

CE/EMC COMPLIANCE REPORT

for

Shenzhen KTC Commercial Display Technology Co., Ltd.

LCD MONITOR

Prepared for : Shenzhen KTC Commercial Display Technology Co., Ltd.
Address : The B district of the first floor, third floor and fourth floor, 1#
Building, NO.4023, Wuhe Street, Bantian, Longgang District,
Shenzhen City, Guangdong Province, China

Prepared by : EST Technology Co., Ltd.
Address : Chilingxiang, Qishantou, Santun, Houjie, Dongguan,
Guangdong, China

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Report Number : ESTE-E2306023
Date of Report : Jun. 08, 2023



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EST Technology Co., Ltd.

Applicant:	Shenzhen KTC Commercial Display Technology Co., Ltd.		
Address:	The B district of the first floor, third floor and fourth floor, 1# Building, NO.4023, Wuhe Street, Bantian, Longgang District, Shenzhen City, Guangdong Province, China		
Manufacturer:	Sharp NEC Display Solutions, Ltd.		
Address:	4-28, Mita 1-chome, Minato-ku, Tokyo, 108-0073 Japan		
Factory 1:	Huizhou KTC Technology Co., Ltd.		
Address:	NO.38 Guangtai Road, Huinan HI-TECH Industrial Park, Huizhou City, Guangdong Province, P.R. China		
Factory 2:	Dynabook Technology (Hangzhou) Inc.		
Address:	2/F, Building 2, NO.3, East Gate, Comprehensive bonded Zone, Hangzhou Economic and Technical Development Zone, 310018 Zhejiang, China		
Factory 3:	Shenzhen KTC Commercial Display Technology Co., Ltd.		
Address:	The B district of the first floor, third floor and fourth floor, 1# Building, NO.4023, Wuhe Street, Bantian, Longgang District, Shenzhen City, Guangdong Province, China		
E.U.T:	LCD MONITOR		
Model Number:	E988		
Trade Name:	NEC	Serial No:	-----
Date of Receipt:	May. 09, 2023	Date of Test:	Jun. 05~06, 2023
Test Specification:	EN 55032:2015+A11:2020 / BS EN 55032:2015+A11:2020 EN 55035:2017+A11:2020 / BS EN 55035:2017+A11:2020 EN 61000-3-2:2014; EN IEC 61000-3-2:2019+A1:2021 / BS EN 61000-3-2:2014; BS EN IEC 61000-3-2:2019+A1:2021 EN 61000-3-3:2013; EN 61000-3-3:2013+A1:2019+A2:2021 / BS EN 61000-3-3:2013; BS EN 61000-3-3:2013+A1:2019+A2:2021 AS/NZS CISPR 32:2015+A1:2020		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. Issue Date: Jun. 08, 2023		
Prepared by:	Reviewed by:	Approved by:  Iceman Hu / Manager	
 Lena / Assistant	 Bible / Engineer		
Other Aspects: None.			
<i>Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested</i>			
<i>This test report is based on a single evaluation of one sample of above mentioned products, It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd. The statement of compliance in this report is based on the limit in the test standard, the measurement uncertainty is not considered.</i>			

1. GENERAL PRODUCT INFORMATION

1.1. Product Function

Refer to Technical Construction Form and User Manual.

1.2. Description of Device (EUT)

Description : LCD MONITOR
Model No. : E988
System Input Voltage : AC 100-240V, 50/60Hz, 3.9-1.6A
Output : USB 2.0, 5V/0.5A; Type-c: 5V/3A

1.3. Difference between Model Numbers

None.

1.4. Independent Operation Modes

The basic operation modes are:

1.4.1. HDMI 1 Mode (3840*2160)

1.4.2. HDMI 2 Mode (3840*2160)

1.4.3. HDMI 3 Mode (3840*2160)

1.4.4. VGA Mode (1920*1080)

1.4.5. USB Play

1.4.6. AV IN

1.4.7. LAN Mode

1.5. Test Supporting System

2. TEST SITES

2.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION(EN 55032:2015+A11:2020)			
Description of Test Item	Standard	Limits	Results
Conducted emissions (AC mains power ports)	EN 55032:2015+A11:2020	Class B	PASS
		Minimum passing margin is 5.11dB at 6.73MHz	
Asymmetric mode conducted emissions	EN 55032:2015+A11:2020	Class B	PASS
		Minimum passing margin is 7.43dB at 24.40MHz	
Conducted differential voltage emissions	EN 55032:2015+A11:2020	Class B	N/A
		More than*** dB below the limit line.	
Radiated Emission	EN 55032:2015+A11:2020	Class B	PASS
		Minimum passing margin is 6.86dB at 519.97MHz	
Radiated Emission Test (above 1GHz)	EN 55032:2015+A11:2020	Class B	PASS
		Minimum passing margin is 7.43dB at 1330MHz	
Harmonic current emissions	EN61000-3-2:2014; EN IEC 61000-3-2:2019+A1:2021	Class A/D	PASS
Voltage fluctuations & flicker	EN 61000-3-3:2013; EN 61000-3-3:2013+ A1:2019+A2:2021	Section 4.6	PASS

IMMUNITY (EN 55035:2017+A11:2020)				
Description of Test Item	Basic Standard	Performance Criteria	Observation Criteria	Results
Electrostatic discharge (ESD)	EN 61000-4-2:2009	B	B	PASS
Radio-frequency,Continuous radiated disturbance	EN 61000-4-3:2006+A1:2008+A2:2010	A	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4:2012	B	B	PASS
Surge (Input a.c. power port)	EN 61000-4-5:2014	B	B	PASS
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6:2014	A	A	PASS
Power frequency magnetic field	EN 61000-4-8:2010	A	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11:2004	B	B	PASS
Voltage dips, 30% reduction		C	C	PASS
Voltage interruptions		C	C	PASS
N/A is an abbreviation for Not Applicable.				

2.2. Test Facilities

EMC Lab : Certificated by CNAS, CHINA
Registration No.: L5288
This Certificate is valid until: November 12, 2023

Certificated by FCC, USA
Designation Number: CN1215
This Certificate is valid until: January 31, 2024

Certificated by A2LA, USA
Registration No.: 4366.01
This Certificate is valid until: January 31, 2024

Certificated by Industry Canada
CAB identifier No.: CN0035
This Certificate is valid until: January 31, 2024

Certificated by VCCI, Japan
Registration No.: C-14103; T-20073; R-13663;
R-20103; G-20097
Date of registration: Apr. 20, 2020
This Certificate is valid until: Apr. 19, 2026

Certificated by TUV Rheinland, Germany
Registration No.: UA 50413872 0001
Date of registration: July 31, 2018

Certificated by Intertek
Registration No.: 2011-RTL-L2-64
Date of registration: November 08, 2018

Name of Firm : EST Technology Co., Ltd.

Site Location : Chilingxiang, Qishantou, Santun, Houjie, Dongguan,
Guangdong, China

2.3.List of Test and Measurement Instruments

2.3.1. For conducted emission at the mains terminals test (2# conduction)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESRP3	EST-E070	June 13,22	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	EST-E048	June 13,22	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	EST-E078	June 13,22	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A

2.3.2. For asymmetric mode conducted emissions test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESRP3	EST-E070	June 13,22	1 Year
ISN	Teseq	T8	EST-E041	June 13,22	1 Year
Current Transformer	SCHWARZBECK	SW9605	EST-E045	June 13,22	1 Year
Voltage Probe	SCHWARZBECK	TK9420	EST-E046	June 13,22	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A

2.3.3. For radiated emission test (10m radiation)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E105	June 13,22	1 Year
EMI Test Receiver	Rohde & Schwarz	ESR3	EST-E126	June 13,22	1 Year
Bilog Antenna	Teseq	CBL 6111D	EST-E052	June 13,22	1 Year
Bilog Antenna	Teseq	CBL 6111D	EST-E127	June 13,22	1 Year
Signal Amplifier	Agilent	310N	EST-E010	June 13,22	1 Year
Signal Amplifier	Agilent	310N	EST-E068	June 13,22	1 Year
Test Software	EZ	EZ-EMC	EST10m-03A2	N/A	N/A

2.3.4. For radiated emission test (above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	June 13,22	1 Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	EST-E031	June 13,22	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A

2.3.5. For harmonic current emissions and voltage fluctuations/flicker test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Analyzer	California Instruments	3001IX-208-CTS	EST-E011	June 13,22	1 Year
Voltage Source	California Instruments	3001IX-208	EST-E012	June 13,22	1 Year
Test Software	California Instruments	CTS	N/A	N/A	N/A

2.3.6. For electrostatic discharge immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
ESD Generator	Teseq	NSG437	EST-E073	June 13,22	1 Year

2.3.7. For electrical fast transient/burst immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EFT Generator	EMC PARTNER	TRANSIENT 2000	EST-E074	June 13,22	1 Year
Capacitive Coupling Clamp	HAEFELY	IP4A	EST-E040	June 13,22	1 Year

2.3.8. Radio Frequency Electromagnetic Field Immunity (R/S) Test\

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Signal Generator	Agilent	N5181A	EST-E060	June 13,22	1 Year
Power Amplifier	SKET	HAP801000M-250W	EST-E061	N/A	N/A
Power Amplifier	SKET	HAP0103G-75W	EST-E062	N/A	N/A
Power Amplifier	SKET	HAP0306G-50W	EST-E063	N/A	N/A
Power Meter	Agilent	E4419B	EST-E064	June 13,22	1 Year
Power sensor	Agilent	E9301A	EST-E065	June 13,22	1 Year
Power sensor	HP	E9301A	EST-E066	June 13,22	1 Year
Antenna	Schwarzbeck	STLP 9129	EST-E059	N/A	N/A
E-Field Probe	Narda	EP-601	EST-E067	June 13,22	1 Year
Audio Analyzer	Rohde &Schwarz	UPV	EST-E024	June 13,22	1 Year
Test Software	SKET	EMC-S	V1.2.0.48	N/A	N/A

2.3.9. For surge immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Surge Controller	HAEFELY	PSURGE8000	EST-E015	June 13,22	1 Year
Surge Impulse Module	HAEFELY	PIM100	EST-E016	June 13,22	1 Year
Surge Coupling Network	HAEFELY	PCD100	EST-E017	June 13,22	1 Year

2.3.10.For injected currents susceptibility test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Signal Generator	Rohde &Schwarz	SMB100A	EST-E025	June 13,22	1 Year
Power Amplifier	FRANKONIA	CIT-10	EST-E021	N/A	N/A
Power Meter	Rohde &Schwarz	NRVS	EST-E027	June 13,22	1 Year
Audio Analyzer	Rohde &Schwarz	UPV	EST-E024	June 13,22	1 Year
CDN	FRANKONIA	CDN-M2+M3	EST-E022	June 13,22	1 Year
EM-Clamp	FRANKONIA	EMCL-20	EST-E042	June 13,22	1 Year
Test Software	SKET	EMC-S	V1.2.0.80	N/A	N/A

2.3.11.For power frequency magnetic field immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Magnetic Field Tester	HAEFELY	MFS 100	EST-E018	June 13,22	1 Year

2.3.12.For voltage dips and short interruptions immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
DIPS Tester	EMC PARTNER	TRANSIENT 2000	EST-E074	June 13,22	1 Year

Note: All calibration reports of the equipment were provided by LiSai calibration and Testing

3. TEST SET-UP AND OPERATION MODES

3.1. Principle of Configuration Selection

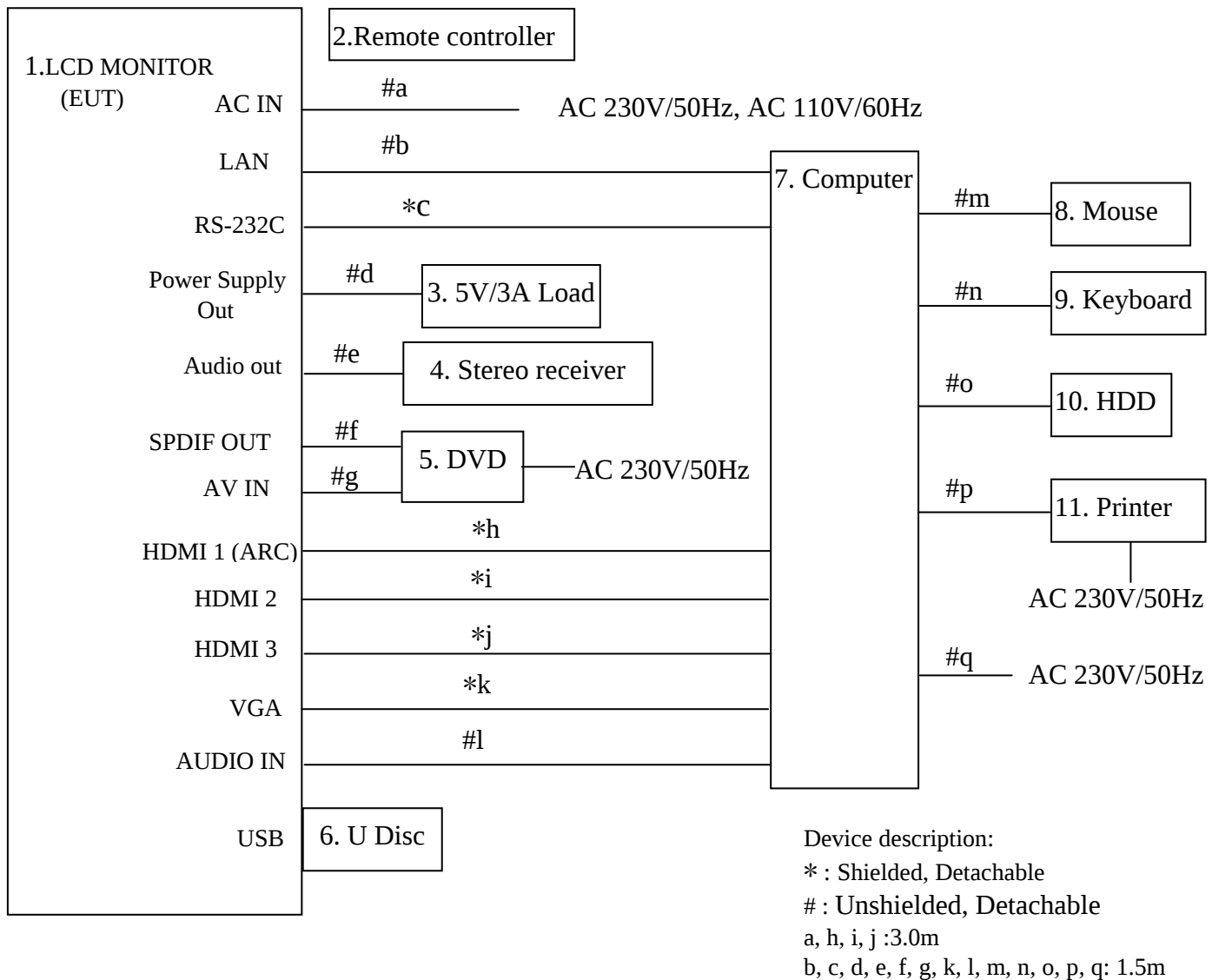
Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

Immunity: The equipment under test (EUT) was configured to the representative operating mode and conditions.

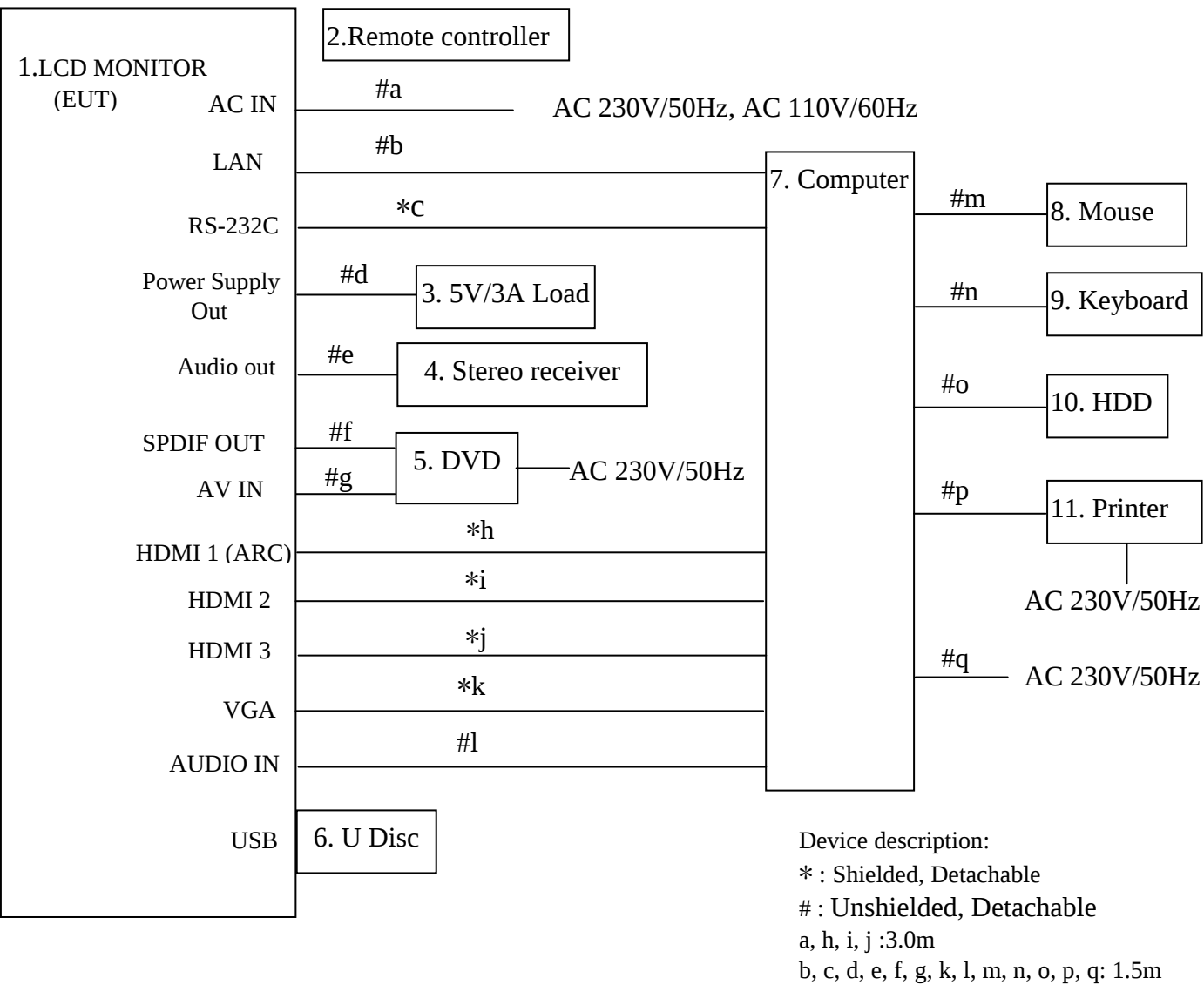
3.2. Block Diagram of Test Set-up

System Diagram of Connections Between EUT and Simulators

3.2.1. For emission test



3.2.2. For immunity test



(EUT: LCD MONITOR)

3.3. Test Operation Mode and Test Software

Refer to Test Setup in clause 4 & 5.

3.4. Special Accessories and Auxiliary Equipment

3.4.1.PC

M / N : ThinkCentre E77s
Manufacturer : Lenovo

Power Cord : Unshielded, Detachable, 1.5m

3.4.2.Keyboard

M / N : L100
S / N : CN-0RH656-65890-01M-070T
Manufacturer : Dell
Data Cable : Shielded, Undetachable, 1.8m

3.4.3.Mouse

M / N : MOL5VO
S / N : JOQ03RNT
Manufacturer : Dell
Data Cable : Shielded, Undetachable, 1.5m

3.4.4.U Disc

M / N : SDCZ7-4096
S / N : BH0701AGOB
Manufacturer : SanDisk

3.4.5.HDD

M / N : iPod/A1238
S / N : 8K044D2Z9ZU
Manufacturer : Apple

3.4.6.Printer

M / N : HP LaserJet 1020 Plus
Manufacturer : HP
AC Line : Unshielded, Detachable 1.2m
USB Line : Unshielded, Detachable 1.2m

3.4.7.DVD Player (4K)

M / N : BDP-G4350
S / N : BD43504KXX17011600701
Manufacturer : GIEC

3.5. Countermeasures to Achieve EMC Compliance

None.

4. EMISSION TEST RESULTS

4.1. Conducted Emission at the Mains Terminals Test

RESULT : **Pass**
Test procedure : EN 55032:2015+A11:2020
Frequency range : 0.15~30MHz
Test Site : 2# Conduction Shielded Room
Limits : EN 55032:2015+A11:2020 Class B

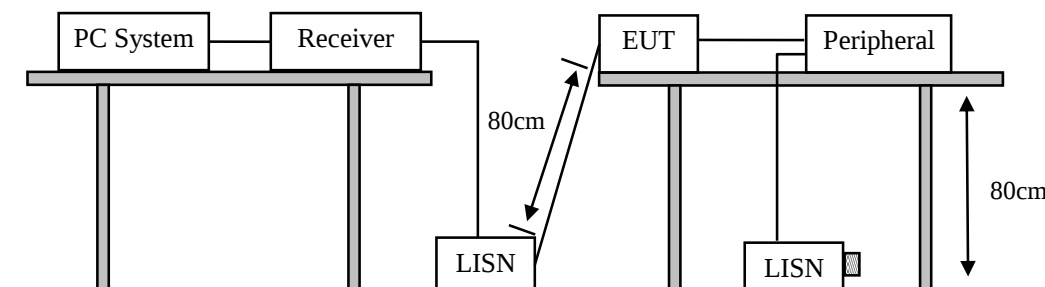
Test Setup

Date of test : Jun. 05, 2023
Model No. : E988
Input Voltage : AC 230V/50Hz, AC 110V/60Hz
Operation Mode : HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode, USB Play, AV IN, LAN Mode

The bandwidth of the test receiver was set at 9kHz.

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

The test data of the worst case condition(s) was reported on the following page.

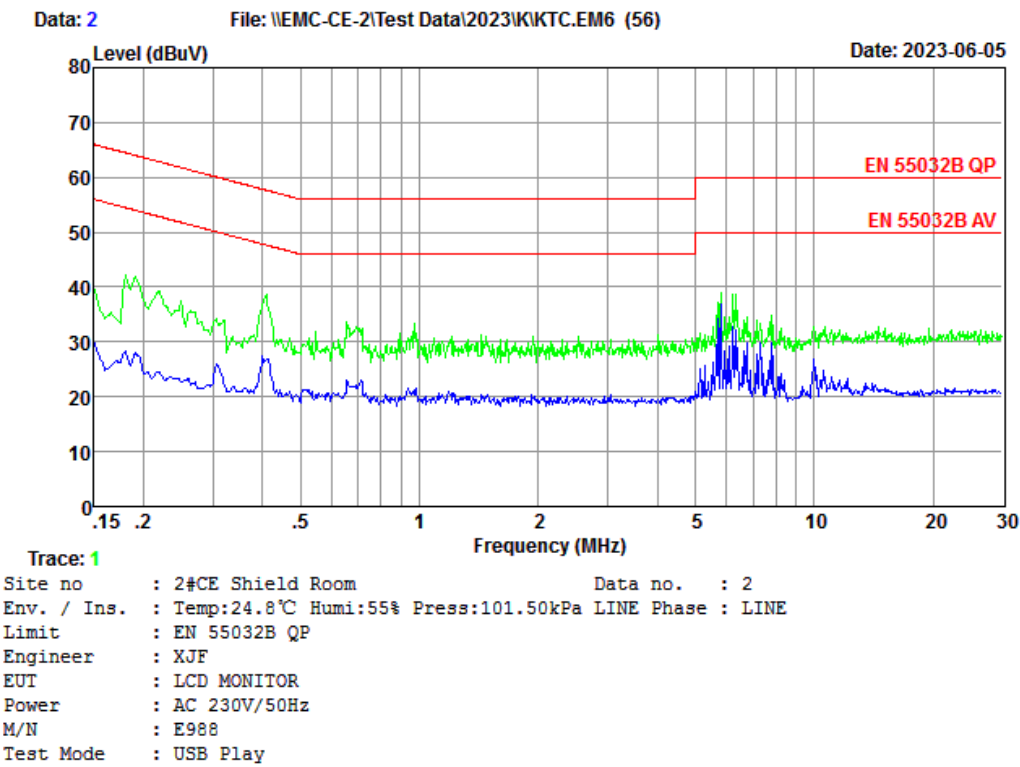


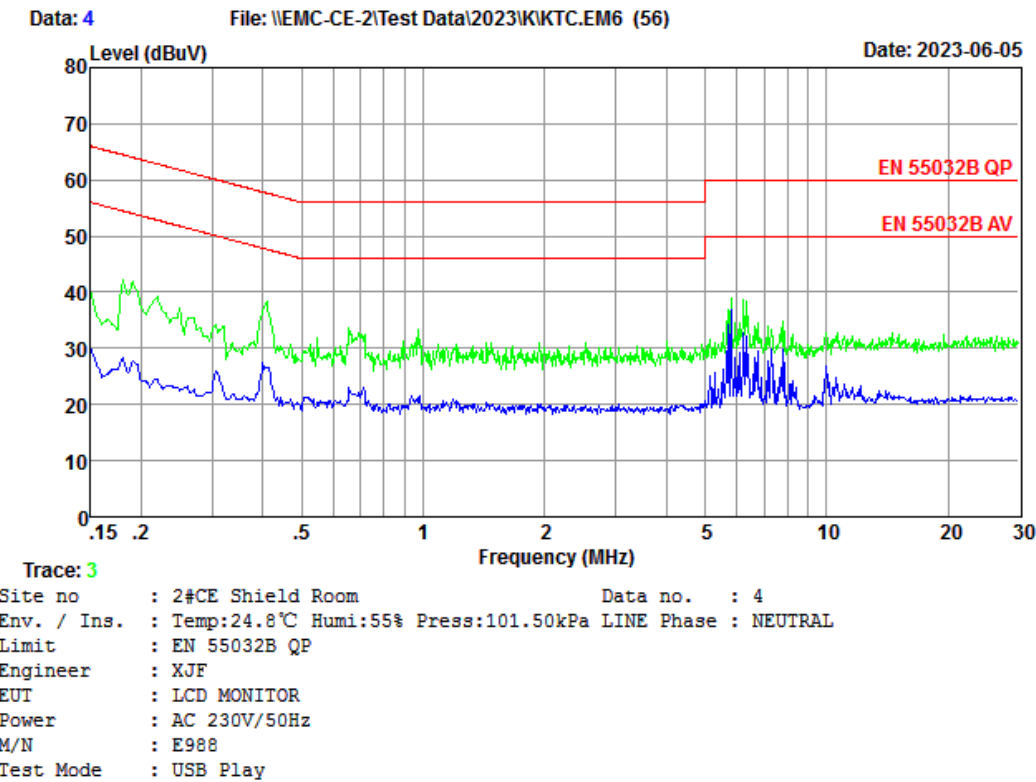
Note: Test uncertainty: $\pm 3.42\text{dB}$ at a level of confidence of 95%.(2#CE)

Test Data

EST Technology

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Fax: +86-769-83081878

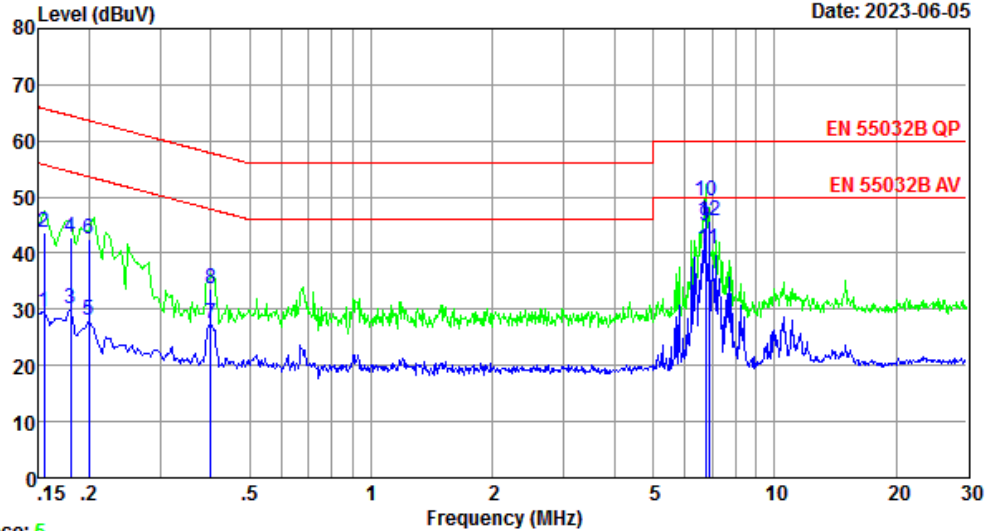




Data: 6

File: \\EMC-CE-2\Test Data\2023\K\KTC.EM6 (56)

Date: 2023-06-05



Trace: 5

Site no : 2#CE Shield Room Data no. : 6
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : LINE
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : USB Play

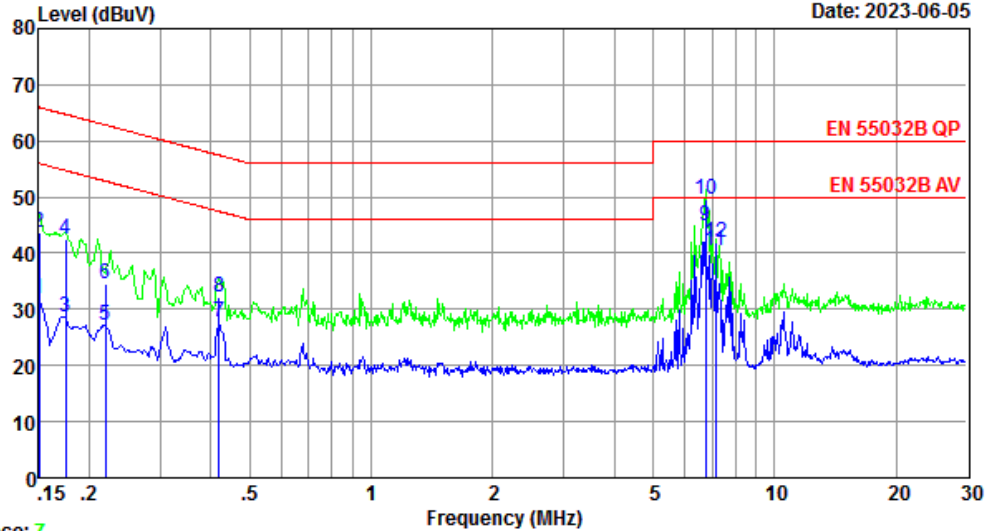
	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	9.66	9.69	10.29	29.64	55.74	26.10	Average
2	0.15	9.66	9.69	24.35	43.70	65.74	22.04	QP
3	0.18	9.67	9.77	10.66	30.10	54.50	24.40	Average
4	0.18	9.67	9.77	23.34	42.78	64.50	21.72	QP
5	0.20	9.67	9.77	8.54	27.98	53.62	25.64	Average
6	0.20	9.67	9.77	22.98	42.42	63.62	21.20	QP
7	0.40	9.70	9.92	7.70	27.32	47.86	20.54	Average
8	0.40	9.70	9.92	14.16	33.78	57.86	24.08	QP
9	6.73	9.74	10.03	25.12	44.89	50.00	5.11	Average
10	6.73	9.74	10.03	29.66	49.43	60.00	10.57	QP
11	6.88	9.74	10.03	20.93	40.70	50.00	9.30	Average
12	6.88	9.74	10.03	25.99	45.76	60.00	14.24	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

Data: 8

File: \\EMC-CE-2\Test Data\2023\K\KTC.EM6 (56)

Date: 2023-06-05



Trace: 7
Site no : 2#CE Shield Room Data no. : 8
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : NEUTRAL
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : USB Play

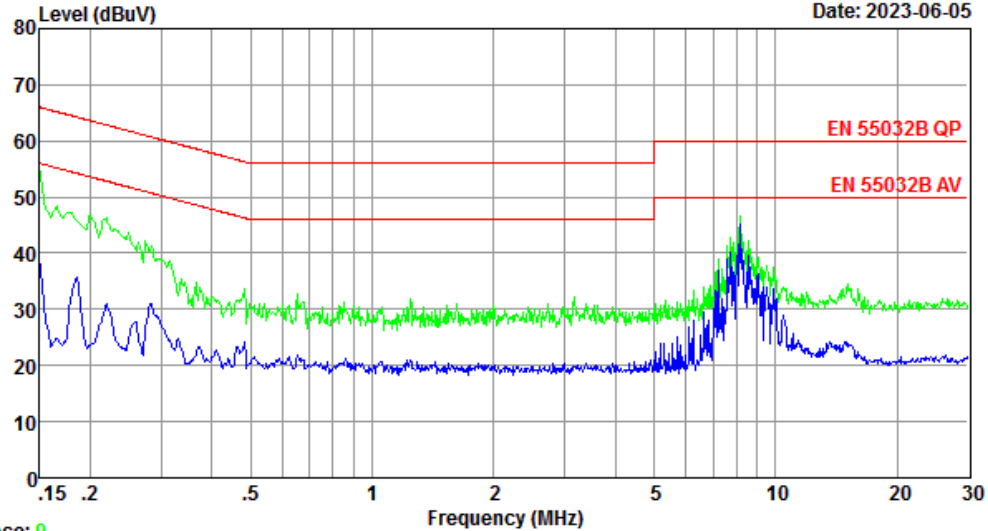
	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	9.71	9.69	12.50	31.90	56.00	24.10	Average
2	0.15	9.71	9.69	24.32	43.72	66.00	22.28	QP
3	0.17	9.54	9.77	9.41	28.72	54.72	26.00	Average
4	0.17	9.54	9.77	23.18	42.49	64.72	22.23	QP
5	0.22	9.53	9.84	7.79	27.16	52.83	25.67	Average
6	0.22	9.53	9.84	15.23	34.60	62.83	28.23	QP
7	0.42	9.62	9.92	8.32	27.86	47.46	19.60	Average
8	0.42	9.62	9.92	12.78	32.32	57.46	25.14	QP
9	6.73	9.71	10.03	25.13	44.87	50.00	5.13	Average
10	6.73	9.71	10.03	29.74	49.48	60.00	10.52	QP
11	7.14	9.72	10.03	20.57	40.32	50.00	9.68	Average
12	7.14	9.72	10.03	22.11	41.86	60.00	18.14	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

Data: 10

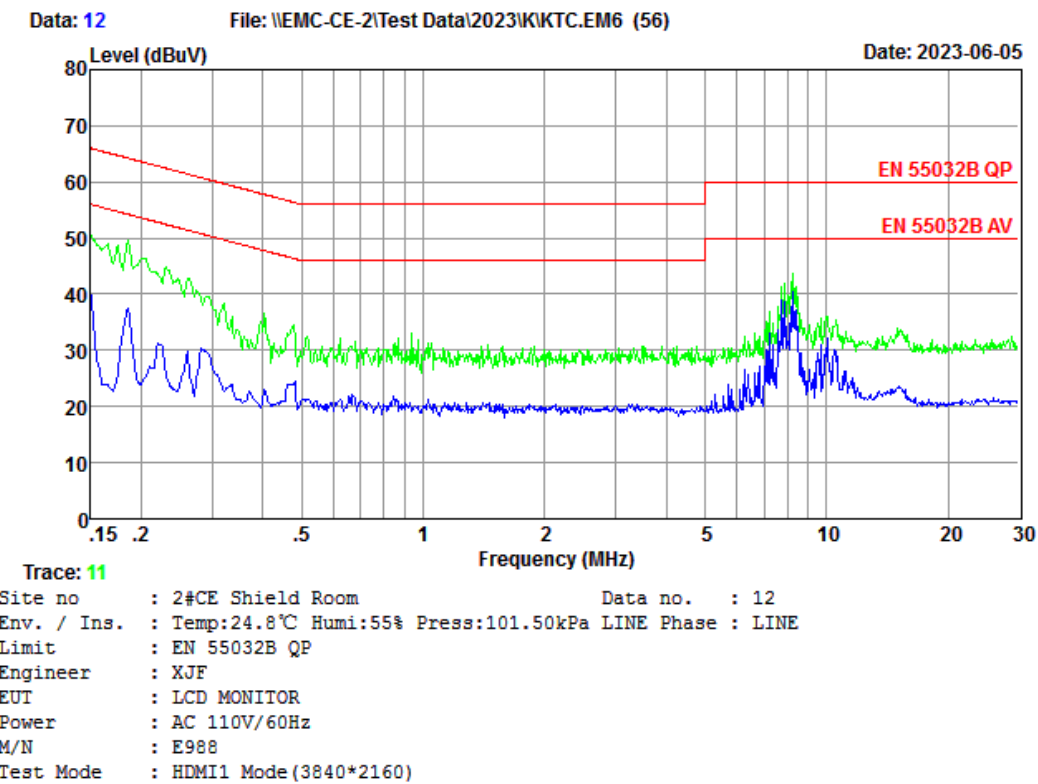
File: \\EMC-CE-2\Test Data\2023\K\KTC.EM6 (56)

Date: 2023-06-05



Trace: 9

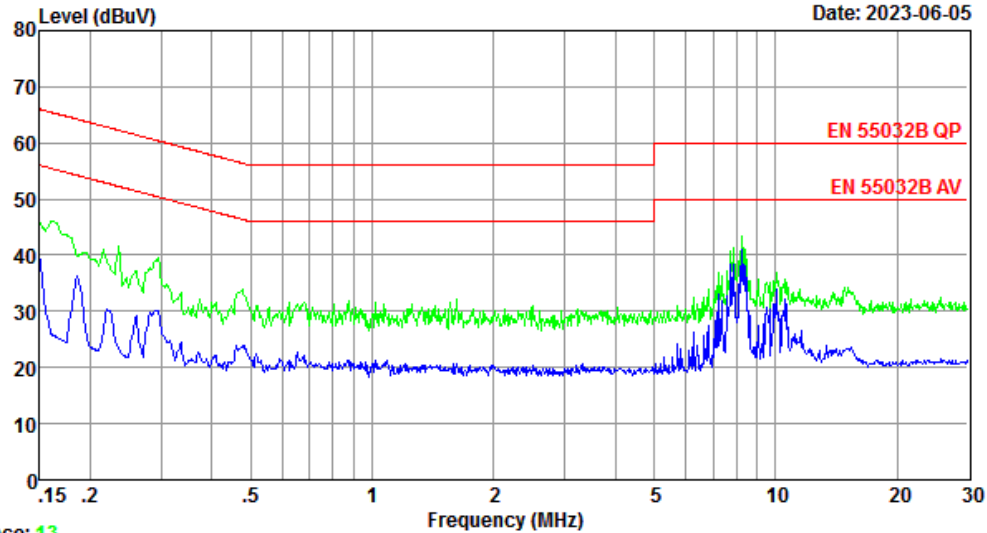
Site no : 2#CE Shield Room Data no. : 10
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : NEUTRAL
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : HDMI1 Mode(3840*2160)



Data: 14

File: \\EMC-CE-2\Test Data\2023\K\KTC.EM6 (56)

Date: 2023-06-05



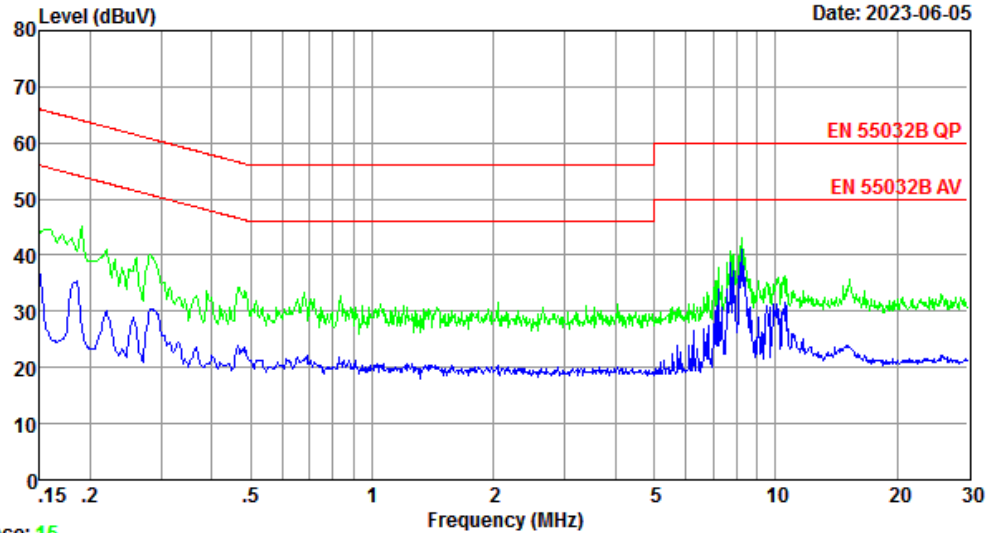
Trace: 13

Site no : 2#CE Shield Room Data no. : 14
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : LINE
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : HDMI1 Mode(3840*2160)

Data: 16

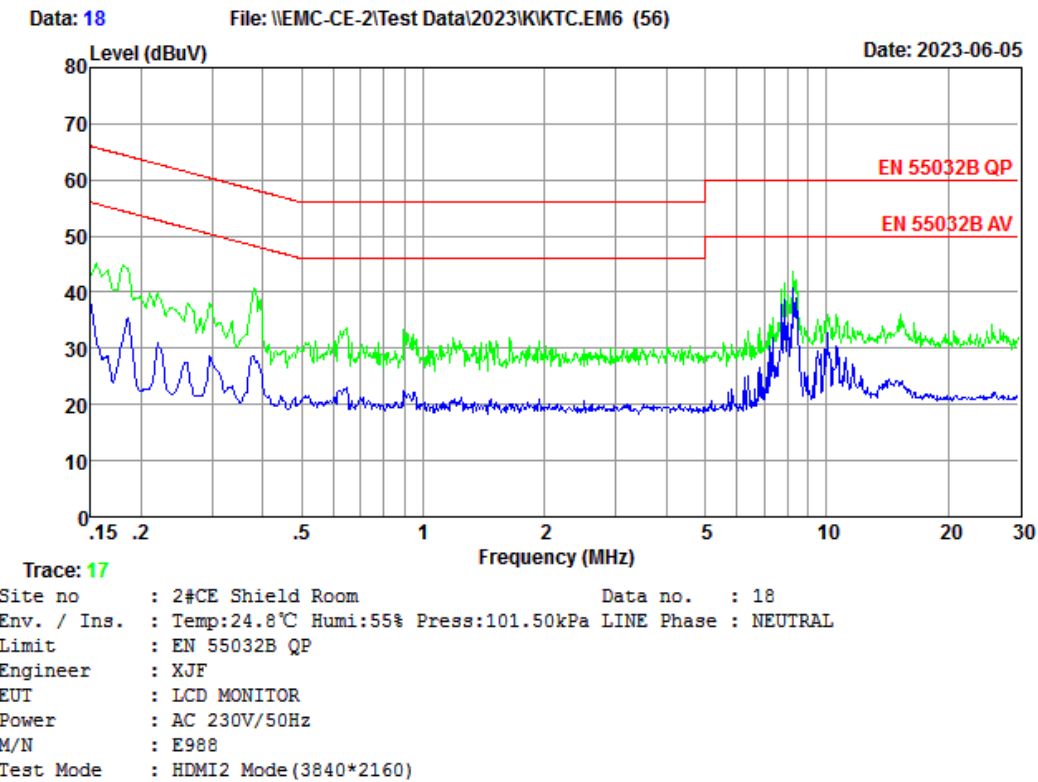
File: \\EMC-CE-2\Test Data\2023\K\KTC.EM6 (56)

Date: 2023-06-05



Trace: 15

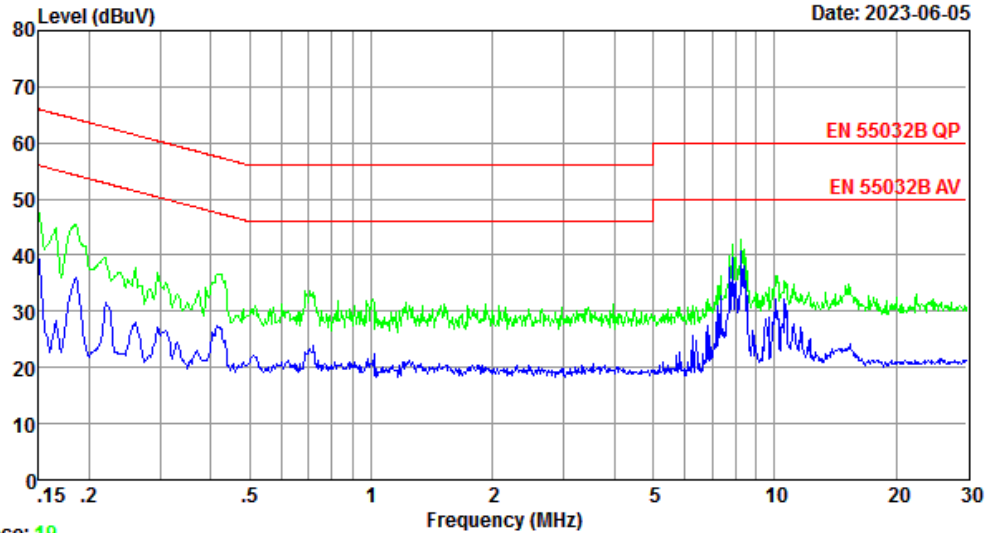
Site no : 2#CE Shield Room Data no. : 16
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : NEUTRAL
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : HDMI1 Mode(3840*2160)



Data: 20

File: \\EMC-CE-2\Test Data\2023\K\KTC.EM6 (56)

Date: 2023-06-05



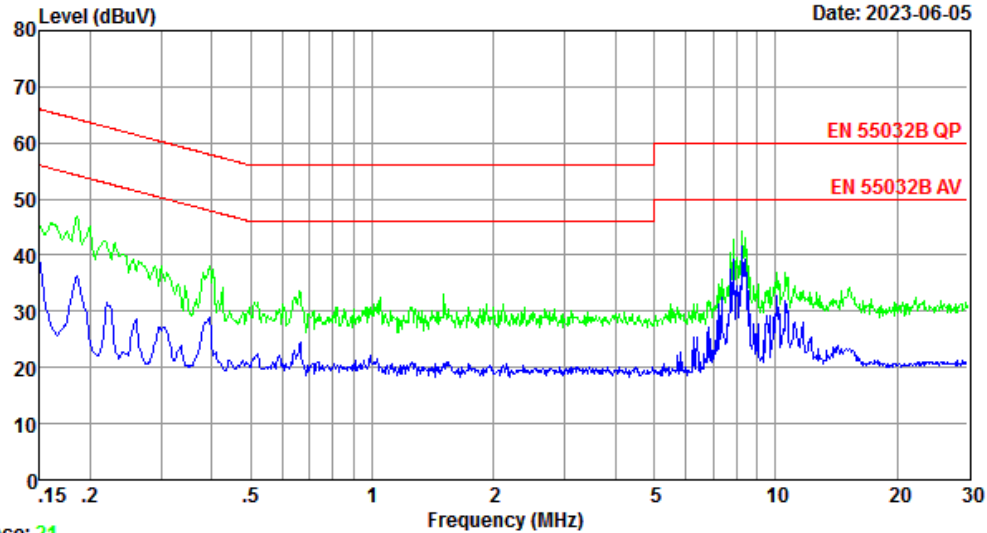
Trace: 19

Site no : 2#CE Shield Room Data no. : 20
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : LINE
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : HDMI2 Mode(3840*2160)

Data: 22

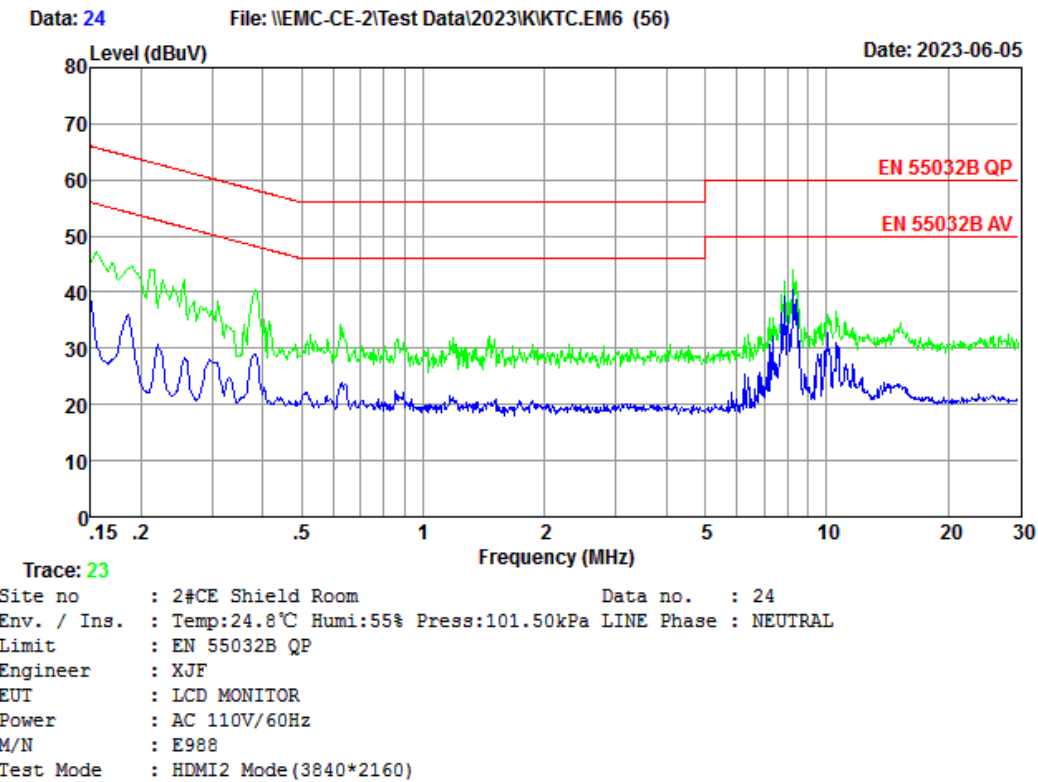
File: \\EMC-CE-2\Test Data\2023\K\KTC.EM6 (56)

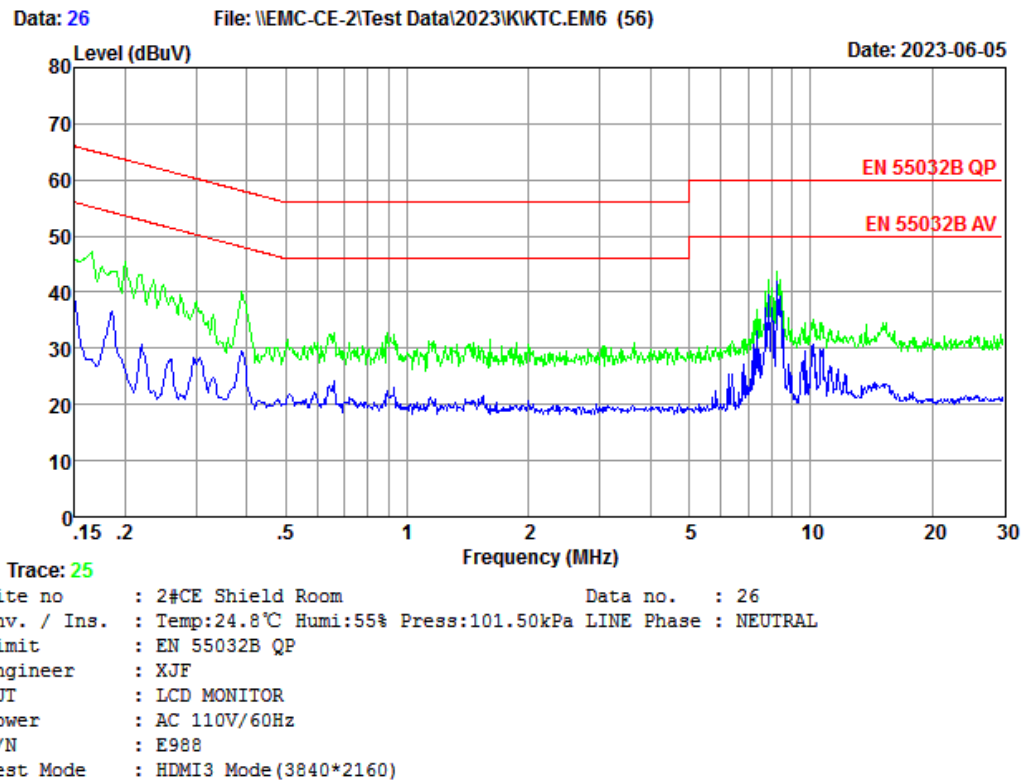
Date: 2023-06-05

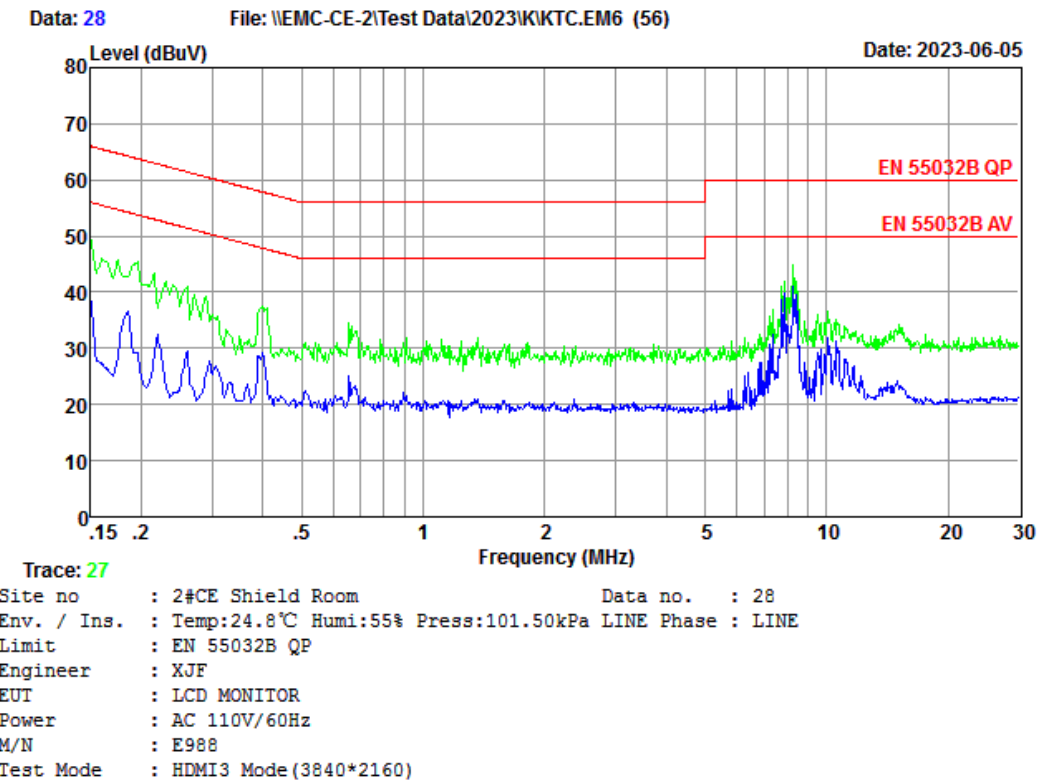


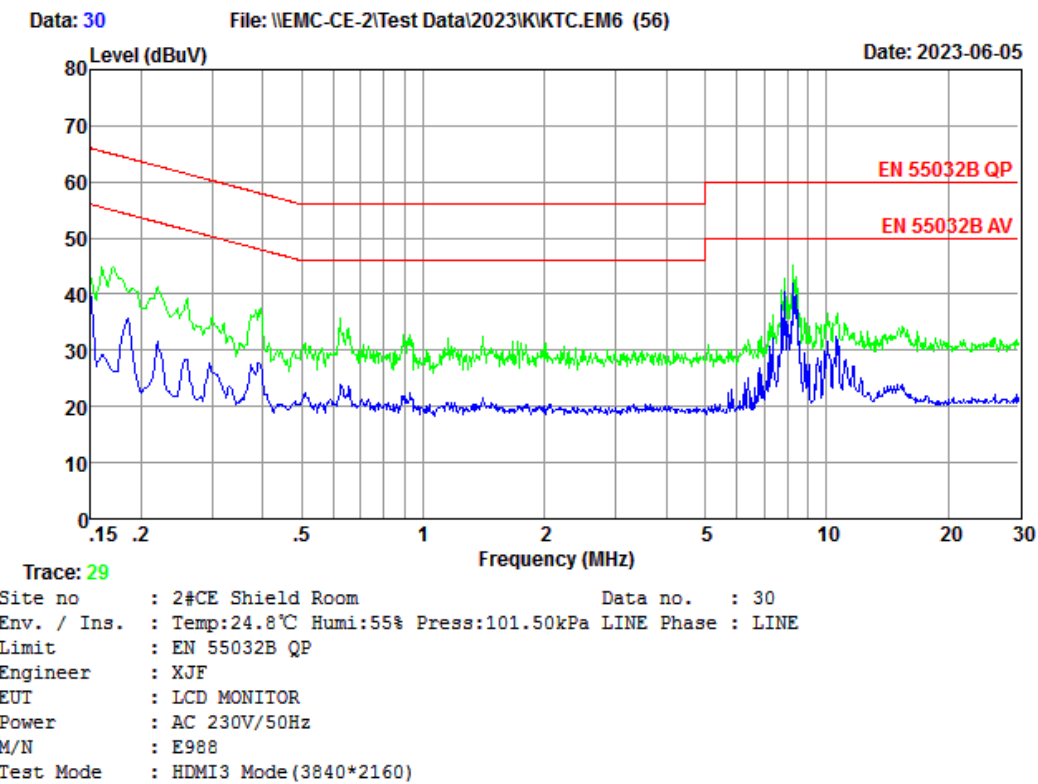
Trace: 21

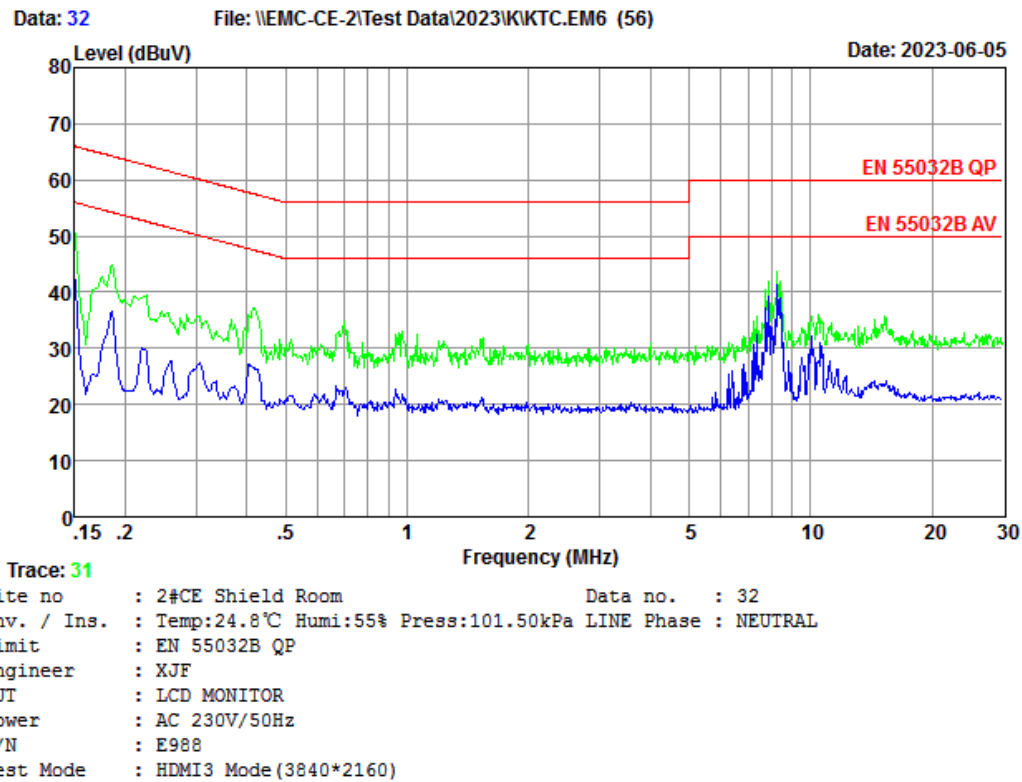
Site no : 2#CE Shield Room Data no. : 22
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : LINE
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : HDMI2 Mode(3840*2160)

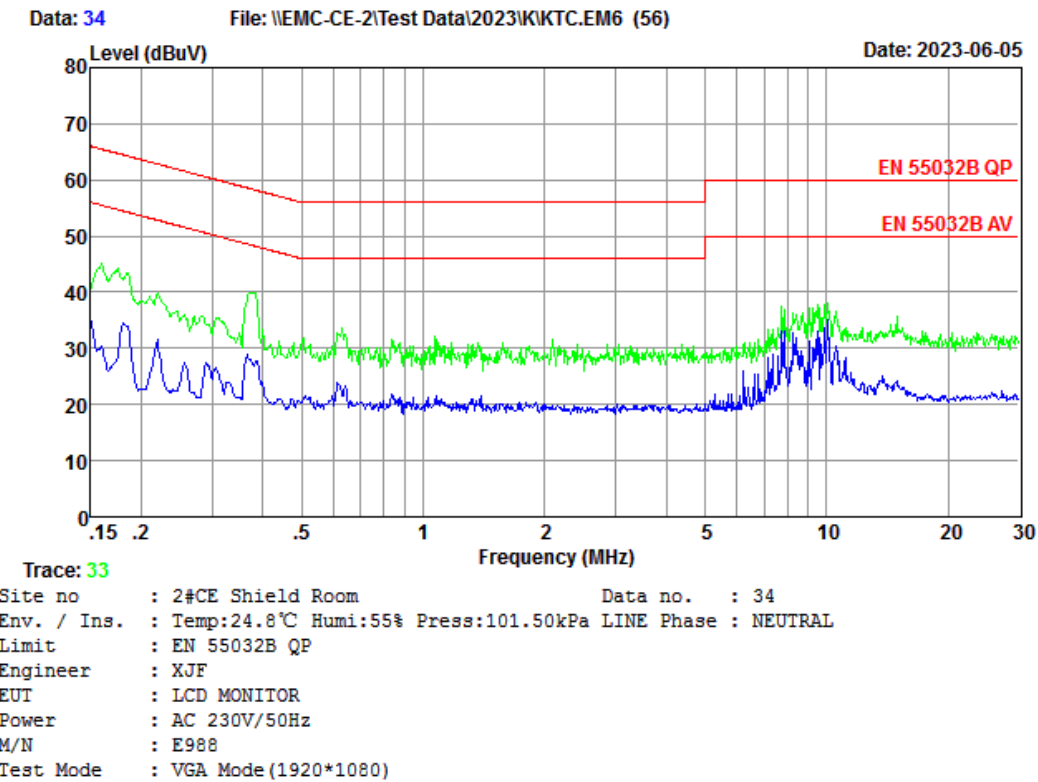








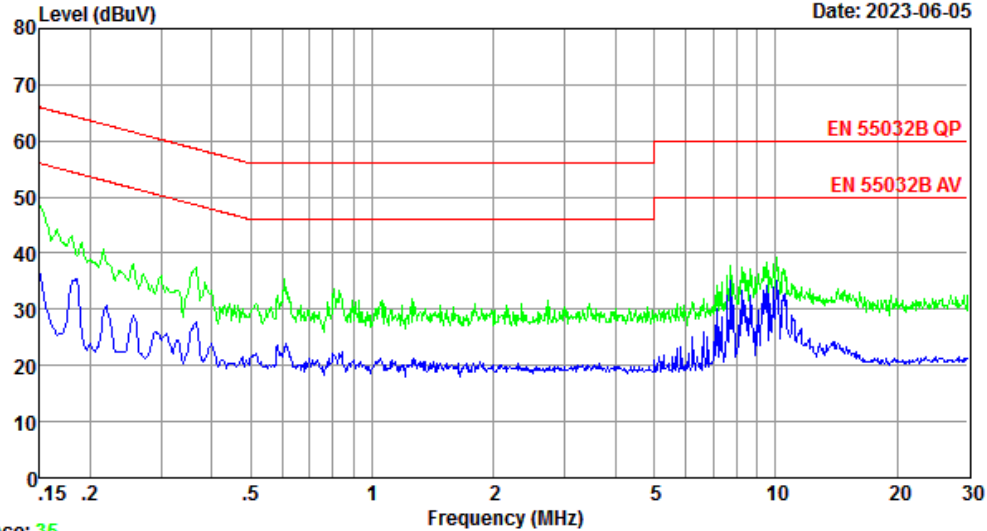




Data: 36

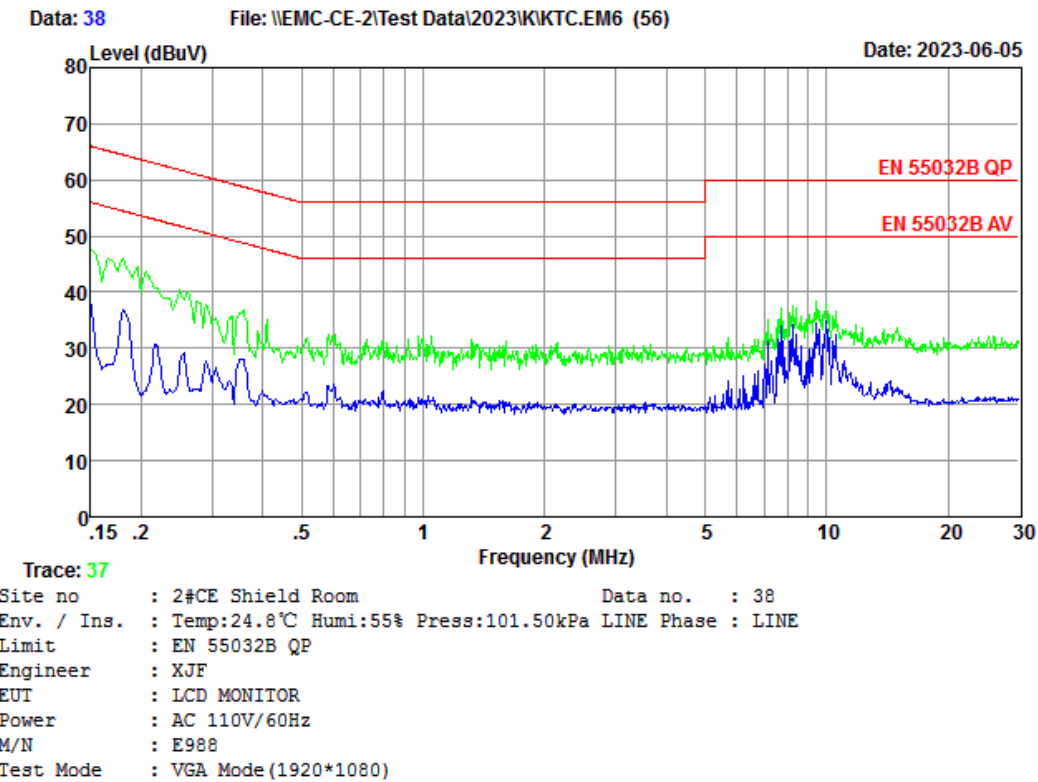
File: \\EMC-CE-2\\Test Data\\2023\\K\\KTC.EM6 (56)

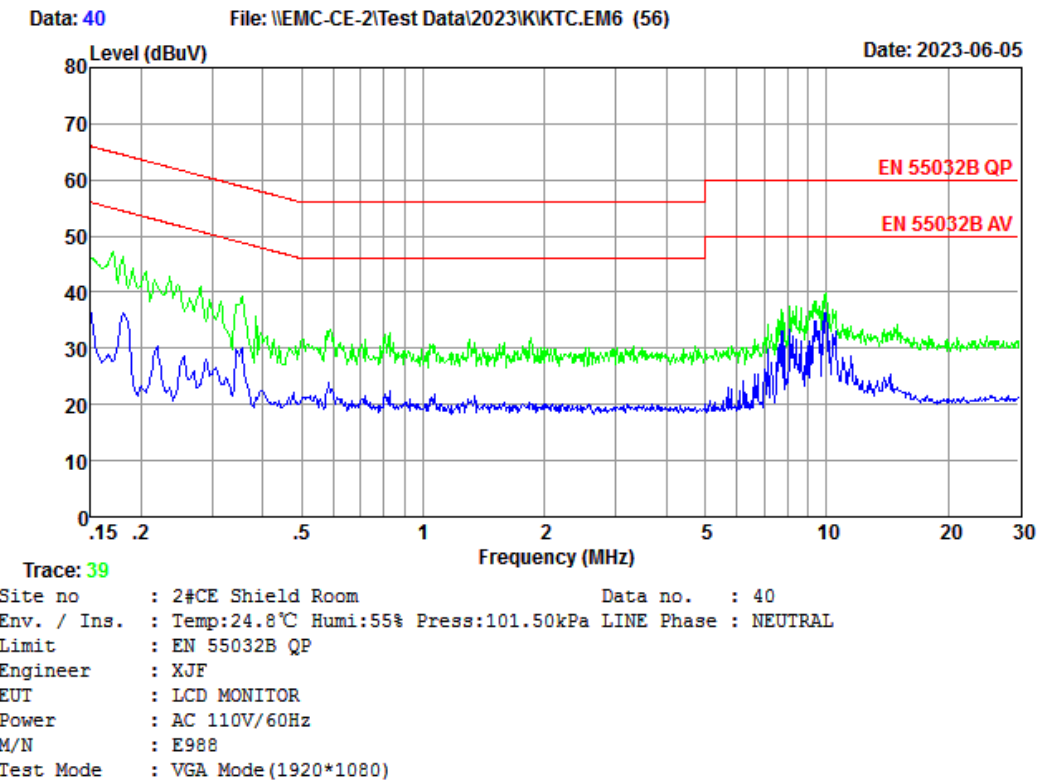
Date: 2023-06-05

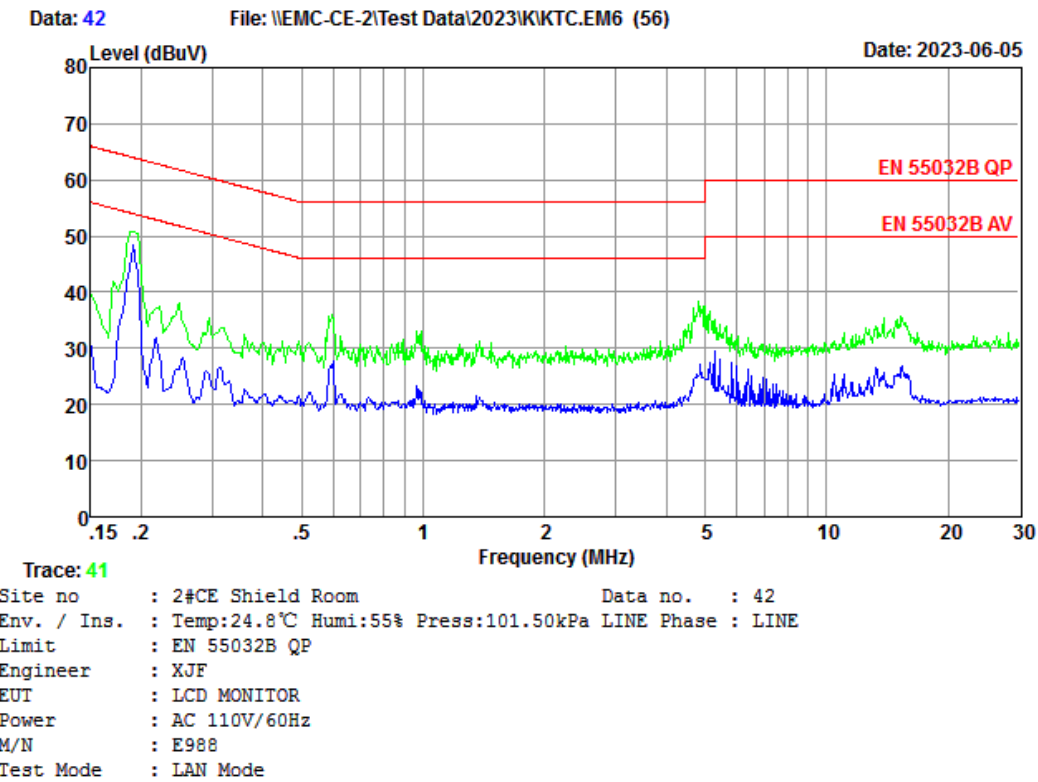


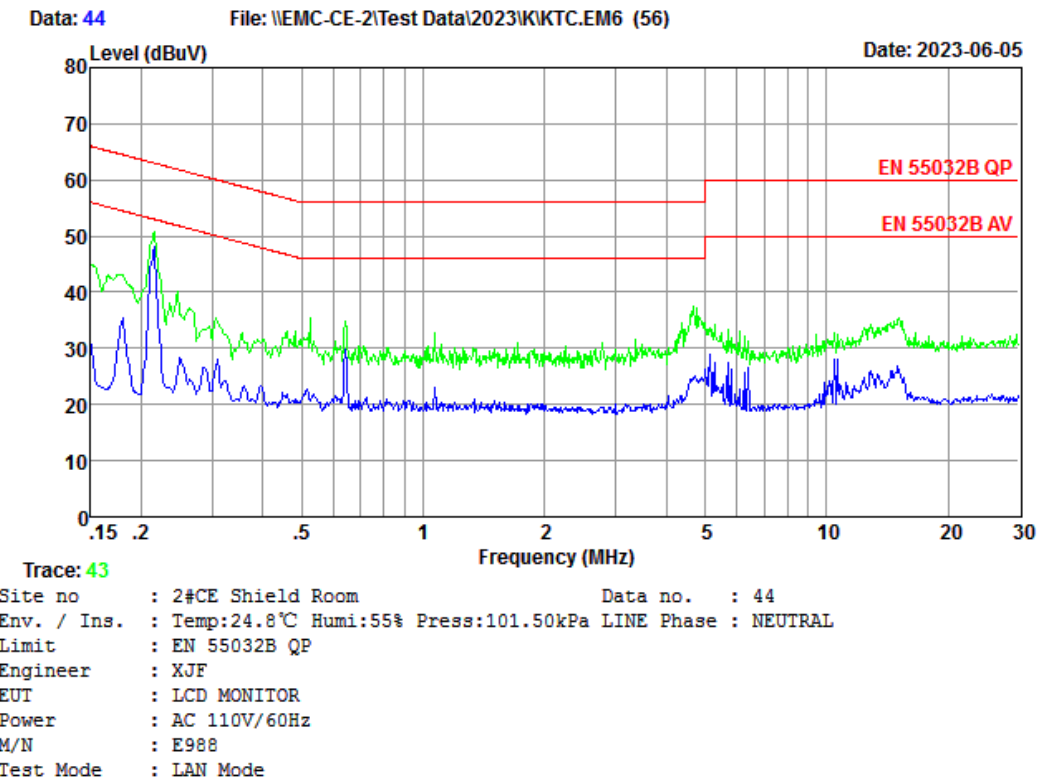
Trace: 35

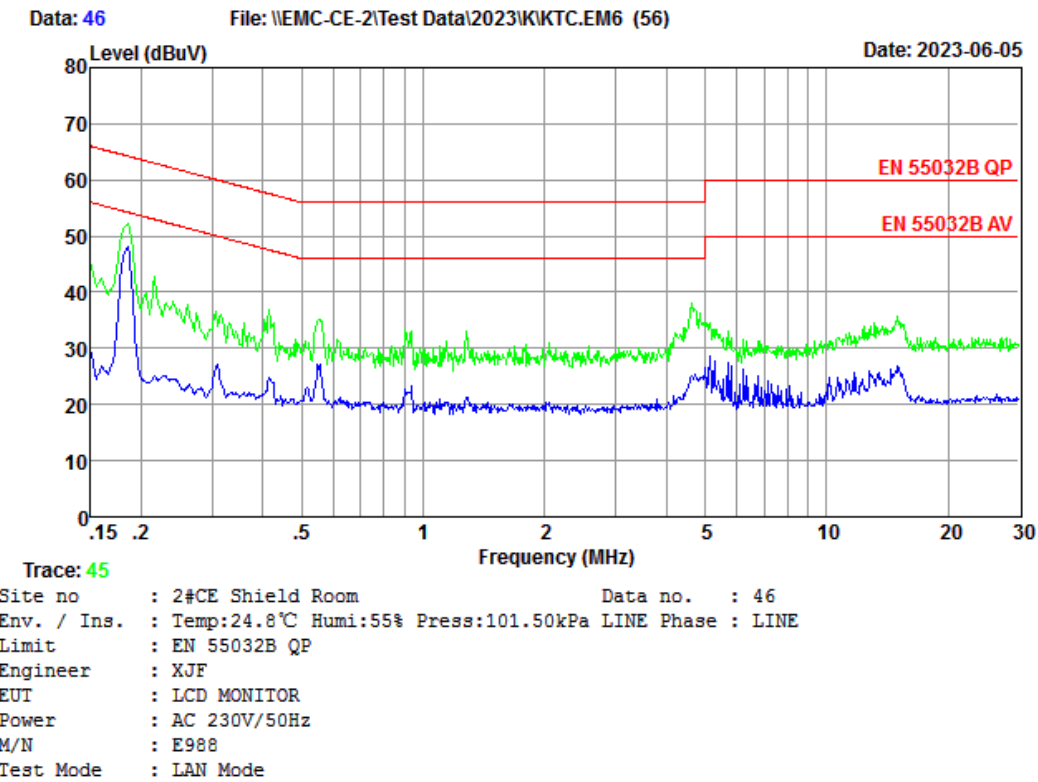
Site no : 2#CE Shield Room Data no. : 36
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : LINE
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : VGA Mode (1920*1080)







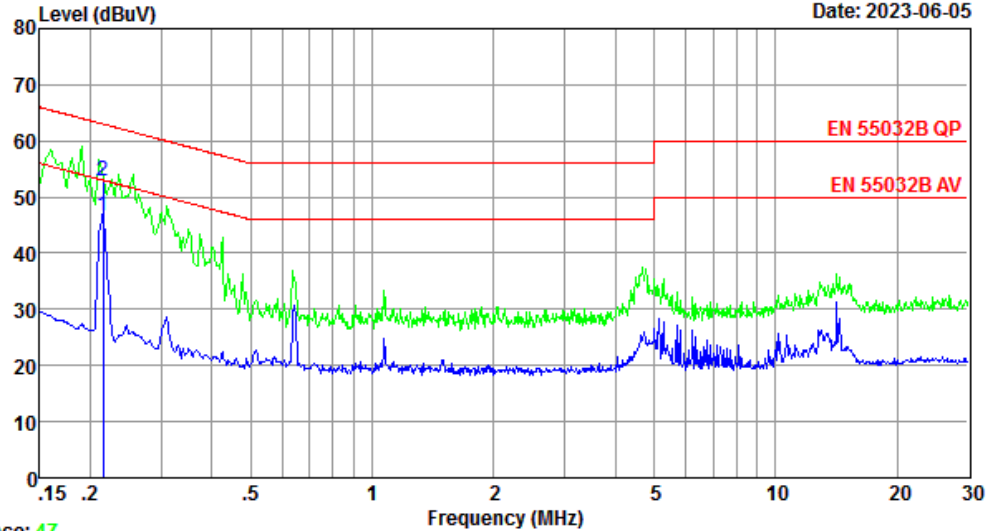




Data: 48

File: \\EMC-CE-2\Test Data\2023\K\KTC.EM6 (56)

Date: 2023-06-05

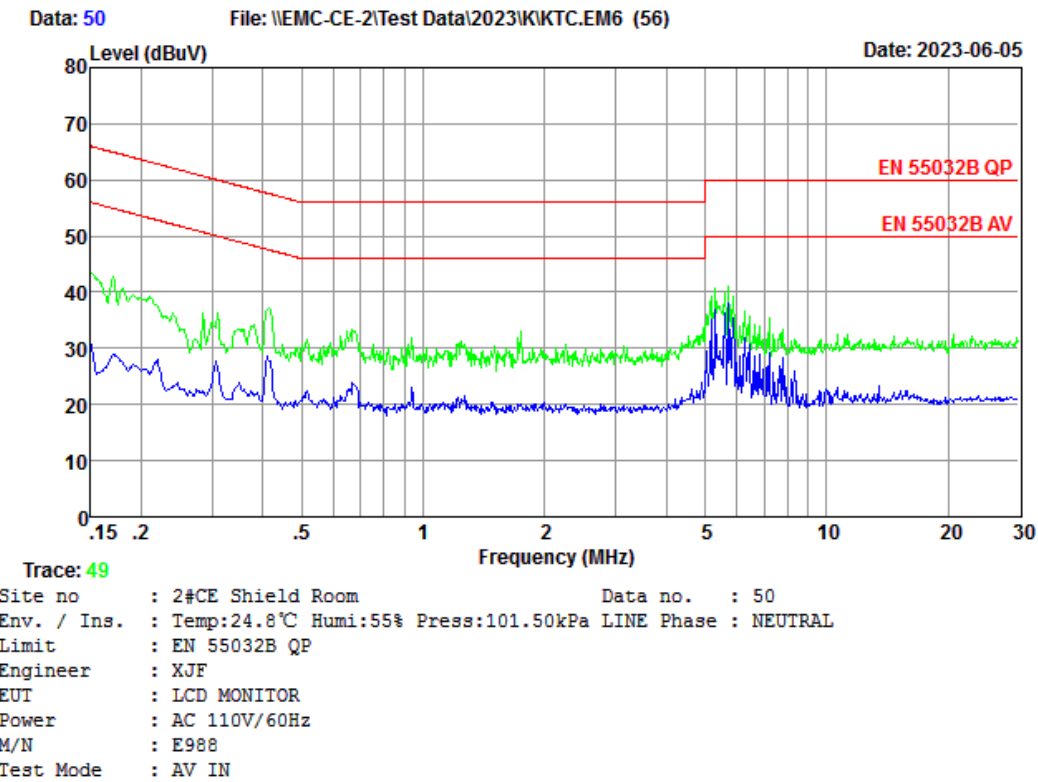


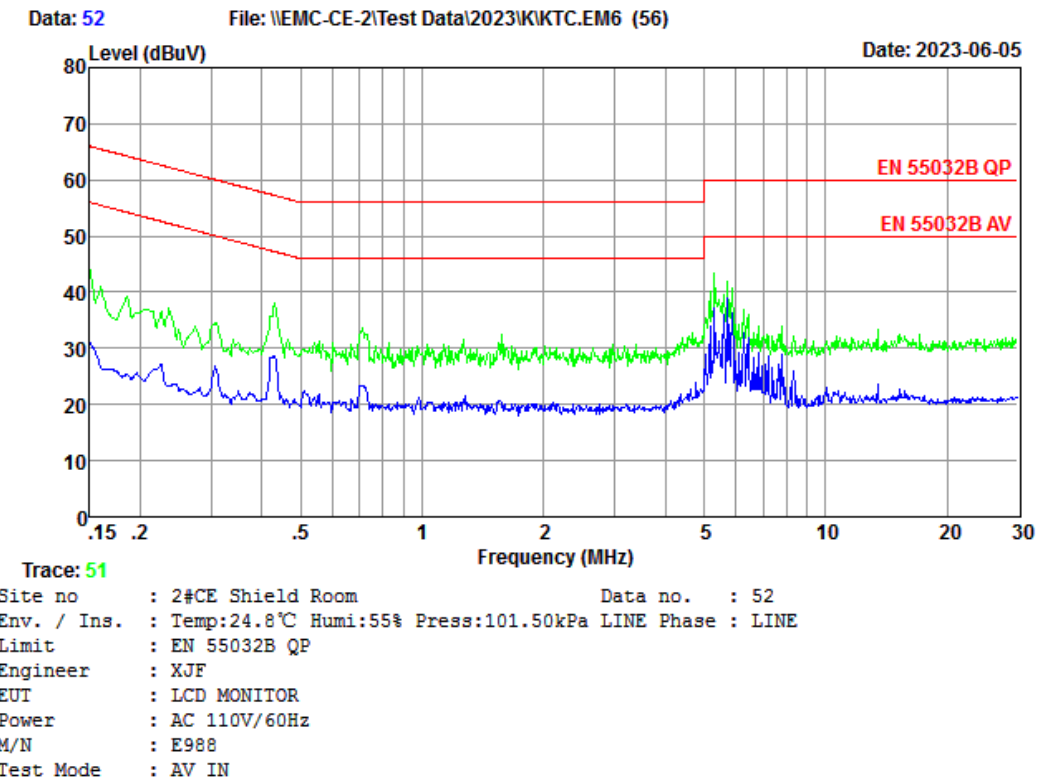
Trace: 47

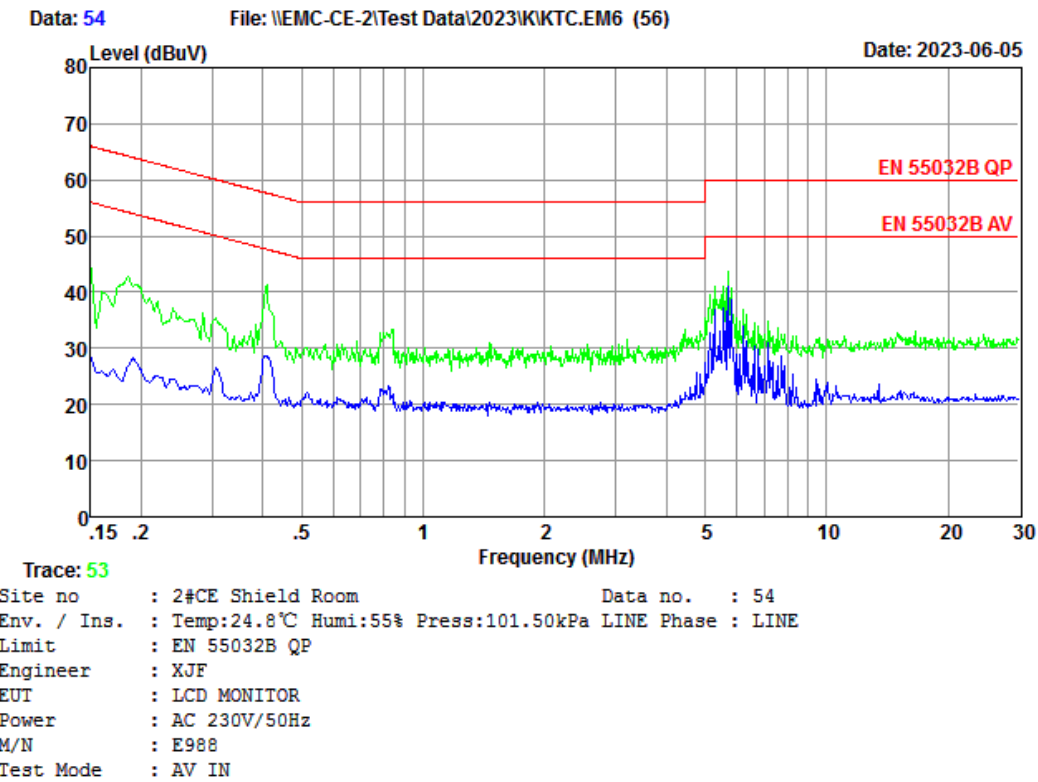
Site no : 2#CE Shield Room Data no. : 48
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : NEUTRAL
Limit : EN 55032B QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : LAN Mode

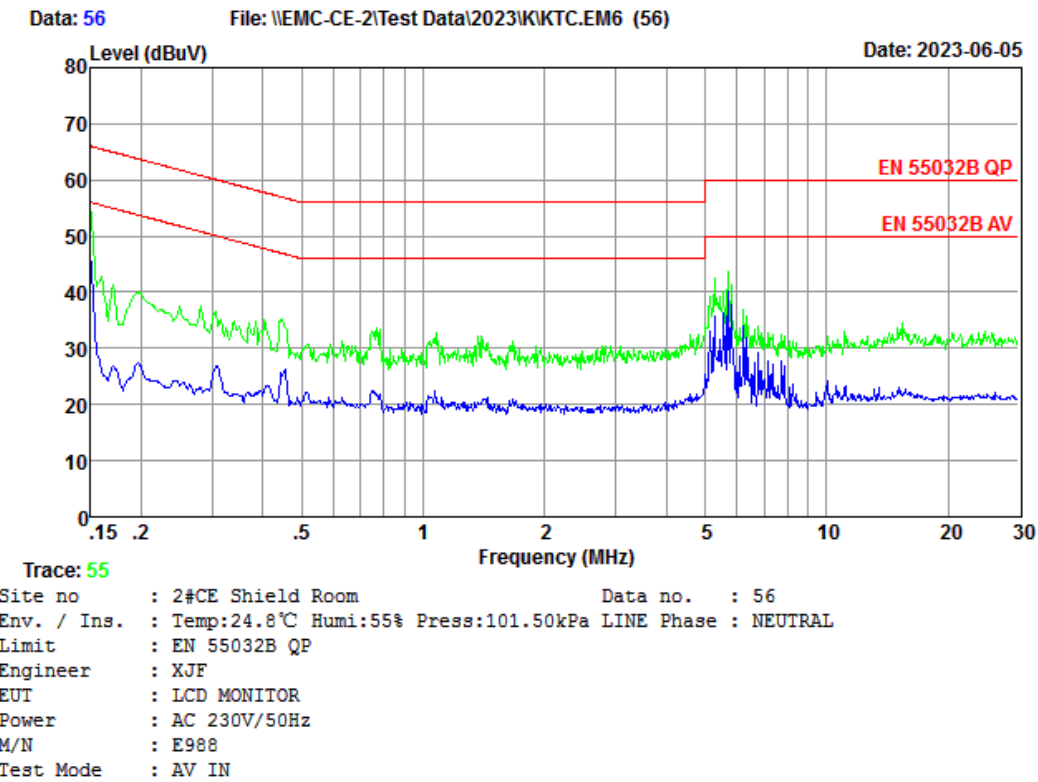
	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.22	9.53	9.84	27.24	46.61	53.01	6.40	Average
2	0.22	9.53	9.84	33.56	52.93	63.01	10.08	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.









4.2. Asymmetric Mode Conducted Emissions Test

RESULT : **Pass**
Test procedure : EN 55032:2015+A11:2020
Frequency range : 0.15~30MHz
Test Site : Shielded Room
Limits : EN 55032:2015+A11:2020

Test Setup

Date of test : Jun. 05, 2023
Model No. : E988
Input Voltage : AC 230V/50Hz, AC 110V/60Hz
Operation Mode : LAN Mode

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

The bandwidth of the test receiver was set at 9 kHz.

The test data of the worst case condition(s) was reported on the following page.

Note: Test uncertainty: $\pm 4.32\text{dB}$ at a level of confidence of 95%.

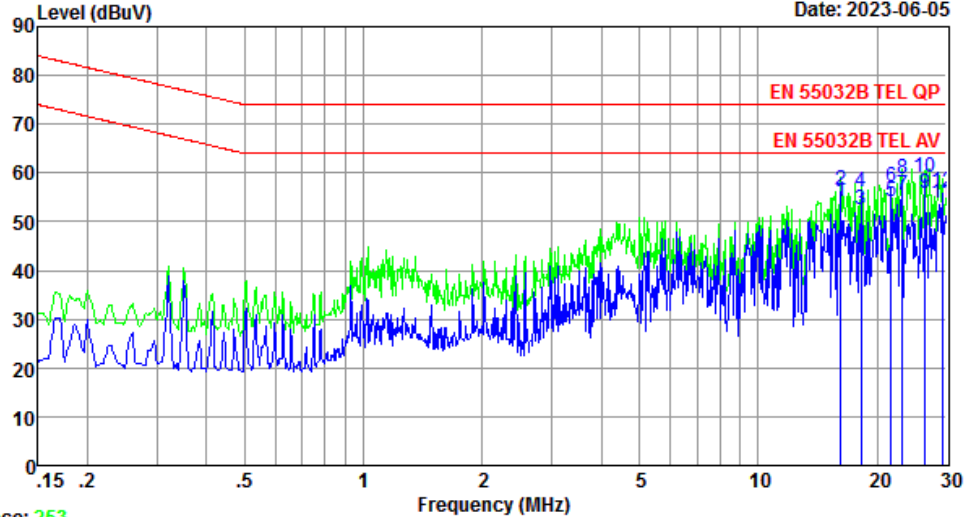
Test Data

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Data: 254 File: \\EMC-CE-2\Test Data\2023\KIKTC.EM6 (264)

Date: 2023-06-05



Trace: 253
Site no : 2#CE Shield Room Data no. : 254
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase :
Limit : EN 55032B TEL QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : LAN Mode

	Freq. (MHz)	ISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	16.23	9.35	10.13	34.71	54.19	64.00	9.81	Average
2	16.23	9.35	10.13	36.85	56.33	74.00	17.67	QP
3	18.23	9.38	10.15	33.06	52.59	64.00	11.41	Average
4	18.23	9.38	10.15	36.54	56.07	74.00	17.93	QP
5	21.71	9.43	10.16	34.67	54.26	64.00	9.74	Average
6	21.71	9.43	10.16	37.45	57.04	74.00	16.96	QP
7	23.14	9.44	10.17	35.98	55.59	64.00	8.41	Average
8	23.14	9.44	10.17	39.12	58.73	74.00	15.27	QP
9	26.42	9.47	10.16	36.01	55.64	64.00	8.36	Average
10	26.42	9.47	10.16	39.43	59.06	74.00	14.94	QP
11	29.22	9.50	10.15	34.13	53.78	64.00	10.22	Average
12	29.22	9.50	10.15	36.55	56.20	74.00	17.80	QP

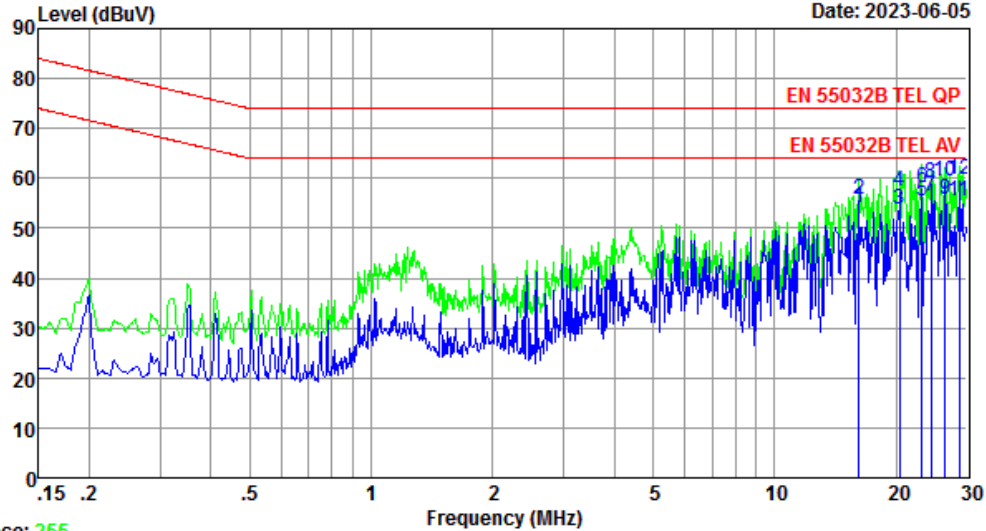
Remarks: 1. Emission Level= ISN Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



Data: 256

File: \\EMC-CE-2\\Test Data\\2023\\K\\KTC.EM6 (264)

Date: 2023-06-05



Site no : 2#CE Shield Room Data no. : 256
Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase :
Limit : EN 55032B TEL QP
Engineer : XJF
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : LAN Mode

	Freq. (MHz)	ISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	16.23	9.35	10.13	34.74	54.22	64.00	9.78	Average
2	16.23	9.35	10.13	36.42	55.90	74.00	18.10	QP
3	20.38	9.41	10.15	34.38	53.94	64.00	10.06	Average
4	20.38	9.41	10.15	37.86	57.42	74.00	16.58	QP
5	23.14	9.44	10.17	35.90	55.51	64.00	8.49	Average
6	23.14	9.44	10.17	38.62	58.23	74.00	15.77	QP
7	24.40	9.45	10.16	36.96	56.57	64.00	7.43	Average
8	24.40	9.45	10.16	39.61	59.22	74.00	14.78	QP
9	26.42	9.47	10.16	36.31	55.94	64.00	8.06	Average
10	26.42	9.47	10.16	39.87	59.50	74.00	14.50	QP
11	28.75	9.50	10.15	35.70	55.35	64.00	8.65	Average
12	28.75	9.50	10.15	40.25	59.90	74.00	14.10	QP

Remarks: 1. Emission Level= ISN Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4.3. Radiated Emission Test

RESULT : **Pass**
Test procedure : EN 55032:2015+A11:2020
Frequency range : 30~1000MHz
Test Site : 10m Chamber
Limits : EN 55032:2015+A11:2020 Class B

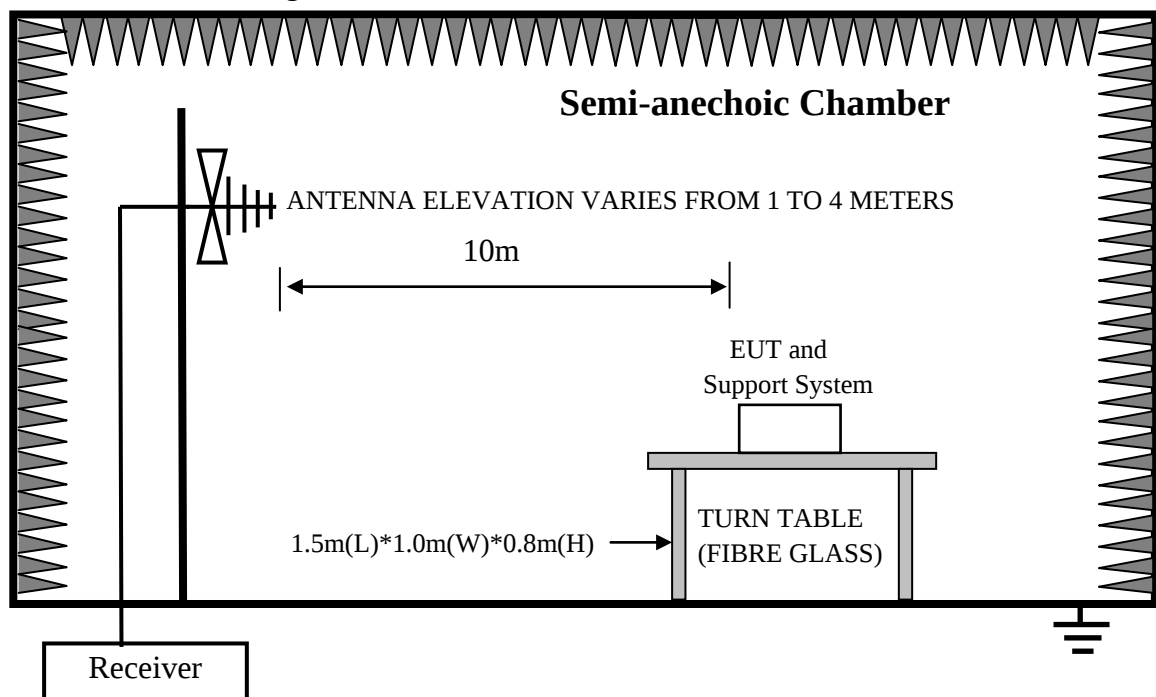
Test Setup

Date of test : Jun. 05, 2023
Model No. : E988
Input Voltage : AC 230V/50Hz, AC 110V/60Hz
Operation Mode : HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode,
USB Play, AV IN, LAN Mode

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 10 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth setting on the test receiver was 120 kHz.



Note: Test uncertainty: ± 4.38 dB (H); ± 4.68 dB (V) at a level of confidence of 95%.

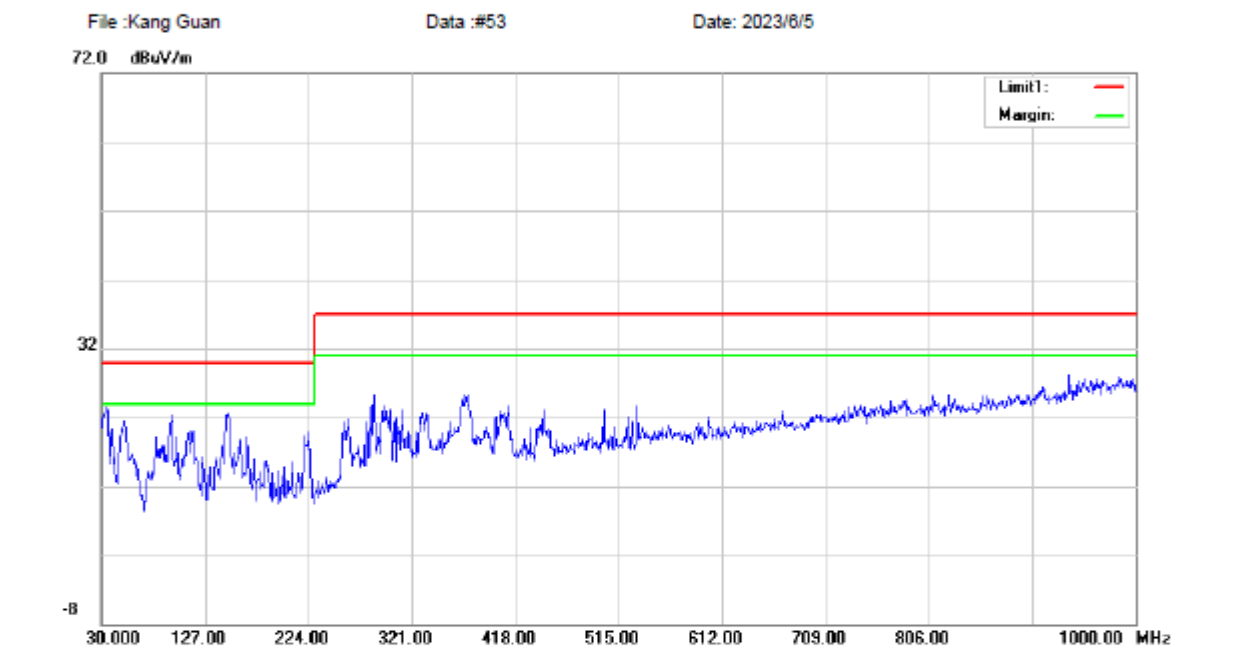
Test Data



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Site 10m Chamber	Polarization: Vertical	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 230V/50Hz	Humidity: 51 %
Mode: HDMI 1 Mode(3840*2160)		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

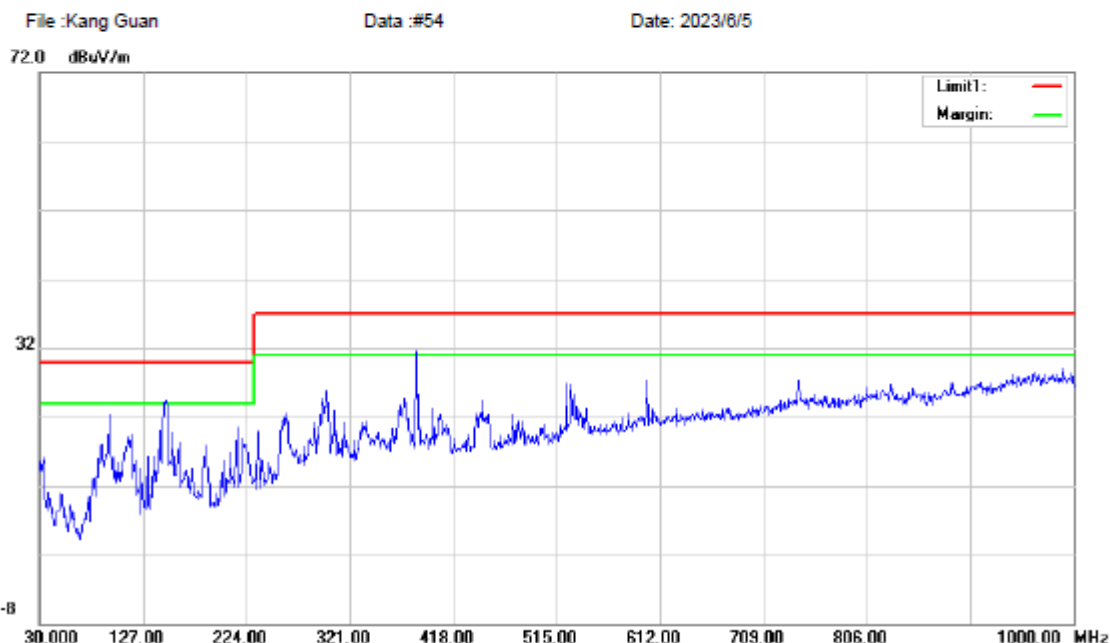




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Site: 10m Chamber	Polarization: Horizontal	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 230V/50Hz	Humidity: 51 %
Mode: HDMI 1 Mode(3840*2160)		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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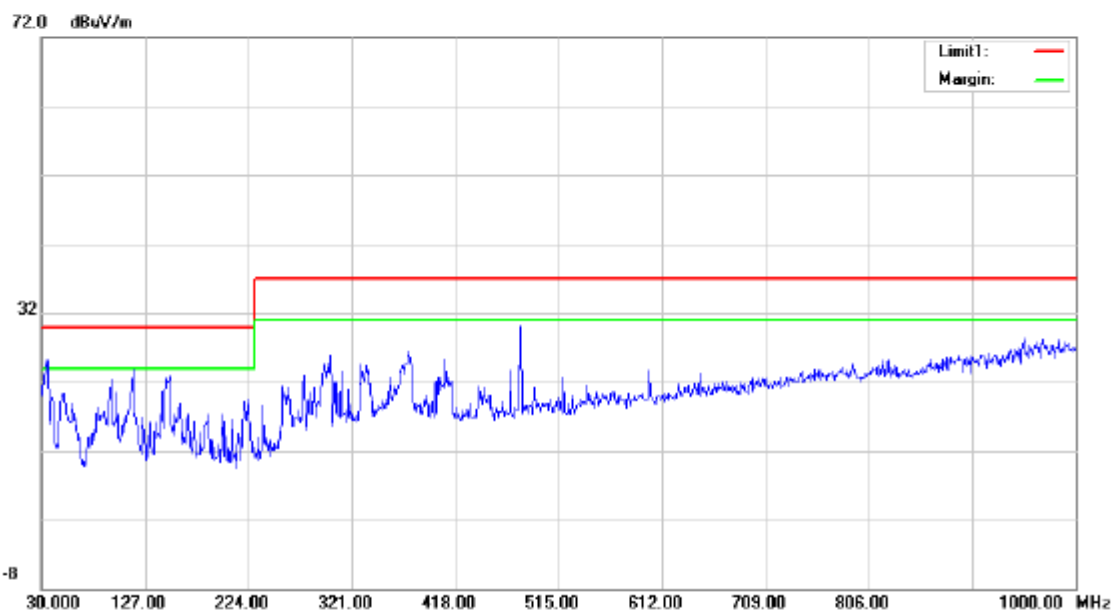
Site 10m Chamber Polarization: **Vertical** Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 230V/50Hz Humidity: 51 %
Mode: HDMI 2 Mode(3840*2160)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

Radiated Emission

File :Kang Guan

Data :#55

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site: 10m Chamber

Polarization: *Horizontal*

Temperature: 22.7 (C)

Limit: EN 55032 B (10M)

Power: AC 230V/50Hz

Humidity: 51 %

Mode: HDMI 2 Mode(3840*2160)

EUT: LCD MONITOR

Distance: 10m

Note:

M/N: E988

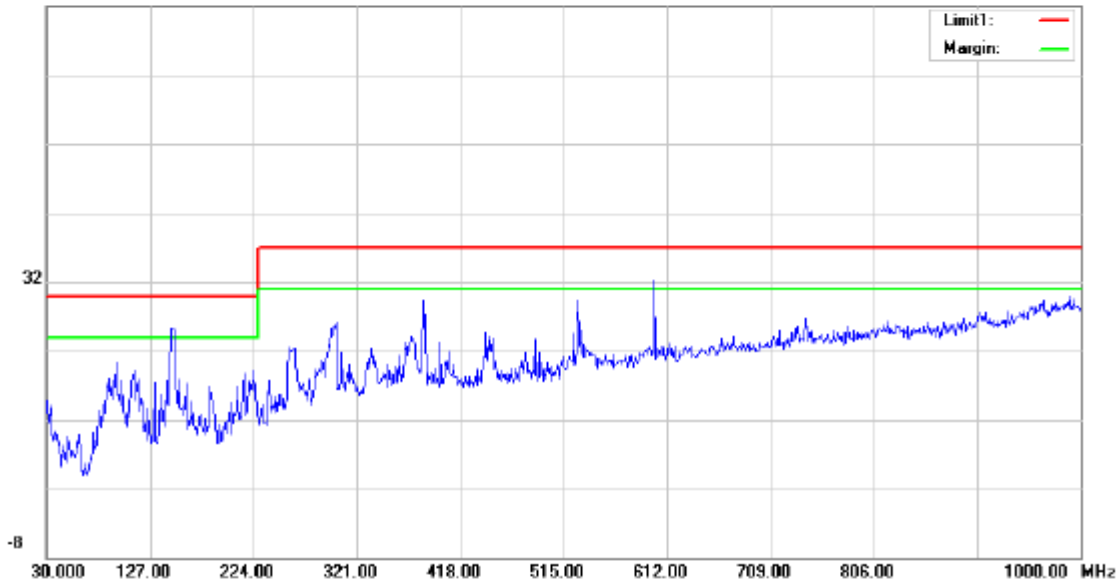
Radiated Emission

File: Kang Guan

Data: #56

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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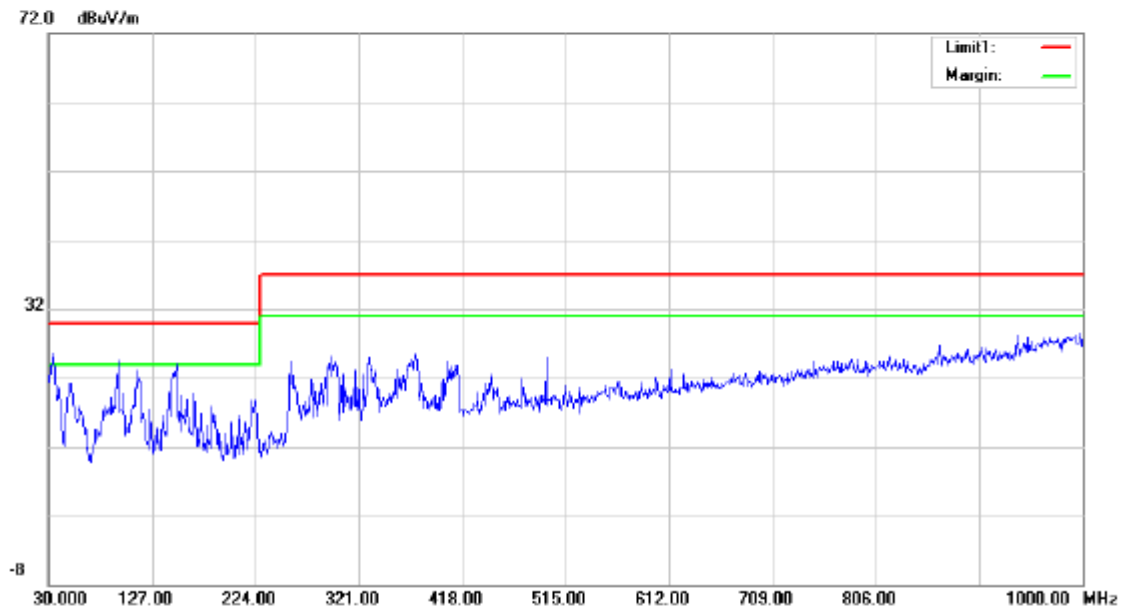
Site 10m Chamber Polarization: *Vertical* Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 230V/50Hz Humidity: 51 %
Mode: HDMI 3 Mode(3840*2160)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

Radiated Emission

File :Kang Guan

Data :#57

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site: 10m Chamber Polarization: **Horizontal** Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 230V/50Hz Humidity: 51 %
Mode: HDMI 3 Mode(3840*2160)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

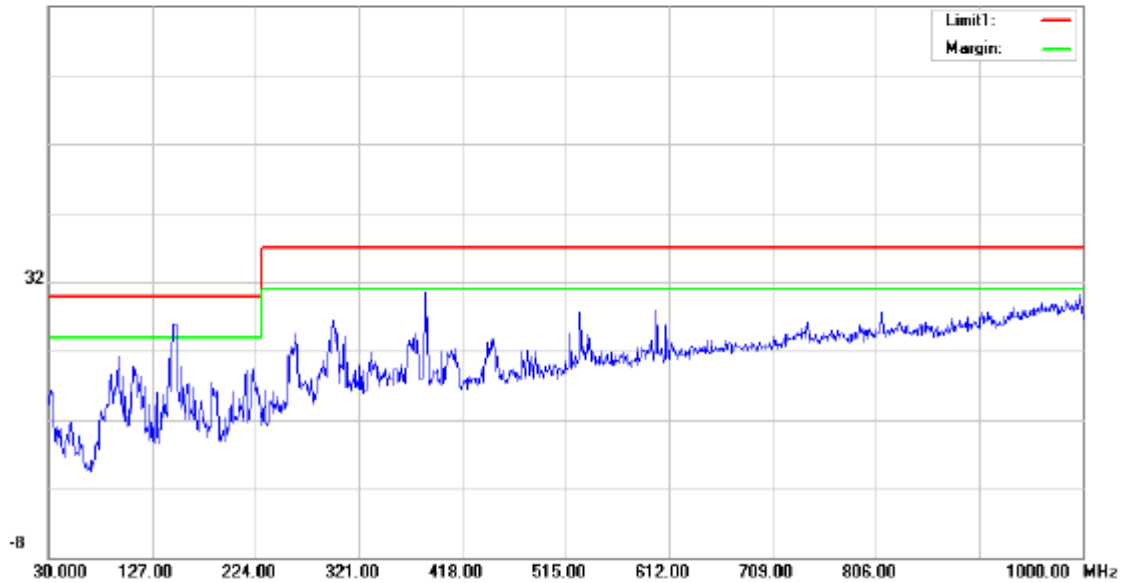
Radiated Emission

File :Kang Guan

Data :#58

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

- Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site 10m Chamber	Polarization: <i>Vertical</i>	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 230V/50Hz	Humidity: 51 %
Mode: USB Play		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

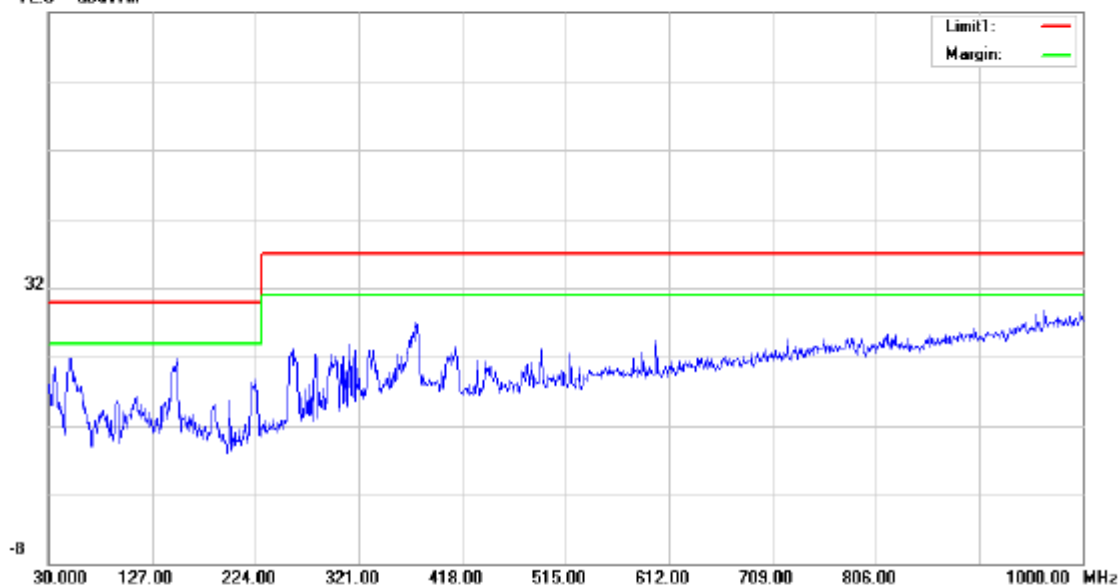
Radiated Emission

File :Kang Guan

Data :#59

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site 10m Chamber Polarization: *Horizontal* Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 230V/50Hz Humidity: 51 %
Mode: USB Play
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

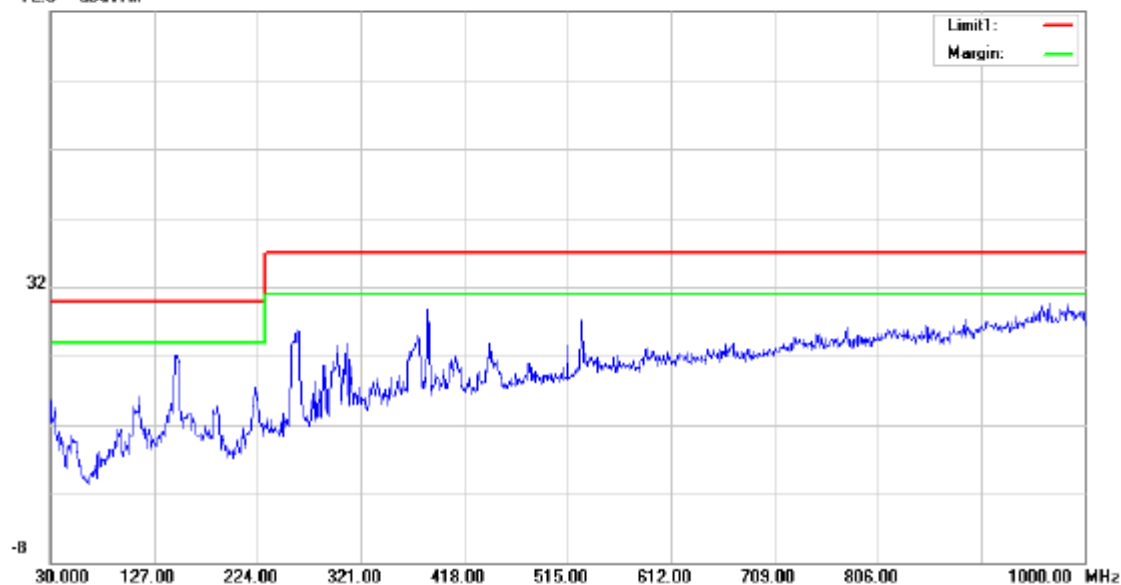
Radiated Emission

File :Kang Guan

Data :#60

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

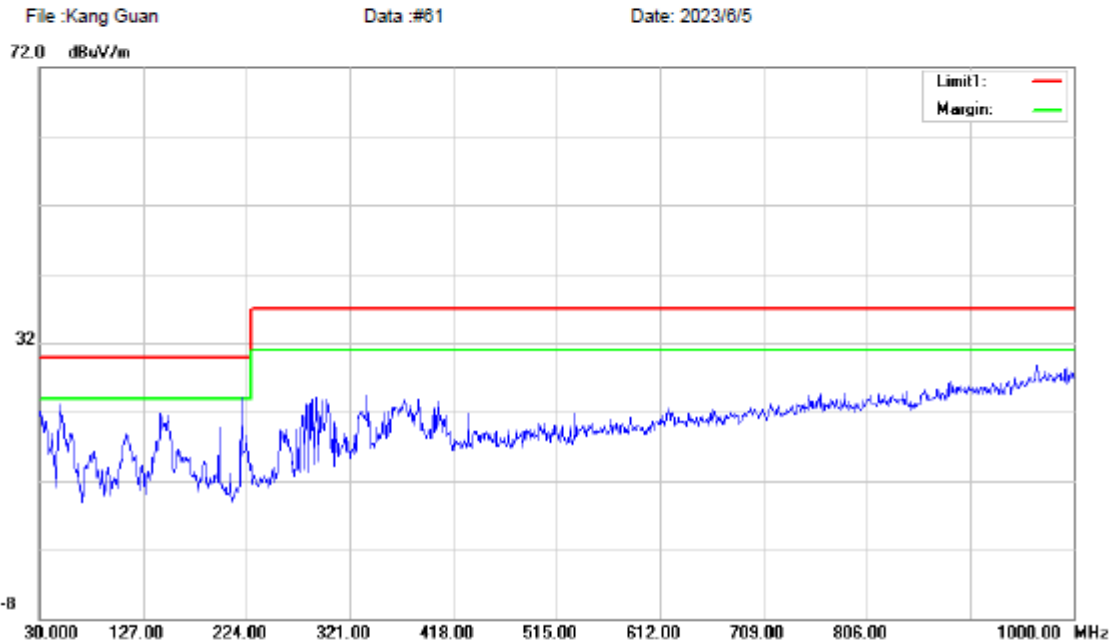




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Site 10m Chamber Polarization: **Vertical** Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 230V/50Hz Humidity: 51 %
Mode: AV IN
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

Radiated Emission



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site 10m Chamber Polarization: *Horizontal* Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 230V/50Hz Humidity: 51 %
Mode: AV IN
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

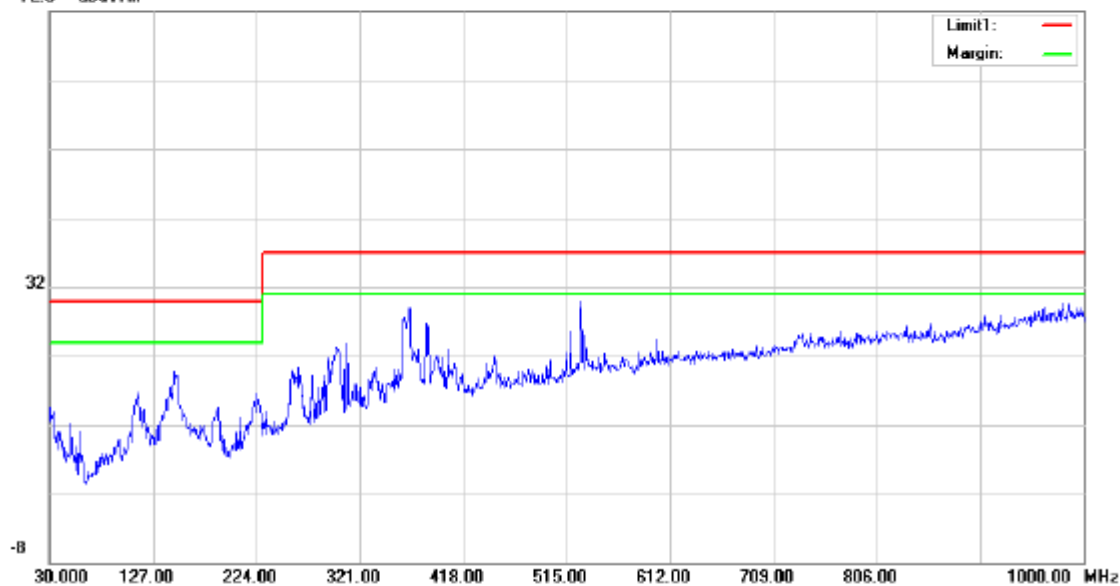
Radiated Emission

File :Kang Guan

Data :#62

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

- Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site 10m Chamber Polarization: **Vertical** Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 230V/50Hz Humidity: 51 %
Mode: VGA Mode(1920*1080)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

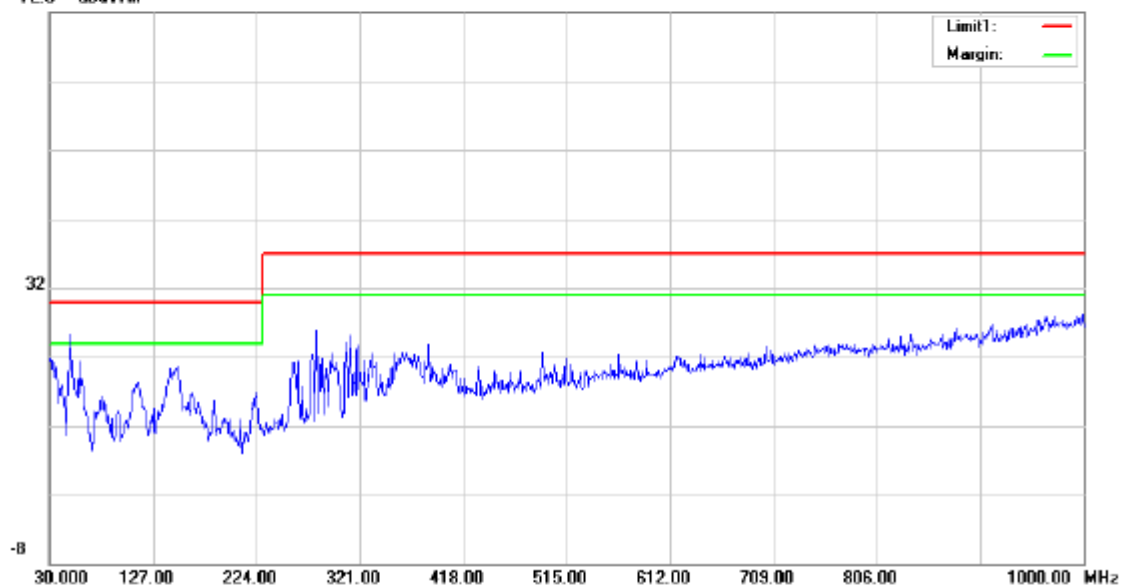
Radiated Emission

File :Kang Guan

Data :#83

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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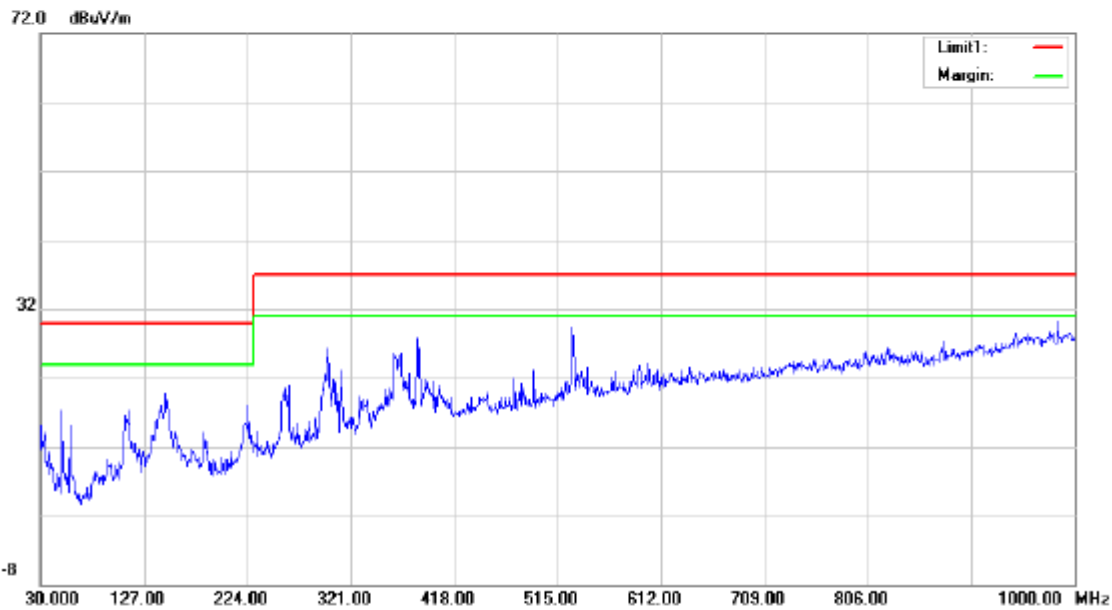
Site 10m Chamber Polarization: *Horizontal* Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 230V/50Hz Humidity: 51 %
Mode: VGA Mode(1920*1080)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

Radiated Emission

File :Kang Guan

Data :#64

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





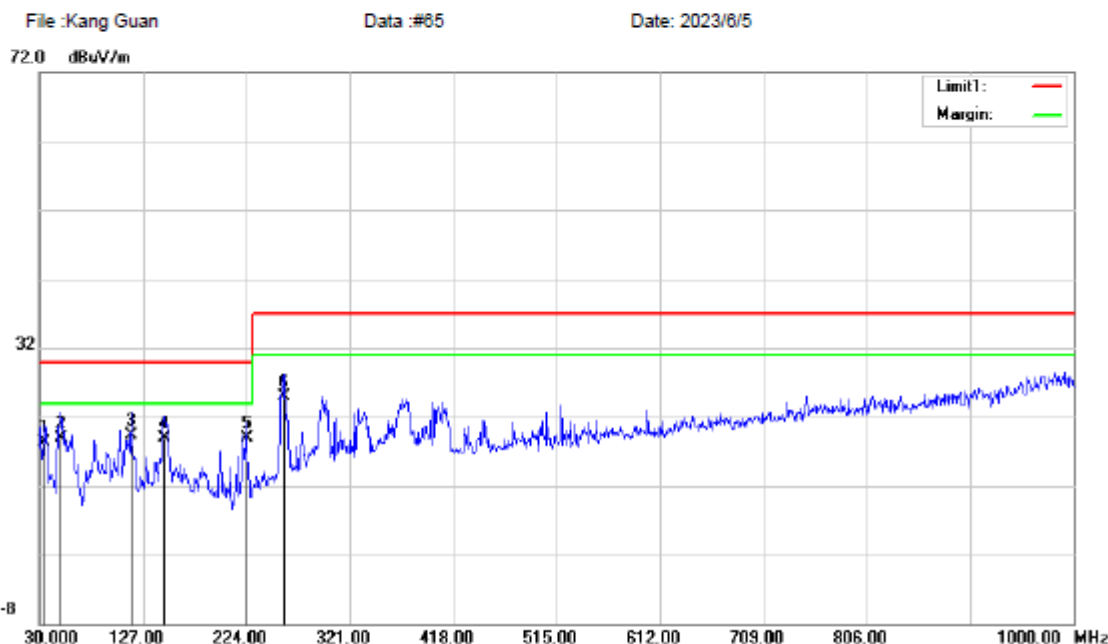
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Site 10m Chamber
Limit: EN 55032 B (10M)
Mode: LAN Mode
EUT: LCD MONITOR
Note:

Polarization: **Vertical**
Power: AC 230V/50Hz
Distance: 10m
M/N: E988

Temperature: 22.7 (C)
Humidity: 51 %

Radiated Emission



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		35.5775	34.61	14.67	31.68	0.62	18.22	30.00	-11.78	QP	
2		50.9761	42.02	7.96	31.71	0.72	18.99	30.00	-11.01	QP	
3 *		116.3300	37.91	11.65	31.5	1.17	19.23	30.00	-10.77	QP	
4		147.0062	37.53	11.66	31.54	1.29	18.94	30.00	-11.06	QP	
5		224.9700	38.44	10.3	31.37	1.58	18.95	30.00	-11.05	QP	
6		259.1625	40.74	13.77	31.4	1.74	24.85	37.00	-12.15	QP	

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





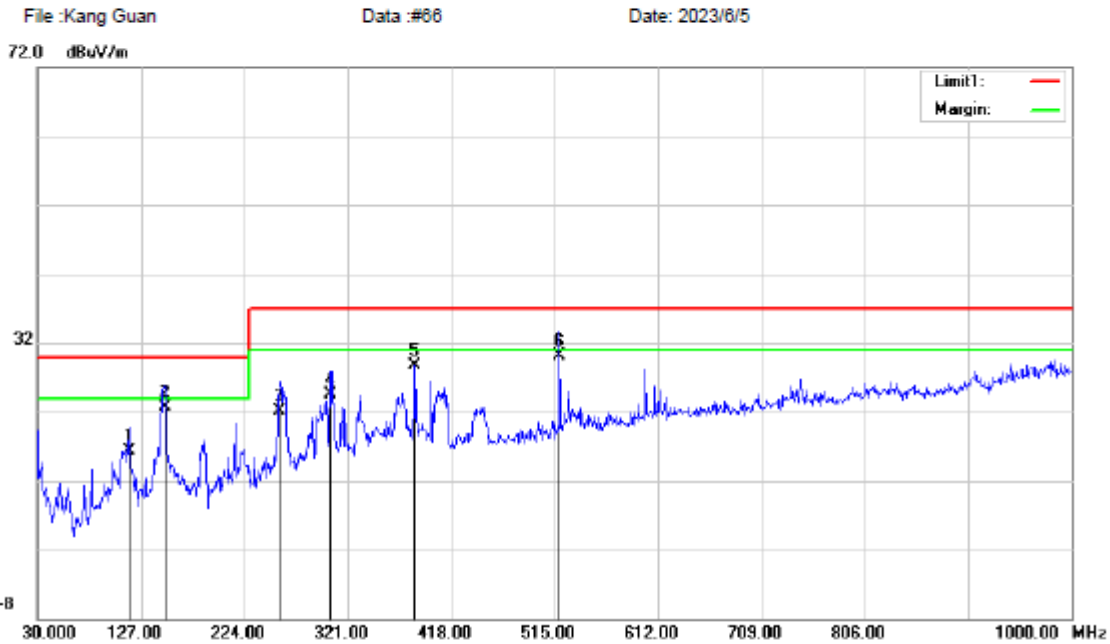
EST Technology Co.,Ltd
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Tel:+86-769-83081888 Fax:+86-769-83081878

Site: 10m Chamber
Limit: EN 55032 B (10M)
Mode: LAN Mode
EUT: LCD MONITOR
Note:

Polarization: *Horizontal*
Power: AC 230V/50Hz
Distance: 10m
M/N: E988

Temperature: 22.7 (C)
Humidity: 51 %

Radiated Emission



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		116.3300	34.97	11.39	31.78	1.63	16.21	30.00	-13.79	QP	
2		149.5525	41.09	11.41	31.68	1.83	22.65	30.00	-7.35	QP	
3		257.5862	37.50	13.65	31.47	2.48	22.16	37.00	-14.84	QP	
4		305.3586	39.74	13.55	31.59	2.72	24.42	37.00	-12.58	QP	
5		384.0500	41.30	15.76	31.37	3.07	28.76	37.00	-8.24	QP	
6 *		519.9710	39.05	18.9	31.43	3.62	30.14	37.00	-6.86	QP	

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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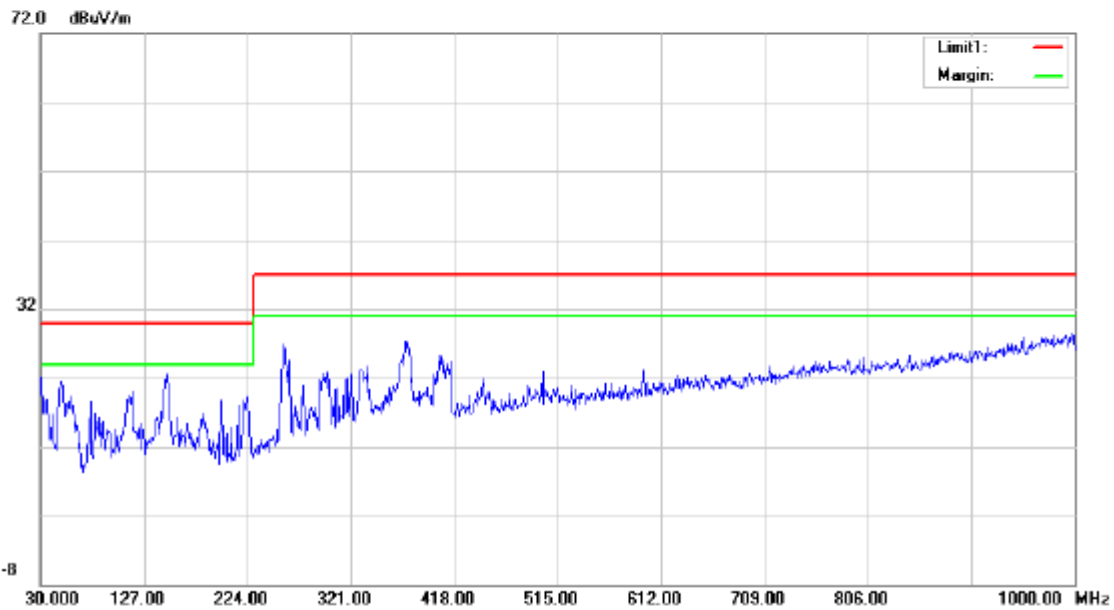
Site: 10m Chamber	Polarization: Vertical	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 110V/60Hz	Humidity: 51 %
Mode: LAN Mode		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission

File: Kang Guan

Data: #87

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector
									Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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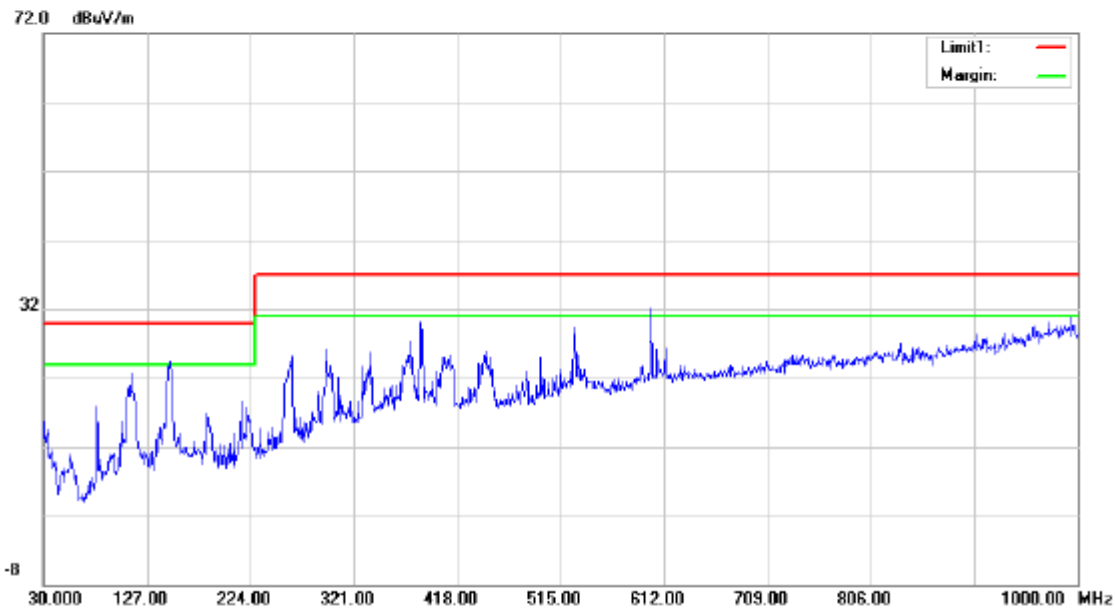
Site: 10m Chamber	Polarization: <i>Horizontal</i>	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 110V/60Hz	Humidity: 51 %
Mode: LAN Mode		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission

File :Kang Guan

Data :#68

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site: 10m Chamber Polarization: **Vertical** Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 110V/60Hz Humidity: 51 %
Mode: VGA Mode(1920*1080)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

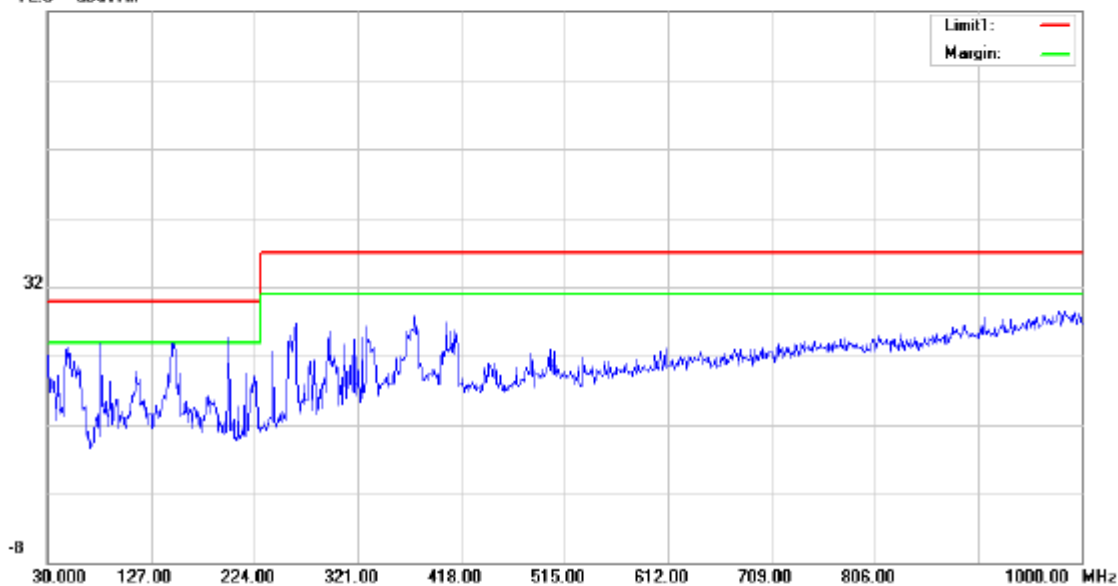
Radiated Emission

File :Kang Guan

Data :#89

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

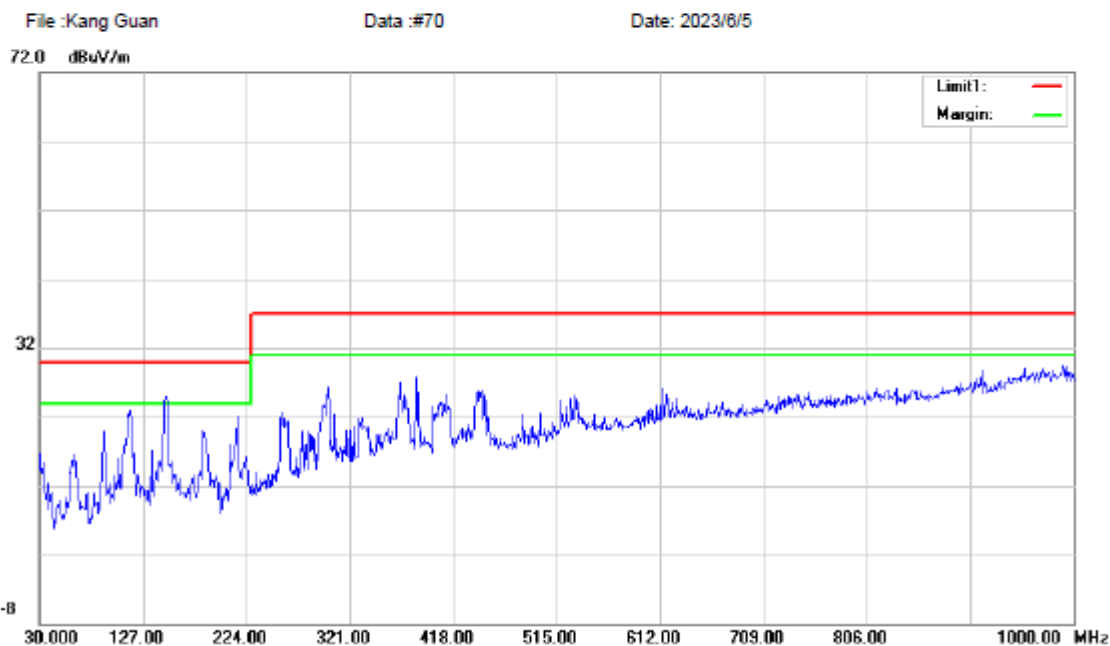




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Site: 10m Chamber	Polarization: <i>Horizontal</i>	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 110V/60Hz	Humidity: 51 %
Mode: VGA Mode(1920*1080)		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site 10m Chamber
Limit: EN 55032 B (10M)
Mode: AV IN
EUT: LCD MONITOR
Note:

Polarization: *Vertical*
Power: AC 110V/60Hz
Distance: 10m
M/N: E988

Temperature: 22.7 (C)
Humidity: 51 %

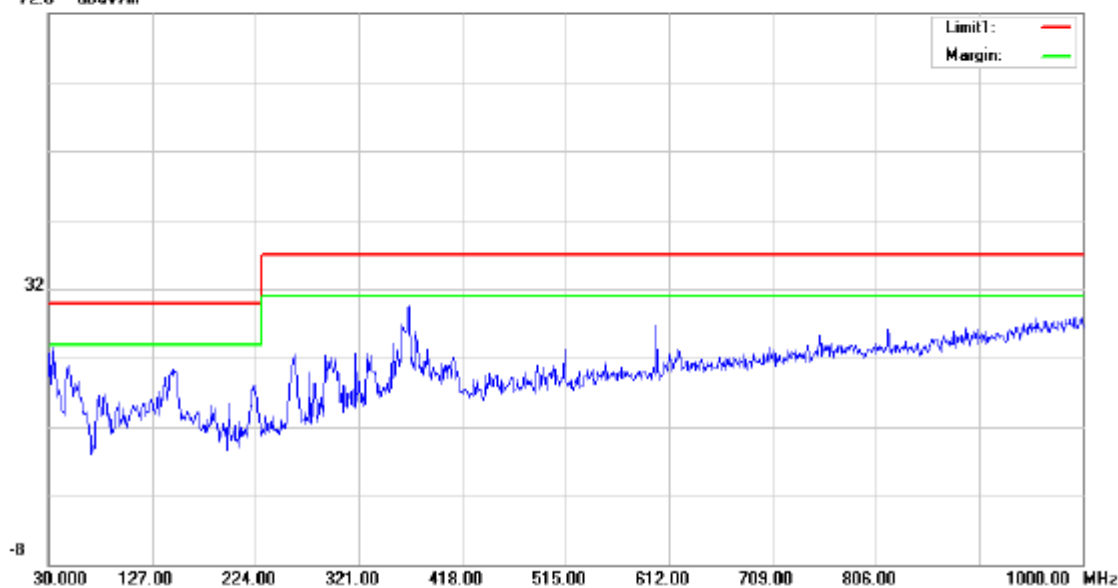
Radiated Emission

File :Kang Guan

Data :#71

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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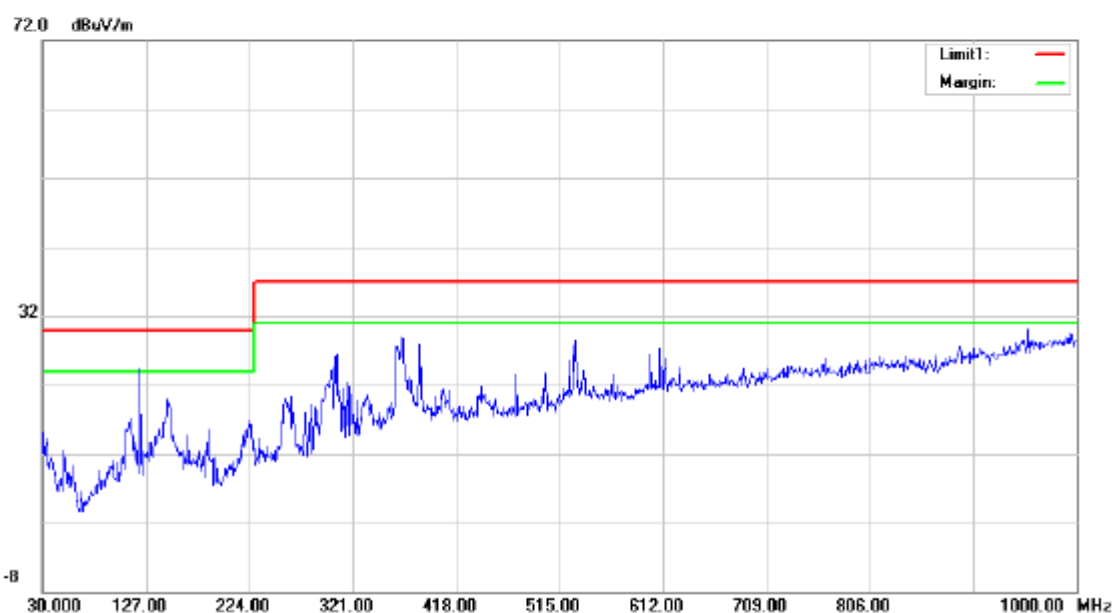
Site: 10m Chamber	Polarization: <i>Horizontal</i>	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 110V/60Hz	Humidity: 51 %
Mode: AV IN		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission

File :Kang Guan

Data :#72

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

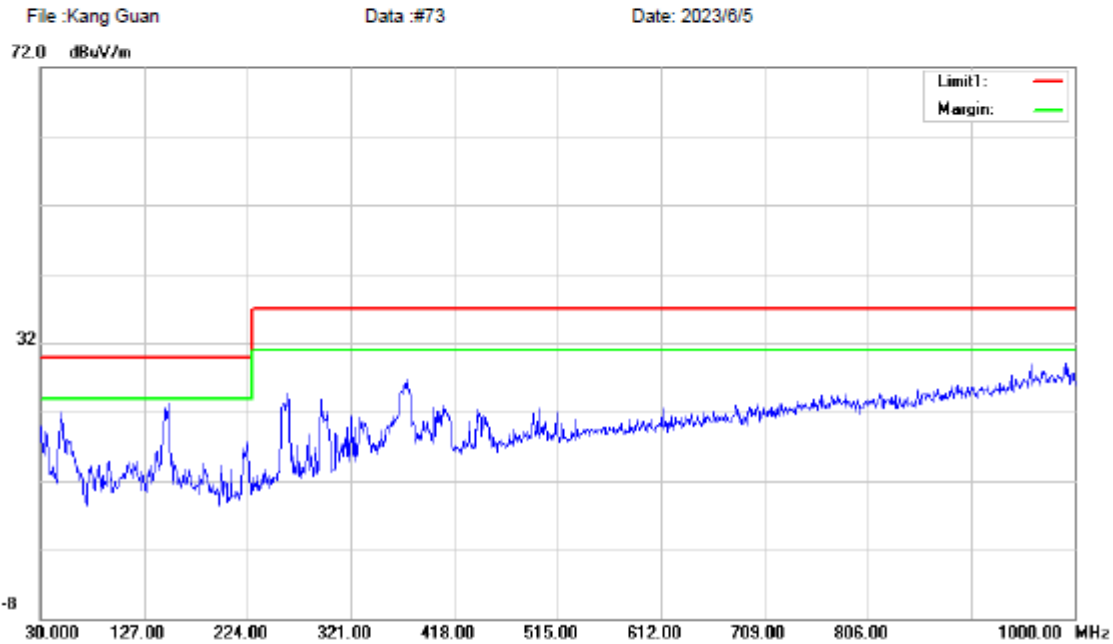




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Site: 10m Chamber	Polarization: Vertical	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 110V/60Hz	Humidity: 51 %
Mode: USB Play		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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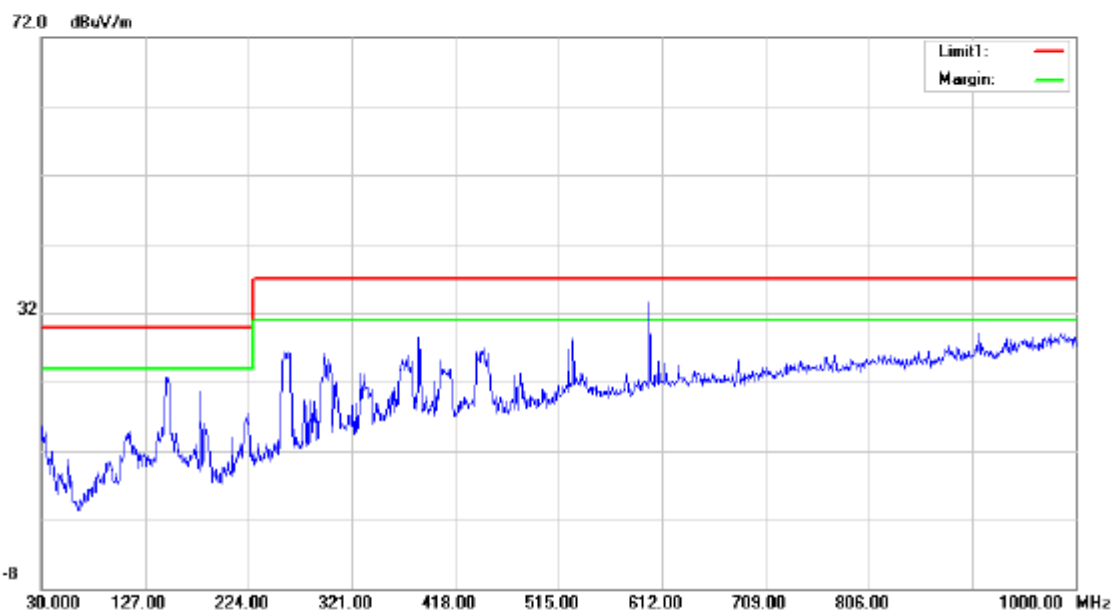
Site: 10m Chamber	Polarization: <i>Horizontal</i>	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 110V/60Hz	Humidity: 51 %
Mode: USB Play		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission

File: Kang Guan

Data: #74

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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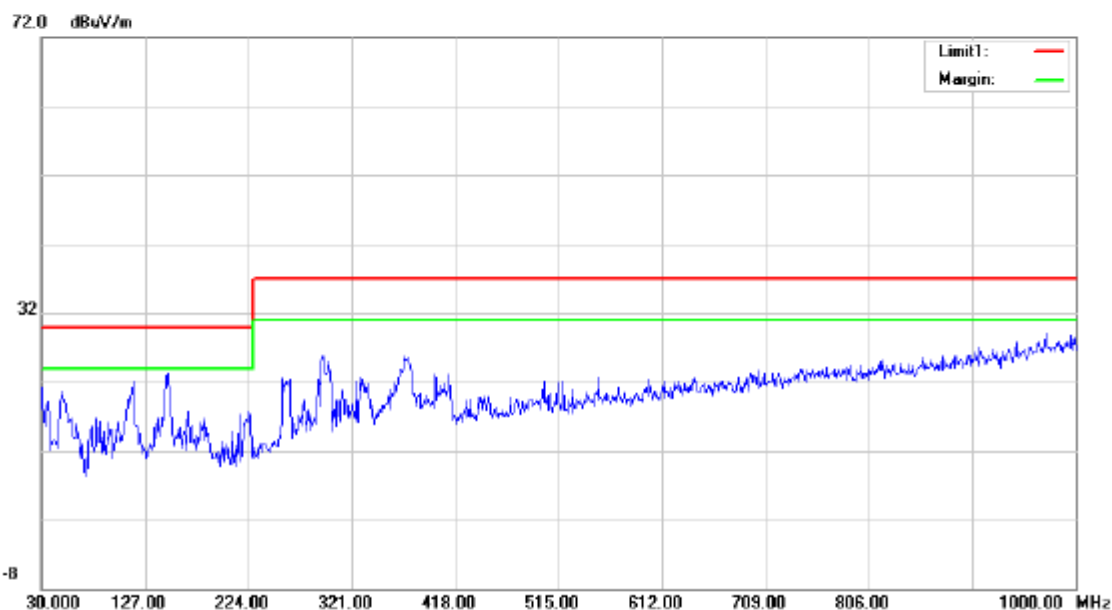
Site 10m Chamber	Polarization: Vertical	Temperature: 22.7 (C)
Limit: EN 55032 B (10M)	Power: AC 110V/60Hz	Humidity: 51 %
Mode: HDMI 3 Mode(3840*2160)		
EUT: LCD MONITOR	Distance: 10m	
Note:	M/N: E988	

Radiated Emission

File :Kang Guan

Data :#75

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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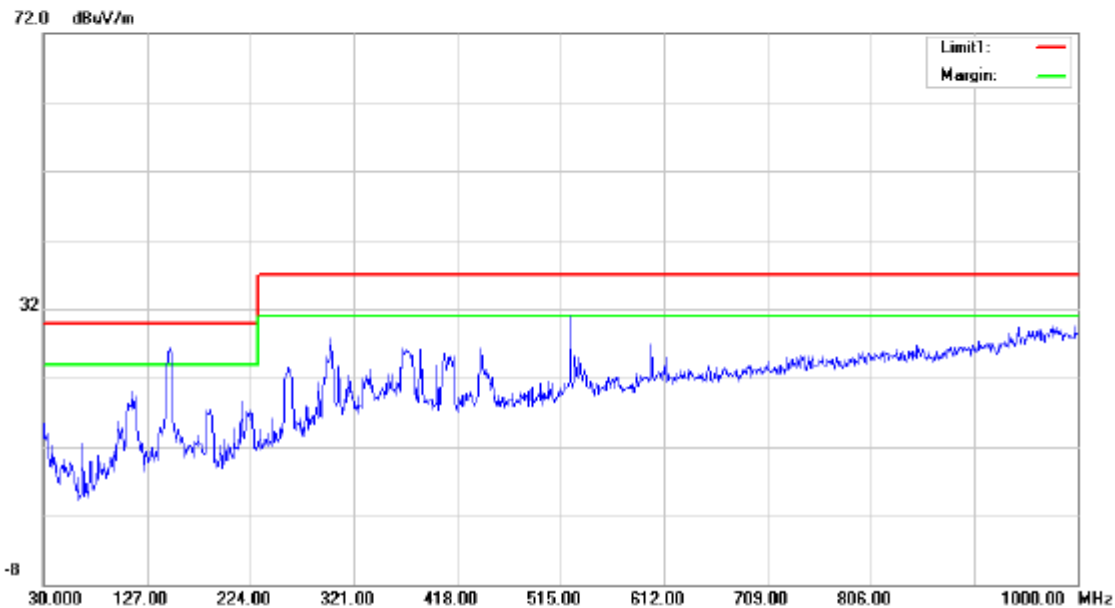
Site: 10m Chamber Polarization: *Horizontal* Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 110V/60Hz Humidity: 51 %
Mode: HDMI 3 Mode(3840*2160)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

Radiated Emission

File :Kang Guan

Data :#76

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site: 10m Chamber Polarization: **Vertical** Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 110V/60Hz Humidity: 51 %
Mode: HDMI 2 Mode(3840*2160)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

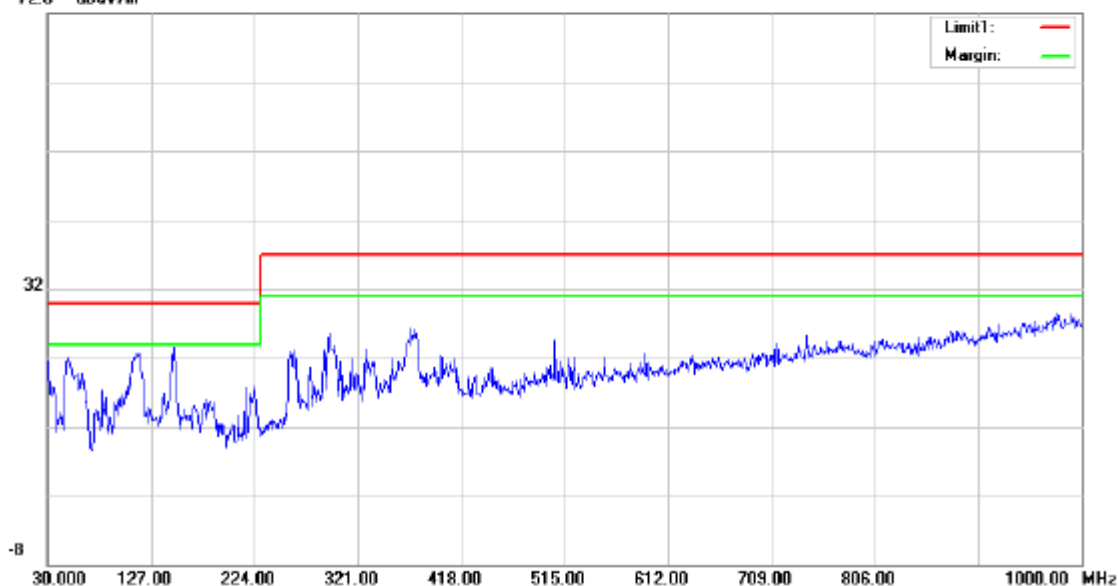
Radiated Emission

File :Kang Guan

Data :#77

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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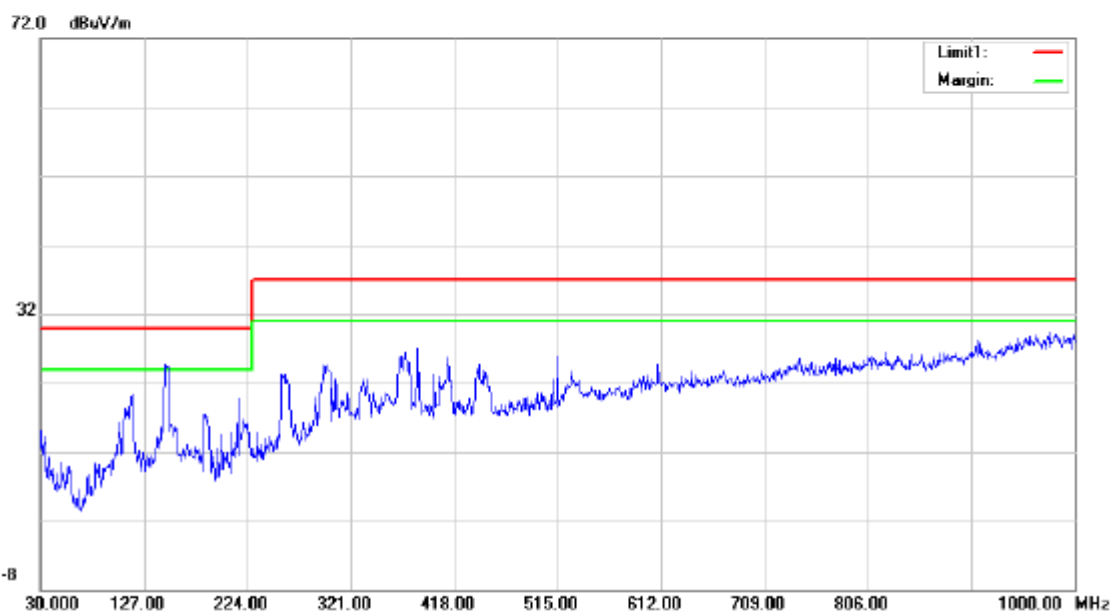
Site 10m Chamber Polarization: *Horizontal* Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 110V/60Hz Humidity: 51 %
Mode: HDMI 2 Mode(3840*2160)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

Radiated Emission

File :Kang Guan

Data :#78

Date: 2023/6/5



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site: 10m Chamber Polarization: **Vertical** Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 110V/60Hz Humidity: 51 %
Mode: HDMI 1 Mode(3840*2160)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

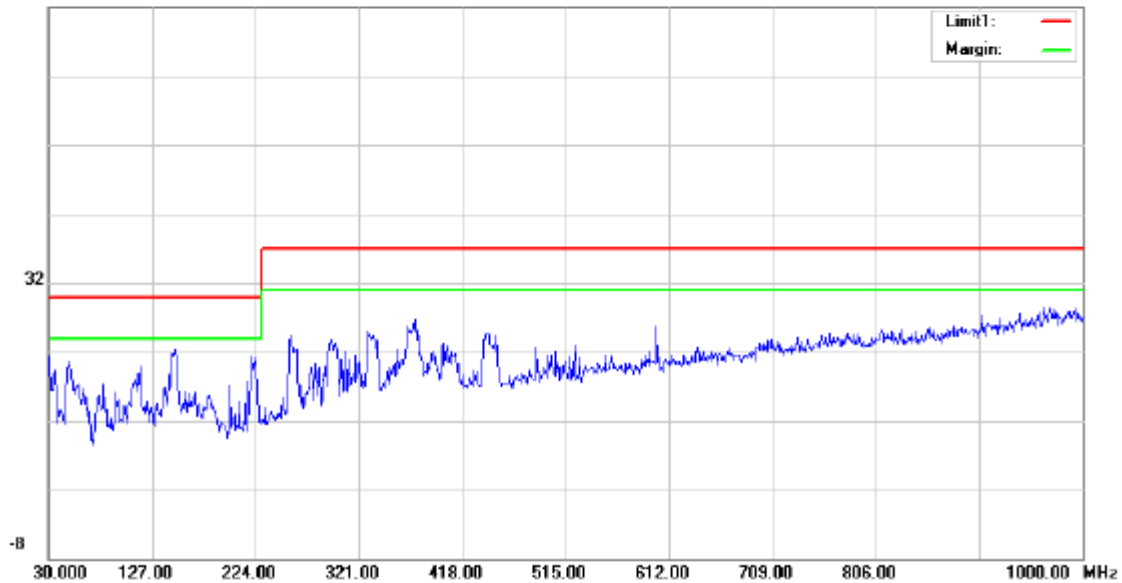
Radiated Emission

File :Kang Guan

Data :#79

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.





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Site: 10m Chamber Polarization: **Horizontal** Temperature: 22.7 (C)
Limit: EN 55032 B (10M) Power: AC 110V/60Hz Humidity: 51 %
Mode: HDMI 1 Mode(3840*2160)
EUT: LCD MONITOR Distance: 10m
Note: M/N: E988

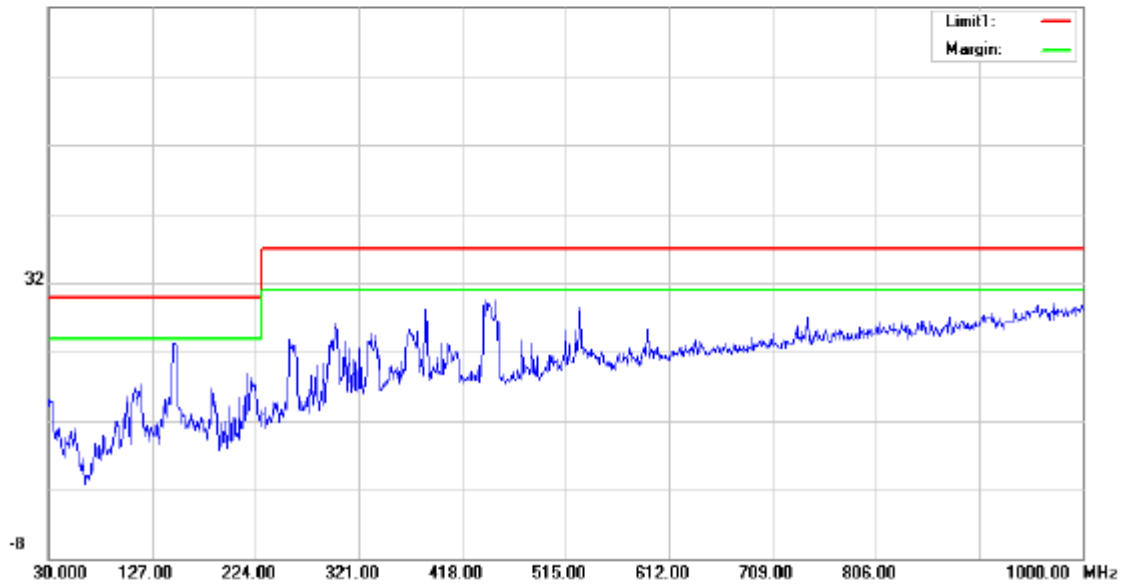
Radiated Emission

File :Kang Guan

Data :#80

Date: 2023/6/5

72.0 dBuV/m



No.	Mk.	Freq.	Reading	Ant.	PreAmp	Cable	Level	Limit	Over
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
									Detector Comment

*:Maximum data x:Over limit !:over margin

Remarks: 1. Emission Level= Antenna Factor - Preamp + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.



4.4. Radiated Emission Test (above 1GHz)

RESULT : **Pass**
Test procedure : EN 55032:2015+A11:2020
Frequency range : 1GHz-6GHz
Test Site : 966 Chamber
Limits : EN 55032:2015+A11:2020 Class B

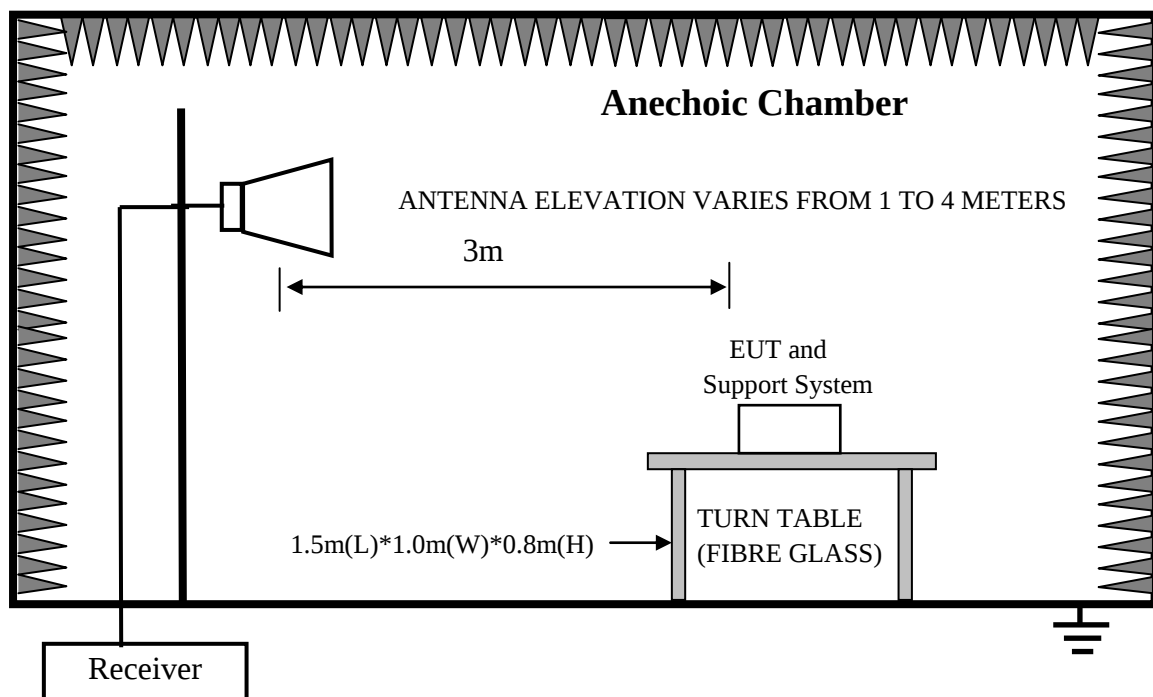
Test Setup

Date of test : Jun. 05, 2023
Model No. : E988
Input Voltage : AC 230V/50Hz, AC 110V/60Hz
Operation Mode : HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode, USB Play, AV IN, LAN Mode

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector and Average detector from the spectrum, and all the final readings from the test receiver were measured with the Peak detector and Average detector.

The bandwidth setting on the test receiver was 1MHz(above 1GHz).

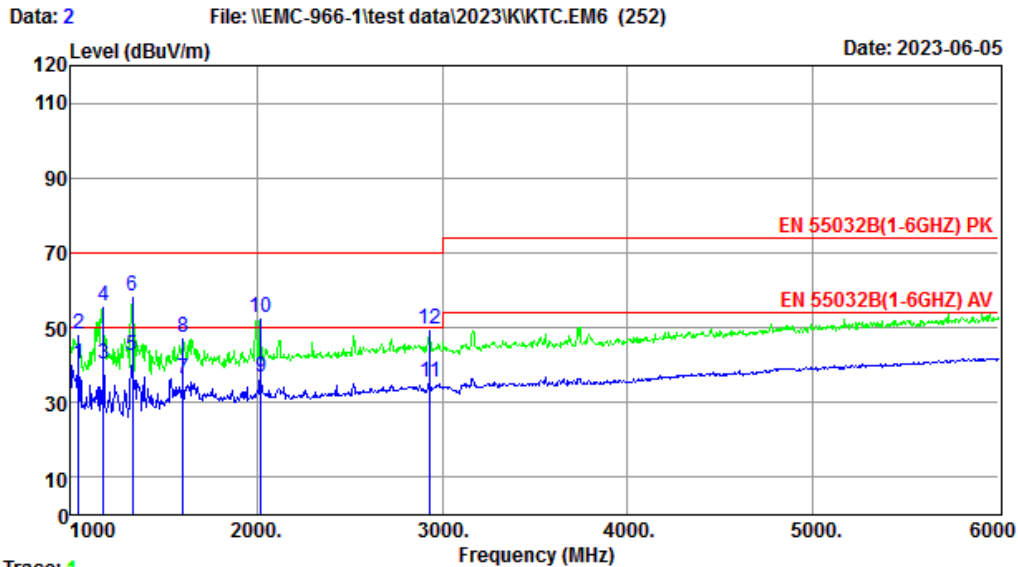


Note: Test uncertainty: $\pm 4.78\text{dB}$ at a level of confidence of 95%.

Test Data

EST Technology

Chilingxiang, Qishantou, Santun,
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Fax: +86-769-83081878



Trace: 1

Site no. : 1# 966 Chamber Data no. : 2

Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : HORIZONTAL

Limit : EN 55032B(1-6GHZ) PK

Env. / Ins. : Temp: 23.7°C; Humi: 53.4%; Press: 101.82kPa

Engineer : ZQL

EUT : LCD MONITOR

Power : AC 230V/50Hz

M/N : E988

Test Mode : HDMI1 Mode (3840*2160)

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1040.00	24.03	2.15	13.91	40.09	50.00	9.91	Average
2	1040.00	24.03	2.15	22.06	48.24	70.00	21.76	Peak
3	1175.00	24.17	2.30	13.83	40.30	50.00	9.70	Average
4	1175.00	24.17	2.30	29.13	55.60	70.00	14.40	Peak
5	1330.00	24.26	2.48	15.83	42.57	50.00	7.43	Average
6	1330.00	24.26	2.48	31.53	58.27	70.00	11.73	Peak
7	1605.00	25.12	2.82	8.18	36.12	50.00	13.88	Average
8	1605.00	25.12	2.82	19.34	47.28	70.00	22.72	Peak
9	2025.00	26.82	3.31	6.72	36.85	50.00	13.15	Average
10	2025.00	26.82	3.31	22.62	52.75	70.00	17.25	Peak
11	2935.00	28.89	3.80	2.73	35.42	50.00	14.58	Average
12	2935.00	28.89	3.80	17.02	49.71	70.00	20.29	Peak

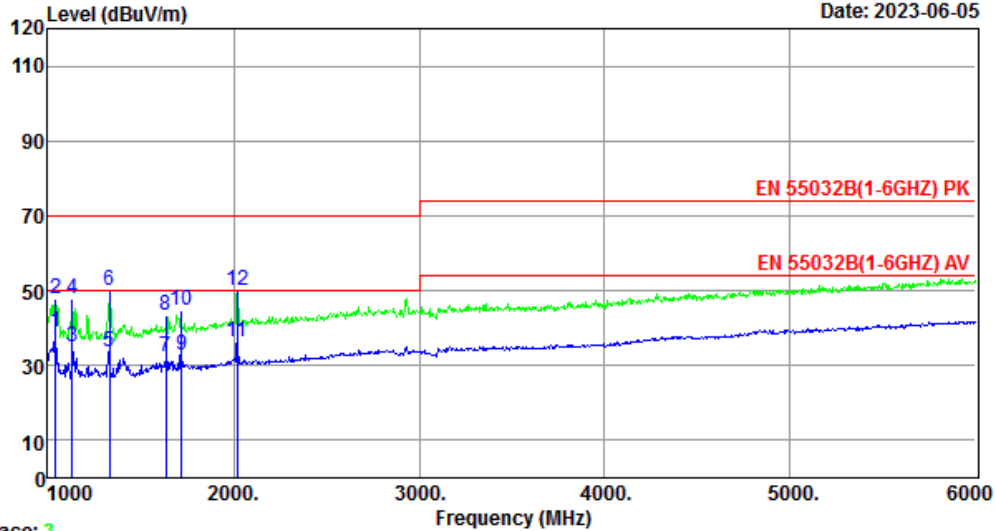
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.



Data: 4

File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

Date: 2023-06-05



Trace: 3

Site no. : 1# 966 Chamber Data no. : 4
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : VERTICAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : HDMI1 Mode (3840*2160)

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1040.00	24.03	2.15	12.68	38.86	50.00	11.14	Average
2	1040.00	24.03	2.15	21.66	47.84	70.00	22.16	Peak
3	1130.00	24.13	2.26	8.57	34.96	50.00	15.04	Average
4	1130.00	24.13	2.26	21.35	47.74	70.00	22.26	Peak
5	1330.00	24.26	2.48	7.08	33.82	50.00	16.18	Average
6	1330.00	24.26	2.48	23.31	50.05	70.00	19.95	Peak
7	1635.00	25.15	2.84	4.33	32.32	50.00	17.68	Average
8	1635.00	25.15	2.84	15.55	43.54	70.00	26.46	Peak
9	1720.00	25.27	2.94	4.68	32.89	50.00	17.11	Average
10	1720.00	25.27	2.94	16.33	44.54	70.00	25.46	Peak
11	2020.00	26.82	3.31	6.02	36.15	50.00	13.85	Average
12	2020.00	26.82	3.31	20.03	50.16	70.00	19.84	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

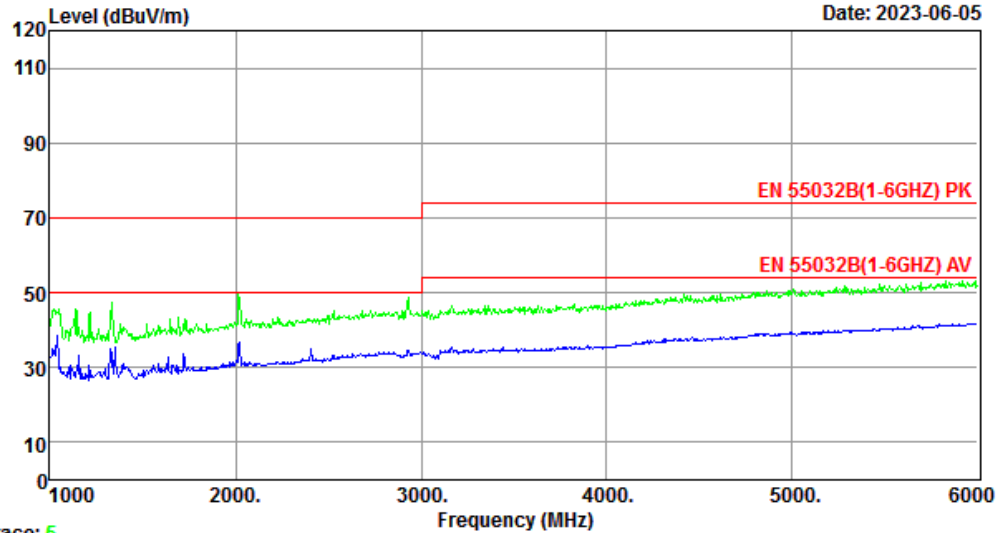
2. Margin= Limit - Emission Level.

3. The emission levels that are 20dB below the official limit are not reported.

Data: 6

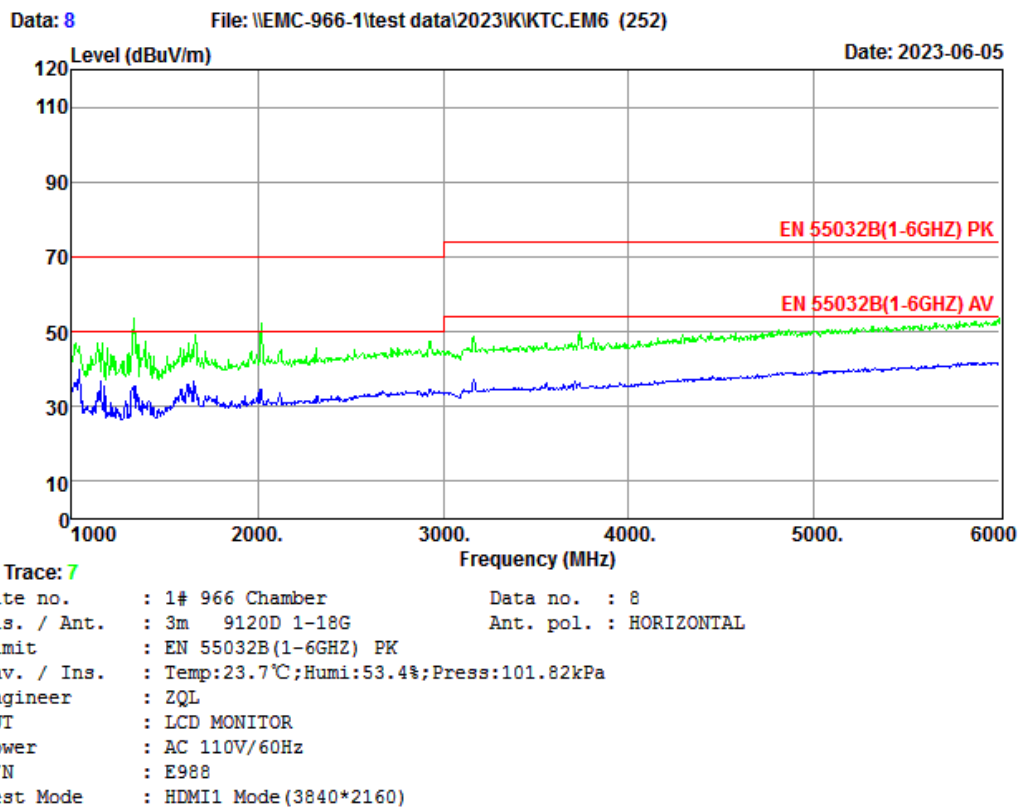
File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

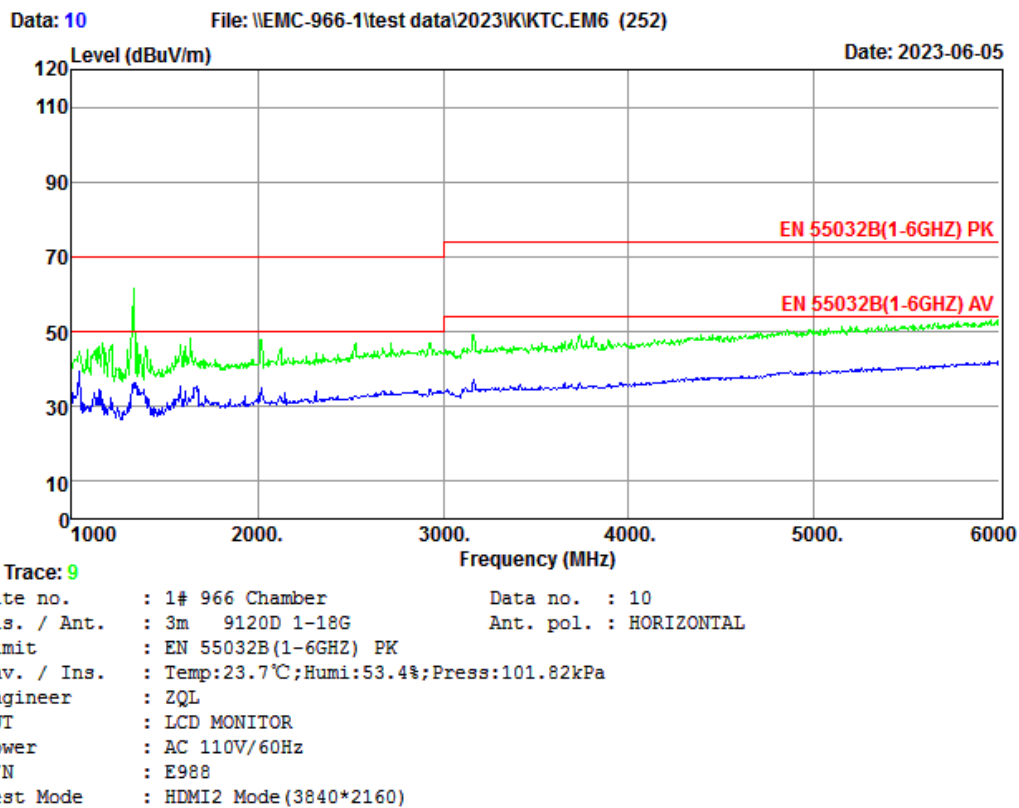
Date: 2023-06-05



Trace: 5

Site no. : 1# 966 Chamber Data no. : 6
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : VERTICAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : HDMI1 Mode (3840*2160)

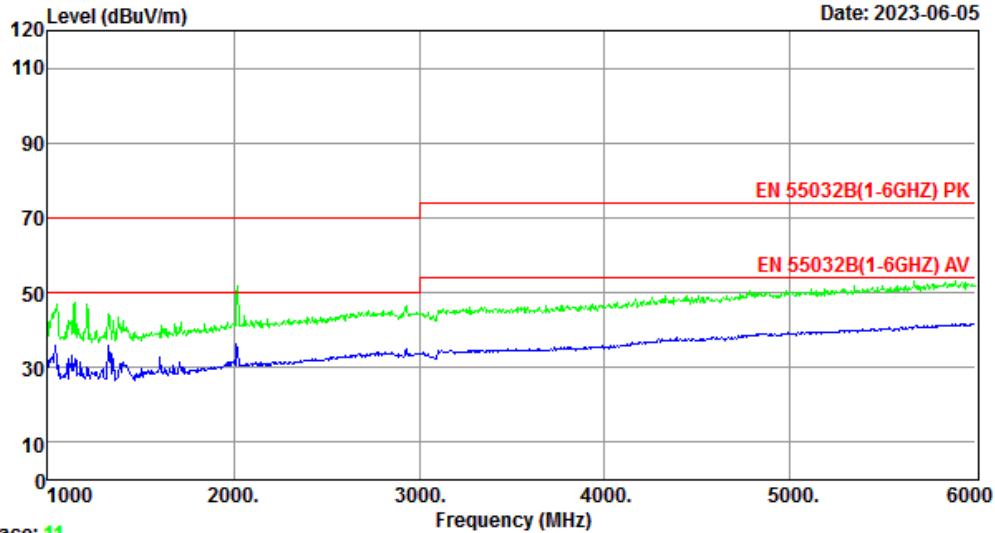




Data: 12

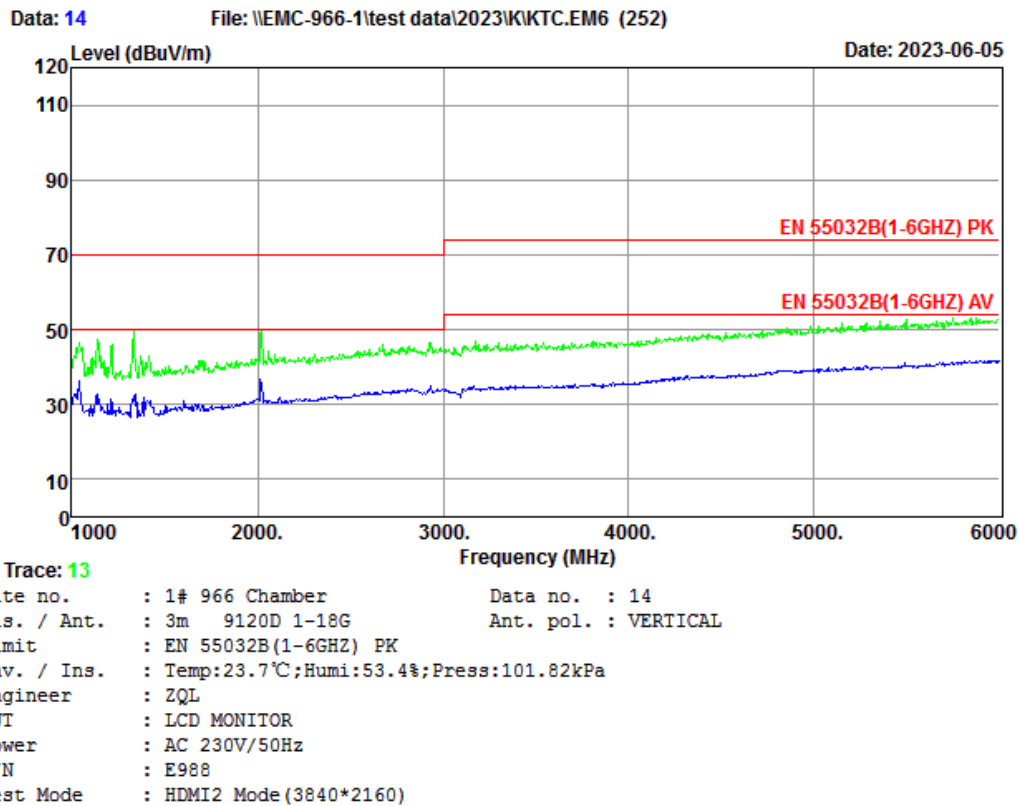
File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

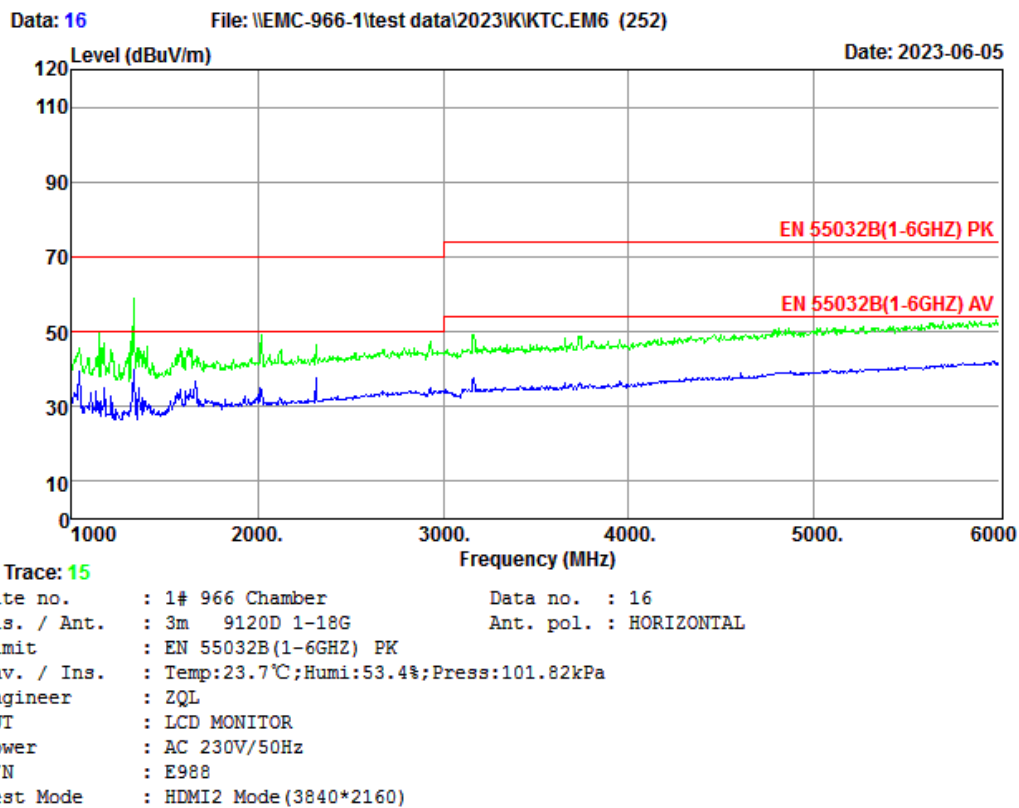
Date: 2023-06-05

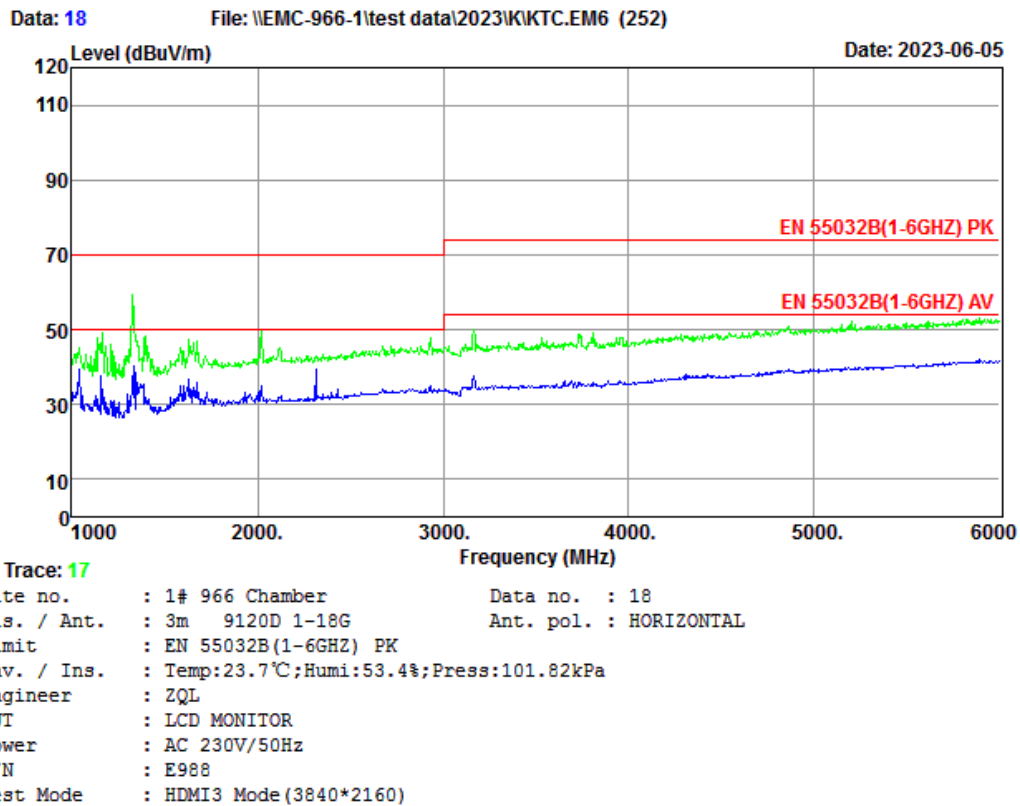


Trace: 11

Site no. : 1# 966 Chamber Data no. : 12
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : VERTICAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : HDMI2 Mode (3840*2160)



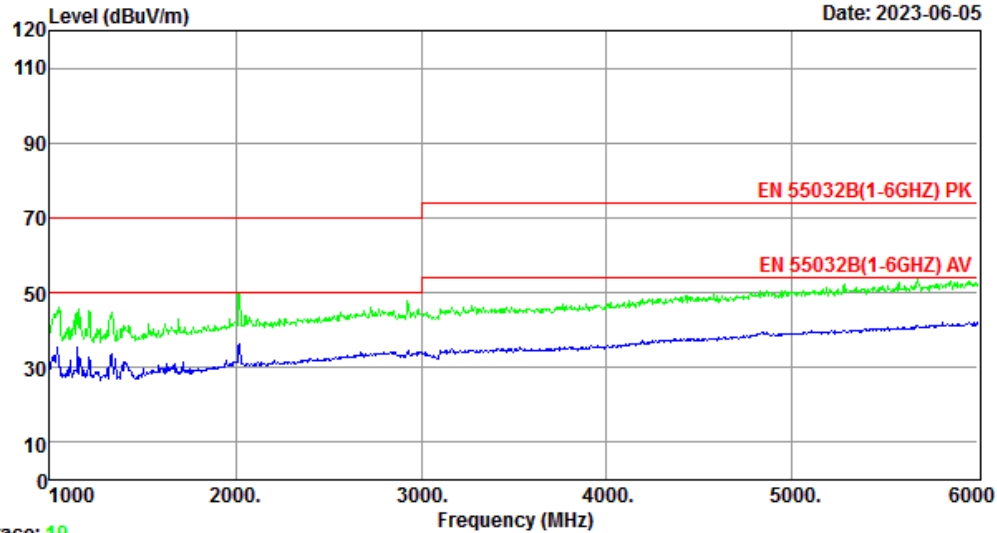




Data: 20

File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

Date: 2023-06-05



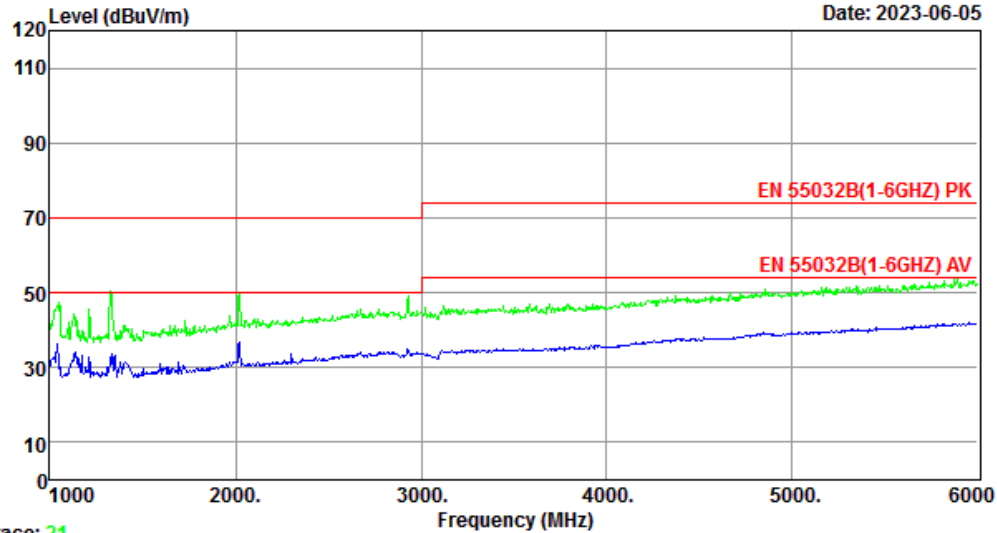
Trace: 19

Site no. : 1# 966 Chamber Data no. : 20
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : VERTICAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : HDMI3 Mode (3840*2160)

Data: 22

File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

Date: 2023-06-05



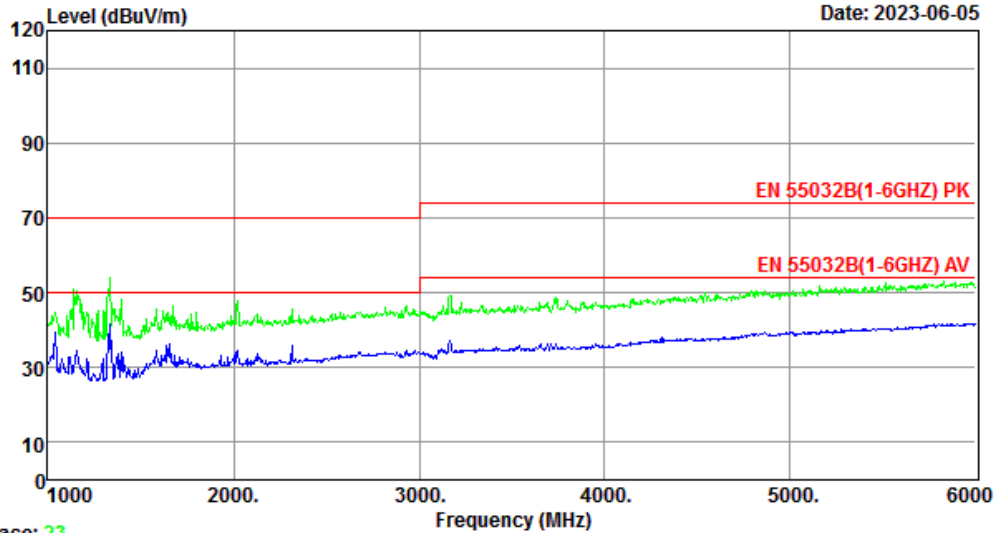
Trace: 21

Site no. : 1# 966 Chamber Data no. : 22
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : VERTICAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : HDMI3 Mode (3840*2160)

Data: 24

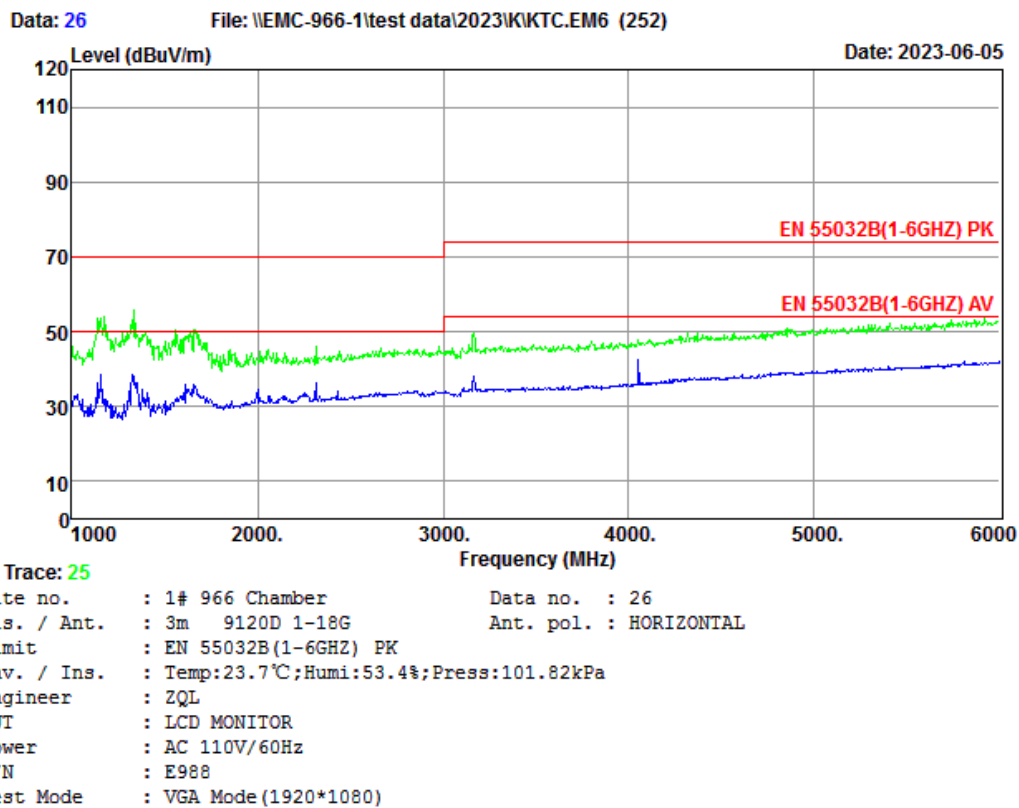
File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

Date: 2023-06-05



Trace: 23

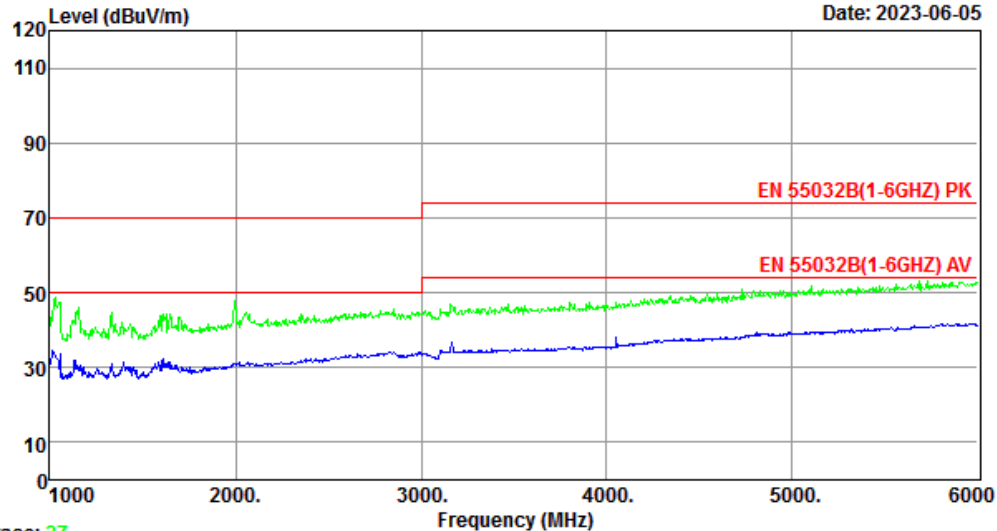
Site no. : 1# 966 Chamber Data no. : 24
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : HORIZONTAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : HDMI3 Mode (3840*2160)



Data: 28

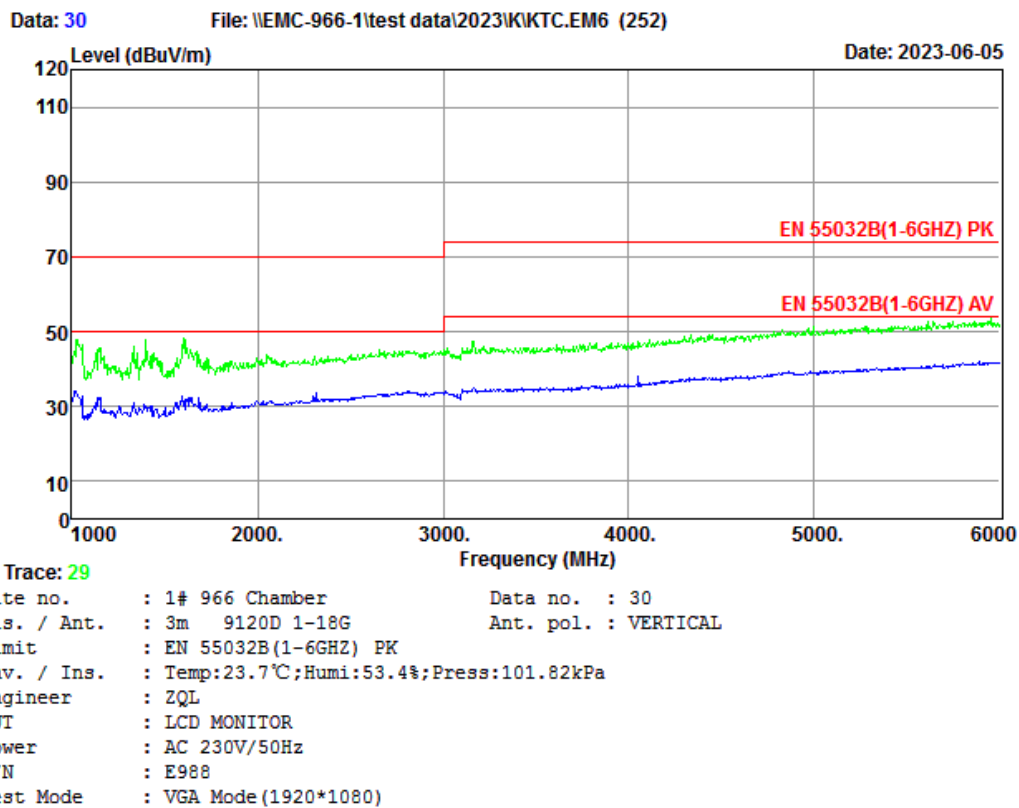
File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

Date: 2023-06-05



Trace: 27

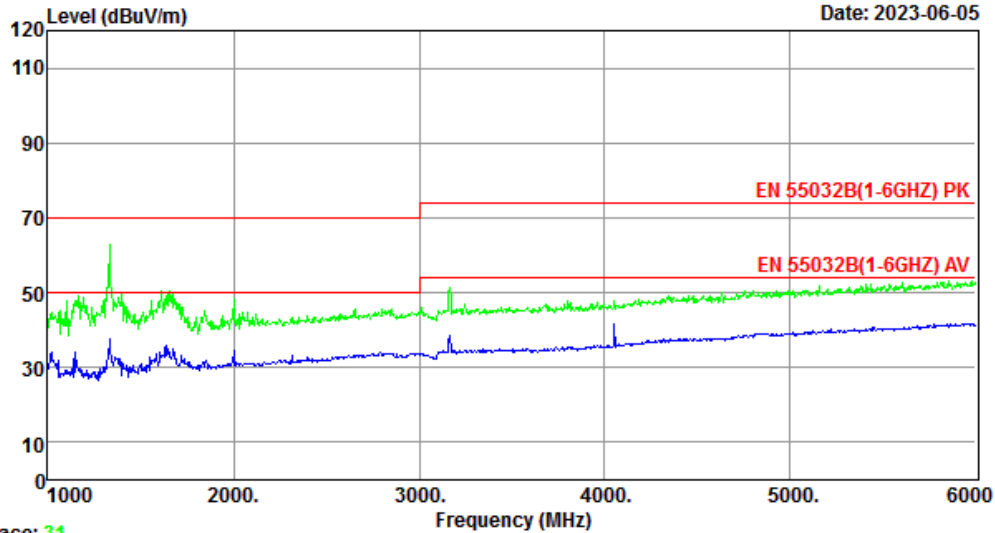
Site no. : 1# 966 Chamber Data no. : 28
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : VERTICAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : VGA Mode (1920*1080)



Data: 32

File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

Date: 2023-06-05



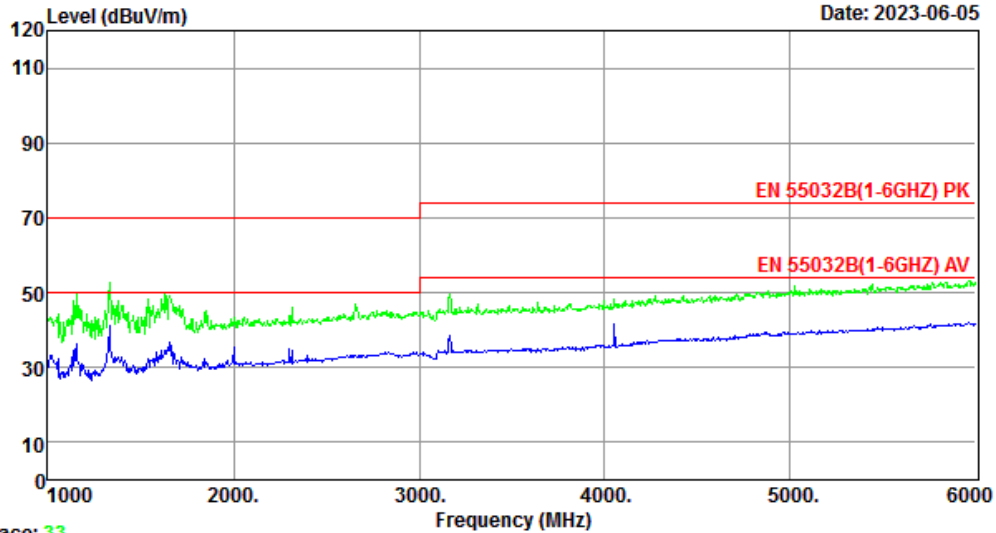
Trace: 31

Site no. : 1# 966 Chamber Data no. : 32
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : HORIZONTAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : VGA Mode (1920*1080)

Data: 34

File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

Date: 2023-06-05



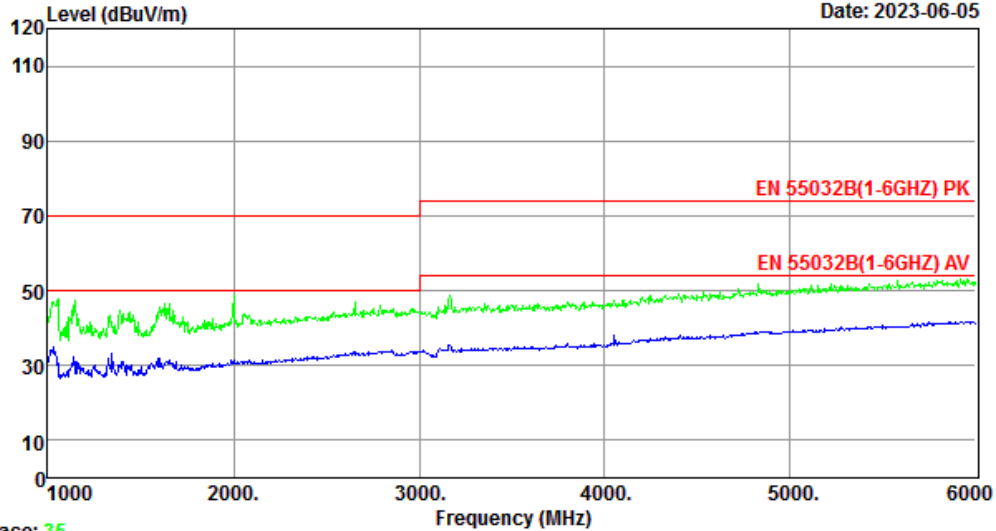
Trace: 33

Site no. : 1# 966 Chamber Data no. : 34
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : HORIZONTAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : LAN Mode

Data: 36

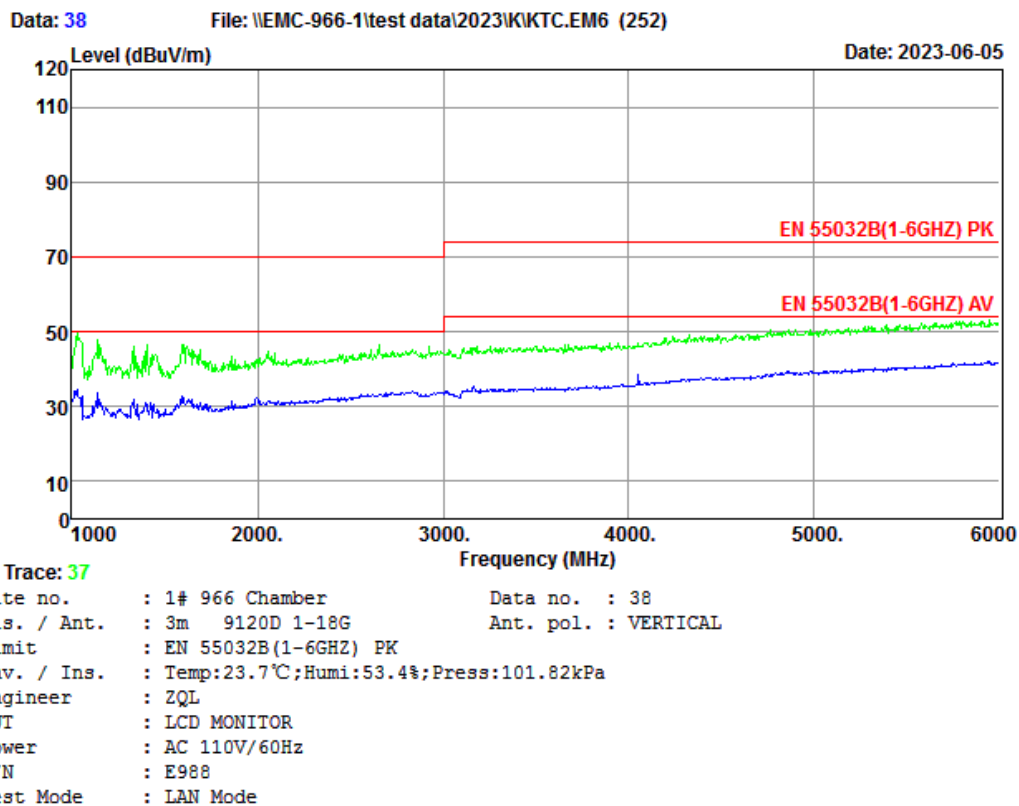
File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

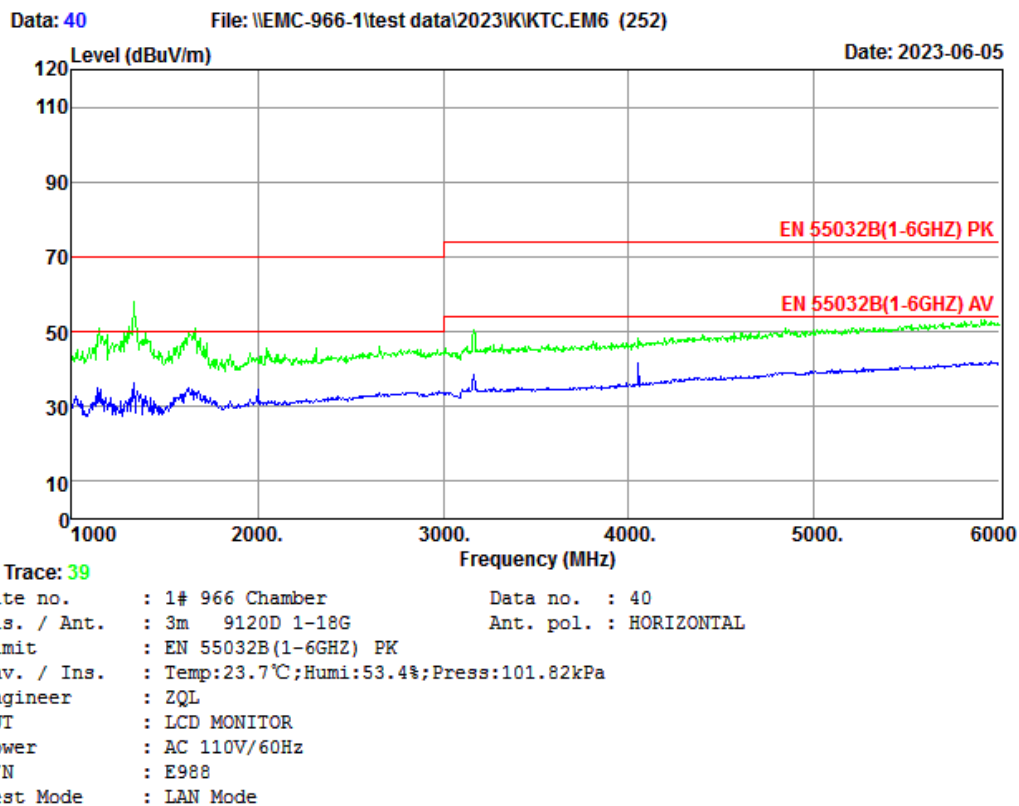
Date: 2023-06-05

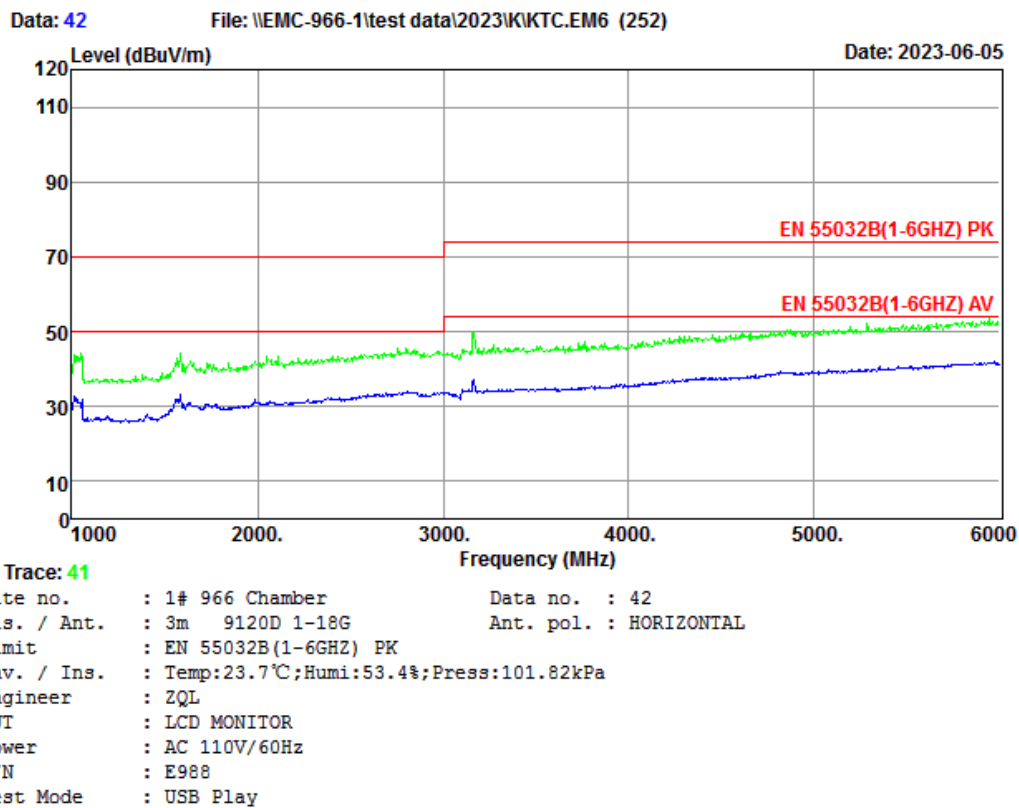


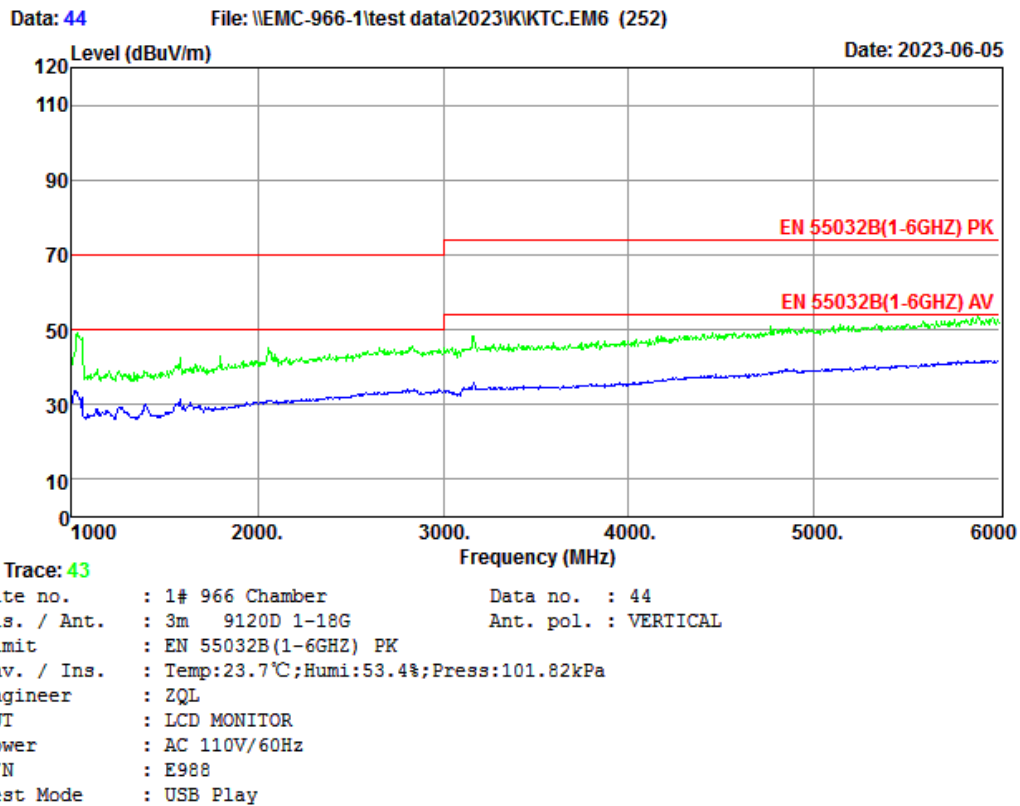
Trace: 35

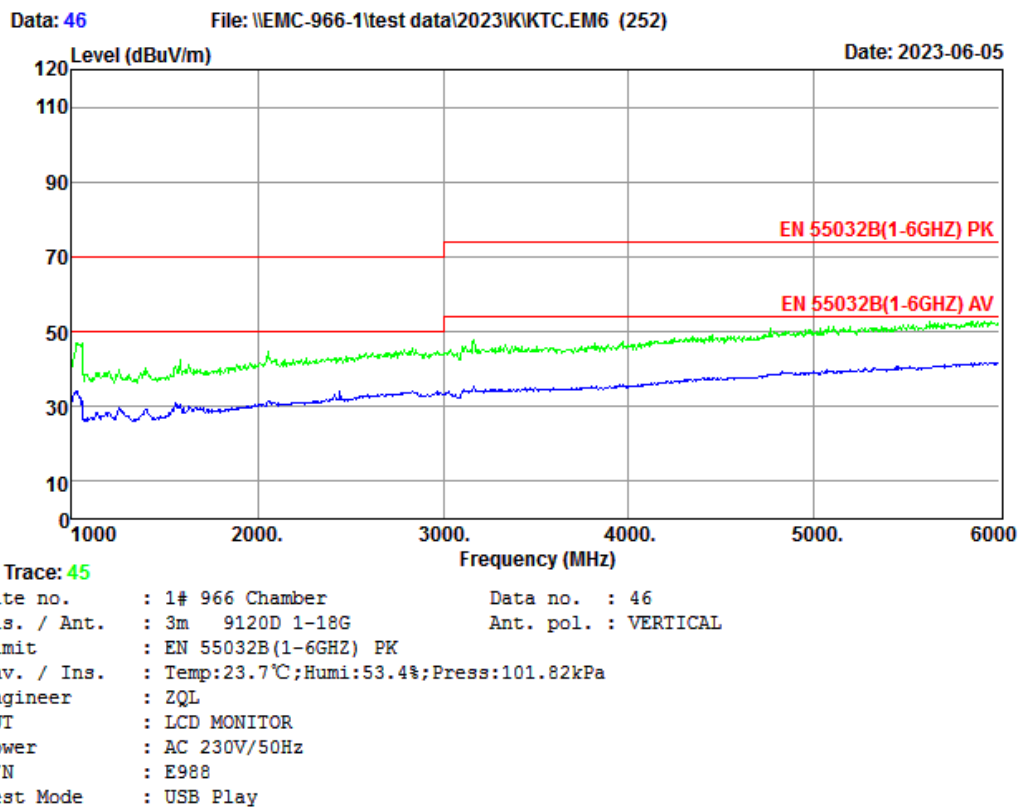
Site no. : 1# 966 Chamber Data no. : 36
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : VERTICAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : LAN Mode







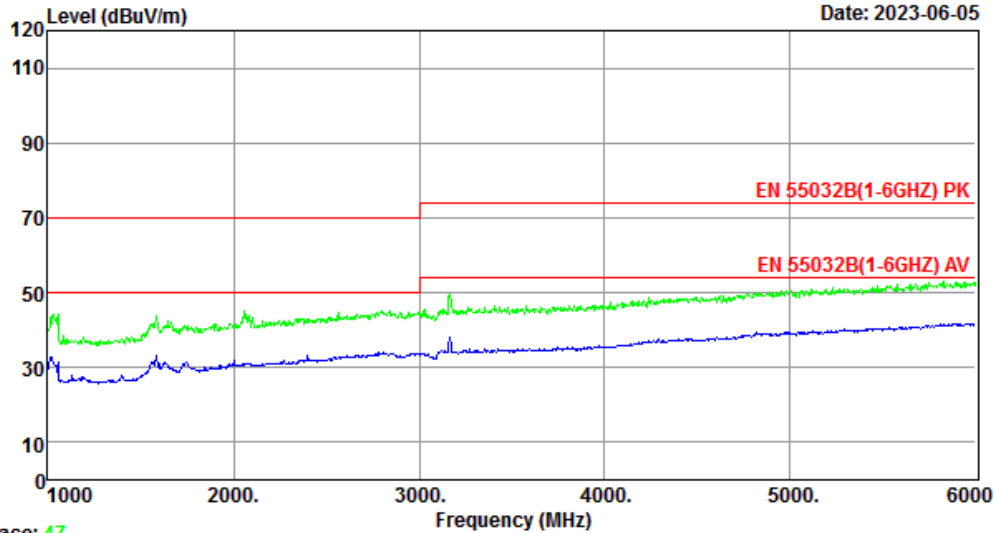




Data: 48

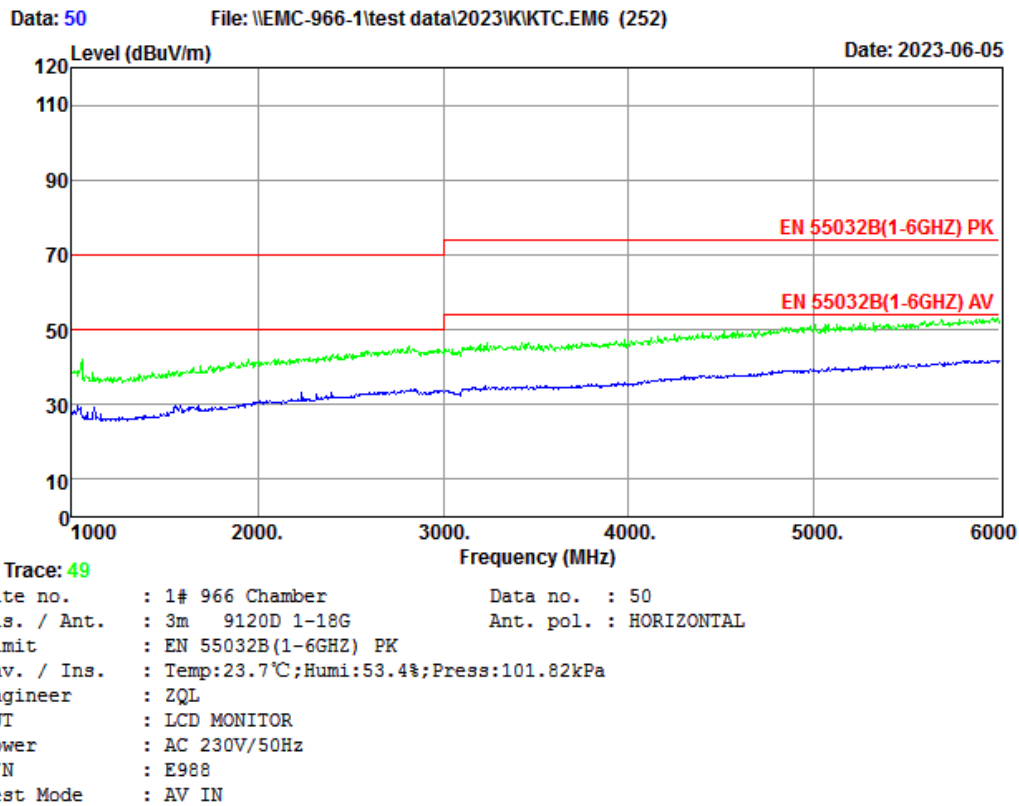
File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

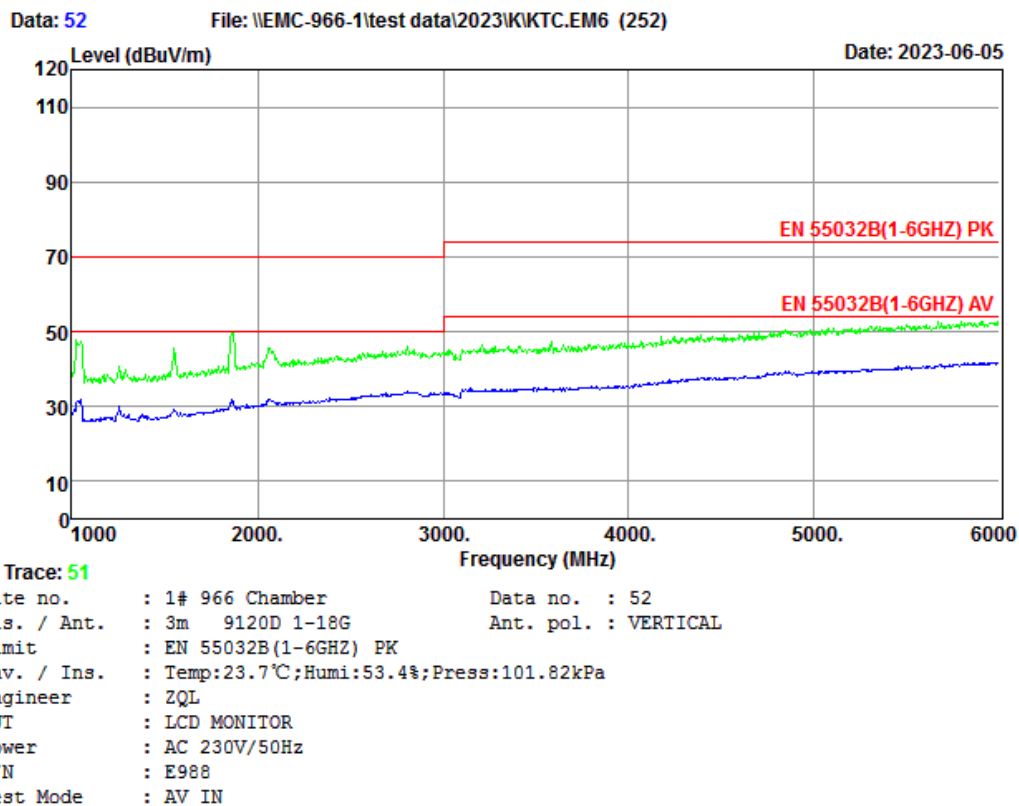
Date: 2023-06-05



Trace: 47

Site no. : 1# 966 Chamber Data no. : 48
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : HORIZONTAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 230V/50Hz
M/N : E988
Test Mode : USB Play

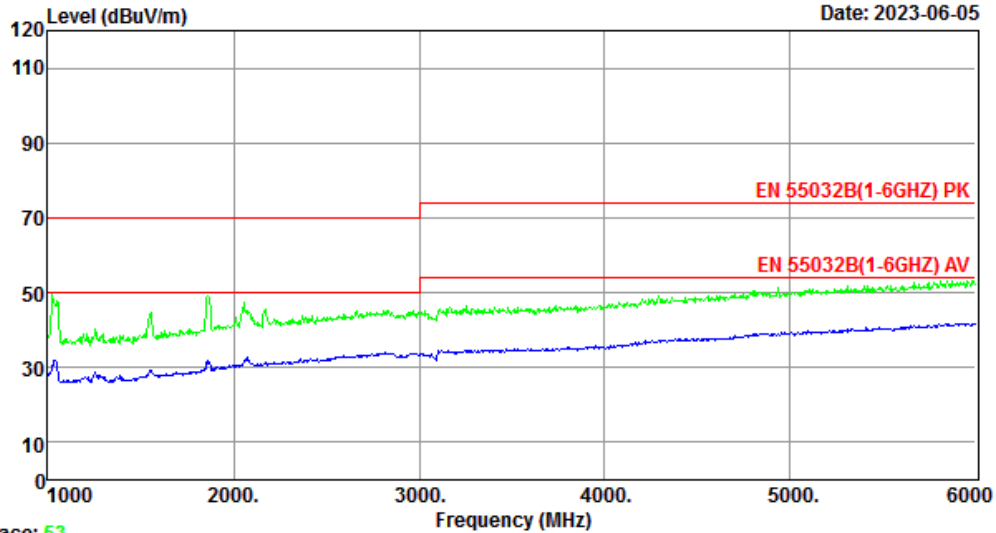




Data: 54

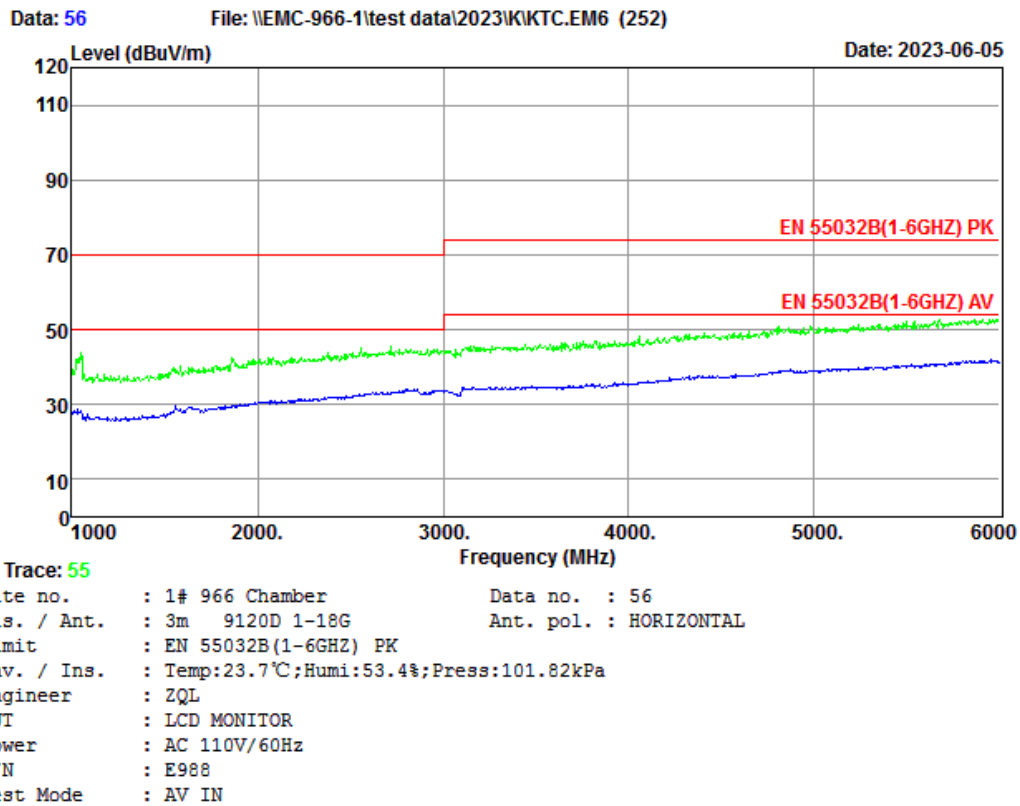
File: \\EMC-966-1\test data\2023\KIKTC.EM6 (252)

Date: 2023-06-05



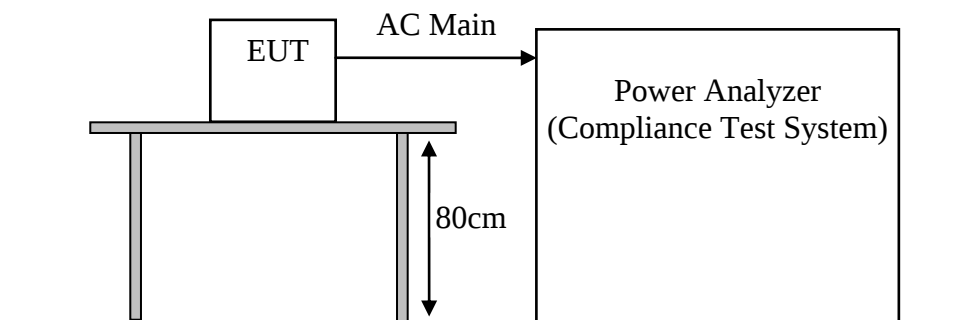
Trace: 53

Site no. : 1# 966 Chamber Data no. : 54
Dis. / Ant. : 3m 9120D 1-18G Ant. pol. : VERTICAL
Limit : EN 55032B(1-6GHZ) PK
Env. / Ins. : Temp:23.7°C;Humi:53.4%;Press:101.82kPa
Engineer : ZQL
EUT : LCD MONITOR
Power : AC 110V/60Hz
M/N : E988
Test Mode : AV IN



4.5. Harmonic Current Emissions on AC Mains Test

RESULT : **Pass**
Test procedure : EN61000-3-2:2014; EN IEC 61000-3-2:2019+A1:2021
Measured harmonics : 1~40th
Limits : EN61000-3-2:2014; EN IEC 61000-3-2:2019+A1:2021



Test Data

EUT: LCD MONITOR M/N: E988

Test category: Class-A (European limits)

Test date: 2023/6/06

Start time: 13:24:35

Tested by: TANK

Test Margin: 100

End time: 13:27:16

Test duration (min): 2.5

Data file name: H-000584.cts_data

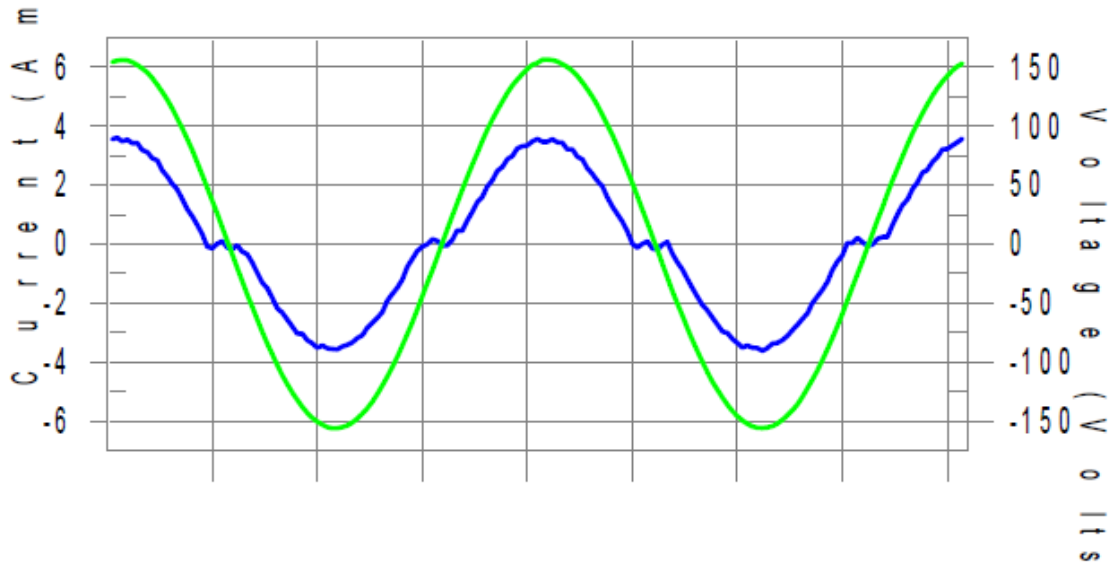
Comment: USB Play WORST CASE OPERATING MODE

Customer: Sharp NEC Display Solutions,Ltd.

Test Result: Pass

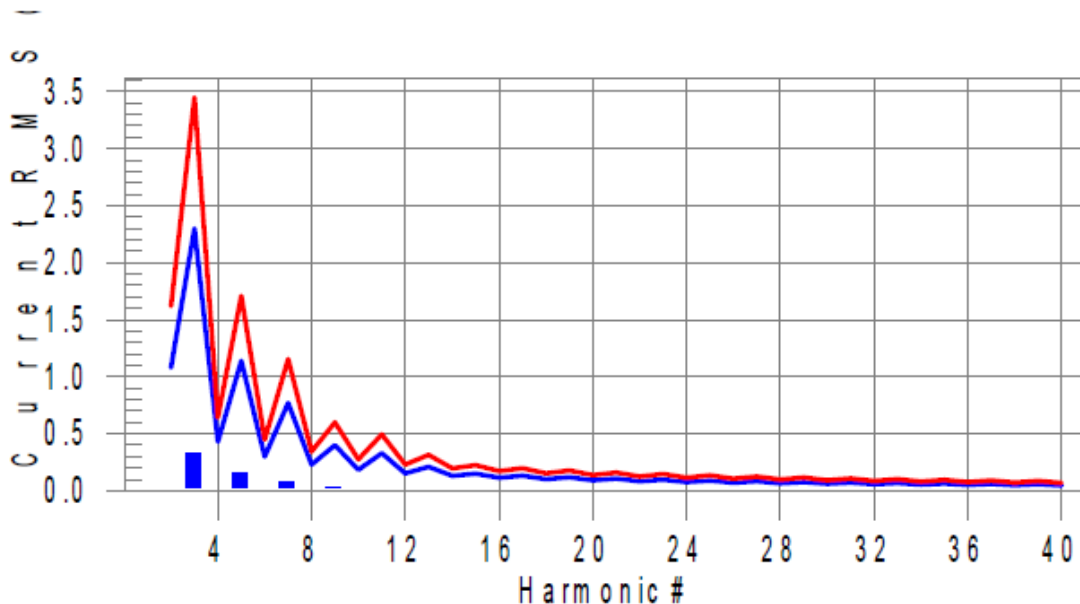
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonics H3-9.8% of 150% limit, H3-14.7% of 100% limit

EUT: LCD MONITOR M/N: E988
 Test category: Class-A (European limits)
 Test date: 2023/6/06 Start time: 13:24:35
 Test duration (min): 2.5 Data file name: H-000584.cts_data
 Comment: USB Play WORST CASE OPERATING MODE
 Customer: Sharp NEC Display Solutions,Ltd.

Tested by: TANK
 Test Margin: 100
 End time: 13:27:16

Test Result: Pass Source qualification: Normal
 THCA: 0.381 I-THD(%): 16.6 POHC(A): 0.016 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 110.33	Frequency(Hz): 60.00
I_Peak (Amps): 3.774	I_RMS (Amps): 2.327
I_Fund (Amps): 2.295	Crest Factor: 1.625
Power (Watts): 252.4	Power Factor: 0.984

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.001	1.620	N/A	Pass
3	0.337	2.300	14.7	0.338	3.450	9.8	Pass
4	0.000	0.430	N/A	0.001	0.645	N/A	Pass
5	0.153	1.140	13.4	0.153	1.710	9.0	Pass
6	0.000	0.300	N/A	0.000	0.450	N/A	Pass
7	0.077	0.770	10.0	0.077	1.155	6.7	Pass
8	0.000	0.230	N/A	0.001	0.345	N/A	Pass
9	0.034	0.400	8.6	0.034	0.600	5.7	Pass
10	0.000	0.184	N/A	0.000	0.276	N/A	Pass
11	0.011	0.330	N/A	0.011	0.495	N/A	Pass
12	0.000	0.153	N/A	0.000	0.230	N/A	Pass
13	0.006	0.210	N/A	0.006	0.315	N/A	Pass
14	0.000	0.131	N/A	0.001	0.197	N/A	Pass
15	0.008	0.150	N/A	0.008	0.225	N/A	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.008	0.132	N/A	0.008	0.198	N/A	Pass
18	0.000	0.102	N/A	0.001	0.153	N/A	Pass
19	0.006	0.118	N/A	0.006	0.178	N/A	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.005	0.107	N/A	0.006	0.161	N/A	Pass
22	0.001	0.084	N/A	0.001	0.125	N/A	Pass
23	0.006	0.098	N/A	0.007	0.147	N/A	Pass
24	0.008	0.077	N/A	0.008	0.115	N/A	Pass
25	0.009	0.090	N/A	0.013	0.135	N/A	Pass
26	0.007	0.071	N/A	0.007	0.107	N/A	Pass
27	0.004	0.083	N/A	0.005	0.125	N/A	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.001	0.078	N/A	0.002	0.116	N/A	Pass
30	0.000	0.061	N/A	0.001	0.092	N/A	Pass
31	0.002	0.073	N/A	0.002	0.109	N/A	Pass
32	0.000	0.058	N/A	0.001	0.086	N/A	Pass
33	0.004	0.068	N/A	0.004	0.102	N/A	Pass
34	0.000	0.054	N/A	0.001	0.081	N/A	Pass
35	0.005	0.064	N/A	0.005	0.096	N/A	Pass
36	0.000	0.051	N/A	0.001	0.077	N/A	Pass
37	0.005	0.061	N/A	0.005	0.091	N/A	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.004	0.058	N/A	0.005	0.087	N/A	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

EUT: LCD MONITOR M/N: E988

Tested by: TANK

Test category: Class-A (European limits)

Test Margin: 100

Test date: 2023/6/06

Start time: 13:24:35

End time: 13:27:16

Test duration (min): 2.5

Data file name: H-000584.cts_data

Comment: USB Play WORST CASE OPERATING MODE

Customer: Sharp NEC Display Solutions,Ltd.

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 110.33

Frequency(Hz): 60.00

I_Peak (Amps): 3.774

I_RMS (Amps): 2.327

I_Fund (Amps): 2.295

Crest Factor: 1.625

Power (Watts): 252.4

Power Factor: 0.984

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.020	0.221	9.04	OK
3	0.090	0.993	9.02	OK
4	0.009	0.221	4.20	OK
5	0.036	0.441	8.16	OK
6	0.005	0.221	2.28	OK
7	0.020	0.331	6.10	OK
8	0.004	0.221	1.67	OK
9	0.014	0.221	6.31	OK
10	0.007	0.221	3.28	OK
11	0.008	0.110	6.86	OK
12	0.004	0.110	3.59	OK
13	0.004	0.110	4.06	OK
14	0.004	0.110	3.75	OK
15	0.010	0.110	9.30	OK
16	0.003	0.110	2.82	OK
17	0.006	0.110	5.35	OK
18	0.004	0.110	3.56	OK
19	0.005	0.110	4.85	OK
20	0.003	0.110	2.66	OK
21	0.008	0.110	6.81	OK
22	0.003	0.110	2.50	OK
23	0.007	0.110	6.18	OK
24	0.004	0.110	3.48	OK
25	0.005	0.110	4.98	OK
26	0.002	0.110	2.25	OK
27	0.005	0.110	4.43	OK
28	0.004	0.110	3.22	OK
29	0.003	0.110	2.94	OK
30	0.003	0.110	3.10	OK
31	0.004	0.110	3.56	OK
32	0.003	0.110	2.56	OK
33	0.006	0.110	5.82	OK
34	0.002	0.110	2.20	OK
35	0.009	0.110	8.20	OK
36	0.003	0.110	2.73	OK
37	0.008	0.110	7.30	OK
38	0.002	0.110	2.17	OK
39	0.008	0.110	7.33	OK
40	0.002	0.110	2.19	OK

EUT: LCD MONITOR M/N: E988

Test category: Class-A (European limits)

Test date: 2023/6/06

Start time: 10:58:17

Tested by: TANK

Test Margin: 100

End time: 11:00:58

Test duration (min): 2.5

Data file name: H-000574.cts_data

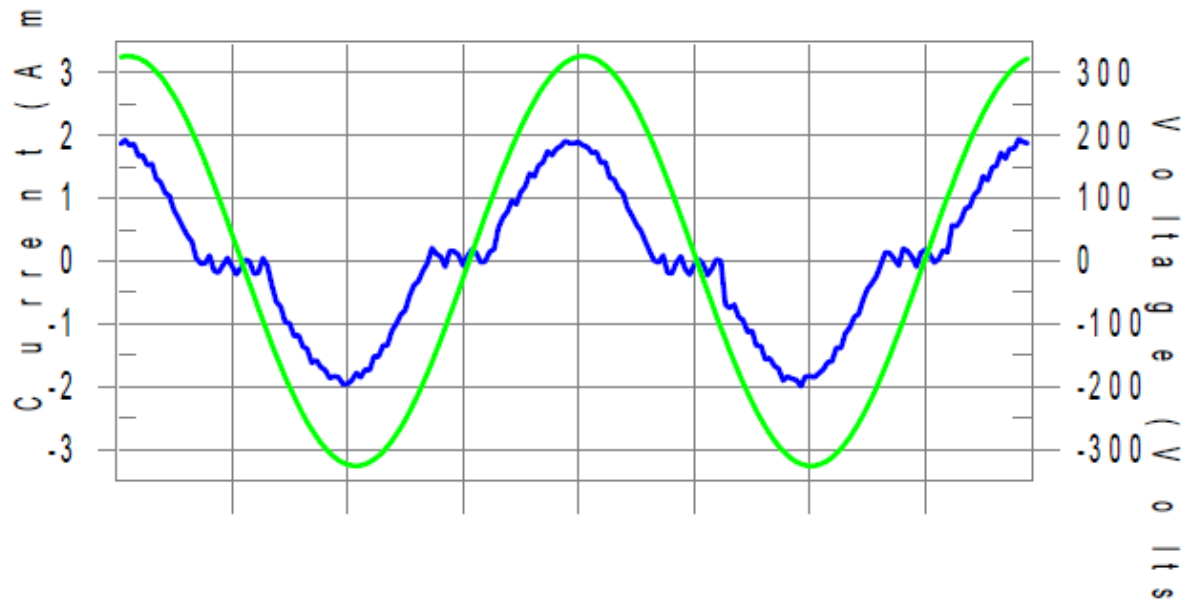
Comment: USB Play WORST CASE OPERATING MODE

Customer: Sharp NEC Display Solutions,Ltd.

Test Result: Pass

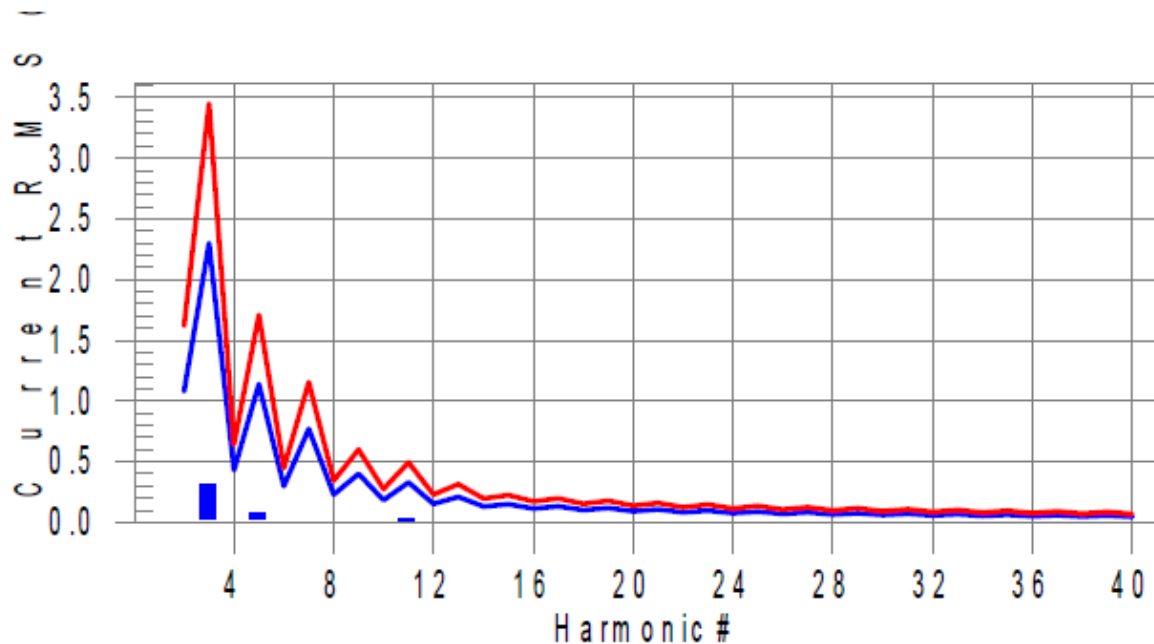
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonics H3-8.9% of 150% limit, H3-13.3% of 100% limit

EUT: LCD MONITOR M/N: E988

Tested by: TANK

Test category: Class-A (European limits)

Test Margin: 100

Test date: 2023/6/06

Start time: 10:58:17

End time: 11:00:58

Test duration (min): 2.5

Data file name: H-000574.cts_data

Comment: USB Play WORST CASE OPERATING MODE

Customer: Sharp NEC Display Solutions,Ltd.

Test Result: Pass

Source qualification: Normal

THC(A): 0.319

I-THD(%): 29.1

POHC(A): 0.021

POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 230.73

Frequency(Hz): 50.00

I_Peak (Amps): 2.092

I_RMS (Amps): 1.147

I_Fund (Amps): 1.098

Crest Factor: 1.828

Power (Watts): 248.4

Power Factor: 0.940

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.002	1.620	N/A	Pass
3	0.306	2.300	13.3	0.306	3.450	8.9	Pass
4	0.001	0.430	N/A	0.001	0.645	N/A	Pass
5	0.080	1.140	7.0	0.080	1.710	4.7	Pass
6	0.001	0.300	N/A	0.001	0.450	N/A	Pass
7	0.019	0.770	2.4	0.019	1.155	1.7	Pass
8	0.000	0.230	N/A	0.001	0.345	N/A	Pass
9	0.016	0.400	4.0	0.017	0.600	2.8	Pass
10	0.000	0.184	N/A	0.001	0.276	N/A	Pass
11	0.023	0.330	7.1	0.024	0.495	4.8	Pass
12	0.000	0.153	N/A	0.001	0.230	N/A	Pass
13	0.016	0.210	7.6	0.016	0.315	5.2	Pass
14	0.000	0.131	N/A	0.001	0.197	N/A	Pass
15	0.007	0.150	4.6	0.007	0.225	3.3	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.010	0.132	7.5	0.010	0.198	5.2	Pass
18	0.000	0.102	N/A	0.001	0.153	N/A	Pass
19	0.012	0.118	9.7	0.012	0.178	6.8	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.008	0.107	7.1	0.008	0.161	4.9	Pass
22	0.000	0.084	N/A	0.001	0.125	N/A	Pass
23	0.006	0.098	N/A	0.007	0.147	N/A	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.008	0.090	9.0	0.009	0.135	6.4	Pass
26	0.001	0.071	N/A	0.002	0.107	N/A	Pass
27	0.008	0.083	9.3	0.009	0.125	7.4	Pass
28	0.005	0.066	N/A	0.005	0.099	N/A	Pass
29	0.006	0.078	N/A	0.007	0.116	N/A	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.007	0.073	N/A	0.010	0.109	N/A	Pass
32	0.005	0.058	N/A	0.005	0.086	N/A	Pass
33	0.007	0.068	10.2	0.009	0.102	8.9	Pass
34	0.001	0.054	N/A	0.002	0.081	N/A	Pass
35	0.005	0.064	N/A	0.006	0.096	N/A	Pass
36	0.000	0.051	N/A	0.001	0.077	N/A	Pass
37	0.005	0.061	N/A	0.005	0.091	N/A	Pass
38	0.000	0.048	N/A	0.001	0.073	N/A	Pass
39	0.006	0.058	N/A	0.006	0.087	N/A	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass

EUT: LCD MONITOR M/N: E988

Test category: Class-A (European limits)

Test date: 2023/6/06

Start time: 10:58:17

Test duration (min): 2.5

Data file name: H-000574.cts_data

Comment: USB Play WORST CASE OPERATING MODE

Customer: Sharp NEC Display Solutions,Ltd.

Tested by: TANK

Test Margin: 100

End time: 11:00:58

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 230.73

Frequency(Hz): 50.00

I_Peak (Amps): 2.092

I_RMS (Amps): 1.147

I_Fund (Amps): 1.098

Crest Factor: 1.828

Power (Watts): 248.4

Power Factor: 0.940

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.060	0.461	13.11	OK
3	0.406	2.076	19.55	OK
4	0.044	0.461	9.62	OK
5	0.035	0.923	3.82	OK
6	0.019	0.461	4.22	OK
7	0.023	0.692	3.35	OK
8	0.025	0.461	5.39	OK
9	0.024	0.461	5.13	OK
10	0.021	0.461	4.46	OK
11	0.011	0.231	4.83	OK
12	0.010	0.231	4.30	OK
13	0.012	0.231	5.08	OK
14	0.009	0.231	4.00	OK
15	0.013	0.231	5.65	OK
16	0.010	0.231	4.27	OK
17	0.011	0.231	4.88	OK
18	0.008	0.231	3.57	OK
19	0.016	0.231	7.02	OK
20	0.011	0.231	4.75	OK
21	0.014	0.231	6.13	OK
22	0.007	0.231	3.05	OK
23	0.015	0.231	6.51	OK
24	0.005	0.231	2.26	OK
25	0.017	0.231	7.55	OK
26	0.005	0.231	2.02	OK
27	0.008	0.231	3.58	OK
28	0.006	0.231	2.52	OK
29	0.009	0.231	3.96	OK
30	0.005	0.231	2.08	OK
31	0.016	0.231	6.79	OK
32	0.004	0.231	1.76	OK
33	0.015	0.231	6.47	OK
34	0.003	0.231	1.52	OK
35	0.013	0.231	5.79	OK
36	0.004	0.231	1.61	OK
37	0.012	0.231	5.18	OK
38	0.005	0.231	1.96	OK
39	0.018	0.231	7.97	OK
40	0.009	0.231	4.01	OK

EUT: LCD MONITOR M/N: E988

Test category: Class-D (European limits)

Test date: 2023/6/06

Start time: 13:29:17

Tested by: TANK

Test Margin: 100

End time: 13:31:58

Test duration (min): 2.5

Data file name: H-000585.cts_data

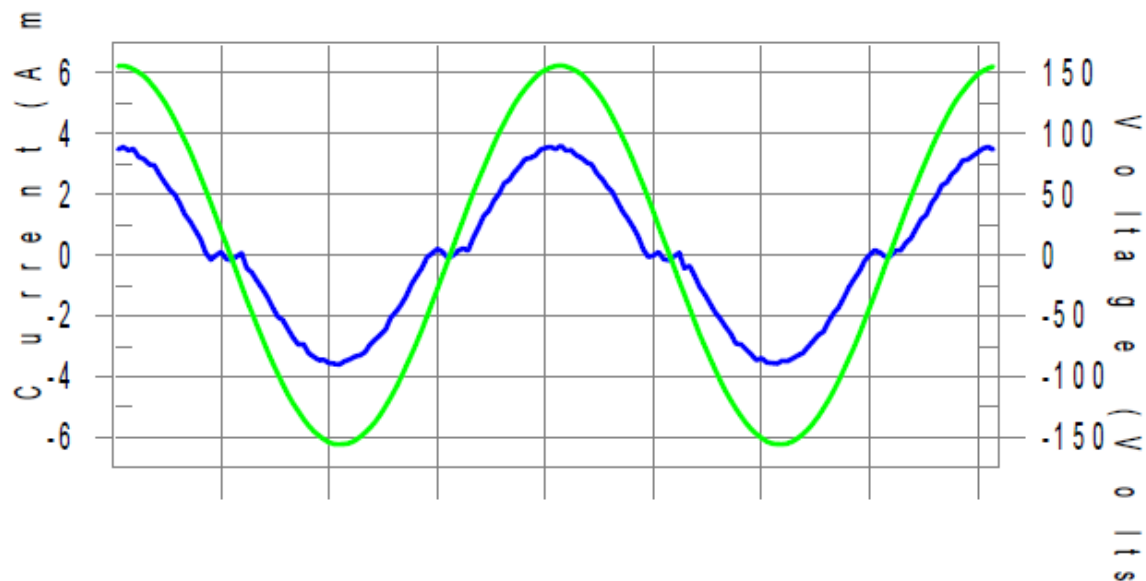
Comment: HDMI1 Mode (3840*2160) WORST CASE OPERATING MODE

Customer: Sharp NEC Display Solutions,Ltd.

Test Result: Pass

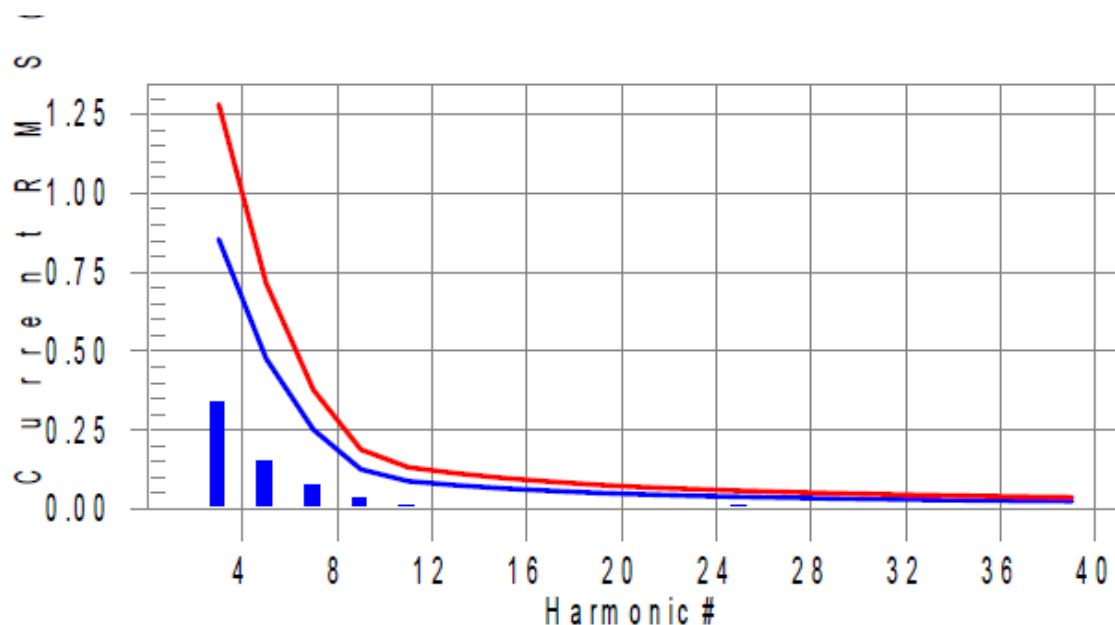
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line

European Limits



Test result: Pass Worst harmonics H3-26.3% of 150% limit, H3-39.4% of 100% limit

EUT: LCD MONITOR M/N: E988
 Test category: Class-D (European limits)
 Test date: 2023/6/06 Start time: 13:29:17
 Test duration (min): 2.5 Data file name: H-000585.cts_data
 Comment: HDMI1 Mode (3840*2160) WORST CASE OPERATING MODE
 Customer: Sharp NEC Display Solutions,Ltd.

Tested by: TANK
 Test Margin: 100
 End time: 13:31:58

Test Result: Pass Source qualification: Normal
 THC(A): 0.380 I-THD(%): 16.6 POHC(A): 0.016 POHC Limit(A): 0.108

Highest parameter values during test:

V_RMS (Volts): 110.34
 I_Peak (Amps): 3.741
 I_Fund (Amps): 2.285
 Power (Watts): 251.3
 Frequency(Hz): 60.00
 I_RMS (Amps): 2.318
 Crest Factor: 1.616
 Power Factor: 0.984

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.000	N/A	0.001	0.000	N/A	Pass
3	0.337	0.854	39.4	0.337	1.282	26.3	Pass
4	0.000	0.000	N/A	0.001	0.000	N/A	Pass
5	0.153	0.478	32.0	0.153	0.716	21.4	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.077	0.251	30.5	0.077	0.377	20.4	Pass
8	0.000	0.000	N/A	0.001	0.000	N/A	Pass
9	0.034	0.126	27.0	0.034	0.188	18.1	Pass
10	0.000	0.000	N/A	0.001	0.000	N/A	Pass
11	0.011	0.088	N/A	0.011	0.132	N/A	Pass
12	0.000	0.000	N/A	0.001	0.000	N/A	Pass
13	0.006	0.075	N/A	0.006	0.113	N/A	Pass
14	0.000	0.000	N/A	0.001	0.000	N/A	Pass
15	0.008	0.065	N/A	0.008	0.098	N/A	Pass
16	0.000	0.000	N/A	0.001	0.000	N/A	Pass
17	0.008	0.058	N/A	0.008	0.087	N/A	Pass
18	0.000	0.000	N/A	0.001	0.000	N/A	Pass
19	0.006	0.051	N/A	0.006	0.077	N/A	Pass
20	0.000	0.000	N/A	0.001	0.000	N/A	Pass
21	0.006	0.046	N/A	0.006	0.069	N/A	Pass
22	0.001	0.000	N/A	0.001	0.000	N/A	Pass
23	0.006	0.042	N/A	0.007	0.063	N/A	Pass
24	0.008	0.000	N/A	0.008	0.000	N/A	Pass
25	0.009	0.039	N/A	0.011	0.058	N/A	Pass
26	0.007	0.000	N/A	0.007	0.000	N/A	Pass
27	0.004	0.036	N/A	0.004	0.054	N/A	Pass
28	0.001	0.000	N/A	0.001	0.000	N/A	Pass
29	0.001	0.033	N/A	0.001	0.050	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.002	0.031	N/A	0.003	0.047	N/A	Pass
32	0.000	0.000	N/A	0.001	0.000	N/A	Pass
33	0.004	0.029	N/A	0.004	0.044	N/A	Pass
34	0.000	0.000	N/A	0.001	0.000	N/A	Pass
35	0.005	0.028	N/A	0.005	0.041	N/A	Pass
36	0.000	0.000	N/A	0.001	0.000	N/A	Pass
37	0.005	0.026	N/A	0.005	0.039	N/A	Pass
38	0.001	0.000	N/A	0.001	0.000	N/A	Pass
39	0.004	0.025	N/A	0.005	0.037	N/A	Pass
40	0.001	0.000	N/A	0.001	0.000	N/A	Pass

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

EUT: LCD MONITOR M/N: E988
 Test category: Class-D (European limits)
 Test date: 2023/6/06 Start time: 13:29:17
 Test duration (min): 2.5 Data file name: H-000585.cts_data
 Comment: HDMI1 Mode (3840*2160) WORST CASE OPERATING MODE
 Customer: Sharp NEC Display Solutions,Ltd.

Tested by: TANK
 Test Margin: 100
 End time: 13:31:58

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	110.34	Frequency(Hz):	60.00
I_Peak (Amps):	3.741	I_RMS (Amps):	2.318
I_Fund (Amps):	2.285	Crest Factor:	1.616
Power (Watts):	251.3	Power Factor:	0.984

Harm#	Harmonics	V-rms	Limit V-rms	% of Limit	Status
2		0.020	0.221	9.17	OK
3		0.085	0.993	8.52	OK
4		0.010	0.221	4.32	OK
5		0.034	0.441	7.69	OK
6		0.005	0.221	2.45	OK
7		0.021	0.331	6.20	OK
8		0.004	0.221	1.81	OK
9		0.014	0.221	6.21	OK
10		0.008	0.221	3.75	OK
11		0.007	0.110	6.41	OK
12		0.004	0.110	3.33	OK
13		0.005	0.110	4.14	OK
14		0.004	0.110	3.67	OK
15		0.010	0.110	8.76	OK
16		0.004	0.110	3.60	OK
17		0.006	0.110	5.03	OK
18		0.004	0.110	3.22	OK
19		0.006	0.110	4.99	OK
20		0.003	0.110	2.83	OK
21		0.008	0.110	7.09	OK
22		0.003	0.110	2.88	OK
23		0.007	0.110	6.32	OK
24		0.003	0.110	2.98	OK
25		0.006	0.110	5.67	OK
26		0.003	0.110	2.48	OK
27		0.005	0.110	4.63	OK
28		0.004	0.110	3.25	OK
29		0.003	0.110	3.01	OK
30		0.004	0.110	3.25	OK
31		0.004	0.110	3.94	OK
32		0.003	0.110	2.46	OK
33		0.006	0.110	5.37	OK
34		0.002	0.110	2.03	OK
35		0.009	0.110	8.35	OK
36		0.003	0.110	2.50	OK
37		0.008	0.110	7.03	OK
38		0.002	0.110	2.19	OK
39		0.008	0.110	7.39	OK
40		0.003	0.110	2.39	OK

EUT: LCD MONITOR M/N: E988

Test category: Class-D (European limits)

Test date: 2023/6/06

Start time: 11:03:03

Tested by: TANK

Test Margin: 100

End time: 11:05:44

Test duration (min): 2.5

Data file name: H-000575.cts_data

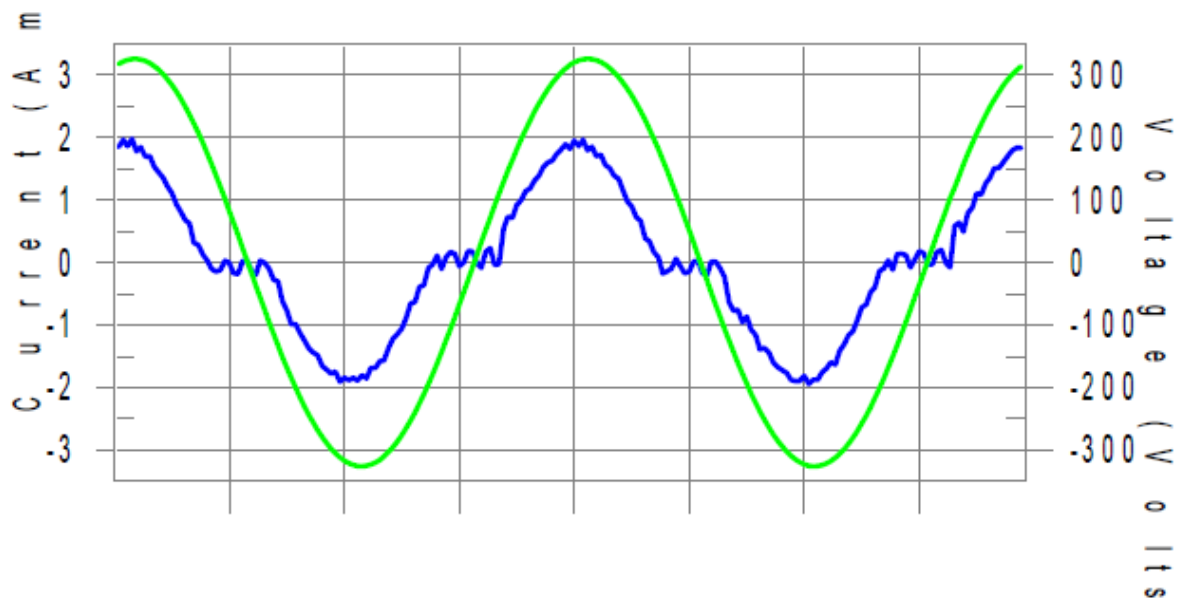
Comment: HDMI1 Mode (3840*2160) WORST CASE OPERATING MODE

Customer: Sharp NEC Display Solutions,Ltd.

Test Result: Pass

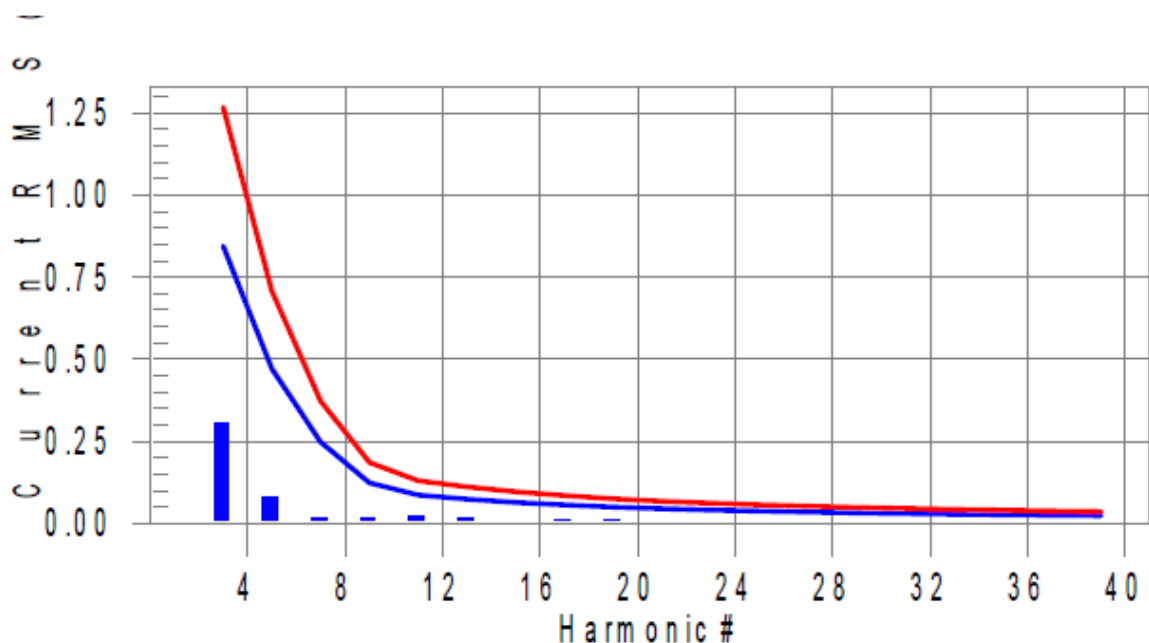
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line

European Limits



Test result: Pass Worst harmonics H3-24.2% of 150% limit, H3-36.2% of 100% limit

EUT: LCD MONITOR M/N: E988
 Test category: Class-D (European limits)
 Test date: 2023/6/06 Start time: 11:03:03
 Test duration (min): 2.5 Data file name: H-000575.cts_data
 Comment: HDMI1 Mode (3840*2160) WORST CASE OPERATING MODE
 Customer: Sharp NEC Display Solutions,Ltd.

Tested by: TANK
 Test Margin: 100
 End time: 11:05:44

Test Result: Pass Source qualification: Normal
 THCA: 0.319 I-THD(%): 29.1 POHC(A): 0.021 POHC Limit(A): 0.107

Highest parameter values during test:

V_RMS (Volts): 230.75	Frequency(Hz): 50.00
I_Peak (Amps): 2.078	I_RMS (Amps): 1.146
I_Fund (Amps): 1.098	Crest Factor: 1.815
Power (Watts): 248.5	Power Factor: 0.940

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.000	N/A	0.002	0.000	N/A	Pass
3	0.306	0.845	36.2	0.307	1.267	24.2	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.080	0.472	17.0	0.080	0.708	11.3	Pass
6	0.001	0.000	N/A	0.001	0.000	N/A	Pass
7	0.019	0.248	7.6	0.019	0.373	5.2	Pass
8	0.000	0.000	N/A	0.001	0.000	N/A	Pass
9	0.016	0.124	12.9	0.017	0.186	8.9	Pass
10	0.000	0.000	N/A	0.001	0.000	N/A	Pass
11	0.023	0.087	26.9	0.024	0.130	18.1	Pass
12	0.000	0.000	N/A	0.001	0.000	N/A	Pass
13	0.016	0.075	21.3	0.016	0.112	14.6	Pass
14	0.000	0.000	N/A	0.001	0.000	N/A	Pass
15	0.007	0.065	10.8	0.007	0.097	7.7	Pass
16	0.000	0.000	N/A	0.001	0.000	N/A	Pass
17	0.010	0.057	17.4	0.010	0.086	12.0	Pass
18	0.000	0.000	N/A	0.001	0.000	N/A	Pass
19	0.012	0.050	22.8	0.012	0.076	15.8	Pass
20	0.000	0.000	N/A	0.001	0.000	N/A	Pass
21	0.008	0.045	16.8	0.008	0.068	11.7	Pass
22	0.000	0.000	N/A	0.001	0.000	N/A	Pass
23	0.006	0.041	N/A	0.007	0.062	N/A	Pass
24	0.000	0.000	N/A	0.001	0.000	N/A	Pass
25	0.008	0.038	21.2	0.009	0.057	15.4	Pass
26	0.001	0.000	N/A	0.002	0.000	N/A	Pass
27	0.008	0.036	21.9	0.011	0.053	20.1	Pass
28	0.005	0.000	N/A	0.005	0.000	N/A	Pass
29	0.006	0.033	N/A	0.007	0.050	N/A	Pass
30	0.001	0.000	N/A	0.001	0.000	N/A	Pass
31	0.007	0.031	N/A	0.009	0.046	N/A	Pass
32	0.005	0.000	N/A	0.005	0.000	N/A	Pass
33	0.007	0.029	24.1	0.010	0.043	22.2	Pass
34	0.001	0.000	N/A	0.002	0.000	N/A	Pass
35	0.005	0.027	N/A	0.006	0.041	N/A	Pass
36	0.000	0.000	N/A	0.001	0.000	N/A	Pass
37	0.005	0.026	N/A	0.005	0.039	N/A	Pass
38	0.000	0.000	N/A	0.001	0.000	N/A	Pass
39	0.006	0.025	N/A	0.006	0.037	N/A	Pass
40	0.000	0.000	N/A	0.001	0.000	N/A	Pass

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

EUT: LCD MONITOR M/N: E988

Tested by: TANK

Test category: Class-D (European limits)

Test Margin: 100

Test date: 2023/6/06

Start time: 11:03:03

End time: 11:05:44

Test duration (min): 2.5

Data file name: H-000575.cts_data

Comment: HDMI1 Mode (3840*2160) WORST CASE OPERATING MODE

Customer: Sharp NEC Display Solutions,Ltd.

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 230.75

Frequency(Hz): 50.00

I_Peak (Amps): 2.078

I_RMS (Amps): 1.146

I_Fund (Amps): 1.098

Crest Factor: 1.815

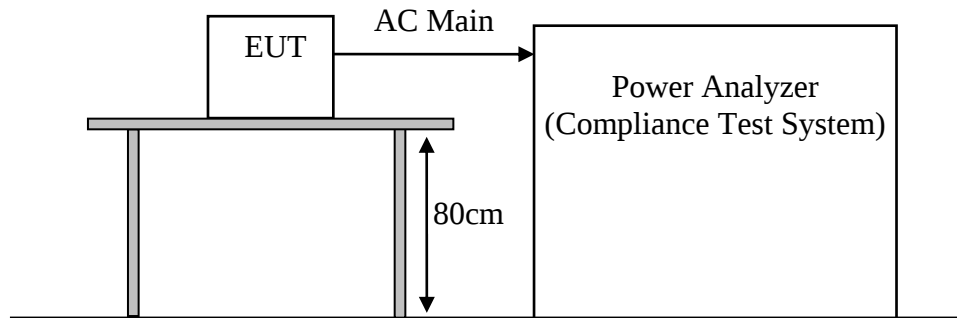
Power (Watts): 248.5

Power Factor: 0.940

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.052	0.461	11.36	OK
3	0.406	2.076	19.57	OK
4	0.044	0.461	9.60	OK
5	0.031	0.923	3.40	OK
6	0.019	0.461	4.06	OK
7	0.022	0.692	3.22	OK
8	0.026	0.461	5.62	OK
9	0.023	0.461	4.88	OK
10	0.020	0.461	4.23	OK
11	0.010	0.231	4.34	OK
12	0.009	0.231	3.98	OK
13	0.011	0.231	4.85	OK
14	0.007	0.231	3.11	OK
15	0.015	0.231	6.54	OK
16	0.009	0.231	4.11	OK
17	0.012	0.231	5.26	OK
18	0.007	0.231	3.21	OK
19	0.017	0.231	7.49	OK
20	0.012	0.231	5.18	OK
21	0.016	0.231	6.73	OK
22	0.007	0.231	2.83	OK
23	0.015	0.231	6.49	OK
24	0.005	0.231	2.24	OK
25	0.017	0.231	7.36	OK
26	0.005	0.231	2.23	OK
27	0.009	0.231	3.90	OK
28	0.005	0.231	2.38	OK
29	0.009	0.231	3.89	OK
30	0.004	0.231	1.92	OK
31	0.015	0.231	6.31	OK
32	0.003	0.231	1.47	OK
33	0.015	0.231	6.45	OK
34	0.004	0.231	1.58	OK
35	0.013	0.231	5.62	OK
36	0.004	0.231	1.56	OK
37	0.011	0.231	4.82	OK
38	0.005	0.231	1.99	OK
39	0.018	0.231	7.64	OK
40	0.009	0.231	3.76	OK

4.6. Voltage Fluctuations and Flicker on AC Mains Test

RESULT : **Pass**(Please refer to the following page)
Test procedure : EN 61000-3-3:2013; EN 61000-3-3:2013+A1:2019+A2:2021
Limits : EN 61000-3-3:2013; EN 61000-3-3:2013+A1:2019+A2:2021



Test Data

EUT: LCD MONITOR M/N: E988
Test category: All parameters (European limits)
Test date: 2023/6/06
Test duration (min): 10
Comment: HDMI1 Mode (3840*2160) WORST CASE OPERATING MODE
Customer: Sharp NEC Display Solutions,Ltd.

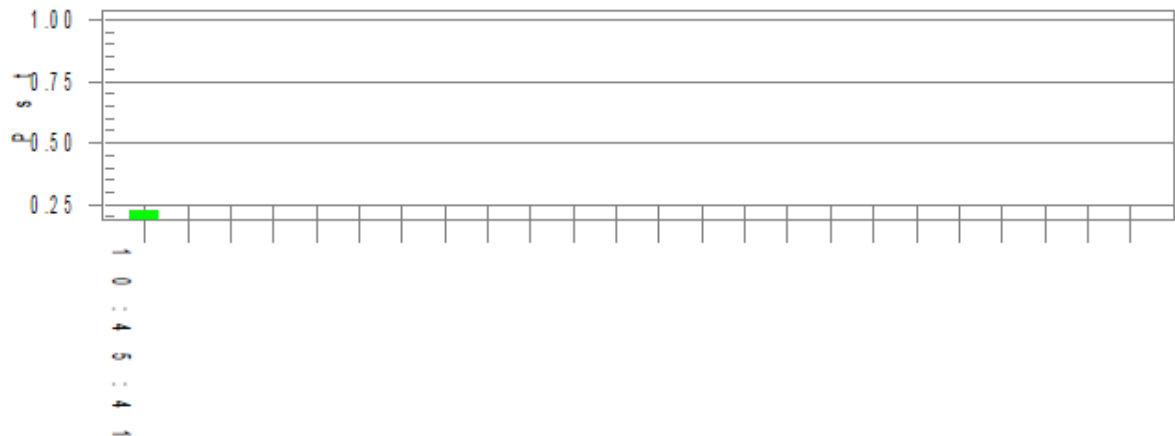
Tested by: TANK
Test Margin: 100
Start time: 10:35:20
Data file name: F-000573.cts_data
End time: 10:45:47

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:			
Vrms at the end of test (Volt): 230.67			
Highest dt (%)		Test limit (%)	
T-max (mS)	0	Test limit (mS)	500.0 Pass
Highest dc (%)	0.00	Test limit (%)	3.30 Pass
Highest dmax (%)	0.00	Test limit (%)	4.00 Pass
Highest Pst (10 min. period)	0.224	Test limit:	1.000 Pass
Highest Plt (2 hr. period)	0.098	Test limit:	0.650 Pass

5. IMMUNITY TEST RESULT

5.1. Description of Performance Criteria:

Performance criteria 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.

For audio output device: The measured acoustic interference ratio and/or the measured electrical interference during the test shall be -20dB or better(see note1)

Performance criteria 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 criteria 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.

Note 1: This performance criterion only using for Continuous inducted RF disturbances and Continuous RF electromagnetic field disturbances item.

5.2. Electrostatic Discharge Immunity Test

RESULT	: Pass
Test procedure	: EN 55035:2017+A11:2020
Basic standard	: EN 61000-4-2:2009
Test specification	: +/-4.0kV, +/-5kV, +/-6.5KV, +/-10.0kV (Contact discharge) +/-5.0kV, +/-8.0kV, +/-10.0kV (Air discharge)
Number of discharges	: ≥ 10 (Air discharge for single polarity discharge) ≥ 10 (Contact discharge for single polarity discharge)
Polarity	: Positive/Negative
Performance criterion	: B

Test Setup

Date of test	: Jun. 06, 2023
Model No.	: E988
Input Voltage	: AC 230V/50Hz, AC 110V/60Hz
Operation Mode	: HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode, USB Play, AV IN, LAN Mode
Temperature	: 26.3°C
Humidity	: 51.2%
Pressure	: 101.2kPa

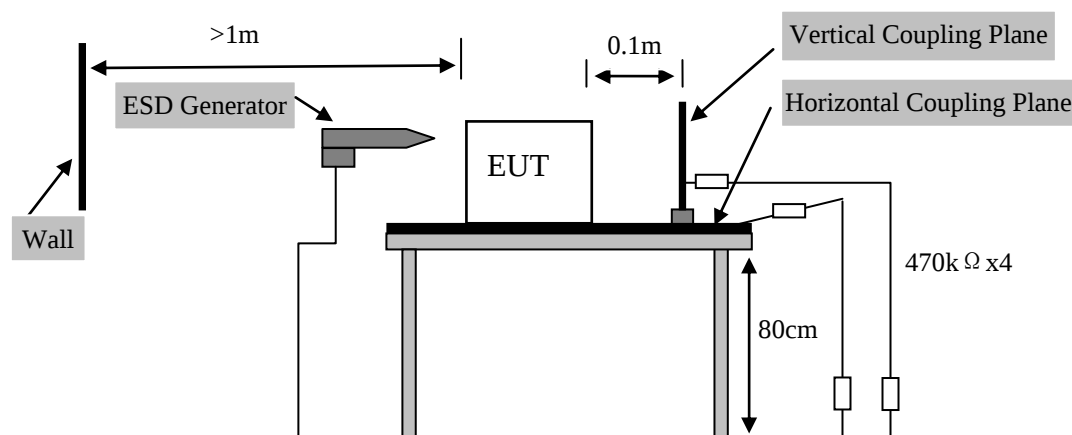


Table 1: Electrostatic Discharge Immunity Test Result

Discharge Location		Type of discharge	Result
HCP	4 points	Contact	Pass
VCP	4 points	Contact	Pass
Screw	36 points	Contact	Pass
Crust	4 points	Contact	Pass
USB Port	1 point	Contact	Pass
HDMI Port	3 points	Contact	Pass
VGA Port	1 point	Contact	Pass
LAN Port	1 point	Contact	Pass
RS-232C Port	1 point	Contact	Pass
POWER SUPPLY OUT	1 point	Contact	Pass
Audio out	1 point	Air	Pass
AV IN	1 point	Air	Pass
AUDIO IN	1 point	Air	Pass
Screen	4 points	Air	Pass

*Remark: 1. The screen was flashing during the test, but self-recoverable after the test
2. Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).*

5.3. Radio Frequency Electromagnetic Field Immunity(R/S) Test

RESULT : **Pass**
Test procedure : EN 55035:2017+A11:2020
Basic standard : EN 61000-4-3:2006+A1:2008+A2:2010
Frequency Range : 80-1000MHz,1800MHz, 2600MHz, 3500MHz, 5000MHz
Performance criterion : A
Test site : 866 Chamber

Test Setup

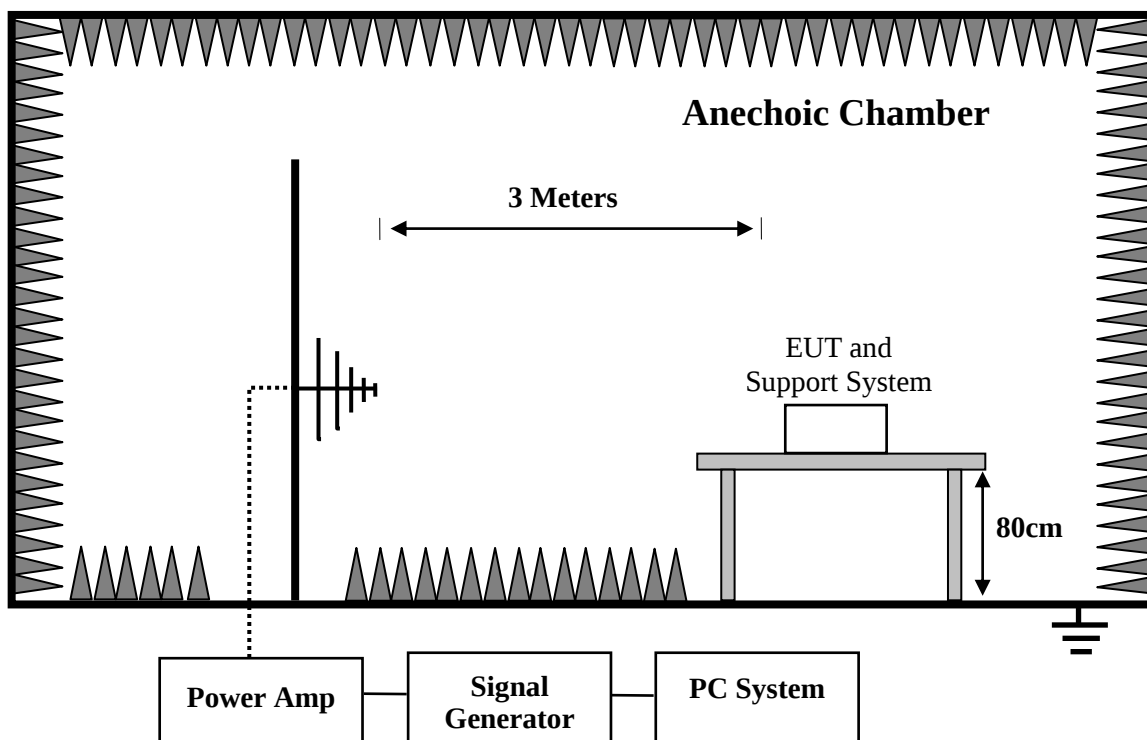
Date of test : Jun. 06, 2023
Model No. : E988
Input Voltage : AC 230V/50Hz, AC 110V/60Hz
Operation Mode : HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode, USB Play, AV IN, LAN Mode
Temperature : 26.1°C
Humidity : 51.1%
Pressure : 101.2kPa

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The EUT was set 3 m away from the transmitting antenna which was mounted on an antenna tower. Both horizontal and vertical polarization of the antenna were 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 was used to monitor EUT screen.

All the scanning conditions were as follows:

Condition of Test	Remarks
1. Field Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 - 1000 MHz
4. Sweeping time of radiated	0.0015 decade/s
5. Dwell Time	at least 3 seconds



Condition of Test	Remarks
6. Field Strength	3 V/m (Severity Level 2)
7. Radiated Signal	Modulated
8. Scanning Frequency	1800MHz,2600MHz,3500MHz,5000MHz
9. Sweeping time of radiated	0.0015 decade/s
10. Dwell Time	at least 3 seconds

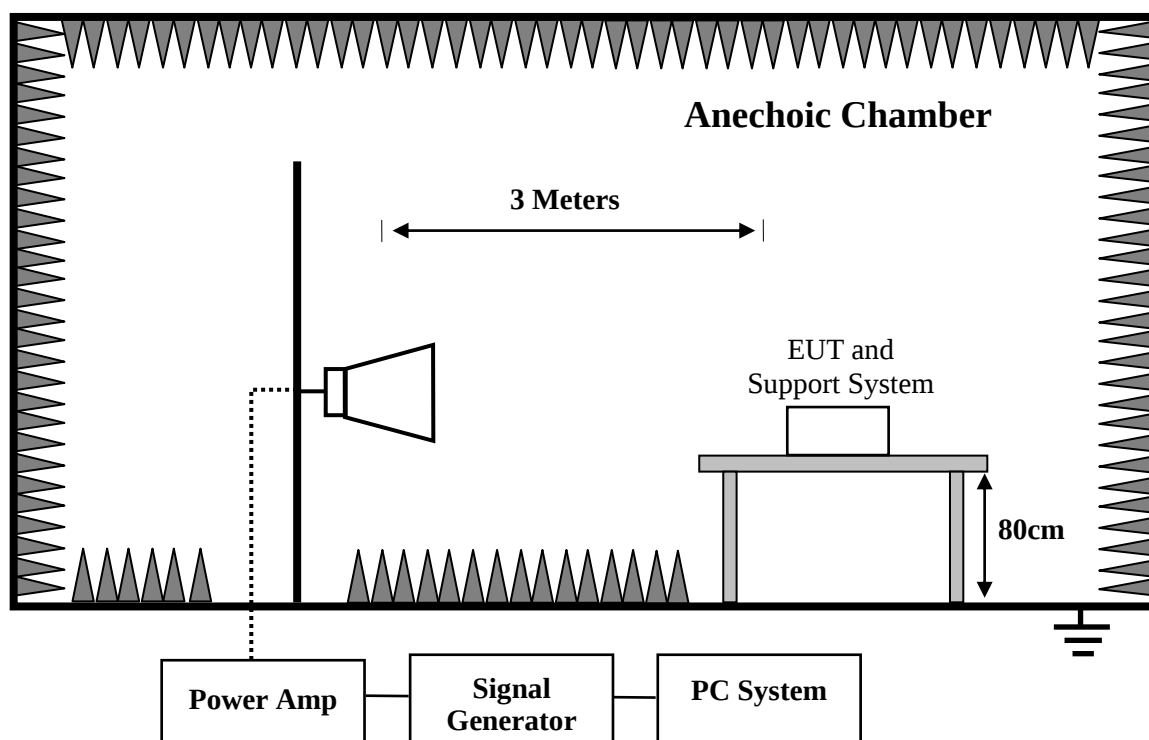


Table 2: Radio Frequency Electromagnetic Field Immunity Test Result

Field Strength (V/m)	Test Frequency (MHz)	Test mode (Worst)	Polarization of antenna	Reference Level	Audio output	Limit	Interference Ratio (worst case)
3	80-1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz	HDMI Mode	H	75dBSPL	Speaker	$\leq$ -20dB	-59 dB
			V	75dBSPL	Speaker		-57 dB

5.4. Electrical Fast Transient/Burst Immunity Test

RESULT	: Pass
Test procedure	: EN 55035:2017+A11:2020
Basic standard	: EN 61000-4-4:2012
Pulseform	: Tr/Th=5/50ns
Repetition Frequency	: 5 kHz ; (100 kHz : only for single lines of xDSL equipment)
Test Duration	: 120s
Performance criterion	: B

Test Setup

Date of test	: Jun. 06, 2023
Model No.	: E988
Input Voltage	: AC 230V/50Hz, AC 110V/60Hz
Operation Mode	: HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode, USB Play, AV IN, LAN Mode
Temperature	: 26.1°C
Humidity	: 51.2%
Pressure	: 101.2kPa

The EUT and its simulators were placed 0.1 m high above the ground reference plane which was a minimum 2m*2m metallic sheet with 0.65mm minimum thickness. This reference ground plane shall project beyond the EUT by at least 0.1 m 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.

1. For power input port:

The EUT was connected to the power mains by using a coupling device which coupled the EFT interference signal to AC power lines. Both polarities of the test voltage were applied during compliance test and the duration of the test were 2mins.

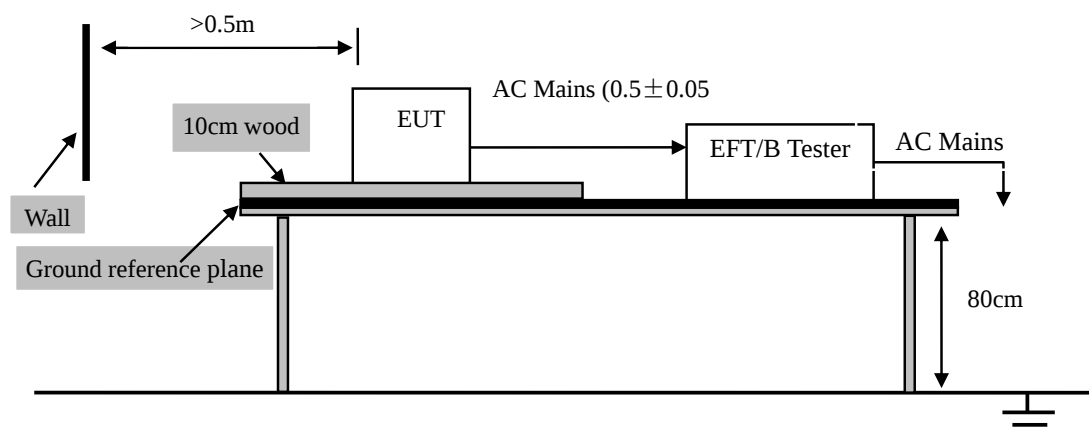


Table 5: Electrical Fast Transient/Burst Immunity Test Result

Coupling Ports		Coupling Voltage	Inject Method	Result
AC Power Ports	L	± 1 kV	Direct	Pass
	N	± 1 kV		Pass
	PE	± 1 kV		Pass
	L-N	± 1 kV		Pass
	L-PE	± 1 kV		Pass
	N-PE	± 1 kV		Pass
	L-N-PE	± 1 kV		Pass
Signal Line		± 0.5 kV, ± 1 kV		Pass

Remark: The screen was flashing during the test, but self-recoverable after the test

5.5. Surge Immunity Test

RESULT : **Pass**
Test procedure : EN 55035:2017+A11:2020
Basic standard : EN 61000-4-5:2014
Pulse form : $Tr/Td=1.2/50\mu s$
Test Duration : 60s
Performance criterion : B

Test Setup

Date of test : Jun. 06, 2023
Model No. : E988
Input Voltage : AC 230V/50Hz, AC 110V/60Hz
Operation Mode : HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode, USB Play, AV IN, LAN Mode
Temperature : 25.8°C
Humidity : 51.2%
Pressure : 101.2kPa

2 Ω effective output impedance of the generator was used for L-N test. 12 Ω effective output impedance of the generator was used for L-PE, N-PE test.

5 positive and 5 negative (polarity) tests were applied successively synchronized to the voltage phase 90°, 270° to L-N respectively. The repetition rate was 1 per minute during test.

1. For input and AC power ports:

The EUT was connected to the power mains by using a coupling device which coupled the surge interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration was 1 minute.

2. For signal lines and control lines ports:

None.

3. For DC input and DC output power ports:

None.

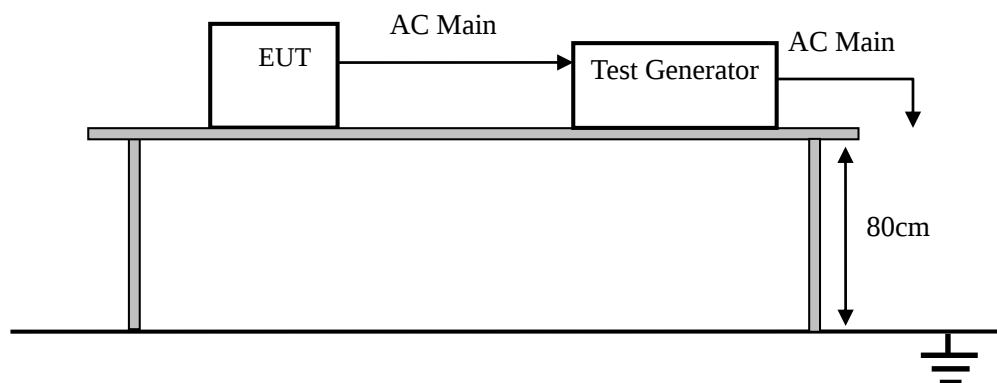


Table 4: Surge Immunity Test Result

Coupling Ports		Coupling Voltage	Coupling Phase / Result			
			0°	90°	180°	270°
AC power ports	L-N	+/-1kV Direct	/	Pass	/	Pass
	L-PE	+/-2kV Direct	/	Pass	/	Pass
	N-PE	+/-2kV Direct	/	Pass	/	Pass

Remark: The screen was flashing during the test, but self-recoverable after the test

5.6. Injected Currents Susceptibility Test

RESULT	: Pass
Test procedure	: EN 55035:2017+A11:2020
Basic standard	: EN 61000-4-6:2014
Test specification	: 3 Vr.m.s, 3 Vr.m.s - 1Vr.m.s, 1Vr.m.s, AM 80%, 0.15 MHz - 10 MHz, 10 MHz – 30 MHz, 30 MHz – 80MHz
Performance criterion	: A

Test Setup

Date of test	: Jun. 06, 2023
Model No.	: E988
Input Voltage	: AC 230V/50Hz, AC 110V/60Hz
Operation Mode	: HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode, USB Play, AV IN, LAN Mode
Temperature	: 26.8°C
Humidity	: 51.3%
Pressure	: 101.2kPa

The EUT were placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) was placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT were as short as possible, and their height above the ground reference plane were between 30 and 50 mm (where possible).

The frequency range was swept from 0.15 MHz - 10 MHz, 10 MHz – 30 MHz and 30 MHz – 80MHz using 3V, 3 V - 1V, 1V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.

The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency was swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

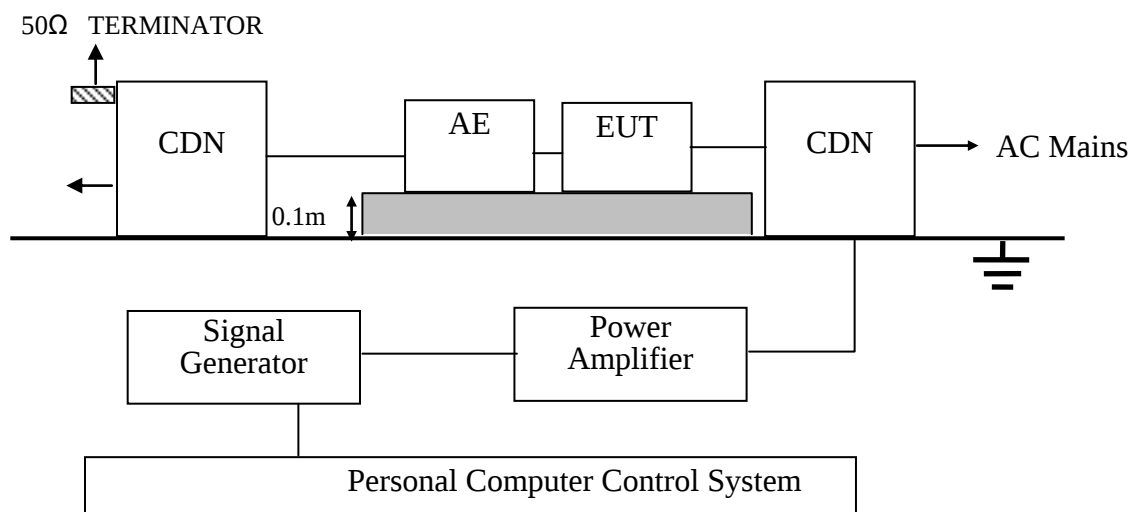


Table 5: Injected Currents Susceptibility Test Result

Voltage (V)	Test Frequency (MHz)	Test mode (Worst)	Injection Method	Reference Level	Audio output	Limit	Interference Ratio (worst case)
3	0.15 –10 MHz	HDMI Mode	CDN-M3	75dBSPL	Speaker	$\leq$ -20dB	-46 dB
3 -1	10 –30 MHz						-47 dB
1	30 –80 MHz						-48 dB
3	0.15 –10 MHz	HDMI Mode	EM Clamp	75dBSPL	Speaker	$\leq$ -20 dB	-42 dB
3 -1	10 –30 MHz						-46 dB
1	30 –80 MHz						-44 dB

5.7. Power Frequency Magnetic Field Immunity Test

RESULT : **Pass**
Test procedure : EN 55035:2017+A11:2020
Basic standard : EN 61000-4-8:2010
Test specification : 1 A/m
Performance criterion : A

Test Setup

Date of test : Jun. 06, 2023
Model No. : E988
Input Voltage : AC 230V/50Hz, AC 110V/60Hz
Operation Mode : HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode, USB Play, AV IN, LAN Mode
Temperature : 26.9°C
Humidity : 51.2%
Pressure : 101.2kPa

The EUT was subjected to the test magnetic field by using the induction coil of standard dimensions (1m*1m). The induction coil then was rotated by 90° in order to expose the EUT to the test field with different orientations.

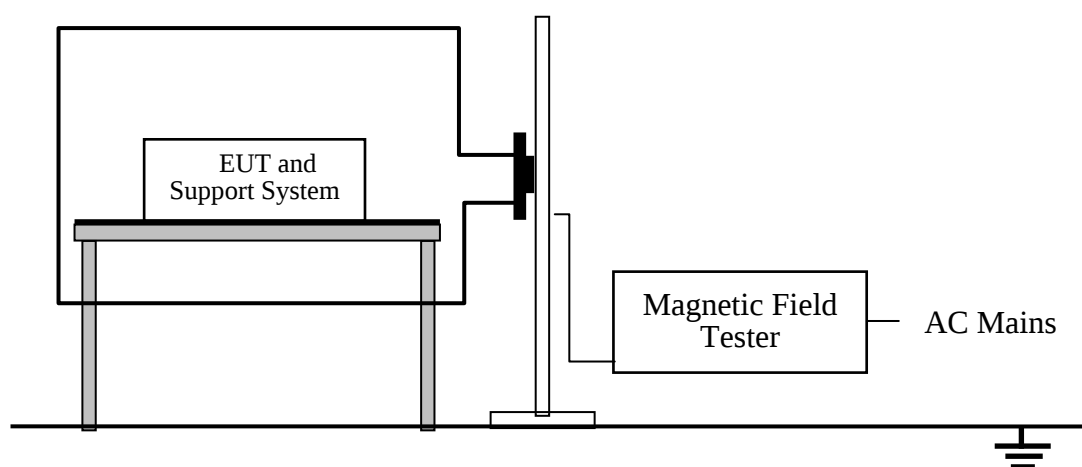


Table 6: Power Frequency Magnetic Field Immunity Test Result

Test Level	Testing Duration	Coil Orientation	Criterion	Result
1A/m	5 mins	X	A	Pass
1A/m	5 mins	Y	A	Pass
1A/m	5 mins	Z	A	Pass

Remark: There was no change compared with initial operation during the test

5.8. Voltage Dips and Short Interruptions Immunity Test

RESULT : **Pass**

Test procedure : EN 55035:2017+A11:2020

Basic standard : EN 61000-4-11:2004

Test specification : 0%UT ; 0.5P, Criterion: B
70%UT; 25P/30P, Criterion: C
0%UT; 250P/300P, Criterion: C

Test Setup

Date of test : Jun. 06, 2023

Model No. : E988

Input Voltage : AC 230V/50Hz, AC 110V/60Hz

Operation Mode : HDMI 1 Mode, HDMI 2 Mode, HDMI 3 Mode, VGA Mode,
USB Play, AV IN, LAN Mode

Temperature : 26.8°C

Humidity : 51.2%

Pressure : 101.2kPa

The interruptions was introduced at selected phase angles with specified duration.
Recorded any degradation of performance.

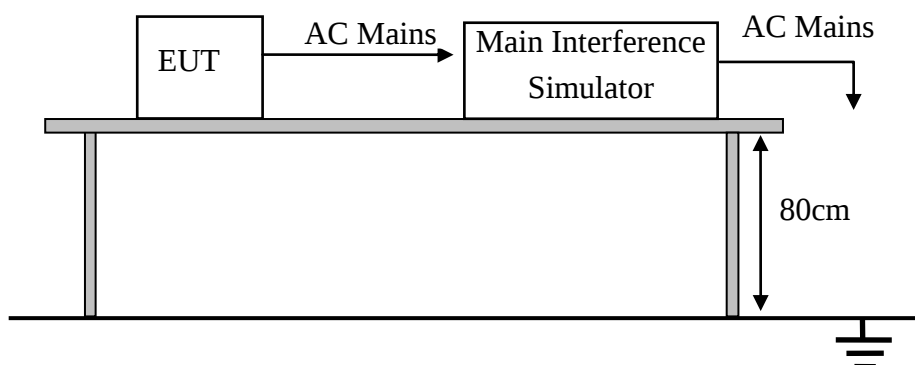


Table 7: Voltage Dips and Short Interruptions Immunity Test Result AC 230V/50Hz

Test Level % UT	Voltage Dips & Short Interruptions % UT	Duration (in period)	Criterion	Result
0	100	0.5P	B	PASS
70	30	25P	C	PASS
0	100	250P	C	PASS

Remark: The EUT was Stopped during the test, but self-recoverable after the test.

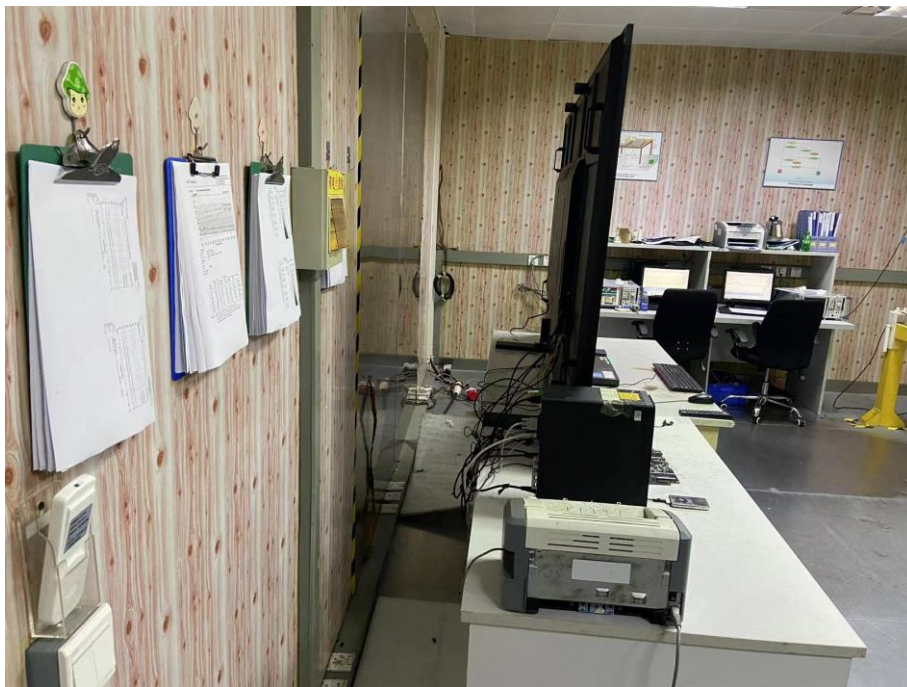
Table 8: Voltage Dips and Short Interruptions Immunity Test Result AC 110V/60Hz

Test Level % UT	Voltage Dips & Short Interruptions % UT	Duration (in period)	Criterion	Result
0	100	0.5P	B	PASS
70	30	30P	C	PASS
0	100	300P	C	PASS

Remark: The EUT was Stopped during the test, but self-recoverable after the test.

6. PHOTOGRAPHS OF TEST SET-UP

6.1.Set-up for Conducted Emission at the Mains Terminals Test



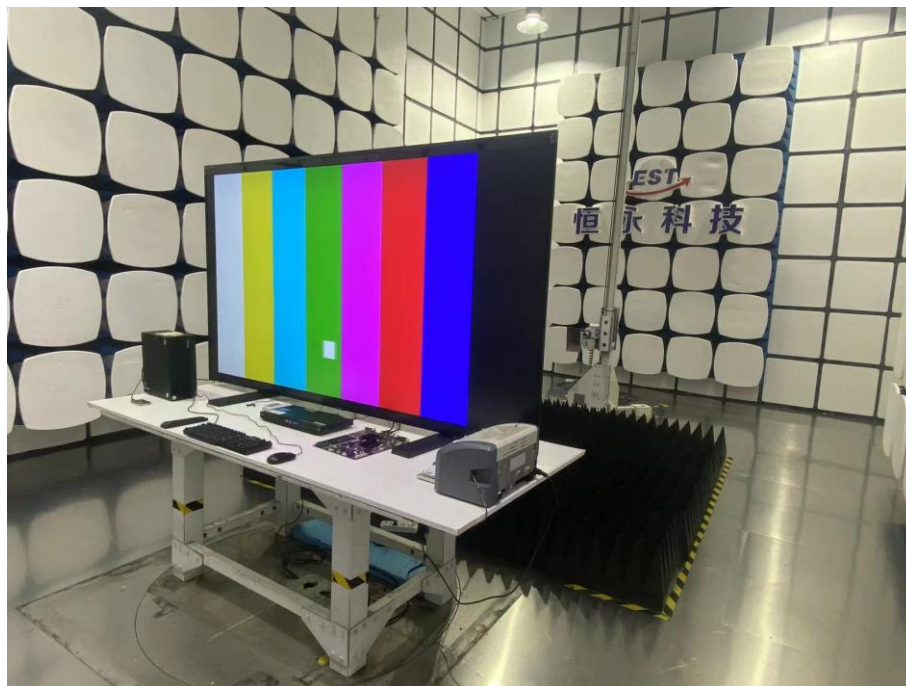
6.2.Set-up for Asymmetric Mode Conducted Emissions Test



6.3.Set-up for Radiated Emission Test



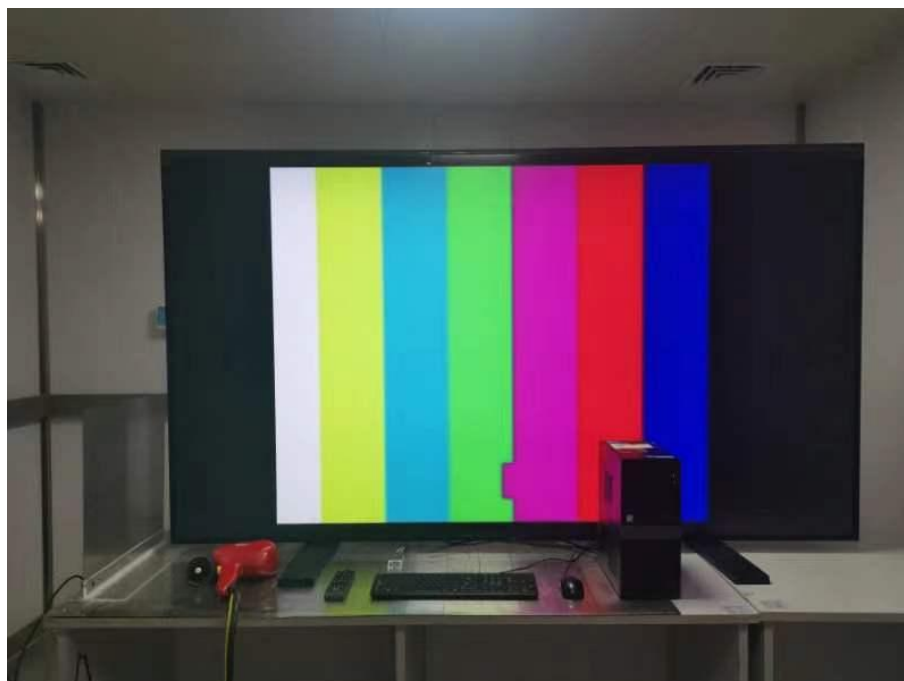
6.4. Set-up for Radiated Emission Test (above 1GHz)



6.5.Set-up for Harmonic Current Emissions and Flicker on AC Mains Test



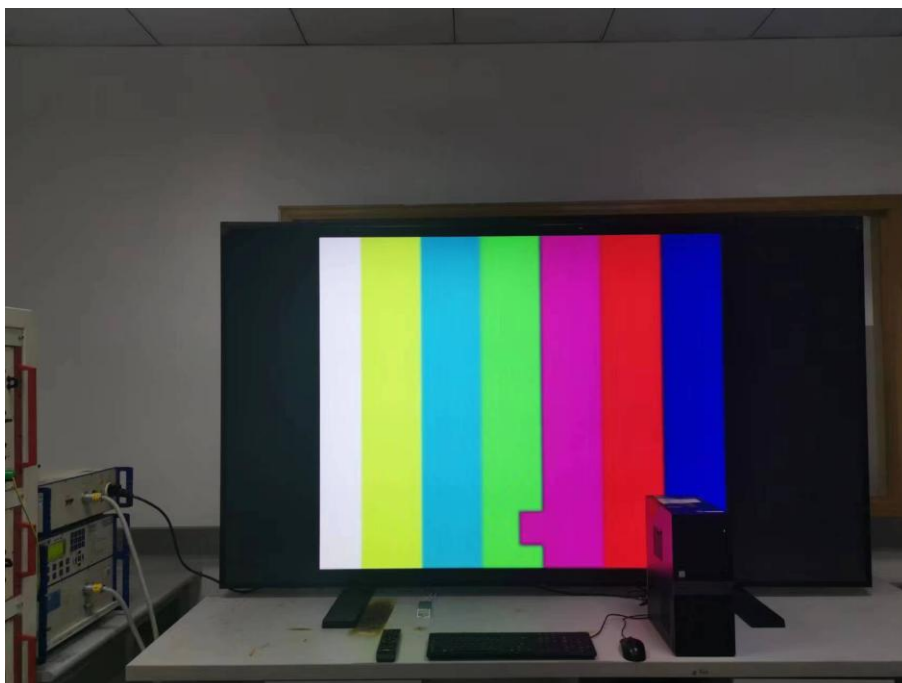
6.6.Set-up for Electrostatic Discharge Immunity Test



6.7. Set-up for Radio Frequency Electromagnetic Field Immunity (R/S) Test



6.8. Set-up for Surge Immunity Test



6.9.Set-up for Electrical Fast Transient/Burst Immunity Test

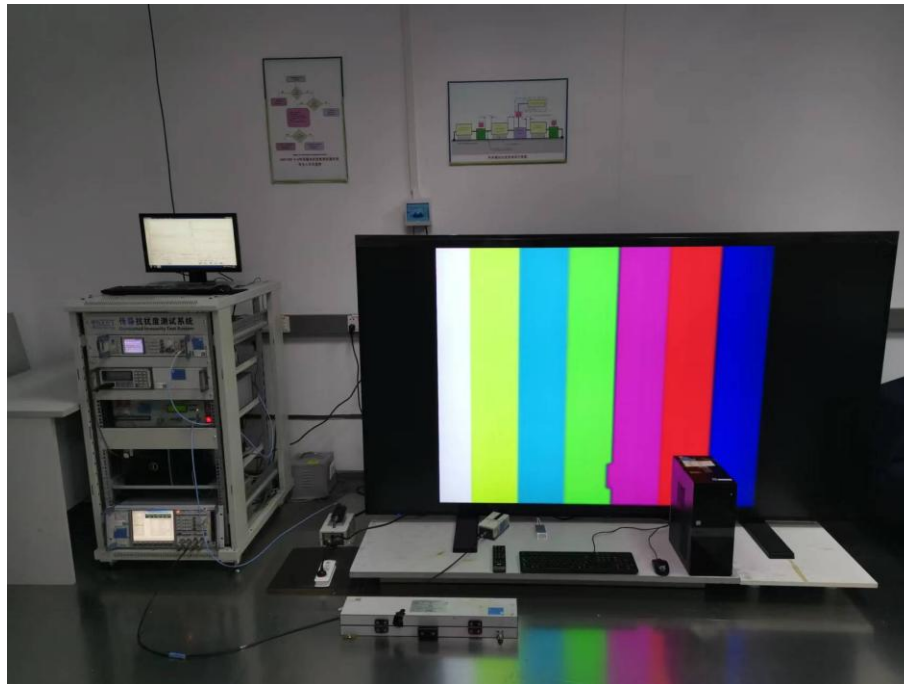


(AC Port)

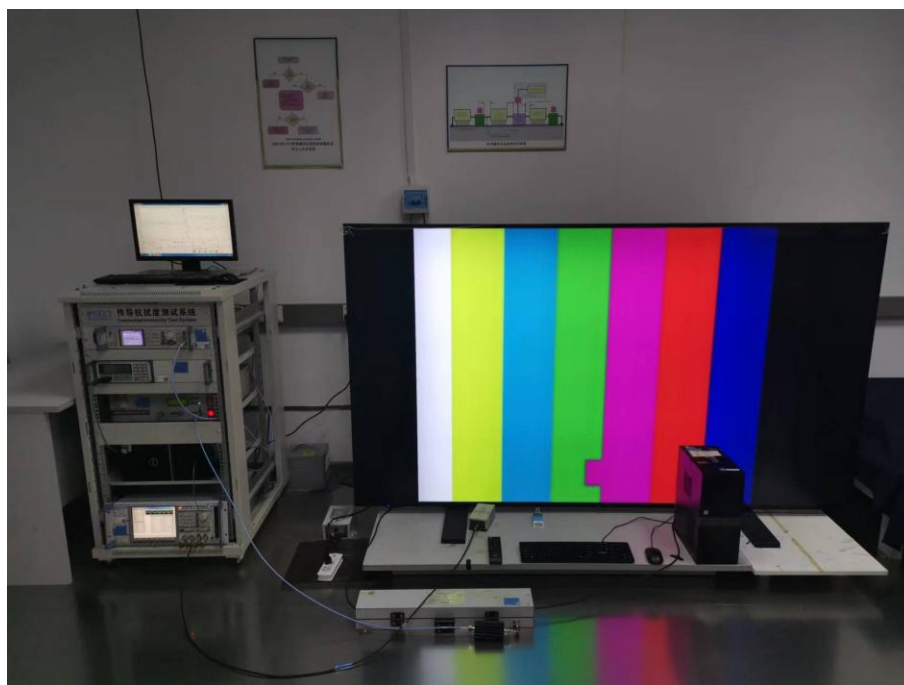


(Signal Port)

6.10. Set-up for Injected Currents Susceptibility Test



AC Port



Signal Port

6.11.Set-up for Voltage Dips and Short Interruptions Immunity Test



7. PHOTOGRAPHS OF THE EUT

Figure 1
General Appearance of the EUT



Figure 2
General Appearance of the EUT



Figure 3
General Appearance of the EUT

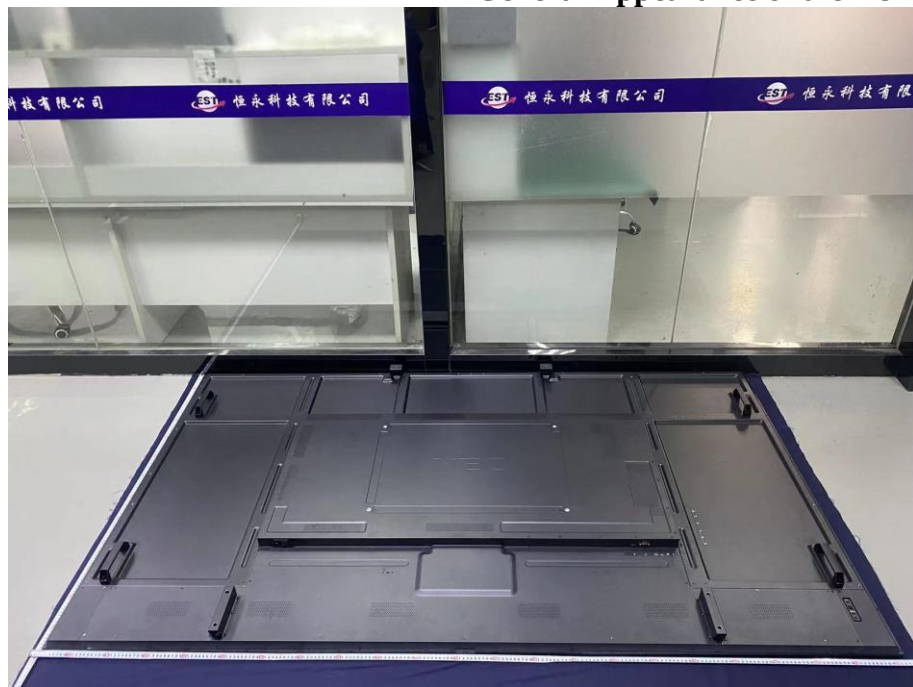


Figure 4
General Appearance of the EUT



Figure 5
General Appearance of the EUT



Figure 6
General Appearance of the EUT



Figure 7
General Appearance of the EUT



Figure 8
General Appearance of the EUT



Figure 9
General Appearance of the EUT



Figure 10
General Appearance of the EUT



Figure 11
General Appearance of the EUT



End of Test Report