



KES Co., Ltd.

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Report No.:
KES-E1-19T0808-R1
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EMC TEST REPORT For RCM

Test Report No. : KES-E1-19T0808-R1
Date of Issue : Dec. 10, 2020
Product name : Network Camera
Model/Type No. : PNB-A9001
Variant Model : PNB-A9001LP, PNB-A9001OP
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of 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 : Nov. 26, 2019
Test date : Dec. 06, 2019
Test Results : In Compliance Not in Compliance

Tested by

Min Seong, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 18, 2019	KES-E1-19T0808	Issued
Dec. 10, 2020	KES-E1-19T0808-R1	Reissuance due to the addition of a derivative

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1.0 General Product Description

Main Specifications of EUT are:

Video		PNB-A9001
Imaging Device	1/1.8" 8MP CMOS	
Effective Pixels	3864(H) x 2180(V)	
NETD	None	
Pixel Size	None	
Min. Illumination	Color: 0.065Lux(F1.2, 1/30sec)	
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation	
Lens		
Focal Length (Zoom Ratio)	None	
Max. Aperture Ratio	None	
Angular Field of View	None	
Min. Object Distance	None	
Focus Control	Simple focus	
Lens Type	DC auto iris, P iris, Manual, I-CS	
Mount Type	C mount, CS mount	
Optional Lens	None	
Pan / Tilt / Rotate		
Pan / Tilt / Rotate Range	None	
Pan Range	None	
Pan Speed	None	
Tilt Range	None	
Tilt Speed	None	
Rotate Range	None	
Sequence	None	
Preset Accuracy	None	
Azimuth	None	
Auto Tracking	None	
Operational		
IR Viewable Length	None	
Camera Title	Off / On (Up to 85 characters) - W/W : English / Numeric / Special characters - China : English / Numeric / Special / Chinese characters - Common : Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Auto scale by resolution	
Day & Night	Auto(ICR)/Color/BW/External/Schedule	
Backlight Compensation	BLC, WDR	
Wide Dynamic Range	120dB	
Contrast Enhancement	SSDR (Off / On)	
Digital Noise Reduction	SSNR(2D+3D Noise Filter) (Off / On)	
Digital Image Stabilization	Support(built-in gyro sensor)	
Defog	None	
Motion Detection	8ea, 8point Polygonal zones	
Privacy Masking	32ea, polygonal zones - Color : Gray, Green, Red, Blue, Black, White - Mosaic	

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Gain Control	Support	
White Balance	ATW / AWC / Manual / Indoor / Outdoor(include Mercury & Sodium)	
Contrast	Level adjustment	
LDC	Support	
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec)	
Digital PTZ	Support(Preset, Group)	
Video Rotation	Flip, Mirror, Hallway view(90°/270°)	
Analytics	Object detection(Person/Vehicle/Face/ License plate), Defocus detection, Directional detection, Motion detection, Digital auto tracking, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection, Sound classification, Shock detection BestShot, Feature extraction	
Business Intelligence	People counting, Queue management, Heatmap	
Serial Interface	RS-485(Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)	
Alarm I/O	Input 1ea / Output 1ea / 12V Power (Max. 50mA) 1ea - 2 configurable i/o ports	
Alarm Triggers	Analytics, Network disconnect, Alarm input	
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output DPTZ Preset Handover Audio playback	
Audio In	Selectable(mic in/line in/Built in MIC) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm	
Audio Out	Line out, Max.output level: 1Vrms	
IR Illuminator (Optional)	None	
Wiper	None	
Coaxial Protocol	None	
Video Transmission Distance	None	
Radiometry		
Temperature detect range	None	
Temperature accuracy	None	
Temperature detection	None	
Additional	None	

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Network		
Ethernet	RJ-45(10/100/1000BASE-T)	
Video Compression	H.265/H.264: Main/High, MJPEG	
Resolution	3840x2160, 3072x1728, 2592x1944, 2688x1520, 2560x1440, 2048x1536, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800 x 600, 800 x 448, 720 x 576, 720x480, 640x480, 640x360	
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 15fps/12fps(60Hz/50Hz)	
Smart Codec	Manual(5ea area), WiseStreamII	
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Quality level control	
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR	
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 3 profiles)	
Audio Compression	G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz	
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast)	
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) Device Certificate(Hanwha Techwin Root CA)	
Edge Storage	Micro SD/SDHC/SDXC 2slot 2~ 256GB Total 512GB	
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek	
Web Viewer	Supported OS: Windows 8.1, 10, Mac OS X 10.10, 10.11, 10.12 Recommended Browser: Google Chrome Supported Browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)	
Memory	4096MB RAM, 512MB Flash	
Environmental		
Operating Temperature / Humidity	-10°C ~ +55°C(+14°F ~ +131°F) / Less than 90% RH	
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH	
Certification	None	
Electrical		
Input Voltage	PoE+(IEEE802.3at), 12VDC	
Power Consumption	PoE+: Max 19.50W, typical 15.00W 12VDC: Max 16.50W, typical 12.00W	
Mechanical		
Color / Material	Body: Black / Aluminum	
RAL Code	None	
Product dimensions / weight	73.1x66.6x147.8mm, Weight : 0.70Kg (1.54lb)	
Conduit hole		
Hanging mount(Dome)		
Skin cover(Dome)		
Weather cap(Dome)		
Power module		
Backbox		

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1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage 240 Vac 100 Vac 24 Vac 12 Vdc PoE

Frequency 50 Hz 60 Hz Hz

1.2 Variant Model Differences

Addition of derivative model for distribution route classification

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Network Camera	PNB-A9001	-	HANWHA TECHWIN (TIANJIN) CO., LTD	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE+ Adapter	GS728TPP	-	NETGEAR	-
Lens	M118VG1250IR	-	TAMRON	-
Notebook	P95G001	8KM8HT2	Wistron Infocom (Chengdu) Company Limited	-
Notebook Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY(CHANGZ HOU)CO.,LTD.	-
Controller	SPC-1010	C50E67WG10100F	SamSung Techwin Co.,Ltd.	-
Controller Adapter	RS-AB1000	-	Dongguan Jinhua sheng Power Technology Co.,Ltd.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	MP1000	-	-	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Button Alarm	-	-	-	-
Smart Phone	LG-SU760	108KPQJ0186212	LG Electronics Co.,Ltd.	-
Micro SD Card	-	-	SanDisk	8 GB

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1.6 External I/O Cabling

■ DC 12 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	IRIS	Lens	IRIS	0.2	U
	NETWORK	Notebook	RJ-45	3.0	U
	RS-485	Controller	RS-485	3.0	U
	Audio Out	Speaker	3.5 mm	1.4	U
	Audio In	MIC	XLR	1.4	U
	Alarm Out	Alarm	Alarm In	3.0	U
	Alarm In	Button Alarm	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	Smart Phone	3.5 mm	1.0	U

■ PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	IRIS	Lens	IRIS	0.2	U
	NETWORK	PoE+ Adapter	RJ-45	3.0	U
	RS-485	Controller	RS-485	3.0	U
	Audio Out	Speaker	3.5 mm	1.4	U
	Audio In	MIC	XLR	1.4	U
	Alarm Out	Alarm	Alarm In	3.0	U
	Alarm In	Button Alarm	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	Smart Phone	3.5 mm	1.0	U
	RJ-45	PoE+ Adapter	RJ-45	2.0	U

* Unshielded=U, Shielded=S

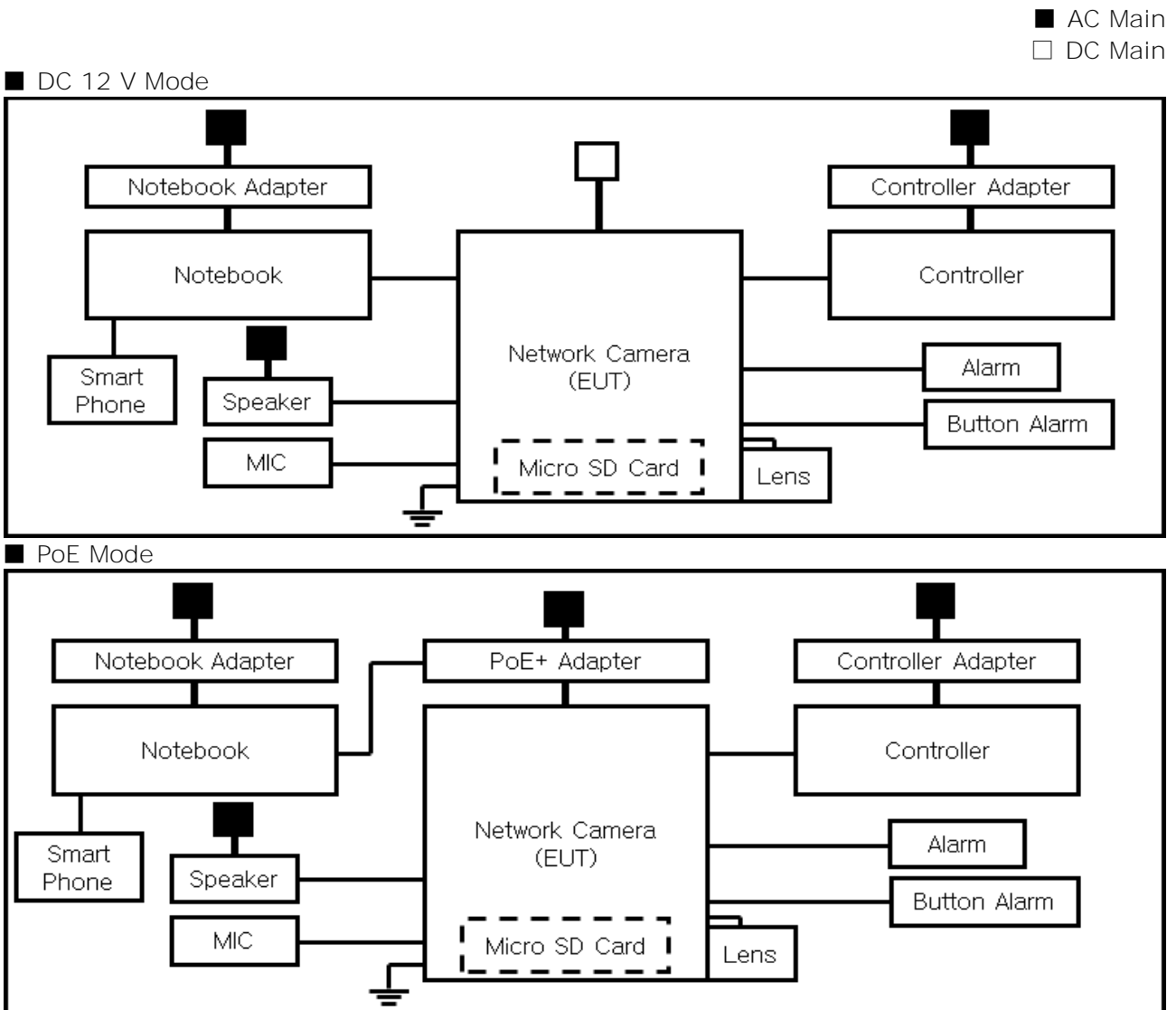
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1.7 EUT Operating Mode(s)

Test mode	operating
DC 12 V, PoE	Monitoring EUT Using Web Viewer, Ping Test

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

1.8 Configuration



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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. 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-Anechoic 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-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, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
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-20056, C-20036, T-20040, G-20057
Europe	TÜ V SÜ D	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004

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2.0 Test Regulations

The emissions tests were performed according to following regulations:

- EMC – Directive 2014/30/EU

- EN 61000-6-3: 2011
- EN 61000-6-1: 2007
- EN 61000-6-4: 2007 +A1: 2011
- EN 61000-6-2: 2005
- EN 55011: 2007 +A1: 2010 Group 1 Group 2
 Class A Class B
- EN 55014-1: 2006 +A2: 2011
- EN 55014-2: 1997 +A2: 2008
- EN 55015: 2013
- EN 55032: 2015 Class A Class B
- EN 55024: 2010
- EN 50130-4: 2011 +A1: 2014
- EN 61000-3-2: 2014
- EN 61000-3-3: 2013
- EN 61326-1: 2013



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-
- | | | |
|---|---|----------------------------------|
| <input type="checkbox"/> VCCI -CISPR 32:2016 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> AS/NZS CISPR32:2015 | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> 47 CFR Part 15, Subpart B | | |
| <input type="checkbox"/> CISPR 22:2009 +A1:2010 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2009 | | |
| <input type="checkbox"/> IC Regulation ICES-003 : 2016 | | |
| <input type="checkbox"/> CAN/CSA CISPR 22-10 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2014 | | |
| <input type="checkbox"/> RE- Directive 2014/53/EU | | |
| <input type="checkbox"/> EN 301 489-1 V1.9.2 | | |
| <input type="checkbox"/> Equipment for fixed use | | |
| <input type="checkbox"/> Equipment for vehicular use | | |
| <input type="checkbox"/> Equipment for portable use | | |
| <input type="checkbox"/> EN 301 489-3 V1.6.1 | | |
| <input type="checkbox"/> EN 301 489-17 V2.2.1 | | |
| <input type="checkbox"/> EN 60945:2002 | | |

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2.1 Conducted Emissions at Mains Power Ports

Test Date
N/A

Test Location
Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101781	04, 22, 2020
<input type="checkbox"/>	LISN	ENV216	R & S	101787	01, 04, 2020
<input type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	04, 22, 2020
<input type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 25, 2020

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
It is not tested apply because it is powered by DC and PoE.

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2.2 Conducted Emissions at Telecommunication Ports

Test Date
Dec. 02, 2019

Test Location
Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101781	04, 22, 2020
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	01, 04, 2020
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	04, 22, 2020
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 25, 2020
<input type="checkbox"/>	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2020
<input checked="" type="checkbox"/>	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2020

Test Conditions

Temperature: 20,1 °C
Relative Humidity: 50,2 % R.H.

Frequency Range of Measurement
150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- PASS
- NOT PASS
- NOT APPLICABLE

Remarks

See Appendix A for test data.



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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date
Dec. 02, 2019

Test Location
 OPEN AREA TEST SITE #2 SEMI ANECHOIC CHAMBER #4(10 m)

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	R & S	100551	04, 09, 2020
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2020
<input checked="" type="checkbox"/>	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	32173	03, 11, 2020

Test Conditions
Temperature: 22,1 °C
Relative Humidity: 51,7 % 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.

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2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date
Dec. 01, 2019

Test Location
SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR7	R & S	101190	08, 06, 2020
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 27, 2020
<input type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 11, 2020
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 12, 2021

Test Conditions

Temperature: 22,3 °C
Relative Humidity: 51,6 % 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.

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APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

N/A

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NEUTRAL LINE

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))

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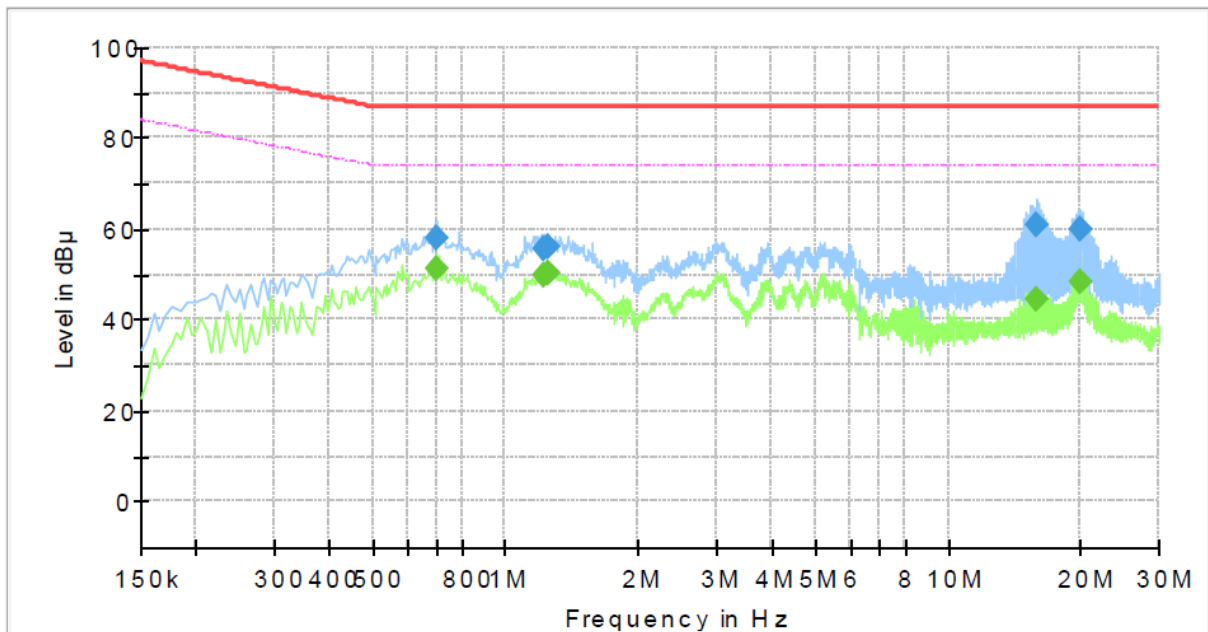


Conducted Emissions at Telecommunication Ports

■ DC 12 V Mode
 [1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
 Model No.: PNB-A9001
 Mode :
 Speed : DC 12 V_1 000 Mbps
 Operator Name: KES



Final Result

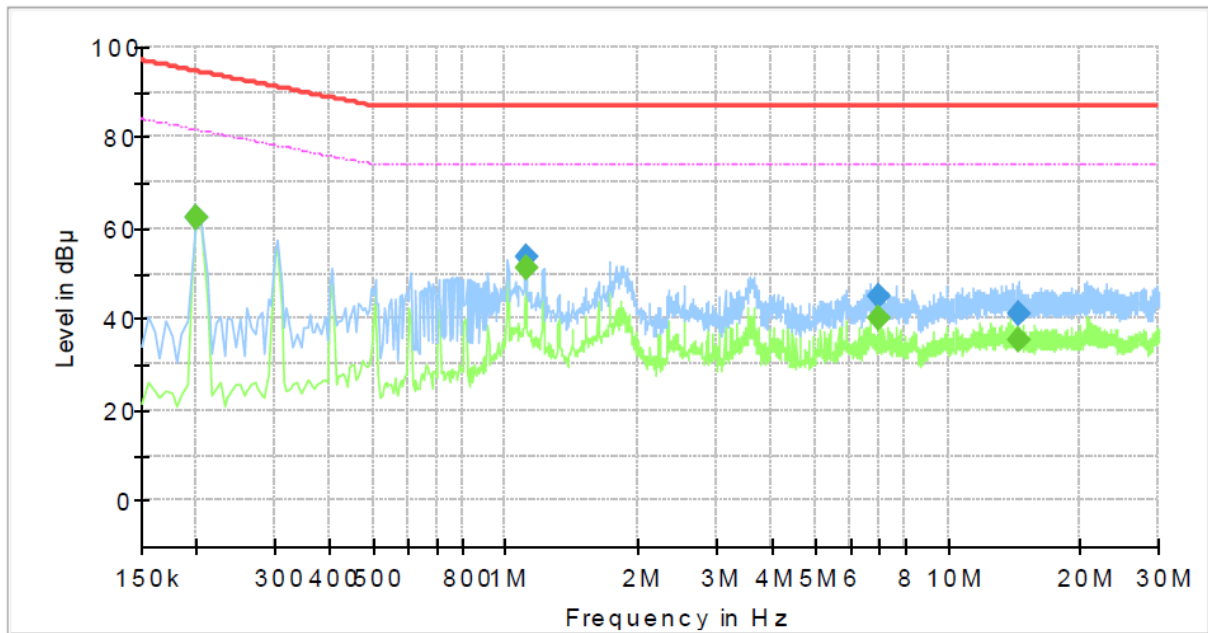
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.695000	---	51.51	74.00	22.49	1000.0	9.000	Single Line	20.1
0.695000	58.15	---	87.00	28.85	1000.0	9.000	Single Line	20.1
1.215000	---	49.81	74.00	24.19	1000.0	9.000	Single Line	20.3
1.215000	55.63	---	87.00	31.37	1000.0	9.000	Single Line	20.3
1.245000	---	50.28	74.00	23.72	1000.0	9.000	Single Line	20.3
1.245000	55.94	---	87.00	31.06	1000.0	9.000	Single Line	20.3
15.935000	---	44.51	74.00	29.49	1000.0	9.000	Single Line	20.0
15.935000	60.78	---	87.00	26.22	1000.0	9.000	Single Line	20.0
19.965000	---	48.59	74.00	25.41	1000.0	9.000	Single Line	20.1
19.965000	60.01	---	87.00	26.99	1000.0	9.000	Single Line	20.1

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■ PoE Mode
[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNB-A9001
Mode :	
Speed :	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)
0.200000	---	62.32	81.61	19.29	1000.0	9.000	Single Line	19.8
0.200000	62.47	---	94.61	32.14	1000.0	9.000	Single Line	19.8
1.110000	---	51.20	74.00	22.80	1000.0	9.000	Single Line	20.3
1.110000	53.57	---	87.00	33.43	1000.0	9.000	Single Line	20.3
6.970000	---	39.98	74.00	34.02	1000.0	9.000	Single Line	19.7
6.970000	44.86	---	87.00	42.14	1000.0	9.000	Single Line	19.7
14.540000	---	35.54	74.00	38.46	1000.0	9.000	Single Line	20.0
14.540000	41.16	---	87.00	45.84	1000.0	9.000	Single Line	20.0

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

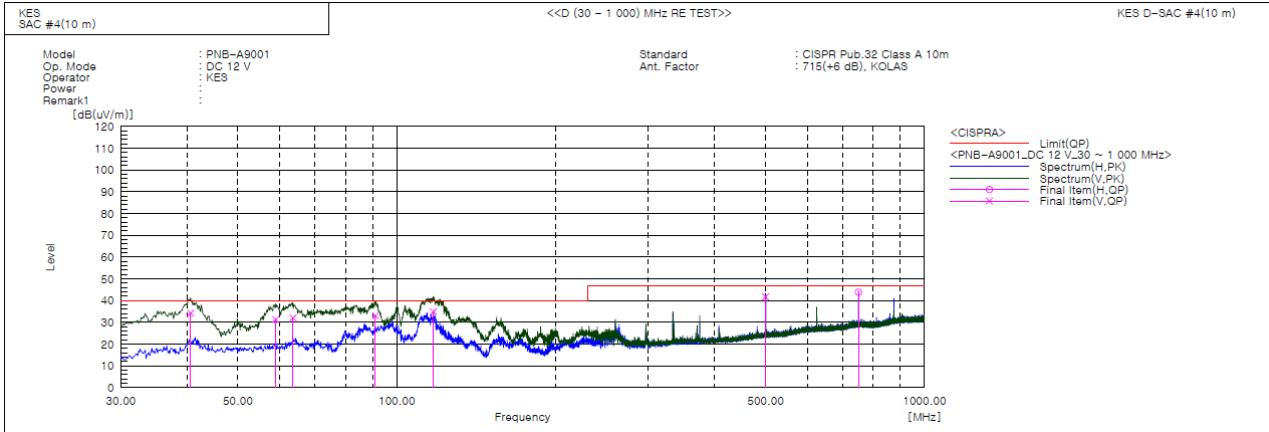
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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Radiated Electric Field Emissions(Below 1 GHz)

■ DC 12 V Mode



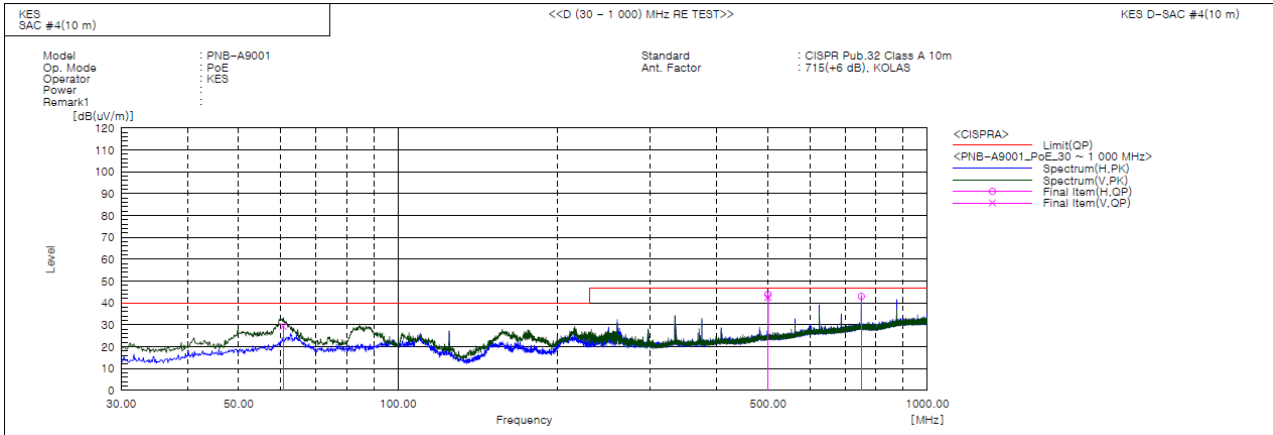
Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	40.670	V	56.8	-22.6	34.2	40.0	5.8	100.0	253.0	
2	58.979	V	53.6	-22.2	31.4	40.0	8.6	130.0	266.0	
3	63.586	V	55.1	-23.1	32.0	40.0	8.0	100.0	257.0	
4	91.110	V	57.4	-24.4	33.0	40.0	7.0	128.0	111.0	
5	117.300	V	58.4	-23.5	34.9	40.0	5.1	142.0	282.0	
6	499.965	V	54.5	-12.7	41.8	47.0	5.2	277.0	330.0	
7	749.983	H	51.2	-7.3	43.9	47.0	3.1	268.0	269.0	

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■ PoE Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	60.676	V	51.8	-22.5	29.3	40.0	10.7	100.0	241.0	
2	499.980	H	56.7	-12.7	44.0	47.0	3.0	272.0	284.0	
3	499.996	V	55.2	-12.7	42.5	47.0	4.5	193.0	339.0	
4	750.104	H	50.3	-7.3	43.0	47.0	4.0	217.0	217.0	

◆ Calculation

$$\text{Result(QP)} [\text{dB}(\mu\text{V}/\text{m})] = (\text{Reading(QP)} [\text{dB}(\mu\text{V})] + \text{c.f} [\text{dB}(1/\text{m})])$$

$$\text{Margin(QP)} [\text{dB}] = \text{Limit} [\text{dB}(\mu\text{V}/\text{m})] - \text{Result(QP)} [\text{dB}(\mu\text{V}/\text{m})]$$

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

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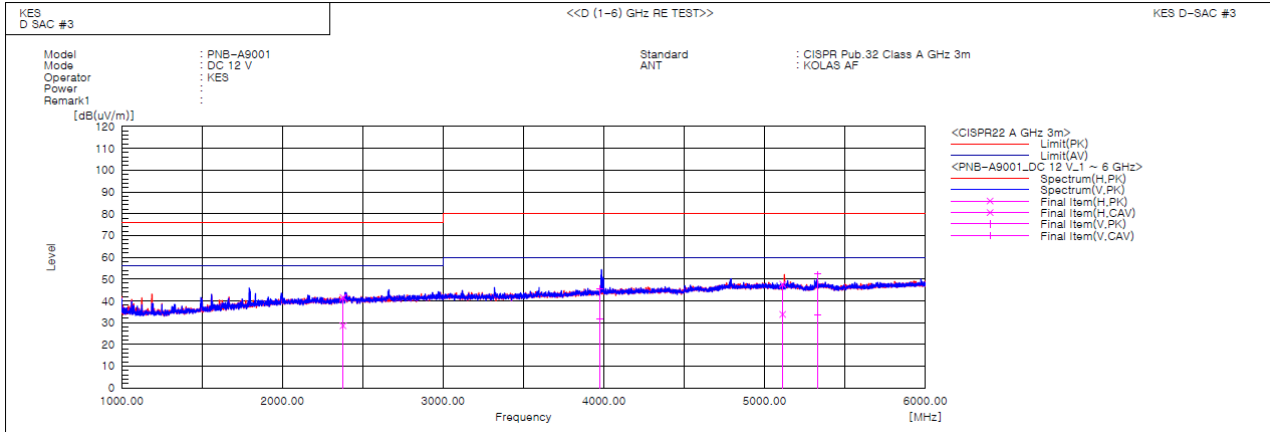
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Radiated Electric Field Emissions(Above 1 GHz)

■ DC 12 V Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	2376.524	H	42.2	29.2	-0.7	41.5	28.5	76.0	56.0	34.5	27.5	100.0	171.5	
2	3973.432	V	40.8	27.3	4.6	45.4	31.9	80.0	60.0	34.6	28.1	100.0	172.4	
3	5111.282	H	39.3	25.5	8.3	47.6	33.8	80.0	60.0	32.4	26.2	100.0	71.9	
4	5331.989	V	44.2	25.7	8.0	52.2	33.7	80.0	60.0	27.8	26.3	100.0	84.9	

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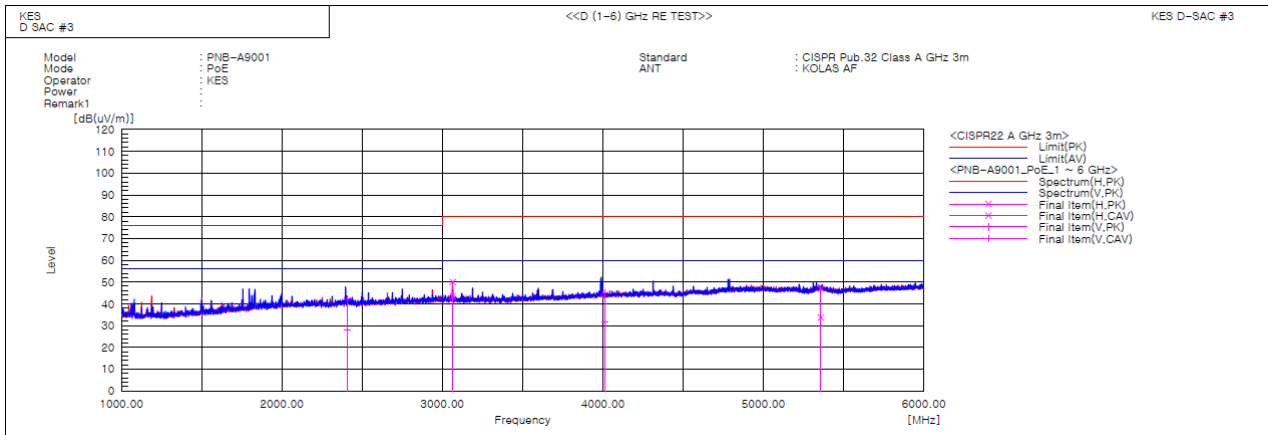


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■ PoE Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	2405.868	V	42.8	28.4	-0.6	42.2	27.8	76.0	56.0	33.8	28.2	100.0	221.0	
2	3062.710	H	48.3	41.8	1.7	50.0	43.5	80.0	60.0	30.0	16.5	100.0	99.7	
3	4012.086	V	40.3	27.1	4.7	45.0	31.8	80.0	60.0	35.0	28.2	100.0	135.3	
4	5357.058	H	38.9	25.7	8.0	46.9	33.7	80.0	60.0	33.1	26.3	100.0	273.9	

◆ Calculation

$$\text{Result(PK/CAV)} [\text{dB}(\mu\text{V}/\text{m})] = (\text{Reading(PK/CAV)} [\text{dB}(\mu\text{V})] + \text{c.f} [\text{dB}(1/\text{m})])$$

$$\text{Margin(PK/CAV)} [\text{dB}] = \text{Limit} [\text{dB}(\mu\text{V}/\text{m})] - \text{Result(PK/CAV)} [\text{dB}(\mu\text{V}/\text{m})]$$

Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

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Test Setup Photos and Configuration Conducted Emissions at Mains Power Ports

N/A

N/A

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Conducted Emissions at Telecommunication Ports



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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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EUT External Photographs

(Top)



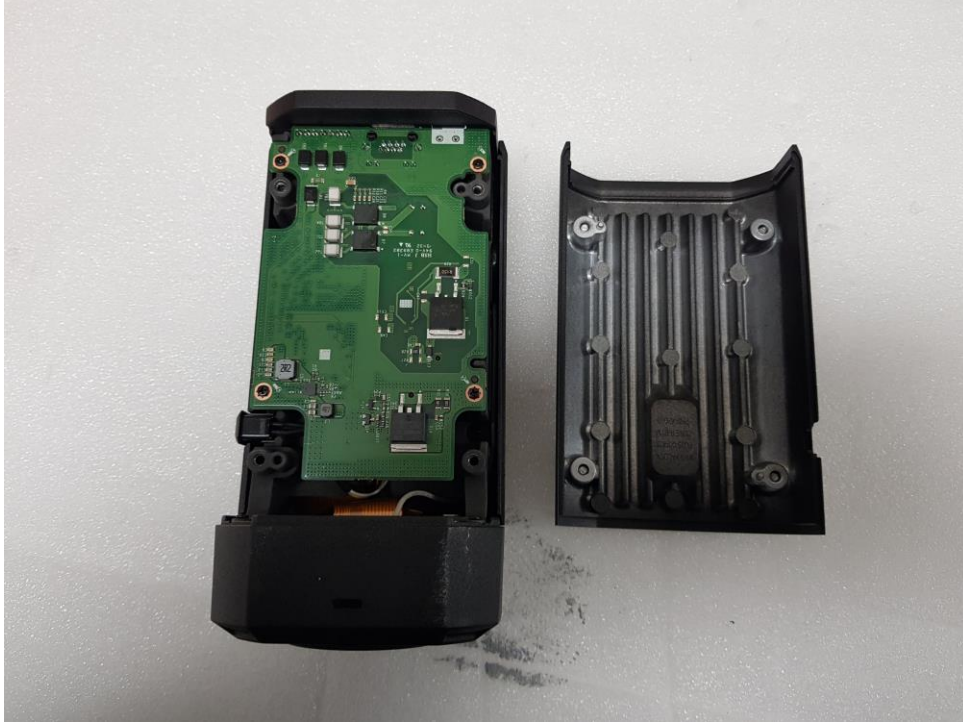
(Bottom)



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EUT Internal Photographs

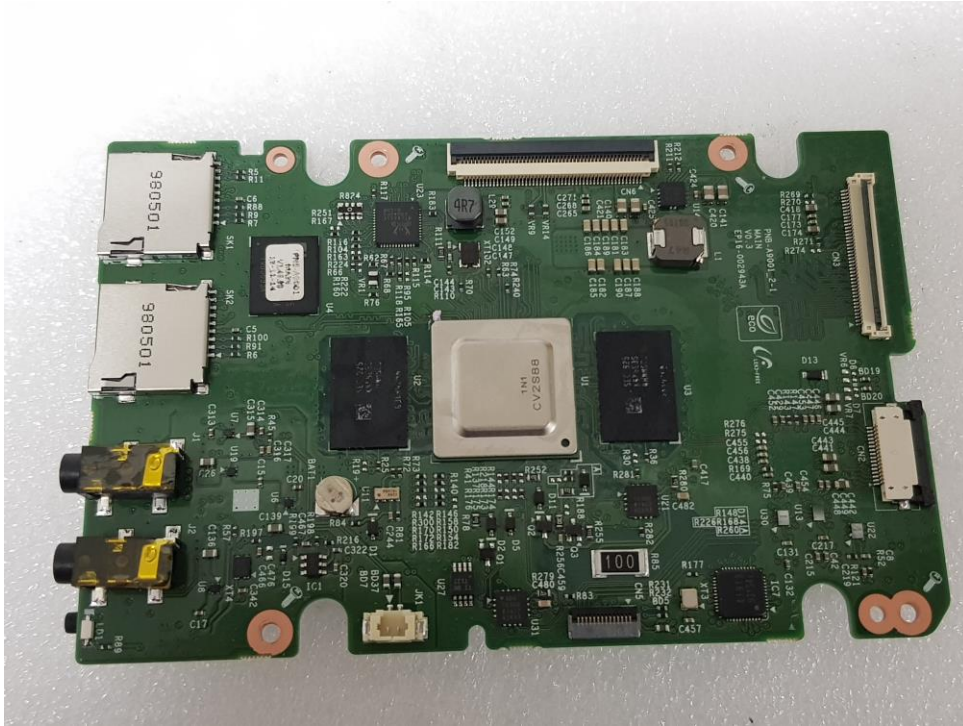
(Internal View)



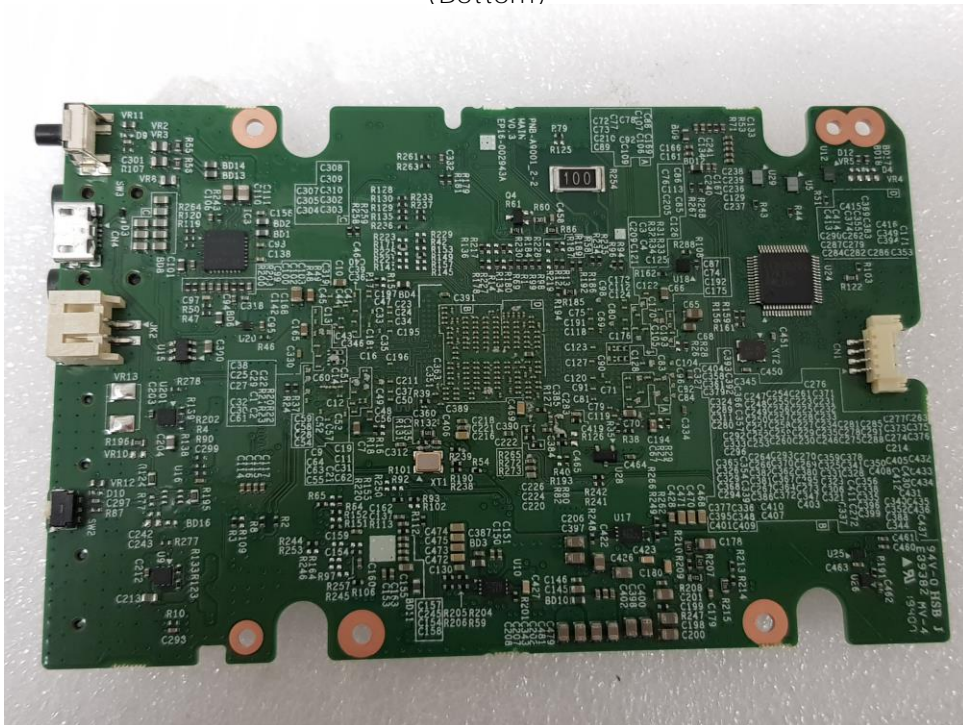
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EUT Internal View – Main Board

(Top)



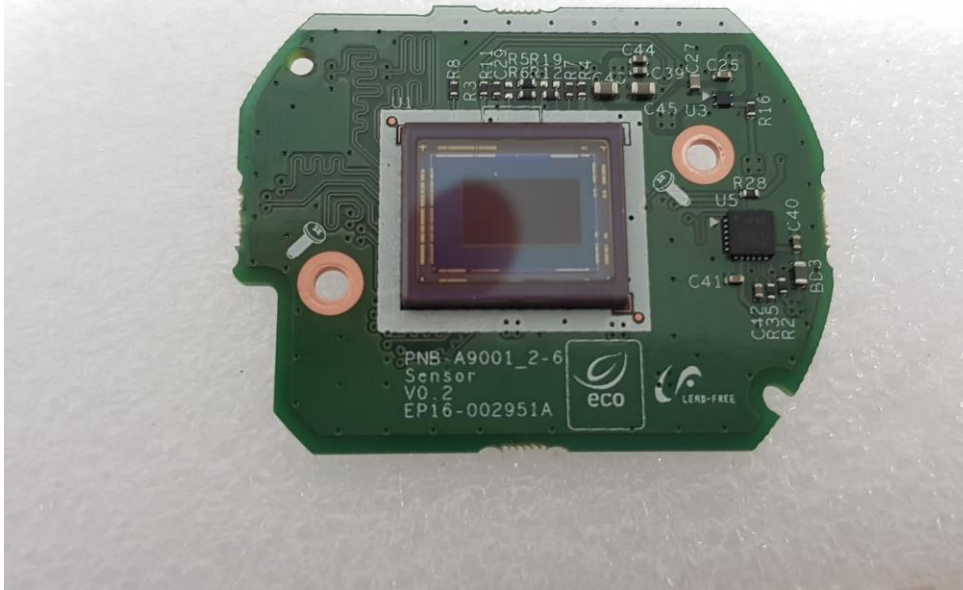
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EUT Internal View – SENSOR Board

(Top)



(Bottom)



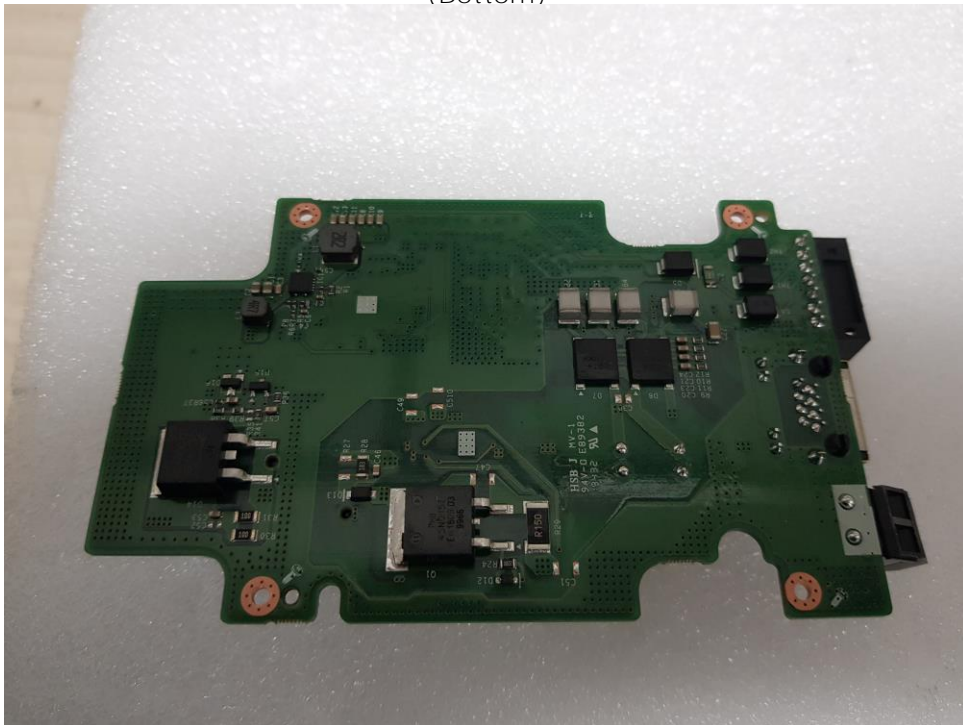
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EUT Internal View – POWER Board

(Top)



(Bottom)



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