EMC TEST REPORT For CE

Test Report No.	:	KES-E1-17T0647-R1
Date of Issue	:	May. 15, 2019
Product name	:	PoE Switch
Model/Type No.	:	SPN-10080P
Variant Model	:	SPN-10080PM
Applicant	:	Hanwha Techwin Co., Ltd.
Applicant Address	:	6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, KOREA
Manufacturer	:	1. Hanwha Techwin (Tianjin) Co.,Ltd. 2. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. 3. D-TECH CO.,LTD.
Manufacturer Address	:	1. No.11 Weiliu Rd,Micro-Electronic Industrial Park, TEDA,Tianjin, 300385,People's Republic of China 2. Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam 3. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)
Date of Receipt	:	Sep, 06, 2017
Test date	:	Sep, 16, 2017 ~ Sep, 17, 2017
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Young Jun, Jo
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KOLAS.

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Sep. 21, 2017	KES-E1-17T0647	Issued
May. 15, 2019	KES-E1-17T0647-R1	Changed model name, customer's address, factory addition, variant model addtion and application standard due to customer request.

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1.0 General Product Description

Main Specifications of E.U.T are:

PoE	
Maximum PoE Budget	64W
PoE Standard	IEEE 802.3af / 802.3at
PoE/PoE+ Ports	Port 1 ~ 8 : PoE/PoE+
Compatible Devices	
Network CCTV Devices	WiseNet Network Cameras, TRM NVR Series
Interface	
1000Base-T Interface	2 (M12, A-Code, 8P Female)
100Base-T PoE Interface	8 (M12, D-Code, 4P Female)
MDI/MDIX adjustable	Yes
Power Input	Molex 6P -> 6P Gender Included
Indicator	
LED	Power Status : 1 -> 0 Ethernet : Link 10-> 2, ACT 10 ->2 PoE Status : 8 -> PoE Link: 8
General	
Dimension (W x D x H)	270 x 134 x 93mm
Weight	TBD
Operation Temperature	-40 ~ 70°C
Operation/Storage Humidity	0% - 95% RH
Maximum Power Consumption	TBD
Power Input	9 ~ 36 VDC (Fanless)
Color/Material	Black / Al
Imgression	X

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 ☒ 12 Vdc ☐ PoE

Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Add derivative model for vendor management

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Switch	SPN-10080P	-	Hanwha Techwin (Tianjin) Co.,Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	NT63025J	JK9091EF400432X	SAMSUNG Electronics Co., Ltd.	-
Notebook AC/DC adapter	A13-040N2A	-	Chicony Power Technbology Co., Ltd.	-
PoE Camera 1	-	-	SAMSUNG	-
PoE Camera 2	RS-CH292H3C-36P-ST	-	SAMSUNG	7 EA

1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
PoE Switch (E.U.T)	8 PIN	Notebook	RJ-45	3.5	S
	8 PIN	PoE Camera 1	RJ-45	3.5	S
	8 PIN	PoE Camera 2	RJ-45	5.0	S
	8 PIN	PoE Camera 2	RJ-45	5.0	S
	8 PIN	PoE Camera 2	RJ-45	5.0	S
	8 PIN	PoE Camera 2	RJ-45	5.0	S
	8 PIN	PoE Camera 2	RJ-45	5.0	S
	8 PIN	PoE Camera 2	RJ-45	5.0	S
	8 PIN	PoE Camera 2	RJ-45	5.0	S

* Unshielded=U, Shielded=S

1.7 E.U.T Operating Mode(s)

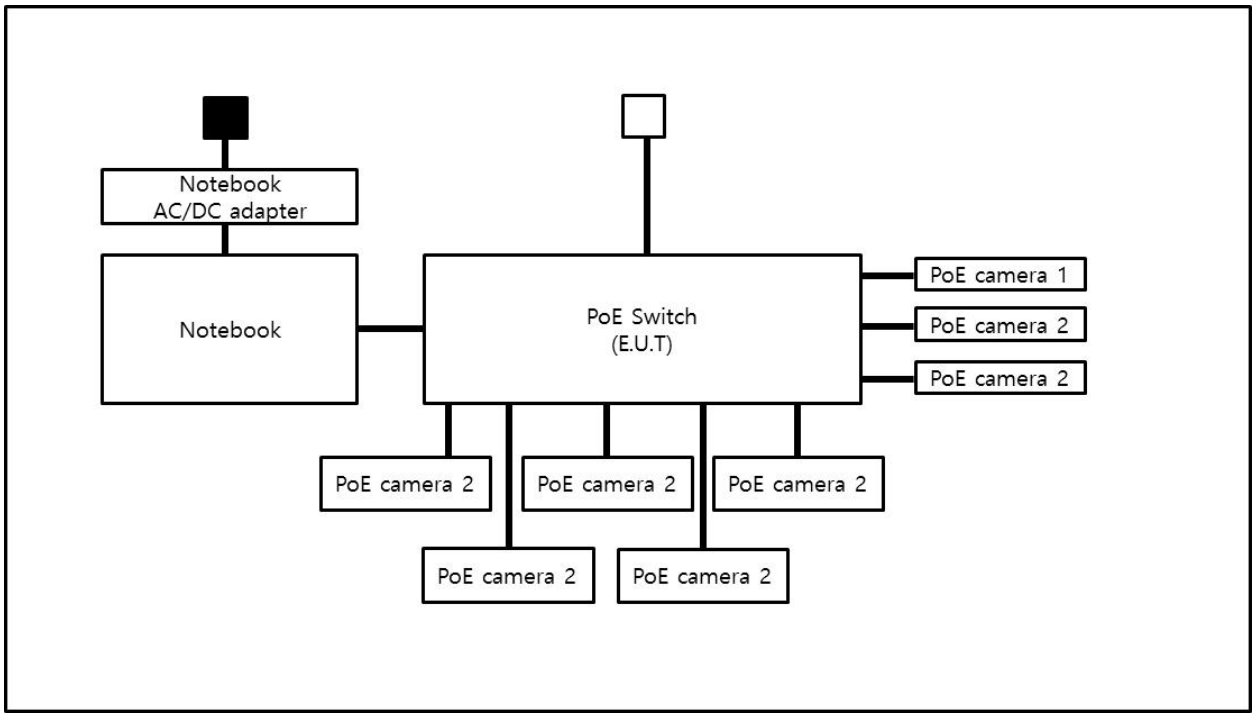
Equipment under test was operated during the measurement under the following conditions:

Test mode	operating
Normal Operating	Check the video output of the camera & Ping test

E.U.T Test operating S/W		
Name	Version	Manufacture Company
-	-	-

1.8 Configuration

■ AC Main
□ DC Main



1.9 Calibration Details of Equipment Used for Measurement

N/A

1.10 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	**RRA**	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KR0100
International	**KOLAS**	EMI (3 m & 10 m Semi-Aechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KT489
USA	**FCC**	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	KR0100
Canada	**ISED**	3 m & 10 m Semi-Aechoic Chamber and Conducted test site	23298-1
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
Europe	**TÜV SÜD**	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	CARAT 17 07 01633 001

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 55032:2012/AC:2013	☒ Class A	☐ Class B
☒ EN 55024:2010 +A1:2015		
☐ EN 50130-4:2011 +A1:2014		
☐ EN 61000-3-2:2014		
☐ EN 61000-3-3:2013		
☐ EN 61326-1:2013		

☐ **VCCI V-3 / 2015.04** ☐ Class A ☐ Class B

☐ **AS/NZS CISPR32:2013** ☐ Class A ☐ Class B

☐ **47 CFR Part 15, Subpart B**

- ☐ CISPR 22:2009 +A1:2010 ☐ Class A ☐ Class B
- ☐ ANSI C63.4-2014 ☐ Class A ☐ Class B

☐ **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 V2.2.1

- ☐ 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

☐ **05/2014/TT-BTTTT**

☐ TCVN 7189:2009 (CISPR 22 :2006) ☐ Class A ☐ Class B

☐ TCVN 7137:2003 (CISPR 24 :1997)

☐ QCVN 18:2014/BTTTT ☐ Class A ☐ Class B

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 S/W	EMC32	R & S	9.12.00	-
☐	EMI TEST RECEIVER	ESR3	R & S	101783	2018.04.27
☐	LISN	ENV216	R & S	101137	2018.02.03
☐	LISN	ENV216	R & S	101786	2018.04.27
☐	PULSE LIMITER	ESH3-Z2	R & S	101914	2017.12.13

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
N/A

2.2 Conducted Emissions at Telecommunication Ports

Test Date
Sep. 16, 2017

Test Location
Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	SHIELD ROOM #3	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	04, 27, 2018
☒	LISN	ENV216	R & S	101137	02, 03, 2018
☒	LISN	ENV216	R & S	101786	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101914	12, 13, 2017
☒	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	05, 12, 2018

Test Conditions
Temperature: 23,0 ℃
Relative Humidity: 52,1 %

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
Sep, 16, 2017

Test Location
☐ Open Area Test Site #2 ☒ SAC #4

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, 18, 2018
☒	AMPLIFIER	SCU 01	R & S	100603	12, 13, 2017
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	716	11, 28, 2018

Test Conditions
Temperature: 23,6 ℃
Relative Humidity: 52,3 %

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
Sep, 16, 2017

Test Location
☒ SAC #2 ☐ SAC #3 ☐ SAC #4

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, 19, 2018
☒	PREAMPLIFIER	8449B	AGILENT	3008A01729	05, 31, 2018
☐	ATTENUATOR	8491A	HP	35496	03, 24, 2018
☒	LOG-PERIODIC ANTENNA	STLP 9149	SCHWARZBECK	9149-255	05, 17, 2018

Test Conditions
Temperature: 23,0 ℃
Relative Humidity: 52,1 %

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
☐	EMI Test S/W	dpa.control	EM TEST	5.4.11.0	-
☐	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 09, 2018(H) 08, 08, 2018(F)
☐	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

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
N/A

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
☐	EMI Test S/W	dpa.control	EM TEST	5.4.11.0	-
☐	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 09, 2018(H) 08, 08, 2018(F)
☐	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions
Temperature: ℃
Relative Humidity: %

Test Results
The requirements are:

☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks
N/A

3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

General performance criteria

The manufacturer has the obligation to express the performance criteria in terms which relate to the performance of his specific product when used as intended.

The following performance criteria are applicable, and shall only be evaluated when the functions referred to are implemented.

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

– essential operational modes and states;

– tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);

– quality of software execution;

– quality of data display and transmission;

– quality of speech transmission.

Performance criterion A

During and after the test the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a minimum performance level specified by the manufacturer when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the EUT if used as intended.

Performance criterion B

After the test, the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the EUT if used as intended.

Performance criterion C

During and after testing, a temporary loss of function is allowed, provided the function is self recoverable, or can be restored by the operation of the controls or cycling of the power to the Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

EUT by the user in accordance with the manufacturer's instructions.

3.1 Electrostatic Discharge

Reference Standard
EN 61000-4-2:2009

Test Date
Sep, 17, 2017

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	02, 24, 2018
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions
Temperature: 23,3 ℃
Relative Humidity: 52,0 %
Atmospheric Pressure: 99,9 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:

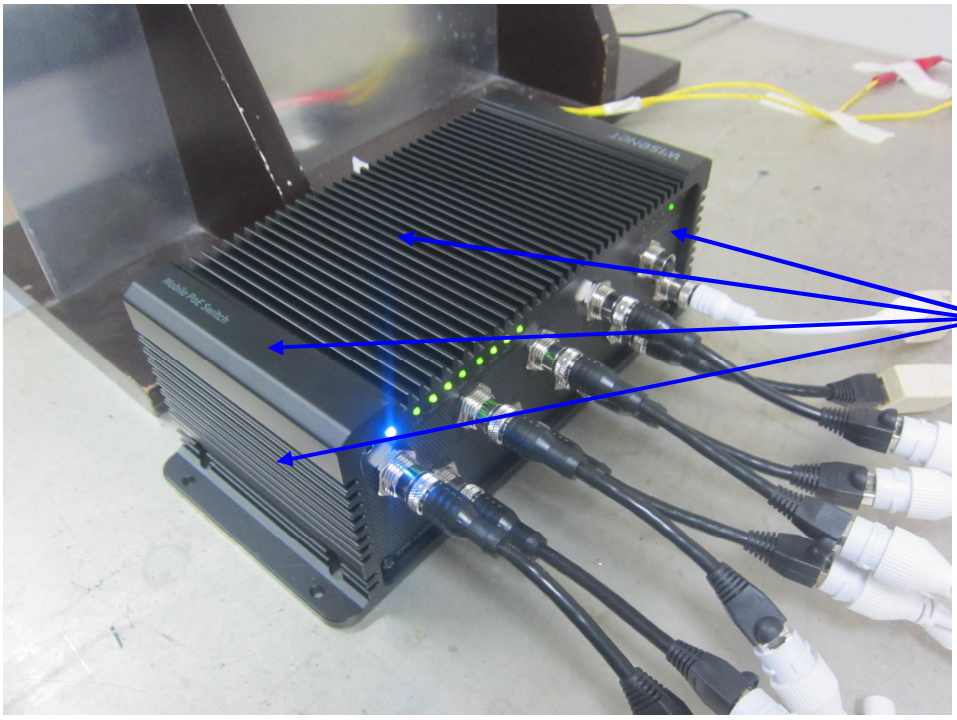
Contact	Air	HCP	VCP
☒ 2 kV	☒ 2 kV	☒ 2 kV	☒ 2 kV
☒ 4 kV	☒ 4 kV	☒ 4 kV	☒ 4 kV
☐ 6 kV	☐ 6 kV	☐ 6 kV	☐ 6 kV
☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

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

Required Performance Criteria: ☒ B

Location of Discharge:

Air
Contact



Test Data

Indirect Discharge

No.	Test Point	Discharge Method	Performance Criteria	Results	Remarks
1	HCP Contact	Contact Discharge	B	A	-
2	VCP Contact	Contact Discharge	B	A	

Direct Discharge

No.	Test Point	Discharge Method	Performance Criteria	Results	Remarks
1	Surface	Contact Discharge	B	A	-
2	8 PIN Port	Contact Discharge	B	A	-

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

Required Performance Criteria

3.2 Radiated Electric Field Immunity

Reference Standard
EN 61000-4-3:2006 +A2:2010

Test Date
Sep, 17, 2017

Test Location
EMS-RS: ☒ Semi Anachoic Chamber #2 ☐ Semi Anechoic Chamber #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	KTI_RS2012	KOREA TECHNOLOGY INSTITUDE CO., LTD	2.1.1	-
☒	SIGNAL GENERATOR	ESG-3000A	HP	US37040210	11, 01, 2017
☒	AMPLIFIER	ITA0300-200	Infinitech	-	11, 01, 2017
☒	AMPLIFIER	ITA0750-200	Infinitech	-	11, 01, 2017
☒	AMPLIFIER	ITA1500-100	Infinitech	-	11, 01, 2017
☒	AMPLIFIER	ITA2500-100	Infinitech	-	11, 01, 2017
☒	POWER METER	E4419B	Agilent	MY45101506	06, 26, 2018
☒	AVERAGE POWER SENSOR	E9301A	Agilent	-	06, 26, 2018
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41495698	06, 26, 2018
☒	HYBRID LOG-PERIODIC ANTENNA	HLP-2603	TDK	100400	-

Test Conditions
Temperature: 23,3 ℃
Relative Humidity: 52,0 %
Atmospheric Pressure: 99,9 kPa

Test Specifications

Antenna Polarization:	Horizontal & vertical unless indicated otherwise	
Antenna Distance:	☒ 3 m	
Field Strength:	☐ 1 V/m ☐ 10 V/m	☒ 3 V/m
Frequency Range:	☒ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,0 GHz	☒ 2,0 GHz 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:	☒ A	

Test Data

Side Exposed	Performance Criteria	Results	
		Horizontal	Vertical
Front	A	A	A
Right	A	A	A
Back	A	A	A
Left	A	A	A

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

Required Performance Criteria

3.3 Electrical Fast Transients/Bursts

Reference Standard
EN 61000-4-4:2012

Test Date
Sep, 17, 2017

Test Location
EMS-EFT: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.3.9	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N5T	EM TEST	P1317117973	02, 08, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	02, 08, 2018
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	070925	06, 26, 2018

Test Conditions

Temperature:	23,3 ℃
Relative Humidity:	52,0 %
Atmospheric Pressure:	99,9 ㎪

Test Specifications

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

Test Data

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

Mode of Application	Performance Criteria	Results	
		(+) Burst (㎸)	(-) Burst (㎸)
-	B	-	-

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

Mode of Application	Performance Criteria	Results	
		(+) Burst (㎸)	(-) Burst (㎸)
L1 – L2	B	A	A

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Performance Criteria	Results	
		(+) Burst (㎸)	(-) Burst (㎸)
8 PIN(LAN)	B	A	A
8 PIN(POE)	B	A	A

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

Required Performance Criteria.

3.4 Surge Transients

Reference Standard
EN 61000-4-5:2014

Test Date
Sep, 17, 2017

Test Location
EMS-Surge: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.3.9	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N5T	EM TEST	P1317117973	02, 08, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	02, 08, 2018
☒	CDN	CNV 508T5	EM TEST	P1549168422	04, 26, 2018

Test Conditions
Temperature: 23,3 ℃
Relative Humidity: 52,0 %
Atmospheric Pressure: 99,9 kPa

Test Specifications

AC 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: ☐ B

Other supply / Signal Lines

Source Impedance: 42 ohm for common mode

Surge Amplitude: Common Mode

DC Power Line ☐ (0,5) kV

Signal Lines ☒ (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: ☒ C

Test Data

☐ Line to Line – Differential Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
L - N	B	-	-

☐ Line to Earth – Common Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
L – PE	B	-	-
N - PE	B	-	-

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
8 PIN(POE)	C	C	C

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

Required Performance Criteria

3.5 Conducted Disturbance

Reference Standard
EN 61000-4-6:2014

Test Date
Sep, 17, 2017

Test Location
EMS-CS: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.7	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1	EM TEST	V0936105119	08, 07, 2018
☒	ATTENUATOR	ATT6	EM TEST	1208-34	08, 07, 2018
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 07, 2018
☒	CDN	CDN T8RJ45	EM TEST	0909-09	08, 07, 2018
☒	EM INJECTION CLAMP	EM 101	Liithi	35943	02, 03, 2018

Test Conditions
Temperature: 23,3 ℃
Relative Humidity: 52,0 %
Atmospheric Pressure: 99,9 kPa

Test Specifications

Frequency range:	☐ 150 ㎑ to 100 ㎒	☒ 150 ㎑ to 80 ㎒
Voltage Level:	☐ 1 Vrms ☐ 10 Vrms	☒ 3 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:	☒ A	

Test Data

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
-	CDN (☐M2, ☐M3)	-	-

☒ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
L1 – L2	CDN (☒M2, ☐M3)	A	A

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
8 PIN(LAN)	EM CLAMP	A	A
8 PIN (POE)	EM CLAMP	A	A

Notes: CDN = Coupling Decoupling Network
"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

Required Performance Criteria

3.6 Power Frequency Magnetic Field Immunity

Reference Standard
EN 61000-4-8:2010

Test Date
N/A

Test Location
EMS-Magnetic: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMS Test S/W	iec.control	EM TEST	5.3.9	-
☐	ULTRA COMPACT SIMULATOR	UCS 500N5T	EM TEST	P1317117973	02, 08, 2018
☐	MOTOR VARIAC	MV2616	EM TEST	V0936105123	02, 08, 2018
☐	MAGNETIC FIELD COIL	MS100	EM TEST	0809-10	08, 07, 2018
☐	CURRENT TRANSFORMER	MC2630	EM TEST	0309-46	08, 07, 2018

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

Test Results

☐ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☒ NOT APPLICABLE

Remarks

This "EUT" is not affected by the magnetic field.

3.7 Voltage Dips and Short Interruptions

Reference Standard
EN 61000-4-11:2004

Test Date
N/A

Test Location
EMS-Voltage dip: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMS Test S/W	iec.control	EM TEST	5.3.9	-
☐	ULTRA COMPACT SIMULATOR	UCS 500N5T	EM TEST	P1317117973	02, 08, 2018
☐	MOTOR VARIAC	MV2616	EM TEST	V0936105123	02, 08, 2018

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

Voltage dips

% reduction	Period / ㎳	Performance Criteria	Result
>95 % dip	0.5 / 10	B	-
30 % dip	25 / 500	B	-

Voltage interruptions

% reduction	Period / ㎳	Performance Criteria	Result
>95 % dip	250 / 5 000	C	-

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
☒ NOT APPLICABLE

Remarks

N/A : This EUT operates on DC power. Test is not applicable.

APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

N/A

[NEUTRAL]

N/A

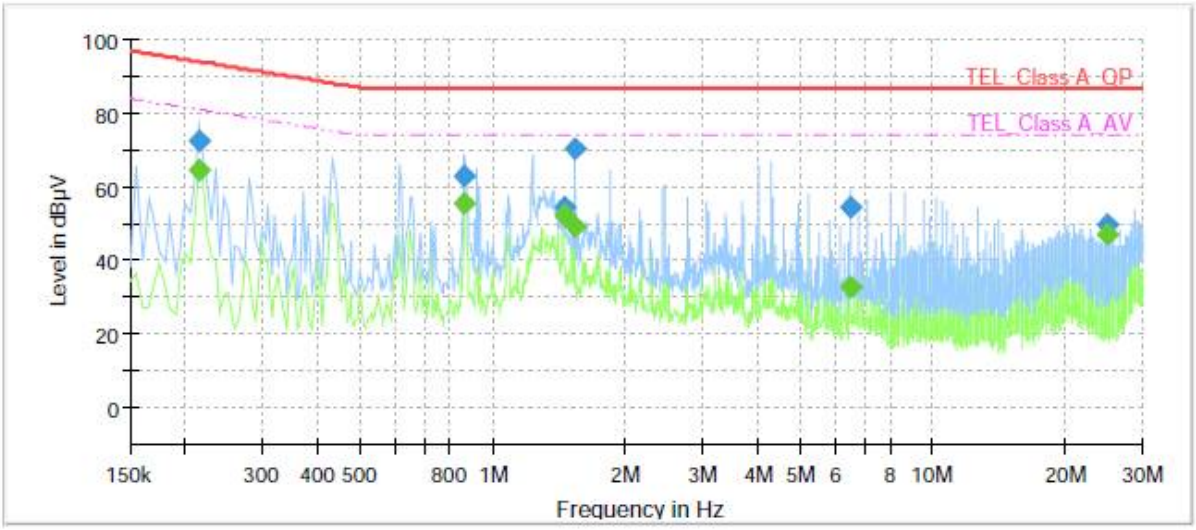
♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Conducted Emissions at Telecommunication Ports

(LAN)
[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SPN-10080PM
Mode	LAN 10 Mbps
Operator Name:	KES



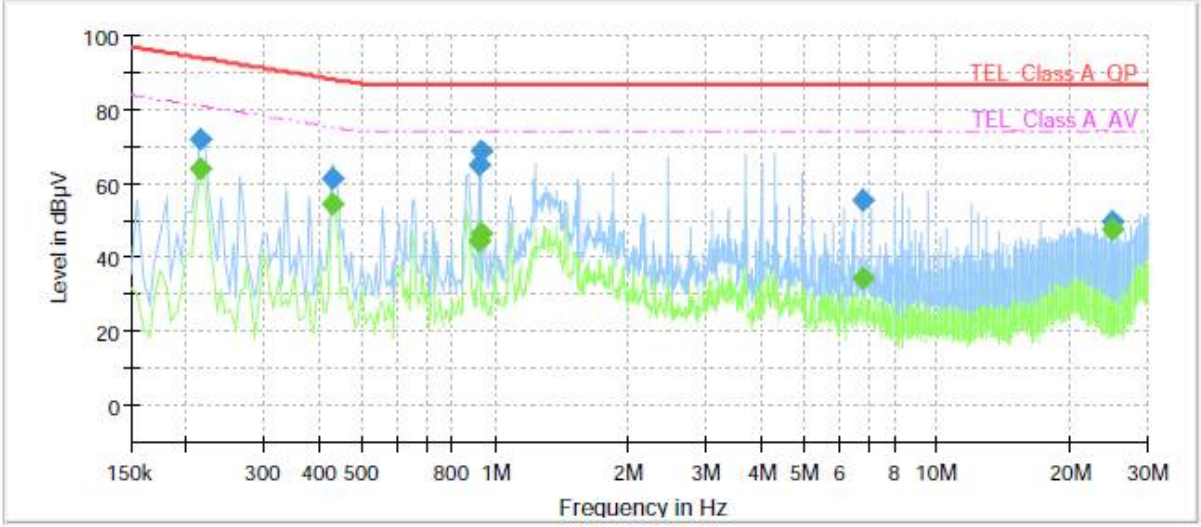
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.215000	---	64.79	81.01	16.22	1000.0	9.000	Single Line	19.4
0.215000	72.67	---	94.01	21.34	1000.0	9.000	Single Line	19.4
0.865000	---	55.46	74.00	18.54	1000.0	9.000	Single Line	19.6
0.865000	63.23	---	87.00	23.77	1000.0	9.000	Single Line	19.6
1.450000	---	52.51	74.00	21.49	1000.0	9.000	Single Line	19.7
1.450000	54.44	---	87.00	32.56	1000.0	9.000	Single Line	19.7
1.540000	---	49.09	74.00	24.91	1000.0	9.000	Single Line	19.7
1.540000	70.45	---	87.00	16.55	1000.0	9.000	Single Line	19.7
6.470000	---	33.10	74.00	40.90	1000.0	9.000	Single Line	19.7
6.470000	54.33	---	87.00	32.67	1000.0	9.000	Single Line	19.7
25.000000	---	46.96	74.00	27.04	1000.0	9.000	Single Line	19.9
25.000000	49.59	---	87.00	37.41	1000.0	9.000	Single Line	19.9

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SPN-10080PM
Mode	LAN 100 Mbps
Operator Name:	KES



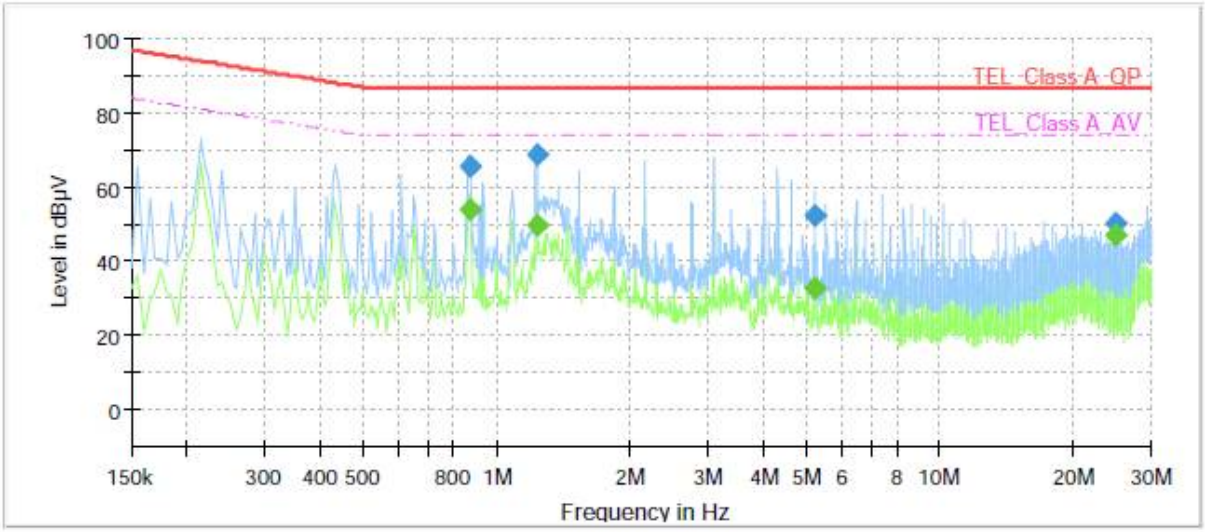
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.215000	---	63.96	81.01	17.05	1000.0	9.000	Single Line	19.4
0.215000	71.76	---	94.01	22.25	1000.0	9.000	Single Line	19.4
0.430000	---	54.75	75.25	20.50	1000.0	9.000	Single Line	19.5
0.430000	61.29	---	88.25	26.96	1000.0	9.000	Single Line	19.5
0.920000	---	44.33	74.00	29.67	1000.0	9.000	Single Line	19.7
0.920000	64.85	---	87.00	22.15	1000.0	9.000	Single Line	19.7
0.925000	---	46.79	74.00	27.21	1000.0	9.000	Single Line	19.7
0.925000	68.73	---	87.00	18.27	1000.0	9.000	Single Line	19.7
6.775000	---	34.36	74.00	39.64	1000.0	9.000	Single Line	19.7
6.775000	55.61	---	87.00	31.39	1000.0	9.000	Single Line	19.7
25.000000	---	47.67	74.00	26.33	1000.0	9.000	Single Line	19.9
25.000000	49.90	---	87.00	37.10	1000.0	9.000	Single Line	19.9

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SPN-10080PM
Mode	LAN 1 000 Mbps
Operator Name:	KES



Final_Result

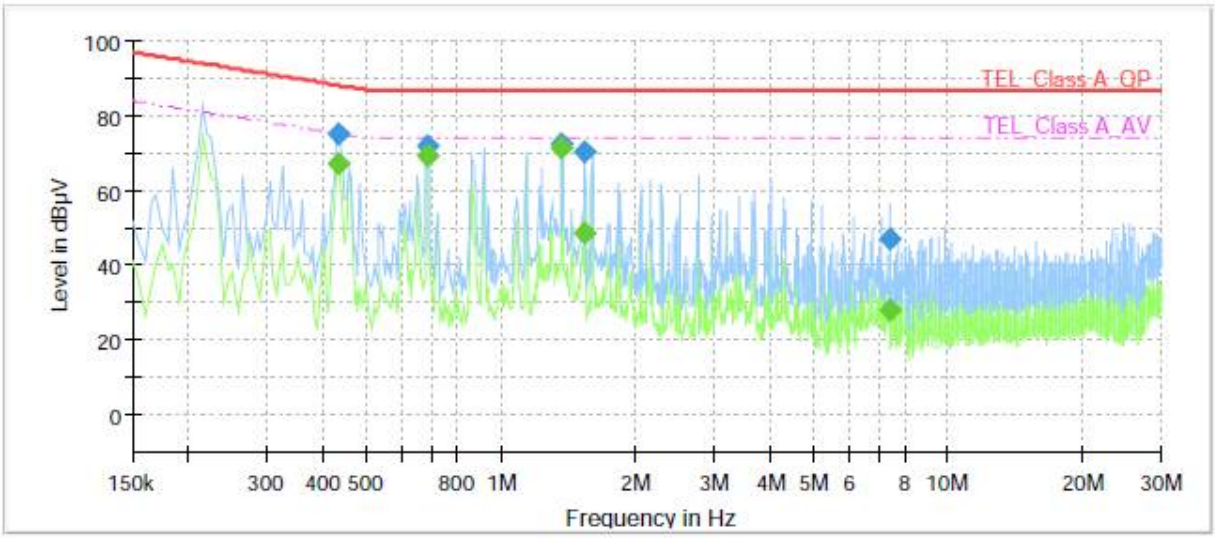
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.870000	---	53.82	74.00	20.18	1000.0	9.000	Single Line	19.6
0.870000	65.40	---	87.00	21.60	1000.0	9.000	Single Line	19.6
1.230000	---	49.71	74.00	24.29	1000.0	9.000	Single Line	19.7
1.230000	69.05	---	87.00	17.95	1000.0	9.000	Single Line	19.7
5.230000	---	33.04	74.00	40.96	1000.0	9.000	Single Line	19.7
5.230000	52.25	---	87.00	34.75	1000.0	9.000	Single Line	19.7
25.000000	---	47.33	74.00	26.67	1000.0	9.000	Single Line	19.9
25.000000	50.13	---	87.00	36.87	1000.0	9.000	Single Line	19.9

♦ 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))

(POE)
[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SPN-10080PM
Mode	POE 10 Mbps
Operator Name:	KES



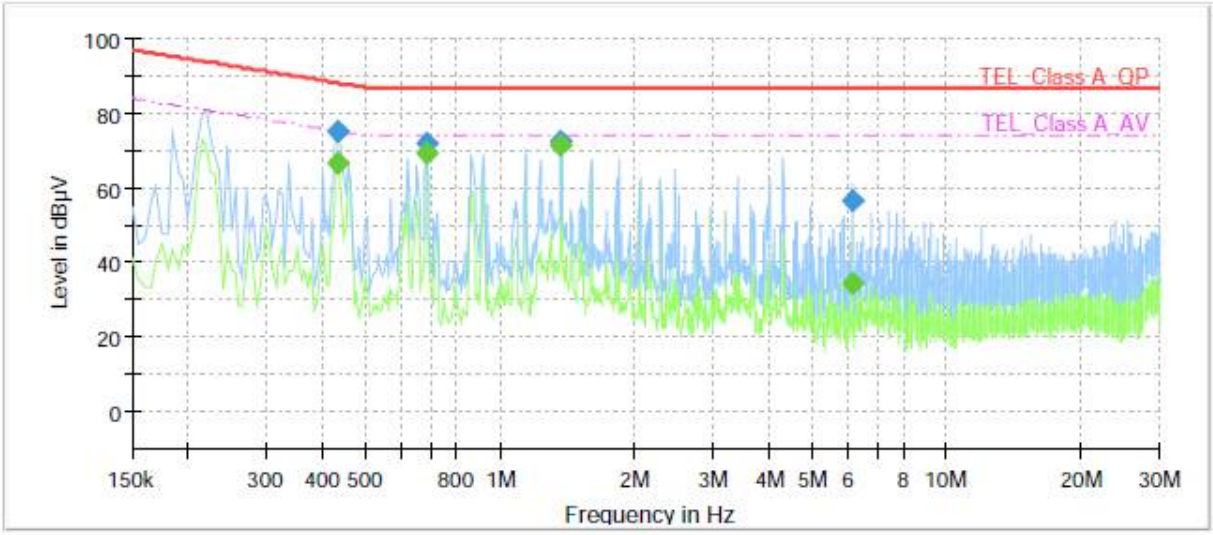
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.435000	---	66.97	75.16	8.19	1000.0	9.000	Single Line	19.5
0.435000	75.24	---	88.16	12.92	1000.0	9.000	Single Line	19.5
0.685000	---	69.54	74.00	4.46	1000.0	9.000	Single Line	19.6
0.685000	72.06	---	87.00	14.94	1000.0	9.000	Single Line	19.6
1.370000	---	71.63	74.00	2.37	1000.0	9.000	Single Line	19.7
1.370000	72.28	---	87.00	14.72	1000.0	9.000	Single Line	19.7
1.540000	---	48.63	74.00	25.37	1000.0	9.000	Single Line	19.7
1.540000	70.35	---	87.00	16.65	1000.0	9.000	Single Line	19.7
7.400000	---	28.16	74.00	45.84	1000.0	9.000	Single Line	19.6
7.400000	47.19	---	87.00	39.81	1000.0	9.000	Single Line	19.6

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SPN-10080PM
Mode	POE 100 Mbps
Operator Name:	KES



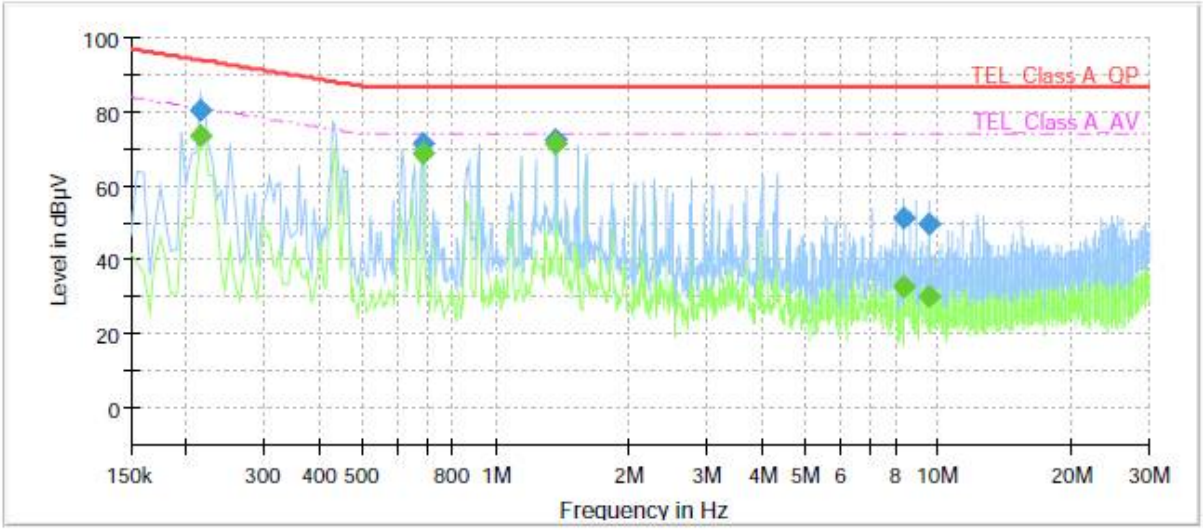
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.435000	---	66.83	75.16	8.33	1000.0	9.000	Single Line	19.5
0.435000	75.17	---	88.16	12.99	1000.0	9.000	Single Line	19.5
0.685000	---	69.43	74.00	4.57	1000.0	9.000	Single Line	19.6
0.685000	72.07	---	87.00	14.93	1000.0	9.000	Single Line	19.6
1.370000	---	71.60	74.00	2.40	1000.0	9.000	Single Line	19.7
1.370000	72.29	---	87.00	14.71	1000.0	9.000	Single Line	19.7
6.160000	---	34.60	74.00	39.40	1000.0	9.000	Single Line	19.7
6.160000	56.58	---	87.00	30.42	1000.0	9.000	Single Line	19.7

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SPN-10080PM
Mode	POE 1 000 Mbps
Operator Name:	KES

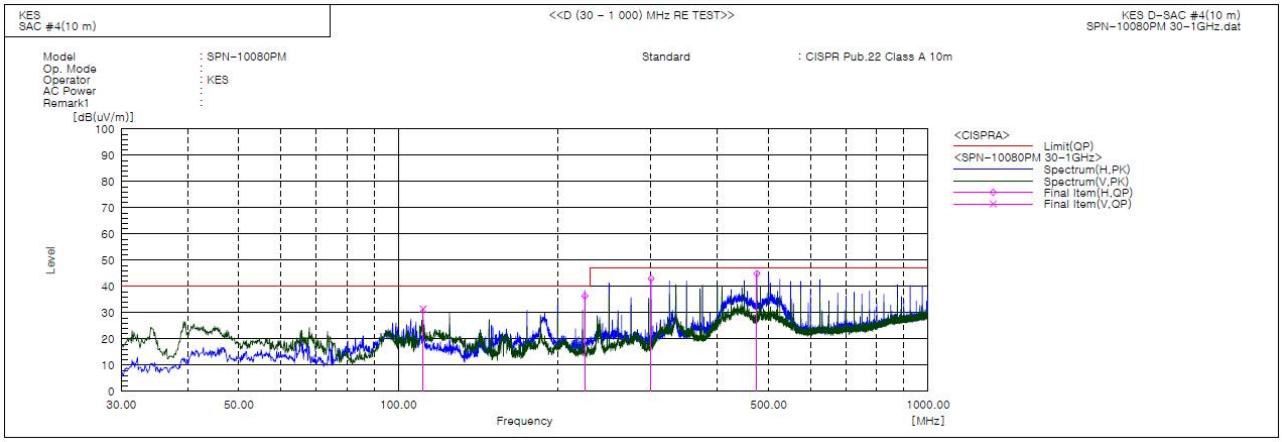


Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.215000	---	73.54	81.01	7.47	1000.0	9.000	Single Line	19.4
0.215000	80.48	---	94.01	13.53	1000.0	9.000	Single Line	19.4
0.685000	---	68.84	74.00	5.16	1000.0	9.000	Single Line	19.6
0.685000	71.59	---	87.00	15.41	1000.0	9.000	Single Line	19.6
1.370000	---	71.50	74.00	2.50	1000.0	9.000	Single Line	19.7
1.370000	72.33	---	87.00	14.67	1000.0	9.000	Single Line	19.7
8.320000	---	32.65	74.00	41.35	1000.0	9.000	Single Line	19.6
8.320000	51.44	---	87.00	35.56	1000.0	9.000	Single Line	19.6
9.550000	---	29.96	74.00	44.04	1000.0	9.000	Single Line	19.6
9.550000	49.76	---	87.00	37.24	1000.0	9.000	Single Line	19.6

♦ 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))

Radiated Electric Field Emissions(Below 1 ㎓)



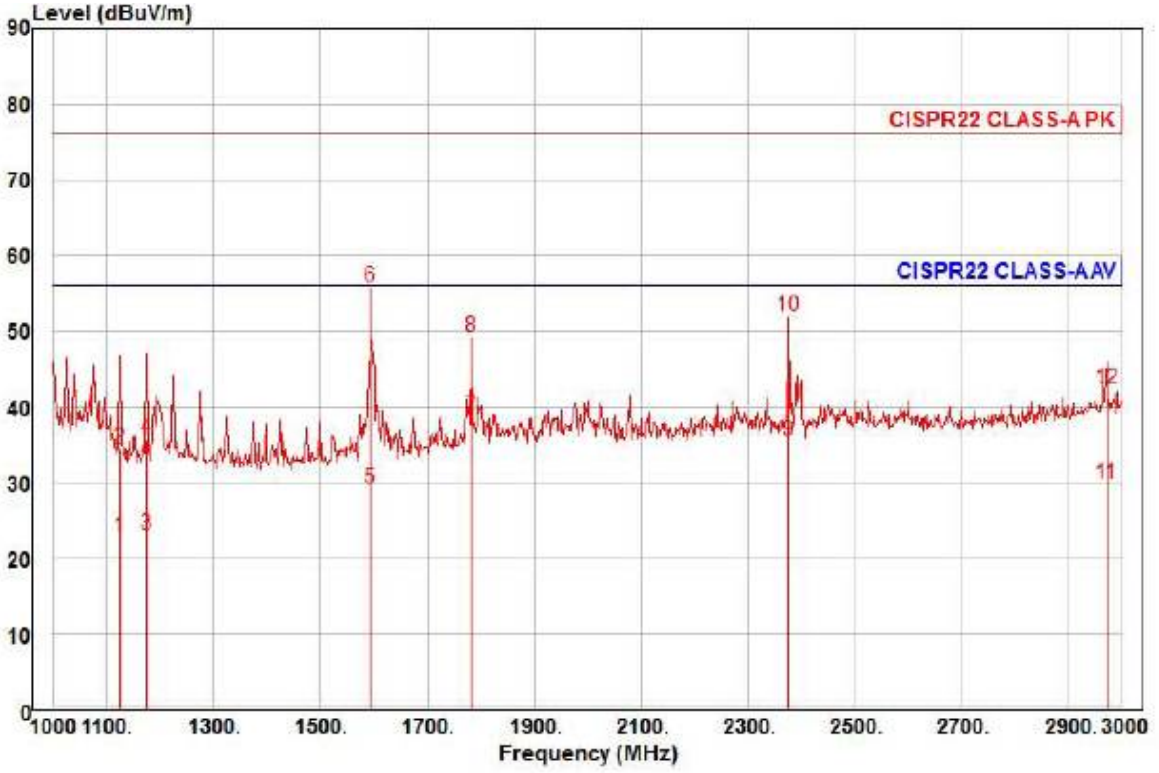
Final Result

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	111.375	V	60.9	-29.4	31.5	40.0	8.5	114.0	105.0	
2	225.009	H	62.5	-26.1	36.4	40.0	3.6	386.0	134.0	
3	300.018	H	66.8	-23.8	43.0	47.0	4.0	260.0	260.0	
4	475.031	H	63.2	-18.3	44.9	47.0	2.1	191.0	196.0	

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

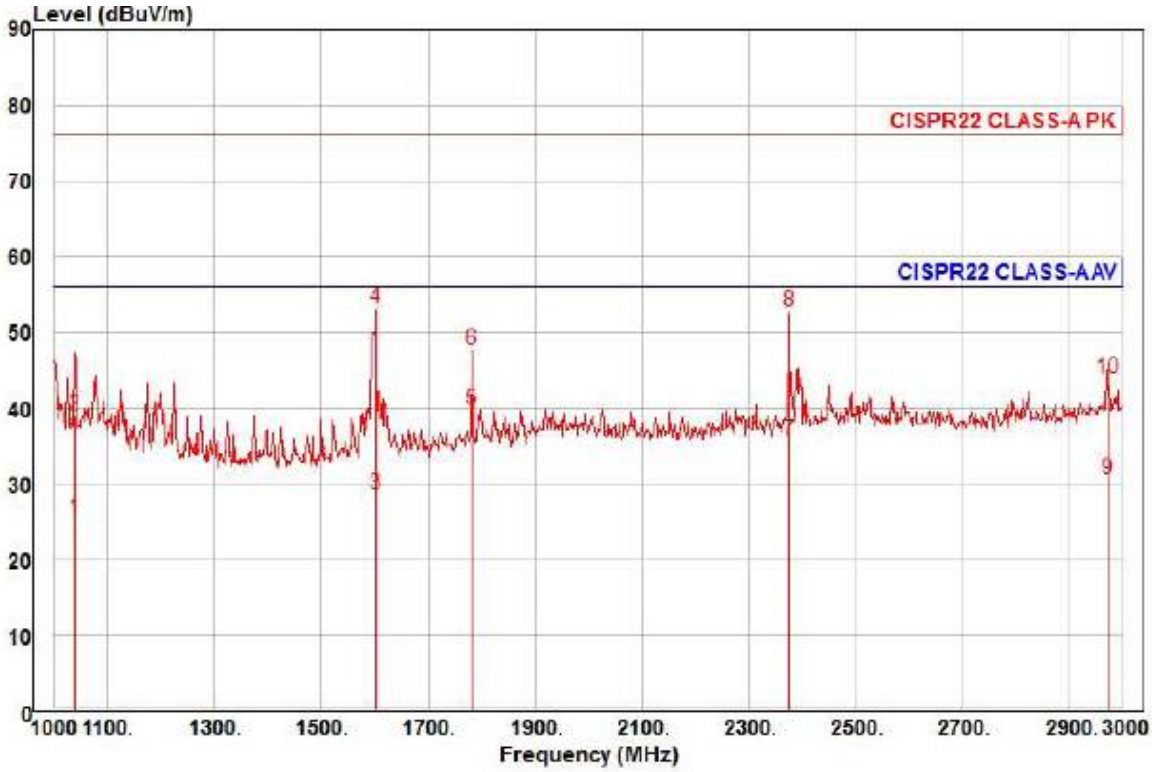
♦ Calculation - SAC #4(10 m)
Result(QP) [㏈(㎶/m)] = (Reading(QP)[㏈(㎶)] + c.f[㏈(1/m)]
Margin(QP)[㏈] = Limit[㏈(㎶/m)] - Result(QP) [㏈(㎶/m)]
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

Radiated Electric Field Emissions(Above 1 ㎓)



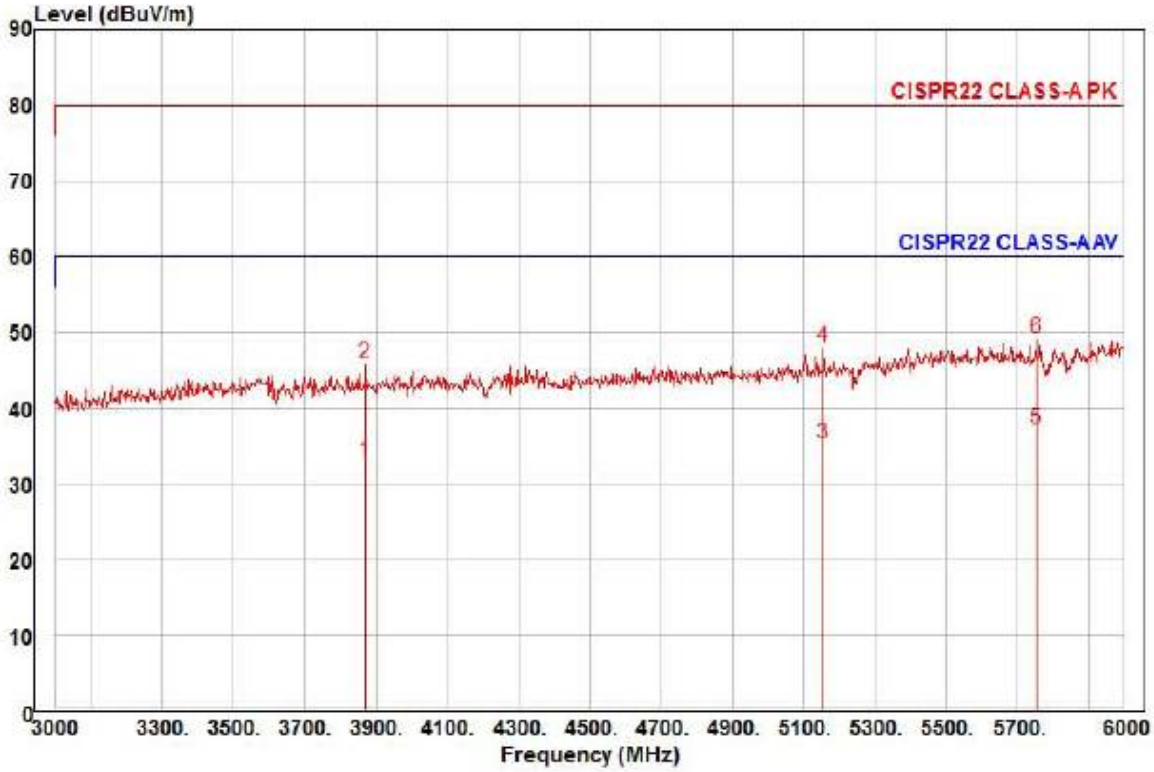
Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SPN-10080PM
Mode :
Memo : 1 - 3 GHz

	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	1124.00	28.87	22.88	7.04	35.95	69	56.00	-33.16	horizontal	Average
2	1124.00	40.53	22.88	7.04	35.95	69	76.00	-41.50	horizontal	Peak
3	1174.00	28.86	23.03	7.20	35.91	226	56.00	-32.82	horizontal	Average
4	1174.00	41.44	23.03	7.20	35.91	226	76.00	-40.24	horizontal	Peak
5	1594.00	31.83	24.39	8.49	35.53	283	56.00	-26.82	horizontal	Average
6 pk	1594.00	58.59	24.39	8.49	35.53	283	76.00	-20.06	horizontal	Peak
7 pp	1782.00	39.80	25.14	9.04	35.36	102	56.00	-17.38	horizontal	Average
8	1782.00	50.39	25.14	9.04	35.36	102	76.00	-26.79	horizontal	Peak
9	2376.00	33.22	27.15	10.54	35.32	60	56.00	-20.41	horizontal	Average
10	2376.00	49.61	27.15	10.54	35.32	60	76.00	-24.02	horizontal	Peak
11	2972.00	23.72	29.62	12.07	35.55	84	56.00	-26.14	horizontal	Average
12	2972.00	36.29	29.62	12.07	35.55	84	76.00	-33.57	horizontal	Peak



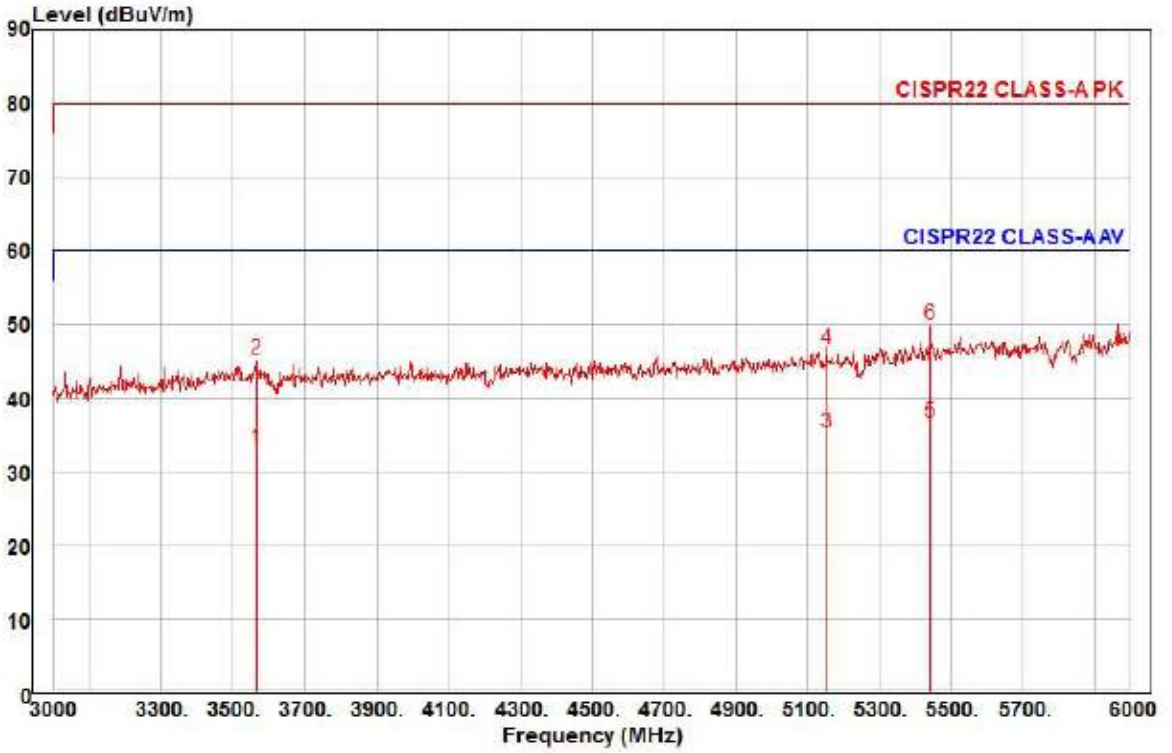
Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SPN-10080PM
Mode :
Memo : 1 - 3 GHz

	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	1038.00	32.00	22.62	6.76	36.03	149	56.00	-30.65	vertical	Average
2	1038.00	45.71	22.62	6.76	36.03	149	76.00	-36.94	vertical	Peak
3	1600.00	31.15	24.42	8.51	35.53	234	56.00	-27.45	vertical	Average
4 pk	1600.00	55.75	24.42	8.51	35.53	234	76.00	-22.85	vertical	Peak
5 pp	1782.00	41.01	25.14	9.04	35.36	25	56.00	-16.17	vertical	Average
6	1782.00	48.84	25.14	9.04	35.36	25	76.00	-28.34	vertical	Peak
7	2376.00	33.38	27.15	10.54	35.32	71	56.00	-20.25	vertical	Average
8	2376.00	50.39	27.15	10.54	35.32	71	76.00	-23.24	vertical	Peak
9	2972.00	24.39	29.62	12.07	35.55	89	56.00	-25.47	vertical	Average
10	2972.00	37.73	29.62	12.07	35.55	89	76.00	-32.13	vertical	Peak



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 : SPN-10080PM
Mode :
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	3870.00	22.29	32.15	13.79	35.32	305	60.00	-27.09	horizontal	Average
2	3870.00	35.33	32.15	13.79	35.32	305	80.00	-34.05	horizontal	Peak
3	5157.00	21.00	34.03	16.00	35.64	104	60.00	-24.61	horizontal	Average
4	5157.00	33.63	34.03	16.00	35.64	104	80.00	-31.98	horizontal	Peak
5 pp	5754.00	20.24	35.75	16.98	35.68	68	60.00	-22.71	horizontal	Average
6 pk	5754.00	32.14	35.75	16.98	35.68	68	80.00	-30.81	horizontal	Peak



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 : SPN-10080PM
Mode :
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	3564.00	23.96	31.32	13.23	35.40	70	60.00	-26.89	vertical	Average
2	3564.00	36.23	31.32	13.23	35.40	70	80.00	-34.62	vertical	Peak
3	5154.00	21.01	34.01	15.99	35.64	148	60.00	-24.63	vertical	Average
4	5154.00	32.38	34.01	15.99	35.64	148	80.00	-33.26	vertical	Peak
5 pp	5445.00	20.70	35.15	16.52	35.66	171	60.00	-23.29	vertical	Average
6 pk	5445.00	33.92	35.15	16.52	35.66	171	80.00	-30.07	vertical	Peak

♦ Calculation
Over Limit [dB] = (Read Level[dBμV] + Ant Factor[dB/m] + Cable Loss [dB] – Preamp Factor [dB]) – Limit Line[dBμV]
Over Limit : Margin, Read Level : Reading value, Ant Factor : ANT Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
		N/A		

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
		N/A		

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Test Data - Voltage Fluctuations

Maximum Flicker results

	EUT values	Limit	Result
Pst	N/A		
Plt			
dc [%]			
dmax [%]			
Tmax [s]			

Test Setup Photos and Configuration

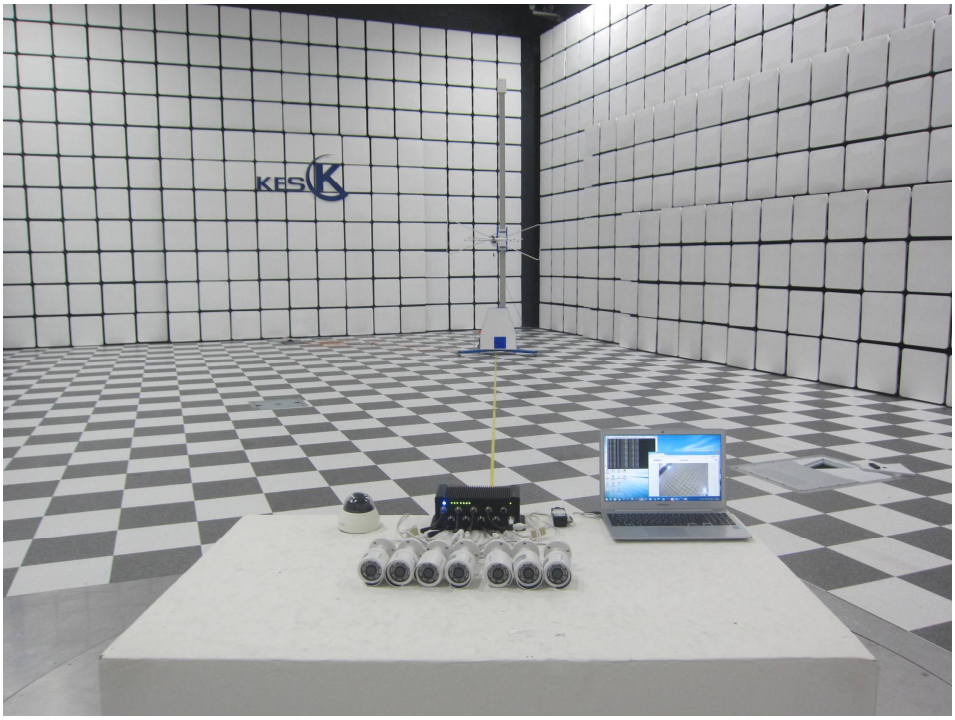
Conducted Voltage Emissions

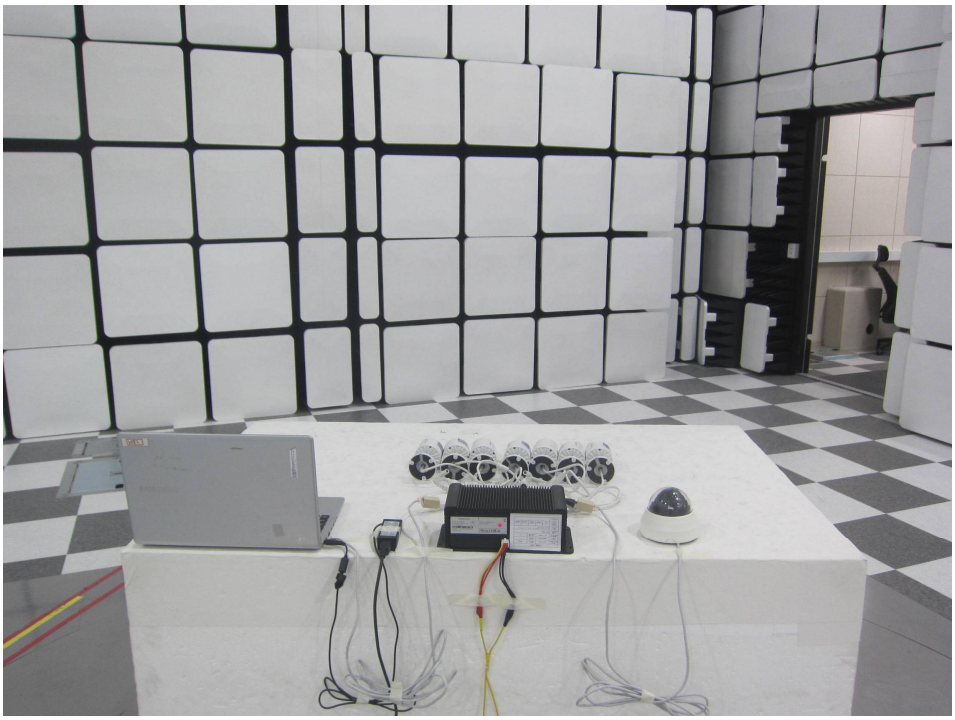
N/A

N/A

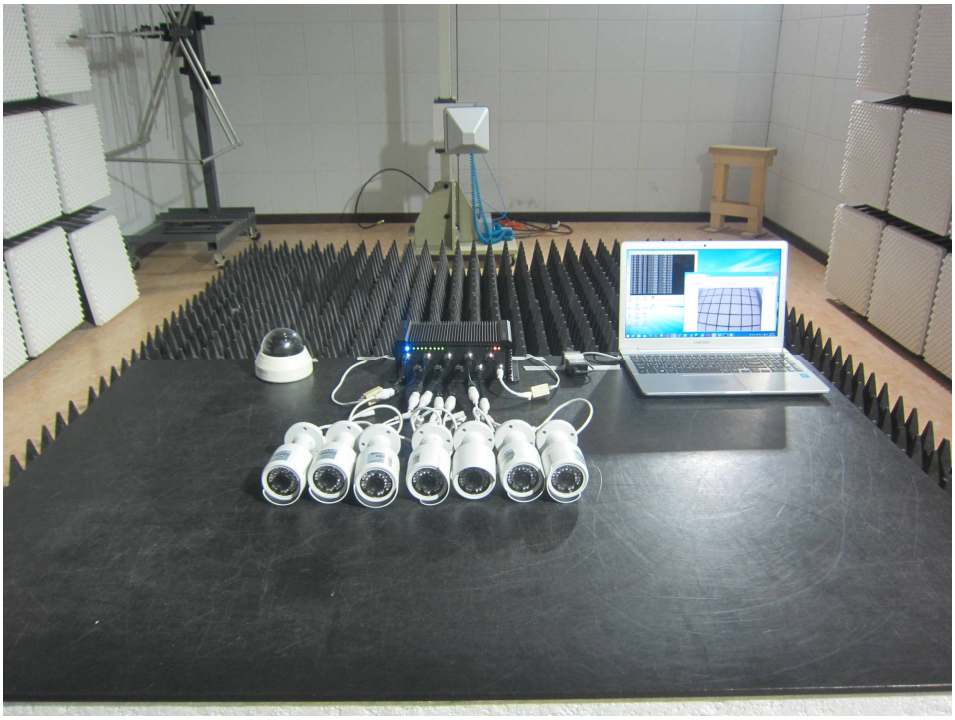
Conducted Telecommunication Emissions

Radiated Electric Field Emissions(Below 1 ㎓)





Radiated Electric Field Emissions(Above 1 ㎓)



Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A

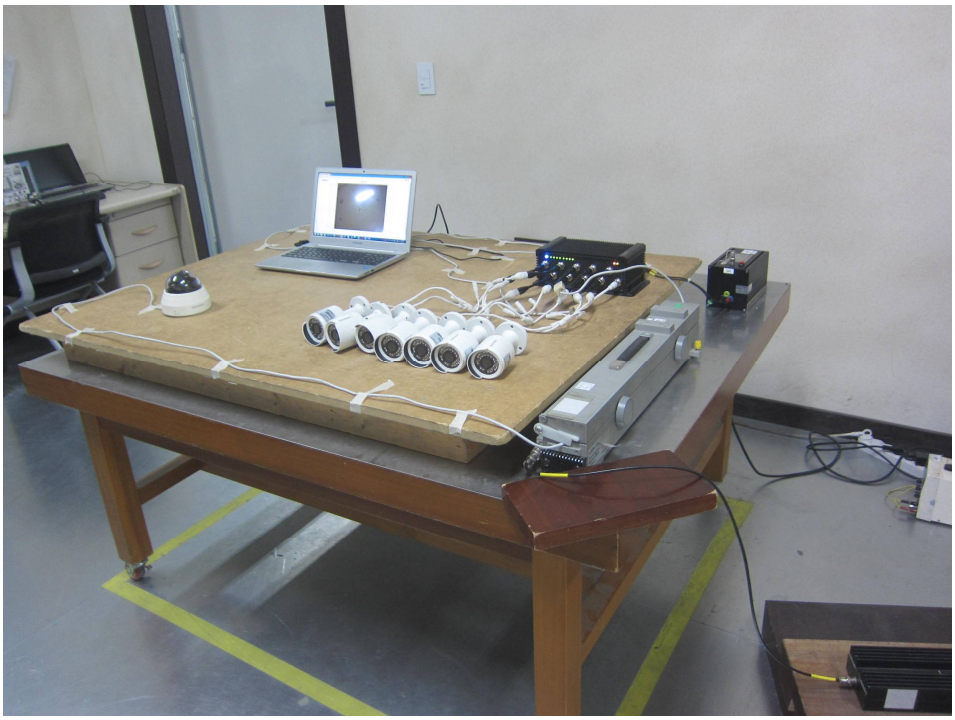
Electrostatic Discharge

Radiated Electric Field Immunity

Electrical Fast Transients/Bursts

Surge Transients

Conducted Disturbance



Power Frequency Magnetic Field Immunity

N/A

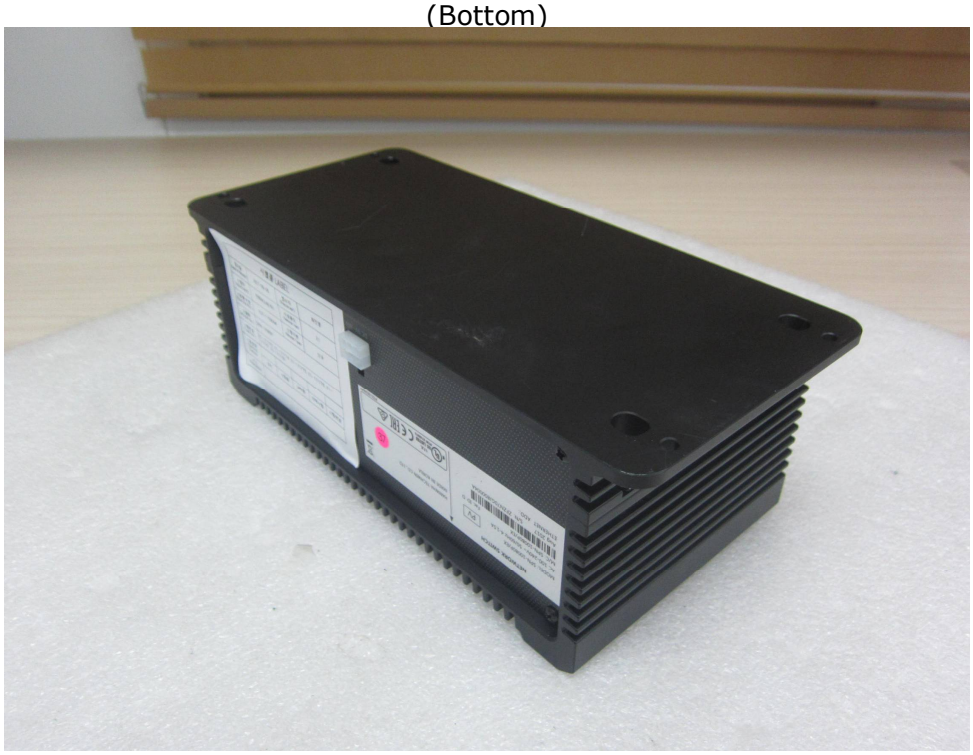
Voltage Dips and Short Interruptions

N/A

EUT External Photographs

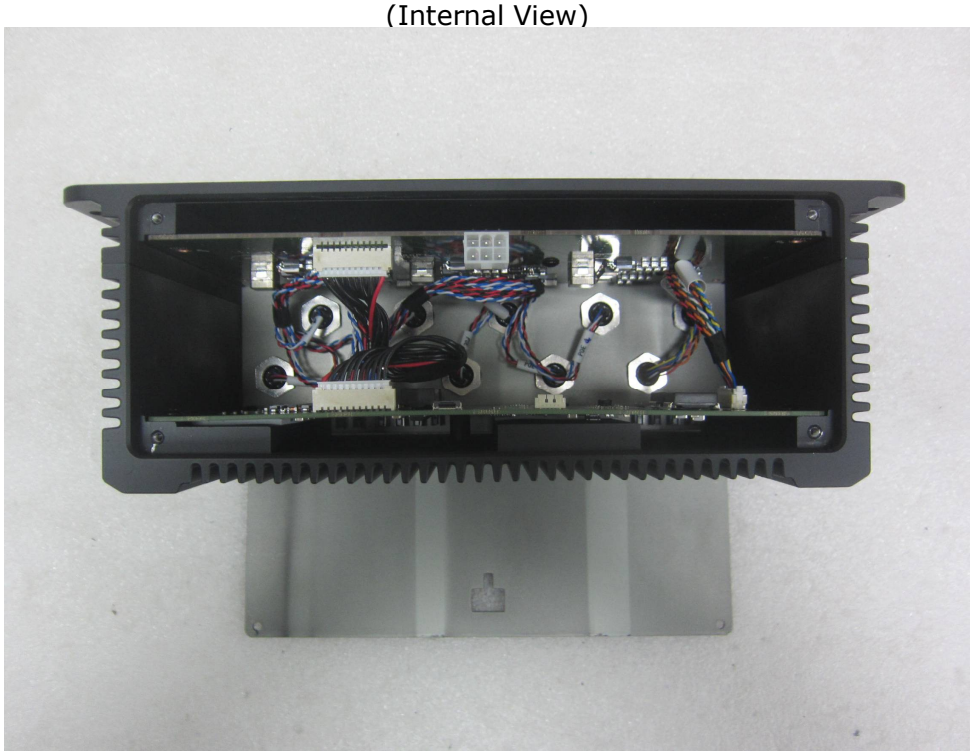
(Top)

(Bottom)



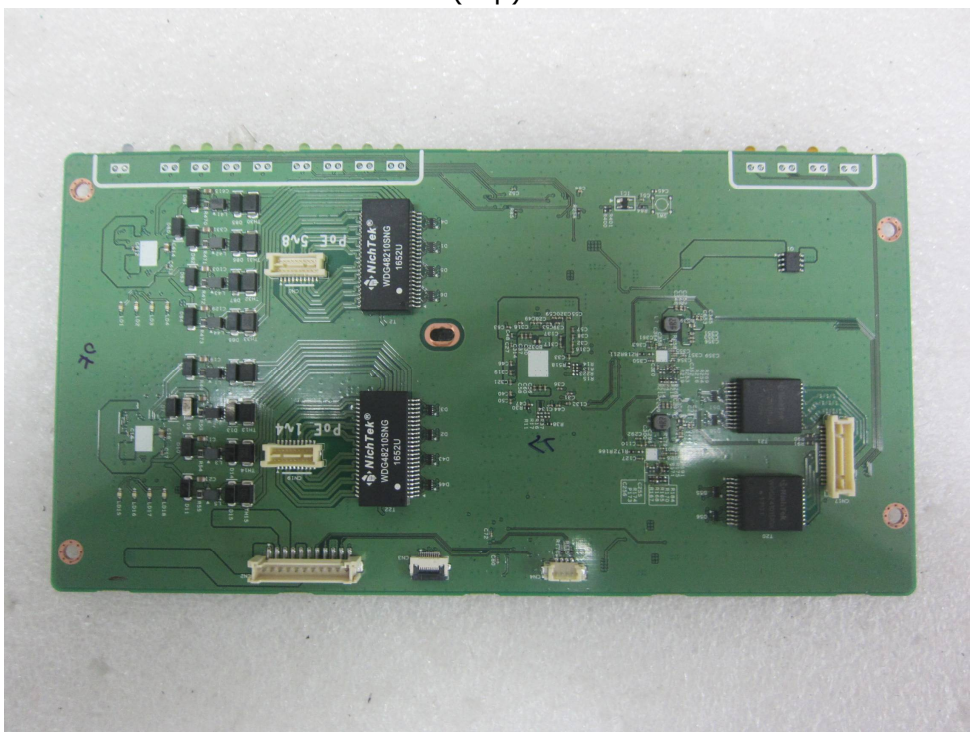
EUT Internal Photographs

(Internal View)

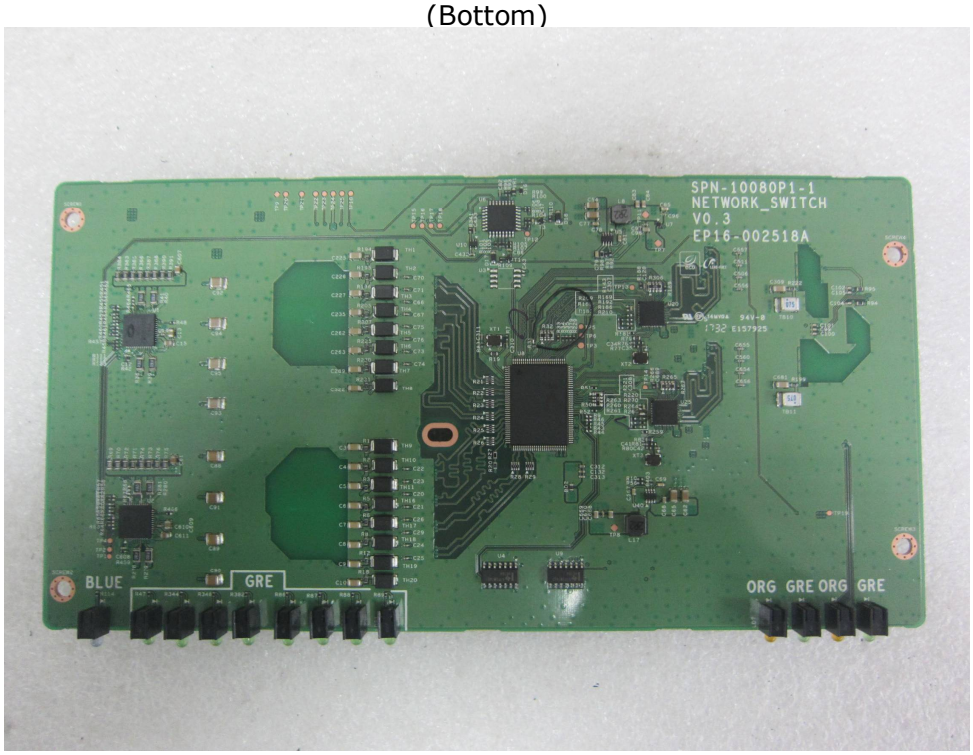


EUT Internal Photographs – Main board

(Top)

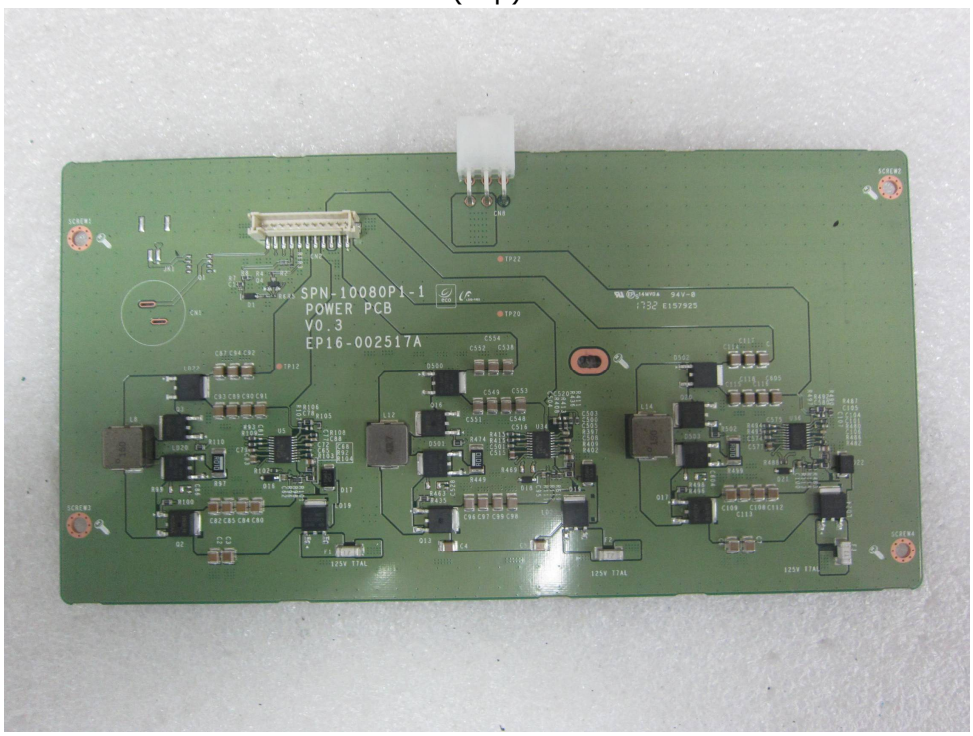


(Bottom)



EUT Internal Photographs – Slot board

(Top)



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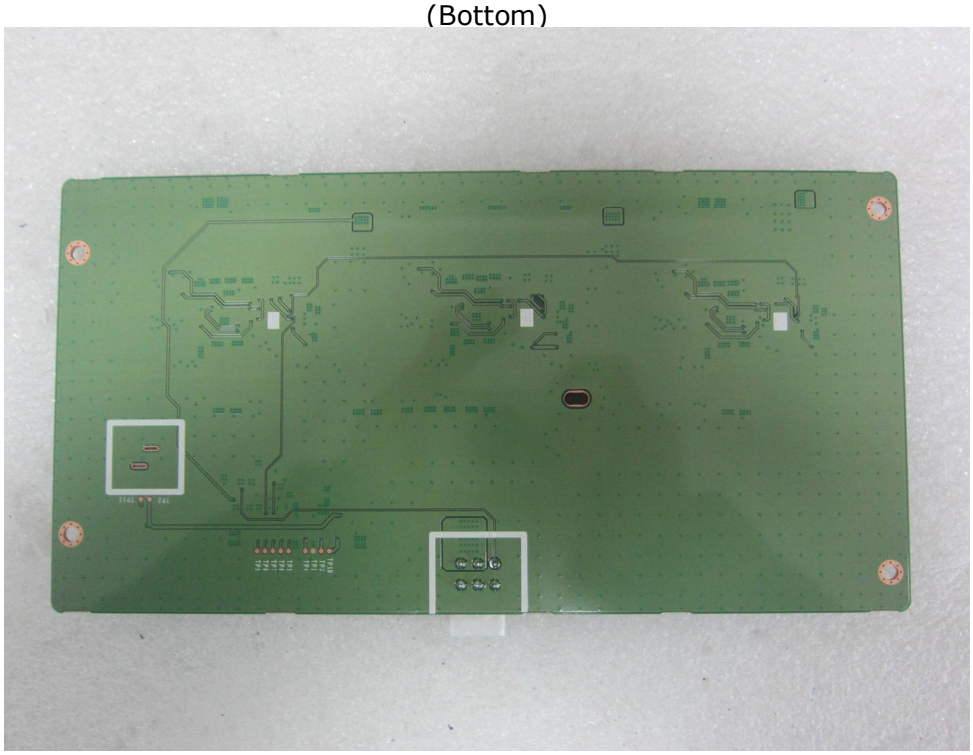
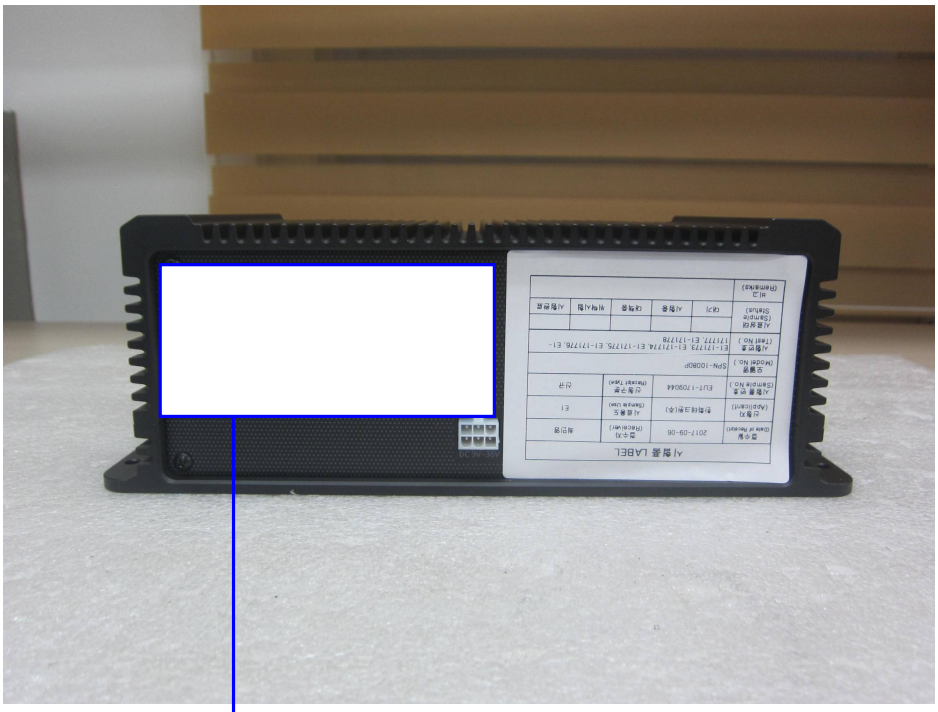


Label Photographs



[LABEL VIEW]

PoE Switch

Model No : SPN-10080P

Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.

Made in China

CE