) Test Setup





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





8.4 Radiated Emissions (above 1GHz) Test Setup



8.5 Voltage Fluctuations and Flicker Test Setup

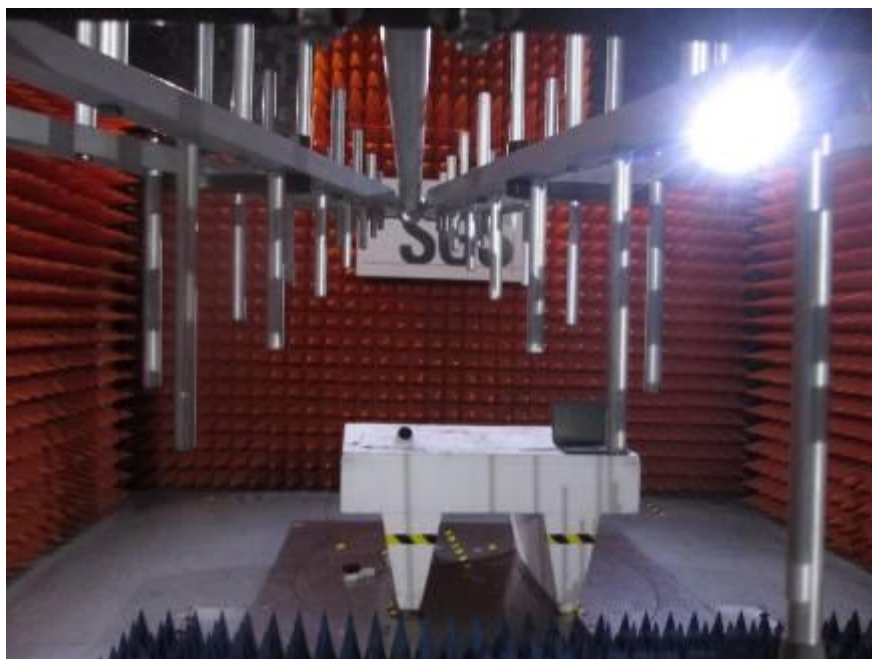


8.6 Electrostatic Discharge Test Setup





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



8.8 Electrical Fast Transients/Burst at Power Port Test Setup



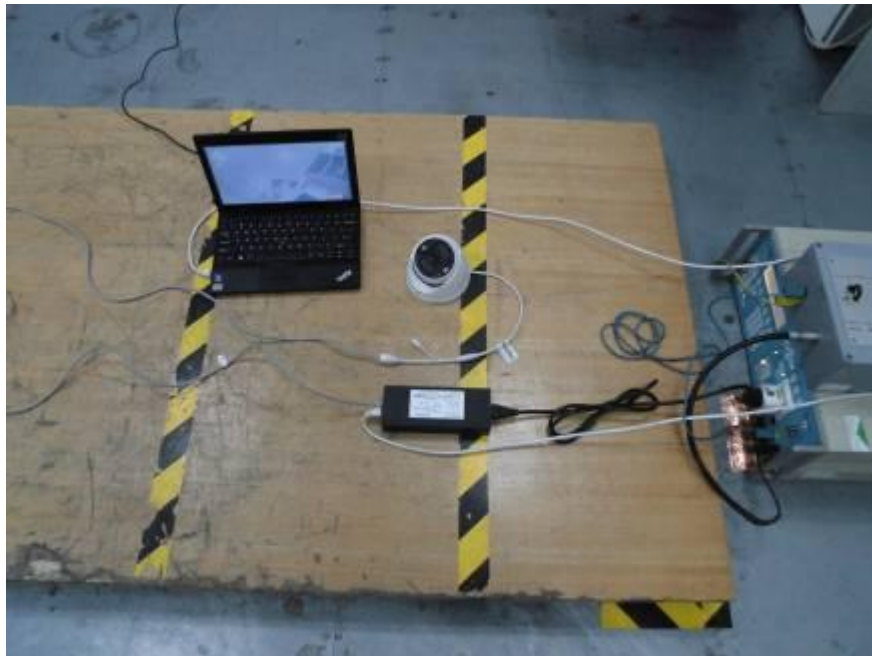
8.9 Electrical Fast Transients/Burst at Signal Port Test Setup



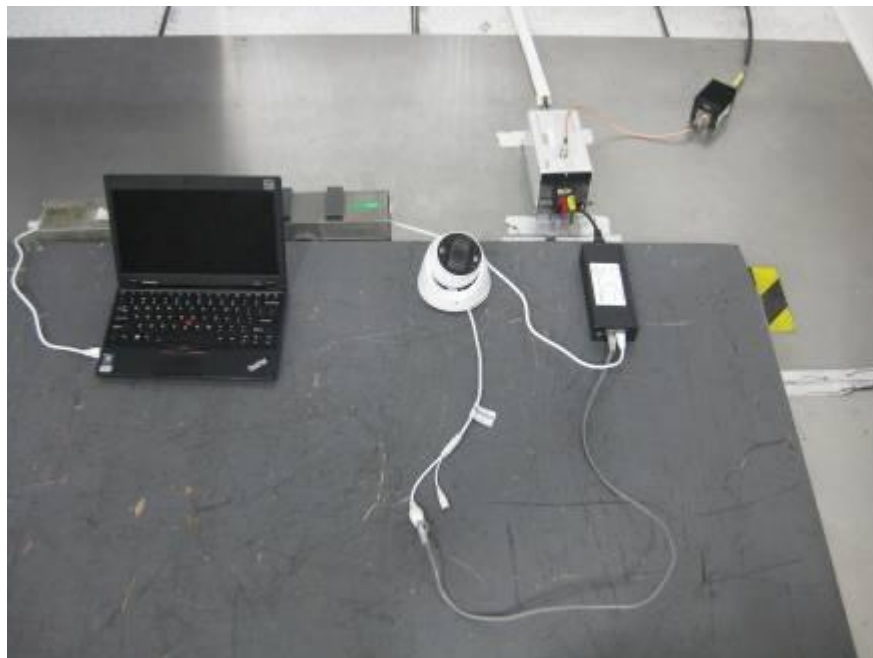
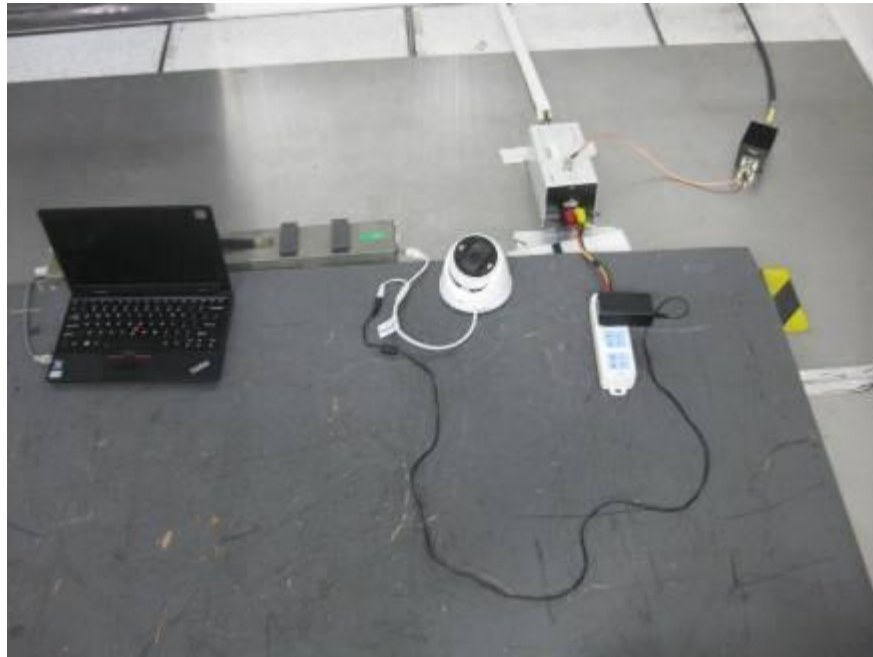
8.10 Surge at Power Port Test Setup



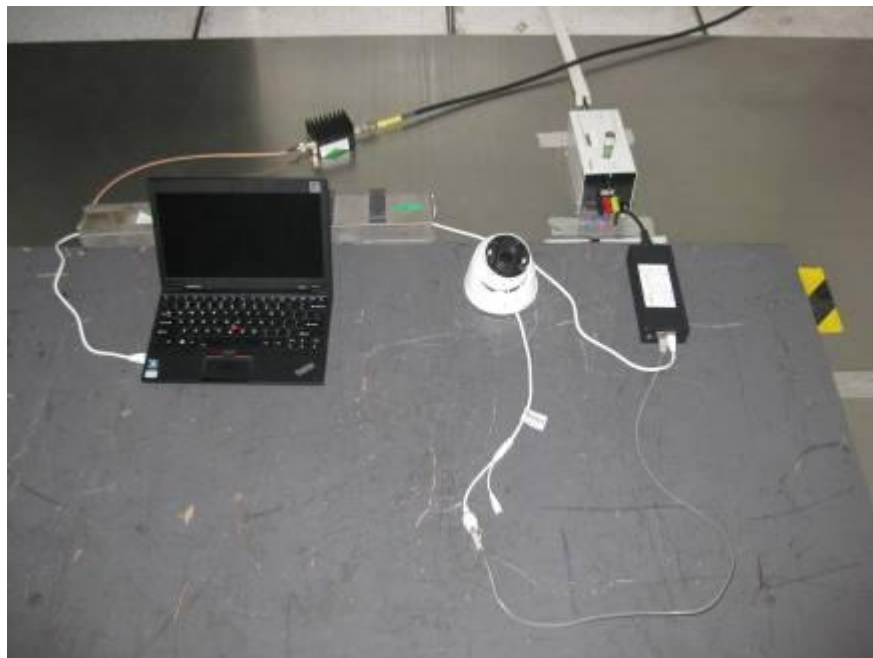
8.11 Surge at Signal Port Test Setup



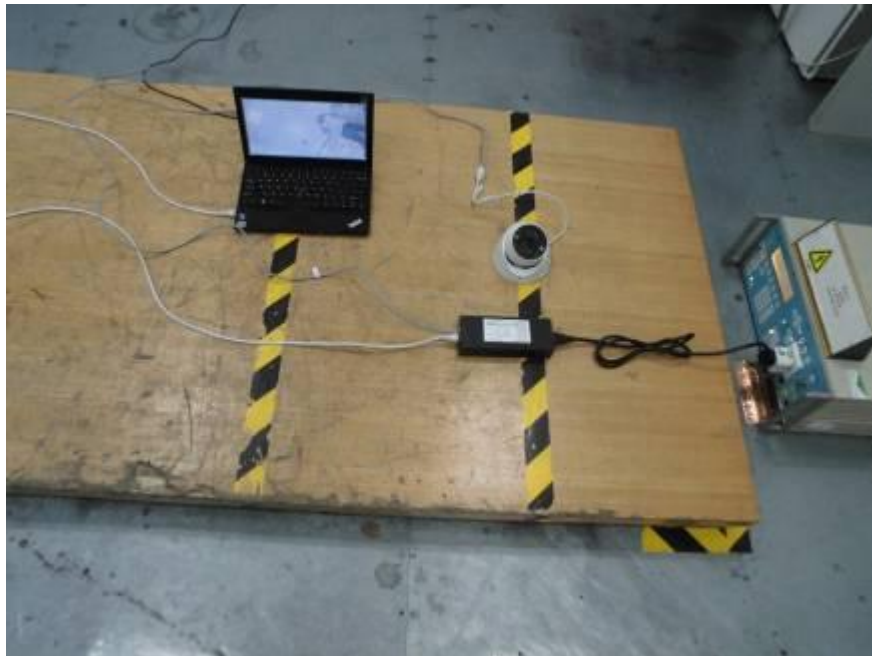
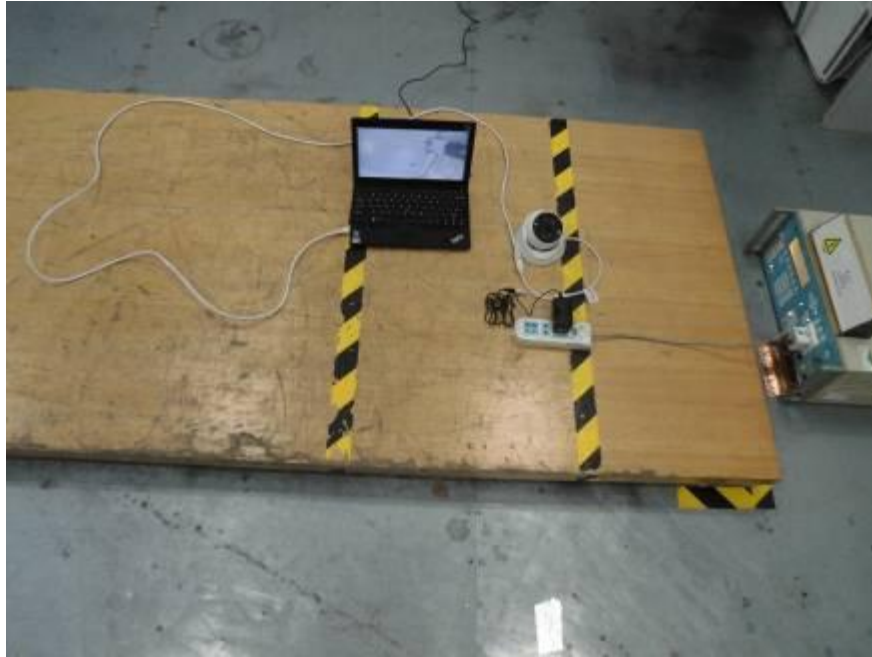
8.12 Conducted Immunity at Power Port (150kHz-80MHz) Test Setup



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



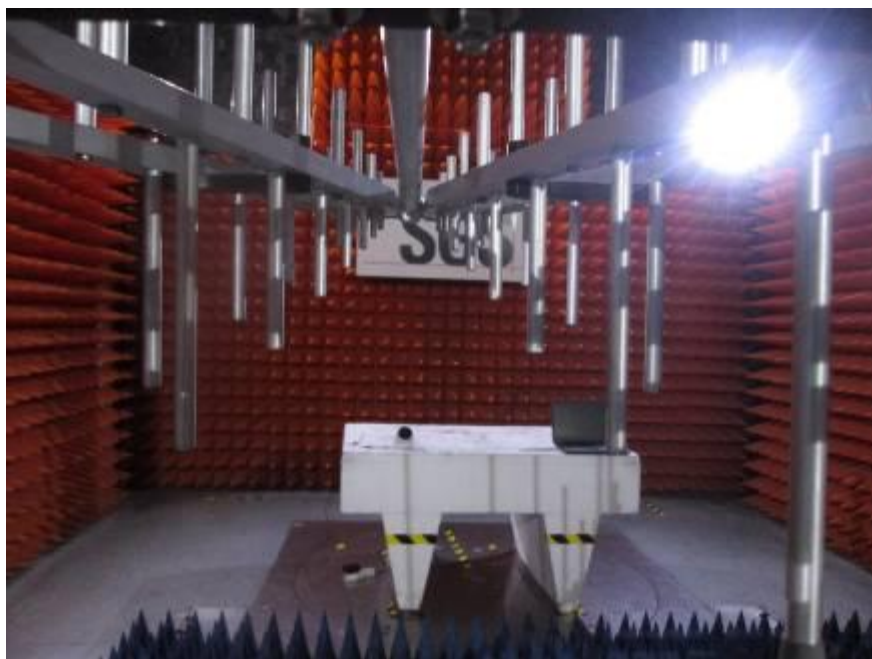
8.14 Voltage Dips and Interruptions Test Setup



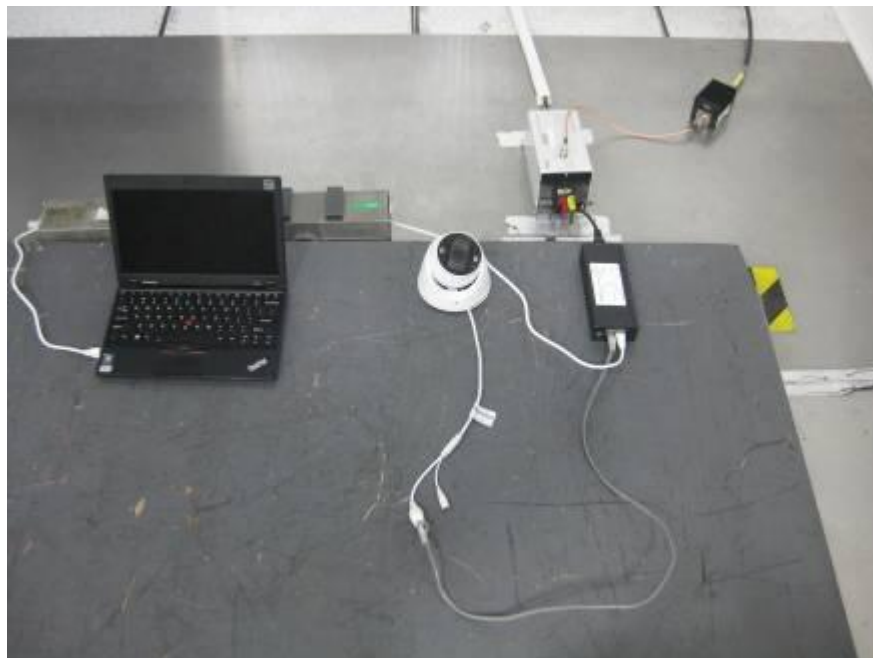
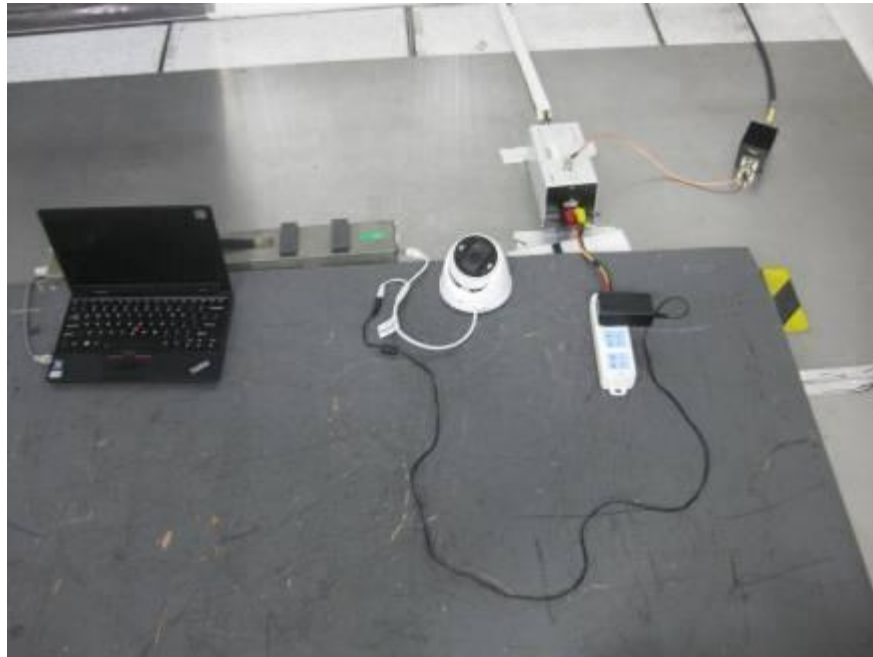
8.15 Mains Supply Voltage Variations-Conditioning Test Setup



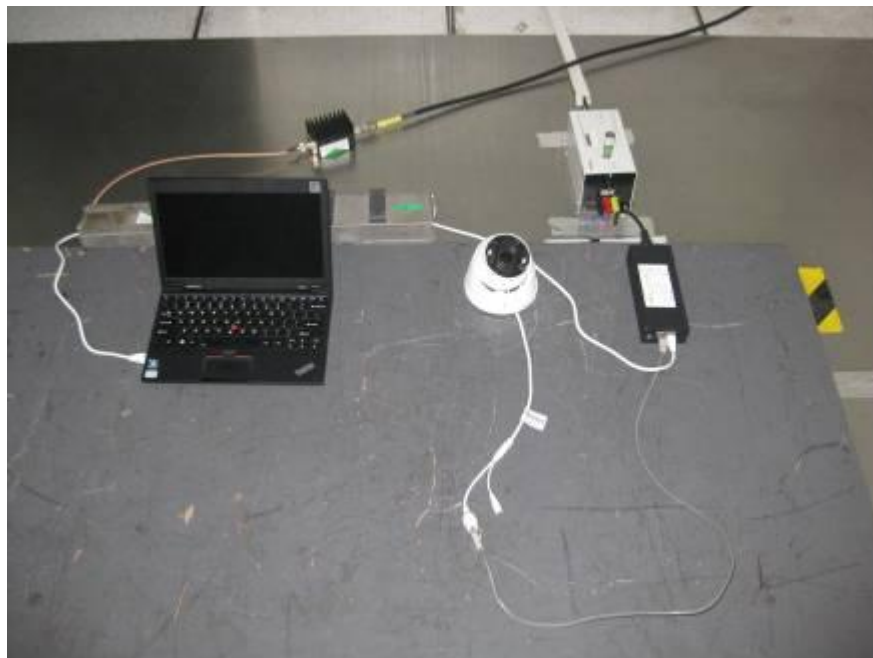
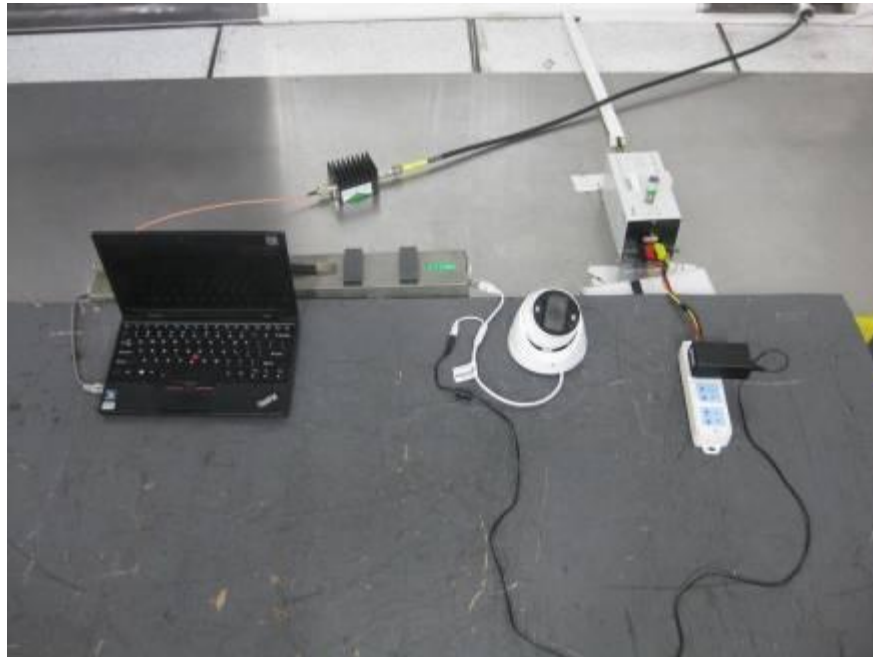
8.16 Radiated Immunity(80MHz-2.7GHz) Test Setup



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



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



8.19 EUT Constructional Details







--End of the Report--