Declaration of Conformity

Hanwha

CE

Type of equipment:	**NETWORK CAMERA**
Brand Name /Trade Mark:	**HANWHA**
Type designation /model:	**SCV-6023RP**
Applicant:	**Hanwha Techwin Company Limited**

In accordance with the following Directives:

2004/108/EC	The Electromagnetic Compatibility Directive

Including amendments by the CE Marking Directive 93/68/EEC

2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment (recast)

The following harmonized European standards or technical specifications have been applied:

EN 55022:2010	Limits and methods of measurement of radio disturbance characteristics of information technology equipment
EN 50130-4:2011+A1:2014	Product family standard: Immunity requirements for components of fire, intruder and social alarm systems
EN 61000-3-3:2013	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection
EN 61000-4-2:2009	Electrostatic discharge immunity test
EN 61000-4-3:2006+A2:2010	Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-4:2012	Electrical fast transient/burst immunity test
EN 61000-4-5:2014	Surge immunity test
EN 61000-4-6:2009	Immunity to conducted disturbances, induced by radio-frequency fields

The CE Marking on the products and/or their packaging signifies that Hanwha Techwin Company Limited holds the reference technical file available to the European Union authorities.

Place and date of issue: 1204, Changwon-daero, Seongsan-gu, Changwon-si, Gyeongsangnam-do,Korea / Jan 26, 2015

Authorized Signatory: Name : Jei Soon, Kang

Title : Principal Research Engineer

Signatur :

EMC TEST REPORT For CE

Test Report No.	:	KES-E1-16T0018
Date of Issue	:	Jan. 26, 2016
Product name	:	ANALOG CAMERA
Model/Type No.	:	SCV-6023RP
Variant Model	:	-
Applicant	:	Hanwha Techwin Company Limited
Applicant Address	:	1204, Changwon-daero, Seongsan-gu, Changwon-si, Gyeongsangnam-do, korea
Manufacturer	:	Tianjin Samsung Techwin Opto-Electronic Co., Ltd.
Manufacturer Address	:	No.11 Weiliu Rd,Micro-Electronic Industrial Park, TEDA, Tianjin, 300385, People's Republic of China
Date of Receipt	:	Jan. 06, 2016
Test date	:	Jan. 19, 2016 – Jan. 21, 2016
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Hyo Jin, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jan. 26, 2016	KES-E1-160018	Issued

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1.0 General Product Description

Main Specifications of E.U.T are:

	SCV-6023RN	SCV-6023RP
Video		
Imaging Device	1/2.9" 2M CMOS	
Total Pixels	2,000(H) x 1,121(V) 2.24M pixels	
Effective Pixels	1,984(H) x 1,105(V) 2.19M pixels	
Scanning System	Progressive Scan	
Horizontal Resolution	1000TVL	
Min. Illumination	Color : 0.45Lux (F2.1, 50IRE); 0.25Lux (F2.1, 30IRE) B/W : 0Lux(IR LED on)	
S / N Ratio	52dB (AGC off, Weight on)	
Video Output	BNC(AHD, CVBS Selectable)	
Resolution	1920 x 1080	
Max, Framerate	30fps @1080p, 30fps@ 720p	
Lens Type		
Focal Length (Zoom Ratio)	4mm	
Max. Aperture Ratio	F2.1	
Angular Field of View	H : 82.2° / V : 44.1°/ D : 97.8°	
Min. Object Distance	0.5m (1.64ft)	
Focus Control	Manual	
Lens Type	Fixed	
Mount Type	Board-in type	
Operational		
On Screen Display	Multi-language Support(16) English, Japanese, Spanish, French, Portuguese, Korean, German, Italian, Russian, Polish, Czech, Romanian, Serbian, Swedish, Danish, Turkish	
Camera Title	Off / On (Displayed 15 characters)	
Day & Night	Auto (ICR) / Color / B/W	
Backlight Compensation	Off / User BLC / HLC	
Wide Dynamic Range	D-WDR	
Digital Noise Reduction	SSNR4 (Off / On)	
Defog	AUTO / MANUAL / OFF	

	SCV-6023RN	SCV-6023RP
Motion Detection	Off / On(4 zones)	
Privacy Masking	Off / On (4 zones rectangle)	
Gain Control	Off / Low / Middle / High / Very High	
White Balance	ATW / Outdoor / Indoor / Manual / AWC(1,800K° ~ 10,500K°)	
Electronic Shutter Speed	1 sec ~ 1/12,000 sec	
Reverse	Off / H-Rev / V-Rev / HV-Rev	
Profile	Basic, Day & Night, Backlight, ITS, Indoor, User	
Alarm	Not support	
Remote control interface	Coaxial	
Protocol	Coax : ACP	
IR Distance	20m(65.62ft)	
Video Transmission Distance	500m(75-5 Coaxial Cable)	
Environmental		
Operating Temperature / Humidity	-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH * Start up should be done at above -10°C	
Ingress Protection	IP66	
Vandal Resistance	IK10	
Electrical		
Input Voltage	12VDC±10%	
Power Consumption	Max. 4.2W	
Mechanical		
Color / Material	Ivory / Aluminum	
Dimension (HxØ)	46 X Φ137mm	
Weight	560g	

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 ☐ 220 Vac ☐ 230 Vac ☐ 240 Vac ☐ 24 Vac ☒ 12 Vdc

Frequency ☐ 50 Hz ☐ 60 Hz ☐ 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
ANALOG CAMERA	SCV-6023RP	-	Tianjin Samsung Techwin Opto-Electronic Co., Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
MONITOR	M1950DM	-	204KCXM31738	-
AC/DC Adapter	PA-1650-68	OE9FA612314100070	LITE-ON TECHNOLOGY CORPORATION	-

1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
ANALOG CAMERA	BNC	MONITOR	RCA	5.0	U

* Unshielded=U, Shielded=S

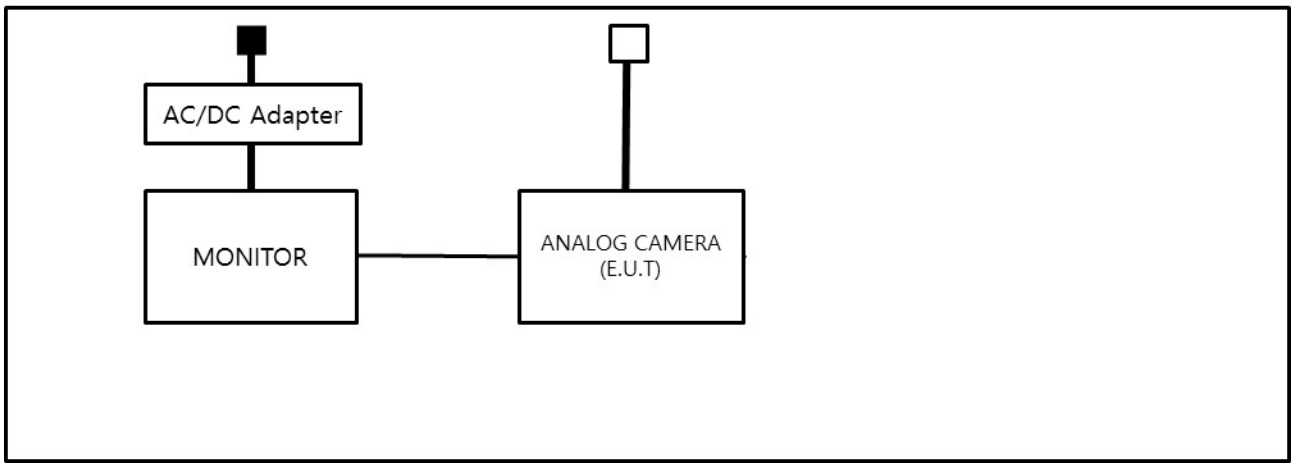
1.7 E.U.T Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

Test mode	Normal operating
OP	MONITOR CHECK

1.8 Configuration

■ AC Main
□ DC Main



1.9 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.

1.10 Test Facility

The measurement facility is located at 473-29 Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	**FCC**	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	
JAPAN	**VCCI**	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	R-4308, C-4798, T-2311, G-914
KOREA	**MSIP**	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KR0100
Canada	**IC**	3 & 10 meter Open Area Test Sites and one conducted site	4769B-1
Europe	**CE**	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	
International	**KOLAS**	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2004/108/EC**

☐ 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 55022:2010	☒ 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		
☐ VCCI V-3 / 2013.04	☐ Class A	☐ Class B
☐ AS / NZS CISPR22:2009 +A1:2010	☐ Class A	☐ Class B
☐ 47 CFR Part 15, Subpart B / ANSI C63.4-2009	☐ Class A	☐ Class B
☐ IC Regulation ICES-003 : 2012 / ANSI C63.4-2014	☐ Class A	☐ Class B
☐ CISPR 22:2009 +A1:2010	☐ Class A	☐ Class B

☐ **R&TTE – Directive 1999/5/EC**

☐ 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 at Mains Power Ports

Test Date
N/A

Test Location
Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test Receiver	ESR3	R&S	101783	05, 06, 2016
☐	LISN	ENV216	R&S	101137	02, 10, 2016
☐	LISN	ENV216	R&S	101786	05, 06, 2016
☐	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions
Temperature: ℃
Relative Humidity: %

.

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test Receiver	ESR3	R&S	101783	05, 06, 2016
☐	LISN	ENV216	R&S	101137	02, 10, 2016
☐	LISN	ENV216	R&S	101786	05, 06, 2016
☐	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 02, 2016
☐	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 02, 2016
☐	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 14, 2016
☐	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions
Temperature: ℃
Relative Humidity: %

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.

2.3 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Jan. 18, 2016

Test Location
☐ Open Area Test Site #1 ☒ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R&S	101781	05, 06, 2016
☒	Trilog-Broadband Antenna	VULB 9163	SCHWARZBECK	9168-713	05, 15, 2017
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions
Temperature: -7,8 ℃
Relative Humidity: 41.0 %

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
Jan. 19, 2016

Test Location
Semi Anachoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESU26	R&S	100552	05, 06, 2016
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 23, 2016
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☒	Semi Anachoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-

Test Conditions
Temperature: 19,7 ℃
Relative Humidity: 38,2 %

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.

2.5 Harmonic Current Emissions

Test Date
N/A

Test Location
Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	AC Source	ACS 500 N	EM TEST	V1024106760	08, 13, 2016
☐	Digital Power Analyzer	DPA 500 N	EM TEST	V1024106759	08, 13, 2016

Test Conditions
Temperature: ℃
Relative Humidity: %

Classification of Equipment for Harmonic Current Emissions
☐ Class A
☐ Class B
☐ Class C(Below 25 W)
☐ Class C(Above 25 W)
☐ Class D

Test Results
The requirements are:

☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks
Because the E.U.T power is less than 75 W, limits are not specified.
See Appendix A for test data.

2.6 Voltage Fluctuations and Flicker

Test Date
N/A

Test Location
Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	AC Source	ACS 500 N	EM test	V1024106760	08, 13, 2016
☐	Digital Power Analyzer	DPA 500 N	EM test	V1024106759	08, 13, 2016

Test Conditions
Temperature: ℃
Relative Humidity: %

Test Results
The requirements are:

☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks
See Appendix A for test data.

3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:
EN 50130-4:2011 +A1:2014 Alarm systems-Part 4: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

which could be interpreted by associated equipment as a change, and no such

Flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any

change in outputs, which could be interpreted by associated equipment as a change.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any

change in outputs, which could be interpreted by associated equipment as a change,

and no such flickering of indicators oeuvres at U = 130 dBμV.

For component of CCTV systems, where the status is monitored by observing the TV picture,

then deterioration of the picture is allowed at U = 140 dBμV, providing:

(a) there is no permanent damage or change to the EUT

(e.g. no corruption of memory or changes to programmable settings etc.)

(b) at U = 130 dBμV, any deterioration of the picture is so minor that the system could

still be used; and

(c) there in no observable deterioration of the picture at U = 120 dBμV.

Voltage dip/interruption / Voltage variation

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual

change in the EUT or any change in outputs, which could be interpreted by associated equipment

as a change. The EUT shall meet the acceptance criteria for the functional test, after the conditioning.

3.1 Electrostatic Discharge

Reference Standard
오류! 참조 원본을 찾을 수 없습니다.

Test Date
Jan. 18, 2016

Test Location
EMS-ESD: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	06, 30, 2016
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions
Temperature: 19,7 ℃
Relative Humidity: 38,2 %
Atmospheric Pressure: 100,6 kPa

Test Specifications
Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

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

Polarity: Positive and Negative

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

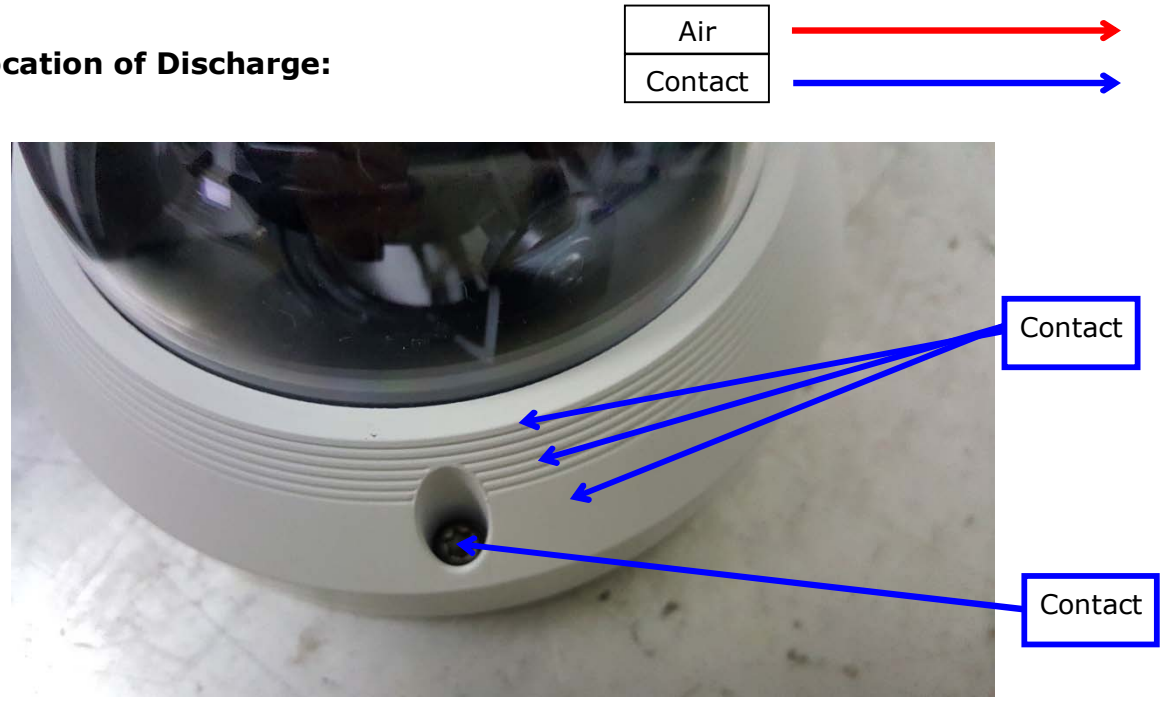
Discharge Voltage:

Contact	Air	HCP	VCP
☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

Location of Discharge:



Test Data

Indirect Discharge

No.	Test Point	Discharge Method	Performance Observation	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Performance Observation	Remarks
1		Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
-	-	-	-	-

Note: "Blank" = Not performed

Observations:
Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

3.2 Radiated Electric Field Immunity

Reference Standard
오류! 참조 원본을 찾을 수 없습니다. +A2:2010

Test Date
Jan. 20, 2016

Test Location
EMS-RS: ☐ Semi Anachoic Chamber #1 ☒ Semi Anachoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	Integrated measurement system for EMS	IMS	R&S	100027	08, 13, 2016
☐	Average Power Sensor	NRP-Z91	R&S	100784	08, 13, 2016
☐	Power Amplifier	100W1000M1	AMPLIFIER RESEARCH	19510	08, 13, 2016
☐	High Power Dual Directional Coupler	C3910	WERLATONE	30447	08, 13, 2016
☐	Hybrid Log-Periodic Antenna	HLP-2603	EMC Automation (TDK)	100400	-
☐	Semi Anachoic Chamber #1	-	KES	-	-
☒	SiGNAL GENERATOR	SMB 100A	R&S	108252	08, 13, 2016
☒	BROADBAND AMPLIFIER	BBA100	R&S	101239	08, 13, 2016
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 13, 2016
☒	POWER METER	NRP2	R&S	103475	08, 13, 2016
☒	AVG POWER SENSOR	NRP-Z91	R&S	102526	08, 13, 2016
☒	AVG POWER SENSOR	NRP-Z91	R&S	102527	08, 13, 2016
☒	Stacked Log.-Per.Antenna	STLP 9128 D	Schwarzbeck	9128D038	-
☒	Semi Anachoic Chamber #2		SEMITEC	-	-

Test Conditions

Temperature: 18,4 ℃
Relative Humidity: 37,5 %
Atmospheric Pressure: 101,8 kPa

Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

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

Frequency Range: ☐ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz
☒ 80 MHz to 2,7 GHz

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

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

# of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

Test Data

Side Exposed	Observation	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

Note: "Blank" = Not performed

Observations:
Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

3.3 Electrical Fast Transients/Bursts

Reference Standard
오류! 참조 원본을 찾을 수 없습니다.12

Test Date
Jan. 21, 2016

Test Location
EMS-EFT: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☒	Capacitive Coupling Clamp	HFK	EM TEST	070925	07, 14, 2016
☒	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016
☐	Transient Test System	TRA3000F-S-D-V	EMC PARTNER AG	1524	04, 01, 2016
☐	MotorVariac	VAR-EXT1000	EMC PARTNER AG	1507	04, 01, 2016
☐	Capacitive Coupling Clamp	CN-EFT1000	EMC PARTNER AG	1528	04, 01, 2016

Test Conditions
Temperature: 21,3 ℃
Relative Humidity: 37,2 %
Atmospheric Pressure: 101,2 kPa

Test Specifications

Pulse Amplitude & Polarity: (Power Lines)	☒ ± 1.0 kV ☐ ± 4.0 kV	☐ ± 2.0 kV
Pulse Amplitude & Polarity: (Signal Lines)	☐ ± 0.5 kV ☐ ± 2.0 kV	☒ ± 1.0 kV
Burst Period:	☒ 300 ms	☐ 2 s
Repetition Rate:	☐ 5 kHz	☒ 100 kHz
Duration of Test Voltage:	☒ ≥ 1 min	
Required Performance Criteria:	☒ Complied	

Test Data

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

Mode of Application	OBSERVATIONS	
	(+) Burst (㎸)	(-) Burst (㎸)
-	-	-

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

Mode of Application	OBSERVATIONS	
	(+) Burst (㎸)	(-) Burst (㎸)
L - N	Complied	Complied

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	OBSERVATIONS	
	(+) Burst (㎸)	(-) Burst (㎸)
BNC	Complied	Complied

Note: "Blank" = Not performed

Observations:
A – No degradation of function
B – Distortion/Error of function (self-recoverable)
C – Loss of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

3.4 Surge Transients

Reference Standard
오류! 참조 원본을 찾을 수 없습니다.

Test Date
Jan. 21, 2016

Test Location
EMS-Surge: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☒	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016
☐	CDN	CNV 504N	EM TEST	V0936105121	04, 01, 2016
☐	Transient Test System	TRA3000F-S-D-V	EMC PARTNER AG	1524	04, 01, 2016
☐	MotorVariac	VAR-EXT1000	EMC PARTNER AG	1507	04, 01, 2016

Test Conditions
Temperature: 21,3 ℃
Relative Humidity: 37,2 %
Atmospheric Pressure: 101,2 kPa

Test Specifications

Power Lines

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

Surge Amplitude:
Common Mode
☐ (0,5 / 1,0 / 2,0) kV
Differential Mode
☐ (0,5 / 1,0) kV

Number of Surges: ☐ 5 surges per angle

Angle: ☐ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity: ☐ Positive & Negative

Repetition Rate: ☐ 1 surge per min ☐ 1 surge per 30 sec.

Required Performance Criteria: ☐ Complied

Signal Lines

Source Impedance: 42 ohm for common mode
Surge Amplitude: Common Mode
☒ (0,5 / 1,0) kV

Number of Surges: ☒ 5 Surges

Polarity: ☒ Positive & Negative

Repetition Rate: ☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☐ Complied

Test Data

Power Lines

☐ Line to Line – Differential Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (㎸)	(-) Surge (㎸)
L - N		

☐ Line to Earth – Common Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (㎸)	(-) Surge (㎸)
L - PE		
N - PE		

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (㎸)	(-) Surge (㎸)
BNC	Complied	Complied

Note: "Blank" = Not performed

Observations:
A – No degradation of function
B – Distortion/Error of function (self-recoverable)
C – Loss of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

No any function degraded during the test.

3.5 Conducted Disturbance

Reference Standard
오류! 참조 원본을 찾을 수 없습니다.

Test Date
Jan. 21, 2016

Test Location
EMS-CS: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Continuous Wave Generator	CWS 500N1	EM TEST	V0936105119	09, 25, 2016
☒	6dB Attenuator	ATT6	EM TEST	1208-34	08, 13, 2016
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 13, 2016
☐	CDN	CDN-T2-RJ11	EM TEST	0909-07	08, 13, 2016
☐	CDN	CDN-T4	EM TEST	0909-08	08, 13, 2016
☐	CDN	CDN-T8RJ45	EM TEST	0909-09	08, 13, 2016
☐	CDN	CDN-AF2	EM TEST	0909-10	08, 13, 2016
☐	CDN	CDN-AF4	EM TEST	0909-11	08, 13, 2016
☒	EM Injection Clamp	EM 101	Liithi	35943	02, 11, 2016
☐	Continuous Wave Generator	CWS 500 N1	EM TEST	P1251106910	04, 01, 2016
☐	6 dB Attenuator	ATT6/75	EM TEST	1012-35	04, 01, 2016
☐	CDN	CDN-M2/M3N	EM TEST	0213-10	04, 01, 2016
☐	EM Injection Clamp	EM 101	Liithi	36152	04, 06, 2016

Test Conditions
Temperature: 21,2 ℃
Relative Humidity: 37,2 %
Atmospheric Pressure: 101,2 kPa

Test Specifications

Frequency range: ☒ 150 ㎑ to 80 ㎒ ☐ 10 ㎑ to 30 ㎒
☐ 150 ㎑ to 230 ㎒ ☐ 10 ㎑ to 100 ㎒

Voltage Level: ☐ 1 Vrms ☐ 3 Vrms
☒ 10 Vrms

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

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

Required Performance Criteria: ☒ Complied

Test Data

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observation

☒ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observation
Input d.c. power port	CDN (☒M2, ☐M3)	Complied

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observation
BNC	EM Injection Clamp	Complied

Notes: CDN = Coupling Decoupling Network
EMC = Electro Magnetic Clamp
"blank" = Not performed

Observations:
A – No degradation of function
B – Distortion/Error of function (self-recoverable)
C – Loss of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

No any function degraded during the test.

3.6 Power Frequency Magnetic Field Immunity

Reference Standard
오류! 참조 원본을 찾을 수 없습니다.

Test Date
N/A

Test Location
EMS-Magnetic: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	Magnetic coil	MS100	EM TEST	0809-10	08, 13, 2016
☐	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016
☐	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☐	Current Transformer	MC2630	EM TEST	0307-46	08, 13, 2016

Test Conditions
Temperature: ℃
Relative Humidity: %
Atmospheric Pressure: kPa

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

Frequency: ☐ 50 Hz ☐ 60 Hz

Required Performance Criteria: ☐ A

Test Data

☐ Immersion method

Coil orientation	Observation
X - axis	
Y - axis	
Z - axis	

☐ Proximity method

Coil orientation	Observation

Note: "blank" = Not performed

Observations:
A – No degradation of function
B – Distortion/Error of function (self-recoverable)
C – Loss of function

Test Results

☐ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

NOT APPLICABLE

3.7 Voltage Dips and Short Interruptions

Reference Standard
오류! 참조 원본을 찾을 수 없습니다.

Test Date
N/A

Test Location
EMS-Voltage dip: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☐	Capacitive Coupling Clamp	HFK	EM TEST	070925	07, 14, 2016
☐	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016
☐	Transient Test System	TRA3000F-S-D-V	EMC PARTNER AG	1524	04, 01, 2016
☐	MotorVariac	VAR-EXT1000	EMC PARTNER AG	1507	04, 01, 2016
☐	Capacitive Coupling Clamp	CN-EFT1000	EMC PARTNER AG	1528	04, 01, 2016

Test Conditions
Temperature: ℃
Relative Humidity: %
Atmospheric Pressure: kPa

Test Specifications & Observations/Remarks

Test Level	Duration [in period/ms (50 Hz)]	Criteria	Results
☐ 0 %Ut (100 % dip)	☐ 0,5 /10	—	—
	☐ 1,0 /20	—	—
	☐ 5,0 /100	—	—
	☐ 10 /200	—	—
	☐ 25 /500	—	—
	☐ 50 /1 000	—	—
	☐ 250 /5 000	—	—
☐ 40 %Ut (60 % dip)	☐ 0,5 /10	—	—
	☐ 1,0 /20	—	—
	☐ 5,0 /100	—	—
	☐ 10 /200	—	—
	☐ 25 /500	—	—
	☐ 50 /1 000	—	—
☐ 70 %Ut (30 % dip)	☐ 0,5 /10	—	—
	☐ 1,0 /20	—	—
	☐ 5,0 /100	—	—
	☐ 10 /200	—	—
	☐ 25 /500	—	—
	☐ 50 /1 000	—	—

Observations:
A – No response observed from E.U.T
B – Unit shuts down then automatically restarts when full voltage is restored.
C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

Test Results

☐ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

Refer to the results

APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

N/A

[NEUTRAL]

N/A

Conducted Emissions at Telecommunication Ports

[10 Mbps]

N/A

[100 Mbps]

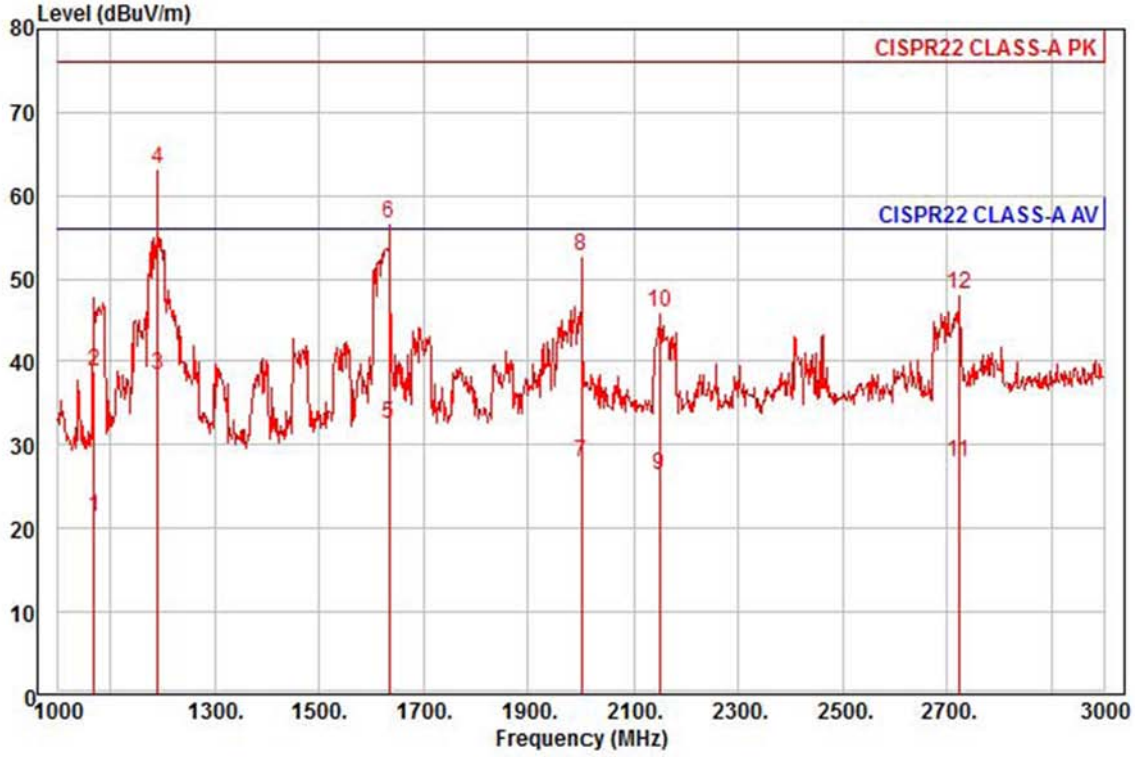
N/A

Radiated Electric Field Emissions(Below 1 ㎓)

Frequency	Amplitude	ANT Polar. (H/V)	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin [dB]
[㎒]	[dB㎶]		[m]	ANT. [dB/m]	Cable [dB]	[dB㎶/m]	[dB㎶/m]	
210.37	16.20	H	2.30	11.53	3.98	31.71	40.00	8.29
222.95	11.87	H	1.20	11.81	4.07	27.75	40.00	12.25
260.81	10.33	V	1.39	12.62	4.42	27.37	47.00	19.63
260.86	13.96	H	1.74	12.62	4.42	31.00	47.00	16.00
297.75	9.30	V	1.22	13.34	4.90	27.54	47.00	19.46
371.30	19.36	H	2.36	15.03	5.45	39.84	47.00	7.16
371.48	11.25	V	1.00	15.04	5.45	31.74	47.00	15.26
519.75	12.95	V	1.25	17.53	6.74	37.22	47.00	9.78
519.77	10.28	H	2.33	17.53	6.74	34.55	47.00	12.45

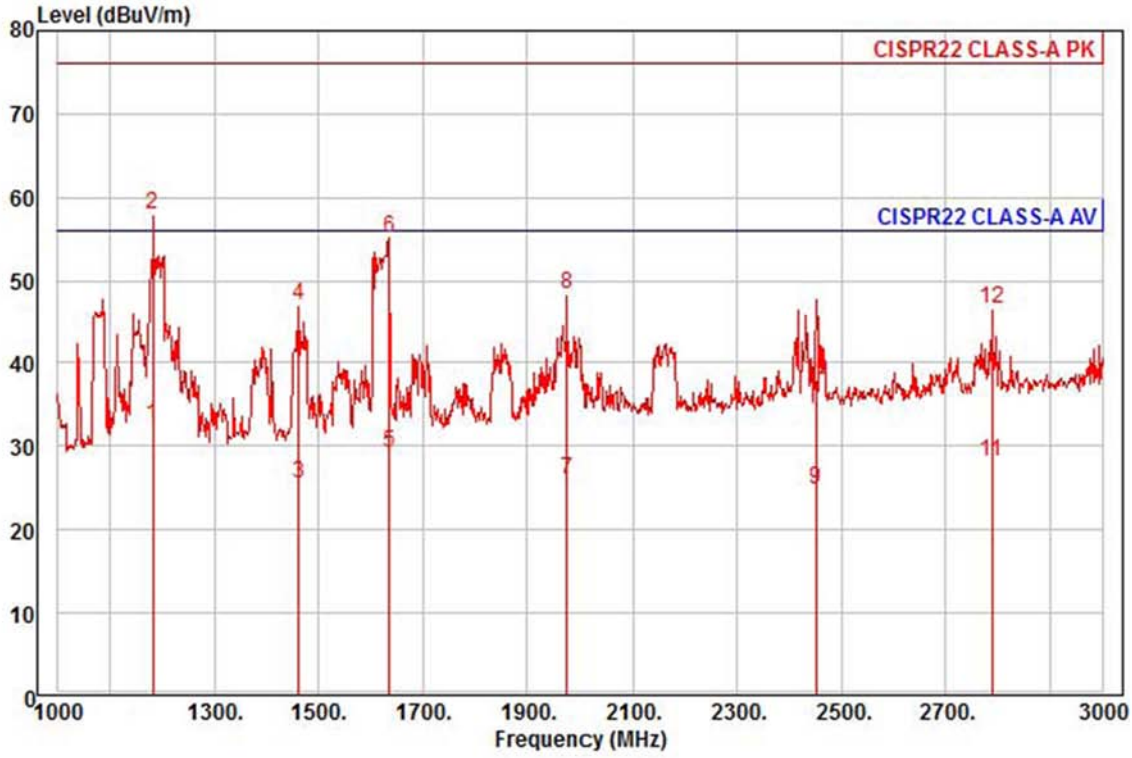
* H : Horizontal, V : Vertical

Radiated Electric Field Emissions(Above 1 ㎓)



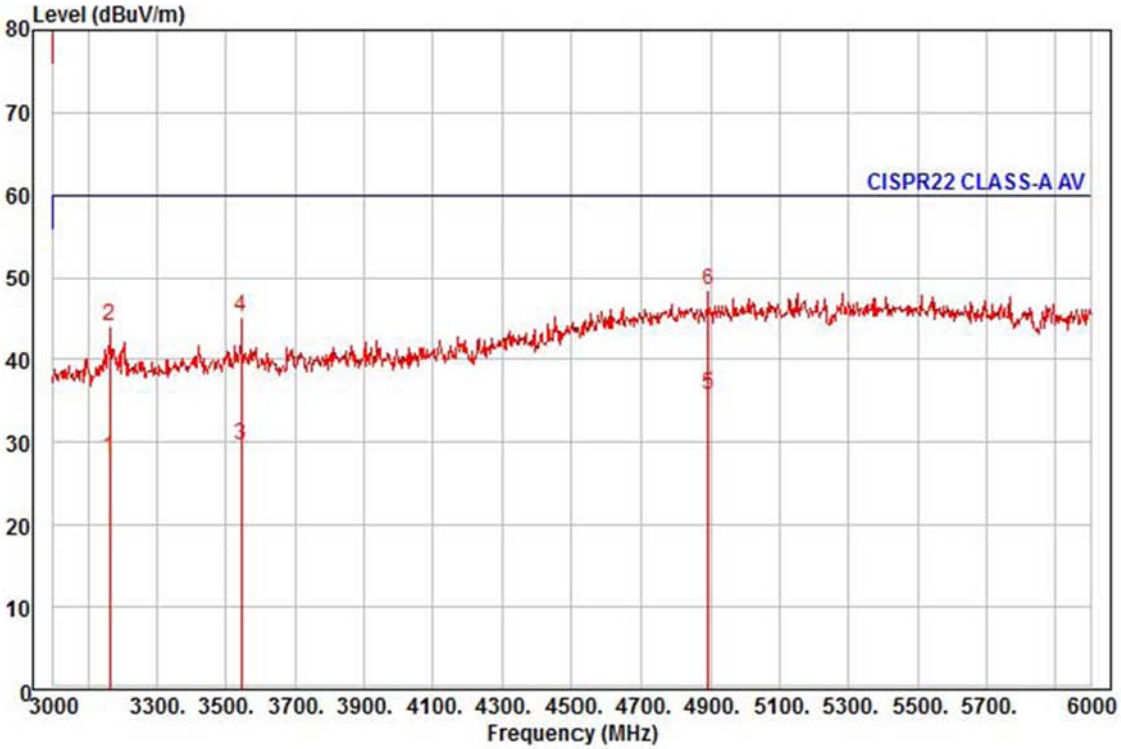
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SCV-6023RP
Mode : CE
Memo : 1 ~ 3 GHz

	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	1068.00	30.93	24.18	6.25	40.09	39	56.00	-34.73	horizontal	Average
2	1068.00	48.46	24.18	6.25	40.09	39	76.00	-37.20	horizontal	Peak
3 av	1190.00	47.22	24.66	6.60	40.03	19	56.00	-17.55	horizontal	Average
4 pp	1190.00	71.96	24.66	6.60	40.03	19	76.00	-12.81	horizontal	Peak
5	1634.00	37.95	26.43	7.87	39.81	39	56.00	-23.56	horizontal	Average
6	1634.00	62.17	26.43	7.87	39.81	39	76.00	-19.34	horizontal	Peak
7	2002.00	30.64	27.88	8.93	39.63	68	56.00	-28.18	horizontal	Average
8	2002.00	55.56	27.88	8.93	39.63	68	76.00	23.26	horizontal	Peak
9	2148.00	28.42	28.24	9.33	39.72	359	56.00	-29.73	horizontal	Average
10	2148.00	48.14	28.24	9.33	39.72	359	76.00	-30.01	horizontal	Peak
11	2722.00	27.34	29.65	10.93	40.05	28	56.00	-28.13	horizontal	Average
12	2722.00	47.58	29.65	10.93	40.05	28	76.00	-27.89	horizontal	Peak



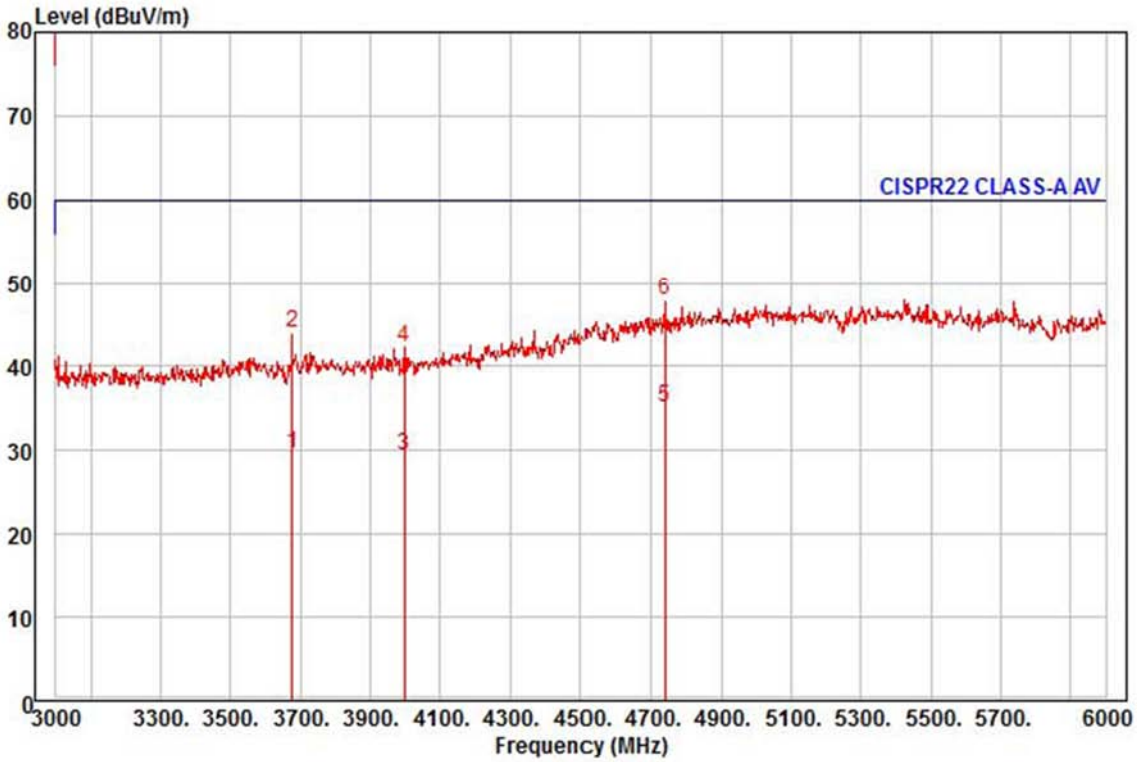
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SCV-6023RP
Mode : CE
Memo : 1 ~ 3 GHz

	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 av	1182.00	41.36	24.63	6.57	40.03	13	56.00	-23.47	vertical	Average
2 pp	1182.00	66.84	24.63	6.57	40.03	13	76.00	-17.99	vertical	Peak
3	1462.00	32.37	25.74	7.38	39.89	21	56.00	-30.40	vertical	Average
4	1462.00	53.79	25.74	7.38	39.89	21	76.00	-28.98	vertical	Peak
5	1636.00	34.68	26.43	7.88	39.81	15	56.00	-26.82	vertical	Average
6	1636.00	60.71	26.43	7.88	39.81	15	76.00	-20.79	vertical	Peak
7	1976.00	28.91	27.78	8.85	39.64	4	56.00	-30.10	vertical	Average
8	1976.00	51.48	27.78	8.85	39.64	4	76.00	-27.53	vertical	Peak
9	2452.00	25.68	28.99	10.18	39.89	186	56.00	-31.04	vertical	Average
10	2452.00	38.61	28.99	10.18	39.89	186	76.00	-38.11	vertical	Peak
11	2788.00	27.32	29.81	11.11	40.09	24	56.00	-27.85	vertical	Average
12	2788.00	45.86	29.81	11.11	40.09	24	76.00	-29.31	vertical	Peak



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SCV-6023RP
Mode : CE
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	3162.00	25.80	30.60	11.92	40.24	55	60.00	-31.92	horizontal	Average
2	3162.00	41.78	30.60	11.92	40.24	55	80.00	-35.94	horizontal	Peak
3	3543.00	26.39	31.24	12.42	40.32	330	60.00	-30.27	horizontal	Average
4	3543.00	41.85	31.24	12.42	40.32	330	80.00	-34.81	horizontal	Peak
5 pp	4893.00	24.27	37.11	14.67	40.41	151	60.00	-24.36	horizontal	Average
6 pk	4893.00	37.00	37.11	14.67	40.41	151	80.00	-31.63	horizontal	Peak



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SCV-6023RP
Mode : CE
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	3678.00	25.84	31.47	12.60	40.35	1	60.00	-30.44	vertical	Average
2	3678.00	40.42	31.47	12.60	40.35	1	80.00	-35.86	vertical	Peak
3	3999.00	24.86	32.01	13.03	40.41	170	60.00	-30.51	vertical	Average
4	3999.00	37.62	32.01	13.03	40.41	170	80.00	-37.75	vertical	Peak
5 pp	4740.00	24.78	36.24	14.39	40.41	164	60.00	-25.00	vertical	Average
6 pk	4740.00	37.75	36.24	14.39	40.41	164	80.00	-32.03	vertical	Peak

Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A

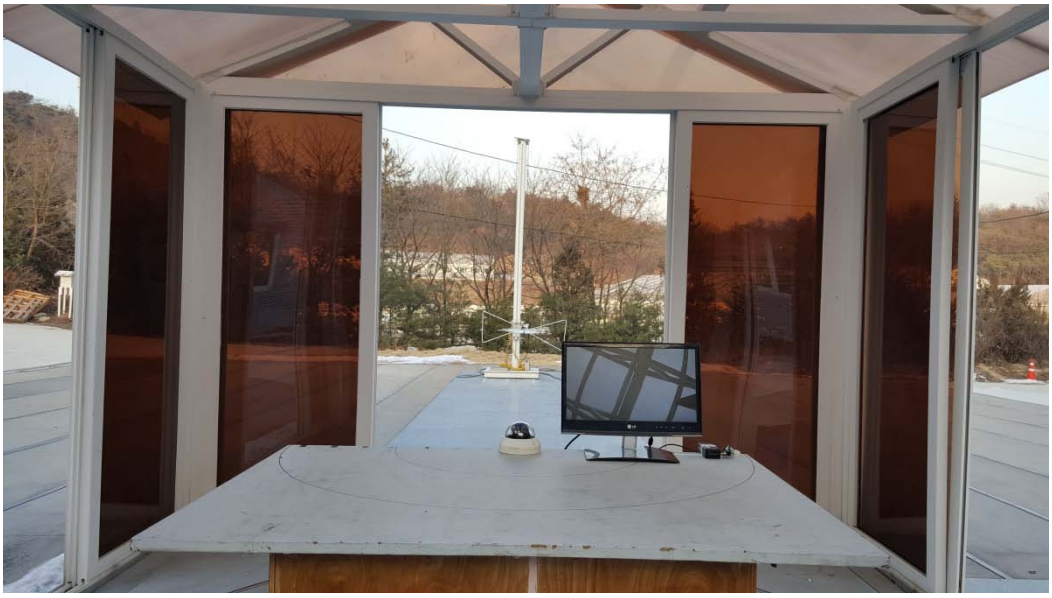
Test Setup Photos and Configuration

Conducted Voltage Emissions

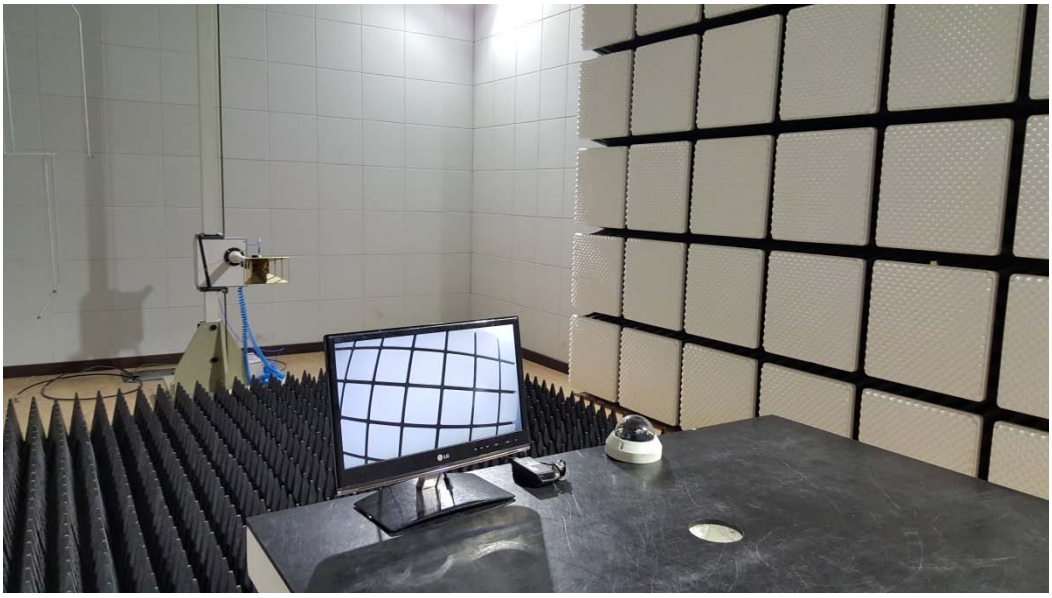
N/A

N/A

Radiated Electric Field Emissions(Below 1 ㎓)



Radiated Electric Field Emissions(Above 1 ㎓)

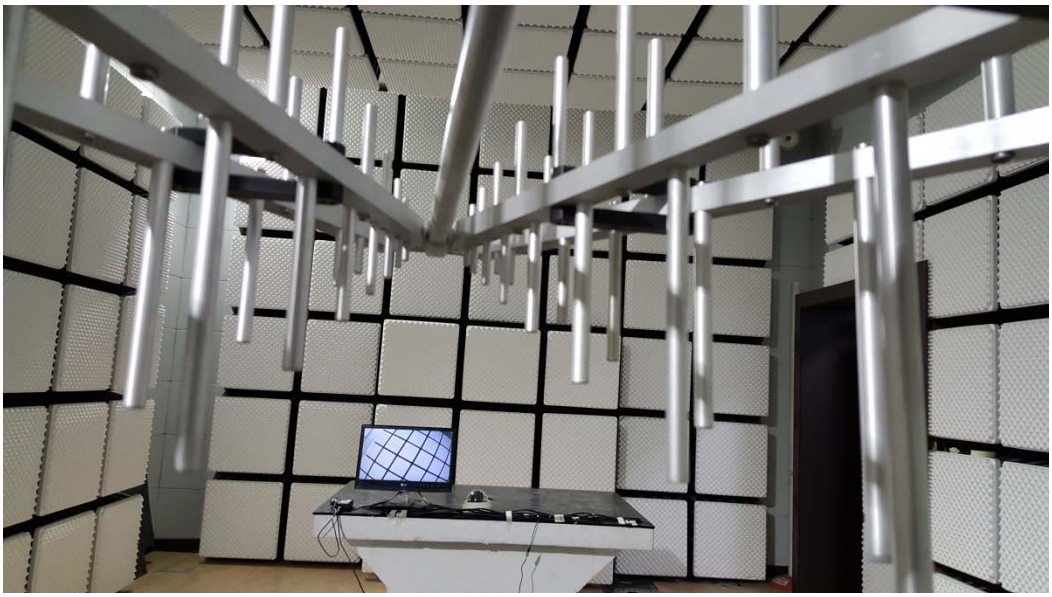


Harmonic Current Emissions and Voltage Fluctuations and Flicker

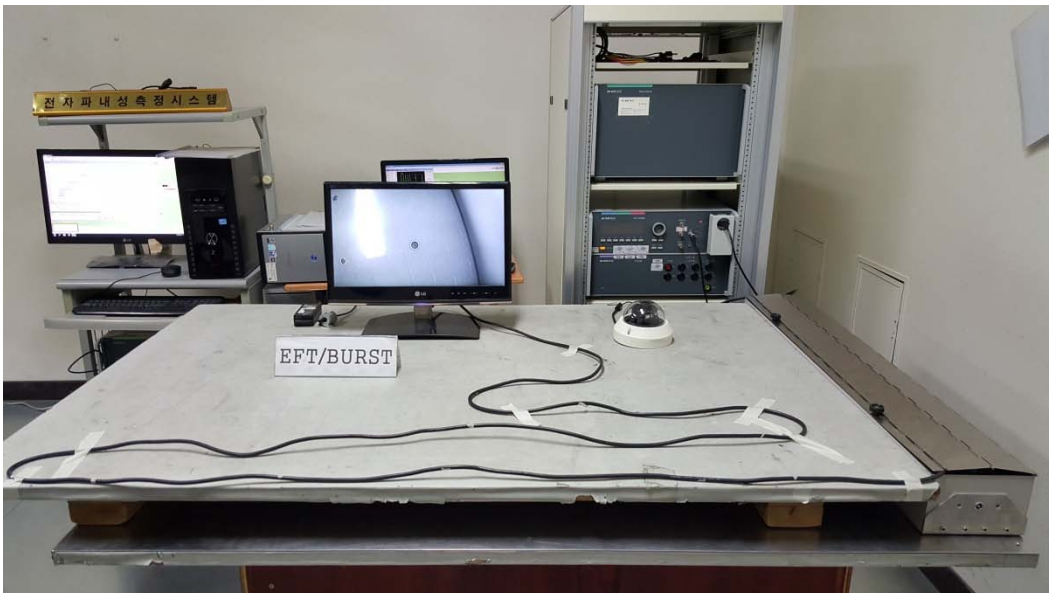
N/A

Electrostatic Discharge

Radiated Electric Field Immunity



Electrical Fast Transients/Bursts



Surge Transients

Conducted Disturbance

Power Frequency Magnetic Field Immunity

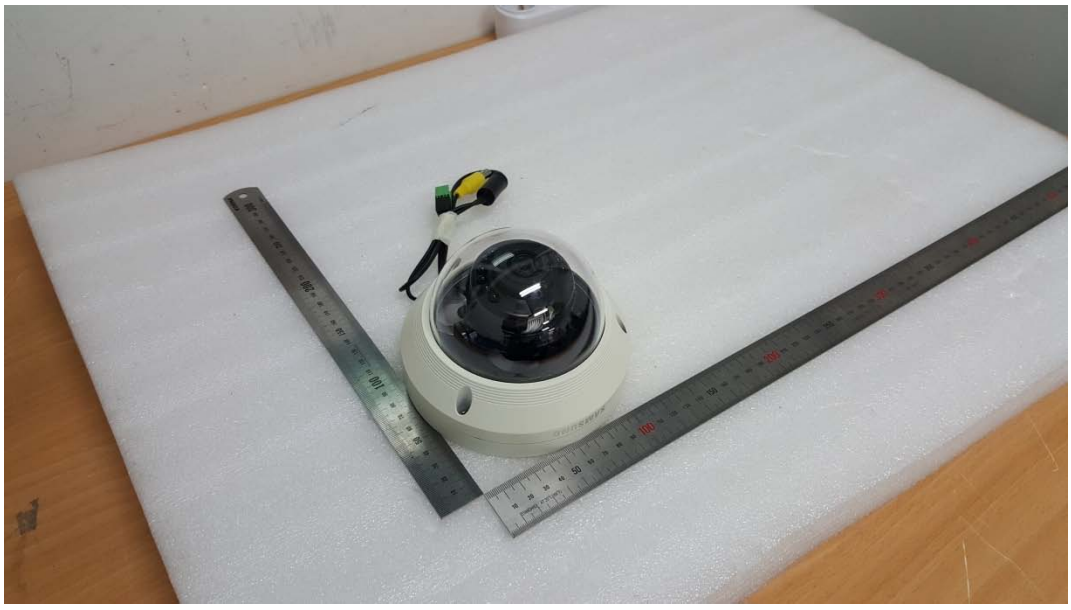
N/A

Voltage Dips and Short Interruptions

N/A

E.U.T External Photographs

(Top)



(Bottom)

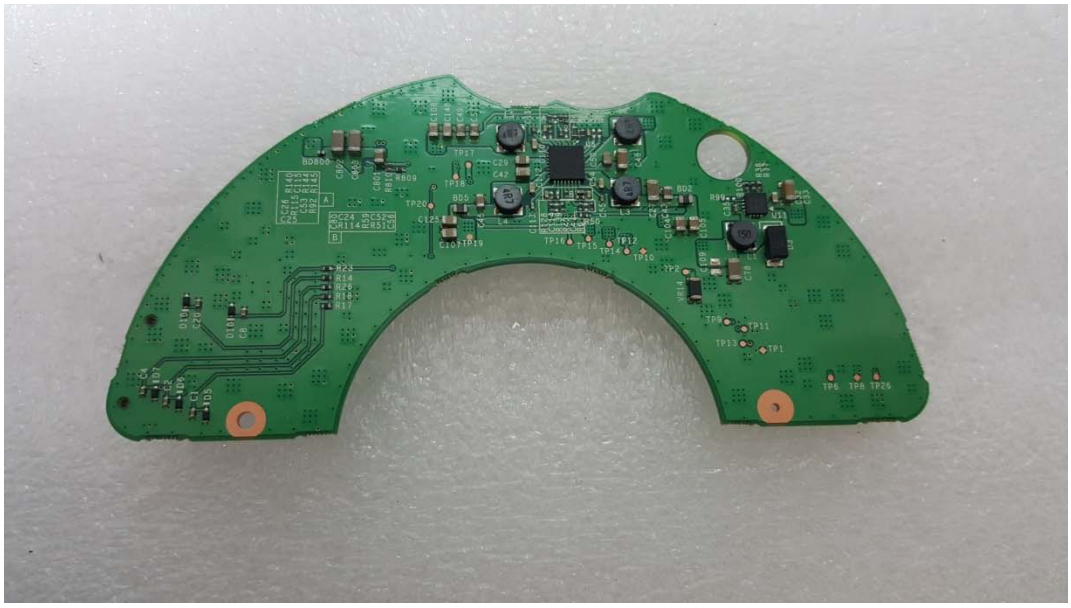
E.U.T Internal Photographs

(Internal View)

Main Board EUT Internal View – Main Board

(Top)

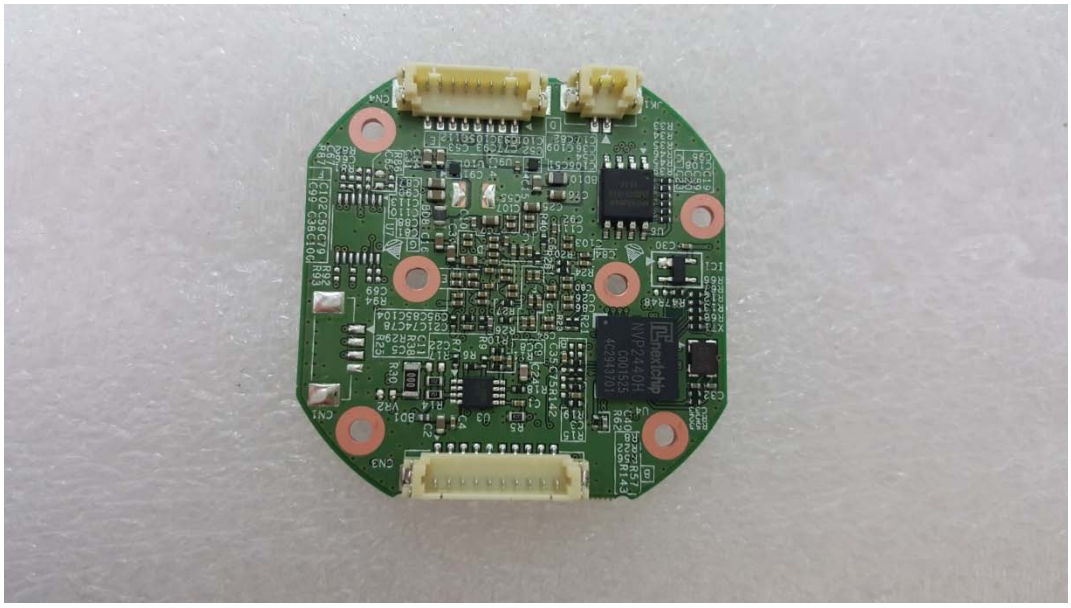
(Bottom)



Main Board EUT Internal View – Lens

(Top)

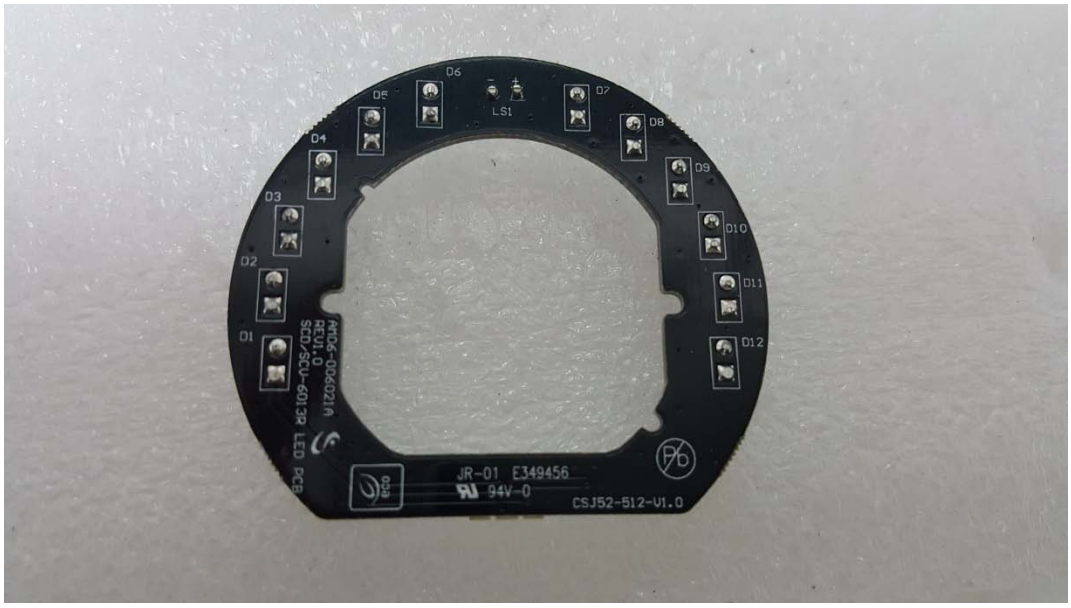
(Bottom)



Main Board EUT Internal View – LED

(Top)

(Bottom)



Label and Location

ANALOG CAMERA

Model No : SCV-6023RP

Manufacturer : Tianjin Samsung Techwin Opto-Electronic Co., Ltd.

Made in of China