

**KES Co., Ltd.**

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Report No.:

KES-EM-22T0717-R1

Page (1) of (27)

EMC TEST REPORT

Test Report No. : KES-EM-22T0717-R1

Date of Issue : Feb. 24, 2023

Product name : LENS MODULE

Model/Type No. : SLA-T4680DA

Variant Model : SLA-T4680DSA

Applicant : Hanwha Vision Co., Ltd

Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea

Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.

Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)

Equipment authorization : **Supplier's Declaration of Conformity**

Date of Receipt : Aug. 11, 2022

Test date : Aug. 13, 2022 ~ Aug. 14, 2022

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae-Hyun, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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

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Page (2) of (27)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Aug. 23, 2022	KES-EM-22T0717	Issued
Feb. 24, 2023	KES-EM-22T0717-R1	Change the Applicant and manufacturer at the request of the customer

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TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	5
1.2	Variant Model Differences	5
1.3	Device Modifications	5
1.4	Equipment Under Test.....	5
1.5	Support Equipments	5
1.6	External I/O Cabling	5
1.7	EUT Operating Mode(s)	6
1.8	Configuration.....	6
1.9	Remarks when standards applied	7
1.10	Calibration Details of Equipment Used for Measurement	7
1.11	Test Facility	7
1.12	Laboratory Accreditations and Listings	7
2.0	Test Regulations.....	8
2.1	Conducted Emissions at Mains Power Ports	9
2.2	Radiated Electric Field Emissions(Below 1 GHz)	11
2.3	Radiated Electric Field Emissions(Above 1 GHz)	13
APPENDIX A – TEST DATA.....		15
Conducted Emissions at Mains Power Ports.....		15
Radiated Electric Field Emissions(Below 1 GHz)		17
Radiated Electric Field Emissions(Above 1 GHz)		19
Test Setup Photos and Configuration		20
Conducted Emissions at Mains Power Ports.....		20
Radiated Electric Field Emissions(Below 1 GHz)		21
Radiated Electric Field Emissions(Above 1 GHz)		22
EUT External Photographs		23
EUT Internal Photographs		24



1.0 General Product Description

Main Specifications of EUT are:

	SLA-T4680DA	Network	
Video		Ethernet	None
Imaging Device	1/2.8" 2M CMOS	Video Compression	None
Resolution	None	Audio Compression	None
Max. Framerate	None	Smart Codes	None
NETD	None	Video Quality Adjustment	None
Pixel Size	None	Bitrate Control	None
Min. Illumination	Color: 0.06Lux(F2.5) BW: 0.06Lux(F2.5) * with PNM-9000CB, XNB-6002	Streaming	None
Video Out	None	Protocol	None
Video Transmission Distance	None	SIP support (VoIP, Peer-to-peer, SIP/P	None
		Security	None
		Application Programming Interface	None
Lens		General	
Focal Length (Zoom Ratio)	4.6mm fixed focal	Webpage Language	None
Max. Aperture Ratio	F2.5	Web Viewer	None
Angular Field of View	H : 73° / V : 39° / D : 85°	Edge Storage	None
Min. Object Distance	0.3m(0.98ft)	Memory	None
Focus Control	Fixed	Environmental & Electrical	
Lens Type	None	Operating Temperature / Humidity	-10°C ~ +55°C (+14°F ~ +131°F) / 0 ~ 90% RH
Mount Type	R12 connected with main unit	Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / 0 ~ 90% RH
Optional Lens	None	Certification	None
Pan / Tilt / Rotate		Input Voltage	None
Pan / Tilt / Rotate Range	Flexible panning -30°~30°	Power Consumption	None
Pan Range	None	Mechanical	
Pan Speed	None	Color / Material	Housing : Black / Plastic Lens : Black / Plastic, Aluminum
Tilt Range	None	RAL Code	None
Tilt Speed	None		(TBD)
Rotate Range	None	Product Dimensions / Weight	Housing : 42.9(W)x33.0(H)x170.0(D)mm(1.69"x1.30"x6.69"). ??g(??lb) Lens : 30(W)x27.9(H)x45(D)mm(1.18"x1.10"x1.77"). 321g(0.71lb) Cable : 8m(26ft)
Sequence	None	Compatible Conduit hole / Gangbox	None
Preset Accuracy	None	Hanging Mount (Dome)	None
Operational		Skin Cover	None
Camera Title	None	Skin Cover (Dome)	None
Direction Indicator	None	Weather Cap (Dome)	None
Day & Night	None	Power Module	None
Backlight Compensation	None	Backbox	None
Wide Dynamic Range	None	Certifications & Standards	
Digital Noise Reduction	None	Network	None
Digital Image Stabilization	None	EMC	None
Defog	None	Safety	None
Motion Detection	None	Environment	None
Privacy Masking	None	Video	None
Gain Control	None	DORI (EN62676-4 standard)	
White Balance	None	Detect (25PPM/ 8PPF)	None
LDC	None	Observe (63PPM/ 19PPF)	None
Electronic Shutter Speed	None	Recognize (125PPM/ 38PPF)	None
Digital PTZ	None	Identify (250PPM/ 75PPF)	None
Video Rotation	None		
Analytics	None		
Business Intelligence	None		
Serial Interface	None		
Alarm I/O	None		
Alarm Triggers	None		
Alarm Events	None		
Audio Streaming	None		
Audio In	None		
Audio Out	None		
IR Viewable Length	None		
IR Illuminator (Optional)	None		
IR Radiation angle	None		
IR LED	None		
IR Wavelength	None		
IR Operation	None		
Water Removal	None		
Auto Tracking	None		
Coaxial Protocol	None		
Color Palettes	None		
Radiometry			
Temperature Detect Range	None		
Temperature Accuracy	None		
Temperature Detection	None		
Additional	None		

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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 (DC Adapter Input Power)

1.2 Variant Model Differences

Add a derivative model due to instrument color differences.

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
LENS MODULE	SLA-T4680DA	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	PNM-9000QB	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
AC/DC Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
Monitor	DELL E2222H DVT	8221TCM10D001 03X	DELL INC.	-

1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
LENS MODULE (EUT)	RJ-12	NETWORK CAMERA	RJ-12	8.0	S
NETWORK CAMERA	HDMI	Monitor	HDMI	1.5	S
NETWORK CAMERA	DC Jack (2 Pin)	AC/DC Adapter	DC Jack (2 Pin)	0.8	U

* Unshielded=U, Shielded=S

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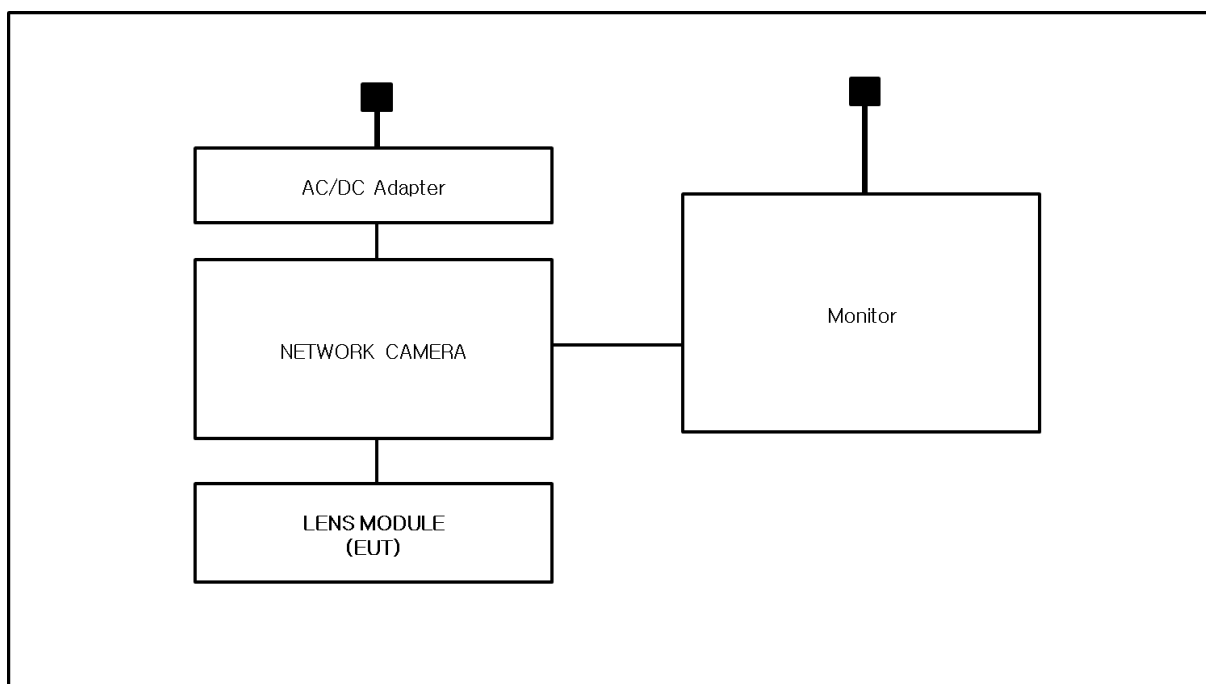
1.7 EUT Operating Mode(s)

Test Mode	operating
Operating	The normal operating state of Monitor was confirmed through EUT.

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

1.8 Configuration

■ AC Main
 □ DC Main



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:

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B

☒ **IC Regulation ICES-003 Issue 7**

☐ CAN/CSA-CISPR 32:17

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B

2.1 Conducted Emissions at Mains Power Ports

Test Date

Aug. 13, 2022

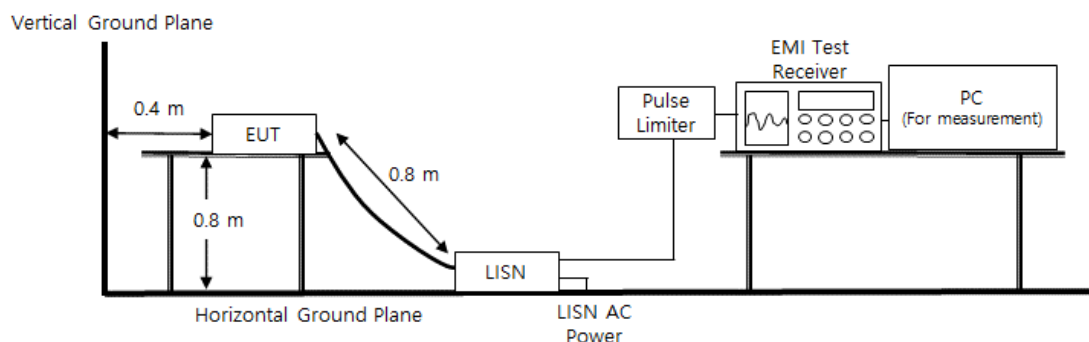
Test Location

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	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022

Diagram of test setup





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Report No.:

KES-EM-22T0717-R1

Page (10) of (27)

Test Conditions

Temperature: (24,4 ± 0,1) °C

Relative Humidity: (47,6 ± 0,1) % 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 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Aug. 14, 2022

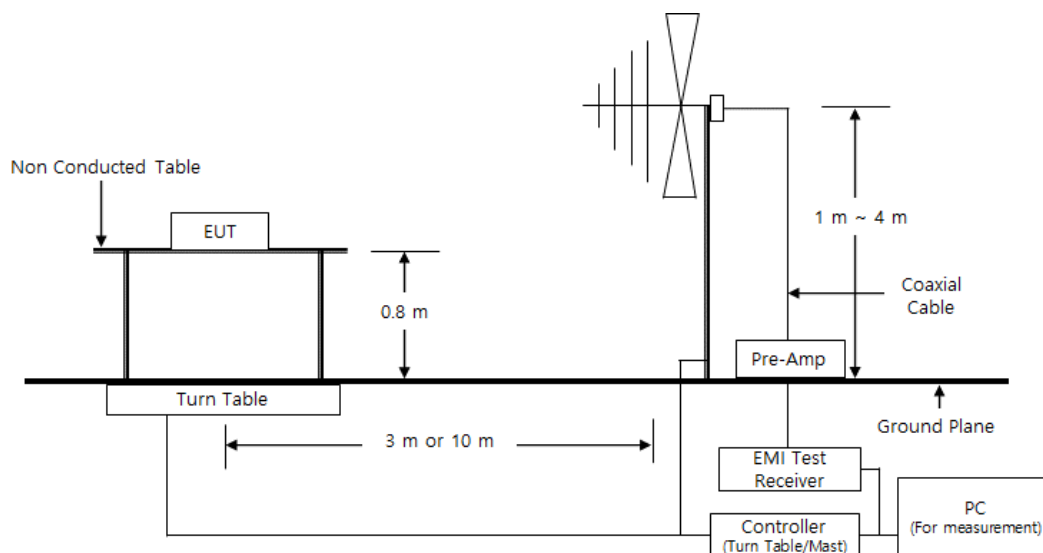
Test Location

☐ 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	03, 31, 2023
☒	AMPLIFIER	SCU 01	R & S	100603	11, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Diagram of test setup





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Report No.:

KES-EM-22T0717-R1

Page (12) of (27)

Test Conditions

Temperature: (24,9 ± 0,1) °C

Relative Humidity: (45,1 ± 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

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2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Aug. 14, 2022

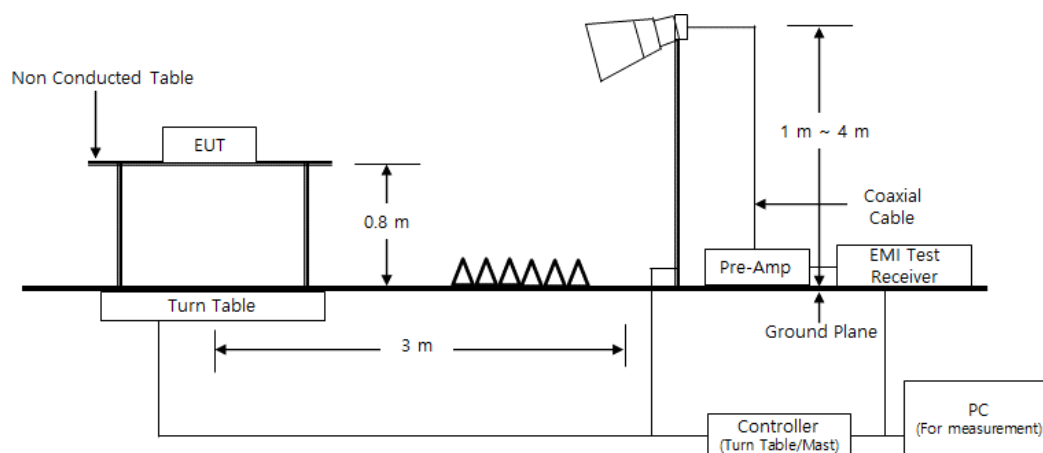
Test Location

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
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	12, 27, 2022
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 16, 2022

Diagram of test setup





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Report No.:

KES-EM-22T0717-R1

Page (14) of (27)

Test Conditions

Temperature: (24,9 ± 0,1) °C

Relative Humidity: (45,1 ± 0,1) % 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.

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APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description:

Conducted Emission

Model No.:

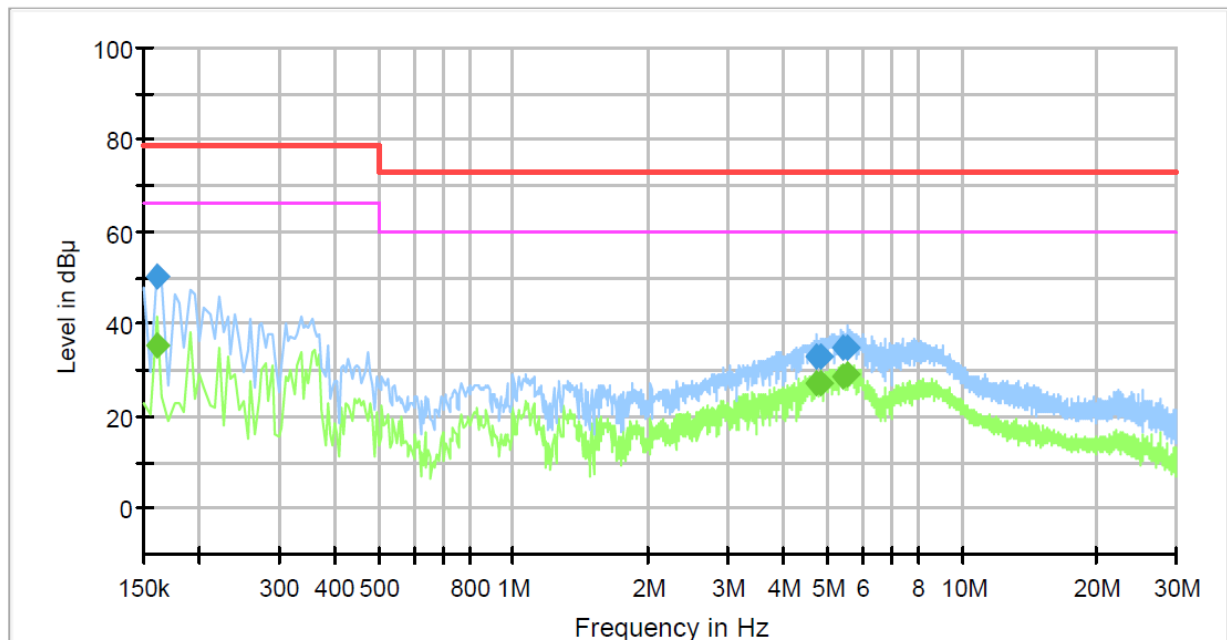
SLA-T4680DA

Phase:

Mode:

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	---	35.51	66.00	30.49	1000.0	9.000	L1	19.4
0.160000	50.29	---	79.00	28.71	1000.0	9.000	L1	19.4
4.755000	---	27.30	60.00	32.70	1000.0	9.000	L1	19.7
4.755000	33.04	---	73.00	39.96	1000.0	9.000	L1	19.7
4.835000	---	27.30	60.00	32.70	1000.0	9.000	L1	19.7
4.835000	33.06	---	73.00	39.94	1000.0	9.000	L1	19.7
5.445000	---	28.59	60.00	31.41	1000.0	9.000	L1	19.6
5.445000	34.72	---	73.00	38.28	1000.0	9.000	L1	19.6
5.570000	---	28.86	60.00	31.14	1000.0	9.000	L1	19.5
5.570000	35.09	---	73.00	37.91	1000.0	9.000	L1	19.5

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NEUTRAL LINE

Common Information

Test Description:

Conducted Emission

Model No.:

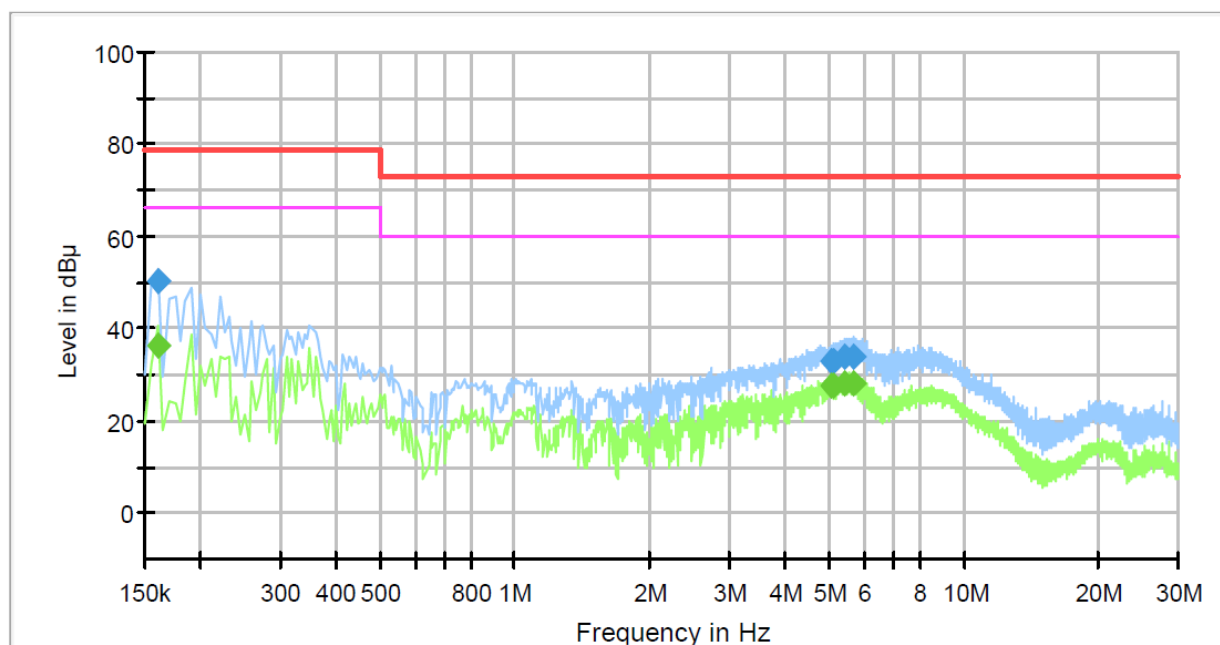
SLA-T4680DA

Phase:

Mode:

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	---	36.14	66.00	29.86	1000.0	9.000	N	19.4
0.160000	50.39	---	79.00	28.61	1000.0	9.000	N	19.4
5.065000	---	27.57	60.00	32.43	1000.0	9.000	N	19.6
5.065000	32.99	---	73.00	40.01	1000.0	9.000	N	19.6
5.110000	---	27.57	60.00	32.43	1000.0	9.000	N	19.6
5.110000	33.09	---	73.00	39.91	1000.0	9.000	N	19.6
5.415000	---	28.28	60.00	31.72	1000.0	9.000	N	19.6
5.415000	34.08	---	73.00	38.92	1000.0	9.000	N	19.6
5.715000	---	28.03	60.00	31.97	1000.0	9.000	N	19.5
5.715000	34.07	---	73.00	38.93	1000.0	9.000	N	19.5

◆ Calculation

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

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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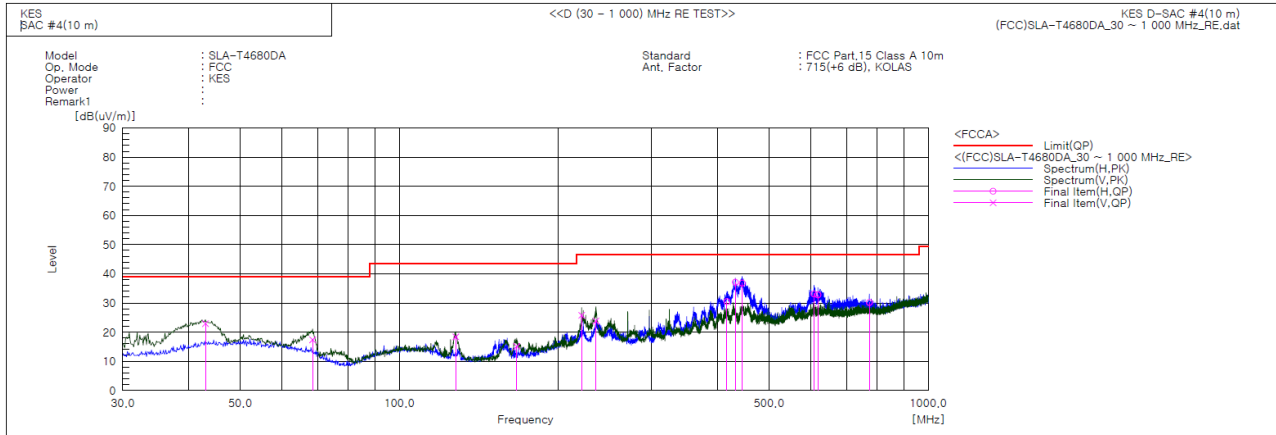
Report No.:

KES-EM-22T0717-R1

Page (17) of (27)

Radiated Electric Field Emissions(Below 1 GHz)

- 47 CFR Part 15, Subpart B



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	42.974	V	44.6	-21.7	22.9	39.0	16.1	100.0	255.0	
2	68.558	V	41.8	-24.4	17.4	39.0	21.6	118.0	296.0	
3	127.849	V	43.5	-25.1	18.4	43.5	25.1	150.0	127.0	
4	166.649	V	39.5	-24.4	15.1	43.5	28.4	100.0	102.0	
5	221.090	V	46.2	-20.4	25.8	46.5	20.7	120.0	192.0	
6	235.276	V	43.6	-19.8	23.8	46.5	22.7	155.0	203.0	
7	416.181	H	44.2	-13.8	30.4	46.5	16.1	400.0	146.0	
8	431.823	H	50.6	-13.5	37.1	46.5	9.4	400.0	180.0	
9	444.675	H	50.0	-13.2	36.8	46.5	9.7	356.0	259.0	
10	607.999	H	41.6	-8.5	33.1	46.5	13.4	400.0	214.0	
11	618.426	H	41.2	-8.4	32.8	46.5	13.7	249.0	206.0	
12	773.626	H	36.9	-6.7	30.2	46.5	16.3	150.0	282.0	

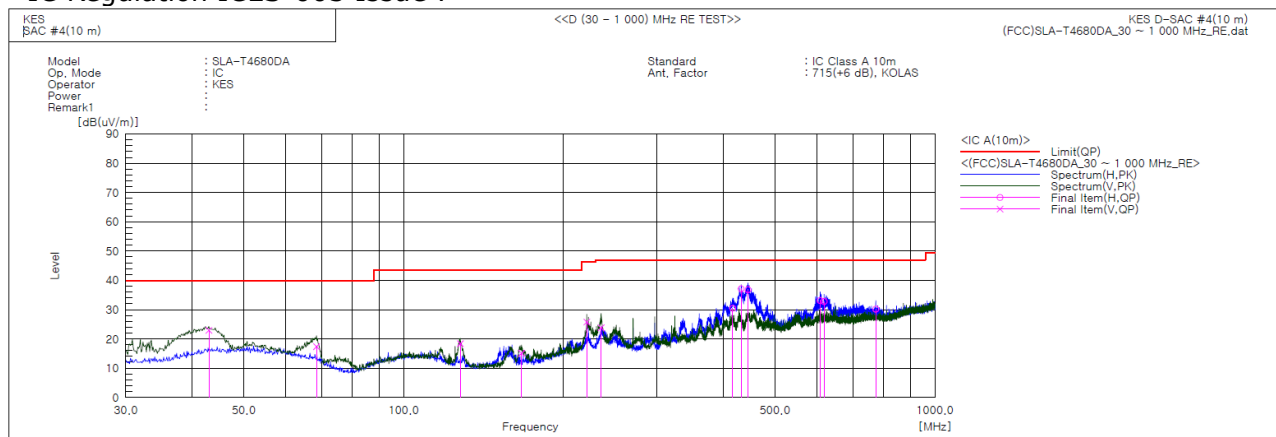
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- IC Regulation ICES-003 Issue 7



Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP [dB(uV)]	[dB(1/m)]	QP [dB(uV/m)]	QP [dB(uV/m)]	QP [dB]	[cm]	[deg]	
1	42.974	V	44.6	-21.7	22.9	40.0	17.1	100.0	255.0	
2	68.558	V	41.8	-24.4	17.4	40.0	22.6	118.0	296.0	
3	127.849	V	43.5	-25.1	18.4	43.5	25.1	150.0	127.0	
4	166.649	V	39.5	-24.4	15.1	43.5	28.4	100.0	102.0	
5	221.090	V	46.2	-20.4	25.8	46.4	20.6	120.0	192.0	
6	235.276	V	43.6	-19.8	23.8	47.0	23.2	155.0	203.0	
7	416.181	H	44.2	-13.8	30.4	47.0	16.6	400.0	146.0	
8	431.823	H	50.6	-13.5	37.1	47.0	9.9	400.0	180.0	
9	444.675	H	50.0	-13.2	36.8	47.0	10.2	356.0	259.0	
10	607.999	H	41.6	-8.5	33.1	47.0	13.9	400.0	214.0	
11	618.426	H	41.2	-8.4	32.8	47.0	14.2	249.0	206.0	
12	773.626	H	36.9	-6.7	30.2	47.0	16.8	150.0	282.0	

◆ Calculation - SAC #4(10 m)

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

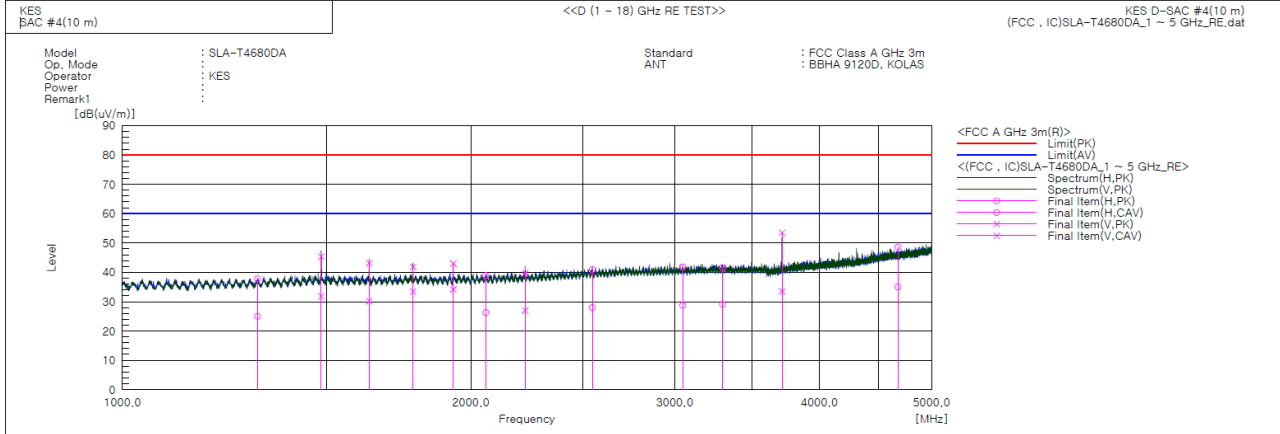
Margin(QP)[dB] = Limit[dB(μ V/m)] - Result(QP) [dB(μ V/m)]

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



Radiated Electric Field Emissions(Above 1 GHz)



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	1308.325	H	42.1	29.3	-4.3	37.8	25.0	80.0	60.0	42.2	35.0	400.0	327.0	
2	1484.594	V	48.8	35.2	-3.4	45.4	31.8	80.0	60.0	34.6	28.2	100.0	86.0	
3	1633.135	V	46.0	33.0	-2.8	43.2	30.2	80.0	60.0	36.8	29.8	133.0	343.0	
4	1782.203	V	44.0	35.7	-2.2	41.8	33.5	80.0	60.0	38.2	26.5	110.0	101.0	
5	1930.420	V	44.6	35.8	-1.6	43.0	34.2	80.0	60.0	37.0	25.8	100.0	342.0	
6	2059.558	H	39.9	27.3	-1.0	38.9	26.3	80.0	60.0	41.1	33.7	365.0	297.0	
7	2227.777	V	40.0	27.2	-0.2	39.8	27.0	80.0	60.0	40.2	33.0	165.0	152.0	
8	2546.126	H	39.4	26.5	1.5	40.9	28.0	80.0	60.0	39.1	32.0	150.0	223.0	
9	3047.200	H	38.4	25.4	3.4	41.8	28.8	80.0	60.0	38.2	31.2	400.0	308.0	
10	3298.854	H	37.6	25.1	4.0	41.6	29.1	80.0	60.0	38.4	30.9	369.0	237.0	
11	3712.953	V	48.0	28.0	5.5	53.5	33.5	80.0	60.0	26.5	26.5	100.0	161.0	
12	4676.754	H	37.2	23.6	11.4	48.6	35.0	80.0	60.0	31.4	25.0	350.0	145.0	

◆ 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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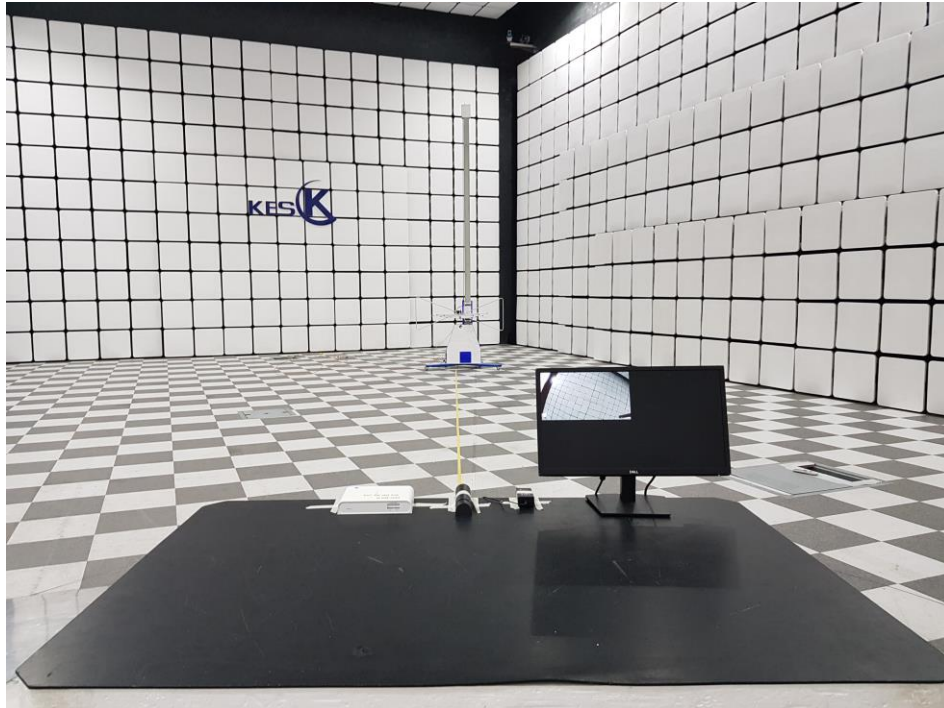
Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports



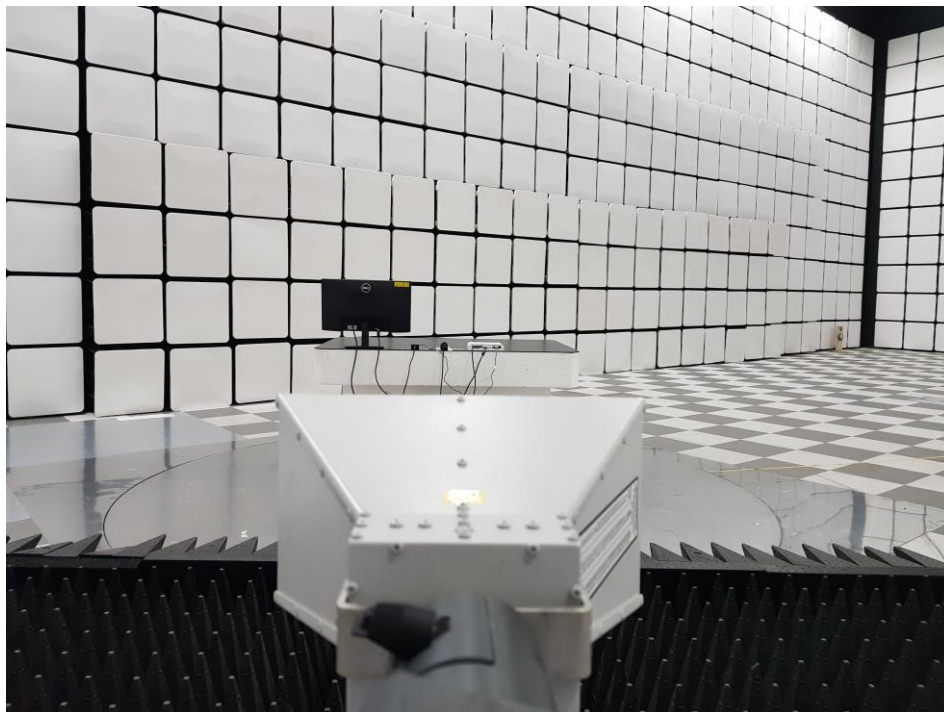
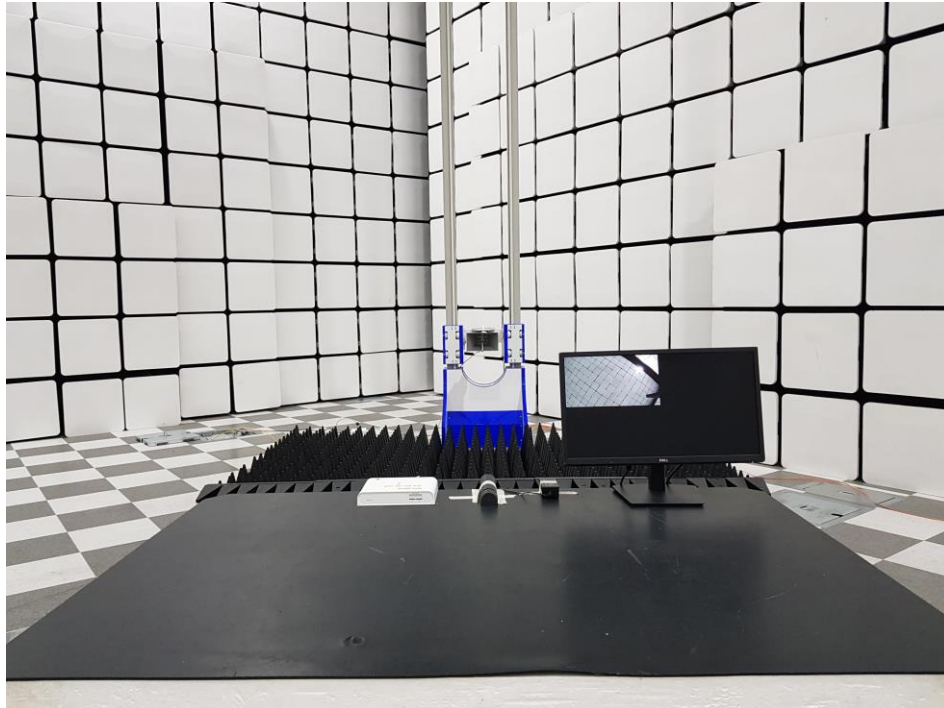
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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EUT External Photographs

(Top)



(Bottom)



EUT Internal Photographs

(Internal View)



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EUT Internal View – Main Board

(Top)



(Bottom)



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EUT Internal View – Cable

(Top)



(Bottom)



Label Photographs

FCC Label



HANWHA VISION VIETNAM COMPANY LIMITED

SLA-T4680DA

IC Label

CAN ICES-003(A) / NMB-003(A)

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.