

EN 55032:2015+A11:2020

EN 55035:2017+A11:2020

EN IEC 61000-3-2:2019/A1:2021

EN 61000-3-3:2013+A1:2019

BS EN 55032:2015+A11:2020

BS EN 55035:2017+A11:2020

BS EN IEC 61000-3-2:2019/A1:2021

BS EN 61000-3-3:2013+A1:2019

TEST REPORT

For

SHENZHEN TENDA TECHNOLOGY CO.,LTD

6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

Model: N3L-4H
Multiple Models: N3L-8H, N3L-16H

Report Type: Original Report	Product Type: HD Network Video Recorder
Report Number:	DG2210907-46503E-01
Report Date:	2021-09-29
Reviewed By:	Redick Zhang EMC Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

Table of Contents

General Information	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
OBJECTIVE	4
TEST METHODOLOGY	4
DECLARATIONS	5
System Test Configuration	6
DESCRIPTION OF TEST CONFIGURATION	6
EQUIPMENT MODIFICATIONS	6
EUT EXERCISE SOFTWARE	6
BLOCK DIAGRAM OF TEST SETUP	6
SUPPORT EQUIPMENT LIST AND DETAILS	7
SUPPORT CABLE LIST AND DETAILS	7
TEST EQUIPMENT LIST	8
ENVIRONMENTAL CONDITIONS.....	9
Summary of Test Results	10
1 – Conducted emissions	11
MEASUREMENT UNCERTAINTY	11
TEST SYSTEM SETUP.....	11
EMI TEST RECEIVER SETUP	12
CORRECTED AMPLITUDE & MARGIN CALCULATION	12
TEST PROCEDURE	12
TEST DATA	13
2 – Radiated emissions	19
MEASUREMENT UNCERTAINTY	19
TEST SYSTEM SETUP.....	19
EMI TEST RECEIVER SETUP	20
TEST PROCEDURE	20
CORRECTED AMPLITUDE & MARGIN CALCULATION	20
TEST DATA	21
3 – Electrostatic discharges IEC 61000-4-2.....	29
MEASUREMENT UNCERTAINTY	29
TEST SYSTEM SETUP.....	29
TEST STANDARD.....	29
TEST PROCEDURE	30
TEST DATA	31
4 – Continuous radiated disturbances IEC 61000-4-3.....	33
MEASUREMENT UNCERTAINTY	33
TEST SYSTEM SETUP.....	33
TEST STANDARD.....	34
TEST LEVEL	34
TEST PROCEDURE	34
TEST DATA	35
5 – Continuous conducted disturbances IEC 61000-4-6	36
MEASUREMENT UNCERTAINTY	36
TEST SETUP	36
TEST STANDARD.....	36
TEST PROCEDURE	37
TEST DATA	38
7 – Electrical fast transients/burst IEC 61000-4-4.....	39

MEASUREMENT UNCERTAINTY	39
TEST SYSTEM SETUP.....	39
TEST STANDARD.....	39
TEST PROCEDURE	40
TEST DATA	41
8 – Surges IEC 61000-4-5.....	42
TEST SYSTEM SETUP.....	42
TEST STANDARD.....	42
TEST PROCEDURE	42
TEST DATA	43
9 – Voltage dips and short interruptions IEC 61000-4-11	44
TEST SETUP	44
TEST STANDARD.....	44
TEST PROCEDURE	44
TEST DATA	45
11 – Voltage fluctuations and flicker	46
TEST SYSTEM SETUP.....	46
TEST STANDARD.....	46
TEST DATA	47
ExhibitB – Test Setup Photographs.....	55
CONDUCTED EMISSIONS	55
RADIATED EMISSION	57
ESD.....	59
RS	60
EFT	61
SURGE	62
DIPS.....	63
CS	64
FLICKER.....	65
DECLARATION LETTER.....	66

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		HD Network Video Recorder
EUT Model:		N3L-4H
Multiple Models:		N3L-8H, N3L-16H
Rated Input Voltage:		DC 12V
Adapter Information	Model:	BN026-A24012E
	Input:	AC 100~240V 50/60Hz 0.7A
	Output:	DC 12V/2.0A
The Highest Operating Frequency:		1 GHz
I/O Ports:		Refer to manual
EUT Function:		Recording
Serial Number:		DG2210907-46503E-EM -S1
EUT Received Date:		2021.09.08
EUT Received Status:		Good

Note: The series product, models N3L-4H, N3L-8H, N3L-16H are electrically identical, the model N3L-4H was fully tested. The difference between them please refer to the declaration letter for details.

Objective

This report is prepared on behalf of *SHENZHEN TENDA TECHNOLOGY CO.,LTD* in accordance with EN 55032:2015+A11:2020 and BS EN 55032:2015+A11:2020 Electromagnetic compatibility of multimedia equipment — Emission Requirements; EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 Electromagnetic compatibility of multimedia equipment — Immunity Requirements; EN IEC 61000-3-2:2019/A1:2021 and BS EN IEC 61000-3-2:2019/A1:2021 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase); EN 61000-3-3:2013+A1:2019 and BS EN 61000-3-3:2013+A1:2019 Electromagnetic compatibility (EMC) Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.

The objective is to determine the compliance of EUT with:

EN 55032:2015+A11:2020

EN 55035:2017+A11:2020

EN IEC 61000-3-2:2019/A1:2021

EN 61000-3-3:2013+A1:2019.

BS EN 55032:2015+A11:2020

BS EN 55035:2017+A11:2020

BS EN IEC 61000-3-2:2019/A1:2021

BS EN 61000-3-3:2013+A1:2019.

Test Methodology

All measurements contained in this report were conducted with EN 55032:2015+A11:2020 and BS EN 55032:2015+A11:2020 Electromagnetic compatibility of multimedia equipment — Emission Requirements; EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 Electromagnetic compatibility of multimedia equipment — Immunity Requirements; EN IEC 61000-3-2:2019/A1:2021 and BS EN IEC 61000-3-2:2019/A1:2021 Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase); EN 61000-3-3:2013+A1:2019 and BS EN 61000-3-3:2013+A1:2019 Electromagnetic compatibility (EMC) Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol“▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

This report cannot be reproduced except in full, without prior written approval of the Company.

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk “★”.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

Mode 1: Normal working

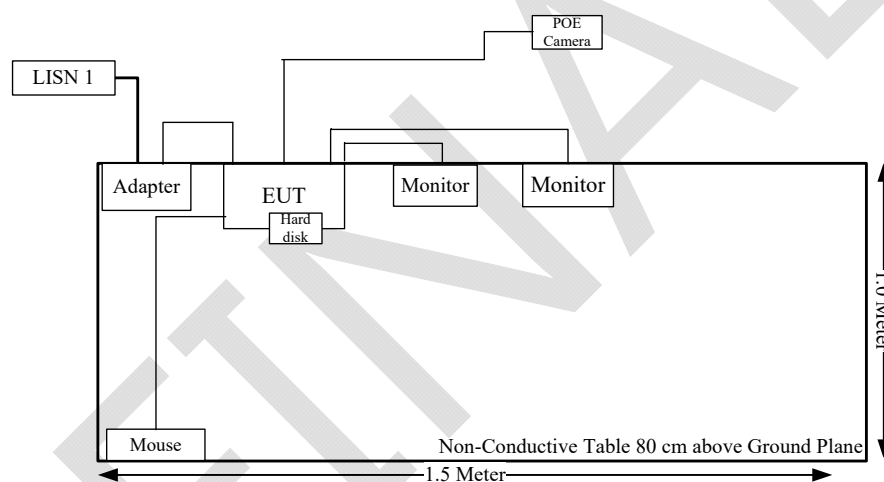
Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

N/A

Block Diagram of Test Setup



Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Monitor	U3011t	CN-OPH5NY-74445-17M-114L
DELL	Monitor	P2721Q	CN-0XJ46C-FCC00-135-AA8L-A03
Barracuda	Hard Disk	ST500DM002	23TVG4RZ
Tenda	POE Carema	unknown	unknown

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
HDMI	Yes	Yes	0.8	EUT	Monitor
VGA	Yes	Yes	0.8	EUT	Monitor
RJ45	No	No	5	EUT	POE Carema

Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emission					
R&S	LISN	ENV 216	101614	2021-09-11	2022-09-10
TESEQ	ISN	T800	34379	2021-09-11	2022-09-10
R&S	EMI Test Receiver	ESCI	101121	2021-07-22	2022-07-21
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2021-09-05	2022-09-04
R&S	Test Software	EMC32	Version 9.10.00	N/A	N/A
Radiated emissions below 1GHz					
Sunol Sciences	Antenna	JB3	A060611-1	2020-11-10	2023-11-10
R&S	EMI Test Receiver	ESR3	102453	2020-09-23	2021-09-22
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2021-07-19	2022-07-18
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2021-07-19	2022-07-18
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2021-07-19	2022-07-18
HP	Amplifier	8447D	2727A05902	2021-09-05	2022-09-05
Audix	Test Software	E3	201021 (V9)	N/A	N/A
Radiated emissions above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2021-07-22	2022-07-21
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2021-09-04	2022-09-03
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2021-09-04	2022-09-03
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2021-06-16	2022-06-15
ESD					
HAEFELY	Electrostatic Discharge Simulator	ONYX	180786	2021-09-15	2022-09-14
EFT & Surge & Dips					
EM TEST	Ultra Compact Generator	UCS 500N5	P1406130994	2021-07-22	2022-07-21
EM TEST	Autotransformer	MV2616	P1450144859	N/A	N/A
EM TEST	CDN	CNV508 S1	311137	2021-01-26	2022-01-25
EM TEST	EFT Clamp	N/A	300886	2021-07-22	2022-07-21
Flicker & Harmonic					
ELGAR	AC Power Source	1751SX	5611	2021-09-22	2022-09-21
EM TEST	Harmonic & Flicker Analyzer	DPA 500	303278	2021-09-16	2022-09-15
CS					
HP	Signal Generator	8648A	3246A00831	2021-09-11	2022-09-10
R&S	Power Amplifier	15A250	12934	N/A	N/A
Werlatone	Dual Directional Coupler	C5091-10	113192	2021-02-09	2022-02-08
HP	Power Meter	HP EPM-441A	GB37481494	2021-07-22	2022-07-21
Agilent	8482A Power sensor	8482A	US37296108	2021-07-22	2022-07-21

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
NARDA	Attenuator	769-6	2754	N/A	N/A
COM-POWER	CDN	M325E	521064	2021-07-22	2022-07-21
COM-POWER	CDN	T8E	581607	2019-05-09	2022-05-09
RS					
AR	Antenna	ATL80M1G	0351400	N/A	N/A
AR	Antenna	ATT700M12G	0349410	N/A	N/A
HP	Signal Generator	8665B	3438a00584	2021-09-11	2022-09-10
AR	Power Amplifier	500W1000C	0353561	N/A	N/A
AR	Power Amplifier	60S1G6	0348711	N/A	N/A
PASTERNAK	Dual Directional Coupler	PE2239-30	1711	2021-07-15	2022-07-14
Agilent	EPM Series Power Meter	E4419B	MY45103907	2021-07-22	2022-07-21
Agilent	E-Series Avg Power Sensor	E9301A	MY41497625	2021-07-22	2022-07-21
Agilent	E-Series Avg Power Sensor	E9301A	MY41497628	2021-07-22	2022-07-21

Environmental Conditions

Test Item:	Conducted emission	Radiated emissions	Flicker & EMS
Temperature:	24.7°C	25.6~26.1°C	24.9~29.4°C
Relative Humidity:	66%	61~64%	41~47%
ATM Pressure:	100.6kPa	100.4~100.8kPa	100.9kPa
Tester:	Mia Huang	Joker Chen, Elan Lv	Ethan Xu
Test Date:	2021.09.18	2021.09.14~2021.09.16	2021.09.28

SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	EN 55032 Clause A.3	Conducted emissions	Compliance
2	EN 55032 Clause A.2	Radiated emissions	Compliance
3	EN 55035 Clause 4.2.1	Electrostatic discharges IEC 61000-4-2	Compliance
4	EN 55035 Clause 4.2.2.2	Continuous radiated disturbances IEC 61000-4-3	Compliance
5	EN 55035 Clause 4.2.2.3	Continuous conducted disturbances IEC 61000-4-6	Compliance
6	EN 55035 Clause 4.2.3	Power frequency magnetic fields IEC 61000-4-8	Not applicable*
7	EN 55035 Clause 4.2.4	Electrical fast transients/burst IEC 61000-4-4	Compliance
8	EN 55035 Clause 4.2.5	Surges IEC 61000-4-5	Compliance
9	EN 55035 Clause 4.2.6	Voltage dips and short interruptions IEC 61000-4-11	Compliance
10	EN 61000-3-2	Harmonic current emissions	Not applicable**
11	EN 61000-3-3	Voltage fluctuations and flicker	Compliance

Note:

Not applicable*: The EUT is not sensitive to magnetic field.

Not applicable**: The EUT Power is less than 75W.

1 – CONDUCTED EMISSIONS

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

- If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
 - non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
- If U_{lab} is greater than U_{cispr} of Table 1, then:
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
 - non - compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

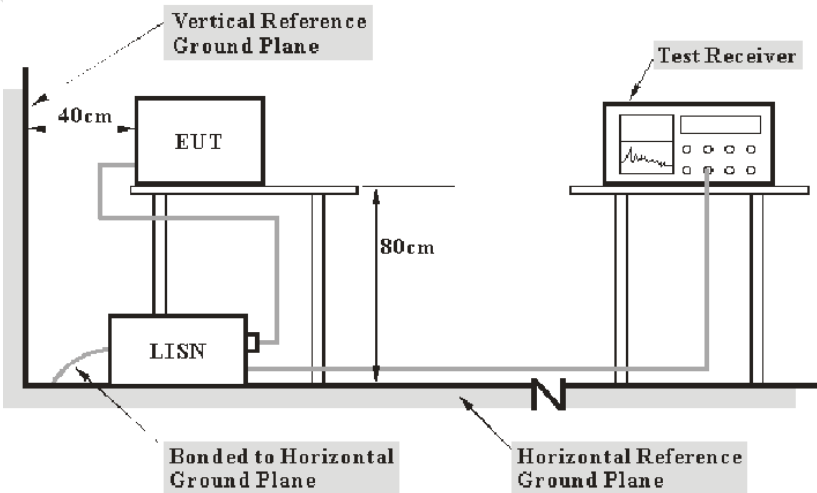
Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 dB (150 kHz to 30 MHz), and conducted disturbance at telecommunication port using AAN is 5.0 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (9 kHz to 150 kHz)	3.8 dB
(150 kHz to 30 MHz)	3.4 dB
Conducted disturbance at mains port using voltage probe (9 kHz to 30 MHz)	2.9 dB
Conducted disturbance at telecommunication port using AAN (150 kHz to 30 MHz)	5.0 dB
Conducted disturbance at telecommunication port using CVP (150 kHz to 30 MHz)	3.9 dB
Conducted disturbance at telecommunication port using CP (150 kHz to 30 MHz)	2.9 dB

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with CISPR 16-1-1:2010+A1:2010, CISPR 16-2-1:2008+A1:2010 measurement procedure. The specification used was the EN 55032 and BS EN 55032 Class A limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.

The spacing between the peripherals was 10cm.

The adapter was connected to a 230V/50Hz AC line power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result (QuasiPeak or Average) = Meter Reading + Corr.

Note:

Corr. = Cable loss + Factor of coupling device

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit – Result

Test Procedure

During the conducted emissions test, the adapter was connected to the main outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

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

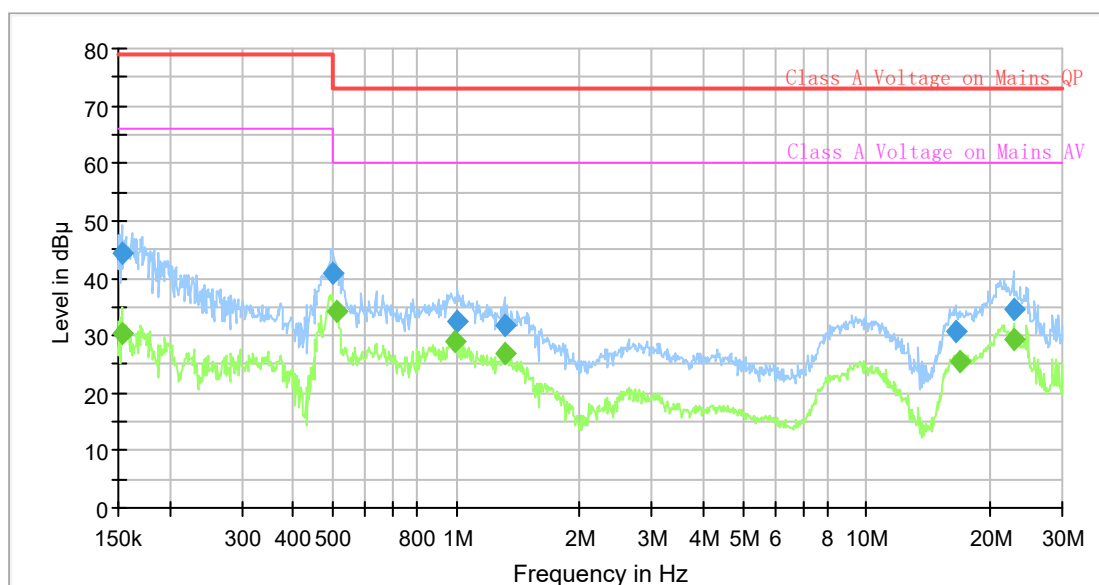
All data was recorded in the Quasi-peak and average detection mode.

Except for the recorded frequency points (no more than 6), the remaining frequency points have a margin more than 20dB.

Test Data

Please refer to following table and plots:

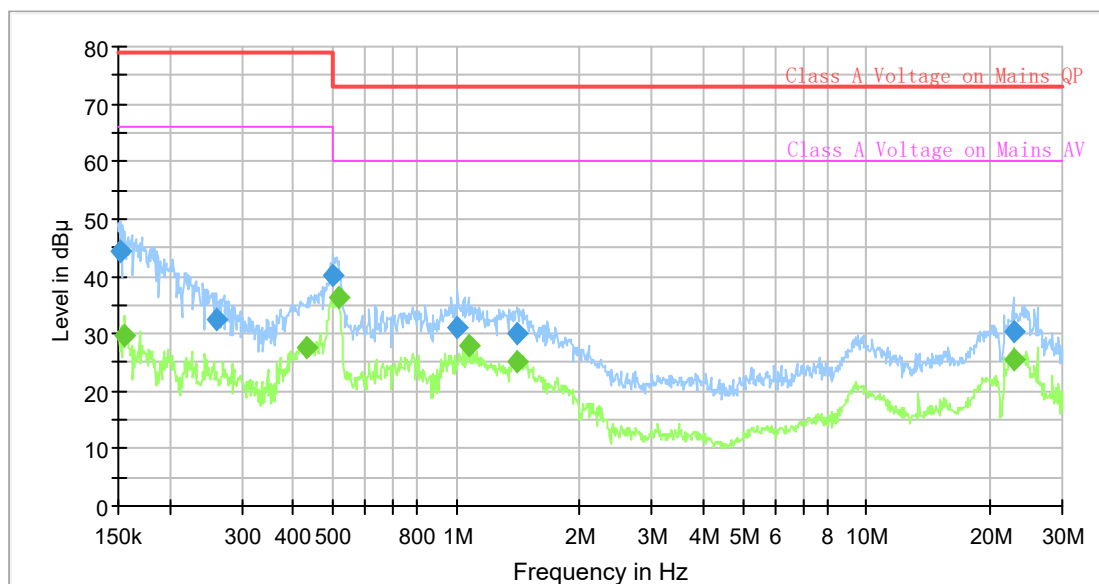
Model Number: N3L-4H
 Port: L
 Test Mode: Normal working
 Power Source: AC 110V/50Hz
 Note:



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.153023	---	30.22	66.00	35.78	9.000	L1	9.6
0.153023	44.35	---	79.00	34.65	9.000	L1	9.6
0.501508	41.03	---	73.00	31.97	9.000	L1	9.6
0.509069	---	34.29	60.00	25.71	9.000	L1	9.6
0.998148	---	28.99	60.00	31.01	9.000	L1	9.7
1.008154	32.36	---	73.00	40.64	9.000	L1	9.7
1.313192	31.64	---	73.00	41.36	9.000	L1	9.7
1.313192	---	26.76	60.00	33.24	9.000	L1	9.7
16.463472	30.88	---	73.00	42.12	9.000	L1	10.1
16.879195	---	25.43	60.00	34.57	9.000	L1	10.1
22.881343	---	29.20	60.00	30.80	9.000	L1	10.0
22.881343	34.54	---	73.00	38.46	9.000	L1	10.0

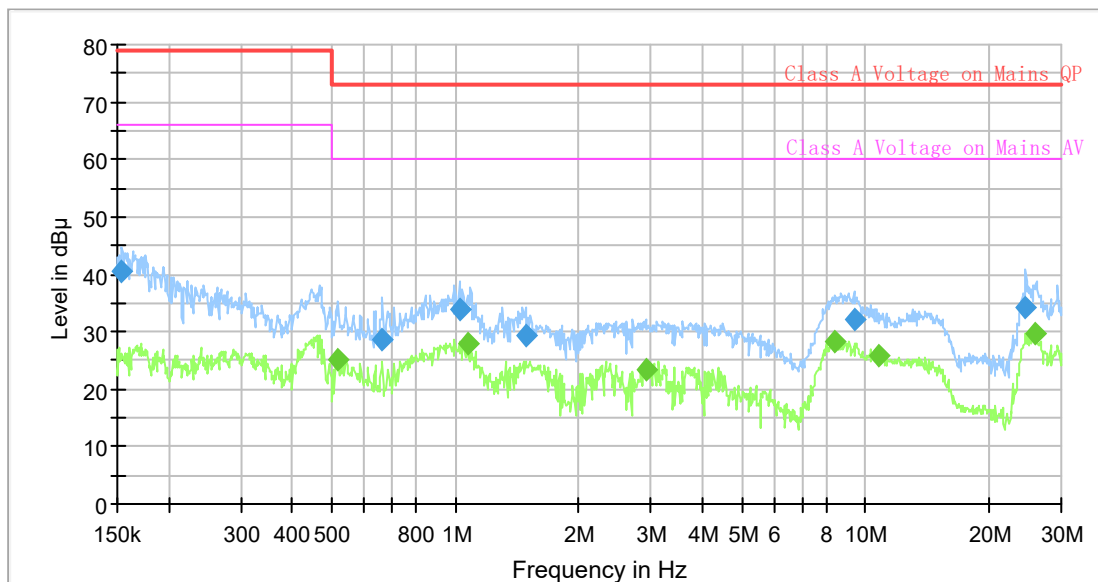
Model Number: N3L-4H
Port: N
Test Mode: Normal working
Power Source: AC 110V/50Hz
Note:



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.152261	44.20	---	79.00	34.80	9.000	N	9.6
0.155329	---	29.81	66.00	36.19	9.000	N	9.6
0.259632	32.51	---	79.00	46.49	9.000	N	9.6
0.431814	---	27.66	66.00	38.34	9.000	N	9.6
0.501508	40.01	---	73.00	32.99	9.000	N	9.6
0.514172	---	36.28	60.00	23.72	9.000	N	9.6
1.008154	31.15	---	73.00	41.85	9.000	N	9.6
1.070335	---	27.89	60.00	32.11	9.000	N	9.6
1.408163	29.97	---	73.00	43.03	9.000	N	9.6
1.408163	---	24.98	60.00	35.02	9.000	N	9.6
22.881343	---	25.33	60.00	34.67	9.000	N	9.9
22.881343	30.48	---	73.00	42.52	9.000	N	9.9

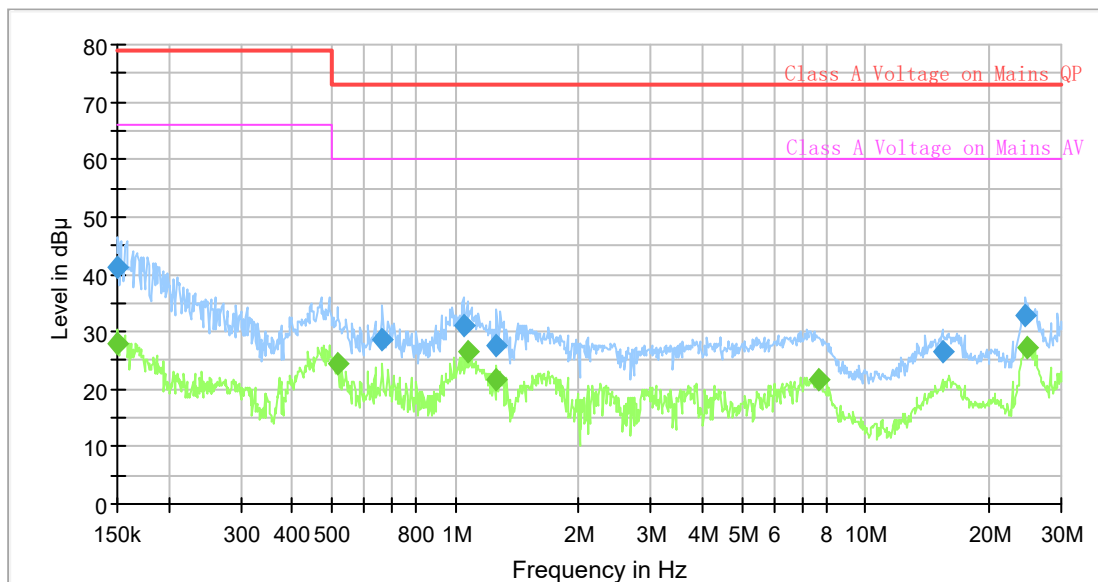
Model Number: N3L-4H
Port: L
Test Mode: Normal working
Power Source: AC 230V/50Hz
Note:



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.153788	40.44	---	79.00	38.56	9.000	L1	9.6
0.519327	---	25.07	60.00	34.93	9.000	L1	9.6
0.663098	28.75	---	73.00	44.25	9.000	L1	9.6
1.023352	34.05	---	73.00	38.95	9.000	L1	9.7
1.070335	---	28.03	60.00	31.97	9.000	L1	9.7
1.480177	29.34	---	73.00	43.66	9.000	L1	9.7
2.916742	---	23.24	60.00	36.76	9.000	L1	9.7
8.438576	---	28.23	60.00	31.77	9.000	L1	9.8
9.370364	32.29	---	73.00	40.71	9.000	L1	9.9
10.774725	---	25.79	60.00	34.21	9.000	L1	9.9
24.536148	34.37	---	73.00	38.63	9.000	L1	10.0
25.919884	---	29.60	60.00	30.40	9.000	L1	10.1

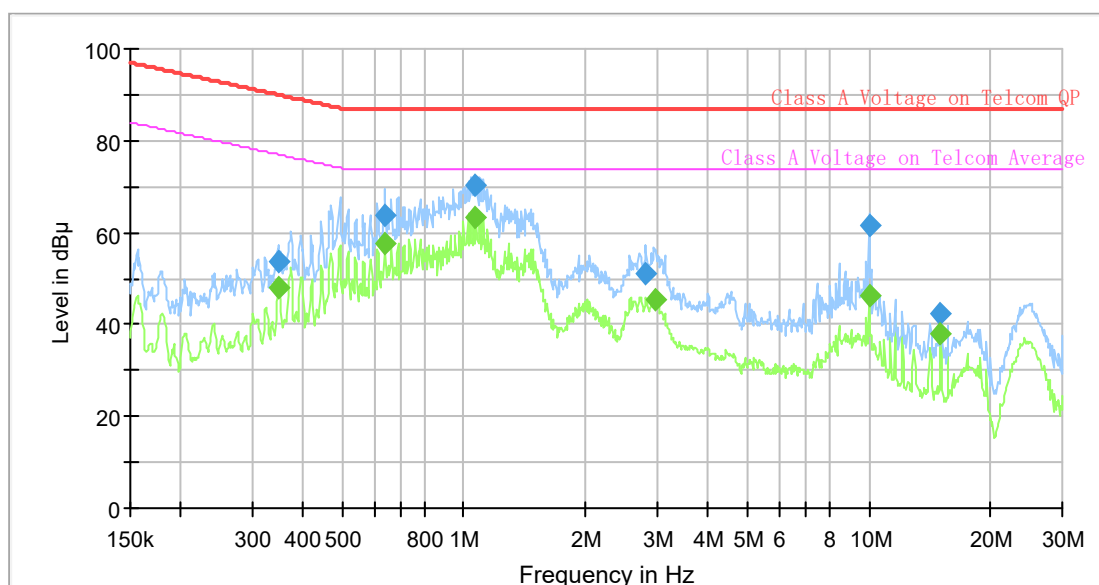
Model Number: N3L-4H
 Port: N
 Test Mode: Normal working
 Power Source: AC 230V/50Hz
 Note:



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.150750	---	27.84	66.00	38.16	9.000	N	9.6
0.150750	41.30	---	79.00	37.70	9.000	N	9.6
0.516743	---	24.55	60.00	35.45	9.000	N	9.6
0.663098	28.67	---	73.00	44.33	9.000	N	9.6
1.049193	31.11	---	73.00	41.89	9.000	N	9.6
1.070335	---	26.67	60.00	33.33	9.000	N	9.6
1.261826	27.44	---	73.00	45.56	9.000	N	9.6
1.261826	---	21.74	60.00	38.26	9.000	N	9.6
7.714007	---	21.52	60.00	38.48	9.000	N	9.7
15.429883	26.53	---	73.00	46.47	9.000	N	9.9
24.536148	32.69	---	73.00	40.31	9.000	N	9.9
24.906033	---	27.28	60.00	32.72	9.000	N	9.9

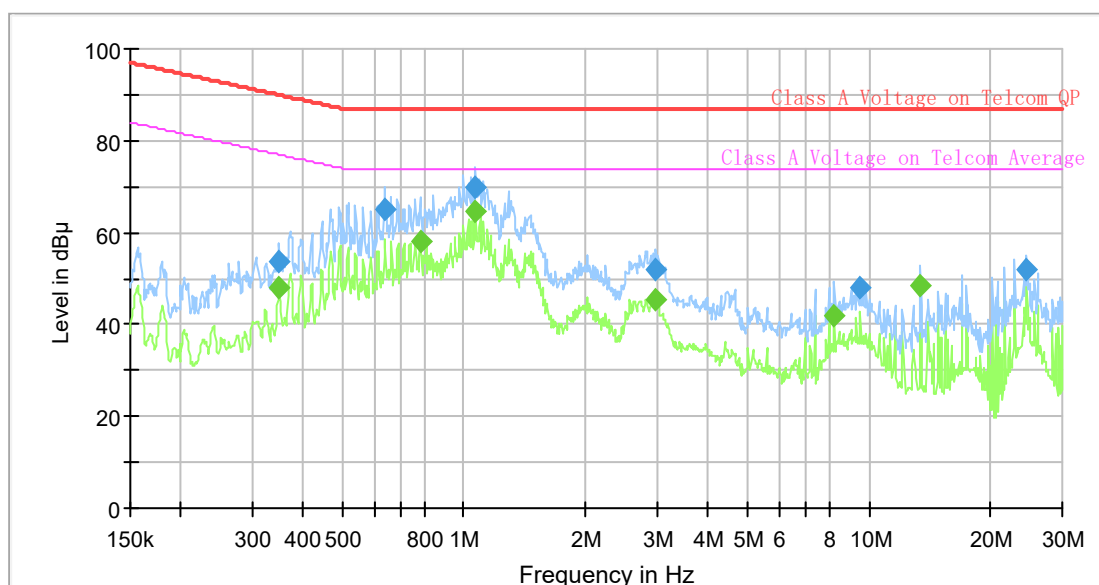
Model Number: N3L-4H
 Port: RJ45
 Test Mode: 10Mbps
 Power Source: AC 230V/50Hz
 Note:



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.348462	53.77	---	90.00	36.23	9.000	Line 1	9.9
0.350205	---	47.84	76.96	29.12	9.000	Line 1	9.9
0.637161	---	57.84	74.00	16.16	9.000	Line 1	9.8
0.637161	63.85	---	87.00	23.15	9.000	Line 1	9.8
1.070335	---	63.17	74.00	10.83	9.000	Line 1	9.7
1.070335	70.12	---	87.00	16.88	9.000	Line 1	9.7
2.802654	51.13	---	87.00	35.87	9.000	Line 1	9.6
2.975516	---	45.31	74.00	28.69	9.000	Line 1	9.6
9.998049	61.78	---	87.00	25.22	9.000	Line 1	9.6
9.998049	---	46.32	74.00	27.68	9.000	Line 1	9.6
15.049855	---	38.06	74.00	35.94	9.000	Line 1	9.6
15.049855	42.36	---	87.00	44.64	9.000	Line 1	9.6

Model Number: N3L-4H
 Port: RJ45
 Test Mode: 100Mbps
 Power Source: AC 230V/50Hz
 Note:



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.348462	---	47.82	77.00	29.18	9.000	Line 1	9.9
0.348462	53.60	---	90.00	36.40	9.000	Line 1	9.9
0.637161	65.20	---	87.00	21.80	9.000	Line 1	9.8
0.781732	---	58.26	74.00	15.74	9.000	Line 1	9.7
1.070335	69.81	---	87.00	17.19	9.000	Line 1	9.7
1.070335	---	64.66	74.00	9.34	9.000	Line 1	9.7
2.975516	52.12	---	87.00	34.88	9.000	Line 1	9.6
2.975516	---	45.46	74.00	28.54	9.000	Line 1	9.6
8.230739	---	41.82	74.00	32.18	9.000	Line 1	9.6
9.511623	47.88	---	87.00	39.12	9.000	Line 1	9.6
13.418776	---	48.62	74.00	25.38	9.000	Line 1	9.6
24.536148	52.00	---	87.00	35.00	9.000	Line 1	9.8

2 - RADIATED EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 10m at Bay Area Compliance Laboratories Corp. (Dongguan) is: 30M~200MHz: 4.55 dB for Horizontal, 4.57 dB for Vertical; 200M~1GHz: 4.66 dB for Horizontal, 4.56 dB for Vertical; measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is: 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB.

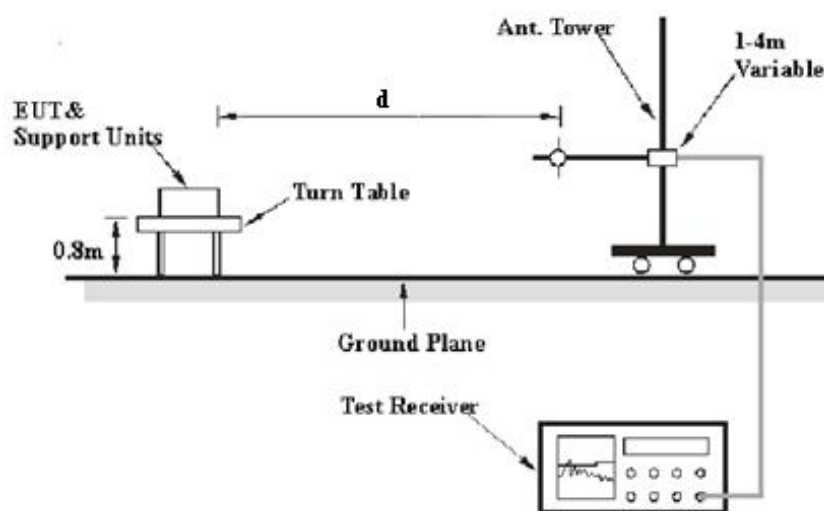
Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup

Below 1GHz:



The radiated emission tests below 1GHz were performed in 3 meters, using the setup accordance with the CISPR 16-1-1:2010+A1:2010, CISPR 16-1-4:2010, CISPR 16-2-3:2010. The specification used was EN 55032 and BS EN 55032 Class A limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.

The spacing between the peripherals was 10cm.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 6 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	Reduced video bandwidth	/	AVG

Test Procedure

During the radiated emissions, maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

If the maximized peak measured value complies with under the QP limit more than 6dB, then it is unnecessary to perform QP measurement.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Meter Reading + Corrected

Note:

Corrected = Antenna Factor + Cable Loss - Amplifier Gain

or

Corrected = Antenna Factor + Cable Loss + Insertion loss of attenuator - Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit for Class A. The equation for margin calculation is as follows:

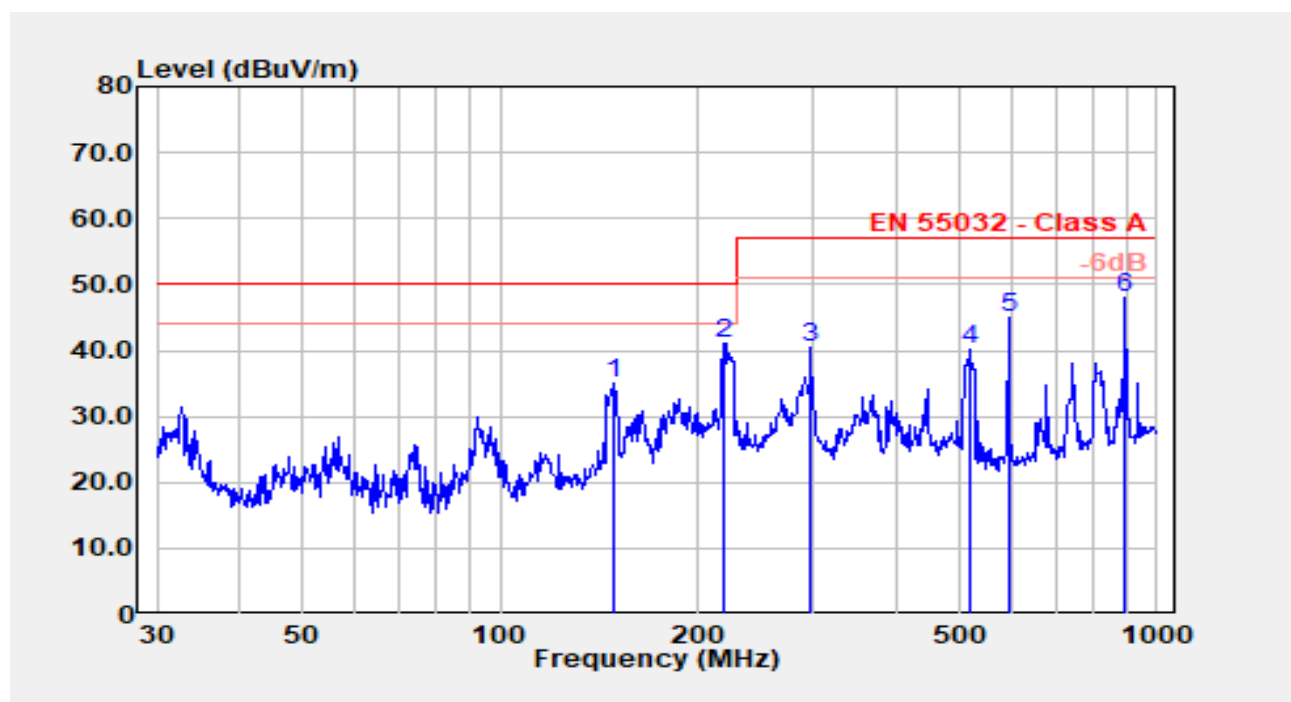
Margin = Limit – Result

Test Data

Please refer to following table and plots:

Condition: EN 55032 Class A 3m Radiation
EUT: HD Network Video Recorder
Model: N3L-4H
Test Mode: Mode 1 Normal working
Note:

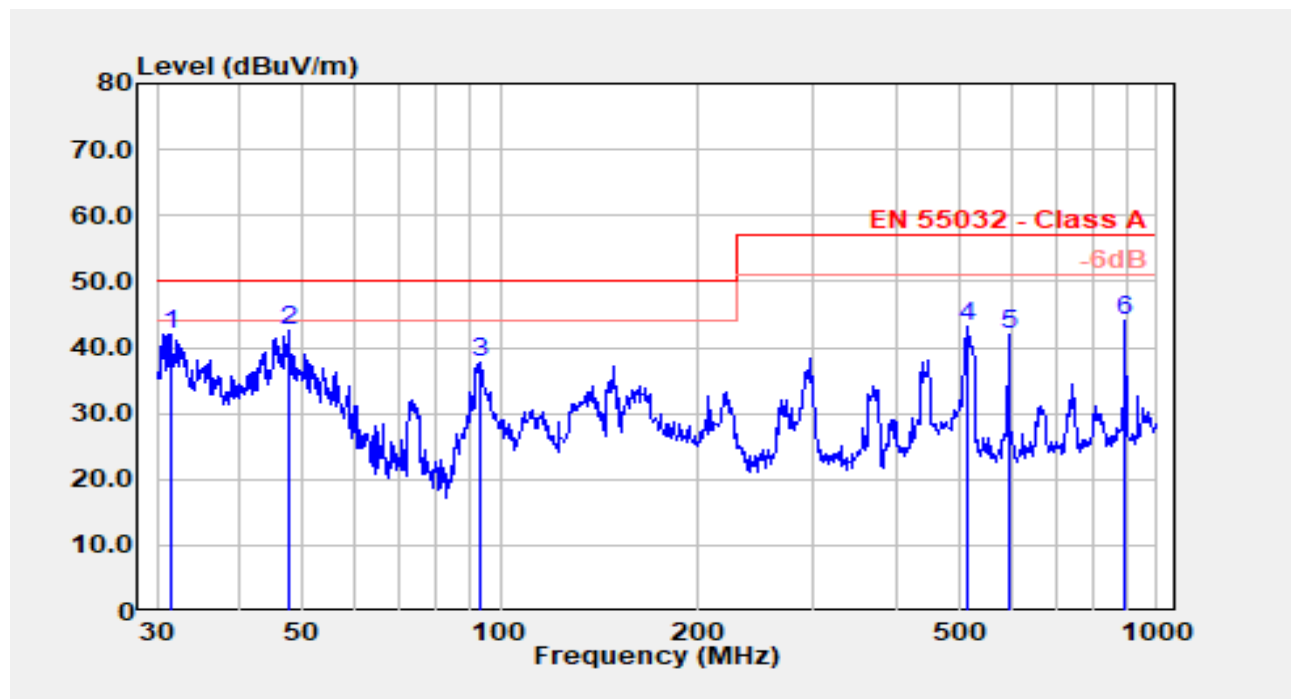
Polarization: Horizontal
Power: AC 110V/50Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	148.441	47.30	-12.25	35.06	50.00	14.94	Peak
2	218.309	54.09	-12.91	41.18	50.00	8.82	Peak
3	297.224	51.31	-10.88	40.43	57.00	16.57	Peak
4	519.065	46.11	-6.06	40.05	57.00	16.95	Peak
5	595.133	50.48	-5.42	45.06	57.00	11.94	Peak
6	893.857	49.32	-1.35	47.98	57.00	9.02	Peak

Condition: EN 55032 Class A 3m Radiation
EUT: HD Network Video Recorder
Model: N3L-4H
Test Mode: Mode 1 Normal working
Note:

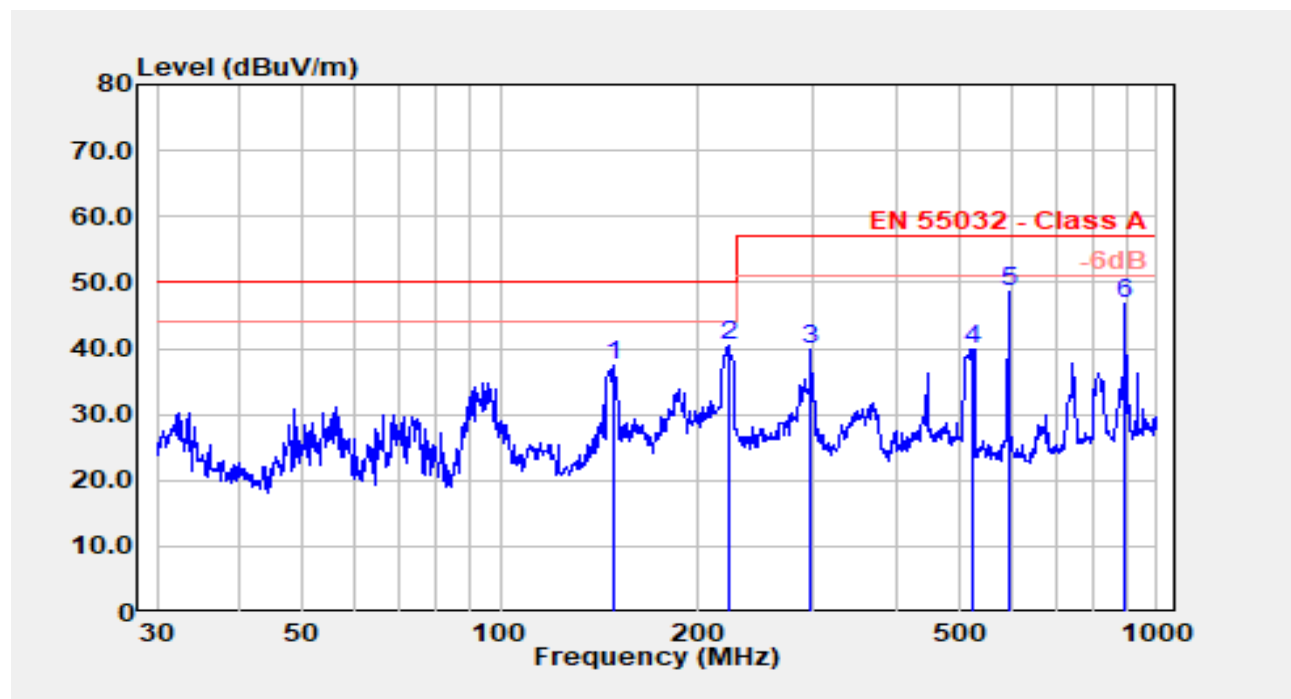
Polarization: vertical
Power: AC 110V/50Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	31.399	46.95	-4.86	42.08	50.00	7.92	Peak
2	47.826	58.77	-16.14	42.63	50.00	7.37	Peak
3	92.787	54.05	-16.46	37.59	50.00	12.41	Peak
4	515.437	49.11	-6.07	43.05	57.00	13.95	Peak
5	595.133	47.45	-5.42	42.03	57.00	14.97	Peak
6	893.857	45.34	-1.35	44.00	57.00	13.00	Peak

Condition: EN 55032 Class A 3m Radiation
EUT: HD Network Video Recorder
Model: N3L-4H
Test Mode: Mode 1 Normal working
Note:

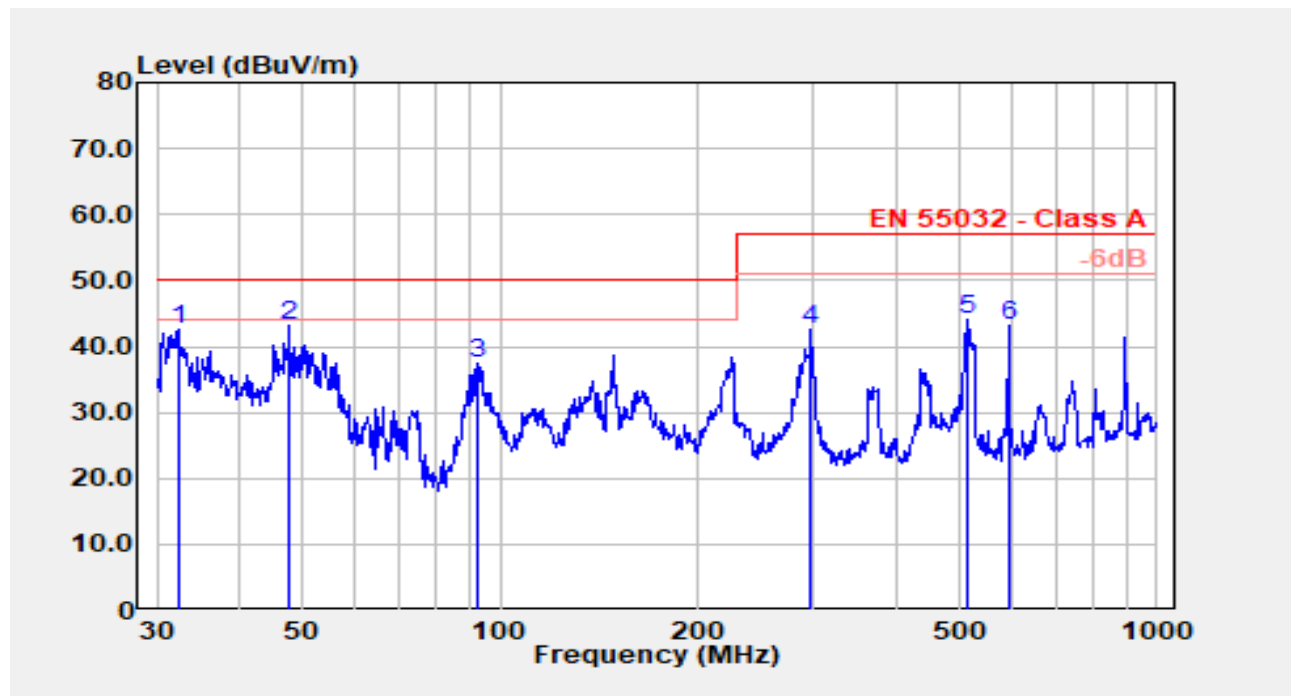
Polarization: horizontal
Power: AC 230V/50Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	148.441	49.74	-12.25	37.49	50.00	12.51	Peak
2	222.170	53.35	-12.99	40.35	50.00	9.65	Peak
3	297.224	50.62	-10.88	39.74	57.00	17.26	Peak
4	522.718	46.03	-6.10	39.92	57.00	17.08	Peak
5	595.133	54.15	-5.42	48.73	57.00	8.27	Peak
6	893.857	48.20	-1.35	46.86	57.00	10.14	Peak

Condition: EN 55032 Class A 3m Radiation
EUT: HD Network Video Recorder
Model: N3L-4H
Test Mode: Mode 1 Normal working
Note:

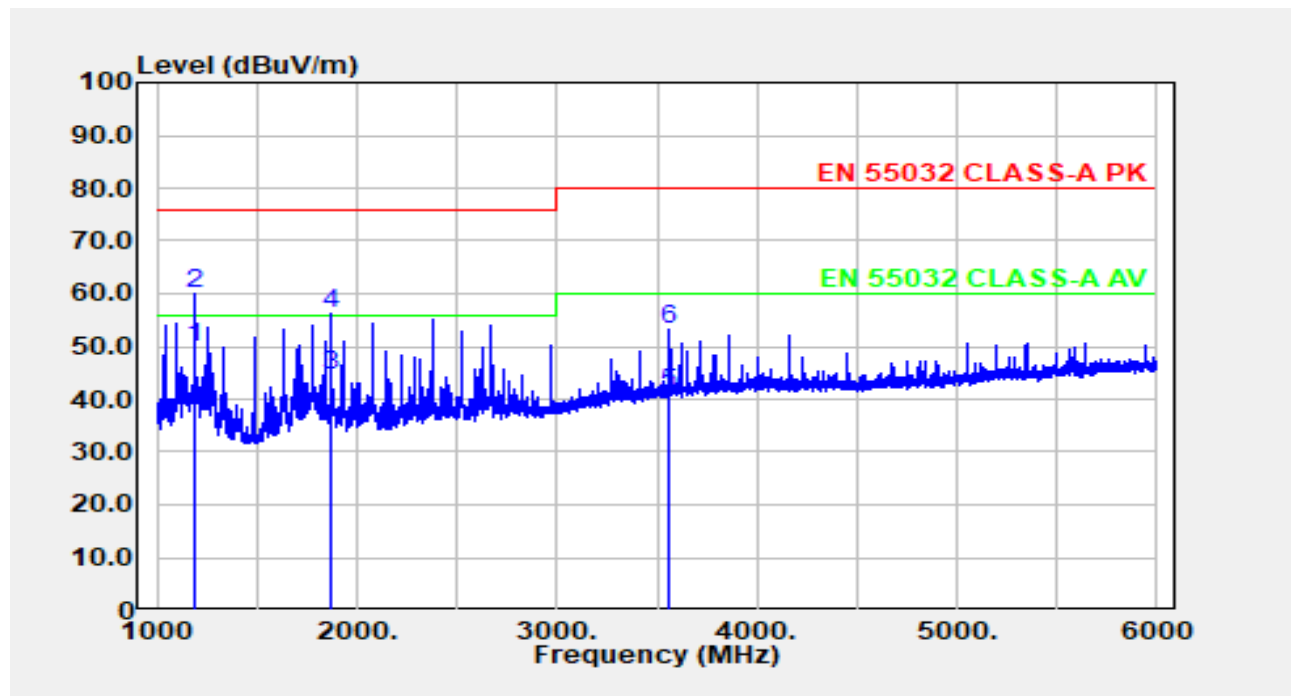
Polarization: vertical
Power: AC 230V/50Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	32.406	48.20	-5.64	42.56	50.00	7.44	Peak
2	47.659	59.13	-16.04	43.09	50.00	6.91	Peak
3	92.462	54.10	-16.56	37.54	50.00	12.46	Peak
4	297.224	53.39	-10.88	42.51	57.00	14.49	Peak
5	515.437	50.28	-6.07	44.21	57.00	12.79	Peak
6	595.133	48.72	-5.42	43.30	57.00	13.70	Peak

Condition: EN 55032 Class A 3m Radiation
EUT: HD Network Video Recorder
Model: N3L-4H
Test Mode: Normal working
Note:

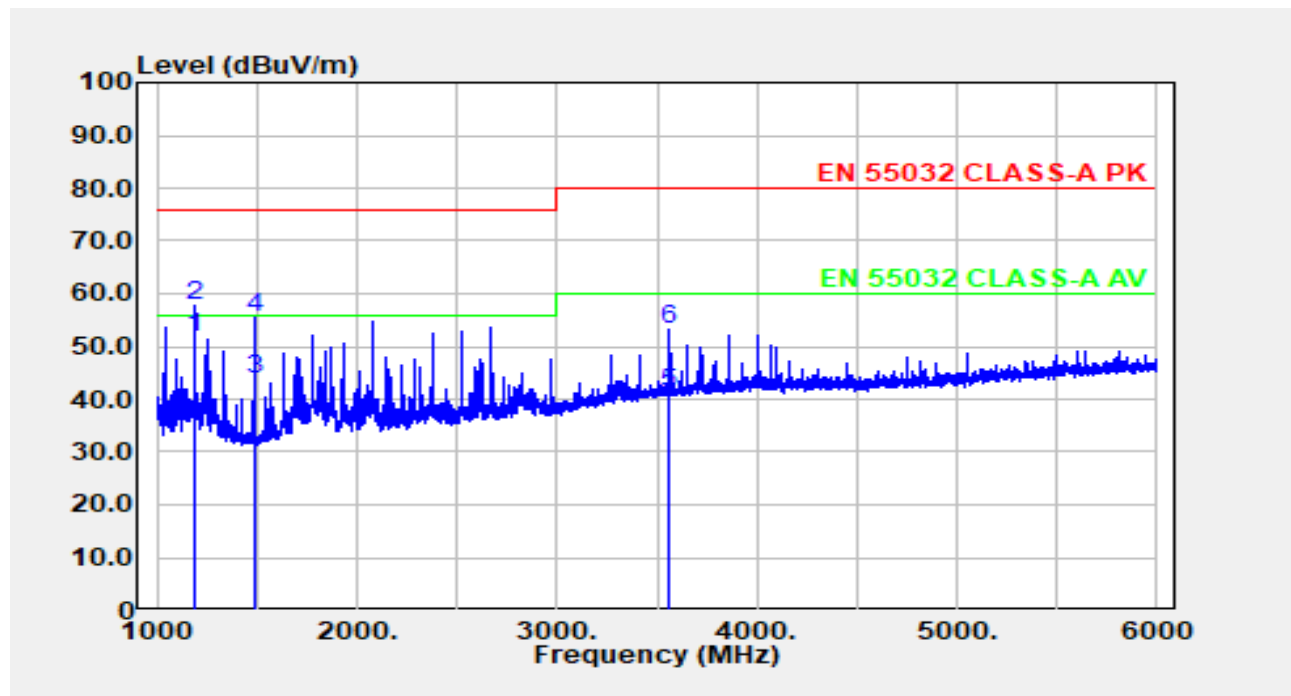
Polarization: horizontal
Power: AC 230V/50Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1187.037	51.80	-1.98	49.82	56.00	6.18	Average
2	1187.037	62.16	-1.98	60.18	76.00	15.82	Peak
3	1870.174	42.58	1.81	44.39	56.00	11.61	Average
4	1870.174	54.36	1.81	56.17	76.00	19.83	Peak
5	3563.513	32.36	8.95	41.31	60.00	18.69	Average
6	3563.513	44.20	8.95	53.15	80.00	26.85	Peak

Condition: EN 55032 Class A 3m Radiation
EUT: HD Network Video Recorder
Model: N3L-4H
Test Mode: Normal working
Note:

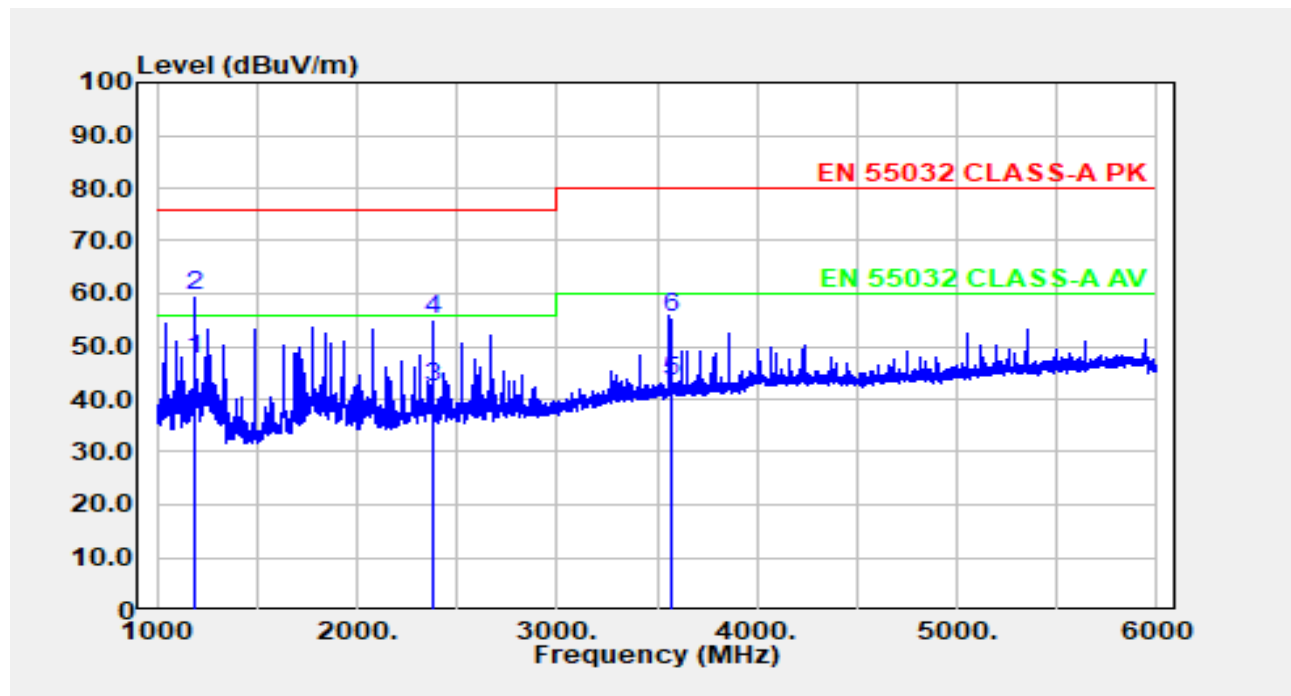
Polarization: vertical
Power: AC 230V/50Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1188.038	53.82	-1.98	51.84	56.00	4.16	Average
2	1188.038	59.79	-1.98	57.81	76.00	18.19	Peak
3	1485.097	44.25	-0.62	43.63	56.00	12.37	Average
4	1485.097	56.10	-0.62	55.48	76.00	20.52	Peak
5	3563.513	32.25	8.95	41.20	60.00	18.80	Average
6	3563.513	44.12	8.95	53.07	80.00	26.93	Peak

Condition: EN 55032 Class A 3m Radiation
EUT: HD Network Video Recorder
Model: N3L-4H
Test Mode: Normal working
Note:

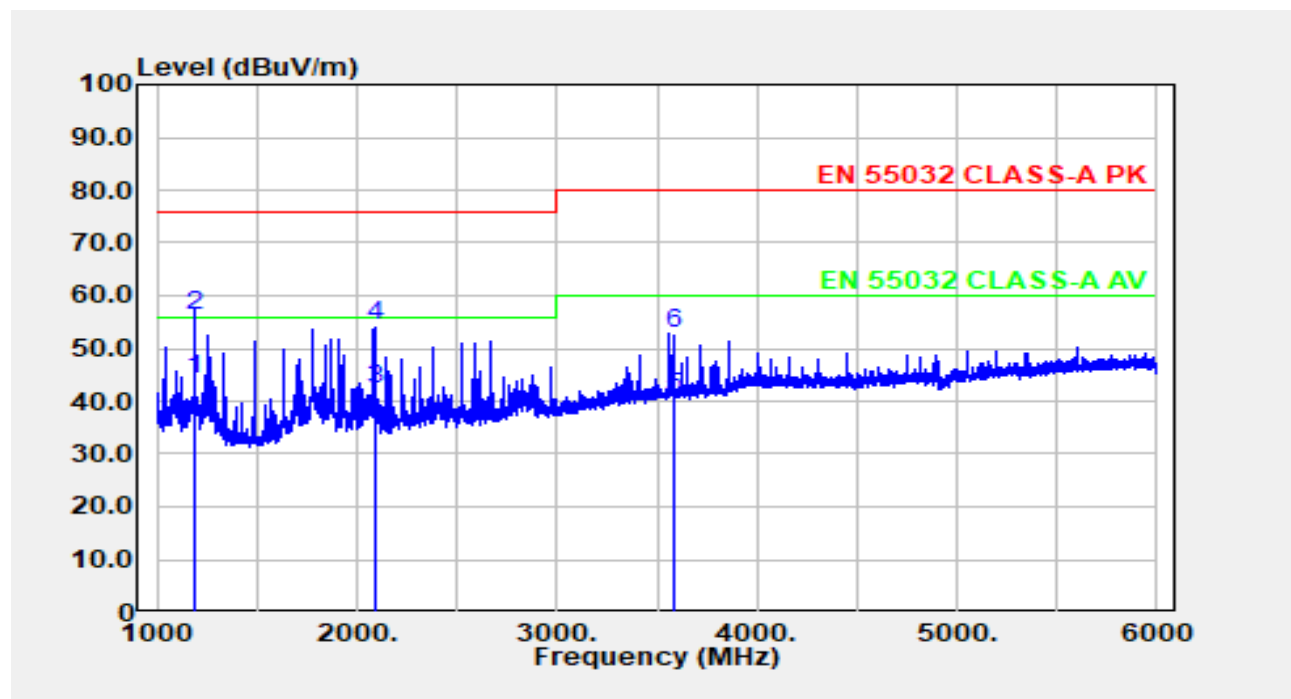
Polarization: horizontal
Power: AC 110V/50Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	1187.039	49.36	-1.98	47.38	56.00	8.62	Average
2	1187.039	61.43	-1.98	59.45	76.00	16.55	Peak
3	2378.694	38.65	3.56	42.21	56.00	13.79	Average
4	2378.694	51.45	3.56	55.01	76.00	20.99	Peak
5	3567.288	34.57	8.96	43.53	60.00	16.47	Average
6	3567.288	46.61	8.96	55.57	80.00	24.43	Peak

Condition: EN 55032 Class A 3m Radiation
EUT: HD Network Video Recorder
Model: N3L-4H
Test Mode: Normal working
Note:

Polarization: vertical
Power: AC 110V/50Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	1188.038	46.25	-1.98	44.27	56.00	11.73	Average
2	1188.038	58.14	-1.98	56.16	76.00	19.84	Peak
3	2096.740	39.41	2.69	42.10	56.00	13.90	Average
4	2096.740	51.77	2.69	54.46	76.00	21.54	Peak
5	3583.490	31.91	9.00	40.91	60.00	19.09	Average
6	3583.490	43.82	9.00	52.82	80.00	27.18	Peak

3 - ELECTROSTATIC DISCHARGES IEC 61000-4-2

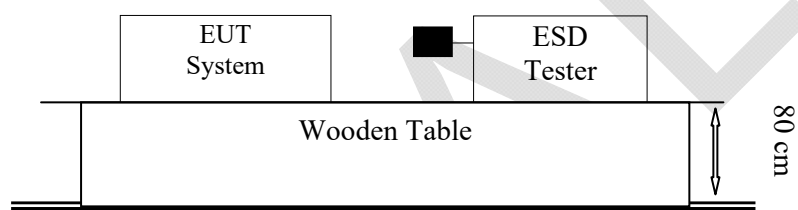
Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-2 and BS EN 61000-4-2) please refer to the following:

Parameter	U_{EN}	U_{lab}
Rise time t_r	$\leq 15\%$	15%
Peak current I_p	$\leq 7\%$	6.30%
Current at 30 ns	$\leq 7\%$	6.30%
Current at 60 ns	$\leq 7\%$	6.30%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup



Remark: ■ is the tip of the electrode

IEC61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.6 by 0.8-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5-millimeter thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Standard

EN 55035:2017+A11:2020(IEC 61000-4-2:2008)
 BS EN 55035:2017+A11:2020(IEC 61000-4-2:2008)
 Test level 3 for Air Discharge at ± 8 kV
 Test level 2 for Contact Discharge at ± 4 kV

Test Level

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

Performance criteria: B**Test Procedure****Air Discharge:**

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

Contact Discharge:

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

Indirect discharge for horizontal coupling plane:

At least 50 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane:

At least 50 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions $0.5\text{m} \times 0.5\text{m}$, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Test Data

Please refer to following tables:

Test Mode: Normal working

Note:

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Points Location	Test Level							
	-2 kV	+2 kV	-4 kV	+4 kV	-8 kV	+8 kV	-15 kV	+15 kV
Non-metallic Shell	A	A	A	A	A	A	/	/
Seam	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Points Location	Test Level							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Metal shell	A	A	A	A	/	/	/	/
USB Port	A	A	A	A	/	/	/	/
HDMI Port	A	A	A	A	/	/	/	/
VGA Port	A	A	A	A	/	/	/	/
DC Port	A	A	A	A	/	/	/	/
RJ45 Port	A	A	A	A	/	/	/	/
Screw	A	A	A	A	/	/	/	/

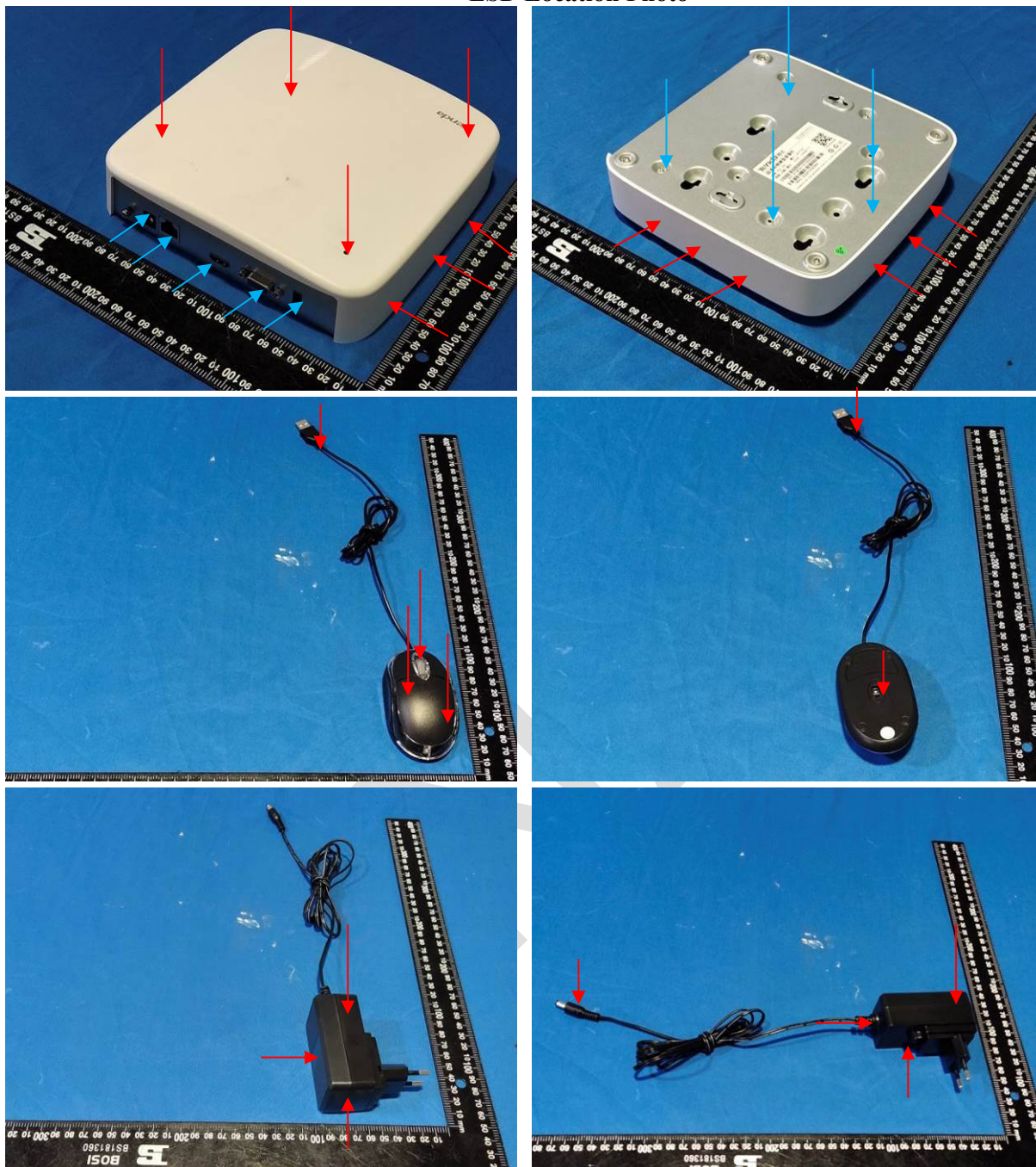
Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

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

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

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

ESD Location Photo



Air Discharge: →

Direct Contact: →

4 - CONTINUOUS RADIATED DISTURBANCES IEC 61000-4-3

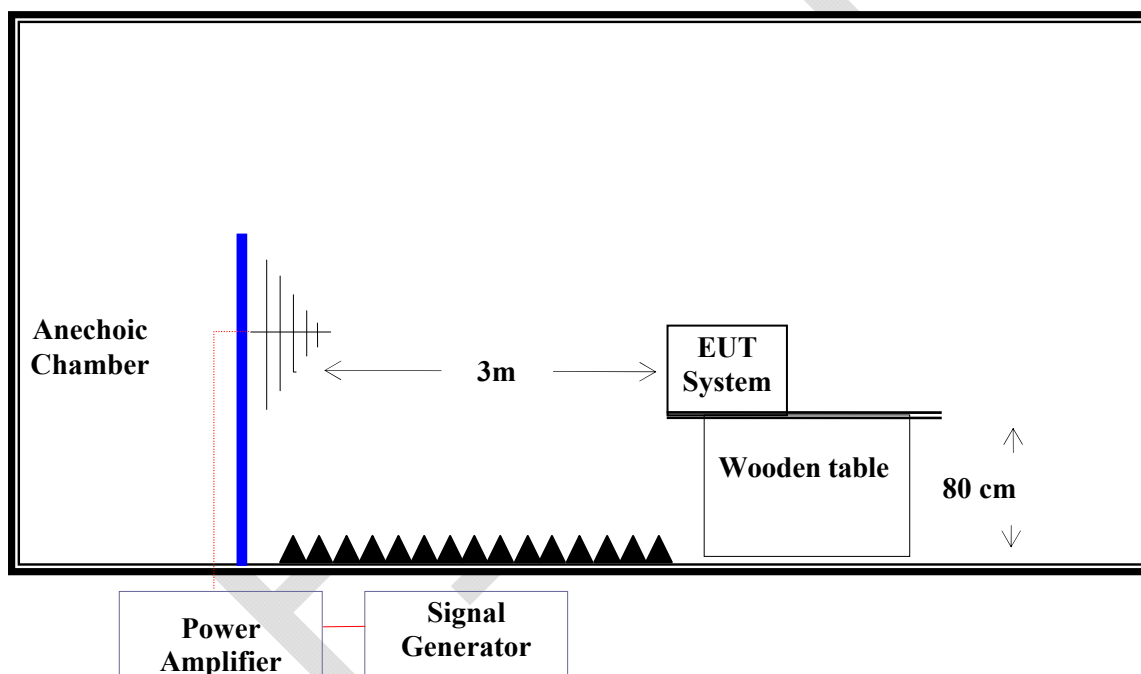
Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-3 and BS EN 61000-4-3) please refer to the following:

Parameter	U_{EN}	U_{lab}
Calibration process	1.88 dB	1.88 dB
Level setting	2.19 dB	2.19 dB

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup



Test Standard

EN 55035:2017+A11:2020 (IEC 61000-4-3:2020)

BS EN 55035:2017+A11:2020 (IEC 61000-4-3:2020)

Test Level

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

Performance criteria: A**Test Procedure**

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

Test Data

Please refer to following tables:

Test Mode: Normal working

Note:

Condition of Test	Remarks
Field Strength	3 V/m (Test Level 2)
RF Signal	1 kHz, 80% AM, sine wave
Sweep Frequency Step	1%, logarithmic
Dwell Time	1 Sec

Table 1: Radiated RF-Electromagnetic Field Immunity

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

Table 2: Radiated RF-Electromagnetic Field Immunity

Spot Test (MHz)	Front Side		Rear Side		Left Side		Right Side	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
1800, 2600, 3500, 5000	A	A	A	A	A	A	A	A

5 - CONTINUOUS CONDUCTED DISTURBANCES IEC 61000-4-6

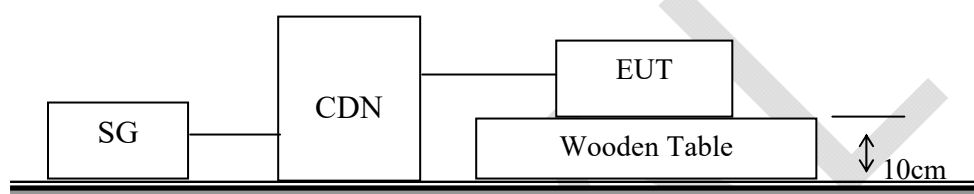
Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-6 and BS EN 61000-4-6) please refer to the following:

Parameter	U_{EN}	U_{lab}
CDN calibration process	1.27 dB	1.27 dB
CDN test process	1.36 dB	1.36 dB

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Setup



Test Standard

EN 55035:2017+A11:2020 (IEC 61000-4-6:2013)

BS EN 55035:2017+A11:2020 (IEC 61000-4-6:2013)

Test level 2 at 3 V (r.m.s.), 0.15MHz ~ 10MHz,

Test level 3-1 V (r.m.s.), 10MHz ~ 30MHz,

Test level 1 at 1 V (r.m.s.), 30MHz ~ 80MHz,

Test Level

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

Performance criteria: A

Test Procedure

- 1) Let the EUT work in test mode and test it.
- 2) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 3) The disturbance signal described below is injected to EUT through CDN.
- 4) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 5) The frequency range is swept from 150 kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
- 6) Where the frequency is swept incrementally, the step size shall not exceed 1 % of the preceding frequency value. The dwell time of the amplitude modulated carrier at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0.5 s.
- 7) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

Test Data

Please refer to following tables:

Test Mode: Normal working

Note:

Table 1: AC mains power input port

Frequency range: 150 kHz to 80 MHz
■ Modulated: Amplitude 80%, 1kHz sine wave □ Unmodulated
Dwell Time 1 Sec

Frequency(MHz)	Voltage Level	Pass	Fail
0.15-10	3V	A	/
10-30	3V-1V		
30-80	1V		

Table 3: Signal Port : RJ45

Frequency range: 150 kHz to 80 MHz
■ Modulated: Amplitude 80%, 1kHz sine wave □ Unmodulated □ Other:
Dwell Time 1 Sec

Frequency(MHz)	Voltage Level	Pass	Fail
0.15-10	3V	A	/
10-30	3V-1V		
30-80	1V		

7 - ELECTRICAL FAST TRANSIENTS/BURST IEC 61000-4-4

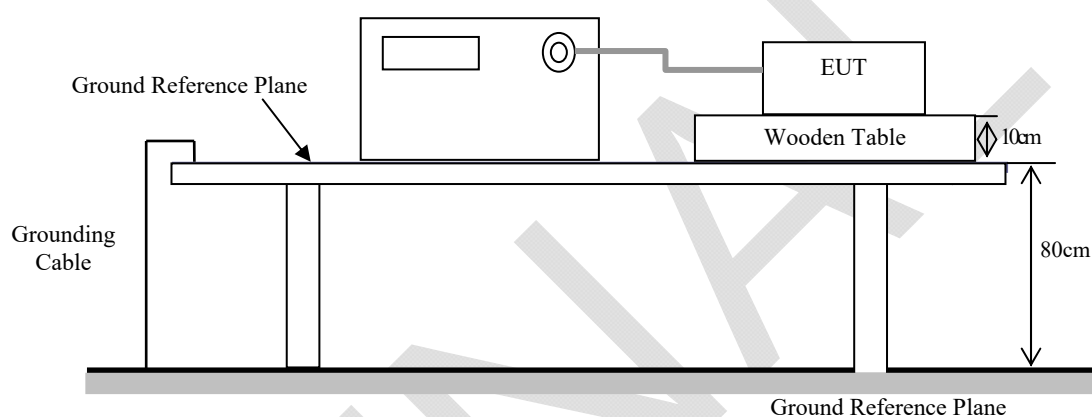
Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-4 and BS EN 61000-4-4) please refer to the following:

Parameter	U_{EN}	U_{lab}
Rise time t_r	6.20%	6.20%
Peak voltage value V_p	8.60%	8.60%
Voltage pulse width t_w	5.90%	5.90%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup



Test Standard

EN 55035:2017+A11:2020 (IEC 61000-4-4:2012)
BS EN 55035:2017+A11:2020 (IEC 61000-4-4:2012)
AC mains: Test level 2 at 1 kV;
Signal line: Test level 2 at 0.5 kV

Test Level

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

Performance criteria: B**Test Procedure**

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

Test Data

Please refer to following tables:

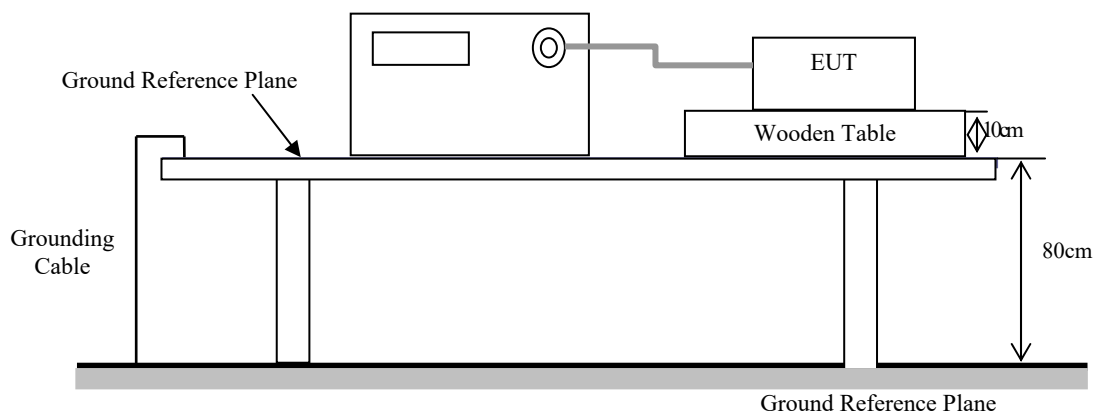
Test Mode: Normal working

Note:

Test Points		Test Level (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
AC mains power input ports	L	A	A	A	A	/	/	/	/
	N	A	A	A	A	/	/	/	/
	Earth	/	/	/	/	/	/	/	/
	L+N	A	A	A	A	/	/	/	/
	L + Earth	/	/	/	/	/	/	/	/
	N + Earth	/	/	/	/	/	/	/	/
	L+N+Earth	/	/	/	/	/	/	/	/
Signal ports	RJ45	A	A	/	/	/	/	/	/

8 - SURGES IEC 61000-4-5

Test System Setup



Test Standard

EN 55035:2017+A11:2020 (IEC 61000-4-5:2017)

BS EN 55035:2017+A11:2020 (IEC 61000-4-5:2017)

AC Mains: L-N: Test level 2 at 1kV,

Signal line: Test level at 1kV;

Test Level

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

Performance criteria: B

Test Procedure

- 1) Provide disturbance signal described below is injected to EUT.
- 2) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 3) Different phase angles are done individually.
- 4) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

Test Data

Please refer to following tables:

Test Mode: Normal working
Note:

Table 1: AC mains power input port

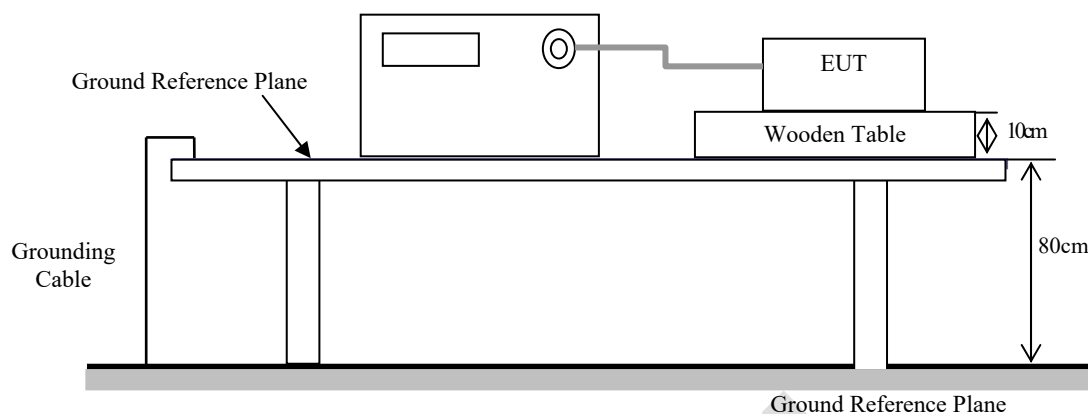
Level	Voltage	Poll	Path	Phase Angle	Pass	Fail
1	0.5kV	+	L-N	90	A	/
1	0.5kV	-	L-N	270	A	/
2	1kV	+	L-N	90	A	/
2	1kV	-	L-N	270	A	/

Table 2: RJ45 I/O Circuit and Lines

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

9 - VOLTAGE DIPS AND SHORT INTERRUPTIONS IEC 61000-4-11

Test Setup



Test Standard

EN 55035:2017+A11:2020 (IEC 61000-4-11:2020)

BS EN 55035:2017+A11:2020 (IEC 61000-4-11:2020)

Test levels and Performance Criterion

Test Level

Test Level	U2 (% Reduction)	Duration (Periods)	Performance Criteria
1	>95	0.5	B
2	30	25	C
3	>95	250	C

Test Procedure

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

Test Data

Please refer to following tables:

Test Mode: Normal working

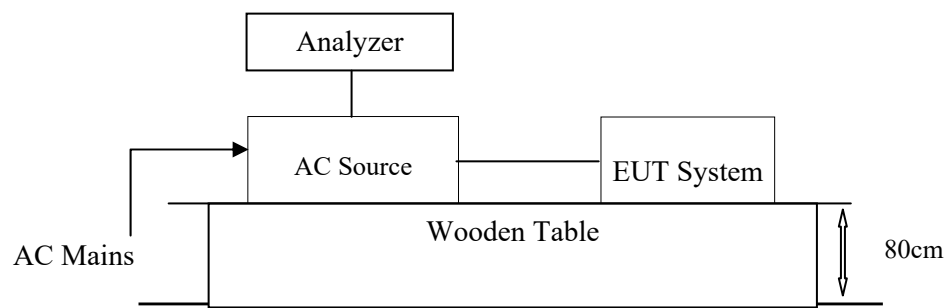
Note: B represents that EUT powered off when be tested, but it could recover normal after test.

Table 1: Voltage Dips/Interruptions Test

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

11 – VOLTAGE FLUCTUATIONS AND FLICKER

Test System Setup



Test Standard

EN 61000-3-3:2013+A1:2019

BS EN 61000-3-3:2013+A1:2019

Flicker Test Limits :

The limits shall be applicable to voltage fluctuations and flicker at the supply terminals of the equipment under test, measured or calculated according to clause 4 under test conditions described in clause 6 and annex A. Tests made to prove compliance with the limits are considered to be type tests.

The following limits apply:

- the value of P_{st} shall not be greater than 1,0;
- the value of Plt shall not be greater than 0,65;
- the value of $d(t)$ during a voltage change shall not exceed 3,3 % for more than 500 ms;
- the relative steady-state voltage change, 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 Plt limit. For example: a d_{max} of 6 % producing a rectangular voltage change characteristic twice per hour will give a Plt of about 0,65.

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

In the case of equipment having several separately controlled circuits in accordance with 6.6, limits b) and c) shall apply only if there is a delayed or manual restart after a power supply interruption; for all equipment with automatic switching which is energized immediately on restoration of supply after a power supply interruption, limits a) shall apply; for all equipment with manual switching, limits b) or c) shall apply depending on the rate

of switching. Pst and Plt requirements shall not be applied to voltage changes caused by manual switching. The limits shall not be applied to voltage changes associated with emergency switching or emergency interruptions.

Test Data

Please refer to following tables:

Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Test Mode:	Normal working
Power Source:	AC 230V/50Hz
Test Result	PASS

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.008	3.30	PASS
dmax [%]	0.142	4.00	PASS
dt [s]	0.000	0.50	PASS

EXHIBITA – EUT PHOTOGRAPHS

EUT for EU



EU Adapter



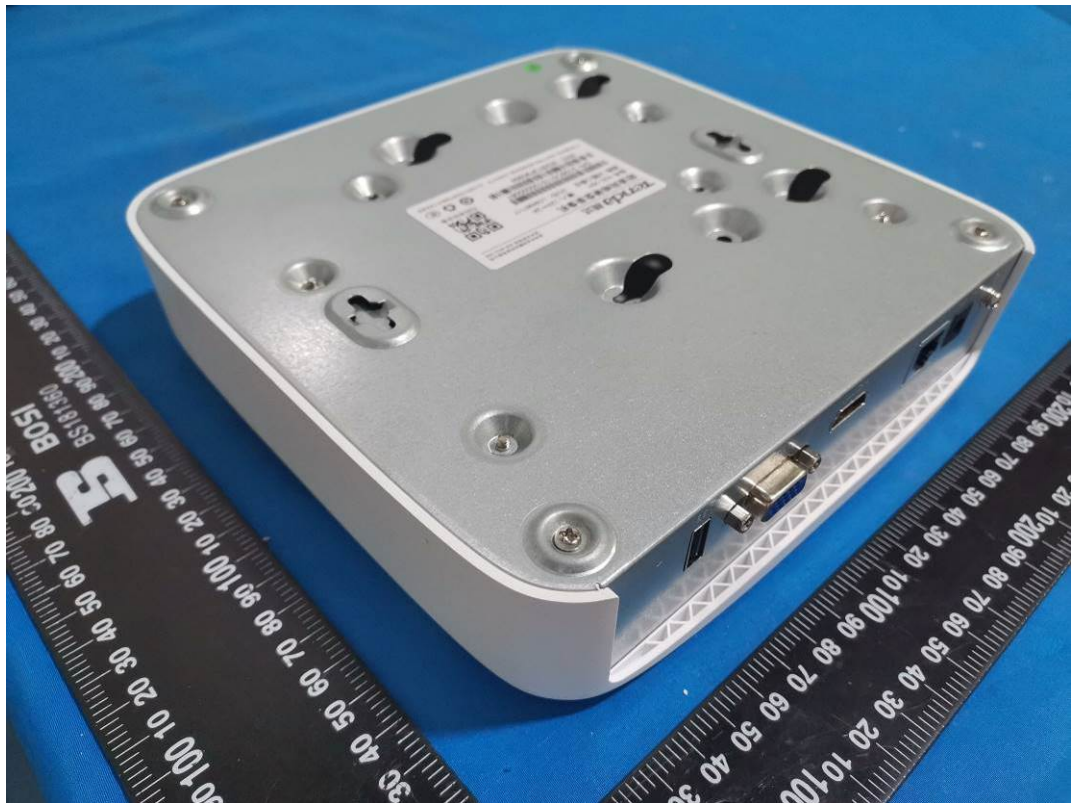
EUT for BS



BS Adapter







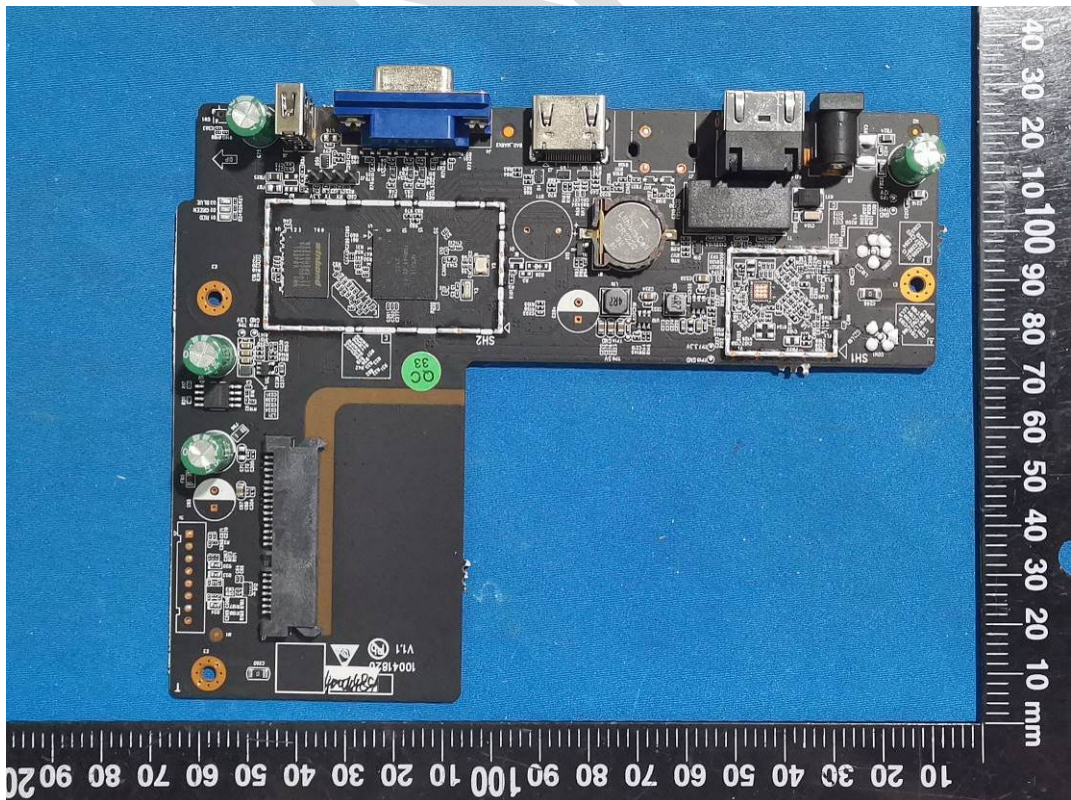
Port



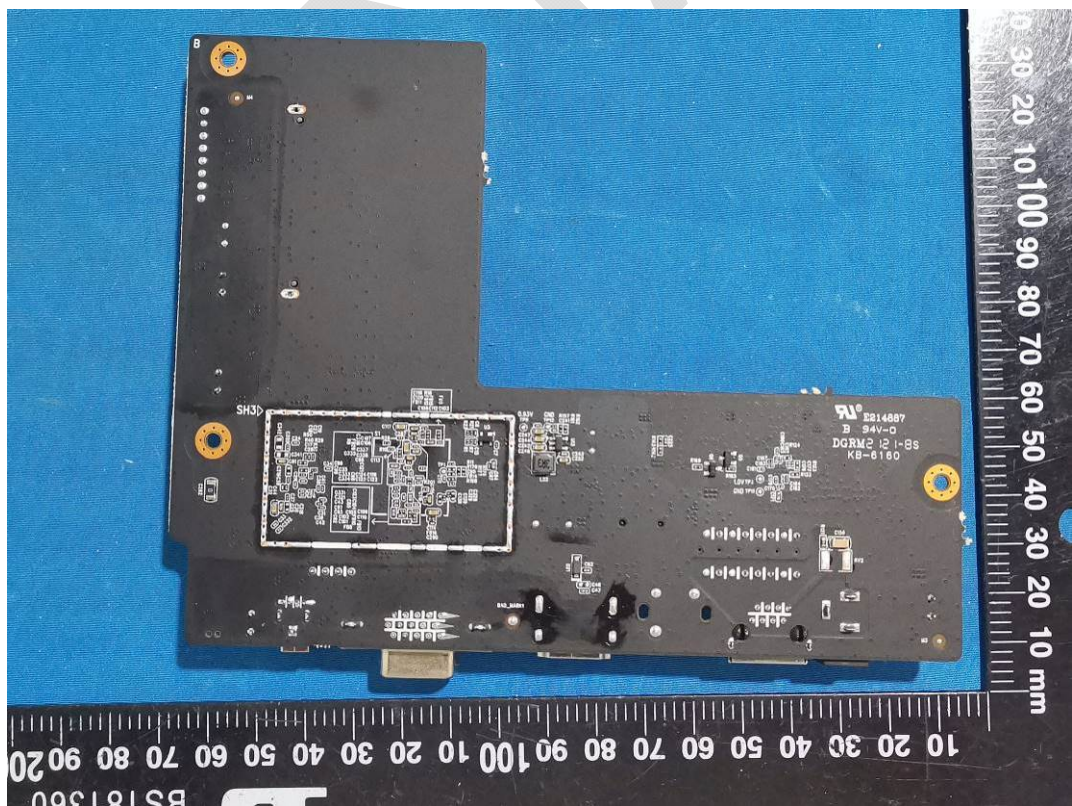
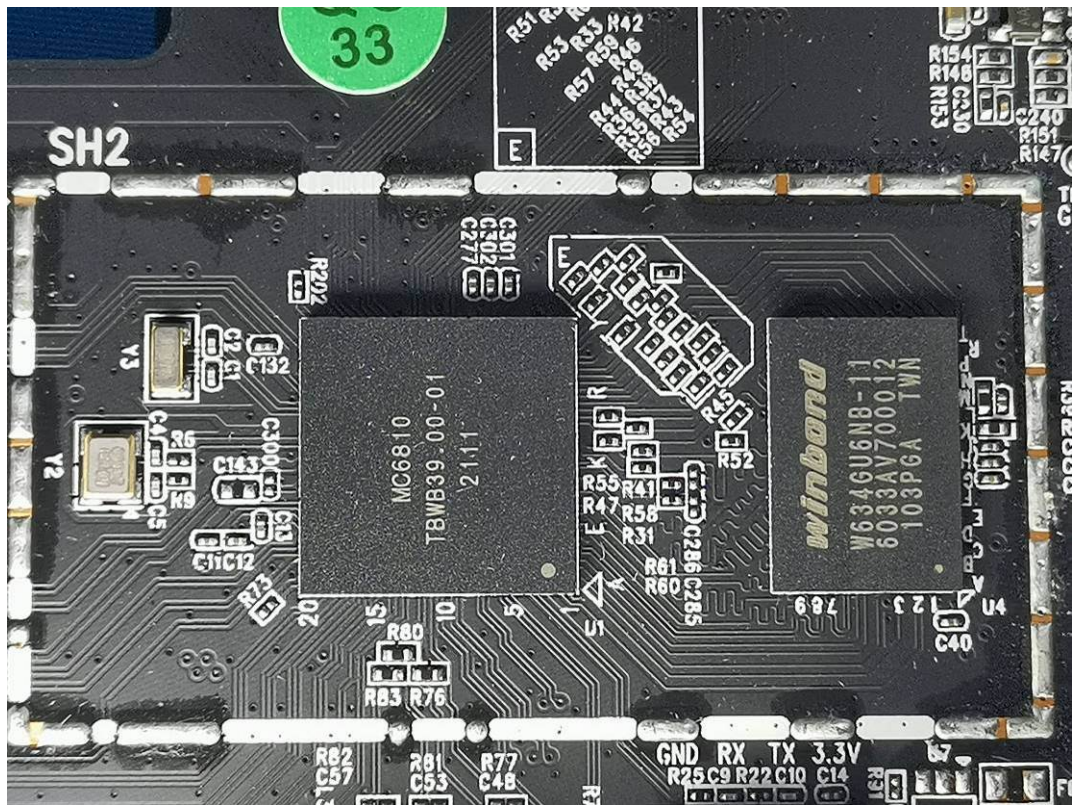
Port



Uncover



Chip



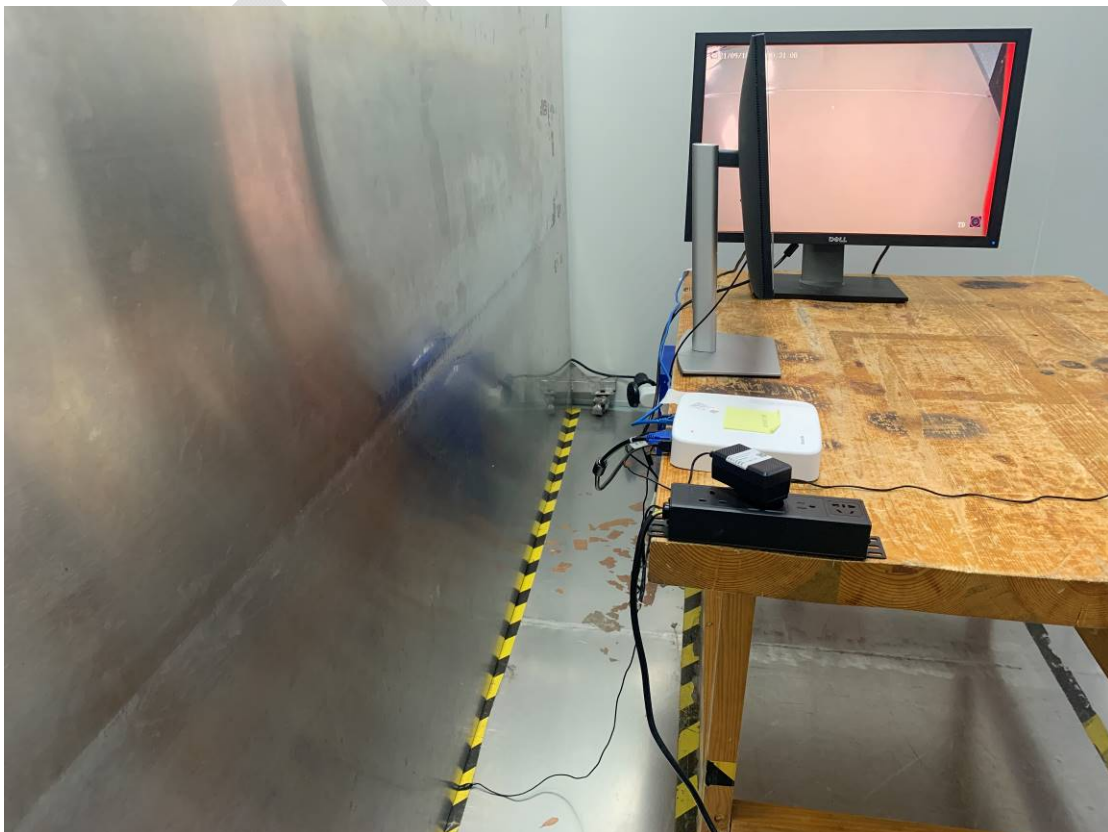
EXHIBITB – TEST SETUP PHOTOGRAPHS

Conducted Emissions

Conducted Emissions Front View



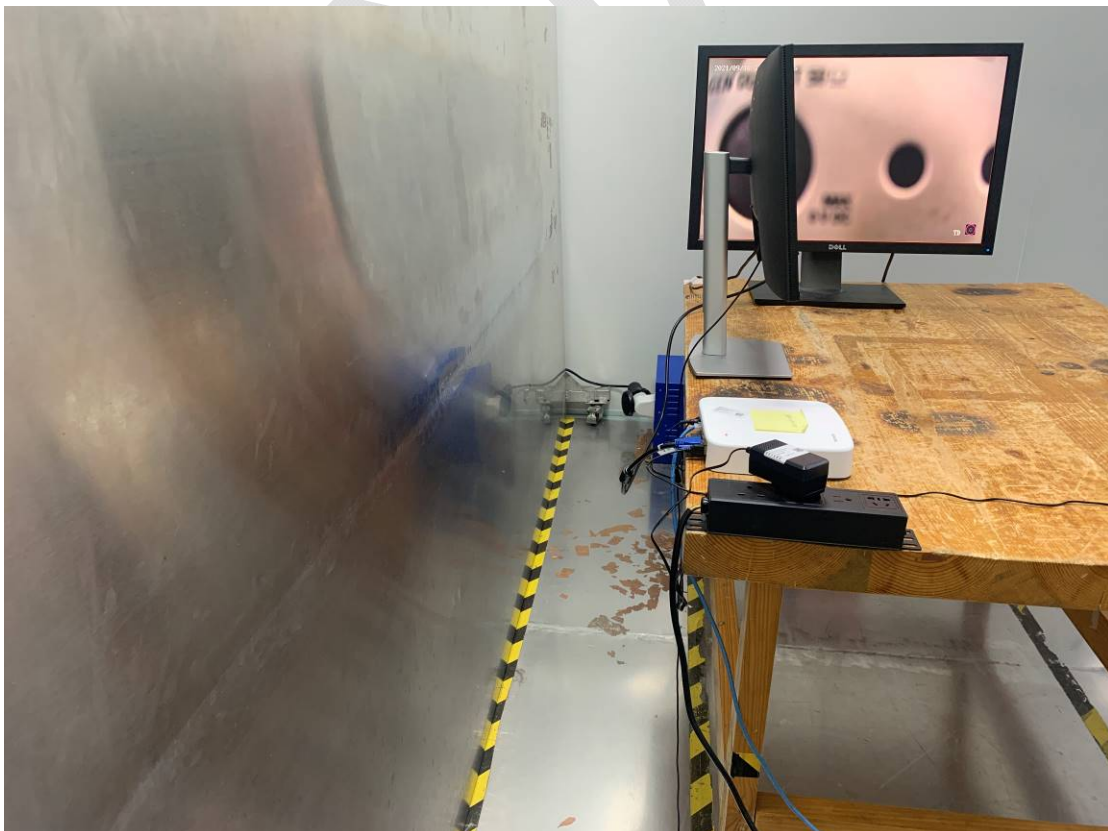
Conducted Emissions Side View



Conducted Emissions Front View-ISON

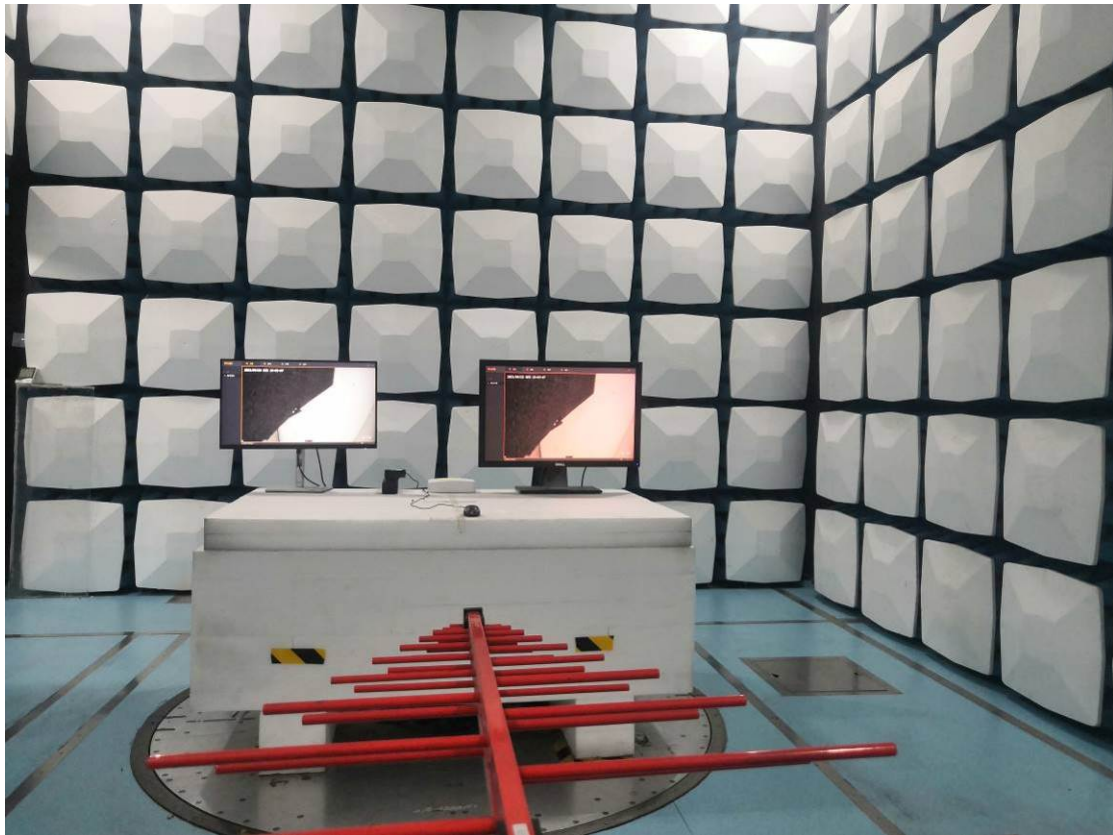


Conducted Emissions Side View-ISON

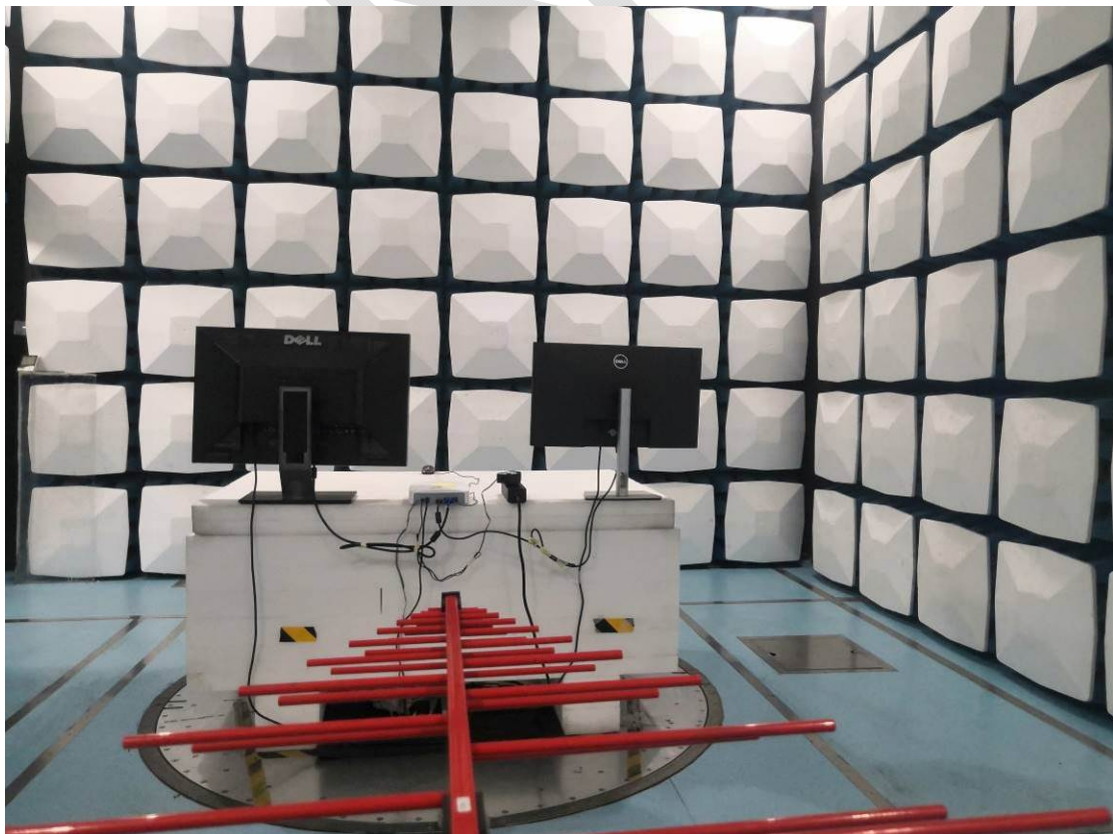


Radiated Emission

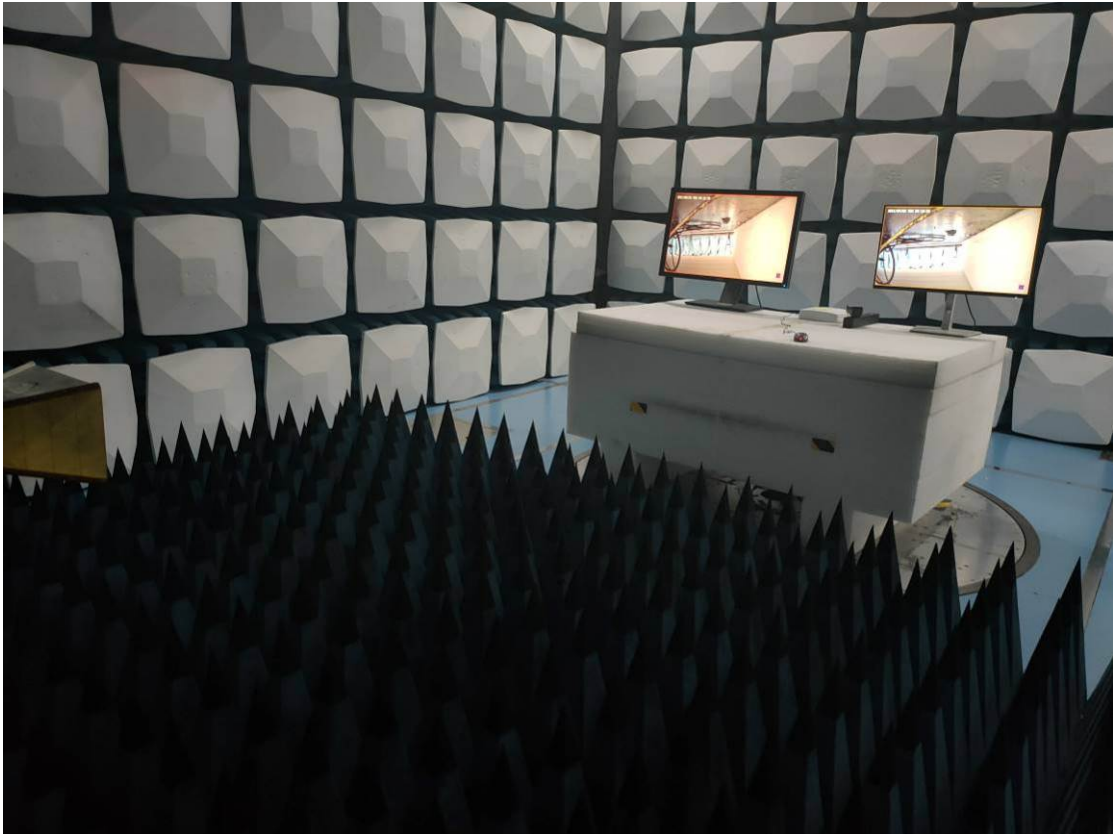
Radiated Emission Below 1G front View



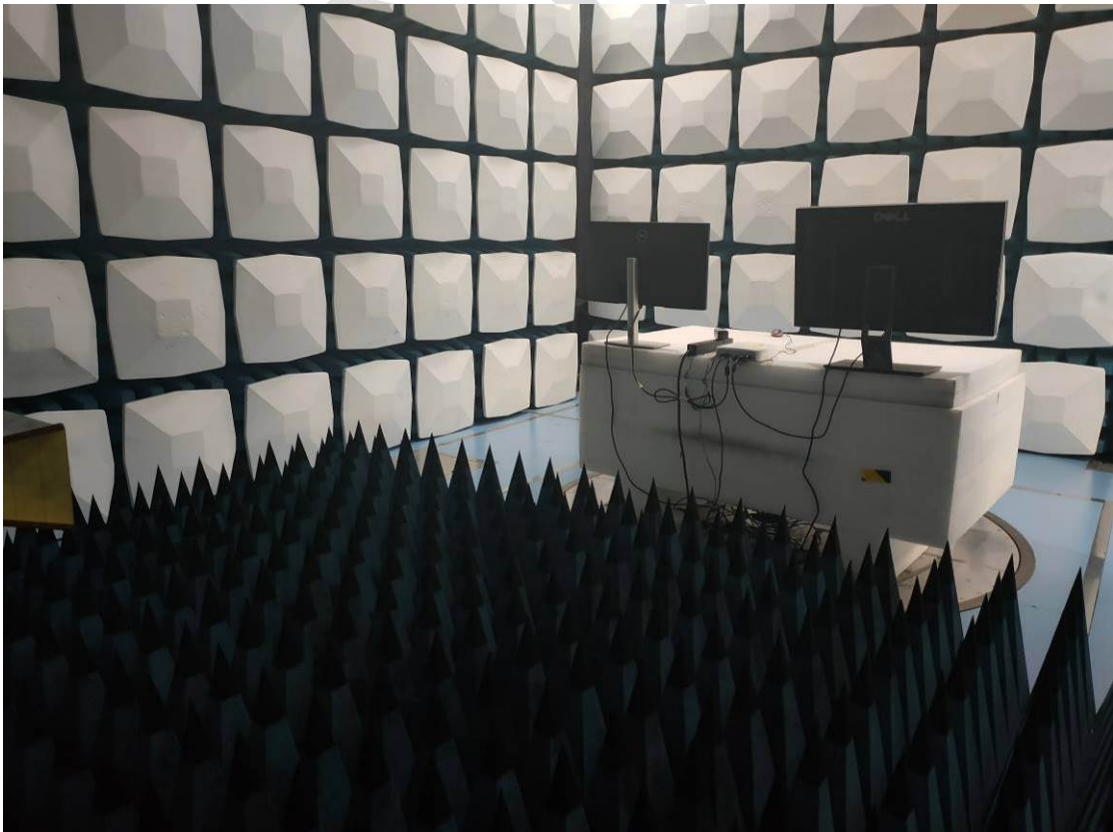
Radiated Emission Below 1G rear View



Radiated Emission above 1G front View



Radiated Emission above 1G rear View



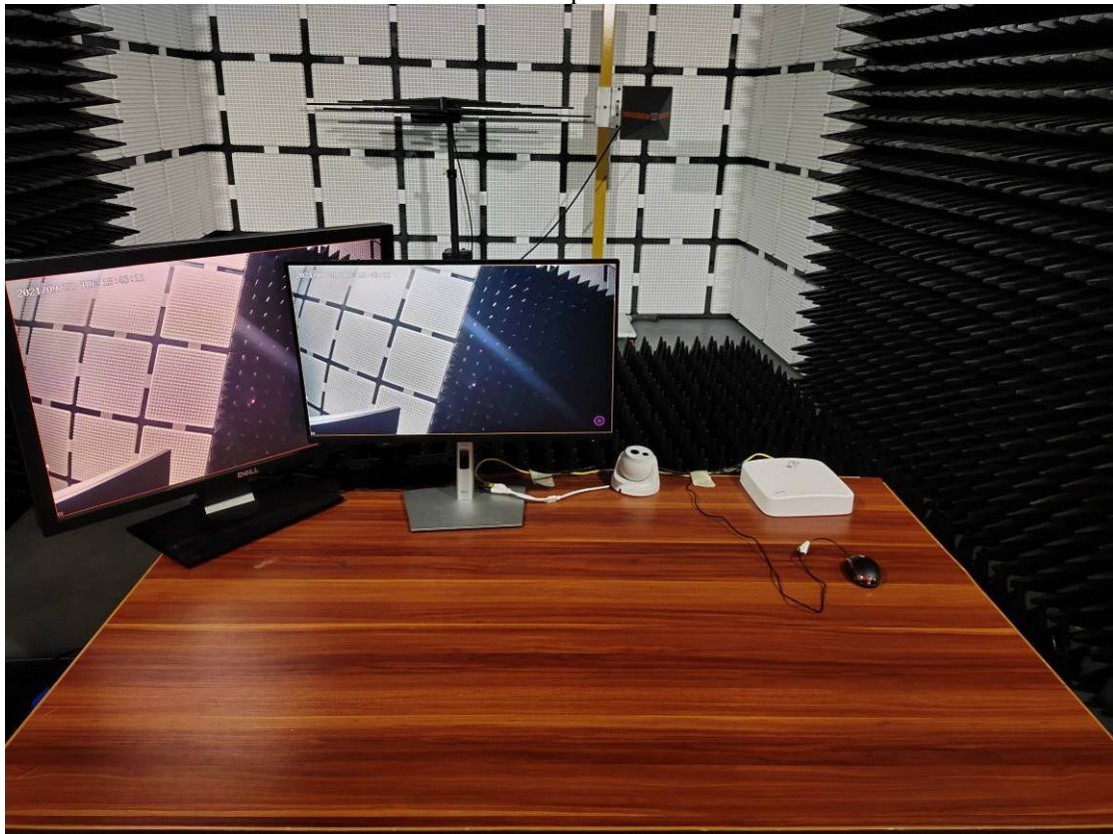
ESD

Test Setup Photo View



RS

Test Setup Photo



EFT

Test Setup Photo View



RJ45 Test Setup Photo View

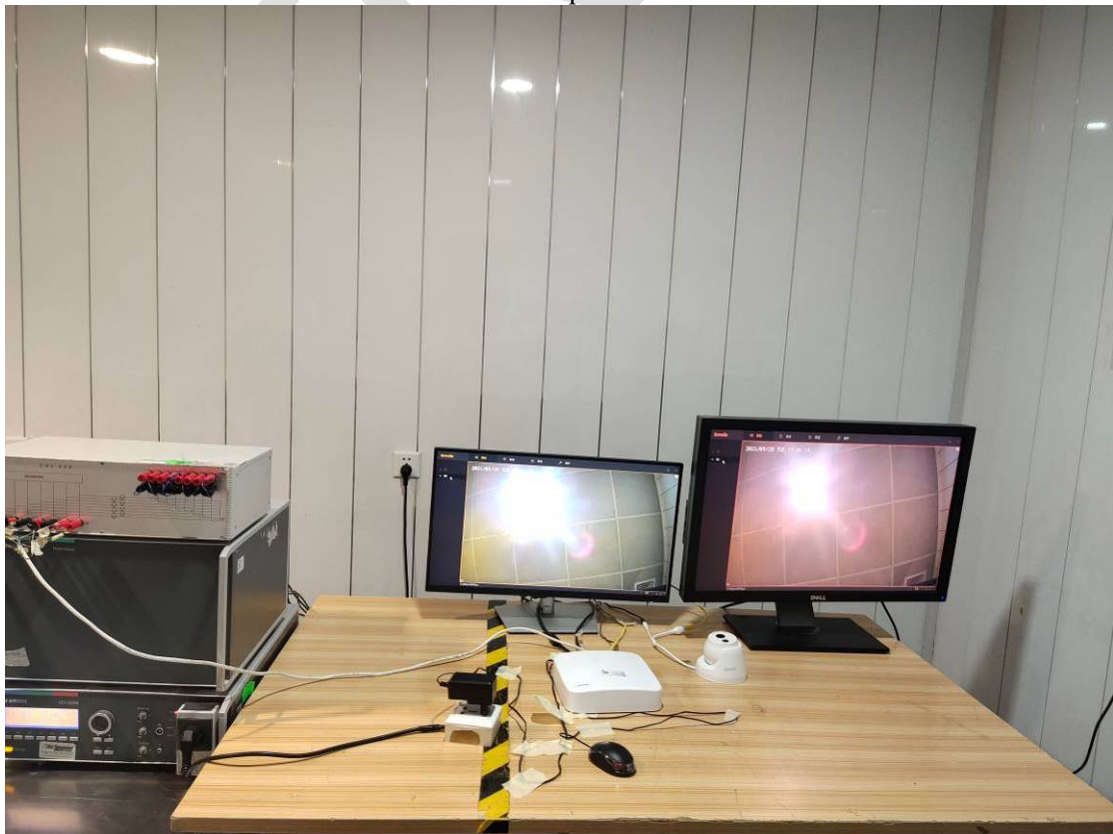


Surge

Test Setup Photo View



RJ45 Test Setup Photo View



Dips

Test Setup Photo View

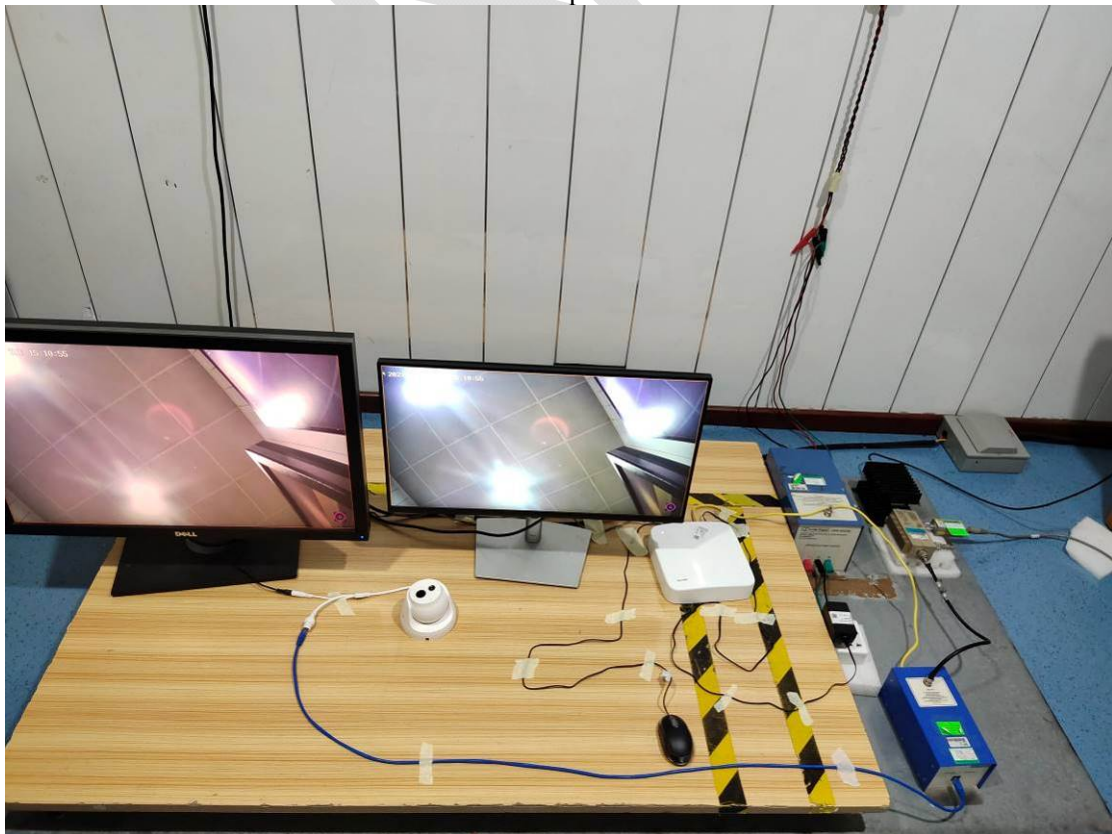


CS

Test Setup Photo View



RJ45 Test Setup Photo View



Flicker

Test Setup Photo View



DECLARATION LETTER

SHENZHEN TENDA TECHNOLOGY CO., LTD.

ADD: 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China.
518052

TEL: 86-755-27657098 FAX: 866-755-27657178

E-mail: cert@tenda.cn

DECLARATION OF SIMILARITY

Date: 2021-09-28

Dear Sir or Madam:

We, SHENZHEN TENDA TECHNOLOGY CO., LTD. hereby declare that the product: HD Network Video Recorder, model: N3L-8 H,N3L-16H is electrically identical with the model:N3L-4 Hwhich was tested by BACL with the same electromagnetic emissions and

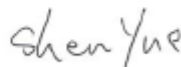
electromagnetic compatibility characteristics.

A description of the differences between those models and that are declared similar are as follows: They are the same product, and just the different model name, the rest are the same.

Please contact me should there be need for any additional clarification or information.

Best Regards,

Signature:



Printed Name: Shen Yue

Title: Engineer

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