

**KES Co., Ltd.**

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Report No.:

KES-EM-23T0264

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EMC TEST REPORT

Test Report No. : KES-EM-23T0264
Date of Issue : Mar. 20, 2023
Product name : Security LED Monitor
Model/Type No. : SMT-2740
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : Weihai Daewoo Electronics Co., Ltd.
Manufacturer Address : No.26, Hongkong Road, Economic & Technical Development
Zone, 264205 Weihai City, Shandong Province, China
Date of Receipt : Mar. 03, 2023
Test date : Mar. 09, 2023 ~ Mar. 14, 2023
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Se Heon, Kim
EMC Test Engineer

Reviewed by

Seong Min, Choi
EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Mar. 20, 2023	KES-EM-23T0264	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Model		UHD 27" SMT-2740	Remark
Display			
Screen Size		27"	
Max. Resolution		3840*2160 60Hz (UHD)	
Brightness		300 cd/m ² (Typ)	
Contrast Ratio		955:1 (Min) '1200:1 (Typ)	
Aspect Ratio		16:9	
Viewing Angle (H/V)		178°/178°	
Display Color		1.07B	
Response Time		14ms(Typ)	
Panel Life		30,000 hours	
Interface			
Video	Connector	HDMI 2.0(2), DP1.4(1)	
	Connector	N/A	
VGA	Connector	N/A	
	Available Format	N/A	
HDMI	Connector	HDMI	
	Available Format	640 x 480@60Hz, 800 x 600@56Hz/60Hz/72Hz/75Hz, 1024 x 768@60Hz/70Hz/75Hz, 1280 x 1024@60Hz/75Hz, 1440 x 900@60Hz, 1680 x 1050@60Hz, 1920 x 1080@50Hz/60Hz, 2560 x 1440@60Hz, 3840x2160@60Hz, 3840 x 2160P@30/50/60Hz, 720 x 480P60Hz, 1280 x 720P@50Hz, 720 x 576P@50Hz, 1920x1080P@50/60Hz, 1280 x 800@60Hz, 1280 x 960@60Hz, 1280 x 720@60Hz,	
DP	Connector	DP	
	Available Format	640 x 480@60Hz, 800 x 600@56Hz/60Hz/72Hz/75Hz, 1024 x 768@60Hz/70Hz/75Hz, 1280 x 1024@60Hz/75Hz, 1440 x 900@60Hz, 1680 x 1050@60Hz, 1920 x 1080@50Hz/60Hz, 2560 x 1440@60Hz, 3840x2160@60Hz, 3840 x 2160P@30/50/60Hz, 720 x 480P60Hz, 1280 x 720P@50Hz, 720 x 576P@50Hz, 1920x1080P@50/60Hz, 1280 x 800@60Hz, 1280 x 960@60Hz, 1280 x 720@60Hz,	
Audio	Connector	Audio Out	
	Output Signal	Loop-through line level(PC only), Speakers : 4Ω 2.5Wx 2	
PIP/PBP		YES	
Remocon		N/A	
On Screen Display (OSD)			
Functions		VESA™ DPM Compatible	
Language		Korean, English, Русский, Deutsch, Français, Español, Italiano, Português, Chinese (Simplified), Chinese (Traditional), Japanese, Arabic	
General			
Electrical	Input Voltage	AC 100-240V, 50/60Hz, 1.0A	
	Power Consumption	<45W	
Environmental	Operating Temperature	0 ~ +40°C (+32°F ~ +104°F)	
	Operating Humidity	10% ~ 80% (non-condensing)	
Mechanical	Dimensions with Stand	614.7*452.5*224.1mm	
	Dimensions without Stand	614.7*336.4*50.8mm	
	Bezel Size	3 Frameless Top:2.2mm Bottom:21mm Side : 2.2mm	
	Cabinet Color	Black	
	VESA Mounts Interface	100*100mm	
Weight	Monitor with Stand	5.030kg	
	Monitor without Stand	4.620kg	
Stand		including	

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1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

☒ AC 230 V, 50 Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Security LED Monitor	SMT-2740	-	Weihai Daewoo Electronics Co., Ltd.	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Desktop	-	-	-	-
Earphone	-	-	-	-
Keyboard	ST-600	-	CAN TECHNOLOGY CO., LTD.	-
Mouse	M-U0026	-	LOGITECH Inc.	-



1.6 External I/O Cabling

■ HDMI, DP

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Security LED Monitor (EUT)	HDMI1	Desktop	HDMI1	1.0	S
	HDMI2		HDMI2	1.0	S
	DP		DP	1.5	S
	3.5 mm	Earphone	3.5 mm	1.7	U
Desktop	USB	Keyboard	USB	1.6	U
	USB	Mouse	USB	1.4	U

* Unshielded = U, Shielded = S

1.7 EUT Operating Mode(s)

Test mode	operating
HDMI, DP	Checked the screen and audio output of the EUT by running the 1kHz tone color bar.

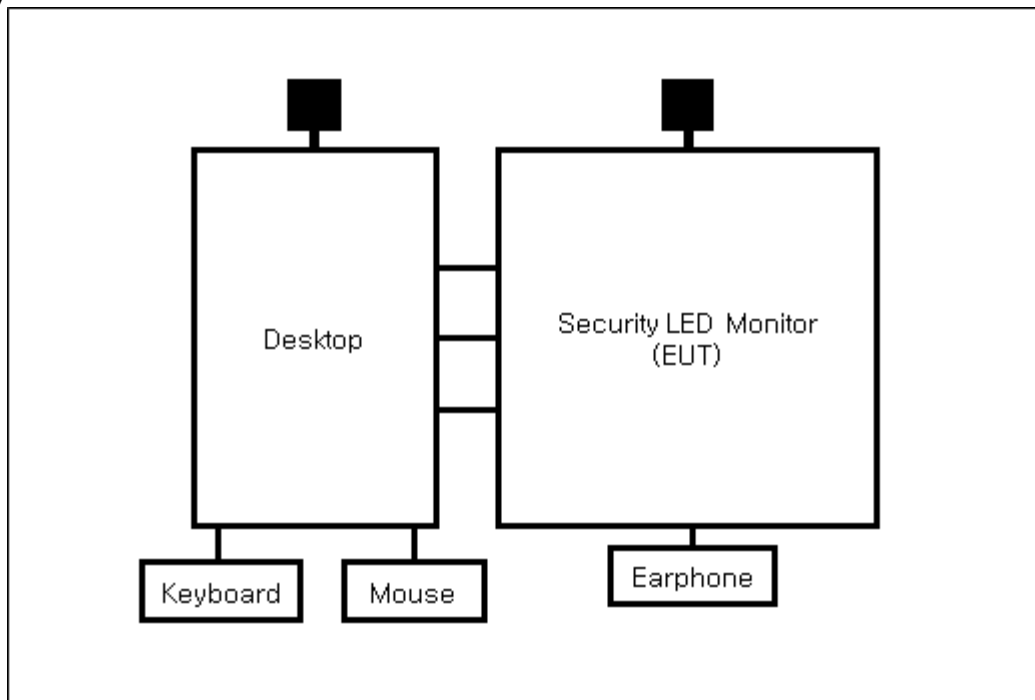
EUT Test operating S/W		
Name	Version	Manufacture Company
-	-	-

1.8 Configuration

■ AC Main

□ DC Main

■ HDMI, DP



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1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.11 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 55035:2017/A11:2020

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☒ **EMC – Regulations 2016**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 55035:2017/A11:2020

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013



2.1 Conducted Emissions at Mains Power Ports

Test Date

Mar. 09, 2023

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
☒	LISN	ENV216	R & S	101787	11, 10, 2023
☒	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023

Test Conditions

Temperature: (23,9 ± 0,1) °C

Relative Humidity: (43,7 ± 0,0) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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2.2 Conducted Emissions at Telecommunication Ports

Test Date

N/A

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test S/W	EMC32	R & S	9.12.00	-
☐	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
☐	LISN	ENV216	R & S	101787	11, 10, 2023
☐	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
☐	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023
☐	8-WIRE ISN CAT3,5	ENY81	R & S	100174	11, 22, 2023
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	11, 22, 2023
☐	CDN	CDNS502A	TESEQ	40431	11, 10, 2023

Test Conditions

Temperature: (±) °C

Relative Humidity: (±) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

RemarksDoes not apply because there is no signal line ports.

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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Mar. 09, 2023

Test Location

☐ OPEN AREA TEST SITE #2

☒ SEMI ANECHOIC CHAMBER #4(10 m)

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	03, 31, 2023
☒	AMPLIFIER	SCU 01	R & S	100603	11, 10, 2023
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 17, 2024
☒	ATTENUATOR	8491A	HP	32173	03, 03, 2024

Test Conditions

Temperature: (24,1 ± 0,0) °C

Relative Humidity: (43,4 ± 0,1) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS

☐ NOT PASS

☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Mar. 14, 2023

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESR7	R & S	101190	08, 01, 2023
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	03, 06, 2024
☒	ATTENUATOR	8491A	HP	35496	03, 03, 2024
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 06, 2024

Test Conditions

Temperature: (23,2 ± 0,1) °C

Relative Humidity: (43,6 ± 0,1) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

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2.5 Harmonic Current Emissions

Test Date

Mar. 13, 2023

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2023
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,9 ± 0,0) °C
Relative Humidity: (43,0 ± 0,0) % R.H.

Classification of Equipment for Harmonic Current Emissions

- ☒ Class A
☐ Class B
☐ Class C(Below 25 W)
☐ Class C(Above 25 W)
☐ Class D

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



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2.6 Voltage Fluctuations and Flicker

Test Date

Mar. 13, 2023

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2023
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,9 ± 0,9) °C

Relative Humidity: (43,0 ± 1,2) % R.H.

Test Results

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks

See Appendix A for test data.

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3.0 Criteria for compliance

General performance criteria

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

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

Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion B

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

Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.

Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2:2009

Test Date

Mar. 14, 2023

Test Location

EMS-ESD: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	01, 31, 2023
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (23,2 ± 0,0) °C
Relative Humidity: (44,5 ± 0,0) % R.H.
Atmospheric Pressure: (100,7 ± 0,0) kPa

Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge
10 at all locations for Contact discharge

Discharge Voltage:	Contact ☐ 2 kV ☒ 4 kV ☐ 6 kV ☐ 8 kV ☐ 15 kV	Air ☒ 2 kV ☒ 4 kV ☐ 6 kV ☒ 8 kV ☐ 15 kV	HCP ☐ 2 kV ☒ 4 kV ☐ 6 kV ☐ 8 kV ☐ 15 kV	VCP ☐ 2 kV ☒ 4 kV ☐ 6 kV ☐ 8 kV ☐ 15 kV
--------------------	---	---	---	---

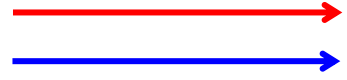
Notes: HCP: Horizontal coupling plane

VCP: Vertical coupling plane

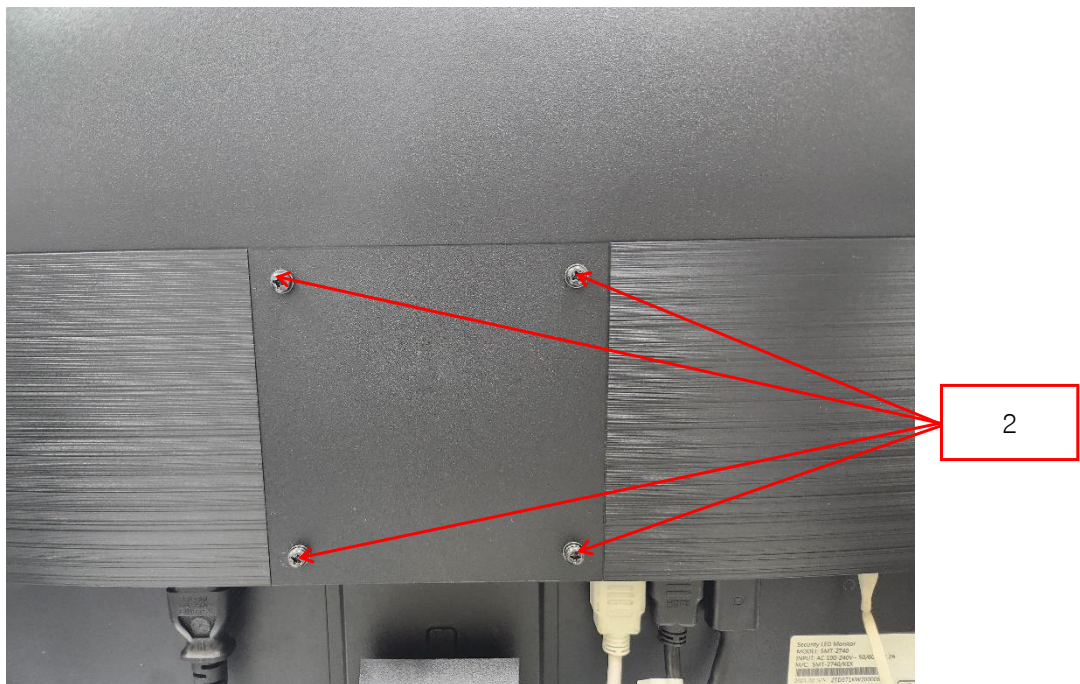
Required Performance Criteria: ☒ B

Location of Discharge:

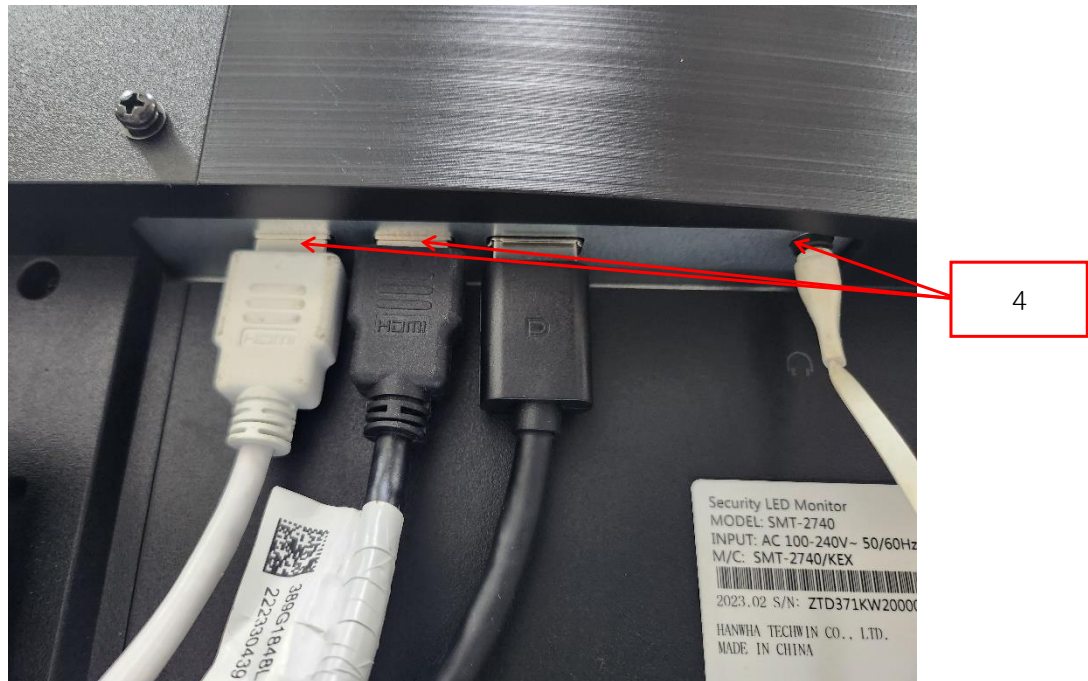
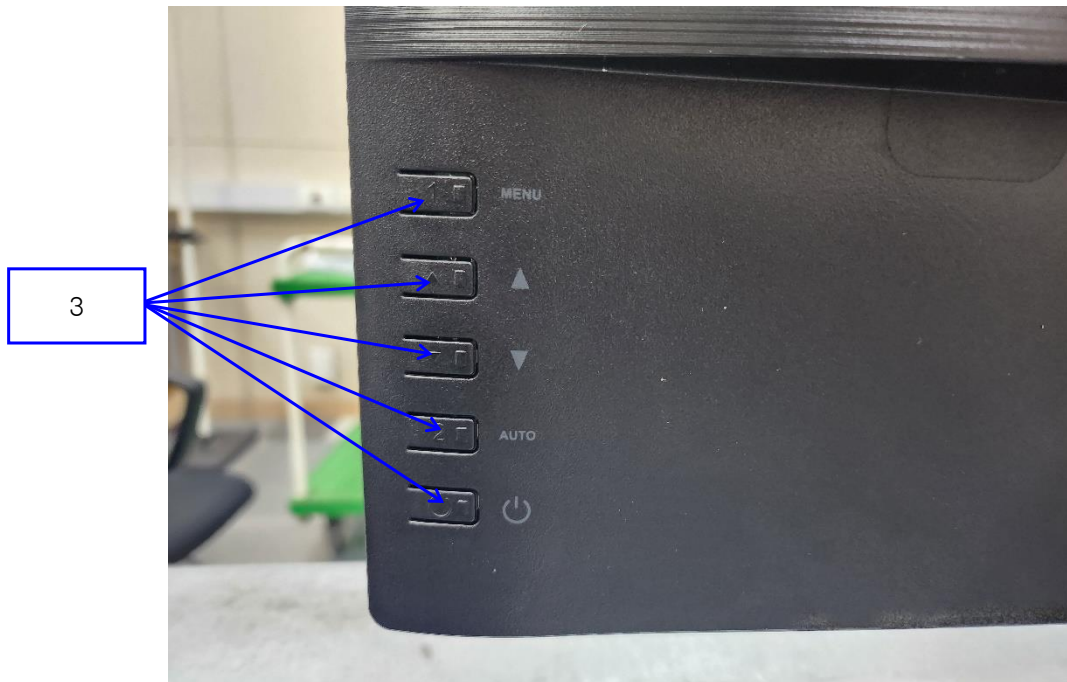
Contact
Air



■ HDMI, DP



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Test Data

■ HDMI

No.	Test Point	Discharge Method	Performance		Remarks
			Criteria	Results	
1	HCP Contact	Contact Discharge	B	A	-
2	VCP Contact	Contact Discharge	B	A	-

Direct Discharge

No.	Test Point	Discharge Method	Performance		Remarks
			Criteria	Results	
1	Display, Enclosure	Air Discharge	B	A	-
2	Screw	Contact Discharge	B	A	-
3	Button	Air Discharge	B	A	-
4	Port	Contact Discharge	B	A	-

■ DP

No.	Test Point	Discharge Method	Performance		Remarks
			Criteria	Results	
1	HCP Contact	Contact Discharge	B	A	-
2	VCP Contact	Contact Discharge	B	A	-

Direct Discharge

No.	Test Point	Discharge Method	Performance		Remarks
			Criteria	Results	
1	Display, Enclosure	Air Discharge	B	A	-
2	Screw	Contact Discharge	B	A	-
3	Button	Air Discharge	B	A	-
4	Port	Contact Discharge	B	A	-

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**N/A

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3.2 Radiated Electric Field Immunity

Reference Standard

EN 61000-4-3:2006 +A2:2010

Test Date

Mar. 12, 2023

Test Location

EMS-RS: ☐ SEMI ANECHOIC CHAMBER #2

☒ SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	08, 01, 2023
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	03, 31, 2023
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY52170007	04, 04, 2023
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41498669	04, 04, 2023
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 06, 2024
☐	SOUND ACOUSTIC TESTER	TST-1000	TESTEK	150045	11, 01, 2023
☐	MICROPHONE	MP201	BSWA	551675	10, 31, 2023

Test Conditions

Temperature: (23,9 ± 1,5) °C
Relative Humidity: (43,5 ± 1,3) % R.H.
Atmospheric Pressure: (100,4 ± 0,0) kPa

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Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Field Strength: ☐ 1 V/m ☒ 3 V/m
☐ 10 V/m

Frequency Range: ☒ 80 MHz to 1 GHz (swept test) ☐ 1,4 GHz to 2,7 GHz
☒ 1.8 GHz , 2.6 GHz , 3.5 GHz , 5 GHz ($\pm 1\%$) (spot test)

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☐ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ A

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Test Data
■ HDMI

Side Exposed	Performance Criteria	Results	
		Horizontal	Vertical
Front	A	A	A
Right	A	A	A
Back	A	A	A
Left	A	A	A

[Audio output function]

☐ Electrical Measurements / ☐ Acoustic Measurements

Measured parts	Test method	Level (dB)		Performance criteria	Observations	
		Criteria	Measured		Horizontal	Vertical
-	-	-	-	-	-	-

* The SOUND ACOUSTIC TESTER mark characteristics indicate low if less than 50 dB.

■ DP

Side Exposed	Performance Criteria	Results	
		Horizontal	Vertical
Front	A	A	A
Right	A	A	A
Back	A	A	A
Left	A	A	A

[Audio output function]

☐ Electrical Measurements / ☐ Acoustic Measurements

Measured parts	Test method	Level (dB)		Performance criteria	Observations	
		Criteria	Measured		Horizontal	Vertical
-	-	-	-	-	-	-

* The SOUND ACOUSTIC TESTER mark characteristics indicate low if less than 50 dB.

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results
☒ PASS Required Performance Criteria

☐ NOT PASS Required Performance Criteria

Remarks

N/A

3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Mar. 14, 2023

Test Location

EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 28, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023
☐	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 28, 2023

Test Conditions

Temperature: (23,2 ± 0,1) °C
Relative Humidity: (44,5 ± 0,2) % R.H.
Atmospheric Pressure: (100,7 ± 0,0) kPa

Test Specifications

Pulse Amplitude & Polarity: ☒ ± 1.0 kV ☐ ± 2.0 kV
(Power Lines) ☐ ± 4.0 kV

Pulse Amplitude & Polarity: ☐ ± 0.5 kV ☐ ± 1.0 kV
(Signal Lines) ☐ ± 2.0 kV

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☒ 5 kHz ☐ 100 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ B

Test Data
■ HDMI
☒ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
L	B	A	A
N	B	A	A
PE	B	A	A
L – N	B	A	A
L – PE	B	A	A
N – PE	B	A	A
L – N – PE	B	A	A

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
-	B	-	-

☐ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
-	B	-	-

■ DP

☒ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
L	B	A	A
N	B	A	A
PE	B	A	A
L – N	B	A	A
L – PE	B	A	A
N – PE	B	A	A
L – N – PE	B	A	A

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
-	B	-	-

☐ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
-	B	-	-

Note: “Blank” = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results

☒ PASS Required Performance Criteria

☐ NOT PASS Required Performance Criteria

Remarks

N/A

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3.4 Surge

Reference Standard

EN 61000-4-5:2014+A1:2017

Test Date

Mar. 14, 2023

Test Location

EMS-Surge: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 28, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023

Test Conditions

Temperature: (23,2 ± 0,4) °C
Relative Humidity: (44,5 ± 0,2) % R.H.
Atmospheric Pressure: (100,7 ± 0,0) kPa

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Test Specifications

AC Power Lines

Source Impedance: 12 ohm for common mode and 2 ohm for differential mode

Surge Amplitude :

Common Mode

☒ (0,5 / 1,0 / 2,0) kV

Differential Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 surges per angle

Angle:

☒ 90°, 270° (input a.c. power port)

Polarity:

☒ Positive & Negative

Repetition Rate:

☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ B

Signal Lines

Source Impedance:

42 ohm for common mode

Surge Amplitude:

Common Mode

☐ (1,0) kV

Number of Surges:

☐ 5 Surges

Polarity:

☐ Positive & Negative

Repetition Rate:

☐ 1 surge per min ☐ 1 surge per 30 sec.

Required Performance Criteria: ☐ B

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Test Data

■ HDMI

☒ Line to Line – Differential Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
L - N	B	A	A

☒ Line to Earth – Common Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
L – PE	B	A	A
N – PE	B	A	A

Signal Lines☐ Line to Earth – Common Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
-	B	-	-

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■ DP

☒ Line to Line – Differential Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
L - N	B	A	A

☒ Line to Earth – Common Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
L - PE	B	A	A
N - PE	B	A	A

Signal Lines☐ Line to Earth – Common Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
-	B	-	-

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**N/A

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3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Mar. 10, 2023

Test Location

EMS-CS: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.12	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 10, 2023
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 10, 2023
☒	CDN	CDN M016	TESEQ	43694	11, 10, 2023
☒	CDN	CDN M016	TESEQ	43697	11, 10, 2023
☐	CDN	CDN T800	TESEQ	42800	11, 10, 2023
☐	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 14, 2023
☐	SOUND ACOUSTIC TESTER	TST-1000	TESTEK	150045	11, 01, 2023
☐	MICROPHONE	MP201	BSWA	551675	10, 31, 2023

Test Conditions

Temperature: (24,1 ± 0,3) °C
Relative Humidity: (43,1 ± 0,4) % R.H.
Atmospheric Pressure: (100,5 ± 0,0) kPa



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Test Specifications

Frequency range: ☐ 150 kHz to 100 MHz ☒ 150 kHz to 80 MHz

Voltage Level: ☒ 3 Vrms (150 kHz to 10 MHz)
☒ 3 Vrms to 1Vrms (10 MHz to 30 MHz)
☒ 1 Vrms (30 MHz to 80 MHz)

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☐ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

Required Performance Criteria: ☒ A

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Test Data
☒ HDMI

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
L – N – PE	CDN	A	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
-	CDN	A	-

☐ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
-	CDN	A	-

[Audio output function]

☐ Electrical Measurements / ☐ Acoustic Measurements

Measured parts	Test method	Level (dB)		Performance criteria	Observations	
		Criteria	Measured		Horizontal	Vertical
-	-	-	-	-	-	-

* The SOUND ACOUSTIC TESTER mark characteristics indicate low if less than 50 dB.

■ DP

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
L – N – PE	CDN	A	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
-	CDN	A	-

☐ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
-	CDN	A	-

[Audio output function]

☐ Electrical Measurements / ☐ Acoustic Measurements

Measured parts	Test method	Level (dB)		Performance criteria	Observations	
		Criteria	Measured		Horizontal	Vertical
-	-	-	-	-	-	-

* The SOUND ACOUSTIC TESTER mark characteristics indicate low if less than 50 dB.

Notes: CDN = Coupling Decoupling Network
"blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results

☒ PASS Required Performance Criteria

☐ NOT PASS Required Performance Criteria

Remarks

N/A

3.6 Power Frequency Magnetic Field Immunity

Reference Standard

EN 61000-4-8:2010

Test Date

N/A

Test Location

EMS-Magnetic: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☐	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 28, 2023
☐	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023
☐	MAGNETIC FIELD COIL	MS 100N	EM TEST	P1536163691	11, 28, 2023
☐	CURRENT TRANSFORMER	MC 2630	EM TEST	P1629182219	11, 28, 2023

Test Conditions

Temperature: (±) °C
Relative Humidity: (±) % R.H.
Atmospheric Pressure: (±) kPa

Test Specifications

Field Strength: ☐ 1 A/m ☐ 3 A/m
☐ 30 A/m

Frequency: ☐ 50 Hz ☐ 60 Hz

Required Performance Criteria: ☐ A

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Test Data☐ Immersion method

Coil orientation	Performance Criteria	Results
X - axis	A	-
Y - axis	A	-
Z - axis	A	-

Note: "blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results

- ☐ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☒ NOT APPLICABLE

RemarksN/A

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3.7 Voltage Dips and Short Interruptions

Reference Standard

EN 61000-4-11:2004+A1:2017

Test Date

Mar. 14, 2023

Test Location

EMS-Voltage dip: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 29, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023

Test Conditions

Temperature: (23,2 ± 0,0) °C
Relative Humidity: (44,5 ± 0,0) % R.H.
Atmospheric Pressure: (100,7 ± 0,0) kPa

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Test Data

■ HDMI

NO	Depth	Duration	Performance		Remarks
			Criteria	Results	
1	95 %	0.5	B	A	-
2	30 %	25	C	A	-
3	95 %	250	C	B	-

■ DP

NO	Depth	Duration	Performance		Remarks
			Criteria	Results	
1	95 %	0.5	B	A	-
2	30 %	25	C	A	-
3	95 %	250	C	B	-

Results:

- A – No response observed from EUT
B – Unit shuts down then automatically restarts when full voltage is restored.
C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

During the interruption, EUT was turned off but after the test, it was recovered without operator's intervention.

APPENDIX A – TEST DATA

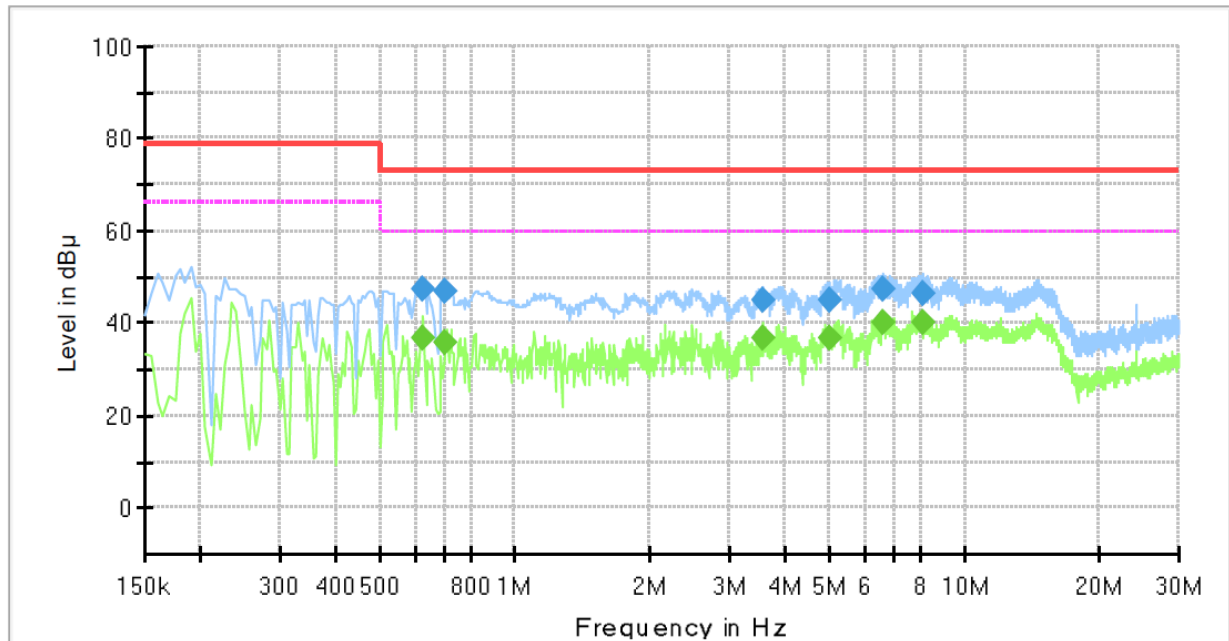
Conducted Emissions at Mains Power Ports

■ HDMI

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-2740
Phase:	L1
Mode:	HDMI
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.625000	---	36.90	60.00	23.10	1000.0	9.000	L1	19.8
0.625000	47.24	---	73.00	25.76	1000.0	9.000	L1	19.8
0.700000	---	35.89	60.00	24.11	1000.0	9.000	L1	19.9
0.700000	46.74	---	73.00	26.26	1000.0	9.000	L1	19.9
3.580000	---	36.69	60.00	23.31	1000.0	9.000	L1	20.0
3.580000	44.90	---	73.00	28.10	1000.0	9.000	L1	20.0
4.995000	---	36.94	60.00	23.06	1000.0	9.000	L1	19.7
4.995000	44.87	---	73.00	28.13	1000.0	9.000	L1	19.7
6.620000	---	40.34	60.00	19.66	1000.0	9.000	L1	19.6
6.620000	47.57	---	73.00	25.43	1000.0	9.000	L1	19.6
8.085000	---	40.02	60.00	19.98	1000.0	9.000	L1	19.7
8.085000	46.55	---	73.00	26.45	1000.0	9.000	L1	19.7

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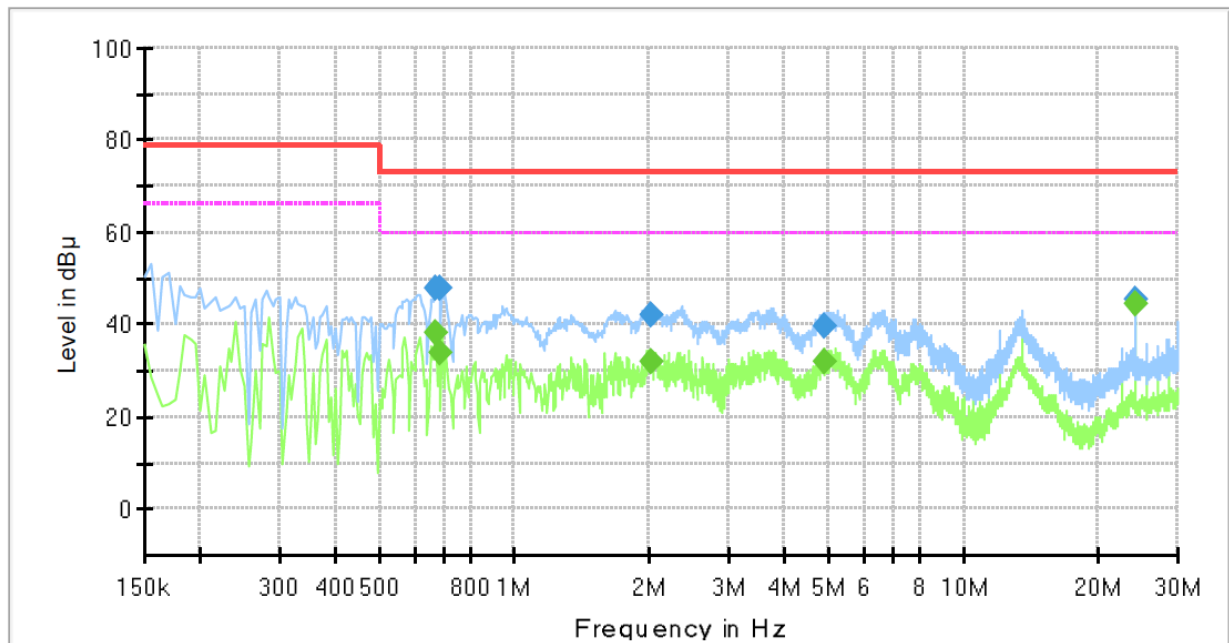
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[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-2740
Phase:	N
Mode:	HDMI
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.670000	---	38.35	60.00	21.65	1000.0	9.000	N	19.9
0.670000	48.06	---	73.00	24.94	1000.0	9.000	N	19.9
0.680000	---	33.88	60.00	26.12	1000.0	9.000	N	19.9
0.680000	47.85	---	73.00	25.15	1000.0	9.000	N	19.9
2.005000	---	32.20	60.00	27.80	1000.0	9.000	N	20.3
2.005000	41.91	---	73.00	31.09	1000.0	9.000	N	20.3
4.910000	---	32.19	60.00	27.81	1000.0	9.000	N	19.7
4.910000	39.86	---	73.00	33.14	1000.0	9.000	N	19.7
24.045000	---	44.74	60.00	15.26	1000.0	9.000	N	20.4
24.045000	45.36	---	73.00	27.64	1000.0	9.000	N	20.4

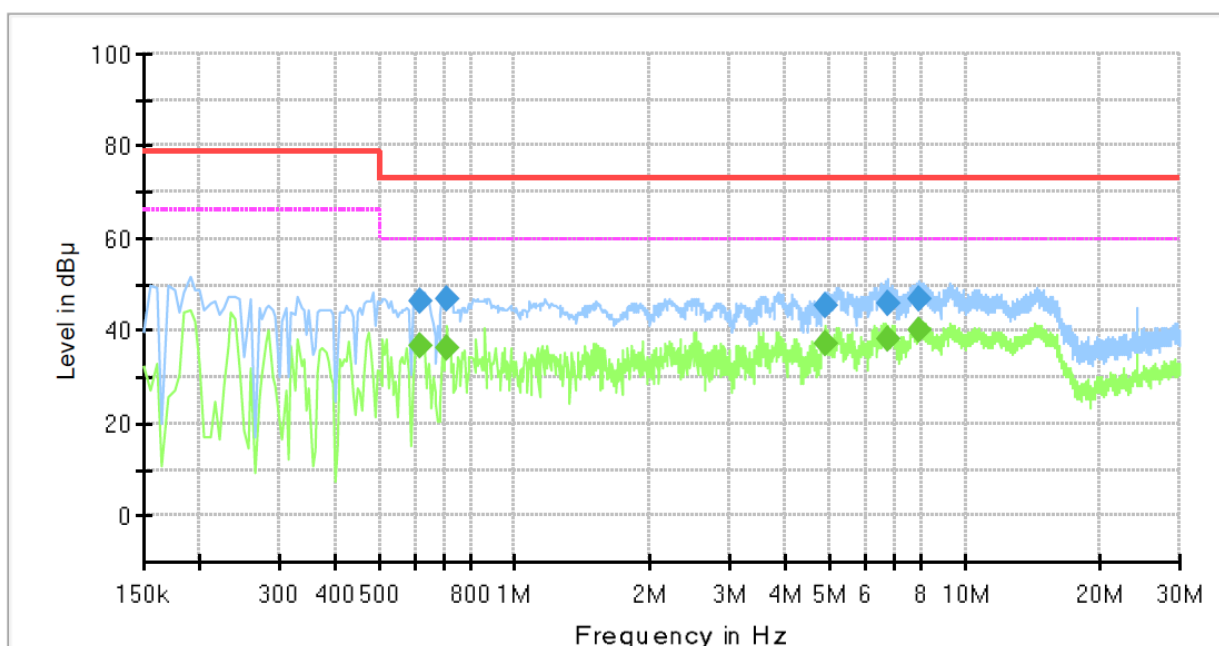
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■ DP

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-2740
Phase:	L1
Mode:	DP
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.615000	---	37.00	60.00	23.00	1000.0	9.000	L1	19.8
0.615000	46.45	---	73.00	26.55	1000.0	9.000	L1	19.8
0.710000	---	36.48	60.00	23.52	1000.0	9.000	L1	19.9
0.710000	46.75	---	73.00	26.25	1000.0	9.000	L1	19.9
4.900000	---	37.49	60.00	22.51	1000.0	9.000	L1	19.7
4.900000	45.61	---	73.00	27.39	1000.0	9.000	L1	19.7
6.765000	---	38.37	60.00	21.63	1000.0	9.000	L1	19.6
6.765000	45.76	---	73.00	27.24	1000.0	9.000	L1	19.6
7.920000	---	40.18	60.00	19.82	1000.0	9.000	L1	19.6
7.920000	47.00	---	73.00	26.00	1000.0	9.000	L1	19.6

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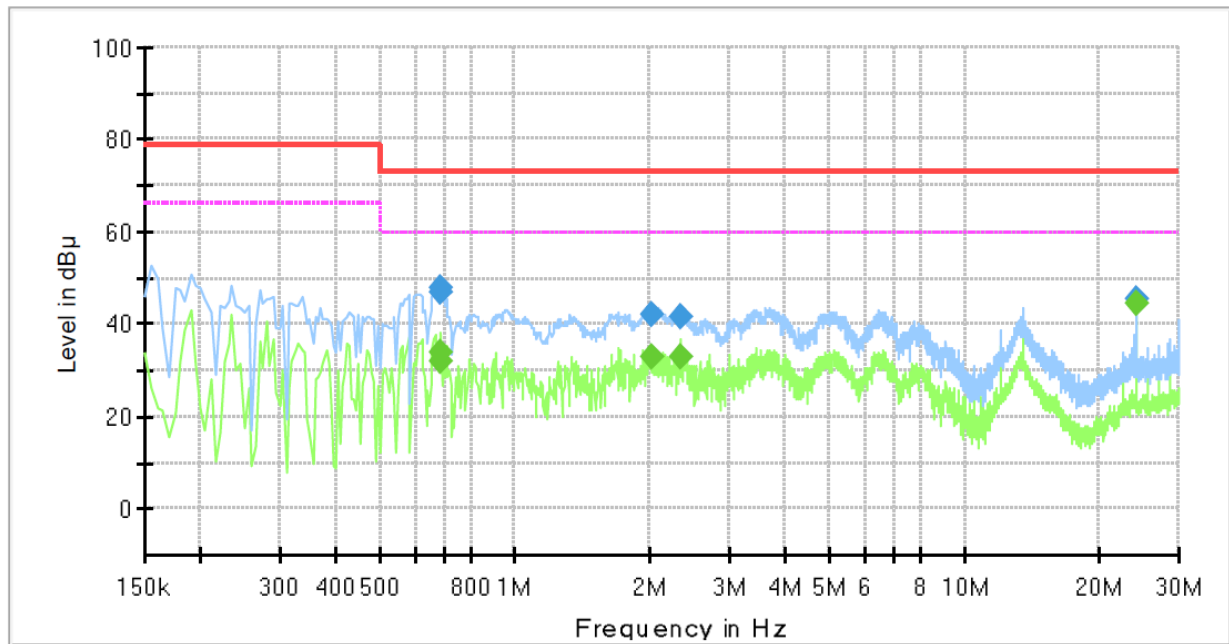
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[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-2740
Phase:	N
Mode:	DP
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.680000	---	34.09	60.00	25.91	1000.0	9.000	N	19.9
0.680000	47.95	---	73.00	25.05	1000.0	9.000	N	19.9
0.685000	---	32.08	60.00	27.92	1000.0	9.000	N	19.9
0.685000	46.79	---	73.00	26.21	1000.0	9.000	N	19.9
2.010000	---	32.70	60.00	27.30	1000.0	9.000	N	20.3
2.010000	41.94	---	73.00	31.06	1000.0	9.000	N	20.3
2.340000	---	32.84	60.00	27.16	1000.0	9.000	N	20.3
2.340000	41.52	---	73.00	31.48	1000.0	9.000	N	20.3
24.045000	---	44.71	60.00	15.29	1000.0	9.000	N	20.4
24.045000	45.34	---	73.00	27.66	1000.0	9.000	N	20.4

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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KES-EM-23T0264

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Conducted Emissions at Telecommunication Ports [100 Mbps]

N/A

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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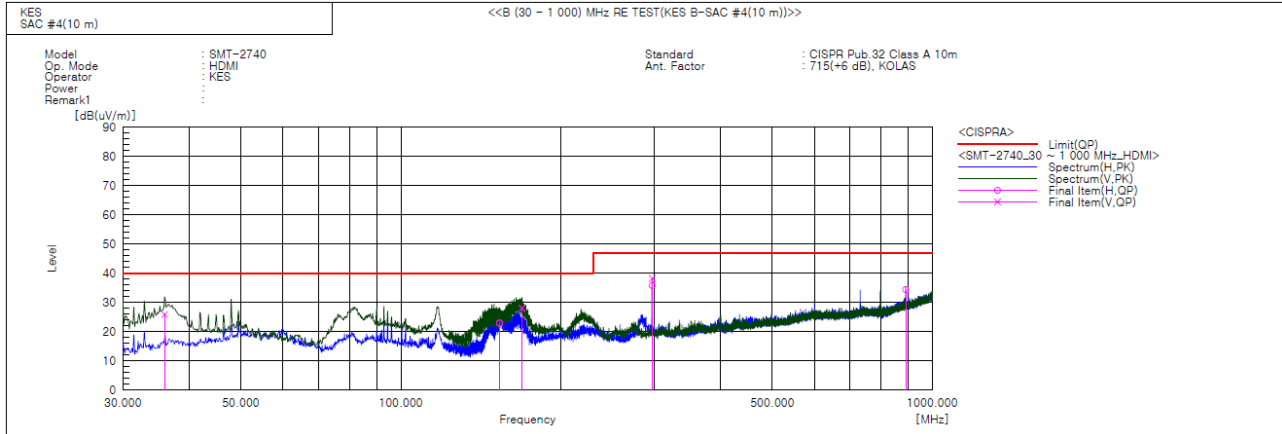
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Radiated Electric Field Emissions(Below 1 GHz)

■ HDMI



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	35.941	V	49.9	-24.0	25.9	40.0	14.1	112.0	89.0	
2	153.311	H	48.1	-25.2	22.9	40.0	17.1	357.0	126.0	
3	169.074	V	52.5	-24.5	28.0	40.0	12.0	126.0	349.0	
4	296.993	V	56.3	-18.1	38.2	47.0	8.8	148.0	135.0	
5	296.993	H	53.9	-18.1	35.8	47.0	11.2	381.0	107.0	
6	891.118	H	39.1	-4.7	34.4	47.0	12.6	366.0	100.0	

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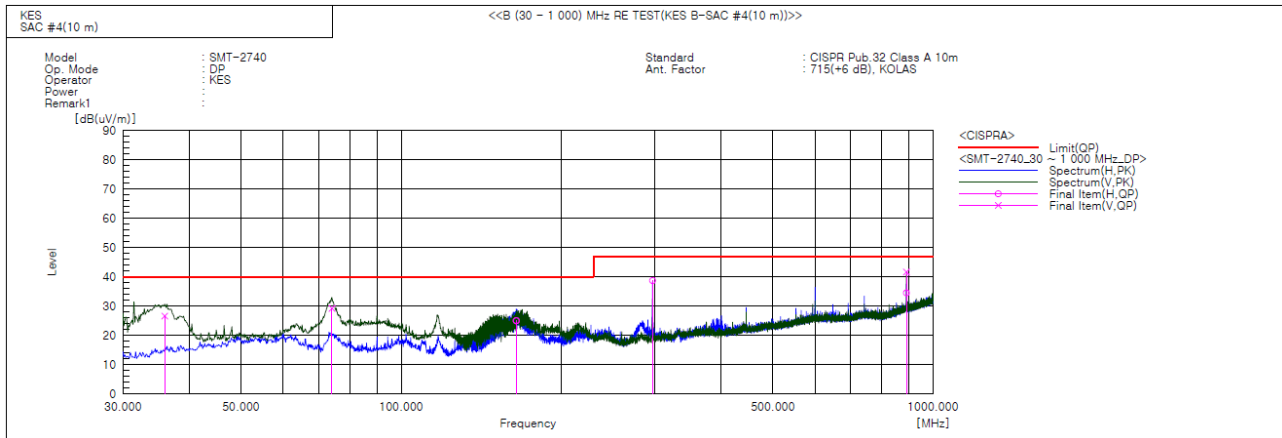


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DP



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	35.941	V	50.6	-24.0	26.6	40.0	13.4	146.0	352.0	
2	74.135	V	55.5	-26.3	29.2	40.0	10.8	129.0	240.0	
3	164.588	H	49.8	-24.8	25.0	40.0	15.0	361.0	114.0	
4	296.993	H	56.8	-18.1	38.7	47.0	8.3	398.0	121.0	
5	890.996	V	46.3	-4.7	41.6	47.0	5.4	106.0	8.0	
6	890.996	H	39.2	-4.7	34.5	47.0	12.5	354.0	114.0	

◆ Calculation – SAC #4(10 m)

Result(QP) [dB(μV/m)] = (Reading(QP)[dB(μV)] + c.f[dB(1/m)])

Margin(QP)[dB] = Limit[dB(μV/m)] - Result(QP) [dB(μV/m)]

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

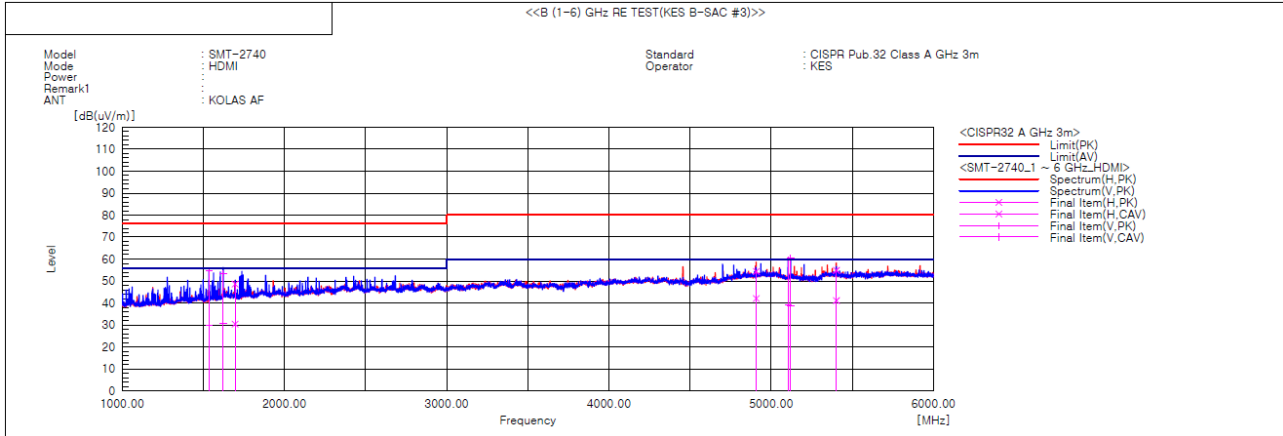
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamplifier Factor), Margin: Margin value

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Radiated Electric Field Emissions(Above 1 GHz)

■ HDMI



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1534.170	V	54.6	29.6	0.1	54.7	29.7	76.0	56.0	21.3	26.3	100.0	63.9	
2	1623.411	V	52.6	30.1	0.7	53.3	30.8	76.0	56.0	22.7	25.2	100.0	50.8	
3	1695.502	H	47.0	28.9	1.6	48.6	30.5	76.0	56.0	27.4	25.5	100.0	152.6	
4	4907.081	H	39.6	27.3	14.8	54.4	42.1	80.0	60.0	25.6	17.9	100.0	48.3	
5	5103.630	V	44.6	24.1	14.9	59.5	39.0	80.0	60.0	20.5	21.0	100.0	142.2	
6	5119.914	V	45.6	23.8	14.8	60.4	38.6	80.0	60.0	19.6	21.4	100.0	147.3	
7	5401.100	H	39.0	25.3	15.9	54.9	41.2	80.0	60.0	25.1	18.8	100.0	321.5	



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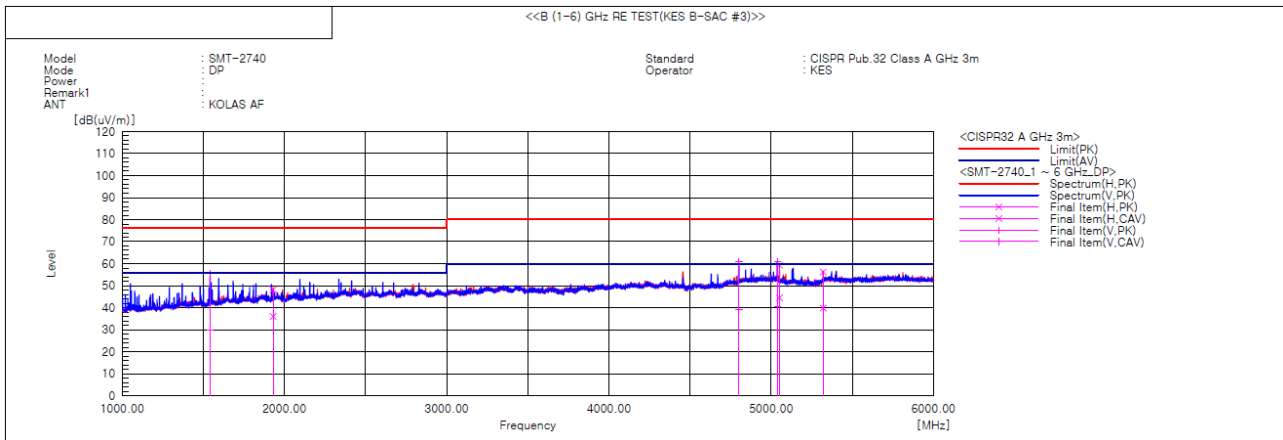
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DP



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Result CAV [dB(μV/m)]	Limit PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1541.254	V	55.5	29.6	0.1	55.6	29.7	76.0	56.0	20.4	26.3	100.0	53.6	
2	1930.076	H	44.6	32.5	3.6	48.2	36.1	76.0	56.0	27.8	19.9	100.0	19.3	
3	4801.302	V	47.2	25.5	13.8	61.0	39.3	80.0	60.0	19.0	20.7	100.0	149.9	
4	5037.840	V	45.7	25.4	15.2	60.9	40.6	80.0	60.0	19.1	19.4	100.0	147.0	
5	5050.266	H	44.2	29.4	15.1	59.3	44.5	80.0	60.0	20.7	15.5	100.0	306.7	
6	5319.552	H	40.9	24.5	15.4	56.3	39.9	80.0	60.0	23.7	20.1	100.0	79.6	

◆ Calculation

Result(PK/CAV) [dB(μV/m)] = (Reading(PK/CAV)[dB(μV)] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB(μV/m)] - Result(PK/CAV) [dB(μV/m)]

Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

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Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ HDMI

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.135			
2	0.002	0.176	1.080	n/a
3	0.125	5.424	2.300	PASS
4	0.003	0.665	0.430	n/a
5	0.118	10.354	1.140	PASS
6	0.002	0.749	0.300	n/a
7	0.110	14.250	0.770	PASS
8	0.002	0.797	0.230	n/a
9	0.098	24.524	0.400	PASS
10	0.002	1.053	0.184	n/a
11	0.085	25.730	0.330	PASS
12	0.001	0.955	0.153	n/a
13	0.072	34.235	0.210	PASS
14	0.001	0.937	0.131	n/a
15	0.058	38.944	0.150	PASS
16	0.001	0.974	0.115	n/a
17	0.044	33.554	0.132	PASS
18	0.001	0.701	0.102	n/a
19	0.031	26.341	0.118	PASS
20	0.001	0.737	0.092	n/a
21	0.020	12.326	0.161	PASS
22	0.001	0.954	0.084	n/a
23	0.011	7.297	0.147	PASS
24	0.001	1.061	0.077	n/a
25	0.005	3.804	0.135	PASS
26	0.001	1.211	0.071	n/a
27	0.006	4.701	0.125	PASS
28	0.001	1.294	0.066	n/a
29	0.008	7.197	0.116	PASS
30	0.001	1.161	0.061	n/a
31	0.010	8.971	0.109	PASS
32	0.001	1.167	0.058	n/a
33	0.010	9.662	0.102	PASS
34	0.001	1.327	0.054	n/a
35	0.009	9.400	0.096	PASS
36	0.001	1.515	0.051	n/a
37	0.007	8.058	0.091	PASS
38	0.001	1.490	0.048	n/a
39	0.005	5.866	0.087	PASS
40	0.001	1.262	0.046	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.

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Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.135			
2	0.002	0.138	1.620	n/a
3	0.125	3.619	3.450	PASS
4	0.003	0.499	0.645	n/a
5	0.118	6.917	1.710	PASS
6	0.003	0.566	0.450	n/a
7	0.110	9.517	1.155	PASS
8	0.002	0.608	0.345	n/a
9	0.098	16.385	0.600	PASS
10	0.002	0.822	0.276	n/a
11	0.085	17.257	0.495	PASS
12	0.002	0.742	0.230	n/a
13	0.072	22.927	0.315	PASS
14	0.001	0.721	0.197	n/a
15	0.059	26.151	0.225	PASS
16	0.001	0.771	0.173	n/a
17	0.045	22.565	0.199	PASS
18	0.001	0.577	0.153	n/a
19	0.032	17.775	0.178	PASS
20	0.001	0.586	0.138	n/a
21	0.020	12.548	0.161	PASS
22	0.001	0.715	0.125	n/a
23	0.011	7.544	0.147	PASS
24	0.001	0.805	0.115	n/a
25	0.005	3.942	0.135	PASS
26	0.001	0.941	0.106	n/a
27	0.006	4.856	0.125	PASS
28	0.001	0.982	0.099	n/a
29	0.009	7.349	0.116	PASS
30	0.001	0.871	0.092	n/a
31	0.010	9.238	0.109	PASS
32	0.001	0.884	0.086	n/a
33	0.010	9.777	0.102	PASS
34	0.001	1.013	0.081	n/a
35	0.009	9.516	0.096	PASS
36	0.001	1.166	0.077	n/a
37	0.007	8.208	0.091	PASS
38	0.001	1.175	0.073	n/a
39	0.005	6.062	0.087	PASS
40	0.001	0.950	0.069	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.

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■ DP

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.134			
2	0.002	0.184	1.080	n/a
3	0.125	5.416	2.300	PASS
4	0.003	0.698	0.430	n/a
5	0.118	10.359	1.140	PASS
6	0.002	0.774	0.300	n/a
7	0.110	14.291	0.770	PASS
8	0.002	0.831	0.230	n/a
9	0.099	24.692	0.400	PASS
10	0.002	1.116	0.184	n/a
11	0.086	26.051	0.330	PASS
12	0.002	1.035	0.153	n/a
13	0.073	34.897	0.210	PASS
14	0.001	1.026	0.131	n/a
15	0.060	40.027	0.150	PASS
16	0.001	1.054	0.115	n/a
17	0.046	34.943	0.132	PASS
18	0.001	0.754	0.102	n/a
19	0.033	27.986	0.118	PASS
20	0.001	0.770	0.092	n/a
21	0.022	13.491	0.161	PASS
22	0.001	0.997	0.084	n/a
23	0.012	8.405	0.147	PASS
24	0.001	1.077	0.077	n/a
25	0.006	4.419	0.135	PASS
26	0.001	1.232	0.071	n/a
27	0.005	4.193	0.125	PASS
28	0.001	1.363	0.066	n/a
29	0.008	6.580	0.116	PASS
30	0.001	1.237	0.061	n/a
31	0.009	8.592	0.109	PASS
32	0.001	1.220	0.058	n/a
33	0.010	9.575	0.102	PASS
34	0.001	1.352	0.054	n/a
35	0.009	9.612	0.096	PASS
36	0.001	1.549	0.051	n/a
37	0.008	8.556	0.091	PASS
38	0.001	1.532	0.048	n/a
39	0.006	6.555	0.087	PASS
40	0.001	1.314	0.046	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

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Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.135			
2	0.002	0.142	1.620	n/a
3	0.125	3.615	3.450	PASS
4	0.003	0.531	0.645	n/a
5	0.118	6.918	1.710	PASS
6	0.003	0.578	0.450	n/a
7	0.110	9.542	1.155	PASS
8	0.002	0.624	0.345	n/a
9	0.099	16.490	0.600	PASS
10	0.002	0.842	0.276	n/a
11	0.086	17.460	0.495	PASS
12	0.002	0.797	0.230	n/a
13	0.074	23.340	0.315	PASS
14	0.002	0.780	0.197	n/a
15	0.060	26.841	0.225	PASS
16	0.001	0.796	0.173	n/a
17	0.047	23.451	0.199	PASS
18	0.001	0.582	0.153	n/a
19	0.033	18.829	0.178	PASS
20	0.001	0.592	0.138	n/a
21	0.022	13.693	0.161	PASS
22	0.001	0.768	0.125	n/a
23	0.013	8.620	0.147	PASS
24	0.001	0.824	0.115	n/a
25	0.006	4.577	0.135	PASS
26	0.001	0.956	0.106	n/a
27	0.005	4.318	0.125	PASS
28	0.001	1.045	0.099	n/a
29	0.008	6.741	0.116	PASS
30	0.001	0.930	0.092	n/a
31	0.010	8.765	0.109	PASS
32	0.001	0.937	0.086	n/a
33	0.010	9.699	0.102	PASS
34	0.001	1.032	0.081	n/a
35	0.009	9.710	0.096	PASS
36	0.001	1.219	0.077	n/a
37	0.008	8.700	0.091	PASS
38	0.001	1.151	0.073	n/a
39	0.006	6.714	0.087	PASS
40	0.001	0.990	0.069	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.

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**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
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Page (52) of (69)

Test Data - Voltage Fluctuations**■ HDMI**

Flicker Measurements					
	P_{It}	Max P_{st}	Max D_c	Max D_{max}	Max T_{max}
Line 1:	0.028	0.028	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

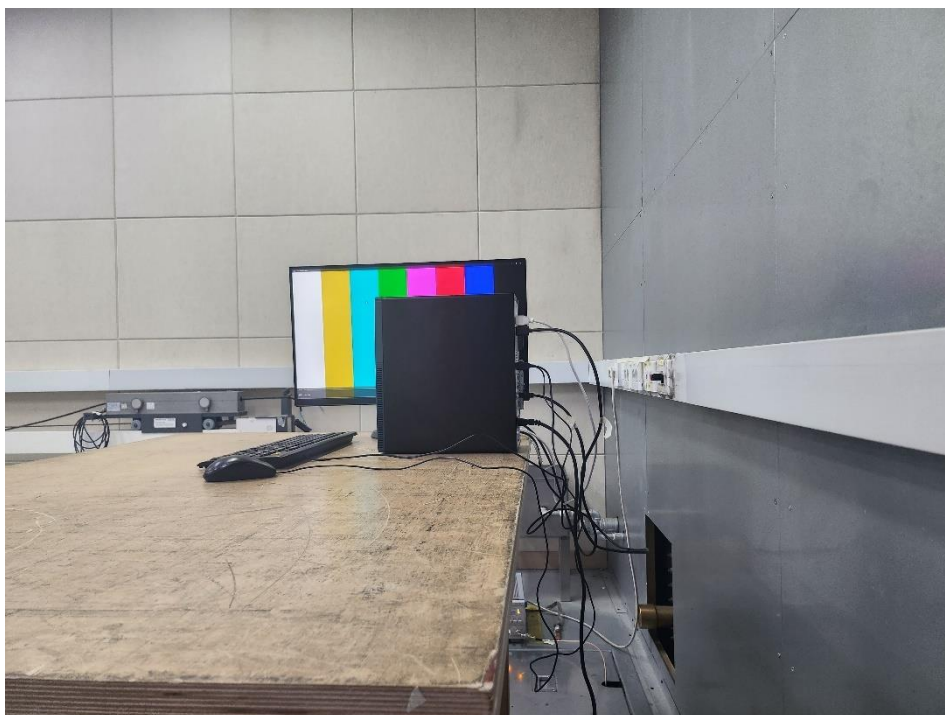
■ DP

Flicker Measurements					
	P_{It}	Max P_{st}	Max D_c	Max D_{max}	Max T_{max}
Line 1:	0.028	0.028	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

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APPENDIX B – Test Setup Photos and Configuration

Conducted Voltage Emissions



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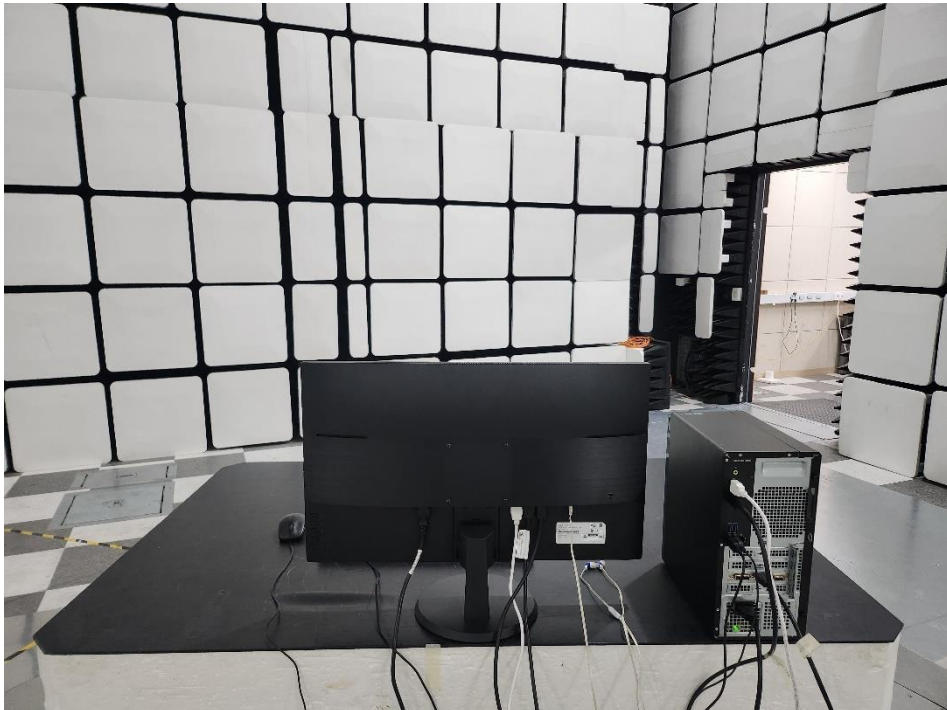
Report No.:
KES-EM-23T0264
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Conducted Telecommunication Emissions

N/A

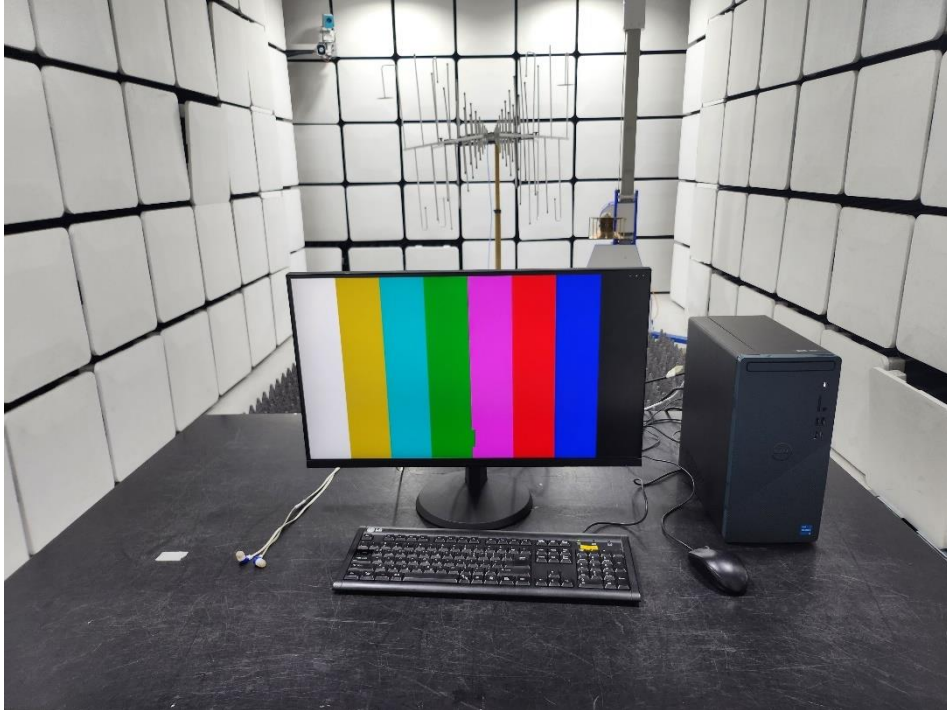
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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Harmonic Current Emissions and Voltage Fluctuations and Flicker

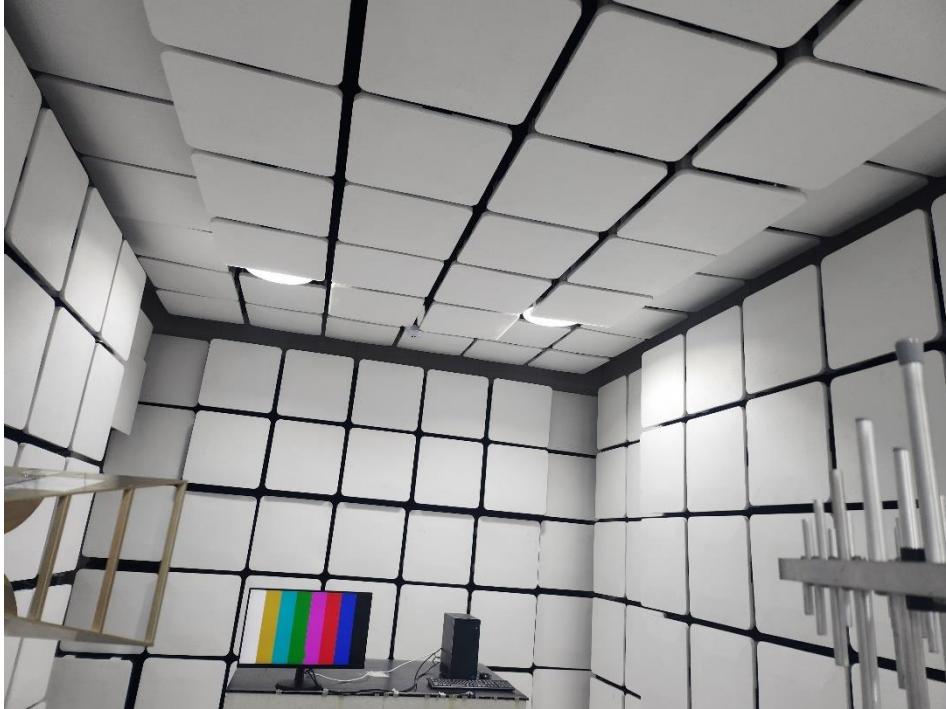


Electrostatic Discharge

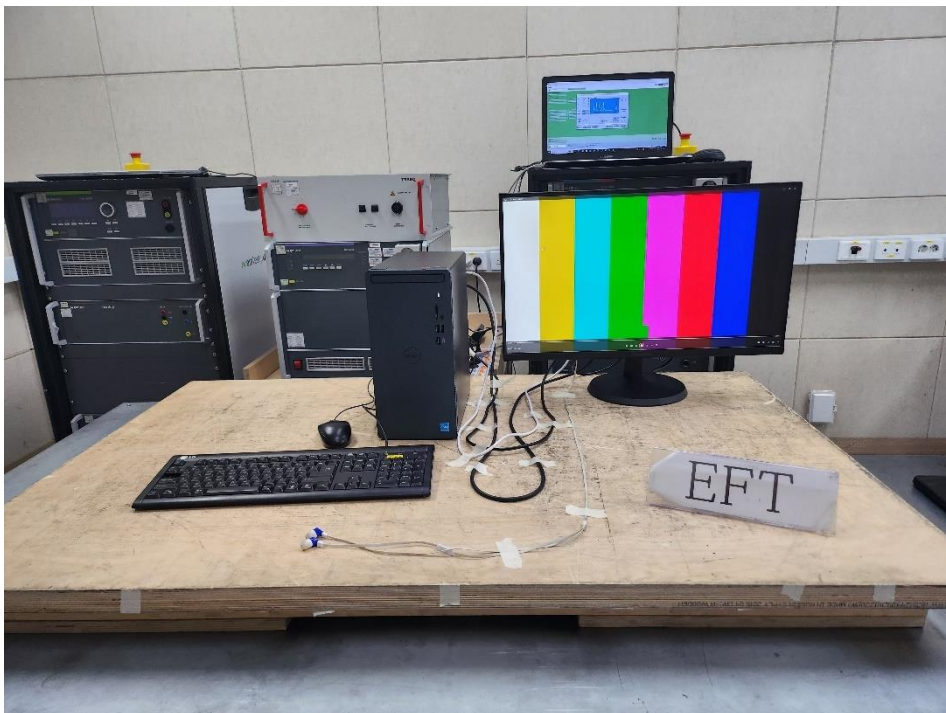


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Radiated Electric Field Immunity



Electrical Fast Transients/Bursts



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Surge Transients



Conducted Disturbance

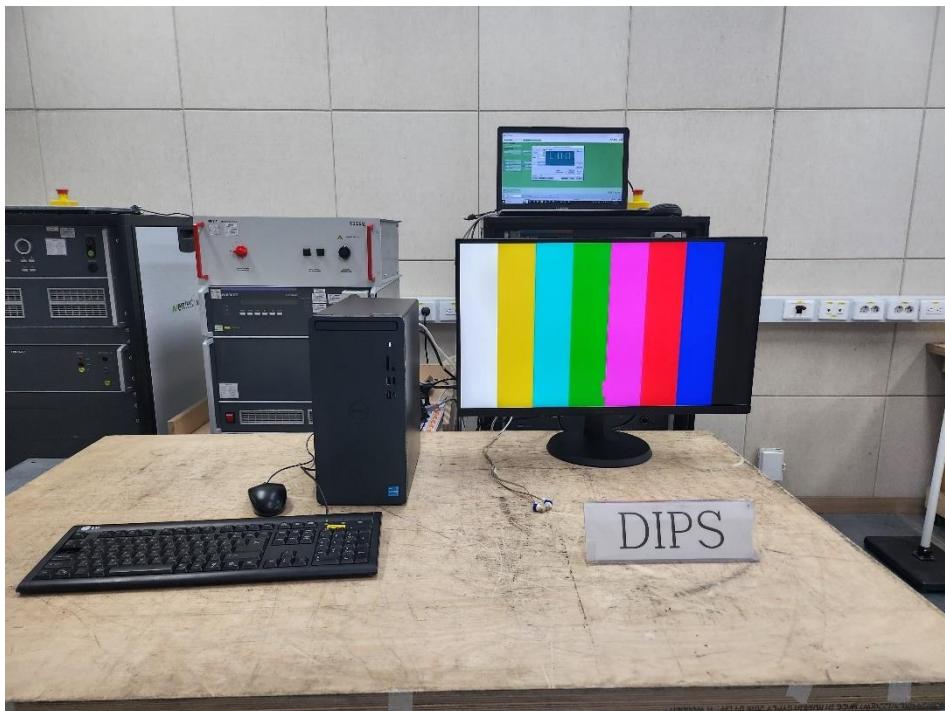


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Power Frequency Magnetic Field Immunity

N/A

Voltage Dips and Short Interruptions



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APPENDIX C – EUT Photographs EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

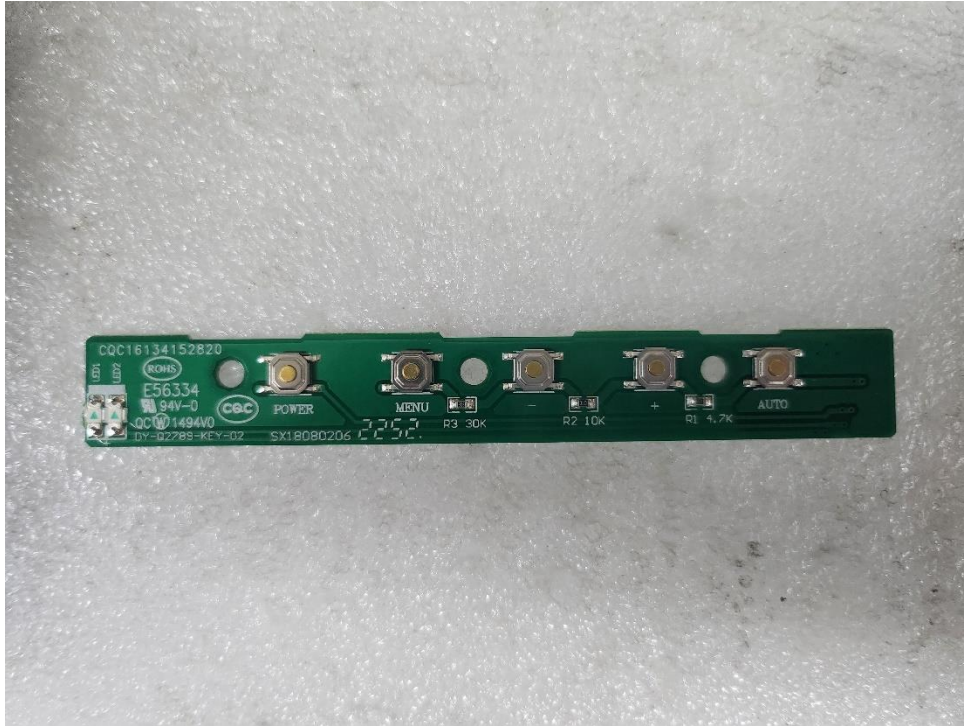
(Internal View)



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EUT Internal View – Board 1

(Top)



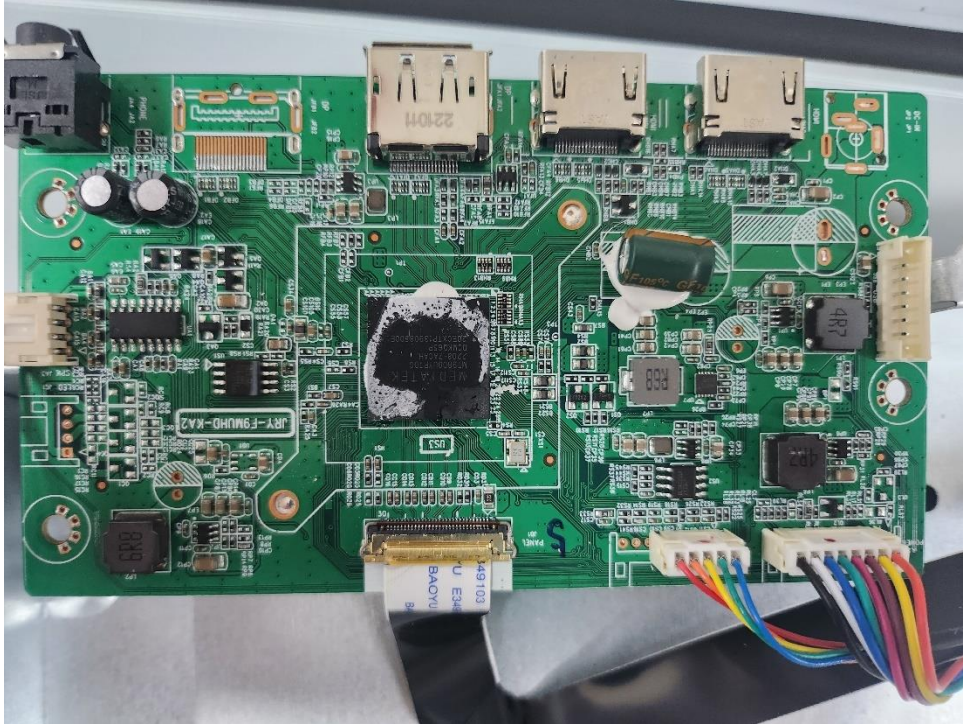
(Bottom)



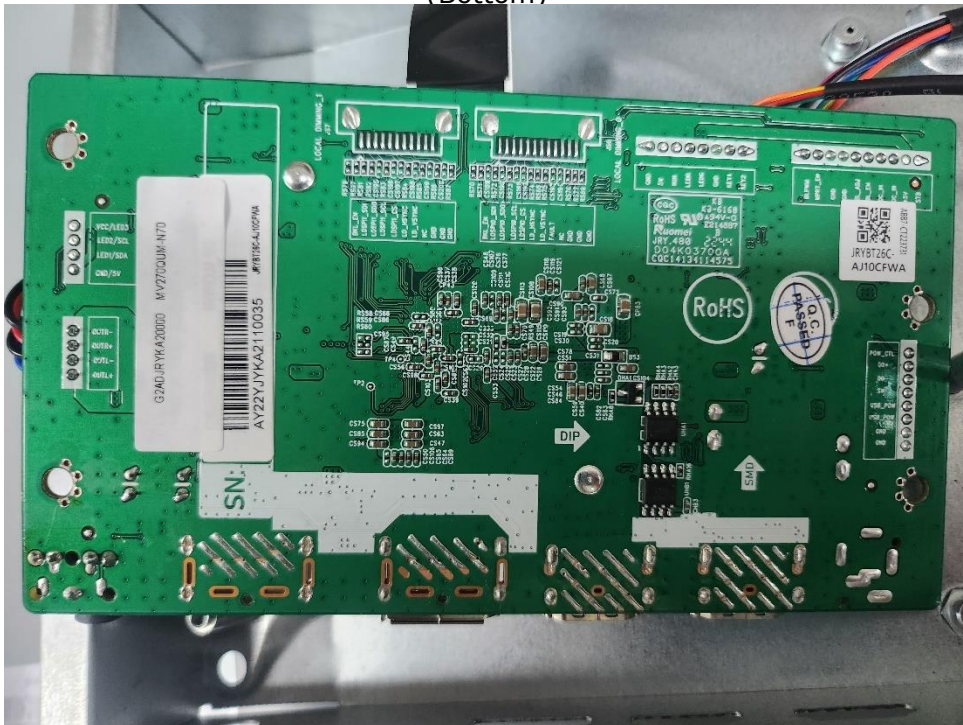
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EUT Internal View – Board 2

(Top)



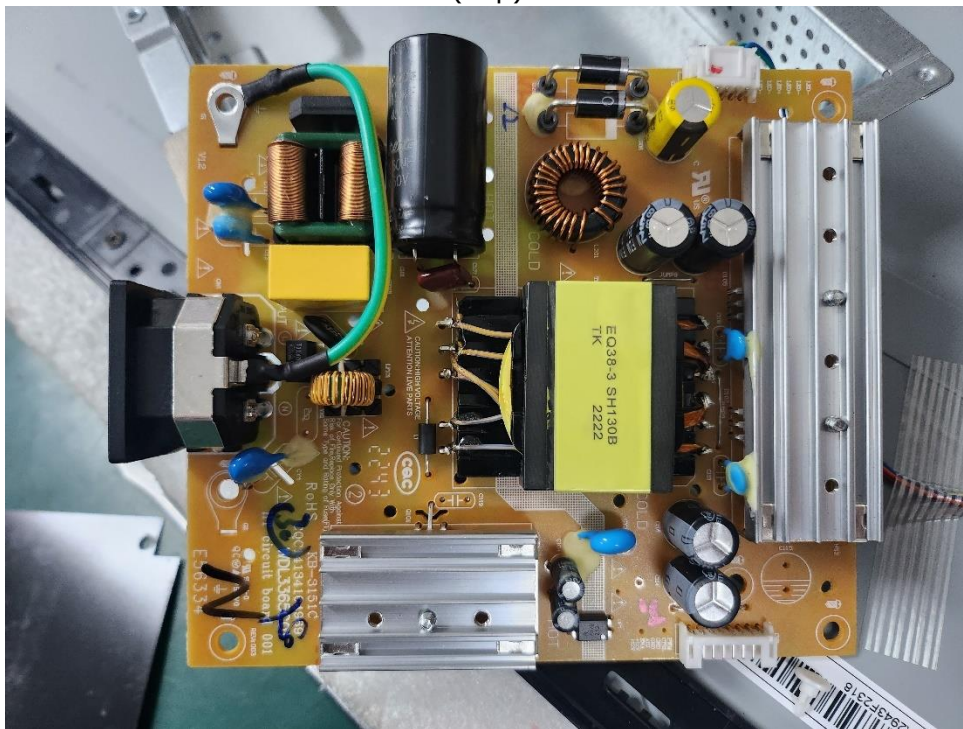
(Bottom)



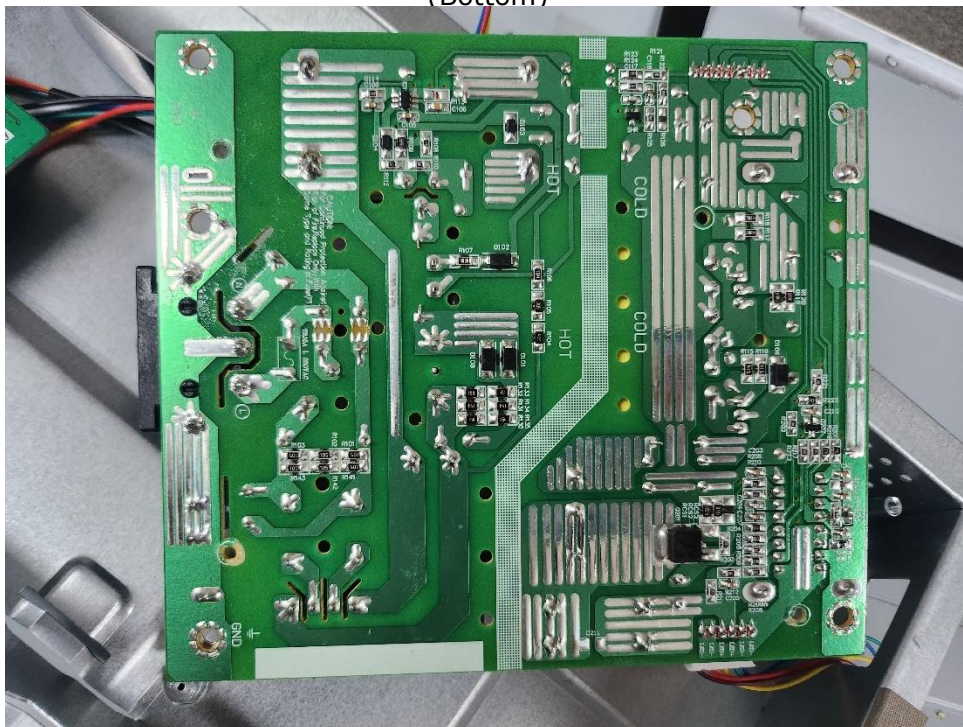
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EUT Internal View – Board 3

(Top)



(Bottom)



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EUT Internal View – Board 4

(Top)



(Bottom)



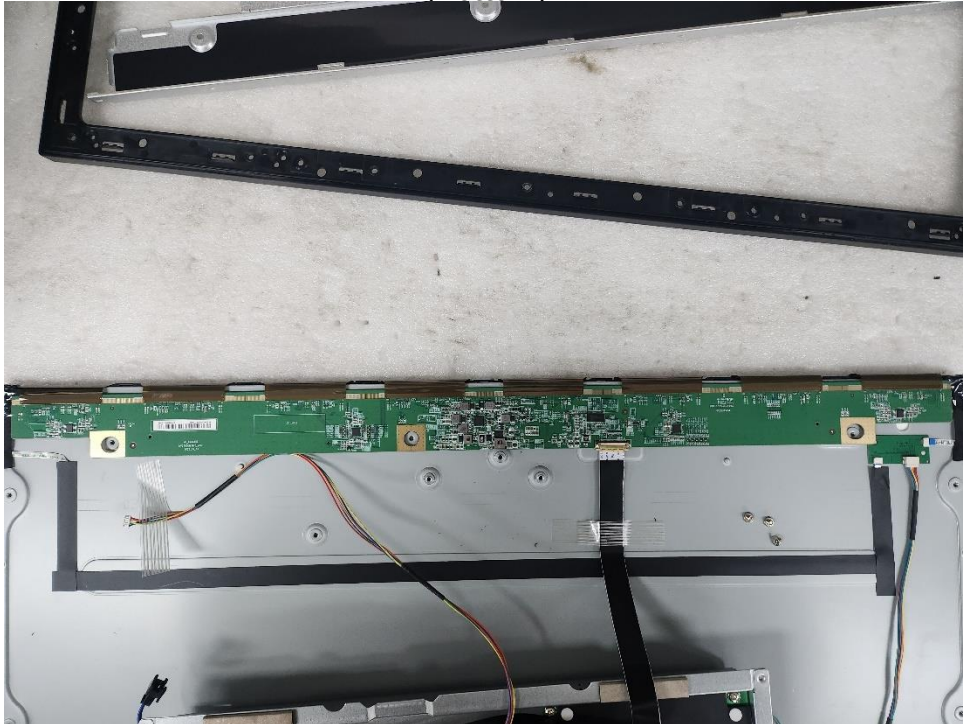
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EUT Internal View – Board 5

(Top)



(Bottom)



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EUT Internal View – Panel

(Top)

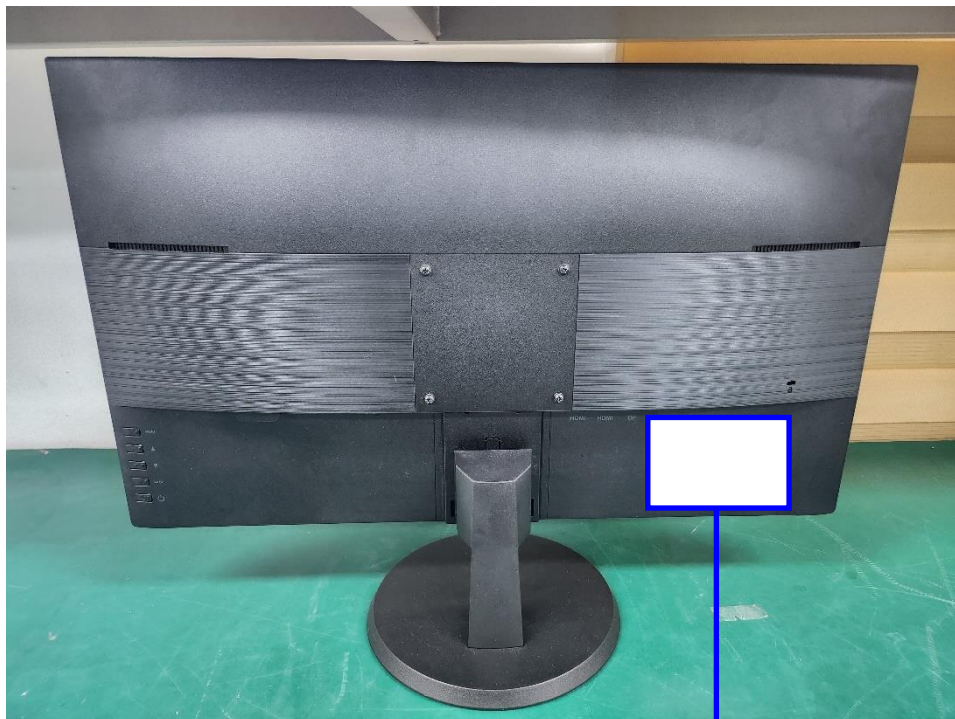


(Bottom)



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Label and Location

**Security LED Monitor**

Model No : SMT-2740

Manufacturer : Weihai Daewoo Electronics Co., Ltd.

Made in China

