

CERTIFICATE of EMC Compliance

Report No: EMC-FCC-1481
Type of equipment: PTZ CAMERA
Model Name: SNP-6200HN
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.



Yeom, Han-Seok/ Manager

Laboratory

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EMI TEST REPORT

Test report No.: EMC-FCC-1481
Type of Equipment: PTZ CAMERA
Model Name: SNP-6200HN
Applicant: Samsung Techwin Co., Ltd.
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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
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. 01. 16

Date of testing: 2012. 01. 28

Issued date: 2012. 01. 30

Tested by: 
BEAK, JEONG-SOO

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 31 336 4767

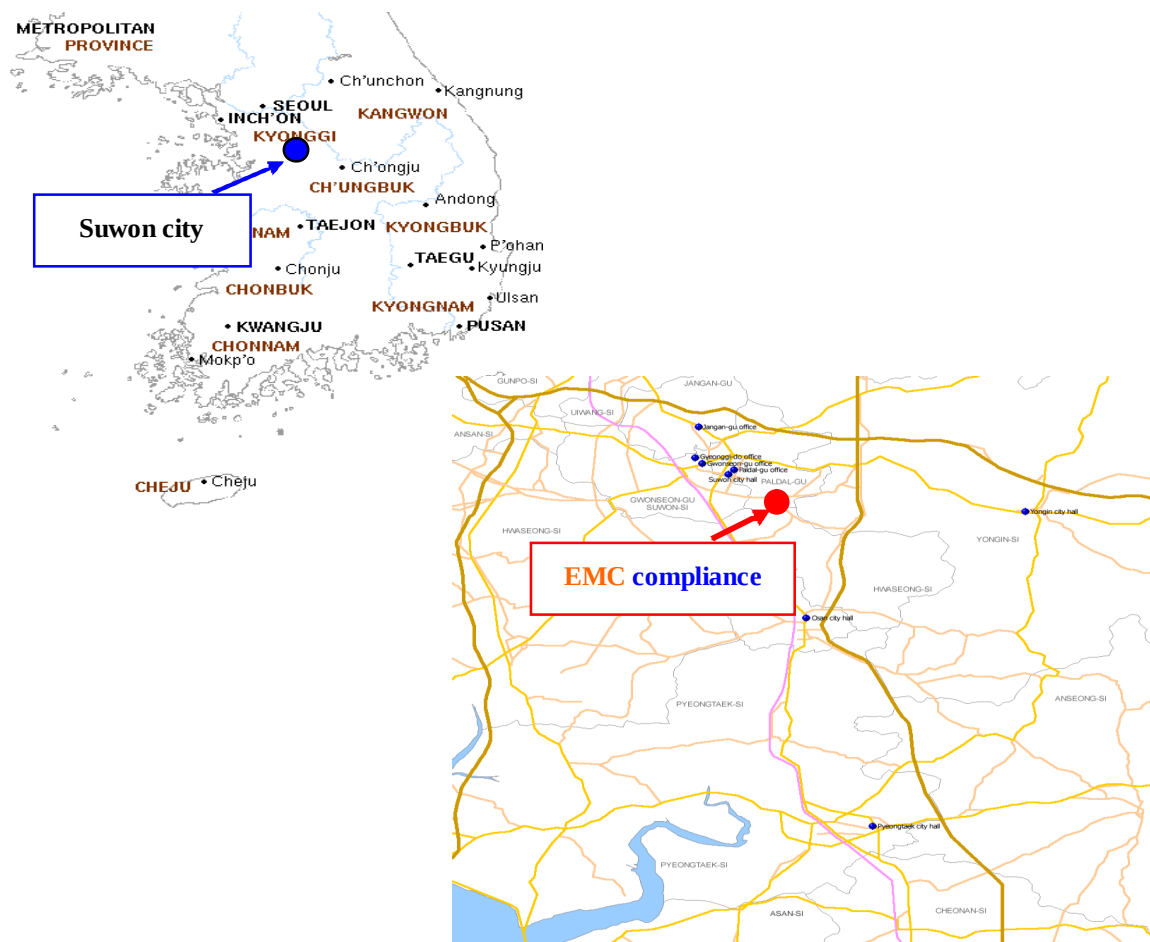
FCC CAB.: KR0040

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)	: 19 °C	29 % 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 : ($k = 2$, 95 %)		
Shielded Room (CE#1)	9 kHz ~ 150 kHz: ± 3.77 [dB] 150 kHz ~ 30 MHz: ± 3.35 [dB]	
Shielded Room (CE#2)	9 kHz ~ 150 kHz: ± 3.95 [dB] 150 kHz ~ 30 MHz: ± 3.55 [dB]	
Shielded Room (CE#3)	9 kHz ~ 150 kHz: ± 3.88 [dB] 150 kHz ~ 30 MHz: ± 3.50 [dB]	
Radiated Emission measurement : ($k = 2$, 95 %)		
10 m Chamber (#F4)	30 MHz ~ 300 MHz	3 m: + 4.29 [dB], - 4.31 [dB] 10 m: + 4.28 [dB], - 4.30 [dB]
	300 MHz ~ 1 000 MHz	3 m: + 4.57 [dB], - 4.57 [dB] 10 m: + 4.42 [dB], - 4.44 [dB]
	1 GHz ~ 6 GHz	3 m: + 5.94 [dB], - 5.95 [dB]
	6 GHz ~ 18 GHz	3 m: + 5.49 [dB], - 5.16 [dB]
10 m Chamber (#F2)	30 MHz ~ 300 MHz	3 m: + 4.28 [dB], - 4.30 [dB] 10 m: + 4.27 [dB], - 4.28 [dB]
	300 MHz ~ 1 000 MHz	3 m: + 4.56 [dB], - 4.57 [dB] 10 m: + 4.41 [dB], - 4.43 [dB]
	1 GHz ~ 6 GHz	3 m: + 5.94 [dB], - 5.95 [dB]
	6 GHz ~ 18 GHz	3 m: + 5.49 [dB], - 5.16 [dB]

4. Description of E.U.T.

4.1 General information

Items		Description	
		SNP-6200N/P	SNP-6200HN/HP
Video	Imaging Device	1/3" 1.3M PS CMOS	
	Total Pixels	1,384(H) x 1,076(V)	
	Effective Pixels	1,329(H) x 1,049(V)	
	Scanning System	Progressive	
	Min. Illumination	Color : 0.7 Lux (F1.6, 50IRE), 0.01Lux (Sens-up 60X, 50IRE) B/W : 0.08 Lux (F1.6, 50IRE), 0.001Lux (Sens-up 60X, 50IRE)	
	S / N Ratio	52dB	
	Video Out	CVBS : 1.0 Vp-p / 75Ω composite	
Lens	Focal Length (Zoom Ratio)	4.45 ~ 89mm (20X)	
	Max. Aperture Ratio	F1.6(Wide) / F2.9(Tele)	
	Angular Field of View	H : 56.56°(Wide) ~ 3.10°(Tele) V : 43.32°(Wide) ~ 2.34°(Tele)	
	Min. Object Distance	1m	
	Focus Control	AF / One-Shot AF / Manual	
	Lens Type	DC Auto Iris	
	Mount Type	Board-in type	

Items		Description	
		SNP-6200N/P	SNP-6200HN/HP
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	-	
Operational	Camera Title	Off / On (Displayed up to 15 characters)	
	Day & Night	Auto (ICR) / Color / B/W	
	Backlight Compensation	Off / BLC / HLC	
	Wide Dynamic Range	-	
	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	Off / On (4 programmable zones)	
	Privacy Masking	Off / On (8 programmable zones)	
	Sens-up (Frame Integration)	Off / Auto (2X ~ 60X)	
	Gain Control	Off / Low / Medium / High / Manual	
	White Balance	ATW / AWC / Manual / Indoor / Outdoor	
	Electronic Shutter Speed	Auto / A.FLK / Manual (1/30 ~ 30,000sec)	

Items		Description	
		SNP-6200N/P	SNP-6200HN/HP
Operational	Digital Zoom	16X	
	Flip / Mirror	Off / On	
	Intelligent Video Analytics	Scene Change, Virtual Line, Enter / Exit, Appear / Disappear	
	Alarm I/O	Input 4ea / Output 2ea (Relay)	
	Remote Control Interface	RS-485/422	
	RS-485 Protocol	SAMSUNG-T/E, PELCO-P/D, Panasonic, Honeywell, AD, Bosch, Vicon, GE	
Network	Ethernet	RJ-45 (10/100BASE-T)	
	Video Compression Format	H.264, MPEG-4, MJPEG	
	Resolution	1280x1024, 1280x720P(HD), 1024x768, 800x600, 640x480, 320x240	
	Max. Framerate	30fps at all resolutions	
	Video Quality Adjustment	H.264/MPEG-4 : Compression Level, Target Bitrate Level Control MJPEG : Quality Level Control	
	Bitrate Control Method	H.264/MPEG-4 : CBR or VBR MJPEG : VBR	
	Streaming Capability	Multiple Streaming (Up to 10 Profiles)	
	Audio I/O	Mic / Line in, Line out	
	Audio Compression Format	G.711 μ -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	

Items		Description	
		SNP-6200N/P	SNP-6200HN/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	
Environmental	Operating Temperature / Humidity	-10°C ~ +50°C (+14°F ~ +122°F) / 20% ~ 80% RH	-50°C ~ +50°C (-58°F ~ +122°F) / ~ 90% RH
	Ingress Protection	-	IP66 Grade (Waterproof)
Electrical	Input Voltage	AC 24V ~ 50 / 60Hz, hPoE (42 - 57V ===)	
	Power Consumption	Max. 21W (AC 24V~), Max. 21W (hPoE)	Max. 25W (Heater Off), Max. 52W (Heater On), Max. 25W (hPoE)
Mechanical	Color / Material	Ivory / Plastic	Ivory / Aluminum / Plastic Sun-Shield
	Dimension (Ø x H)	Ø155 x H243.4 mm	Ø248 x H316.5 mm
	Weight	2.1kg	4.6kg

4.2 Product description

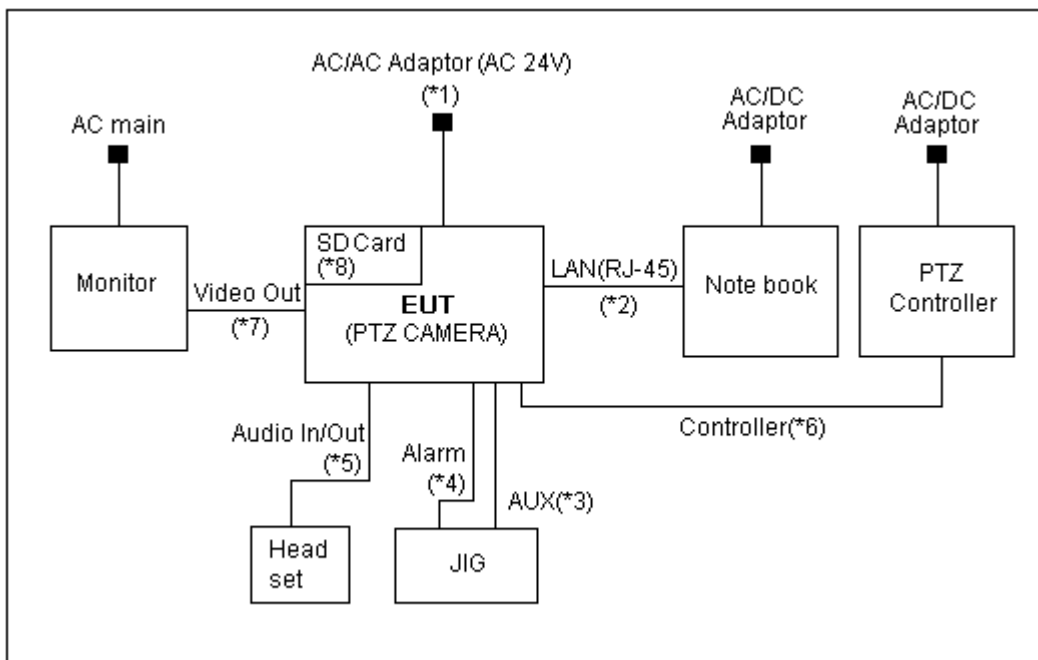
Type of product	PTZ CAMERA
Model name (Basic)	SNP-6200HN
Model name (Variant)	-
Difference	-
Trade name	-
Serial no	Engineering Sample
Testing voltage	AC 24 V , PoE
Product rating	AC 24 V , PoE
Internal clock frequency	108 MHz
Note	* AC/AC adaptor, PoE Switch was not provided by the manufacturer.

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
Note book	C1321	472680432038	FUJITSU
Monitor	DO19WS	N732HIIL900528X	SAMSUNG
Headset	SHS-250V	-	SAMSUNG
PTZ Controller	SCC-1000	-	SAMSUNG
JIG	-	-	-
AC/AC Adaptor(AC 24 V)	STA-220	-	Dream Electronics
PoE Switch	MHPSE-01	-	Samsung Techwin
SD Card(4GB)	-	BH09030914510G	SANDISK

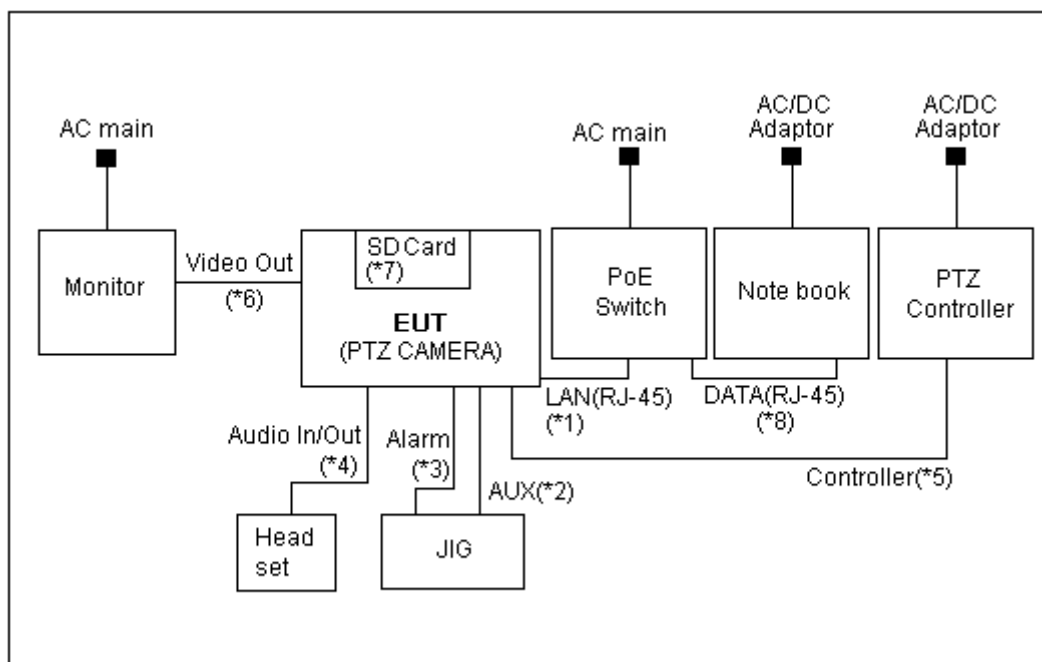
4.4 Test configuration

* AC 24 V



Note *	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT (PTZ CAMERA)	Power	AC/AC Adaptor	Power	3.0	Non-Shield
2		LAN(RJ-45)	Note book	RJ-45	3.0	Non-Shield
3		AUX	JIG	AUX	3.0	Non-Shield
4		Alarm	JIG	Alarm	1.5	Non-Shield
5		Audio In/Out	Headset	Audio In/Out	1.5	Non-Shield
6		Controller	PTZ Controller	Controller	3.0	Non-Shield
7		Video Out	Monitor	Video In	1.5	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 (PTZ CAMERA)	LAN(RJ-45)	PoE Switch	RJ-45	3.0	Non-Shield
2		AUX	JIG	AUX	3.0	Non-Shield
3		Alarm	JIG	Alarm	1.5	Non-Shield
4		Audio In/Out	Headset	Audio In/Out	1.5	Non-Shield
5		Controller	PTZ Controller	Controller	3.0	Non-Shield
6		Video Out	Monitor	Video In	1.5	Non-Shield
7		SD Card	SD Card	SD Card	Direct	-
8	PoE	DATA(RJ-45)	Note book	RJ-45	1.0	Non-Shield

4.5 Operating conditions

The EUT was configured as normal intended use.

This test was done at worst case.

Test mode	Normal operation
1	Camera operating test mode.

* Note: 2 types of powers are available for the product, that are AC/AC Adapter (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 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

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 (#F4)		
Test distance	10 m, 3 m		
Date	2012. 01. 28		
Temperature (°C)	19 °C	Humidity (% R.H.)	29 % R.H.
Remarks	Complied		

6.1.1 Limits of radiated emission measurement

Frequency [MHz]	Class A (dB(μ V/m)) @ 10 m	Class B (dB(μ V/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	100001	R&S	2012.07.11	☒
Bi-Log Antenna	VULB 9168	375	SCHWARZBECK	2013.09.21	☒
Amplifier	310N	284608	SONOMA INSTRUMENT	2012.07.11	☒
3 dB Attenuator	8491A	16861	HP	2012.07.11	☒
Antenna Mast	AM4.0	079/3440509	MATURO	-	☒
Turn Table	CO2000-SOFT	-	MATURO	-	☒
Horn ANT	3115	00086706	ETS	2013.11.21	☒
Amplifier	8449B	3008A01802	AGILENT	2012.05.11	☒
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

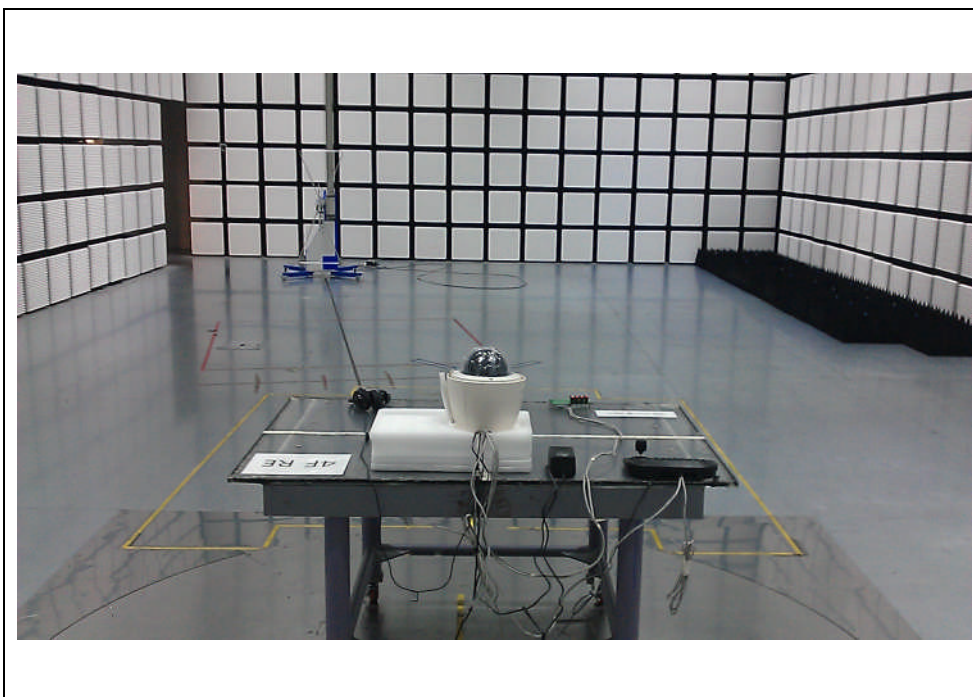
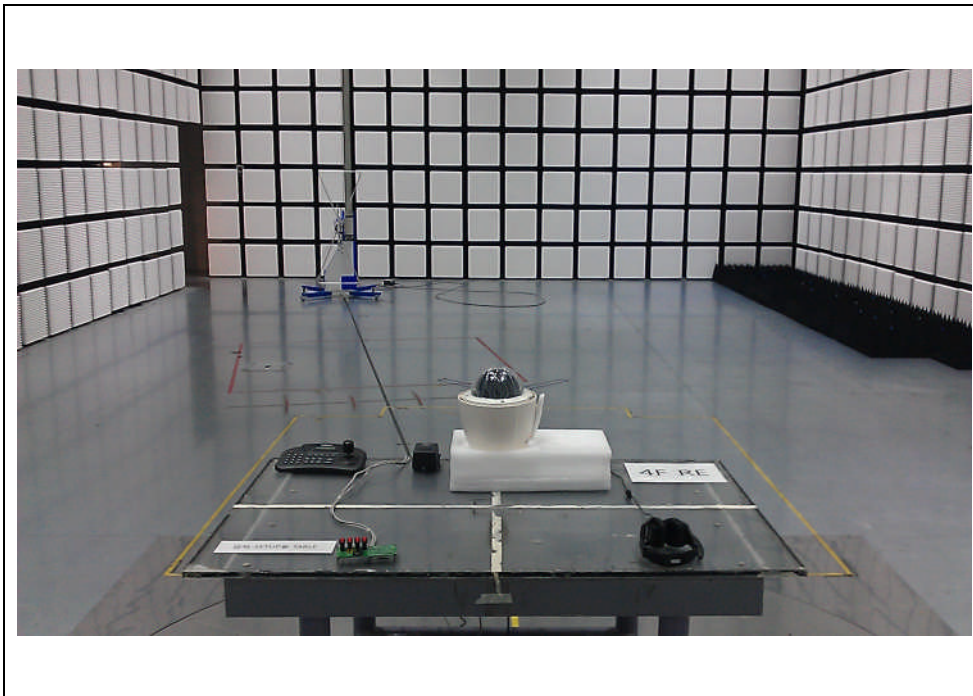
3 dB Att = 3 dB Attenuator

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

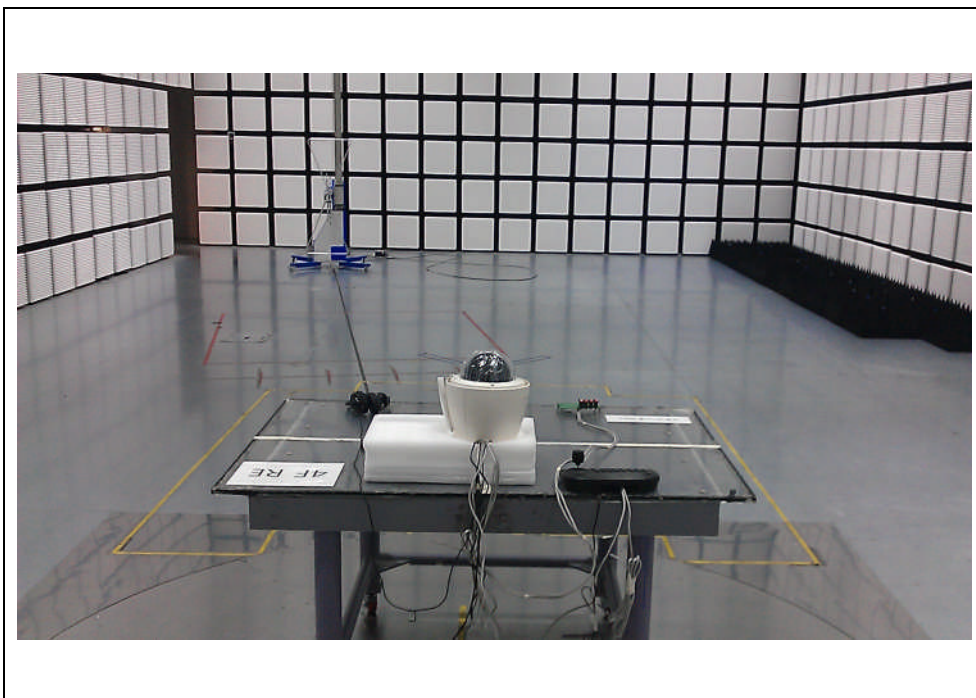
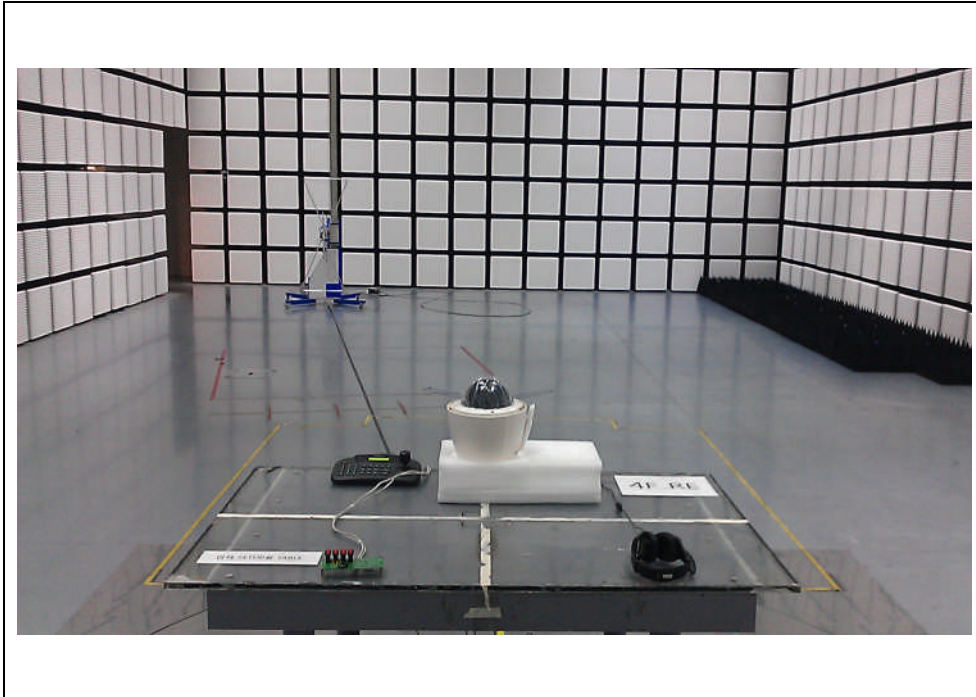
The result is $30 + 12 + 5 + 3 - 35 = 15 \text{ dB}(\mu\text{V/m})$

6.1.5 Photographs of test setup

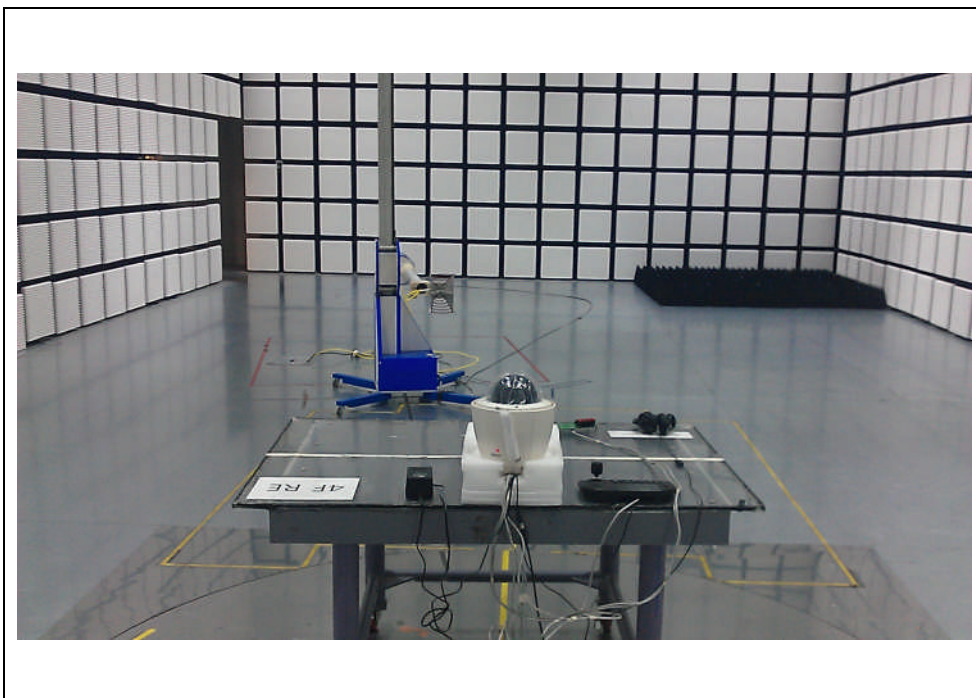
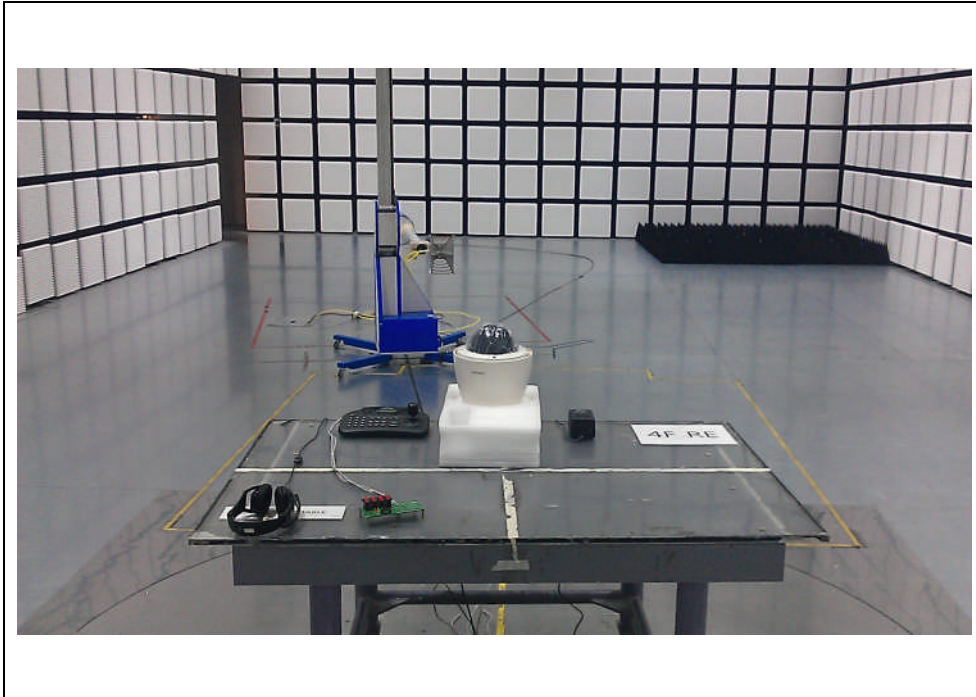
* 30 MHz ~ 1 GHz (AC 24 V)



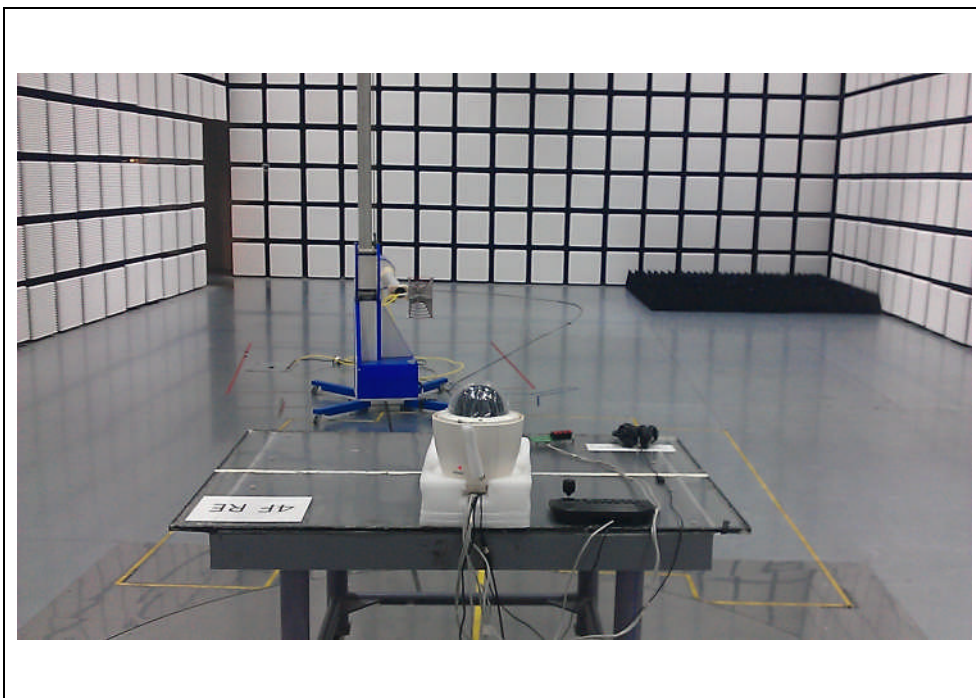
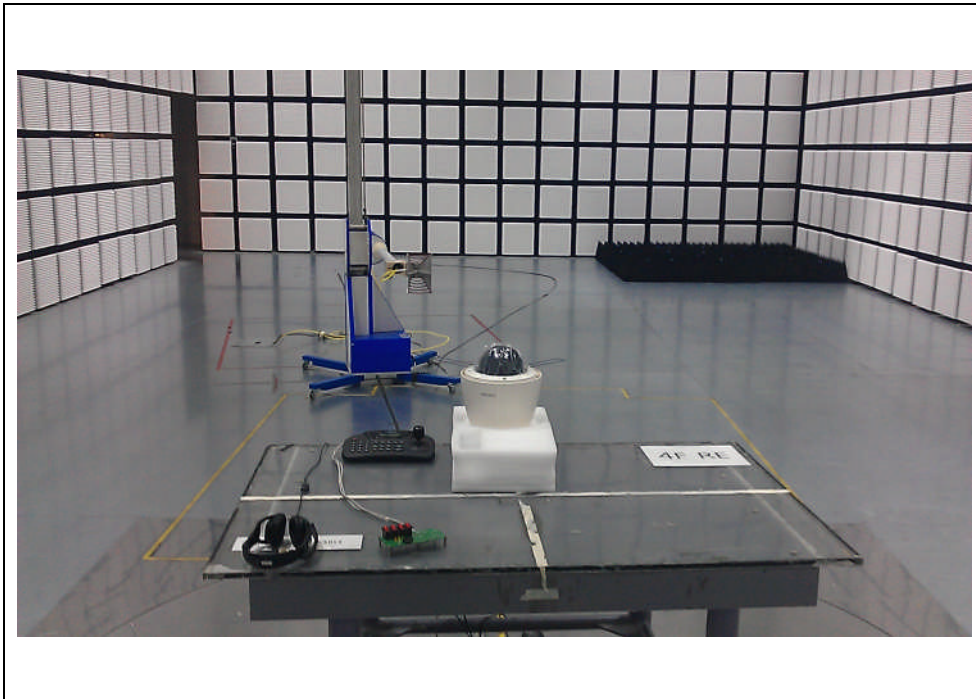
* 30 MHz ~ 1 GHz (PoE)



* 1 GHz ~ 6 GHz (AC 24 V)



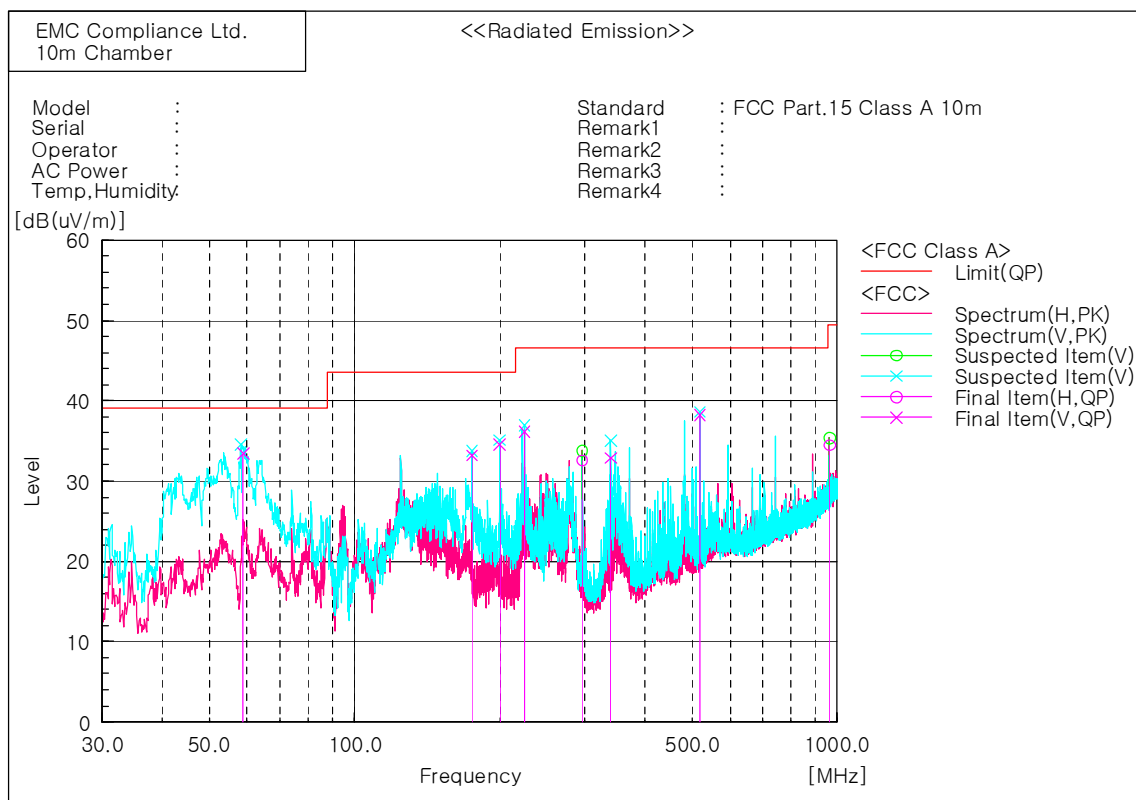
* 1 GHz ~ 6 GHz (PoE)



6.1.6 Radiated emission measurement result

* Graph and Data

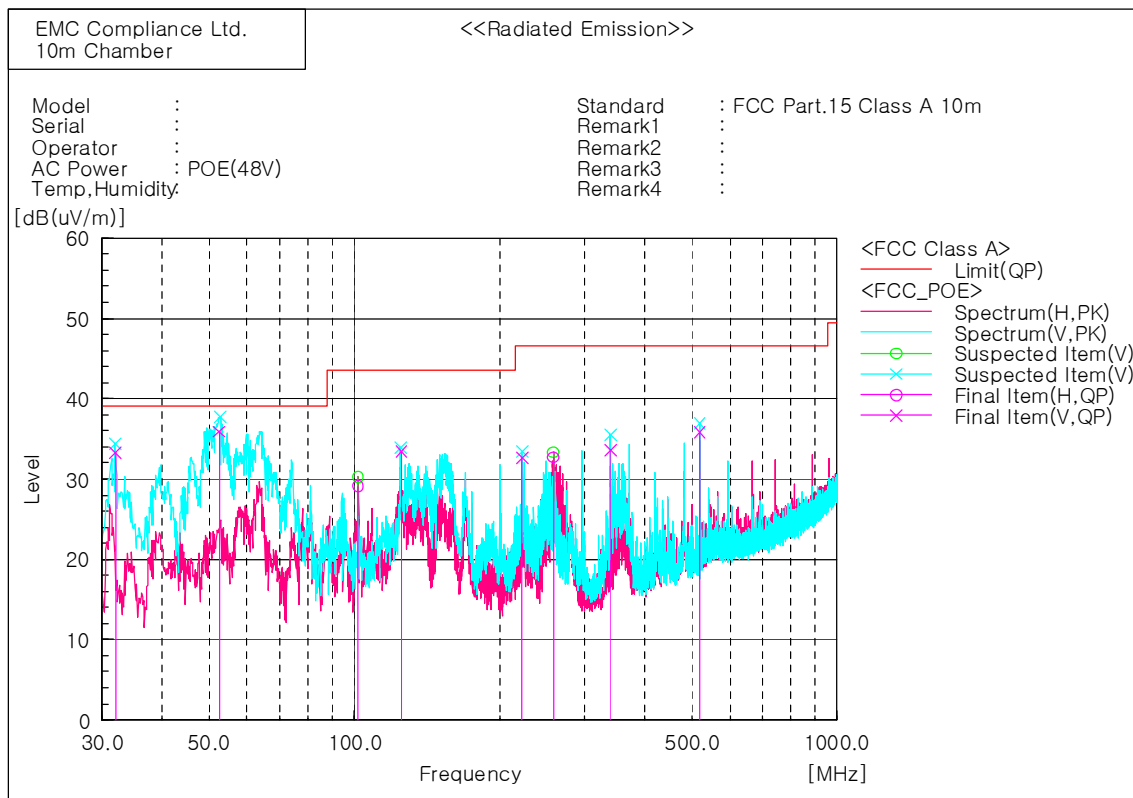
* 30 MHz ~ 1 GHz (AC 24 V)



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]	Remark
1	58.750	V	47.5	-14.1	33.4	39.0	5.6	100.0	208.9	
2	175.000	V	46.5	-13.3	33.2	43.5	10.3	100.0	291.3	
3	200.000	V	49.7	-15.2	34.5	43.5	9.0	100.0	223.0	
4	224.999	V	50.3	-14.2	36.1	46.5	10.4	100.0	354.1	
5	297.004	H	43.4	-10.8	32.6	46.5	13.9	400.0	259.3	
6	340.006	V	42.6	-9.7	32.9	46.5	13.6	100.0	354.1	
7	519.760	V	43.0	-4.8	38.2	46.5	8.3	100.0	349.8	
8	965.260	H	30.2	4.2	34.4	49.5	15.1	100.0	173.1	

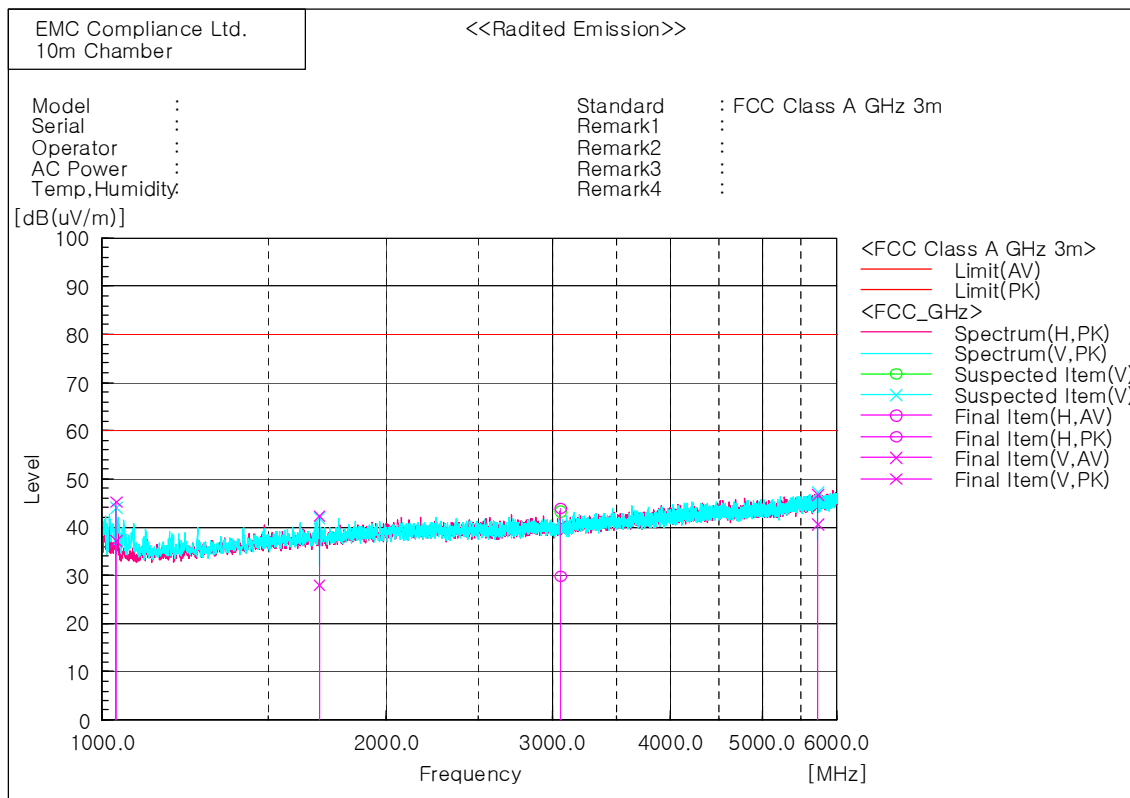
* 30 MHz ~ 1 GHz (PoE)



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]	Remark
1	31.987	V	48.4	-15.1	33.3	39.0	5.7	100.0	60.8	
2	52.525	V	49.6	-13.7	35.9	39.0	3.1	100.0	229.3	
3	101.853	H	46.5	-17.4	29.1	43.5	14.4	400.0	265.1	
4	125.000	V	48.3	-14.9	33.4	43.5	10.1	100.0	160.9	
5	222.758	V	47.0	-14.3	32.7	46.5	13.8	100.0	347.6	
6	258.556	H	44.8	-12.1	32.7	46.5	13.8	400.0	218.2	
7	339.996	V	43.3	-9.7	33.6	46.5	12.9	100.0	347.6	
8	519.749	V	40.6	-4.8	35.8	46.5	10.7	100.0	9.1	

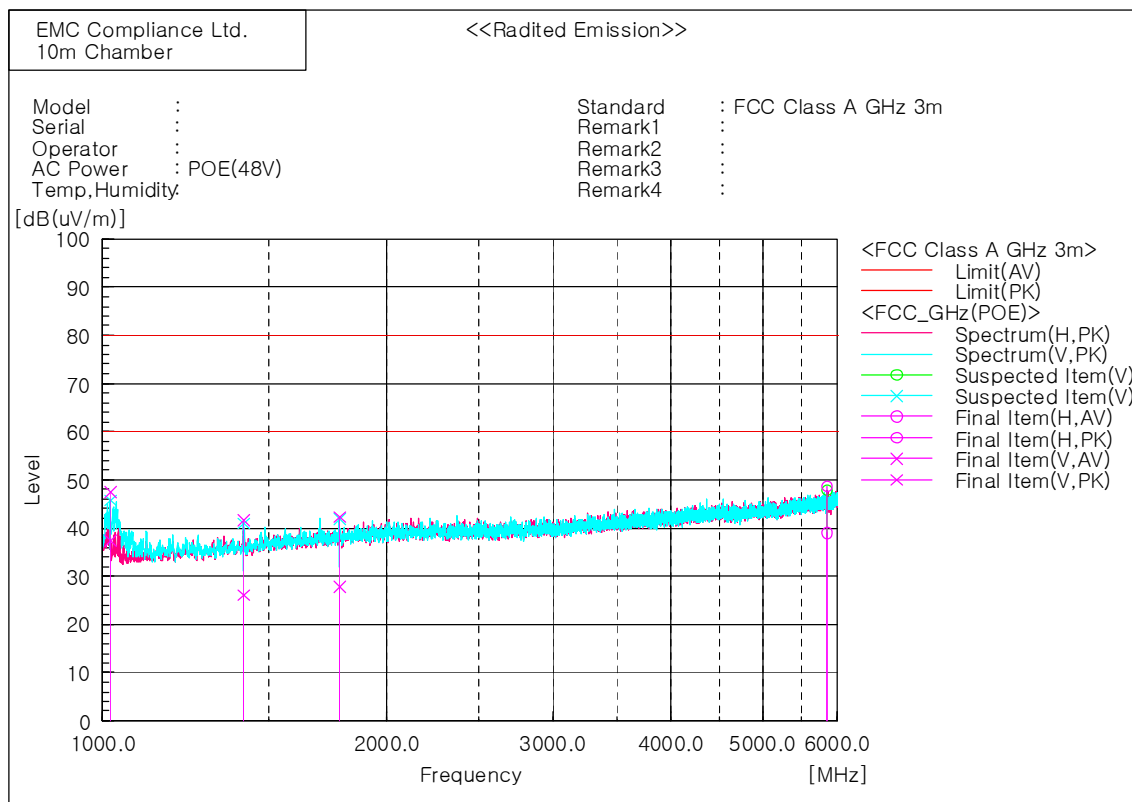
* 1 GHz ~ 6 GHz (AC 24 V)



Final Result

No.	Frequency [MHz]	(P)	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c. f. [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1035.625	V	51.2	59.4	-14.1	37.1	45.3	60.0	80.0	22.9	34.7	100.0	44.7	
2	1698.125	V	36.5	50.8	-8.5	28.0	42.3	60.0	80.0	32.0	37.7	100.0	35.1	
3	3058.125	H	34.8	48.9	-5.0	29.8	43.9	60.0	80.0	30.2	36.1	100.0	358.0	
4	5722.500	V	38.7	44.8	1.9	40.6	46.7	60.0	80.0	19.4	33.3	100.0	89.1	

* 1 GHz ~ 6 GHz (PoE)



Final Result

No.	Frequency [MHz]	(P)	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c. f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1019.375	V	51.7	61.8	-14.3	37.4	47.5	60.0	80.0	22.6	32.5	100.0	105.5	
2	1410.825	V	36.8	52.3	-10.7	26.1	41.6	60.0	80.0	33.9	38.4	100.0	283.3	
3	1781.875	V	35.8	50.3	-8.0	27.8	42.3	60.0	80.0	32.2	37.7	100.0	216.5	
4	5853.750	H	36.8	46.5	2.2	39.0	48.7	60.0	80.0	21.0	31.3	100.0	43.5	

7. E.U.T. photographs

Front View



Rear View



Left View



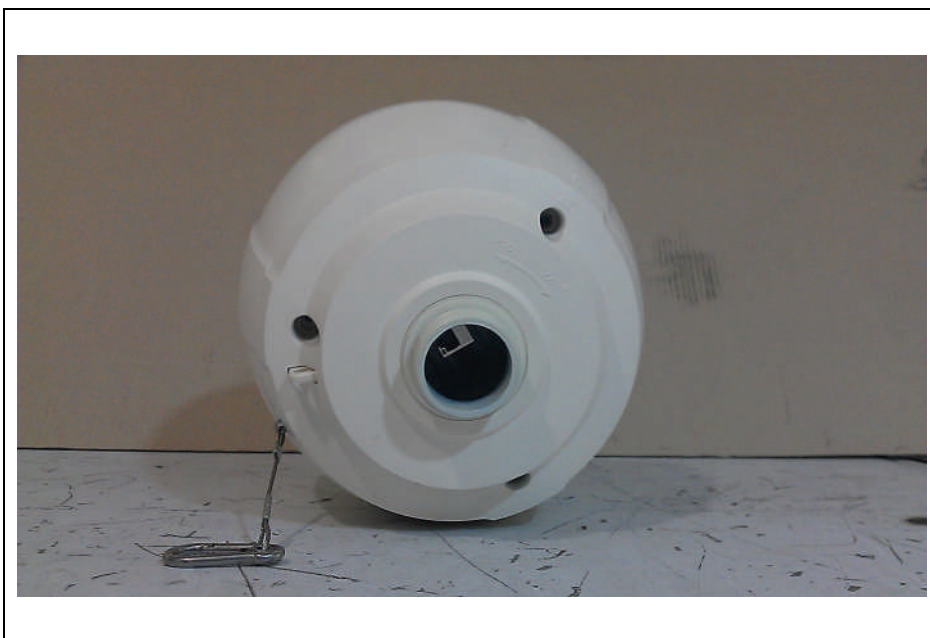
Right View



Top View



Bottom View



Label



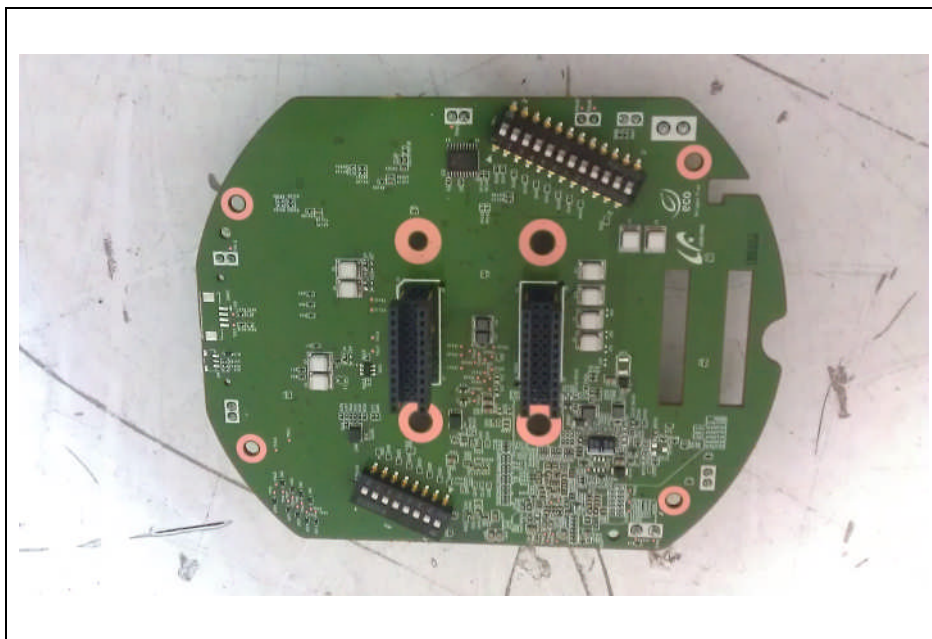
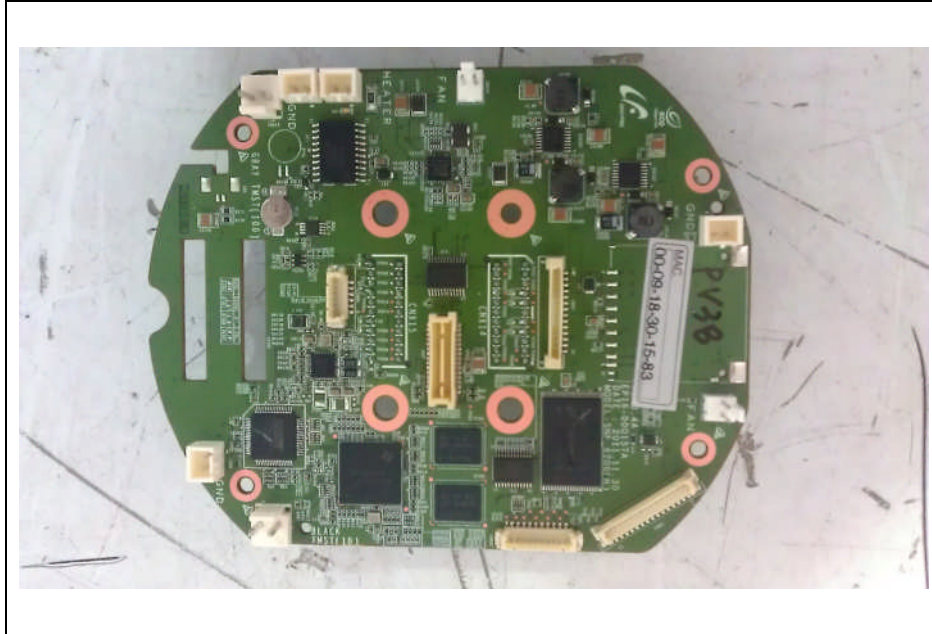
FCC Label Location

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.

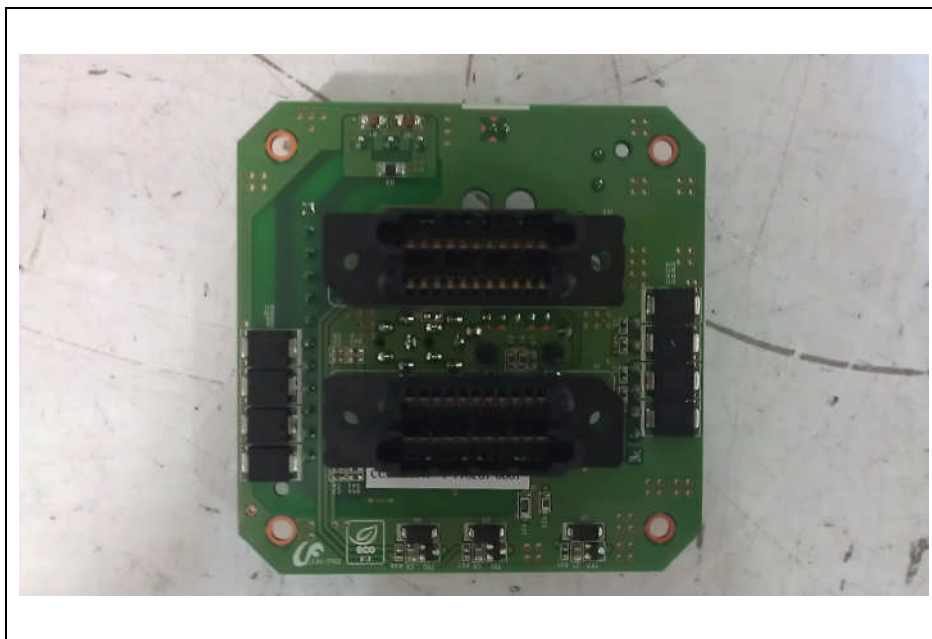
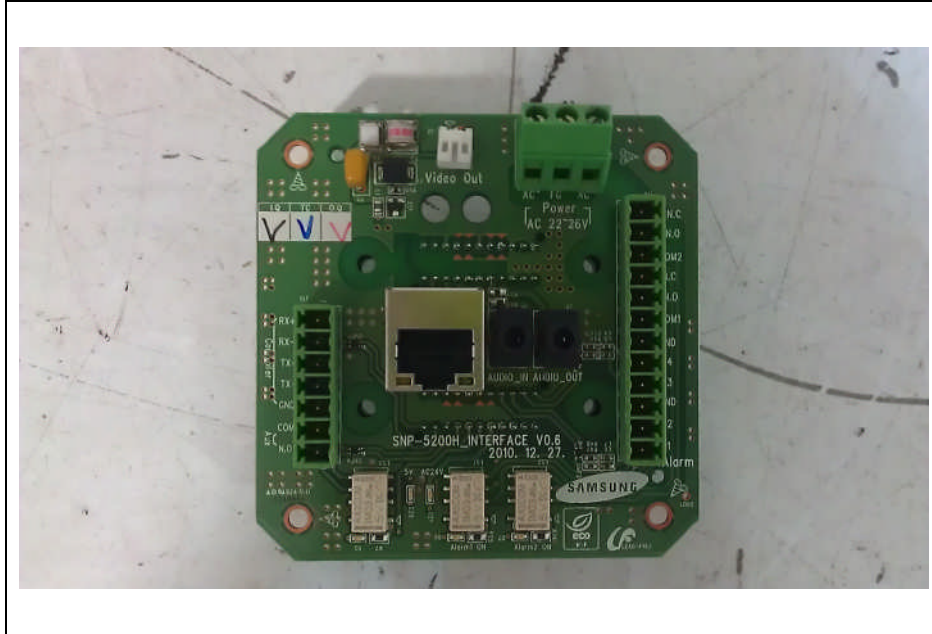
Inside



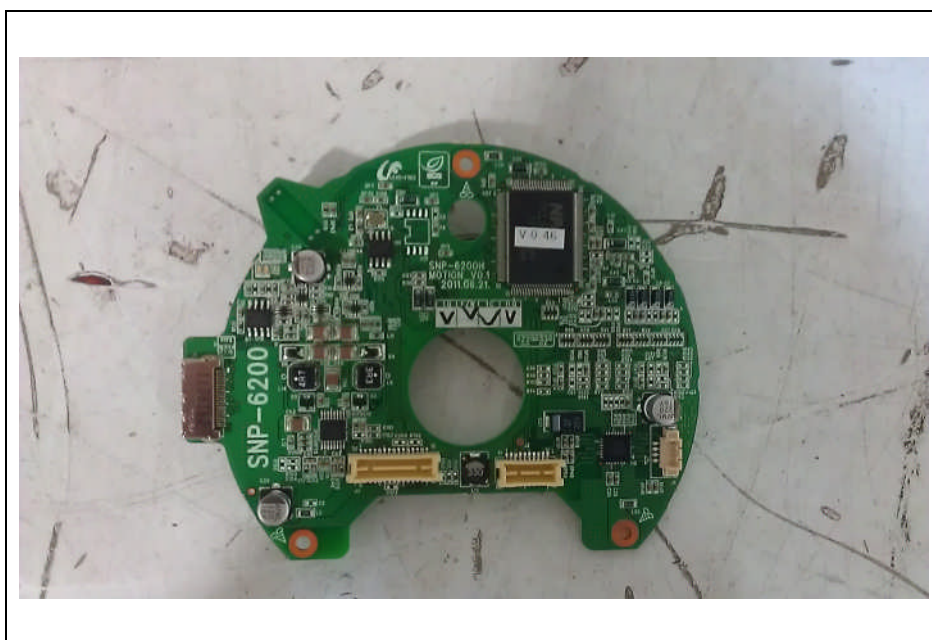
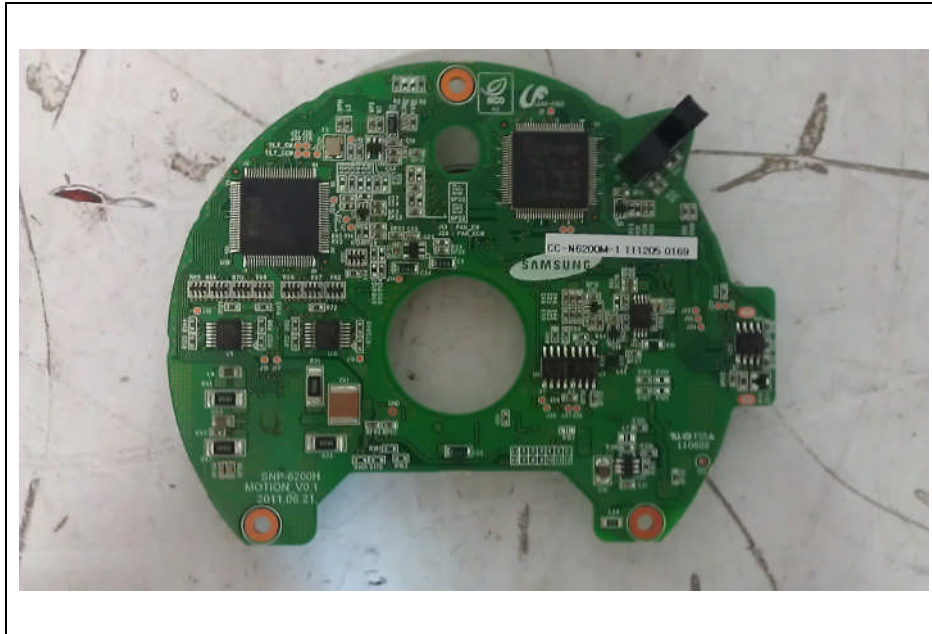
Connector Board



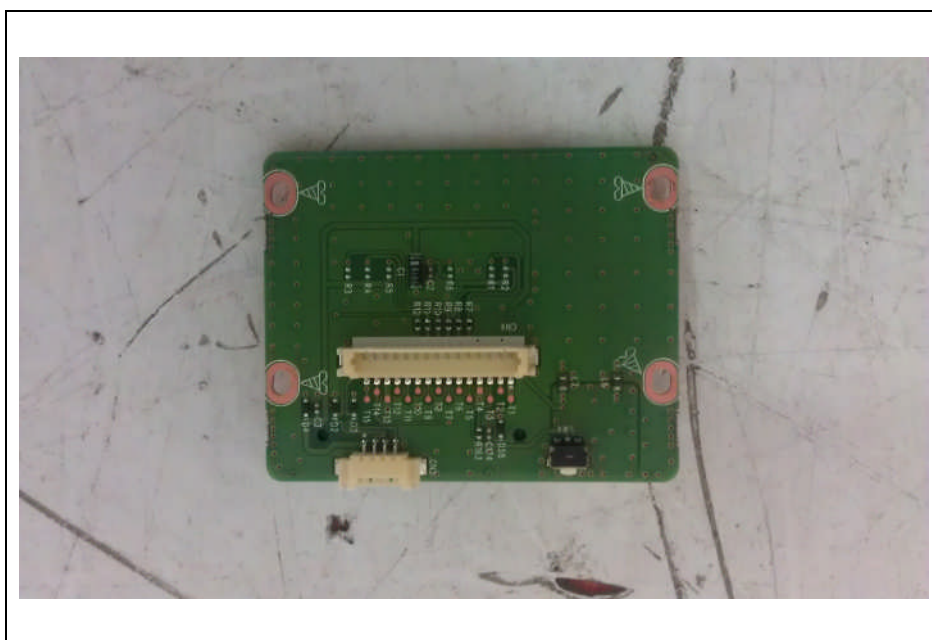
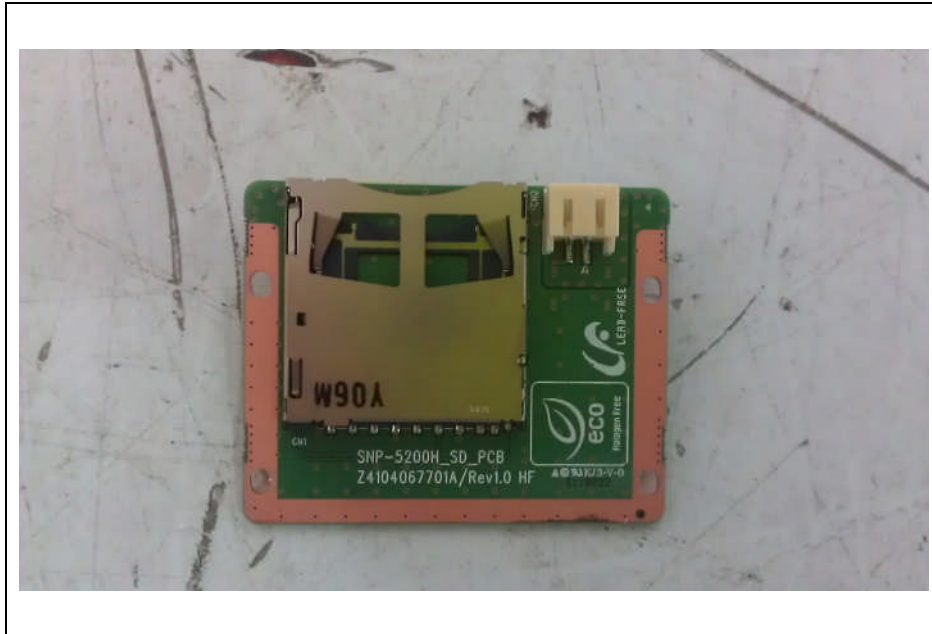
Interface Board



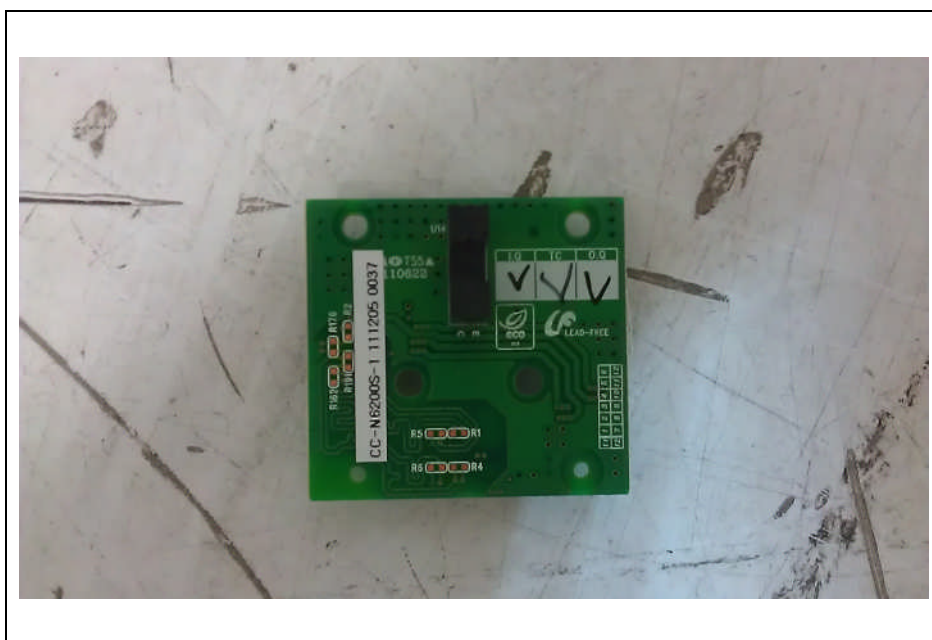
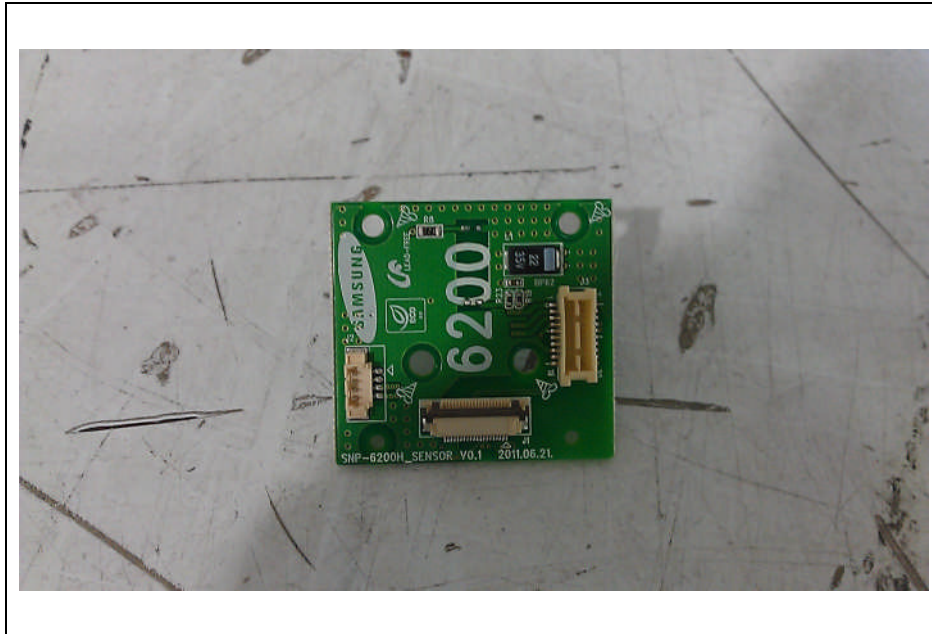
Motion Board



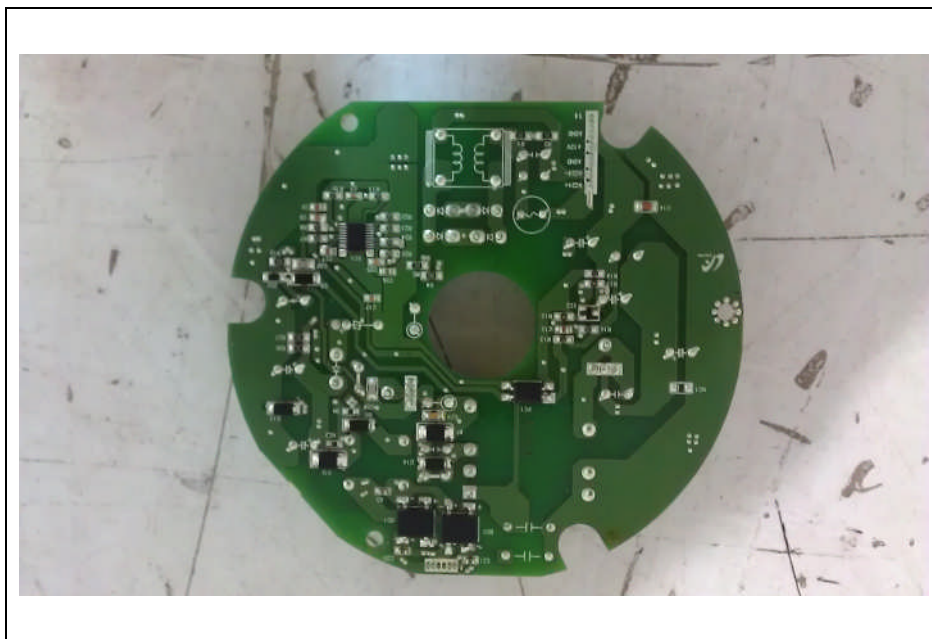
SD Board



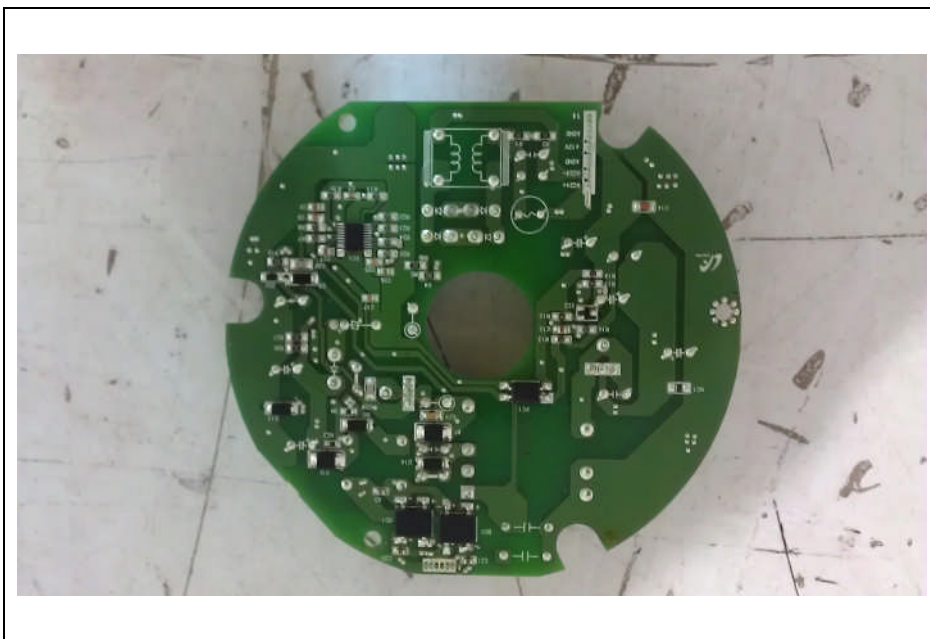
Sensor Board



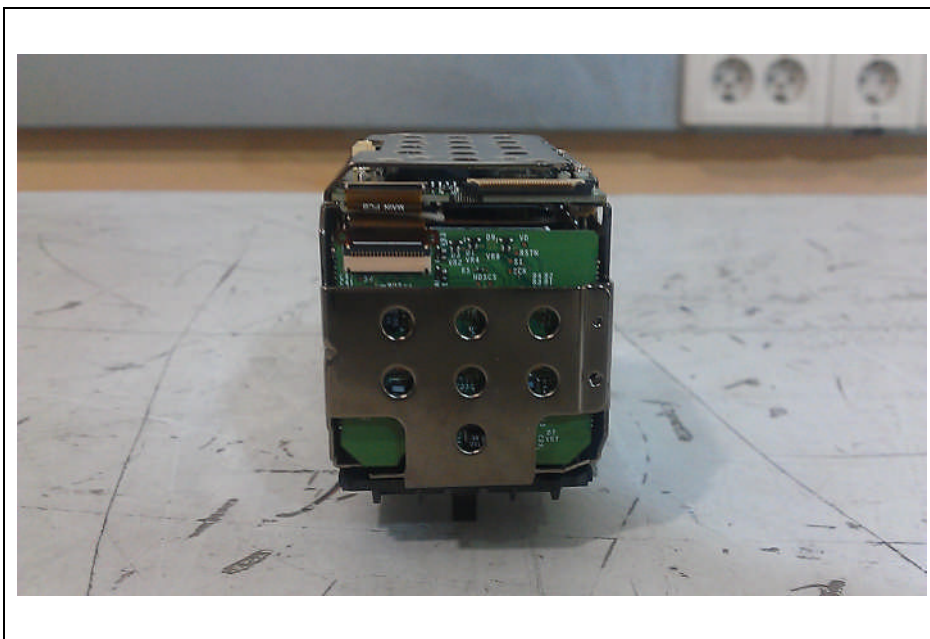
SMPS Board

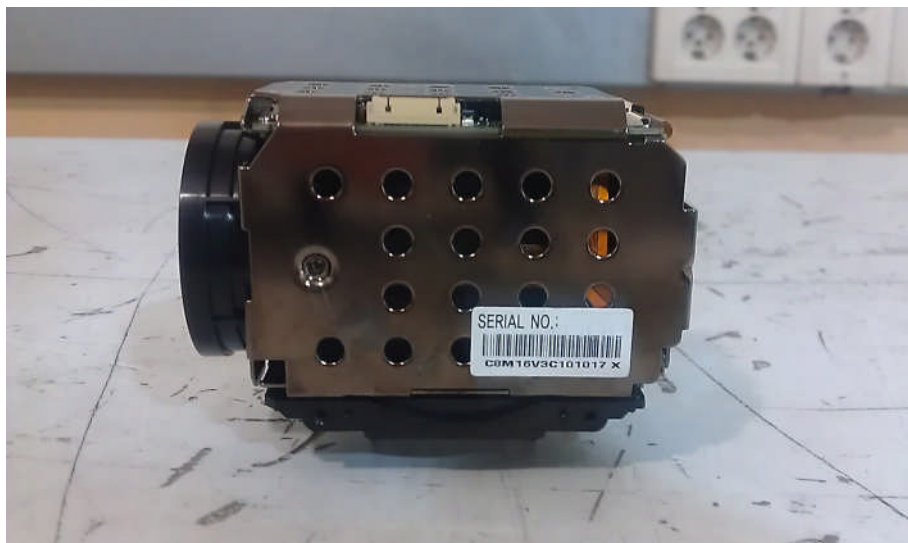
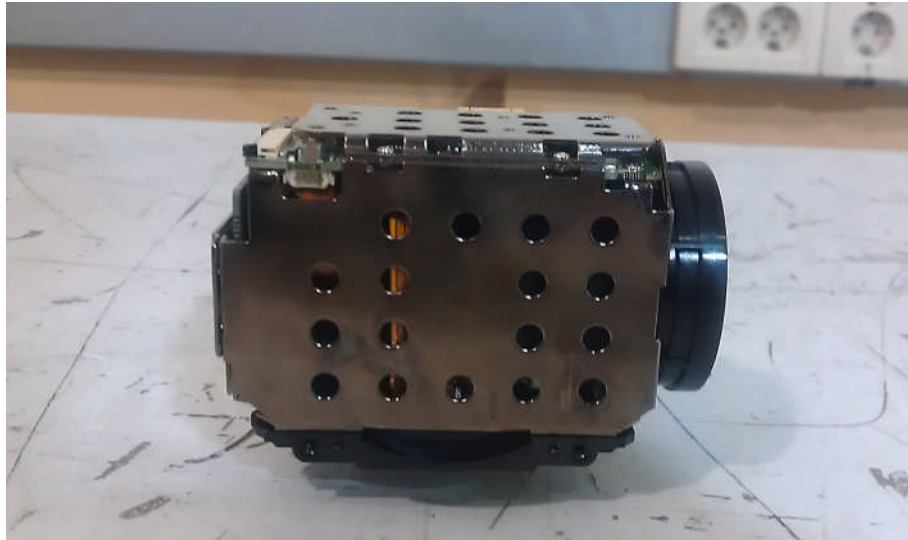


SMPS Board



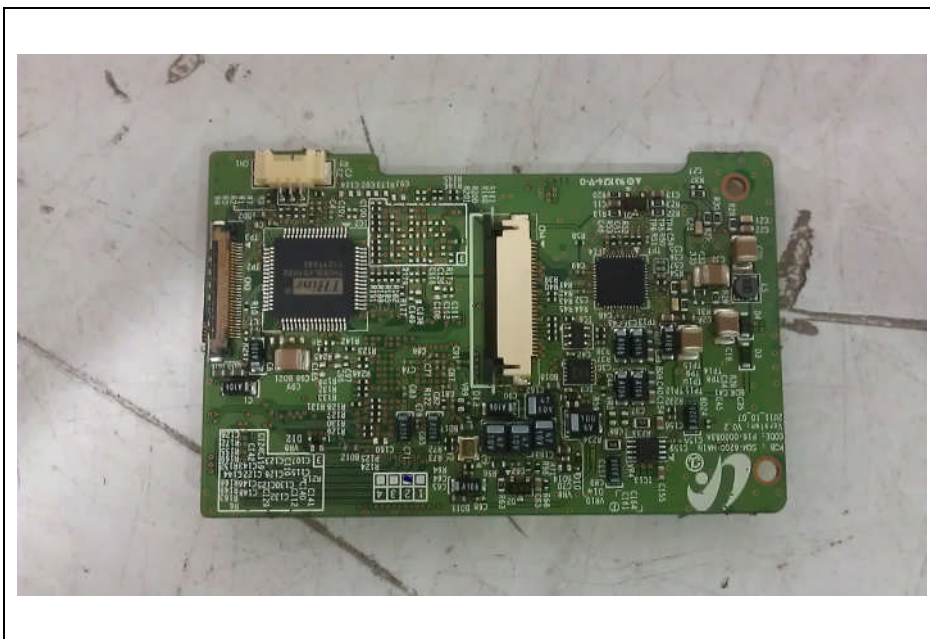
Camera







Camera – Main Board



Camera – Sensor Board

