

CERTIFICATE of EMC Compliance

Report No : EMC-FCC-E2543
Type of equipment : Network Camera
Model Name : SNP-6320RHN
Applicant : Samsung Techwin Co., Ltd.
84, Jeongdong-ro, Seongsan-gu,
Changwon-si, Gyeongsangnam-do, Korea
Manufacturer#1 : Samsung Techwin Co., Ltd.
84, Jeongdong-ro, Seongsan-gu,
Changwon-si, Gyeongsangnam-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-E2543
Type of Equipment : Network Camera
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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: 2014. 12. 12

Date of testing: 2014. 12. 26

Issued date: 2014. 12. 29

Tested by: 
JUNG, YONG-JUN

Approved by: 
YEOM, HAN-SEOK

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1. Applicant information

Applicant: Samsung Techwin Co., Ltd.
Address: 84, Jeongdong-ro, Seongsan-gu, Changwon-si,
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E-mail: js2002.kang@samsung.com
Contact name: **Kang Jei Soon**

Manufacturer#1: Samsung Techwin Co., Ltd.
Address: 84, Jeongdong-ro, Seongsan-gu, Changwon-si,
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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.

65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-390, Korea

Telephone Number: 82 70 5008 1021

Facsimile Number: 82 505 299 8311

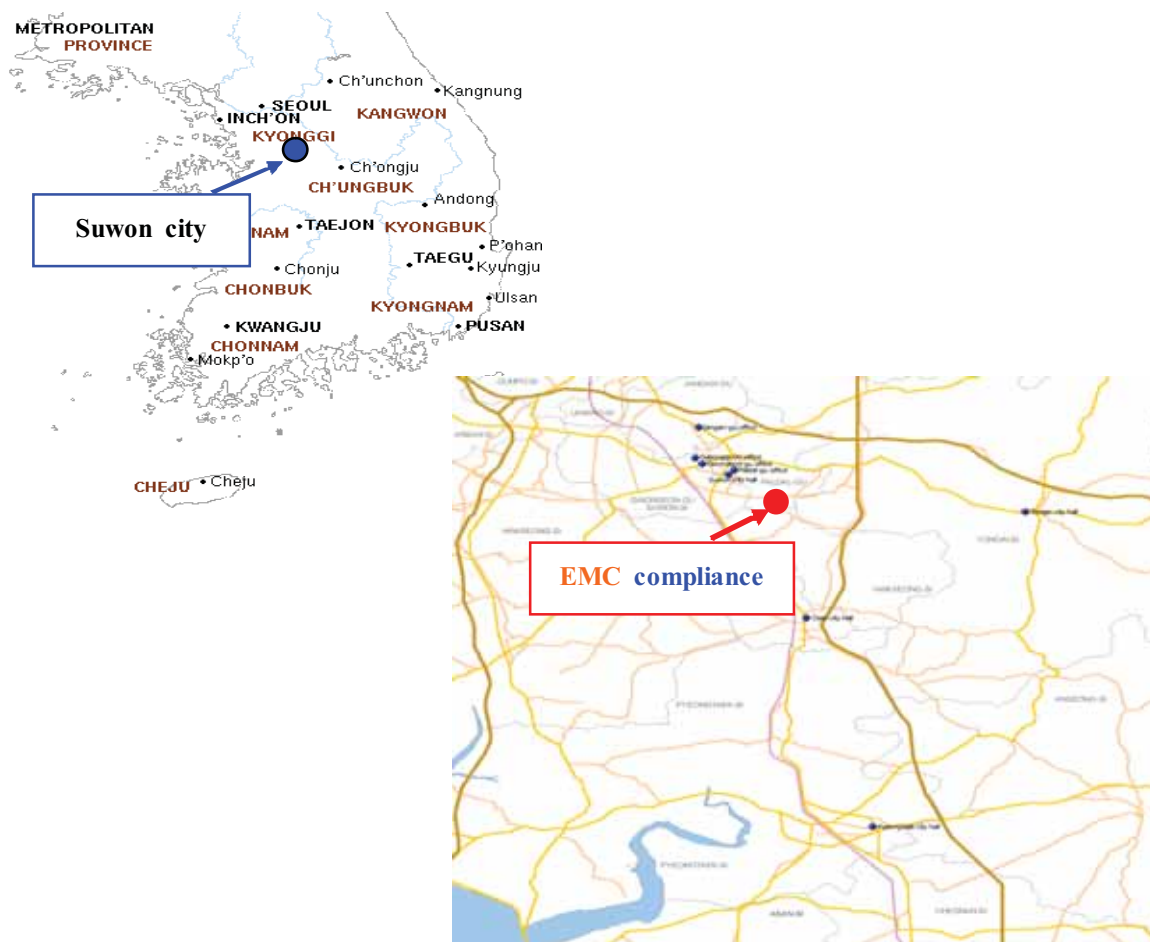
FCC Site Designation No: KR0040, FCC Site Registration No: 687132

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)	: 25.5 °C	13.2 % 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: ± 3.75 dB 150 kHz ~ 30 MHz: ± 3.36 dB	
Shielded Room (CE#2)	9 kHz ~ 150 kHz: ± 3.79 dB 150 kHz ~ 30 MHz: ± 3.42 dB	
Radiated Emission measurement (C.L: Approx 95 %, k = 2)		
10 m Chamber (#F4)	30 MHz ~ 300 MHz	3 m: + 4.87 dB, - 4.99 dB 10 m: + 4.86 dB, - 4.98 dB
	300 MHz ~ 1 000 MHz	3 m: + 5.04 dB, - 5.14 dB 10 m: + 4.91 dB, - 5.02 dB
	1 GHz ~ 6 GHz	3 m: + 6.03 dB, - 6.06 dB
10 m Chamber (#F2)	30 MHz ~ 300 MHz	3 m: + 4.94 dB, - 5.06 dB 10 m: + 4.93 dB, - 5.05 dB
	300 MHz ~ 1 000 MHz	3 m: + 4.97 dB, - 5.08 dB 10 m: + 4.84 dB, - 4.96 dB
	1 GHz ~ 6 GHz	3 m: + 6.03 dB, - 6.05 dB
10 m Chamber	6 GHz ~ 18 GHz	3 m: + 6.60 dB, - 6.78 dB

4. Description of E.U.T.

4.1 General information

Video	
Imaging Device	1/2.9" 2M CMOS
Total Pixels	1952(H) x 1116(V), 2.18M
Effective Pixels	1944(H) x 1104(V), 2.14M
Scanning System	Progressive Scan
Min. Illumination	Color : 0.3 Lux/F1.6(1/30sec, F1.6, 50IRE), 0.005Lux(2sec, F1.6, 50IRE) Color : 0.1 Lux/F1.6(1/30sec, F1.6, 30IRE), 0.0005Lux(2sec, F1.6, 30IRE) 0 Lux (IR LED On)
S / N Ratio	50dB
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation
Lens	
Focal Length (Zoom Ratio)	32x(4.4 ~ 140.8 mm)
Max. Aperture Ratio	F1.6 (Wide) ~ F 4.9 (Tele)
Angular Field of View	H : 63.68° (Wide) ~ 2.24° (Tele) / V : 37.52° (Wide) ~ 1.28° (Tele)
Min. Object Distance	1.5m (3.28ft)
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 : 250°/sec , Manual : 0.024°/sec ~120°/sec
Tilt Range	190°(-5° ~185°)
Tilt Speed	Preset : 250°/sec , Manual : 0.024°/sec ~120°/sec
Rotate Range	-
Sequence	Preset (255 ea), Swing, Group (6 ea), Trace, Tour, Auto Run, Schedule
Preset Accuracy	±0.2°
Azimuth	Yes (East/West/South/North OSD)
Auto Tracking	Off / On
Operational	
IR LED	2ea
Viewable Length	150m
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	120dB
Contrast Enhancement	SSDR (Samsung Super Dynamic Range) (Off / On)
Digital Noise Reduction	SSNR(2D+3D Noise Filter) (Off / On)
Digital Image Stabilization	Off / On
Defog	Auto/Manual/Off
Motion Detection	Yes(4ea, Rectangular zones)
Privacy Masking	Off / On (32ea, Rectangular zones) - Color : Grey/Green/Red/Blue/Black/White - Zoom ratio option for mask mode
Gain Control	Off / Low / Medium / High / Manual
White Balance	ATW / AWC / Manual / Indoor / Outdoor / Mercury / Sodium
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Digital Zoom	16x , area zoom function support digital zoom 2x
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 3ea (Relay type)
Remote Control Interface	RS-485/422
RS-485 Protocol	Samsung-T/E, Pelco-D/P, Panasonic, Honeywell, AD, Vicon, GE, BOSCH
Alarm Triggers	Alarm Input, Motion Detection, Intelligent Video Analytics, Network Disconnect
Alarm events	• File upload via FTP, E-Mail • Notification via E-Mail, TCP • local storage(SD/SDHC) or NAS recording at Network disconnected • External output • PTZ preset
Audio In	Selectable (Mic IN/Line IN), Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
Audio out	Line out (3.5mm stereo mini jack), Max output level: 1 Vrms

Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 720x576, 640x480, 640x360, 320x240, 320x180
Max. Framerate	H.264 : Max. 60fps at all resolutions Motion JPEG : 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768 : 최대 15 fps 800x600, 720x576, 640x480, 640x360, 320x240, 320x180 : 최대 30fps
Smart Codec	Manual Mode (area-based : 5EA) Face detection Mode
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 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 (2-Way)
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	HT TSPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP)
Streaming Method	Unicast / Multicast
Max. User Access	15 users at Unicast Mode
Edge Storage	SD/SDHC/SDXC(up to 128G) - motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording
Application Programming Interface	ONVIF Profile S SUNAPI(HTTP API) SVNP 1.2 Samsung Camera Application Platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Danish, Portuguese, Czech, Polish, Turkish, Rumanian, Serbian, Dutch, Croatia, Hungary, Greek, Norsk, Finnish
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 /	-50°C ~ +55°C (-58°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-60°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP66
Vandal Resistance	IK10
Electrical	
Input Voltage / Current	24V AC
Power Consumption	Max. 30W(Heater Off) / 35W(Heater Off, IR ON), 90W(Heater On, IR ON)
Mechanical	
Color / Material	Ivory/Aluminum
Dimension (WxHxD)	H399.5mm x Ø248 (Ø9.76" x 15.73")
Weight	7.1Kg

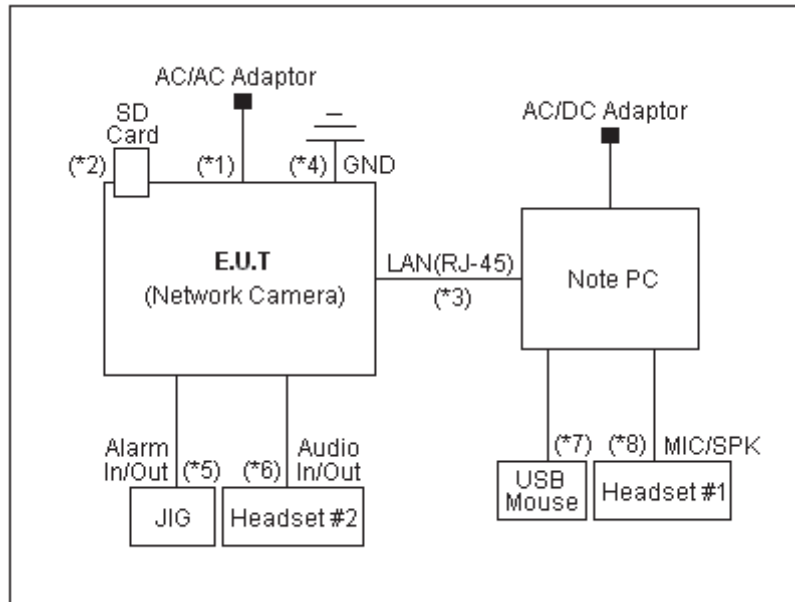
4.2 Product description

Type of product	Network Camera
Model name (Basic)	SNP-6320RHN
Model name (Variant)	-
Difference	-
Trade name	-
Serial no	-
Testing voltage	AC 24 V
Product rating	AC 24 V
Internal clock frequency	Above 108 MHz
Note	* AC/AC Adaptor was not provided by the manufacturer.

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
Note PC	NT271B5E	JGFE91DF600046D	SAMSUNG
USB Mouse	SMH-214UB	M2UBTAKQ335310R	SAMSUNG
Headset #1	SHS-250V	-	SAMSUNG
Headset #2	SHS-250V	-	SAMSUNG
JIG	-	-	-
SD Card (2GB)	-	-	-
AC/AC Adaptor	DRL-246000AC	-	Dream Electronic

4.4 Test configuration



Note *	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT (Network Camera)	Power	AC/AC Adaptor	Power	1.2	Non-Shield
2		SD Card	SD Card	SD Card	Direct	-
3		LAN(RJ-45)	Note PC	LAN(RJ-45)	3.0	Non-Shield
4		GND	GND	GND	2.0	Non-Shield
5		Alarm In/Out	JIG	Alarm In/Out	3.0	Non-Shield
6		Audio In/Out	Headset #1	Audio In/Out	3.0	Non-Shield
7	Note PC	USB	USB Mouse	USB	1.8	Shield
8		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
	Ping test.
	Alarm In/Out test.
	Audio In/Out test.
	Recording test.

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
<input type="checkbox"/>	Conducted Emission	ANSI C63.4 – 2009	N/A
<input checked="" type="checkbox"/>	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		
Test facility	10 m Chamber (#F2)		
Test distance	10 m, 3 m		
Date	2014. 12. 26		
Temperature (°C)	25.5 °C	Humidity (% R.H.)	13.2 % R.H.
Software Program	EP5/RE Ver 4.6.0(Toyo)		
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	ESCI7	100732	R&S	2015.01.27	<input checked="" type="checkbox"/>
Test Receiver	ESCI	100001	R&S	2015.07.14	<input type="checkbox"/>
Test Receiver	ESCI	100710	R&S	2015.10.13	<input type="checkbox"/>
Test Receiver	ESR	101078	R&S	2015.02.24	<input type="checkbox"/>
Bi-Log Antenna	VULB 9168	440	SCHWARZBECK	2016.08.28	<input checked="" type="checkbox"/>
Amplifier	310N	284608	SONOMA INSTRUMENT	2015.04.16	<input checked="" type="checkbox"/>
3 dB Attenuator	8491B	22981	HP	2015.03.04	<input checked="" type="checkbox"/>
Antenna Mast	MA4000-EP	303	Innco Systems	-	<input checked="" type="checkbox"/>
Turn Table	DT2000S-1t	079	Innco Systems	-	<input checked="" type="checkbox"/>
Preamplifier	8449B	3008A02343	AGILENT	2015.10.13	<input checked="" type="checkbox"/>
Horn ANT	3115	00155772	ETS	2015.02.26	<input checked="" type="checkbox"/>
Spectrum Analyzer	E4407B	US39010142	AGILENT	2015.10.13	<input type="checkbox"/>

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

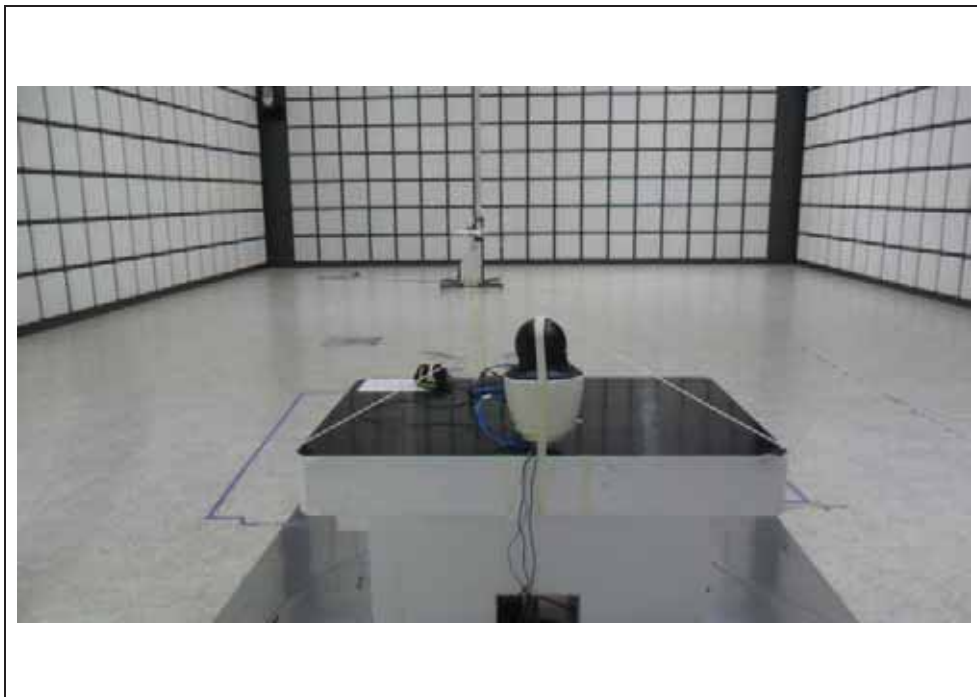
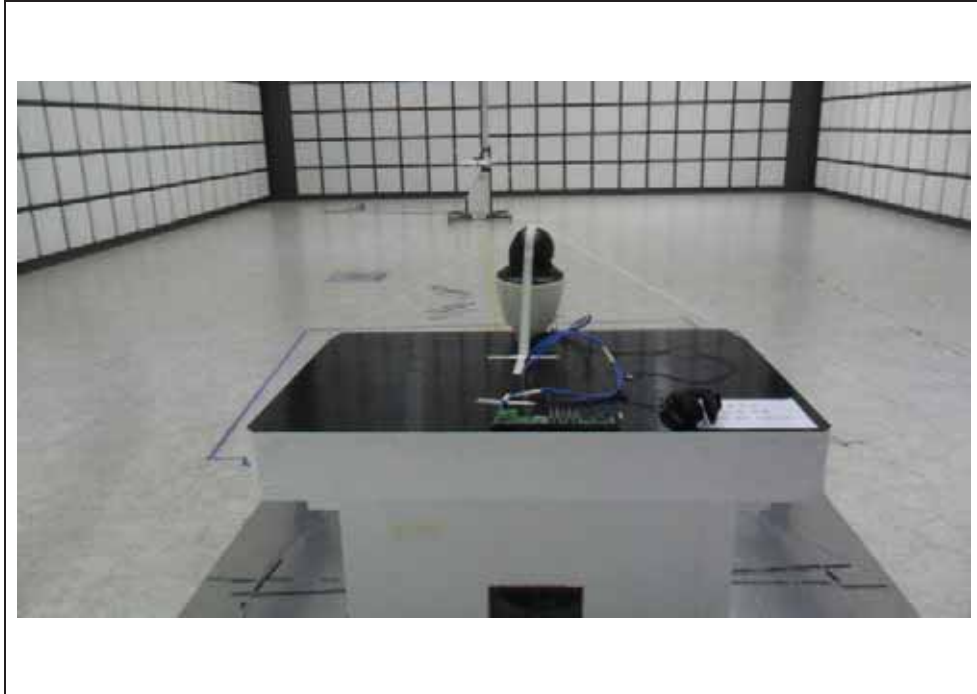
If M.R is 30 dB, A.F 12 dB, C.L 5 dB, 3 dB, A.G 35 dB

The result is

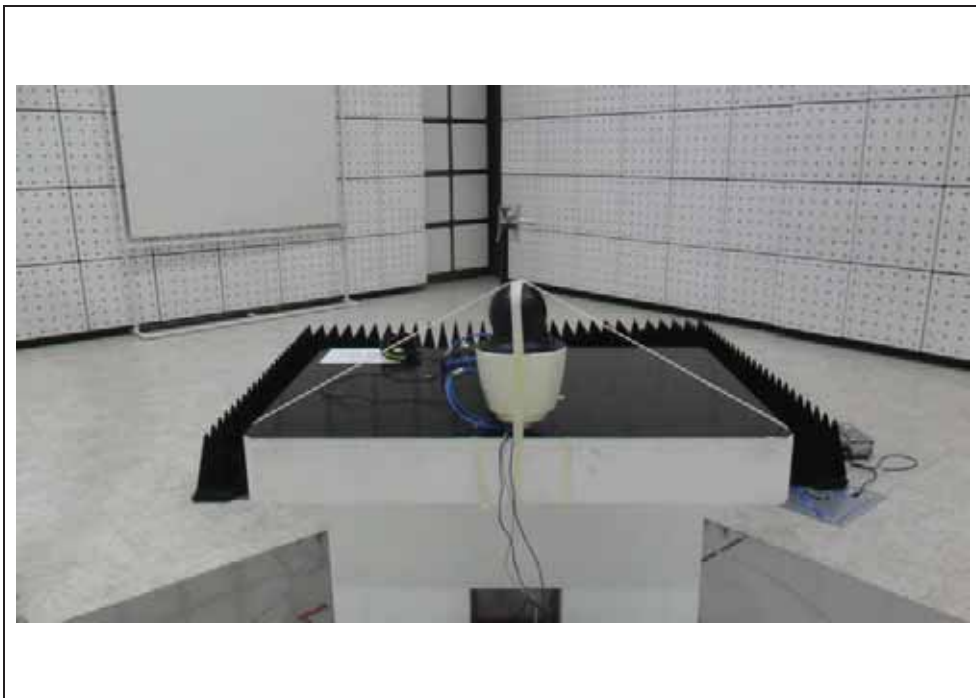
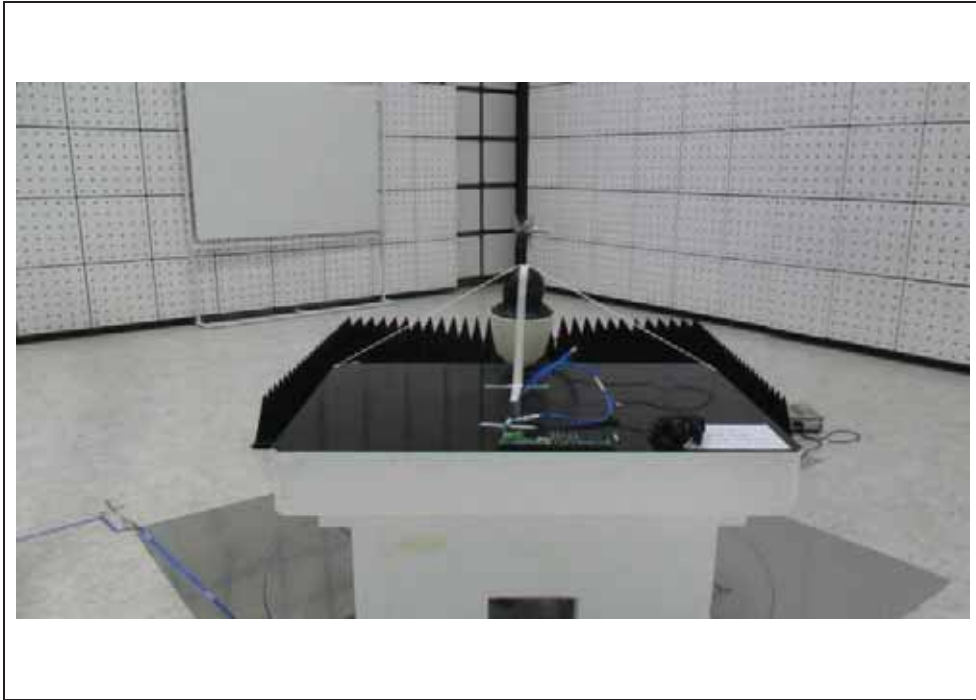
$$30 + 12 + 5 + 3 - 35 = 15 \text{ dB}(\mu\text{V/m})$$

6.1.5 Photographs of test setup

* 30 MHz ~ 1 GHz



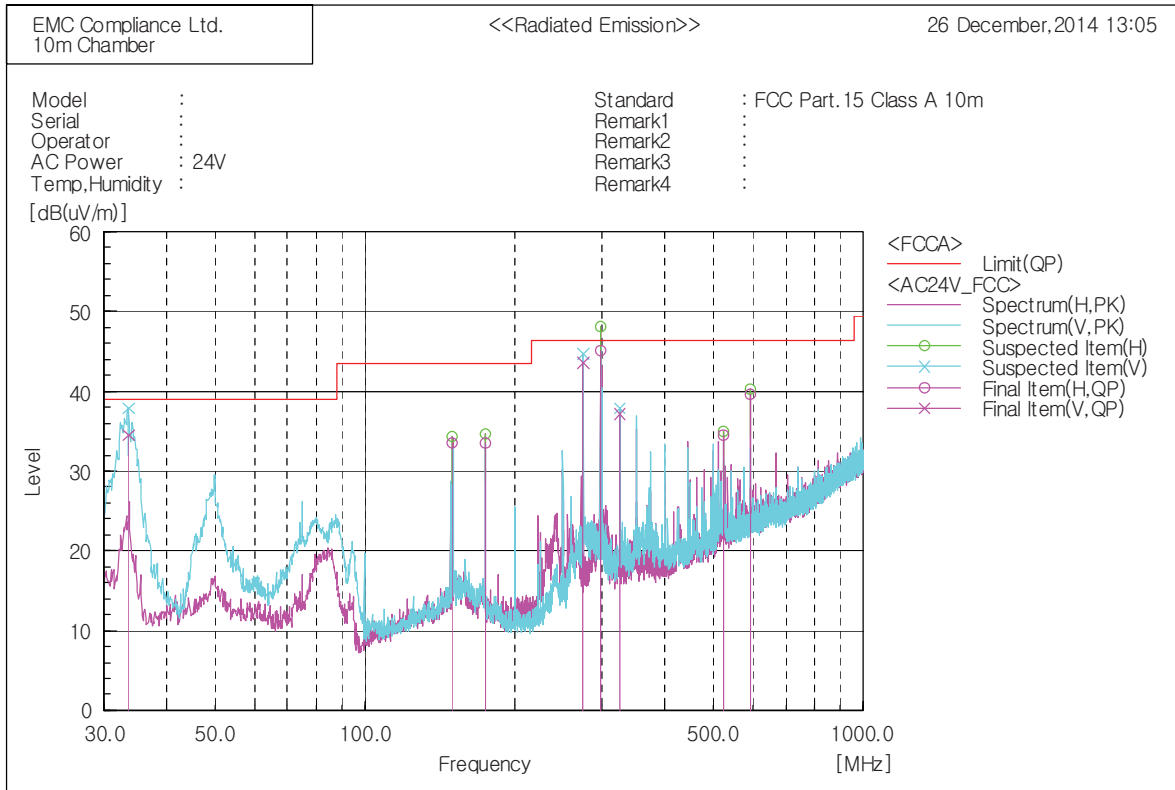
* 1 GHz ~ 6 GHz



6.1.6 Radiated emission measurement result

* Graph and Data

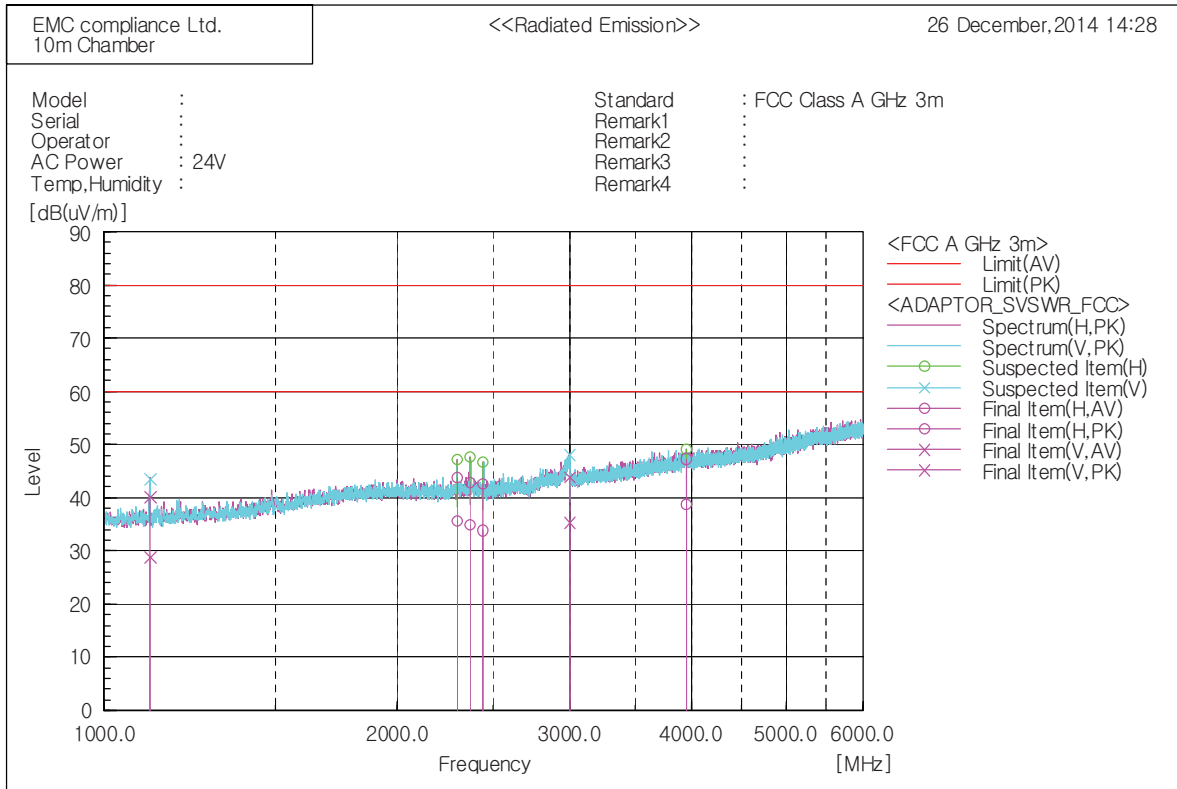
* 30 MHz ~ 1 GHz (SNP-6320RHN)



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	33.516	V	48.8	-14.3	34.5	39.0	4.5	100.0	323.6
2	149.916	H	45.5	-11.9	33.6	43.5	9.9	400.0	244.9
3	175.015	H	46.0	-12.5	33.5	43.5	10.0	400.0	258.4
4	274.925	V	54.6	-10.9	43.7	46.5	2.8	100.0	8.8
5	296.993	H	55.3	-10.1	45.2	46.5	1.3	400.0	252.4
6	325.001	V	46.4	-9.2	37.2	46.5	9.3	100.0	21.2
7	524.943	H	37.8	-3.3	34.5	46.5	12.0	100.0	175.3
8	594.055	H	40.8	-1.2	39.6	46.5	6.9	100.0	282.0

* 1 GHz ~ 6 GHz (SNP-6320RHN)



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]
1	1113.750	V	34.1	45.5	-5.4	28.7	40.1	60.0	80.0	31.3	39.9	100.0	75.6
2	2301.875	H	33.6	41.8	1.9	35.5	43.7	60.0	80.0	24.5	36.3	100.0	348.7
3	2375.625	H	33.0	41.0	1.9	34.9	42.9	60.0	80.0	25.1	37.1	100.0	348.7
4	2449.375	H	31.8	40.6	2.0	33.8	42.6	60.0	80.0	26.2	37.4	100.0	1.0
5	2998.750	V	31.4	40.0	3.8	35.2	43.8	60.0	80.0	24.8	36.2	100.0	264.8
6	3949.375	H	30.2	38.7	8.5	38.7	47.2	60.0	80.0	21.3	32.8	100.0	217.2

7. E.U.T. photographs

Front View



Rear View



Left View



Right View



Top View



Bottom View



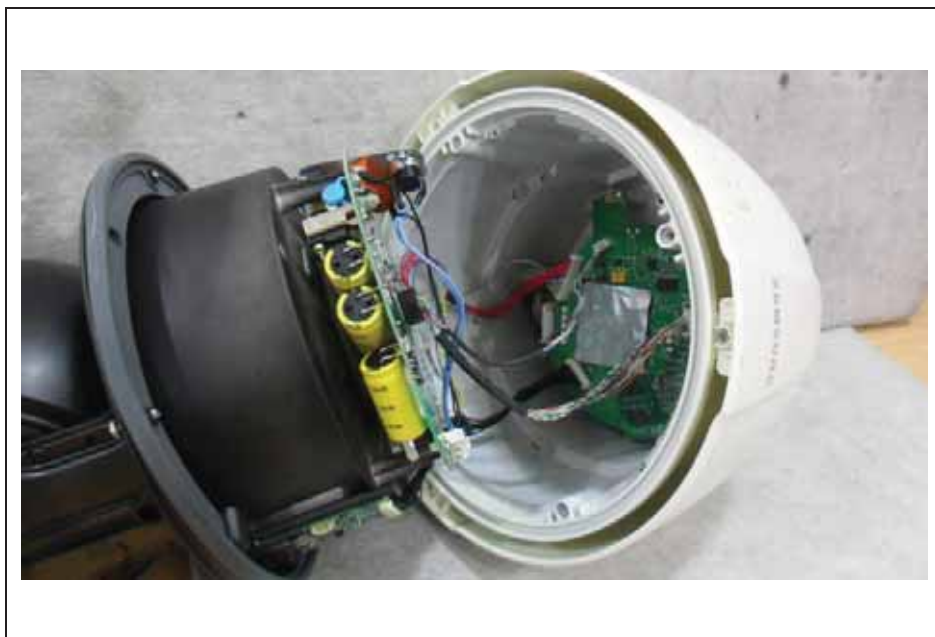
Label



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.

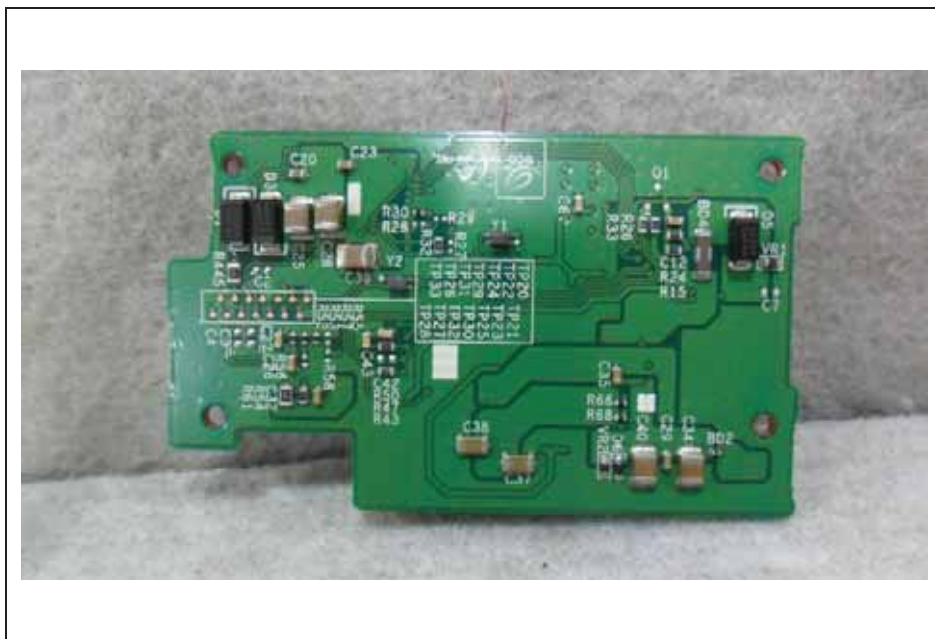
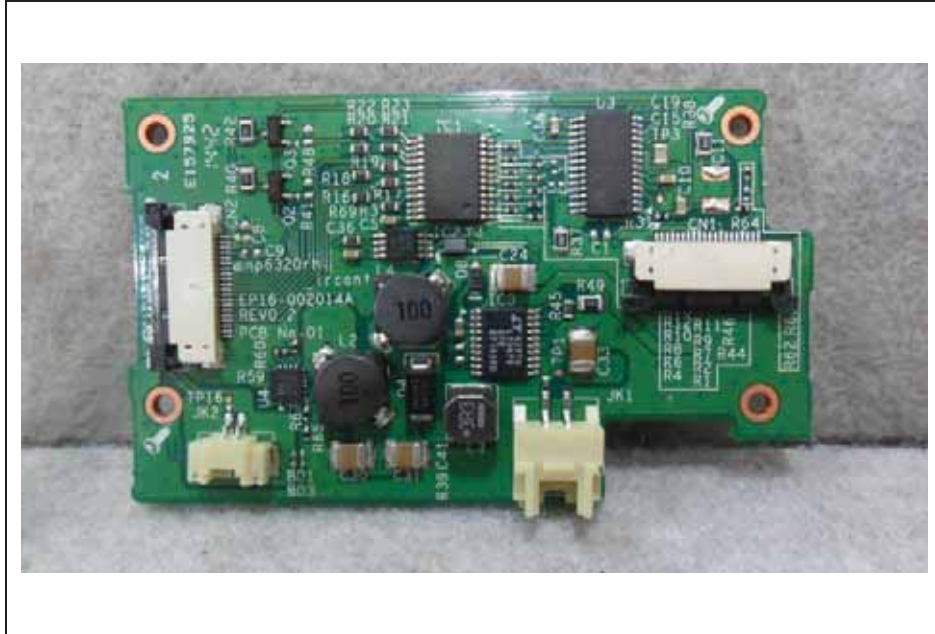
Inside



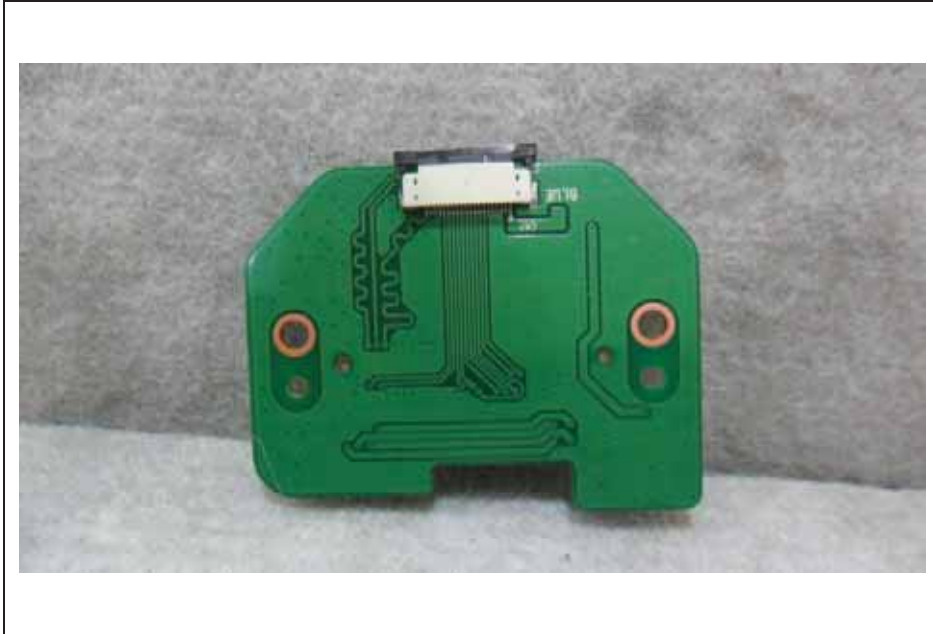
Module Main Board



SUB Board #1



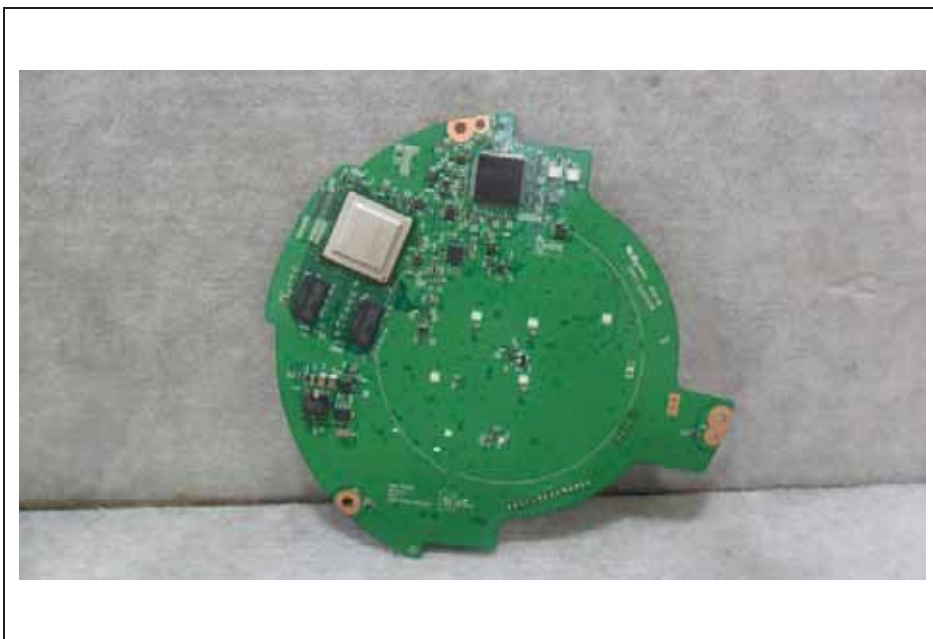
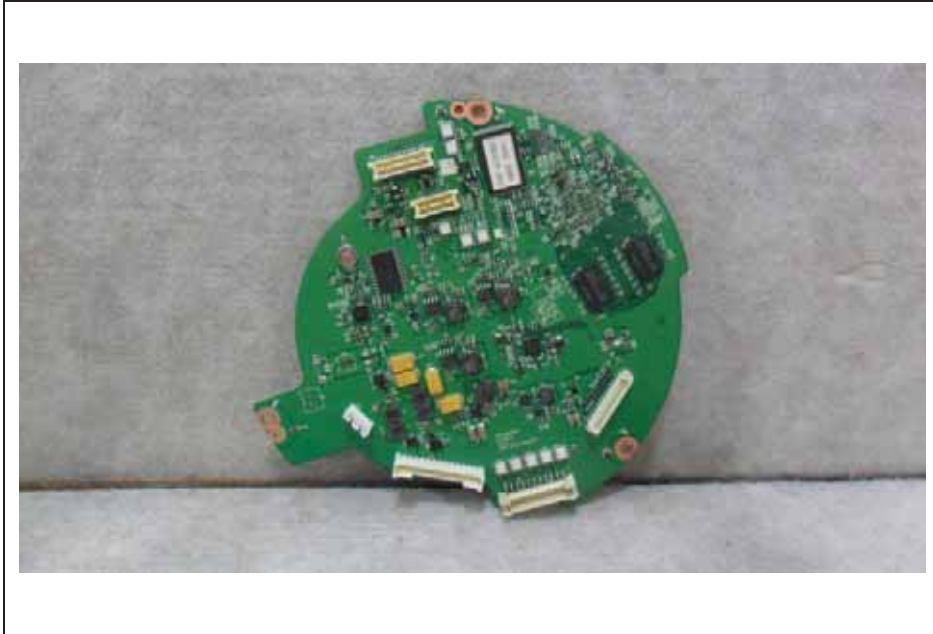
SUB Board #2



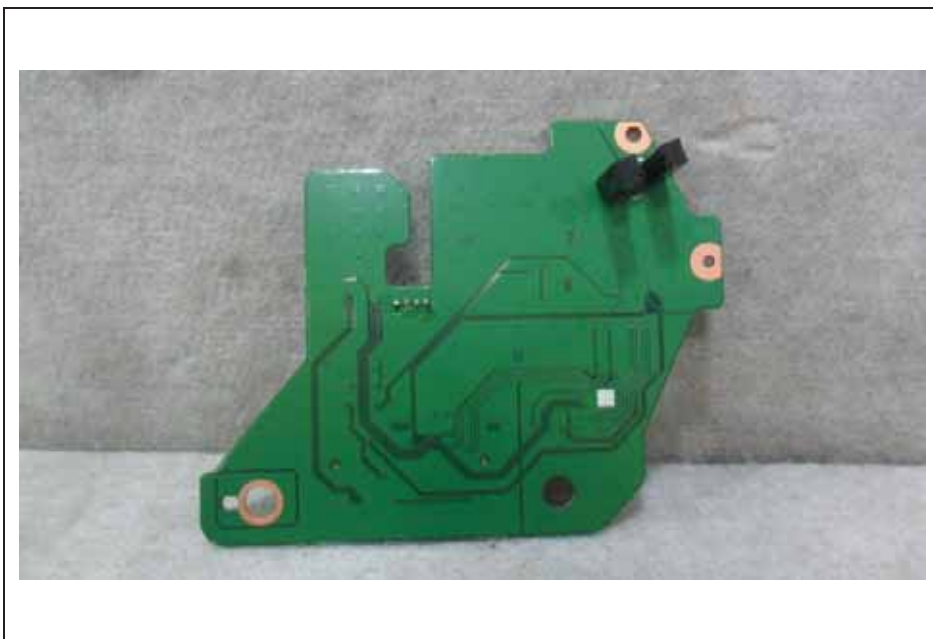
CCD Board



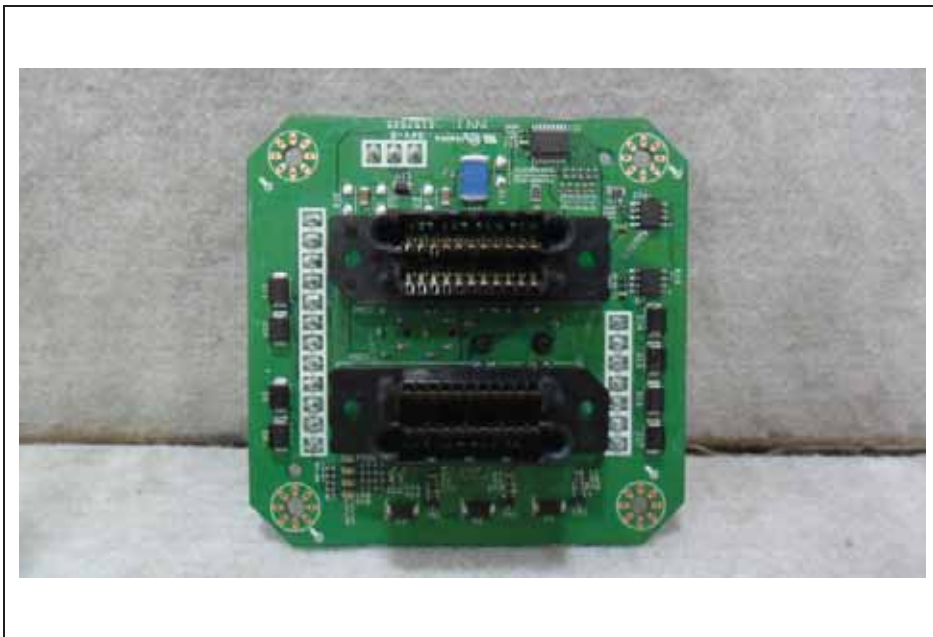
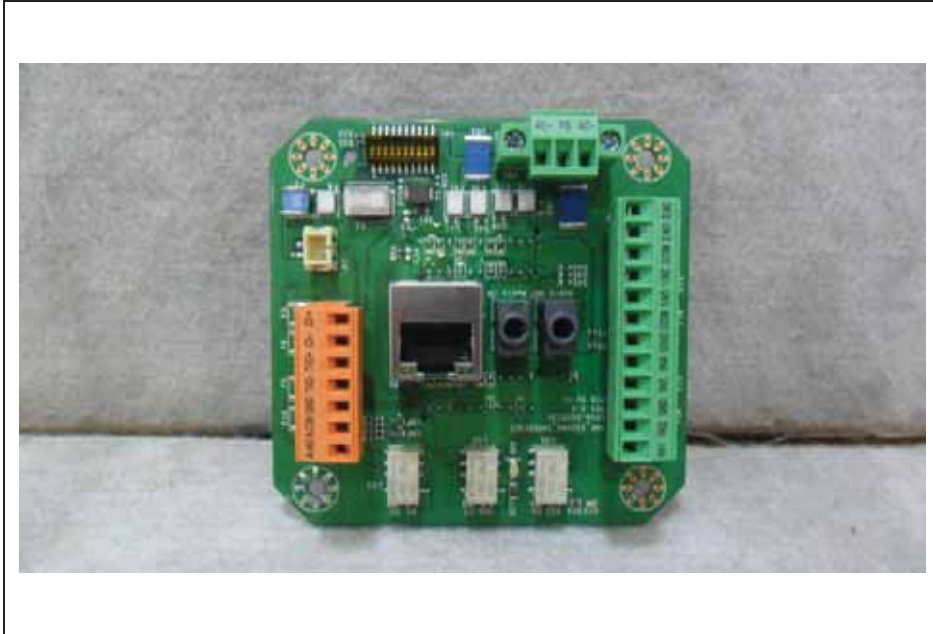
Interface Board



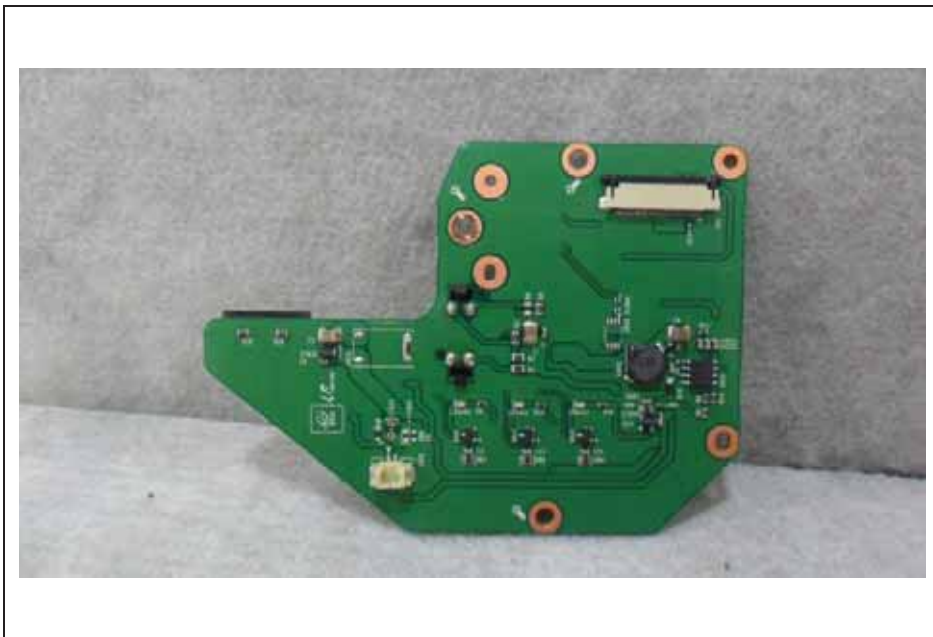
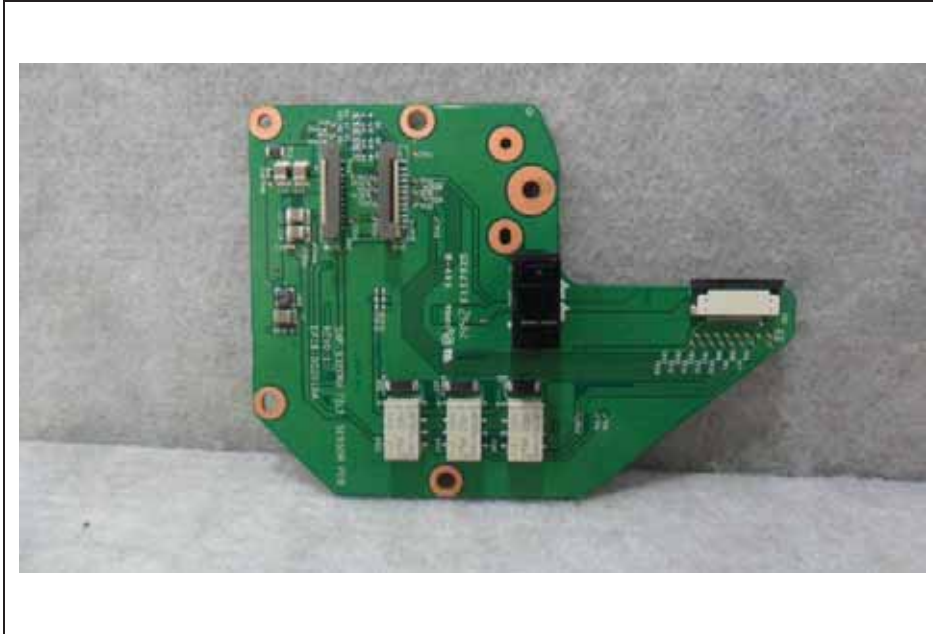
Motion Board



Terminal Board



Tilt Sensor Board



SD Card Board



IR Board



Power Board

