



EMC TEST REPORT For VCCI

Test Report No. : KES-E1-18T0351-R2
Date of Issue : Feb. 24, 2023
Product name : 2M LENS Module
Model/Type No. : SLA-2M2400Q
Variant Model : SLA-2M2402D
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 : ☐ Declaration of Conformity
☒ Verification
☐ Certification
Date of Receipt : Jun. 12, 2018
Test date : Jun. 15, 2018
Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Kang Hyeon, 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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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 26, 2018	KES-E1-18T0351	Issued
Jul. 27, 2020	KES-E1-18T0351-R1	Reissue due to the addition of a derived model
Feb. 24, 2023	KES-E1-18T0351-R2	Change the Applicant and manufacturer at the request of the customer, Factory deletion at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

SLA-2M2400Q
1/2.8" 2M CMOS
1945(H) x 1109(V) 2.16M
1945(H) x 1097(V) 2.13M
Progressive Scan
Color : 0.055Lux(F2.0, 1/30sec, 30IRE) B/W : 0.055Lux(F2.0, 1/30sec, 30IRE)
50dB
150dB
Electrical
2.4mm
F2.0
Fixed focal
M12 Lens module with main unit
Black / Plastic



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.

Voltage ☐ 230 Vac ☒ 100 Vac ☐ 24 Vac ☐ 12 Vdc ☐ PoE

Frequency ☐ 50 Hz ☒ 60 Hz ☐ Hz

1.2 Variant Model Differences

Added a simple variant model for the purpose of the vendor management and a country of origin for the dualization.

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
2M LENS Module	SLA-2M2400Q	-	HANWHA VISION VIETNAM COMPANY LIMITED	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	ProBook4430s	-	HP	-
Notebook Adaptor	SeriesPPP0009H	-	CHICONY POWER TECHNOLOGY (SUZHOU) CO.,LTD,	-
NETWORK CAMERA	PNM-9000VQ	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
2M LENS Module	SLA-2M2800Q	-	HANWHA VISION VIETNAM COMPANY LIMITED	1EA
2M LENS Module	SLA-2M3600Q	-	HANWHA VISION VIETNAM COMPANY LIMITED	1EA
2M LENS Module	SLA-2M6000Q	-	HANWHA VISION VIETNAM COMPANY LIMITED	1EA
POE Adaptor	PT-PSE109GBRO-A	PT1817220025	PROCET	-



1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
2M LENS Module (EUT)	-	NETWORK CAMERA	-	-	-
NETWORK CAMERA	-	2M LENS Module	-	-	-
	-	2M LENS Module	-	-	-
	-	2M LENS Module	-	-	-
	RJ-45	POE Adaptor	RJ-45	4.0	U
Notebook	RJ-45	POE Adaptor	RJ-45	4.0	U

* Unshielded=U, Shielded=S

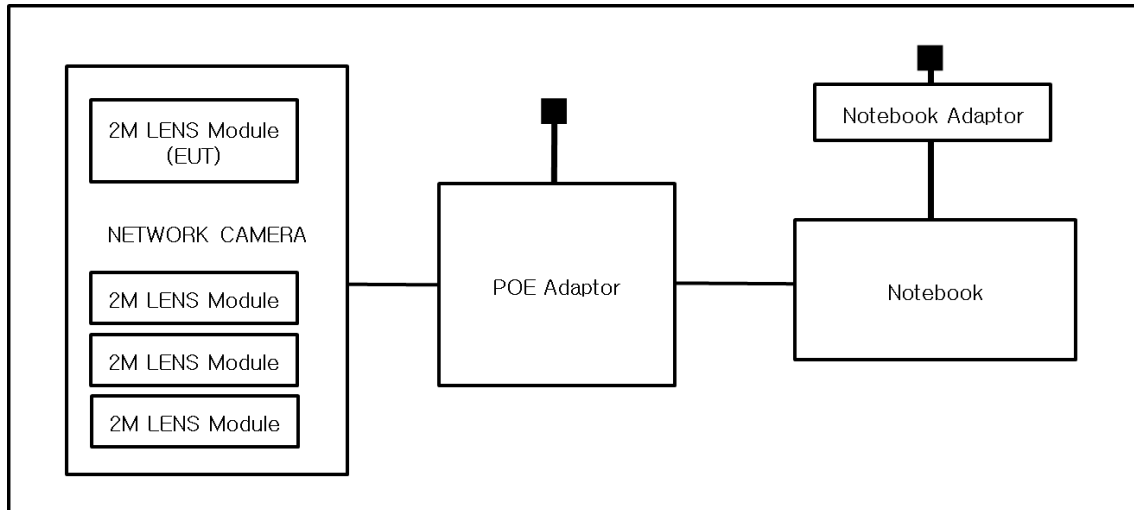
1.7 EUT Operating Mode(s)

Test mode	operating
PoE	E.U.T Monitoring, Ping Test

EUT Test operating S/W		
Name	Version	Manufacture Company
Webviewer	-	Hanwha Vision Co., Ltd

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:

☐ **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



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- | | | |
|---|---|----------------------------------|
| ☒ VCCI V-3 / 2015.04 | ☒ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2009 +A1:2010 | ☐ 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 | | |

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2.1 Conducted Emissions Mains Power Ports

Test Date

Jun. 15, 2018

Test Location

Electro wave Shieldroom #3

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	04, 25, 2019
☒	LISN	ENV216	R & S	101137	01, 31, 2019
☒	LISN	ENV216	R & S	101786	04, 25, 2019

Test Conditions

Temperature: 23,0 °C
Relative Humidity: 48,6 % 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 Conducted Emissions at Telecommunication Ports

Test Date

N/A

Test Location

Electro wave Shieldroom #3

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	04, 25, 2019
☐	LISN	ENV216	R & S	101137	01, 31, 2019
☐	LISN	ENV216	R & S	101786	04, 25, 2019
☐	8-WIRE ISN CAT3	CAT3 8158	SCHWARZBECK	8158-0019	03, 22, 2019
☐	8-WIRE ISN CAT5	CAT5 8158	SCHWARZBECK	8158-0030	03, 22, 2019
☐	8-WIRE ISN CAT6	NTFM 8158	SCHWARZBECK	8158-0029	08, 10, 2018

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

Remarks

N/A



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jun. 15, 2018

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, 11, 2019
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	714	11, 28, 2018

Test Conditions

Temperature: 22,0 °C
Relative Humidity: 56,2 % 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.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jun. 15, 2018

Test Location

SEMI ANECHOIC CHAMBER #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	e3	AUDIX	8.083b	-
☒	EMI TEST RECEIVER	ESU26	R & S	100552	04, 18, 2019
☒	PREAMPLIFIER	8449B	AGILENT	8008A01640	01, 11, 2019
☐	ATTENUATOR	8491A	HP	32173	03, 21, 2019
☒	LOG-PERIODIC ANTENNA	STLP 9149	SCHWARZBECK	9149-255	05, 18, 2019

Test Conditions

Temperature: 23,0 °C

Relative Humidity: 48,6 % 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

Remarks

See Appendix A for test data.

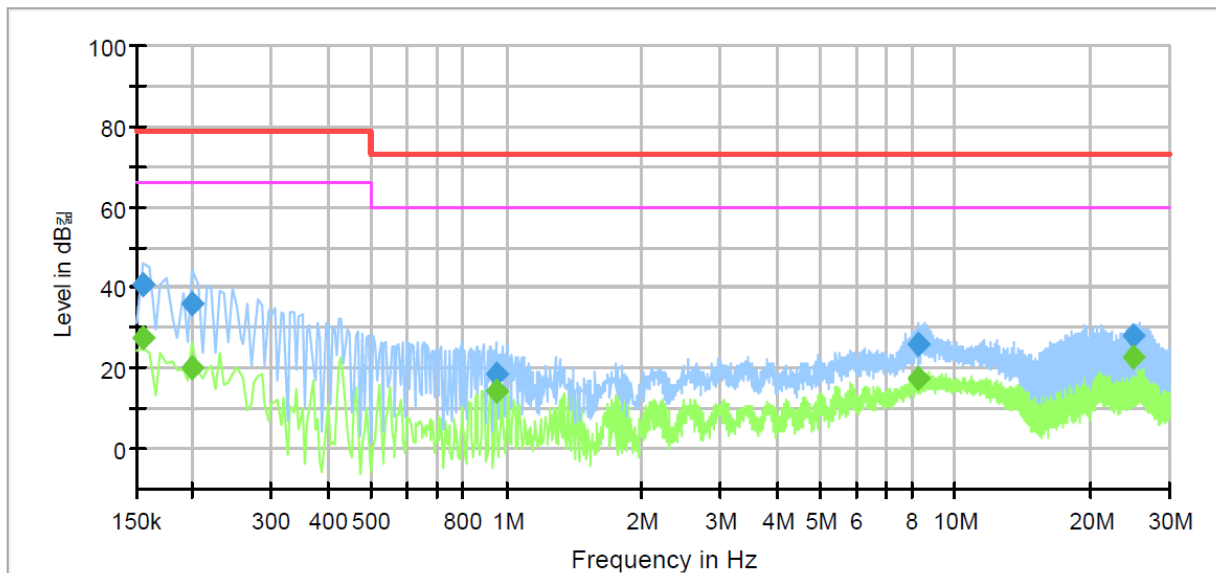
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description: Conducted Emission
 Model No.: SLA-2M2400Q
 Mode: VCCI
 Operator Name: KES



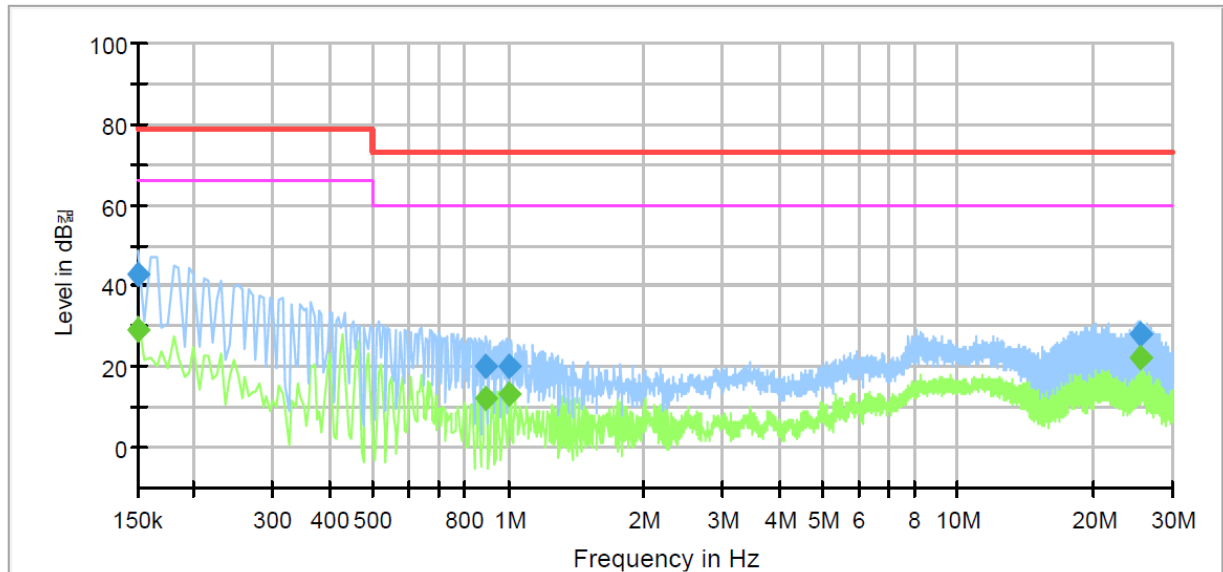
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	27.69	66.00	38.31	1000.0	9.000	L1	9.6
0.155000	40.88	---	79.00	38.12	1000.0	9.000	L1	9.6
0.200000	---	20.14	66.00	45.86	1000.0	9.000	L1	9.6
0.200000	35.77	---	79.00	43.23	1000.0	9.000	L1	9.6
0.950000	---	14.21	60.00	45.79	1000.0	9.000	L1	10.0
0.950000	18.57	---	73.00	54.43	1000.0	9.000	L1	10.0
8.310000	---	17.60	60.00	42.40	1000.0	9.000	L1	9.8
8.310000	26.02	---	73.00	46.98	1000.0	9.000	L1	9.8
24.970000	---	22.96	60.00	37.04	1000.0	9.000	L1	10.3
24.970000	28.34	---	73.00	44.66	1000.0	9.000	L1	10.3

NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Model No.: SLA-2M2400Q
Mode: VCCI
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	---	29.24	66.00	36.76	1000.0	9.000	N	9.6
0.150000	43.04	---	79.00	35.96	1000.0	9.000	N	9.6
0.890000	---	11.98	60.00	48.02	1000.0	9.000	N	9.9
0.890000	20.34	---	73.00	52.66	1000.0	9.000	N	9.9
1.005000	---	13.53	60.00	46.47	1000.0	9.000	N	10.0
1.005000	20.25	---	73.00	52.75	1000.0	9.000	N	10.0
25.460000	---	22.38	60.00	37.62	1000.0	9.000	N	10.2
25.460000	28.24	---	73.00	44.76	1000.0	9.000	N	10.2
25.560000	---	22.43	60.00	37.57	1000.0	9.000	N	10.2
25.560000	28.04	---	73.00	44.96	1000.0	9.000	N	10.2

◆ 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))



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Conducted Emissions at Telecommunication Ports

[10 Mbps]

N/A

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[100 Mbps]

N/A

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

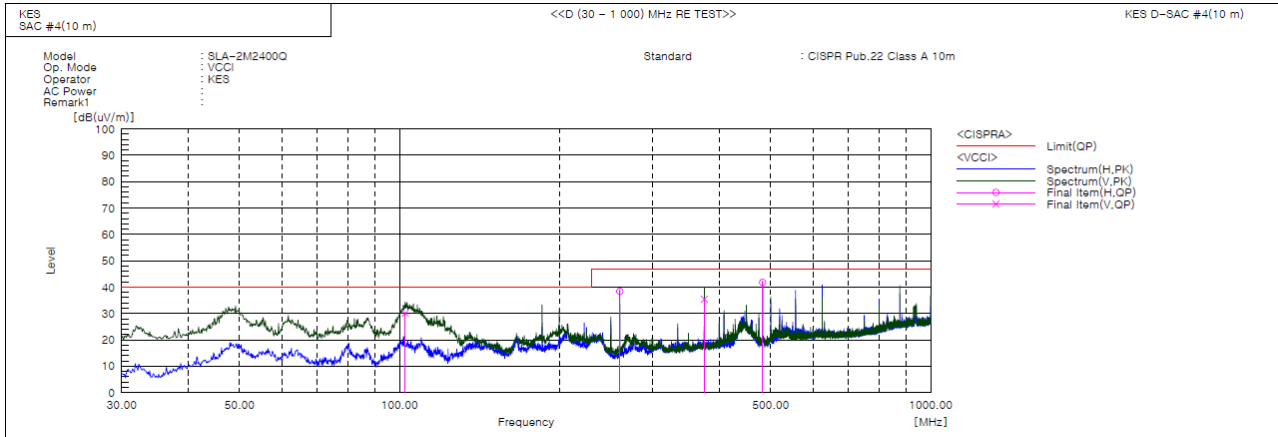
Reading Value : Not shown in the table.

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

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Radiated Electric Field Emissions(Below 1 GHz)



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	102.508	V	59.2	-29.1	30.1	40.0	9.9	150.0	176.0	
2	259.890	H	64.5	-26.1	38.4	47.0	8.6	400.0	248.0	
3	374.956	V	57.8	-22.4	35.4	47.0	11.6	400.0	231.0	
4	482.626	H	61.2	-19.4	41.8	47.0	5.2	200.0	116.0	

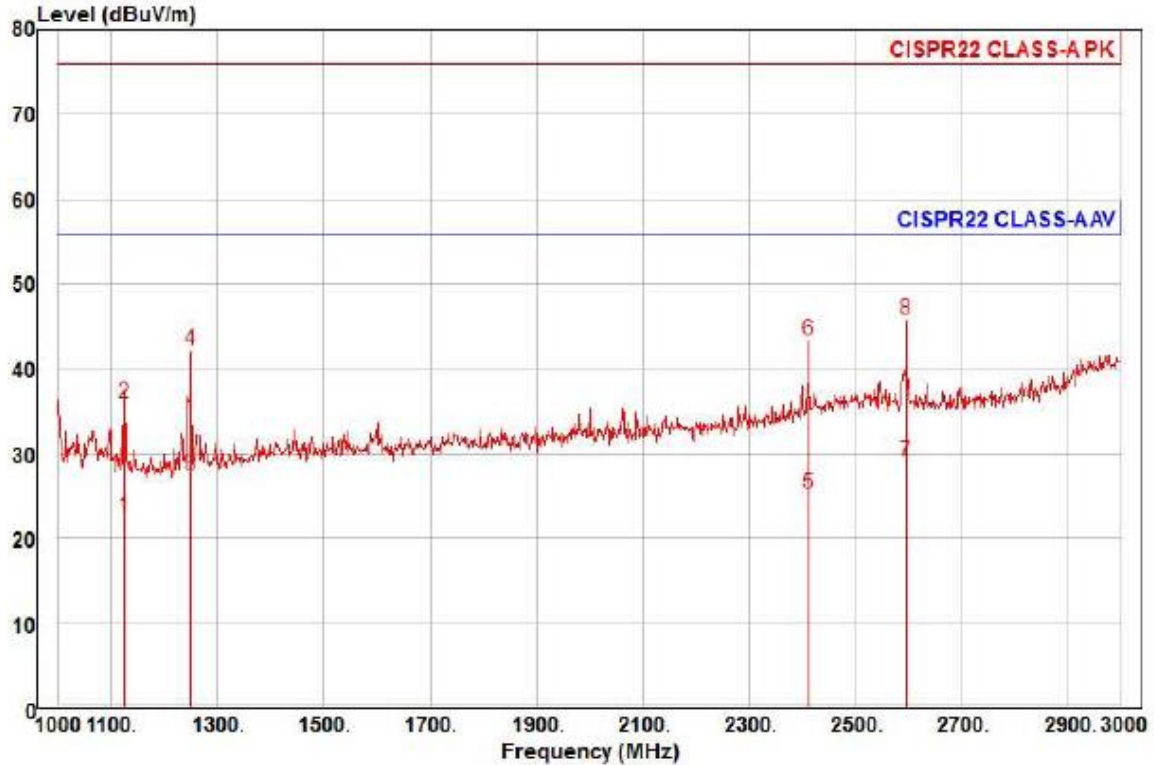
◆ Calculation

Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

Radiated Electric Field Emissions(Above 1 GHz)



Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SLA-2M2400
Mode : VCCI
Memo : (1 ~ 3) GHz

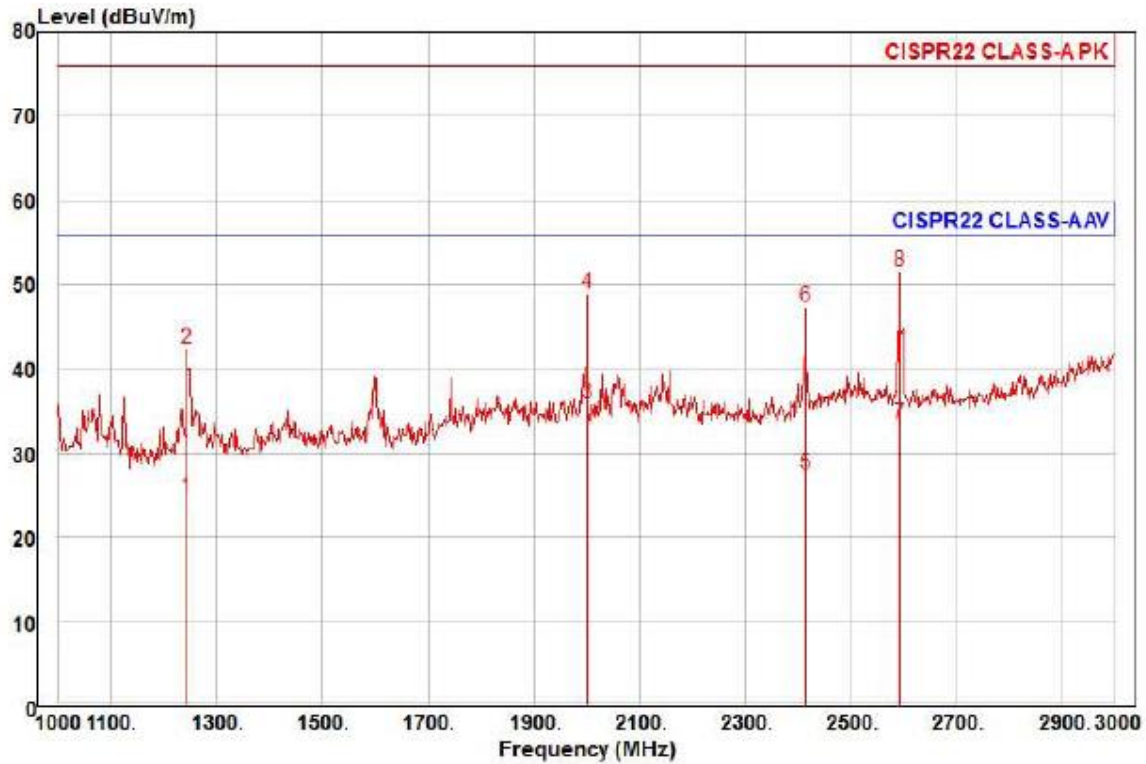
	Read	Ant	Cable	Preamp	TPos	Limit	Over		
Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1124.00	32.75	22.88	6.31	39.49	151	56.00	-33.55	horizontal Average
2	1124.00	46.28	22.88	6.31	39.49	151	76.00	-40.02	horizontal Peak
3	1250.00	36.43	23.26	6.67	39.00	233	56.00	-28.64	horizontal Average
4	1250.00	51.30	23.26	6.67	39.00	233	76.00	-33.77	horizontal Peak
5	2412.00	26.77	27.26	9.43	38.10	219	56.00	-30.64	horizontal Average
6	2412.00	44.79	27.26	9.43	38.10	219	76.00	-32.62	horizontal Peak
7 pp	2596.00	29.44	27.95	9.85	38.07	55	56.00	-26.83	horizontal Average
8 pk	2596.00	46.07	27.95	9.85	38.07	55	76.00	-30.20	horizontal Peak



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Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SLA-2M2400
Mode : VCCI
Memo : (1 ~ 3) GHz

		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1244.00	33.84	23.24	6.65	39.03	189	56.00	-31.30	vertical	Average
2	1244.00	51.57	23.24	6.65	39.03	189	76.00	-33.57	vertical	Peak
3 pp	2000.00	39.80	26.01	8.48	38.36	333	56.00	-20.07	vertical	Average
4	2000.00	52.81	26.01	8.48	38.36	333	76.00	-27.06	vertical	Peak
5	2414.00	28.97	27.27	9.43	38.10	336	56.00	-28.43	vertical	Average
6	2414.00	48.80	27.27	9.43	38.10	336	76.00	-28.60	vertical	Peak
7	2592.00	33.74	27.94	9.84	38.07	236	56.00	-22.55	vertical	Average
8 pk	2592.00	51.83	27.94	9.84	38.07	236	76.00	-24.46	vertical	Peak

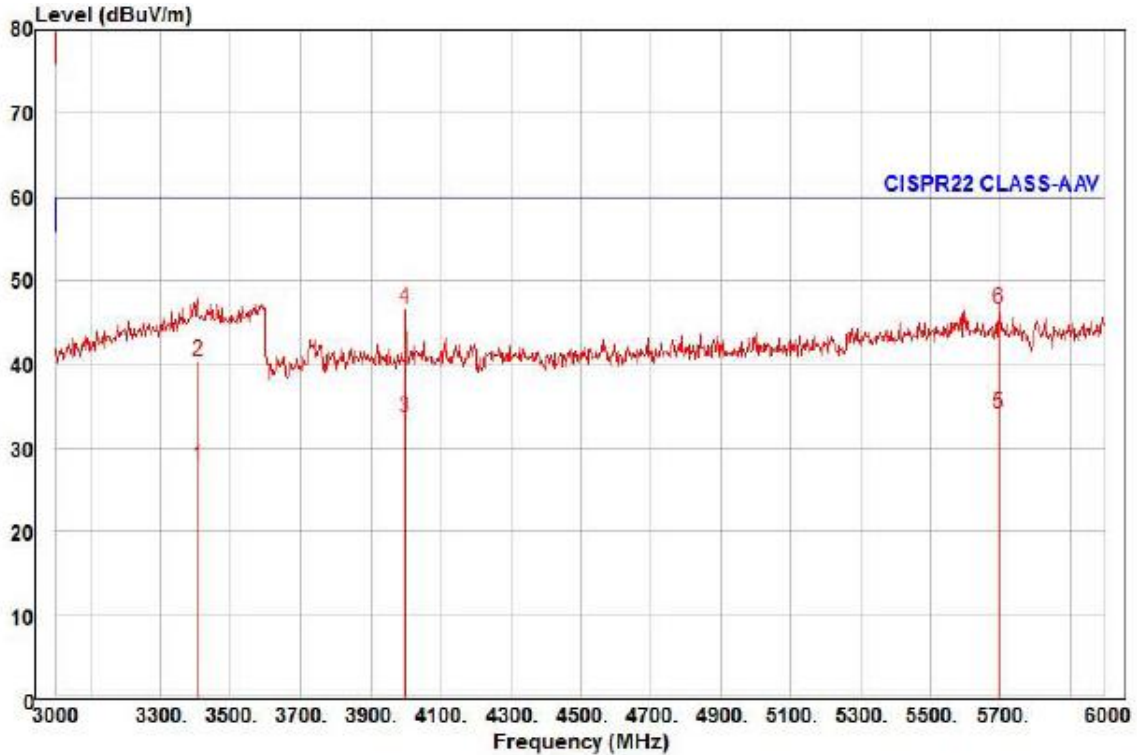
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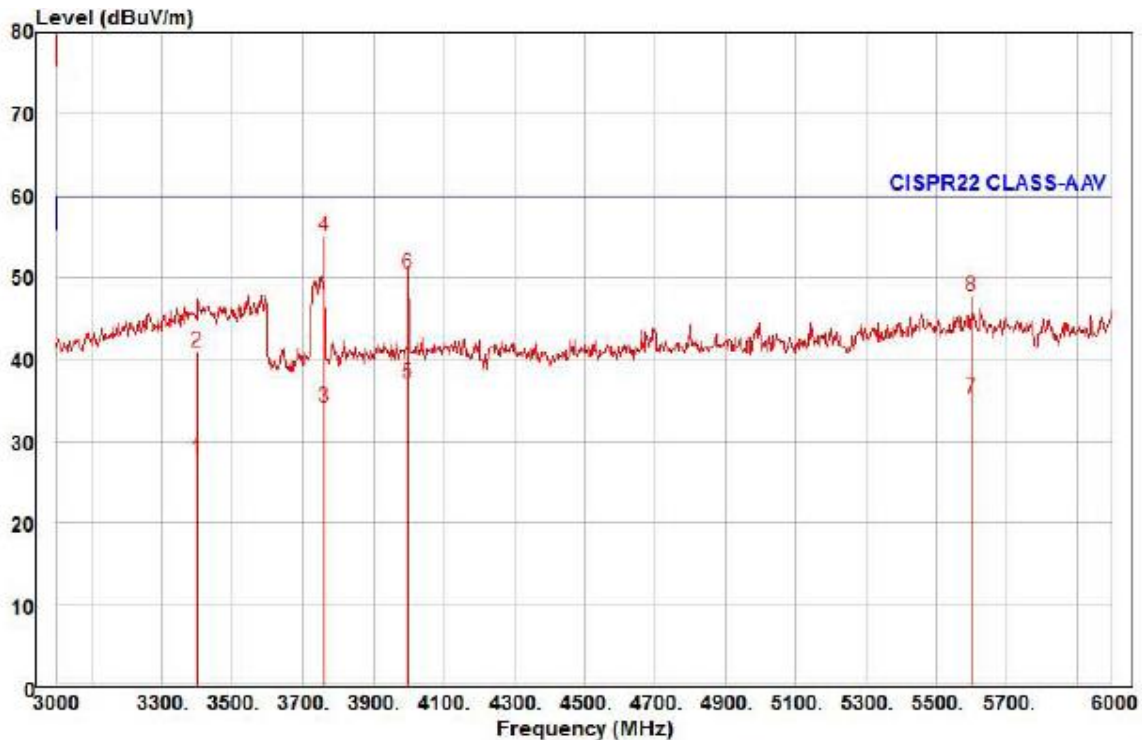
Report No.:
KES-E1-18T0351-R2
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Site : YE0JU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SLA-2M2400
Mode : VCCI
Memo : (3 ~ 6) GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3405.00	23.91	30.88	11.44	38.26	316	60.00	-32.03	horizontal	Average
2	3405.00	36.40	30.88	11.44	38.26	316	80.00	-39.54	horizontal	Peak
3	3999.00	26.80	32.50	12.19	37.84	342	60.00	-26.35	horizontal	Average
4	3999.00	39.81	32.50	12.19	37.84	342	80.00	-33.34	horizontal	Peak
5 pp	5697.00	21.79	35.67	14.95	38.20	122	60.00	-25.79	horizontal	Average
6 pk	5697.00	34.36	35.67	14.95	38.20	122	80.00	-33.22	horizontal	Peak

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Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SLA-2M2400
Mode : VCCI
Memo : (3 ~ 6) GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3399.00	23.90	30.87	11.44	38.26	126	60.00	-32.05	vertical	Average
2	3399.00	36.90	30.87	11.44	38.26	126	80.00	-39.05	vertical	Peak
3	3762.00	28.54	31.86	11.79	38.05	24	60.00	-25.86	vertical	Average
4 pk	3762.00	49.43	31.86	11.79	38.05	24	80.00	-24.97	vertical	Peak
5 pp	3999.00	30.27	32.50	12.19	37.84	356	60.00	-22.88	vertical	Average
6	3999.00	43.76	32.50	12.19	37.84	356	80.00	-29.39	vertical	Peak
7	5601.00	23.09	35.52	14.76	38.17	50	60.00	-24.80	vertical	Average
8	5601.00	35.61	35.52	14.76	38.17	50	80.00	-32.28	vertical	Peak

◆ 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

Test Setup Photos and Configuration

Conducted Voltage Emissions



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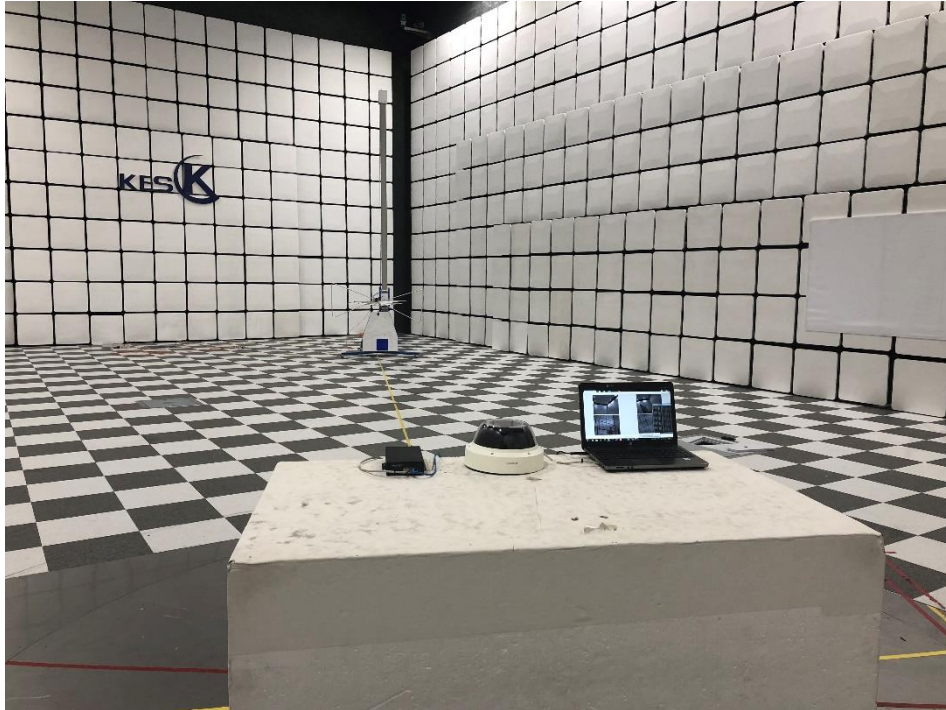
Conducted Telecommunication Emissions

N/A

N/A

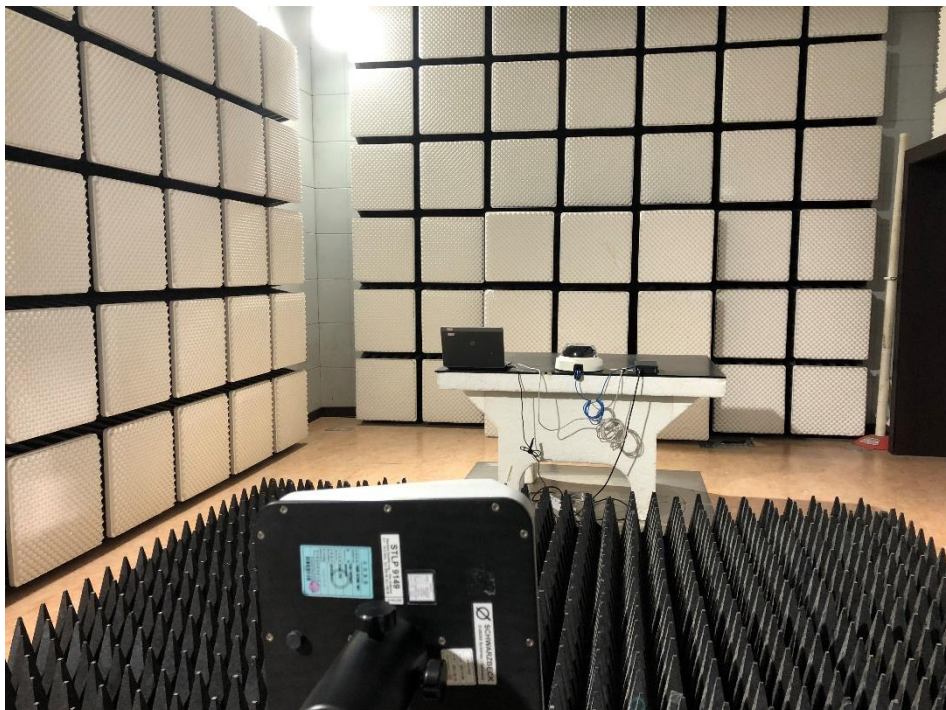
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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EUT External Photographs

(Top)

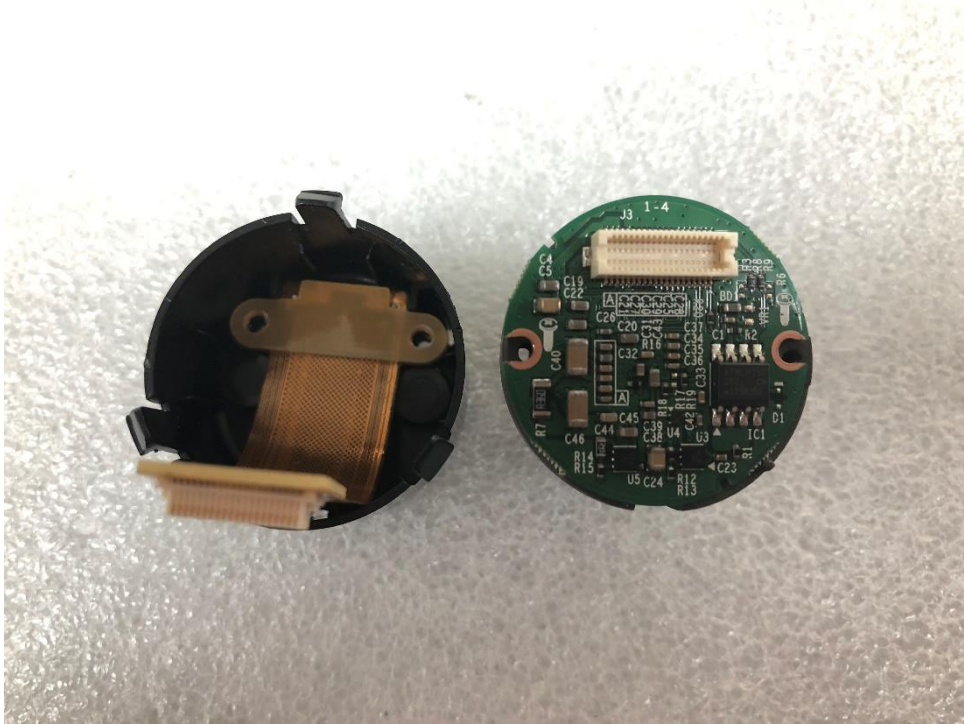


(Bottom)



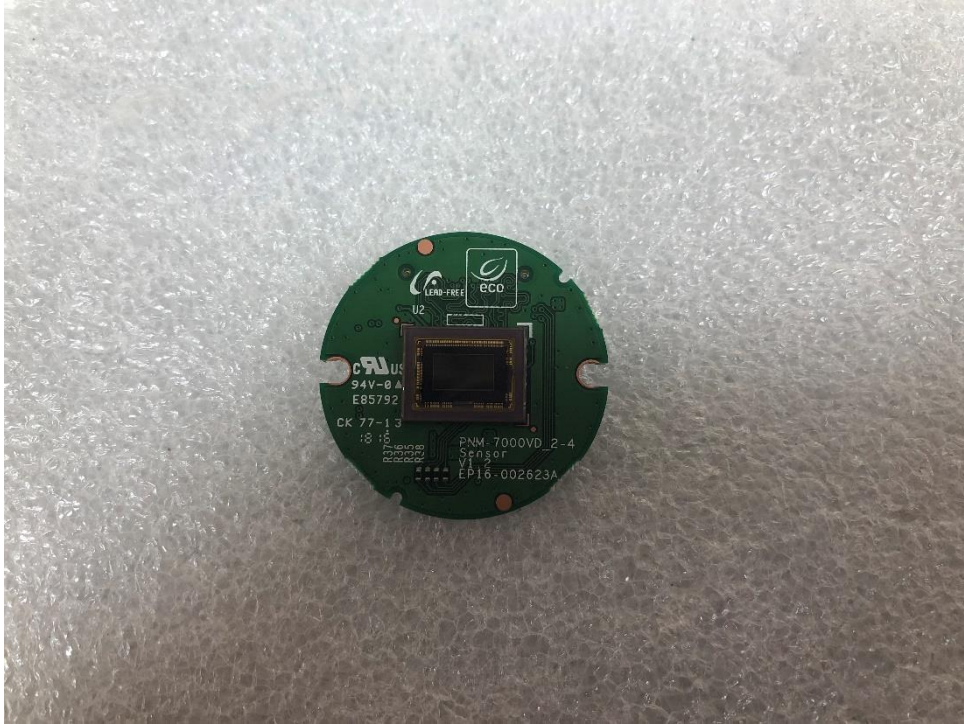
EUT Internal Photographs

(Internal View)



EUT Internal View – Board 1

(Top)



(Bottom)



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