CE Test Report

Product Name ： Network Camera

Model No. ： IB9387-HT, IB9387-EHT, IB9387-LPR, 5.0-H3B-BO3-IR

Applicant ： VIVOTEK INC.

Address ： 6F, No.192, Lien-Cheng Rd., Chung-Ho , New Taipei City, 235, Taiwan, R.O.C.

Date of Receipt ： 2019/04/17

Issued Date ： 2019/05/21

Report No. ： 1940245R-ITCEP01V01

Report Version ： V1.0

Testing Laboratory
3023

Test Report

Issued Date : 2019/05/21
Report No. : 1940245R-ITCEP01V01

Product Name	:	Network Camera
Applicant	:	VIVOTEK INC.
Address	:	6F, No.192, Lien-Cheng Rd., Chung-Ho , New Taipei City, 235, Taiwan, R.O.C.
Manufacturer	:	VIVOTEK INC.
Model No.	:	IB9387-HT, IB9387-EHT, IB9387-LPR, 5.0-H3B-BO3-IR
EUT Rated Voltage	:	By PoE ; DC 12V
EUT Test Voltage	:	AC 230V / 50Hz, By PoE
Trade Name	:	VIVOTEK
Applicable Standard	:	EN 55032: 2015+AC: 2016, Class A EN 55024: 2010+A1: 2015 CISPR 32: 2008 CISPR 24: 2010 AS/NZS CISPR 32: 2015
Test Result	:	Complied
Performed Location	:	DEKRA Testing and Certification Co., Ltd. Linkou Laboratory No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan TEL:+866-2-8601-3788 / FAX:+886-2-8601-3789

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Approved By :
(Director / Vincent Lin)

Laboratory Information

We, **DEKRA Testing and Certification Co., Ltd.**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scopes:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Norway	**:**	**DNVGL**
USA	**:**	**FCC**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site :
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	Network Camera
Trade Name	VIVOTEK
Model No.	IB9387-HT, IB9387-EHT, IB9387-LPR, 5.0-H3B-BO3-IR

Note: The different of each model is shown as below

Model Number	Different
IB9387-HT	Non wide temperature
IB9387-LPR	
5.0-H3B-BO3-IR	
IB9387-EHT	Wide temperature
Note: IB9387-LPR Have SD card	

1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
Mode 1: IB9387-EHT, Adapter Mode 2: IB9387-EHT, PoE	
Final Test Mode	
Emission	Mode 1: IB9387-EHT, Adapter Mode 2: IB9387-EHT, PoE
Immunity	Mode 1: IB9387-EHT, Adapter Mode 2: IB9387-EHT, PoE

1.3. Tested System Details

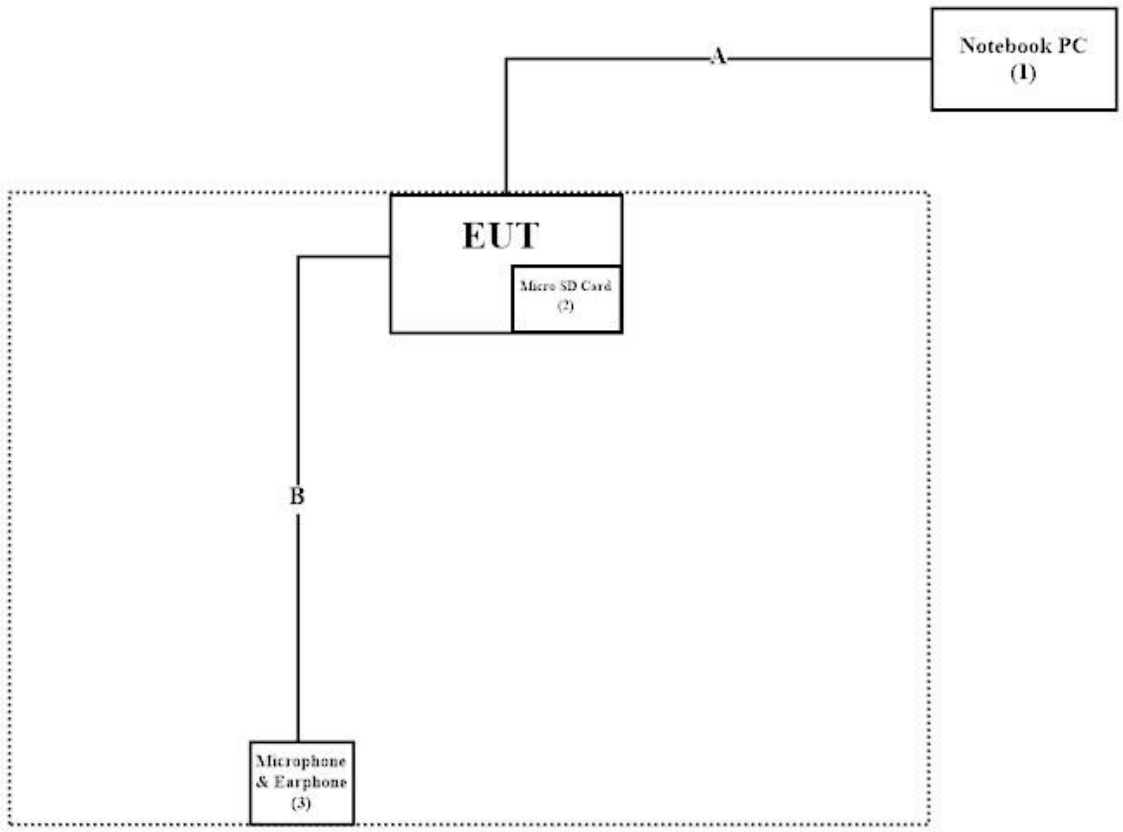
The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Test Mode		Mode 1			
Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude 5580	GDZN7H2	Non-shielded, 0.8m
2	Micro SD Card 1GB	SanDisk	N/A	0734502841D85	N/A
3	Microphone & Earphone	RONEVER	MOE240	N/A	N/A

Test Mode		Mode 2			
Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude 5580	GDZN7H2	Non-shielded, 0.8m
2	PoE	N/A	N/A	N/A	Non-shielded, 1.8m
3	Micro SD Card 1GB	SanDisk	N/A	0734502841D85	N/A
4	Microphone & Earphone	RONEVER	MOE240	N/A	N/A

1.4. Configuration of Tested System

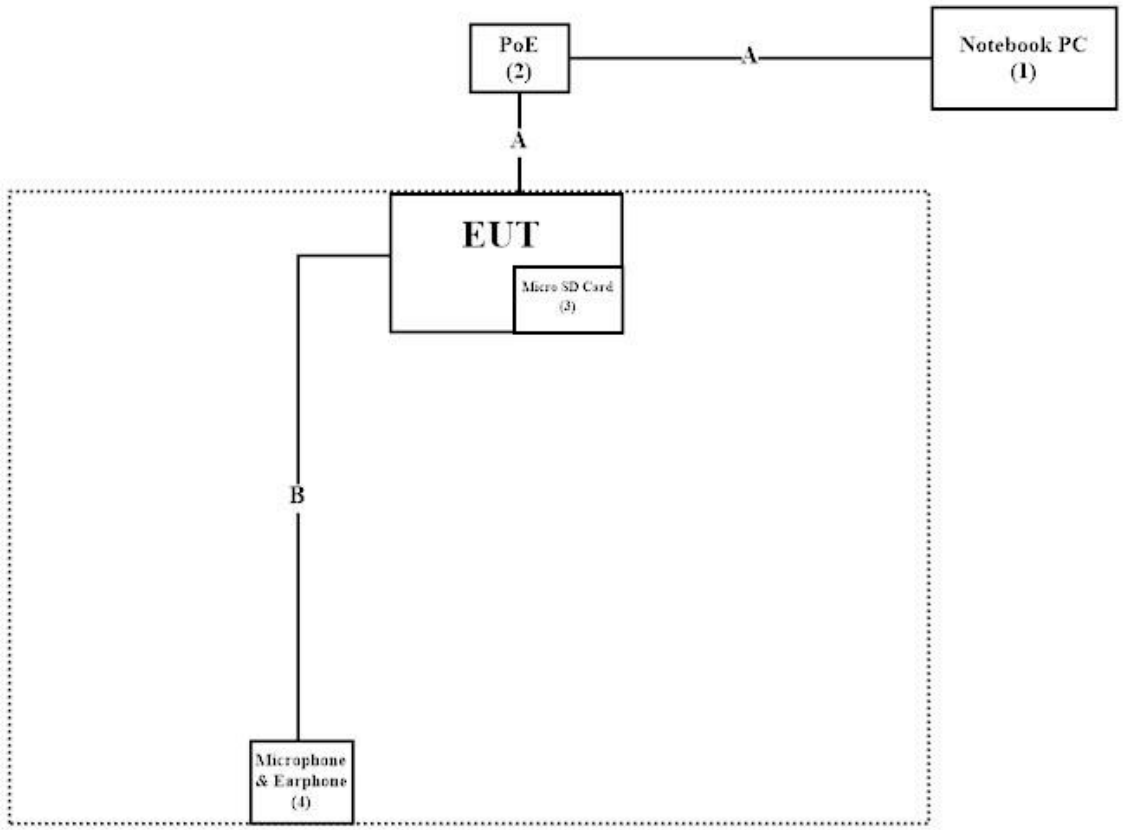
Test Mode	Mode 1
Connection Diagram	



Signal Cable Type		Signal cable Description
A	LAN Cable	Non-shielded, 7m
B	Microphone & Earphone Cable	Non-shielded, 1.2m

Test Mode	Mode 2

Connection Diagram



Signal Cable Type		Signal cable Description
A	LAN Cable	Non-shielded, 7m, two PCS.
B	Microphone & Earphone Cable	Non-shielded, 1.2m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	The EUT will start to operate and display the video figure from the signal source.
4	The EUT will display “video figure” on monitor.
5	SD card works while the EUT is recording.
6	Repeat the above procedure (3) to (5).

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Conducted Emission	EN 55032: 2015+AC: 2016 AS/NZS CISPR 32: 2015	Yes	No
Impedance Stabilization Network	EN 55032: 2015+AC: 2016 AS/NZS CISPR 32: 2015	Yes	No
Radiated Emission	EN 55032: 2015+AC: 2016 AS/NZS CISPR 32: 2015	Yes	No
Power Harmonics	EN 61000-3-2: 2014	Yes	No
Voltage Fluctuation and Flicker	EN 61000-3-3: 2013	Yes	No

Immunity			
Performed Item	Normative References	Test Performed	Deviation
Electrostatic Discharge	IEC 61000-4-2 Ed. 2.0: 2008	Yes	No
Radiated susceptibility	IEC 61000-4-3 Ed. 3.2: 2010	Yes	No
Electrical fast transient/burst	IEC 61000-4-4 Ed. 3.0: 2012	Yes	No
Surge	IEC 61000-4-5 Ed. 3.1: 2014+A1: 2017	Yes	No
Conducted susceptibility	IEC 61000-4-6 Ed. 4.0: 2013	Yes	No
Power frequency magnetic field	IEC 61000-4-8 Ed. 2.0: 2009	Yes	No
Voltage dips and interruption	IEC 61000-4-11 Ed. 2.1: 2004 +A1: 2017	Yes	No

2.2. List of Test Equipment

Conducted Emission / SR8

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCS 30	100369	2018/11/19
LISN	R&S	ENV216	100097	2019/02/18
LISN	R&S	ESH3-Z5	836679/017	2019/02/18
Coaxial Cable	DEKRA	RG 400	LC018-RG	2018/06/21

Impedance Stabilization Network / SR8

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCS 30	100369	2018/11/19
LISN	R&S	ENV216	100097	2019/02/18
LISN	R&S	ESH3-Z5	836679/017	2019/02/18
Coaxial Cable	DEKRA	RG 400	LC018-RG	2018/06/21
Capacitive Voltage Probe	Schaffner	CVP2200A	18331	2018/12/03
RF Current Probe	FCC	F-65	198	2018/12/13
BALANCED TELECOM ISN	FCC	FCC-TLISN-T2-02	20316	2018/09/14
Impedance Stabilization Network	Teseq	ISN T800	42815	2018/07/12

Radiated Emission / Site7

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Broadband Antenna	Schwarzbeck	VULB 9168	0852	2019/02/02
EMI Test Receiver	R&S	ESCI	100649	2018/07/20
Coaxial Cable	DEKRA	RG 214	LC007-RG	2018/06/18
Pre-Amplifier	DEKRA	AP/0100A	CHM/1009094	2018/06/18
Site7 NSA	DEKRA	N/A	N/A	2018/06/18

Radiated Emission / CB7

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESU26	100433	2018/11/13
Horn Antenna	ETS-Lindgren	3117	00202723	2018/08/08
Horn Antenna	SCHWARZBECK	9120D	576	2018/12/18
Pre-Amplifier	EMCI	EMC051845SE	980359	2018/10/24
CB7 VSWR	DEKRA	N/A	N/A	2018/06/25

Electrostatic Discharge / SR6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
ESD Simulator System	Noiseken	ESS-B3011	ESS1233479	2018/05/16
ESD GUN	Noiseken	GT-30R	ESS1233499	2018/05/16
Horizontal Coupling Plane(HCP)	QuieTek	HCP AL50	N/A	N/A
Vertical Coupling Plane(VCP)	QuieTek	VCP AL50	N/A	N/A

Radiated susceptibility / CB9

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Signal Generator	Keysight	N5171B	MY53051650	2019/03/05
Power Sensor	Keysight	N1912A	MY55480006	2019/03/06
Stacked double Log.-Per.-Broadband Antenna	SCHWARZBECK	STLP 9129	9129 011	N/A
Power Amplifier	MILMEGA	80RF1000-300	1071481	N/A
Power Amplifier	MILMEGA	AS0860B-50/50	1071482	N/A
uniform field calibration	Dekra	N/A	N/A	2018/06/15

Electrical fast transient/burst / SR6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMS TEST System	TESEQ	NSG 3060	1685	2018/09/02

Surge / SR6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMS TEST System	TESEQ	NSG 3060	1685	2018/09/02

Conducted susceptibility / SR6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
TESEQ RF-Generator	TESEQ	NSG 4070B-30	37490	2018/05/29

Power frequency magnetic field / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
45kVA Power Source	TESEQ	NSG 1007-45	1847A00294	2018/12/19
Magnetic Loop Coil	TESEQ	INA 703	2007	2018/08/02

Voltage dips and interruption / SR6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMS TEST System	TESEQ	NSG 3060	1685	2018/09/02

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 3.44 dB.

Impedance Stabilization Network

The measurement uncertainty is evaluated as ± 3.88 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 4.22 dB.

Radiated Emission Above 1GHz

The measurement uncertainty is evaluated as ± 5.08 dB.

Electrostatic Discharge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in ESD testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant ESD standards. The immunity test signal from the ESD system meet the required specifications in IEC 61000-4-2 through the calibration report with the calibrated uncertainty for the waveform of voltage, current and timing as being 1.5 %, 4.6% and 6.7%.

Radiated susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in RS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant RS standards. The immunity test signal from the RS system meet the required specifications in IEC 61000-4-3 through the calibration for the uniform field strength and monitoring for the test level with the uncertainty evaluation report for the electrical filed strength as being 3.57 dB.

Electrical fast transient/burst

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in EFT/Burst testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant EFT/Burst standards. The immunity test signal from the EFT/Burst system meet the required specifications in IEC 61000-4-4 through the calibration report with the calibrated uncertainty for the waveform of voltage, frequency and timing as being 6.3 %,5.1% and 5.3%.

Surge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in Surge testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant Surge standards. The immunity test signal from the Surge system meet the required specifications in IEC 61000-4-5 through the calibration report with the calibrated uncertainty for the waveform of voltage, current and timing as being 5.6 %, 7.7% and 4.6%.

Conducted susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in CS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant CS standards. The immunity test signal from the CS system meet the required specifications in IEC 61000-4-6 through the calibration for unmodulated signal and monitoring for the test level with the uncertainty evaluation report for the injected modulated signal level through CDN and EM Clamp/Direct Injection as being 2.15 dB and 3.3 dB.

Power frequency magnetic field

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in PFM testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant PFM standards. The immunity test signal from the PFM system meet the required specifications in IEC 61000-4-8 through the calibration report with the calibrated uncertainty for the Gauss Meter to verify the output level of magnetic field strength as being 2.0 %.

Voltage dips and interruption

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025, the requirements for measurement uncertainty in DIP testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant DIP standards. The immunity test signal from the DIP system meet the required specifications in IEC 61000-4-11 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 5.5 % and 4.5%.

2.4. Test Environment

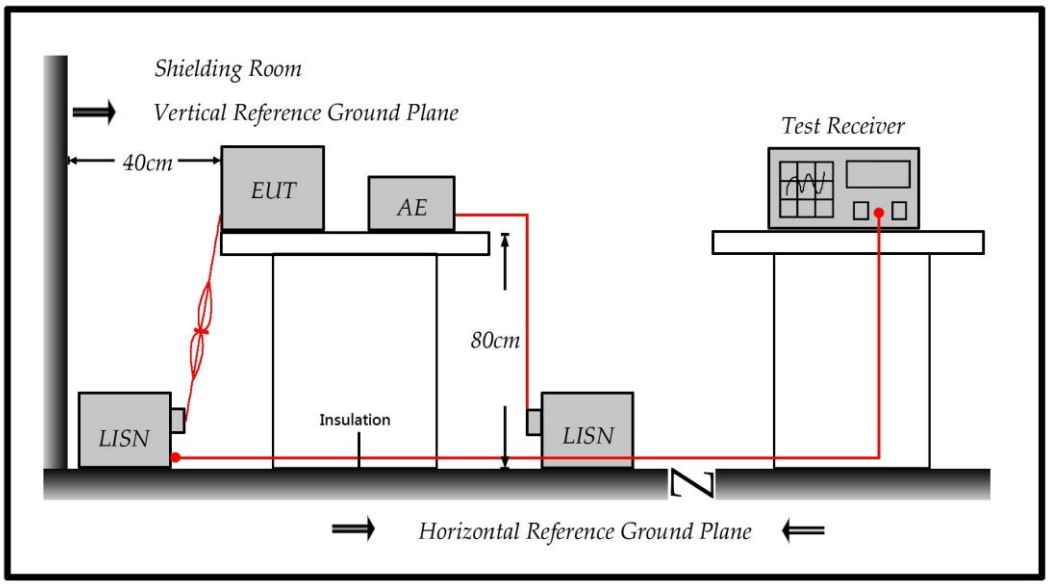
Performed Item	Items	Required	Actual
Impedance Stabilization Network	Temperature (°C)	15-35	24.5
	Humidity (%RH)	25-75	53
	Barometric pressure (mbar)	860-1060	950-1000
Radiated Emission	Temperature (°C)	15-35	24.5
	Humidity (%RH)	25-75	53
	Barometric pressure (mbar)	860-1060	950-1000
Electrostatic Discharge	Temperature (°C)	15-35	23.8
	Humidity (%RH)	30-60	75
	Barometric pressure (mbar)	860-1060	950-1000
Radiated susceptibility	Temperature (°C)	15-35	20
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Electrical fast transient/burst	Temperature (°C)	15-35	18
	Humidity (%RH)	25-75	53
	Barometric pressure (mbar)	860-1060	950-1000
Surge	Temperature (°C)	15-35	20
	Humidity (%RH)	10-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Conducted susceptibility	Temperature (°C)	15-35	20
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Power frequency magnetic field	Temperature (°C)	15-35	20
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Voltage dips and interruption	Temperature (°C)	15-35	20
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission (Main Terminals)

3.1. Test Specification

According to EMC Standard : EN 55032 / AS/NZS CISPR 32

3.2. Test Setup



3.3. Limit

Applicable to AC mains power ports			
Frequency range MHz	Coupling device	Detector type/ Bandwidth	Class A limits dB(μV)
0.15 – 0.5	AMN	Quasi Peak / 9 KHz	79
0.5 – 30			73
0.15 – 0.5	AMN	Average / 9 KHz	66
0.5 – 30			60
Both apply across the entire frequency range.			

Remarks:

If the limits for the average detector are met when using the quasi-peak detector, then the limits for the measurement with the average detector are considered to be met.

3.4. Test Procedure

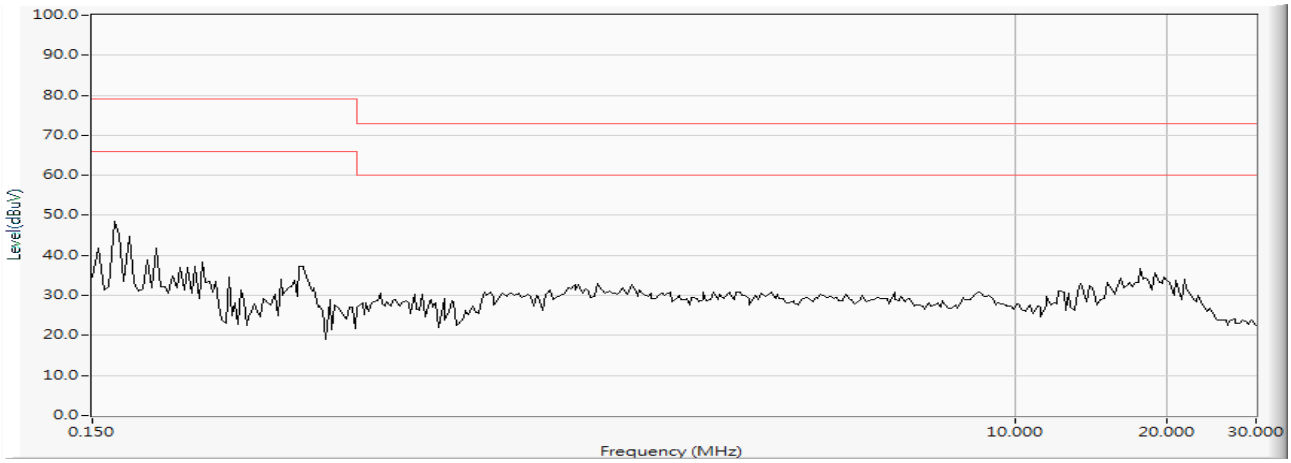
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.
(Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Deviation from Test Standard

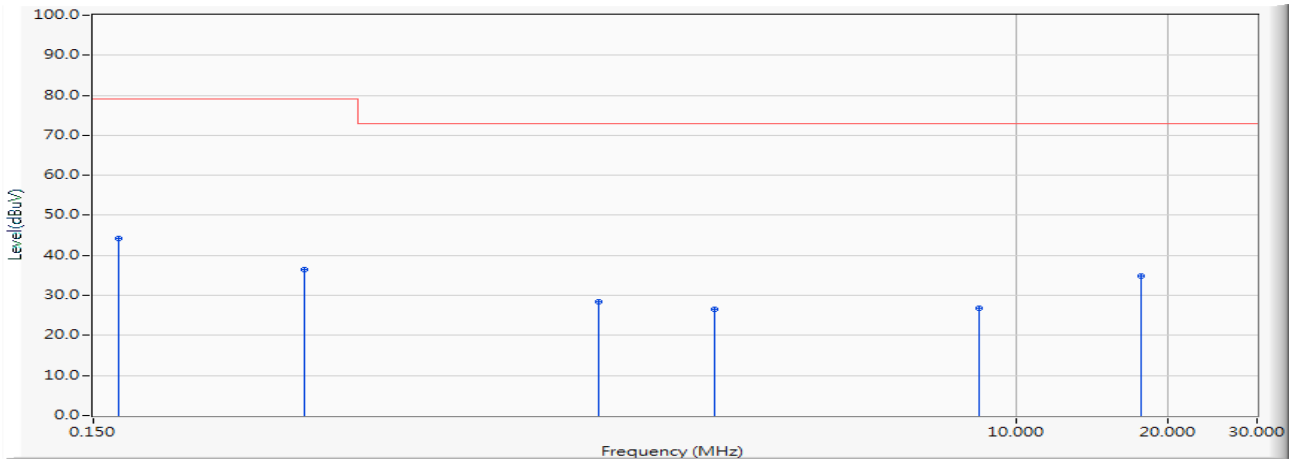
No deviation.

3.6. Test Result

Site : SR8	**Time : 2019/04/09 - 13:20**
Limit : CISPR_A_00M_QP	**Margin : 13**
EUT : Network Camera	**Probe : ENV216_L1_1068 - Line1**
Power : AC 230V/50Hz	**Note : Mode 1**



Site : SR8	**Time : 2019/04/09 - 13:21**
Limit : CISPR_A_00M_QP	**Margin : 0**
EUT : Network Camera	**Probe : ENV216_L1_1068 - Line1**
Power : AC 230V/50Hz	**Note : Mode 1**

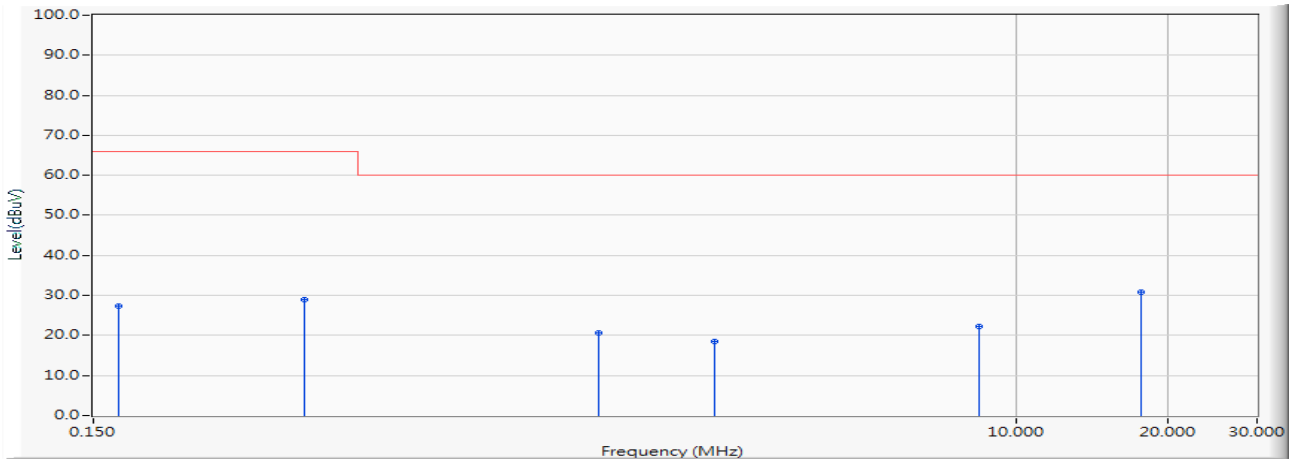


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.168	9.657	34.520	44.177	-34.823	79.000	QUASIPEAK
2		0.392	9.666	26.680	36.346	-42.654	79.000	QUASIPEAK
3		1.498	9.717	18.820	28.537	-44.463	73.000	QUASIPEAK
4		2.545	9.758	16.780	26.538	-46.462	73.000	QUASIPEAK
5		8.459	9.942	16.940	26.882	-46.118	73.000	QUASIPEAK
6		17.693	10.121	24.840	34.961	-38.039	73.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 13:21**
Limit : CISPR_A_00M_AV	**Margin : 0**
EUT : Network Camera	**Probe : ENV216_L1_1068 - Line1**
Power : AC 230V/50Hz	**Note : Mode 1**

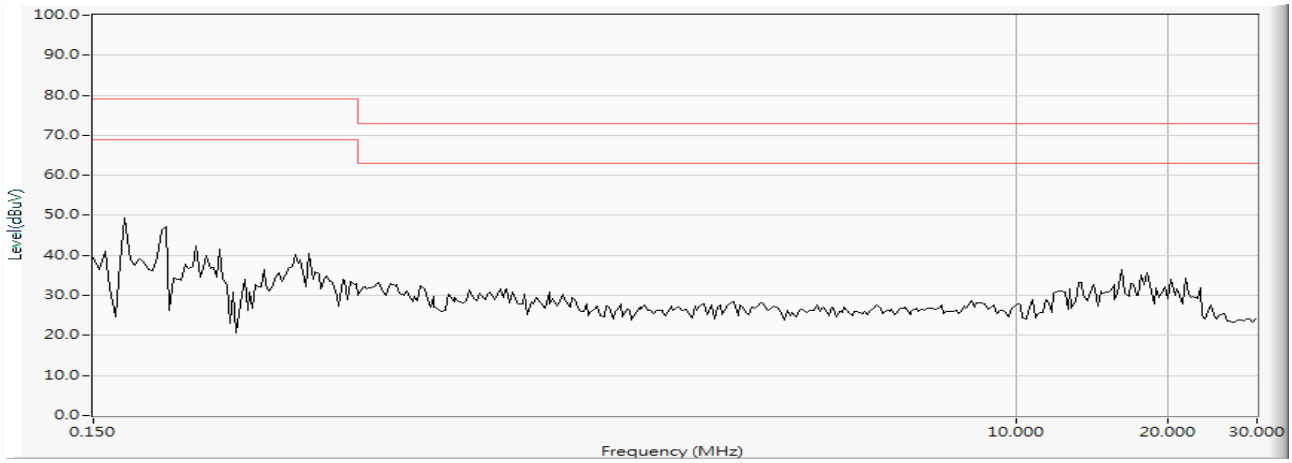


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.168	9.657	17.580	27.237	-38.763	66.000	AVERAGE
2		0.392	9.666	19.200	28.866	-37.134	66.000	AVERAGE
3		1.498	9.717	10.820	20.537	-39.463	60.000	AVERAGE
4		2.545	9.758	8.640	18.398	-41.602	60.000	AVERAGE
5		8.459	9.942	12.440	22.382	-37.618	60.000	AVERAGE
6	*	17.693	10.121	20.820	30.941	-29.059	60.000	AVERAGE

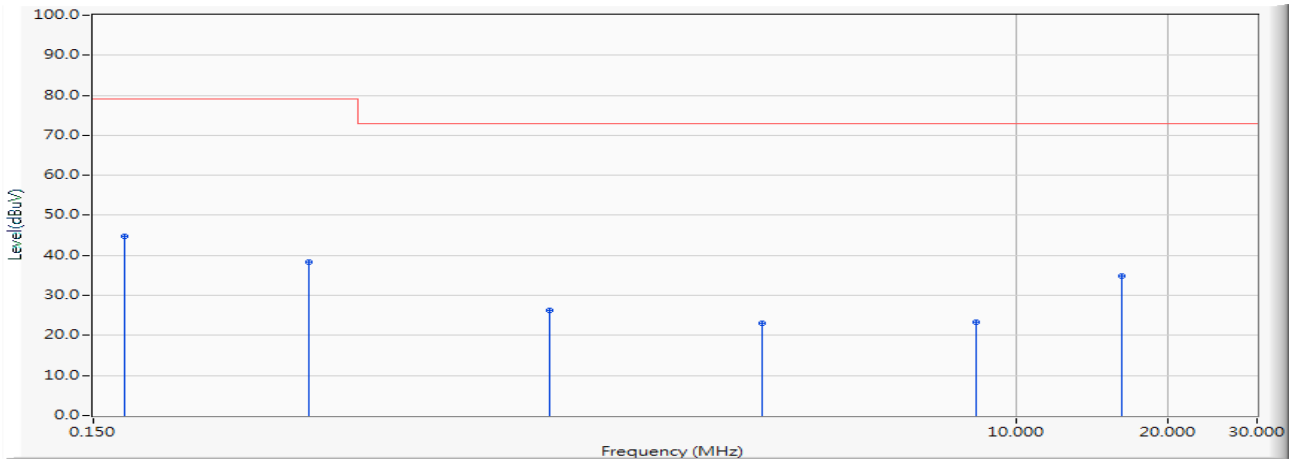
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 13:22**
Limit : CISPR_A_00M_QP	**Margin : 10**
EUT : Network Camera	**Probe : ENV216_N_1068 - Line2**
Power : AC 230V/50Hz	**Note : Mode 1**



Site : SR8	**Time : 2019/04/09 - 13:23**
Limit : CISPR_A_00M_QP	**Margin : 0**
EUT : Network Camera	**Probe : ENV216_N_1068 - Line2**
Power : AC 230V/50Hz	**Note : Mode 1**

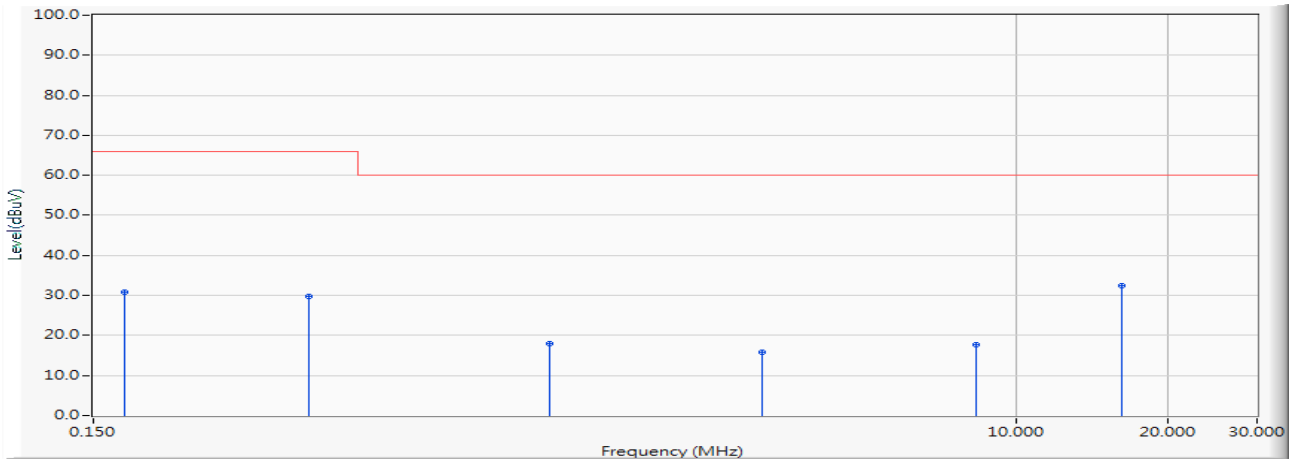


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.173	9.692	35.200	44.892	-34.108	79.000	QUASIPEAK
2		0.400	9.696	28.620	38.316	-40.684	79.000	QUASIPEAK
3		1.197	9.739	16.440	26.179	-46.821	73.000	QUASIPEAK
4		3.162	9.822	13.280	23.102	-49.898	73.000	QUASIPEAK
5		8.349	10.000	13.340	23.340	-49.660	73.000	QUASIPEAK
6		16.228	10.231	24.680	34.911	-38.089	73.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 13:23**
Limit : CISPR_A_00M_AV	**Margin : 0**
EUT : Network Camera	**Probe : ENV216_N_1068 - Line2**
Power : AC 230V/50Hz	**Note : Mode 1**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	9.692	21.180	30.872	-35.128	66.000	AVERAGE
2		0.400	9.696	20.020	29.716	-36.284	66.000	AVERAGE
3		1.197	9.739	8.240	17.979	-42.021	60.000	AVERAGE
4		3.162	9.822	5.980	15.802	-44.198	60.000	AVERAGE
5		8.349	10.000	7.660	17.660	-42.340	60.000	AVERAGE
6	*	16.228	10.231	22.220	32.451	-27.549	60.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

3.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Front View of Conducted Test

Test Mode : Mode 1: IB9387-EHT, Adapter

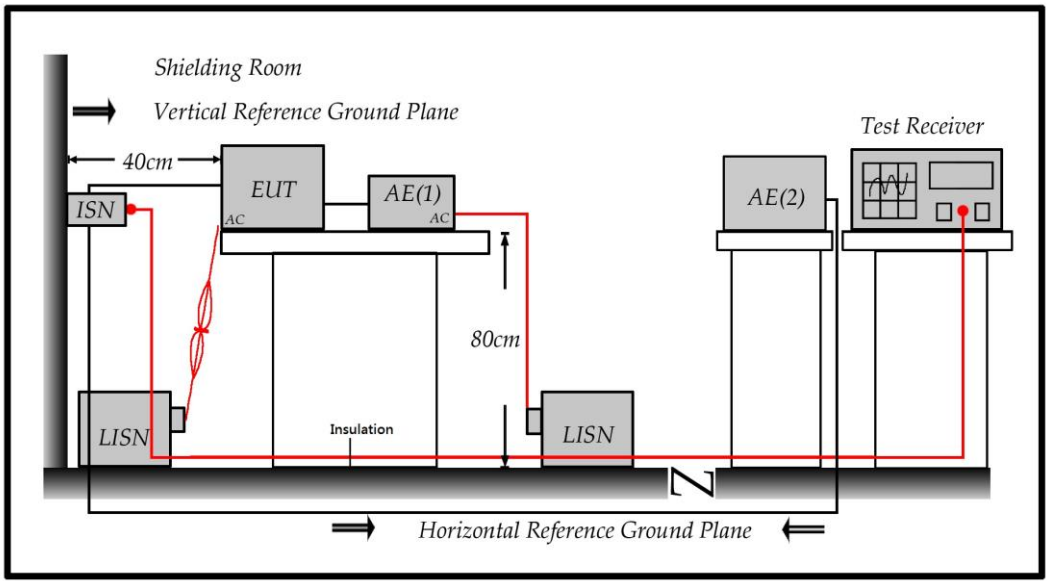
Description : Back View of Conducted Test

4. Conducted Emissions (Telecommunication Ports)

4.1. Test Specification

According to EMC Standard : EN 55032 / AS/NZS CISPR 32

4.2. Test Setup



4.3. Limit

Applicable to 1. wired network ports 2. optical fibre port with metallic shield or tension members 3. antenna ports				
Frequency range MHz	Coupling device	Detector type/ Bandwidth	Class A voltage limits dB(μV)	Class A current limits dB(μA)
0.15 – 0.5	AAN	Quasi Peak / 9 KHz	97 – 87	N / A
0.5 – 30			87	
0.15 – 0.5	AAN	Average / 9 KHz	84 – 74	
0.5 – 30			74	
0.15 – 0.5	CVP And current probe	Quasi Peak / 9 KHz	97 – 87	53 – 43
0.5 – 30			87	43
0.15 – 0.5	CVP And current probe	Average / 9 KHz	84 – 74	40 – 30
0.5 – 30			74	30
0.15 – 0.5	Current Probe	Quasi Peak / 9 KHz	N / A	53 – 43
0.5 – 30				43
0.15 – 0.5	Current Probe	Average / 9 KHz		40 – 30
0.5 – 30				30
The choice of coupling device and measurement procedure is defined in EN55032: 2012 Annex C. Screened ports including TV broadcast receiver tuner ports are tested with a common-mode impedance of 150 Ω. This is typically accomplished with the screen terminated by 150 Ω to earth. AC mains ports that also have the function of a wired network port shall meet the limits given in EN55032: 2012+AC 2013 Table A.9. The test shall cover the entire frequency range. The application of the voltage and/or current limits is dependent on the measurement procedure used. Refer to EN55032: 2012+AC 2013 Table C.1 for applicability. Testing is required at only one EUT supply voltage and frequency. Applicable to ports listed above and intended to connect to cables longer than 3 m				

4.4. Test Procedure

Telecommunication Port:

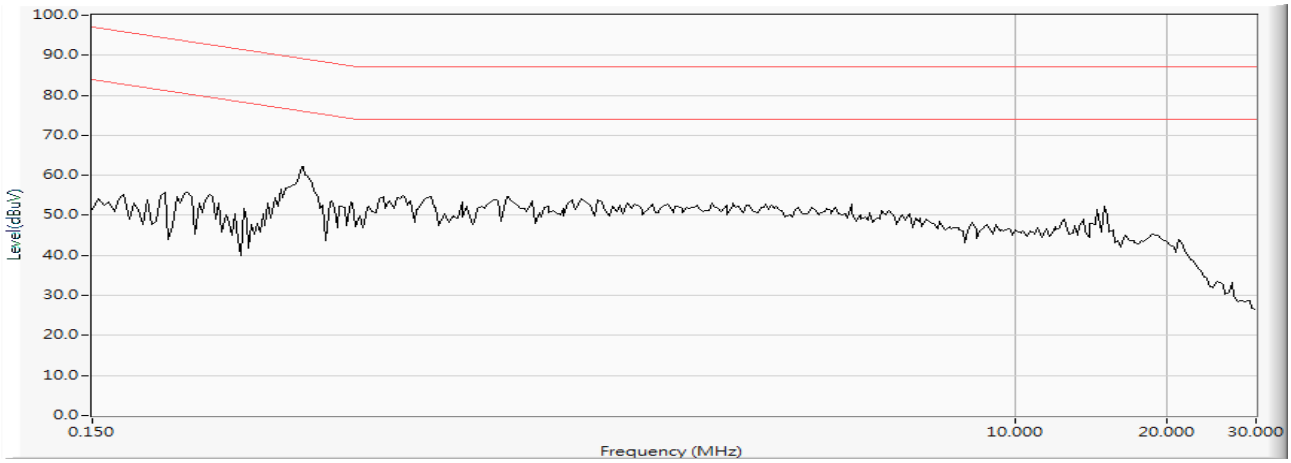
The mains voltage shall be supplied to the EUT via the LISN when the measurement of telecommunication port is performed. The common mode disturbances at the telecommunication port shall be connected to the ISN, which is 150 ohm impedance.
Both alternative cables are tested related to the LCL requested. The measurement range is from 150kHz to 30MHz. The bandwidth of measurement is set to 9kHz.
The 75Db LCL ISN is used for cat. 6 cable, the 65Db LCL ISN is used for cat. 5 cable, 55Db LCL ISN is used for cat. 3.

4.5. Deviation from Test Standard

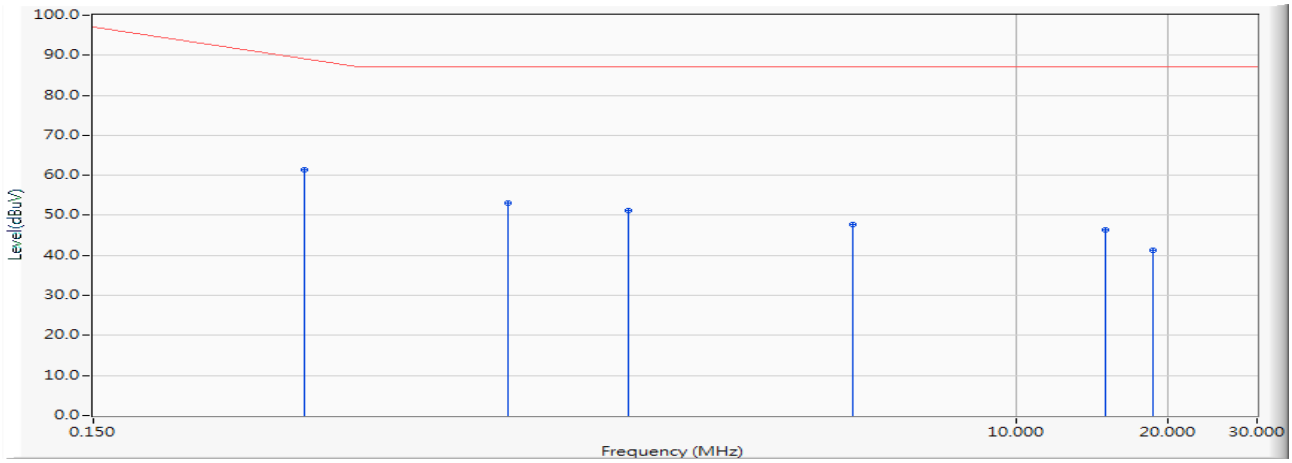
No deviation.

4.6. Test Result

Site : SR8	**Time : 2019/04/09 - 13:05**
Limit : ISN_Voltage_A_00M_QP	**Margin : 13**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : AC 230V/50Hz	**Note :Mode 1,ISN 10M**



Site : SR8	**Time : 2019/04/09 - 13:07**
Limit : ISN_Voltage_A_00M_QP	**Margin : 0**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : AC 230V/50Hz	**Note :Mode 1, ISN 10M**

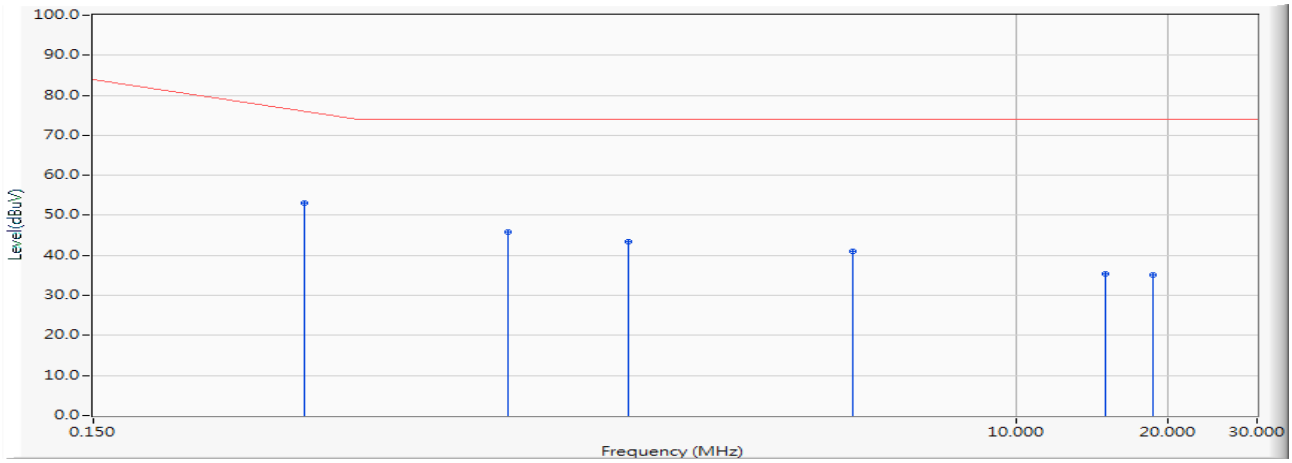


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.392	10.054	51.220	61.274	-28.812	90.086	QUASIPEAK
2		0.994	9.930	43.080	53.010	-33.990	87.000	QUASIPEAK
3		1.716	9.910	41.280	51.190	-35.810	87.000	QUASIPEAK
4		4.752	9.908	37.820	47.728	-39.272	87.000	QUASIPEAK
5		15.041	10.163	36.240	46.403	-40.597	87.000	QUASIPEAK
6		18.638	10.248	31.020	41.268	-45.732	87.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 13:07**
Limit : ISN_Voltage_A_00M_AV	**Margin : 0**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : AC 230V/50Hz	**Note :Mode 1, ISN 10M**

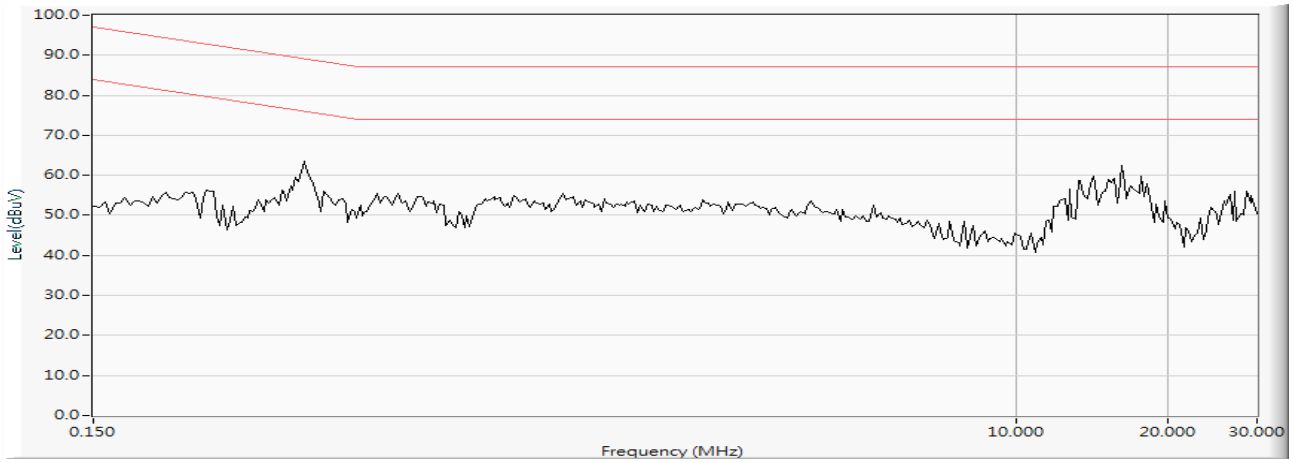


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.392	10.054	43.140	53.194	-23.892	77.086	AVERAGE
2		0.994	9.930	35.860	45.790	-28.210	74.000	AVERAGE
3		1.716	9.910	33.500	43.410	-30.590	74.000	AVERAGE
4		4.752	9.908	31.100	41.008	-32.992	74.000	AVERAGE
5		15.041	10.163	25.280	35.443	-38.557	74.000	AVERAGE
6		18.638	10.248	24.840	35.088	-38.912	74.000	AVERAGE

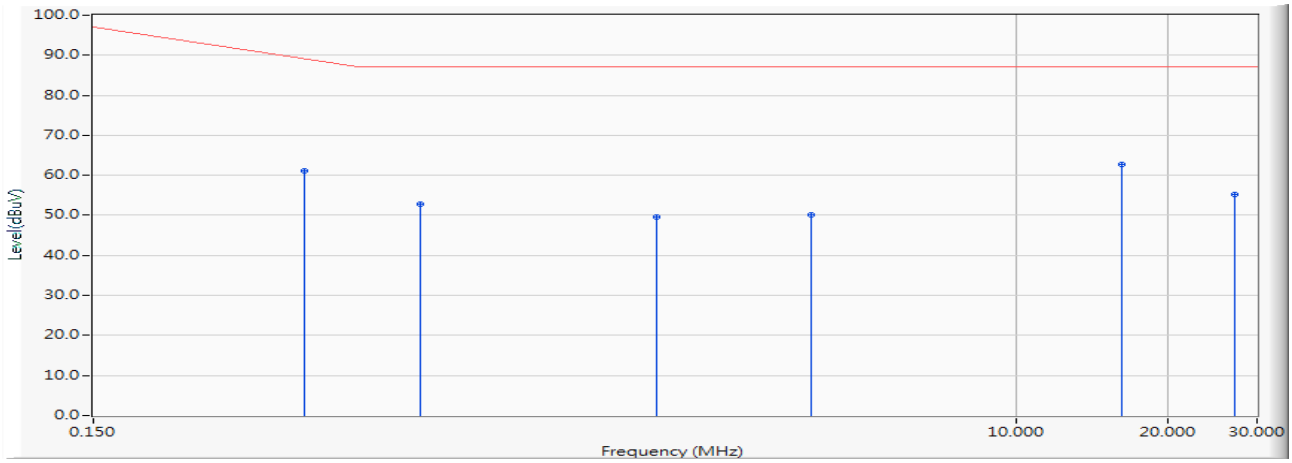
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 13:08**
Limit : ISN_Voltage_A_00M_QP	**Margin : 13**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : AC 230V/50Hz	**Note :Mode 1, ISN 100M**



Site : SR8	**Time : 2019/04/09 - 13:09**
Limit : ISN_Voltage_A_00M_QP	**Margin : 0**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : AC 230V/50Hz	**Note :Mode 1, ISN 100M**

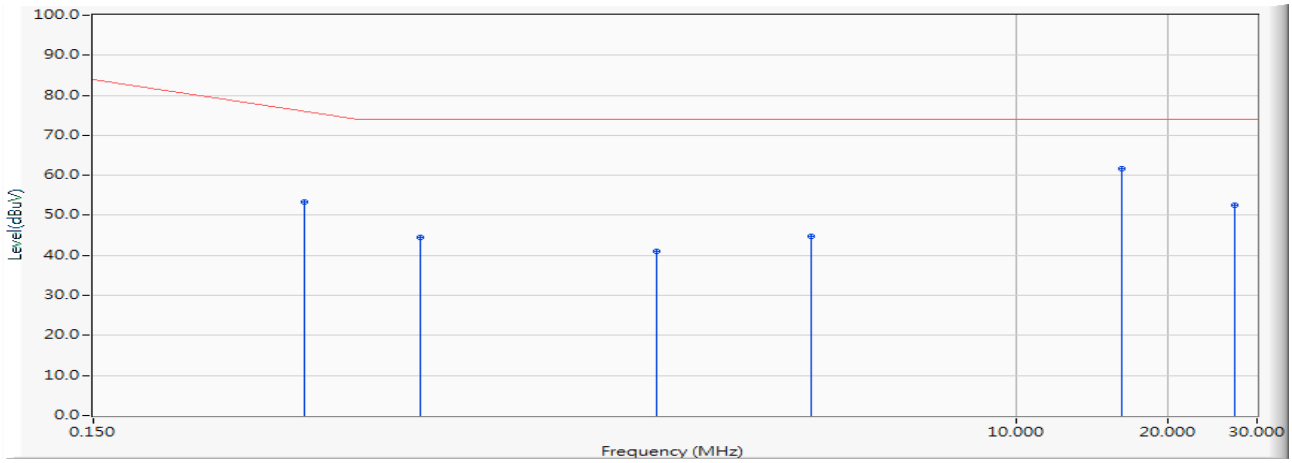


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.392	10.054	51.020	61.073	-29.013	90.086	QUASIPEAK
2		0.666	9.964	42.940	52.904	-34.096	87.000	QUASIPEAK
3		1.951	9.899	39.780	49.679	-37.321	87.000	QUASIPEAK
4		3.951	9.900	40.340	50.240	-36.760	87.000	QUASIPEAK
5	*	16.228	10.191	52.620	62.811	-24.189	87.000	QUASIPEAK
6		27.158	10.547	44.740	55.287	-31.713	87.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 13:09**
Limit : ISN_Voltage_A_00M_AV	**Margin : 0**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : AC 230V/50Hz	**Note :Mode 1, ISN 100M**

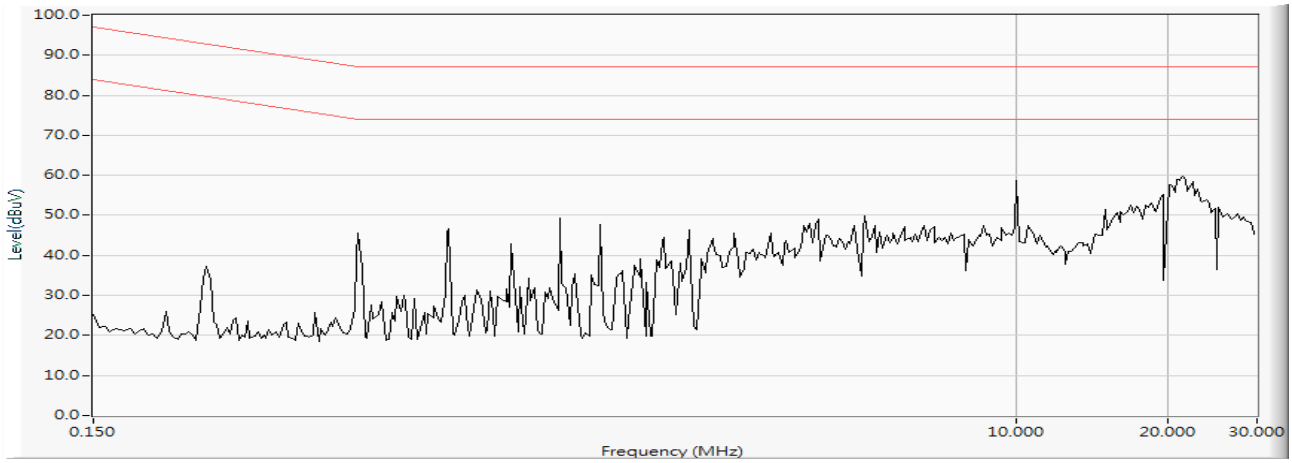


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.392	10.054	43.280	53.333	-23.753	77.086	AVERAGE
2		0.666	9.964	34.480	44.444	-29.556	74.000	AVERAGE
3		1.951	9.899	31.240	41.139	-32.861	74.000	AVERAGE
4		3.951	9.900	34.740	44.640	-29.360	74.000	AVERAGE
5	*	16.228	10.191	51.340	61.531	-12.469	74.000	AVERAGE
6		27.158	10.547	41.880	52.427	-21.573	74.000	AVERAGE

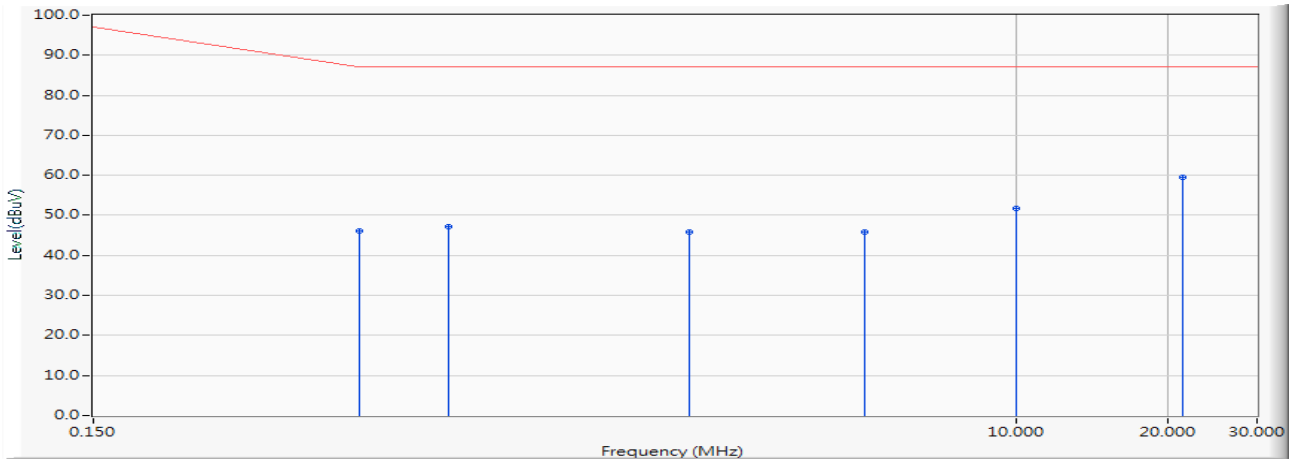
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 12:03**
Limit : ISN_Voltage_A_00M_QP	**Margin : 13**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : PoE	**Note :Mode 1,ISN 10M**



Site : SR8	**Time : 2019/04/09 - 12:05**
Limit : ISN_Voltage_A_00M_QP	**Margin : 0**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : PoE	**Note :Mode 1,ISN 10M**

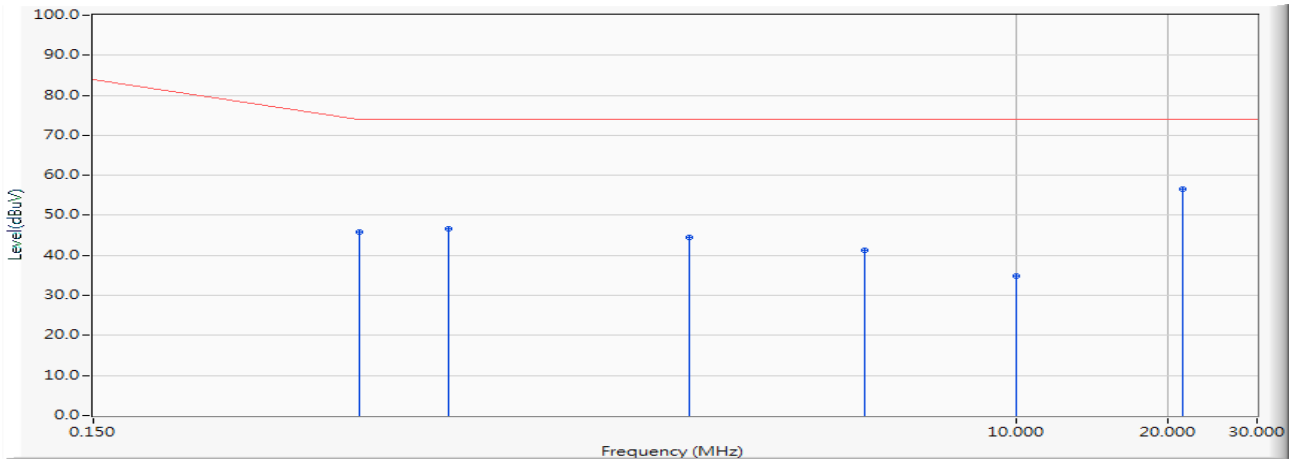


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.504	10.011	35.980	45.992	-41.008	87.000	QUASIPEAK
2		0.754	9.958	37.100	47.058	-39.942	87.000	QUASIPEAK
3		2.265	9.901	35.900	45.801	-41.199	87.000	QUASIPEAK
4		5.033	9.914	35.820	45.734	-41.266	87.000	QUASIPEAK
5		10.002	10.022	41.740	51.762	-35.238	87.000	QUASIPEAK
6	*	21.384	10.328	49.060	59.388	-27.612	87.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 12:05**
Limit : ISN_Voltage_A_00M_AV	**Margin : 0**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : PoE	**Note :Mode 1,ISN 10M**

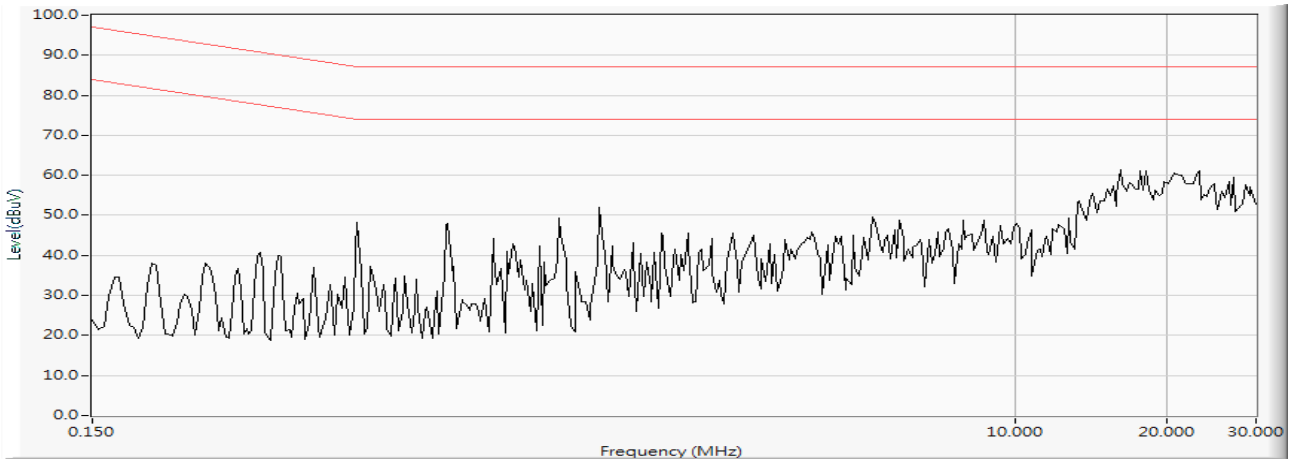


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.504	10.011	35.740	45.752	-28.248	74.000	AVERAGE
2		0.754	9.958	36.660	46.618	-27.382	74.000	AVERAGE
3		2.265	9.901	34.720	44.621	-29.379	74.000	AVERAGE
4		5.033	9.914	31.420	41.334	-32.666	74.000	AVERAGE
5		10.002	10.022	24.900	34.922	-39.078	74.000	AVERAGE
6	*	21.384	10.328	46.200	56.528	-17.472	74.000	AVERAGE

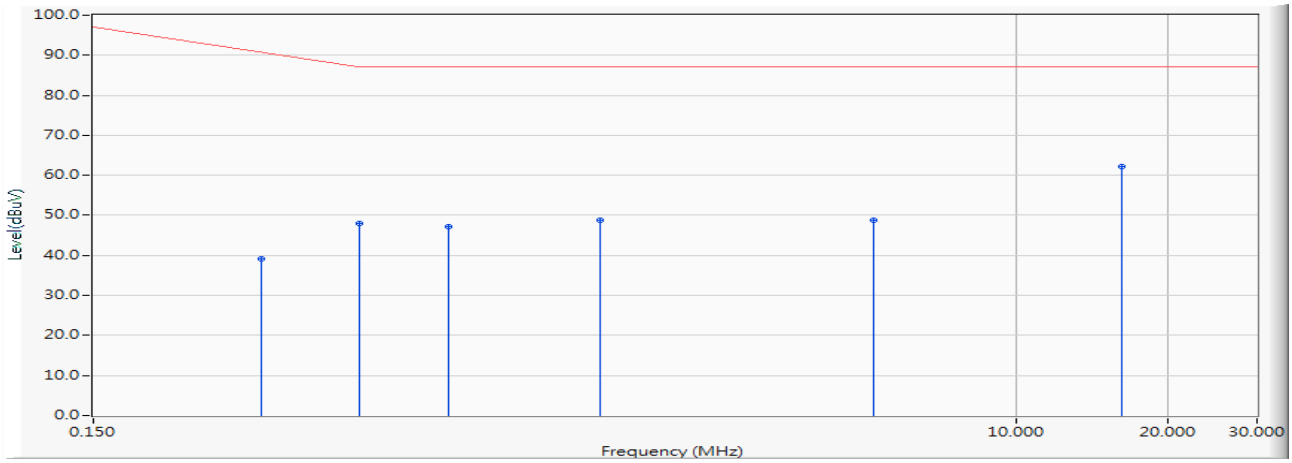
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 11:59**
Limit : ISN_Voltage_A_00M_QP	**Margin : 13**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : PoE	**Note :Mode 1,ISN 100M**



Site : SR8	**Time : 2019/04/09 - 12:01**
Limit : ISN_Voltage_A_00M_QP	**Margin : 0**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : PoE	**Note :Mode 1,ISN 100M**

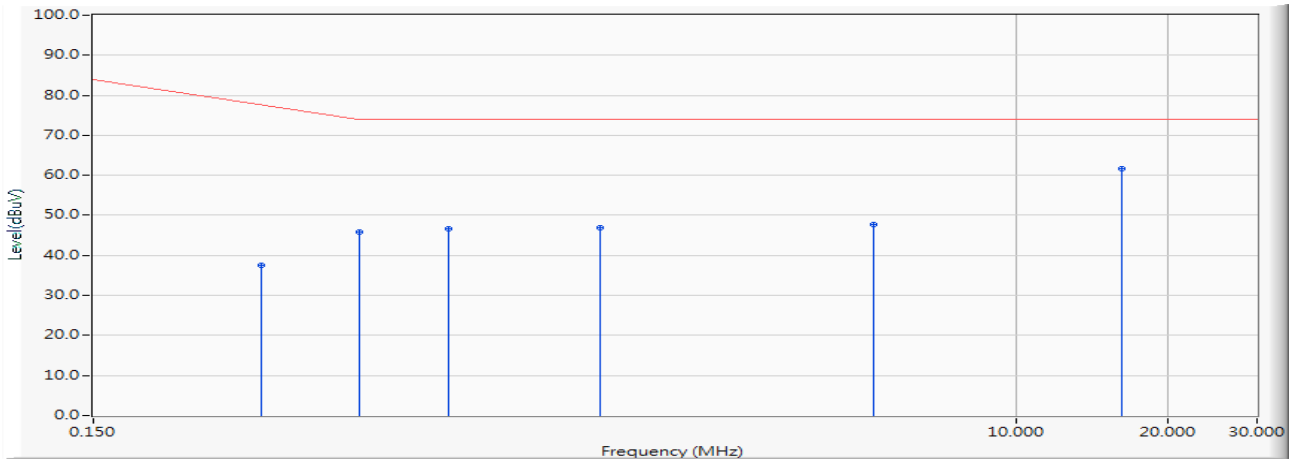


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.322	10.108	29.000	39.108	-52.978	92.086	QUASIPEAK
2		0.504	10.011	37.900	47.912	-39.088	87.000	QUASIPEAK
3		0.754	9.958	37.260	47.218	-39.782	87.000	QUASIPEAK
4		1.509	9.916	38.980	48.896	-38.104	87.000	QUASIPEAK
5		5.236	9.919	38.820	48.739	-38.261	87.000	QUASIPEAK
6	*	16.228	10.191	52.040	62.231	-24.769	87.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SR8	**Time : 2019/04/09 - 12:01**
Limit : ISN_Voltage_A_00M_AV	**Margin : 0**
EUT : Network Camera	**Probe : TESEQ_T8_42815 - Line1**
Power : POE	**Note :Mode 1,ISN 100M**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.322	10.108	27.340	37.448	-41.638	79.086	AVERAGE
2		0.504	10.011	35.880	45.892	-28.108	74.000	AVERAGE
3		0.754	9.958	36.740	46.698	-27.302	74.000	AVERAGE
4		1.509	9.916	37.080	46.996	-27.004	74.000	AVERAGE
5		5.236	9.919	37.700	47.619	-26.381	74.000	AVERAGE
6	*	16.228	10.191	51.340	61.531	-12.469	74.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

4.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Front View of ISN Test

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Back View of ISN Test

Test Mode : Mode 2: IB9387-EHT, PoE

Description : Front View of ISN Test

Test Mode : Mode 2: IB9387-EHT, PoE

Description : Back View of ISN Test

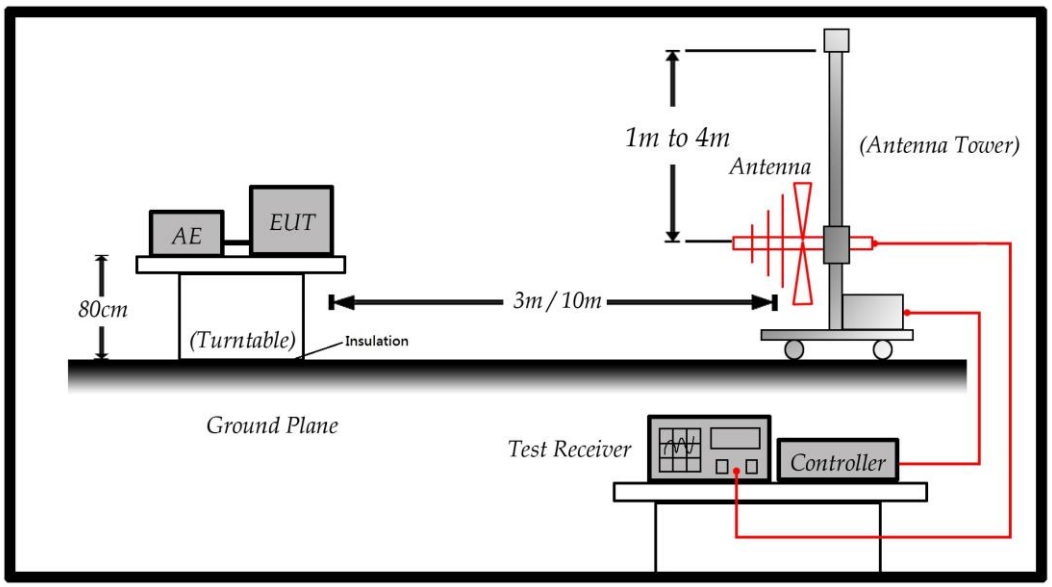
5. Radiated Emission

5.1. Test Specification

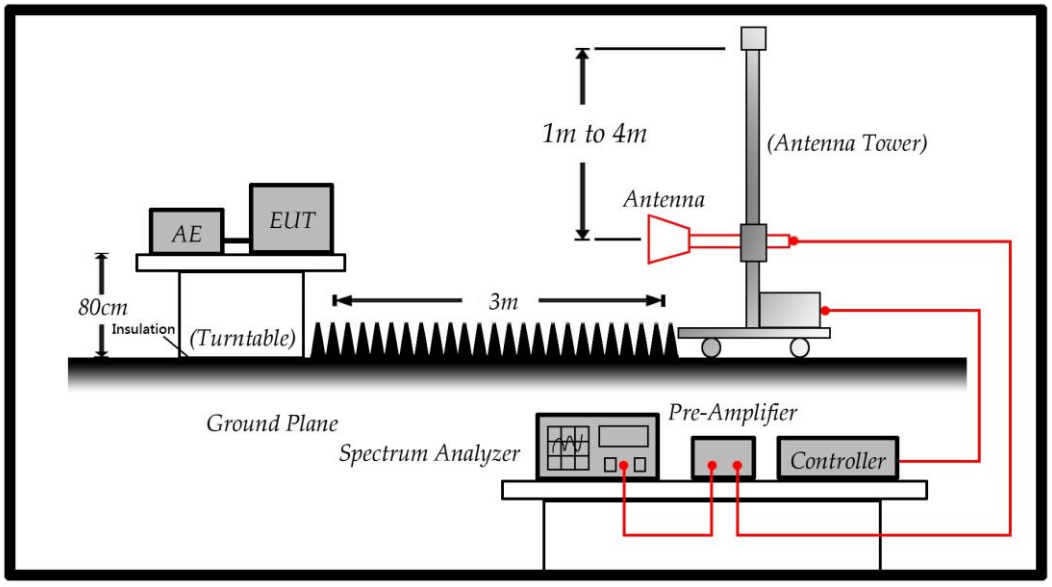
According to EMC Standard : EN 55032 / AS/NZS CISPR 32

5.2. Test Setup

Under 1GHz



Above 1GHz



5.3. Limit

Radiated emissions at frequencies up to 1 GHz

for Class A equipment

Frequency range MHz	Measurement		Class A limits dB(μV/m)
	Distance m	Detector type/ Bandwidth	OATS / SAC
30-230	10	Quasi Peak / 120 KHz	40
230-1000			47
30-230	3		50
230-1000			57
Apply only 3m or 10m across the entire frequency range			

Radiated emissions at frequencies above 1 GHz

for Class A equipment

Frequency range MHz	Measurement		Class A limits dB(μV/m)
	Distance m	Detector type/ Bandwidth	OATS / SAC
1000-3000	3	Average / 1 MHz	56
3000-6000			60
1000-3000		Peak / 1 MHz	76
3000-6000			80
Both apply across the frequency range from 1000 MHz to the highest required frequency of measurement derived from			

Required highest frequency for radiated measurement

Highest internal frequency (*F*x)	Highest measured frequency
*F*x ≤ 108 MHz	1 GHz
108 MHz < *F*x ≤ 500 MHz	2 GHz
500 MHz < *F*x ≤ 1 GHz	5 GHz
*F*x> 1 GHz	5 × *F*x up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, *F*x is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies. NOTE 2 *F*x is defined in 3.1.19.	

5.4. Test Procedure

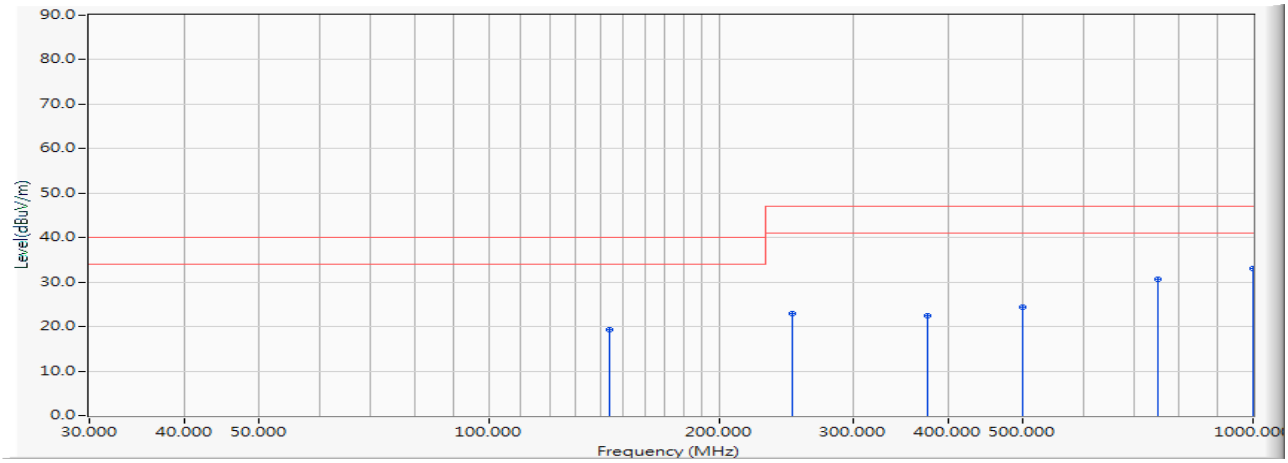
The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The EUT was positioned such that the distance from antenna to the EUT was 3/10 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.
Radiated emissions were invested over the frequency range from 30MHz to1GHz using a receiver bandwidth of 120kHz and above 1GHz using a receiver bandwidth of 1MHz.
30MHz to1GHz Radiated was performed at an antenna to EUT distance of 10 meters.
Above1GHz Radiated was performed at an antenna to EUT distance of 3 meters.
It is placed with absorb on the ground between EUT and Antenna.

5.5. Deviation from Test Standard

No deviation.

5.6. Test Result

Site : SITE7	**Time : 2019/04/22 - 19:24**
Limit : CISPR_A_10M_QP	**Margin : 6**
EUT : Network Camera	**Probe : Site7_VULB9168_10m_1902 - HORIZONTAL**
Power : AC 230V/50Hz	**Note : Mode 1**

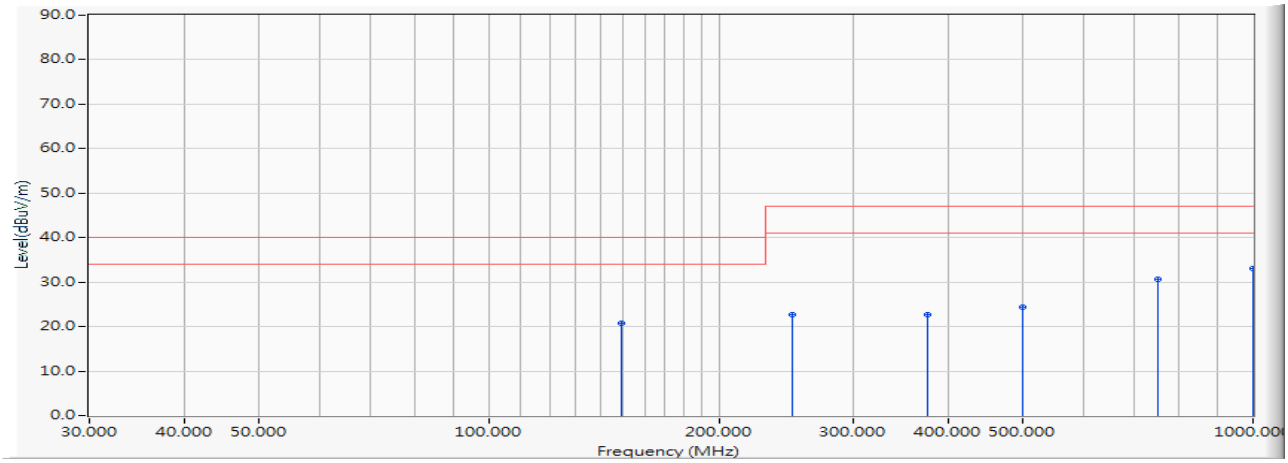


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		144.000	-10.699	30.000	19.301	-20.699	40.000	QUASIPEAK	390.000	54.000
2		250.000	-10.488	33.400	22.912	-24.088	47.000	QUASIPEAK	380.000	124.000
3		375.000	-5.843	28.400	22.557	-24.443	47.000	QUASIPEAK	300.000	95.000
4		500.000	-1.815	26.200	24.385	-22.615	47.000	QUASIPEAK	200.000	-47.000
5		750.000	4.566	26.000	30.565	-16.435	47.000	QUASIPEAK	120.000	14.000
6	*	1000.000	7.830	25.300	33.130	-13.870	47.000	QUASIPEAK	100.000	-112.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SITE7	**Time : 2019/04/22 - 19:25**
Limit : CISPR_A_10M_QP	**Margin : 6**
EUT : Network Camera	**Probe : Site7_VULB9168_10m_1902 - VERTICAL**
Power : AC 230V/50Hz	**Note : Mode 1**

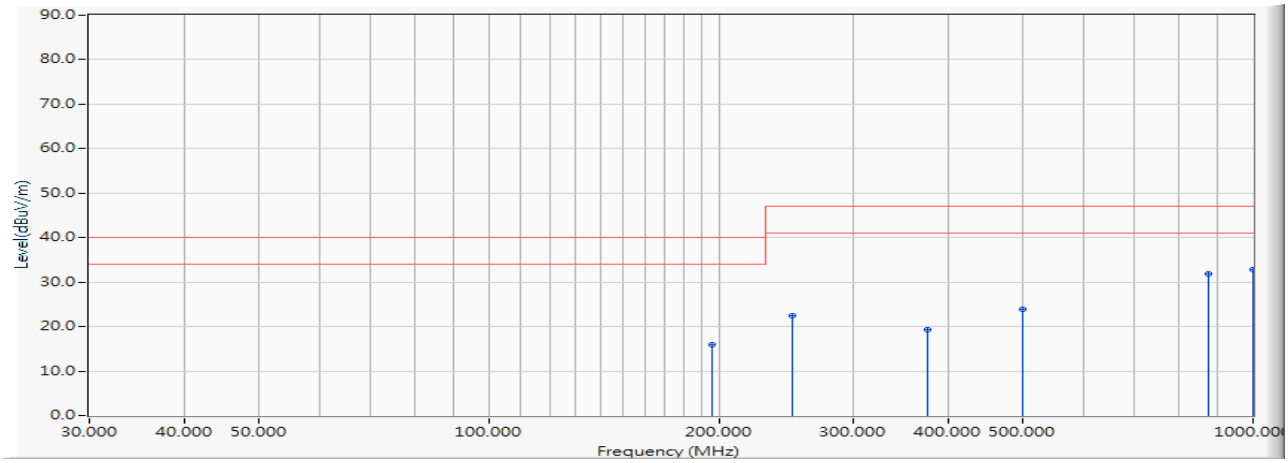


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		148.900	-10.487	31.200	20.713	-19.287	40.000	QUASIPEAK	100.000	64.000
2		250.000	-10.488	33.200	22.712	-24.288	47.000	QUASIPEAK	100.000	97.000
3		375.000	-5.843	28.600	22.757	-24.243	47.000	QUASIPEAK	100.000	62.000
4		500.000	-1.815	26.300	24.485	-22.515	47.000	QUASIPEAK	300.000	51.000
5		750.000	4.566	26.000	30.565	-16.435	47.000	QUASIPEAK	260.000	31.000
6	*	1000.000	7.830	25.300	33.130	-13.870	47.000	QUASIPEAK	175.000	-71.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SITE7	**Time : 2019/04/22 - 16:41**
Limit : CISPR_A_10M_QP	**Margin : 6**
EUT : Network Camera	**Probe : Site7_VULB9168_10m_1902 - HORIZONTAL**
Power : PoE	**Note : Mode 2**

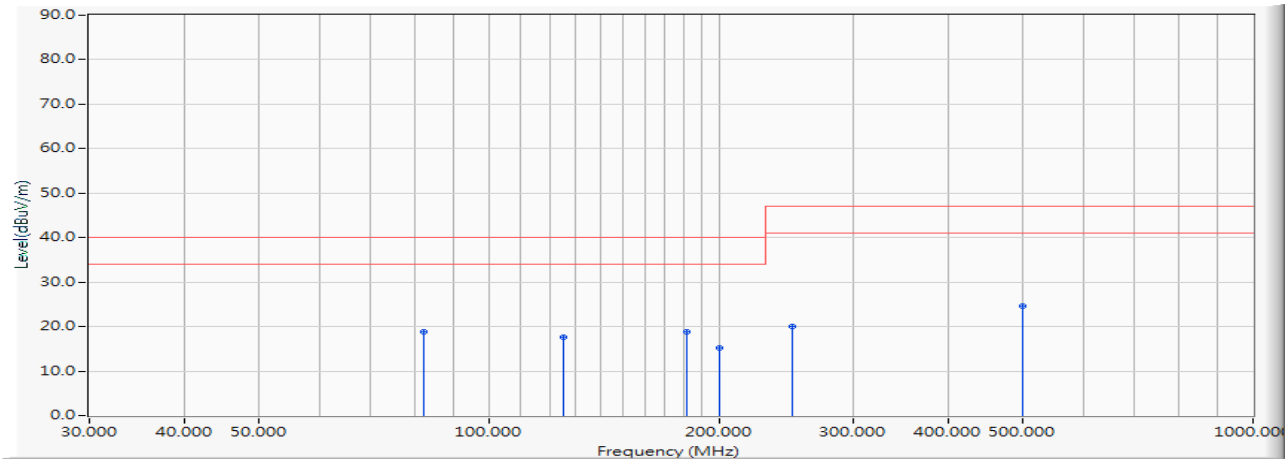


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		196.200	-12.617	28.600	15.983	-24.017	40.000	QUASIPEAK	380.000	51.000
2		250.000	-10.488	33.000	22.512	-24.488	47.000	QUASIPEAK	370.000	42.000
3		375.000	-5.843	25.100	19.257	-27.743	47.000	QUASIPEAK	300.000	33.000
4		500.000	-1.815	25.600	23.785	-23.215	47.000	QUASIPEAK	200.000	-41.000
5		875.000	6.141	25.600	31.741	-15.259	47.000	QUASIPEAK	100.000	94.000
6	*	1000.000	7.830	24.900	32.730	-14.270	47.000	QUASIPEAK	100.000	-48.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site : SITE7	**Time : 2019/04/22 - 16:41**
Limit : CISPR_A_10M_QP	**Margin : 6**
EUT : Network Camera	**Probe : Site7_VULB9168_10m_1902 - VERTICAL**
Power : PoE	**Note : Mode 2**

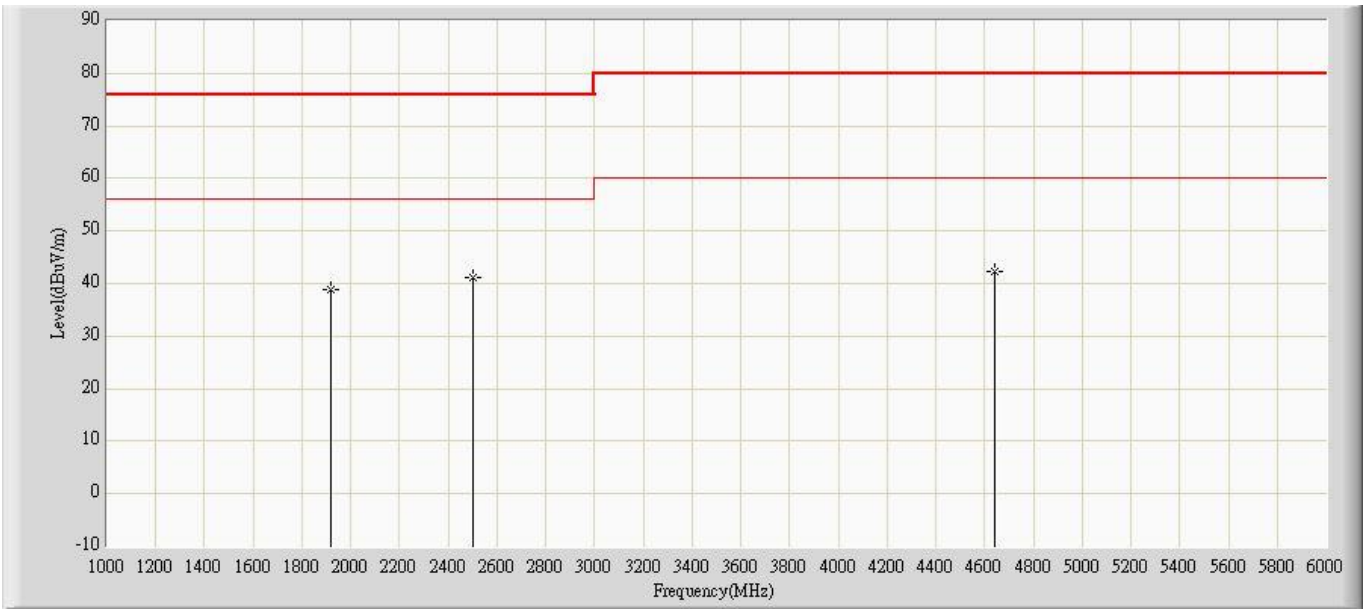


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		82.000	-15.893	34.600	18.707	-21.293	40.000	QUASIPEAK	100.000	91.000
2		125.000	-12.365	30.000	17.635	-22.365	40.000	QUASIPEAK	100.000	55.000
3	*	181.200	-11.356	30.200	18.844	-21.156	40.000	QUASIPEAK	100.000	139.000
4		200.000	-12.745	28.000	15.255	-24.745	40.000	QUASIPEAK	100.000	-48.000
5		250.000	-10.488	30.600	20.112	-26.888	47.000	QUASIPEAK	100.000	-89.000
6		500.000	-1.815	26.400	24.585	-22.415	47.000	QUASIPEAK	300.000	89.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor(Probe+Cable-Amp).

Site: CB7	Time: 2019/04/24 - 02:03
Limit: CISPR_A(Above_1G)	Margin: 0
Probe: CB7_Horn_3117_1808	Polarity: Horizontal
EUT: Network Camera	Power: AC 230V/50Hz
Note: Mode 1	

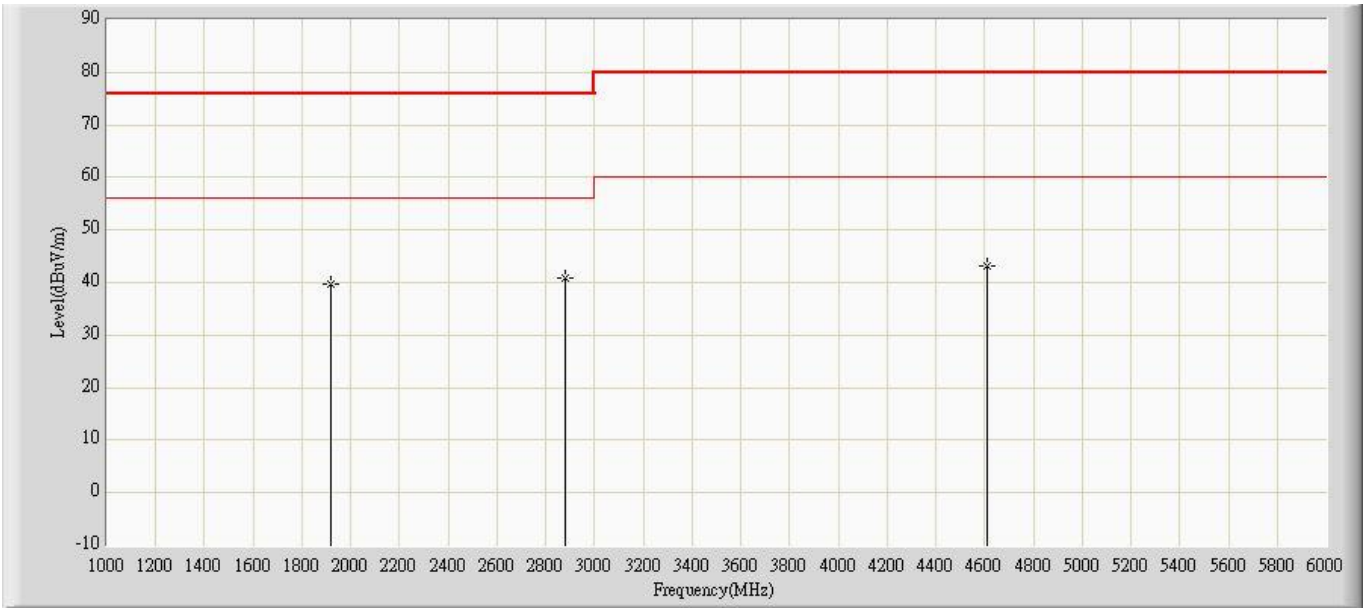


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Ant Pos (cm)	Table Pos (deg)	Type
1			1920.000	38.968	49.280	-37.032	76.000	-10.312	158	64	PK
2		*	2500.000	41.157	49.381	-34.843	76.000	-8.224	100	-178	PK
3			4640.000	42.373	45.667	-37.627	80.000	-3.294	112	92	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2019/04/24 - 02:03
Limit: CISPR_A(Above_1G)	Margin: 0
Probe: CB7_Horn_3117_1808	Polarity: Vertical
EUT: Network Camera	Power: AC 230V/50Hz
Note: Mode 1	

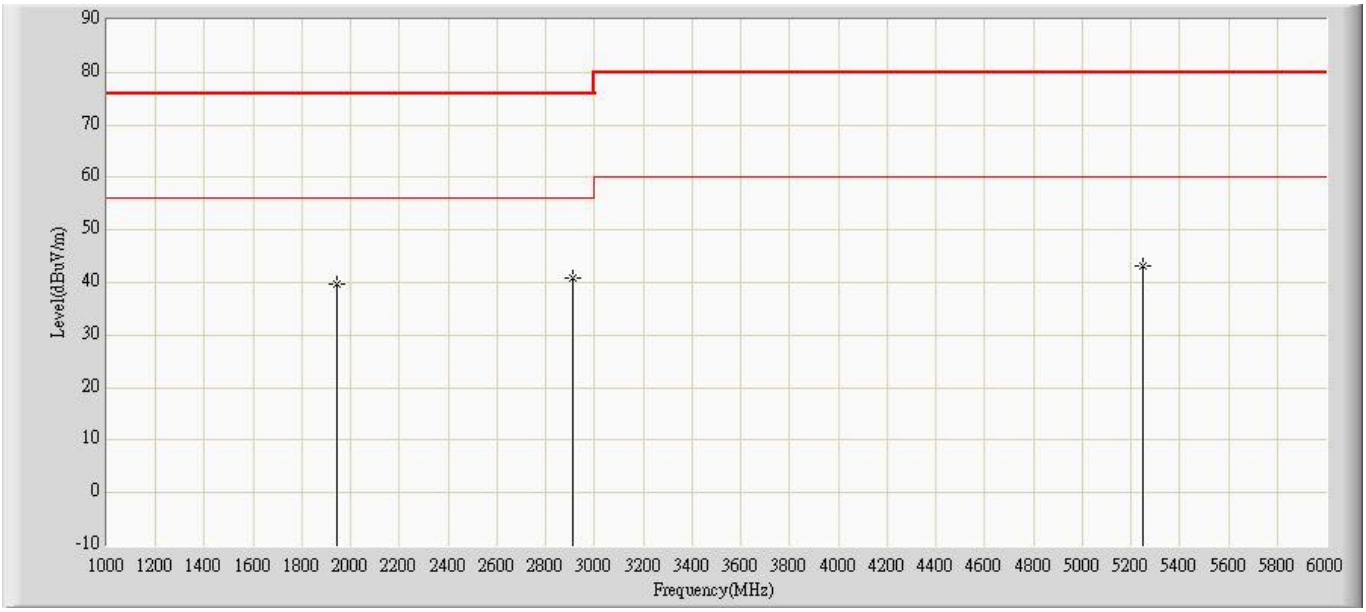


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Ant Pos (cm)	Table Pos (deg)	Type
1			1920.000	39.652	49.964	-36.348	76.000	-10.312	185	125	PK
2		*	2880.000	41.000	48.500	-35.000	76.000	-7.500	175	72	PK
3			4610.000	43.080	46.481	-36.920	80.000	-3.400	171	111	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2019/04/24 - 02:09
Limit: CISPR_A(Above_1G)	Margin: 0
Probe: CB7_Horn_3117_1808	Polarity: Horizontal
EUT: Network Camera	Power: PoE
Note: Mode 2	

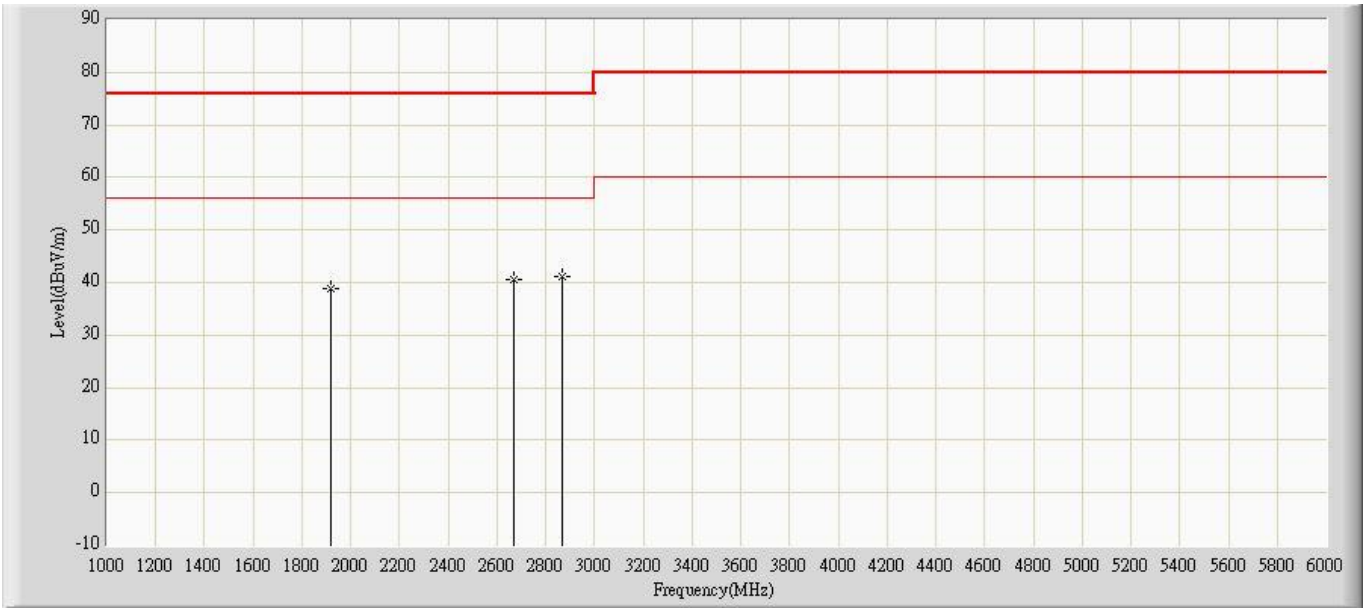


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Ant Pos (cm)	Table Pos (deg)	Type
1			1940.000	39.683	49.841	-36.317	76.000	-10.158	179	193	PK
2		*	2910.000	40.867	48.263	-35.133	76.000	-7.396	199	123	PK
3			5250.000	43.275	46.245	-36.725	80.000	-2.970	118	-23	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2019/04/24 - 02:10
Limit: CISPR_A(Above_1G)	Margin: 0
Probe: CB7_Horn_3117_1808	Polarity: Vertical
EUT: Network Camera	Power: PoE
Note: Mode 2	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Ant Pos (cm)	Table Pos (deg)	Type
1			1920.000	38.970	49.282	-37.030	76.000	-10.312	117	198	PK
2			2670.000	40.523	48.204	-35.477	76.000	-7.681	164	-30	PK
3		*	2870.000	41.186	48.686	-34.814	76.000	-7.500	179	181	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

5.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Front View of Radiated Test

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Back View of Radiated Test

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Front View of High Frequency Radiated Test

Test Mode : Mode 2: IB9387-EHT, PoE

Description : Front View of Radiated Test

Test Mode : Mode 2: IB9387-EHT, PoE

Description : Back View of Radiated Test

Test Mode : Mode 2: IB9387-EHT, PoE

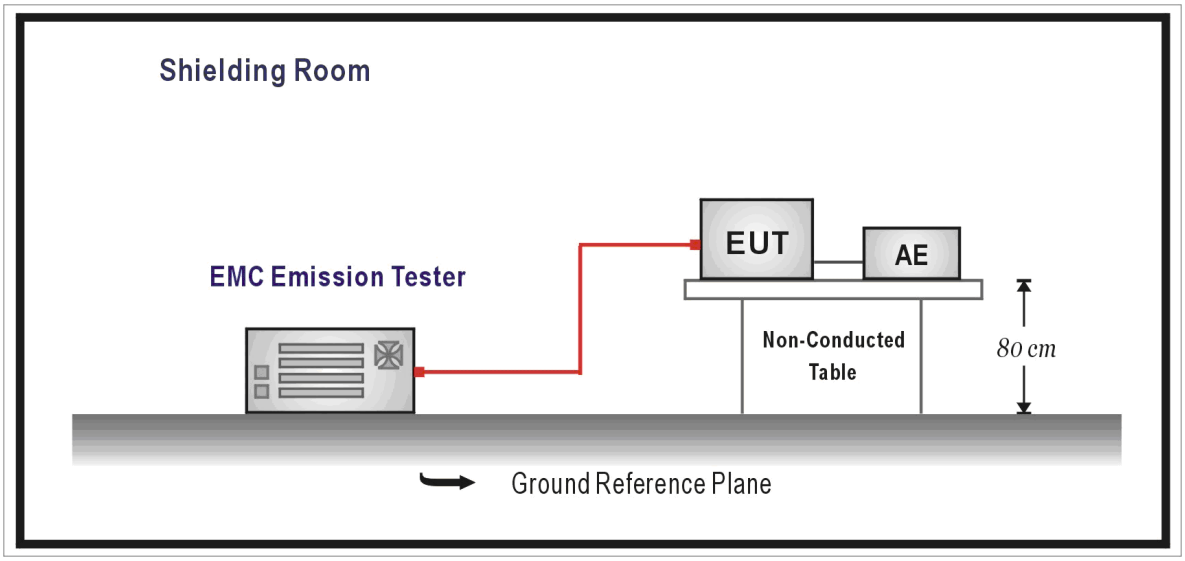
Description : Front View of High Frequency Radiated Test

6. Harmonic Current Emission

6.1. Test Specification

According to EMC Standard : EN 61000-3-2

6.2. Test Setup



6.3. Limit

(a) Limits of Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current A	Harmonics Order n	Maximum Permissible harmonic current A
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	8 ≤ n ≤ 40	0.23 * 8/n
11	0.33		
13	0.21		
15 ≤ n ≤ 39	0.15 * 15/n		

(b) Limits of Class B Harmonics Currents

For Class B equipment, the harmonic of the input current shall not exceed the maximum permissible values given in table that is the limit of Class A multiplied by a factor of 1.5.

(c) Limits of Class C Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current Expressed as a percentage of the input current at the fundamental frequency %
2	2
3	30 · λ*
5	10
7	7
9	5
11 ≤ n ≤ 39 (odd harmonics only)	3
∗λ is the circuit power factor	

(d) Limits of Class D Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current per watt mA/W	Maximum Permissible harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
11 ≤ n ≤ 39 (odd harmonics only)	3.85/n	See limit of Class A

6.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

6.5. Deviation from Test Standard

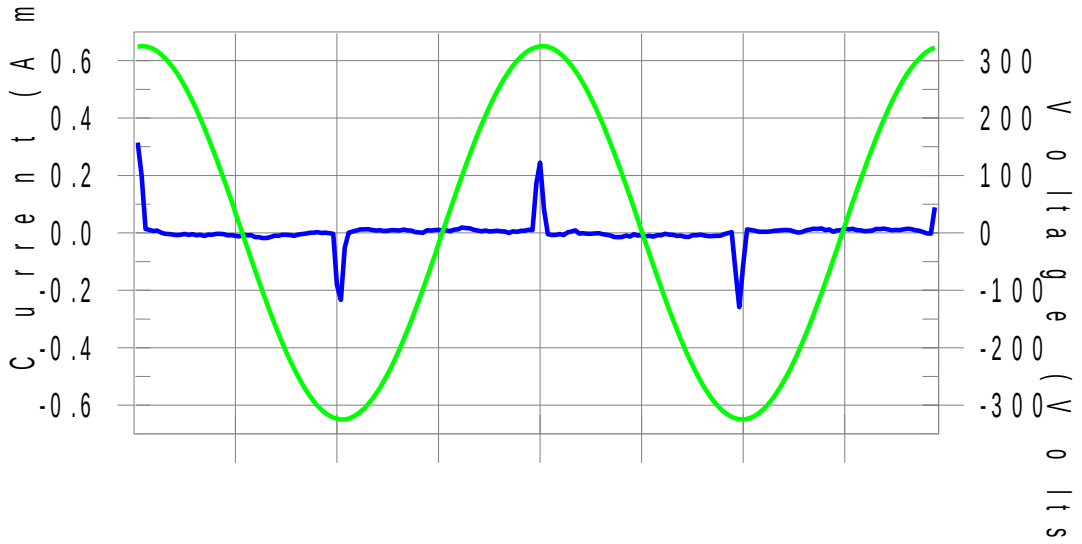
No deviation.

6.6. Test Result

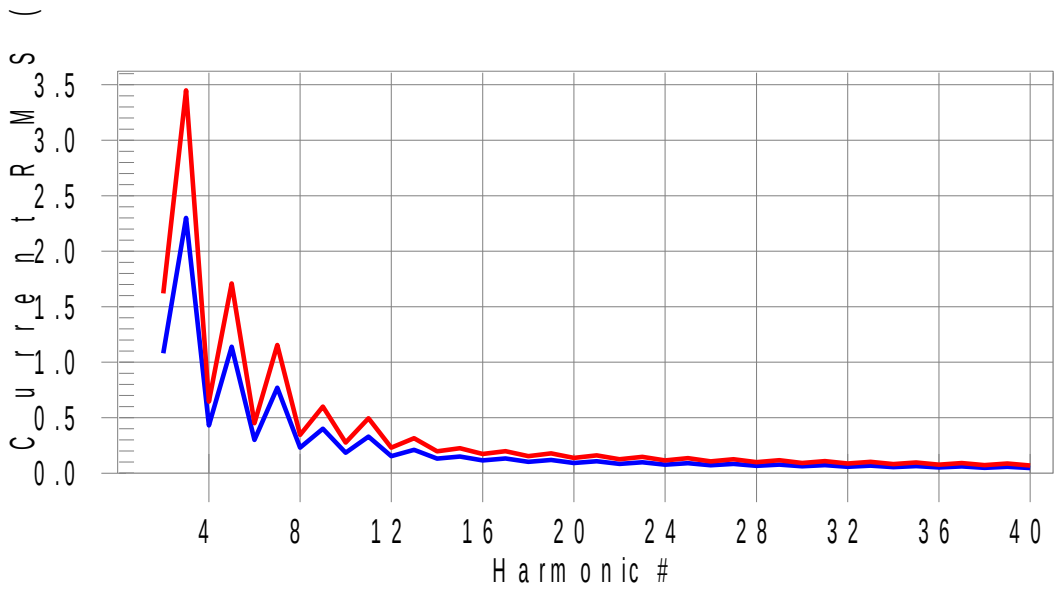
Product	Network Camera		
Test Item	Power Harmonics		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/12	Test Site	No.3 Shielded Room

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass Worst harmonics H21-6.1% of 150% limit, H23-9.1% of 100% limit.

Test Result: Pass Source qualification: Normal
THC(A): 0.044 I-THD(%): 267.6 POHC(A): 0.021 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts):	229.960	Frequency(Hz):	50.00
I_Peak (Amps):	0.332	I_RMS (Amps):	0.048
I_Fund (Amps):	0.016	Crest Factor:	7.221
Power (Watts):	3.3	Power Factor:	0.313

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	1.080	N/A	0.002	1.620	N/A	Pass
3	0.014	2.300	0.6	0.016	3.450	0.5	Pass
4	0.002	0.430	N/A	0.002	0.645	N/A	Pass
5	0.014	1.140	1.2	0.014	1.710	0.8	Pass
6	0.002	0.300	N/A	0.002	0.450	N/A	Pass
7	0.014	0.770	1.8	0.014	1.155	1.2	Pass
8	0.001	0.230	N/A	0.002	0.345	N/A	Pass
9	0.013	0.400	3.4	0.014	0.600	2.3	Pass
10	0.001	0.184	N/A	0.002	0.276	N/A	Pass
11	0.013	0.330	3.9	0.013	0.495	2.7	Pass
12	0.002	0.153	N/A	0.002	0.230	N/A	Pass
13	0.012	0.210	5.9	0.013	0.315	4.0	Pass
14	0.001	0.131	N/A	0.001	0.197	N/A	Pass
15	0.012	0.150	7.9	0.012	0.225	5.3	Pass
16	0.001	0.115	N/A	0.001	0.173	N/A	Pass
17	0.011	0.132	8.4	0.011	0.198	5.7	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.010	0.118	8.8	0.010	0.178	5.9	Pass
20	0.001	0.092	N/A	0.001	0.138	N/A	Pass
21	0.010	0.107	9.0	0.010	0.161	6.1	Pass
22	0.001	0.084	N/A	0.001	0.125	N/A	Pass
23	0.009	0.098	9.1	0.009	0.147	6.1	Pass
24	0.001	0.077	N/A	0.001	0.115	N/A	Pass
25	0.008	0.090	9.0	0.008	0.135	6.0	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass
27	0.007	0.083	8.7	0.007	0.125	5.9	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.006	0.078	8.4	0.007	0.116	5.6	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.006	0.073	7.9	0.006	0.109	5.3	Pass
32	0.001	0.058	N/A	0.001	0.086	N/A	Pass
33	0.005	0.068	N/A	0.005	0.102	N/A	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.004	0.064	N/A	0.004	0.096	N/A	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.004	0.061	N/A	0.004	0.091	N/A	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.003	0.058	N/A	0.003	0.087	N/A	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass

1.Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

2:According to EN61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.

6.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

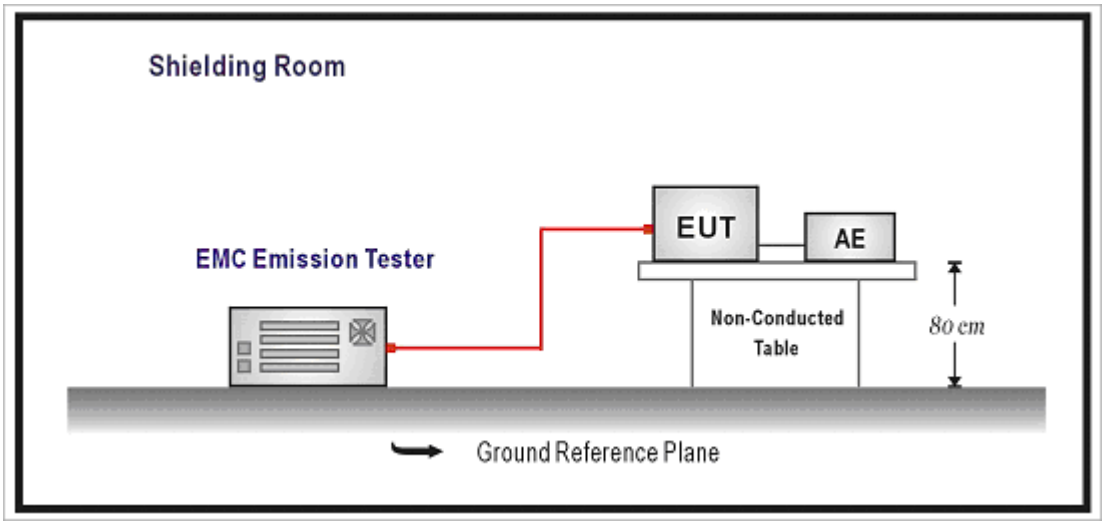
Description : Power Harmonics Test Setup

7. Voltage Fluctuation and Flicker

7.1. Test Specification

According to EMC Standard : EN 61000-3-3

7.2. Test Setup



7.3. Limit

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{lt} shall not be greater than 0.65;
- the value of d(t) during a voltage change shall not exceed 3.3 % for more than 500 ms;
- the relative steady-state voltage change, d_c, shall not exceed 3.3 %;
- the maximum relative voltage change, d_{max}, shall not exceed;

a) 4 % without additional conditions;

b) 6 % for equipment which is:

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

NOTE The cycling frequency will be further limited by the P_{st} and P_{1t} limit.

For example: a d_{max} of 6%producing a rectangular voltage change characteristic twice per hour will give a P_{1t} of about 0.65.

c) 7 % for equipment which is:

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

P_{st} and P_{1t} requirements shall not be applied to voltage changes caused by manual switching.

7.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

7.5. Deviation from Test Standard

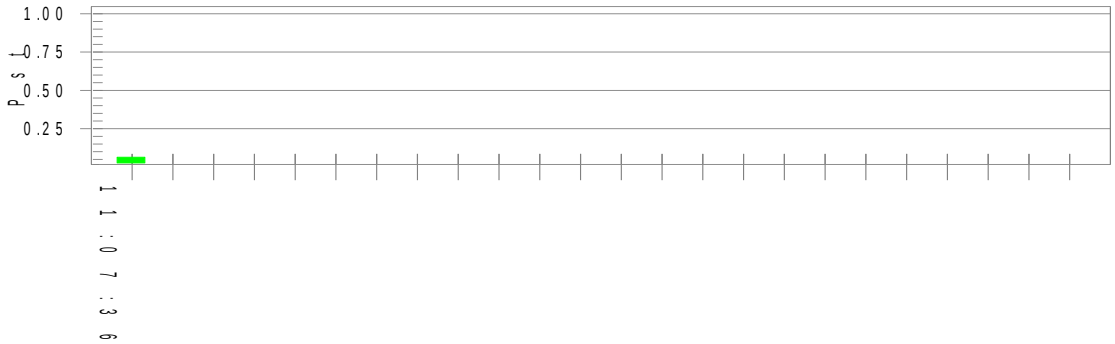
No deviation.

7.6. Test Result

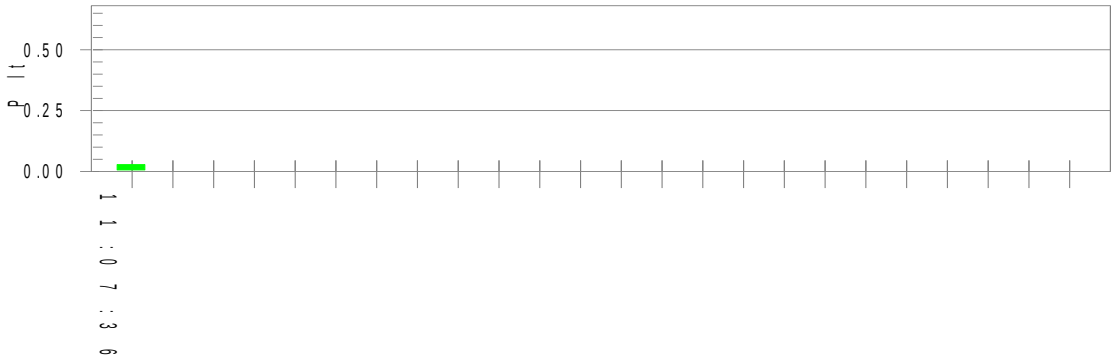
Product	Network Camera		
Test Item	Voltage Fluctuation and Flicker		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/12	Test Site	No.3 Shielded Room

Test Result: Pass Status: Test Completed

Pst_i and limit line European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.90			
T-max (mS):	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	-0.05	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

7.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

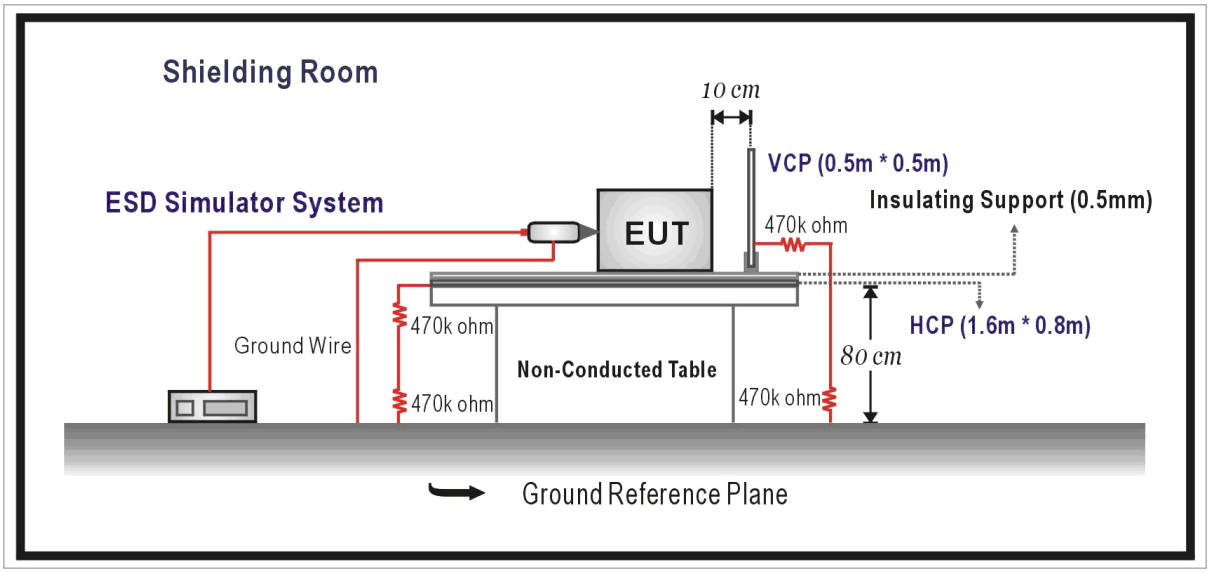
Description : Flicker Test Setup

8. Electrostatic Discharge

8.1. Test Specification

According to Standard : IEC 61000-4-2

8.2. Test Setup



8.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Electrostatic Discharge	kV(Charge Voltage)	±8 Air Discharge ±4 Contact Discharge	B

8.4. Test Procedure

Direct application of discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

Indirect application of discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

8.5. Deviation from Test Standard

No deviation.

8.6. Test Result

Product	Network Camera		
Test Item	Electrostatic Discharge		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/12	Test Site	No.6 Shielded Room

Item	Amount of Discharge	Voltage	Required Criteria	Complied To Criteria (A,B,C)	Results
Air Discharge	10	+8kV	B	A	Pass
	10	-8kV	B	A	Pass
Contact Discharge	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (HCP)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

NR: No Requirement

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at ____ kV.

☒ No false alarms or other malfunctions were observed during or after the test.

Remark:

The Contact discharges were applied at least total 200 discharges at a minimum of four test points.

Product	Network Camera		
Test Item	Electrostatic Discharge		
Test Mode	Mode 2: IB9387-EHT, PoE		
Date of Test	2019/05/12	Test Site	No.6 Shielded Room

Item	Amount of Discharge	Voltage	Required Criteria	Complied To Criteria (A,B,C)	Results
Air Discharge	10	+8kV	B	A	Pass
	10	-8kV	B	A	Pass
Contact Discharge	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (HCP)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

NR: No Requirement

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at ____ kV.

☒ No false alarms or other malfunctions were observed during or after the test.

Remark:

The Contact discharges were applied at least total 200 discharges at a minimum of four test points.

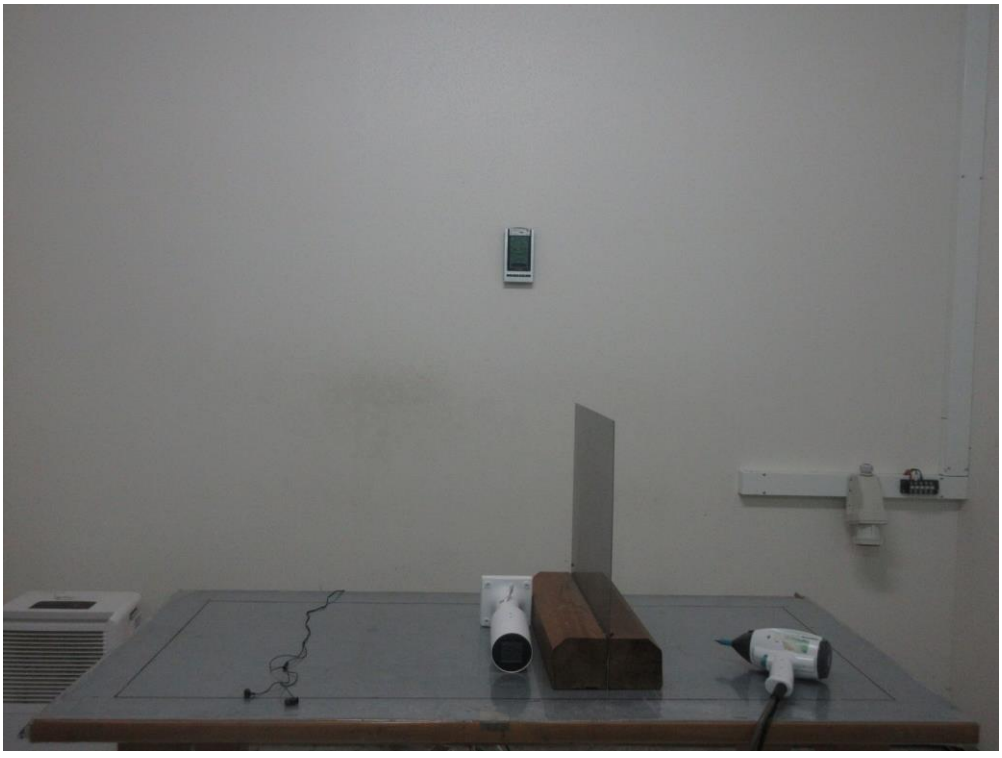
8.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : ESD Test Setup

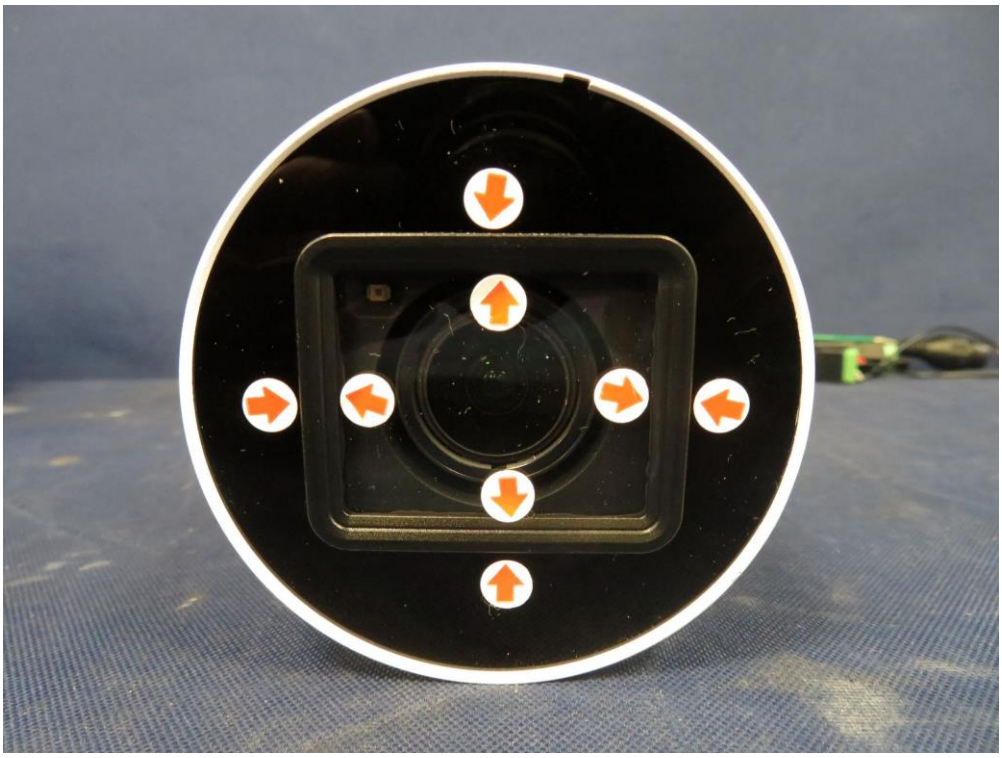
Test Mode : Mode 2: IB9387-EHT, PoE

Description : ESD Test Setup

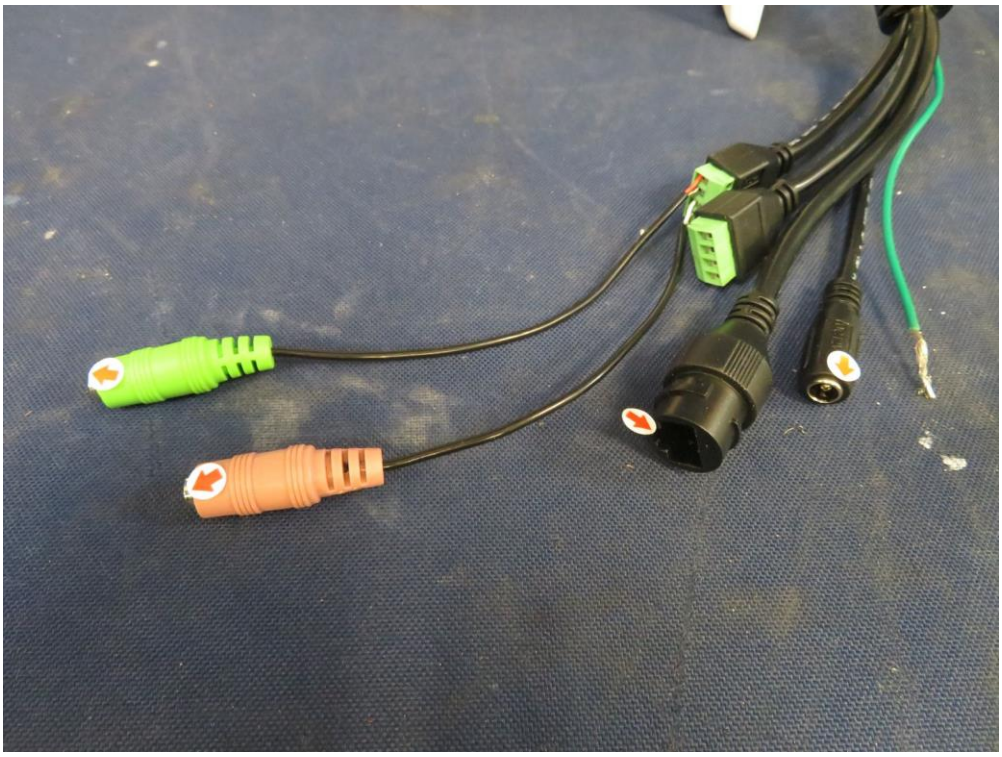


8.8. EUT to dot photo for ESD test

Test dot : (Air DISCHARGE)



Test dot : (Air DISCHARGE)



Test dot : (CONTACT DISCHARGE)

Test dot : (CONTACT DISCHARGE)

Test dot : (CONTACT DISCHARGE)

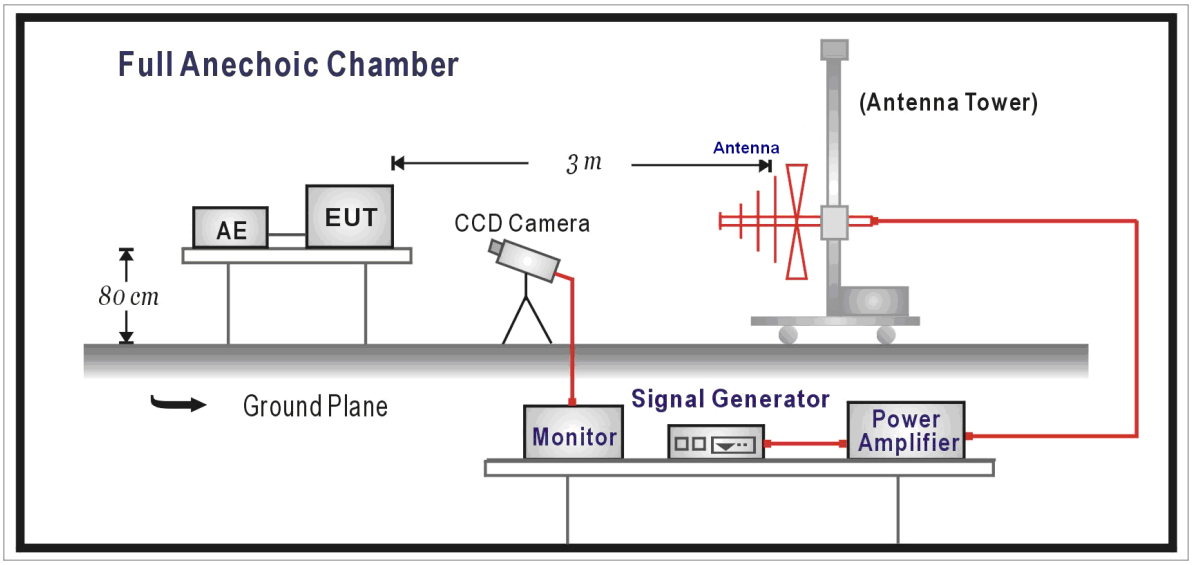
Test dot : (CONTACT DISCHARGE)

9. Radiated Susceptibility

9.1. Test Specification

According to Standard : IEC 61000-4-3

9.2. Test Setup



9.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Radio-Frequency Electromagnetic Field Amplitude Modulated	MHz V/m(Un-modulated, rms) % AM (1kHz)	80-1000 3 80	A

9.4. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.

In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3 V/m Level 2
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	80MHz - 1000MHz
4	Dwell Time	3 Seconds
5.	Frequency step size Δf :	1%
6.	The rate of Swept of Frequency	1.5×10^{-3} decades/s

9.5. Deviation from Test Standard

No deviation.

9.6. Test Result

Product	Network Camera		
Test Item	Radiated susceptibility		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/12	Test Site	Chamber 9

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	0°	H	3	A	A	PASS
80-1000	0°	V	3	A	A	PASS
80-1000	90°	H	3	A	A	PASS
80-1000	90°	V	3	A	A	PASS
80-1000	180°	H	3	A	A	PASS
80-1000	180°	V	3	A	A	PASS
80-1000	270°	H	3	A	A	PASS
80-1000	270°	V	3	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A: Operate as intended during and after the test
☐ Meet criteria B: Operate as intended after the test
☐ Meet criteria C: Loss/Error of function
☐ Additional Information
  ☐ There was no observable degradation in performance.
  ☐ EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____MHz.

☒ No false alarms or other malfunctions were observed during or after the test.

Product	Network Camera		
Test Item	Radiated susceptibility		
Test Mode	Mode 2: IB9387-EHT, PoE		
Date of Test	2019/05/12	Test Site	Chamber 9

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	0°	H	3	A	A	PASS
80-1000	0°	V	3	A	A	PASS
80-1000	90°	H	3	A	A	PASS
80-1000	90°	V	3	A	A	PASS
80-1000	180°	H	3	A	A	PASS
80-1000	180°	V	3	A	A	PASS
80-1000	270°	H	3	A	A	PASS
80-1000	270°	V	3	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

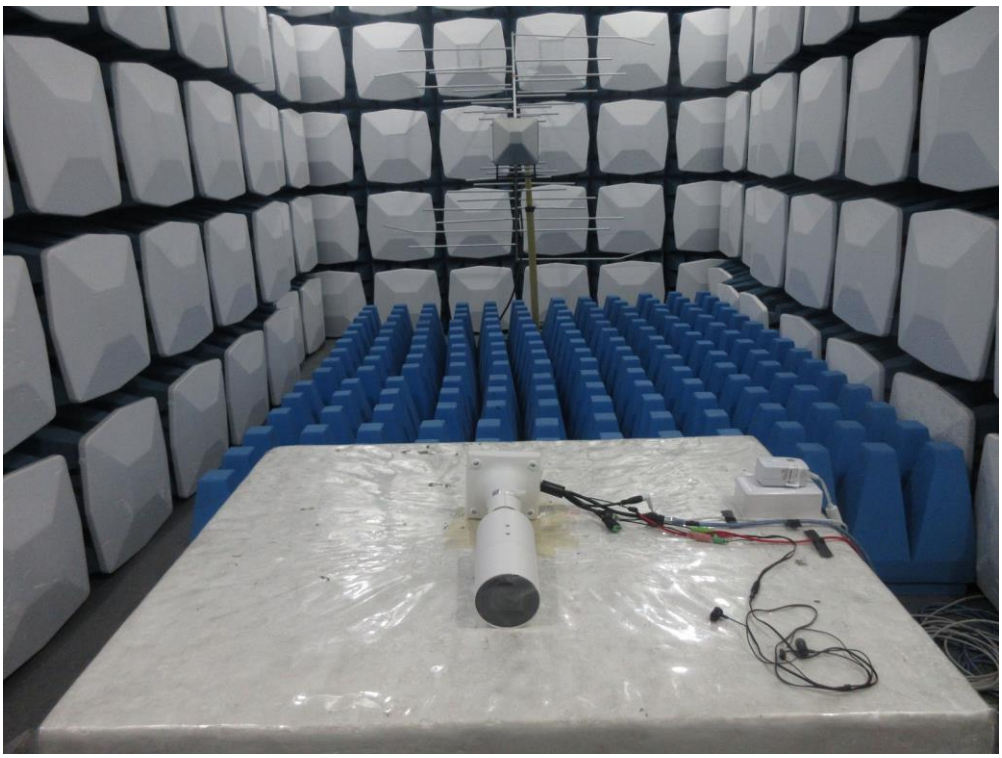
☒ Meet criteria A: Operate as intended during and after the test
☐ Meet criteria B: Operate as intended after the test
☐ Meet criteria C: Loss/Error of function
☐ Additional Information
  ☐ There was no observable degradation in performance.
  ☐ EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____MHz.

☒ No false alarms or other malfunctions were observed during or after the test.

9.7. Test Photograph

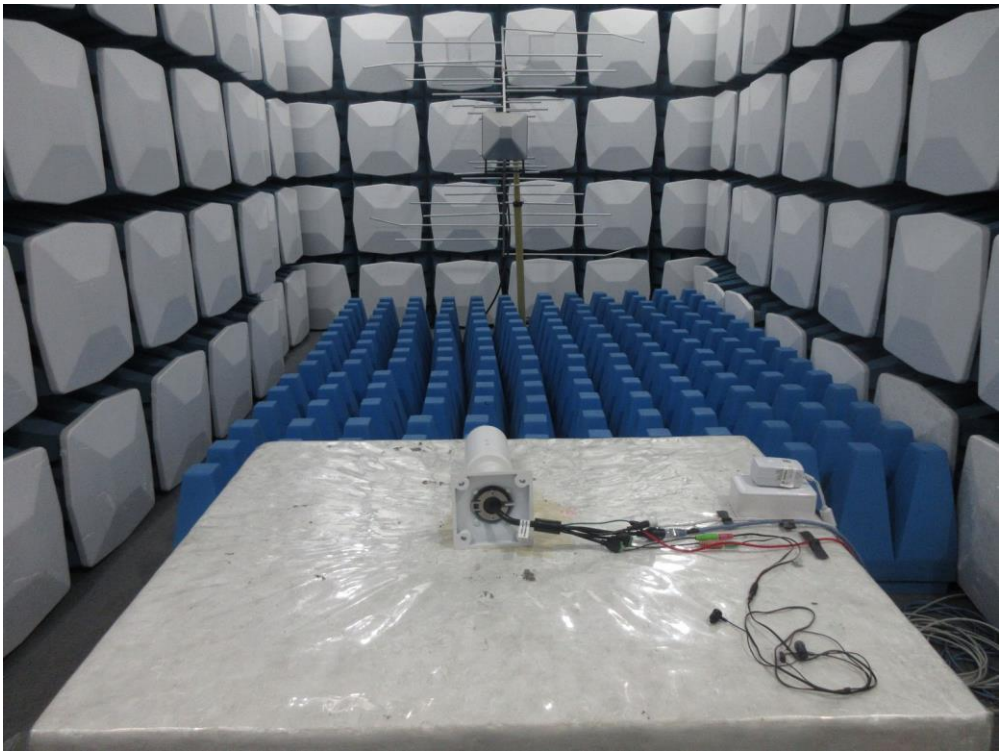
Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Radiated Susceptibility Test Setup



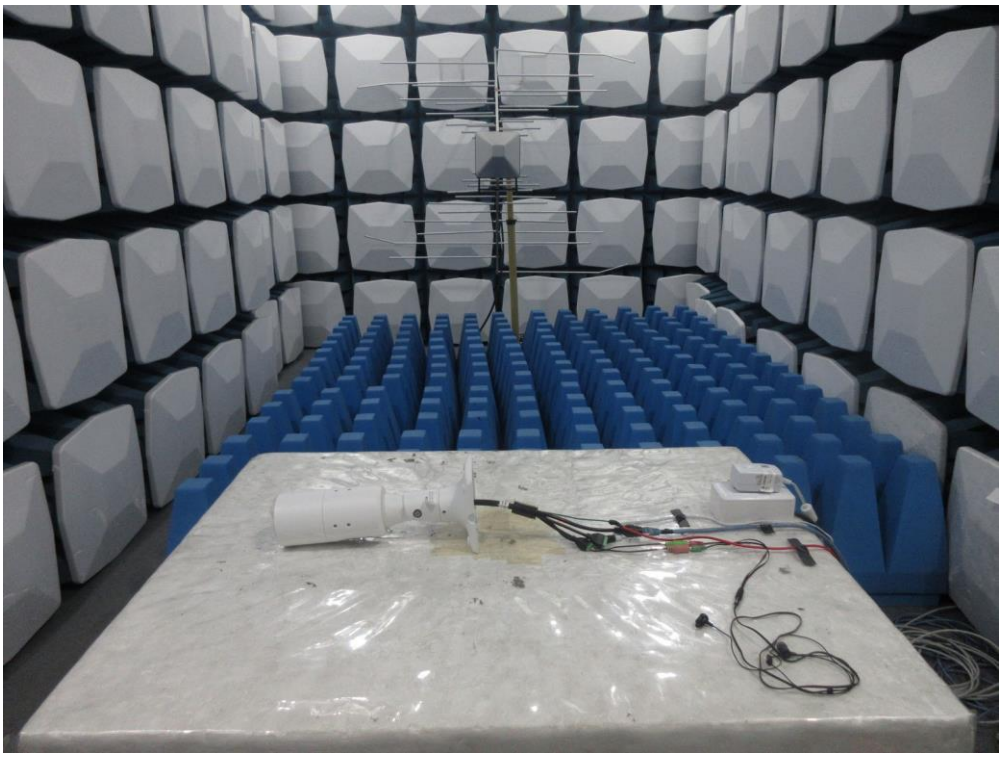
Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Radiated Susceptibility Test Setup



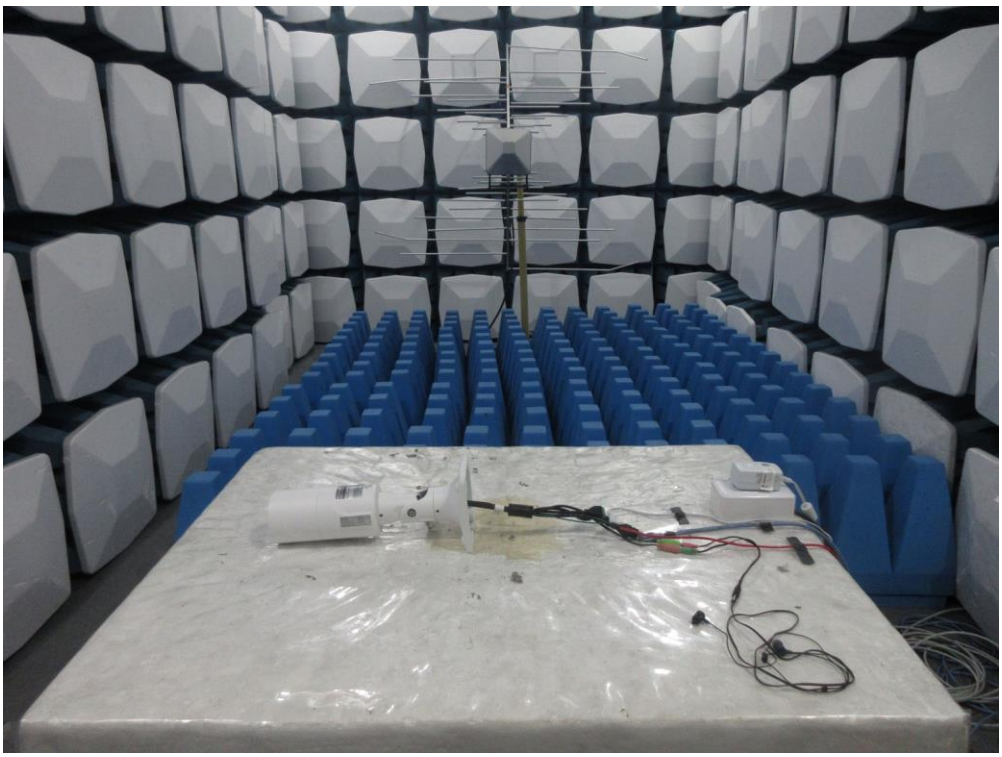
Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Radiated Susceptibility Test Setup



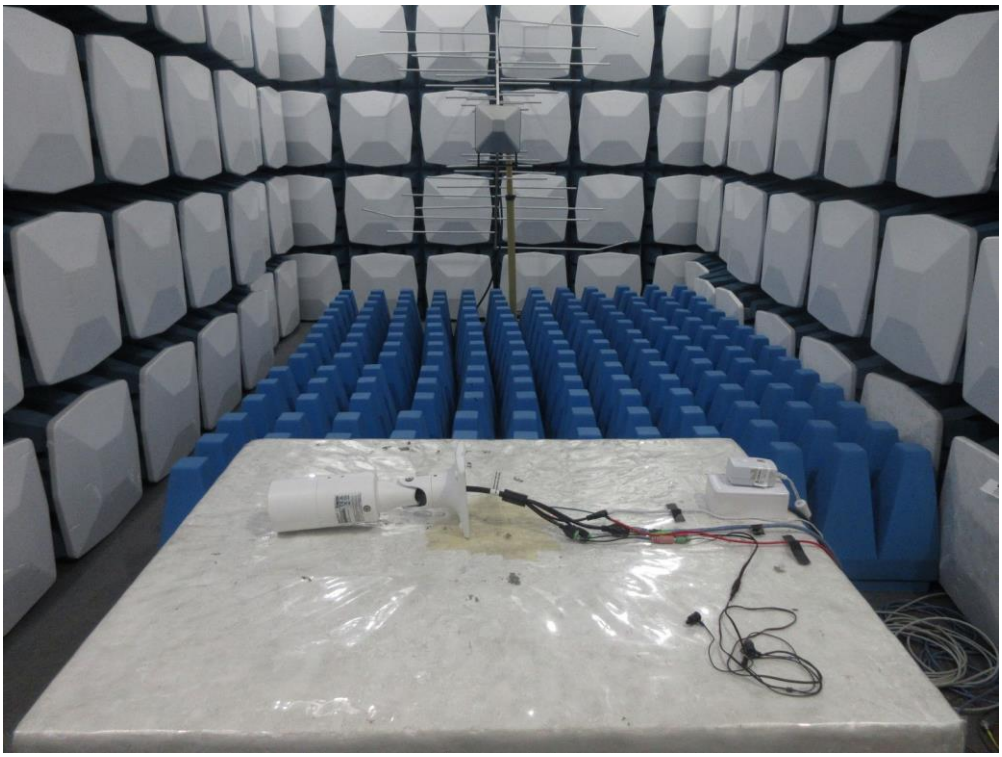
Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Radiated Susceptibility Test Setup



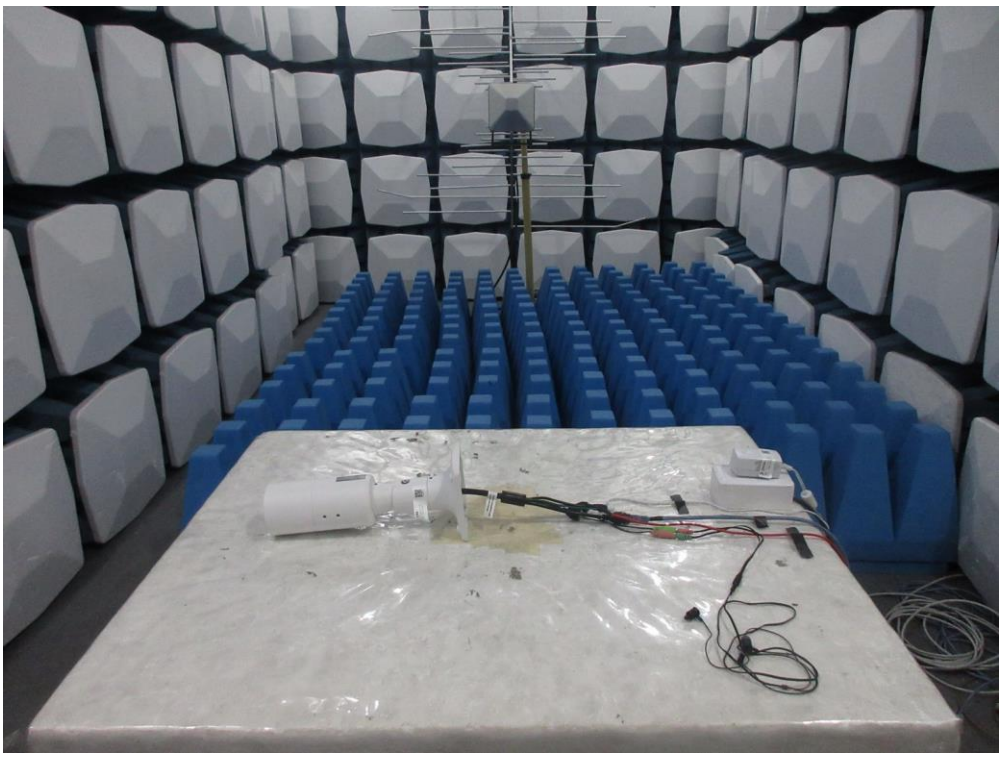
Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Radiated Susceptibility Test Setup



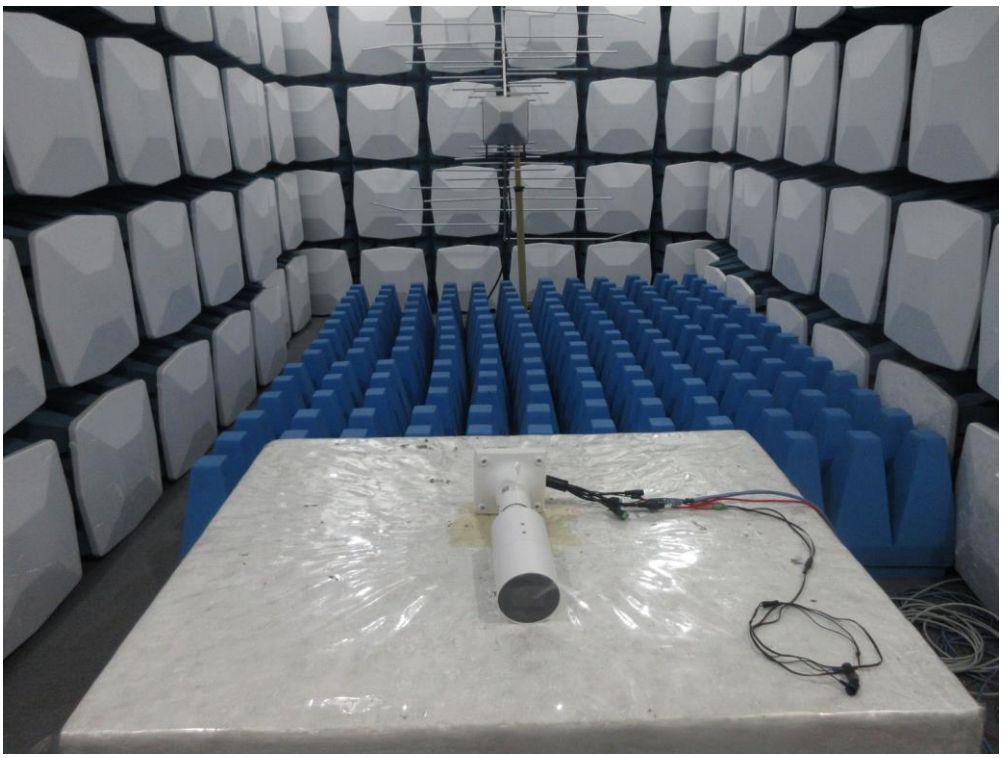
Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Radiated Susceptibility Test Setup



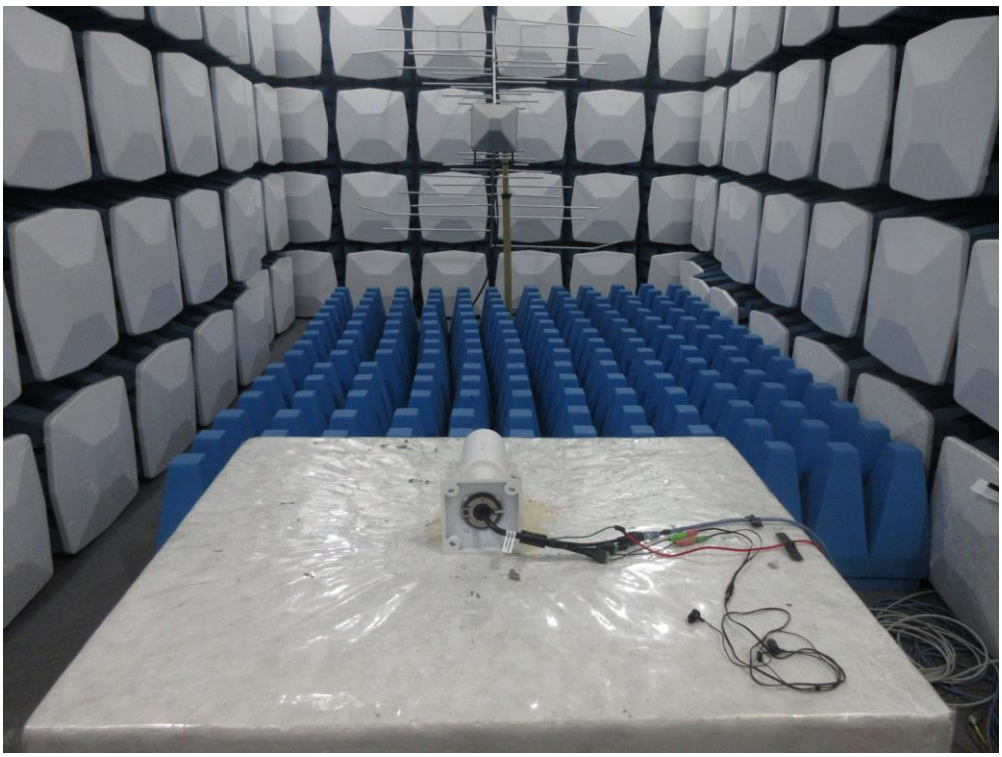
Test Mode : Mode 2: IB9387-EHT, PoE

Description : Radiated Susceptibility Test Setup



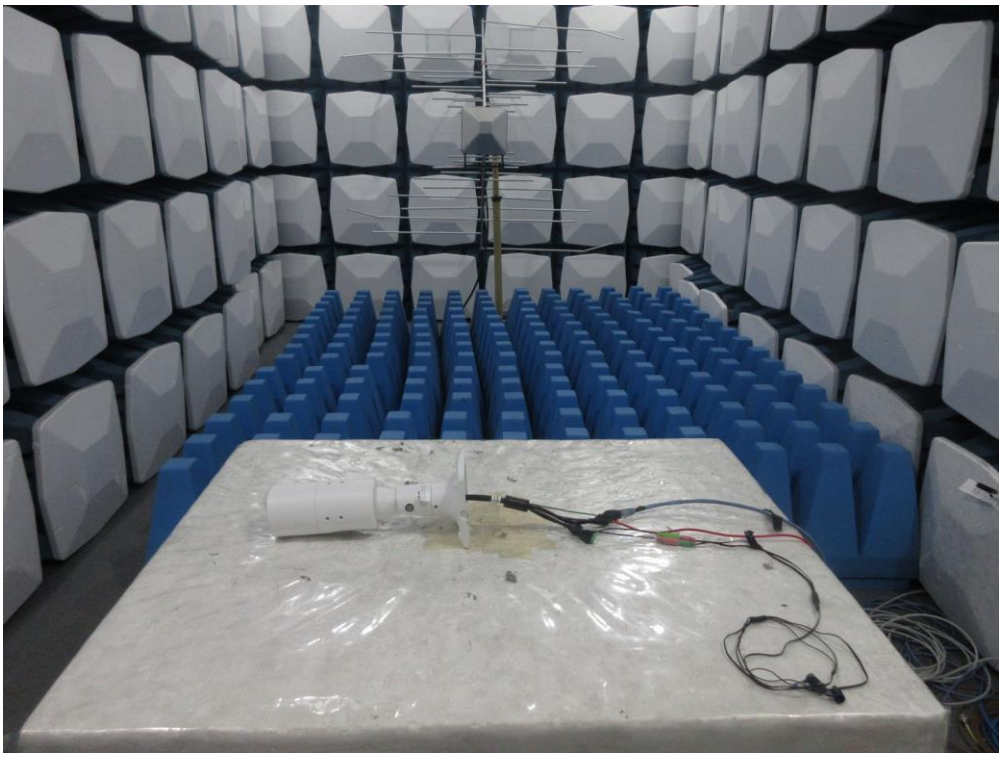
Test Mode : Mode 2: IB9387-EHT, PoE

Description : Radiated Susceptibility Test Setup



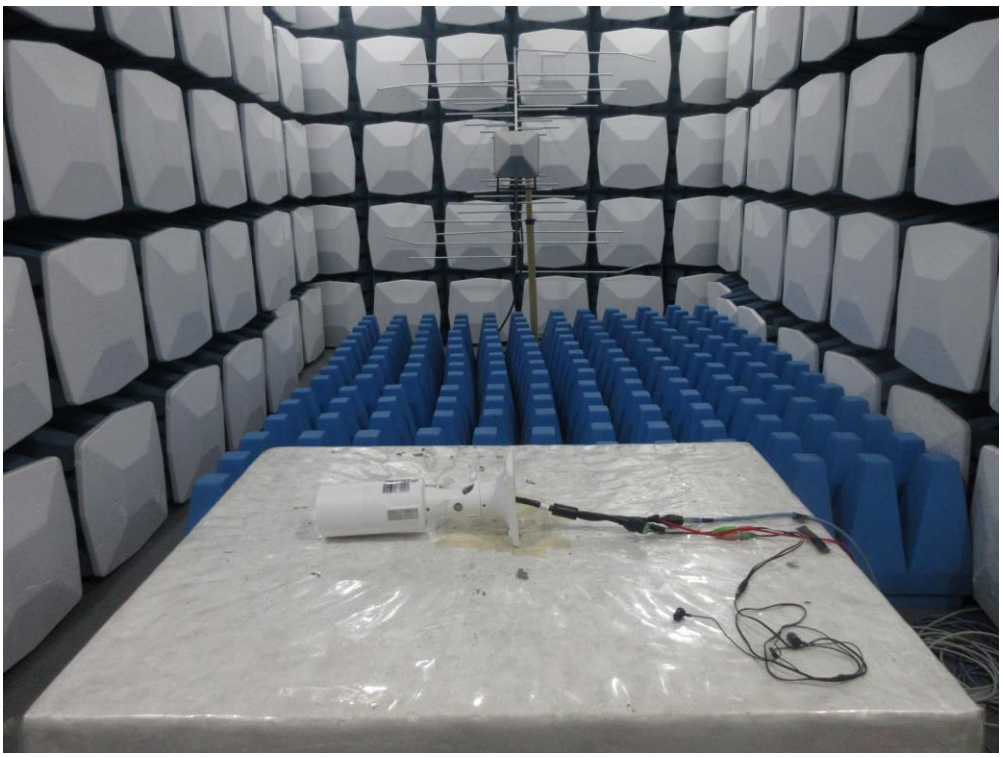
Test Mode : Mode 2: IB9387-EHT, PoE

Description : Radiated Susceptibility Test Setup



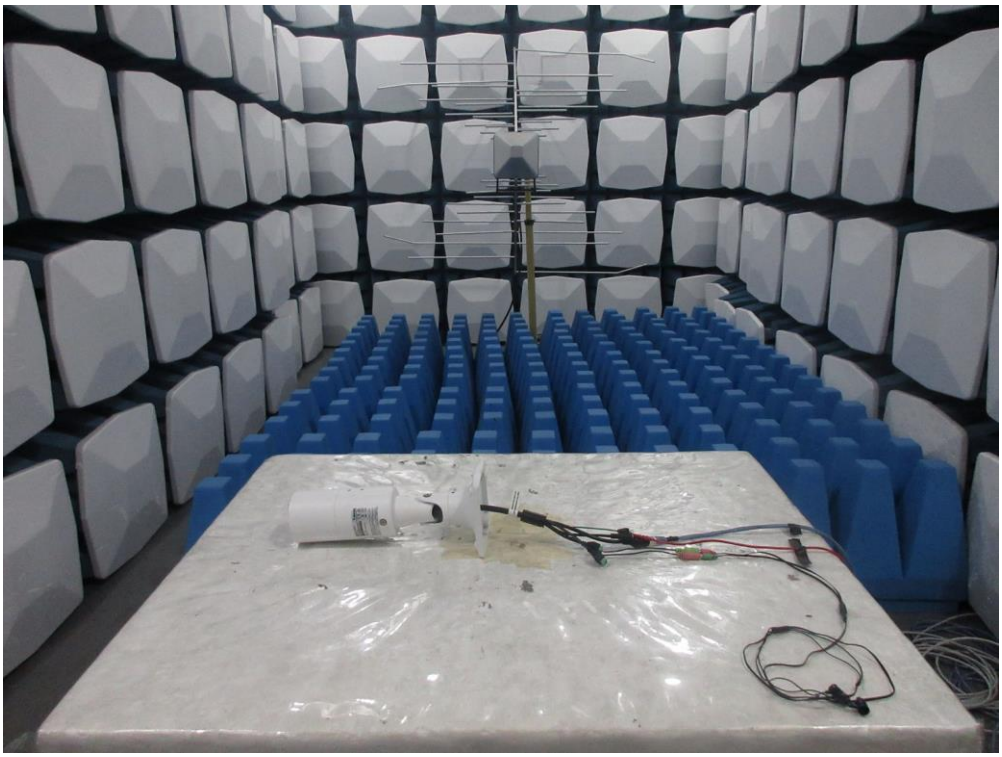
Test Mode : Mode 2: IB9387-EHT, PoE

Description : Radiated Susceptibility Test Setup



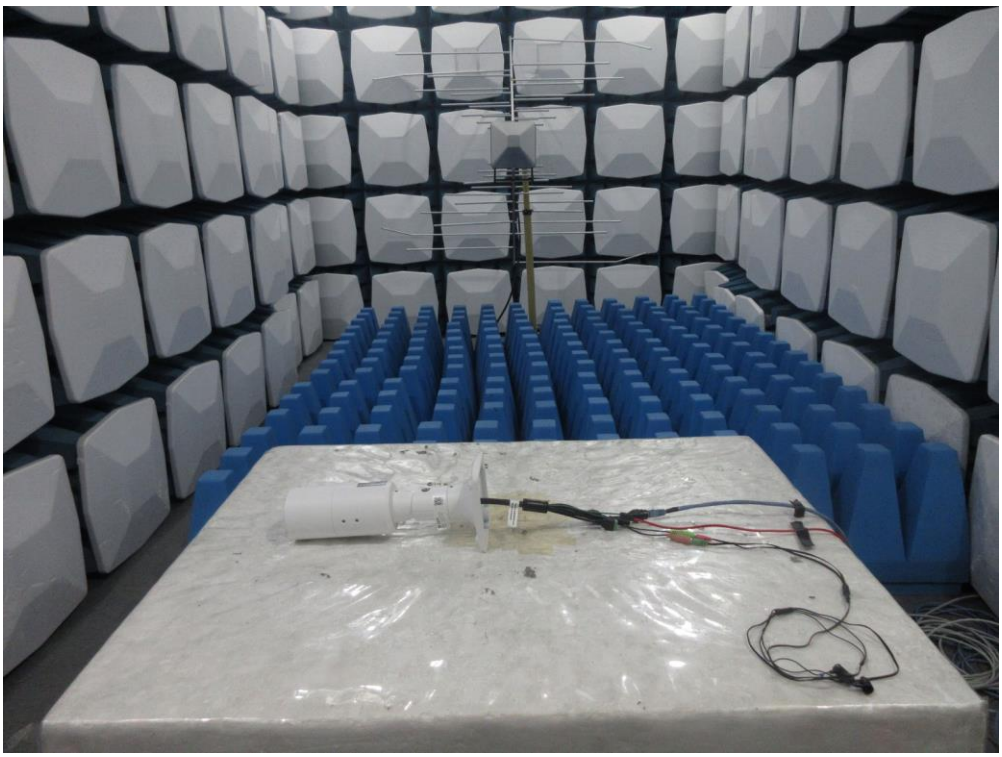
Test Mode : Mode 2: IB9387-EHT, PoE

Description : Radiated Susceptibility Test Setup



Test Mode : Mode 2: IB9387-EHT, PoE

Description : Radiated Susceptibility Test Setup

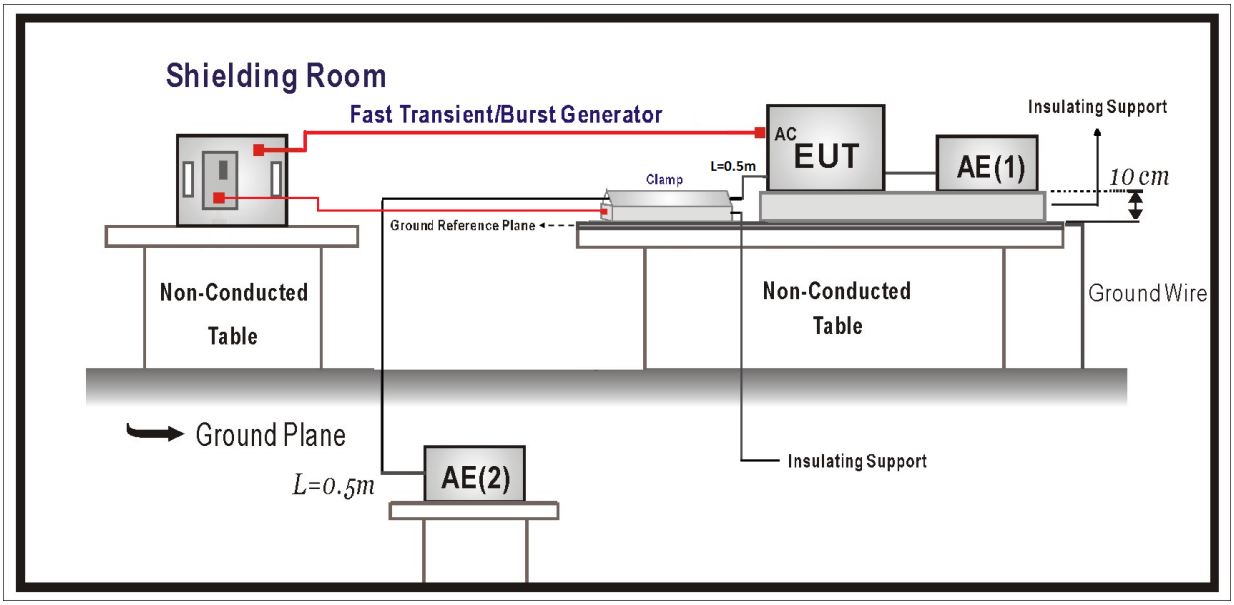


10. Electrical Fast Transient/Burst

10.1. Test Specification

According to Standard : IEC 61000-4-4

10.2. Test Setup



10.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
I/O and communication ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±0.5 5/50 5	B
Input DC Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±0.5 5/50 5	B
Input AC Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±1 5/50 5	B

10.4. Test Procedure

The EUT is placed on a table that is 0.8 meter height. A ground reference plane is placed on the table, and uses a 0.1m insulation between the EUT and ground reference plane.
The minimum area of the ground reference plane is 1m*1m, and 0.65mm thick min, and projected beyond the EUT by at least 0.1m on all sides.

Test on I/O and communication ports:
The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1minute.

Test on power supply ports:
The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.
Each of the Line and Neutral conductors is impressed with burst noise for 1 minute.

The length of the signal and power lines between the coupling device and the EUT is 0.5m.

10.5. Deviation from Test Standard

No deviation.

10.6. Test Result

Product	Network Camera		
Test Item	Electrical fast transient/burst		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/12	Test Site	No.6 Shielded Room

Inject Line	Polarity	Voltage kV	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L	±	1kV	60	Direct	B	A	PASS
N	±	1kV	60	Direct	B	A	PASS
L-N	±	1kV	60	Direct	B	A	PASS
LAN	±	0.5kV	60	Clamp	B	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
☒ No false alarms or other malfunctions were observed during or after the test.

Product	Network Camera		
Test Item	Electrical fast transient/burst		
Test Mode	Mode 2: IB9387-EHT, PoE		
Date of Test	2019/05/12	Test Site	No.6 Shielded Room

Inject Line	Polarity	Voltage kV	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
LAN	±	0.5kV	60	Clamp	B	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
☒ No false alarms or other malfunctions were observed during or after the test.

10.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : EFT/B Test Setup

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : EFT/B Test Setup - Clamp

Test Mode : Mode 2: IB9387-EHT, PoE

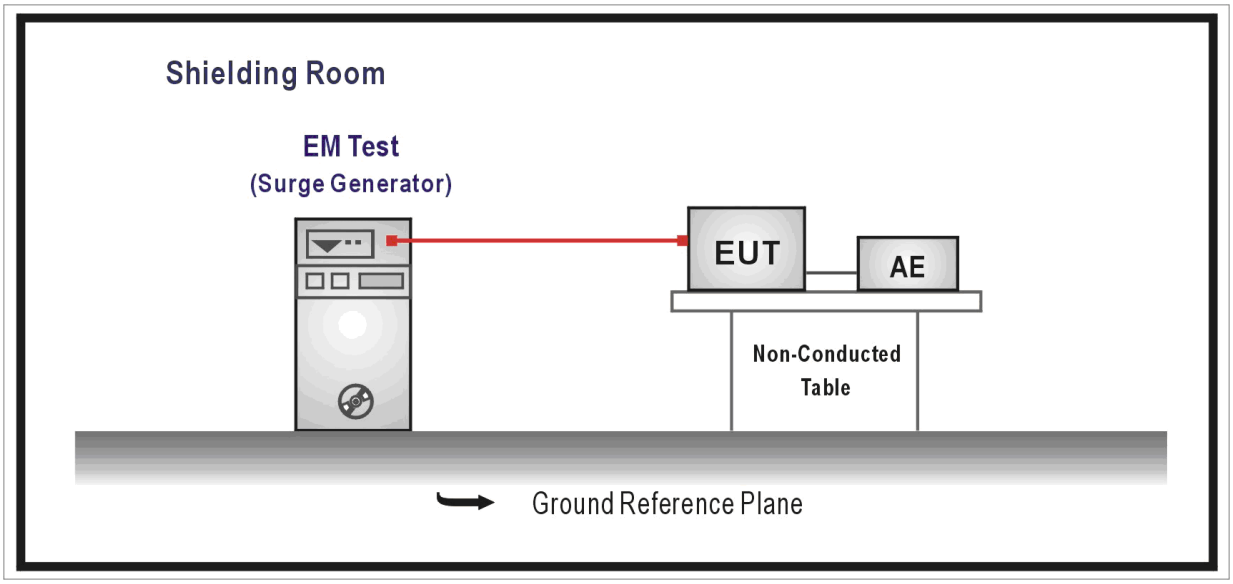
Description : EFT/B Test Setup - Clamp

11. Surge

11.1. Test Specification

According to Standard : IEC 61000-4-5

11.2. Test Setup



11.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports(See 1) and 2))				
	Surges Line to Ground	Tr/Th us kV	10/700 ± 1	C
Input DC Power Ports				
	Surges Line to Ground	Tr/Th us kV	1.2/50 (8/20) ± 0.5	B
AC Input and AC Output Power Ports				
	Surges Line to Line Line to Ground	Tr/Th us kV kV	1.2/50 (8/20) ± 1 ± 2	B

Notes:

1) Applicable only to ports which according to the manufacturer's may directly to outdoor cables.
2) Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no immunity test shall be required.

11.4. Test Procedure

The EUT and its load are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The length of power cord between the coupling device and the EUT shall be 2m or less.

For Input and Output AC Power or DC Input and DC Output Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the Surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0^0, 90^0, 180^0, 270^0 and the peak value of the a.c. voltage wave. (Positive and negative)

Each of Line-Earth and Line-Line is impressed with a sequence of five surge voltages with interval of 1 min.

11.5. Deviation from Test Standard

No deviation.

11.6. Test Result

Product	Network Camera		
Test Item	Surge		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/12	Test Site	No.6 Shielded Room

Inject Line	Polarity	Voltage kV	Angle	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N	±	1kV	0	60	Direct	B	A	PASS
L-N	±	1kV	90	60	Direct	B	A	PASS
L-N	±	1kV	180	60	Direct	B	A	PASS
L-N	±	1kV	270	60	Direct	B	A	PASS
LAN (Line to Ground)	±	4kV	--	60	Direct	B	B	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test

☒ Meet criteria B : Operate as intended after the test

☐ Meet criteria C : Loss/Error of function

☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

☒ No false alarms or other malfunctions were observed during or after the test.

Product	Network Camera		
Test Item	Surge		
Test Mode	Mode 2: IB9387-EHT, PoE		
Date of Test	2019/05/12	Test Site	No.6 Shielded Room

Inject Line	Polarity	Voltage kV	Angle	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
LAN (Line to Ground)	±	4kV	--	60	Direct	B	B	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☐ Meet criteria A : Operate as intended during and after the test
☒ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

☒ No false alarms or other malfunctions were observed during or after the test.

11.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : SURGE Test Setup

Test Mode : Mode 2: IB9387-EHT, PoE

Description : SURGE Test Setup

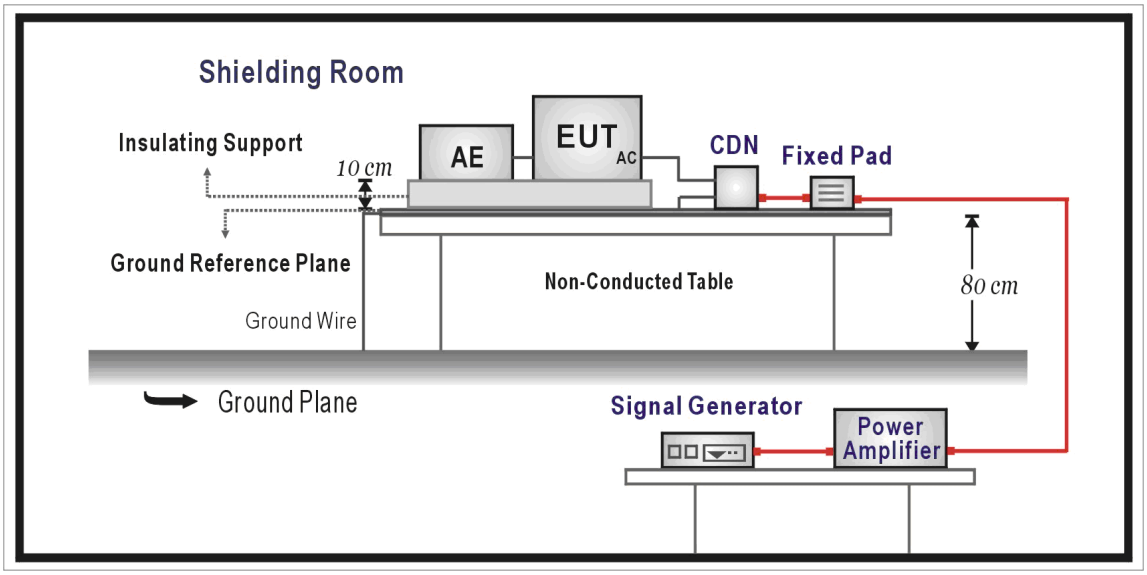
12. Conducted Susceptibility

12.1. Test Specification

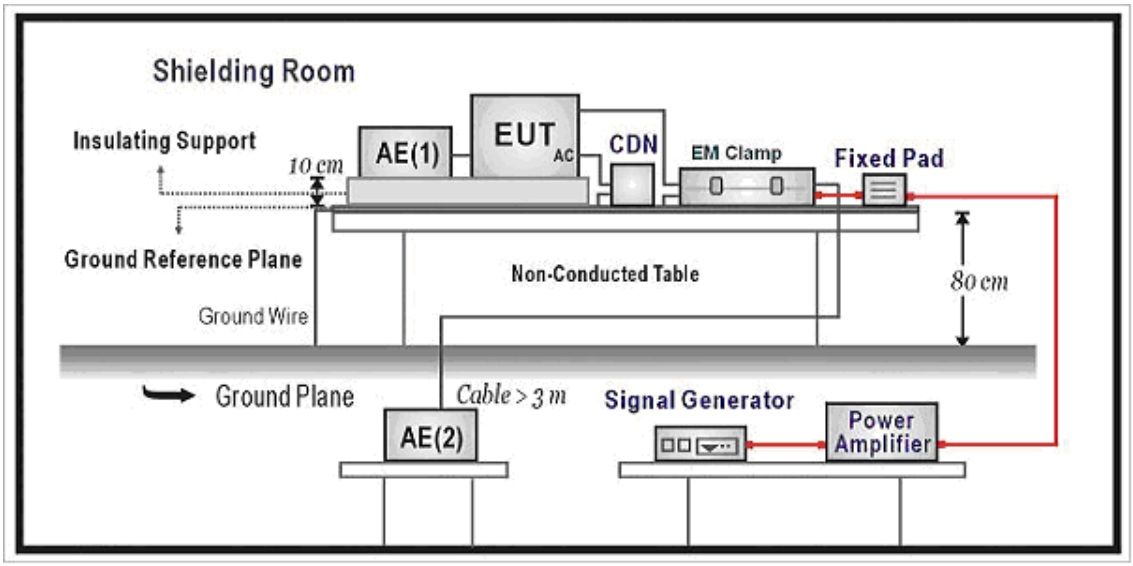
According to Standard : IEC 61000-4-6

12.2. Test Setup

CDN Inject Method



EM Clamp Inject Method



12.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input DC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input AC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A

12.4. Test Procedure

The EUT are placed on a table that is 0.8 meter height, and a Ground reference plane on the table, EUT are placed upon table and use a 10cm insulation between the EUT and Ground reference plane.
For Signal Ports and Telecommunication Ports
The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and Telecommunication lines of the EUT.
For Input DC and AC Power Ports
The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.
Used CDN-M2 for two wires or CDN-M3 for three wires.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	130dBuV(3V) Level 2
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	0.15MHz – 80MHz
4	Dwell Time	3 Seconds
5.	Frequency step size Δf :	1%
6.	The rate of Swept of Frequency	1.5 x 10^{-3} decades/s

12.5. Deviation from Test Standard

No deviation.

12.6. Test Result

Product	Network Camera		
Test Item	Conducted susceptibility		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/09	Test Site	No.6 Shielded Room

Frequency Range (MHz)	Voltage Applied dBuV(V)	Inject Method	Tested Port of EUT	Required Criteria	Performance Criteria Complied To	Result
0.15~80	3V	CDN	AC IN	A	A	PASS
0.15~80	3V	CDN	LAN	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at _____ dBuV(V) at frequency _____MHz.
  ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	Network Camera		
Test Item	Conducted susceptibility		
Test Mode	Mode 2: IB9387-EHT, PoE		
Date of Test	2019/05/09	Test Site	No.6 Shielded Room

Frequency Range (MHz)	Voltage Applied dBuV(V)	Inject Method	Tested Port of EUT	Required Criteria	Performance Criteria Complied To	Result
0.15~80	3V	CDN	LAN	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
- ☐ EUT stopped operation and could / could not be reset by operator at _____ dBuV(V) at frequency _____MHz.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

12.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Conducted Susceptibility Test Setup

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Conducted Susceptibility Test Setup - CDN

Test Mode : Mode 2: IB9387-EHT, PoE

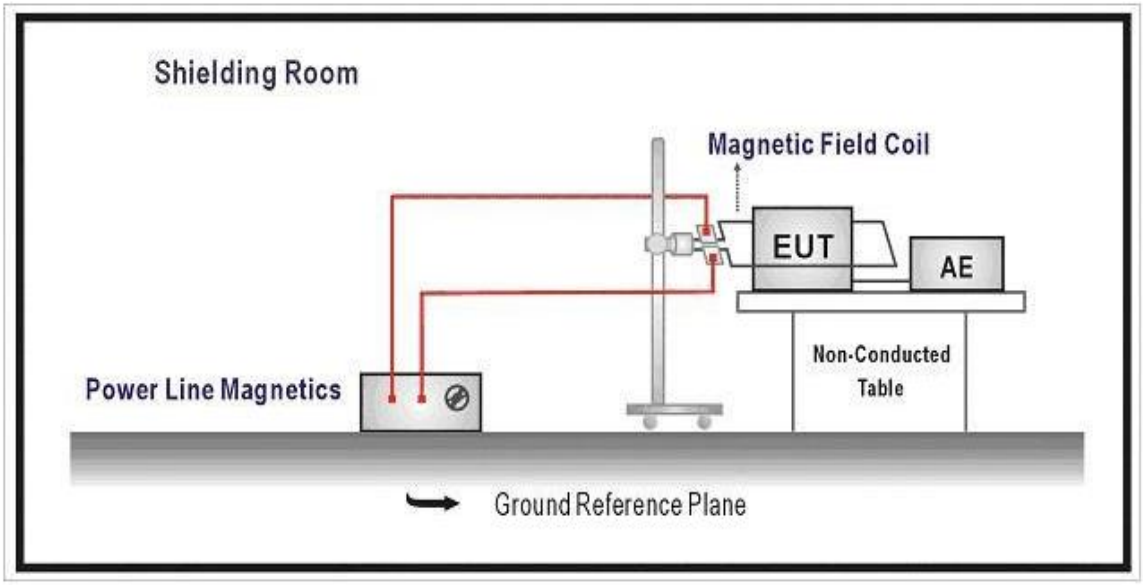
Description : Conducted Susceptibility Test Setup - CDN

13. Power Frequency Magnetic Field

13.1. Test Specification

According to Standard : IEC 61000-4-8

13.2. Test Setup



13.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Power-Frequency Magnetic Field	Hz A/m (r.m.s.)	50 1	A

13.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured at least 1m*1m min. The test magnetic field shall be placed at central of the induction coil.

The test magnetic Field shall be applied 10 minutes by the immersion method to the EUT. And the induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z Orientations).

13.5. Deviation from Test Standard

No deviation.

13.6. Test Result

Product	Network Camera		
Test Item	Power frequency magnetic field		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/12	Test Site	No.3 Shielded Room

Polarization	Frequency (Hz)	Inject Times (s)	Magnetic Strength (A/m)	Required Performance Criteria	Performance Criteria Complied To	Test Result
X Orientation	50	60	1	A	A	PASS
Y Orientation	50	60	1	A	A	PASS
Z Orientation	50	60	1	A	A	PASS

☒ Meet criteria A: Operate as intended during and after the test
☐ Meet criteria B: Operate as intended after the test
☐ Meet criteria C: Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	Network Camera		
Test Item	Power frequency magnetic field		
Test Mode	Mode 2: IB9387-EHT, PoE		
Date of Test	2019/05/12	Test Site	No.3 Shielded Room

Polarization	Frequency (Hz)	Inject Times (s)	Magnetic Strength (A/m)	Required Performance Criteria	Performance Criteria Complied To	Test Result
X Orientation	50	60	1	A	A	PASS
Y Orientation	50	60	1	A	A	PASS
Z Orientation	50	60	1	A	A	PASS

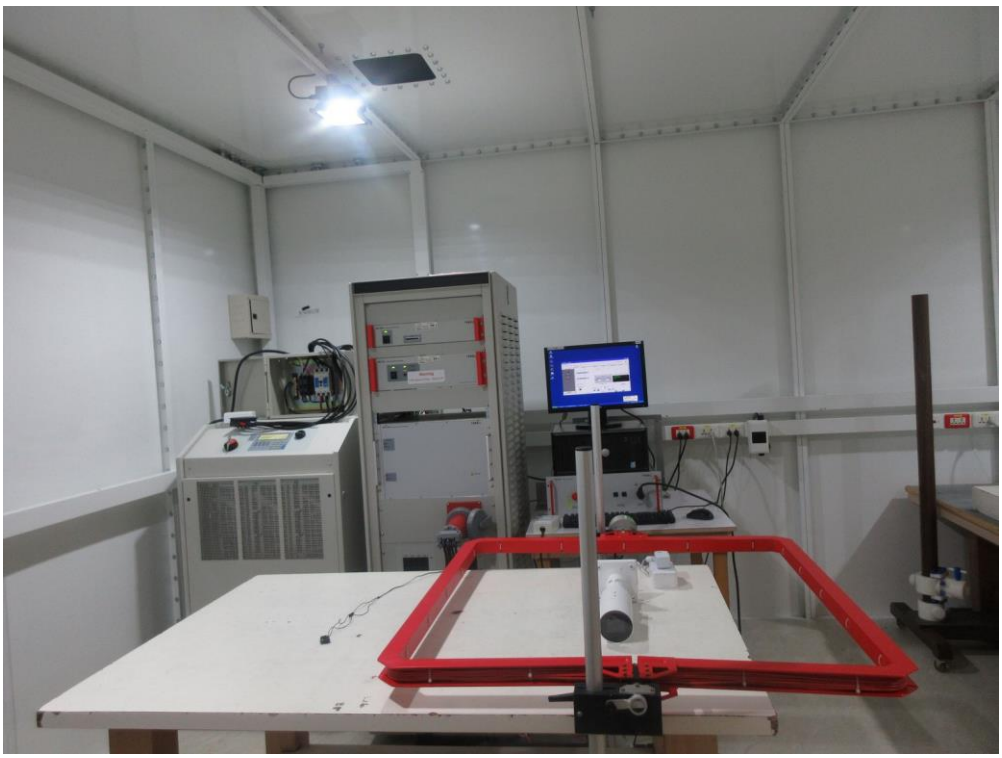
☒ Meet criteria A: Operate as intended during and after the test
☐ Meet criteria B: Operate as intended after the test
☐ Meet criteria C: Loss/Error of function
☐ Additional Information
☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

13.7. Test Photograph

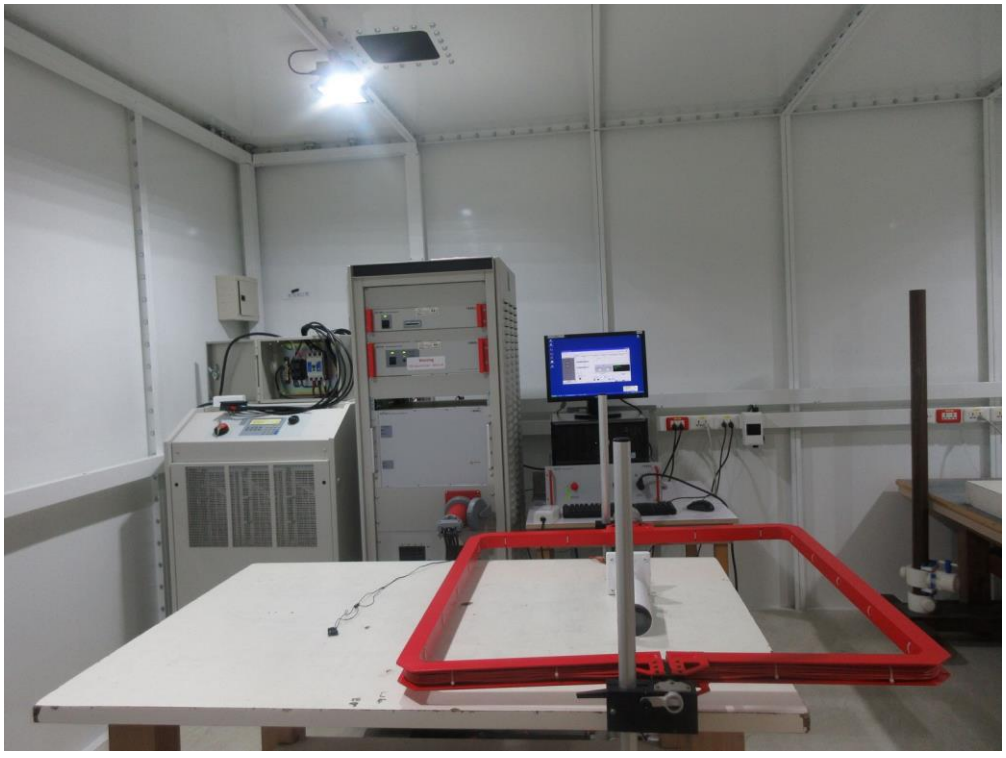
Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Power Frequency Magnetic Field Test Setup



Test Mode : Mode 2: IB9387-EHT, PoE

Description : Power Frequency Magnetic Field Test Setup

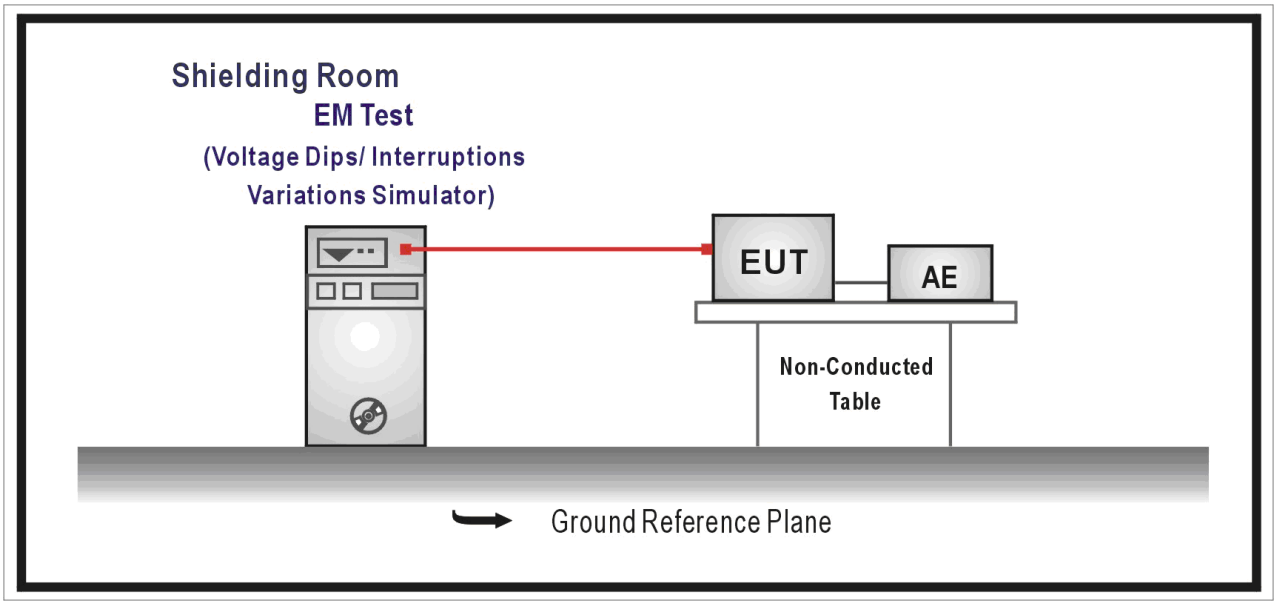


14. Voltage Dips and Interruption

14.1. Test Specification

According to Standard : IEC 61000-4-11

14.2. Test Setup



14.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Input AC Power Ports				
	Voltage Dips	% Reduction Period	30 25	C
		% Reduction Period	>95 0.5	B
	Voltage Interruptions	% Reduction Period	> 95 250	C

14.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m min. And 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage Dips/ Interruptions test:

The selection of test voltage is based on the rated power range. If the operation range is large than 20% of lower power range, both end of specified voltage shall be tested. Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

The EUT shall be tested for 30% voltage dip of supplied voltage and duration 25 Periods, for 95% voltage dip of supplied voltage and duration 0.5 Periods with a sequence of three voltage dips with intervals of 10 seconds, and for 95% voltage interruption of supplied voltage and duration 250 Periods with a sequence of three voltage interruptions with intervals of 10 seconds.

Voltage phase shifting are shall occur at 0^0, 45^0, 90^0 ,135^0 ,180^0 ,225^0, 270^0 ,315^0 of the voltage.

14.5. Deviation from Test Standard

No deviation.

14.6. Test Result

Product	Network Camera		
Test Item	Voltage dips and interruption		
Test Mode	Mode 1: IB9387-EHT, Adapter		
Date of Test	2019/05/12	Test Site	No.6 Shielded Room

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Performance Criteria Complied To	Test Result
30	0	25	C	A	PASS
30	45	25	C	A	PASS
30	90	25	C	A	PASS
30	135	25	C	A	PASS
30	180	25	C	A	PASS
30	225	25	C	A	PASS
30	270	25	C	A	PASS
30	315	25	C	A	PASS
>95	0	0.5	B	A	PASS
>95	45	0.5	B	A	PASS
>95	90	0.5	B	A	PASS
>95	135	0.5	B	A	PASS
>95	180	0.5	B	A	PASS
>95	225	0.5	B	A	PASS
>95	270	0.5	B	A	PASS
>95	315	0.5	B	A	PASS
>95	0	250	C	B	PASS
>95	45	250	C	B	PASS
>95	90	250	C	B	PASS
>95	135	250	C	B	PASS
>95	180	250	C	B	PASS
>95	225	250	C	B	PASS
>95	270	250	C	B	PASS
>95	315	250	C	B	PASS

☒ Meet criteria A: Operate as intended during and after the test

☒ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☐ Additional Information

- ☐ The nominal voltage of EUT is 230V.
- ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

14.7. Test Photograph

Test Mode : Mode 1: IB9387-EHT, Adapter

Description : Voltage Dips Test Setup

15. Attachment

➢ EUT Photograph

(1) EUT Photo

(2) EUT Photo