EU CERTIFICATION TECHNOLOGY CO., LTD.
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Report No: WF-2023001-E1
Test Date : June 01, 2023
5" HDMI Interface Diplay

EMC Test Report

FOR
5" HDMI Interface Diplay

Model :
WF50FTYFGDHG0#, WF50FTYFGDHGV#, WF50FTYFGDHN0#, WF50FTYFGDHNV#, WF50FTYFGDHTV#

Issued to

WINSTAR Display Co., Ltd.
5F, No.31, Keya Rd., Daya Dist., Taichung City 428, Taiwan

Issued by
EU CERTIFICATION TECHNOLOGY CO., LTD.

Testing laboratory Address	:	**No.13, Ln. 19, Zhongshan Rd., Shalu Dist., Taichung City 433, Taiwan (R.O.C.)**
EMC Test Site Address	:	**5F, No.31, Keya Rd., Daya Dist., Taichung City 428, Taiwan**

Note:
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Revisions History

Report No.	Issue Date	Revisions
WF-2023001-E1	June 01, 2023	New apply

1. General Information

Applicant	:	WINSTAR Display Co., Ltd
Address	:	5F, No.31, Keya Rd., Daya Dist., Taichung City 428, Taiwan
Manufacturer	:	WINSTAR Display Co., Ltd
Address	:	5F, No.31, Keya Rd., Daya Dist., Taichung City 428, Taiwan
EUT	:	5” HDMI Interface Diplay
Model No.	:	WF50FTYFGDHG0#, WF50FTYFGDHGV#, WF50FTYFGDHN0#, WF50FTYFGDHNV#, WF50FTYFGDHTV#
Trade Name	:	N/A
Model Differences	:	Appearance of EUT(size)

Measurement procedure used:

EMI: Class A

EN 55032:2015+AC:2016-07 Class A
EN 61000-3-2:2014 (IEC 61000-3-2:2014)
EN 61000-3-3:2013 (IEC 61000-3-3:2013)

EMS:

EN 55035:2017
EN 61000-4-2:2009 (IEC 61000-4-2:2008)
EN 61000-4-3:2006+A1:2008+A2:2010 (IEC 61000-4-3:2006+A1:2007+A2:2010)
EN 61000-4-4:2012 (IEC 61000-4-4:2012)
EN 61000-4-5:2014 (IEC 61000-4-5:2014)
EN 61000-4-6:2014 (IEC 61000-4-6:2013)
EN 61000-4-8:2010 (IEC 61000-4-8:2009)
EN 61000-4-11:2004 (IEC 61000-4-11:2004)

The above equipment was tested by EU CERTIFICATION TECHNOLOGY CO., LTD. For compliance with the requirements set forth in the EUROPEAN Directive 2014/30/EU and the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested.

Approved By: Albert Tsai **Date:** June 09, 2023

(Albert Tsai)

1.1 DESCRIPTION OF THE TESTED SAMPLES

EUT		
EUT Type	:	Final sample
EUT Name	:	5” HDMI Interface Diplay
Model No	:	WF50FTYFGDHG0#, WF50FTYFGDHGV#, WF50FTYFGDHN0#, WF50FTYFGDHNV#, WF50FTYFGDHTV#
EUT Power Rating	:	Input rating: DC 5V
Power Supply Type	:	☐ N/A
		☐ Linear
		☑ Switching
Power From	:	☐ N/A
		☑ Adapter: AC 110V-240V/50Hz
		☐ AC Power Source
		☐ BATTERY
		☐ DC Power Source
		☐ Power Supply
		☐ Support Unit PC
The highest internal frequency of EUT	:	50Hz
EUT Received Date	:	May 23, 2023
EMC Test Completed Date	:	June 09, 2023

1.2 SUMMARY OF TEST RESULT

Emissions			
Test Standard	**Test Item**	**Limit**	**Result**
EN 55032	Conducted Emission	Class A	**PASS**
	Conducted Emission At Telecommunication Ports	N/A	N/A
	Radiation Emission	Class A	**PASS**
IEC/EN 61000-3-2	Harmonic Emission	Refer to page 26	**PASS**
IEC/EN 61000-3-3	Flicker Emission	Refer to page 29	**PASS**

Immunity				
Test Standard EN 55024	**Test Item**	**Performance Criteria**	**Observed Result Class**	**Result**
IEC/EN 61000-4-2	Electrostatic Discharge	B	A	**PASS**
IEC/EN 61000-4-3	RF Electromagnetic Field	A	A	**PASS**
IEC/EN 61000-4-4	Fast Transients	B	A	**PASS**
IEC/EN 61000-4-5	Surges	B	A	**PASS**
IEC/EN 61000-4-6	Conducted Susceptibility	A	A	**PASS**
IEC/EN 61000-4-8	Power Frequency Magnetic Field	A	A	**PASS**
IEC/EN 61000-4-11	Volt. Interruptions volt. Dips	B/C/C	B/C/C	**PASS**
	Broadband impulse noise disturbances, repetitive	A	--	N/A(2)
	Broadband impulse noise disturbances, isolated	A	--	N/A(2)

Remark:
N/A denotes test is not applicable in this Test Report.
Without CPE xDSL port of the EUT.

DESCRIPTION OF TEST MODES

1. EUT SYSTEM OPERATION

(1) The EUT was configured according to please refer to Page 6.
(2) All I/O ports are connected to the appropriate peripherals.
(3) Perform the EMC testing procedures, and measure the maximum emission noise.

2. DESCRIPTION OF FINAL TEST MODE FOR CONDUCTED EMISSION

Test Mode	Test condition	Pre-test	Final Data
Mode 1:	OPERATING	√	√

3. DESCRIPTION OF FINAL TEST MODE FOR RADIATED EMISSION

Test Mode	Test condition	Pre-test	Final Data
Mode 1:	OPERATING	√	√

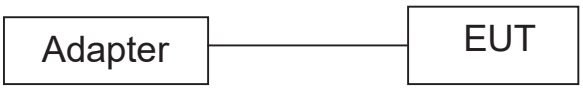
4. EMS TEST MODE

Test Mode	Test condition	Pre-test	Final Data
Mode 1:	OPERATING	√	√

1.3 DESCRIPTION OF THE SUPPORT EQUIPMENTS

Set up Diagram

OPERATING:



Support Equipment

Peripherals Devices:

OUTSIDE SUPPORT EQUIPMENT							
No.	**Equipment**	**Model**	**Serial No.**	**FCC ID / BSMI ID**	**Trade name**	**Data Cable**	**Power Cord**
1.							

INSIDE EQUIPMENT							
No.	**Equipment**	**Model**	**Serial No.**	**FCC ID / BSMI ID**	**Trade name**	**Data Cable**	**Power Cord**
1.							

Note: All the above equipment /cable were placed in worse case position to maximize emission signals during emission test.
Grounding: Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.

1.4 FEATURES OF EUT

Please refer to user manual or product specification.

2. Instrument and Calibration

2.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized international standards BIPM.

2.2 TEST AND MEASUREMENT EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.

TABLE 1 LIST OF TEST AND MEASUREMENT EQUIPMENT

Conducted Emission					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
LISN	SCHWARZBECK	NSLK 8127	01021	10-Sep-2022	09-Sep-2023
Cable	HongAn	RG 223/U	HA2-CE	20-Aug-2022	19-Aug-2023
EMI Receiver	R&S	ESCI 7	100931	06-Aug-2022	05-Aug-2023
Software	Audix	e3 (Ver:6.101006a)	N/A	N/A	N/A
Radiated Emission Test					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
EMI Receiver	R&S	ESCI 7	100931	06-Aug-2022	05-Aug-2023
Preamplifier	CHASE	CPA 9231A	0405	15-Dec-2022	14-Dec-2023
Bilog Antenna (10m)	TESEQ	CBL6111D	47016	09-Jul-2022	08-Jul-2023
Cable	HongAn	8D-FB	HA2-10MSite	20-Aug-2022	19-Aug-2023
Software	Audix	e3 (Ver:6.101006a)	N/A	N/A	N/A
Harmonic Current Emission					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
Signal conditioning unit	TESEQ	CCN 1000-1	1918A03073	02-Jul-2022	01-Jul-2023
AC Power Source	TESEQ	NSG 1007	1919A00280	02-Jul-2022	01-Jul-2023
Software	TESEQ	CTS4 (Version 4.18.0)	N/A	N/A	N/A
Voltage Fluctuations and Flicker					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
Signal conditioning unit	TESEQ	CCN 1000-1	1918A03073	02-Jul-2022	01-Jul-2023
AC Power Source	TESEQ	NSG 1007	1919A00280	02-Jul-2022	01-Jul-2023
Software	TESEQ	CTS4 (Version 4.18.0)	N/A	N/A	N/A

Electrostatic Discharge immunity test					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
Electrostatic Discharge Simulator	Noiseken	ESS-B3011	ESS1632985	12-May-2023	11-May-2024
Discharge Gun	Noiseken	GT-30R	ESS1632993	12-May-2023	11-May-2024
Radiated, radio-frequency, electromagnetic field immunity test					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
Signal Generator	R&S	SMB100A	110549	19-Sep-2022	18-Sep-2023
RF Power Amplifier	ar	150W1000	0343919	N/A	N/A
RF Amplifier	ar	15S1G3	306578	N/A	N/A
Dual Directional Coupler	WERLATONE	C6021-10	108038	N/A	N/A
Directional Coupler	ATM	CHPsc22L-40	Q308504-01	N/A	N/A
Power Sensor	TESEQ	PM6003	074395	29-Jul-2022	28-Jul-2023
Power Sensor	TESEQ	PM6003	074396	29-Jul-2022	28-Jul-2023
Bilog Antenna	TESEQ	CBL6111D	47016	23-Jul-2022	22-Jul-2023
Broadband Field Meter	Narda	NBM-520	D-0519	16-Oct-2022	15-Oct-2023
Probe	Narda	EF-0691	D-0102	16-Oct-2022	15-Oct-2023
Software	Audix	i2 (Ver:20151112c)	N/A	N/A	N/A
Electrical fast transient/burst immunity test					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
EMCPro Plus EMC Test System	ThermoFisher	EMC Pro PLUS	1507189	19-May-2023	18-May-2024
Capacitor Clamp	ThermoFisher	CCL	1507182	19-May-2023	18-May-2024
Software	KeyTek	CEWare32 (Ver:4.1)	N/A	N/A	N/A

Surge immunity test					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
EMCPro Plus EMC Test System	ThermoFisher	EMC Pro PLUS	1507189	19-May-2023	18-May-2024
Software	KeyTek	CEWare32 (Ver:4.1)	N/A	N/A	N/A

Immunity to conducted disturbances, induced by radio-frequency fields					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
Signal Generator	R&S	SMB100A	110549	19-Sep-2022	18-Sep-2023
Wide Band Amplifier	ifi	CMX50	D019-0200	N/A	N/A
6dB Attenuator	BIRD	50-A-MFN-06	004	N/A	N/A
Dual Directional Coupler	WERLATONE	C6021-10	108038	N/A	N/A
Power Sensor	TESEQ	PM6003	074395	29-Jul-2022	28-Jul-2023
Power Sensor	TESEQ	PM6003	074396	29-Jul-2022	28-Jul-2023
CDN	FCC	FCC-801-M3-32 A	2019	20-Jan-2023	19-Jan-2024
Software	Audix	i2 (Ver:20151112b)	N/A	N/A	N/A
Power frequency magnetic field immunity test					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
EMCPro Plus EMC Test System	ThermoFisher	EMC Pro PLUS	1507189	19-May-2023	18-May-2024
Magnetic Field Immunity Loop	ThermoFisher	F-1000-4-8/9/10 -L-1M	9953	19-May-2023	18-May-2024
Software	KeyTek	CEWare32 (Ver:4.1)	N/A	N/A	N/A
Voltage dips, short interruptions and voltage variations immunity tests					
Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
EMCPro Plus EMC Test System	ThermoFisher	EMC Pro PLUS	1507189	19-May-2023	18-May-2024
Software	KeyTek	CEWare32 (Ver:4.1)	N/A	N/A	N/A

Estimated Measurement Uncertainty

Where relevant, the following measurement uncertainty levels has been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Test Item	Expanded Uncertainty	Maximum allowable
Conducted emission at AC mains power using a V-AMN, 9kHz – 150kHz	2.94dB	3.8dB (*U*cispr)
Conducted emission at AC mains power using a V-AMN, 150kHz - 30MHz	3.05dB	3.4dB (*U*cispr)
Conducted emission at telecommunication port using AAN, 150kHz - 30MHz	4.71dB	5.0dB (*U*cispr)
Radiated emission, 30MHz-1GHz	5.04dB	6.3dB (*U*cispr)
Radiated emission, 1GHz – 6GHz	4.37dB	5.2dB (*U*cispr)
Note: This reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k = 2, providing a level of confidence of approximately 95%.		

2.3 TEST PERFORMED

Conducted emissions were invested over the frequency range from 0.15MHz to 30 MHz using a receiver which resolution bandwidth is set at 9kHz.

Radiated emissions were invested over the frequency range from 30 MHz to 1000 MHz using a receiver which resolution bandwidth is set at 120kHz. Radiated measurement was performed at distance that from an antenna to EUT is 10 m.

Radiated emissions were invested over the frequency range above 1GHz using a receiver which resolution bandwidth is set at 1MHz. Radiated measurement was performed at distance that from an antenna to EUT is 3 m.

2.4 APPENDIX

Appendix A:

Measurement Procedure for Main Power Port Conducted Emissions

The measurements are performed in a Ancert lab room; The EUT was placed on non-conductive 1.0m x 1.5m table, which is 0.8 m above an earth-grounded.

Power to the EUT was provided through the LISN which has the Impedance (50ohm/50uH) vs. Frequency Characteristic in accordance with the standard. Powers to the LISNs were filtered to eliminate ambient signal interference and these filters were bonded to the ground plane. Peripheral equipment required to provide a functional system (support equipment) for EUT testing was powered from the second LISN through a ganged, metal power outlet box which is bonded to the ground plane at the LISN.

If the EUT is supplied with a flexible power cord, the power cord length in excess of the distance separating the EUT from the LISN shall be folded back and forth at the center of the lead so as to form a bundle not exceeding 40cm in length. If the EUT is provided with a permanently coiled power cord, bundling of the cord is not required. If the EUT is supplied without a power cord, the EUT shall be connected to the LISN by a power cord of the type specified by the manufacturer which shall not be longer than 1 m. The excess power cord shall be bundled as described above. If a non-flexible power cord is provided with the EUT, it shall be cut to the length necessary to attach the EUT to the LISN and shall not be bundled.

The interconnecting cables were arranged and moved to get the maximum measurement. Both the line of power cord, hot and neutral, were measured.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

Appendix B:

Test Procedure for Radiated Emissions

Preliminary Measurements in the Anechoic Chamber

The radiated emissions are initially measured in the anechoic chamber at a measurement distance of 3 m. Desktop EUT are placed on a non-conductive table stand 0.8 m in height. The measurement antenna is 3 m from the EUT. The test setup in anechoic chamber is the same as Open Area Test Site (OATS). The turntable rotated 360°C. The antenna height is 1 m. The primary objective of the radiated measurements in the anechoic chamber is to identify the frequency spectrum in the absence of the electromagnetic environment existing on the open test site. The frequencies can then be pre-selected on the open test site to obtain the corresponding amplitude. The initial scan is made with the spectrum analyzer in automatic sweep mode. The spectrum peaks are then measured manually to determine the exact frequencies.

Final Measurements on the Open Area Test Site (OATS) or Chamber

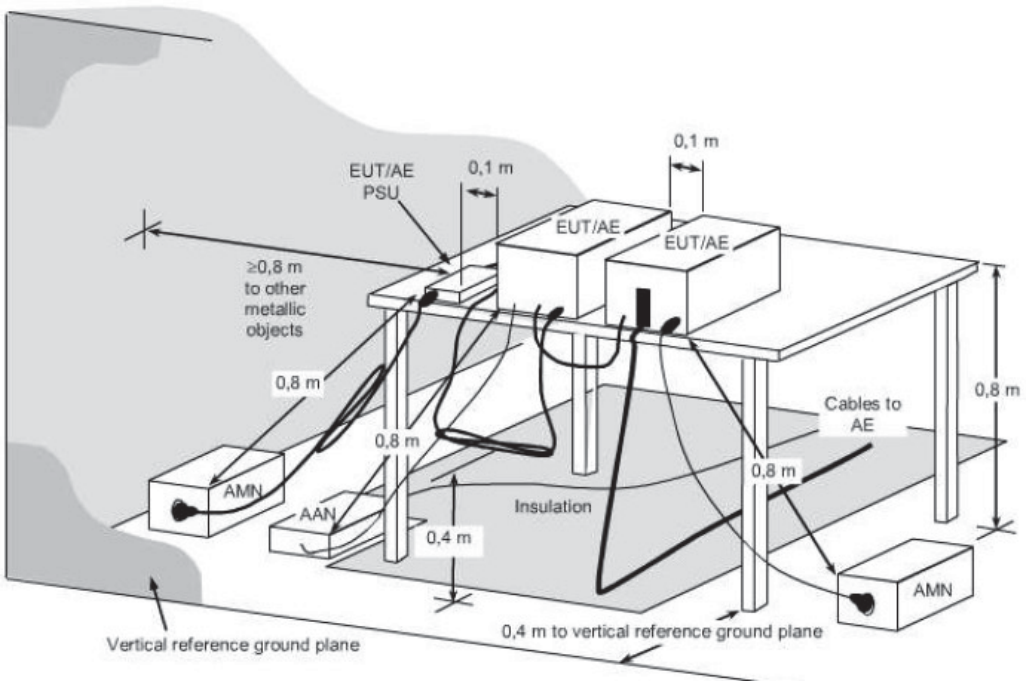
The radiated emissions test will then be repeated on the Open Area Test Site (OATS) or chamber to measure the amplitudes accurately and without the multiple reflections existing in the shielded room. The EUT and support equipment's are set up on the turntable. Desktop EUT are set up on a non-conductive table stand 0.8 m above the ground.

For the initial measurements, the receiving antenna is varied from 1-4 m height and is changed in the vertical plane from vertical to horizontal polarization at each frequency. Both reading are recorded with the quasi-peak detector with 120kHz bandwidth. For frequency between 30 MHz and 1000 MHz, the reading is recorded with peak detector or quasi-peak detector. For the frequency range is above 1GHz, the EUT was positioned such that distance from antenna to the EUT is 3 m. The bandwidth set on the field strength is 1 MHz when the frequency range is above 1GHz.

At the highest amplitudes observed, the EUT is rotated in the horizontal plane while changing the antenna polarization in the vertical plane to maximize the reading. The interconnecting cables were arranged and moved to get the maximum measurement. Once the maximum reading is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings.

3. Conducted Emission Measurement

3.1 TEST SET-UP



3.2 LIMIT

Frequency range (MHz)	CLASS A		CLASS B		Receiver RBW
	QP dB(uV)	Average dB(uV)	QP dB(uV)	Average dB(uV)	
0.15-0.5	79 dBuV	66 dBuV	66 - 56 dBuV	56 - 46 dBuV	9kHz
0.5-5.0	73 dBuV	60 dBuV	56 dBuV	46 dBuV	9kHz
5.0-30.0	73 dBuV	60 dBuV	60 dBuV	50 dBuV	9kHz
Remark: In the above table, the tighter limit applies at the band edges.					

3.3 TEST PROCEDURE

The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). It provides a 50 ohm / 50 μH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm / 50 μH coupling impedance with 50 ohm termination. (Please refer to the block diagram of the test setup and photograph.)

Both sides of AC line are checked for the maximum conducted emission interference. In order to find the maximum emissions, the relating positions of equipment and all of the interference cables must be changed according to please refer to Page 6 regulations: The measurement procedure on conducted emission interference.

The resolution bandwidth of the field strength m is set at 9kHz.

3.4 TEST SPECIFICATION

According to EN 55032 Class A
(Please refers to Page 6 for dated references which are related to the standard as mentioned above.)

3.5 TEST DATA

Please refer to appendix 2.

3.6 TEST RESULT

All test results have complied with EN 55032.

3.7 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

3.8 LIMIT OF CONDUCTED COMMON MODE DISTURBANCE AT TELECOMMUNICATION PORTS:

Frequency Range	Class A		Class B		Receiver RBW
MHz	Quasi Peak (dBuV)	Average	Quasi Peak (dBuV)	Average	
0.15 ~ 0.5	97 - 87	84 – 74	84 – 74	74 – 64	9kHz
0.5 ~ 30	87	74	74	64	9kHz
The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz for Class B.					

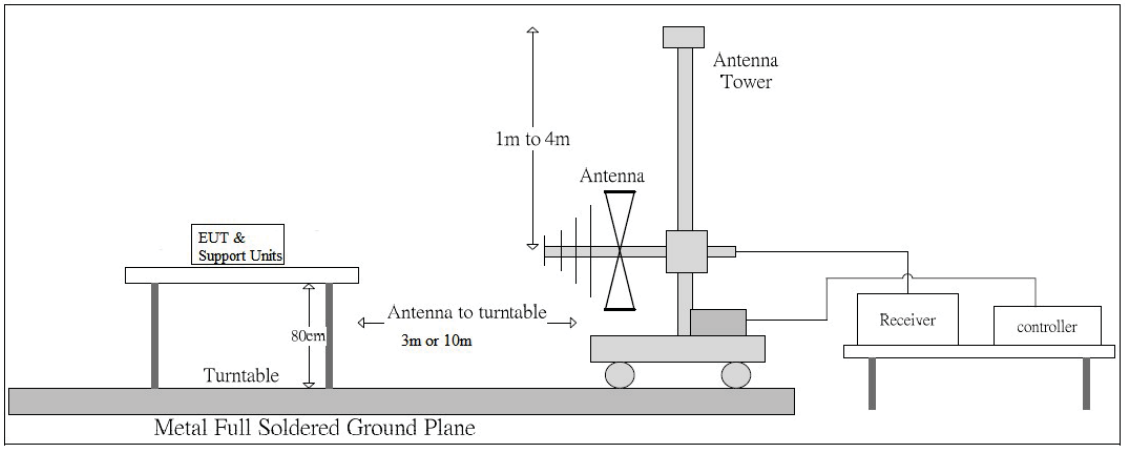
3.9 RESULT OF CONDUCTED COMMON MODE DISTURBANCE AT TELECOMMUNICATION PORTS

Not applicable, because the EUT hasn't Telecommunication Port.

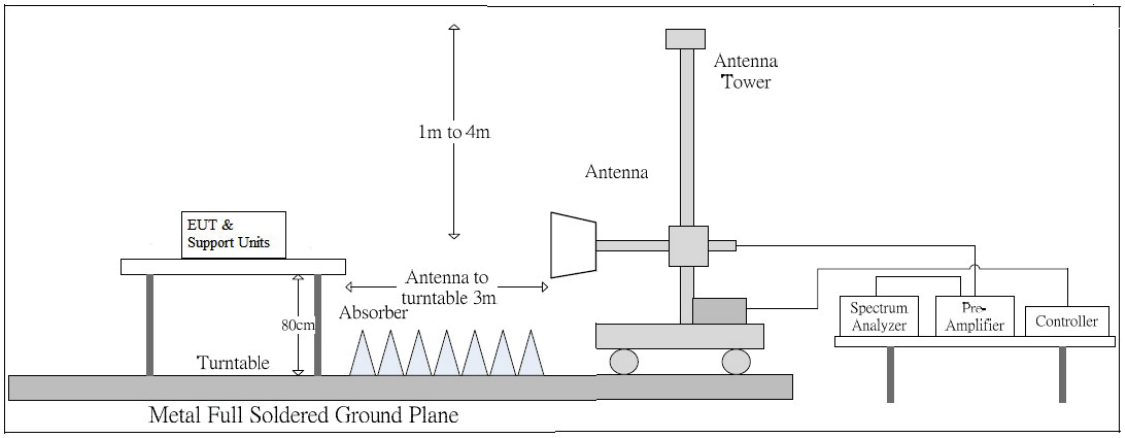
4. Radiated Emission Measurement

4.1 TEST SET-UP

Radiated emission measurements below 1GHz.



Radiated emission measurements above 1GHz.



4.2 LIMIT

For Class A

Frequency range MHz	Distance (m)	Quasi-peak limits dB(μV/m)
30 to 230	10	40
230 to 1000	10	47

For Class B

Frequency range MHz	Distance (m)	Quasi-peak limits dB(μV/m)
30 to 230	10	30
230 to 1000	10	37

For Class A

Frequency range GHz	Average limit dB(μV/m)	Peak limit dB(μV/m)
1 to 3	56	76
3 to 6	60	80
NOTE the lower limit applies at the transition frequency.		

For Class B

Frequency range GHz	Average limit dB(μV/m)	Peak limit dB(μV/m)
1 to 3	50	70
3 to 6	54	74
NOTE the lower limit applies at the transition frequency.		

The highest internal source of an EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes.

Highest Frequency Generated (Note1)	CISPR 32 EN 55032
< 180 MHz	1000 MHz
108-500 MHz	2000 MHz
500-1000 MHz	5000 MHz
>1 GHz	5 x the frequency but no higher than 6 GHz.
Note 1: This highest frequency includes signals generated within processors and other ICs. Note: The Lower limit applies at the boundary between the Frequency ranges.	

4.3 TEST PROCEDURE

The EUT and its simulators are placed on turn table, non-conductive table, which is 0.8 m above ground. The turn table rotates 360 degree to determine the position of the maximum emission level. The EUT was positioned such that distance from antenna to the EUT is 10 m. For the frequency range is above 1GHz, the EUT was positioned such that distance from antenna to the EUT is 3 m.

The antenna is moved up and down between 1 m and 4 m to receive the maximum emission level.

Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission, all of the interference cables must be manipulated according to please refer to Page 6 regulations: the test procedure of the radiated emission measurement.

The bandwidth set on the field strength is 120kHz when the frequency range is below 1GHz. The bandwidth set on the field strength is 1MHz when the frequency range is above 1GHz.

4.4 TEST SPECIFICATION

According to EN 55032 Class A
(Please refers to Page 6 for dated references which are related to the standard as mentioned above.)

4.5 TEST DATA

Please refer to appendix 3.

4.6 TEST RESULT

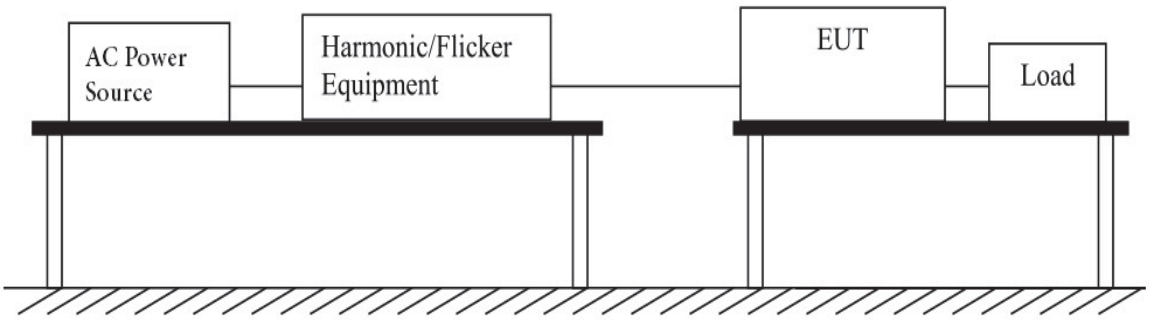
All test results have complied with EN 55032.

4.7 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

5. HARMONIC CURRENT EMISSIONS MEASUREMENT

5.1 TEST SETUP



5.2 LIMIT OF HARMONIC CURRENT

For Class A Equipment

Harmonic Order	LIMIT(Amp.)	Harmonic Order	LIMIT(Amp.)
Even Harmonic		Odd Harmonic	
2	1.08	3	2.30
4	0.43	5	1.14
6	0.30	7	0.77
8 < n < 40	0.23 x 8 / n	9	0.40
		11	0.33
		13	0.21
		15 < n < 39	0.15 x 15 / n

For Class D Equipment

Harmonic Order	Maximum Permissible Harmonic Current (Ampere)	Maximum Permissible Harmonic Current (Ampere)
Odd Harmonic		
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13	0.30	0.21
$15 \leq n \leq 39$	3.85 / n	0.15 x 15 / n
The above limits for Class D equipment are for all applications having an active input power > 75 W. No limits apply for equipment whose active input power is lower than 75 W.		

5.3 TEST PROCEDURE

The EUT is supplied in series with power analyzer from a power source has the same normal voltage and frequency as the rated supply voltage and the equipment under test.

5.4 TEST SPECIFICATION

According to **EN 61000-3-2**
(Please refer to Page 6 for dated references which are related to the standard as mentioned above.)

5.5 TEST DATA

Please refer to next page.

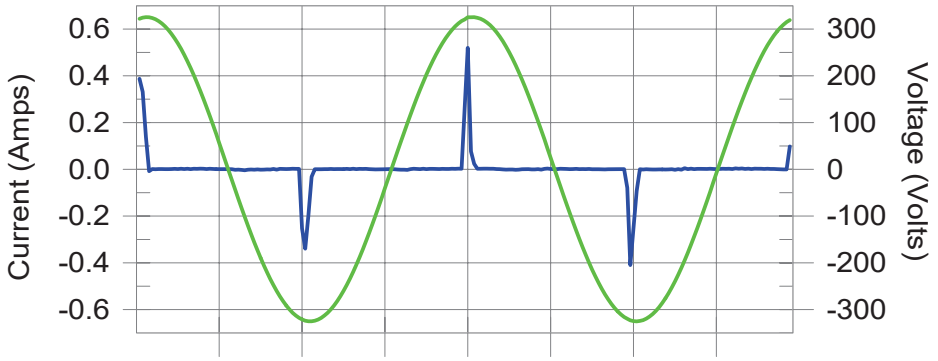
5.6 TEST RESULT:

All test results have complied with EN 61000-3-2.

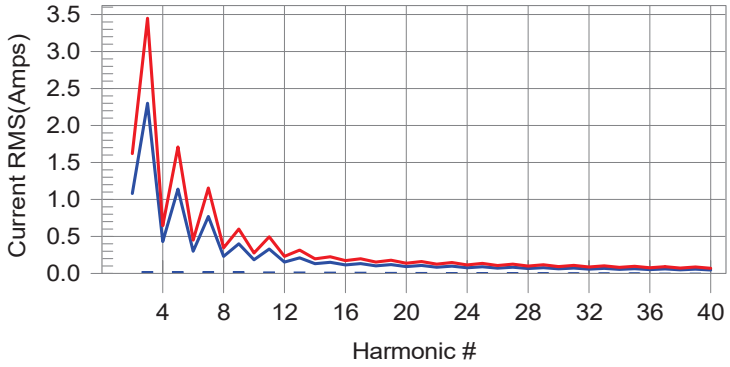
Harmonics – Class-A per IEC 61000-3-2:2018/AMD1:2020(Run time) incl. inter-harmonics

EUT: 5"HDMI Interface Diplay
Tested by: TOM
Test category: Class-A (European limits)
Test Margin: 100
Test date: June 01, 2023
Data file name: H-000126.cts_data
Comment: 23C / 55% / 1008 mbar
Customer: P2353101 3HC60102
Test Result: Pass
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonics H19-8.3% of 150% limit, H19-12.2% of 100% limit

Current Test Result Summary (Run time)

EUT: 5"HDMI Interface Diplay
Tested by: TOM
Test category: Class-A (European limits)
Test Margin: 100
Test date: June 01, 2023
Data file name: H-000126.cts_data
Comment: 23C / 55% / 1008 mbar
Customer: P2353101 3HC60102

Test Result: Pass **Source qualification: Normal**
THC(A): 0.065 **I-THD(%): 257.5** **POHC(A): 0.025** **POHC Limit(A): 0.251**
Highest parameter values during test:
V_RMS (Volts): 230.12 **Frequency(Hz): 50.00**
I_Peak (Amps): 0.627 **I_RMS (Amps): 0.075**
I_Fund (Amps): 0.025 **Crest Factor: 8.878**
Power (Watts): 5.8 **Power Factor: 0.351**

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	0.024	2.300	1.0	0.025	3.450	0.7	Pass
4	0.001	0.430	N/A	0.001	0.645	N/A	Pass
5	0.023	1.140	2.0	0.024	1.710	1.4	Pass
6	0.001	0.300	N/A	0.001	0.450	N/A	Pass
7	0.022	0.770	2.9	0.023	1.155	2.0	Pass
8	0.001	0.230	N/A	0.001	0.345	N/A	Pass
9	0.022	0.400	5.4	0.022	0.600	3.7	Pass
10	0.001	0.184	N/A	0.001	0.276	N/A	Pass
11	0.020	0.330	6.2	0.021	0.495	4.3	Pass
12	0.001	0.153	N/A	0.001	0.230	N/A	Pass
13	0.019	0.210	9.0	0.020	0.315	6.2	Pass
14	0.001	0.131	N/A	0.001	0.197	N/A	Pass
15	0.018	0.150	11.7	0.018	0.225	8.0	Pass
16	0.001	0.115	N/A	0.001	0.173	N/A	Pass
17	0.016	0.132	12.1	0.016	0.198	8.3	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.014	0.118	12.2	0.015	0.178	8.3	Pass
20	0.001	0.092	N/A	0.001	0.138	N/A	Pass
21	0.013	0.107	11.9	0.013	0.161	8.1	Pass
22	0.001	0.084	N/A	0.001	0.125	N/A	Pass
23	0.011	0.098	11.4	0.011	0.147	7.8	Pass
24	0.001	0.077	N/A	0.001	0.115	N/A	Pass
25	0.010	0.090	10.7	0.010	0.135	7.3	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass
27	0.008	0.083	9.9	0.008	0.125	6.7	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass

29	**0.007**	**0.078**	**9.0**	**0.007**	**0.116**	**6.2**	**Pass**
30	**0.001**	**0.061**	**N/A**	**0.001**	**0.092**	**N/A**	**Pass**
31	**0.006**	**0.073**	**8.2**	**0.006**	**0.109**	**5.6**	**Pass**
32	**0.001**	**0.058**	**N/A**	**0.001**	**0.086**	**N/A**	**Pass**
33	**0.005**	**0.068**	**7.5**	**0.005**	**0.102**	**5.1**	**Pass**
34	**0.001**	**0.054**	**N/A**	**0.001**	**0.081**	**N/A**	**Pass**
35	**0.004**	**0.064**	**N/A**	**0.005**	**0.096**	**N/A**	**Pass**
36	**0.001**	**0.051**	**N/A**	**0.001**	**0.077**	**N/A**	**Pass**
37	**0.004**	**0.061**	**N/A**	**0.004**	**0.091**	**N/A**	**Pass**
38	**0.001**	**0.048**	**N/A**	**0.001**	**0.073**	**N/A**	**Pass**
39	**0.004**	**0.058**	**N/A**	**0.004**	**0.087**	**N/A**	**Pass**
40	**0.001**	**0.046**	**N/A**	**0.001**	**0.069**	**N/A**	**Pass**

Voltage Source Verification Data (Run time)

EUT: 5"HDMI Interface Diplay
Tested by: TOM
Test category: Class-A (European limits)
Test Margin: 100
Test date: June 01, 2023
Data file name: H-000126.cts_data
Comment: 23C / 55% / 1008 mbar
Customer: P2353101 3HC60102

Test Result: Pass **Source qualification: Normal**
Highest parameter values during test:

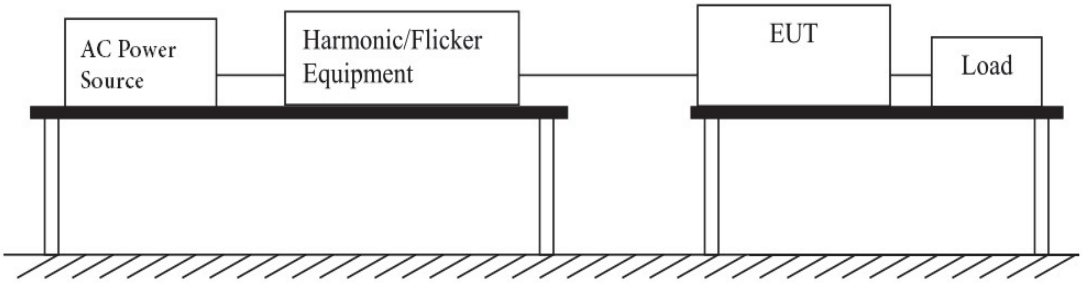
Voltage (Vrms):	**230.12**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**0.627**	**I_RMS (Amps):**	**0.075**
I_Fund (Amps):	**0.025**	**Crest Factor:**	**8.878**
Power (Watts):	**5.8**	**Power Factor:**	**0.351**

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.020	0.460	4.29	OK
3	0.377	2.071	18.23	OK
4	0.011	0.460	2.33	OK
5	0.014	0.920	1.48	OK
6	0.014	0.460	3.08	OK
7	0.006	0.690	0.85	OK
8	0.010	0.460	2.24	OK
9	0.011	0.460	2.30	OK
10	0.011	0.460	2.33	OK
11	0.014	0.230	6.26	OK
12	0.010	0.230	4.30	OK
13	0.012	0.230	5.30	OK
14	0.006	0.230	2.39	OK
15	0.008	0.230	3.29	OK
16	0.003	0.230	1.10	OK
17	0.013	0.230	5.70	OK
18	0.005	0.230	2.01	OK
19	0.014	0.230	6.25	OK
20	0.009	0.230	3.82	OK
21	0.009	0.230	3.91	OK
22	0.003	0.230	1.29	OK
23	0.014	0.230	6.10	OK
24	0.002	0.230	0.99	OK
25	0.013	0.230	5.51	OK
26	0.003	0.230	1.19	OK
27	0.008	0.230	3.30	OK
28	0.003	0.230	1.13	OK
29	0.011	0.230	4.95	OK
30	0.004	0.230	1.55	OK

31	**0.009**	**0.230**	**4.09**	**OK**
32	**0.002**	**0.230**	**0.94**	**OK**
33	**0.007**	**0.230**	**2.98**	**OK**
34	**0.003**	**0.230**	**1.32**	**OK**
35	**0.006**	**0.230**	**2.81**	**OK**
36	**0.003**	**0.230**	**1.29**	**OK**
37	**0.005**	**0.230**	**2.38**	**OK**
38	**0.003**	**0.230**	**1.09**	**OK**
39	**0.009**	**0.230**	**3.78**	**OK**
40	**0.006**	**0.230**	**2.80**	**OK**

6. VOLTAGE FLUCTUATIONS

6.1 TEST SETUP



6.2 VOLTAGE FLUCTUATIONS TEST

Port:	**AC mains**
Basic Standard:	EN 61000-3-3
Test Procedure	Refer to paragraph 6.3
Observation period:	For Pst 10min
	For Plt 2 hours

6.3 TEST PROCEDURE

The EUT is supplied in series with reference impedance from a power source with the voltage and frequency as the nominal supply voltage and frequency of the EUT.

6.4 TEST SPECIFICATION

According to **EN 61000-3-3**
(Please refer to Page 6 for dated references which are related to the standard as mentioned above.)

6.5 TEST DATA

Please refer to next page.

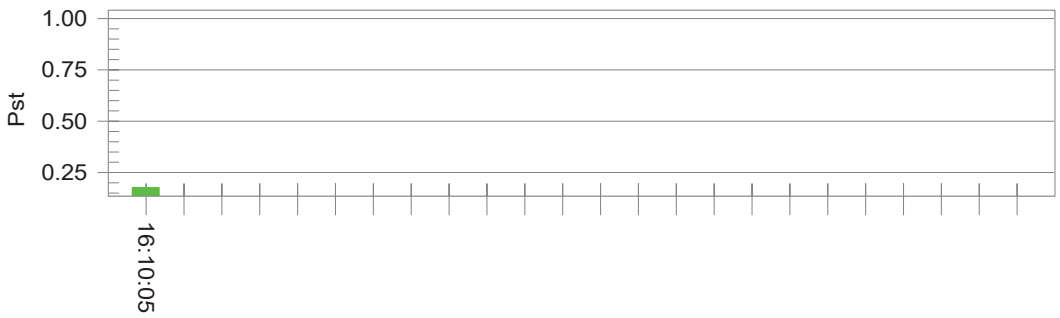
6.6 TEST RESULT

All test results have complied with EN 61000-3-3.

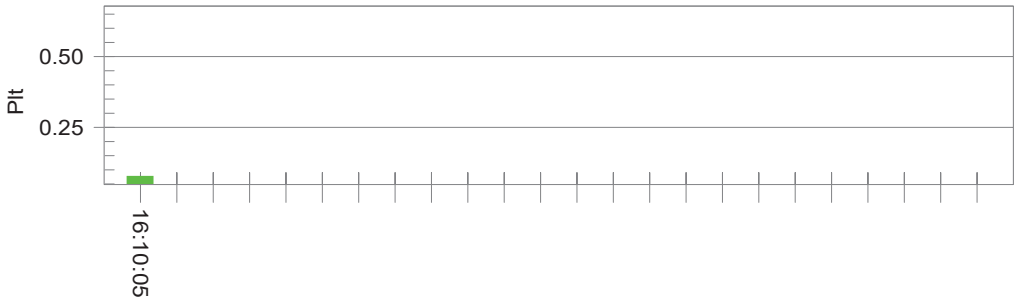
Flicker Test Summary per IEC61000-3-3:2013/AMD1:2017 (Run time)

EUT: 5"HDMI Interface Diplay
Tested by: TOM
Test category: All parameters (European limits)
Test Margin: 100
Test date: June 01, 2023
Data file name: F-000128.cts_data
Comment: 23C / 55% / 1008 mbar
Customer: P2353101 3VF60102
Test Result: Pass
Status: Test Completed

Pst_i and limit line **European Limits**



Plt and limit line

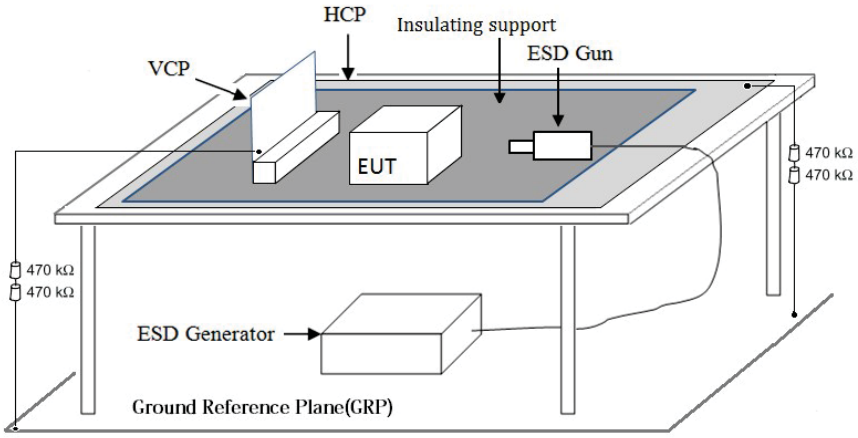


Parameter values recorded during the test:
Vrms at the end of test (Volt): 230.08

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):	**0.176**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.077**	**Test limit:**	**0.650**	**Pass**

7. ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

7.1 TEST SETUP



7.2 TEST SPECIFICATION

According to **EN 61000-4-2**
(Please refer to Page 6 for dated references which are related to the standard as mentioned above.)

7.3 TEST LEVEL

Item	Test Specification	Unit	Performance Criteria
Enclosure Room	±2, ±4, ±8 (Air Discharge)	KV (Charge Voltage)	B
Electrostatic Discharge	±2, ±4 (Contact Discharge)		
Time between test	1	sec	

Number of test: 11 Discharges / Test point / Polarity / Level Particular requirements: at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points.

When the measurement was taken, The ESD discharger was performed in single discharge. For the single discharge time between successive single discharges will keep on one second. It was at least ten single discharges with positive and negative at the same selected pointed. The selected pointed, which was performed with electrostatic discharge, was marked on the red label on the EUT Indirect applicant of discharge to the EUT

Vertical Coupling Plane (VCP)

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

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

Horizontal Coupling Plane (HCP)

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

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

7.4 TEST RESULT

Model: WF50FTYFGDHG0#

Temperature: 22℃ Humidity: 52% RH Test Date: June 01, 2023

Atmospheric pressure: 990hPa

Direct Mode				
Test Point	**Air Discharge**	**Contact Discharge**	**Performance Criteria**	**Result**
CASE	±2, ±4, ±8 KV	N/A	A	PASS
PANEL	±2, ±4, ±8 KV	N/A	A	PASS
SCREWS	N/A	±2, ±4KV	A	PASS
I/O Port	N/A	±2, ±4KV	A	PASS
Indirect Mode				
Contact Discharge				
HCP	N/A	±2, ±4KV	A	PASS
VCP	N/A	±2, ±4KV	A	PASS

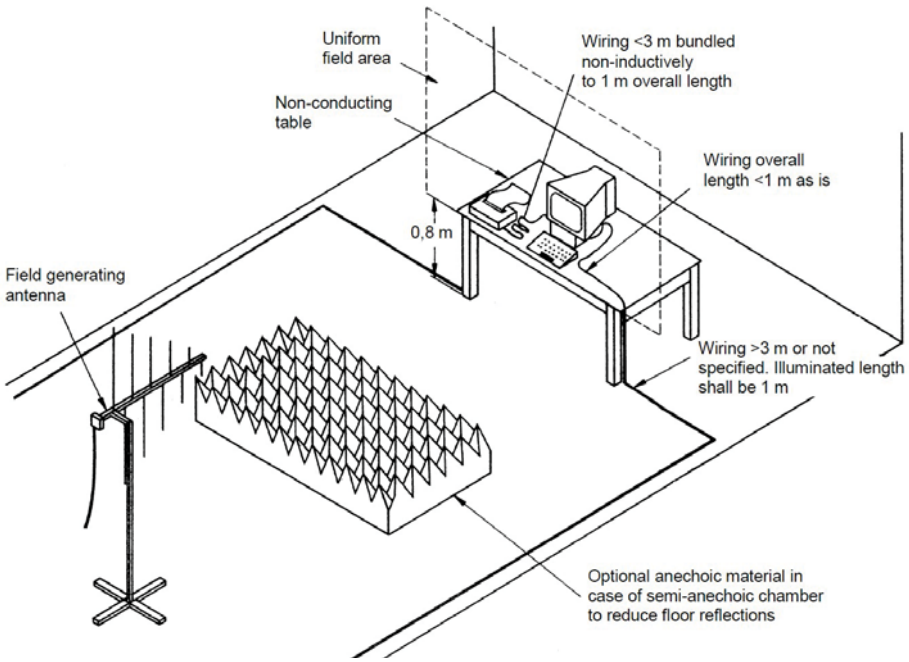
Performance criterion:
Criterion A: Normal performance during test.
Criterion B: Temporary degradation or loss of function of performance which is self-recoverable.
Criterion C: Temporary degradation or loss of function or performance which requires operator intervention system reset.

7.5 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

8. RADIATED SUSCEPTIBILITY MEASUREMENT (RS)

8.1 TEST SETUP



8.2 TEST SPECIFICATION

According to EN 61000-4-3
(Please refer to Page 6 for dated references which are related to the standard as mentioned above)

8.3 TABLE-TOP EQUIPMENT

The field calibration was executed to create a uniform field area (UFA), 3 m away from the antenna, to ensure the validity of the test results.

The EUT was placed on a non-conductive table 0.8 m high in the UFA.
The EUT was then connected to power and signal wires according to relevant installation instruction.

The EUT was positioned so that the four sides of the EUT were exposed to the electromagnetic field in sequence. In each position, the performance of the EUT was investigated and monitored by a CCD camera.

8.4 TEST RESULT

Model: WF50FTYFGDHG0#

Temperature: 22℃ Humidity: 52% RH Test Date: June 01, 2023

Type of Modulation	Test Specifications					Performance Required by EN 55035	Observed Result	Verdict
	Field Strength	Frequency Range	Modulation	EUT Position (°)	Antenna Polarization			
Continuous RF electromagnetic field disturbances, swept test	3V/m	80 to 1000MHz	80%, 1KHz, sinusoidal	0, 90, 180, 270	Horizontal & Vertical	A	A	Pass1
Continuous RF electromagnetic field disturbances, spot test	3V/m	1800, 2600, 3500, 5000 (±1%)	80%, 1KHz, sinusoidal	0, 90, 180, 270	Horizontal & Vertical	A	A	Pass1
Remark	No temporary degradation or loss of function has been observed throughout the entire test.							

The Performance Requirement Class Criterion is defined in Sec. 1.11.

Performance criterion:

Criterion A: Normal performance during test.

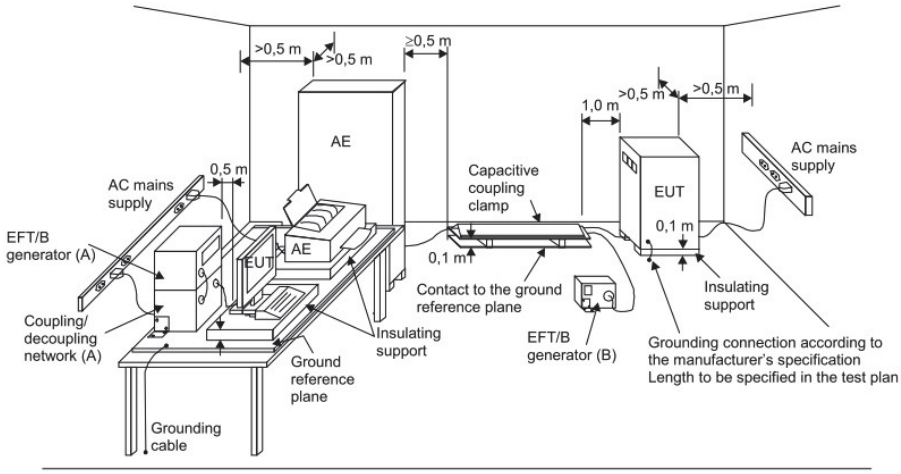
Criterion B: Temporary degradation or loss of function of performance which is self-recoverable.
Criterion C: Temporary degradation or loss of function or performance which requires operator intervention system reset.

8.5 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

9. ELECTRICAL FAST TRANSIENT/BURST (EFT)

9.1 TEST SETUP



(A) location for supply line coupling
(B) location for signal lines coupling

9.2 TEST SPECIFICATION

According to EN 61000-4-4
(Please refer to Page 6 for dated references which are related to the standard as mentioned above.)

9.3 TEST PROCEDURE

The EUT and load are placed on a ground reference plane and insulated from it by an insulating support 0,1 m ± 0,01 m thick. The minimum area of the ground reference plane is 1 m × 1 m. It also projected beyond the EUT by at lease 0.1m on all sides.

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

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

Each of the line and nature conductors is impressed with burst noise for 1 minute.

For Protective Earth Port:

The EUT is connected to the power mains through a coupling device that directly couples the EFT interference signal. The protective earth line (PE) is impressed with burst noise for 1 minute.

The length of power cord between the coupling device and the EUT shall be 0,5 m ± 0,05 m.

For signal Lines and Control Lines Test:

The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1 minute.

9.4 TEST LEVEL

Item	Test Specification		Unit	Performance Criteria
Test Voltage	AC Input Power Line	±1	KV (Peak)	B
	DC Input Power Line	±0.5		
	Signal & Telecommunication Port	±0.5		
Pulse Rise time & Duration	5/50		Tr/Ts (ns)	
Pulse Repetition	5		Rep. Frequency (kHz)	
Coupling of power line	L, N, PE, L+N, L+PE, N+PE, L+N+PE			

9.5 TEST RESULT

Model: WF50FTYFGDHG0#

Temperature: 22℃ Humidity: 52% RH Test Date: June 01, 2023

Power Line								Signal	
TEST VOLTAGE	**L**	**N**	**PE**	**L+N**	**L+PE**	**NE+PE**	**L+N+PE**	**Signal**	**Result**
±0.5KV	A	A	N/A	A	N/A	N/A	N/A	N/A	PASS
±1KV	A	A	N/A	A	N/A	N/A	N/A	N/A	PASS

Performance criterion:

Criterion A: Normal performance during test.

Criterion B: Temporary degradation or loss of function of performance which is self-recoverable.

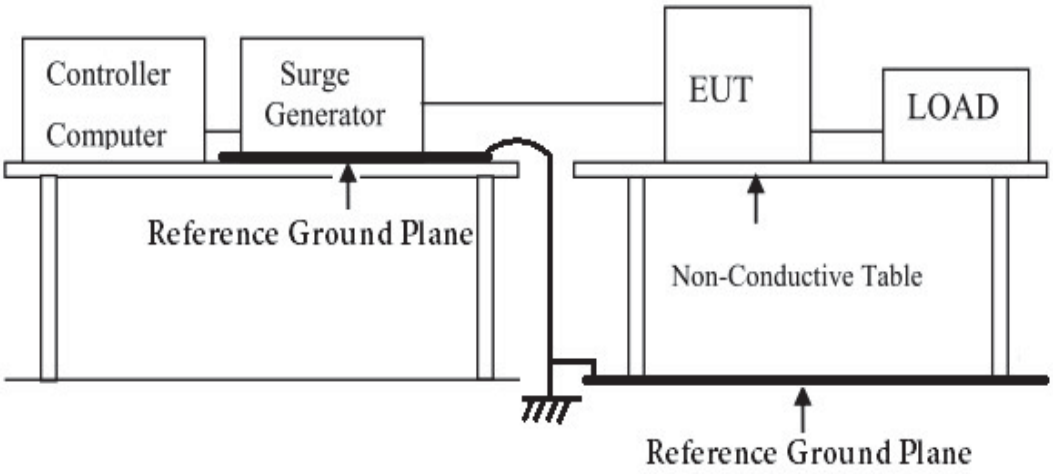
Criterion C: Temporary degradation or loss of function or performance which requires operator intervention system reset.

9.6 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

10. SURGE

10.1 TEST SETUP



10.2 TEST SPECIFICATION

According to EN 61000-4-5
(Please refer to Page 6 for dated references which are related to the standard as mentioned above.)

10.3 TEST LEVEL

Item	Test Specification	Unit	Performance Criteria
AC Input and AC Output Power Ports			B
Surge	1.2/50(8/20)	Tr/Ts (μs)	
Line to Ground	±2	KV	
Line to Line	±1	KV	
Polarity	POSITIVE / NEGATIVE		
Phase shifting in a range between 0°to 360°			

10.4 TEST PROCEDURE

The EUT and its load are placed on a table which is 0.8 m height. The length of power cord between the coupling device and the EUT shall be 2 m or less.

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

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

The Surge noise shall be applied synchronized to the voltage phase at 0º, 90 º, 180 º, 270 º and the peak value of the AC voltage wave. (5 Positive and 5 Negative)

Each of line-earth and line-line is impressed with a sequence of five surge voltages with interval of 1 minute.

10.5 TEST RESULT

Model: WF50FTYFGDHG0#

Temperature: 22℃ Humidity: 52% RH Test Date: June 01, 2023

Environmental Phenomena	Test Specification	Units	Performance Criteria	Result
Line to Neutral	±1 KV	0, 90, 180, 270	A	PASS

Performance criterion:

Criterion A: Normal performance during test.

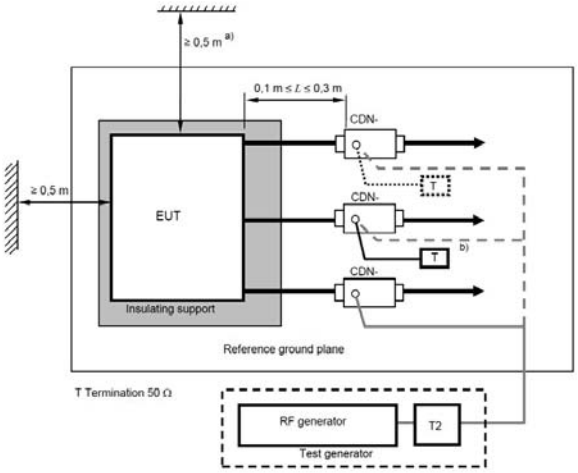
Criterion B: Temporary degradation or loss of function of performance which is self-recoverable.
Criterion C: Temporary degradation or loss of function or performance which requires operator intervention system reset.

10.6 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

11. IMMUNITY TEST CONDUCTED DISTURBANCE (CS)

11.1 TEST SETUP



11.2 TEST SPECIFICATION

According to EN 61000-4-6
(Please refer to Page 6 for dated references which are related to the standard as mentioned above.)

11.3 TEST PROCEDURE

The EUT was placed on an insulating support of 0.1 m height above a ground reference plane.

All cables exiting the EUT was supported at a height of 30 mm above the ground reference plane.
The EUT was connected to the power mains through a Coupling and Decoupling Networks (CDN).

The CDN was located 0.3 m from the EUT as indicated in the diagram above.
The test was performed with the test generator connected to each of the CDN in turn while the other non-excited RF input ports of the coupling devices were terminated by a 50 Ω terminator.

The conducted disturbance was applied on the EUT from 150 kHz to 80 MHz using the signal levels established during the setting process. .
Operating condition was shown on the monitor and observed.

11.4 TEST RESULT

Model: WF50FTYFGDHG0#

Temperature: 22℃ Humidity: 52% RH Test Date: June 01, 2023

Type of Modulation	Test Specifications			Performance Required by EN 55035	Observed Result	Verdict
	Voltage Level (emf) U_0	Frequency Range	Modulation			
Amplitude Modulation	3V	0.15 to 10MHz	80%, 1kHz, sinusoidal	A	A	Pass[1]
	3 to 1V	10 to 30MHz	80%, 1kHz, sinusoidal	A	A	Pass[1]
	1V	30 to 80MHz	80%, 1kHz, sinusoidal	A	A	Pass[1]
Remark	No temporary degradation or loss of function has been observed throughout the entire test.					

Performance criterion:

Criterion A: Normal performance during test.

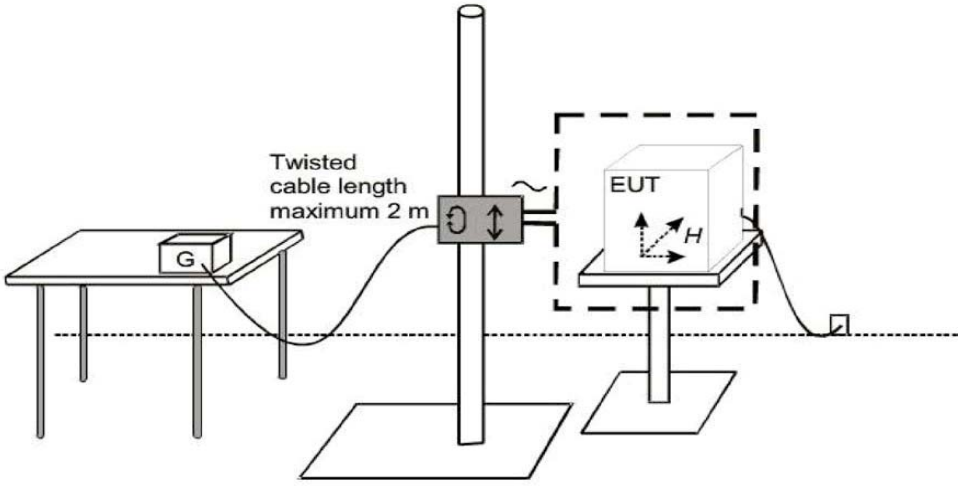
Criterion B: Temporary degradation or loss of function of performance which is self-recoverable.
Criterion C: Temporary degradation or loss of function or performance which requires operator intervention system reset.

11.5 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

12. POWER FREQUENCY MAGNETIC FIELD (MAGNETIC)

12.1 TEST SETUP



12.2 TEST SPECIFICATION

According to EN 61000-4-8
(Please refer to Page 6 for dated references which are related to the standard as mentioned above.)

12.3 TEST LEVEL

Item	Test Specification	Unit	Performance Criteria
Power-Frequency	50	Hz	A
Magnetic Field	1	A/m	

12.4 TEST PROCEDURE

The EUT and its load are placed on a table that is 0.8 m above the metal ground plane dimension is at least 1 m x 1 m. The test magnetic field shall be placed at least than 3 m distance from the induction coil.

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

12.5 TEST RESULT

Model: WF50FTYFGDHG0#

Temperature: 22℃ Humidity: 52% RH Test Date: June 01, 2023

Environmental Phenomena	Test Specification	Units	Performance Criteria	Result
X, Y, Z	1	A/m	A	PASS

Performance criterion:

Criterion A: Normal performance during test.

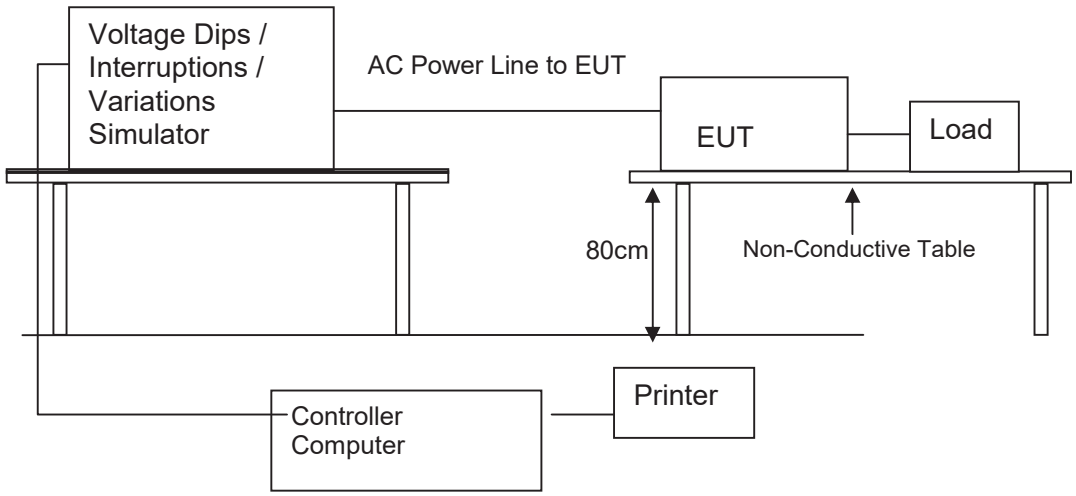
Criterion B: Temporary degradation or loss of function of performance which is self-recoverable.
Criterion C: Temporary degradation or loss of function or performance which requires operator intervention system reset.

12.6 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

13. VOLTAGE DIPS AND INTERRUPTION MEASUREMENT

13.1 TEST SETUP



The EUT was tested with (Ⅰ) residual voltage <5% voltage dip for 10ms (Ⅱ) residual voltage 70% voltage dip duration 500ms (Ⅲ) residual voltage <5% voltage interruption duration is 5000 ms,

For each selected combination of test level and duration with a sequence of three dips / interruptions with intervals of 10 s.
For Voltage Dips, changes in supply voltage occurred at zero crossings of the voltage.

For Short Interruptions, changes in supply voltage also occurred at zero crossings of the voltage.
The performance of the EUT was monitored and recorded.

13.2 TEST RESULT

Model: WF50FTYFGDHG0#

Temperature: 22℃ Humidity: 52% RH Test Date: June 01, 2023

Test Voltage: AC 100/50Hz, AC 240V/50Hz

Voltage Dips

Voltage Residual (%)	Test Specifications			Performance Required by EN 55035	Observed Result	Verdict
	Duration Periods	No. of Reductions	Interval between Each Duration (sec.)			
< 5	0.5	3	≥ 10	B	A	Pass[1]
70	25	3	≥ 10	C	A	Pass[1]
Remarks	No temporary degradation or loss of function has been observed throughout the entire test.					

Voltage Interruptions

Voltage Residual (%)	Test Specifications			Performance Required by EN 55035	Observed Result	Verdict
	Duration Periods	No. of Reductions	Interval between Each Duration (sec.)			
< 5	250	3	≥ 10	C	B	Pass[1]
Remark	1. There is no voltage output at the load during the test. After testing, it self-recovered.					

The Performance Requirement Class Criterion is defined in Sec. 1.11.
Performance criterion:
Criterion A: Normal performance during test.
Criterion B: Temporary degradation or loss of function of performance which is self-recoverable.
Criterion C: Temporary degradation or loss of function or performance which requires operator intervention system reset

13.3 PHOTOS OF TEST

Photos of test configuration please refer to appendix 1.

14. PERFORMANCE CRITERIA OF EMS TEST

A. During and after the test the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a minimum performance level specified by the manufacturer when the EUT 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 EUT if used as intended.

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

C. During and after testing, a temporary loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls or cycling of the power to the EUT by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

APPENDIX 1
PHOTOS OF TEST CONFIGURATION

Conducted Emission

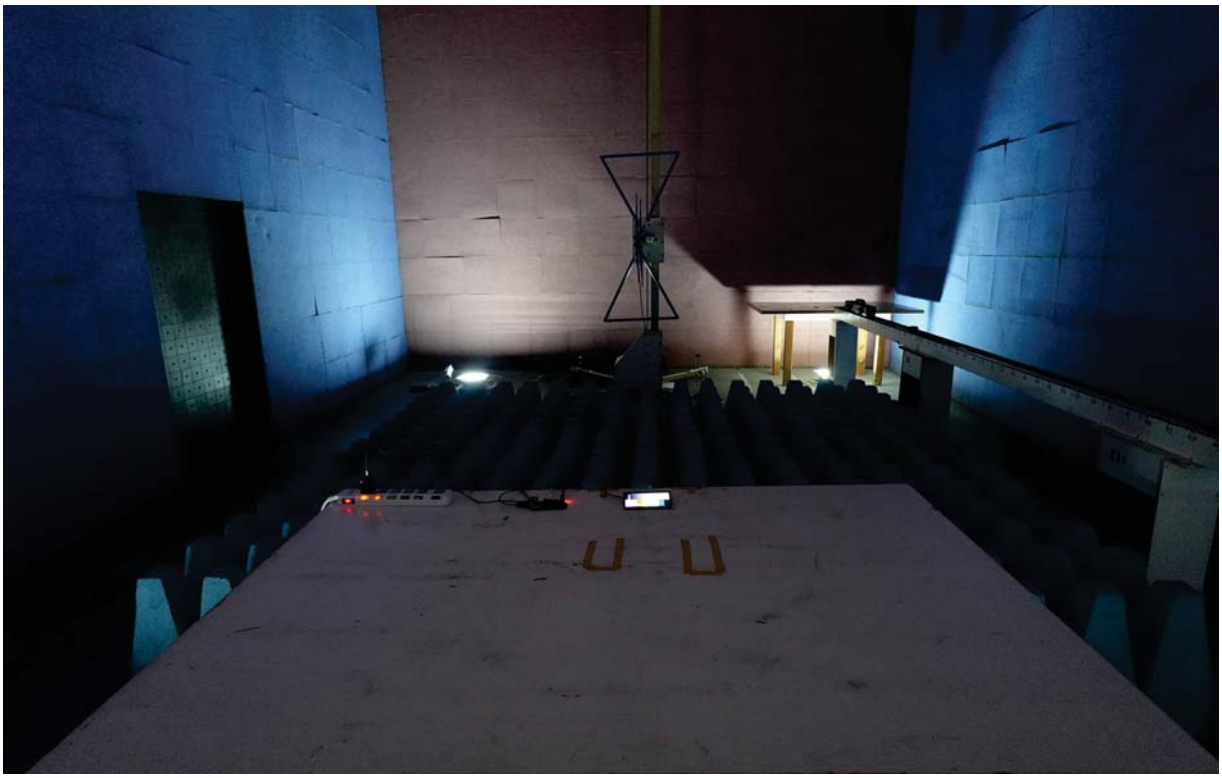
Radiated Emission

Harmonics Current Emission Measurement

Voltage Fluctuations

Electrostatic Discharge Immunity Test (ESD)

Radiated Susceptibility Measurement (RS)

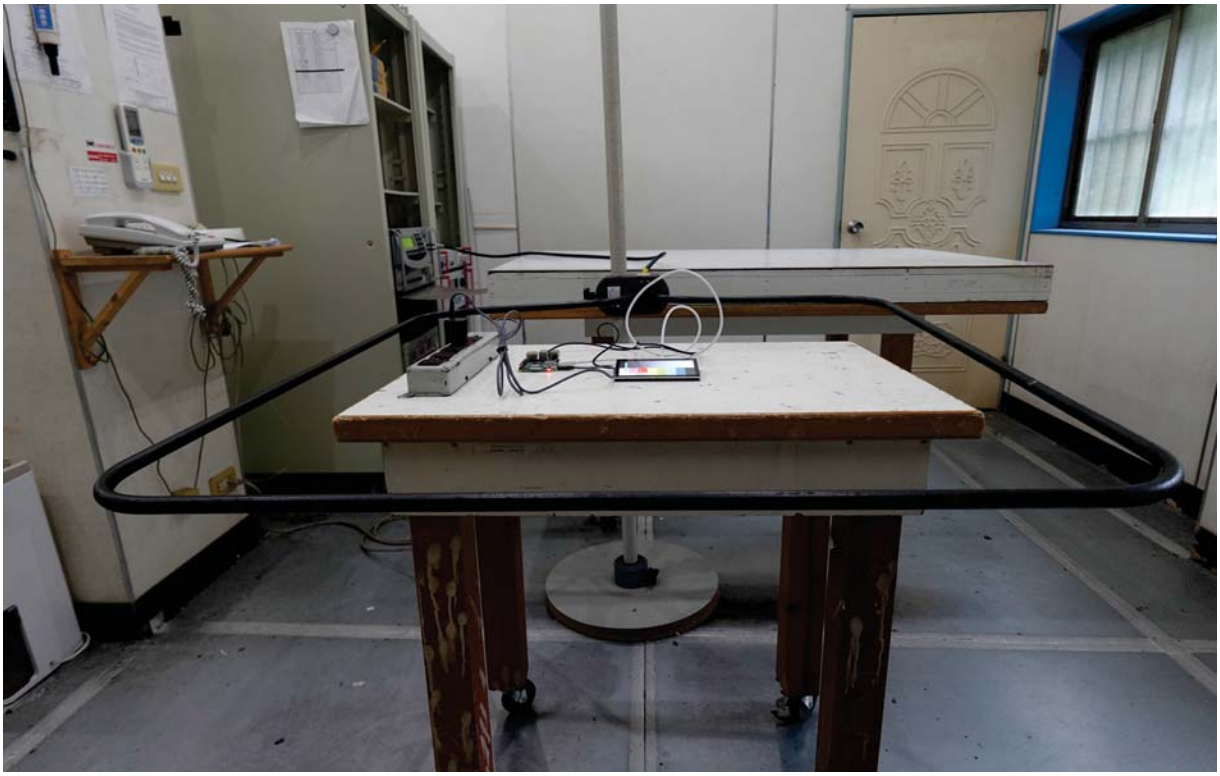


Electrical Fast Transient / Burst (EFT)

Surge

Immunity Test Conducted Disturbance (CS)

Power Frequency Magnetic Field (Magnetic)

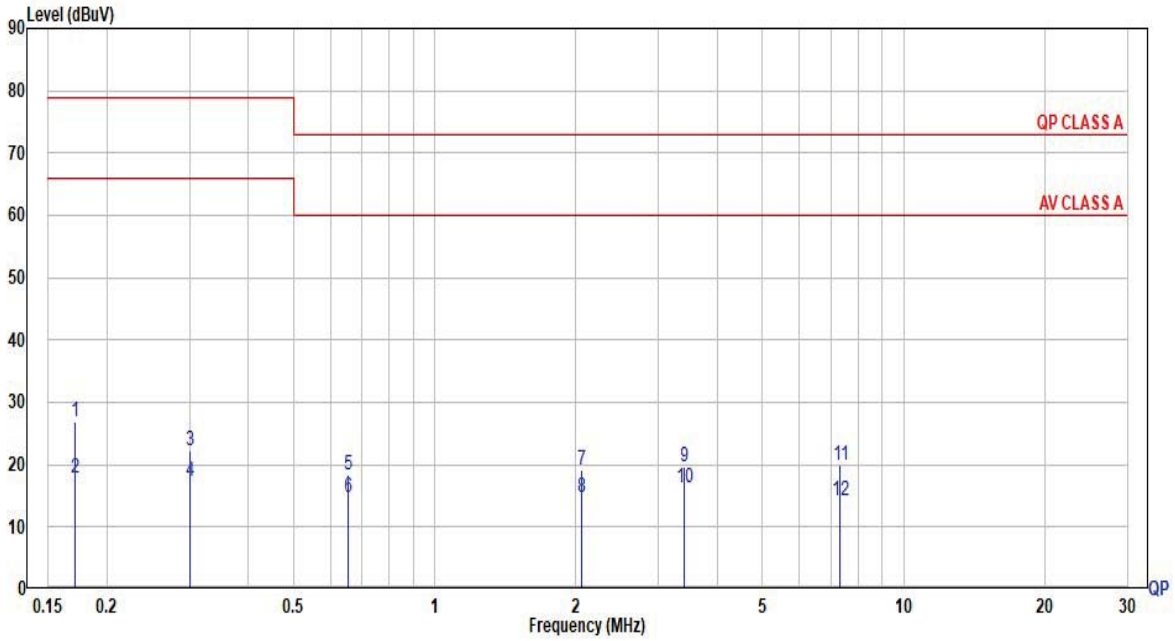


Voltage Dips And Interruption Measurement

APPENDIX 2

TEST DATA FOR CONDUCTED EMISSION

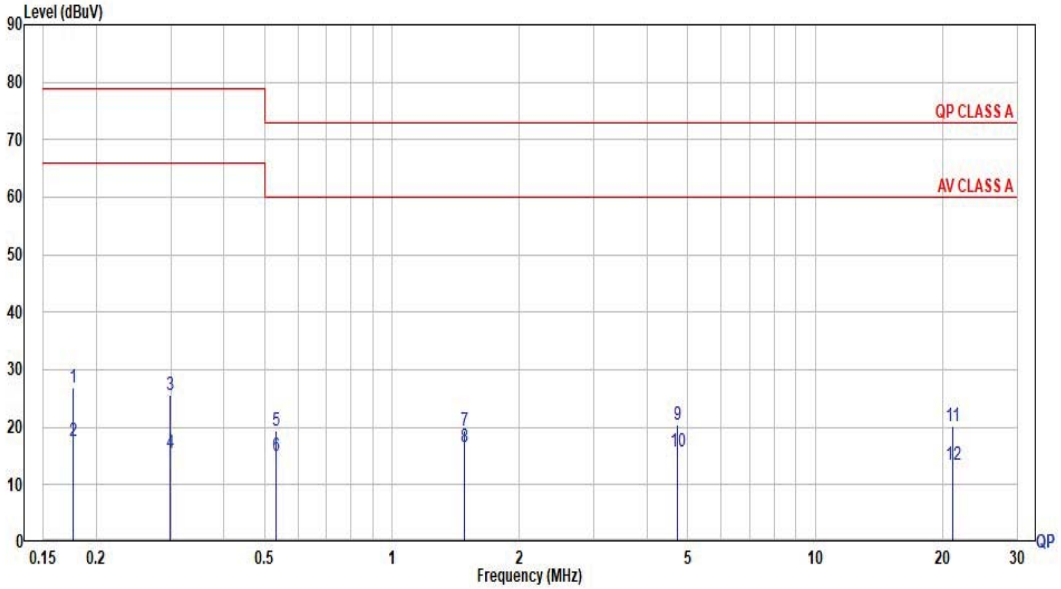
Power	:	230V/50Hz	**Pol/phase**	:	Line
Test Mode	:	Operating	**Temperature**	:	24degC
Test Date	:	June 01, 2023	**Humidity**	:	64%
Memo	:	JACK	**Atmospheric Pressure**	:	993 hPa/mbar



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector
1	0.171	2.03	24.94	26.97	79.00	-52.03	QP
2	0.171	2.03	15.88	17.91	66.00	-48.09	Average
3	0.300	2.04	20.26	22.30	79.00	-56.70	QP
4	0.300	2.04	15.17	17.21	66.00	-48.79	Average
5	0.654	2.08	16.40	18.48	73.00	-54.52	QP
6	0.654	2.08	12.68	14.76	60.00	-45.24	Average
7	2.055	2.18	16.88	19.06	73.00	-53.94	QP
8	2.055	2.18	12.61	14.79	60.00	-45.21	Average
9	3.399	2.23	17.42	19.65	73.00	-53.35	QP
10	3.399	2.23	14.09	16.32	60.00	-43.68	Average
11	7.329	2.35	17.63	19.98	73.00	-53.02	QP
12	7.329	2.35	12.00	14.35	60.00	-45.65	Average

Note: Level = Reading + Factor
Margin(Over limit) = Level – Limit
Factor = (LISN or ISN) Factor + Cable Loss + Attenuator.

Power	:	230V/50Hz	**Pol/phase**	:	Neutral
Test Mode	:	Operating	**Temperature**	:	24degC
Test Date	:	June 01, 2023	**Humidity**	:	64%
Memo	:	JACK	**Atmospheric Pressure**	:	993 hPa/mbar

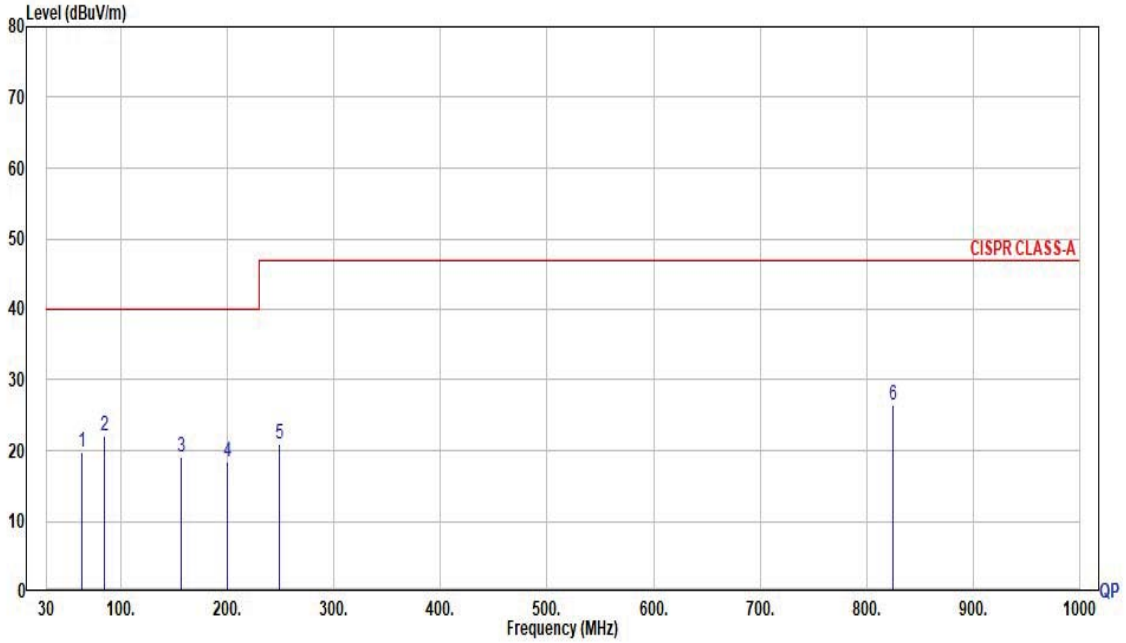


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector
1	0.176	2.07	24.71	26.78	79.00	-52.22	QP
2	0.176	2.07	15.55	17.62	66.00	-48.38	Average
3	0.299	2.08	23.62	25.70	79.00	-53.30	QP
4	0.299	2.08	13.40	15.48	66.00	-50.52	Average
5	0.532	2.09	17.31	19.40	73.00	-53.60	QP
6	0.532	2.09	12.95	15.04	60.00	-44.96	Average
7	1.480	2.17	17.28	19.45	73.00	-53.55	QP
8	1.480	2.17	14.41	16.58	60.00	-43.42	Average
9	4.721	2.29	18.22	20.51	73.00	-52.49	QP
10	4.721	2.29	13.42	15.71	60.00	-44.29	Average
11	21.147	2.64	17.43	20.07	73.00	-52.93	QP
12	21.147	2.64	10.88	13.52	60.00	-46.48	Average

Note: Level = Reading + Factor
Margin(Over limit) = Level – Limit
Factor = (LISN or ISN) Factor + Cable Loss + Attenuator.

APPENDIX 3
TEST DATA FOR RADIATE EMISSION

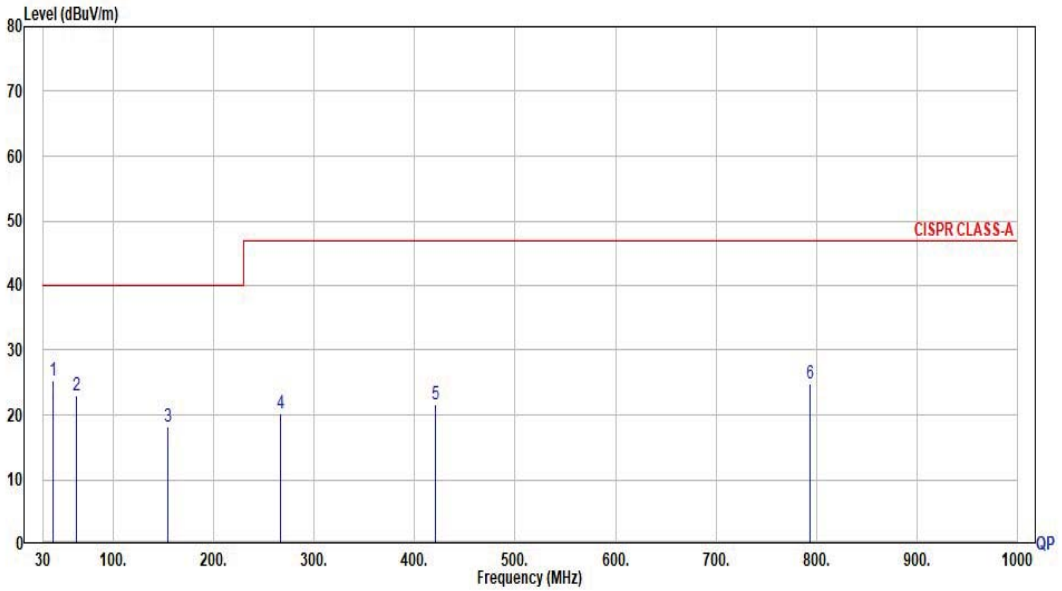
Power	:	AC230V/50HZ	**Pol/phase**	:	Horizontal
Test Mode	:	OPERATING	**Temperature**	:	25 degC
Test Date	:	June 01, 2023	**Humidity**	:	59%
Memo	:	JACK	**Atmospheric Pressure**	:	1002 hPa/mbar



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector
1	62.330	-11.74	31.54	19.80	40.00	-20.20	QP
2	84.250	-15.92	37.91	21.99	40.00	-18.01	QP
3	155.960	-10.74	29.84	19.10	40.00	-20.90	QP
4	199.850	-13.73	32.12	18.39	40.00	-21.61	QP
5	248.360	-11.25	32.14	20.89	47.00	-26.11	QP
6	824.520	1.53	24.87	26.40	47.00	-20.60	QP

Note: Level = Reading + Factor
Margin(Over limit) = Level – Limit
Factor = Antenna Factor + Cable Loss – Pre-amplifier Factor.

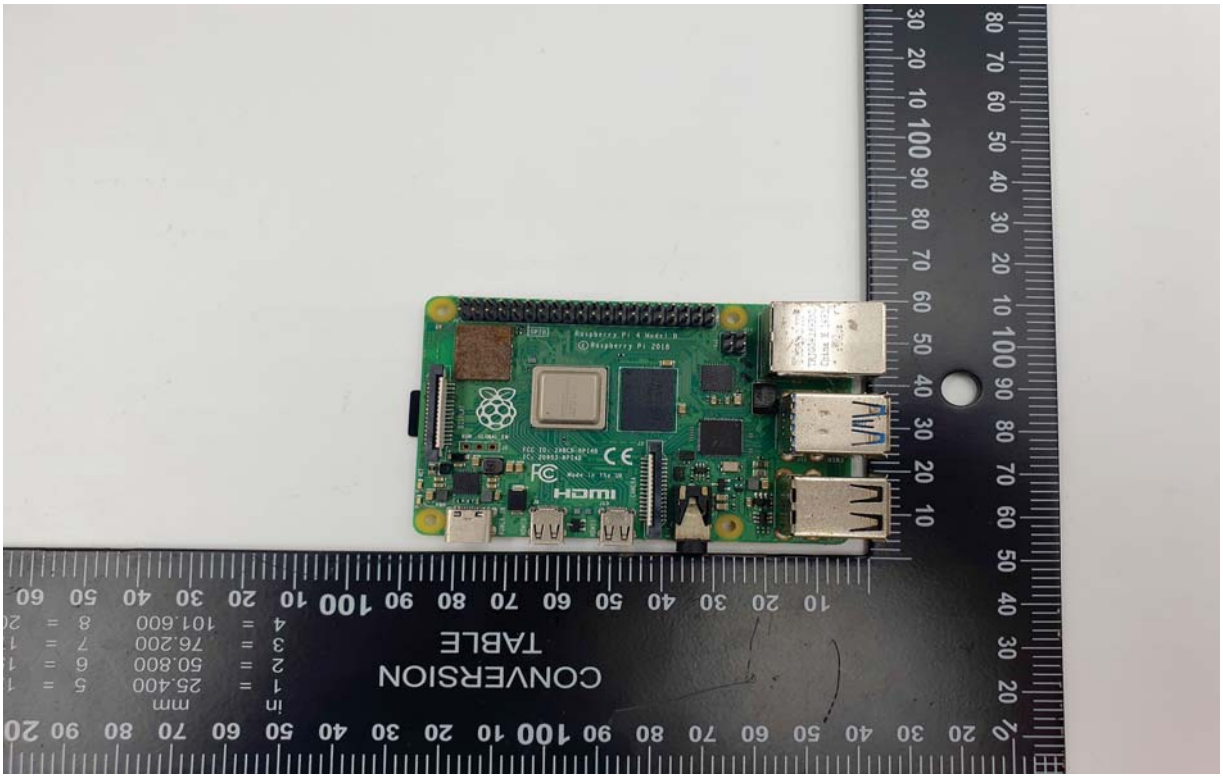
Power	:	AC230V/50HZ	**Pol/phase**	:	Vertical
Test Mode	:	OPERATING	**Temperature**	:	25 degC
Test Date	:	June 01, 2023	**Humidity**	:	59%
Memo	:	JACK	**Atmospheric Pressure**	:	1002 hPa/mbar



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector
1	39.520	-11.15	36.35	25.20	40.00	-14.80	QP
2	62.520	-11.78	34.83	23.05	40.00	-16.95	QP
3	153.520	-10.76	29.01	18.25	40.00	-21.75	QP
4	265.790	-10.39	30.60	20.21	47.00	-26.79	QP
5	420.220	-6.37	27.92	21.55	47.00	-25.45	QP
6	793.520	1.22	23.63	24.85	47.00	-22.15	QP

Note: Level = Reading + Factor
Margin(Over limit) = Level – Limit
Factor = Antenna Factor + Cable Loss – Pre-amplifier Factor.

PHOTOS OF EUT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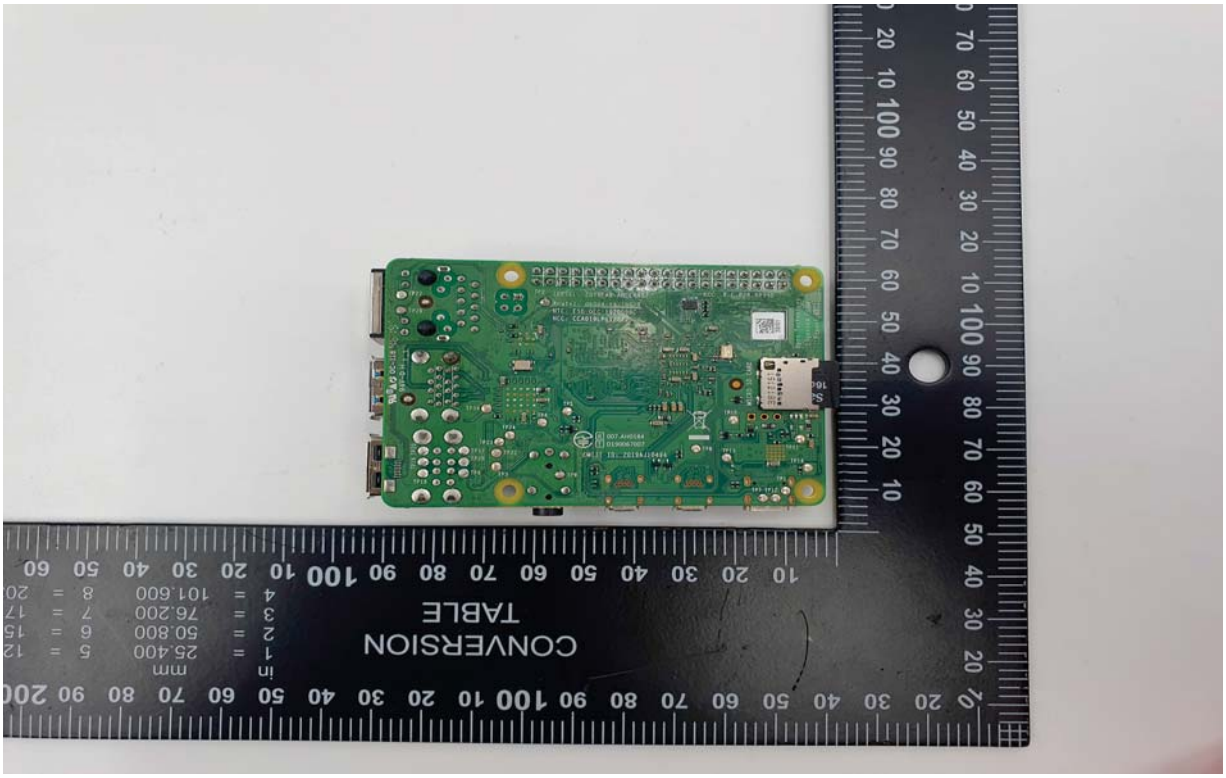
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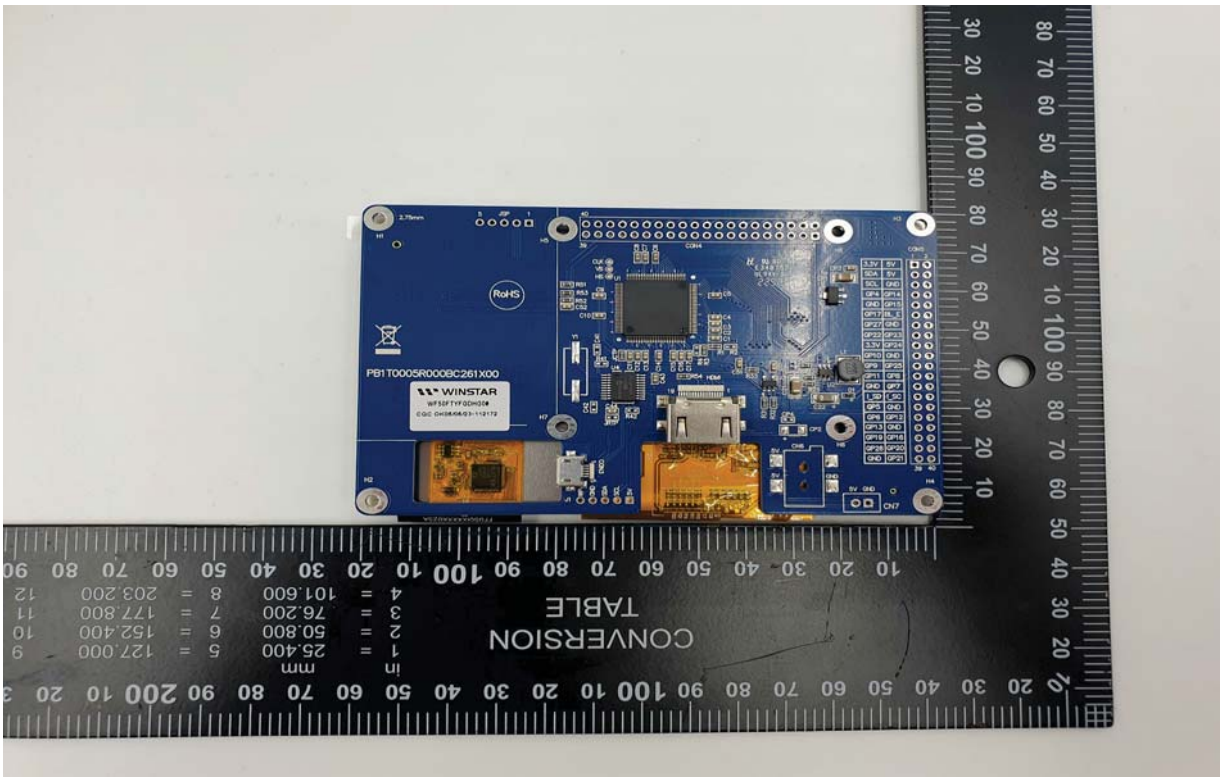
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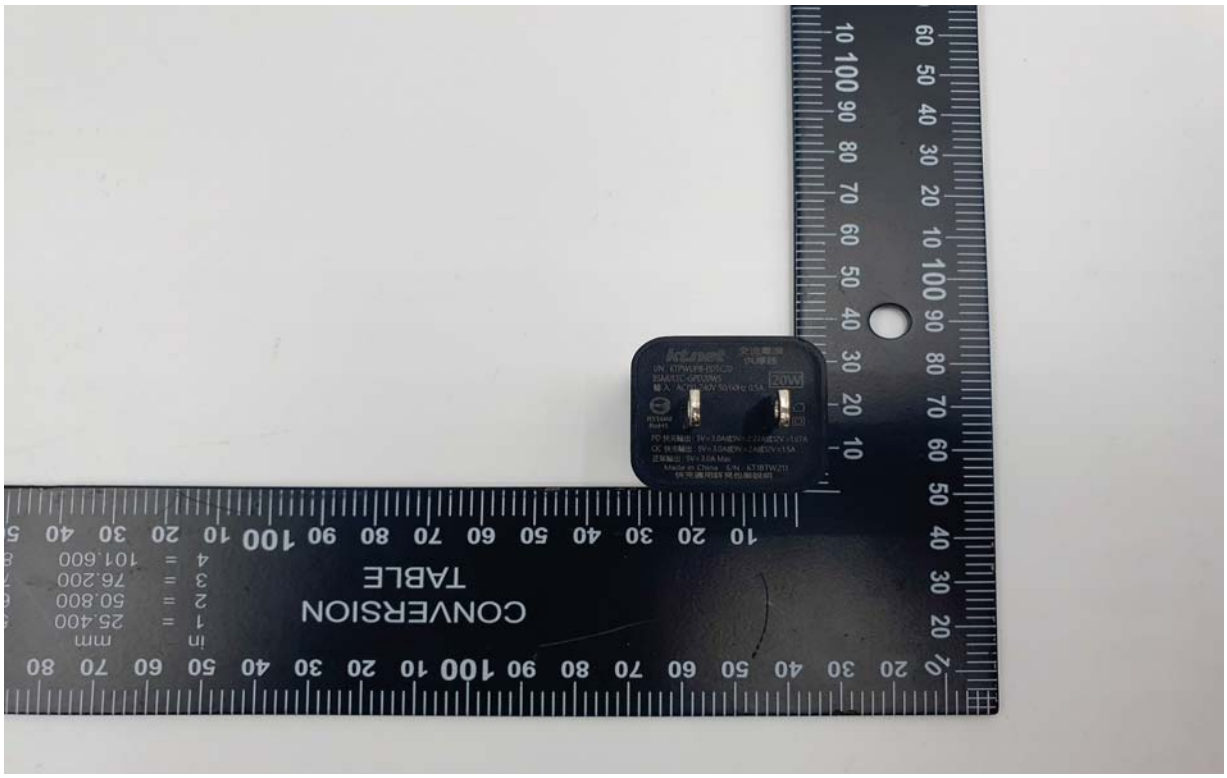
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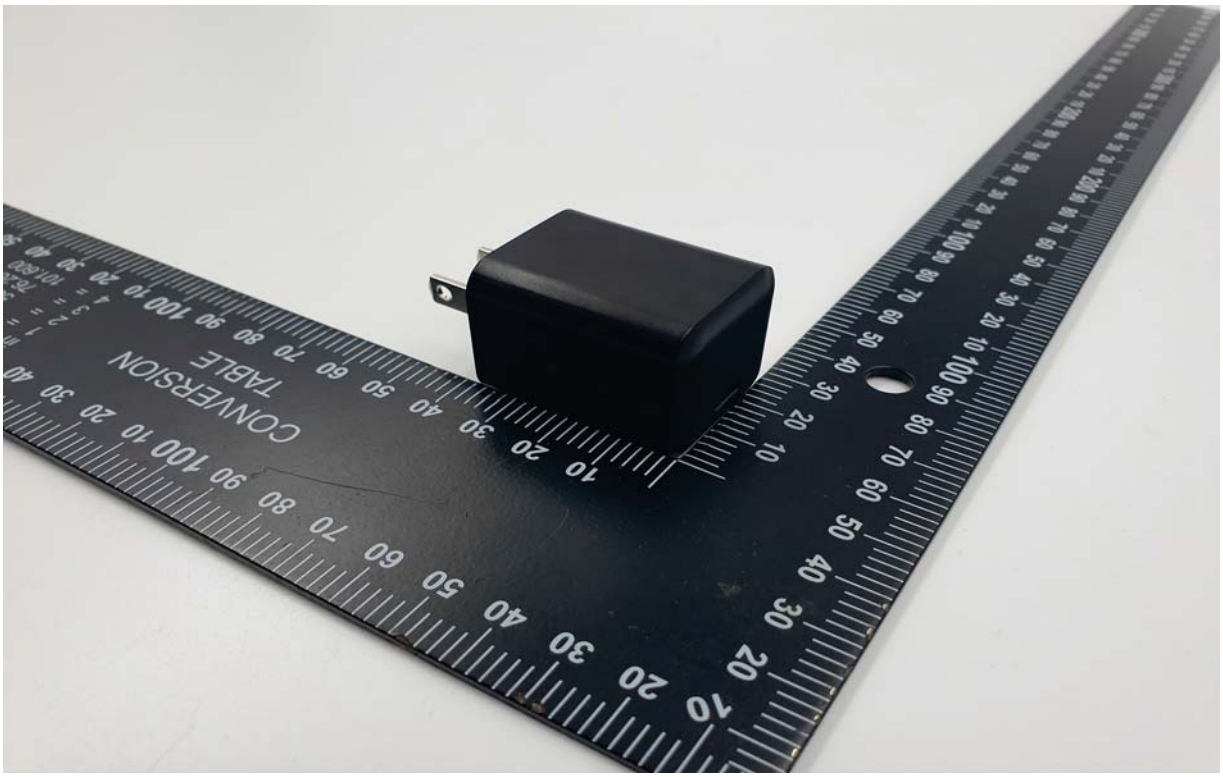
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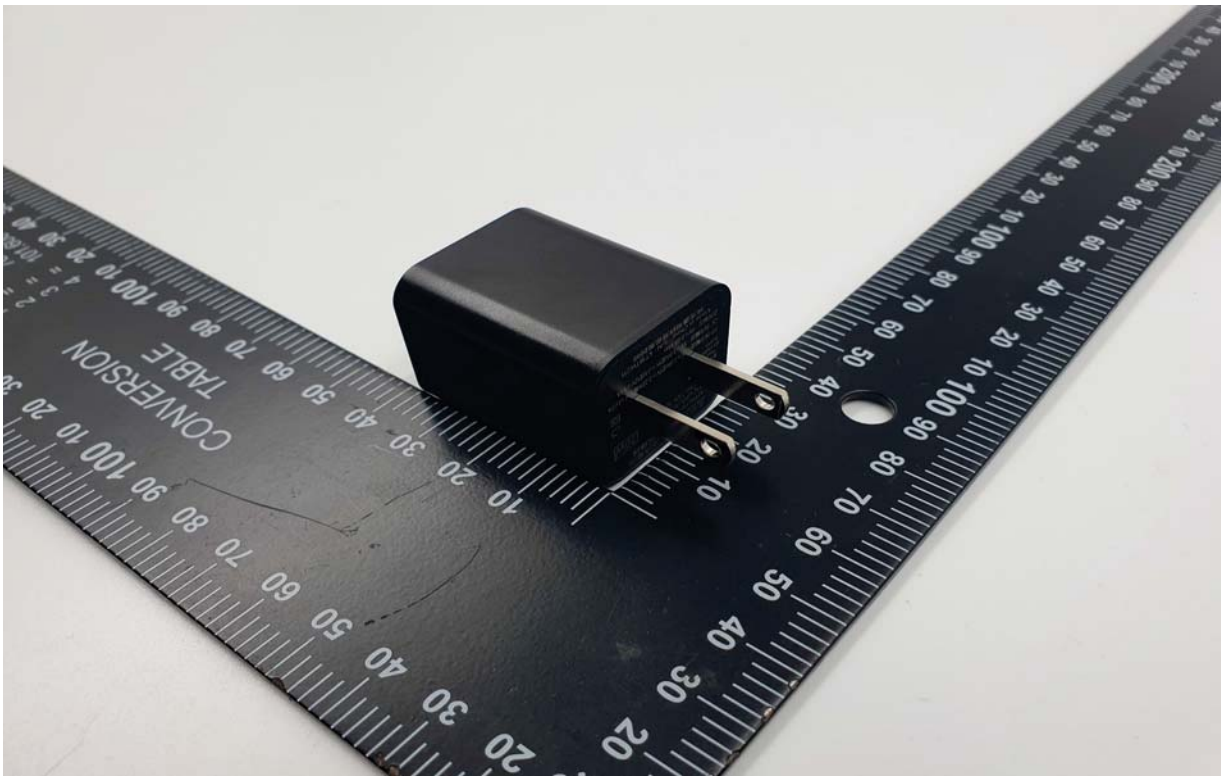
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