

CERTIFICATE of EMC Compliance

Report No : EMC-FCC-1735
Type of equipment : PTZ CAMERA
Model Name : SNP-5300N
Applicant : Samsung Techwin Co., Ltd.
#42 Seongju-Dong, Changwon-Shi,
Kyungsangnam-Do, Korea
Manufacturer#1 : Samsung Techwin Co., Ltd.
#42 Seongju-Dong, Changwon-Shi,
Kyungsangnam-Do, Korea
Manufacturer#2 : TIANJIN SAMSUNG TECHWIN
OPTO-ELECTRONIC CO., LTD
No.11 Weiliu Road. Micro-Electronic Industrial
Park Jingang Road Tianjin 300385, China
Test standards : FCC part 15 subpart B, Class A
Classification : Verification

The above equipment was tested by EMC compliance Testing Laboratory for with the requirements of FCC Rules and Regulations. The results of testing in this report apply to the product / system which was tested only.

These results are deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations.

Laboratory

EMC compliance Ltd.
480-5 Sin-dong, Yeongtong-gu,
Suwon-city, Gyeonggi-do, 443-390, Korea

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Yeom, Han-Seok/ Manager

EMI TEST REPORT

Test report No : EMC-FCC-1735
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No.11 Weiliu Road. Micro-Electronic Industrial
Park Jingang Road Tianjin 300385, China
Test standards : FCC part 15 subpart B, Class A
Classification : Verification
Test Procedure and Items
- Radiated Emissions Measurement : ANSI C63.4-2009
Testing Laboratory : EMC Compliance Ltd.
Test result : Complied

The above equipment was tested by EMC compliance Testing Laboratory for compliance with the requirements of FCC Rules and Regulations. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

These results are deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations.

Date of receipt: 2012. 11. 08

Date of testing: 2012. 11. 14

Issued date: 2012. 11. 26

Tested by:



AHN, BYUNG-WOO

Approved by:



YEOM, HAN-SEOK

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1. Applicant information

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Contact name: **Kang Jei Soon**

Manufacturer#1: SAMSUNG TECHWIN CO., LTD.
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E-mail: js2002.kang@samsung.com
Contact name: **Kang Jei Soon**

Manufacturer#2: TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONIC CO., LTD
Address: No.11 Weiliu Road, Micro-Electronic Industrial Park
Jingang Road Tianjin 300385, China

2. Laboratory information

Address

EMC compliance Ltd.

480-5 Sin-dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, 443-390, Korea

Telephone Number: 82 31 336 9919

Facsimile Number: 82 505 299 8311

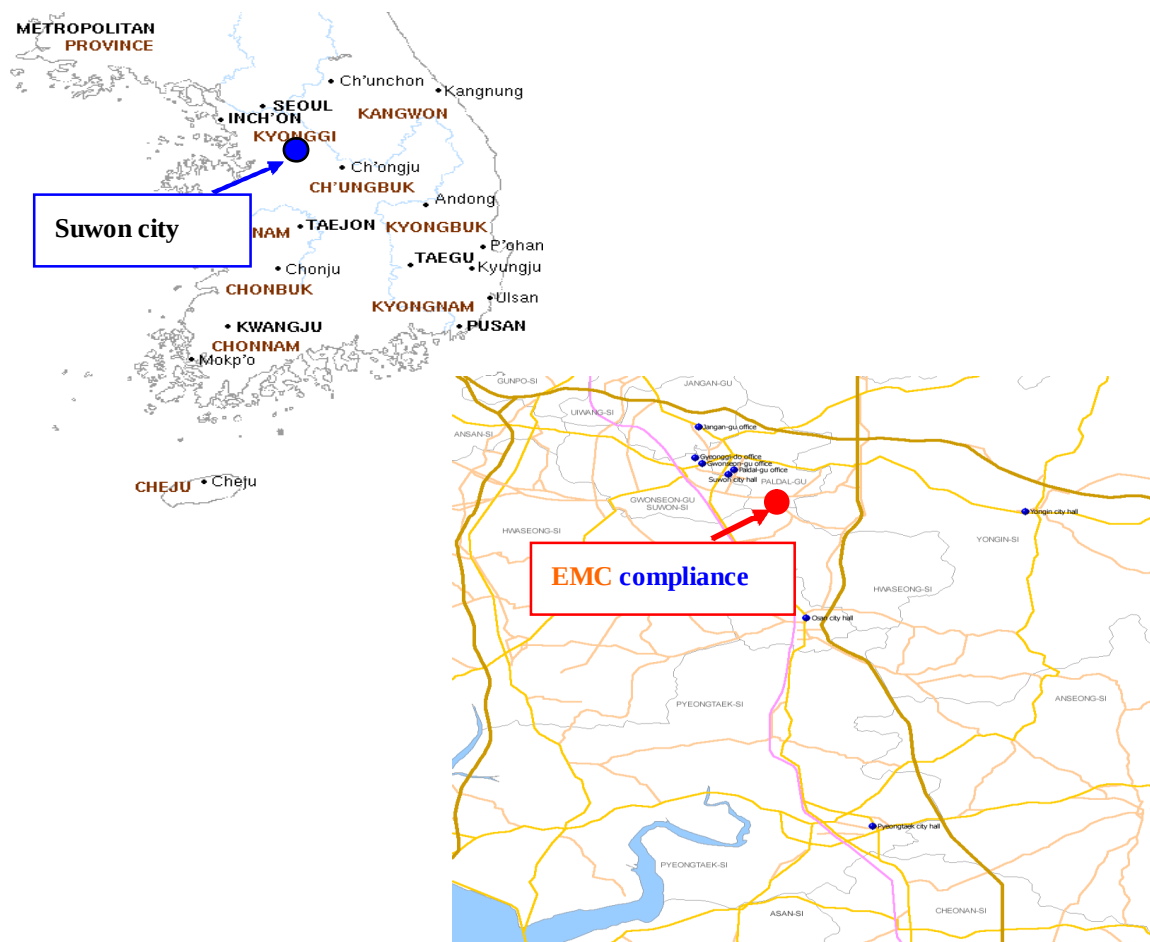
FCC CAB.: KR0040

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)	: 20 °C	28 % 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 kHz ~ 150 kHz: ± 3.82 dB 150 kHz ~ 30 MHz: ± 3.43 dB	
Shielded Room (CE#2)	9 kHz ~ 150 kHz: ± 3.82 dB 150 kHz ~ 30 MHz: ± 3.43 dB	
Shielded Room (CE#3)	9 kHz ~ 150 kHz: ± 4.00 dB 150 kHz ~ 30 MHz: ± 3.63 dB	
Radiated Emission measurement (C.L: Approx 95 %, k = 2)		
10 m Chamber (#F4)	30 MHz ~ 300 MHz	3 m: + 4.56 dB, - 4.58 dB 10 m: + 4.56 dB, - 4.56 dB
	300 MHz ~ 1 000 MHz	3 m: + 4.84 dB, - 4.85 dB 10 m: + 4.71 dB, - 4.72 dB
	1 GHz ~ 6 GHz	3 m: + 6.19 dB, - 6.20 dB
	6 GHz ~ 18 GHz	3 m: + 6.41 dB, - 6.53 dB
10 m Chamber (#F2)	30 MHz ~ 300 MHz	3 m: + 4.86 dB, - 4.88 dB 10 m: + 4.86 dB, - 4.86 dB
	300 MHz ~ 1 000 MHz	3 m: + 4.98 dB, - 4.99 dB 10 m: + 4.85 dB, - 4.87 dB
	1 GHz ~ 6 GHz	3 m: + 6.19 dB, - 6.20 dB
	6 GHz ~ 18 GHz	3 m: + 6.41 dB, - 6.53 dB

4. Description of E.U.T.

4.1 General information

Items		Description	
		SNP-5300N/P	SNP-5300HN/HP
Video	Imaging Device	1/4-type Exmor CMOS (SONY IMZ076LQZ-C)	
	Total Pixels	1392(H) x 1076(V)	
	Effective Pixels	1368(H) x 1049(V)	
	Scanning System	Progressive	
	Min. Illumination	Color (TBD) : 1 Lux/F1.35(50IRE) BW(TBD) : 0.1 Lux/F1.35(50IRE)	
	S / N Ratio	50dB	
Lens	Focal Length (Zoom Ratio)	3.5~105mm (30X)	
	Max. Aperture Ratio	F1.35(Wide) / F3.7(Tele)	
	Angular Field of View	H : 54.85°(Wide) ~ 2.00°(Tele) / V : 44.61°(Wide) ~ 1.6°(Tele)	
	Min. Object Distance	1.5m (4.92ft)	
	Focus Control	AF / One-Shot AF / Manual	
	Lens Type	DC Auto Iris	
	Mount Type	Board-in type	
Pan / Tilt / Rotate	Pan Range	360° Endless	
	Pan Speed	Preset : 500°/sec, Manual : 0.024°/sec ~120°/sec	
	Tilt Range	210°(-15° ~195°)	
	Tilt Speed	Preset : 500°/sec, Manual : 0.024°/sec ~120°/sec	
	Rotate Range	-	
	Preset	255 ea	
	Preset Accuracy	±0.2°	
	Auto Tracking	N/A	

Items	Description	
	SNP-5300N/P	SNP-5300HN/HP
Operational	Camera Title	Off / On (Displayed up to 15 characters)
	Day & Night	Auto (ICR) / Color / B/W
	Backlight Compensation	Off / BLC / WDR / HLC
	Wide Dynamic Range	128X (60dB)
	Contrast Enhancement	SSDR (Samsung Super Dynamic Range) (Off / On)
	Digital Noise Reduction	SSNRIII (2D+3D Noise Filter) (Off / On)
	Digital Image Stabilization	Off / On
	Motion Detection	Yes (4EA)
	Privacy Masking	Off / On (12 Rectangle programmable zones)
	Sens-up (Frame Integration)	Off / Auto (2X ~ 60X)
	Gain Control	Off / Low / Medium / High / Manual
	White Balance	AWC, Manual, Indoor, Outdoor, ATW (2,400°K ~ 10,500°K)
	Electronic Shutter Speed	ESC / FLK / Manual (1/30 ~ 1/30,000)
	Digital Zoom	12X
	Flip / Mirror	Off / On
	Intelligent Video Analytics	Tampering(Scene Change), Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection(5ea)
	Alarm I/O	Input 4ea / Output 2ea
	Alarm Triggers	Motion detection, V-Loss, Intelligent Video Analytics
	Alarm events	• File upload via FTP, E-Mail • Notification via E-Mail, TCP and • local storage(SD/SDHC) recording at Network disconnected • External output • PTZ preset

Items	Description	
	SNP-5300N/P	SNP-5300HN/HP
Network	Ethernet	RJ-45 (10/100BASE-T)
	Video Compression Format	H.264 (MPEG-4 Part 10/AVC), Motion JPEG
	Resolution	SXGA (1280 x 1024), 1280 x 960, HD (16 : 9, 1280 x 720p), 1024 x 768, SVGA (800 x 600), VGA (640 x 480), QVGA (320 x 240)
	Max. Framerate	NTSC : 30fps, PAL : 25fps
	Smart Codec	Yes (Area Based Method, Face Detection Method)
	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 10 Profiles)
	Audio I/O	Mic(Line)-in Selectable via UI, Line-out (1Vrms)
	Audio Compression Format	G.711 μ -law, G.726
	Audio Communication	Bi-directional (2-Way)
	IP	IPv4, IPv6
	Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTSP, NTP, HTTP, HTTPS, SSL, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP

Items		Description	
		SNP-5300N/P	SNP-5300HN/HP
Network	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	
	Memory Slot	SD/SDHC Memory Slot	
	ONVIF Conformance	Yes	
	Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Danish, Portuguese, Czech, Polish, Turkish, Rumanian, Serbian, Dutch, Croatian, Hungarian, Greek	
	Web Viewer	Supported OS : Windows XP / VISTA / 7, MAC OS Supported Browser : Internet Explorer 7.0 or higher, Firefox Google Chrome, Apple Safari	
	Central Management Software	NET-i viewer, iPOLiS TSM Standard/Professional	
Environmental	Operating Temperature / Humidity	-10°C ~ +55°C (+14°F ~ +131°F) / 20% ~ 80% RH	-50°C ~ +55°C (-58°F ~ +131°F) / ~ 90% RH
	Ingress Protection	-	IP66
	Vandal Resistance	TBD (SNP-5300H only) , SHP-3700H : IK10 Housing	
Electrical	Input Voltage / Current	24V AC, PoE+(IEEE802.3at)	
	Power Consumption	TBD	TBD (Heater Off), TBD (Heater On) * Heater works at AC power input only.
Mechanical	Color / Material	Ivory / Plastic	Ivory / Aluminum Plastic Sun-Shield
	Dimension (Ø x H)	Ø152 x H218 mm	Ø220 x H293.6 mm
	Weight	TBD	TBD

4.2 Product description

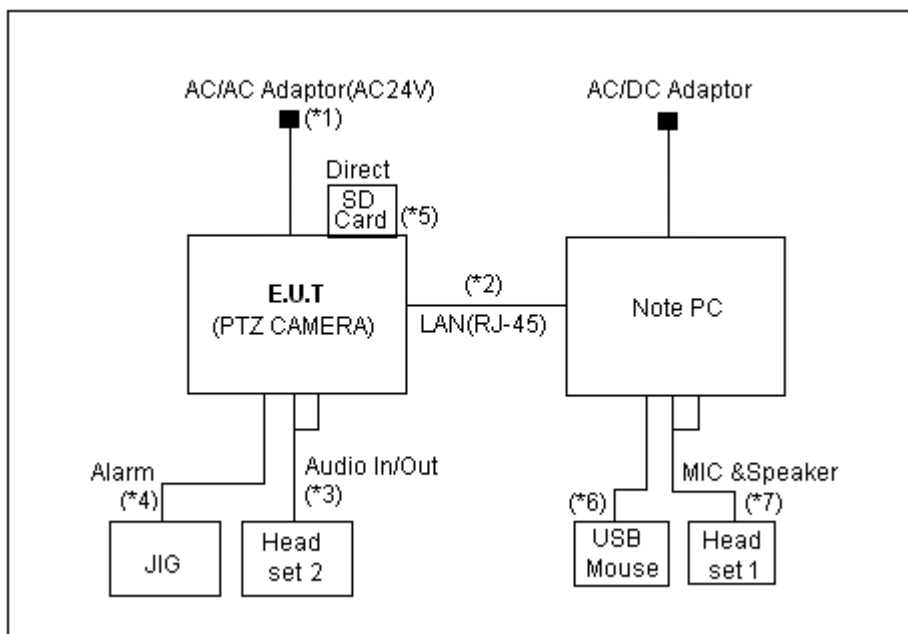
Type of product	PTZ CAMERA
Model name (Basic)	SNP-5300N
Model name (Variant)	-
Difference	-
Trade name	-
Serial no	Engineering Sample
Testing voltage	AC 24 V , PoE
Product rating	AC 24 V , PoE
Internal clock frequency	Above 108 MHz
Note	* AC/AC adaptor was not provided by the manufacturer. * PoE Switch was not provided by the manufacturer.

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
Note PC	PSLQ0K-02N005	2A046497Q	TOSHIBA
USB Mouse	1088	8165906051282	Microsoft
Headset 1	MP-422	-	MANIAPC
Headset 2	MP-421	-	MANIAPC
JIG	-	-	-
SD Card(2GB)	-	-	Sandisk
PoE Switch	FS108P	1DL20C3K00541	NETGEAR
AC/AC Adaptor (AC 24 V)	STA-220	-	Dream Electronics

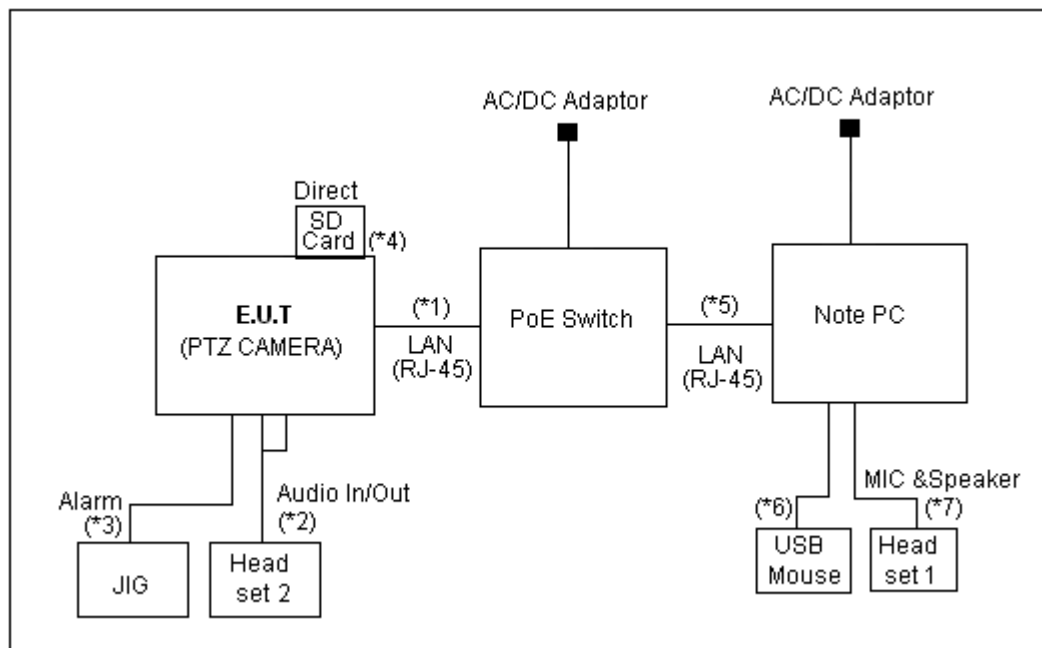
4.4 Test configuration

#1- AC 24V



Note *	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT (PTZ CAMERA)	Power	AC/AC Adaptor	Power	1.5	Non-Shield
2		LAN(RJ-45)	Note PC	LAN(RJ-45)	3.0	Non-Shield
3		Audio In/Out	Headset 2	Audio In/Out	2.0	Non-Shield
4		Alarm	JIG	Alarm	3.0	Non-Shield
5		SD Card	SD Card	SD Card	Direct	-
6	Note PC	USB	USB Mouse	USB	2.0	Shield
7		MIC &Speaker	Headset 1	MIC &Speaker	2.0	Non-Shield

#2- PoE



*Power supplied from PoE Switch

Note *	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT (PTZ CAMERA)	LAN(RJ-45)	PoE Switch	LAN(RJ-45)	3.0	Non-Shield
2		Audio In/Out	Headset 2	Audio In/Out	2.0	Non-Shield
3		Alarm	JIG	Alarm	3.0	Non-Shield
4		SD Card	SD Card	SD Card	Direct	-
5	Note PC	LAN(RJ-45)	PoE Switch	LAN(RJ-45)	3.0	Non-Shield
6		USB	USB Mouse	USB	2.0	Shield
7		MIC &Speaker	Headset 1	MIC &Speaker	2.0	Non-Shield

4.5 Operating conditions

The EUT was configured as normal intended use.

Test mode	Normal operating
1	Check the web view

* Note: 2 types of powers are available for the product, that are AC 24 V, PoE.

Therefore, tests were performed for 2 different types of powers.

5. Summary of test results

In the above configuration tested, The EUT complied with the requirement of the specification

5.1 Summary of EMI emission test results

FCC Part 15 Subpart B (Class A)

ANSI C63.4 – 2009

Applied	Test items	Test method	Result
☐	Conducted Emission	ANSI C63.4 – 2009	N/A
☒	Radiated Emission	ANSI C63.4 – 2009	Complied

6. Test results

6.1 Radiated Emission

Test specification	FCC Part 15, Section 15.109(g), Class A		
Testing voltage	AC 24 V, PoE		
Test facility	10 m Chamber (#F2)		
Test distance	10 m, 3 m		
Date	2012. 11. 14		
Temperature (°C)	20 °C	Humidity (% R.H.)	28 % R.H.
Remarks	Complied		

6.1.1 Limits of radiated emission measurement

Frequency [MHz]	Class A (dB(μV/m)) @ 10 m	Class B (dB(μV/m)) @ 3 m
30-88	39	40
88-216	43.5	43.5
216-960	46.4	46
Above 960	49.5	54

* Note- Alternative standard: CISPR, Pub. 22 *

6.1.2 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.

6.1.3 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
Test Receiver	ESCI	100710	R&S	2013.11.06	☒
Bi-Log Antenna	VULB 9168	9168-440	SCHWARZBECK	2013.10.04	☒
Amplifier	310N	293004	SONOMA INSTRUMENT	2013.11.06	☒
3 dB Attenuator	8491A	27444	HP	2013.11.06	☒
Antenna Mast	MA4000-EP	303	Innco Systems	-	☒
Turn Table	DT2000S-1t	079	Innco Systems	-	☒
Horn ANT	3115	00086706	ETS	2013.11.21	☒
Amplifier	8449B	3008A02343	AGILENT	2013.11.06	☒
Spectrum Analyzer	FSP7	100289	R&S	2012.12.19	☒

6.1.4 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:

$$\text{Result} = \text{M.R} + \text{C.F}(\text{A.F} + \text{C.L} + 3 \text{ dB Att} - \text{A.G})$$

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

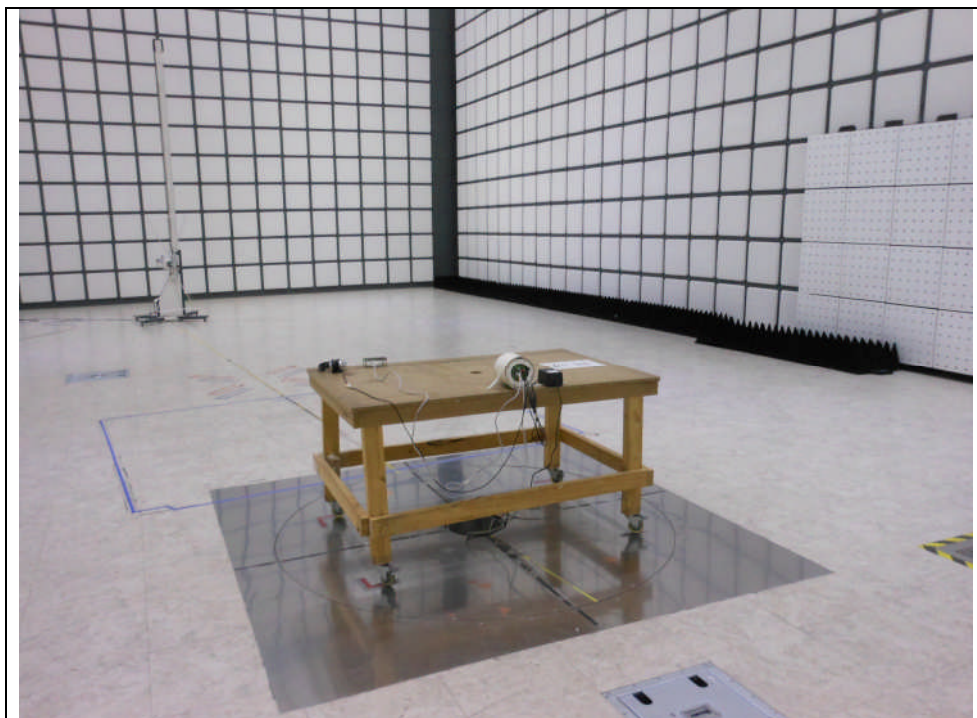
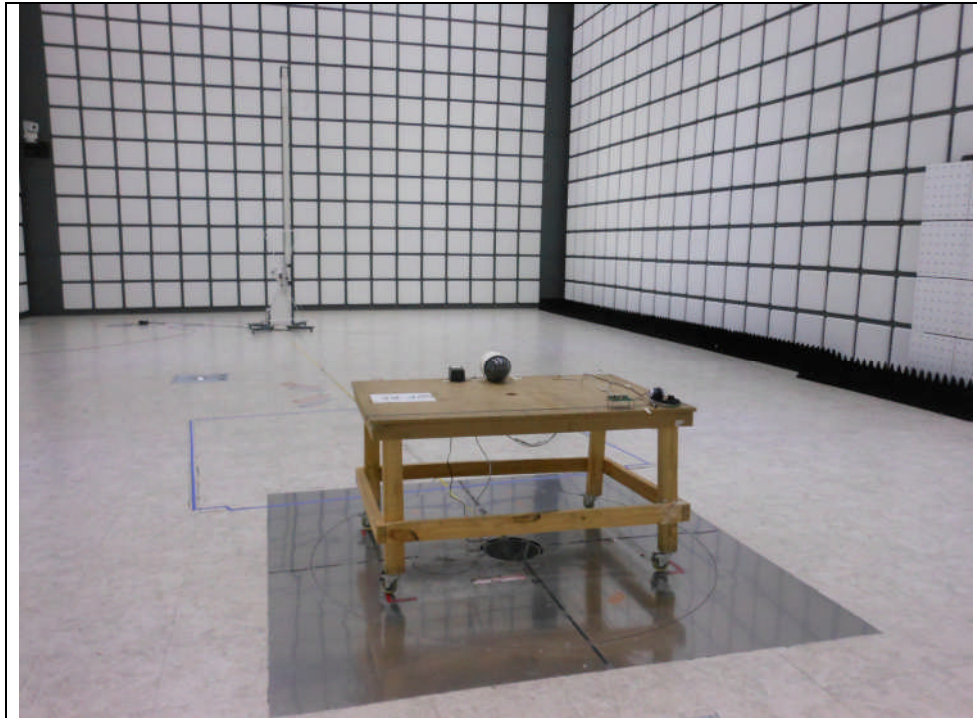
If M.R is 30 dB, A.F 12 dB, C.L 5 dB, 3 dB, A.G 35 dB

The result is $30 + 12 + 5 + 3 - 35 = 15 \text{ dB}(\mu\text{V/m})$

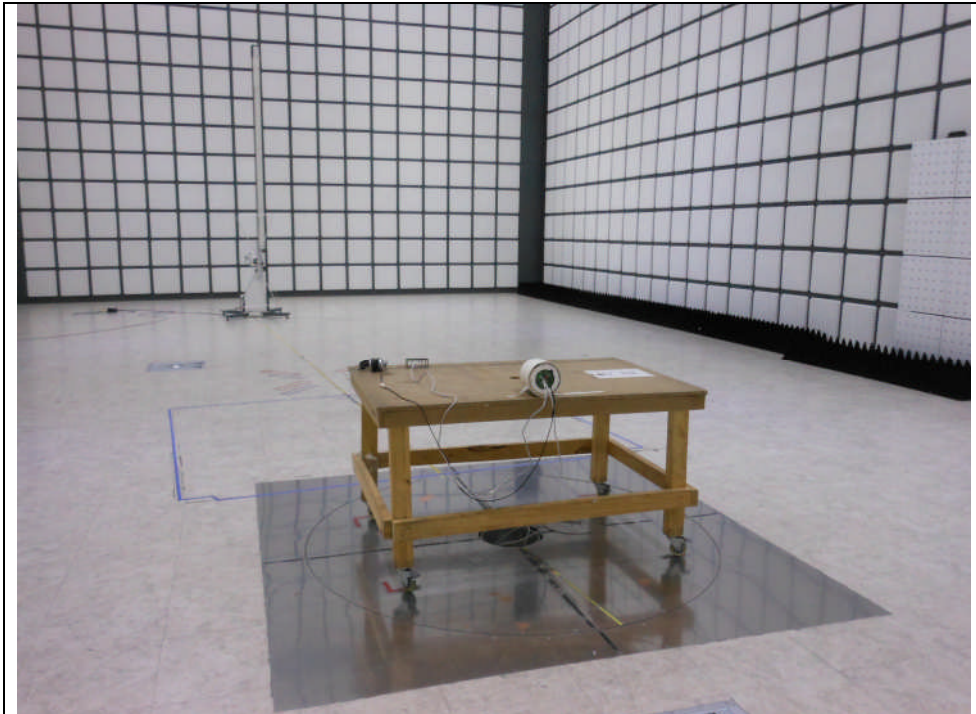
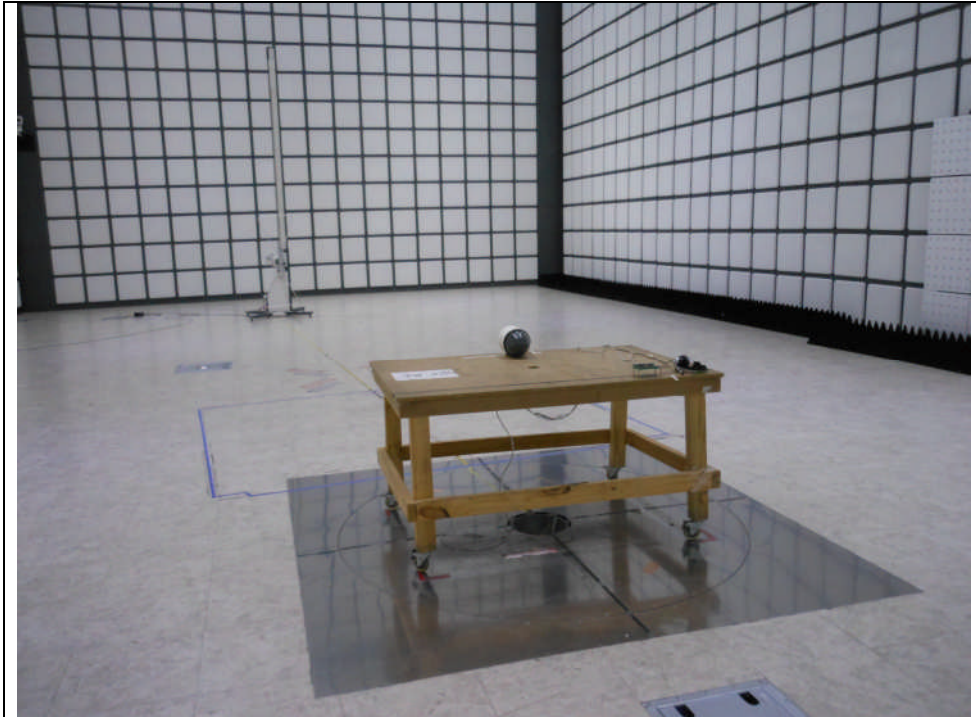
6.1.5 Photographs of test setup

* 30 MHz ~ 1 GHz

* #1- AC 24V

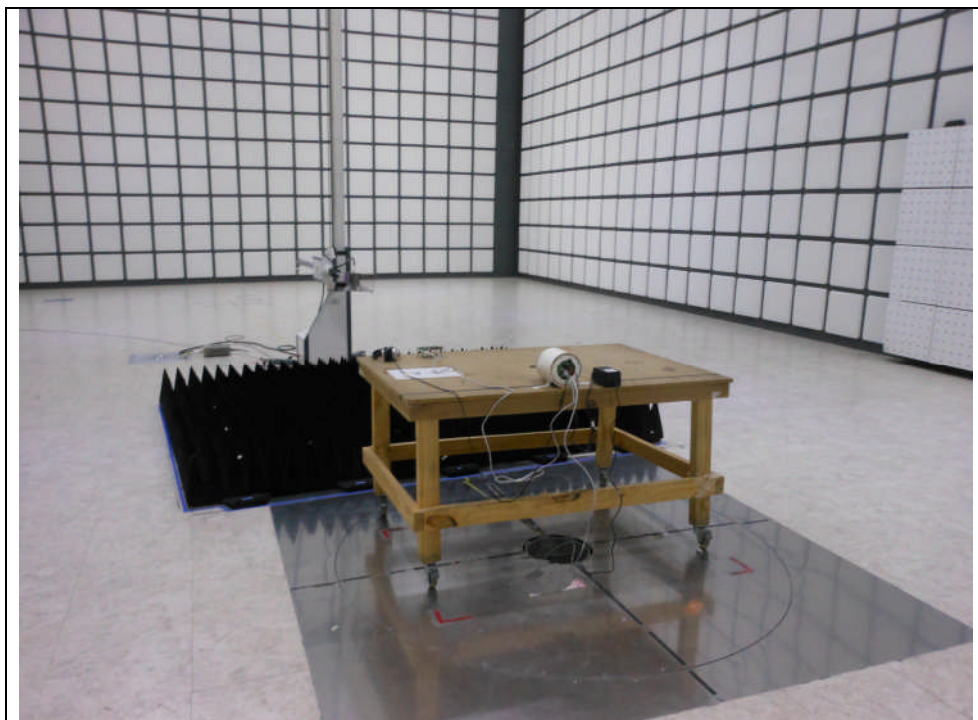
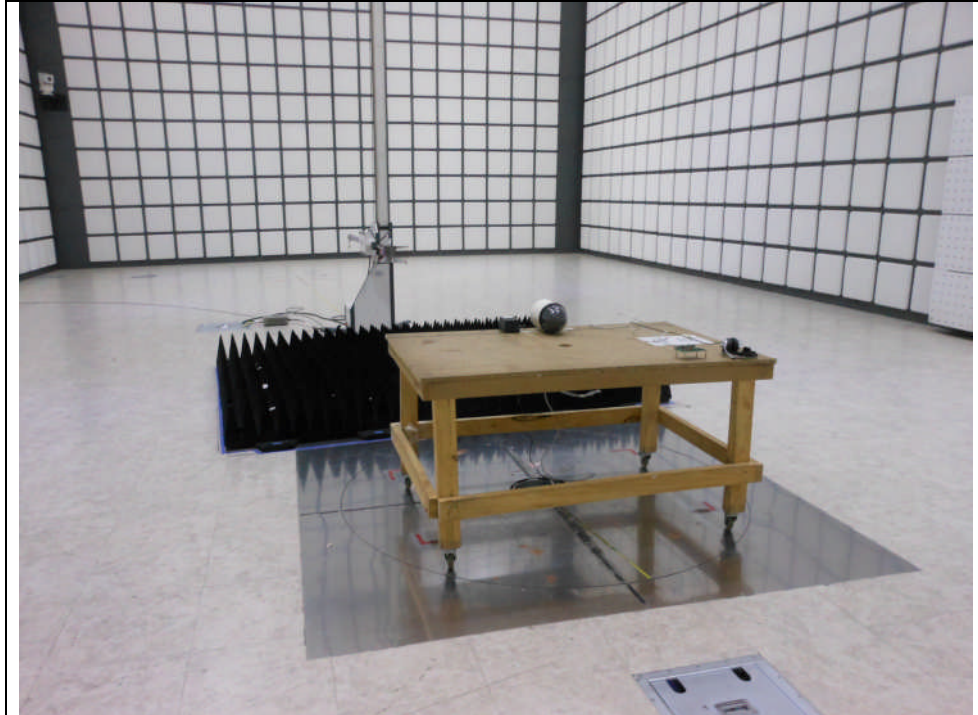


* #2-PoE

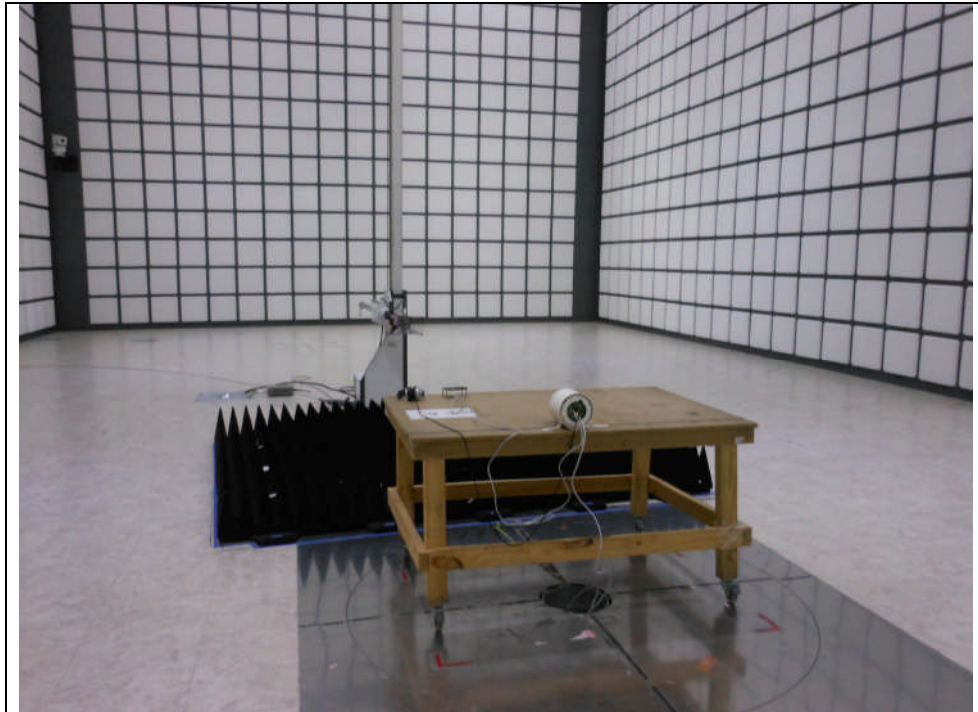
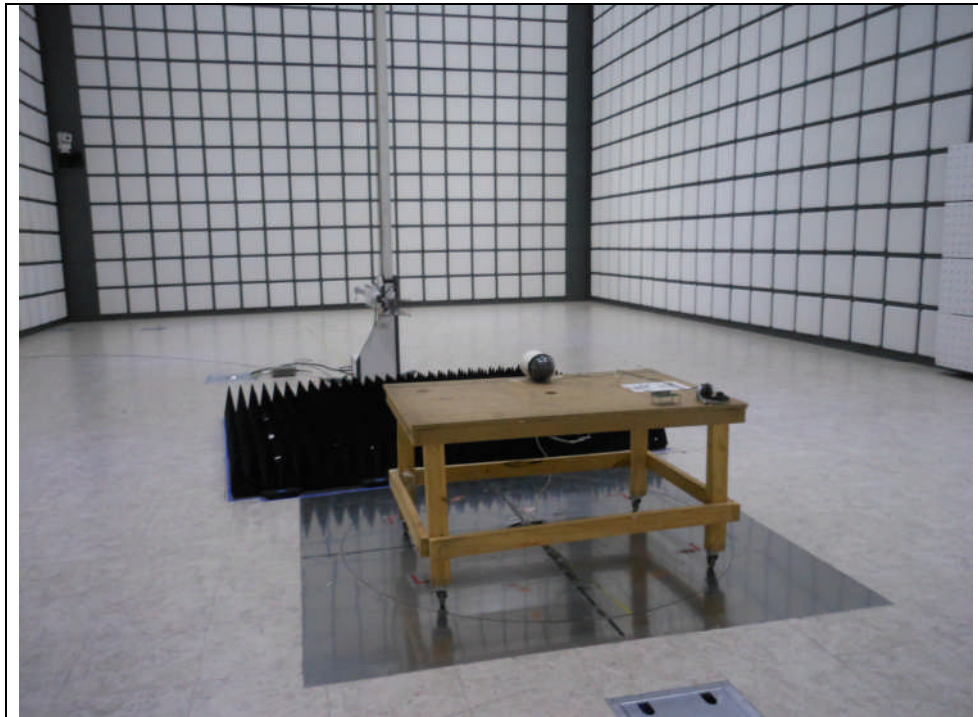


* 1 GHz ~ 5 GHz

* #1- AC 24V



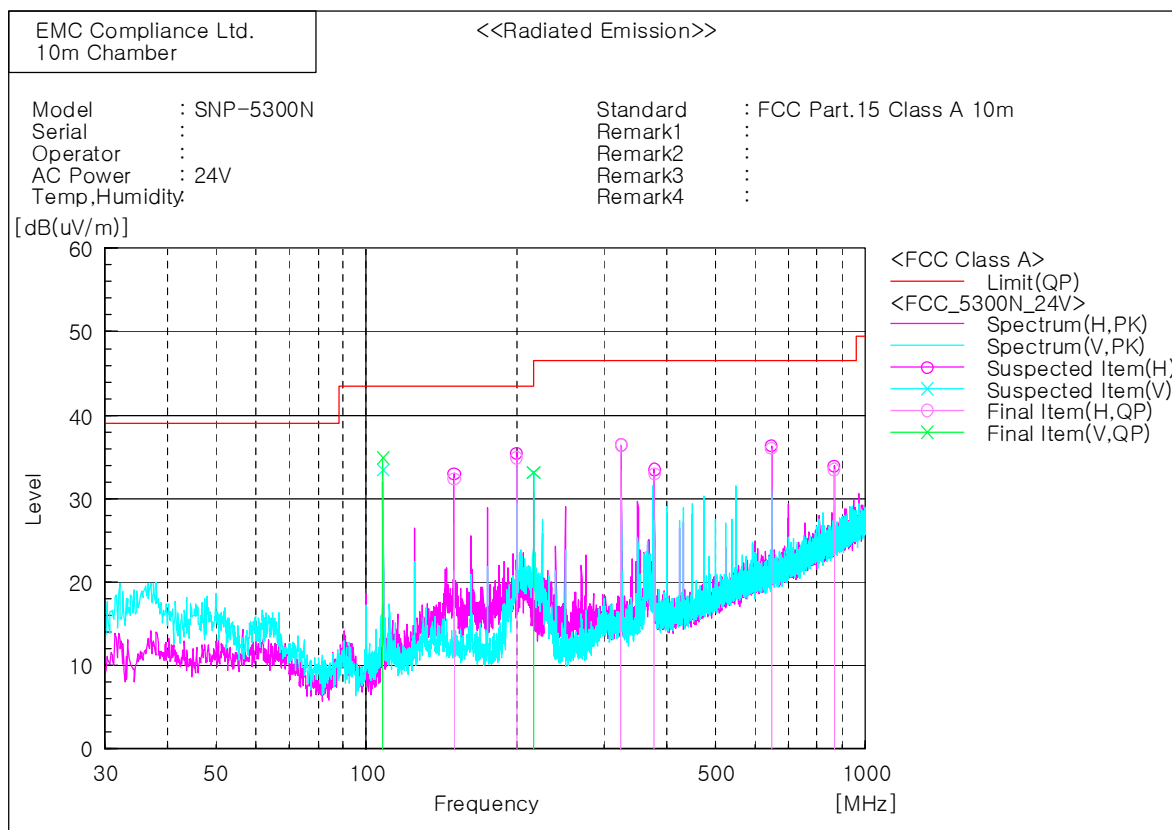
* #2-PoE



6.1.6 Radiated emission measurement result

* Graph and Data

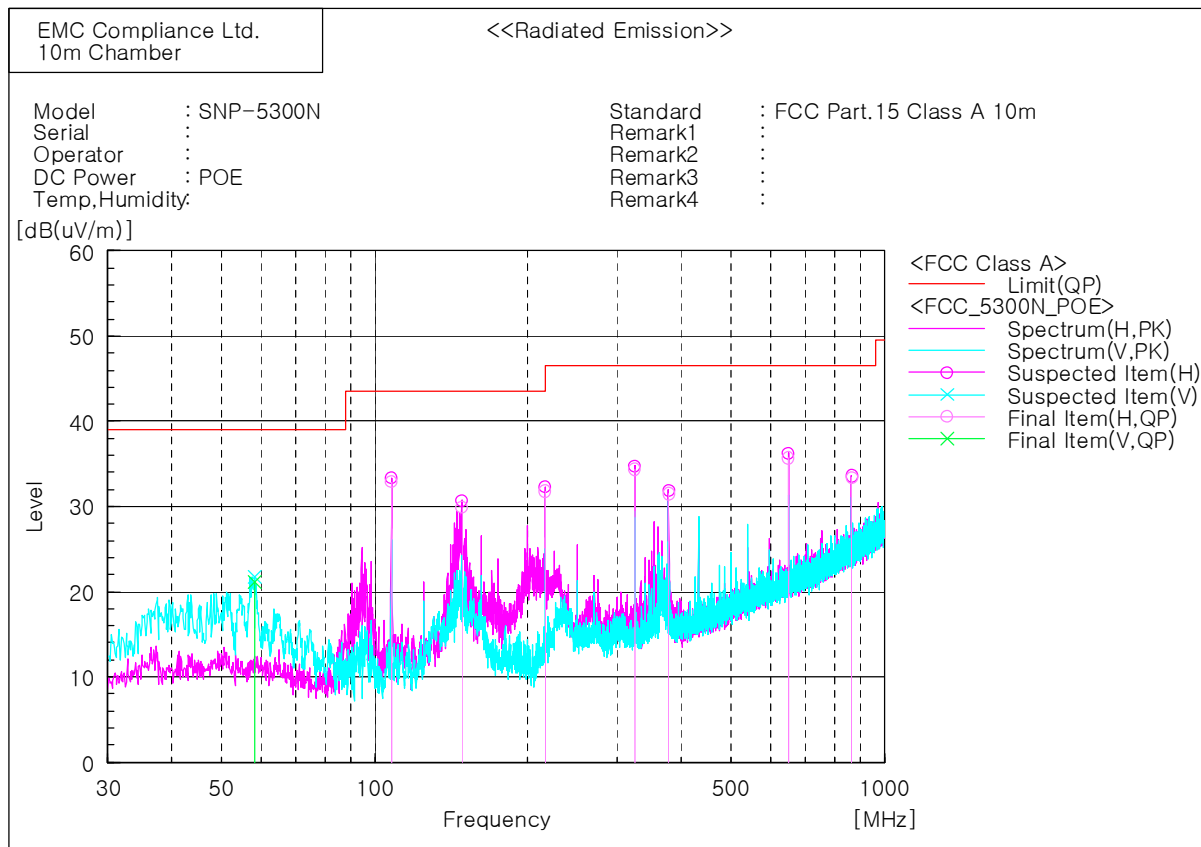
* 30 MHz ~ 1 GHz (#1- AC 24V)



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	107.964	V	52.1	-17.2	34.9	43.5	8.6	200.0	259.6
2	150.038	H	45.9	-13.5	32.4	43.5	11.1	300.0	327.0
3	199.993	H	50.9	-16.0	34.9	43.5	8.6	400.0	130.9
4	215.998	V	48.7	-15.6	33.1	43.5	10.4	100.0	242.0
5	324.031	H	47.5	-11.1	36.4	46.5	10.1	400.0	90.7
6	377.988	H	42.8	-9.8	33.0	46.5	13.5	200.0	332.0
7	648.011	H	39.4	-3.4	36.0	46.5	10.5	100.0	33.0
8	864.079	H	32.8	0.7	33.5	46.5	13.0	200.0	186.2

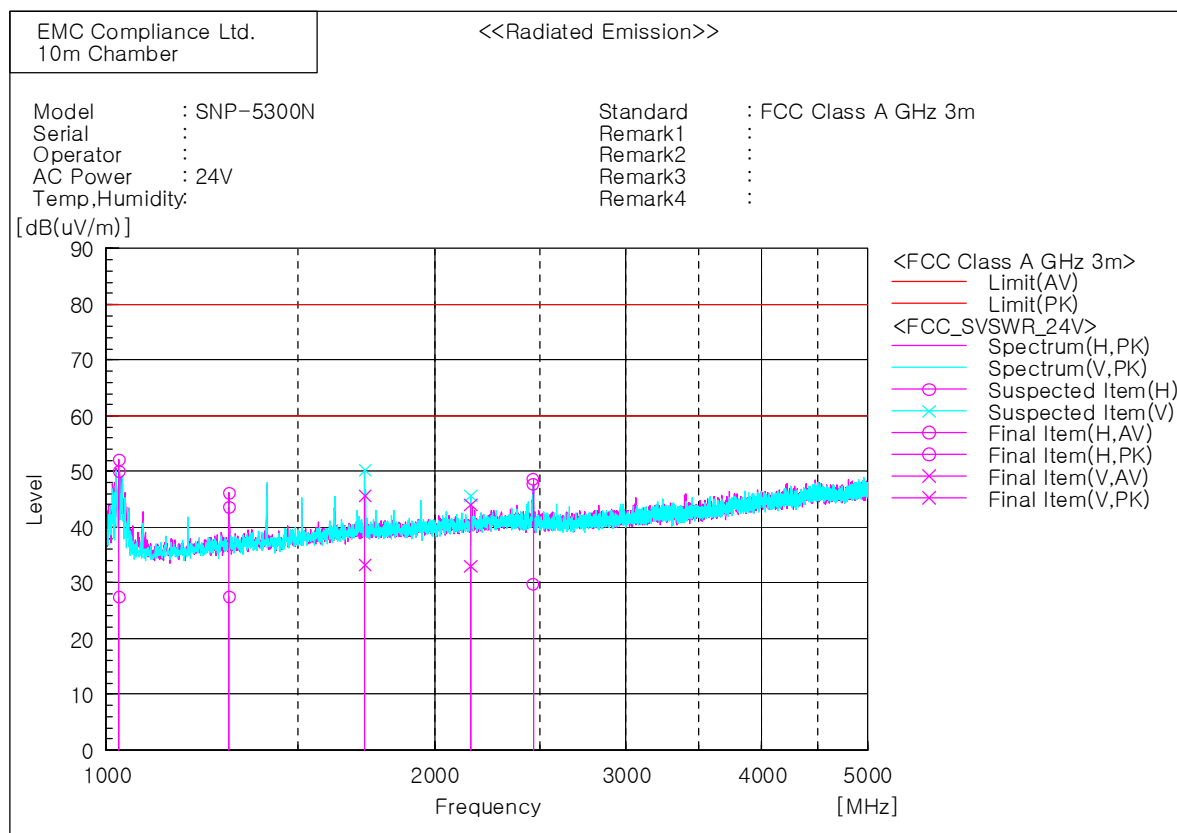
* 30 MHz ~ 1 GHz (#2- PoE)



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	58.130	V	35.3	-14.1	21.2	39.0	17.8	100.0	8.1
2	107.964	H	50.1	-17.2	32.9	43.5	10.6	400.0	107.8
3	148.098	H	43.4	-13.5	29.9	43.5	13.6	400.0	326.6
4	215.998	H	47.4	-15.6	31.8	43.5	11.7	200.0	32.8
5	324.031	H	45.5	-11.1	34.4	46.5	12.1	300.0	326.6
6	377.988	H	41.3	-9.8	31.5	46.5	15.0	300.0	314.0
7	648.011	H	39.1	-3.4	35.7	46.5	10.8	400.0	77.5
8	864.079	H	32.7	0.7	33.4	46.5	13.1	100.0	261.2

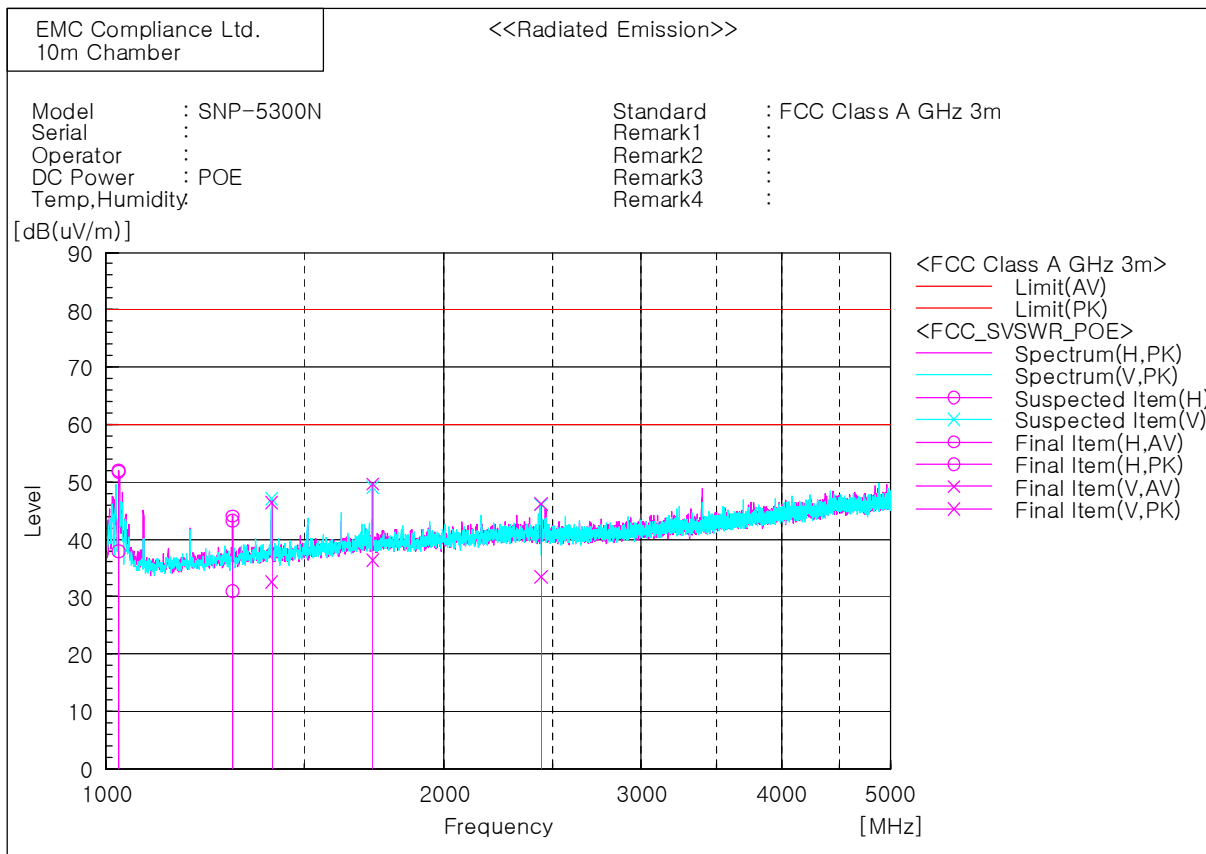
* 1 GHz ~ 5 GHz (#1- AC 24V)



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	1026.875	H	36.7	59.3	-9.3	27.4	50.0	60.0	80.0	32.6	30.0	100.0	192.1
2	1296.250	H	34.2	50.3	-6.7	27.5	43.6	60.0	80.0	32.5	36.4	100.0	358.4
3	1727.500	V	36.7	49.1	-3.5	33.2	45.6	60.0	80.0	26.8	34.4	100.0	250.7
4	2160.625	V	34.5	45.5	-1.5	33.0	44.0	60.0	80.0	27.0	36.0	100.0	359.9
5	2463.750	H	30.9	49.8	-1.1	29.8	48.7	60.0	80.0	30.2	31.3	100.0	136.8

* 1 GHz ~ 5 GHz (#2- 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	1025.625	H	47.2	61.1	-9.3	37.9	51.8	60.0	80.0	22.1	28.2	100.0	113.2
2	1727.500	V	39.8	53.1	-3.5	36.3	49.6	60.0	80.0	23.7	30.4	100.0	301.8
3	1403.750	V	38.3	52.2	-5.8	32.5	46.4	60.0	80.0	27.5	33.6	100.0	301.8
4	2440.625	V	34.5	47.3	-1.1	33.4	46.2	60.0	80.0	26.6	33.8	100.0	47.4
5	1296.250	H	37.6	49.9	-6.7	30.9	43.2	60.0	80.0	29.1	36.8	100.0	276.7

7. E.U.T. photographs

Front View



Rear View



Left View



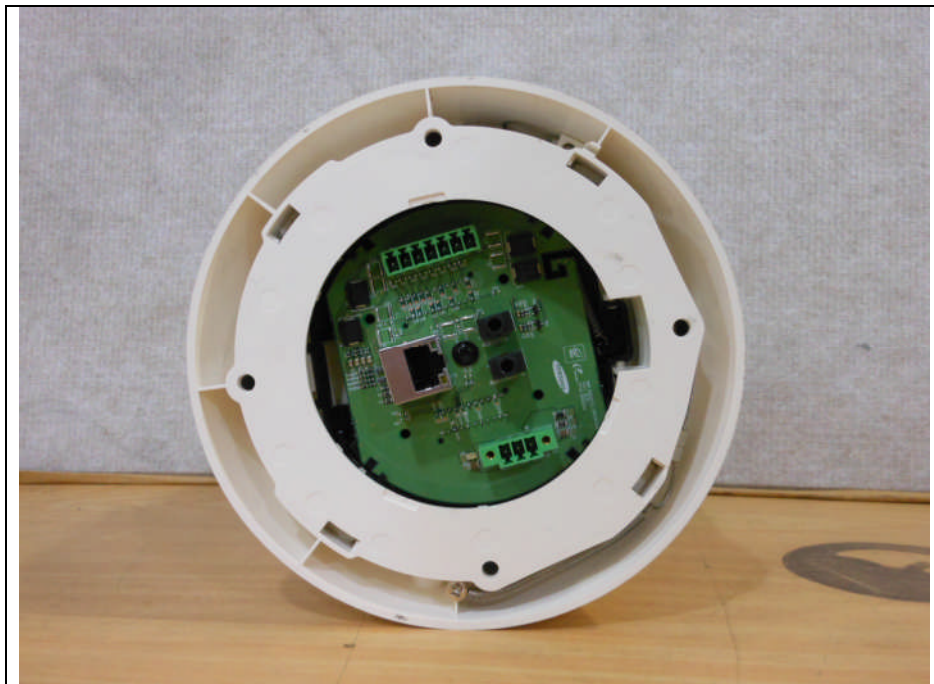
Right View



Top View



Bottom View



Label



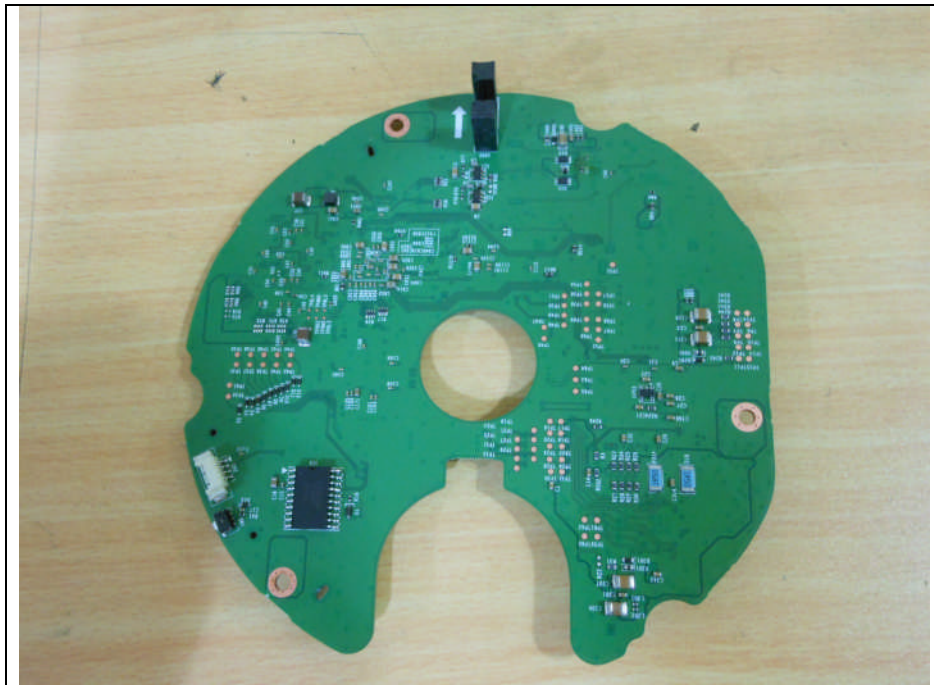
FCC Label Location

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

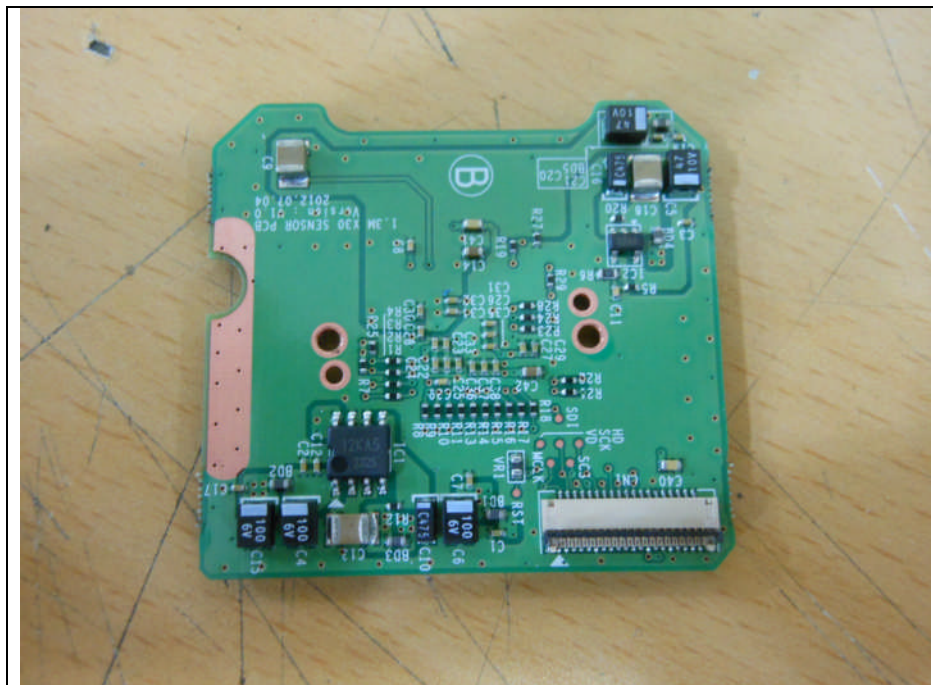
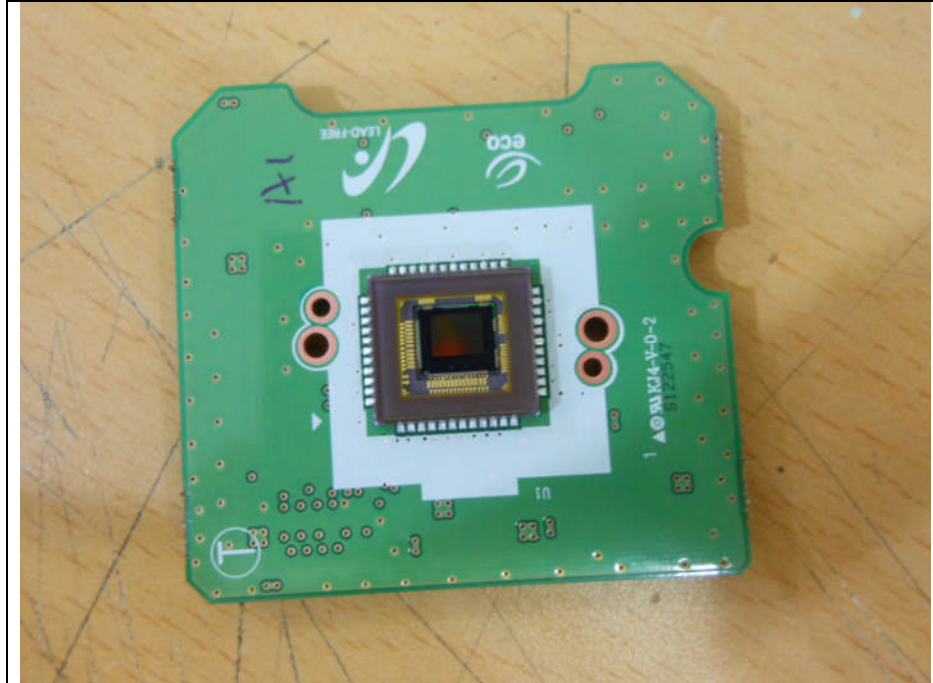
Inside



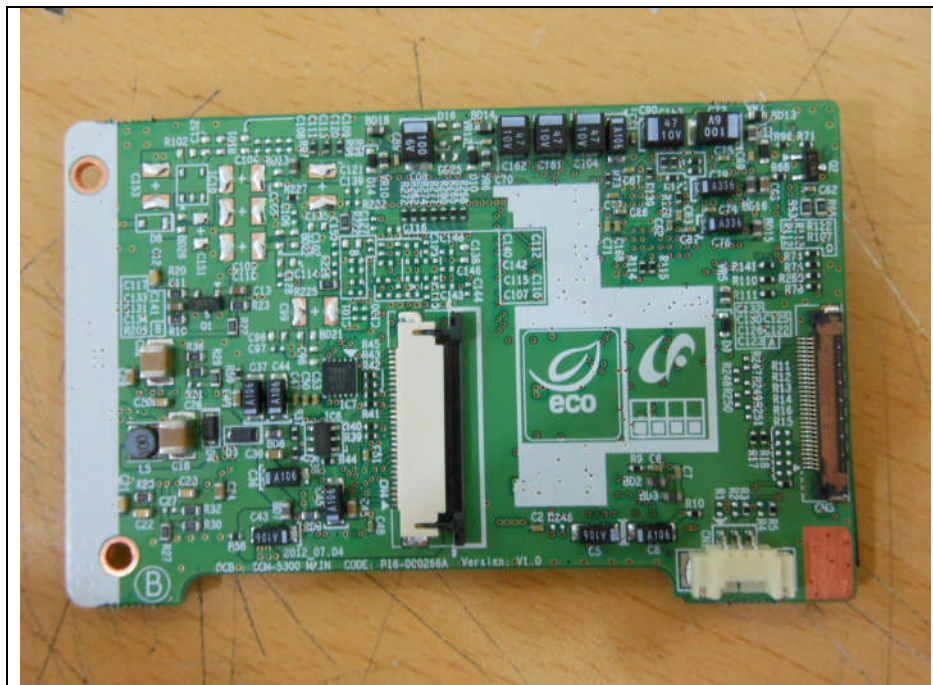
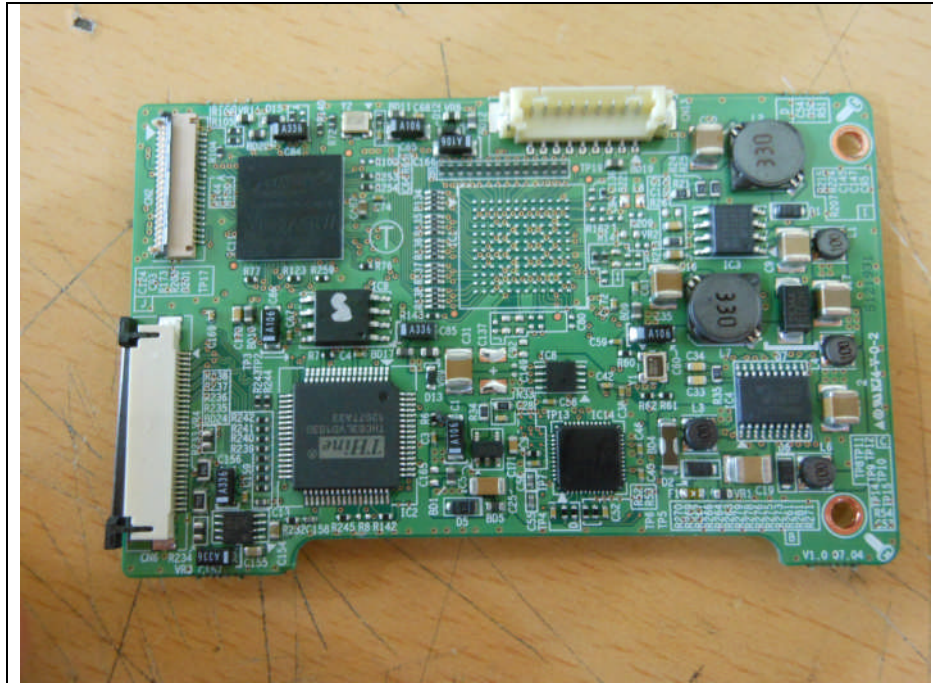
Main Board



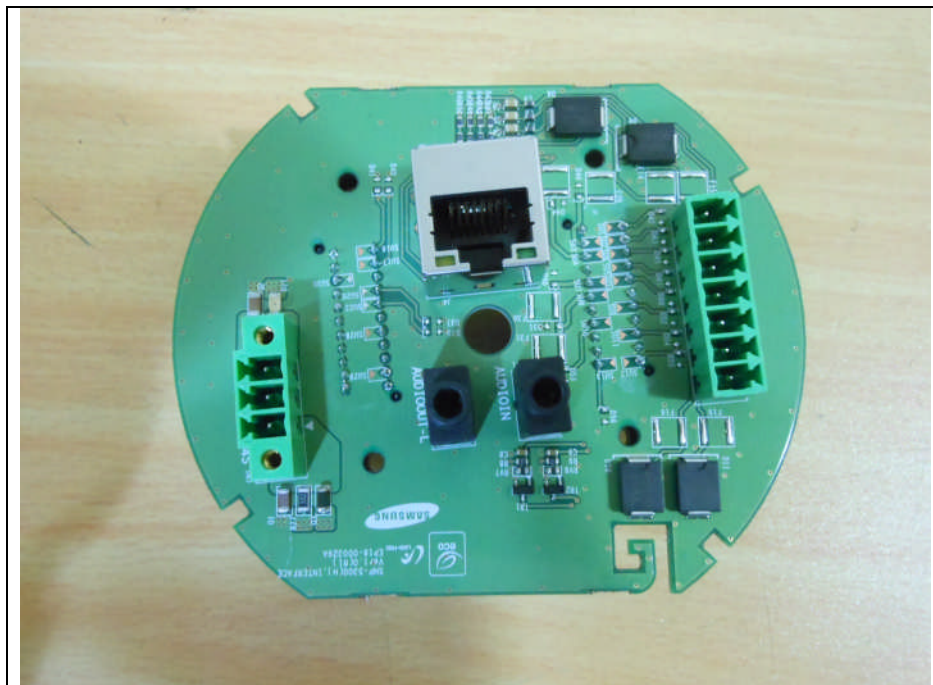
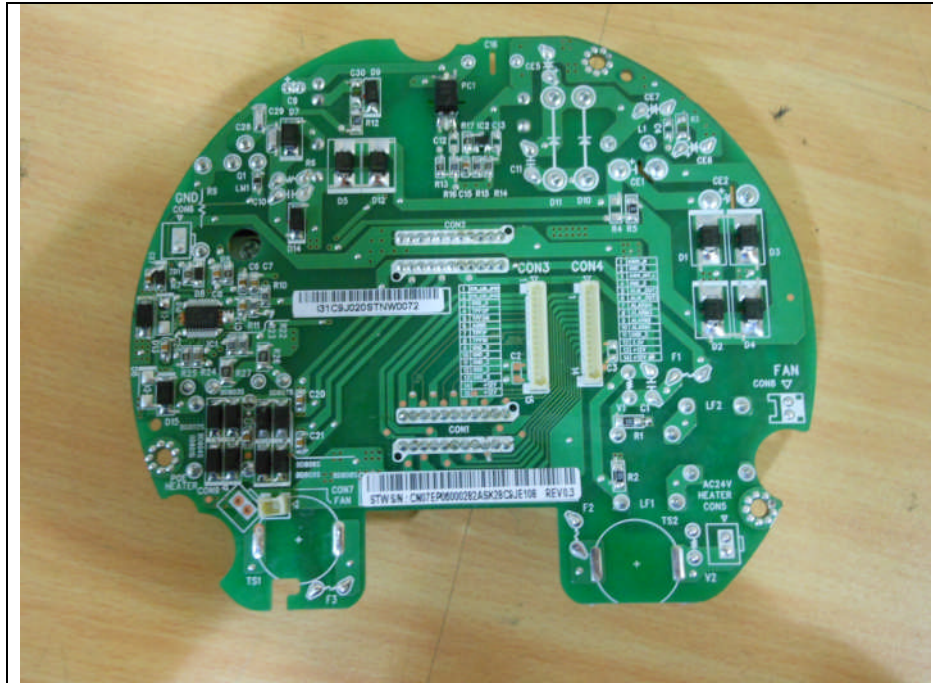
CCD Board



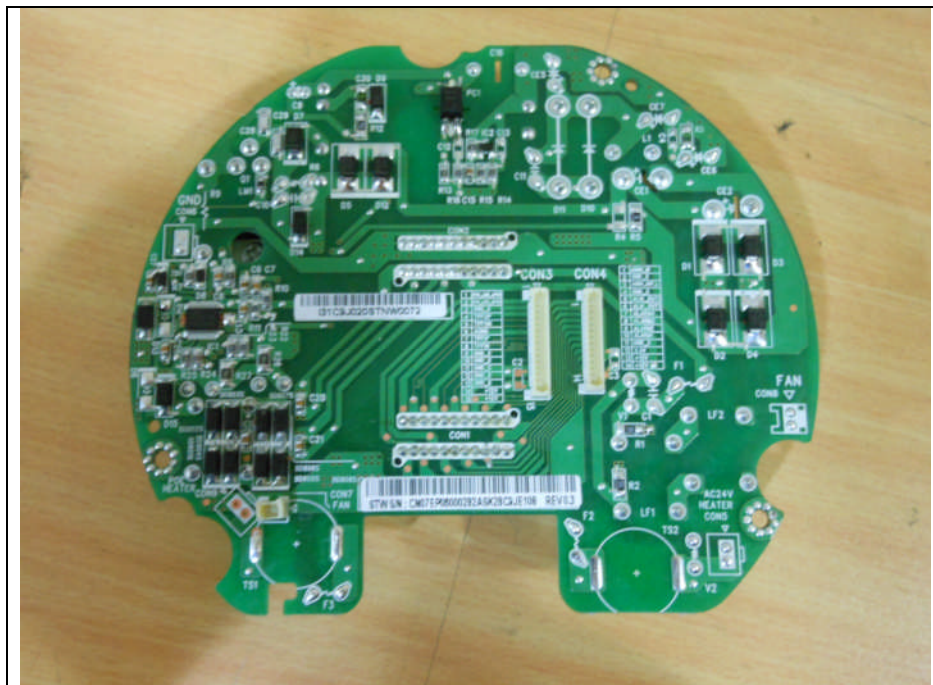
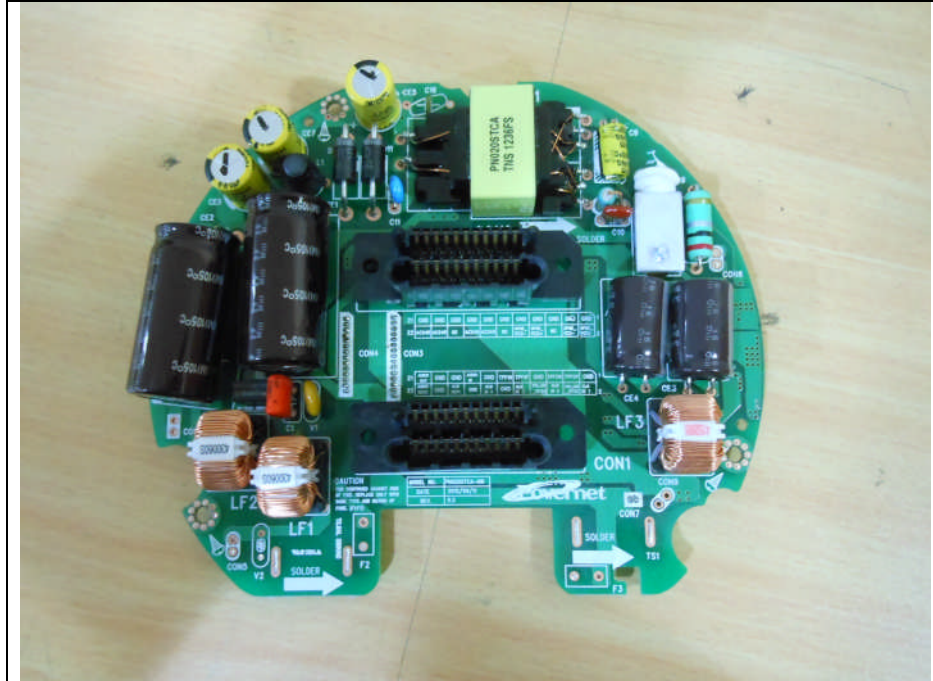
CCD SUB Board



Interface Board



Power Board



Sensor Board

