

CERTIFICATE of EMC Compliance

Report No: EMC-FCC-1284
Type of equipment: Network Camera
Model Name: SNP-3371THN
Applicant: SAMSUNG TECHWIN CO., LTD.
Address: #42 Seongju-Dong, Changwon-Shi,
Kyungsangnam-Do, Korea
Manufacturer#1 : SAMSUNG TECHWIN CO., LTD.
Address: #42 Seongju-Dong, Changwon-Shi,
Kyungsangnam-Do, Korea
Manufacturer#2 : TIANJIN SAMSUNG TECHWIN
OPTO-ELECTRONIC CO., LTD
Address: 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-1284
Type of Equipment: Network Camera
Model Name: SNP-3371THN
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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
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: 2011. 04. 25

Date of testing: 2011. 04. 25

Issued date: 2011. 05. 12

Tested by:

SUNG, KI-MUN

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.
Address: #42 Seongju-Dong, Changwon-Shi,
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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 31 336 4767

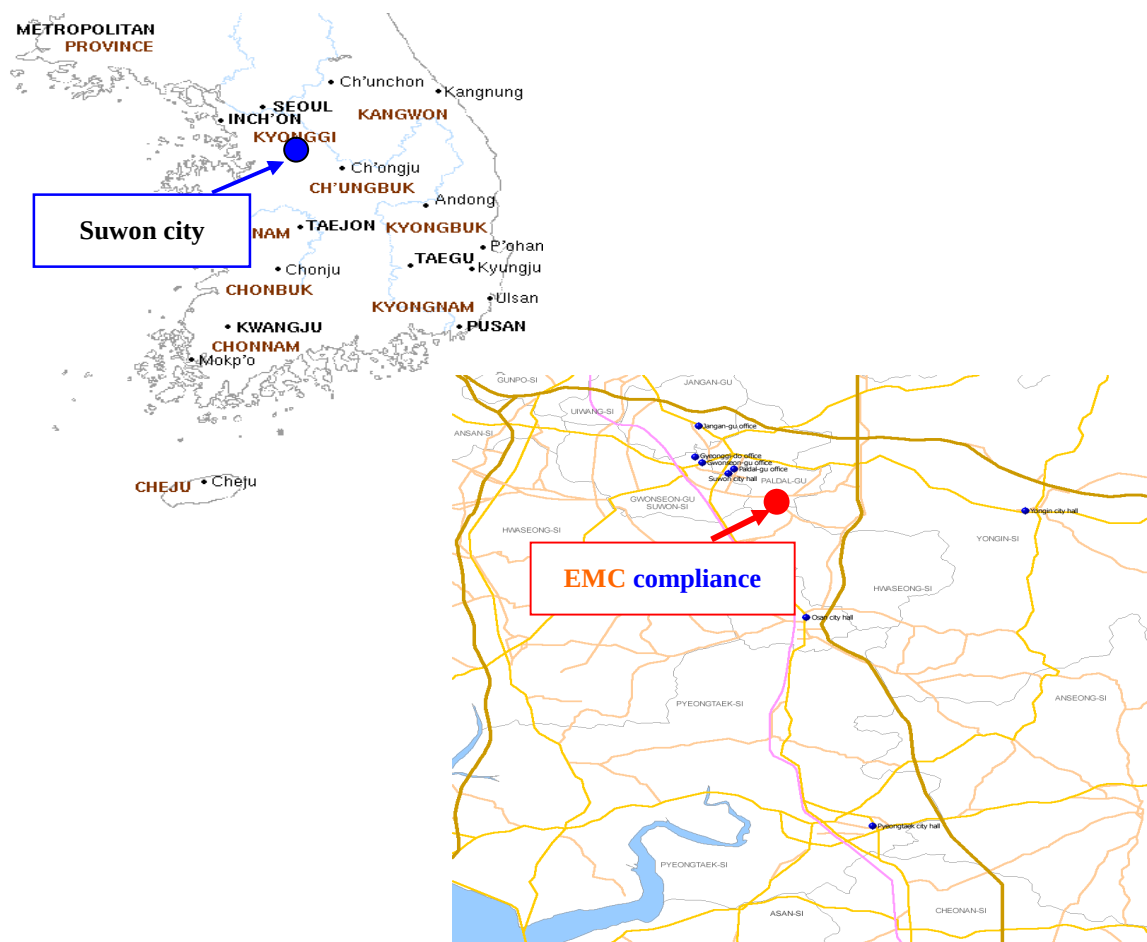
FCC CAB.: KR0040

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)	: 16 ~ 18 °C	35 ~ 41 % R.H.	-

Test site

These testing items were performed following locations;

Chamber (10 m) : Radiated Emission (Test distance: 10 m, 3 m)

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.

Radiated Emission measurement : ($k = 2$, 95 %)

30 MHz ~ 300 MHz: 3 m: ± 4.3 [dB]

10 m: ± 4.3 [dB]

300 MHz ~ 1 000 MHz: 3 m: ± 4.4 [dB]

10 m: ± 4.3 [dB]

4. Description of E.U.T.

4.1 General information

	SNP-3371N/HN/THN	SNP-3371P/HP/THP
Video		
Imaging Device	1/4" Vertical Double Density Interline Transfer CCD	
Total Pixels	811(H) x 508(V)	795(H) x 596(V)
Effective Pixels	768(H) x 494(V)	752(H) x 582(V)
Scanning System	Progressive(VPS ON) (If WDR on, Interlaced Scan)	
Min. Illumination	0.7 Lux/F1.6(50IRE) : Color / 0.07 Lux/F1.6(50IRE) : BW	
S / N Ratio	52dB	
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 704x480(N), 704x576(P), for installation	
Lens		
Focal Length (Zoom Ratio)	3.5~129.5mm (37X)	
Max. Aperture Ratio	F1.6(Wide) / F3.9(Tele)	
Angular Field of View	H : 55.5°(Wide) ~ 1.59°(Tele) / V : 42.5°(Wide) ~ 1.19°(Tele)	
Min. Object Distance	1.8m (5.91ft)	
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	190°(-5° ~185°)	
Tilt Speed	Preset : 500°/sec, Manual : 0.024°/sec ~120°/sec	
Rotate Range	-	
Preset	255 ea	
Preset Accuracy	±0.1°	
Auto Tracking	SNP-3371TH Only (* SNP-3371 not available)	
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 (52dB)	128X
Contrast Enhancement	SSDR (Samsung Super Dynamic Range) (Off / On)	
Digital Noise Reduction	SSNR III (2D+3D Noise Filter) (Off / On)	
Digital Image Stabilization	Off / On	
Motion Detection	Yes	
Privacy Masking	Off / On (8 Polygonal programmable zones)	
Sens-up (Frame Integration)	Off / Auto (2X ~ 512X)	
Gain Control	Off / Low / Medium / High / Manual	
White Balance	AWC, Manual, Indoor, Outdoor, ATW (1,700°K ~ 11,000°K)	
Electronic Shutter Speed	ESC / FLK / Manual (1/60 ~ 1/120,000)	ESC / FLK / Manual (1/50 ~ 1/120,000)
Digital Zoom	16X	
Flip / Mirror	Off / On	
Intelligent Video Analytics	Scene Change, Virtual Line, Enter/Exit, Appear / Disappear	
Schedule	-	
Alarm I/O	Input 4ea / Output 2ea	
Remote Control Interface	RS-485/422	
RS-485 Protocol	Samsung-T, Samsung-E, Pelco-D, Pelco-P, Panasonic, Honeywell, AD, Vicon	

Network		
Ethernet	RJ-45 (10/100BASE-T)	
Video Compression Format	H.264, MPEG4, MJPEG	
Resolution	704x480, 640x480, 352x240, 320x240	704x576, 640x480, 352x288, 320x240
Max. Framerate	30fps	25fps
Video Quality Adjustment	H.264/MPEG4 : Compression Level, Target Bitrate Level Control MJPEG : Quality Level Control	
Bitrate Control Method	H.264/MPEG4 : CBR or VBR MJPEG : VBR	
Streaming Capability	Multiple Streaming (Up to 10 Profiles)	
Audio I/O	Line in / Line out	
Audio Compression Format	G.711 u-law	
Audio Communication	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, ONVIF	
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, Turkish, Polish, Czech, Rumanian, Serbian, Dutch, Croatia, Hungary, Greek	
Web Viewer	Supported OS : Windows XP / VISTA / 7, MAC OS Supported Browser : Internet Explorer 6.0 or Higher, Firefox, Google Chrome, Apple Safari	
Central Management Software	NET-i viewer	
Environmental		
Operating Temperature / Humidity	SNP-3371 : -10°C ~ +50°C (+14°F ~ +122°F) / 20% ~ 80% RH SNP-3371H/TH : -50°C ~ +50°C (-58°F ~ +122°F) / ~ 90% RH	
Ingress Protection	IP66 (SNP-3371H/TH only)	
Electrical		
Input Voltage / Current	24V AC, PoE+ (IEEE802.3at)	
Power Consumption	SNP-3371 : Max. 21W SNP-3371H/TH : Max. 25W (Heater Off), Max. 60W (Heater On) * Heater works only at AC power input.	
Mechanical		
Color / Material	SNP-3371 : Ivory / Plastic SNP-3371H/TH : Ivory / Aluminum / Plastic Sun-Shield	
Dimension (WxHxD)	SNP-3371 : H155 x Ø243.4 mm SNP-3371H/TH : H331 x Ø248 mm	
Weight	SNP-3371 : Approximately 2.1Kg (TBD) SNP-3371H/TH : Approximately 4.6Kg (TBD)	

4.2 Product description

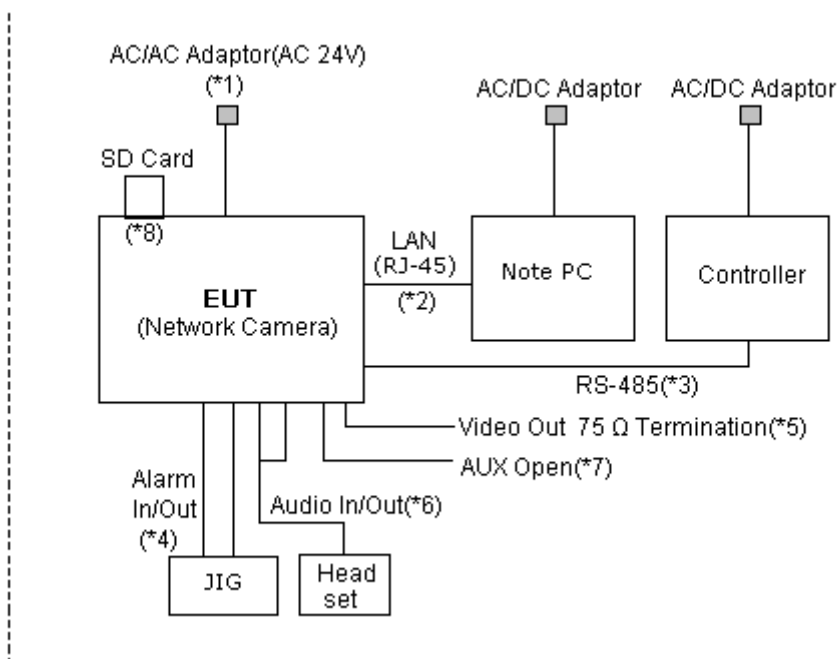
Type of product	Network Camera
Model name (Basic)	SNP-3371THN
Model name (Variant)	N/A
Difference	-
Serial no	Engineering Sample
Testing voltage	AC 24 V , PoE
Product rating	AC 24 V , PoE
Internal clock frequency	108 MHz
Note	* AC/AC adaptor, PoE Switch was not provided by the manufacturer.

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
Note PC	C1410	463680121002	FUJITSU
Controller	SCC-3100A	-	SAMSUNG
Headset	ES-303	-	Inkel
JIG	-	-	-
SD Card(4 GB)	-	BH09030914510G	SANDISK
AC/AC Adaptor (AC 24 V)	STA-220	-	Dream Electronics
PoE Switch	PSVLC-0705	-	HP

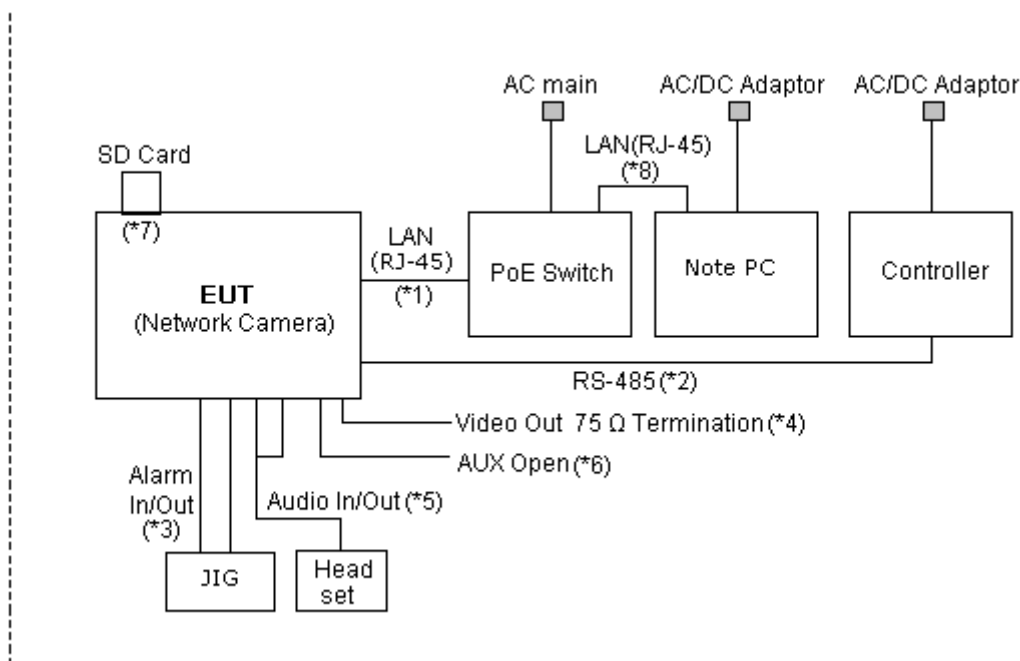
4.4 Test configuration

* AC 24 V



Note	Start		End		Cable	
*	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT (Network Camera)	Power	AC/AC Adaptor	Power	1.8	Non-Shield
2		LAN(RJ-45)	Note PC	LAN(RJ-45)	3.0	Non-Shield
3		RS-485	Controller	RS-485	3.0	Non-Shield
4		Alarm In/Out	JIG	Alarm In/Out	3.0	Non-Shield
5		Video Out	75 Ω Termination	-	1.0	Shield
6		Audio In/Out	Headset	Audio In/Out	2.0	Non-Shield
7		AUX	Open	-	3.0	Non-Shield
8		SD Card	SD Card	SD Card	Direct	-

* 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(RJ-45)	PoE Switch	LAN(RJ-45)	3.0	Non-Shield
2		RS-485	Controller	RS-485	3.0	Non-Shield
3		Alarm In/Out	JIG	Alarm In/Out	3.0	Non-Shield
4		Video Out	75 Ω Termination	-	1.0	Shield
5		Audio In/Out	Headset	Audio In/Out	2.0	Non-Shield
6		AUX	Open	-	3.0	Non-Shield
7		SD Card	SD Card	SD Card	Direct	-
8	PoE Switch	LAN(RJ-45)	Note PC	LAN(RJ-45)	2.0	Non-Shield

4.5 Operating conditions

The EUT was configured as normal intended use.

This test was done at worst case.

Test mode	Normal operating
1	Camera operating mode.
	Alarm port operating mode. (JIG)

* Note: 2 types of powers are available for the product, that are AC/AC adaptor (AC 24 V), PoE switch.

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 Modification to the E.U.T.

None

5.2 Summary of EMI emission test results

FCC Part 15 Subpart B (Class A)

ANSI C63.4 – 2009

Application	Test method	Test result
Conducted emission	ANSI C63.4 – 2009	N/A
Radiated emission - AC 24 V, PoE	ANSI C63.4 – 2009	Complied

6. Test results

6.1 Radiated Emission

Test specification	FCC Part 15, Section 15.109(g), Class A		
Test mode	Operating mode.		
Date	2011. 04. 25		
Testing voltage	AC 24 V, PoE		
Test facility	10 m Chamber (Test distance: 10 m, 3 m)		
Temperature (°C)	16 ~ 18 °C	Humidity (% R.H.)	35 ~ 41 % R.H.
Remarks	Complied 30 MHz ~ 1 GHz Minimum limit margin is 4.9 dB at 54.010 MHz. (AC 24 V) 1 GHz ~ 2 GHz Minimum limit margin is 17.8 dB at 1620.250 MHz. (AC 24 V _ Average)		

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, 3 m distance at 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

* Limits below 1 GHz

Equipment	Model no.	Serial no.	Makers	Next cal. date	Used
Test Receiver	ESCI	100001	R&S	11.08.17	☒
Bi-Log Antenna	VULB 9168	375	SCHWARZBECK	11.11.30	☒
Amplifier	310N	284608	SONOMA INSTRUMENT	11.07.08	☒
3 dB Attenuator	8491A	16861	HP	12.01.13	☒
Antenna Mast	AM4.0	079/3440509	MATURO	-	☒
Turn Table	CO2000-SOFT	-	MATURO	-	☒

* Limits above 1 GHz

Equipment	Model no.	Serial no.	Makers	Next cal. date	Used
Test Receiver	ESCI	100710	R&S	11.12.01	☒
Amplifier	8449B	3008A01802	AGILENT	11.05.14	☒
Horn ANT	3115	00086706	ETS	11.12.22	☒
Antenna Mast	MA4000-EP	303	Innco Systems	-	☒
Turn Table	DT2000S-1t	079	Innco Systems	-	☒

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

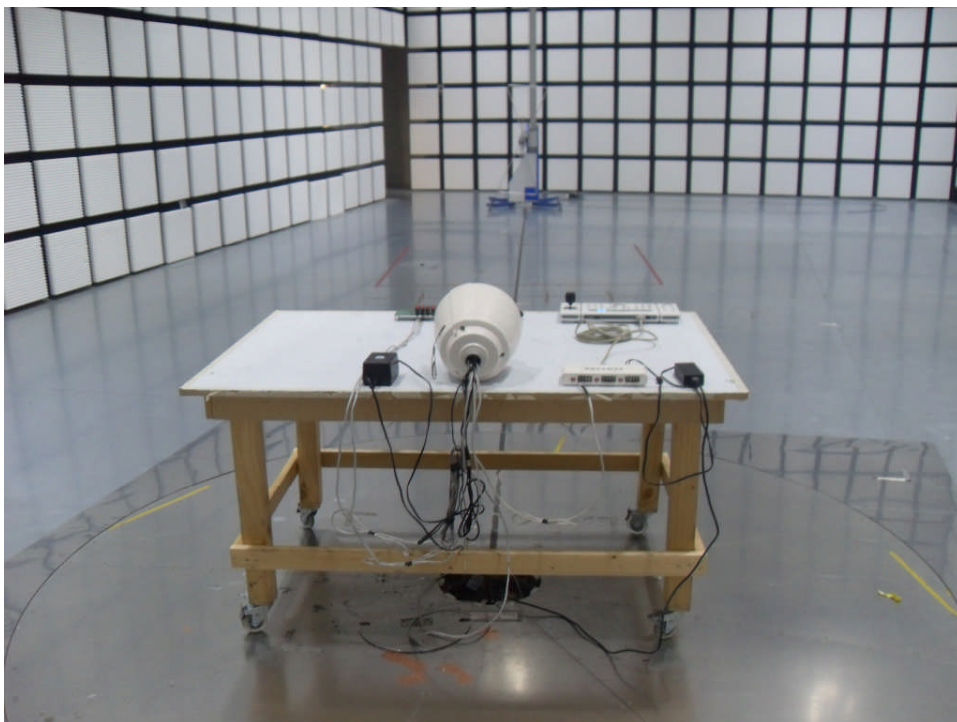
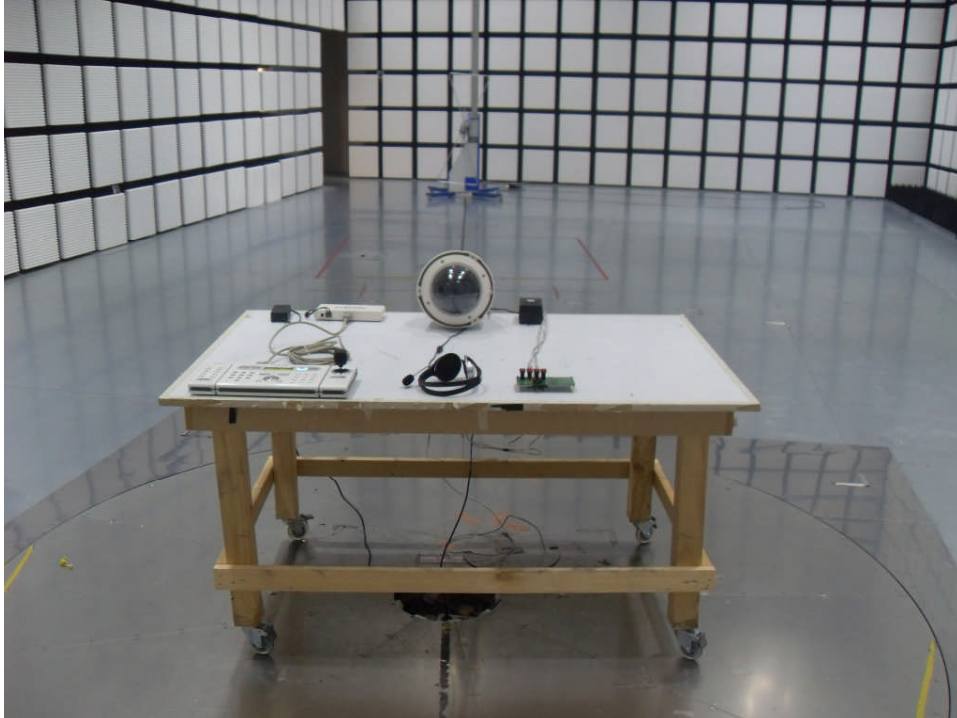
3 dB Att = 3 dB Attenuator

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

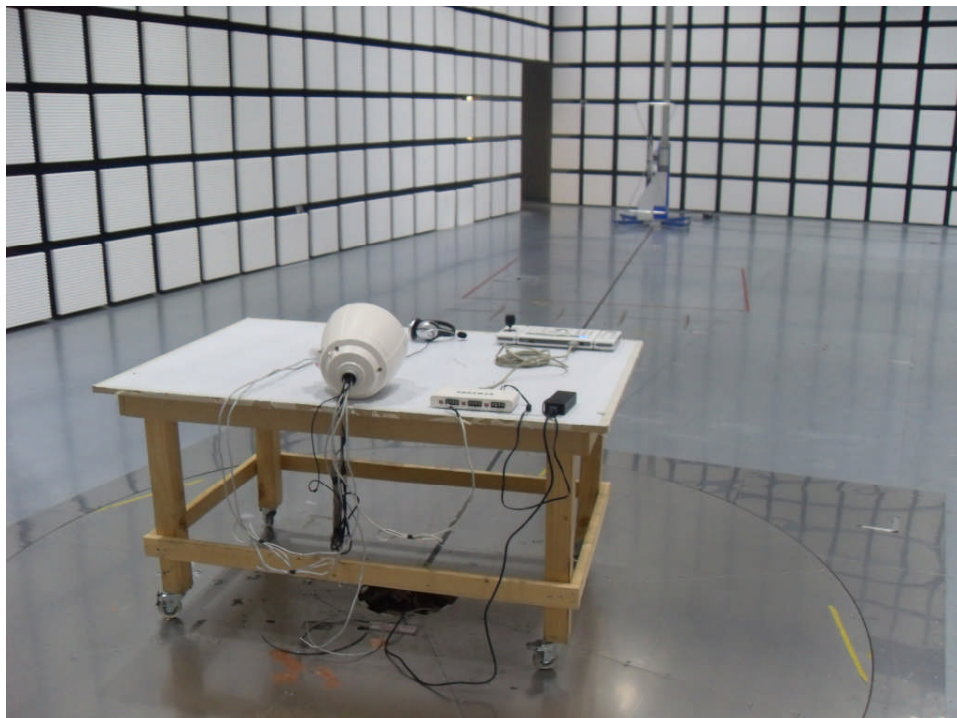
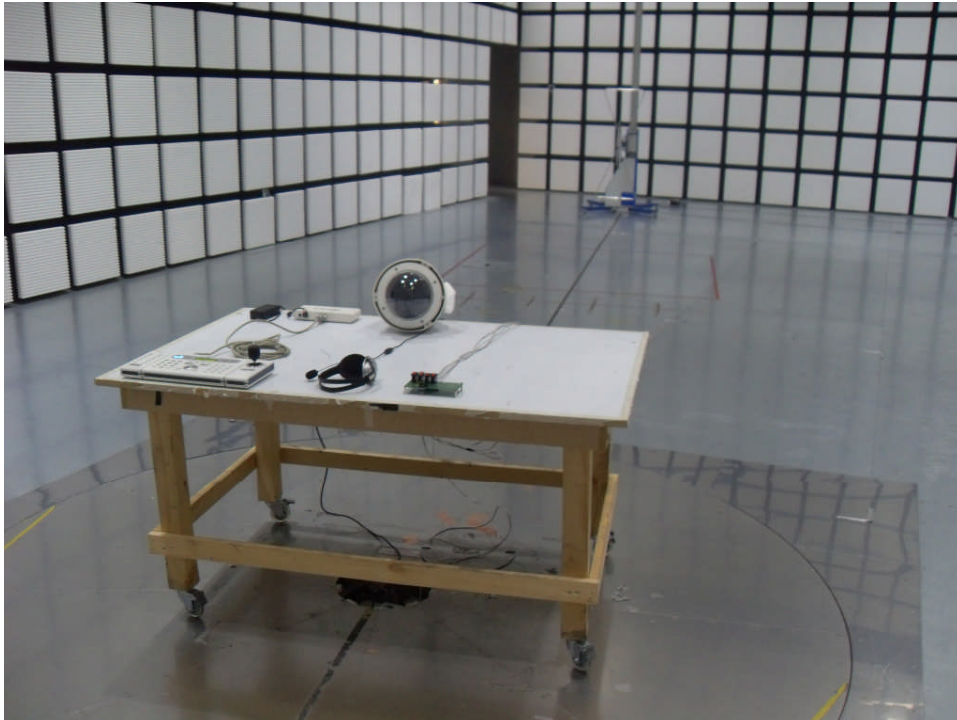
The result is $30 + 12 + 5 + 3 - 35 = 15 \text{ dB}(\mu\text{V/m})$

6.1.5 Photographs of test setup

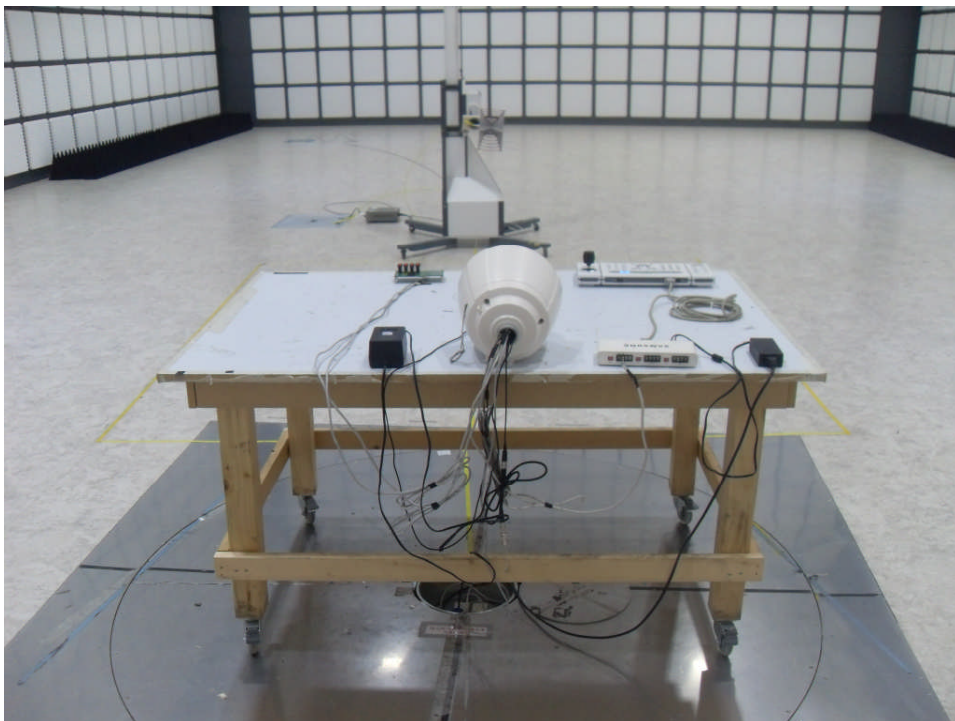
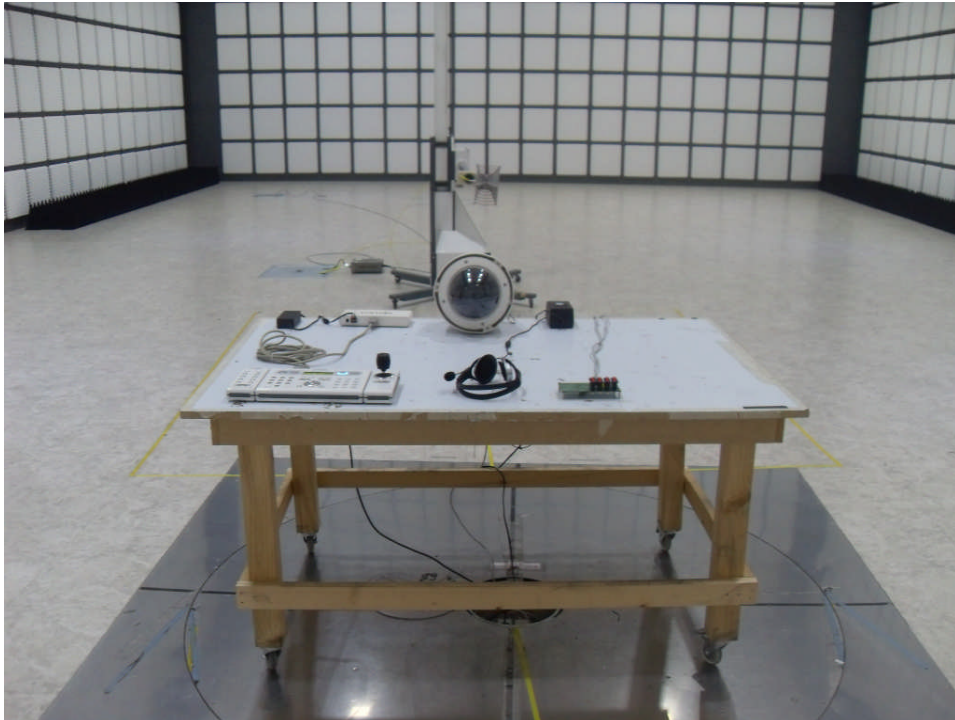
* 30 MHz ~ 1 GHz (AC 24 V)



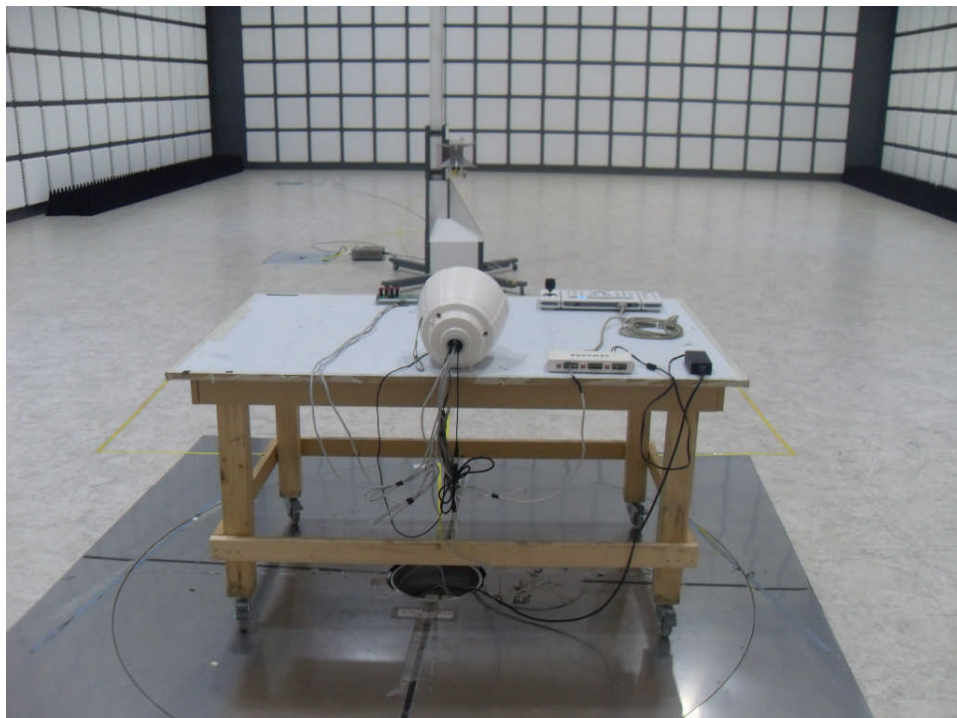
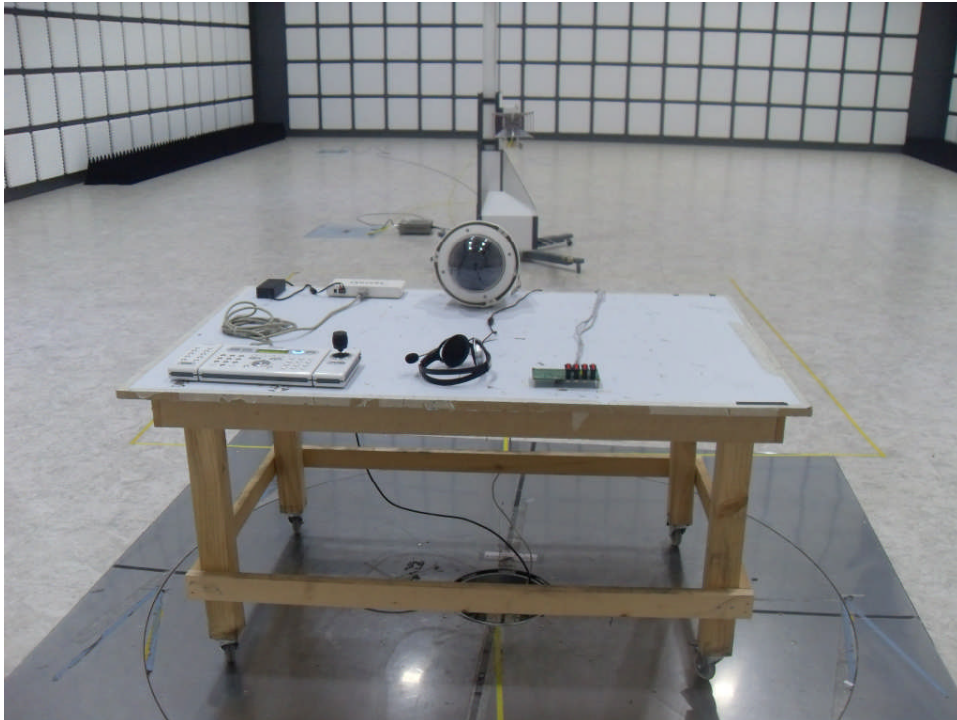
* 30 MHz ~ 1 GHz (PoE)



* 1 GHz ~ 2 GHz (AC 24 V)



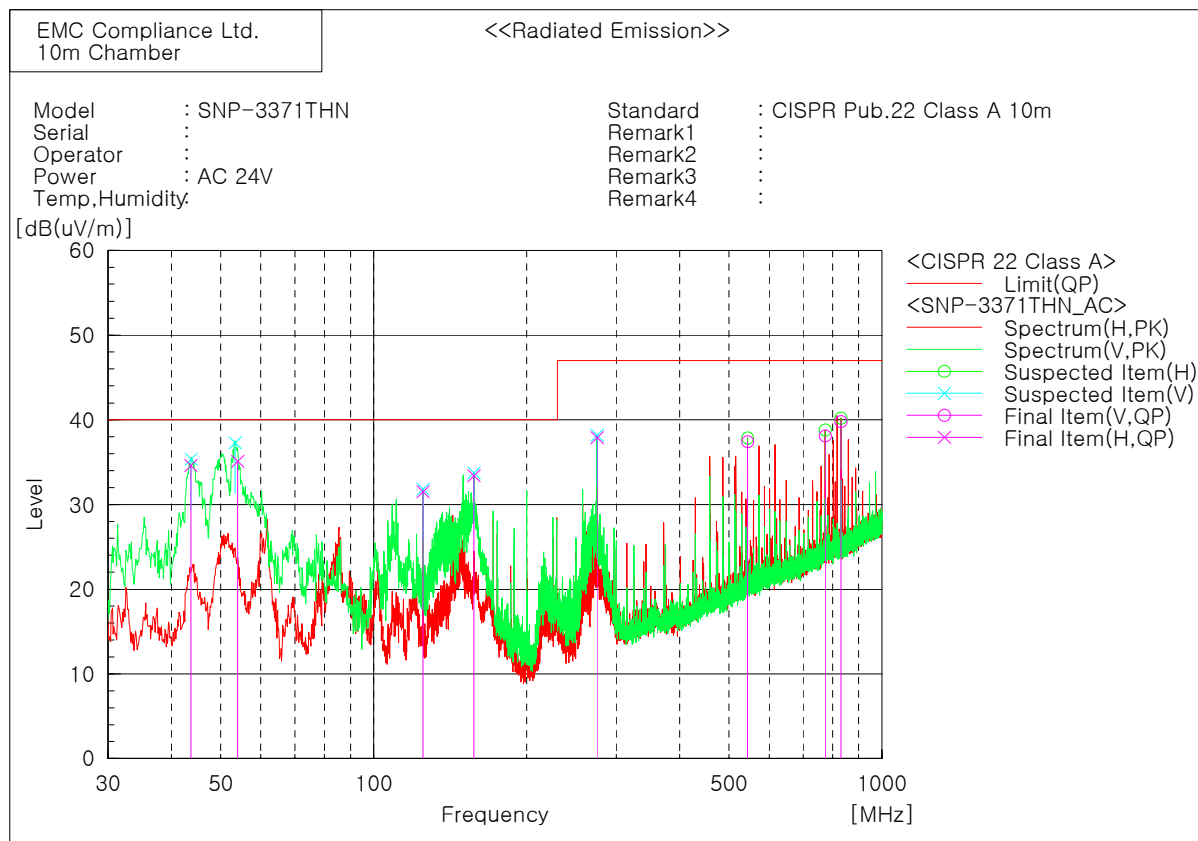
* 1 GHz ~ 2 GHz (PoE)



6.1.6 Radiated emission measurement result

* Graph and Data

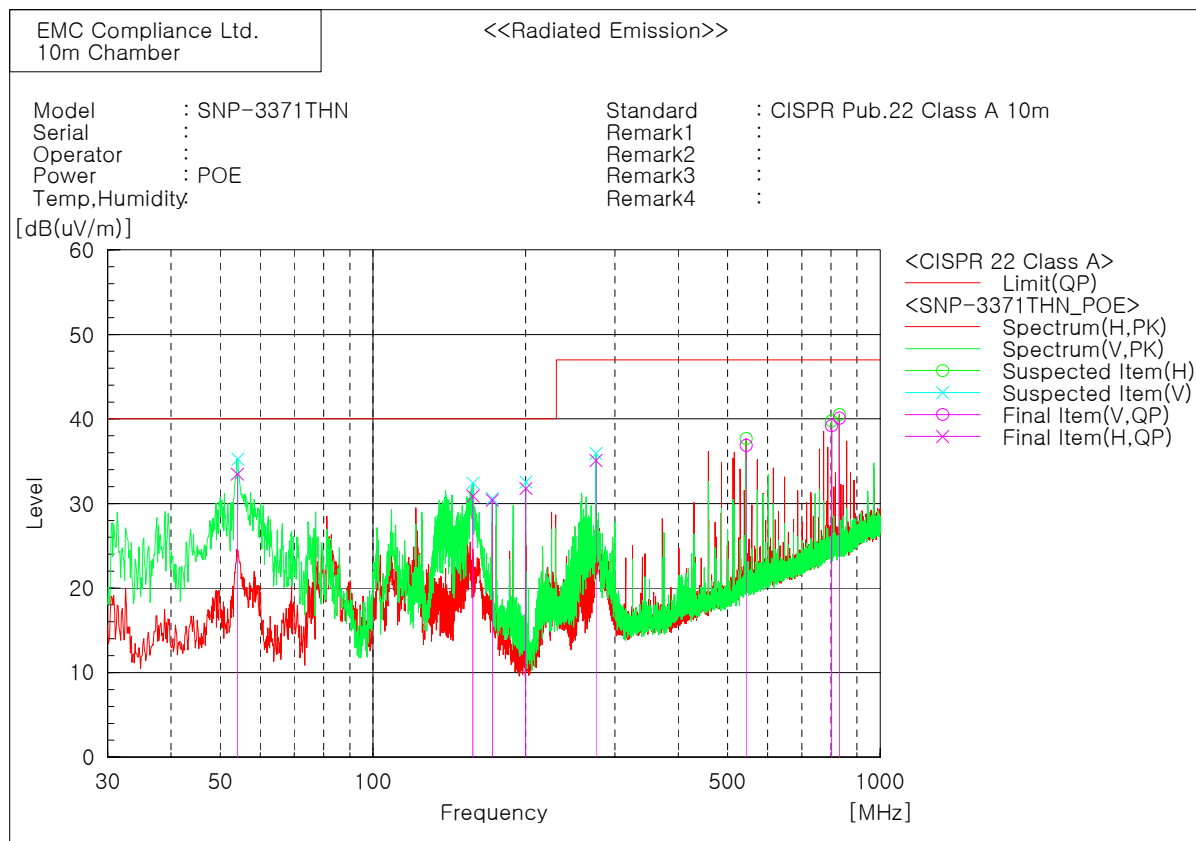
* 30 MHz ~ 1 GHz (AC 24 V)



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	54.010	V	49.7	-14.6	35.1	40.0	4.9	100.0	100.7
2	43.656	V	48.9	-14.3	34.6	40.0	5.4	298.0	120.4
3	157.490	V	45.8	-12.4	33.4	40.0	6.6	100.0	315.9
4	124.939	V	45.8	-14.3	31.5	40.0	8.5	198.0	352.2
5	275.046	V	50.6	-12.7	37.9	47.0	9.1	100.0	267.8
6	544.100	H	42.9	-5.5	37.4	47.0	9.6	202.0	241.4
7	830.493	H	40.0	-0.2	39.8	47.0	7.2	100.0	353.9
8	773.263	H	38.9	-0.8	38.1	47.0	8.9	100.0	323.9

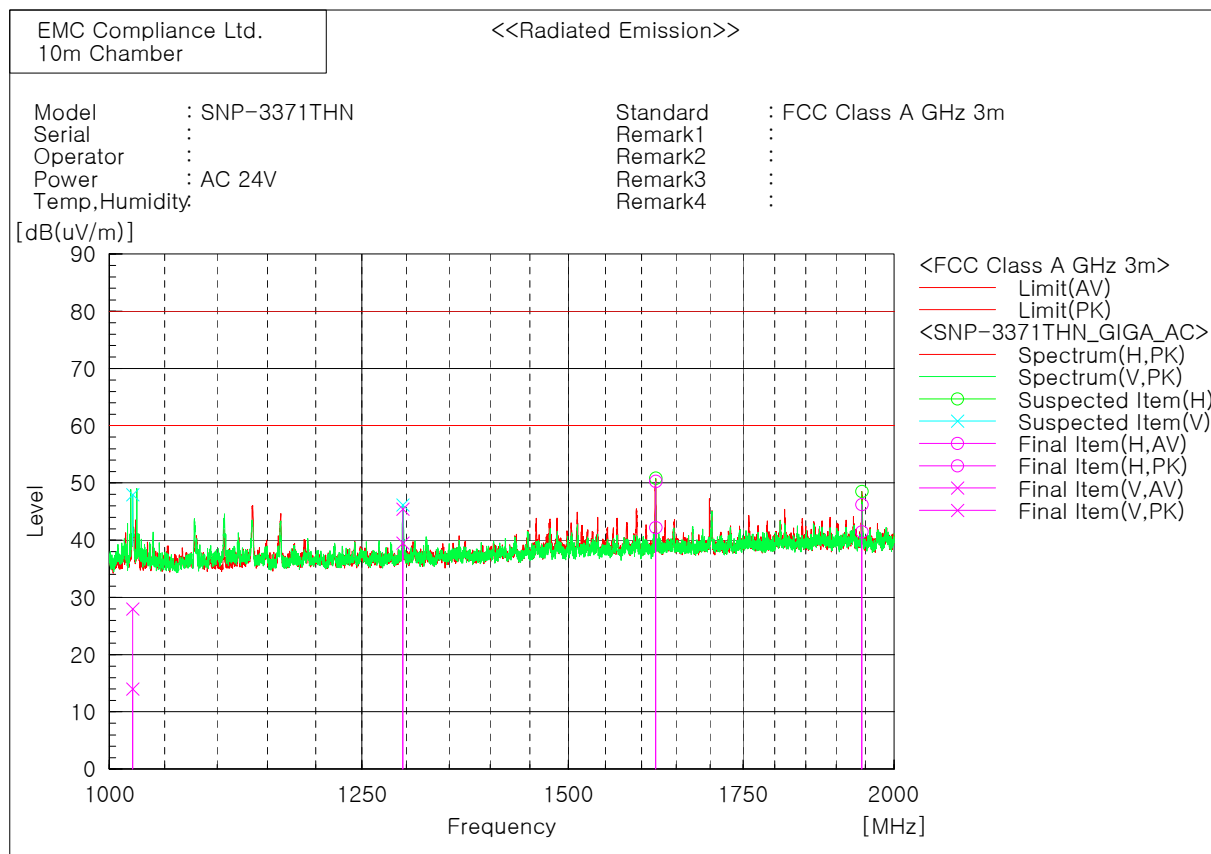
* 30 MHz ~ 1 GHz (PoE)



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	53.990	V	48.1	-14.6	33.5	40.0	6.5	100.0	111.0
2	157.472	V	43.3	-12.4	30.9	40.0	9.1	100.0	20.8
3	171.863	V	43.9	-13.5	30.4	40.0	9.6	100.0	274.3
4	199.999	V	47.9	-16.1	31.8	40.0	8.2	100.0	77.4
5	275.046	V	47.8	-12.7	35.1	47.0	11.9	100.0	5.9
6	544.100	H	42.4	-5.5	36.9	47.0	10.1	100.0	234.1
7	801.878	H	39.5	-0.3	39.2	47.0	7.8	100.0	347.0
8	830.493	H	40.3	-0.2	40.1	47.0	6.9	100.0	1.3

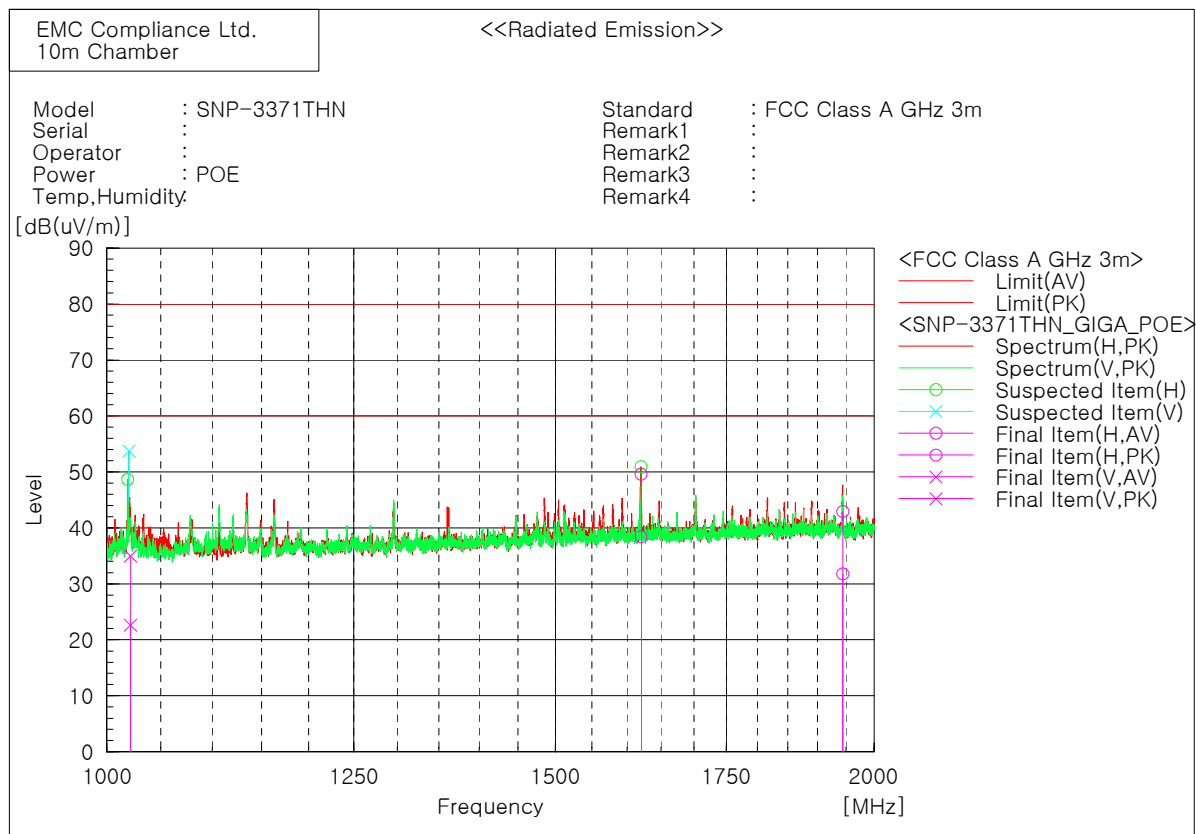
* 1 GHz ~ 2 GHz (AC 24 V)



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	1021.000	V	26.9	40.9	-12.9	14.0	28.0	60.0	80.0	46.0	52.0	200.0	64.9
2	1296.125	V	50.0	55.9	-10.5	39.5	45.4	60.0	80.0	20.5	34.6	100.0	8.5
3	1620.250	H	50.3	58.4	-8.1	42.2	50.3	60.0	80.0	17.8	29.7	200.0	49.4
4	1944.125	H	47.7	52.4	-6.2	41.5	46.2	60.0	80.0	18.5	33.8	200.0	9.1

* 1 GHz ~ 2 GHz (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	1021.500	V	35.5	47.9	-12.9	22.6	35.0	60.0	80.0	37.4	45.0	201.0	52.3
2	1620.250	H	46.5	57.7	-8.1	38.4	49.6	60.0	80.0	21.6	30.4	201.0	44.4
3	1944.250	H	38.0	49.1	-6.2	31.8	42.9	60.0	80.0	28.2	37.1	201.0	4.6

7. E.U.T. photographs

Front View



Rear View



Left View



Right View



Top View



Bottom View



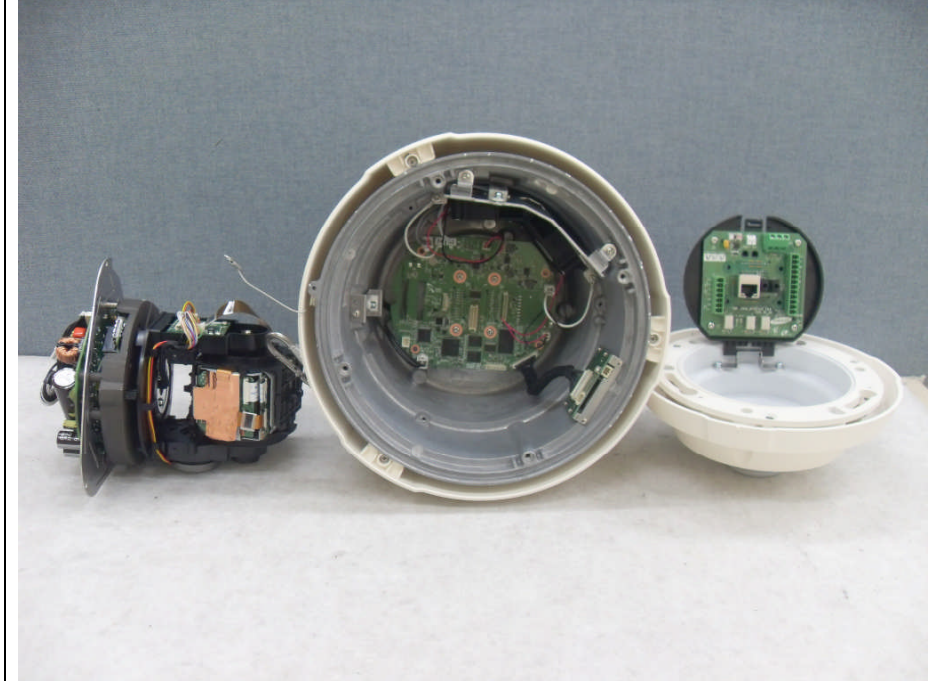
Label



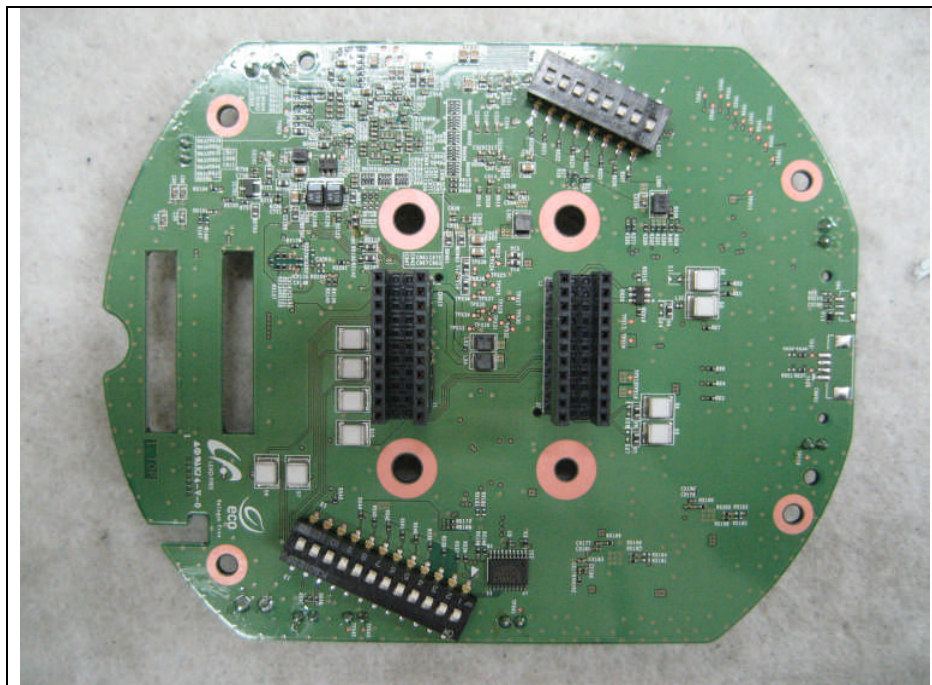
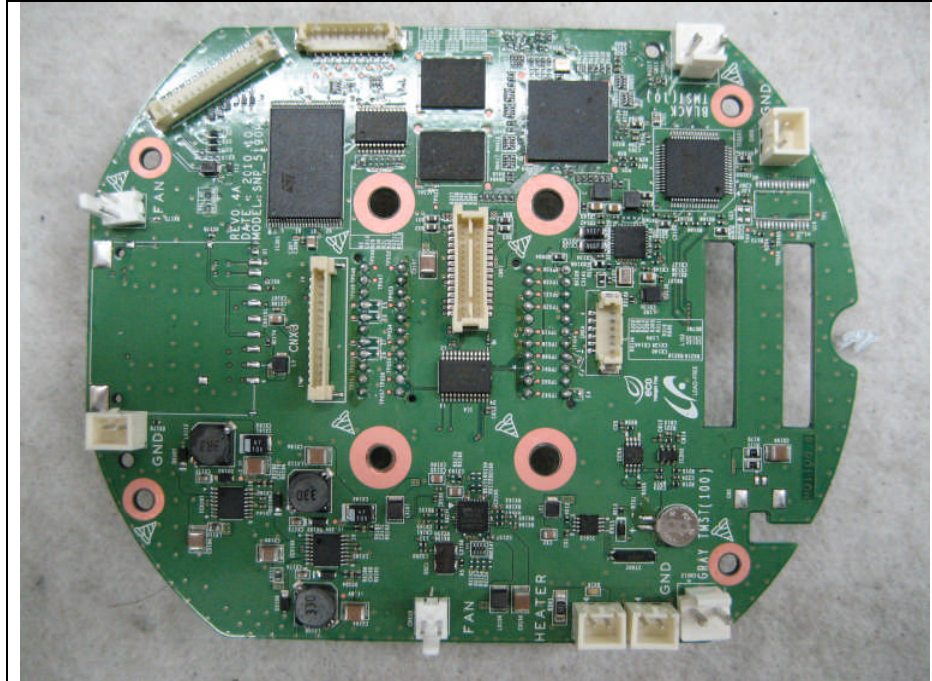
FCC Label Location

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.

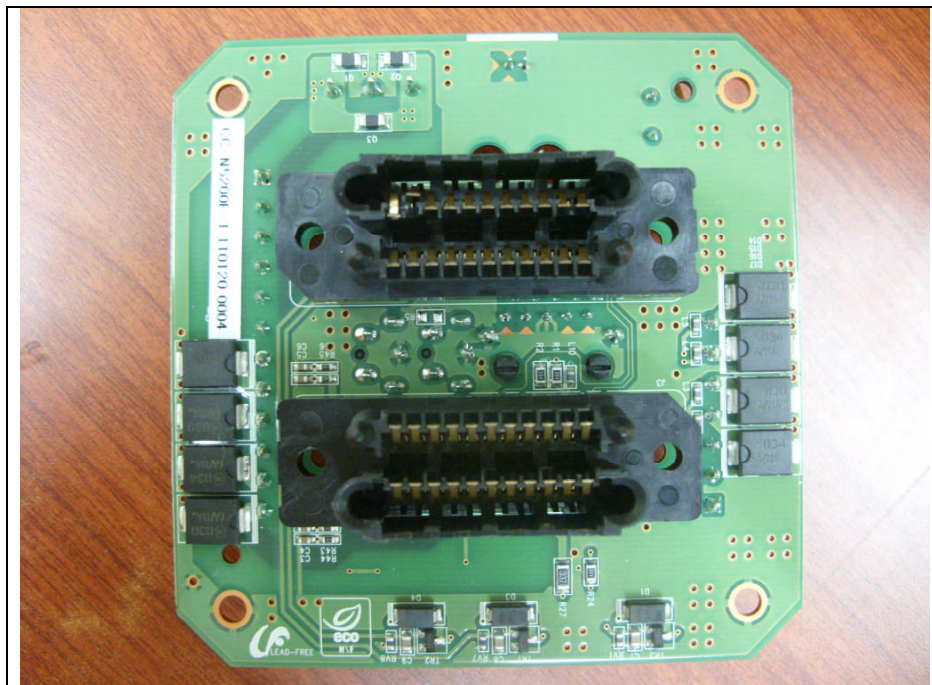
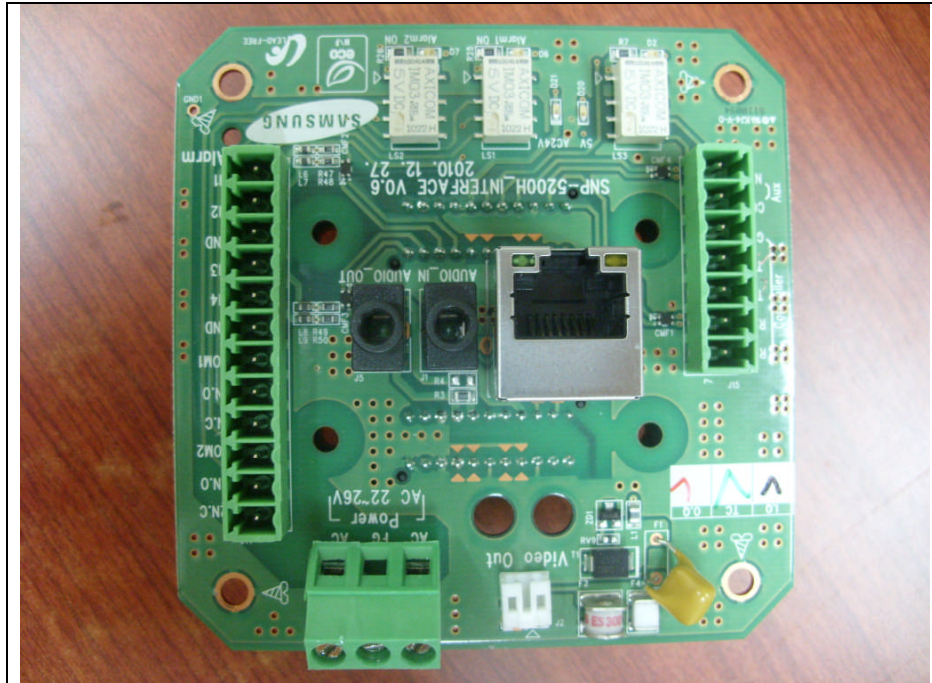
Inside



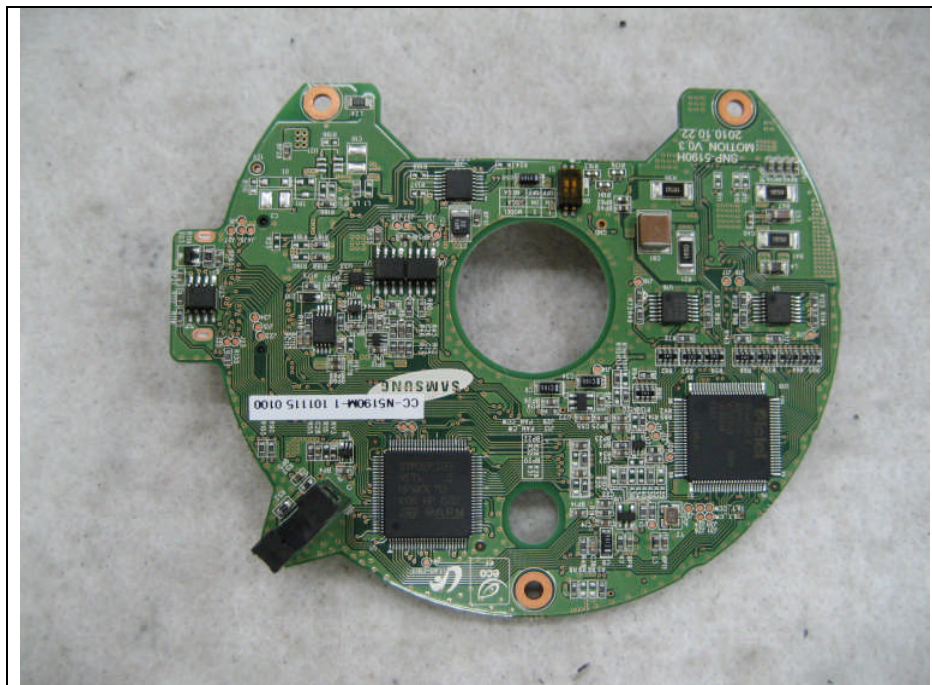
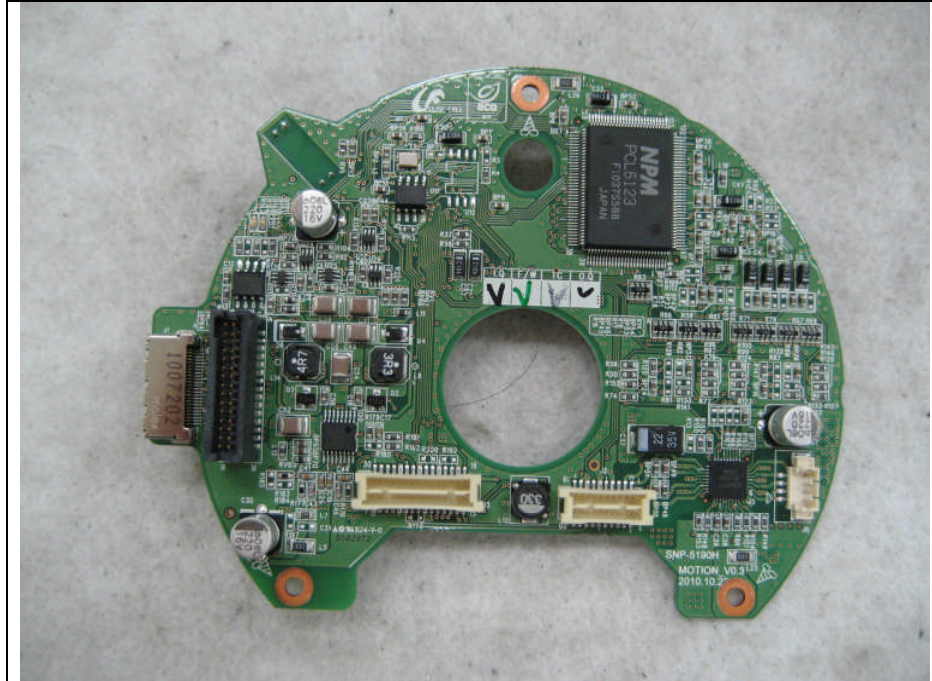
Main Board



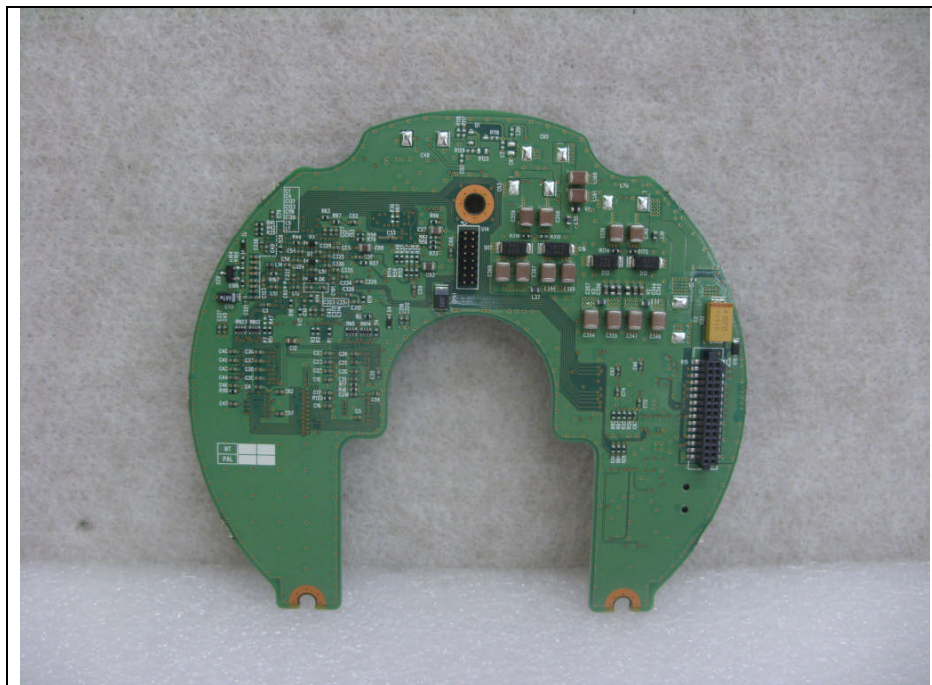
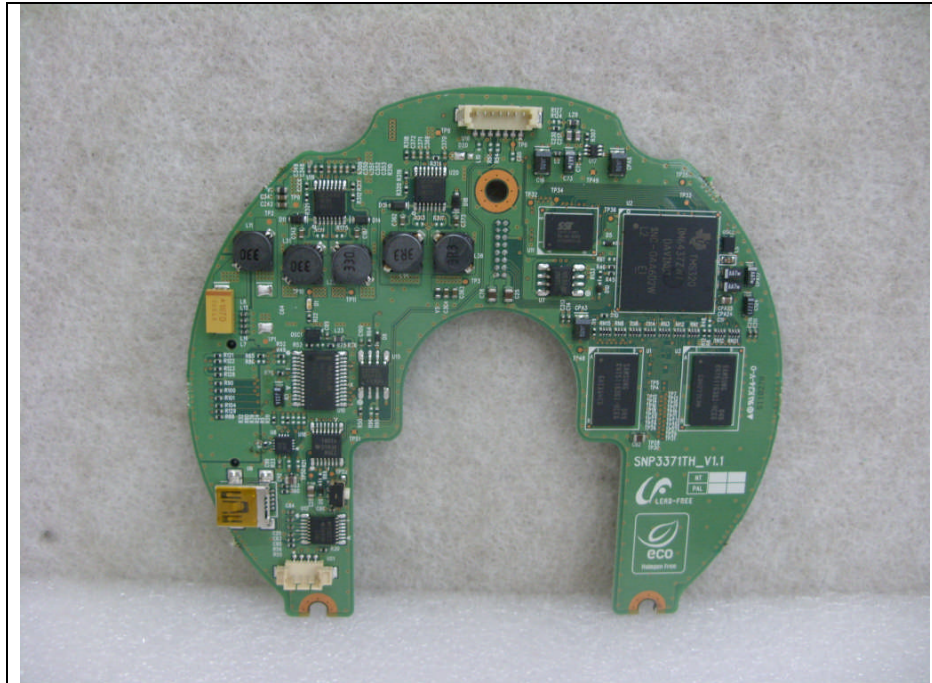
Interface Board



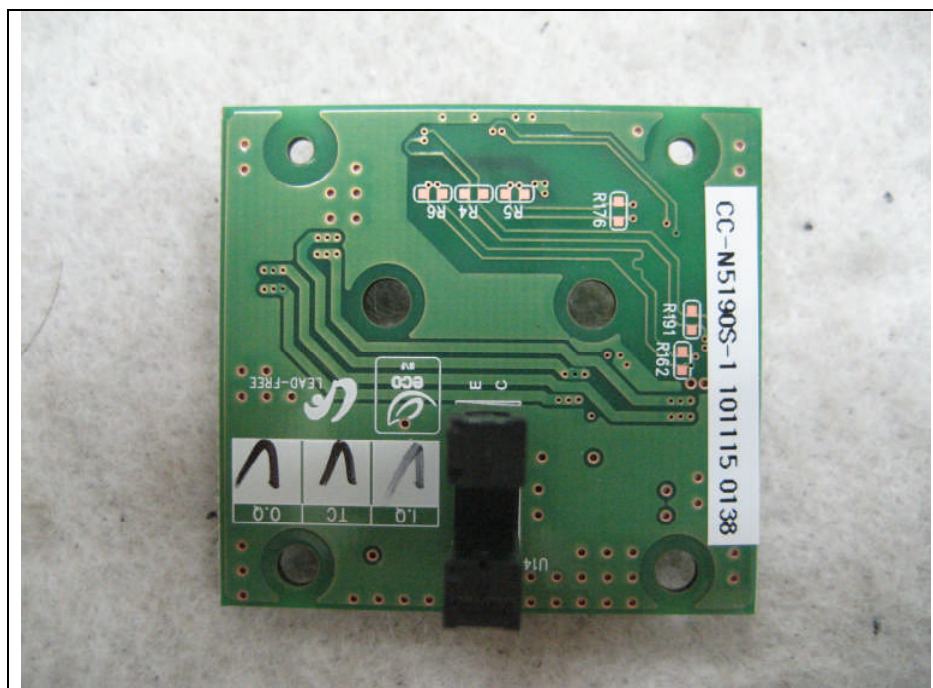
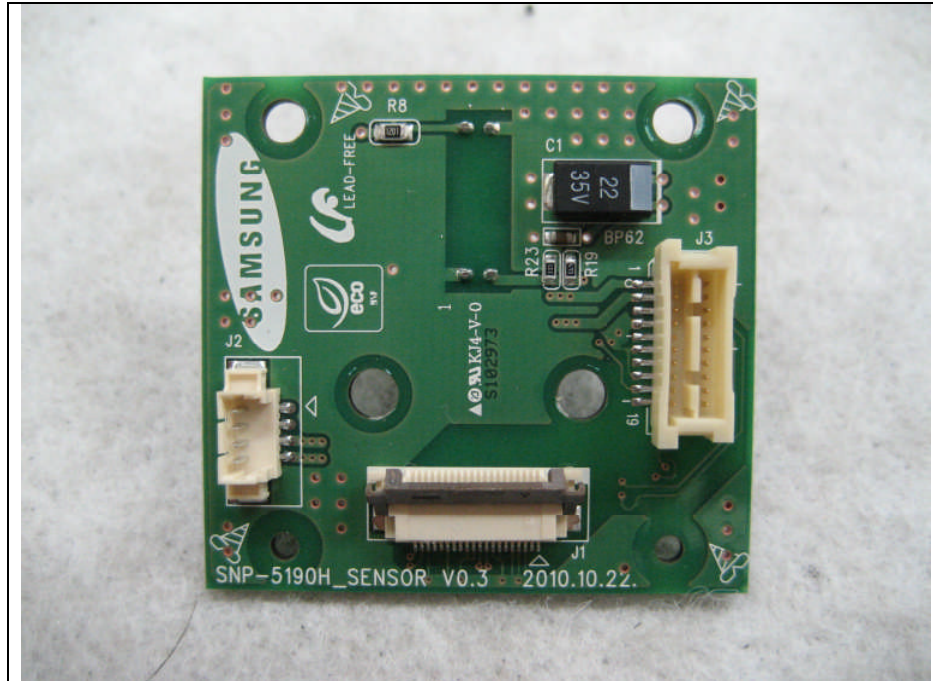
Motion Board



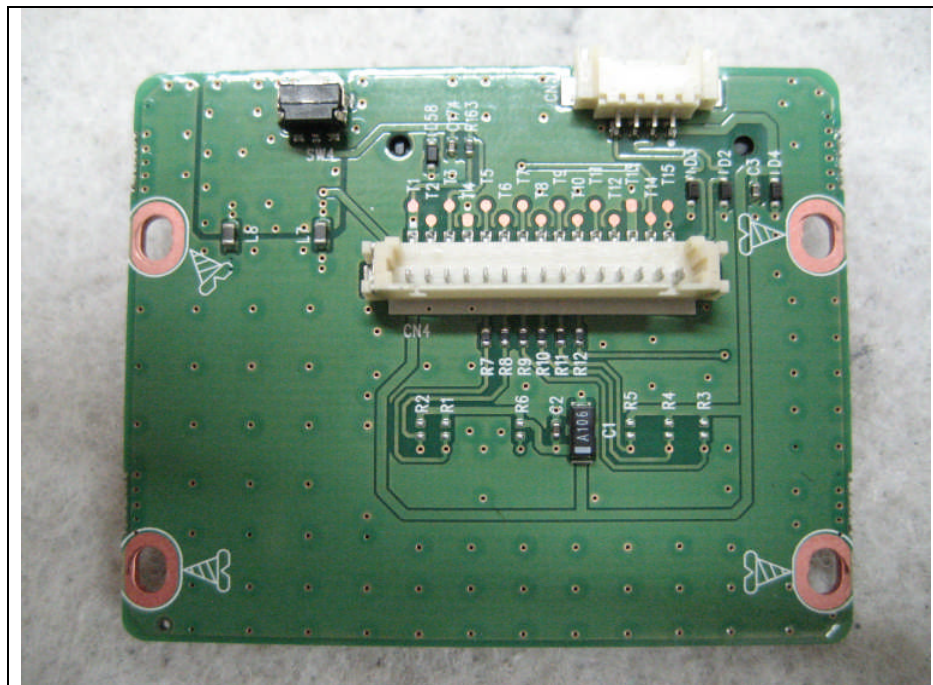
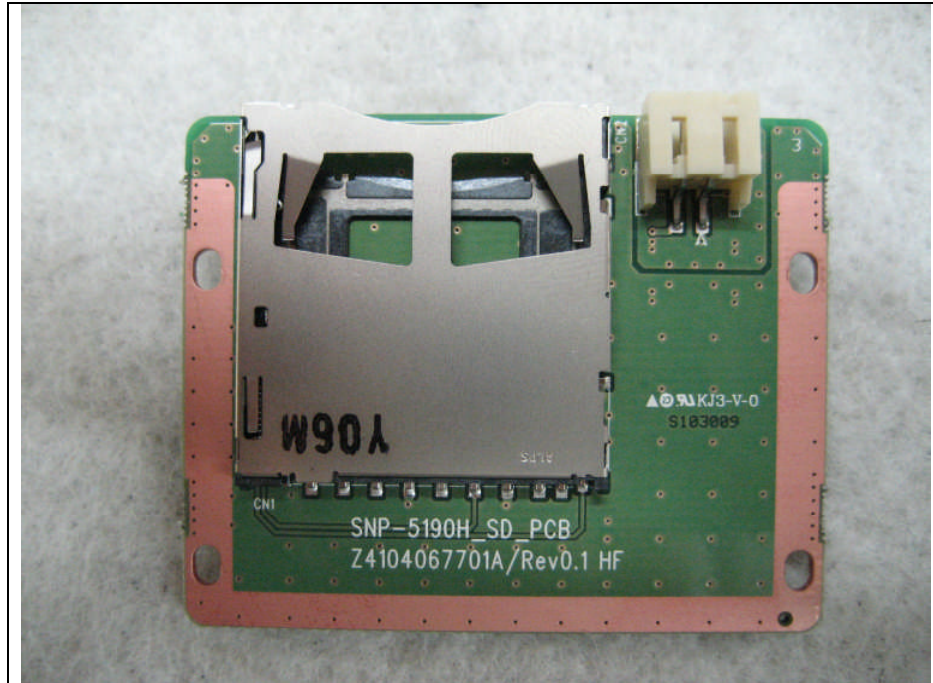
Tracking Board



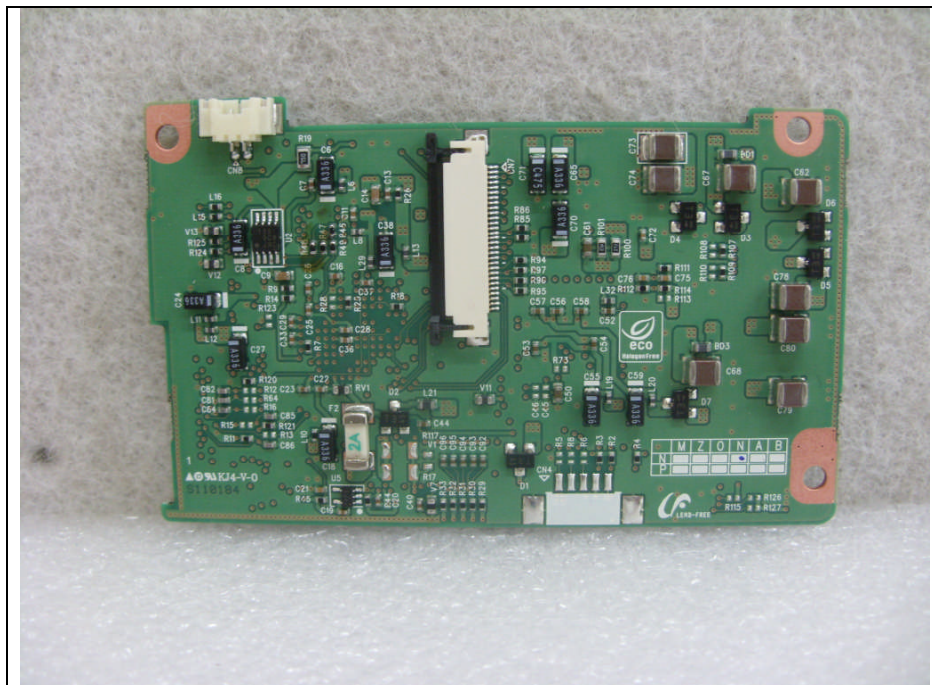
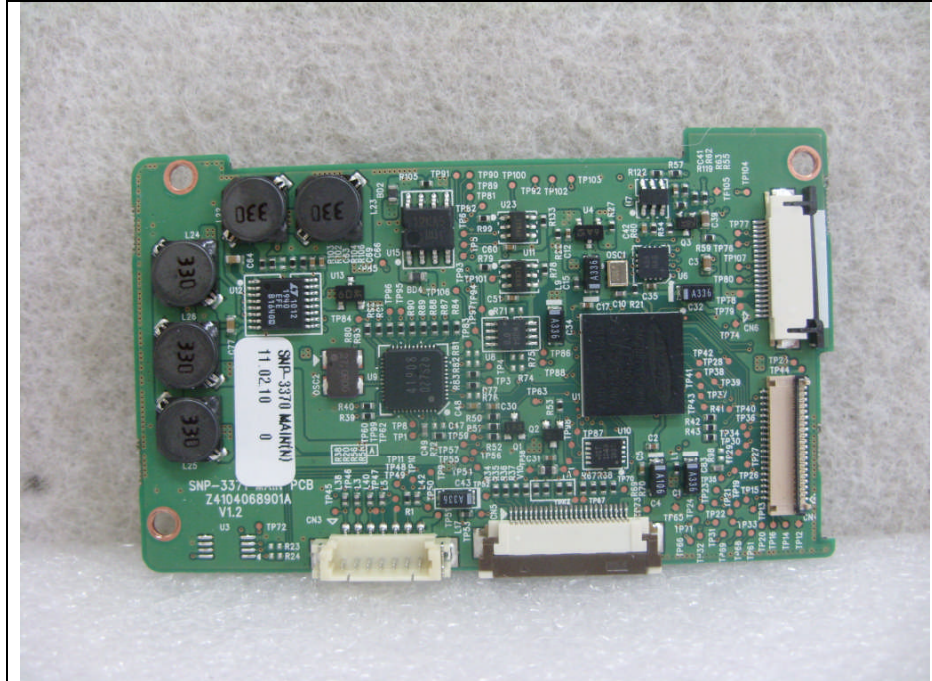
Sensor Board



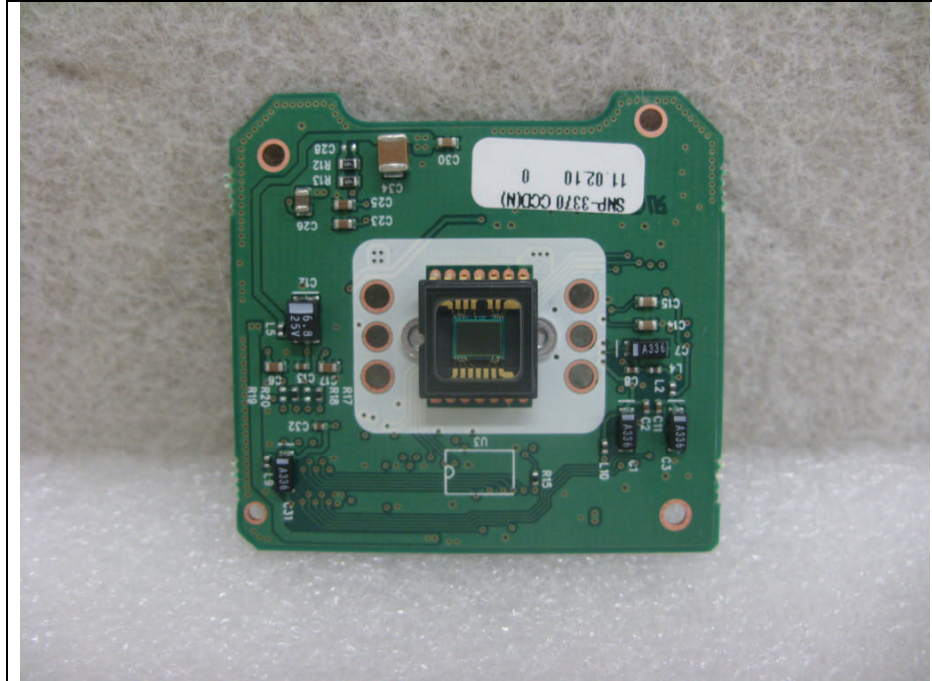
SD Card Board



Camera Main Board



Camera CCD Board



Power Board

