

**KES Co., Ltd.**

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Report No.:

KES-EM-21T0755-R1

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EMC TEST REPORT

Test Report No. : KES-EM-21T0755-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
Equipment authorization : **Supplier's Declaration of Conformity**
Date of Receipt : Aug. 10, 2021
Test date : Aug. 14, 2021
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Reviewed by

Min Seong, Kim
EMC Test Engineer

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.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Aug. 30, 2021	KES-EM-21T0755	Issued
Feb. 24, 2023	KES-EM-21T0755-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/m ²
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

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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
	Cabinet Color	Black
	VESA Mounts Interface	100 x 100mm

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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 120 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	-	-	-	-

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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

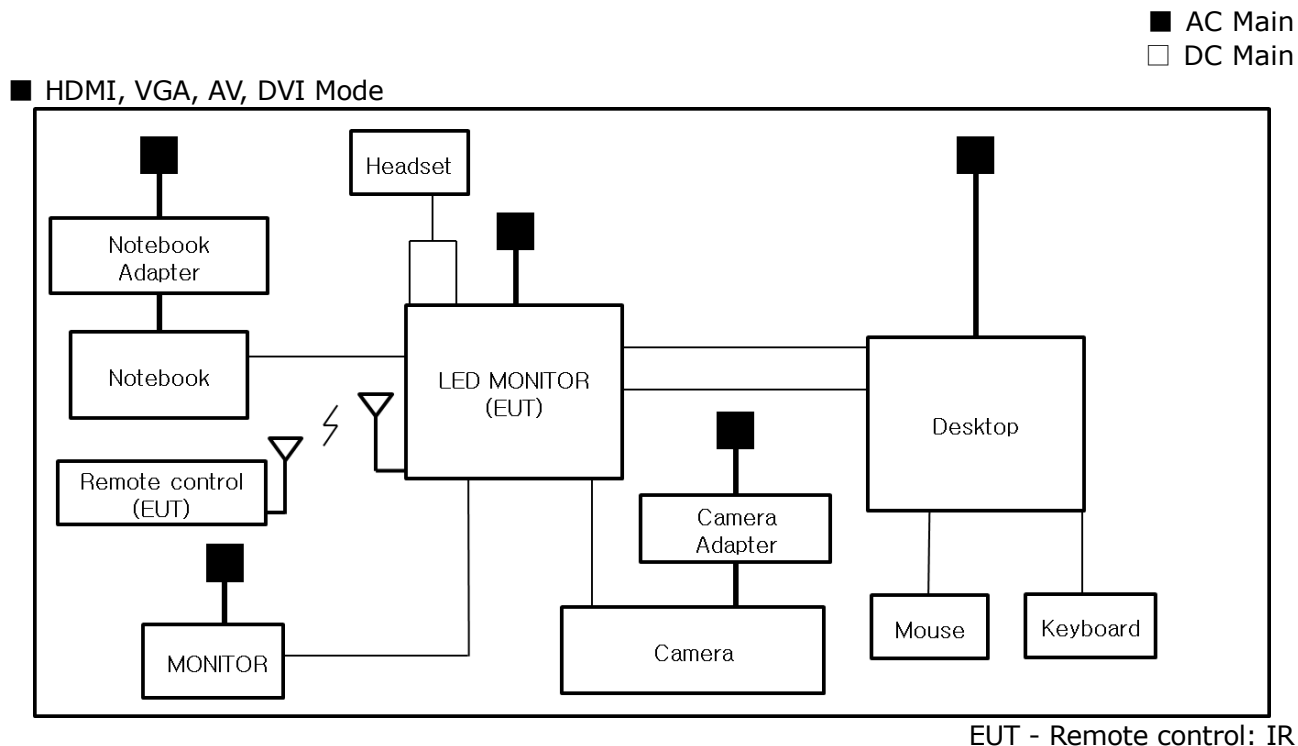
1.7 EUT Operating Mode(s)

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

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

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1.8 Configuration



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, 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 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

☐ Group 2

☐ Class A

☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013

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-
- | | | |
|---|---|----------------------------------|
| ☐ 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 C63.4-2017 | ☒ Class A | ☐ Class B |
| ☒ IC Regulation ICES-003 Issue 7 | | |
| ☐ CAN/CSA CISPR 32-17 | ☐ Class A | ☐ Class B |
| ☒ ANSI C63.4-2017 | ☒ Class A | ☐ Class B |
| ☐ 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 | | |

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Aug. 14, 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: (24,7 ± 0,1) °C

Relative Humidity: (47,3 ± 0,3) % 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.



2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Aug. 14, 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: (24,4 ± 0,1) °C
Relative Humidity: (48,8 ± 0,2) % 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.



2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Aug. 14, 2021

Test Location

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
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	12, 29, 2021
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 14, 2021

Test Conditions

Temperature: (24,4 ± 0,1) °C

Relative Humidity: (48,8 ± 0,2) % R.H.

Frequency Range of Measurement

1 GHz to 5 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

APPENDIX A – TEST DATA

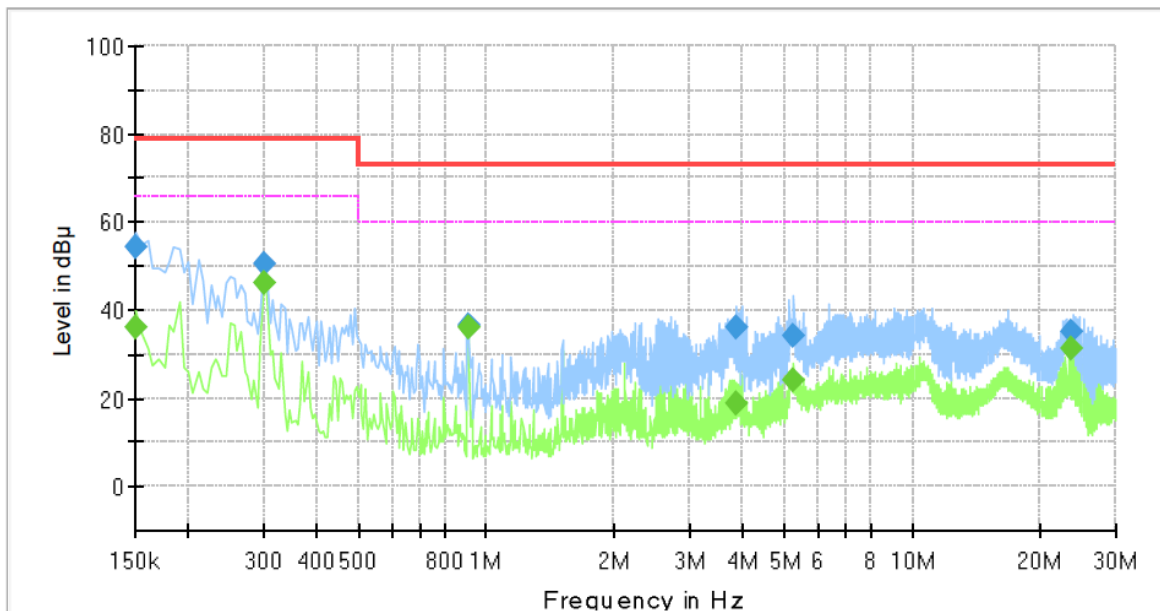
Conducted Emissions at Mains Power Ports

■ 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	---	36.21	66.00	29.79	1000.0	9.000	L1	19.4
0.150000	54.28	---	79.00	24.72	1000.0	9.000	L1	19.4
0.300000	---	46.31	66.00	19.69	1000.0	9.000	L1	19.6
0.300000	50.30	---	79.00	28.70	1000.0	9.000	L1	19.6
0.905000	---	35.97	60.00	24.03	1000.0	9.000	L1	20.1
0.905000	36.51	---	73.00	36.49	1000.0	9.000	L1	20.1
3.880000	---	18.75	60.00	41.25	1000.0	9.000	L1	20.0
3.880000	35.94	---	73.00	37.06	1000.0	9.000	L1	20.0
5.275000	---	24.19	60.00	35.81	1000.0	9.000	L1	19.6
5.275000	34.04	---	73.00	38.96	1000.0	9.000	L1	19.6
23.550000	---	31.10	60.00	28.90	1000.0	9.000	L1	20.2
23.550000	35.24	---	73.00	37.76	1000.0	9.000	L1	20.2

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NEUTRAL LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

Operator Name:

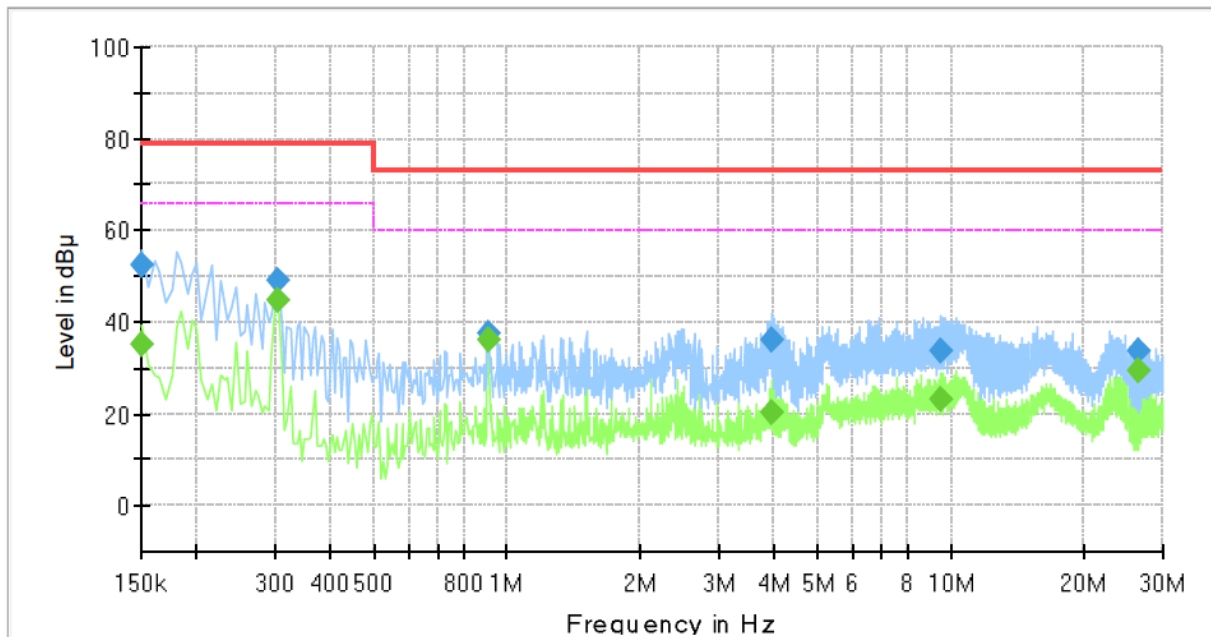
Conducted Emission

SMT-3234

N

HDMI

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	35.03	66.00	30.97	1000.0	9.000	N	19.4
0.150000	52.36	---	79.00	26.64	1000.0	9.000	N	19.4
0.305000	---	44.99	66.00	21.01	1000.0	9.000	N	19.5
0.305000	48.92	---	79.00	30.08	1000.0	9.000	N	19.5
0.905000	---	36.32	60.00	23.68	1000.0	9.000	N	20.1
0.905000	37.64	---	73.00	35.36	1000.0	9.000	N	20.1
3.955000	---	20.31	60.00	39.69	1000.0	9.000	N	19.9
3.955000	36.14	---	73.00	36.86	1000.0	9.000	N	19.9
9.500000	---	23.20	60.00	36.80	1000.0	9.000	N	19.8
9.500000	33.50	---	73.00	39.50	1000.0	9.000	N	19.8
26.570000	---	29.50	60.00	30.50	1000.0	9.000	N	20.3
26.570000	33.75	---	73.00	39.25	1000.0	9.000	N	20.3

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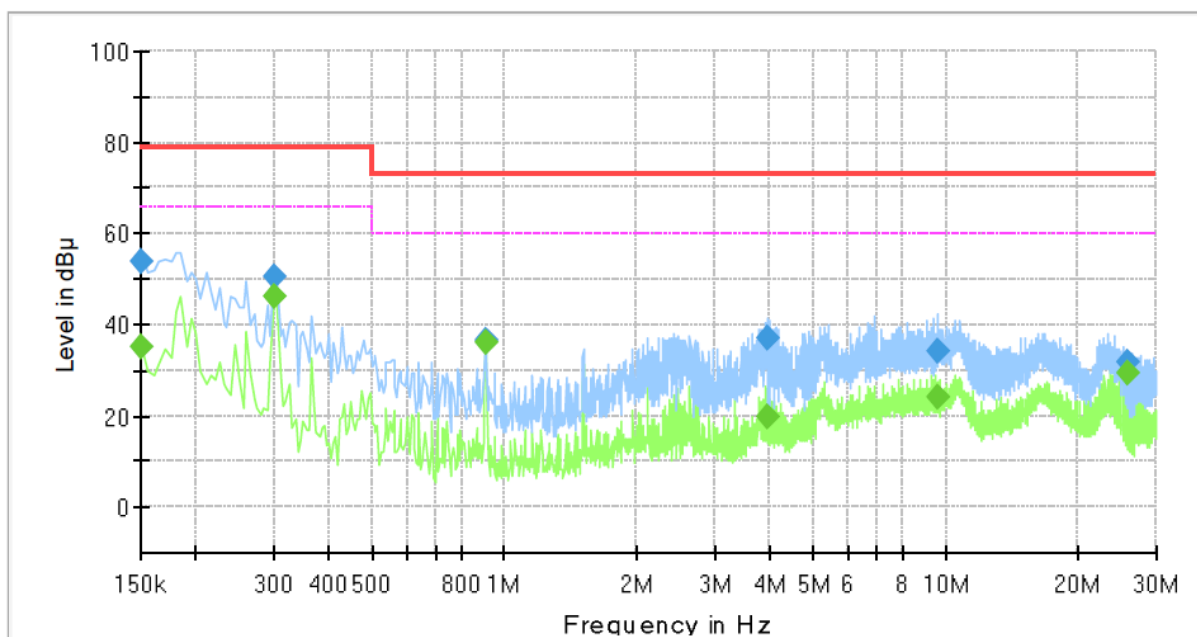
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■ VGA Mode

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)
0.150000	---	35.32	66.00	30.68	1000.0	9.000	L1	19.4
0.150000	53.91	---	79.00	25.09	1000.0	9.000	L1	19.4
0.300000	---	46.36	66.00	19.64	1000.0	9.000	L1	19.6
0.300000	50.36	---	79.00	28.64	1000.0	9.000	L1	19.6
0.905000	---	36.05	60.00	23.95	1000.0	9.000	L1	20.1
0.905000	36.60	---	73.00	36.40	1000.0	9.000	L1	20.1
3.955000	---	19.78	60.00	40.22	1000.0	9.000	L1	19.9
3.955000	36.88	---	73.00	36.12	1000.0	9.000	L1	19.9
9.565000	---	24.21	60.00	35.79	1000.0	9.000	L1	19.9
9.565000	34.42	---	73.00	38.58	1000.0	9.000	L1	19.9
25.965000	---	29.54	60.00	30.46	1000.0	9.000	L1	20.2
25.965000	31.95	---	73.00	41.05	1000.0	9.000	L1	20.2

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NEUTRAL LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

Operator Name:

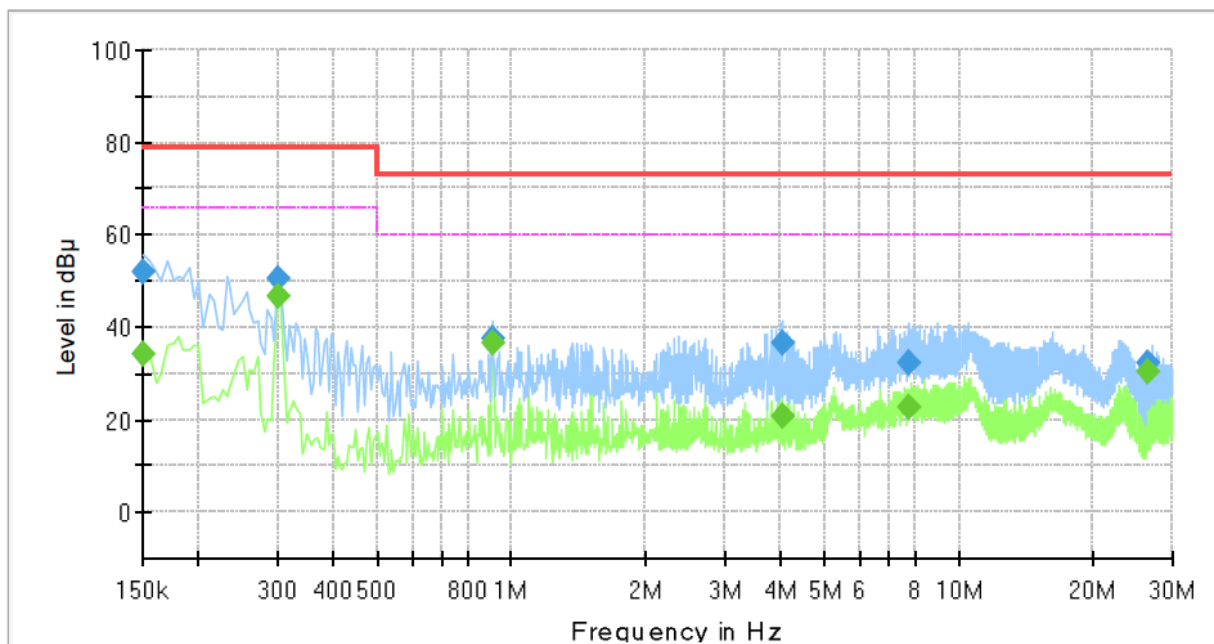
Conducted Emission

SMT-3234

N

VGA

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	34.25	66.00	31.75	1000.0	9.000	N	19.4
0.150000	52.17	---	79.00	26.83	1000.0	9.000	N	19.4
0.300000	---	46.60	66.00	19.40	1000.0	9.000	N	19.5
0.300000	50.48	---	79.00	28.52	1000.0	9.000	N	19.5
0.905000	---	36.38	60.00	23.62	1000.0	9.000	N	20.1
0.905000	37.72	---	73.00	35.28	1000.0	9.000	N	20.1
4.045000	---	20.65	60.00	39.35	1000.0	9.000	N	19.9
4.045000	36.54	---	73.00	36.46	1000.0	9.000	N	19.9
7.690000	---	22.85	60.00	37.15	1000.0	9.000	N	19.6
7.690000	32.22	---	73.00	40.78	1000.0	9.000	N	19.6
26.570000	---	30.39	60.00	29.61	1000.0	9.000	N	20.3
26.570000	32.27	---	73.00	40.73	1000.0	9.000	N	20.3

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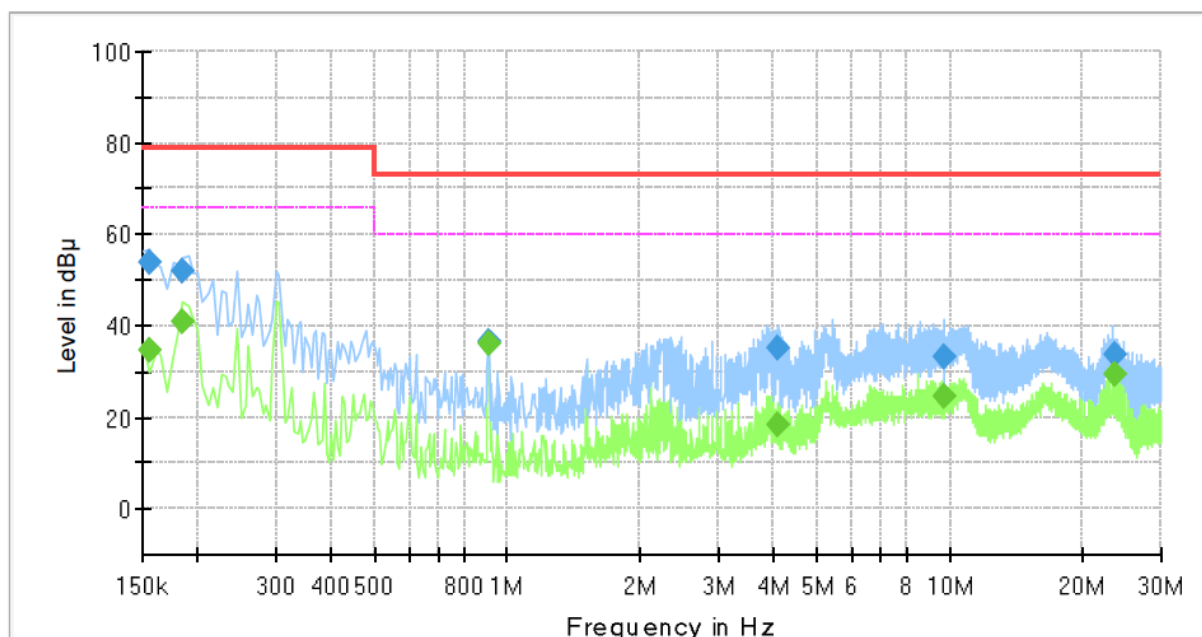
The authenticity of the test report, contact kes@kes.co.kr

■ 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)
0.155000	---	34.63	66.00	31.37	1000.0	9.000	L1	19.5
0.155000	54.04	---	79.00	24.96	1000.0	9.000	L1	19.5
0.185000	---	40.72	66.00	25.28	1000.0	9.000	L1	19.5
0.185000	52.04	---	79.00	26.96	1000.0	9.000	L1	19.5
0.905000	---	36.06	60.00	23.94	1000.0	9.000	L1	20.1
0.905000	36.65	---	73.00	36.35	1000.0	9.000	L1	20.1
4.105000	---	18.26	60.00	41.74	1000.0	9.000	L1	19.9
4.105000	35.01	---	73.00	37.99	1000.0	9.000	L1	19.9
9.745000	---	24.58	60.00	35.42	1000.0	9.000	L1	19.9
9.745000	33.15	---	73.00	39.85	1000.0	9.000	L1	19.9
23.555000	---	29.33	60.00	30.67	1000.0	9.000	L1	20.2
23.555000	33.89	---	73.00	39.11	1000.0	9.000	L1	20.2

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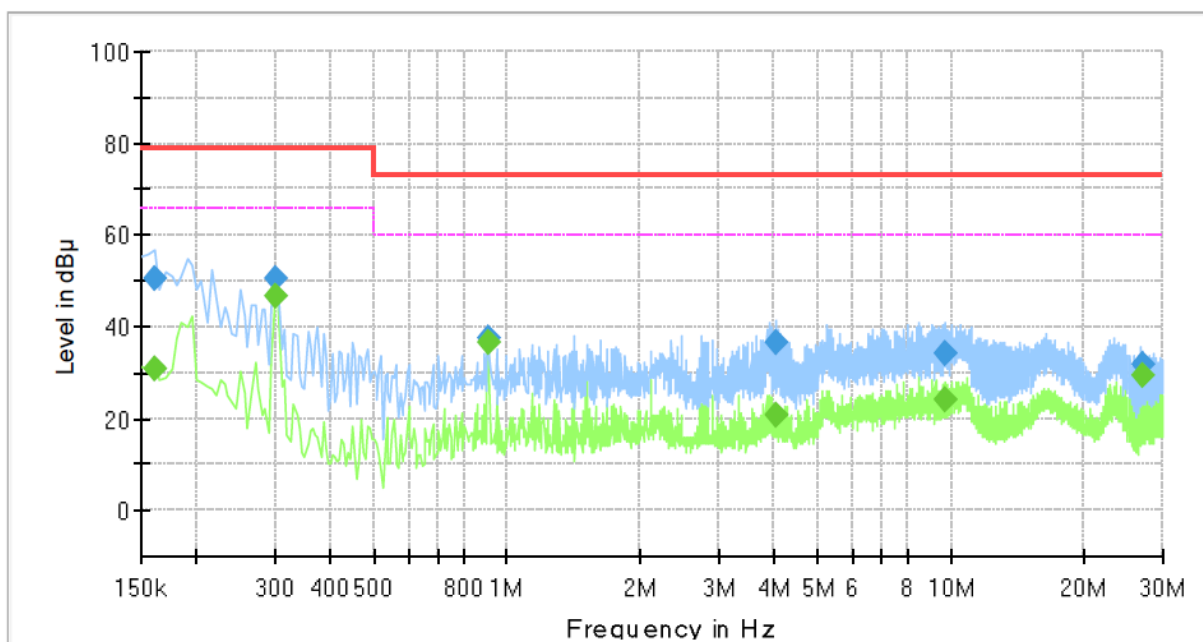
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NEUTRAL LINE

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)
0.160000	---	31.01	66.00	34.99	1000.0	9.000	N	19.4
0.160000	50.38	---	79.00	28.62	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	---	36.40	60.00	23.60	1000.0	9.000	N	20.1
0.905000	37.70	---	73.00	35.30	1000.0	9.000	N	20.1
4.045000	---	20.76	60.00	39.24	1000.0	9.000	N	19.9
4.045000	36.75	---	73.00	36.25	1000.0	9.000	N	19.9
9.685000	---	23.99	60.00	36.01	1000.0	9.000	N	19.9
9.685000	34.29	---	73.00	38.71	1000.0	9.000	N	19.9
27.175000	---	29.55	60.00	30.45	1000.0	9.000	N	20.3
27.175000	31.95	---	73.00	41.05	1000.0	9.000	N	20.3

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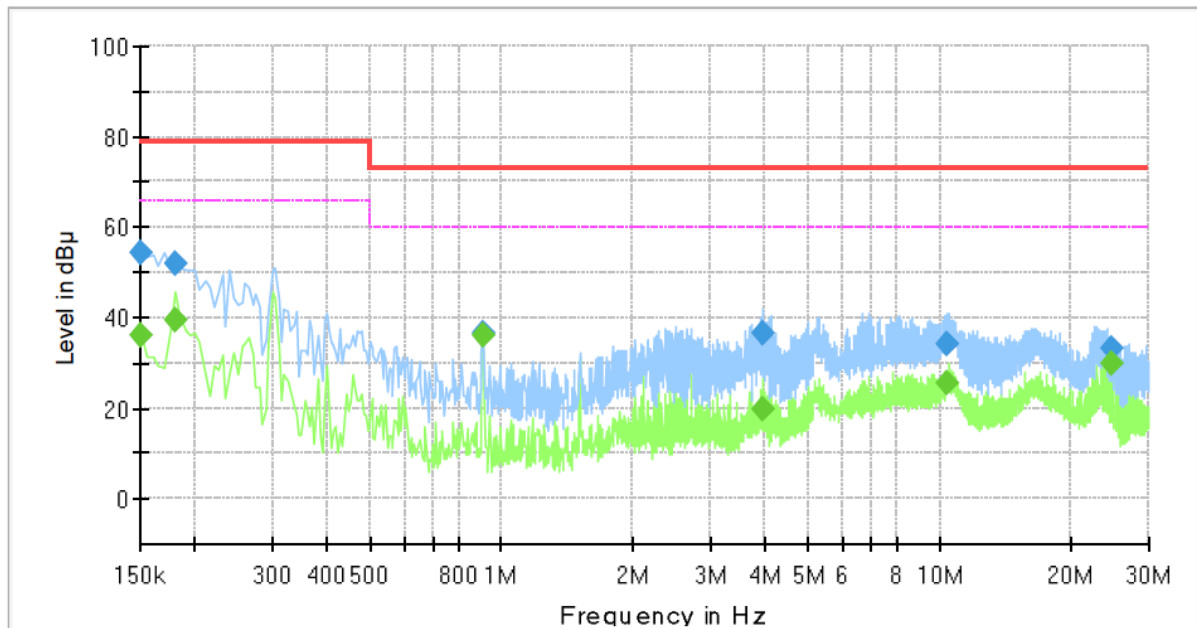
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■ DVI Mode

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)
0.150000	---	36.04	66.00	29.96	1000.0	9.000	L1	19.4
0.150000	54.18	---	79.00	24.82	1000.0	9.000	L1	19.4
0.180000	---	39.38	66.00	26.62	1000.0	9.000	L1	19.5
0.180000	51.81	---	79.00	27.19	1000.0	9.000	L1	19.5
0.905000	---	36.03	60.00	23.97	1000.0	9.000	L1	20.1
0.905000	36.58	---	73.00	36.42	1000.0	9.000	L1	20.1
3.955000	---	19.75	60.00	40.25	1000.0	9.000	L1	19.9
3.955000	36.73	---	73.00	36.27	1000.0	9.000	L1	19.9
10.415000	---	25.69	60.00	34.31	1000.0	9.000	L1	20.0
10.415000	34.27	---	73.00	38.73	1000.0	9.000	L1	20.0
24.760000	---	30.02	60.00	29.98	1000.0	9.000	L1	20.2
24.760000	33.01	---	73.00	39.99	1000.0	9.000	L1	20.2

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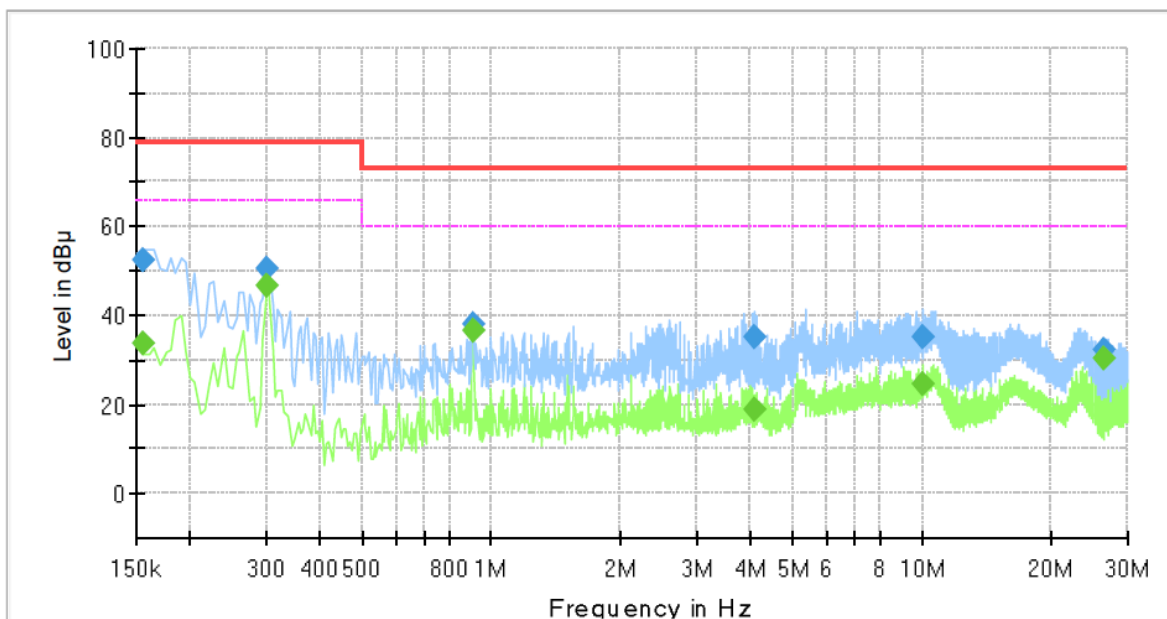
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NEUTRAL LINE

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)
0.155000	---	33.71	66.00	32.29	1000.0	9.000	N	19.4
0.155000	52.23	---	79.00	26.77	1000.0	9.000	N	19.4
0.300000	---	46.61	66.00	19.39	1000.0	9.000	N	19.5
0.300000	50.49	---	79.00	28.51	1000.0	9.000	N	19.5
0.905000	---	36.45	60.00	23.55	1000.0	9.000	N	20.1
0.905000	37.80	---	73.00	35.20	1000.0	9.000	N	20.1
4.065000	---	18.82	60.00	41.18	1000.0	9.000	N	19.9
4.065000	35.35	---	73.00	37.65	1000.0	9.000	N	19.9
10.085000	---	24.67	60.00	35.33	1000.0	9.000	N	19.9
10.085000	34.98	---	73.00	38.02	1000.0	9.000	N	19.9
26.570000	---	30.47	60.00	29.53	1000.0	9.000	N	20.3
26.570000	32.37	---	73.00	40.63	1000.0	9.000	N	20.3

◆ 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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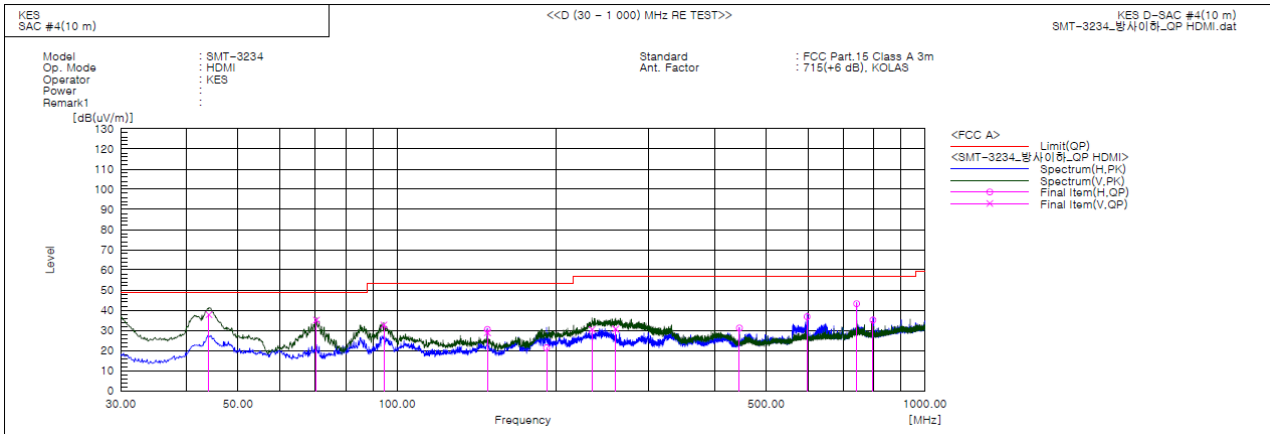
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Radiated Electric Field Emissions(Below 1 GHz)

- 47 CFR Part 15, Subpart B

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	49.0	11.2	100.0	250.0	
2	70.376	V	60.1	-25.0	35.1	49.0	13.9	122.0	212.0	
3	94.505	V	56.3	-23.6	32.7	53.5	20.8	110.0	322.0	
4	148.340	V	54.0	-25.1	28.9	53.5	24.6	106.0	205.0	
5	148.340	H	55.5	-25.1	30.4	53.5	23.1	396.0	347.0	
6	191.990	H	43.0	-21.7	21.3	53.5	32.2	397.0	82.0	
7	234.185	V	50.0	-19.6	30.4	56.5	26.1	103.0	167.0	
8	259.405	V	49.6	-18.9	30.7	56.5	25.8	102.0	163.0	
9	445.039	H	44.4	-13.2	31.2	56.5	25.3	252.0	323.0	
10	597.693	H	45.2	-8.4	36.8	56.5	19.7	176.0	80.0	
11	741.859	H	49.1	-5.9	43.2	56.5	13.3	162.0	322.0	
12	796.906	H	41.5	-6.4	35.1	56.5	21.4	138.0	50.0	

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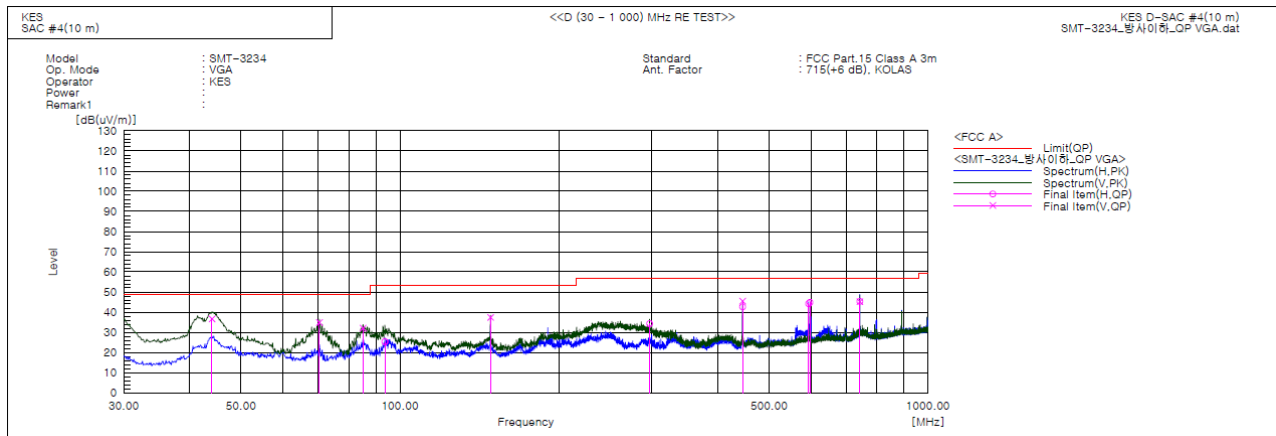
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VGA Mode



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	49.0	12.3	103.0	232.0	
2	70.376	V	59.9	-25.0	34.9	49.0	14.1	121.0	209.0	
3	85.169	V	58.2	-26.1	32.1	49.0	16.9	119.0	281.0	
4	93.656	H	49.1	-23.7	25.4	53.5	28.1	394.0	98.0	
5	148.461	V	62.5	-25.1	37.4	53.5	16.1	108.0	295.0	
6	296.993	H	52.3	-18.0	34.3	56.5	22.2	295.0	324.0	
7	445.524	V	58.7	-13.2	45.5	56.5	11.0	105.0	228.0	
8	445.524	H	55.9	-13.2	42.7	56.5	13.8	396.0	272.0	
9	594.055	H	52.7	-8.5	44.2	56.5	12.3	136.0	312.0	
10	597.450	H	53.4	-8.5	44.9	56.5	11.6	185.0	122.0	
11	742.586	V	51.0	-5.8	45.2	56.5	11.3	341.0	49.0	
12	742.586	H	51.1	-5.8	45.3	56.5	11.2	108.0	324.0	

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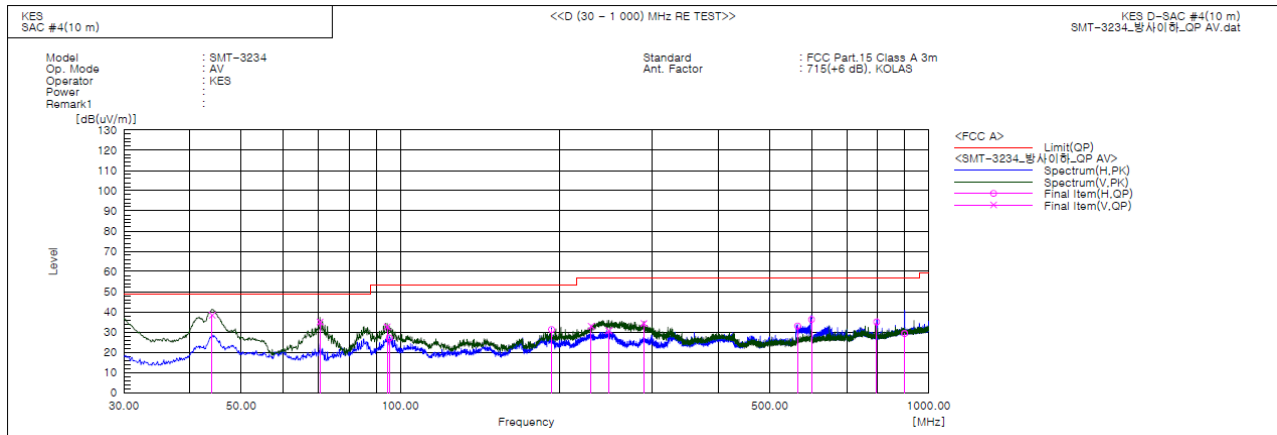
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Report No.:

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■ 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	49.0	10.7	105.0	252.0	
2	70.498	V	60.1	-25.1	35.0	49.0	14.0	124.0	206.0	
3	94.505	V	56.2	-23.6	32.6	53.5	20.9	111.0	293.0	
4	95.354	H	50.5	-23.5	27.0	53.5	26.5	398.0	93.0	
5	193.324	H	52.7	-21.4	31.3	53.5	22.2	391.0	59.0	
6	229.699	V	52.7	-19.8	32.9	56.5	23.6	110.0	180.0	
7	248.129	V	49.8	-19.1	30.7	56.5	25.8	102.0	184.0	
8	288.869	V	52.6	-18.3	34.3	56.5	22.2	107.0	196.0	
9	564.470	H	42.7	-9.7	33.0	56.5	23.5	277.0	69.0	
10	599.996	H	44.6	-8.4	36.2	56.5	20.3	175.0	42.0	
11	796.906	H	41.4	-6.4	35.0	56.5	21.5	251.0	46.0	
12	900.090	H	33.1	-3.9	29.2	56.5	27.3	273.0	92.0	

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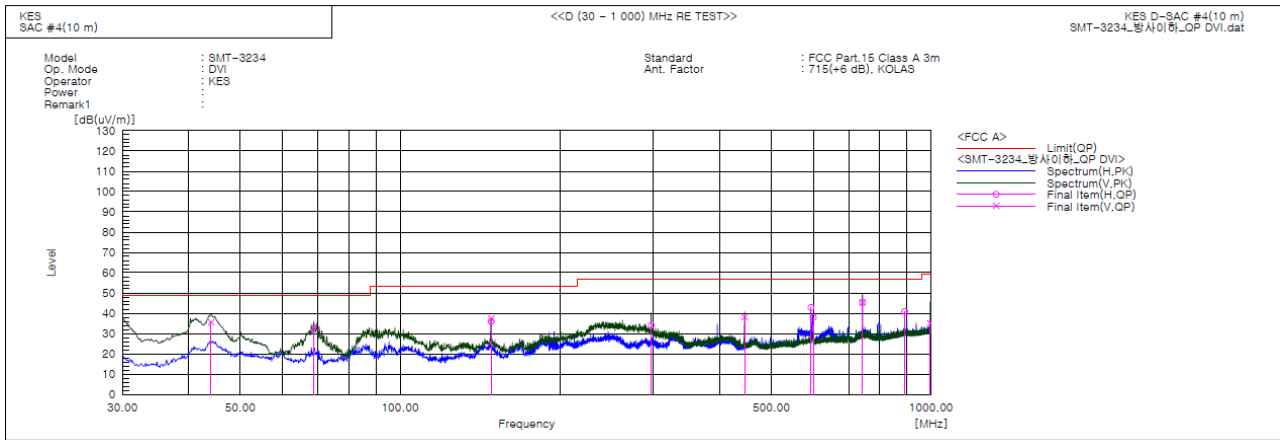
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■ DVI Mode



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	49.0	13.4	102.0	285.0	
2	68.800	V	57.6	-24.5	33.1	49.0	15.9	120.0	188.0	
3	148.340	H	61.1	-25.1	36.0	53.5	17.5	397.0	349.0	
4	148.461	V	62.4	-25.1	37.3	53.5	16.2	107.0	281.0	
5	296.993	H	52.1	-18.0	34.1	56.5	22.4	301.0	296.0	
6	445.524	V	51.4	-13.2	38.2	56.5	18.3	103.0	218.0	
7	594.055	H	51.3	-8.5	42.8	56.5	13.7	149.0	258.0	
8	599.875	H	46.4	-8.4	38.0	56.5	18.5	184.0	32.0	
9	742.586	V	51.1	-5.8	45.3	56.5	11.2	131.0	19.0	
10	742.586	H	51.1	-5.8	45.3	56.5	11.2	110.0	62.0	
11	891.118	H	44.9	-4.0	40.9	56.5	15.6	238.0	285.0	
12	995.999	V	37.8	-2.7	35.1	59.5	24.4	105.0	312.0	

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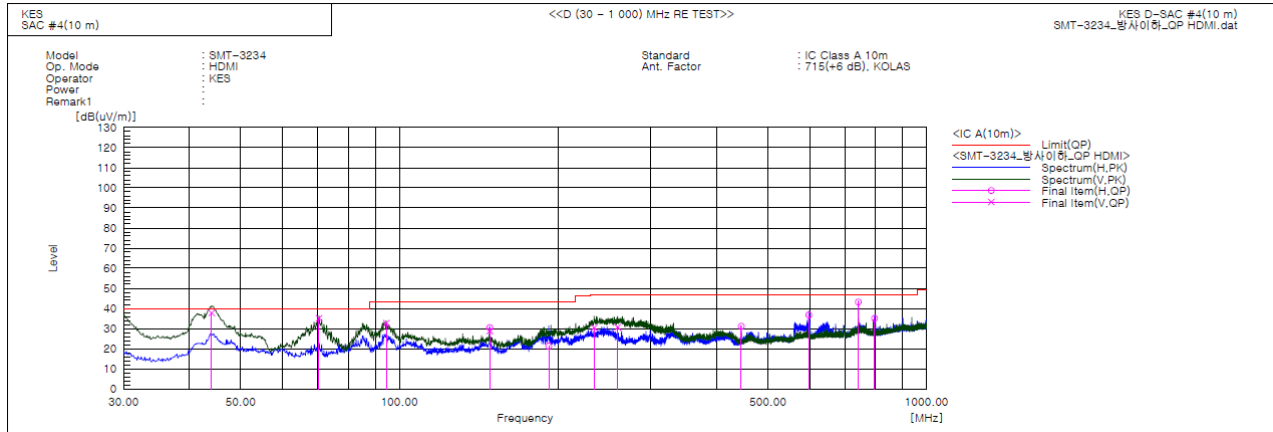
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- IC Regulation ICES-003 Issue 7

■ HDMI Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/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	43.5	10.8	110.0	322.0	
4	148.340	V	54.0	-25.1	28.9	43.5	14.6	106.0	205.0	
5	148.340	H	55.5	-25.1	30.4	43.5	13.1	396.0	347.0	
6	191.990	H	43.0	-21.7	21.3	43.5	22.2	397.0	82.0	
7	234.185	V	50.0	-19.6	30.4	47.0	16.6	103.0	167.0	
8	259.405	V	49.6	-18.9	30.7	47.0	16.3	102.0	163.0	
9	445.039	H	44.4	-13.2	31.2	47.0	15.8	252.0	323.0	
10	597.693	H	45.2	-8.4	36.8	47.0	10.2	176.0	80.0	
11	741.859	H	49.1	-5.9	43.2	47.0	3.8	162.0	322.0	
12	796.906	H	41.5	-6.4	35.1	47.0	11.9	138.0	50.0	

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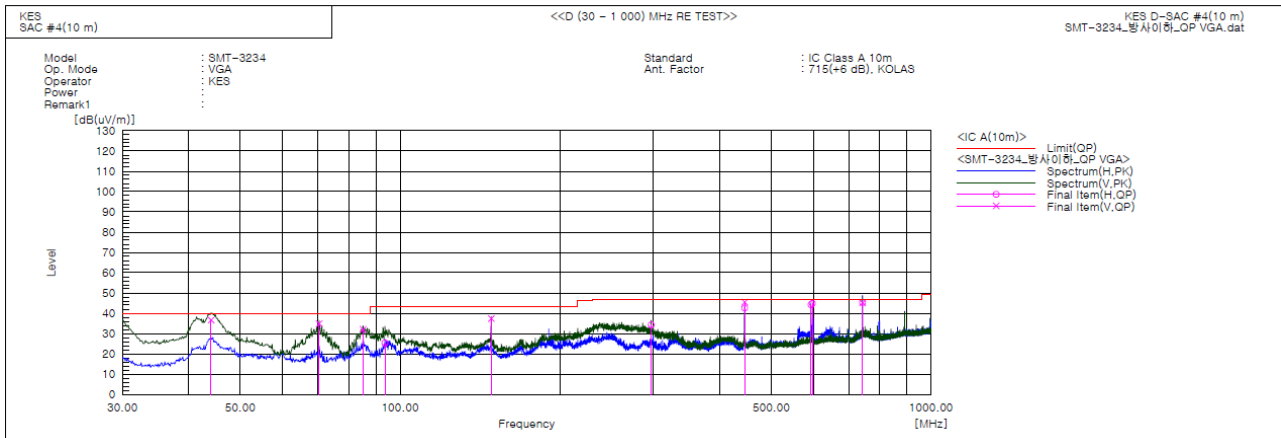
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VGA Mode



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	43.5	18.1	394.0	98.0	
5	148.461	V	62.5	-25.1	37.4	43.5	6.1	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	

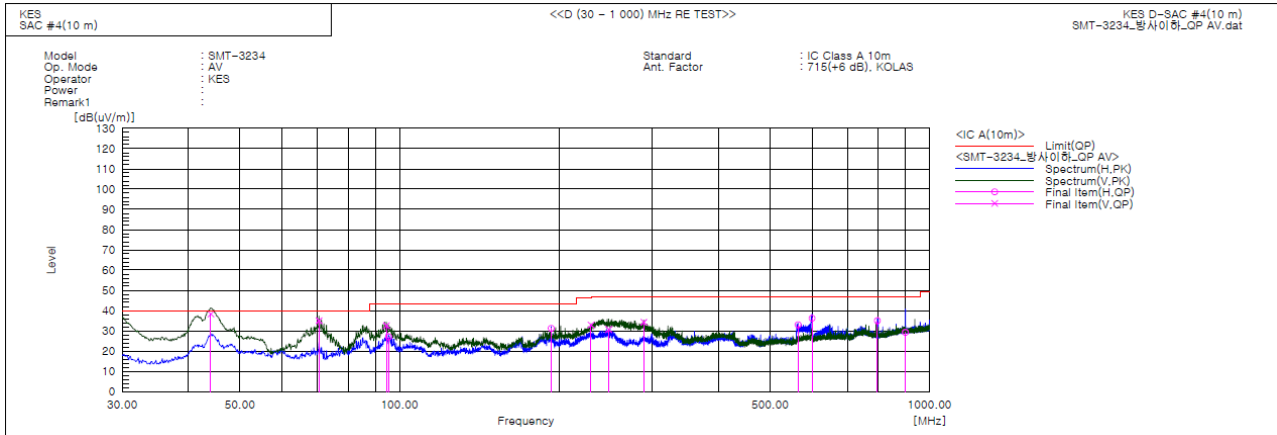
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■ AV Mode



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	43.5	10.9	111.0	293.0	
4	95.354	H	50.5	-23.5	27.0	43.5	16.5	398.0	93.0	
5	193.324	H	52.7	-21.4	31.3	43.5	12.2	391.0	59.0	
6	229.699	V	52.7	-19.8	32.9	46.4	13.5	110.0	180.0	
7	248.129	V	49.8	-19.1	30.7	47.0	16.3	102.0	184.0	
8	288.869	V	52.6	-18.3	34.3	47.0	12.7	107.0	196.0	
9	564.470	H	42.7	-9.7	33.0	47.0	14.0	277.0	69.0	
10	599.996	H	44.6	-8.4	36.2	47.0	10.8	175.0	42.0	
11	796.906	H	41.4	-6.4	35.0	47.0	12.0	251.0	46.0	
12	900.090	H	33.1	-3.9	29.2	47.0	17.8	273.0	92.0	



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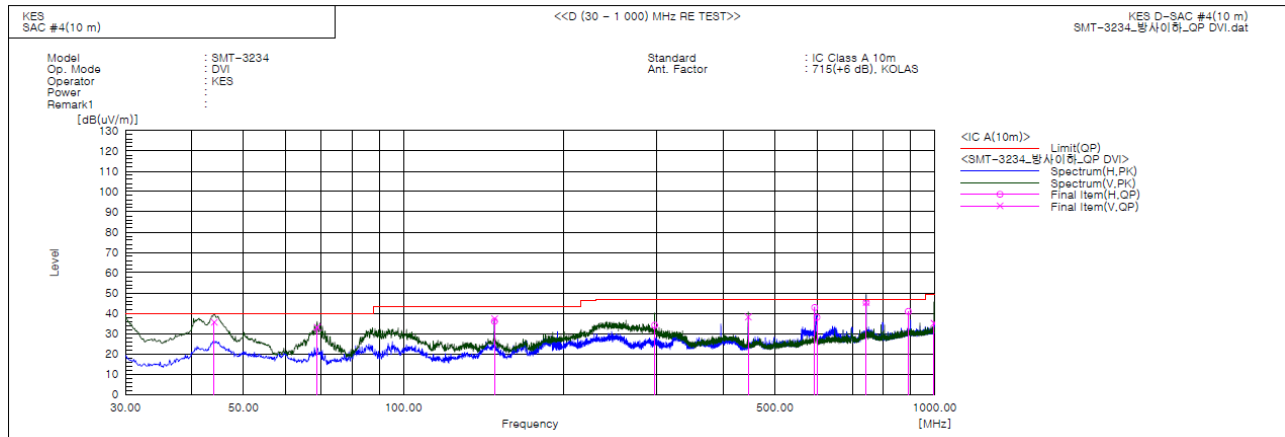
3701, 40, Simin-daero 365beon-gil,
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■ DVI Mode



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	43.5	7.5	397.0	349.0	
4	148.461	V	62.4	-25.1	37.3	43.5	6.2	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	49.5	14.4	105.0	312.0	

◆ 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 - Preamp Factor), Margin: Margin value

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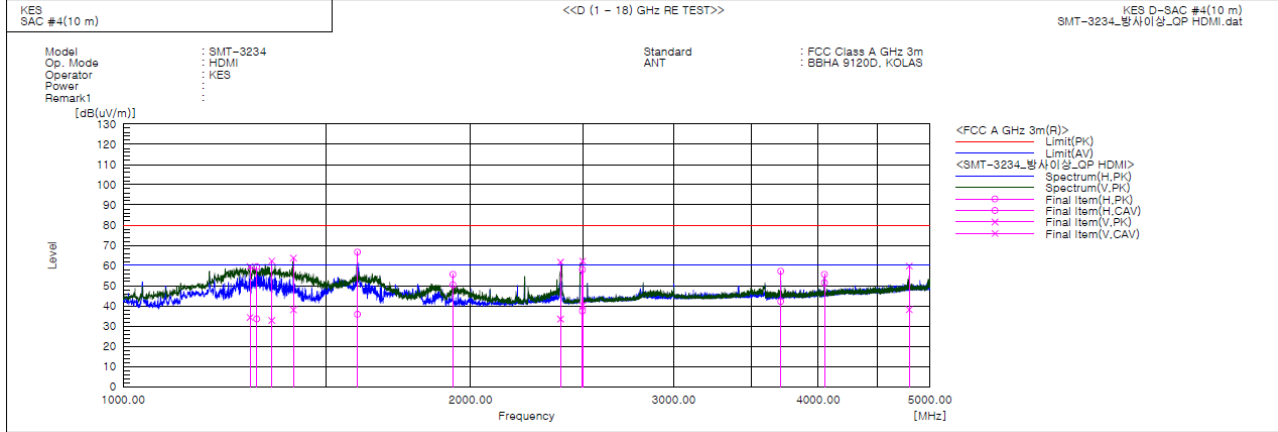
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Radiated Electric Field Emissions(Above 1 GHz)

■ 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	1288.080	V	61.8	36.5	-2.2	59.6	34.3	80.0	60.0	20.4	25.7	103.0	202.0	
2	1305.255	H	61.5	35.7	-2.1	59.4	33.6	80.0	60.0	20.6	26.4	257.0	244.0	
3	1344.735	V	64.1	34.7	-1.9	62.2	32.8	80.0	60.0	17.8	27.2	111.0	202.0	
4	1404.700	V	65.2	39.6	-1.5	63.7	38.1	80.0	60.0	16.3	21.9	105.0	204.0	
5	1595.830	H	67.1	36.3	-0.4	66.7	35.9	80.0	60.0	13.3	24.1	357.0	202.0	
6	1930.555	H	54.3	49.2	1.3	55.6	50.5	80.0	60.0	24.4	9.5	388.0	72.0	
7	2392.280	V	57.9	29.7	3.8	61.7	33.5	80.0	60.0	18.3	26.5	108.0	315.0	
8	2499.925	H	53.6	33.0	4.4	58.0	37.4	80.0	60.0	22.0	22.6	391.0	179.0	
9	2500.040	V	57.8	35.9	4.4	62.2	40.3	80.0	60.0	17.8	19.7	104.0	217.0	
10	3712.545	H	47.6	32.6	9.6	57.2	42.2	80.0	60.0	22.8	17.8	396.0	39.0	
11	4050.190	H	44.2	40.1	11.4	55.6	51.5	80.0	60.0	24.4	8.5	399.0	229.0	
12	4797.590	V	44.9	23.3	14.9	59.8	38.2	80.0	60.0	20.2	21.8	102.0	272.0	

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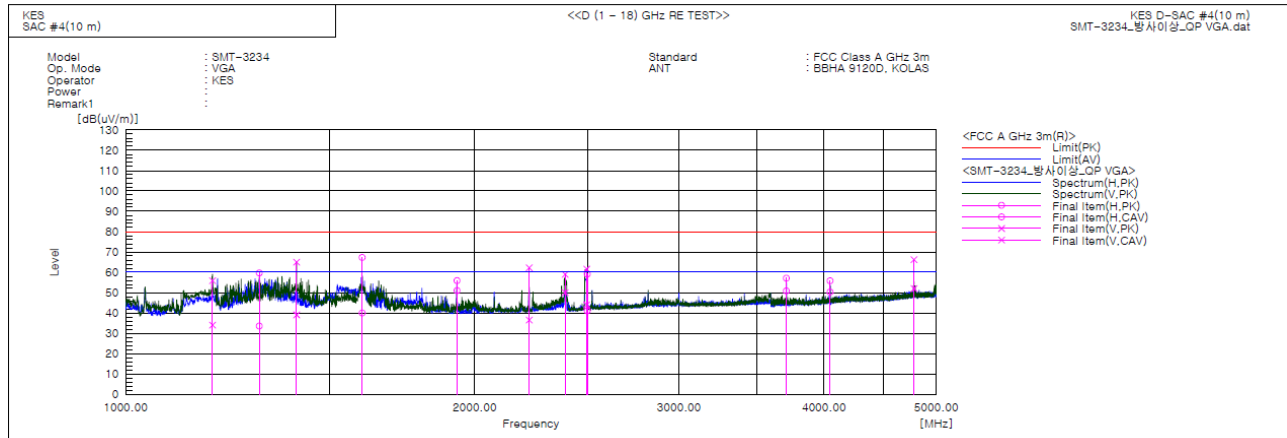
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VGA Mode



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	1188.000	V	58.8	36.9	-2.9	55.9	34.0	80.0	60.0	24.1	26.0	102.0	91.0	
2	1304.000	H	61.8	35.7	-2.1	59.7	33.6	80.0	60.0	20.3	26.4	257.0	220.0	
3	1404.000	V	66.5	40.6	-1.5	65.0	39.1	80.0	60.0	15.0	20.9	191.0	206.0	
4	1599.500	H	67.7	40.4	-0.4	67.3	40.0	80.0	60.0	12.7	20.0	359.0	212.0	
5	1930.500	H	54.6	49.7	1.3	55.9	51.0	80.0	60.0	24.1	9.0	385.0	3.0	
6	2227.500	V	59.3	33.6	2.9	62.2	36.5	80.0	60.0	17.8	23.5	109.0	226.0	
7	2392.500	V	55.2	46.2	3.8	59.0	50.0	80.0	60.0	21.0	10.0	107.0	311.0	
8	2498.000	V	57.2	39.6	4.4	61.6	44.0	80.0	60.0	18.4	16.0	102.0	219.0	
9	2500.000	H	54.7	36.7	4.4	59.1	41.1	80.0	60.0	20.9	18.9	382.0	179.0	
10	3712.500	H	47.5	41.2	9.6	57.1	50.8	80.0	60.0	22.9	9.2	383.0	39.0	
11	4050.000	H	44.4	38.9	11.4	55.8	50.3	80.0	60.0	24.2	9.7	398.0	228.0	
12	4783.500	V	51.4	37.1	14.9	66.3	52.0	80.0	60.0	13.7	8.0	111.0	270.0	

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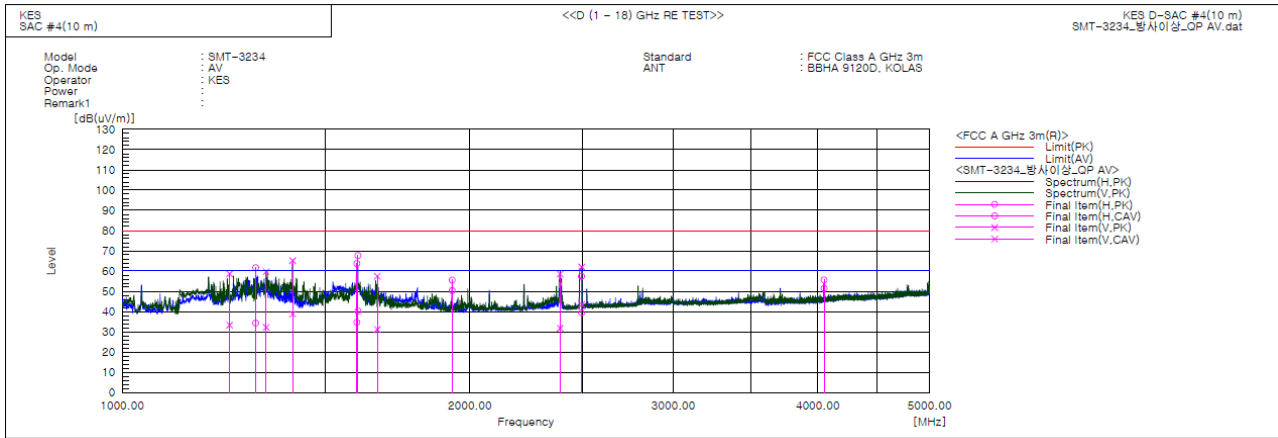
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■ AV Mode



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	1238.375	V	61.3	35.9	-2.6	58.7	33.3	80.0	60.0	21.3	26.7	103.0	202.0	
2	1304.870	H	63.8	36.4	-2.1	61.7	34.3	80.0	60.0	18.3	25.7	256.0	226.0	
3	1331.835	V	61.8	34.3	-2.0	59.8	32.3	80.0	60.0	20.2	27.7	108.0	191.0	
4	1404.320	V	66.7	40.3	-1.5	65.2	38.8	80.0	60.0	14.8	21.2	104.0	199.0	
5	1596.035	H	64.1	35.1	-0.4	63.7	34.7	80.0	60.0	16.3	25.3	359.0	178.0	
6	1599.920	H	68.1	40.7	-0.4	67.7	40.3	80.0	60.0	12.3	19.7	360.0	204.0	
7	1662.475	V	57.6	31.3	-0.1	57.5	31.2	80.0	60.0	22.5	28.8	107.0	199.0	
8	1930.425	H	54.2	49.1	1.3	55.5	50.4	80.0	60.0	24.5	9.6	386.0	72.0	
9	2393.700	V	54.8	28.0	3.8	58.6	31.8	80.0	60.0	21.4	28.2	110.0	245.0	
10	2497.975	H	53.1	35.0	4.4	57.5	39.4	80.0	60.0	22.5	20.6	382.0	178.0	
11	2498.190	V	57.7	39.1	4.4	62.1	43.5	80.0	60.0	17.9	16.5	102.0	217.0	
12	4050.070	H	44.2	40.0	11.4	55.6	51.4	80.0	60.0	24.4	8.6	399.0	229.0	

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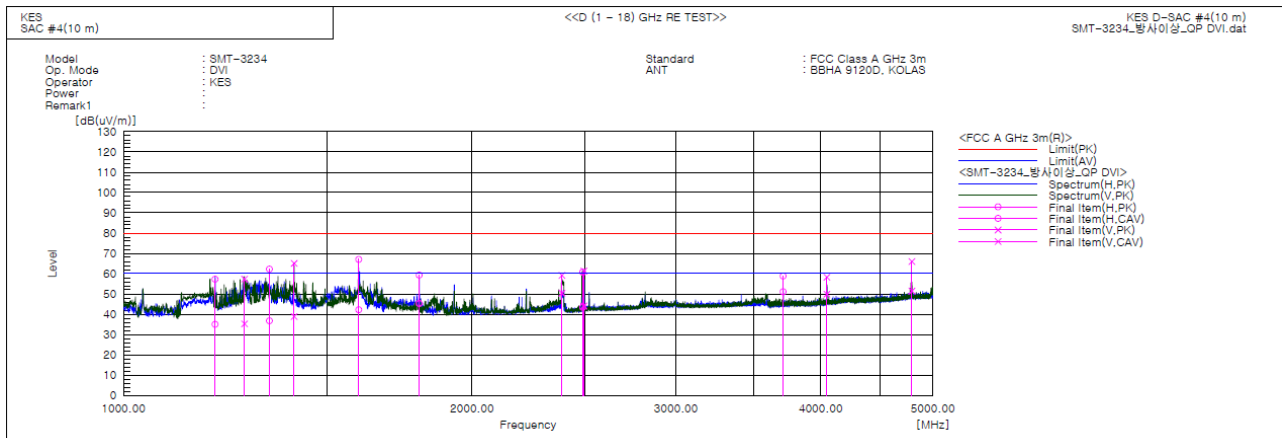
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DVI Mode



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	1199.500	H	60.1	37.8	-2.8	57.3	35.0	80.0	60.0	22.7	25.0	361.0	221.0	
2	1272.000	V	59.7	37.6	-2.3	57.4	35.3	80.0	60.0	22.6	24.7	104.0	208.0	
3	1336.500	H	64.1	38.7	-1.9	62.2	36.8	80.0	60.0	17.8	23.2	388.0	218.0	
4	1404.000	V	66.6	40.4	-1.5	65.1	38.9	80.0	60.0	14.9	21.1	189.0	202.0	
5	1596.000	H	67.4	42.6	-0.4	67.0	42.2	80.0	60.0	13.0	17.8	359.0	167.0	
6	1800.000	H	58.7	44.7	0.6	59.3	45.3	80.0	60.0	20.7	14.7	397.0	219.0	
7	2391.000	V	55.4	46.6	3.8	59.2	50.4	80.0	60.0	20.8	9.6	105.0	254.0	
8	2492.500	H	56.5	39.2	4.3	60.8	43.5	80.0	60.0	19.2	16.5	366.0	171.0	
9	2498.000	V	56.9	39.7	4.4	61.3	44.1	80.0	60.0	18.7	15.9	218.0	213.0	
10	3712.500	H	49.2	41.5	9.6	58.8	51.1	80.0	60.0	21.2	8.9	381.0	44.0	
11	4050.000	V	46.9	38.5	11.4	58.3	49.9	80.0	60.0	21.7	10.1	110.0	217.0	
12	4796.000	V	51.1	36.6	14.9	66.0	51.5	80.0	60.0	14.0	8.5	109.0	273.0	

◆ 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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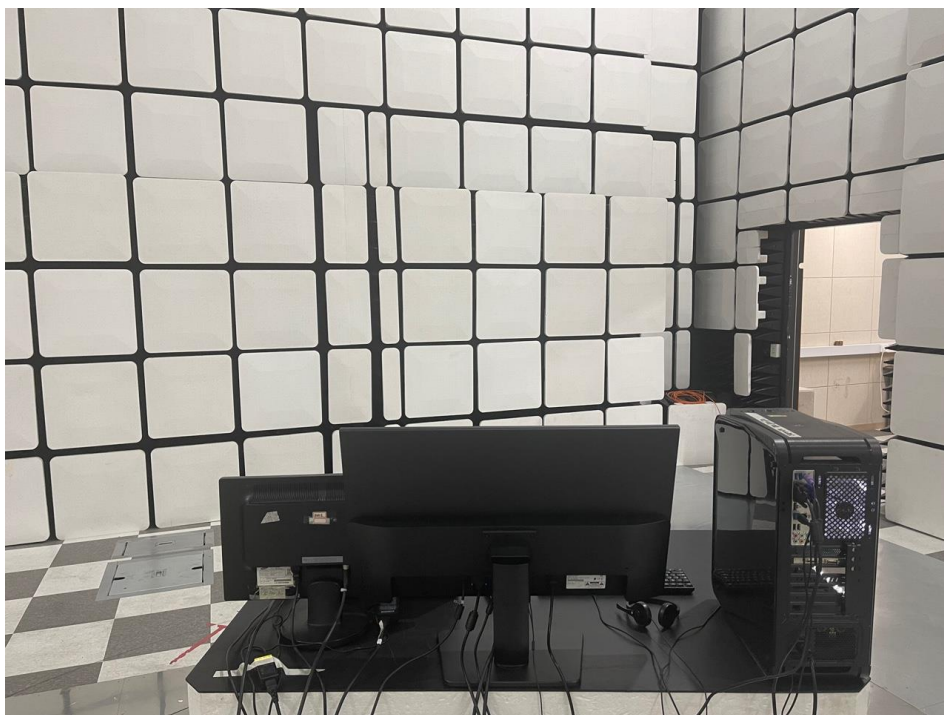
Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports



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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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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

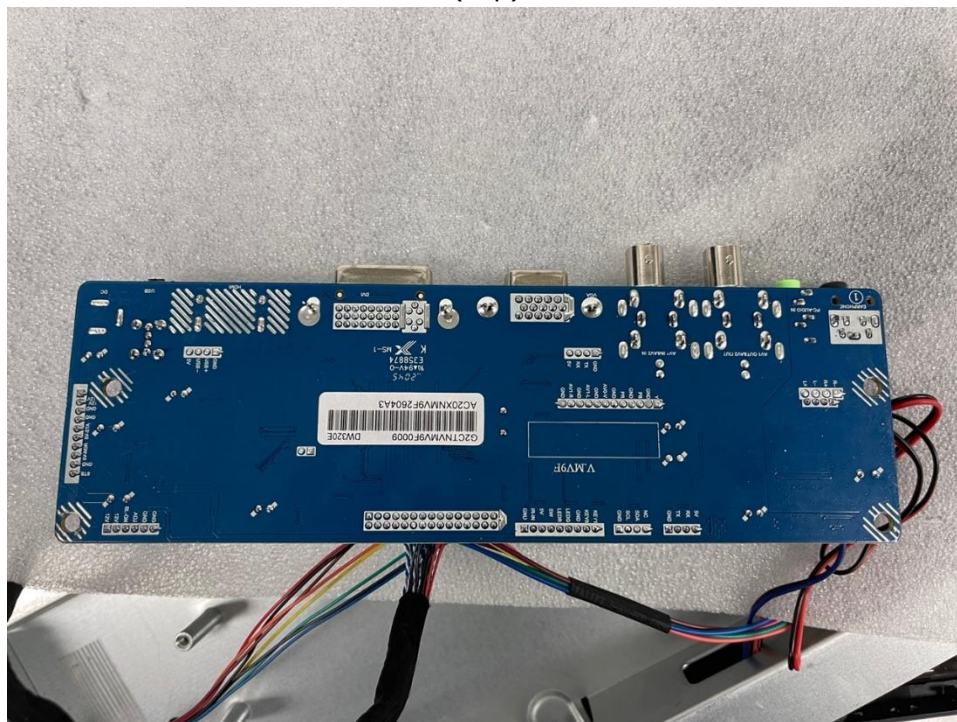
(Internal View)



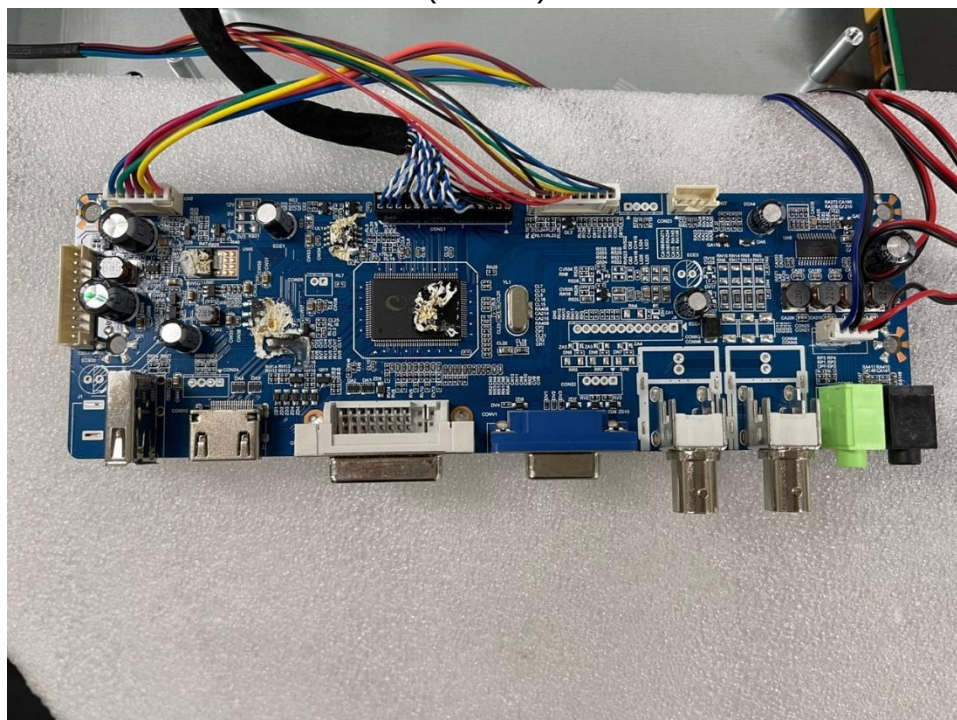
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EUT Internal View – Main Board

(Top)



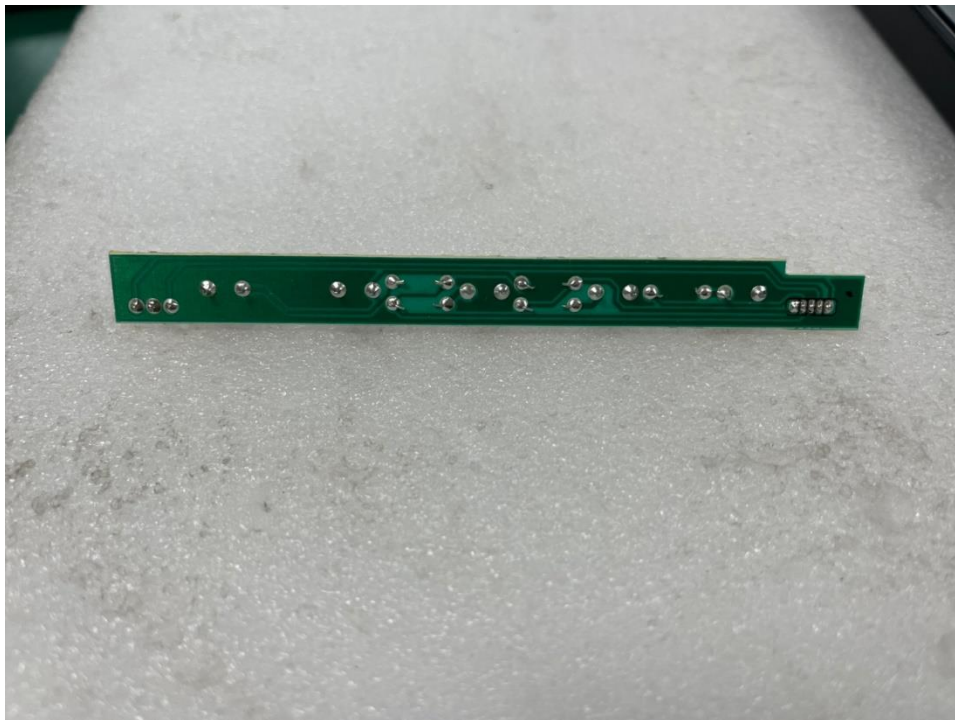
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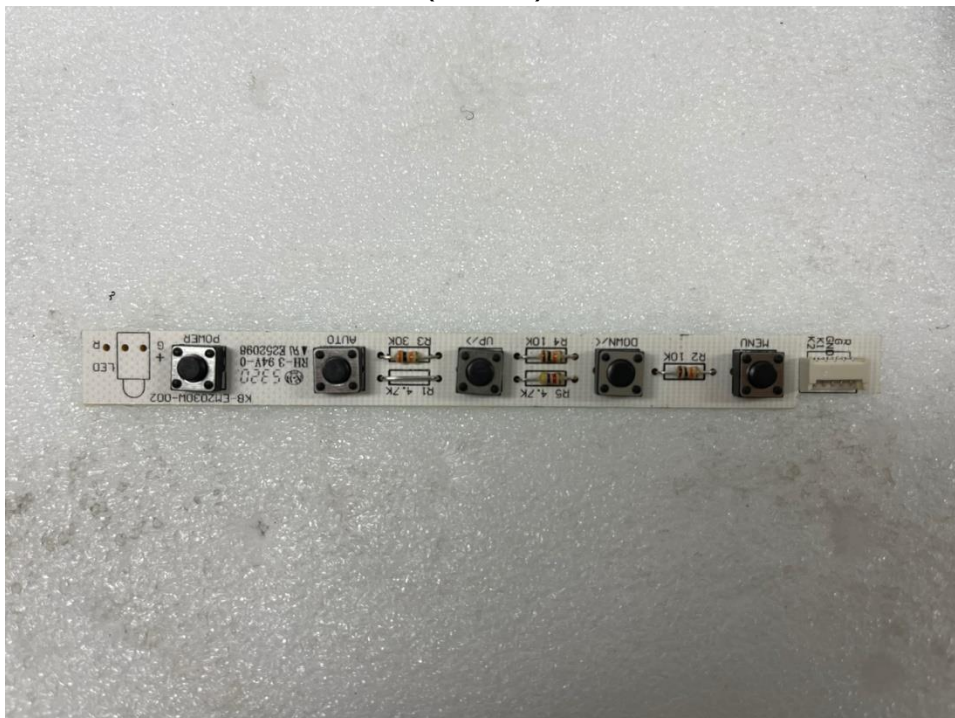
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EUT Internal View – Sub Board 1

(Top)



(Bottom)



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EUT Internal View – Sub Board 2

(Top)



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EUT Internal View – Sub Board 3

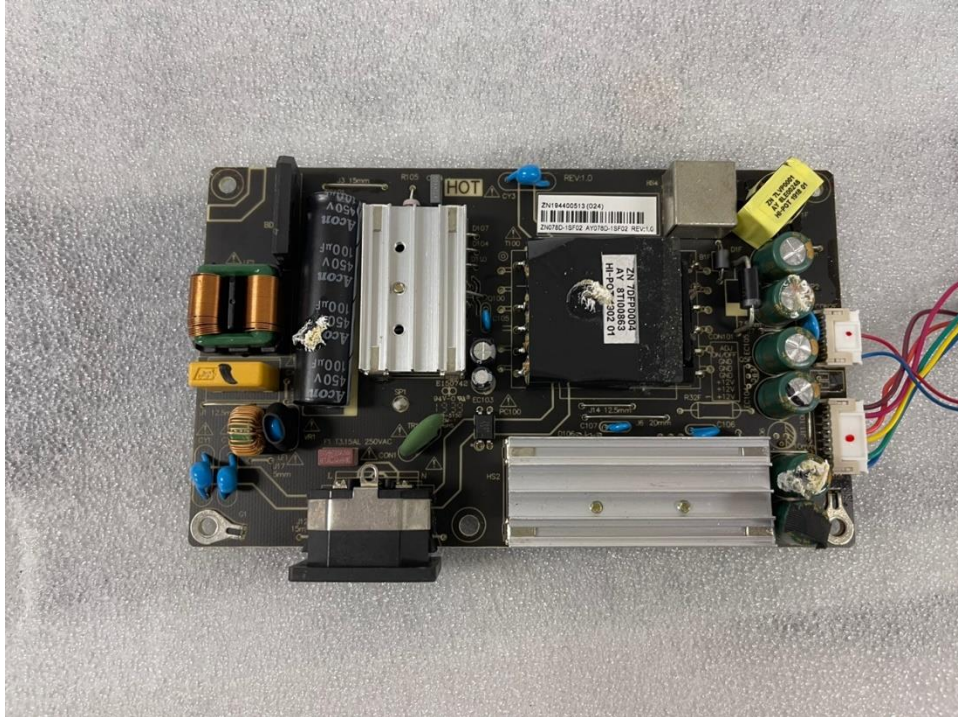
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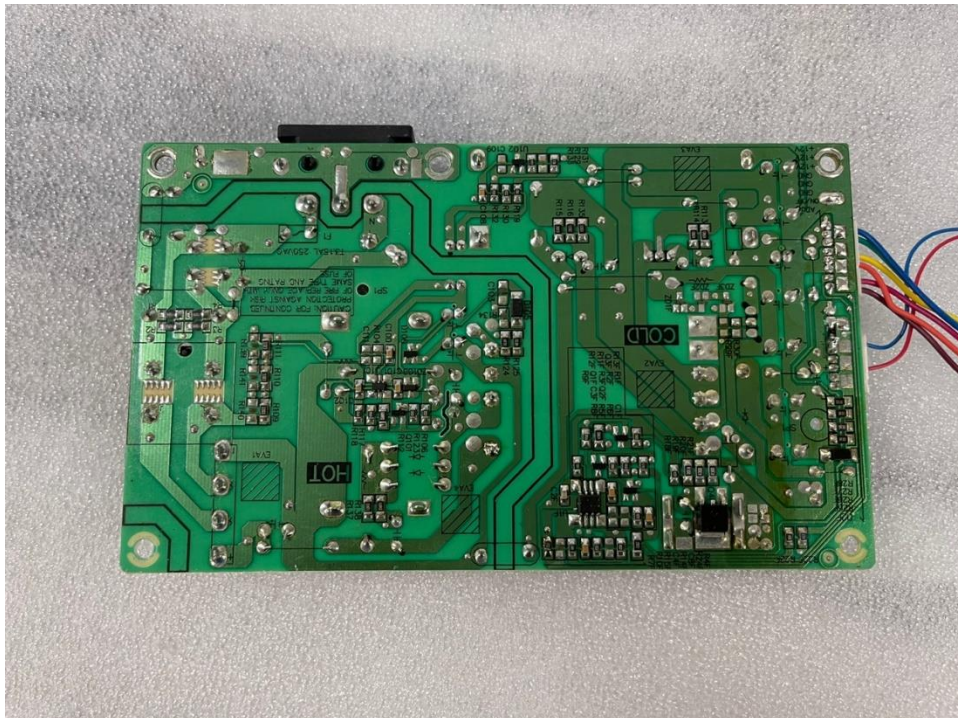
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EUT Internal View – Power Board

(Top)



(Bottom)



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Label Photographs



CAN ICES-3(A) / NMB-3(A)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.