TEST REPORT

Product Name	**:**	**LCD Display**
Model Number	**:**	**PB3701,**37**(The symbol "*" can be 0-9, A-Z, a-z, "/", "\", "-", "_", "(", ")", "," or blank for the marketing purpose, only different model designations on the marking plate for different markets. No safety concerns)**

Prepared for	:	Associated Industries China, Inc.
Address	:	5F-1, No.3-1, Park Street, Nangang District, Taipei, 11503, Taiwan
Prepared by	:	EMTEK (SHENZHEN) CO., LTD.
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Report Number	:	ENS2503260164W00201R
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APPENDIX (Photos of the EUT)

TEST REPORT DESCRIPTION

Applicant	:	Associated Industries China, Inc.
Manufacturer	:	Associated Industries China, Inc.
Trade Mark	:	neovo
EUT	:	LCD Display
Model Number	:	PB3701,**37**(The symbol "*" can be 0-9, A-Z, a-z, "/", "\", "-", "_", "(", ")", "," or blank for the marketing purpose, only different model designations on the marking plate for different markets. No safety concerns)
Power Supply	:	Rating: 100-240V ~ 50/60Hz, 1.0A

Measurement Procedure Used:

EN 55032:2015+A11:2020;
EN 55032:2015+A1:2020;
EN IEC 61000-3-2:2019+A1:2021
EN 61000-3-3:2013+A2:2021
EN 55035:2017+A11:2020;
(IEC 61000-4-2:2008, IEC 61000-4-3:2006+A1:2007+A2:2010, IEC 61000-4-3:2020, IEC 61000-4-4:2012, IEC 61000-4-5:2014, IEC 61000-4-5:2014+A1:2017, IEC 61000-4-6:2013, IEC 61000-4-6:2014+AC2015, IEC 61000-4-8:2009, IEC 61000-4-11:2004, IEC 61000-4-11:2020)

The device described above is tested by EMTEK (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK (SHENZHEN) CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN 55032, EN IEC 61000-3-2, EN 61000-3-3, EN 55035 requirements.
This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (SHENZHEN) CO., LTD.

Date of Test	:	April 2, 2025 to April 14, 2025
Prepared by	:	Una Yu/Editor
Reviewer	:	Joe Xia/Supervisor
Approved & Authorized Signer	:	Lisa Wang/Manager

EMTEK (SHENZHEN) CO., LTD. TESTING

Modified Information

Version	Report No.	Revision Date	Summary
Ver1.0	ENS2503260164W00201R	/	Original Report

1. DESCRIPTION OF STANDARDS AND RESULTS (EUT)

EMISSION				
Description of Test Item		Standard	Limits	Results
Conducted Emissions From the AC Mains Power Ports		EN 55032	Class B	Pass
Asymmetric mode conducted emissions	Wired network ports		Class B	N/A
	Optical fibre ports		Class B	N/A
	Broadcast receiver tuner ports		Class B	N/A
	Antenna ports		Class B	N/A
Conducted differential voltage emissions	TV broadcast receiver tuner ports		Class B	N/A
	RF modulator output ports		Class B	N/A
	FM broadcast receiver tuner ports		Class B	N/A
Radiated emissions at frequencies up to 1 GHz			Class B	Pass
Radiated emissions at frequencies above 1 GHz			Class B	Pass
Radiated emissions from FM receivers			Table A.6	N/A
Outdoor units of home satellite receiving systems			Table A.7	N/A
Harmonic Current Emissions		EN IEC 61000-3-2	Class D	N/A
Voltage Fluctuation and Flicker		EN 61000-3-3	Section 5	Pass

IMMUNITY				
Description of Test Item		Basic Standard	Performance Criteria	Results
Electrostatic Discharge	Enclosure ports	IEC 61000-4-2:2008	B	Pass
Continuous RF electromagnetic field disturbances	Enclosure ports	IEC 61000-4-3:2006+ A1:2007+A2:2010	A	Pass
Electrical fast transients/burst	AC mains power ports	IEC61000-4-4:2012	B	Pass
	Analogue/digital data ports		B	N/A
	DC network power ports		B	N/A
Surges	AC mains power ports	IEC 61000-4-5:2014	B	Pass
	Analogue/digital data ports		B,C	N/A
	DC network power ports		B	N/A
Continuous induced RF disturbances	AC mains power ports	IEC 61000-4-6:2013	A	Pass
	Analogue/digital data ports		A	N/A
	DC network power ports		A	N/A
Power frequency magnetic field	Enclosure ports	IEC 61000-4-8:2009	A	Pass
Voltage dips and interruptions	AC mains power ports	IEC 61000-4-11:2004	B,C	Pass
Note: N/A is an abbreviation for Not Applicable.				

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	LCD Display
Model Number	:	PB3701,**37**(The symbol "*" can be 0-9, A-Z, a-z, "/", "\", "-", "_", "(", ")", "," or blank for the marketing purpose, only different model designations on the marking plate for different markets. No safety concerns)
Serial number	:	1#
Test Voltage	:	Rating: 100-240V ~ 50/60Hz, 1.0A
Applicant	:	Associated Industries China, Inc.
Address	:	5F-1, No.3-1, Park Street, Nangang District, Taipei, 11503, Taiwan
Manufacturer	:	Associated Industries China, Inc.
Address	:	5F-1, No.3-1, Park Street, Nangang District, Taipei, 11503, Taiwan

2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
0	Enclosure	N/E	--	--	None
1	AC INPUT	AC	No	Unshielded	1 ports
2	HDMI input port	A/D	No	Shielded	2ports
3	USB port	A/D	--	--	1 ports
4	LAN port	A/D	Yes	Unshielded	1 ports
5	DIGITAL AUDIO OUT	A/D	No	Unshielded	1 ports
6	AV input port	A/D	No	Unshielded	None
7	ANT	A/D	No	Unshielded	2 ports
8	Earphone	A/D	No	Unshielded	1 ports

*Note: Use abbreviations:
AC= AC Power port
DC= DC Power port
N/E= Non-Electrical
A/D=Analogue/digital data port (signal/control port, antenna port, wired network port, broadcast receiver tuner port, optical fibre port)

2.3. Independent Operation Modes

A. On
1. HDMI IN mode
2. DP mode

B. Stand-By
C. Off

2.4. Test Manner

Test Items	Test Voltage	Operation Modes	Worst case
Conducted disturbance at mains Terminals	AC 230V/50Hz AC 120V/60Hz	Mode A	Mode A.1
Asymmetric mode conducted emissions at Wired network ports	AC 230V/50Hz	Mode A.8	N/A
Asymmetric mode conducted emissions at broadcast receiver tuner ports	AC 230V/50Hz	Mode A.1 Mode A.2 Mode A.3 Mode A.4	N/A
Conducted differential voltage Emissions at TV broadcast receiver tuner ports	AC 230V/50Hz	Mode A.1 Mode A.2 Mode A.3 Mode A.4	N/A
Radiated emissions at frequencies up to 1 GHz	AC 230V/50Hz, AC 120V/60Hz	Mode A	Mode A.1 AC 230V/50Hz
Radiated emissions at frequencies above 1 GHz	AC 230V/50Hz AC 120V/60Hz	Mode A	Mode A.1 AC 230V/50Hz
Harmonic Current Emissions	AC 230V/50Hz	Mode A	\
Voltage Fluctuation and Flicker	AC 230V/50Hz	Mode A	\
Electrostatic Discharge	AC 230V/50Hz	Mode A	\
Continuous RF Electromagnetic Field Disturbances	AC 230V/50Hz	Mode A	\
Electrical Fast Transient / Burst	AC 230V/50Hz	Mode A	\
Surges	AC 230V/50Hz	Mode A	\
Continuous induced RF disturbances	AC 230V/50Hz	Mode A	\
Power frequency magnetic field	AC 230V/50Hz	Mode A	\
Voltage dips and interruptions	AC 230V/50Hz AC 120V/60Hz	Mode A	\

2.5. Description of Support Device

PC	:	Manufacturer: DELL M/N: D11M S/N: CN-0CV772-0887-31L-5219 CE, FCC
Keyboard	:	Manufacturer: LENOVO M/N: KU-0225 S/N:0585494 CE, FCC
Mouse	:	Manufacturer: LENOVO M/N: MO28UOL S/N:44G7862 068 CE, FCC
Notebook	:	Manufacturer: Lenovo M/N: ThinkPad S2 Yoga 3rd Gen S/N: R9-OR98VZ CE, FCC: DOC
Signal Generator	:	Manufacturer: Philips M/N: PM5418 S/N: LO 604796
		Manufacturer: Creastar M/N: CS2326 S/N: 7320018624

2.6. Description of Test Facility

Site Description		
Name of Firm	:	EMTEK (SHENZHEN) CO., LTD.
Site Location	:	Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2.7. Measurement Uncertainty

Test Item		Uncertainty
Conducted Emission Uncertainty	:	2.08dB(9k~150kHz Conduction 1#) 2.40dB(150k-30MHz Conduction 1#)
Conducted Emission Uncertainty	:	3.16dB(9k~150kHz Conduction 2#) 2.90dB(150k-30MHz Conduction 2#)
Power clamp	:	2.53dB
Electromagnetic Radiated Emission(3-loop)	:	3.7dB
Radiated Emission Uncertainty (3m 1# Chamber)	:	4.46dB (30M~1GHz Polarize: H) 5.04dB (30M~1GHz Polarize: V) 4.92dB (1~6GHz) 5.12dB (6~18GHz)
Radiated Emission Uncertainty (3m 3# Chamber)	:	4.40dB (30M~1GHz Polarize: H) 5.04dB (30M~1GHz Polarize: V) 4.94dB (1~6GHz) 5.34dB (6~18GHz)
Radiated Emission Uncertainty (10m Chamber)	:	4.58dB (30M~1GHz Polarize: H) 4.54dB (30M~1GHz Polarize: V)
Uncertainty for Flicker test	:	0.07%
Uncertainty for Harmonic test	:	1.8%
Uncertainty for C/S Test	:	1.45dB(Using CDN Test) 2.37dB(Using EM Clamp Test)
Uncertainty for R/S Test	:	2.10dB(80MHz-200MHz) 1.76dB(200MHz-1000MHz)
Uncertainty for test site temperature and humidity	:	0.6℃ 4%

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Conducted Emissions at the AC Mains Power Ports

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2024/5/11	1 Year
AMN	Rohde & Schwarz	ENV216	101161	2024/5/10	1 Year
AMN	Kyoritsu	KNW-407	8-1492-9	2024/5/11	1 Year

3.2. For Asymmetric Mode Conducted Emissions at Wired Network Ports

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2024/5/11	1 Year
AAN	TESEQ	ISN T8-CAT6	32186	2024/5/12	1 Year

3.3. For Asymmetric Mode Conducted Emissions at Broadcast Receiver Tuner Ports

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2024/5/11	1 Year
Current probe	Rohde & Schwarz	EZ-17	100213	2024/5/11	1 Year

3.4. For Conducted Differential Voltage Emissions at TV Broadcast Receiver Tuner Ports

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2024/5/11	1 Year
Power Splitters & Dividers	Weinschel	1506A	PM203	2024/5/11	1 Year
Impedance Matching Pads	Weinschel	9070-50/75	N/A	2024/5/11	1 Year

3.5. For Radiated Emission Measurement (3m)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	HP	8447F	2944A07999	2024/5/11	1 Year
EMI Test Receiver	Rohde & Schwarz	ESCI	101414	2024/5/11	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	712	2023/7/2	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	2023/8/28	2 Year
Pre-Amplifie	Bonn	BLMA0118-5G	2213967B-02	2024/10/18	1 Year

3.6. For Harmonic Current / Flicker Measurement

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
45KVA AC Power source	Teseq	NSG 1007-45/45KVA	1305A02873	2024/5/11	1 Year
Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	2024/5/11	1 Year
Impedance network	Teseq	INA2197/37A	1305A02873	2024/5/11	1 Year
Impedance network	Teseq	INA 2196/75A	1305A02874	2024/5/11	1 Year
Profline 2100 AC Switching Unit	Teseq	NSG 2200-3	A22714	2024/5/11	1 Year

3.7. For Electrostatic Discharge Immunity

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ESD Tester	EMTEST	Dito	P2220263883	2024/10/21	1 Year

3.8. For Continuous RF Electromagnetic Field Disturbances Immunity

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Power Amplifier	MILMEGA	AS0102-55	1018770	2024/5/11	1 Year
RF Power Meter. Dual Channel	BOONTON	4232A	10539	2024/5/11	1 Year
Log.-Per. Antenna	SCHWARZBECK	STLP 9129-7/16	3050	N/A	N/A
Signal Generator	Agilent	N5181A	MY50145187	2024/5/11	1 Year
50ohm Diode Power Sensor	BOONTON	51011EMC	36164	2024/5/11	1 Year
Field Strength Meter	DARE	RSS1006A	10I00037SNO22	2024/5/20	1 Year
Multi-function interface system	DARE	CTR1009B	12I00250SNO72	N/A	N/A
Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A
Power Amplifier	MILMEGA	AS1860-50	1059346	2024/5/11	1 Year
Power Amplifier	Vectawave	VBA 1000-600C	133627	2024/10/18	1 Year
Directional Coupler	BONN	BDC 0810-50/1500	2229689	2024/10/18	1 Year

3.9. For Electrical Fast Transient / Burst Immunity

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Burst Tester	HAEFELY	PEFT4010	080981-16	2024/5/12	1 Year
Coupling Clamp	HAEFELY	IP-4A	147147	2024/5/12	1 Year

3.10. For Surges Immunity

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval

Controller	HAEFELY	Psurge 8000	174031	2024/5/11	1 Year
Impulse Module	HAEFELY	PIM 100	174124	2024/5/11	1 Year
Coupling Decoupling	HAEFELY	PCD 130	172181	2024/5/11	1 Year
Coupling Module	HAEFELY	PCD122	174354	2024/5/11	1 Year
Impulse Module	HAEFELY	PIM 120	174435	2024/5/11	1 Year
Coupling Module	HAEFELY	PCD 126A	174387	2024/5/11	1 Year
Impulse Module	HAEFELY	PIM 110	174391	2024/5/11	1 Year
Impulse Module	HAEFELY	PIM 150	178707	2024/5/12	1 Year
Impulse Module	PMI	PCDN8	190422	2024/5/12	1 Year

3.11.For Continuous Induced RF Disturbances Immunity

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Continuous Wave Simulator	EMTEST	CWS500C	0900-12	2024/5/10	1 Year
CDN	EMTEST	CDN-M2	510010010010	2024/5/11	1 Year
CDN	EMTEST	CDN-M3	0900-11	2024/5/11	1 Year
EM Injection Clamp	EMTEST	F-2031-23MM	368	2024/5/12	1 Year
Attenuator	EMTEST	100W 6dB DC-3G	/	2024/5/10	1 Year
Signal Generator	R&S	SMB100A	103041	2024/5/10	1 Year
CDN	LUTHI	CDN L-801 M2/M3	2606	2024/5/11	1 Year

3.12.For Power Frequency Magnetic Field Immunity

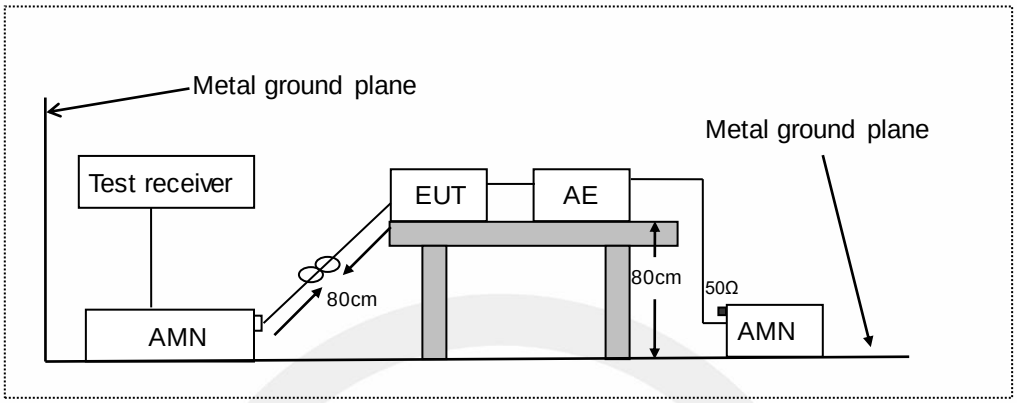
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Magnetic Field Tester	HAEFELY	MAG100	250040.1	2024/5/10	1 Year

3.13.For Voltage Dips and Interruptions Immunity

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
45KVA AC Power source	Teseq	NSG 1007-45/45KVA	1305A02873	2024/5/11	1 Year
Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	2024/5/11	1 Year
Impedance network	Teseq	INA2197/37A	1305A02873	2024/5/11	1 Year
Impedance network	Teseq	INA 2196/75A	1305A02874	2024/5/11	1 Year
Profline 2100 AC Switching Unit	Teseq	NSG 2200-3	A22714	2024/5/11	2 Year

4. CONDUCTED EMISSIONS FROM THE AC MAINS POWER PORTS

4.1. Block Diagram of Test Setup



AMN: Artificial Mains Network
AE: Associated equipment
EUT: Equipment under test

4.2. Limits

EN 55032, Class B

Frequency range MHz	Coupling device	Detector type / bandwidth	Class B limits dB(μV)
0.15 to 0.5	AMN	Quasi Peak / 9 kHz	66 to 56
0.5 to 5			56
5 to 30			60
0.15 to 0.5	AMN	Average / 9 kHz	56 to 46
0.5 to 5			46
5 to 30			50

4.3. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a artificial mains network (AMN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other AMN.

The AMN provides 50 ohm coupling impedance for the measuring instrument.

The CISPR states that the AMN with 50 ohm and 50 microhenry should be used.

Both sides of AC line were checked for maximum conducted interference.

The frequency range from 150 kHz to 30 MHz was sweep.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

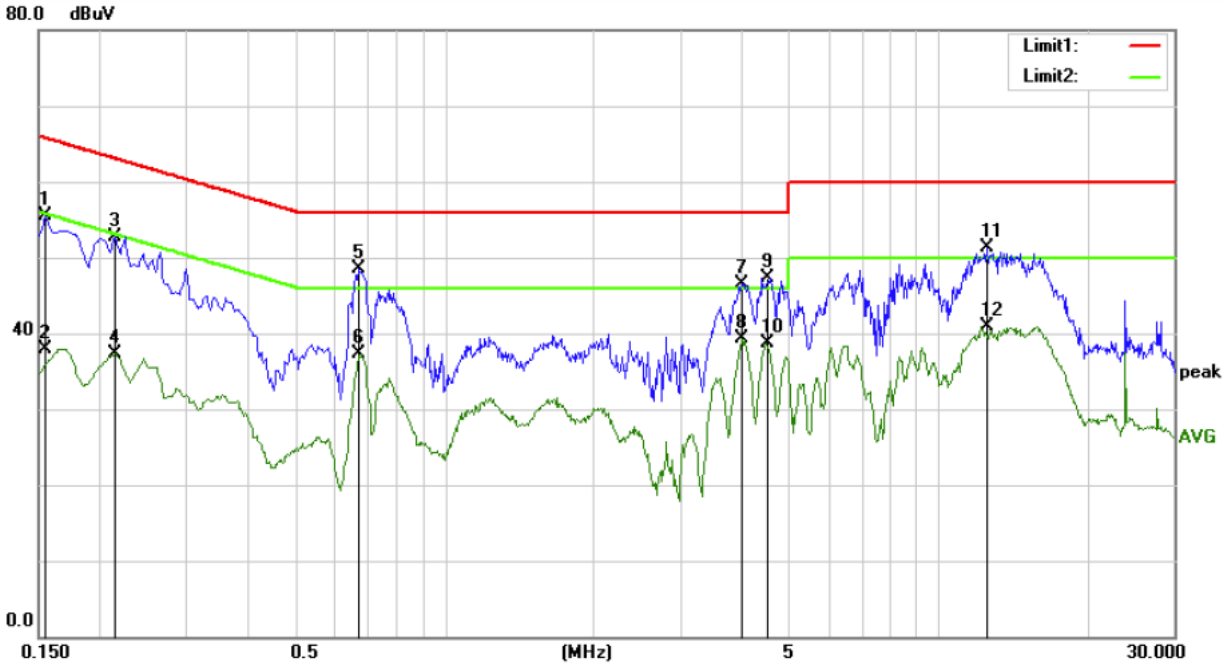
Test results were obtained from the following equation:
Emission Level (dBµV) = AMN Factor (dB) + Cable Loss (dB) + Reading (dBµV)
Margin (dB) = Emission Level (dBµV) - Limit (dBµV)

4.4. Measuring Results

PASS.

All the modes were tested and the data of the worst modes are attached the following pages.

Temperature	:	24.3°C
Humidity	:	45%
Atmospheric Pressure	:	101kpa
Test Engineer	:	FinRen Tan
Test Date	:	2025/04/03



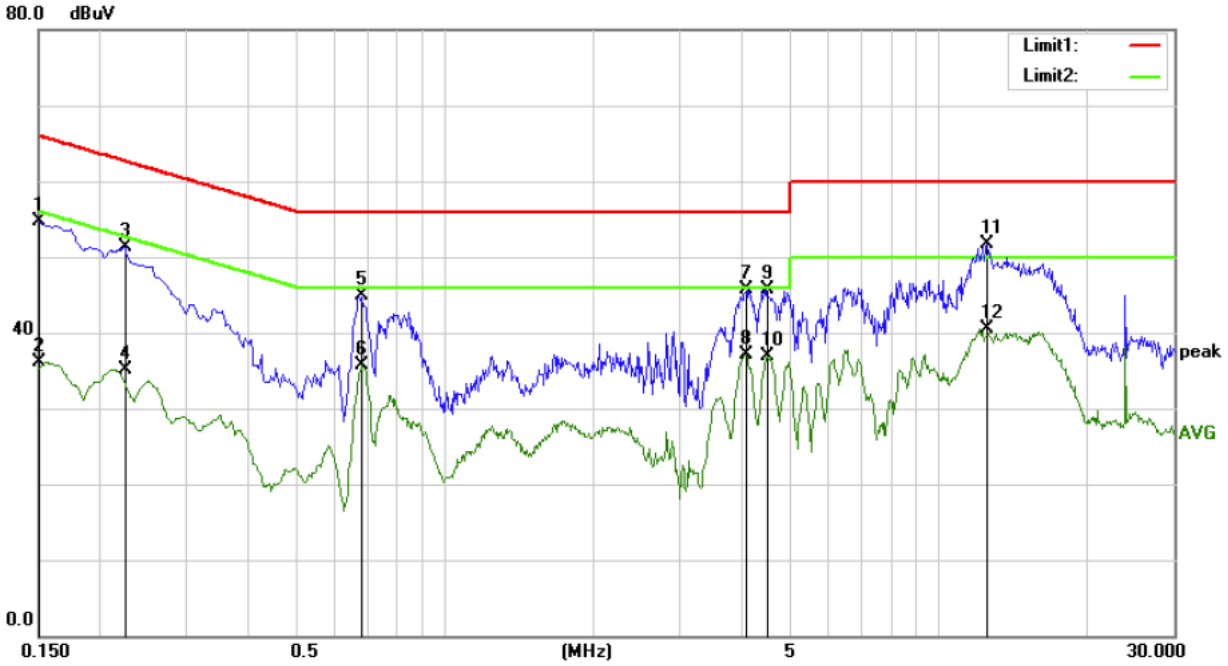
Site Conduction 2# Phase: N Temperature: 24.3

Limit: (CE)EN55032 class B QP Power: AC 230V/50Hz Humidity: 45 %

Mode: HDMI 2 IN

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1548	44.81	10.69	55.50	65.74	-10.24	QP	
2		0.1548	27.26	10.69	37.95	55.74	-17.79	AVG	
3		0.2140	42.10	10.66	52.76	63.05	-10.29	QP	
4		0.2140	26.56	10.66	37.22	53.05	-15.83	AVG	
5		0.6683	37.79	10.74	48.53	56.00	-7.47	QP	
6		0.6683	26.63	10.74	37.37	46.00	-8.63	AVG	
7		4.0000	35.88	10.56	46.44	56.00	-9.56	QP	
8	*	4.0000	28.66	10.56	39.22	46.00	-6.78	AVG	
9		4.5000	36.78	10.52	47.30	56.00	-8.70	QP	
10		4.5000	28.15	10.52	38.67	46.00	-7.33	AVG	
11		12.5155	40.51	10.70	51.21	60.00	-8.79	QP	
12		12.5155	30.25	10.70	40.95	50.00	-9.05	AVG	



Site Conduction 2# Phase: *L1* Temperature: 24.3

Limit: (CE)EN55032 class B_QP Power: AC 230V/50Hz Humidity: 45 %

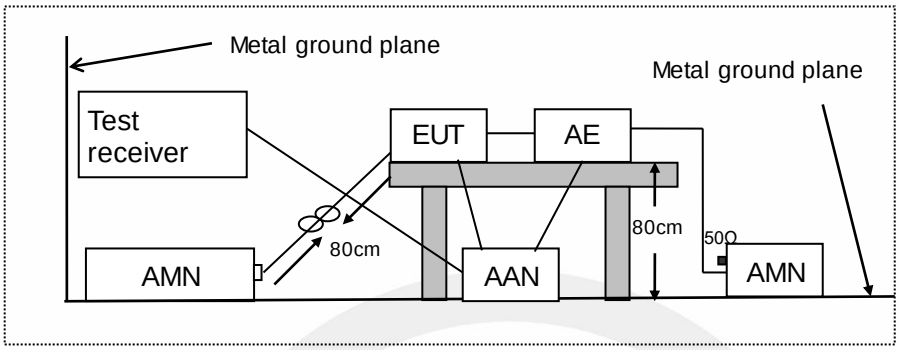
Mode: HDMI 2 IN

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	44.10	10.69	54.79	66.00	-11.21	QP	
2		0.1500	25.37	10.69	36.06	56.00	-19.94	AVG	
3		0.2250	40.57	10.67	51.24	62.63	-11.39	QP	
4		0.2250	24.43	10.67	35.10	52.63	-17.53	AVG	
5		0.6800	34.16	10.74	44.90	56.00	-11.10	QP	
6		0.6800	24.91	10.74	35.65	46.00	-10.35	AVG	
7		4.0800	35.11	10.55	45.66	56.00	-10.34	QP	
8		4.0800	26.62	10.55	37.17	46.00	-8.83	AVG	
9		4.5150	35.14	10.52	45.66	56.00	-10.34	QP	
10		4.5150	26.43	10.52	36.95	46.00	-9.05	AVG	
11	*	12.5550	40.94	10.70	51.64	60.00	-8.36	QP	
12		12.5550	29.71	10.70	40.41	50.00	-9.59	AVG	

5. ASYMMETRIC MODE CONDUCTED EMISSIONS AT WIRED NETWORK PORTS

5.1. Block Diagram of Test Setup



AMN: Artificial mains network
AE: Associated equipment
EUT: Equipment under test
AAN: Asymmetric artificial network

5.2. Limits

EN 55032, Class B, Table A.12

Frequency range (MHz)	Coupling device (see Table A.8)	Detector type / bandwidth	Class B voltage limits dB(μV)	Class B current limits dB(μA)
0.15 to 0.5	AAN	Quasi Peak / 9 kHz	84 to 74	N/A
0.5 to 30			74	
0.15 to 0.5	AAN	Average / 9 kHz	74 to 64	
0.5 to 30			64	
0.15 to 0.5	CVP and current probe	Quasi Peak / 9 kHz	84 to 74	40 to 30
0.5 to 30			74	30
0.15 to 0.5	CVP and current probe	Average / 9 kHz	74 to 64	30 to 20
0.5 to 30			64	20
0.15 to 0.5	Current Probe	Quasi Peak / 9 kHz	N/A	40 to 30
0.5 to 30				30
0.15 to 0.5	Current Probe	Average / 9 kHz		30 to 20
0.5 to 30				20

5.3. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through artificial mains network (AMN) or connected to the wired network port through an asymmetric artificial network (ANN). AMN provided a 50ohm coupling impedance for the tested equipment AC mains port; ANN provided a common mode (asymmetric mode) impedance of 150 Ω to

the wired network port under test. Both sides of AC line and the wired network line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the receiver is set at 9kHz in 150kHz~30MHz. The frequency range from 150kHz to 30MHz is investigated.

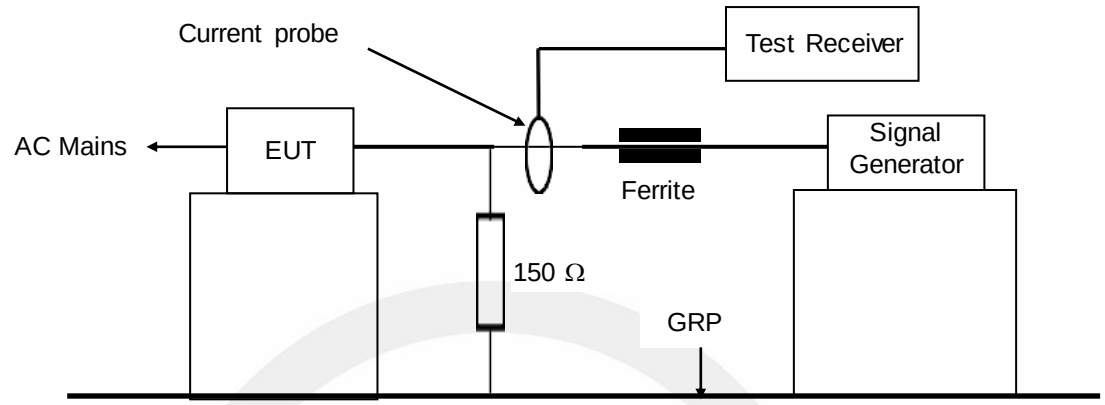
Test results were obtained from the following equation:
Emission Level (dBμV) = ANN Factor (dB) + Cable Loss (dB) + Reading (dBμV)
Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

5.4. Measuring Results

N/A

6. ASYMMETRIC MODE CONDUCTED EMISSIONS AT BROADCAST RECEIVER TUNER PORTS

6.1. Block Diagram of Test Setup



AMN: Artificial mains network
AE: Associated equipment
EUT: Equipment under test
AAN: Asymmetric artificial network

6.2. Limits

EN 55032, Class B

Frequency range (MHz)	Coupling device	Detector type / bandwidth	Class B voltage limits dB(μV)	Class B current limits dB(μA)
0.15 to 0.5	AAN	Quasi Peak / 9 kHz	84 to 74	N/A
0.5 to 30			74	
0.15 to 0.5	AAN	Average / 9 kHz	74 to 64	
0.5 to 30			64	
0.15 to 0.5	CVP and current probe	Quasi Peak / 9 kHz	84 to 74	40 to 30
0.5 to 30			74	30
0.15 to 0.5	CVP and current probe	Average / 9 kHz	74 to 64	30 to 20
0.5 to 30			64	20
0.15 to 0.5	Current Probe	Quasi Peak / 9 kHz	N/A	40 to 30
0.5 to 30				30
0.15 to 0.5	Current Probe	Average / 9 kHz		30 to 20
0.5 to 30				20

6.3. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through artificial mains network(AMN) or connected to the wired network port through an asymmetric artificial network(ANN). AMN provided a 50ohm coupling impedance for the tested

equipment AC mains port, ANN provided a common mode (asymmetric mode) impedance of 150 Ω to the wired network port under test. Both sides of AC line and the wired network line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the receiver is set at 9kHz in 150kHz~30MHz. The frequency range from 150kHz to 30MHz is investigated.

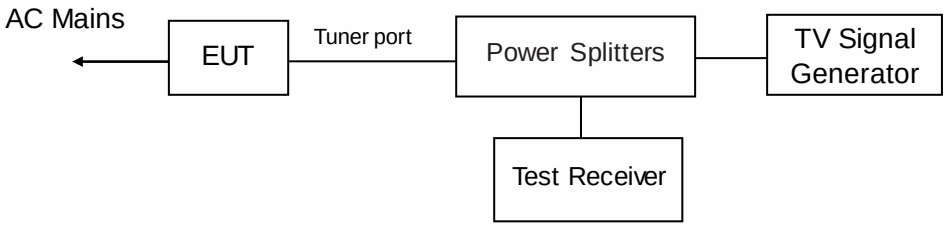
Test results were obtained from the following equation:
Emission Level (dBμV) = ANN Factor (dB) + Cable Loss (dB) + Reading (dBμV)
Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

6.4. Measuring Results

N/A.

7. CONDUCTED DIFFERENTIAL VOLTAGE EMISSIONS AT BROADCAST RECEIVER TUNER PORTS

7.1. Block Diagram of Test Setup



7.2. Limits

EN 55032, Class B

Frequency range MHz	Detector type/ bandwidth	Class B limits dB(μV) 75 Ω			Applicability
		Other	Local Oscillator Fundamental	Local Oscillator Harmonics	
30 to 950	For frequencies ≤1 GHz Quasi Peak/ 120 kHz	46	46	46	See[a]
950 to 2150		46	54	54	
950 to 2150		46	54	54	See[b]
30 to 300		46	54	50	See[c]
300 to 1000				52	
30 to 300	For frequencies ≥1 GHz Peak/1 MHz	46	66	59	See[d]
300 to 1000				52	
30 to 950		46	76	46	See[e]
950 to 2 150			n/a	54	

a. Television receivers (analogue or digital), video recorders and PC TV broadcast receiver tuner cards working in channels between 30 MHz and 1 GHz, and digital audio receivers.
b. Tuner units (not the LNB) for satellite signal reception.
c. Frequency modulation audio receivers and PC tuner cards.
d. Frequency modulation car radios.
e. Applicable to EUTs with RF modulator output ports (for example DVD equipment, video recorders, camcorders and decoders etc.) designed to connect to TV broadcast receiver tuner ports. Limits specified for the LO are for the RF modulator carrier signal and harmonics.

7.3. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane. The broadcast receiver tuner port of the EUT and the signal generator shall be connected to the input of the test receiver by means of coaxial cables and a power splitter. The power splitter used shall have a minimum attenuation of 6 dB between the signal generator and the test receiver.

The frequency range from 30 MHz to 2150 MHz is investigated.

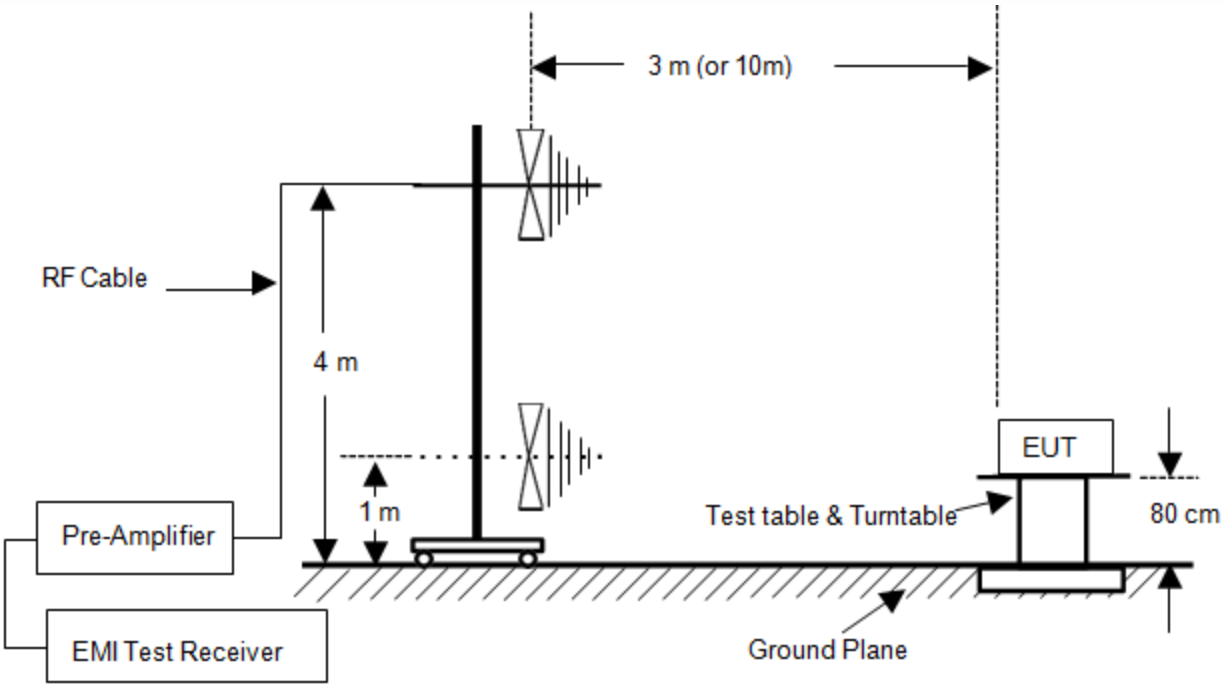
Test results were obtained from the following equation:
Emission Level (dBμV) = Power splitter Factor (dB) + Cable Loss (dB) + Reading (dBμV)
Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

7.4. Measuring Results

N/A.

8. RADIATED EMISSION MEASUREMENT (UP TO 1GHz)

8.1. Block Diagram of Test Setup



8.2. Radiated Limit

EN 55032, Class B

Frequency range MHz	Measurement			Class B limits dB(μV/m)
	Facility	Distance (m)	Detector type / bandwidth	
30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	30
230 to 1 000				37
30 to 230	OATS/SAC	3		40
230 to 1 000				47

8.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters (or 10 meters) away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The bandwidth of the Receiver is set at 120 kHz.

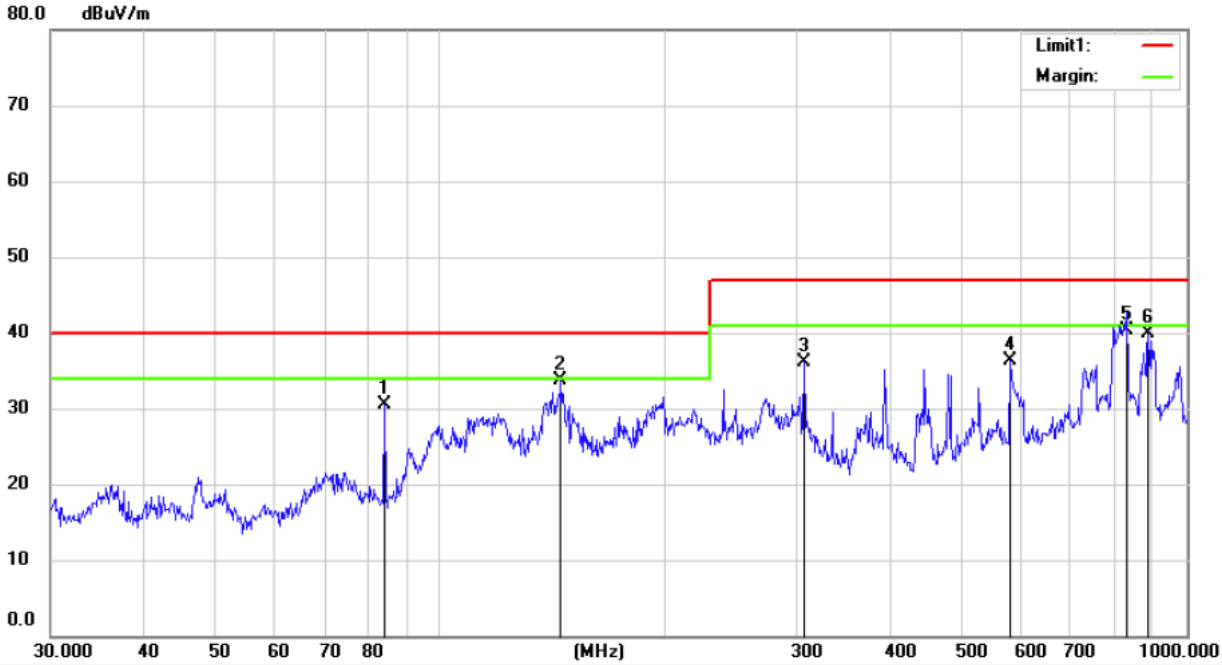
Test results were obtained from the following equation:
Emission level (dBμV/m) = Antenna Factor -Amp Factor +Cable Loss + Reading
Margin (dB) = Emission Level (dBμV/m) - Limit (dBμV/m)

8.4. Measuring Results

PASS.

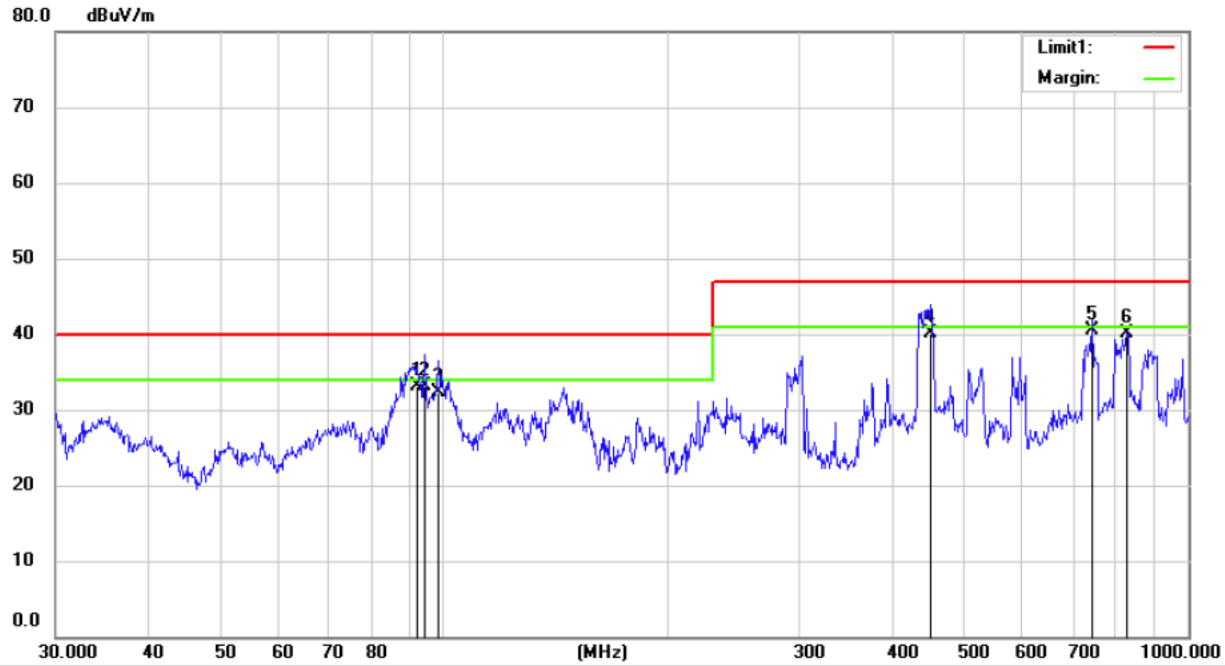
All the modes were tested and the data of the worst modes are attached the following pages.

Temperature	:	21.3°C
Humidity	:	44%
Atmospheric Pressure	:	101kpa
Test Engineer	:	Zhuowen Sheng
Test Date	:	2025/04/03



Site 3m Chamber #3 Polarization: *Horizontal* Temperature: 21.3 C
Limit: (RE)EN55032 class B Power: AC 230V/50Hz Humidity: 44 %
Mode:HDMI in
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		84.2207	48.73	-18.16	30.57	40.00	-9.43	QP			
2	*	145.1595	51.14	-17.52	33.62	40.00	-6.38	QP			
3		307.0227	47.47	-11.45	36.02	47.00	-10.98	QP			
4		582.2318	41.10	-4.78	36.32	47.00	-10.68	QP			
5		830.7642	38.97	1.33	40.30	47.00	-6.70	QP			
6		890.7278	39.33	0.61	39.94	47.00	-7.06	QP			



Site 3m Chamber #3 Polarization: *Vertical* Temperature: 21.3 C

Limit: (RE)EN55032 class B Power: AC 230V/50Hz Humidity: 44 %

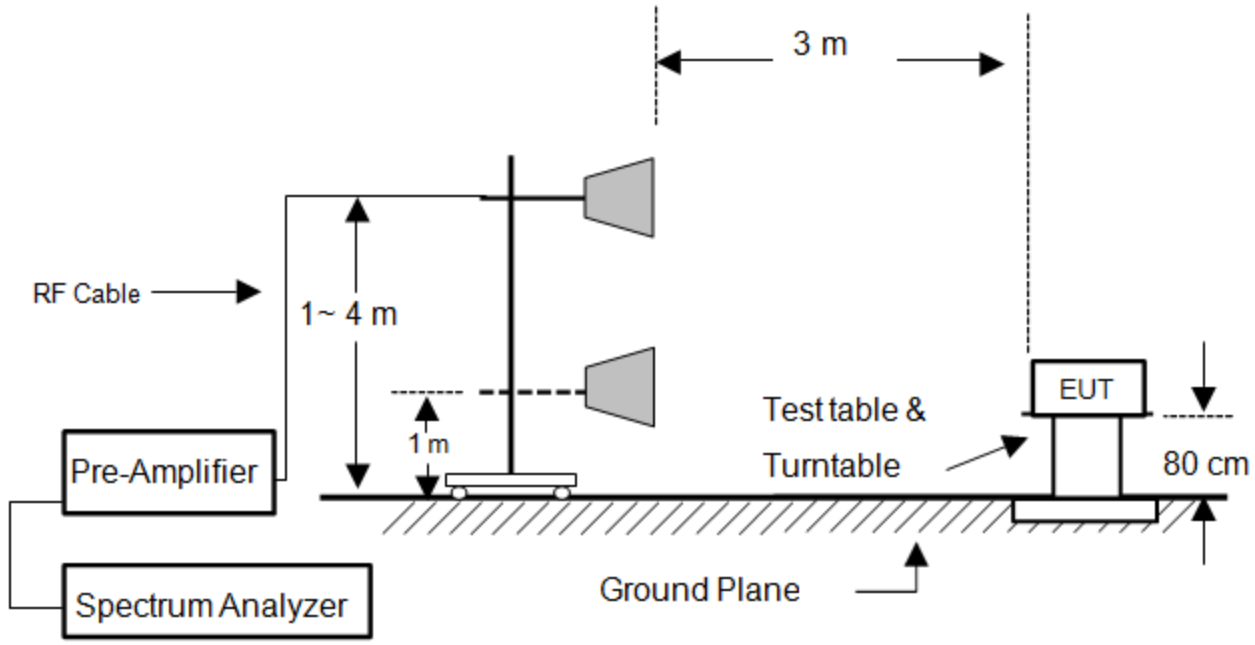
Mode:HDMI in

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		91.8162	50.25	-17.05	33.20	40.00	-6.80	QP			
2		94.2216	49.69	-16.59	33.10	40.00	-6.90	QP			
3		98.3140	48.86	-16.56	32.30	40.00	-7.70	QP			
4		451.1350	47.49	-7.39	40.10	47.00	-6.90	QP			
5	*	742.5841	41.57	-0.97	40.60	47.00	-6.40	QP			
6		827.8562	38.92	1.22	40.14	47.00	-6.86	QP			

9. RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)

9.1. Block Diagram of Test Setup



9.2. Radiated Limit

EN 55032, Class B

Frequency range (MHz)	Measurement			Class B limits dB(μV/m)
	Facility	Distance (m)	Detector type/ bandwidth	
1000 to 3000	FSOATS	3	Average / 1 MHz	50
3000 to 6000				54
1000 to 3000			Peak /1 MHz	70
3000 to 6000				74

Note: The highest internal source of an EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

9.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz.

Test results were obtained from the following equation:
Emission level (dBμV/m) = Antenna Factor -Amp Factor +Cable Loss + Reading
Margin (dB) = Emission Level (dBμV/m) - Limit (dBμV/m)

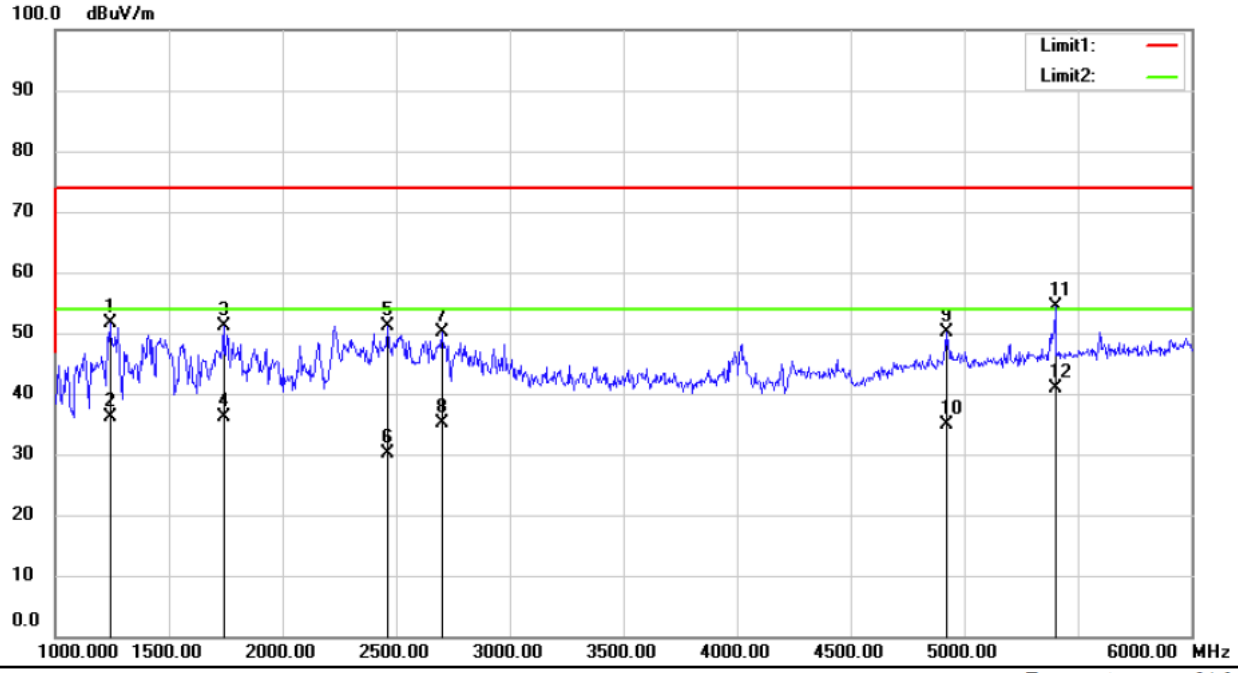
9.4. Measuring Results

PASS

All the modes were tested and the data of the worst modes are attached the following pages.

Retest data

Temperature	:	21.3°C
Humidity	:	44%
Atmospheric Pressure	:	101kpa
Test Engineer	:	Zhuowen Sheng
Test Date	:	2025/04/03

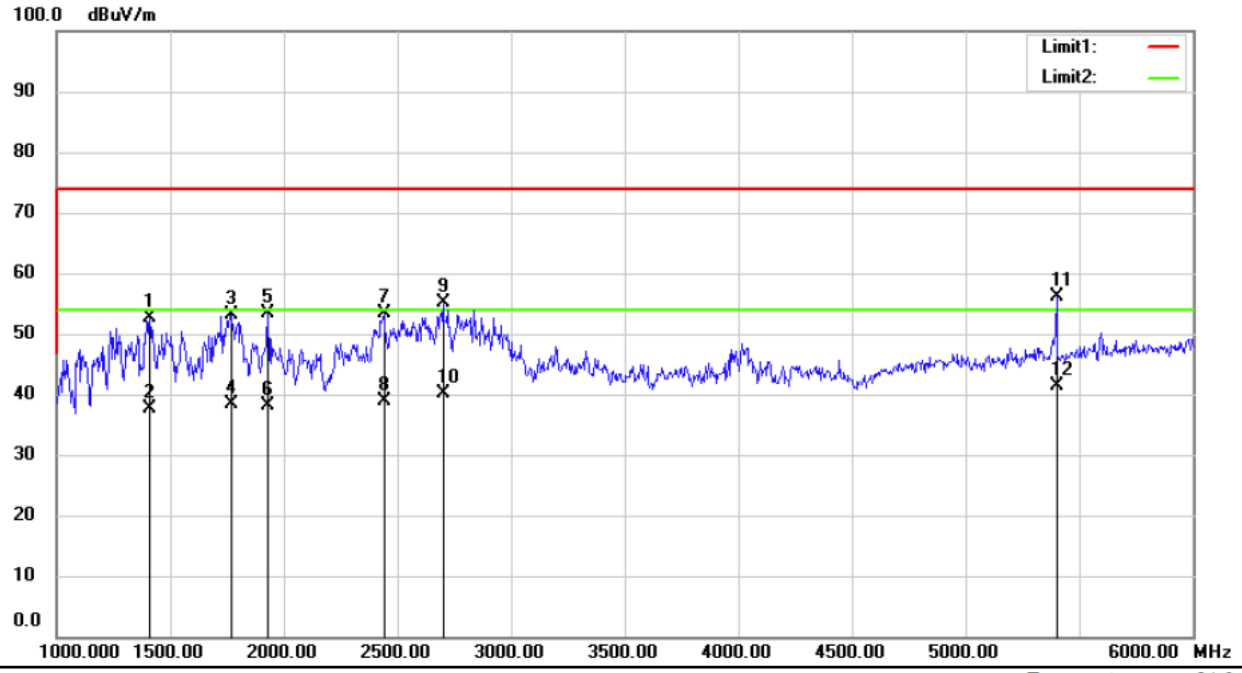


Site 3m Chamber #3
Limit: (RE)EN55032 class B
Mode:HDMI in
Note:

Polarization: *Vertical*
Power: AC 230V/50Hz

Temperature: 21.3 C
Humidity: 44 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1240.625	66.78	-15.09	51.69	74.00	-22.31	peak			
2		1240.625	51.29	-15.09	36.20	54.00	-17.80	AVG			
3		1743.750	64.05	-12.86	51.19	74.00	-22.81	peak			
4		1743.750	48.96	-12.86	36.10	54.00	-17.90	AVG			
5		2462.500	61.43	-10.22	51.21	74.00	-22.79	peak			
6		2462.500	40.42	-10.22	30.20	54.00	-23.80	AVG			
7		2700.625	59.44	-9.36	50.08	74.00	-23.92	peak			
8		2700.625	44.46	-9.36	35.10	54.00	-18.90	AVG			
9		4921.250	53.54	-3.30	50.24	74.00	-23.76	peak			
10		4921.250	38.20	-3.30	34.90	54.00	-19.10	AVG			
11		5400.625	56.47	-2.02	54.45	74.00	-19.55	peak			
12	*	5400.625	42.82	-2.02	40.80	54.00	-13.20	AVG			



Site 3m Chamber #3 Polarization: *Horizontal* Temperature: 21.3 C

Limit: (RE)EN55032 class B Power: AC 230V/50Hz Humidity: 44 %

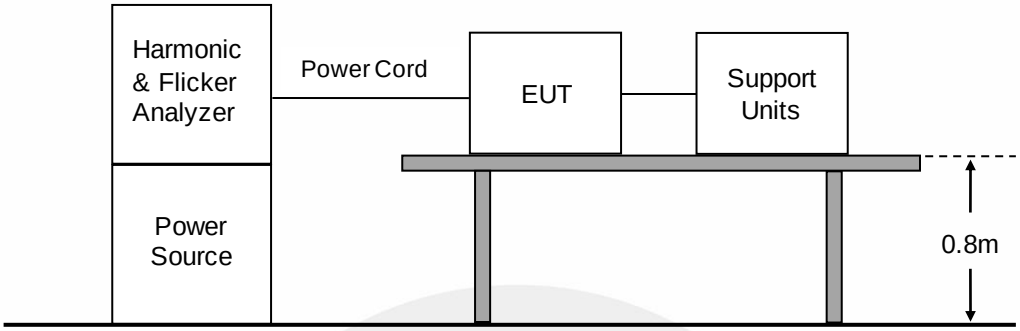
Mode:HDMI in

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1410.625	67.18	-14.55	52.63	74.00	-21.37	peak			
2		1410.625	52.15	-14.55	37.60	54.00	-16.40	AVG			
3		1770.625	65.79	-12.72	53.07	74.00	-20.93	peak			
4		1770.625	51.22	-12.72	38.50	54.00	-15.50	AVG			
5		1930.625	63.24	-9.90	53.34	74.00	-20.66	peak			
6		1930.625	48.00	-9.90	38.10	54.00	-15.90	AVG			
7		2444.375	63.56	-10.27	53.29	74.00	-20.71	peak			
8		2444.375	49.17	-10.27	38.90	54.00	-15.10	AVG			
9		2700.000	64.51	-9.36	55.15	74.00	-18.85	peak			
10		2700.000	49.46	-9.36	40.10	54.00	-13.90	AVG			
11		5400.625	58.21	-2.02	56.19	74.00	-17.81	peak			
12	*	5400.625	43.32	-2.02	41.30	54.00	-12.70	AVG			

10. HARMONIC CURRENT EMISSION MEASUREMENT

10.1. Block Diagram of Test Setup



10.2. Standard Limits

EN IEC 61000-3-2, CLASS D
Harmonic current emissions evaluate the potential for the EUT to cause distortion on the AC power lines. It is applicable to electrical and electronic equipment having an input current≤16 A per phase, and intended to be connected to public low-voltage distribution systems

Table 3 – Limits for Class D equipment

Harmonic 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
13 ≤ n≤39 (odd harmonics only)	3.85/n	See Table 1

10.3. Test Procedure

The measurement of harmonic currents shall be performed as follows: i. For each harmonic order, measure the 1.5 s smoothed r.m.s. harmonic current in each DFT time window as defined in EN / IEC 61000-4-7:2009. ii. Calculate the arithmetic average of the measured values from the DFT time windows, over the entire observation period Short cyclic (T cycle≤2.5 min). Because of synchronisation to meet the requirements for repeatability in 5%.

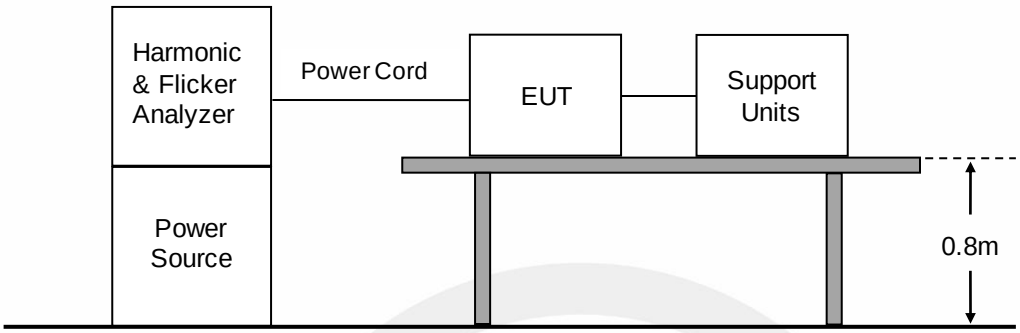
10.4. Test Results

Not applicable.

As specified on section 7 and above figure of EN IEC 61000-3-2, the limits are not specified for equipment with a rated power of 75W or less. The EUT meets the above condition, so it conforms to EN IEC 61000-3-2..

11. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

11.1. Block Diagram of Test Setup



11.2. Standard Limits

EN 61000-3-3 Limits
The objective of voltage changes, voltage fluctuations and flicker in public low voltage supply systems during equipment with rated current≤16 A per phase, ensures that home appliances and certain other electrical equipment do not adversely affect lighting equipment when connected to the same power system.
Voltage Fluctuation and Flicker Limits:
— the value of Pst 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, dc, shall not exceed 3.3 %;
— the maximum relative voltage change, dmax, shall not exceed 4.0 %;

11.3. Test Procedure

The total impedance of the test circuit, excluding the appliance under test, but including the internal impedance of the supply source, shall be equal to the reference impedance. The stability and tolerance of the reference impedance shall be adequate to ensure that the overall accuracy of 8% is achieved during the whole assessment procedure.

11.4. Test Results

PASS.

Please see the attached page.

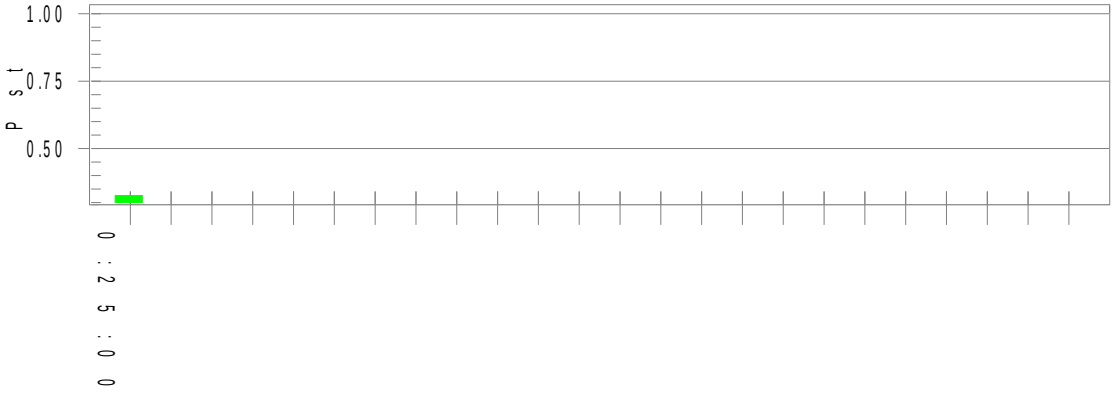
Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT: Non-Smart Bar Display | **Tested by:** ZGX
Test category: All parameters (European limits) | **Test Margin:** 100
Test date: 2025/4/3 | **Start time:** 0:14:39 | **End time:** 0:25:07
Test duration (min): 10 | **Data file name:** CTSMXL_F-000016.cts_data
Comment:

Customer:

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

Pst_i and limit line | **European Limits**



Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.36			
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):	0.325	Test limit:	1.000	Pass

12.IMMUNITY GENERAL PERFORMANCE CRITERIA DESCRIPTION

General performance criteria are defined in EN 55035 clause 8.2, 8.3 and 8.4. These criteria shall be used during the testing of primary functions where no relevant annex is applicable.

When assessing the impact of a disturbance on a function, the assessment should take into consideration the function's performance prior to the application of the disturbance and only identify as failures those changes in performance that are a result of the disturbance.

EN 55035:
Performance criterion A
The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion B
During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.
After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.
If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

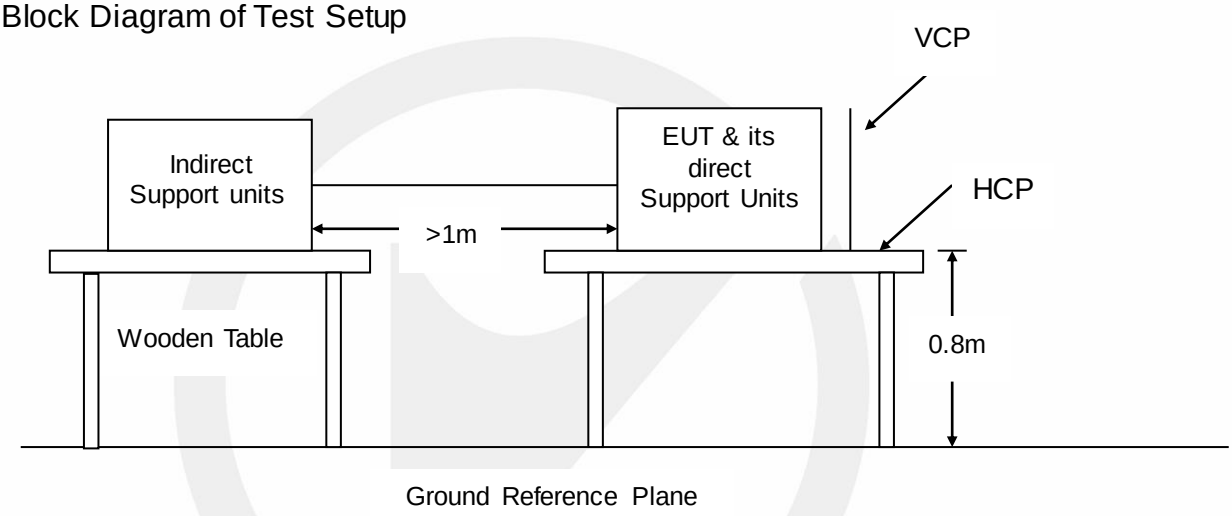
Performance criterion C
Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

13.ELECTROSTATIC DISCHARGE

13.1.Test Specification

Test standard	:	EN 55035
Basic standard	:	IEC 61000-4-2
Performance criterion	:	B
Test level	:	±8.0kV (Air discharge) ±4.0kV (Contact discharge)

13.2.Block Diagram of Test Setup



13.3.Test Procedure

a. In the case of air discharge testing, the climatic conditions shall be within the following ranges:
- ambient temperature: 15°C to 35°C;
- relative humidity : 30% to 60%;
- atmospheric pressure : 86 kPa (860 mbar) to 106 kPa (1060 mbar)

b. Test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.

c. In the case of contact discharges, the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

d. In the case of painted surface covering a conducting substrate, the following procedure shall be adopted : - If the coating is not declared to be an insulating coating by the equipment manufacturer, then the pointed tip of the generator shall penetrate the coating so as to make contact with the conducting substrate. - Coating declared as insulating by the manufacturer shall only be submitted to the air discharge. - The contact discharge test shall not be applied to such surfaces.

e. In the case of air discharges, the round discharge tip of the discharge electrode shall be approached as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator (discharge electrode) shall be removed from the EUT. The generator is then retriggered for a new single discharge. This procedure shall be repeated until the discharges are completed. In the case of an air discharge test, the discharge switch, which is used for contact discharge, shall be closed.

f. The test voltage shall be increased from the minimum to the selected test severity level, in order to determine any threshold of failure. The final test level should not exceed the product specification value in order to avoid damage to the equipment.

g. The test shall be performed with both air discharge and contact discharge. The test shall be performed with single discharges. On each pre-selected point at least 10 single discharges (in the most sensitive polarity) shall be applied. For the time interval between successive single discharges an initial value of 1 s is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.
h. Ensure that the applied charge on the EUT has been dis-charged before next ESD pulse.
I. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.
J. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

13.4. Test Results

PASS

Temperature	:	23.8°C
Humidity	:	47%
Atmospheric Pressure	:	101kpa
Test Engineer	:	ZGX
Test Date	:	2025-04-03

Air Discharge:

Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±8 kV	SLOT/SCREEN/HDM /USB	A	B	Pass

Contact Discharge

Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±4kV	METAL/SCREW/HDMI/ /USB	A	B	Pass

Indirect Discharge

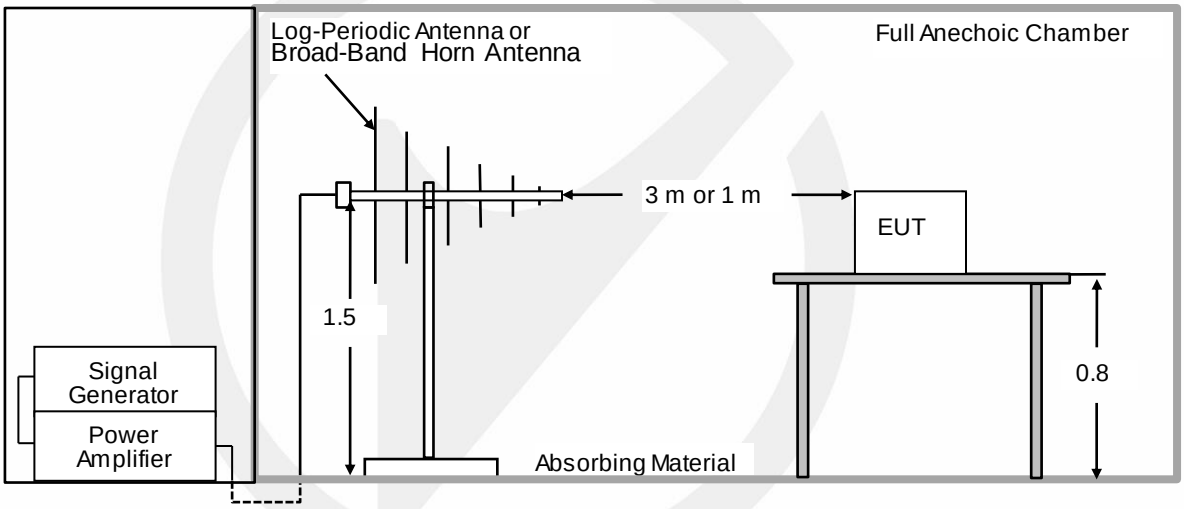
Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±4 kV	HCP	A	B	Pass
±4kV	VCP	A	B	Pass

14.CONTINUOUS RF ELECTROMAGNETIC FIELD DISTURBANCES

14.1.Test Specification

Test standard	:	EN 55035	
Basic standard	:	IEC 61000-4-3	
Performance criterion	:	A	
Frequency range & Test level	:	☒80M-1000MHz	3V/m
		☒Spot frequency	3V/m
		☐Additional spot frequency	3V/m
Modulation	:	AM, 80%, 1kHz sine-wave	

14.2.Block Diagram of Test Setup



14.3.Test procedure

The procedure defined in this part requires the generation of electromagnetic fields within which the test sample is placed and its operation observed. To generate fields that are useful for simulation of actual (field) conditions may require significant antenna drive power and the resultant high field strength levels. To comply with local regulations and to prevent biological hazards to the testing personnel, it is recommended that these tests be carried out in a shielded enclosure or semi-anechoic chamber.

a. The antenna which is enabling the complete frequency range of 80-1000 MHz is placed 3m (or 1m) away from the equipment. The required field strength is determined by placing the field strength meter(s) on top of or direCTRy alongside the equipment under test and monitoring the field strength meter via a remote field strength indicator outside the enclosure while adjusting the continuous-wave to the antenna.
b. The test is performed with the antenna facing the front and back sides of the EUT with. Both vertical and horizontal polarizations from antenna are tested.

14.4.Test results

PASS

Temperature	:	24.6°C
Humidity	:	49%
Atmospheric Pressure	:	101kpa
Test Engineer	:	ZGX
Test Date	:	2025-04-03

☒ 80M-1000MHz:

Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
80-1000	3V/m	AM, 80%	H / V	0, 90,180, 270	A	A	Pass

☒ Spot frequency:

Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
1800, 2600, 3500, 5000	3V/m	AM, 80%	H / V	0, 90,180, 270	A	A	Pass

☐ Additional spot frequency:

Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
80, 120, 160, 230, 434, 460, 600, 863, 900	3V/m	AM, 80%	H / V	0, 90,180, 270	N/A	A	N/A

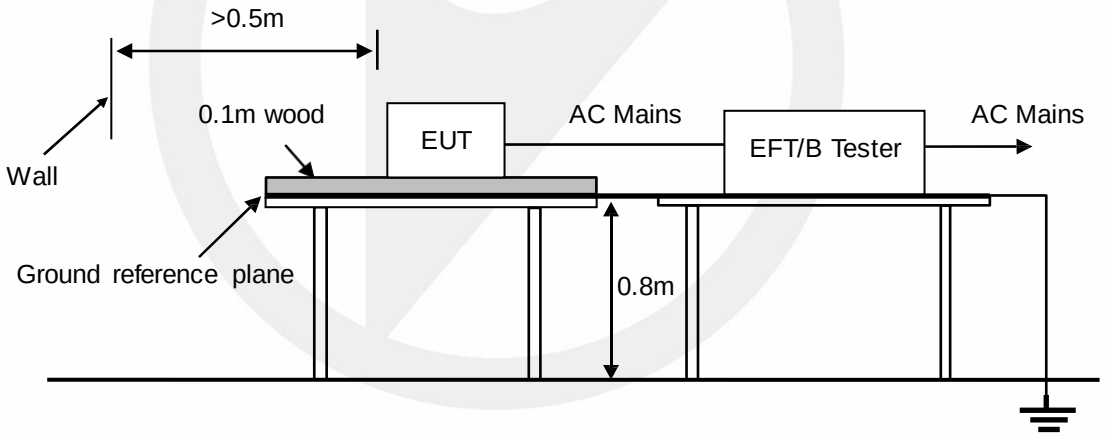
15.ELECTRICAL FAST TRANSIENTS/BURST

15.1.Test Specification

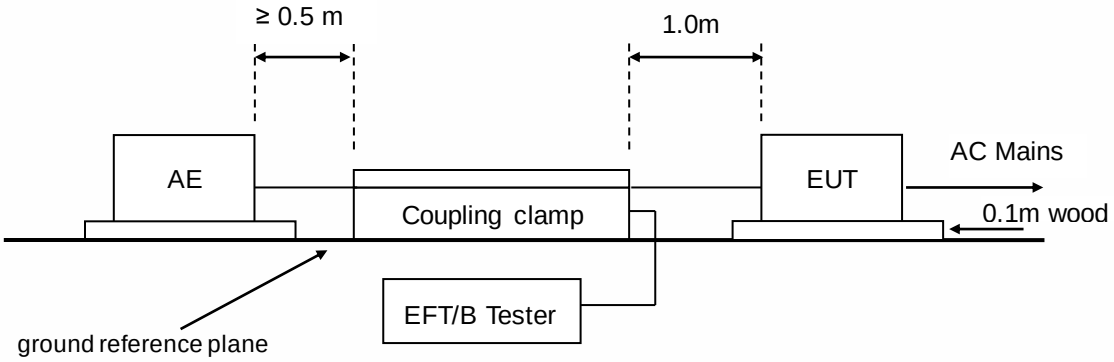
Test standard	:	EN 55035
Basic standard	:	IEC 61000-4-4
Performance criterion	:	B
Test level	:	☒1kV, AC mains power ports ☐0.5kV, DC network power ports ☒0.5kV, Analogue/digital data ports
Repetition frequency	:	☒5kHz, ☐100kHz(Only xDSL ports)
Tr/Th:	:	5/50ns
Burst period	:	300ms
Test time :	:	120s

15.2.Block Diagram of Test Setup

AC Lines:



Signal lines:



15.3. Test Procedure

The EUT is put on the table that is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

15.4. Test Results

PASS

Temperature	:	25.1°C
Humidity	:	50%
Atmospheric Pressure	:	101kpa
Test Engineer	:	ZGX
Test Date	:	2025-04-03

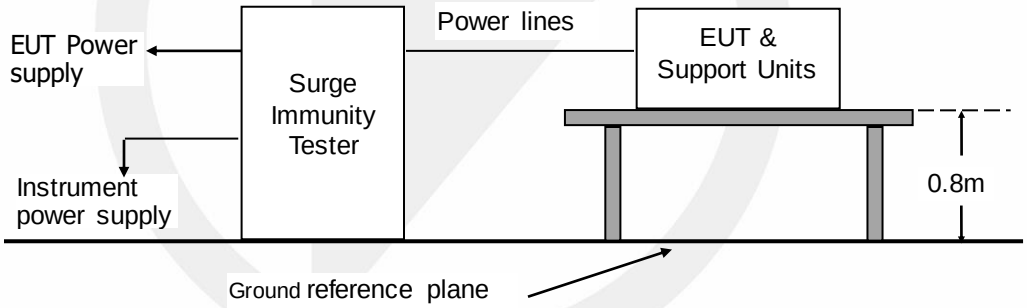
Injection Line	Voltage (kV)	Injected Method	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ AC mains power ports	± 1	☒ CDN ☐ Direct injection ☐ Capacitive coupling clamp	A	B	Pass
☐ DC network power ports	± 0.5	☐ CDN ☐ Direct injection ☐ Capacitive coupling clamp	N/A	B	N/A
☐ Analogue/digital data ports (Wired network port)	± 0.5	☐ CDN ☐ Direct injection ☒ Capacitive coupling clamp	N/A	B	N/A
☐ Analogue/digital data ports (Broadcast receiver tuner port)	± 0.5	☐ CDN ☐ Direct injection ☒ Capacitive coupling clamp	N/A	B	N/A

16.SURGES

16.1.Test Specification

Test standard	:	EN 55035
Basic standard	:	IEC 61000-4-5
Test level	:	☒1kV, Line to Line, AC mains power ports, Criterion B
		☐2kV, Line to Earth, AC mains power ports, Criterion B
		☐0.5kV, Line to Reference ground, DC network power ports, Criterion B
		☒1.0kV, Lines to Ground, Unshielded symmetrical, Criterion C
		☐4.0kV, Lines to Ground, Unshielded symmetrical, Criterion C
		☒0.5kV, Shield to ground, Coaxial or shielded port, Criterion B
Number of surges	:	5 (for each combination of parameters)
Repetition rate	:	1 minute / time
Polarity:	:	Positive / Negative
Phase angle:	:	90º, 270º (Only AC mains power ports)

16.2.Block Diagram of Test Setup



16.3.Test Procedure

This test simulates a lightning event by inducing transients onto the AC/DC power supply lines in common mode (Line to Ground) and differential mode (Line to Line). Each device was tested in a total of two surge configurations: Line to Ground (L-G): Combination Wave, Line to Protective Earth with 9uF and 10Ohm and Neutral to Protective Earth with 9uF and 10Ohm, common mode, generator earthed.
Line to Line (L-L): Combination Wave,
Line to Neutral with 18uF, differential mode, generator floated.
2 ohm : the source impedance of the low-voltage power supply network.
12 ohm : the source impedance of the low-voltage power supply network and ground.

a. If not otherwise specified the surges have to be applied synchronized to the voltage phase at the zero-crossing and the peak value of the a.c. voltage wave (positive and negative).
b. The surges have to be applied line to line and line to earth. When testing line to earth, the test voltage has to be applied successively between each of the lines and earth, if there is no other specification.
c. The test procedure shall also consider the non-linear current-voltage characteristics of the equipment under test. Therefore the test voltage has to be increased by steps up to the test level specified in the product standard or test plan. All lower levels including the selected test level shall be satisfied.
d. For testing the secondary protection, the output voltage of the generator shall be increased up to the worst-case voltage breakdown level (let-through level) of the primary protection.
e. Testing shall be performed according to a Test Plan, which shall be included in the test report.

f. To find all critical points of the duty cycle of the equipment, a sufficient number of positive and negative test pulses shall be applied.

16.4. Test results

PASS

Temperature	:	24.7°C
Humidity	:	48%
Atmospheric Pressure	:	101kpa
Test Engineer	:	ZGX
Test Date	:	2025-04-03

☒ AC mains power ports:

Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ Line to line	1	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☒ Line to earth	0.5, 1, 2	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass

☐ DC network power ports:

Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
Line to Reference ground	0.5	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A

☐ Analogue/digital data ports:

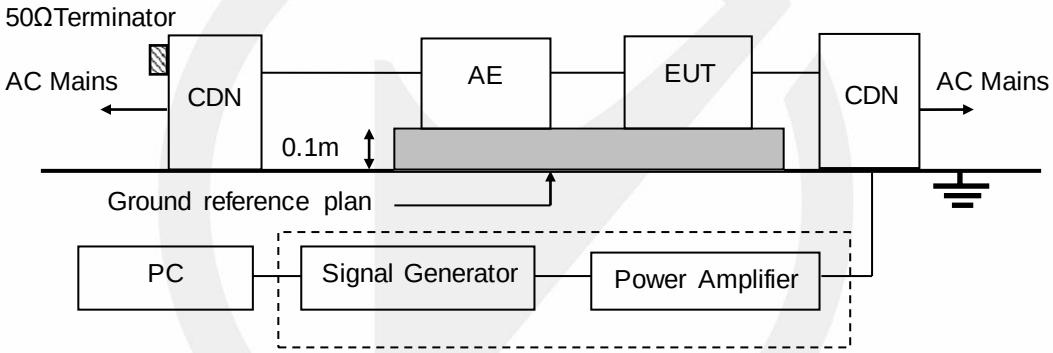
Port type	Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
☐ Unshielded symmetrical (Wired network port)	Lines to ground	0.5, 1	10/700 (5/320)	Pos./ Neg.	N/A	C	N/A
☐ Unshielded symmetrical (……)	Lines to ground	0.5, 1	10/700 (5/320)	Pos./ Neg.	N/A	C	N/A
☐ Unshielded symmetrical	Lines to ground	0.5, 1, 2, 4	10/700 (5/320)	Pos./ Neg.	N/A	C	N/A
☐ Coaxial or shielded (Broadcast receiver tuner port)	Shield to ground	0.5	1.2/50 (8/20)	Pos./ Neg.	N/A	C	N/A
☐ Coaxial or shielded (……)	Shield to ground	0.5	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A

17.CONTINUOUS INDUCED RF DISTURBANCES

17.1.Test Specification

Test standard	:	EN 55035
Basic standard	:	IEC 61000-4-6
Performance criterion	:	A
Frequency range & Test level	:	0.15M to 10MHz, 3V 10M to 30MHz, 3V to 1V 30M to 80MHz, 1V
Modulation	:	AM 80%, 1kHz sine-wave
Frequency Step	:	1% of fundamental

17.2.Block Diagram of Test Setup



17.3.Test Procedure

a. The EUT shall be operated within its intended climatic conditions. The temperature and relative humidity should be recorded.
b. The EUT is placed on a 0.1m high test table, and a well grounded cable is connected to metallic plane above the test table.
c. All cables/wires must be laid out on test plate (3cm in thickness),and the EUT is set up on test plate (10 cm in thickness) as shown in test setup photo, and the cables/wires must not be in mid-air, they should be touching the surface of test plate. Ensure that the EUT is properly connected to the accessory equipment.
d. The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF-input ports of the coupling devices are terminated by a 50 ohm load resistor.
e. The frequency range is swept from 150 kHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF-signal level or to switch coupling devices as necessary. The rate of sweep shall no exceed 1.5 x 10-3 decades/s. Where the frequency is swept incrementally, the step size shall no exceed 1% of the start and thereafter 1% of the preceding frequency value.
f. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies e.g. clock frequency (ies) and harmonics or frequencies of dominant interest shall be analyzed separately.
g. Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility

h. Testing shall be performed according to a Test Plan, which shall be included in the test report.

17.4. Test results

PASS

Temperature	:	24.7°C
Humidity	:	48%
Atmospheric Pressure	:	101kpa
Test Engineer	:	ZGX
Test Date	:	2025-04-03

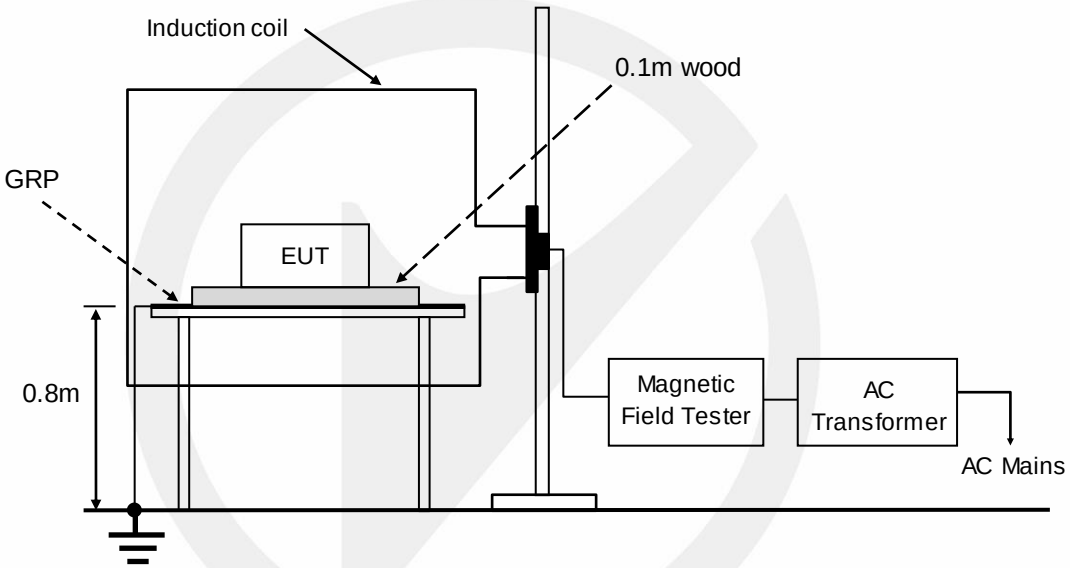
Range (MHz)	Levers (V)	Injection port	Coupling type	Actual criterion	Required performance criterion	Result (Pass/Fail)
0.15-10	3	☒AC mains power ports	☒CDN ☐EM Clamp ☐Current Clamp ☐Direct injection	A	A	Pass
10-30	3-1					
30-80	1					
0.15-10	3	☐DC network power ports	☒CDN ☐EM Clamp ☐Current Clamp ☐Direct injection	N/A	A	N/A
10-30	3-1					
30-80	1					
0.15-10	3	☐Analogue/digital data ports (Wired network port)	☐CDN ☒EM Clamp ☐Current Clamp ☐Direct injection	N/A	A	N/A
10-30	3-1					
30-80	1					
0.15-10	3	☐Analogue/digital data ports (Broadcast receiver tuner port)	☐CDN ☒EM Clamp ☐Current Clamp ☐Direct injection	N/A	A	N/A
10-30	3-1					
30-80	1					
0.15-10	3	☐Analogue/digital data ports (……)	☐CDN ☐EM Clamp ☐Current Clamp ☐Direct injection	N/A	A	N/A
10-30	3-1					
30-80	1					

18.POWER FREQUENCY MAGNETIC FIELD

18.1.Test Specification

Test Standard	:	EN 55035
Basic Standard	:	IEC 61000-4-8
Performance criterion	:	A
Test level	:	1A/m

18.2.Block Diagram of Test Setup



GRP: Ground reference plane
EUT: Equipment under test

18.3.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

18.4. Test Results

PASS

Temperature : 24.7°C
Humidity : 48%
Atmospheric Pressure : 101kpa
Test Engineer : ZGX
Test Date : 2025-04-03

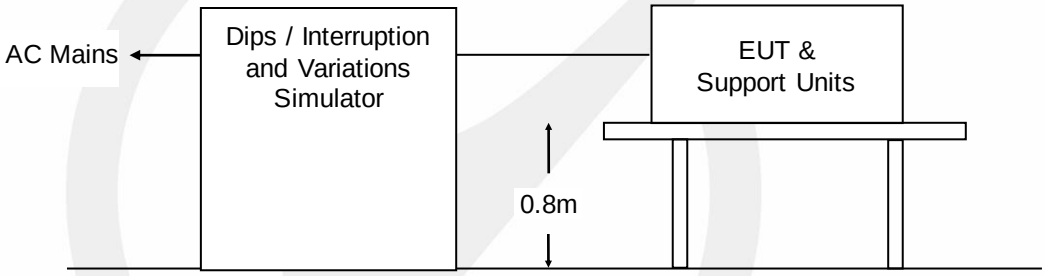
Test Level (A/m)	Frequency	Testing Duration	Coil Orientation	Actual criterion	Required performance criterion	Result (Pass/Fail)
1	☒ 50Hz ☐ 60Hz	5 mins	☒ x-axis ☒ y-axis ☒ z-axis	A	A	Pass

19. VOLTAGE DIPS AND INTERRUPTIONS

19.1. Test Specification

Test standard	:	EN 55035
Basic standard	:	IEC 61000-4-11
Test level	:	☒0%, 0.5 period, Criterion B
		☒70%, 25 periods for 50Hz, Criterion C
		☒70%, 30 periods for 60Hz, Criterion C
		☒0%, 250 periods for 50Hz, Criterion C
		☒0%, 300 periods for 60Hz, Criterion C

19.2. Block Diagram of Test Setup



19.3. Test Procedure

a. Where the equipment has a rated voltage the following shall apply - If the voltage range does not exceed 20% of the lower voltage specified for the rated voltage range, a single voltage within that range may be specified as a basis for test level specification.
- In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range.
b. Test Conditions
- Select operated voltage and frequency of EUT - Test of interval : 10 sec.
- Level and duration : Sequence of 3 dips/interrupts.
- Voltage rise (and fall) time : 1.5 μs.

19.4. Test results

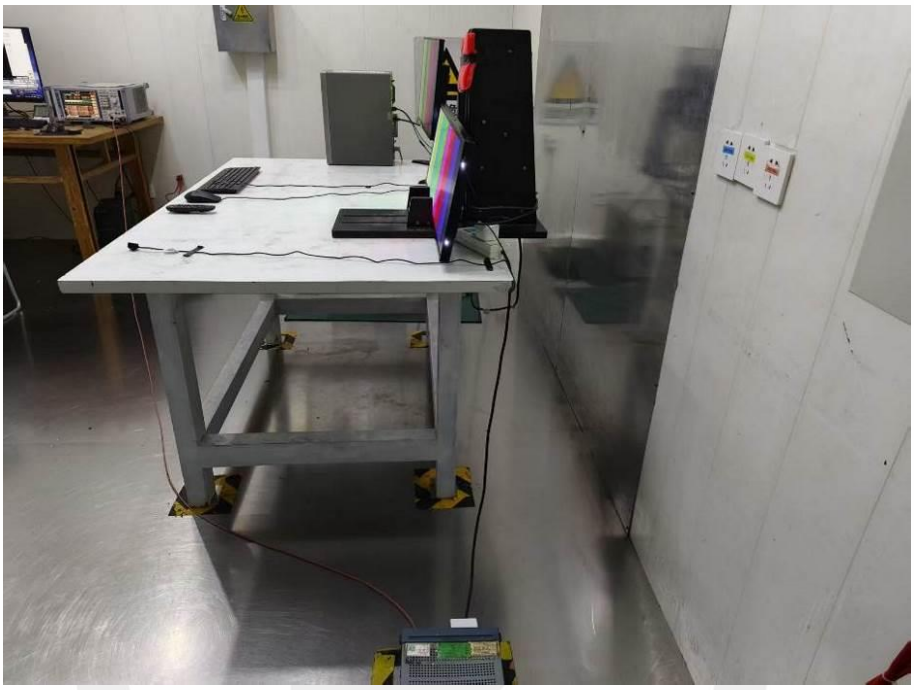
PASS

Temperature	:	24.7°C
Humidity	:	48%
Atmospheric Pressure	:	101kpa
Test Engineer	:	ZGX
Test Date	:	2025-04-03

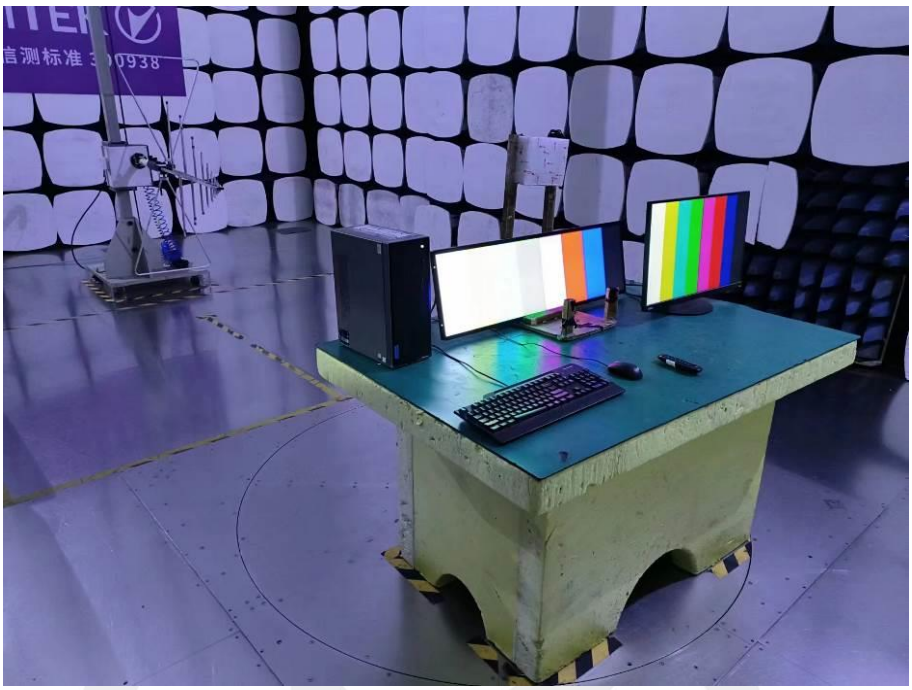
	Test Level (% UT)	Phase angle (°)	Input Voltage (V)	Freq (Hz)	Duration (periods)	Actual criterion	Required performance criterion	Result (Pass /Fail)
☒Voltage dips	0%	0º, 180º	AC 230V	50	0.5	A	B	Pass
☒Voltage dips	70%	0º, 180º	AC 230V	50	25	A	C	Pass
☒Voltage interruptions	0%	0º, 180º	AC 230V	50	250	C	C	Pass
☒Voltage dips	0%	0º, 180º	AC 120V	60	0.5	A	B	Pass
☒Voltage dips	70%	0º, 180º	AC 120V	60	30	A	C	Pass
☒Voltage interruptions	0%	0º, 180º	AC 120V	60	300	C	C	Pass
Note: 1. Dips to 0%, Duration 250P, EUT stopped operation. After the test, it need to automatically restore to normal. 2. Dips to 0%, Duration 300P, EUT stopped operation. After the test, it need to automatically restore to normal.								

20.PHOTOGRAPHS

20.1.Photos of Conducted Emissions from the AC Mains Power Ports

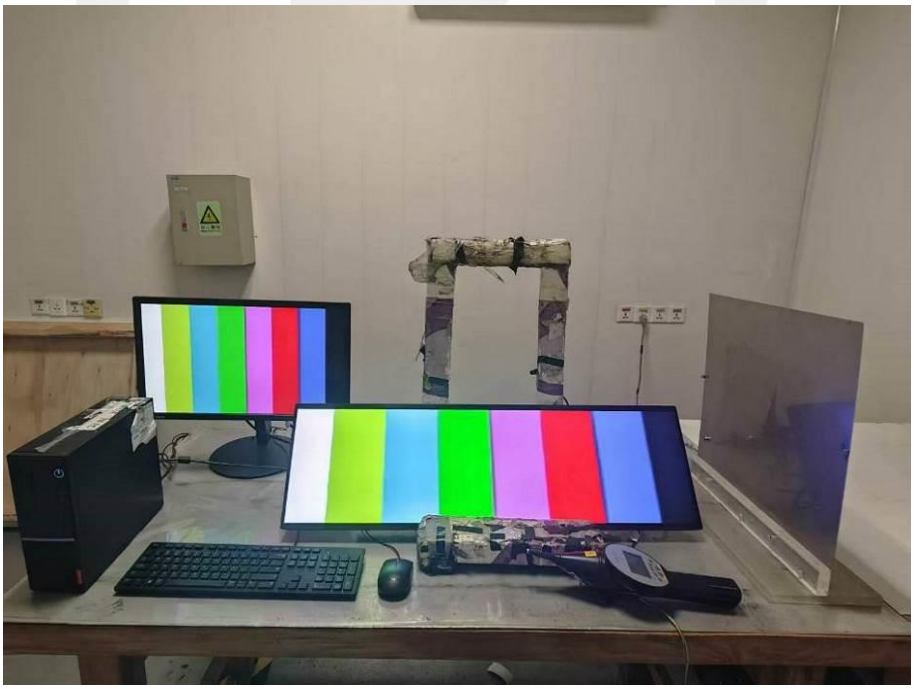


20.2.Photos of Radiation Emission Measurement

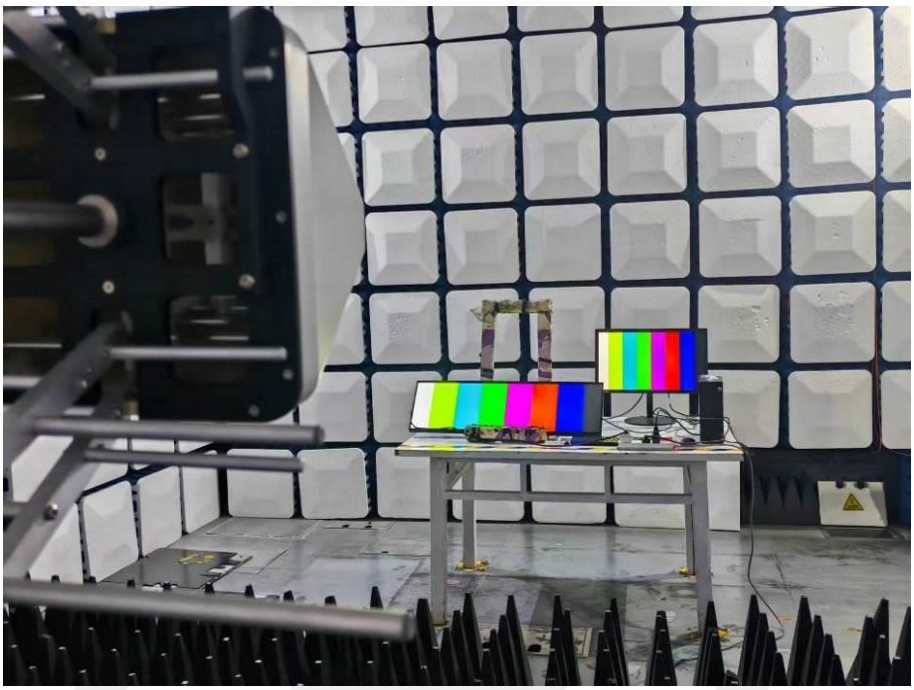


20.3.Photo of Harmonic / Flicker Measurement

20.4.Photo of Electrostatic Discharges



20.5. Photo of Continuous RF Electromagnetic Field Disturbances



20.6. Photos of Electrical Fast Transients/Burst

AC Mains:

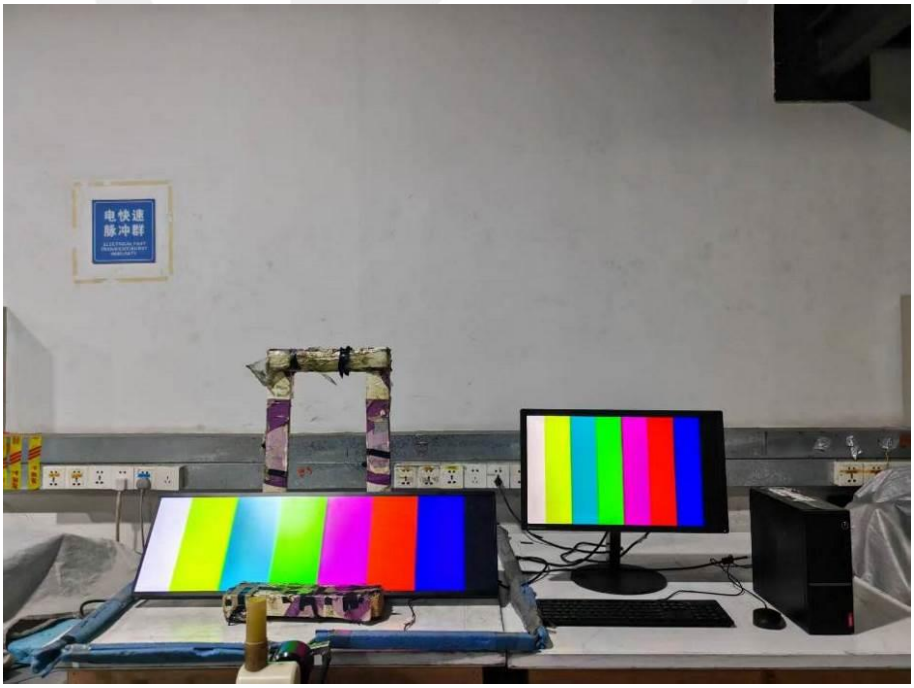
20.7. Photos of Surges

AC Mains:

20.8. Photos of Continuous Induced RF Disturbances

AC Mains:

20.9. Photo of Power Frequency Magnetic Field



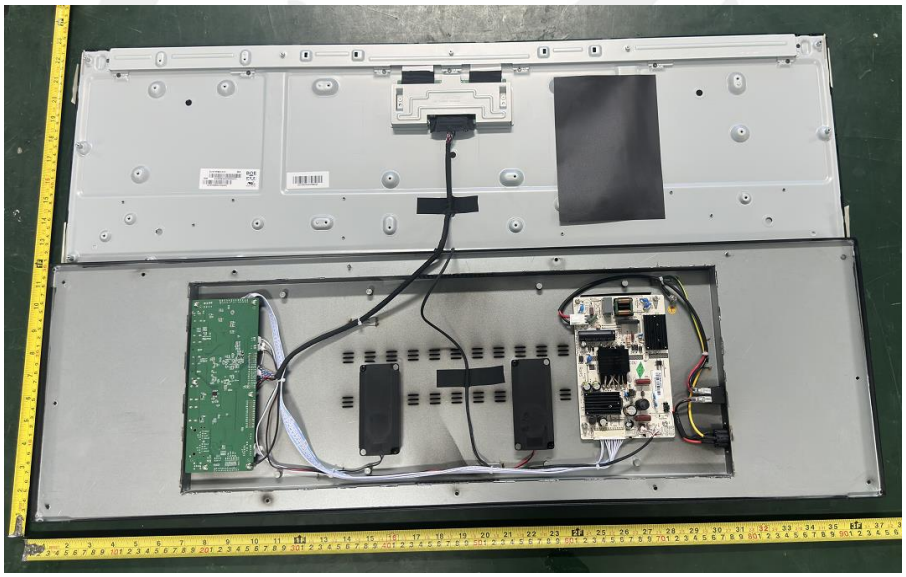
20.10. Photo of Voltage Dips and Interruptions

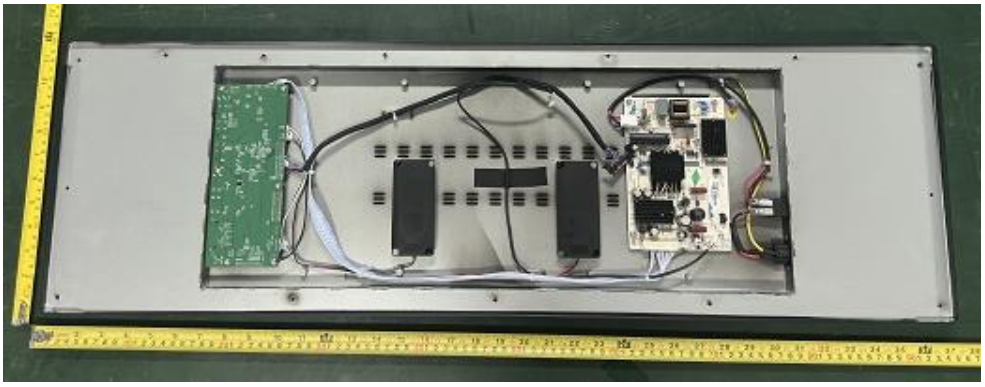
APPENDIX: Photos of EUT


neovo


ON/OFF
AC IN


ON/OFF
AC IN





End of Report

Statement

1 . This report will be void without authorized signature or special seal for testing report.

2 . This report shall not be copied partly without authorization.

3 . The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material.

4 . The observations or tests with special mark fall outside the scope of accreditation, and are only used for purpose of commission, research, training, internal quality control etc.

5 . The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, EMTEK shall not assume any responsibility.

6 . Objections shall be raised within 20 days from the date receiving the report.