EMC TEST REPORT For VCCI

Test Report No.	:	KES-EM-21T0753-R1
Date of Issue	:	Feb. 24, 2023
Product name	:	LED MONITOR
Model/Type No.	:	SMT-3234
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	:	Aug. 10, 2021
Test date	:	Aug. 13, 2021
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Min Seong, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

Tested by In Han, Kang
(Retired person)
Proxy signature : Min Seong, Kim

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

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Aug. 30, 2021	KES-EM-21T0753	Issued
Feb. 24, 2023	KES-EM-21T0753-R1	Change the Applicant at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

Display		
Screen Size		31.5"
Max. Resolution		1,920 x 1,080
Brightness		300cd/㎡
Contrast Ratio		2250 :1 (Typ) , 2000:1 (Min)
Aspect Ratio		16:9
Viewing Angle (H/V)		178°/178°
Display Color		16.7 million
Response Time		8ms(G to G)
Video System		NTSC/PAL
Panel Life		30,000 hours
Filter Type		3D combfilter
Interface		
Video	**Connector**	VGA, DVI, HDMI, BNC , USB
RGB/DVI	**Connector**	Analog D-sub(15 pin), DVI-D
	Input Signal	0.7Vp-p±5%
	Available Format	640 x 480@60Hz/66Hz/72Hz/75Hz (VGA), 800 x 600@56Hz/60Hz/72Hz/75Hz (SVGA), 1,024 x 768@60Hz/70Hz/75Hz (XGA), 1,152 x 864@75Hz, 1,280 x 720@60Hz, 1,280 x 800@60Hz, 1,280 x 1,024@60Hz/75Hz (SXGA), 1,360 x 768@60Hz, 1,440 x 900@60Hz, 1,600 x 900@60Hz, 1,680 x 1,050@60Hz, 1,920 x 1,080@60Hz
HDMI	**Connector**	HDMI
	Available Format	640 x 480p@60Hz, 720 x 480p@60Hz, 720 x 576p@50Hz, 1,280 x 720p@50Hz/60Hz, 1,920 x 1,080i@60Hz, 1,920 x 1,080p@60Hz
Audio	**Connector**	3.5mm Mini Phone Jack
	Output Signal	Loop-through line level(PC only), Speakers : 2x2W
Application Support		Remote Controller

On Screen Display (OSD)		
Functions		VESA™ DPM Compatible
Language		Chinese(Simplified), English, French, German, Spanish,Dutch,Russian,Arabic
General		
Electrical	**Input Voltage**	AC 100 ~ 240V(50/60Hz)
	Power Consumption	<60W
Environmental	**Operating Temperature**	0 ~ +40°C (+32°F ~ +104°F)
	Operating Humidity	10% ~ 80% (non-condensing)
Mechanical	**Dimensions without Stand**	727.7 x 433.2 x 48.8mm
	Bezel Size	14.5/25mm(Top/Bottom)
	Weight	6.2kg
	Cabanet Color	Black
	VESA Mounts Interface	100 x 100mm

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 100 V, 60 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
LED MONITOR	SMT-3234	-	Weihai Daewoo Electronics Co., Ltd.	EUT
Remote control	-	-	-	-

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	HSN-Q07C	5CD8367KND	HP	-
Notebook Adapter	HSTNN-CA40	WFTKU0ERLB4QCH	HP	-
Camera	SCB-5000N	-	SAMSUNG TECHWIN CO.,LTD.	-
Camera Adapter	SAWA-07-41612	-	-	-
Mouse	B138	-	ARESON TECHNOLOGY CPRO.	-
Keyboard	K100	820-004258	Logitech Inc.	-
Headset	-	-	-	-
MONITOR	SMT-2232	C95V67VF900025B	Weihai Daewoo Electronics Co., Ltd.	-
Desktop	-	-	-	-

1.6 External I/O Cabling

■ HDMI, VGA, AV, DVI Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
LED MONITOR (EUT)	Wireless	Remote control (EUT)	Wireless	-	-
	HDMI	Notebook	HDMI	1.4	S
	CAM OUT	MONITOR	BNC	3.0	S
	CAM IN	Camera	BNC	3.0	S
	3.5 mm	Headset	Line	1.5	U
	3.5 mm				U
	DVI	Desktop	DVI	1.9	S
	VGA		VGA	1.5	S
Keyboard	PS/2		Line	1.2	U
Mouse	USB		Line	1.3	U
Notebook Adapter	DC JACK	Notebook	DC JACK	1.2	U
Camera Adapter	DC JACK	Camera	DC JACK	1.0	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

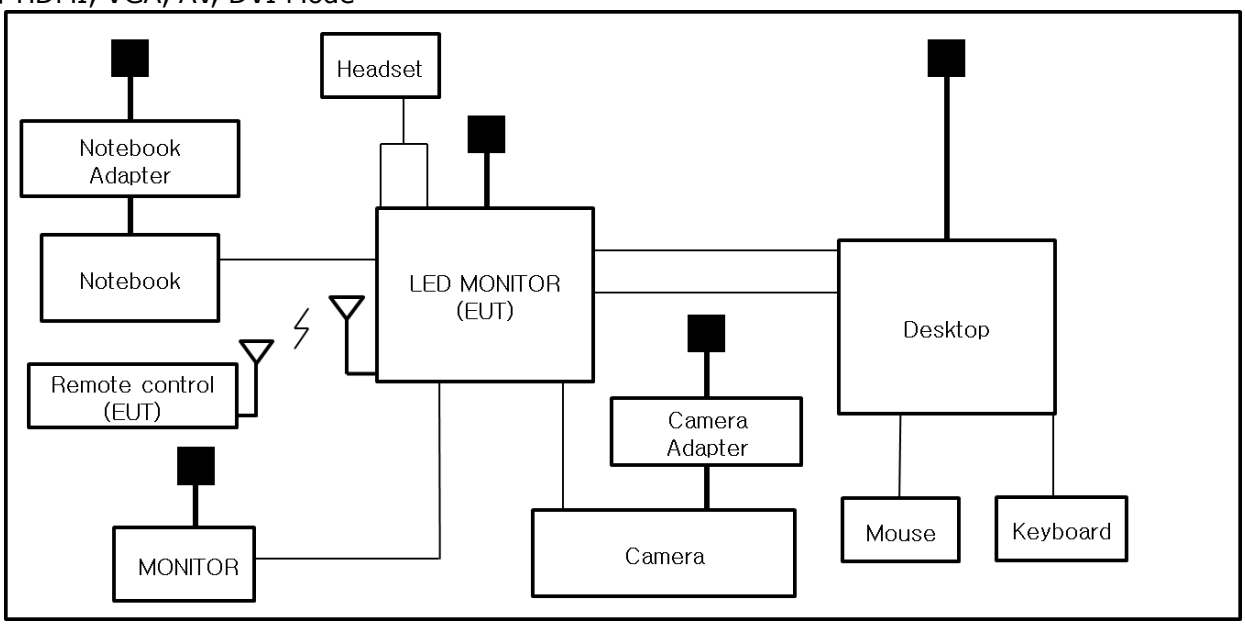
Test Mode	operating
Operating (HDMI, VGA, AV, DVI Mode)	EUT Monitoring

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

1.8 Configuration

■ AC Main
□ DC Main

■ HDMI, VGA, AV, DVI Mode



EUT - Remote control: IR

1.9 Remarks when standards applied

Since the USB port is for administrators, it was excluded from the test.

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, Yeoju-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 61000-6-3:2011		
☐ EN 61000-6-1:2007		
☐ EN 61000-6-4:2007 +A1:2011		
☐ EN 61000-6-2:2005		
☐ EN 55011:2007 +A1:2010	☐ Group 1 ☐ Class A	☐ Group 2 ☐ Class B
☐ EN 55014-1:2006 +A2:2011		
☐ EN 55014-2:1997 +A2:2008		
☐ EN 55015:2013		
☐ EN 61547 :2009		
☐ EN 55032:2015	☐ Class A	☐ Class B
☐ EN 55024:2010 +A1:2015		
☐ EN 50130-4:2011 +A1:2014		
☐ EN 61000-3-2:2014		
☐ EN 61000-3-3:2013		
☐ EN 61326-1:2013		

☒ **VCCI-CISPR 32:2016** ☒ Class A ☐ Class B

☐ **AS/NZS CISPR32:2015** ☐ Class A ☐ Class B

☐ **47 CFR Part 15, Subpart B**

- ☐ CISPR 22:2009 +A1:2010 ☐ Class A ☐ Class B
- ☐ ANSI C63.4-2009

☐ **IC Regulation ICES-003 : 2016**

- ☐ CAN/CSA CISPR 22-10 ☐ Class A ☐ Class B
- ☐ ANSI C63.4-2014

☐ **RE– Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

- ☐ Equipment for fixed use
- ☐ Equipment for vehicular use
- ☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

2.1 Conducted Emissions Mains Power Ports

Test Date
Aug. 13, 2021

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	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

Test Conditions
Temperature: (24,4 ± 0,1) ℃
Relative Humidity: (47,6 ± 0,2) % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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	01, 15, 2022
☐	LISN	ENV216	R & S	101787	12, 29, 2021
☐	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☐	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021
☐	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 30, 2021
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 30, 2021
☐	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	12, 29, 2021
☐	CDN	CDNS502A	TESEQ	40431	

Test Conditions
Temperature: ℃
Relative Humidity: % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

Test Results
The requirements are:

☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks
Does not apply because there is no signal line ports.

2.3 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Aug. 13, 2021

Test Location
☐ OPEN AREA TEST SITE #2 ☒ SEMI ANECHOIC CHAMBER #4(10m)

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	04, 01, 2022
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2021
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions
Temperature: (24,7 ± 0,1) ℃
Relative Humidity: (49,1 ± 0,2) % R.H.

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

2.4 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Aug. 13, 2021

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, 03, 2022
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 07, 2022
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions
Temperature: (24,7 ± 0,1) ℃
Relative Humidity: (49,2 ± 0,2) % R.H.

Frequency Range of Measurement
1 ㎓ to 6 ㎓

Instrument Settings
IF Band Width: 1 ㎒

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

APPENDIX A – TEST DATA

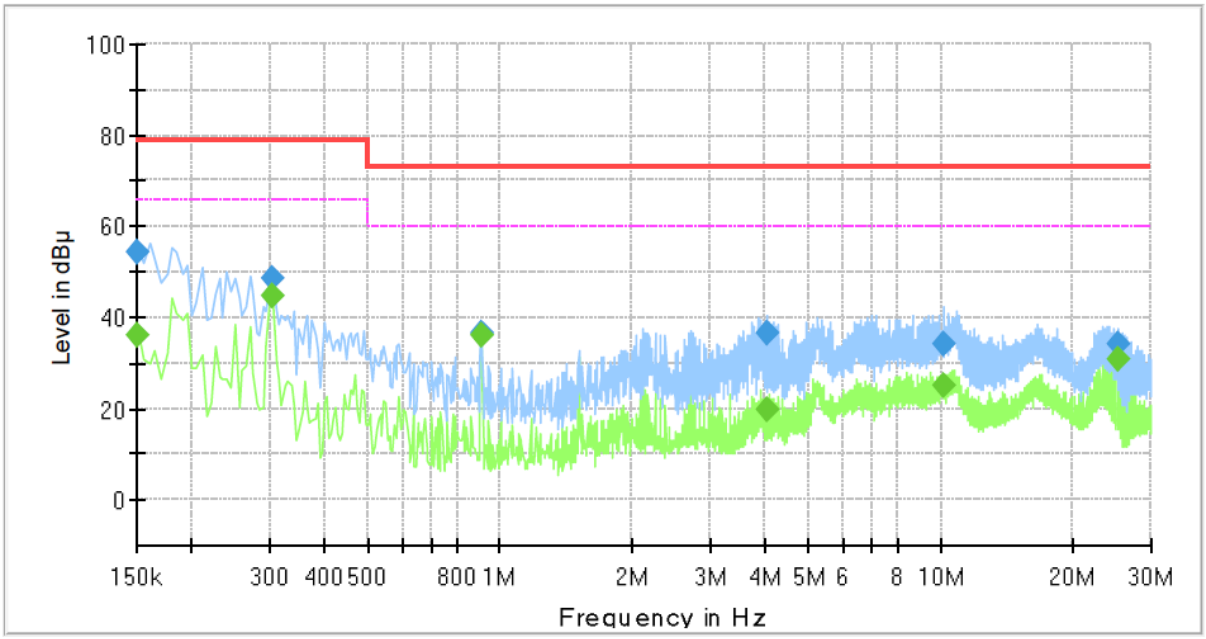
Conducted Emissions at Mains Power Ports

■ HDMI Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-3234
Phase:	L1
Mode:	HDMI
Operator Name:	KES



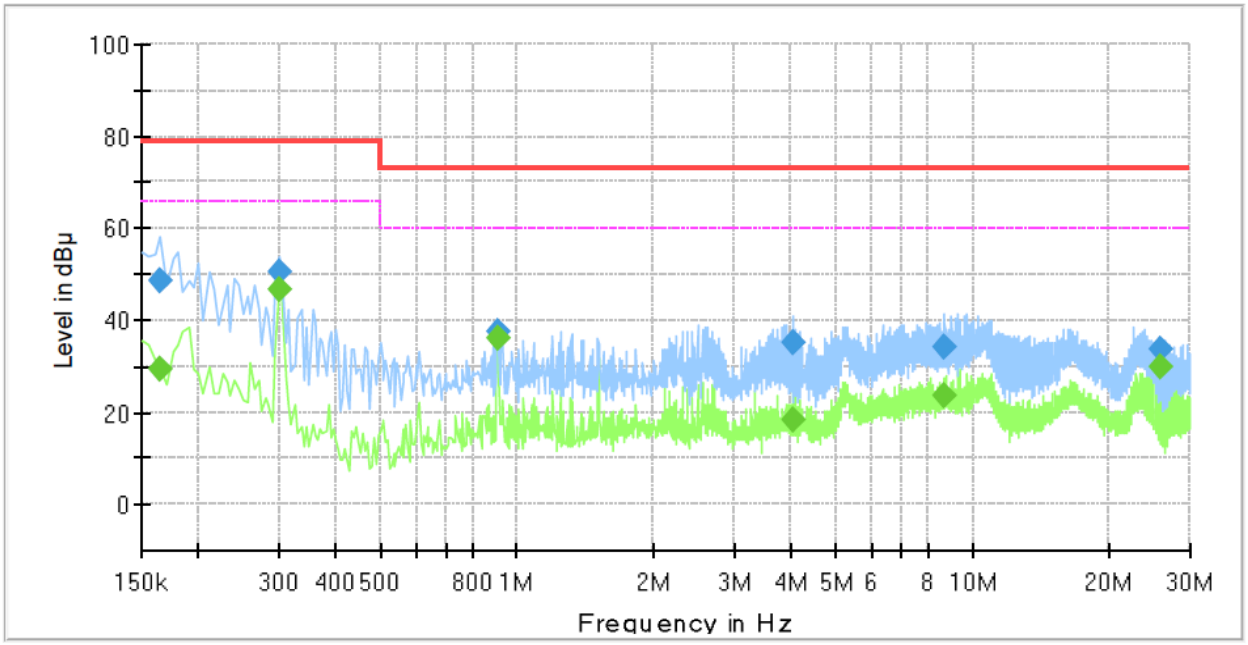
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	36.11	66.00	29.89	1000.0	9.000	L1	19.4
0.150000	54.16	---	79.00	24.84	1000.0	9.000	L1	19.4
0.305000	---	44.74	66.00	21.26	1000.0	9.000	L1	19.6
0.305000	48.76	---	79.00	30.24	1000.0	9.000	L1	19.6
0.905000	---	35.98	60.00	24.02	1000.0	9.000	L1	20.1
0.905000	36.52	---	73.00	36.48	1000.0	9.000	L1	20.1
4.045000	---	19.61	60.00	40.39	1000.0	9.000	L1	19.9
4.045000	36.55	---	73.00	36.45	1000.0	9.000	L1	19.9
10.145000	---	25.15	60.00	34.85	1000.0	9.000	L1	19.9
10.145000	33.96	---	73.00	39.04	1000.0	9.000	L1	19.9
25.365000	---	30.84	60.00	29.16	1000.0	9.000	L1	20.2
25.365000	34.30	---	73.00	38.70	1000.0	9.000	L1	20.2

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-3234
Phase:	N
Mode:	HDMI
Operator Name:	KES



Final_Result

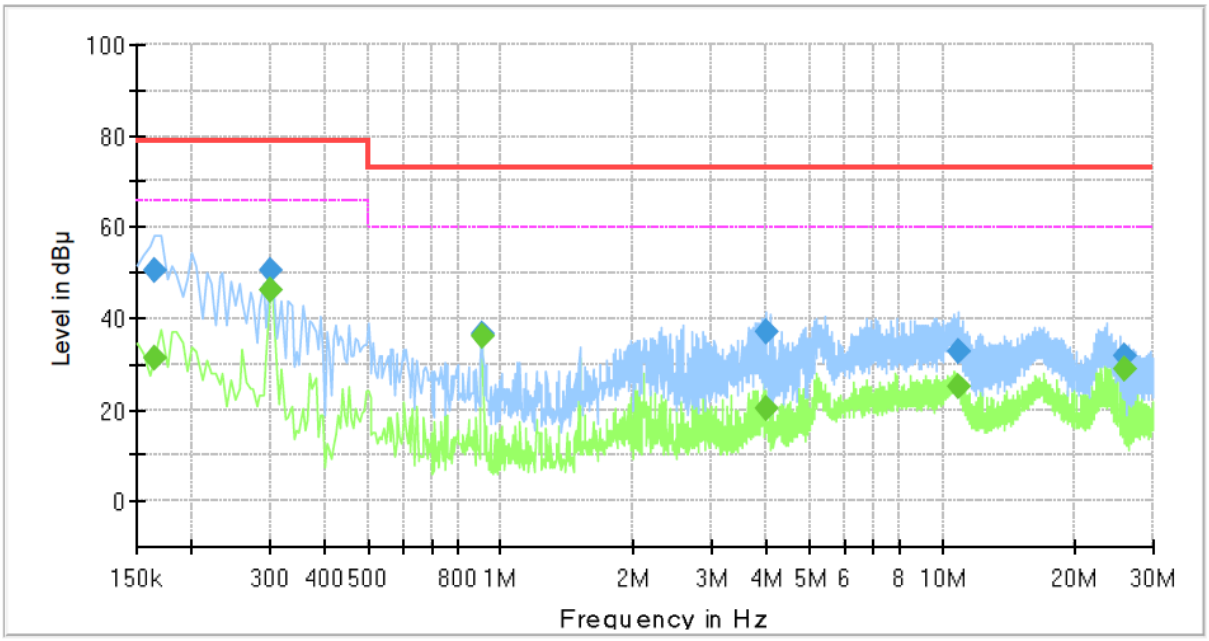
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	29.22	66.00	36.78	1000.0	9.000	N	19.4
0.165000	48.83	---	79.00	30.17	1000.0	9.000	N	19.4
0.300000	---	46.56	66.00	19.44	1000.0	9.000	N	19.5
0.300000	50.41	---	79.00	28.59	1000.0	9.000	N	19.5
0.905000	---	36.35	60.00	23.65	1000.0	9.000	N	20.1
0.905000	37.75	---	73.00	35.25	1000.0	9.000	N	20.1
4.035000	---	18.55	60.00	41.45	1000.0	9.000	N	19.9
4.035000	34.93	---	73.00	38.07	1000.0	9.000	N	19.9
8.640000	---	23.60	60.00	36.40	1000.0	9.000	N	19.7
8.640000	34.38	---	73.00	38.62	1000.0	9.000	N	19.7
25.970000	---	29.93	60.00	30.07	1000.0	9.000	N	20.2
25.970000	33.49	---	73.00	39.51	1000.0	9.000	N	20.2

■ VGA Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-3234
Phase:	L1
Mode:	VGA
Operator Name:	KES



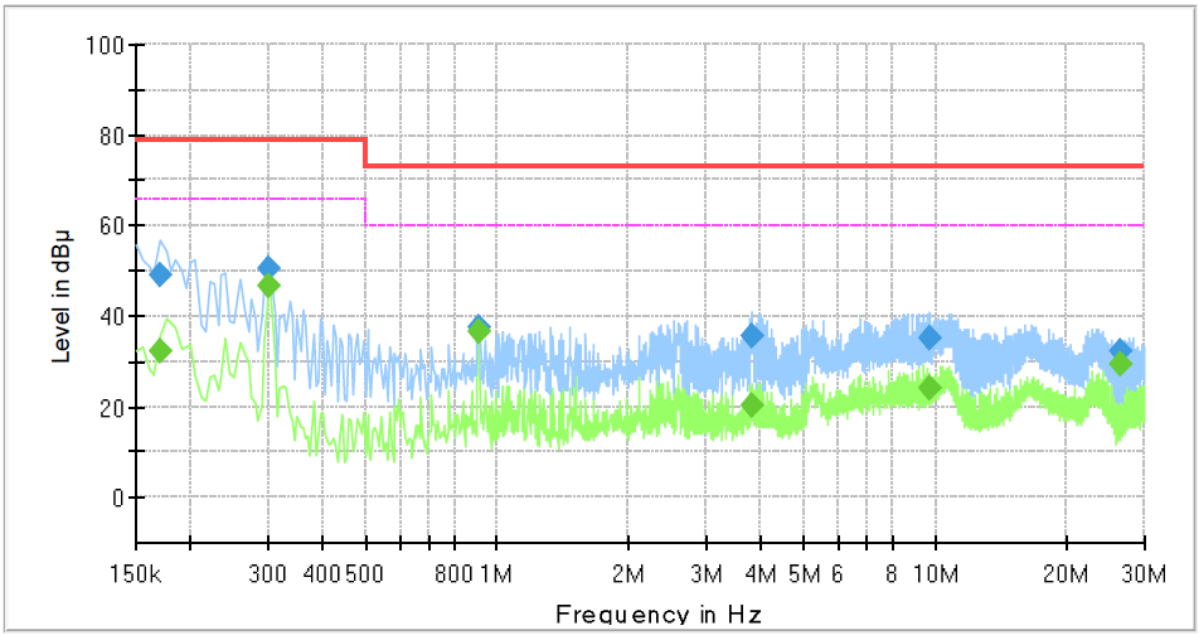
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	31.33	66.00	34.67	1000.0	9.000	L1	19.5
0.165000	50.68	---	79.00	28.32	1000.0	9.000	L1	19.5
0.300000	---	46.34	66.00	19.66	1000.0	9.000	L1	19.6
0.300000	50.32	---	79.00	28.68	1000.0	9.000	L1	19.6
0.905000	---	36.04	60.00	23.96	1000.0	9.000	L1	20.1
0.905000	36.55	---	73.00	36.45	1000.0	9.000	L1	20.1
3.980000	---	20.20	60.00	39.80	1000.0	9.000	L1	19.9
3.980000	36.90	---	73.00	36.10	1000.0	9.000	L1	19.9
10.865000	---	24.91	60.00	35.09	1000.0	9.000	L1	20.0
10.865000	32.84	---	73.00	40.16	1000.0	9.000	L1	20.0
25.970000	---	28.73	60.00	31.27	1000.0	9.000	L1	20.2
25.970000	31.68	---	73.00	41.32	1000.0	9.000	L1	20.2

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-3234
Phase:	N
Mode:	VGA
Operator Name:	KES



Final_Result

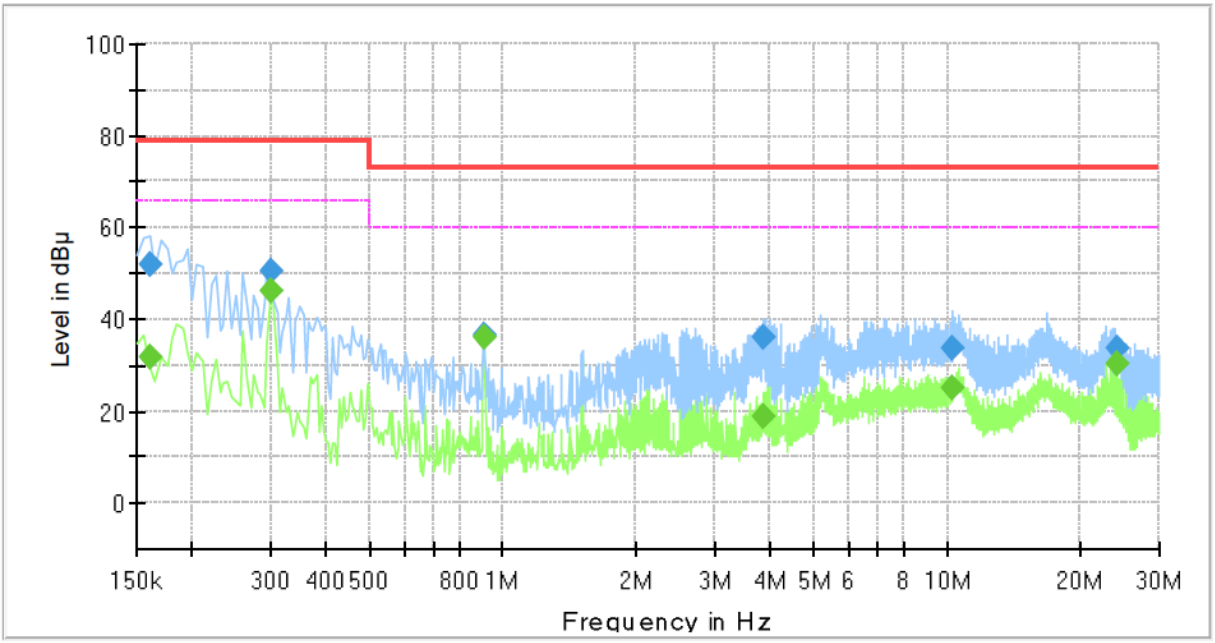
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.170000	---	32.11	66.00	33.89	1000.0	9.000	N	19.4
0.170000	49.12	---	79.00	29.88	1000.0	9.000	N	19.4
0.300000	---	46.64	66.00	19.36	1000.0	9.000	N	19.5
0.300000	50.53	---	79.00	28.47	1000.0	9.000	N	19.5
0.905000	---	36.39	60.00	23.61	1000.0	9.000	N	20.1
0.905000	37.71	---	73.00	35.29	1000.0	9.000	N	20.1
3.825000	---	20.07	60.00	39.93	1000.0	9.000	N	20.0
3.825000	35.52	---	73.00	37.48	1000.0	9.000	N	20.0
9.765000	---	24.17	60.00	35.83	1000.0	9.000	N	19.9
9.765000	35.03	---	73.00	37.97	1000.0	9.000	N	19.9
26.570000	---	29.28	60.00	30.72	1000.0	9.000	N	20.3
26.570000	32.17	---	73.00	40.83	1000.0	9.000	N	20.3

■ AV Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-3234
Phase:	L1
Mode:	AV
Operator Name:	KES



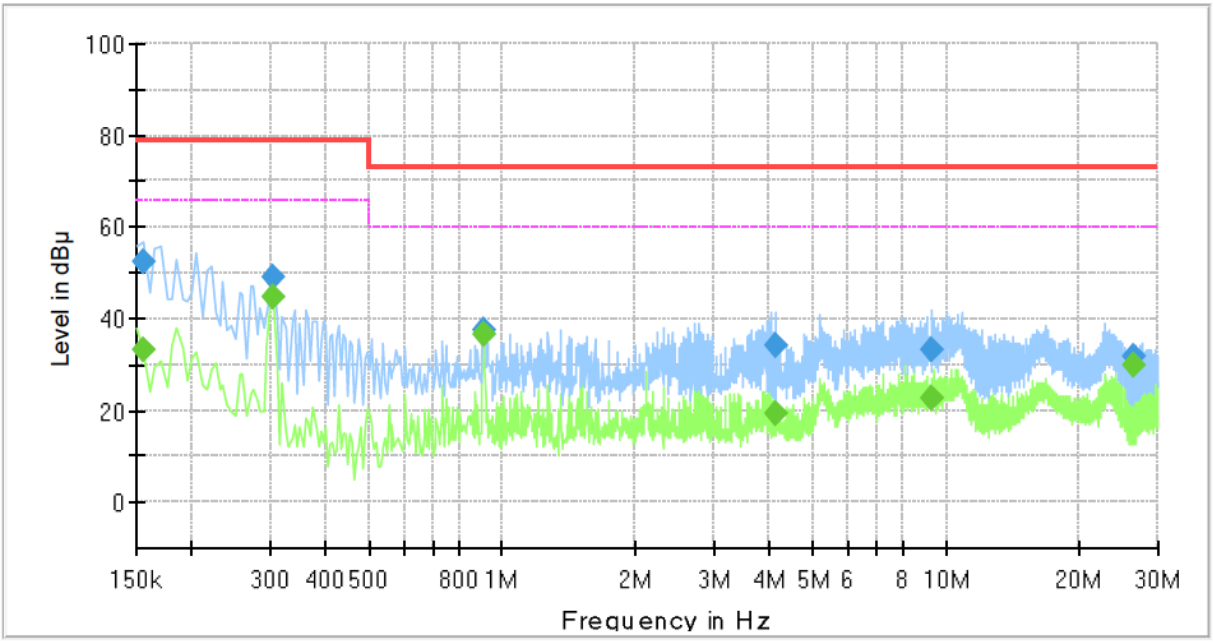
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	31.82	66.00	34.18	1000.0	9.000	L1	19.5
0.160000	52.02	---	79.00	26.98	1000.0	9.000	L1	19.5
0.300000	---	46.36	66.00	19.64	1000.0	9.000	L1	19.6
0.300000	50.39	---	79.00	28.61	1000.0	9.000	L1	19.6
0.905000	---	36.11	60.00	23.89	1000.0	9.000	L1	20.1
0.905000	36.64	---	73.00	36.36	1000.0	9.000	L1	20.1
3.880000	---	18.83	60.00	41.17	1000.0	9.000	L1	20.0
3.880000	35.93	---	73.00	37.07	1000.0	9.000	L1	20.0
10.325000	---	24.94	60.00	35.06	1000.0	9.000	L1	19.9
10.325000	33.75	---	73.00	39.25	1000.0	9.000	L1	19.9
24.155000	---	30.18	60.00	29.82	1000.0	9.000	L1	20.2
24.155000	33.54	---	73.00	39.46	1000.0	9.000	L1	20.2

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-3234
Phase:	N
Mode:	AV
Operator Name:	KES



Final_Result

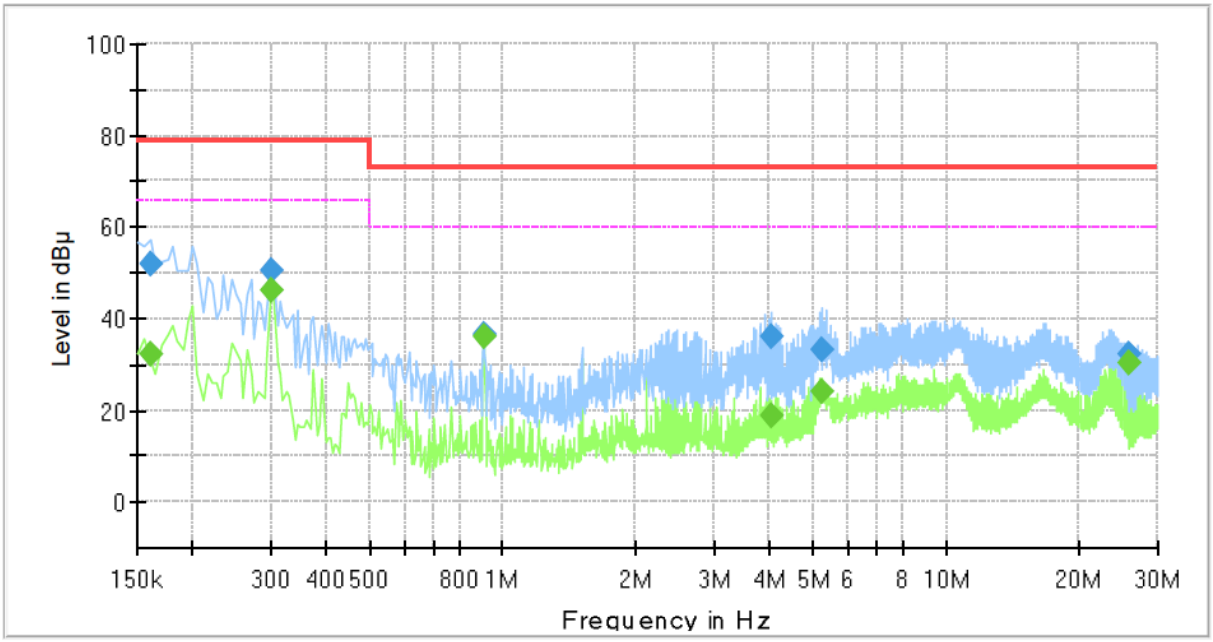
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	33.46	66.00	32.54	1000.0	9.000	N	19.4
0.155000	52.57	---	79.00	26.43	1000.0	9.000	N	19.4
0.305000	---	44.97	66.00	21.03	1000.0	9.000	N	19.5
0.305000	48.93	---	79.00	30.07	1000.0	9.000	N	19.5
0.905000	---	36.39	60.00	23.61	1000.0	9.000	N	20.1
0.905000	37.76	---	73.00	35.24	1000.0	9.000	N	20.1
4.135000	---	19.10	60.00	40.90	1000.0	9.000	N	19.9
4.135000	34.43	---	73.00	38.57	1000.0	9.000	N	19.9
9.235000	---	22.72	60.00	37.28	1000.0	9.000	N	19.8
9.235000	33.08	---	73.00	39.92	1000.0	9.000	N	19.8
26.575000	---	29.78	60.00	30.22	1000.0	9.000	N	20.3
26.575000	32.02	---	73.00	40.98	1000.0	9.000	N	20.3

■ DVI Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-3234
Phase:	L1
Mode:	DVI
Operator Name:	KES



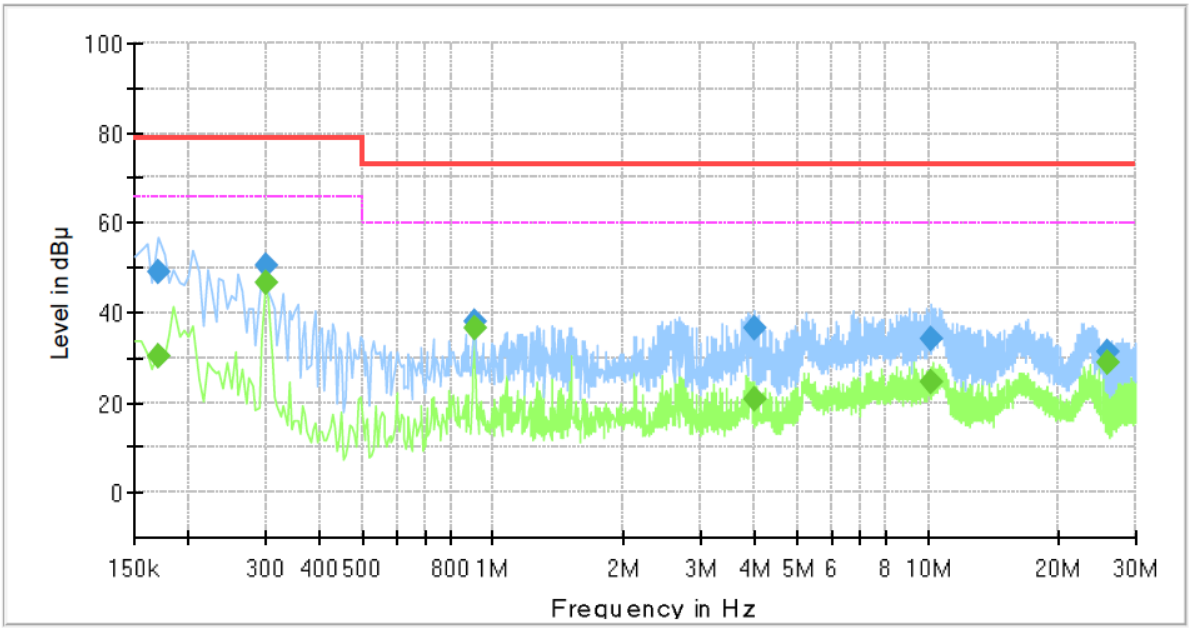
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	32.08	66.00	33.92	1000.0	9.000	L1	19.5
0.160000	51.89	---	79.00	27.11	1000.0	9.000	L1	19.5
0.300000	---	46.34	66.00	19.66	1000.0	9.000	L1	19.6
0.300000	50.35	---	79.00	28.65	1000.0	9.000	L1	19.6
0.905000	---	36.01	60.00	23.99	1000.0	9.000	L1	20.1
0.905000	36.54	---	73.00	36.46	1000.0	9.000	L1	20.1
4.040000	---	18.72	60.00	41.28	1000.0	9.000	L1	19.9
4.040000	36.10	---	73.00	36.90	1000.0	9.000	L1	19.9
5.265000	---	23.98	60.00	36.02	1000.0	9.000	L1	19.7
5.265000	33.09	---	73.00	39.91	1000.0	9.000	L1	19.7
25.970000	---	30.43	60.00	29.57	1000.0	9.000	L1	20.2
25.970000	32.08	---	73.00	40.92	1000.0	9.000	L1	20.2

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	SMT-3234
Phase:	N
Mode:	DVI
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.170000	---	30.17	66.00	35.83	1000.0	9.000	N	19.4
0.170000	49.07	---	79.00	29.93	1000.0	9.000	N	19.4
0.300000	---	46.59	66.00	19.41	1000.0	9.000	N	19.5
0.300000	50.46	---	79.00	28.54	1000.0	9.000	N	19.5
0.905000	---	36.42	60.00	23.58	1000.0	9.000	N	20.1
0.905000	37.80	---	73.00	35.20	1000.0	9.000	N	20.1
3.985000	---	20.53	60.00	39.47	1000.0	9.000	N	19.9
3.985000	36.38	---	73.00	36.62	1000.0	9.000	N	19.9
10.210000	---	24.73	60.00	35.27	1000.0	9.000	N	19.9
10.210000	34.25	---	73.00	38.75	1000.0	9.000	N	19.9
25.970000	---	28.76	60.00	31.24	1000.0	9.000	N	20.2
25.970000	31.21	---	73.00	41.79	1000.0	9.000	N	20.2

♦ 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))

Conducted Emissions at Telecommunication Ports

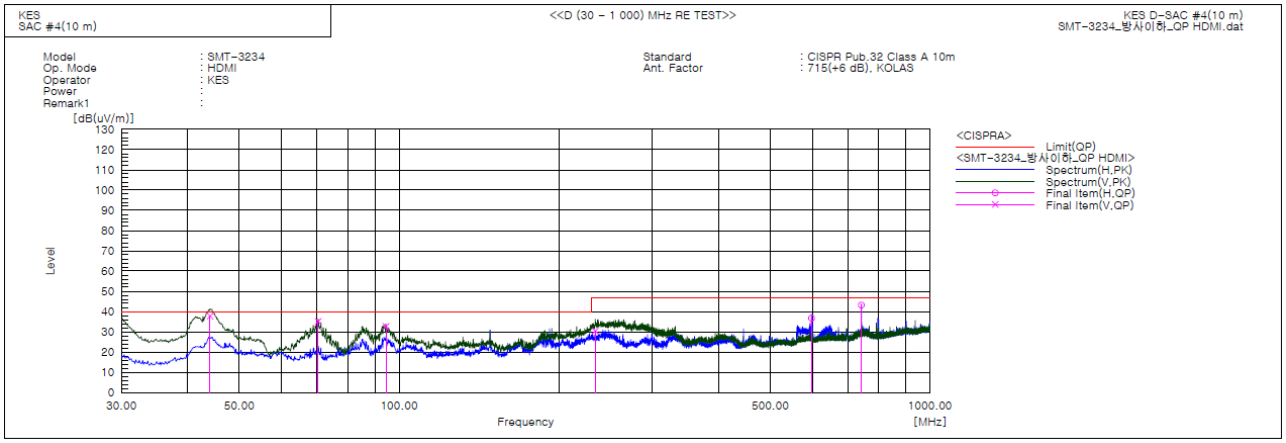
[100 Mbps]

N/A

♦ Calculation
QuasiPeak[㏈uV] / CAverage [㏈uV] = Reading Value[㏈uV] + Corr. [㏈]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Radiated Electric Field Emissions(Below 1 ㎓)

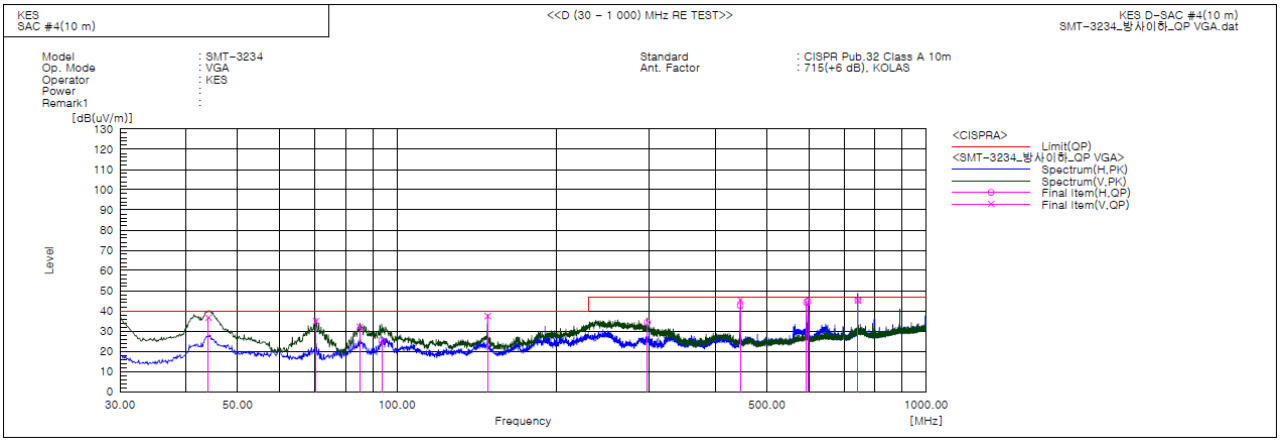
■ HDMI Mode



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	44.065	V	59.4	-21.6	37.8	40.0	2.2	100.0	250.0	
2	70.376	V	60.1	-25.0	35.1	40.0	4.9	122.0	212.0	
3	94.505	V	56.3	-23.6	32.7	40.0	7.3	110.0	322.0	
4	234.185	V	50.0	-19.6	30.4	47.0	16.6	103.0	167.0	
5	597.693	H	45.2	-8.4	36.8	47.0	10.2	176.0	80.0	
6	741.859	H	49.1	-5.9	43.2	47.0	3.8	162.0	322.0	

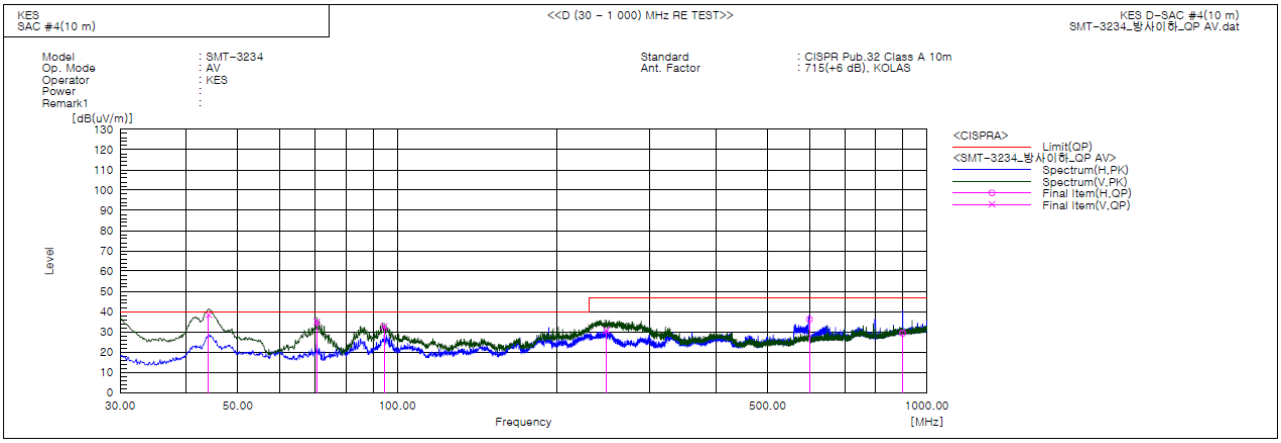
■ VGA Mode



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	44.065	V	58.3	-21.6	36.7	40.0	3.3	103.0	232.0	
2	70.376	V	59.9	-25.0	34.9	40.0	5.1	121.0	209.0	
3	85.169	V	58.2	-26.1	32.1	40.0	7.9	119.0	281.0	
4	93.656	H	49.1	-23.7	25.4	40.0	14.6	394.0	98.0	
5	148.461	V	62.5	-25.1	37.4	40.0	2.6	108.0	295.0	
6	296.993	H	52.3	-18.0	34.3	47.0	12.7	295.0	324.0	
7	445.524	V	58.7	-13.2	45.5	47.0	1.5	105.0	228.0	
8	445.524	H	55.9	-13.2	42.7	47.0	4.3	396.0	272.0	
9	594.055	H	52.7	-8.5	44.2	47.0	2.8	136.0	312.0	
10	597.450	H	53.4	-8.5	44.9	47.0	2.1	185.0	122.0	
11	742.586	V	51.0	-5.8	45.2	47.0	1.8	341.0	49.0	
12	742.586	H	51.1	-5.8	45.3	47.0	1.7	108.0	324.0	

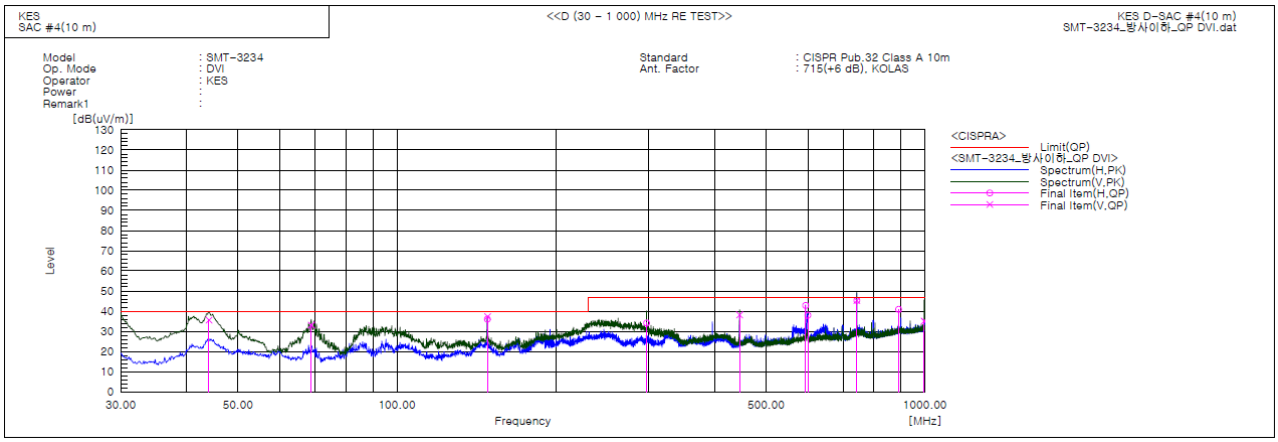
■ AV Mode



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	44.065	V	59.9	-21.6	38.3	40.0	1.7	105.0	252.0	
2	70.498	V	60.1	-25.1	35.0	40.0	5.0	124.0	206.0	
3	94.505	V	56.2	-23.6	32.6	40.0	7.4	111.0	293.0	
4	248.129	V	49.8	-19.1	30.7	47.0	16.3	102.0	184.0	
5	599.996	H	44.6	-8.4	36.2	47.0	10.8	175.0	42.0	
6	900.090	H	33.1	-3.9	29.2	47.0	17.8	273.0	92.0	

■ DVI Mode



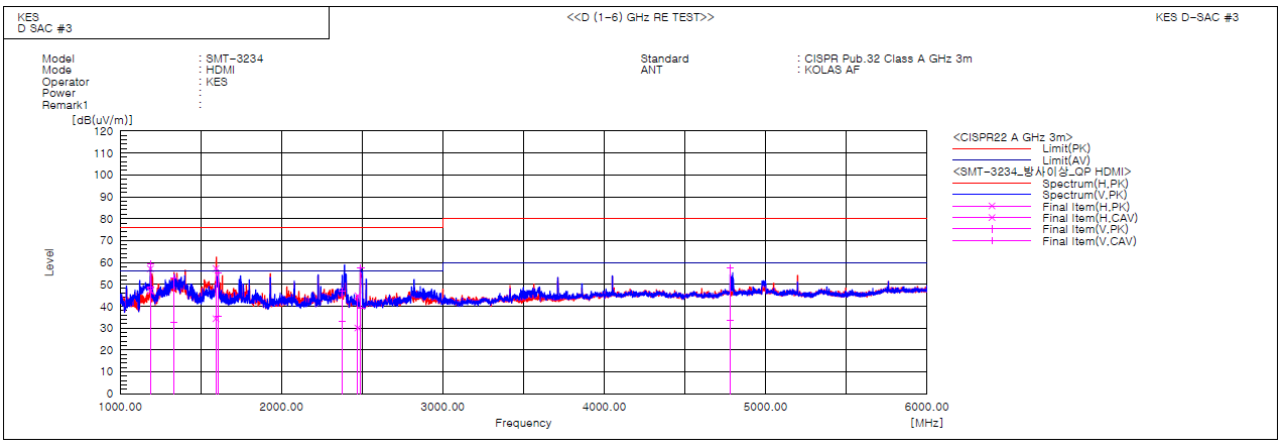
Final Result

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	44.065	V	57.2	-21.6	35.6	40.0	4.4	102.0	285.0	
2	68.800	V	57.6	-24.5	33.1	40.0	6.9	120.0	188.0	
3	148.340	H	61.1	-25.1	36.0	40.0	4.0	397.0	349.0	
4	148.461	V	62.4	-25.1	37.3	40.0	2.7	107.0	281.0	
5	296.993	H	52.1	-18.0	34.1	47.0	12.9	301.0	296.0	
6	445.524	V	51.4	-13.2	38.2	47.0	8.8	103.0	218.0	
7	594.055	H	51.3	-8.5	42.8	47.0	4.2	149.0	258.0	
8	599.875	H	46.4	-8.4	38.0	47.0	9.0	184.0	32.0	
9	742.586	V	51.1	-5.8	45.3	47.0	1.7	131.0	19.0	
10	742.586	H	51.1	-5.8	45.3	47.0	1.7	110.0	62.0	
11	891.118	H	44.9	-4.0	40.9	47.0	6.1	238.0	285.0	
12	995.999	V	37.8	-2.7	35.1	47.0	11.9	105.0	312.0	

♦ Calculation
Corrected Amplitude [㏈uV] = Amplitude[㏈uV] + Correction Factor [㏈]
Corrected Amplitude : The Final Value, Amplitude : Reading Value,
Correction Factor : ANT FACTOR + Cable loss

Radiated Electric Field Emissions(Above 1 ㎓)

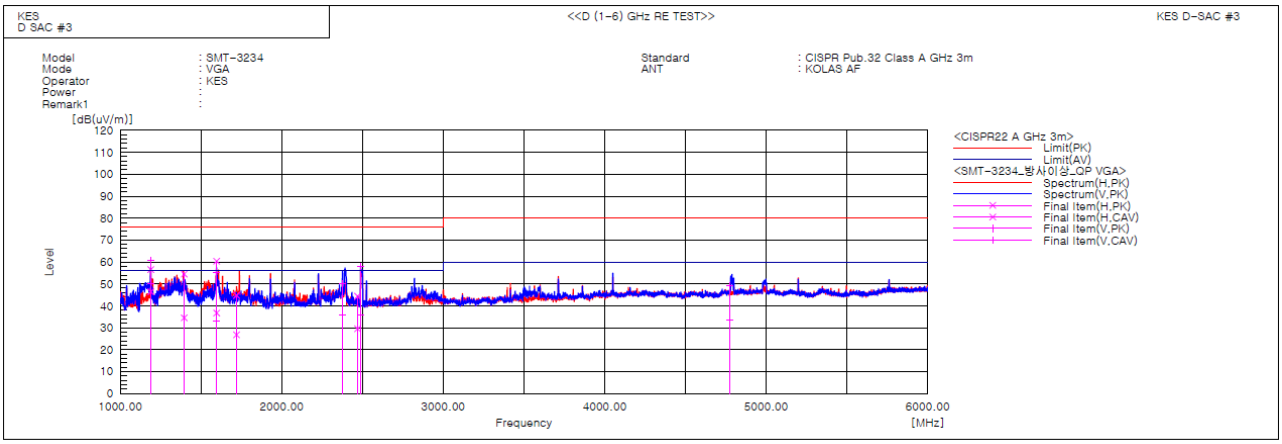
■ HDMI Mode



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	1187.830	H	65.7	55.6	-8.6	57.1	47.0	76.0	56.0	18.9	9.0	100.0	37.6	
2	1188.080	V	67.8	57.4	-8.6	59.2	48.8	76.0	56.0	16.8	7.2	100.0	0.5	
3	1335.050	V	60.1	39.8	-7.2	52.9	32.6	76.0	56.0	23.1	23.4	100.0	294.5	
4	1592.601	H	62.6	39.7	-5.4	57.2	34.3	76.0	56.0	18.8	21.7	100.0	114.4	
5	1605.831	V	60.4	40.7	-5.3	55.1	35.4	76.0	56.0	20.9	20.6	100.0	53.4	
6	2376.213	V	46.6	33.0	0.2	46.8	33.2	76.0	56.0	29.2	22.8	100.0	140.5	
7	2472.523	H	44.6	29.8	0.2	44.8	30.0	76.0	56.0	31.2	26.0	100.0	89.0	
8	2490.800	V	57.6	39.0	0.1	57.7	39.1	76.0	56.0	18.3	16.9	100.0	139.6	
9	4781.533	V	49.9	25.6	7.8	57.7	33.4	80.0	60.0	22.3	26.6	100.0	169.8	

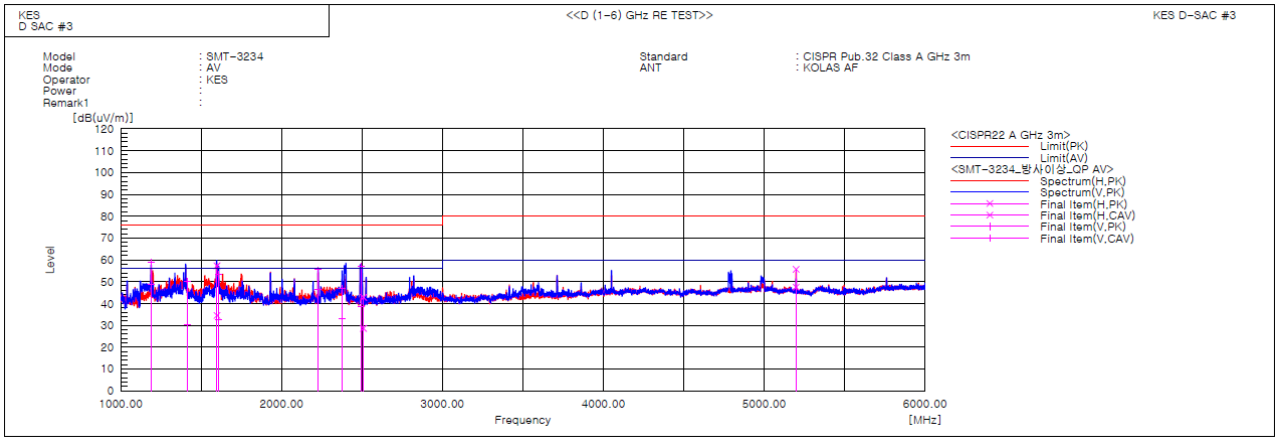
■ VGA Mode



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle	Remark
	[MHz]		[dB(uV)]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[dB]	[cm]	[deg]	
1	1188.030	H	65.1	55.0	-8.6	56.5	46.4	76.0	56.0	19.5	9.6	100.0	31.7	
2	1188.090	V	69.1	58.8	-8.6	60.5	50.2	76.0	56.0	15.5	5.8	100.0	357.2	
3	1395.359	H	61.2	41.3	-6.7	54.5	34.6	76.0	56.0	21.5	21.4	100.0	105.5	
4	1596.492	H	65.7	42.1	-5.4	60.3	36.7	76.0	56.0	15.7	19.3	100.0	108.9	
5	1596.630	V	60.4	38.3	-5.4	55.0	32.9	76.0	56.0	21.0	23.1	100.0	122.1	
6	1719.174	H	48.9	31.0	-4.1	44.8	26.9	76.0	56.0	31.2	29.1	100.0	9.6	
7	2376.083	V	50.1	35.5	0.2	50.3	35.7	76.0	56.0	25.7	20.3	100.0	192.3	
8	2468.874	H	44.1	29.3	0.2	44.3	29.5	76.0	56.0	31.7	26.5	100.0	88.9	
9	2488.350	V	57.7	35.4	0.2	57.9	35.6	76.0	56.0	18.1	20.4	100.0	134.6	
10	4771.163	V	41.3	25.8	7.8	49.1	33.6	80.0	60.0	30.9	26.4	100.0	34.6	

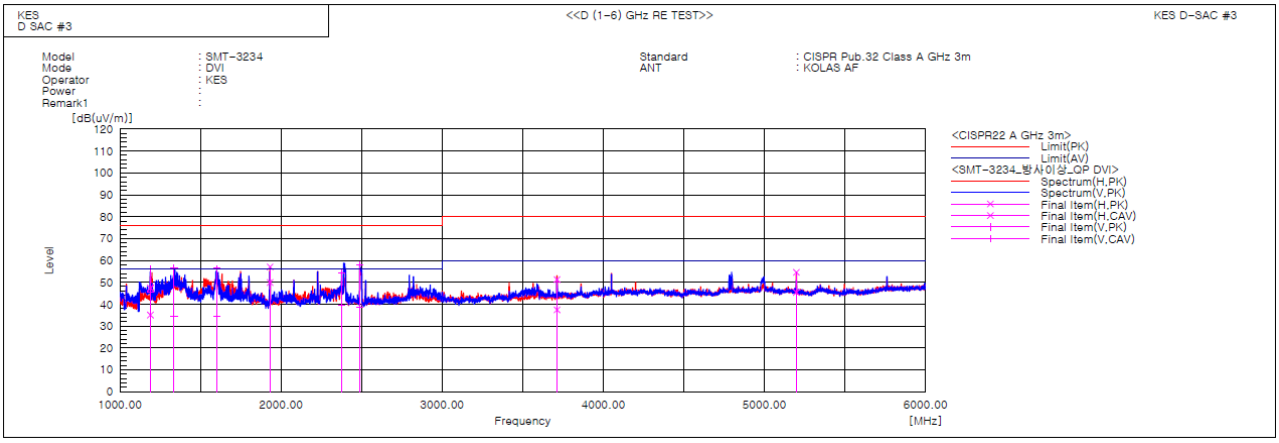
■ AV Mode



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	1188.090	V	67.7	57.3	-8.6	59.1	48.7	76.0	56.0	16.9	7.3	100.0	357.8	
2	1415.438	V	56.7	36.7	-6.6	50.1	30.1	76.0	56.0	25.9	25.9	100.0	146.2	
3	1598.100	H	62.6	39.8	-5.3	57.3	34.5	76.0	56.0	18.7	21.5	100.0	136.4	
4	1607.088	V	58.6	37.7	-5.3	53.3	32.4	76.0	56.0	22.7	23.6	100.0	126.6	
5	2227.640	V	55.8	46.9	-0.4	55.4	46.5	76.0	56.0	20.6	9.5	100.0	60.5	
6	2375.995	V	46.9	33.1	0.2	47.1	33.3	76.0	56.0	28.9	22.7	100.0	151.6	
7	2492.699	V	57.0	38.6	0.1	57.1	38.7	76.0	56.0	18.9	17.3	100.0	137.9	
8	2508.326	H	42.8	28.5	0.1	42.9	28.6	76.0	56.0	33.1	27.4	100.0	88.8	
9	5197.610	H	47.5	39.3	8.2	55.7	47.5	80.0	60.0	24.3	12.5	100.0	343.5	

■ DVI Mode



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	1187.990	V	64.6	54.0	-8.6	56.0	45.4	76.0	56.0	20.0	10.6	100.0	348.1	
2	1188.362	H	56.0	43.6	-8.6	47.4	35.0	76.0	56.0	28.6	21.0	100.0	113.9	
3	1335.321	V	64.0	41.6	-7.2	56.8	34.4	76.0	56.0	19.2	21.6	100.0	135.5	
4	1603.888	V	61.6	39.6	-5.3	56.3	34.3	76.0	56.0	19.7	21.7	100.0	135.4	
5	1930.640	H	58.6	51.4	-1.5	57.1	49.9	76.0	56.0	18.9	6.1	100.0	329.3	
6	2376.143	V	54.0	39.3	0.2	54.2	39.5	76.0	56.0	21.8	16.5	100.0	22.7	
7	2489.070	V	57.6	38.1	0.2	57.8	38.3	76.0	56.0	18.2	17.7	100.0	140.1	
8	3712.870	H	47.4	33.5	3.9	51.3	37.4	80.0	60.0	28.7	22.6	100.0	345.4	
9	5197.980	H	46.4	37.2	8.2	54.6	45.4	80.0	60.0	25.4	14.6	100.0	331.8	

♦ Calculation

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

Test Setup Photos and Configuration

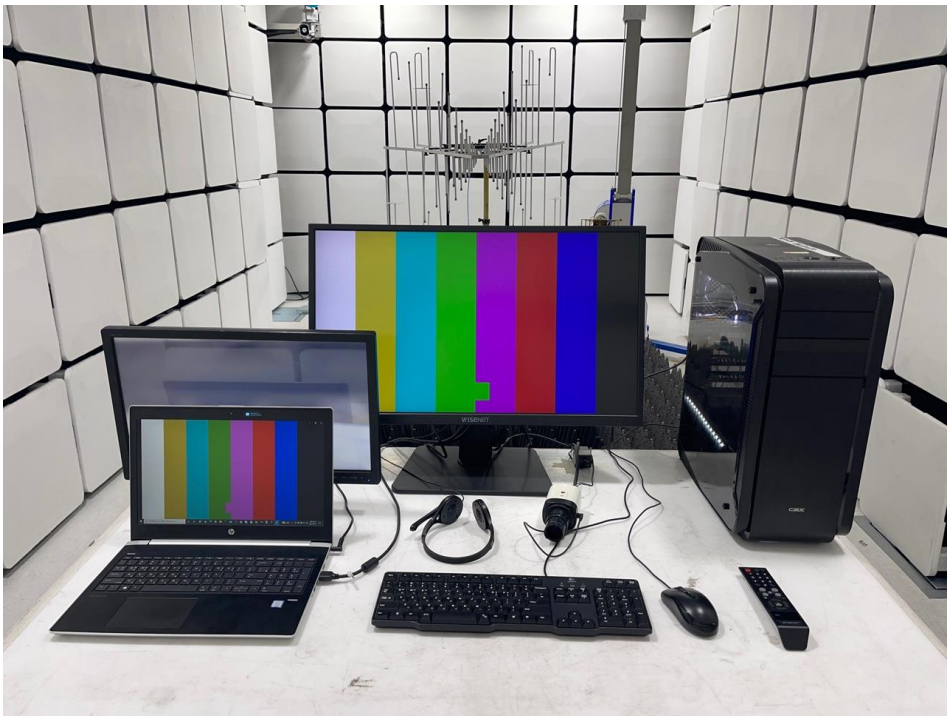
Conducted Emissions at Mains Power Ports

Conducted Emissions at Telecommunication Ports

N/A

Radiated Electric Field Emissions(Below 1 ㎓)

Radiated Electric Field Emissions(Above 1 ㎓)



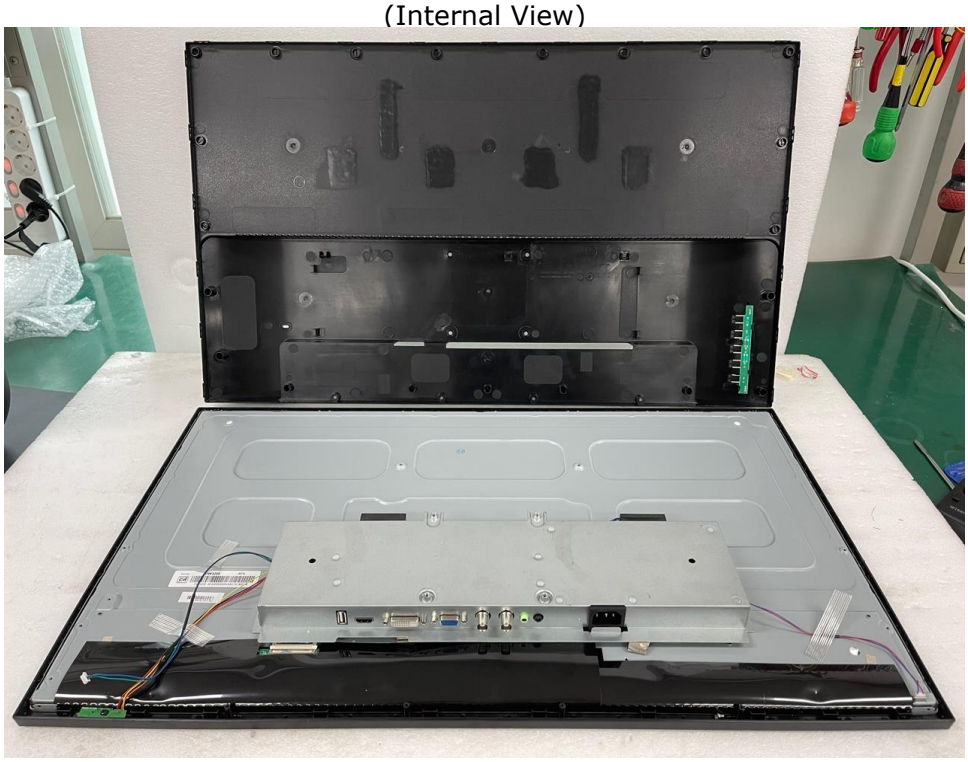
EUT External Photographs

(Top)

(Bottom)

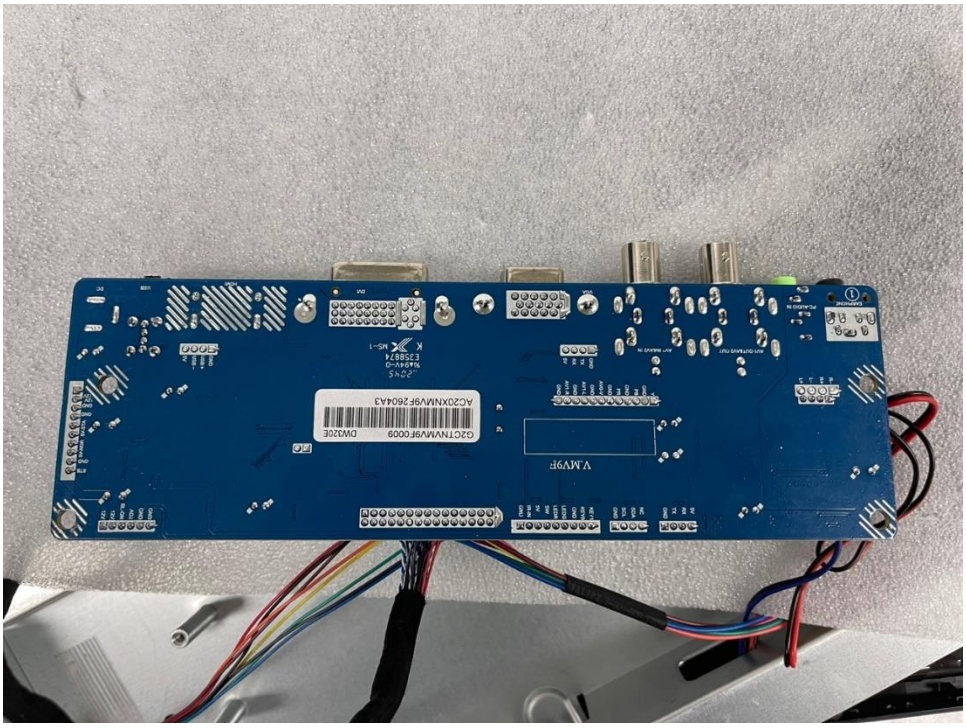
EUT Internal Photographs

(Internal View)

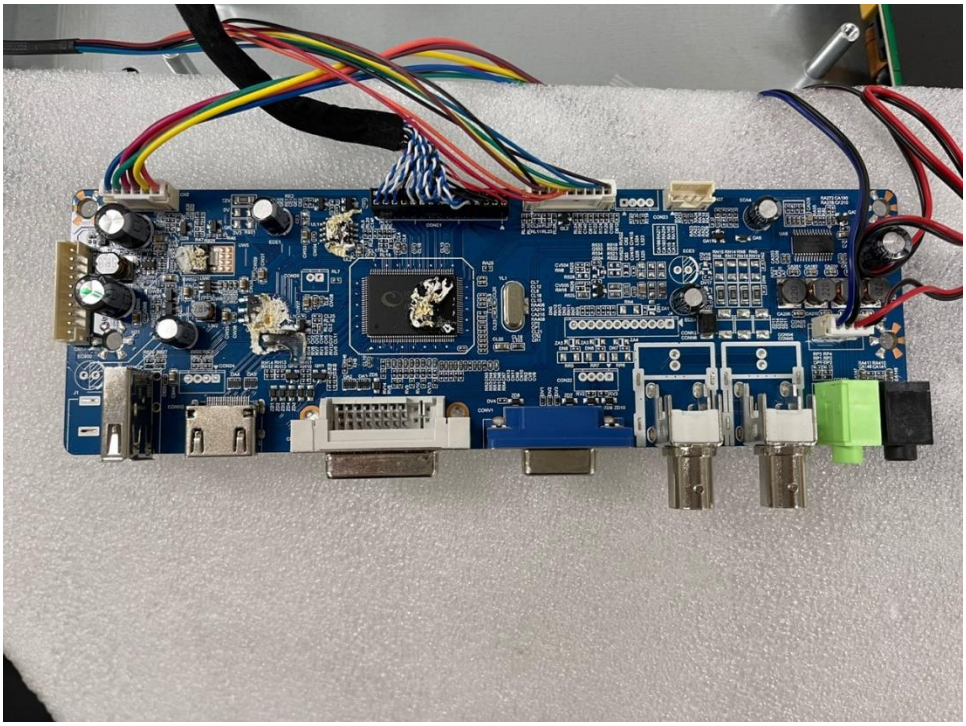


EUT Internal View – Main Board

(Top)



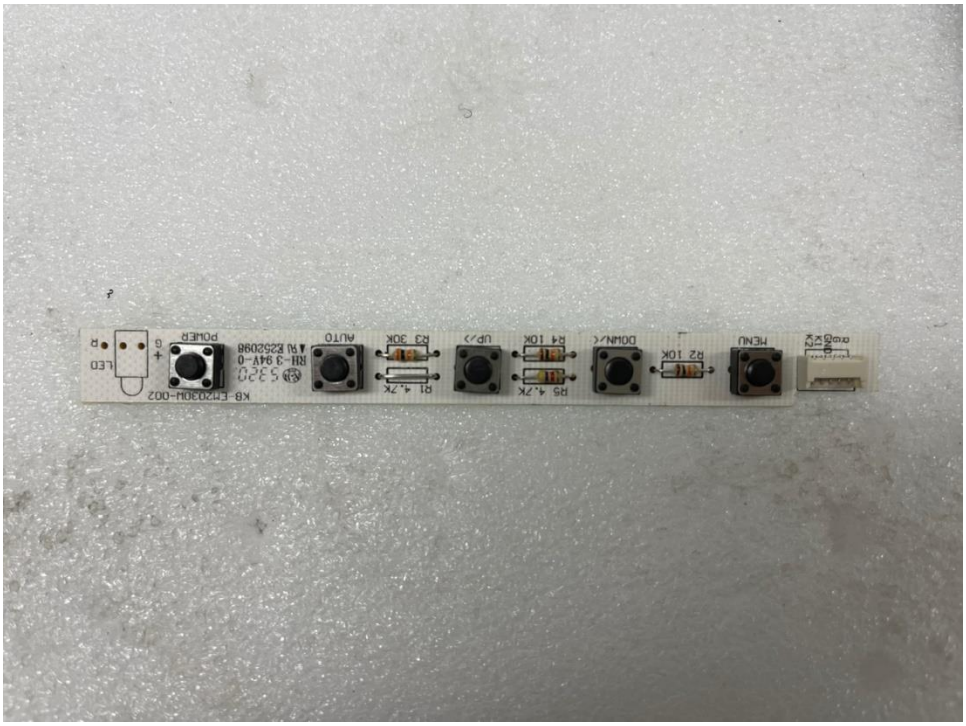
(Bottom)



EUT Internal View – Sub Board 1

(Top)

(Bottom)



EUT Internal View – Sub Board 2

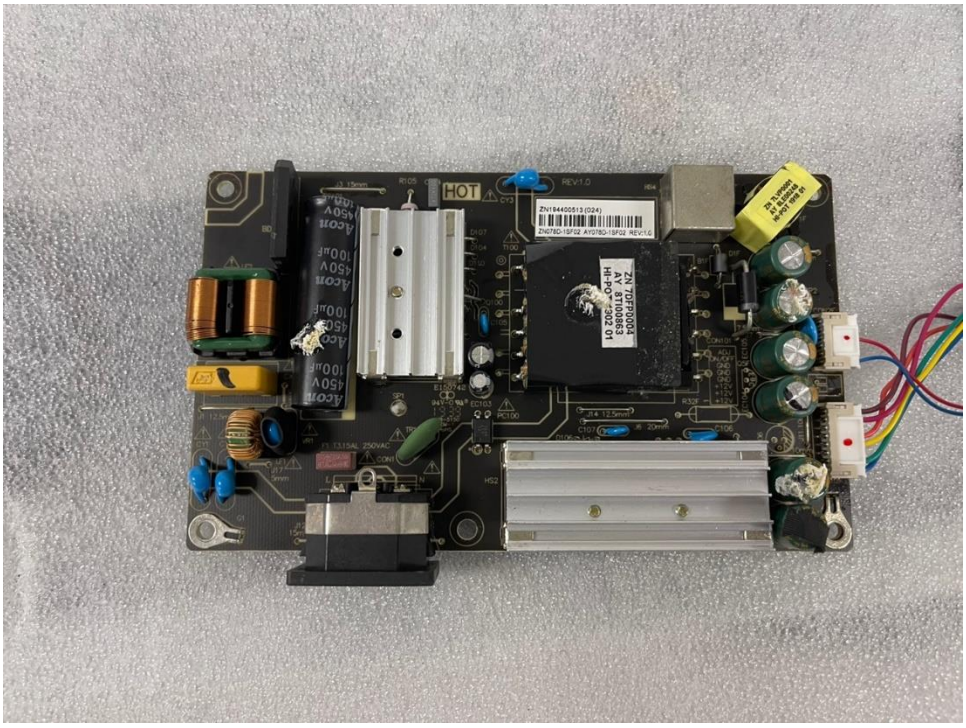
(Top)

EUT Internal View – Sub Board 3

(Top)

EUT Internal View – Power Board

(Top)



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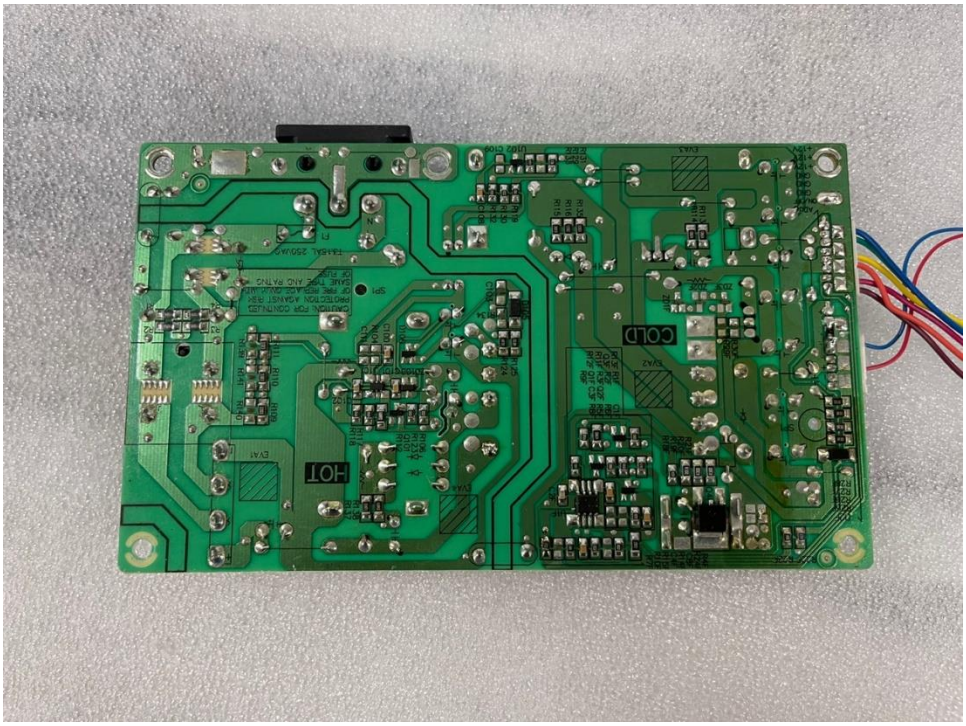
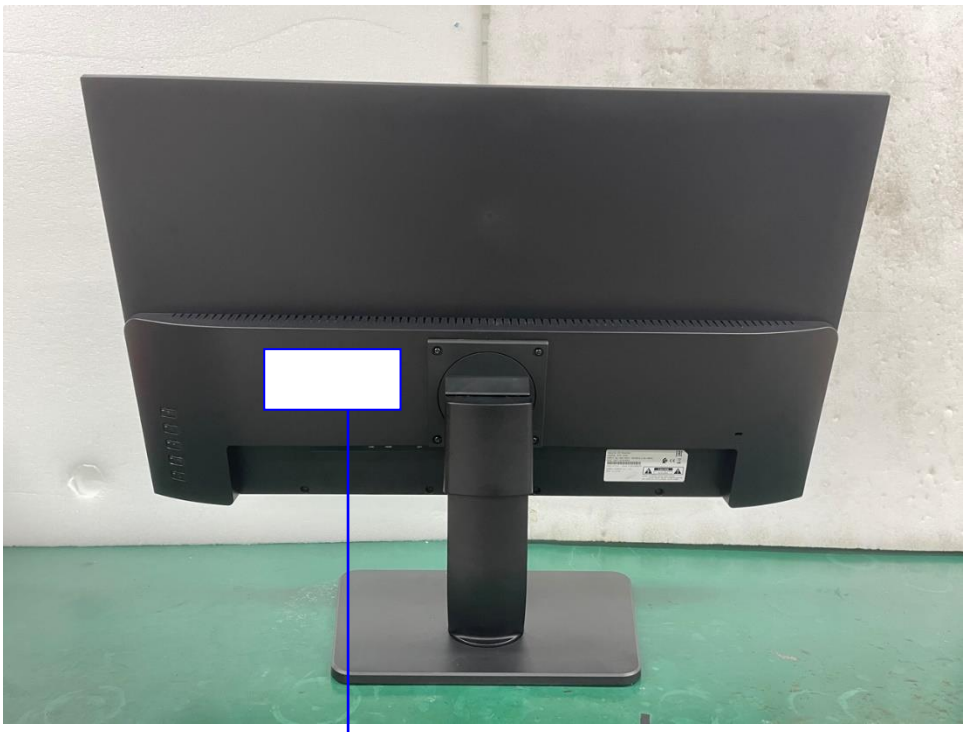


Label Photographs



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