TESTING CERTIFICATE

EMC Compliance Ltd.
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do,
443-390, Korea
TEL: 82 70 5008 1021
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Certificate No.:EMC-K-E0149

1. Applicant

Name: Samsung Techwin Co., Ltd.

Address: 84, Jeongdong-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do, Korea

Date of Receipt: October 21, 2014

2. Manufacturer

Name#1: Samsung Techwin Co., Ltd.

Name#2: TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONIC CO., LTD

3. Use of Report: Completed report

4. Test Sample: Network Camera, SNB-8000P

5. Date of Test: November 09 ~ 10, 2014

6. Test method used: AS/NZS CISPR 22:2009+A1:2010, Class A

7. Testing Environment: Temperature: (25.4 ± 3.0) °C,
Relative Humidity: (26.55 ± 0.65) % R.H.

8. Test Results: Refer to page 15 ~ page 38
(Measurement uncertainty: Refer to page 6)

This result shown in this report refer only to the sample(s) tested unless otherwise stated.
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	Tested by	Technical Manager
Affirmation	Name: JUNG, YONG-JUN	Name: BEAK, JEONG-SOO

The above test certificate is the accredited test results by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

2014. 11. 12

EMC Compliance Ltd.

Accredited by KOLAS, Republic of KOREA

Contents

1. Applicant information

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Contact name:	**Kang Jei Soon**

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Manufacturer#2:	TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONIC CO., LTD
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2. Laboratory information

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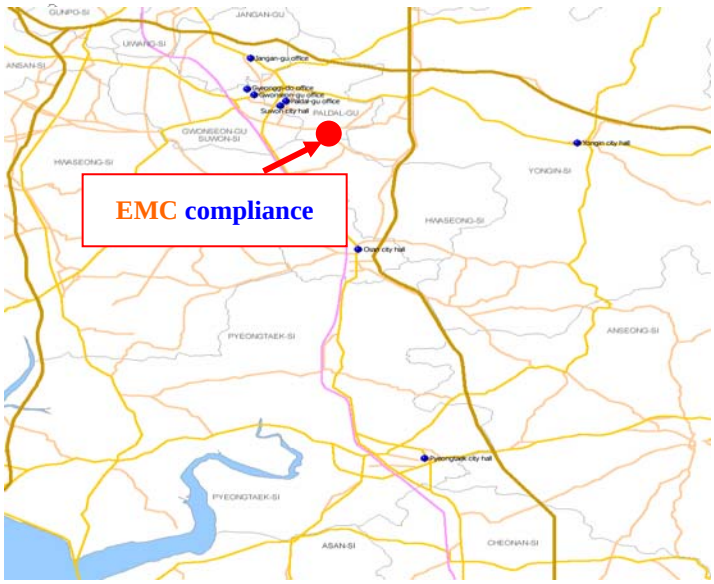
FCC CAB.: KR0040
VCCI Registration No. : R-3327, G-198, C-3706, T-1849
Industry Canada Registration No.: 8035A
KOLAS NO.: 231

SITE MAP



3. Test system configuration

3.1 Operation environment

		Temperature	Humidity	Pressure
Chamber(10 m)	:	28.4 °C	27.2 % R.H.	-
Shielded room(CE)	:	22.4 °C	25.9 % R.H.	-

Test site

These testing items were performed following locations;

Test item	Test site
Conducted Emission	Shielded Room
Radiated Emission	10 m Chamber

3.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.
The factors contributing to uncertainties are test receiver, cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, site imperfection, mismatch, and system repeatability. Based on CISPR 16-4-2, the measurement uncertainty level with a 95 % confidence level was applied.

Conducted emission measurement (C.L: Approx 95 %, k = 2)		
Shielded Room (CE#1)	9 ㎑ ~ 150 ㎑: ± 3.75 dB 150 ㎑ ~ 30 ㎒: ± 3.36 dB	
Shielded Room (CE#2)	9 ㎑ ~ 150 ㎑: ± 3.79 dB 150 ㎑ ~ 30 ㎒: ± 3.42 dB	
Radiated Emission measurement (C.L: Approx 95 %, k = 2)		
10 m Chamber (#F4)	30 ㎒ ~ 300 ㎒	3 m: + 4.87 dB, - 4.99 dB 10 m: + 4.86 dB, - 4.98 dB
	300 ㎒ ~ 1 000 ㎒	3 m: + 5.04 dB, - 5.14 dB 10 m: + 4.91 dB, - 5.02 dB
	1 ㎓ ~ 6 ㎓	3 m: + 6.03 dB, - 6.06 dB
10 m Chamber (#F2)	30 ㎒ ~ 300 ㎒	3 m: + 4.94 dB, - 5.06 dB 10 m: + 4.93 dB, - 5.05 dB
	300 ㎒ ~ 1 000 ㎒	3 m: + 4.97 dB, - 5.08 dB 10 m: + 4.84 dB, - 4.96 dB
	1 ㎓ ~ 6 ㎓	3 m: + 6.03 dB, - 6.05 dB
Radio Frequency Electromagnetic Fields (C.L: Approx 95 %, k = 2)		
± 1.82 dB		
Disturbance power Electromagnetic Fields (C.L: Approx 95 %, k = 2)		
± 3.30 dB		

4. Description of E.U.T.

4.1 General information

	SNB-8000
Video	
Imaging Device	1/1.8" 6M CMOS
Total Pixels	6M -> 3096 x 2094
Effective Pixels	2616(H) x 1976(V) (QSXGA)
Scanning System	Progressive
Min. Illumination	Color : 0.2 Lux (1/20, F1.2, 50IRE), 0.005 Lux (2sec, F1.2, 50IRE) Color : 0.1 Lux (1/20, F1.2, 30IRE), 0.0025 Lux (2sec, F1.2, 30IRE) B/W : 0.02 Lux (1/20, F1.2, 50IRE), 0.0005 Lux (2sec, F1.2, 50IRE) B/W : 0.01 Lux (1/20, F1.2, 30IRE), 0.00025 Lux (2sec, F1.2, 30IRE)
S / N Ratio	50dB ↑
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation - DIP connector type
Lens	
Focus Control	Simple Focus / Manual - Remote control via network ,Button control (Manual, Simple Focus)
Lens Type	Manual / DC Auto Iris, P-Iris
Mount Type	C/CS Mount
Operational	
Camera Title	Off / On (Displayed up to 15 characters)
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC
Wide Dynamic Range (contrast Enhancement)	60dB
Contrast Enhancement	SSDR (Samsung Super Dynamic Range) (Off / On)
Digital Noise Reduction	SSNRIII(2D+3D Noise Filter)
Digital Image Stabilization	-
Defog	-
Motion Detection	Off / On (4ea, Rectanglular zones)
Privacy Masking	Off / On (32ea, Rectanglular zones)
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor (Include Mecury)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Digital PTZ	16x, Digital PTZ(Preset,Group)
Flip / Mirror	Off / On
Intelligent Video Analytics	Tampering, Audio Detection, People Counting (coming '15.MAR)
Alarm I/O	Input 1ea / Output 1ea
Audio In	Selectable (Mic IN/Line IN) (Built- IN Mic) Supply voltage:2.5V DC(4mA), Input I,pedance : approx 2K ohm
Audio out	Line out (3.5mm stereo mini jack Max output Level : 1Vrms
Serial Interface	RS-485 - Samsung-T/E, Pelco-D/P, Sungjin, Panasonic, vicon, Honewell, AD, GE, Bosch
Alarm Triggers	Motion detection, Tampering, Audio Detection, Alarm Input, Network Disconnection
Alarm events	File upload via FTP and E-Mail Notification via E-Mail, TCP and HTTP local storage(SD/SDHC/SDXC) or NAS recording at Network disconnected & Event (Alarm Triggers) External output

Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.264 (MPEG-4 Part 10/AVC), Motion JPEG
Resolution	5M Mode 2592x1944 / 1920x1080 /1600x1200/ 1280x1024 /1280x960 / 1280x720 /1024x768/ 800x600 / 720x576 / 720x480/ 640x480 / 320x240 2M Mode 1920x1080 / 1600x1200/ 1280x1024 /1280x960 / 1280x720 /1024x768/ 800x600 / 720x576 / 720x480/ 640x480 / 320x240
Max. Framerate	5M Mode H.264: 20 fps for all resolution MJPEG: 2592x1944 : 10 fps 1920x1080 / 1600x1200 / 1280x1024 / 1280x960 / 1280x720 / 1024x768 : 15 fps 800x600 / 720x576 / 720x480 / 640x480 / 320x240 : 20 fps 2M Mode H.264: 30 fps for all resolution MJPEG: 1920x1080 / 1600x1200 / 1280x1024 / 1280x960 / 1280x720 / 1024x768 : 15 fps 800x600 / 720x576 / 720x480 / 640x480 / 320x240 : 20 fps
Smart Codec	-
Video Quality Adjustment	H.264 : Compression Level, Target Bitrate Level Control MJPEG : Quality Level Control
Bitrate Control Method	H.264 : CBR or VBR, Motion JPEG : VBR
Streaming Capability	Multiple Streaming (Up to 6 Profiles)
Audio Compression Format	G.711 u-law /G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps
Audio Communication	Bi-directional
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication
Streaming Method	Unicast / Multicast
Max. User Access	10 users at Unicast Mode
Edge Storage	micro SD/SDHC/SDXC (64GB) - motion Images recorded in the SDX/SDHC/SD memory card can be downloaded. NAS(Network Attached Storage)
Application Programming Interface	ONVIF Profile S SUNAPI(HTTP API) SVNP 2.0 Samsung Camera Application Platform
Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Denish, Portuguese, Turkish, Polish, Czech, Rumanian, Serbian, Dutch, Croatia, Hungary, Greek, Finnish, Norwegian
Web Viewer	Supported OS : Windows XP / VISTA / 7 / 8, MAC OS X 10.7 Supported Browser : Microsoft Internet Explorer (Ver. 8~11) Mozilla Firefox (Ver. 9~19) Google Chrome (Ver. 15~25) Apple Safari (Ver. 6.0.2(Mac OS X 10.8, 10.7 Only), 5.1.7) * Mac OS X Only
Central Management Software	SmartViewer, SSM

Environmental	
Operating Temperature / Humidity	-10°C ~ +55°C(+14°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Electrical	
Input Voltage / Current	AC24V±10%, DC12V±10%,PoE(IEEE802.3af,Class3)
Power Consumption	Max. 12.65W (AC 24V, 50~60Hz) Max. 10.68W (DC 12V) Max. 12.14W (PoE, Class3)
Mechanical	
Color / Material	FRONT (BLACK) , BODY (IVORY) / FRONT(Aluminium), BODY(Aluminium)
Dimension (WxHxD)	W73.1 x H66.6 x D147.0
Weight	566g

4.2 Product description

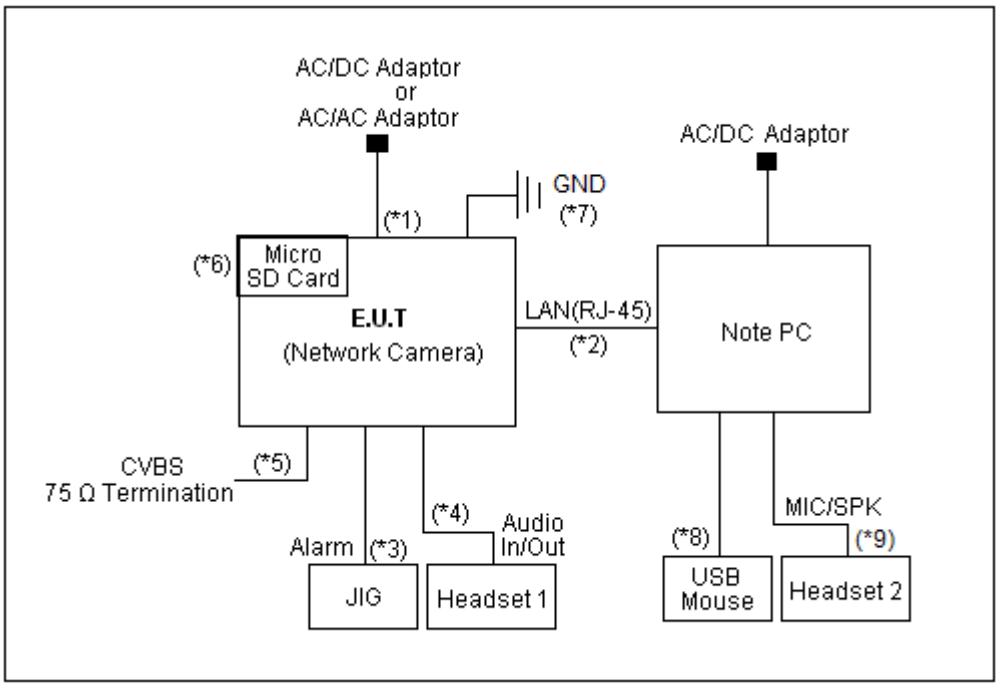
Type of product	Network Camera
Model name (Basic)	SNB-8000P
Model name (Variant)	-
Difference	-
Trade name	-
Serial no	Engineering Sample
Testing voltage	240 Ⅴ, 50 ㎐, PoE
Product rating	*AC/DC Adaptor#1 (DSA-60W-12 1 12048) Input: AC 100 - 240 Ⅴ, 50 / 60 ㎐, 1.5 A Output: DC 12 Ⅴ, 4 A *AC/AC Adaptor#2 (DRL-241500AC) Input: AC 100 - 240 Ⅴ, 50 / 60 ㎐, 1.5 A Output: AC 24 Ⅴ, 1.5A *PoE
Internal clock frequency	Above 108 ㎒
Note	* AC/DC adaptor was provided by the manufacturer. * AC/AC adaptor was provided by the manufacturer. * PoE Switch was not provided by the manufacturer.

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
Note PC	NT271B5E	JGFE91DF600046D	SAMSUNG
USB Mouse	1088	8165900112700	Microsoft
Headset 1	ES-303	-	inkel
Headset 2	SHS-250V	-	SAMSUNG
JIG	-	-	-
Micro SD Card (4GB)	-	-	-
PoE Switch	-	-	-

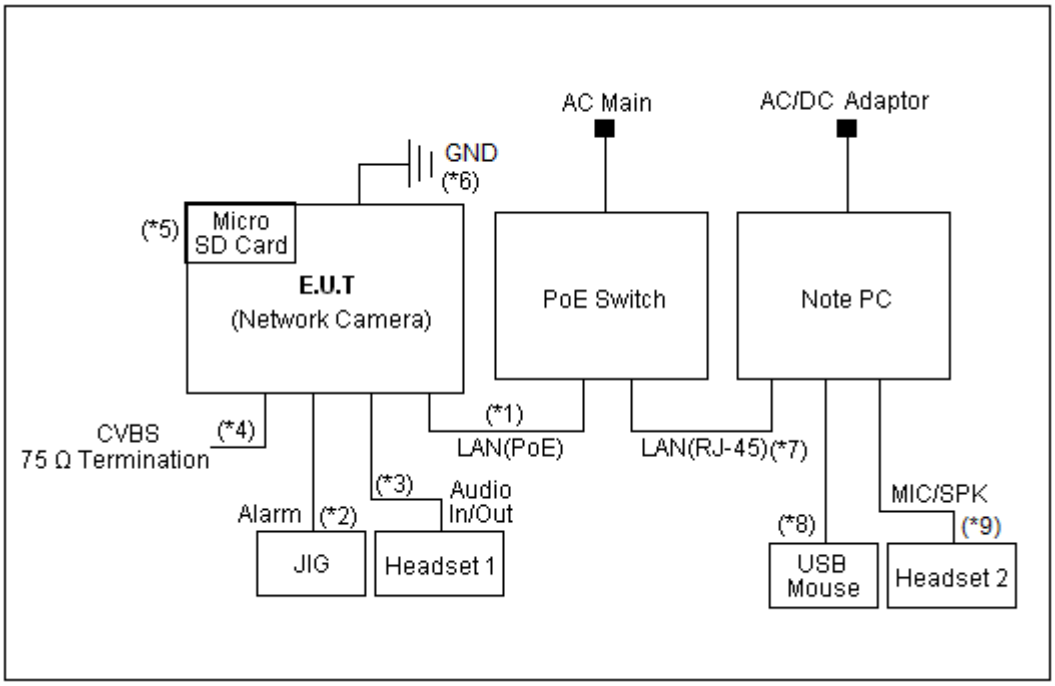
4.4 Test configuration

#1- AC/DC Adaptor, #2- AC/AC Adaptor



Note	Start		End		Cable	
*	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	**EUT** (Network Camera)	Power	AC/DC Adaptor or AC/AC Adaptor	Power	1.6	Non-Shield
2		LAN(RJ-45)	Note PC	LAN(RJ-45)	3.0	Non-Shield
3		Alarm	JIG	Alarm	3.0	Non-Shield
4		Audio In/Out	Headset 1	Audio In/Out	3.0	Non-Shield
5		CVBS	75 Ω Termination	-	0.5	Non-Shield
6		Micro SD Card	Micro SD Card	Micro SD Card	Direct	-
7		GND	GND	GND	1.6	Non-Shield
8	Note PC	USB	USB Mouse	USB	1.8	Shield
9		MIC/SPK	Headset 2	MIC/SPK	2.0	Non-Shield

#3- PoE



* Power supplied from PoE Switch.

Note	Start		End		Cable	
*	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	**EUT** (Network Camera)	LAN(PoE)	PoE Switch	LAN(PoE)	3.0	Non-Shield
2		Alarm	JIG	Alarm	3.0	Non-Shield
3		Audio In/Out	Headset 1	Audio In/Out	3.0	Non-Shield
4		CVBS	75 Ω Termination	-	0.5	Non-Shield
5		Micro SD Card	Micro SD Card	Micro SD Card	Direct	-
6		GND	GND	GND	1.6	Non-Shield
7	Note PC	LAN(RJ-45)	PoE Switch	LAN(RJ-45)	3.0	Non-Shield
8		USB	USB Mouse	USB	1.8	Shield
9		MIC/SPK	Headset 2	MIC/SPK	2.0	Non-Shield

4.5 Operating conditions

The EUT was configured as normal intended use.

Test mode	Normal operating
1	Web Viewer Monitoring Test.
	Audio In/Out Test.
	Alarm Test.
	Ping Test.
	Recording Test.

* Note: 3 types of powers are available for the product, that are AC/DC Adaptor(DC 12 Ⅴ),
AC/AC Adaptor(AC 24 Ⅴ), PoE.
Therefore, tests were performed for 3 different types of powers.

5. Summary of test results

5.1 Summary of EMI emission test results

Applied	Test items	Test method	Result
☒	Conducted Emission	AS/NZS CISPR 22:2009+A1:2010, Class A	15 Page ~ 26 Page
☒	Radiated Emission	AS/NZS CISPR 22:2009+A1:2010, Class A	29 Page ~ 38 Page

6. Test results

6.1 Conducted Emission

Test specification	AS/NZS CISPR 22:2009+A1:2010, Class A		
Testing voltage	230 V, 50 Hz, PoE		
Test facility	Shielded room (CE#1)		
Date	2014. 11. 09		
Temperature (°C)	22.4 °C	Humidity (% R.H.)	25.9 % R.H.
Remarks	Complied		

6.1.1 Limits of conducted emission measurement

☒ AC main

Frequency MHz	Class A dBμV		Class B dBμV	
	Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.5	79	66	66 ~ 56 *	56 ~ 46*
0.5 ~ 5	73	60	56	46
5 ~ 30	73	60	60	50

*The limit decreases linearly with the logarithm of frequency.

☒ Telecommunication

Frequency MHz	Class A Voltage Limits dBμV		Current Limits dBμA	
	Quasi-Peak	Average	Quasi-Peak	Average
0.15 ~ 0.5	97 to 87	84 to 74	53 to 43	40 to 30
0.5 ~ 30	87	74	43	30
Frequency MHz	Class B Limits dBμV		Current Limits dBμA	
	Quasi-Peak	Average	Quasi-Peak	Average
0.15 ~ 0.5	84 to 74	74 to 64	40 to 30	30 to 20
0.5 ~ 30	74	64	30	20

* The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz

* The current and voltage disturbance limits are derived for use with an impedance stabilization Network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test (conversion factor is 20 $\log_{10}$ 150/I = 44 dB).

6.1.2 Measurement procedure

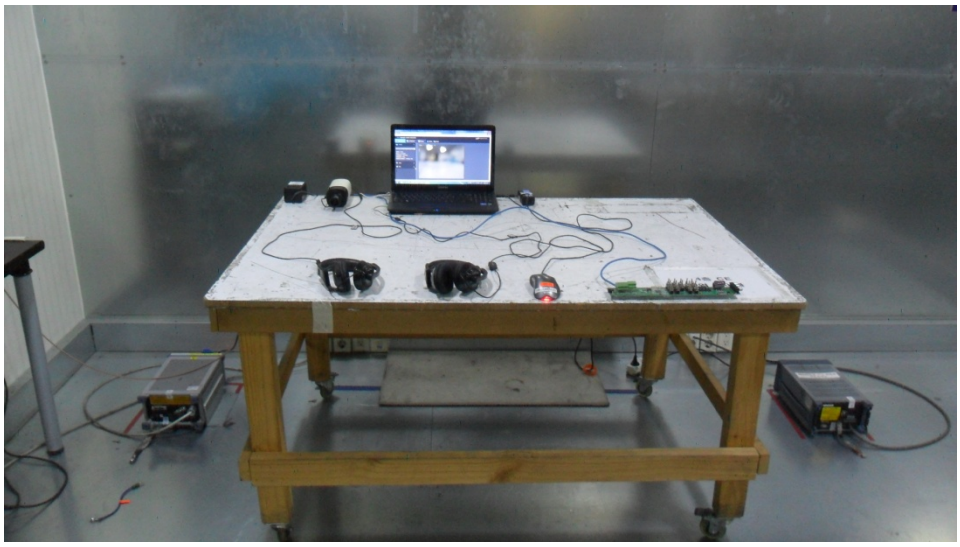
The measurements were performed in a shielded room. EUT was setup as shown in photograph and placed on a non-metallic table height of 0.8 m above the reference ground plane. The rear of table was located 0.4 m to the vertical conducted plane. EUT was power through the LISN, which was bonded to the ground plane. The LISN power was filtered. Each EUT power lead, except ground (safety) lead was individually connected through a LISN to input power source. EUT signal cables that hung closer than 0.4 m to the Horizontal metal ground 0.3 m ~ 0.4 m long. The power cord was bundles in the center. All peripheral equipment was powered from a sub LISN. The LISN and ISN were positioned 0.8 m from the EUT. Peak and Average detection were used in preliminary testing and Quasi-peak and Average detections were used at final measurement. Both lines of power cord, hot and neutral, were measured.

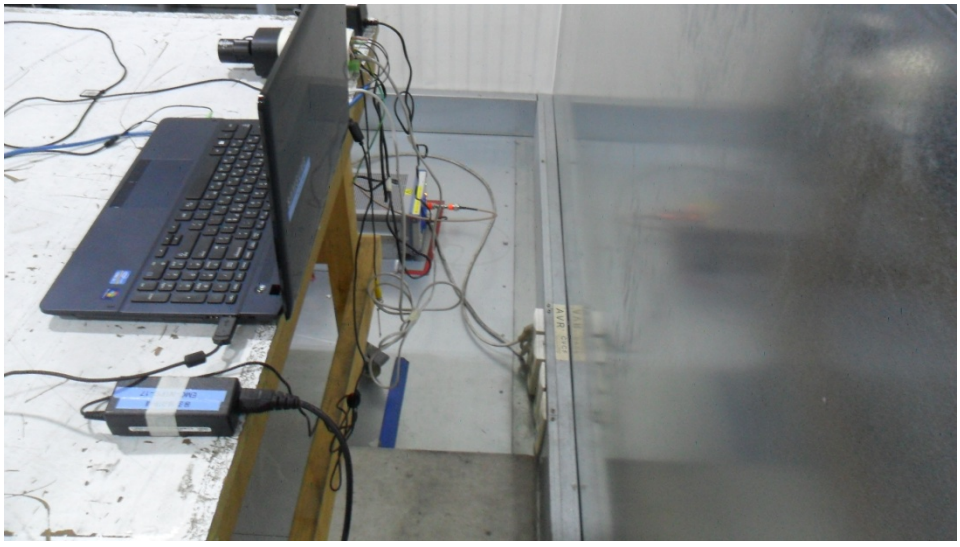
6.1.3 Used equipments

Equipment	Model	Serial No.	Makers	Next Cal. Date	Used
Test Receiver	ESCI7	100732	R&S	2015.01.27	☐
Test Receiver	ESCI	100001	R&S	2015.07.14	☒
Test Receiver	ESCI	100710	R&S	2015.10.13	☐
TWO-LINE V-NETWORK	ENV216	101358	R&S	2015.10.02	☒
TWO-LINE V-NETWORK	ESH3-Z5	100267	R&S	2015.06.24	☒
8-WIRE ISN	NTFM 8158 CAT5	CAT5-8158-0071	SCHWARZBECK	2015.03.21	☒
8-WIRE ISN	NTFM 8158 CAT3	CAT3-8158-0020	SCHWARZBECK	2015.03.07	☐

6.1.4 Photographs of test setup

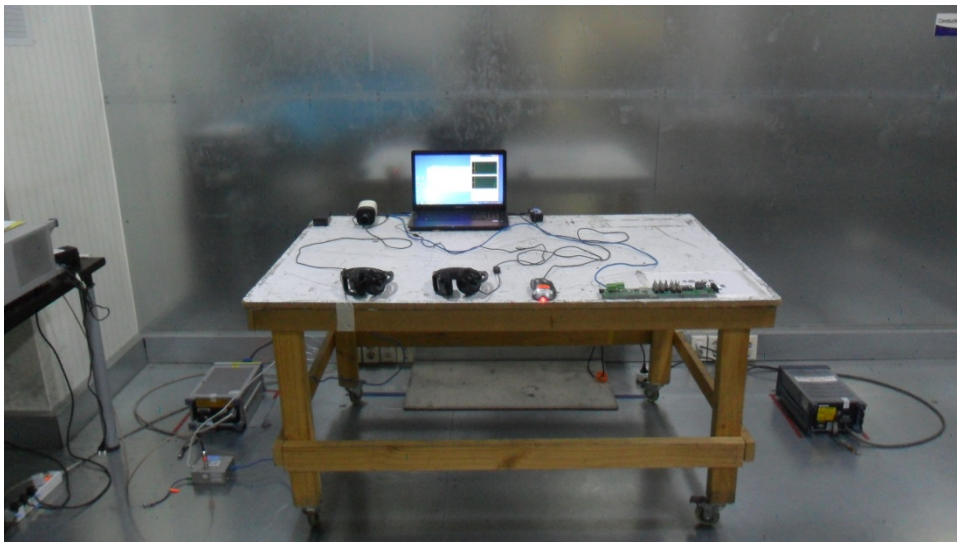
* AC Main (#1- AC/DC Adaptor, #2- AC/AC Adaptor)



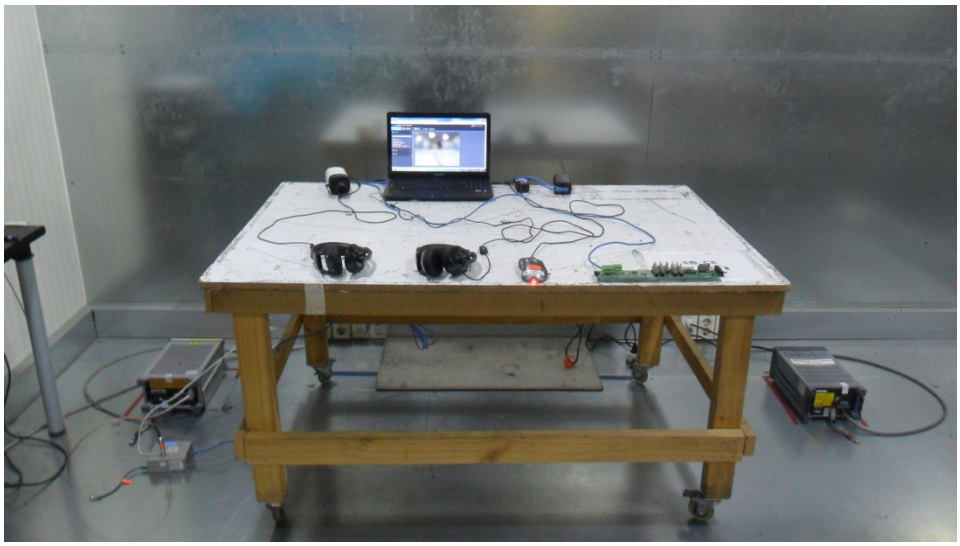


* Telecommunication

#1- AC/DC Adaptor, #2- AC/AC Adaptor

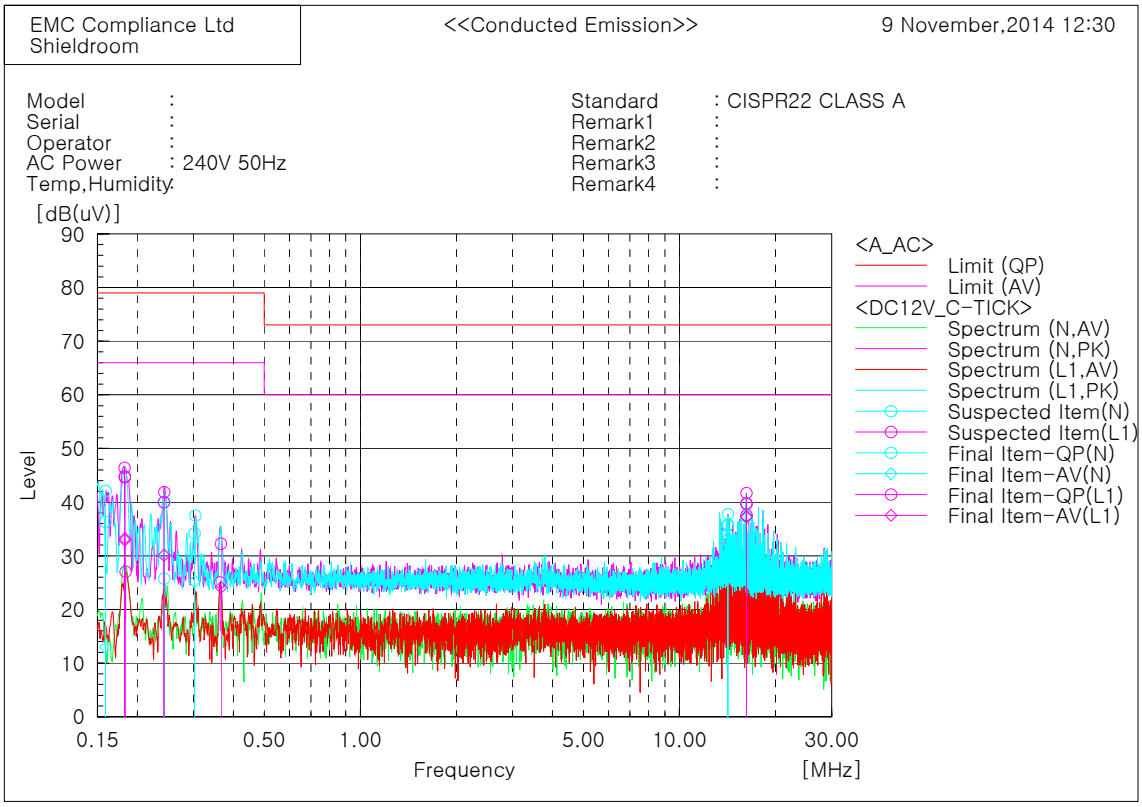


#3- PoE



6.1.5 Conducted emission measurement result

* AC Main (SNB-8000P) _#1- AC/DC Adaptor



Final Result

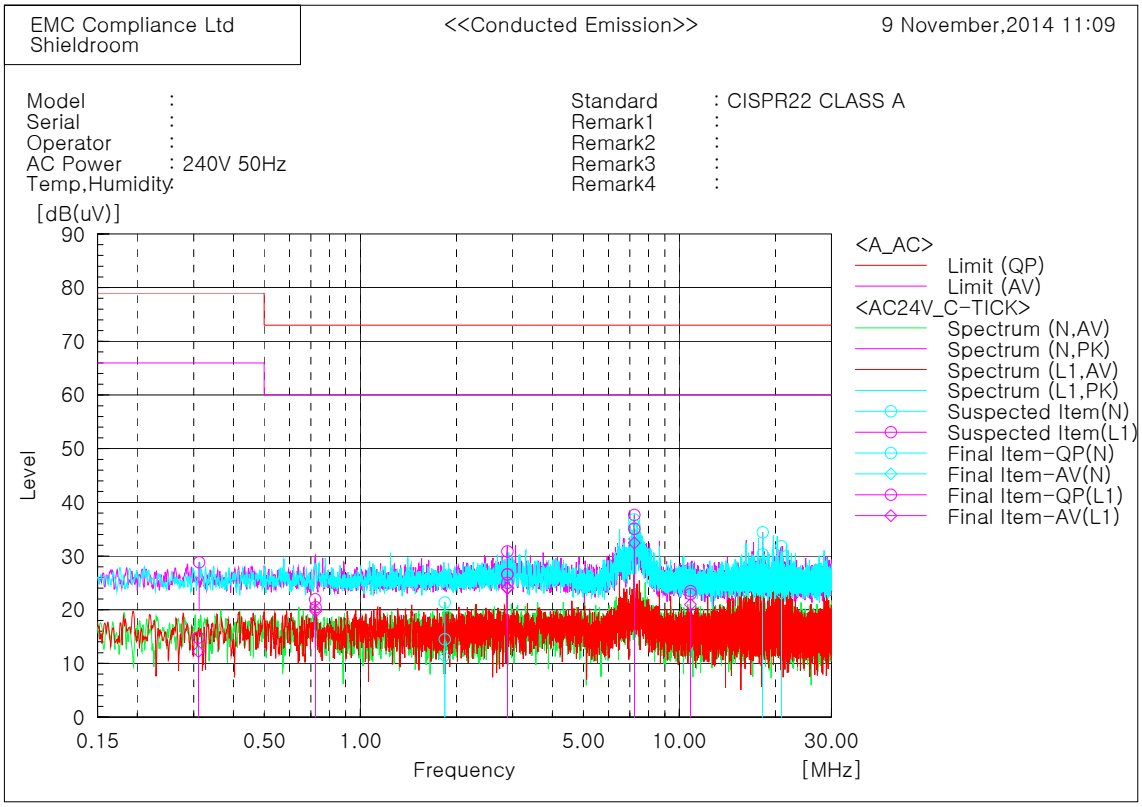
--- N Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15891	26.5	3.2	9.8	36.3	13.0	79.0	66.0	42.7	53.0
2	0.24324	30.4	20.7	9.6	40.0	30.3	79.0	66.0	39.0	35.7
3	0.30252	24.5	15.5	9.7	34.2	25.2	79.0	66.0	44.8	40.8
4	14.15136	25.9	23.4	9.8	35.7	33.2	73.0	60.0	37.3	26.8
5	14.21408	26.0	23.6	9.8	35.8	33.4	73.0	60.0	37.2	26.6
6	16.22767	29.7	27.3	9.8	39.5	37.1	73.0	60.0	33.5	22.9

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.1826	34.9	23.3	9.9	44.8	33.2	79.0	66.0	34.2	32.8
2	0.18268	34.7	23.0	9.9	44.6	32.9	79.0	66.0	34.4	33.1
3	0.24224	30.4	20.5	9.6	40.0	30.1	79.0	66.0	39.0	35.9
4	0.36554	22.4	14.3	9.8	32.2	24.1	79.0	66.0	46.8	41.9
5	16.22867	29.9	27.5	9.8	39.7	37.3	73.0	60.0	33.3	22.7
6	16.22868	29.9	27.5	9.8	39.7	37.3	73.0	60.0	33.3	22.7

* AC Main (SNB-8000P) _#2- AC/AC Adaptor



Final Result

--- N Phase ---

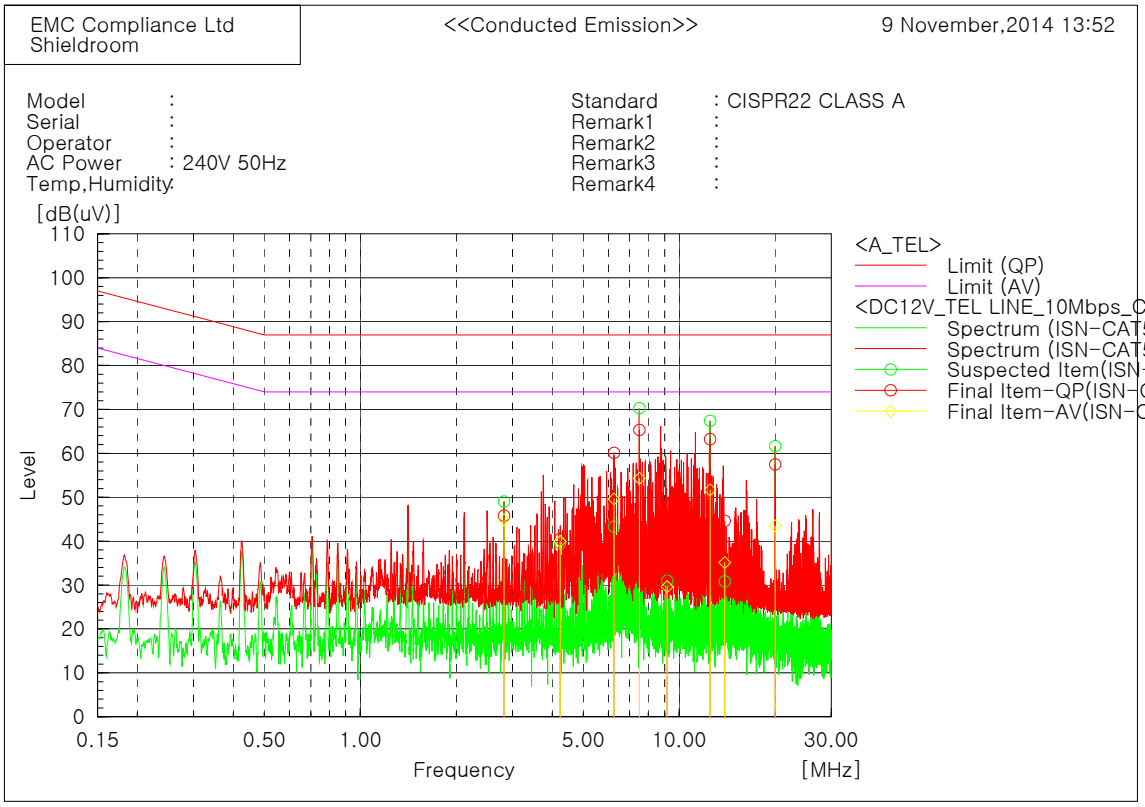
No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	1.83797	4.8	1.5	9.7	14.5	11.2	73.0	60.0	58.5	48.8
2	2.88765	16.9	14.2	9.8	26.7	24.0	73.0	60.0	46.3	36.0
3	7.22031	26.0	23.5	9.7	35.7	33.2	73.0	60.0	37.3	26.8
4	7.22338	25.5	22.8	9.7	35.2	32.5	73.0	60.0	37.8	27.5
5	18.24472	20.4	19.0	9.9	30.3	28.9	73.0	60.0	42.7	31.1
6	20.86998	15.8	13.2	9.9	25.7	23.1	73.0	60.0	47.3	36.9

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.31087	5.0	2.4	9.8	14.8	12.2	79.0	66.0	64.2	53.8
2	0.72369	10.6	10.0	9.8	20.4	19.8	73.0	60.0	52.6	40.2
3	2.88908	16.9	14.4	9.7	26.6	24.1	73.0	60.0	46.4	35.9
4	2.88929	16.9	14.3	9.7	26.6	24.0	73.0	60.0	46.4	36.0
5	7.22208	25.3	22.6	9.8	35.1	32.4	73.0	60.0	37.9	27.6
6	10.82713	13.1	11.2	9.8	22.9	21.0	73.0	60.0	50.1	39.0

* Telecommunication port

LAN Port (LCL 65 dB)_10 Mbps (SNB-8000P)_#1- AC/DC Adaptor

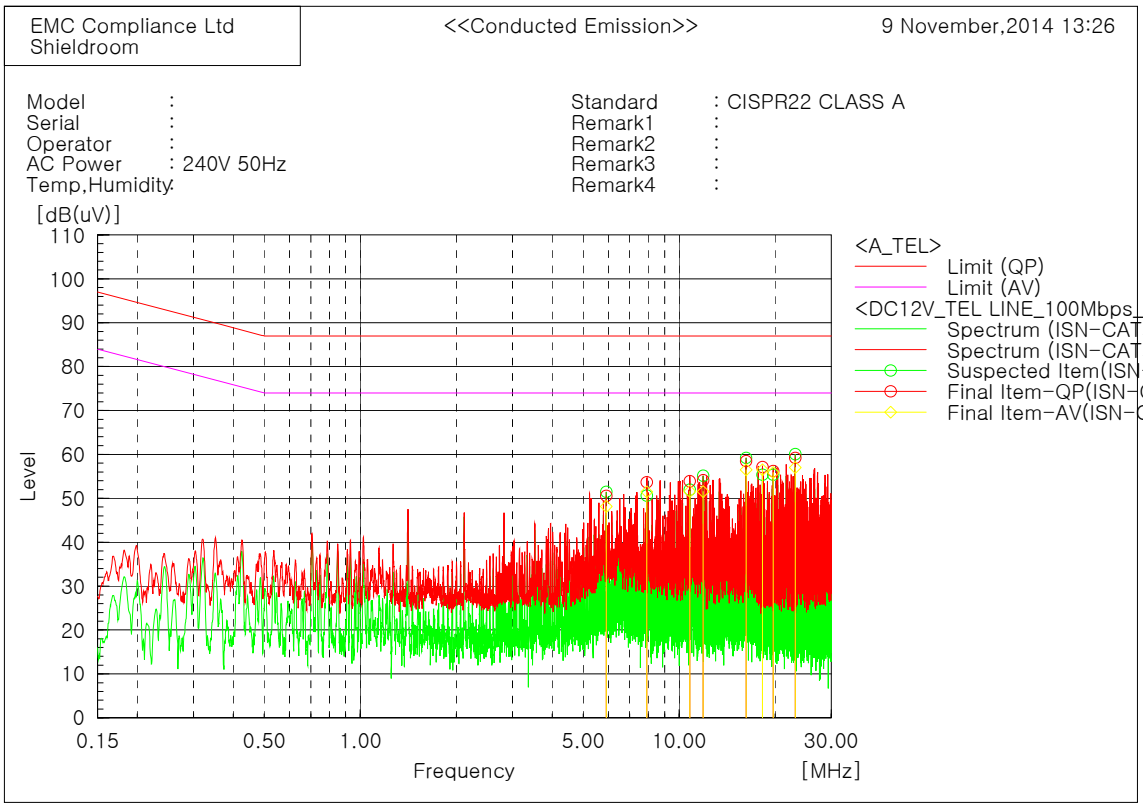


Final Result

--- No Title2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	2.82434	36.2	35.2	9.6	45.8	44.8	87.0	74.0	41.2	29.2
2	4.2366	30.9	30.3	9.6	40.5	39.9	87.0	74.0	46.5	34.1
3	6.24893	50.5	40.0	9.6	60.1	49.6	87.0	74.0	26.9	24.4
4	7.49857	55.7	44.7	9.6	65.3	54.3	87.0	74.0	21.7	19.7
5	9.17203	29.8	20.0	9.6	39.4	29.6	87.0	74.0	47.6	44.4
6	12.50032	53.6	42.1	9.6	63.2	51.7	87.0	74.0	23.8	22.3
7	13.91289	35.0	25.5	9.6	44.6	35.1	87.0	74.0	42.4	38.9
8	20.0007	47.8	33.8	9.7	57.5	43.5	87.0	74.0	29.5	30.5

LAN Port (LCL 65 dB)_100 Mbps (SNB-8000P)_#1- AC/DC Adaptor

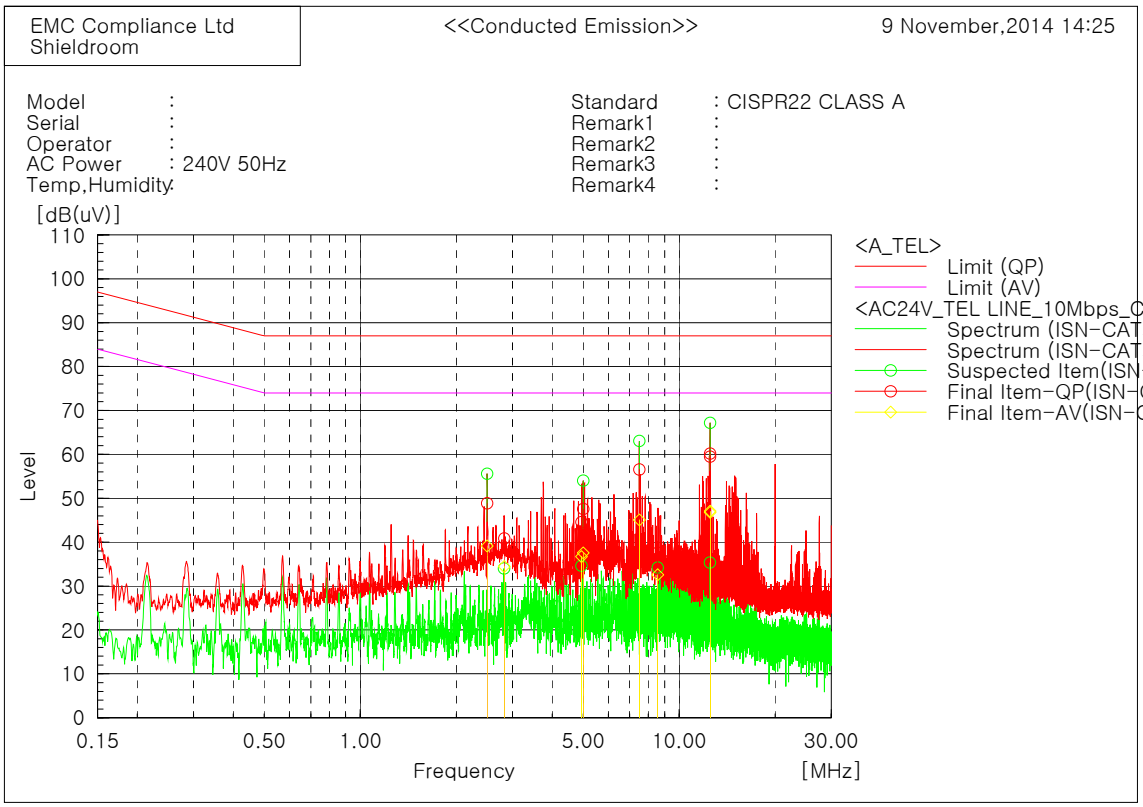


Final Result

--- No Title2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	5.90841	40.9	38.6	9.6	50.5	48.2	87.0	74.0	36.5	25.8
2	7.92326	44.1	41.9	9.6	53.7	51.5	87.0	74.0	33.3	22.5
3	10.79331	44.3	42.0	9.6	53.9	51.6	87.0	74.0	33.1	22.4
4	11.89211	44.5	41.9	9.6	54.1	51.5	87.0	74.0	32.9	22.5
5	16.2288	48.8	46.8	9.7	58.5	56.5	87.0	74.0	28.5	17.5
6	18.24392	47.4	46.8	9.7	57.1	56.5	87.0	74.0	29.9	17.5
7	19.70898	46.5	46.2	9.7	56.2	55.9	87.0	74.0	30.8	18.1
8	23.12916	49.4	47.2	9.8	59.2	57.0	87.0	74.0	27.8	17.0

LAN Port (LCL 65 dB)_10 Mbps (SNB-8000P)_#2- AC/AC Adaptor

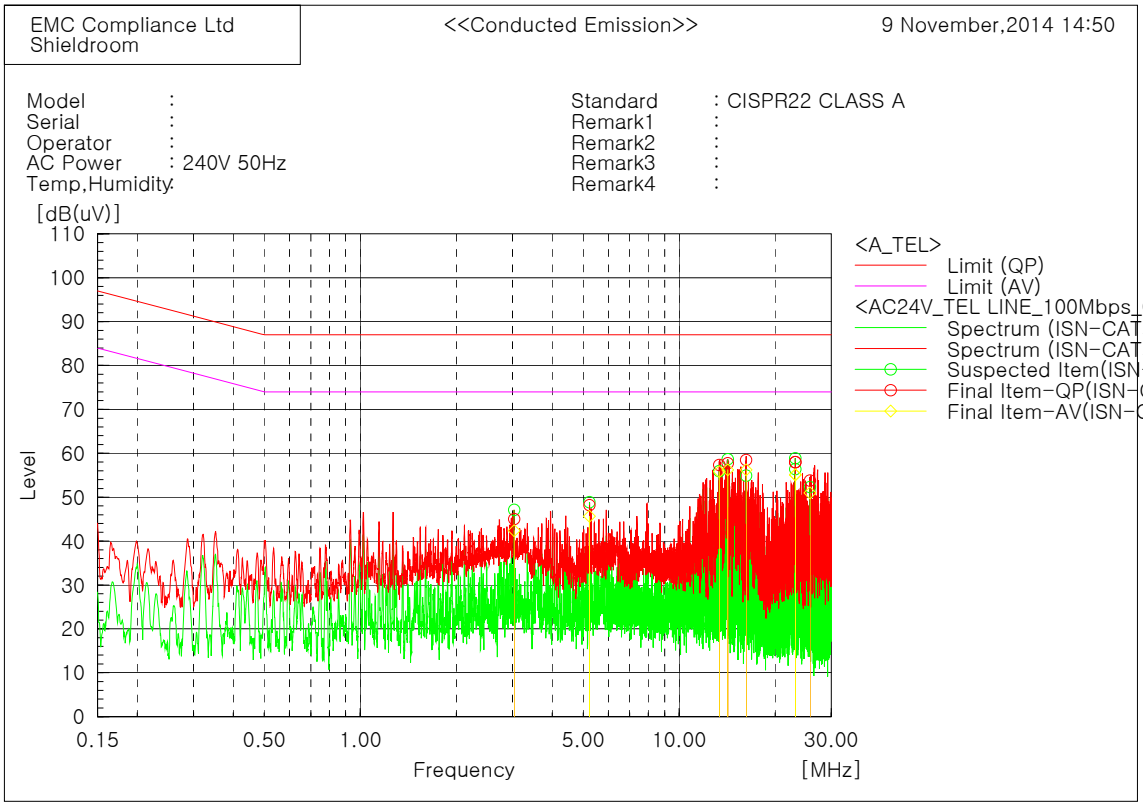


Final Result

--- No Title2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	2.50164	39.3	29.5	9.6	48.9	39.1	87.0	74.0	38.1	34.9
2	2.8274	31.1	24.8	9.7	40.8	34.5	87.0	74.0	46.2	39.5
3	4.94163	34.9	27.1	9.6	44.5	36.7	87.0	74.0	42.5	37.3
4	4.99989	38.0	27.9	9.6	47.6	37.5	87.0	74.0	39.4	36.5
5	7.50009	46.9	35.5	9.6	56.5	45.1	87.0	74.0	30.5	28.9
6	8.56661	28.0	23.0	9.6	37.6	32.6	87.0	74.0	49.4	41.4
7	12.49888	49.9	37.2	9.6	59.5	46.8	87.0	74.0	27.5	27.2
8	12.50021	50.6	37.5	9.6	60.2	47.1	87.0	74.0	26.8	26.9

LAN Port (LCL 65 dB)_10 Mbps (SNB-8000P)_#2- AC/AC Adaptor

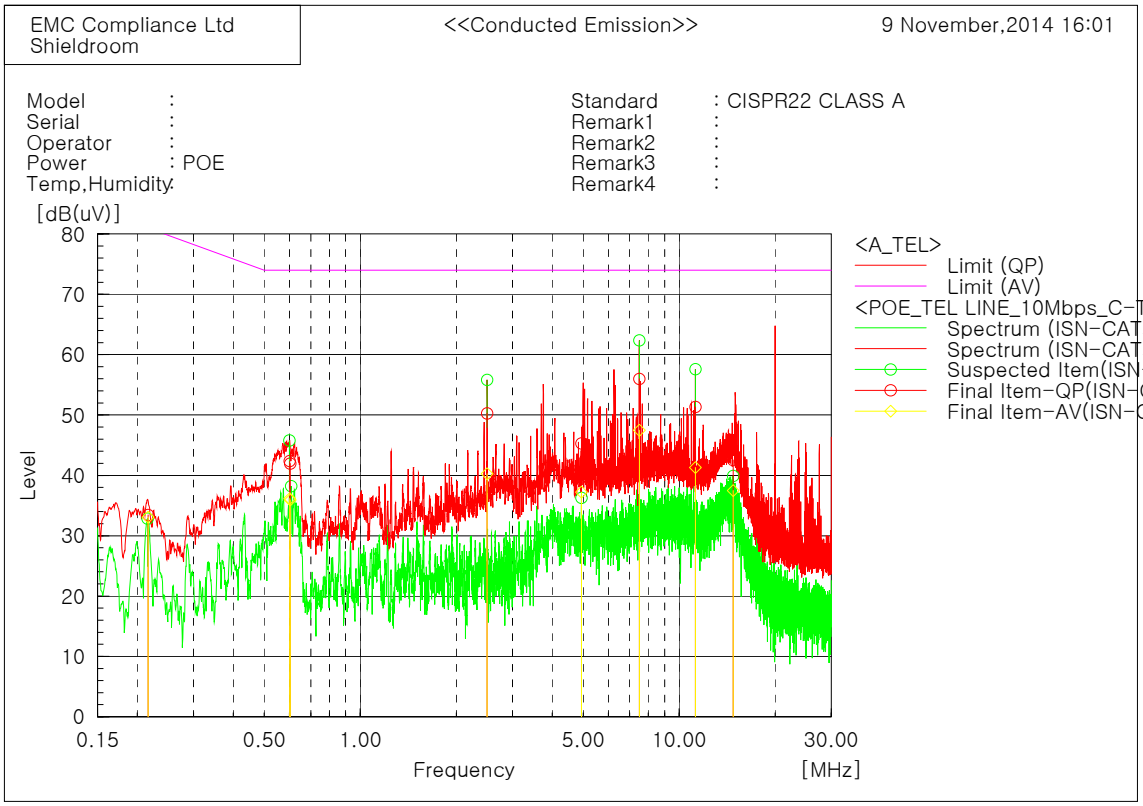


Final Result

--- No Title2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	3.03832	35.3	32.6	9.7	45.0	42.3	87.0	74.0	42.0	31.7
2	5.2366	38.6	36.1	9.6	48.2	45.7	87.0	74.0	38.8	28.3
3	13.35841	47.7	46.2	9.6	57.3	55.8	87.0	74.0	29.7	18.2
4	14.213	48.1	46.5	9.7	57.8	56.2	87.0	74.0	29.2	17.8
5	16.22952	48.8	46.5	9.7	58.5	56.2	87.0	74.0	28.5	17.8
6	23.12896	48.2	45.3	9.8	58.0	55.1	87.0	74.0	29.0	18.9
7	23.12902	48.2	45.3	9.8	58.0	55.1	87.0	74.0	29.0	18.9
8	25.69384	44.0	41.2	9.8	53.8	51.0	87.0	74.0	33.2	23.0

LAN Port (LCL 65 dB)_10 Mbps (SNB-8000P)_#3- PoE

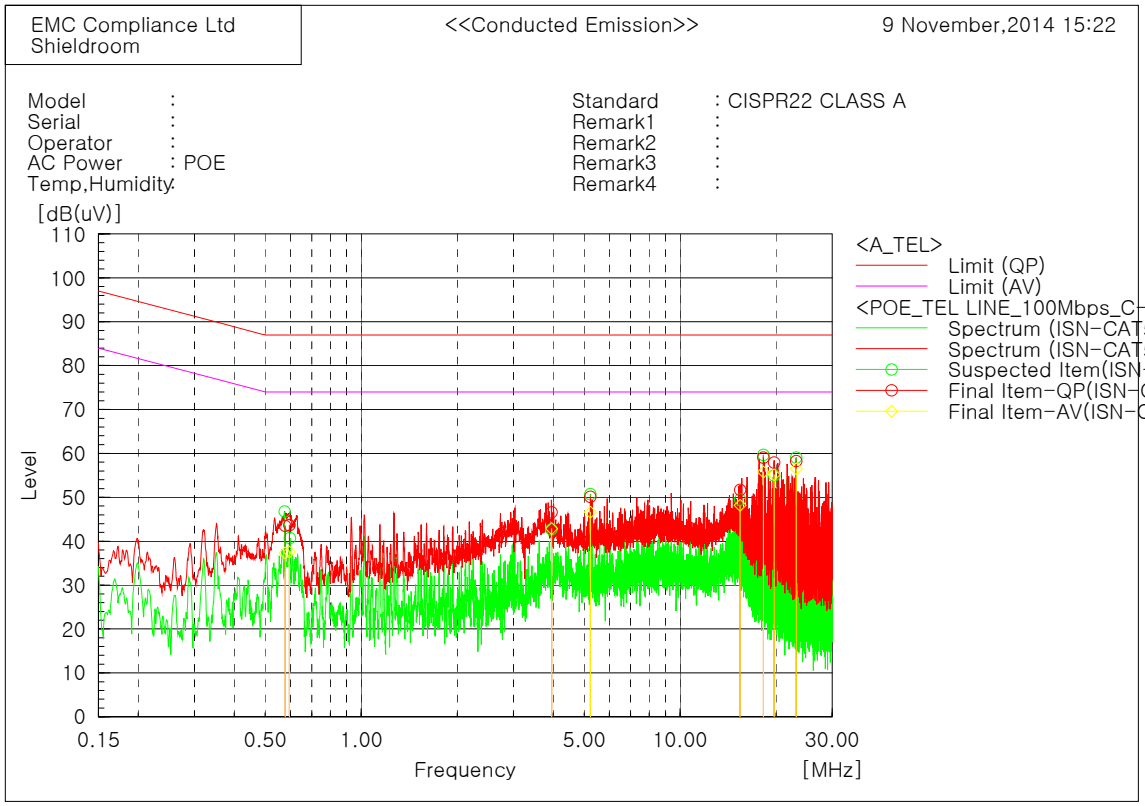


Final Result

--- No Title2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.21623	23.4	23.1	10.0	33.4	33.1	94.0	81.0	60.6	47.9
2	0.60112	32.7	26.5	9.7	42.4	36.2	87.0	74.0	44.6	37.8
3	0.60333	32.3	26.2	9.7	42.0	35.9	87.0	74.0	45.0	38.1
4	2.49984	40.7	30.7	9.6	50.3	40.3	87.0	74.0	36.7	33.7
5	4.940	35.7	27.6	9.6	45.3	37.2	87.0	74.0	41.7	36.8
6	7.50027	46.4	37.9	9.6	56.0	47.5	87.0	74.0	31.0	26.5
7	11.25136	41.7	31.7	9.6	51.3	41.3	87.0	74.0	35.7	32.7
8	14.77883	32.8	27.8	9.7	42.5	37.5	87.0	74.0	44.5	36.5

LAN Port (LCL 65 dB)_100 Mbps (SNB-8000P)_#3- PoE



Final Result

--- No Title2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.57803	33.8	27.6	9.7	43.5	37.3	87.0	74.0	43.5	36.7
2	0.59584	33.9	27.9	9.7	43.6	37.6	87.0	74.0	43.4	36.4
3	3.9534	36.9	33.2	9.7	46.6	42.9	87.0	74.0	40.4	31.1
4	5.2362	40.5	37.0	9.6	50.1	46.6	87.0	74.0	36.9	27.4
5	15.43579	42.0	38.5	9.7	51.7	48.2	87.0	74.0	35.3	25.8
6	18.24409	49.3	46.1	9.7	59.0	55.8	87.0	74.0	28.0	18.2
7	19.70935	48.2	45.4	9.7	57.9	55.1	87.0	74.0	29.1	18.9
8	23.12903	48.4	46.7	9.8	58.2	56.5	87.0	74.0	28.8	17.5

6.2 Radiated Emission

Test specification	AS/NZS CISPR 22:2009+A1:2010, Class A		
Testing voltage	230 V, 50 Hz, PoE		
Test facility	10 m Chamber (#F2)		
Test distance	10 m, 3 m		
Date	2014. 11. 10		
Temperature (°C)	28.4 °C	Humidity (% R.H.)	27.2 % R.H.
Remarks	Complied		

6.2.1 Limits of radiated emission measurement

☒ Limits below 1 GHz

Frequency MHz	Class A dBμV/m @ 10 m	Class B dBμV/m @ 10 m
30 ~ 230	40	30
230 ~ 1 000	47	37

☒ Limits above 1 GHz

Frequency MHz	Class A @ 3 m		Class B @ 3 m	
	Average limit dBμV/m	Peak limit dBμV/m	Average limit dBμV/m	Peak limit dBμV/m
1 ~ 3	56	76	50	70
3 ~ 6	60	80	54	74
Note - The lower limit applies at the transition frequency.				

6.2.2 Measurement procedure

The test was done at a 10 m chamber with a quasi-peak detector. EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane. Cables were folded back and forth forming a bundle 0.3 m to 0.4 m long and were hanged at a 0.4 m height to the ground plane.
Cables connected to EUT were fixed to cause maximum emission. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

6.2.3 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
Test Receiver	ESCI7	100732	R&S	2015.01.27	☒
Test Receiver	ESCI	100001	R&S	2015.07.14	☐
Test Receiver	ESCI	100710	R&S	2015.10.13	☐
Test Receiver	ESR	101078	R&S	2015.02.24	☐
Bi-Log Antenna	VULB 9168	440	SCHWARZBECK	2016.08.28	☒
Amplifier	310N	284608	SONOMA INSTRUMENT	2015.04.16	☒
3 dB Attenuator	8491B	22981	HP	2015.03.04	☒
Antenna Mast	MA4000-EP	303	Innco Systems	-	☒
Turn Table	DT2000S-1t	079	Innco Systems	-	☒
Preamplifier	8449B	3008A02343	AGILENT	2015.10.13	☒
Horn ANT	3115	00155772	ETS	2015.02.26	☒
Spectrum Analyzer	E4407B	US39010142	AGILENT	2015.10.13	☐

6.2.4 Sample calculation

The field strength is calculated adding the antenna Factor, cable loss and, Antenna pad adding, subtracting the amplifier gain from the measured reading.

The sample calculation is as follow:

Result = M.R + C.F(A.F + C.L +3 dB Att – A.G)

M.R = Meter Reading

C.F = Correction Factor

A.F = Antenna Factor

C.L = Cable Loss

A.G= Amplifier Gain

3 dB Att = 3 dB Attenuator

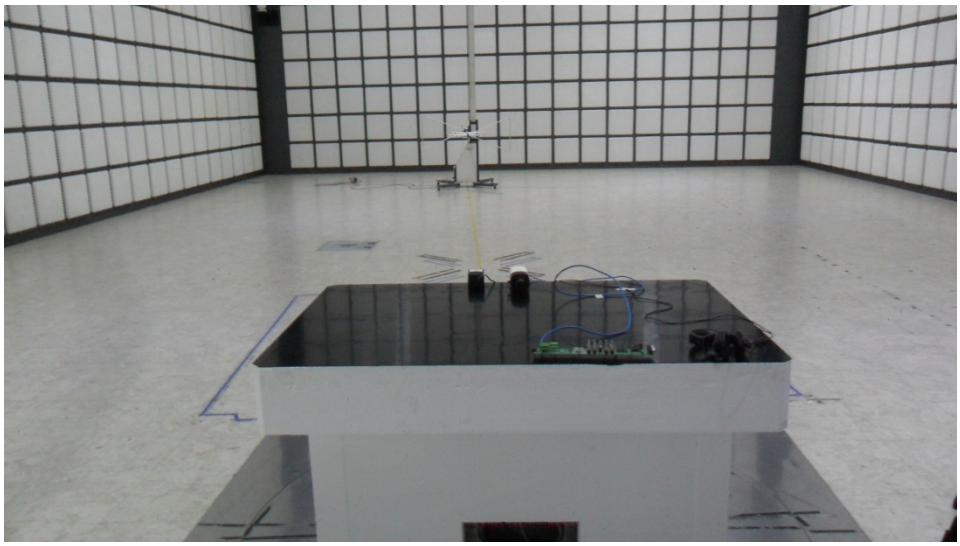
If M.R is 30 dB, A.F 12 dB, C.L 5 dB, 3 dB, A.G 35 dB

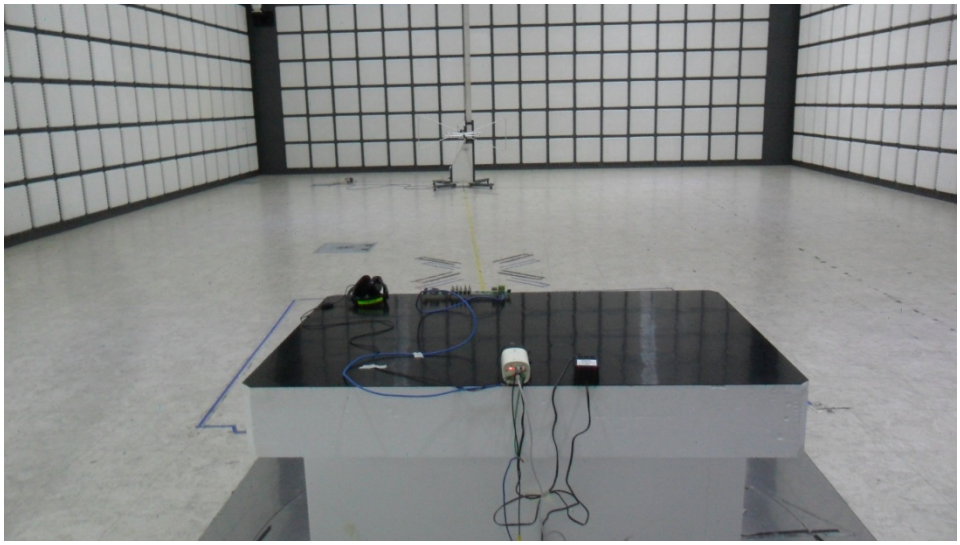
The result is

30 + 12 + 5 + 3 – 35 = 15 dBμV/m

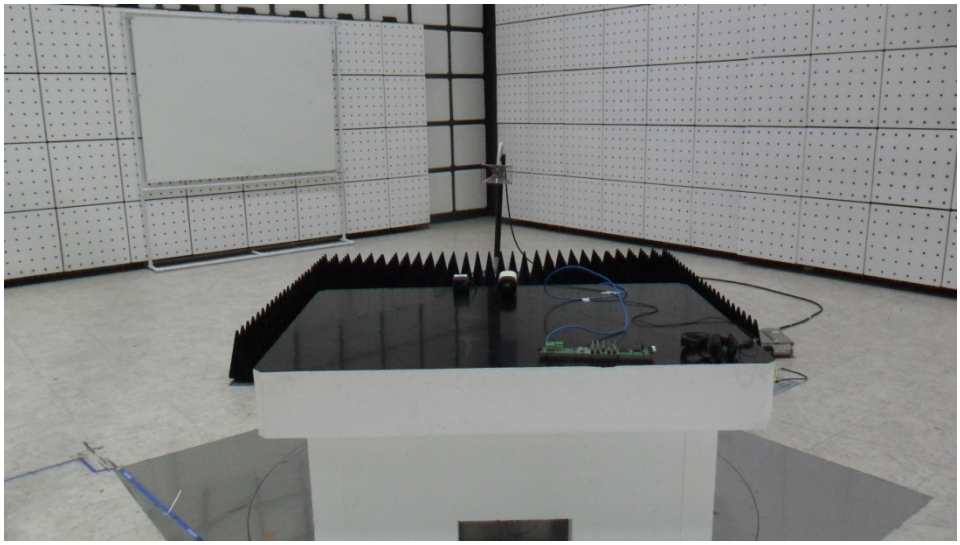
6.2.5 Photographs of test setup

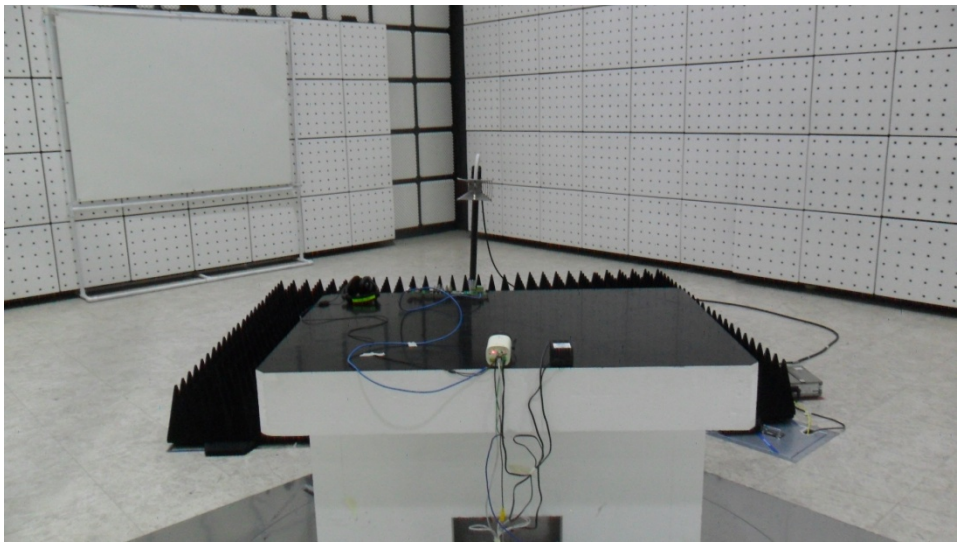
* 30 ㎒ ~ 1 ㎓ (#1- AC/DC Adaptor, #2- AC/AC Adaptor)



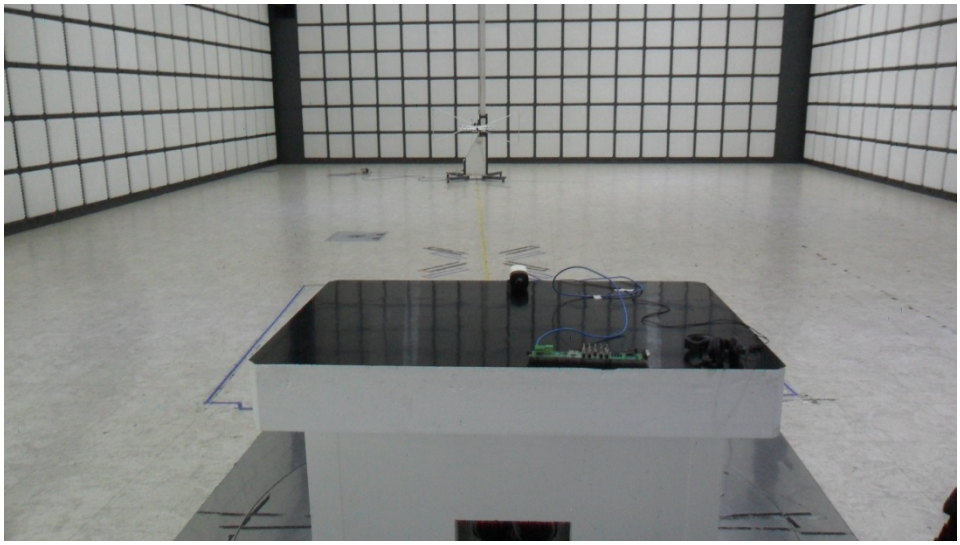


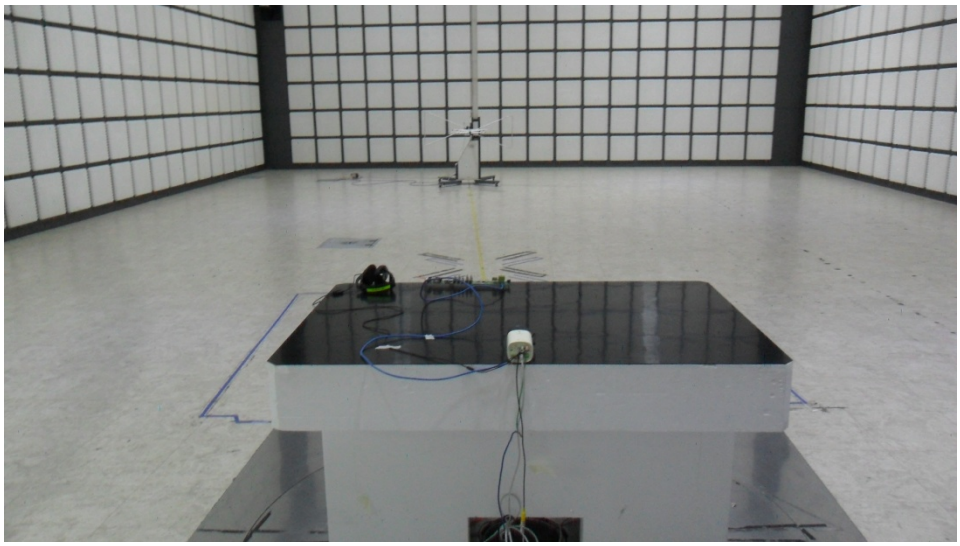
* 1 ㎓ ~ 6 ㎓ (#1- AC/DC Adaptor, #2- AC/AC Adaptor)



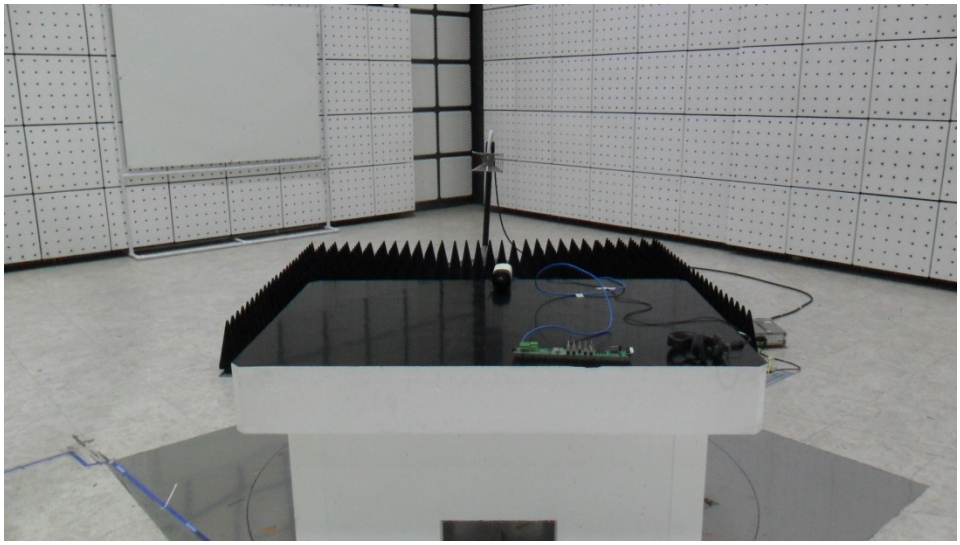


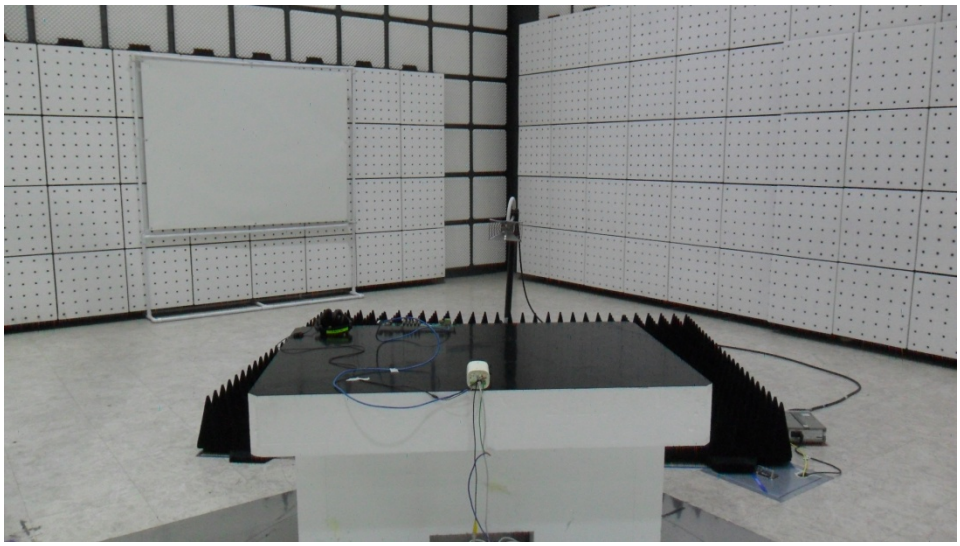
* 30 ㎒ ~ 1 ㎓ (#3- PoE)





* 1 ㎓ ~ 6 ㎓ (#3- PoE)

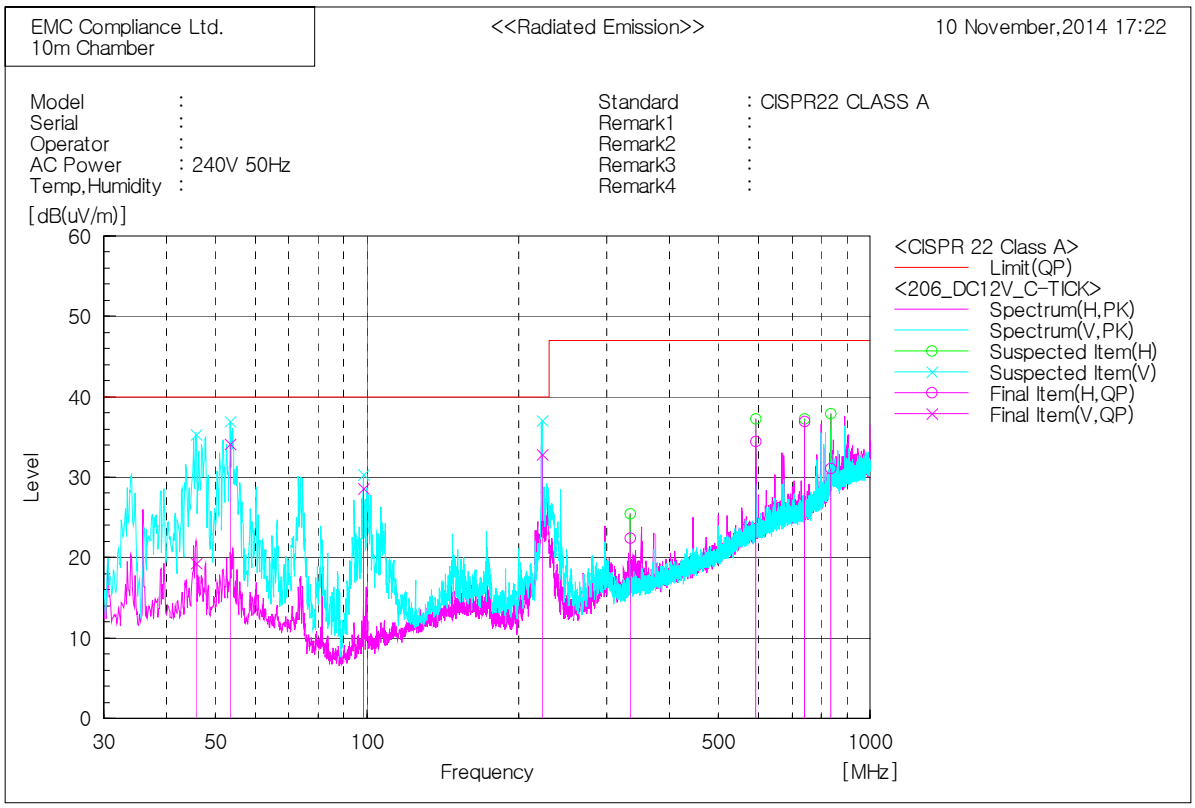




6.2.6 Radiated emission measurement result

*** Graph and Data**

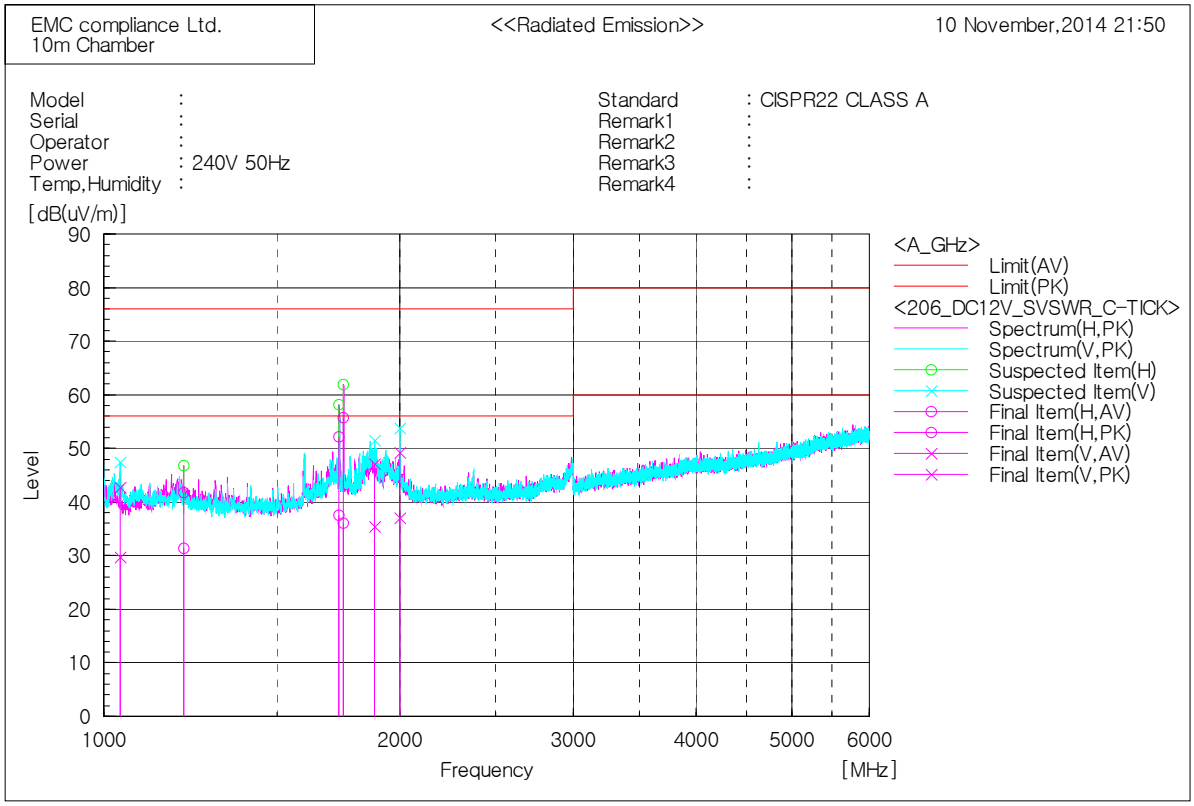
* 30 ㎒ ~ 1 ㎓ (SNB-8000P) _#1- AC/DC Adaptor



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]
1	45.763	V	32.4	-13.1	19.3	40.0	20.7	302.0	63.1
2	53.523	V	47.0	-12.9	34.1	40.0	5.9	100.0	35.7
3	98.506	V	45.7	-17.1	28.6	40.0	11.4	100.0	126.3
4	222.788	V	46.4	-13.6	32.8	40.0	7.2	100.0	317.6
5	334.095	H	31.3	-8.9	22.4	47.0	24.6	299.0	82.1
6	593.934	H	35.6	-1.2	34.4	47.0	12.6	200.0	162.8
7	742.465	H	35.7	1.2	36.9	47.0	10.1	100.0	259.8
8	837.040	H	27.8	3.3	31.1	47.0	15.9	100.0	190.6

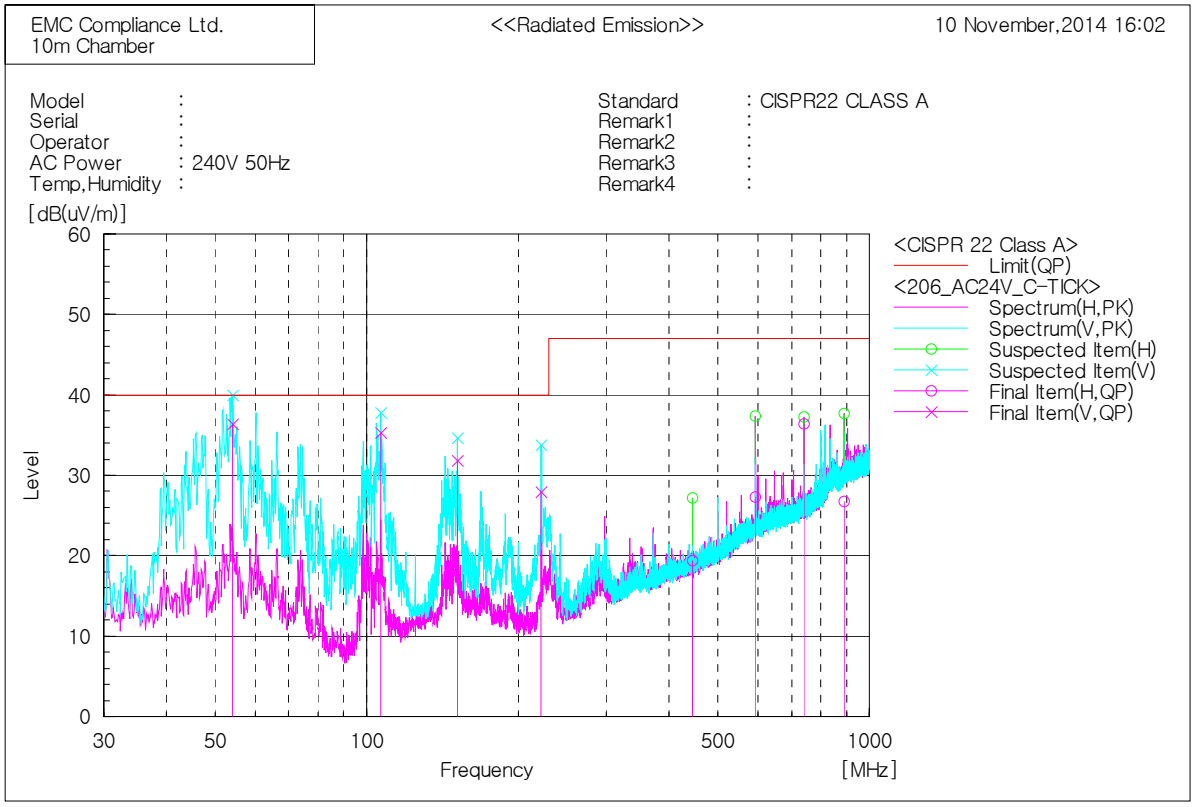
* 1 ㎓ ~ 6 ㎓ (SNB-8000P) _#1- AC/DC Adaptor



Final Result

No.	Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	c.f [dB(1/m)]	Result AV [dB(uV/m)]	Result PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1	1039.375	V	35.6	48.7	-5.9	29.7	42.8	56.0	76.0	26.3	33.2	100.0	219.6
2	1205.625	H	36.1	46.6	-4.8	31.3	41.8	56.0	76.0	24.7	34.2	100.0	169.9
3	1735.625	H	37.2	51.8	0.4	37.6	52.2	56.0	76.0	18.4	23.8	100.0	76.2
4	1753.125	H	35.4	55.2	0.6	36.0	55.8	56.0	76.0	20.0	20.2	100.0	38.6
5	1886.875	V	33.8	45.5	1.6	35.4	47.1	56.0	76.0	20.6	28.9	100.0	216.6
6	2000.000	V	35.0	47.3	2.0	37.0	49.3	56.0	76.0	19.0	26.7	100.0	195.5

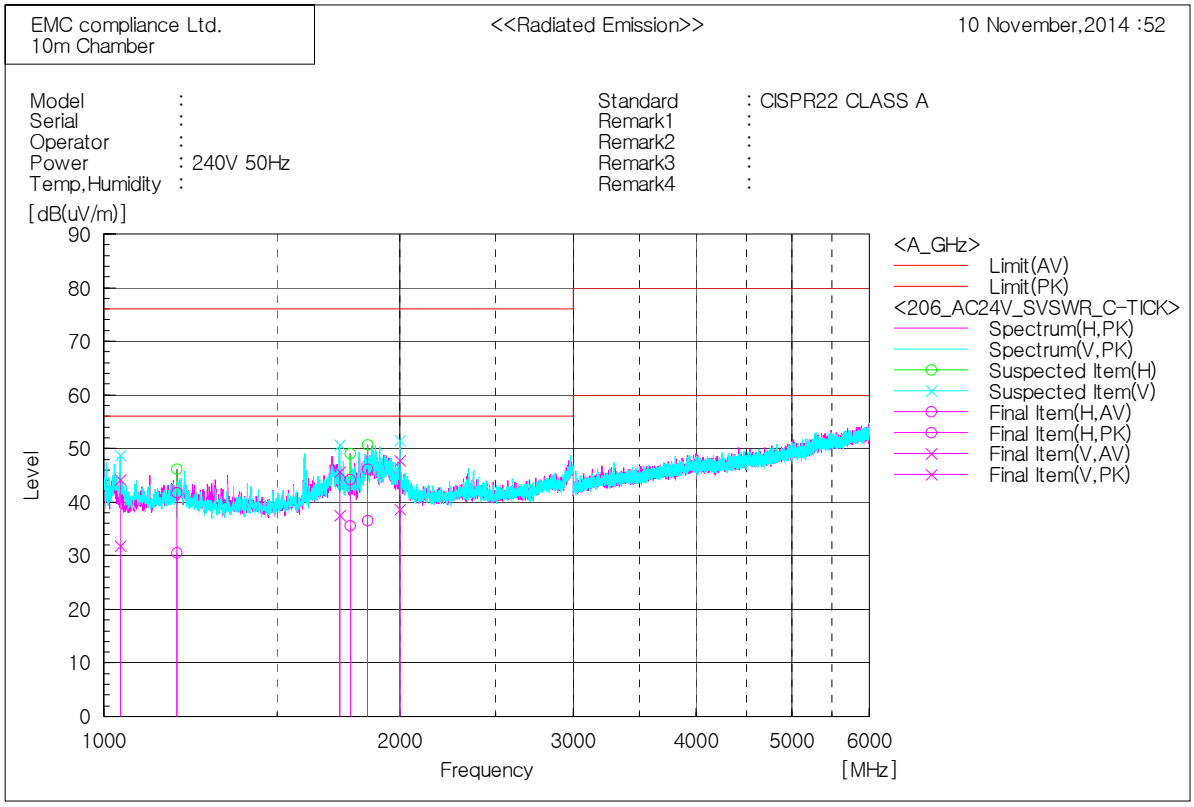
* 30 ㎒ ~ 1 ㎓ (SNB-8000P) _#2- AC/AC Adaptor



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]
1	54.129	V	49.4	-13.0	36.4	40.0	3.6	100.0	38.6
2	106.751	V	51.1	-15.8	35.3	40.0	4.7	201.0	119.6
3	151.493	V	43.7	-11.9	31.8	40.0	8.2	100.0	270.6
4	222.666	V	41.5	-13.6	27.9	40.0	12.1	100.0	195.3
5	445.403	H	24.9	-5.5	19.4	47.0	27.6	199.0	206.0
6	594.055	H	28.5	-1.2	27.3	47.0	19.7	199.0	306.7
7	742.465	H	35.2	1.2	36.4	47.0	10.6	100.0	259.6
8	891.117	H	22.3	4.4	26.7	47.0	20.3	100.0	211.5

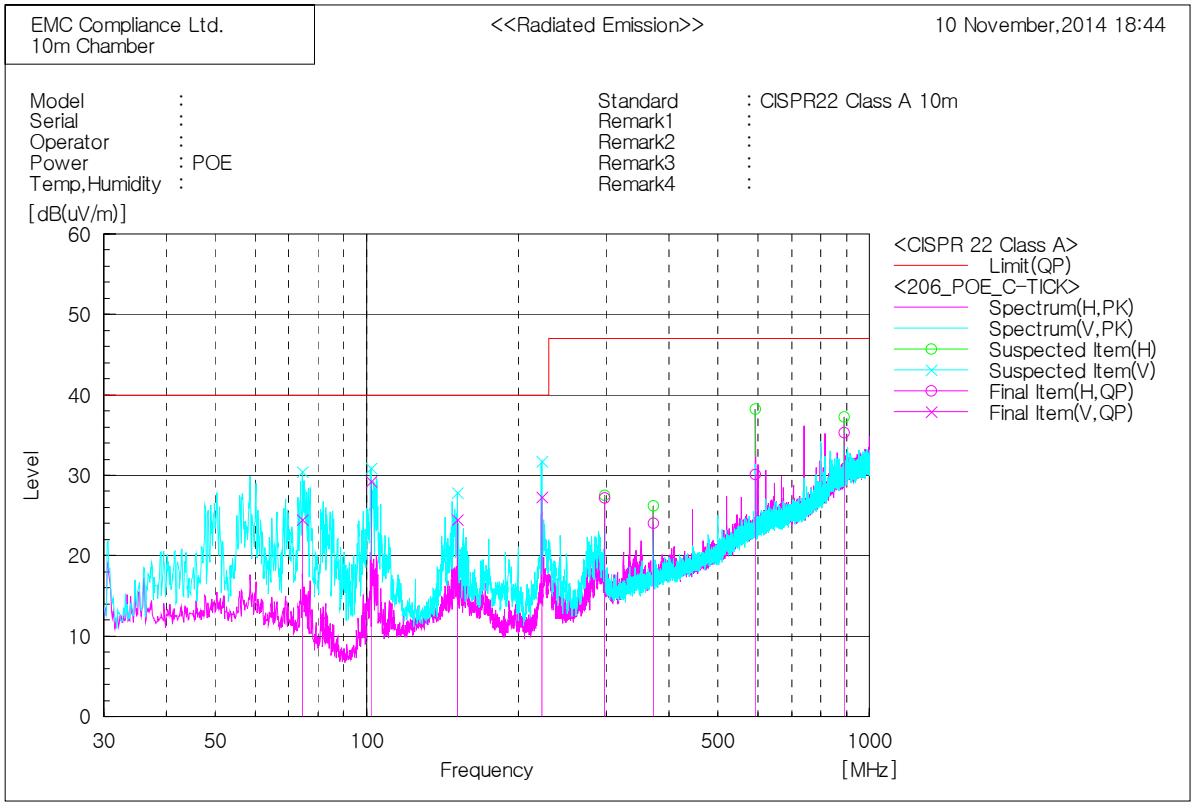
* 1 ㎓ ~ 6 ㎓ (SNB-8000P) _#2- AC/AC Adaptor



Final Result

No.	Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	c.f [dB(1/m)]	Result AV [dB(uV/m)]	Result PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1	1039.375	V	37.8	50.1	-5.9	31.9	44.2	56.0	76.0	24.1	31.8	100.0	221.7
2	1187.500	H	35.4	46.6	-4.9	30.5	41.7	56.0	76.0	25.5	34.3	100.0	172.8
3	1736.250	V	37.1	45.2	0.4	37.5	45.6	56.0	76.0	18.5	30.4	100.0	187.1
4	1781.875	H	34.6	43.3	0.9	35.5	44.2	56.0	76.0	20.5	31.8	100.0	166.8
5	1855.000	H	35.2	44.7	1.4	36.6	46.1	56.0	76.0	19.4	29.9	100.0	207.4
6	2000.000	V	36.7	45.8	2.0	38.7	47.8	56.0	76.0	17.3	28.2	100.0	205.1

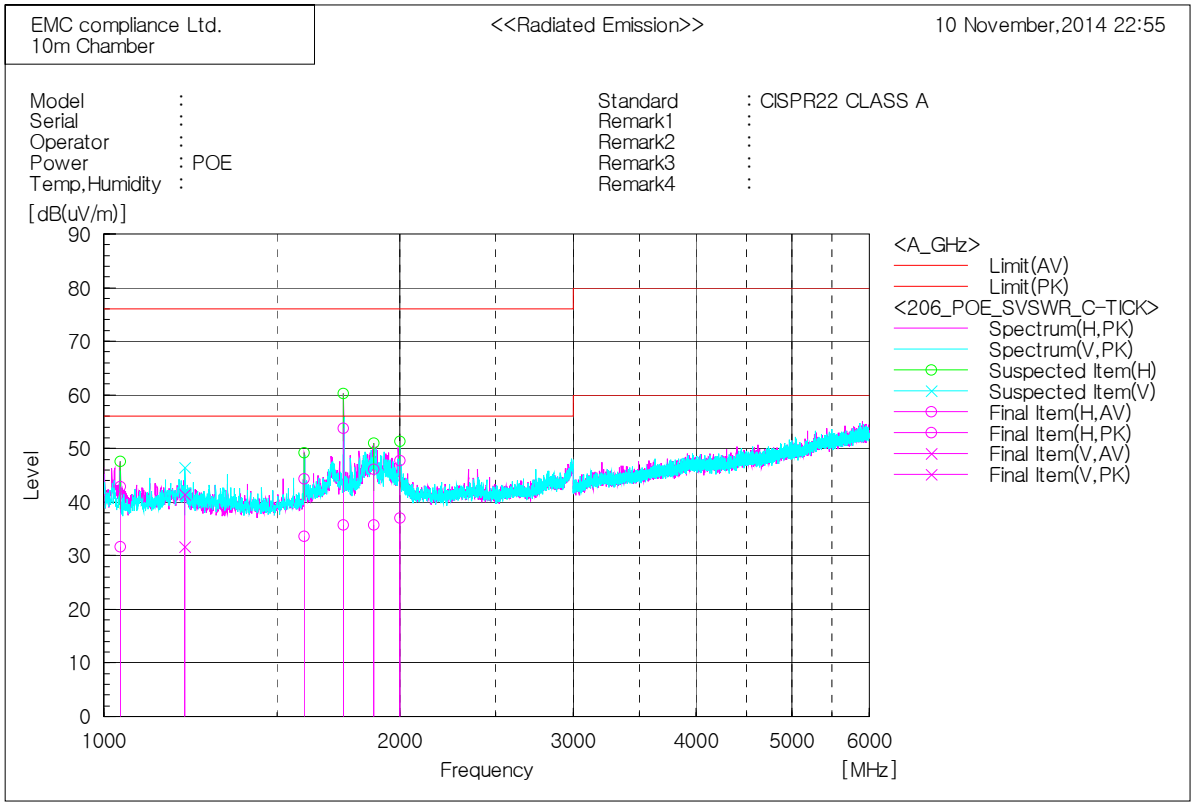
* 30 ㎒ ~ 1 ㎓ (SNB-8000P) _#3- PoE



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]
1	74.499	V	40.0	-15.5	24.5	40.0	15.5	299.0	141.9
2	101.901	V	45.7	-16.5	29.2	40.0	10.8	100.0	351.9
3	151.493	V	36.4	-11.9	24.5	40.0	15.5	100.0	285.2
4	222.788	V	40.9	-13.6	27.3	40.0	12.7	100.0	258.1
5	296.993	H	37.3	-10.1	27.2	47.0	19.8	301.0	65.9
6	371.198	H	31.6	-7.6	24.0	47.0	23.0	301.0	270.9
7	594.055	H	31.3	-1.2	30.1	47.0	16.9	200.0	276.3
8	890.996	H	30.9	4.4	35.3	47.0	11.7	100.0	226.7

* 1 ㎓ ~ 6 ㎓ (SNB-8000P) _#3- PoE



Final Result

No.	Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	c.f [dB(1/m)]	Result AV [dB(uV/m)]	Result PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1	1039.375	H	37.5	48.8	-5.9	31.6	42.9	56.0	76.0	24.4	33.1	100.0	218.4
2	1209.375	V	36.4	46.2	-4.7	31.7	41.5	56.0	76.0	24.3	34.5	100.0	166.8
3	1599.375	H	34.7	45.5	-1.1	33.6	44.4	56.0	76.0	22.4	31.6	100.0	150.6
4	1753.125	H	35.2	53.1	0.6	35.8	53.7	56.0	76.0	20.2	22.3	100.0	11.0
5	1881.250	H	34.1	44.6	1.6	35.7	46.2	56.0	76.0	20.3	29.8	100.0	215.4
6	2000.000	H	35.0	45.7	2.0	37.0	47.7	56.0	76.0	19.0	28.3	100.0	11.0

7. E.U.T. photographs

Front View

Rear View

Left View

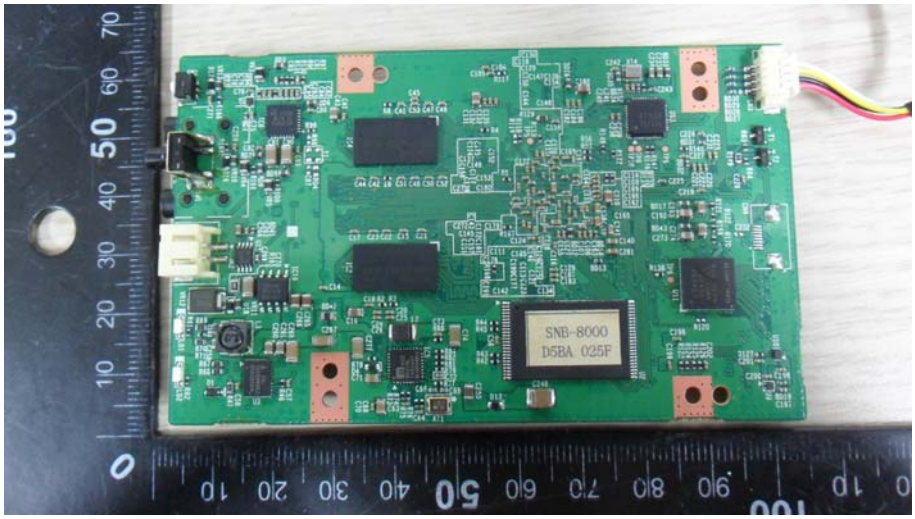
Right View

Top View

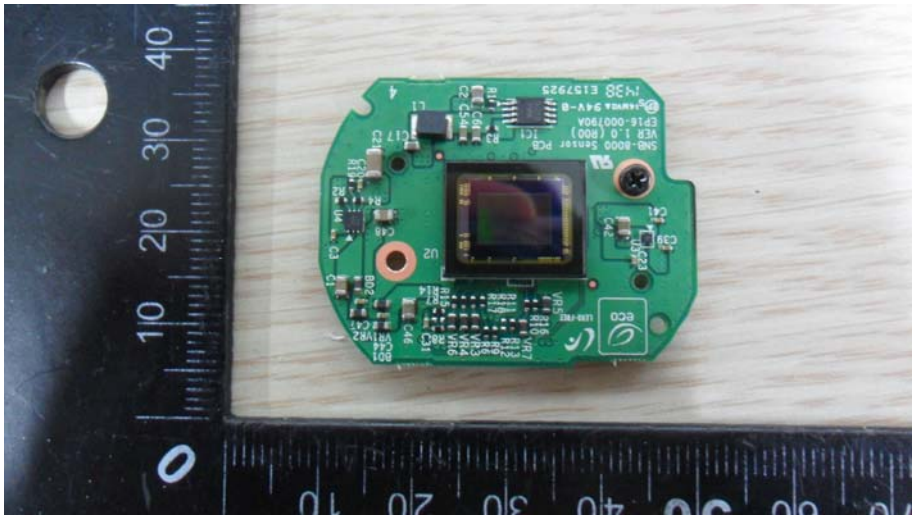
Bottom View

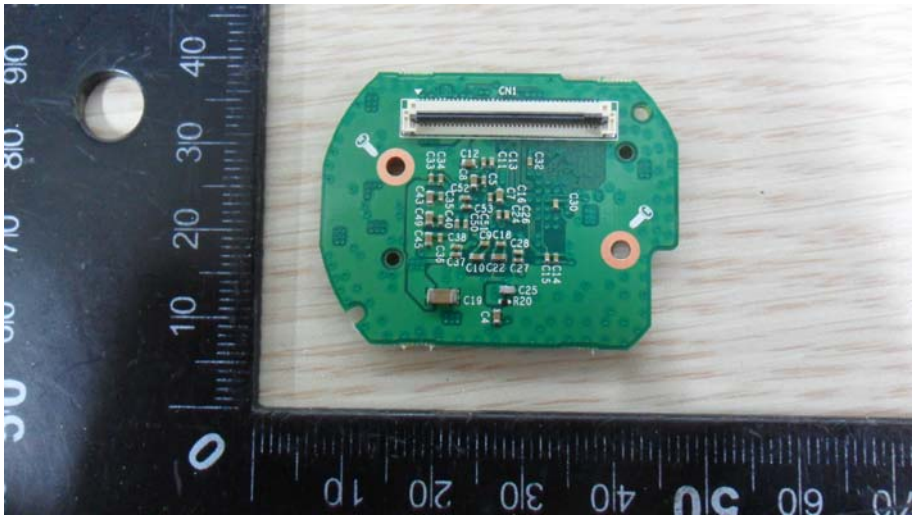
Inside

Main Board

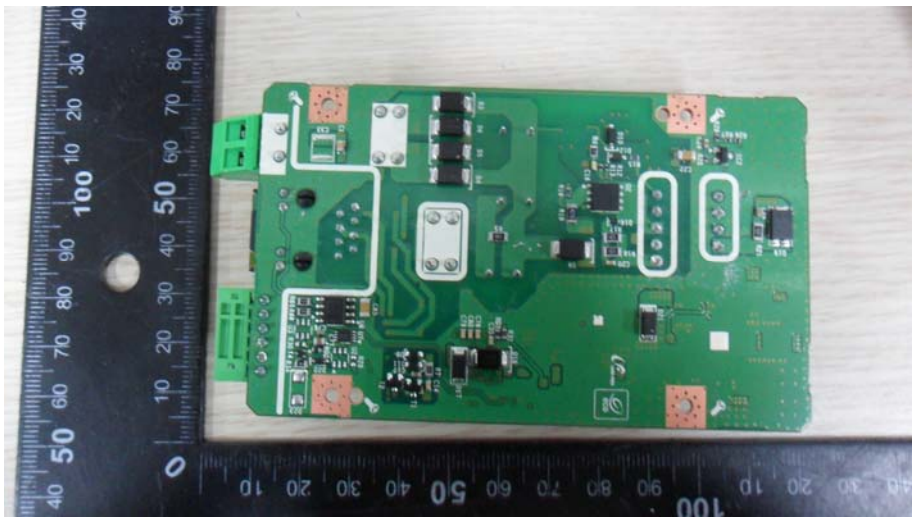


CCD Board





Power Board



AC/DC Adaptor

AC/AC Adaptor