CERTIFICATE of EMC Compliance

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Report No	:	**EMC-FCC-1741**
Type of equipment	:	**PTZ CAMERA**
Model Name	:	**SCP-2371N**
Variant Model Name	:	**SCP-2271N**
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

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

Tel: 82 31 336 9919
Fax: 82 505 299 8311

EMI TEST REPORT

Test report No	:	**EMC-FCC-1741**
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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. 15

Date of testing: 2012. 11. 28

Issued date: 2012. 12. 04

Tested by: JUNG, YOUNG-JUN

Approved by: YEOM, HAN-SEOK

Contents

1. Applicant information

Applicant:	SAMSUNG TECHWIN CO., LTD.
Address:	#42 Seongju-Dong, Changwon-Shi,
	Kyungsangnam-Do, Korea
Telephone:	+82-70-7147-8361
Fax:	+82-31-277-2784
E-mail:	js2002.kang@samsung.com
Contact name:	**Kang Jei Soon**

Manufacturer#1:	SAMSUNG TECHWIN CO., LTD.
Address:	#42 Seongju-Dong, Changwon-Shi,
	Kyungsangnam-Do, Korea
Telephone:	+82-70-7147-8361
Fax:	+82-31-277-2784
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

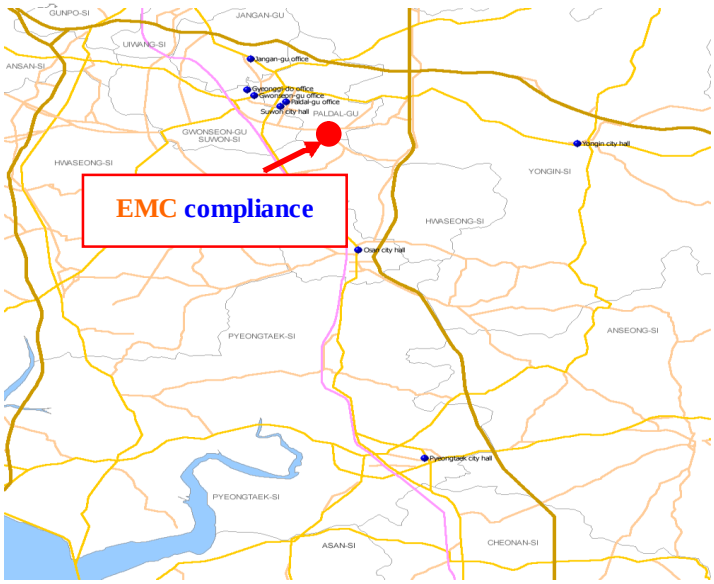
2. Laboratory information

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) :	23 °C	32 % 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 ㎑: ± 3.82 dB 150 ㎑ ~ 30 ㎒: ± 3.43 dB	
Shielded Room (CE#2)	9 ㎑ ~ 150 ㎑: ± 3.82 dB 150 ㎑ ~ 30 ㎒: ± 3.43 dB	
Shielded Room (CE#3)	9 ㎑ ~ 150 ㎑: ± 4.00 dB 150 ㎑ ~ 30 ㎒: ± 3.63 dB	
Radiated Emission measurement (C.L: Approx 95 %, k = 2)		
10 m Chamber (#F4)	30 ㎒ ~ 300 ㎒	3 m: + 4.56 dB, - 4.58 dB 10 m: + 4.56 dB, - 4.56 dB
	300 ㎒ ~ 1 000 ㎒	3 m: + 4.84 dB, - 4.85 dB 10 m: + 4.71 dB, - 4.72 dB
	1 ㎓ ~ 6 ㎓	3 m: + 6.19 dB, - 6.20 dB
	6 ㎓ ~ 18 ㎓	3 m: + 6.41 dB, - 6.53 dB
10 m Chamber (#F2)	30 ㎒ ~ 300 ㎒	3 m: + 4.86 dB, - 4.88 dB 10 m: + 4.86 dB, - 4.86 dB
	300 ㎒ ~ 1 000 ㎒	3 m: + 4.98 dB, - 4.99 dB 10 m: + 4.85 dB, - 4.87 dB
	1 ㎓ ~ 6 ㎓	3 m: + 6.19 dB, - 6.20 dB
	6 ㎓ ~ 18 ㎓	3 m: + 6.41 dB, - 6.53 dB

4. Description of E.U.T.

4.1 General information

Video	SCP-2371N	SCP-2371P
Imaging Device	1/4" Super HAD CCD II	
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	2 : 1 Interlace	
Synchronization	Internal / Line Lock	
Frequency	H : 15.734KHz / V : 59.94Hz	H : 15.625KHz / V : 50Hz
Horizontal Resolution	Color : 600 TV lines, B/W : 700 TV lines	
Min. Illumination	Color : 0.2Lux @ F1.6 (50IRE), 0.0004 Lux (Sens-up, 512x) B/W : 0.02 Lux @ F1.6 (50IRE), 0.00004 Lux (Sens-up, 512x)	
S / N Ratio	52dB (AGC off, Weight on)	
Video Output	CVBS : 1.0 Vp-p / 75Ω composite	
Lens Type		
Focal Length (Zoom Ratio)	3.5~129.5mm (Optical 37x)	
Max. Aperture Ratio	1:1.6 (Wide) ~ 3.9 (Tele)	
Angular Field of View	H : 55.5°(Wide) ~ 1.59°(Tele) / V : 42.5°(Wide) ~ 1.19°(Tele)	
Min. Object Distance	1.8m	
Focus Control	Auto / Manual / One Shot	
Zoom Movement Speed	2.8 sec	
Pan / Tilt		
Pan Range	360° Endless	
Pan Speed	Preset : 500°/sec / Manual : 0.024°/sec ~ 120°/sec (Proportional zoom ratio)	
Tilt Range	-5° ~ 185° (Manual Setup : -15° ~ 195°)	
Tilt Speed	Preset : 500°/sec / Manual : 0.024°/sec ~ 120°/sec (Proportional zoom ratio)	
Preset	255	
Preset Accuracy	±0.1°	
Operational		
On Screen Display	English, Japanese, Spanish, French, Portuguese, Taiwanese, Korean	English, French, German, Spanish, Italian, Chinese, Russian, Polish, Czech,Turkish, Portuguese
Camera Title	Off / On (Displayed 12 characters)	
Day &Night	Auto (ICR) / External / Color / B/W	
Backlight Compensation	BLC / HLC / Off	
Contrast Enhancement	SSDR (Off/On)	
Digital Noise Reduction	SSNR III (Off/On)	
Digital Image Stabilization	Off / On	
Motion Detection	Off / On	
Privacy Masking	Off / On (8 programmable zones)	
Sens-up (Frame Integration)	2x ~ 512x	

Gain Control	Off / Low / Medium / High / Manual	
White Balance	ATW / Outdoor / Indoor / Manual / AWC (1,700K° ~ 11,000K°)	
Electronic Shutter Speed	1/60 ~ 1/120,000 sec	1/50 ~ 1/120,000 sec
Digital Zoom	Off / On (2x ~ 16x)	
Digital Flip	Off / On	
Schedule	Day / Time	
Alarm	8 In 3 Out	
Communication	Coaxial Control (SPC-300 Compatible), RS-485/422	
Protocol	Coax : Pelco-C (Coaxitron) RS-485/422: Samsung-T, Samsung-E, Pelco-D, Pelco-P, Vicon, Honeywell, Panasonic, Bosch, AD, GE	
Environmental		
Operating Temperature / Humidity	-10°C ~ +55°C (+14°F ~ +131°F) / Less than 90% RH	
Electrical		
Input Voltage/Current	24VAC±10%	
Power Consumption	Max. 15W	
Mechanical		
Color / Material	Ivory, Plastic (Dome Cover : Clear)	
Dimension (WxHxD)	Φ152 x 218mm	
Weight	2Kg↓(Not Fixed)	

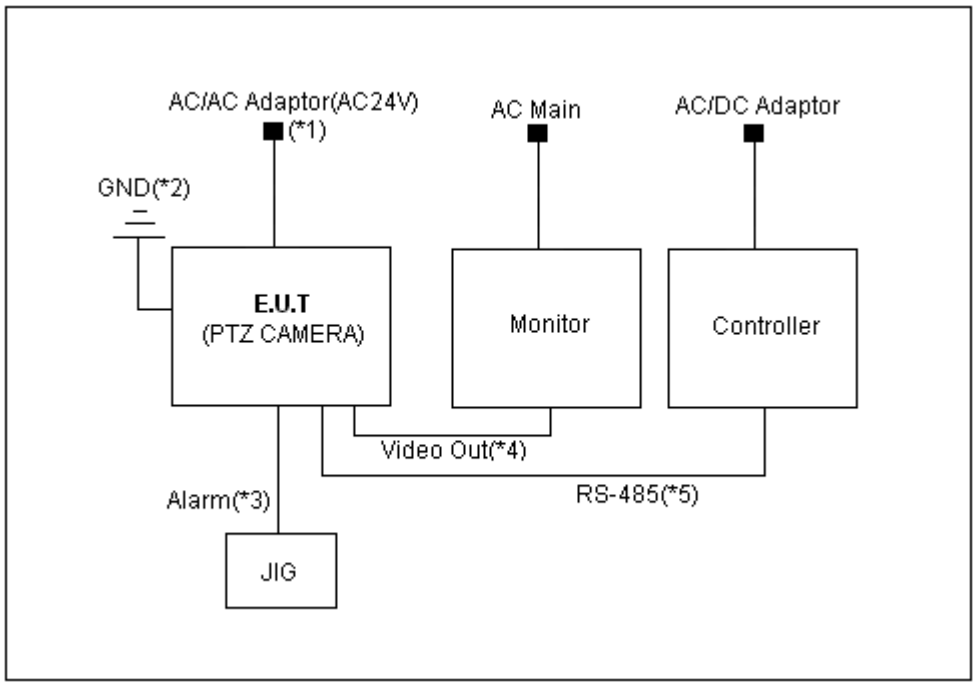
4.2 Product description

Type of product	PTZ CAMERA
Model name (Basic)	SCP-2371N
Model name (Variant)	SCP-2271N
Difference	* magnifications of zoom SCP-2371N: 37X SCP-2271N: 27X
Trade name	-
Serial no	Engineering Sample
Testing voltage	AC 24 V
Product rating	AC 24 V
Internal clock frequency	Above 108 ㎒
Note	* AC/AC adaptor was not provided by the manufacturer.

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
Monitor	SMT-2231P	YDQ03VDBB02500H	SAMSUNG
Controller	SCC-1000	C28667WZ107714Y	SAMSUNG
JIG	-	-	-
AC/AC Adaptor (AC 24 V)	STA-220	-	Dream Electronics

4.4 Test configuration



Note	Start		End		Cable	
*	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	**EUT** (PTZ CAMERA)	Power	AC/AC Adaptor	Power	1.6	Non-Shield
2		GND	GND	GND	2.5	Non-Shield
3		Alarm	JIG	Alarm	3.0	Non-Shield
4		Video Out	Monitor	Video In	3.0	Shield
5		RS-485	Controller	RS-485	3.0	Non-Shield

4.5 Operating conditions

The EUT was configured as normal intended use.

Test mode	Normal operating
1	Camera monitoring mode
	Controller operating mode (Used RS-485)
	JIG operating mode (Used Alarm)

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		
Test facility	10 m Chamber (#F2)		
Test distance	10 m, 3 m		
Date	2012. 11. 28		
Temperature (°C)	23 °C	Humidity (% R.H.)	32 % R.H.
Remarks	Complied		

6.1.1 Limits of radiated emission measurement

Frequency [㎒]	Class A (dB(㎶/m)) @ 10 m	Class B (dB(㎶/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:

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

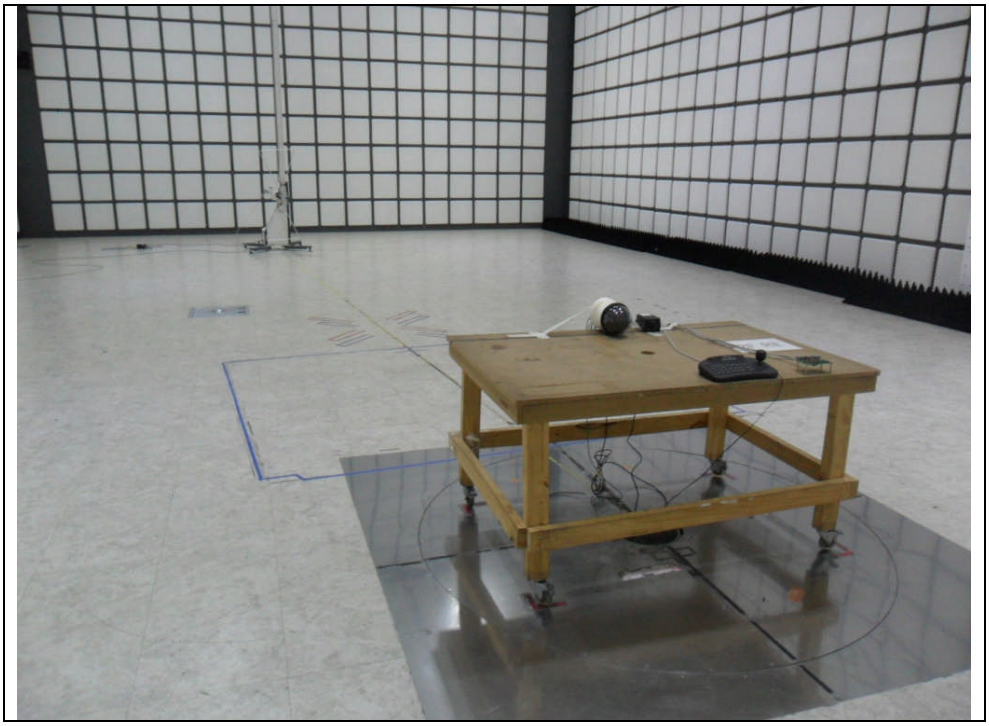
3 dB Att = 3 dB Attenuator

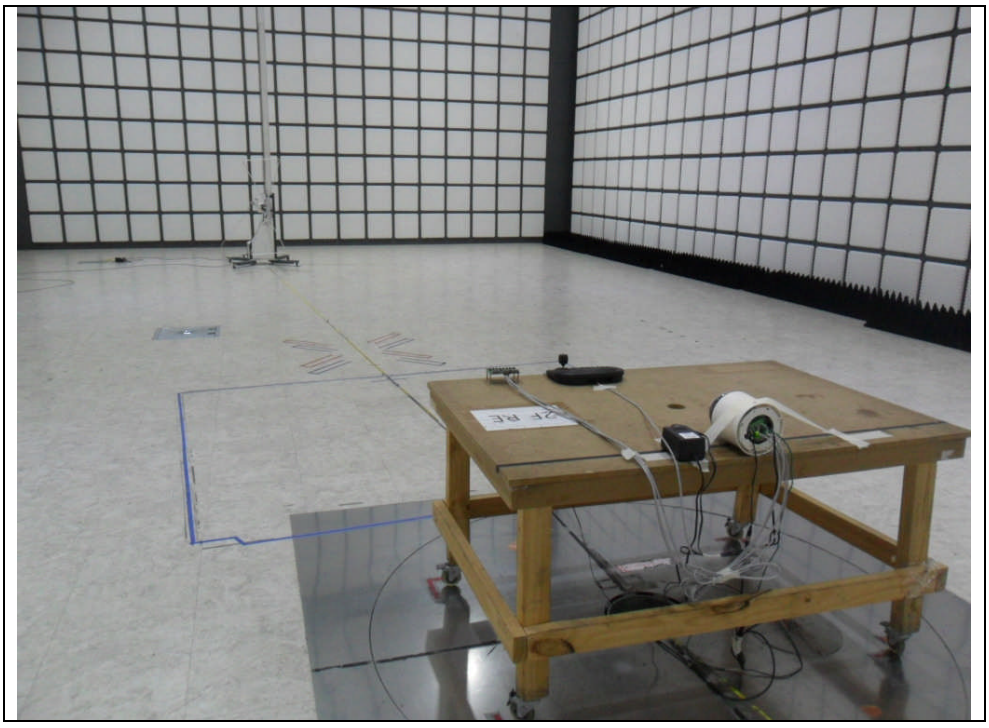
If M.R is 30 dB, A.F 12 dB, C.L 5 dB, 3 dB, A.G 35 dB

The result is 30 + 12 + 5 + 3 – 35 = 15 dB(μV/m)

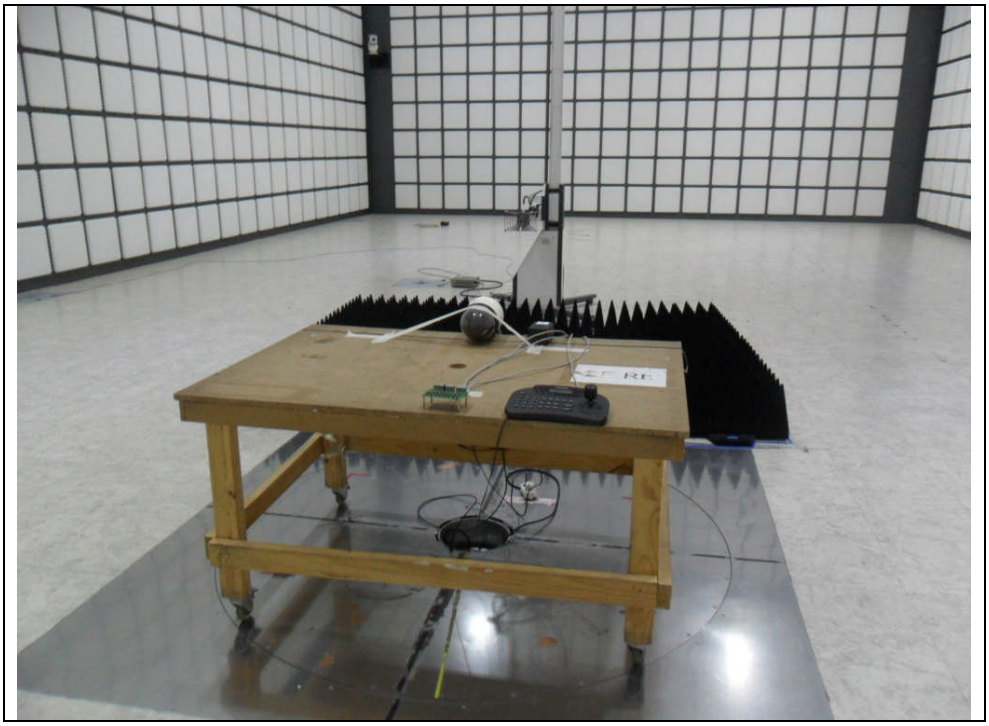
6.1.5 Photographs of test setup

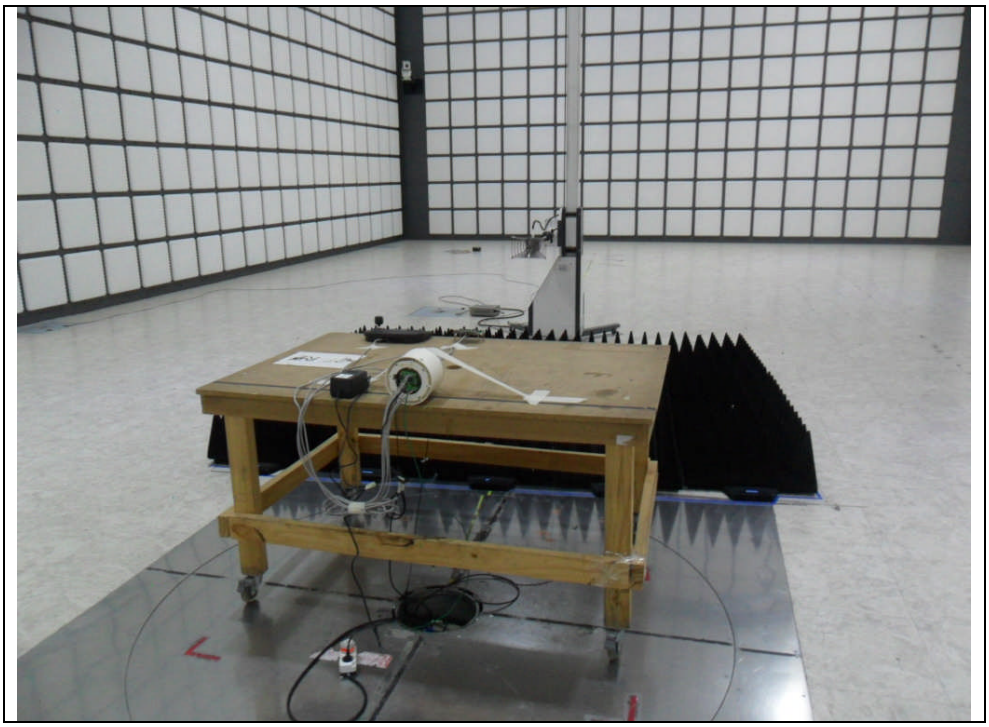
* 30 ㎒ ~ 1 ㎓





* 1 ㎓ ~ 5 ㎓

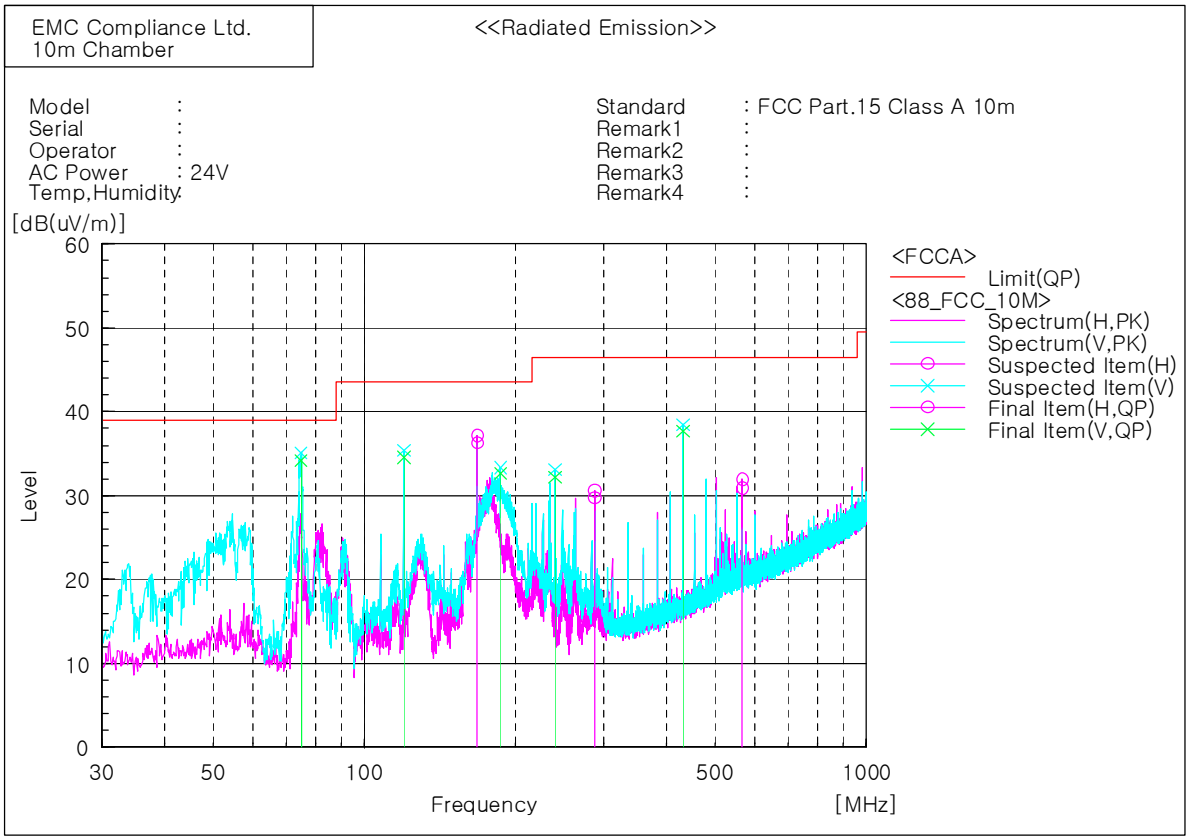




6.1.6 Radiated emission measurement result

*** Graph and Data**

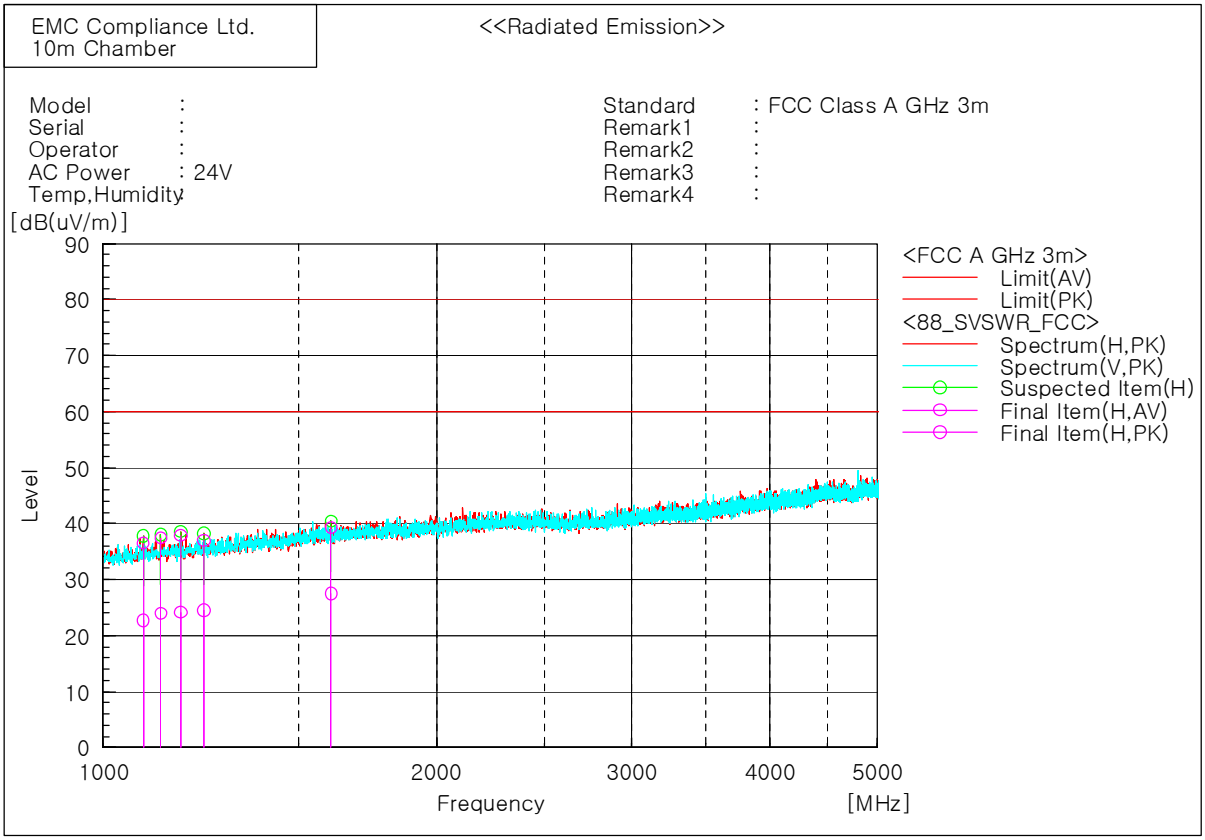
* 30 ㎒ ~ 1 ㎓ (SCP-2371N)



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	74.863	V	50.7	-16.5	34.2	39.0	4.8	100.0	80.2
2	119.968	V	50.3	-15.7	34.6	43.5	8.9	100.0	98.3
3	167.983	H	49.7	-13.4	36.3	43.5	7.2	400.0	255.4
4	186.655	V	47.9	-15.2	32.7	43.5	10.8	100.0	111.8
5	240.005	V	46.6	-14.4	32.2	46.5	14.3	100.0	72.7
6	288.020	H	42.0	-12.2	29.8	46.5	16.7	400.0	24.6
7	432.065	V	45.9	-8.2	37.7	46.5	8.8	100.0	336.5
8	567.501	H	35.6	-4.7	30.9	46.5	15.6	100.0	285.2

* 1 ㎓ ~ 5 ㎓ (SCP-2371N)



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]	Remark
1	1087.500	H	31.5	45.3	-8.8	22.7	36.5	60.0	80.0	37.3	43.5	100.0	359.8	
2	1128.125	H	32.3	45.7	-8.3	24.0	37.4	60.0	80.0	36.0	42.6	100.0	148.8	
3	1175.625	H	31.9	45.7	-7.8	24.1	37.9	60.0	80.0	35.9	42.1	100.0	30.1	
4	1233.125	H	31.7	44.2	-7.2	24.5	37.0	60.0	80.0	35.5	43.0	100.0	7.6	
5	1606.875	H	31.8	43.6	-4.3	27.5	39.3	60.0	80.0	32.5	40.7	100.0	323.2	

7. E.U.T. photographs

Front View

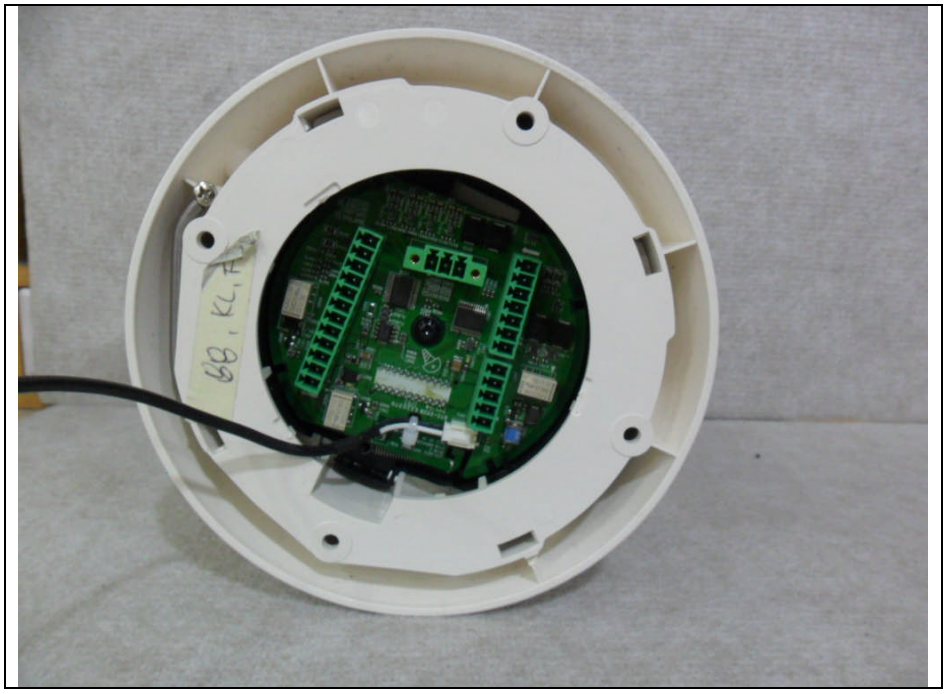
Rear View

Left View

Right View

Top View

Bottom View



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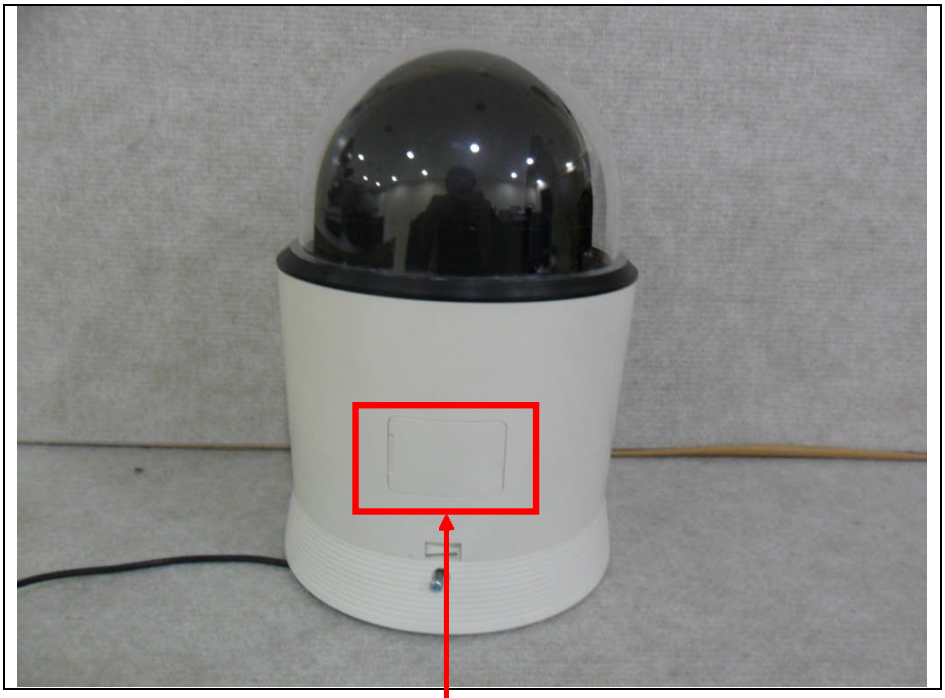
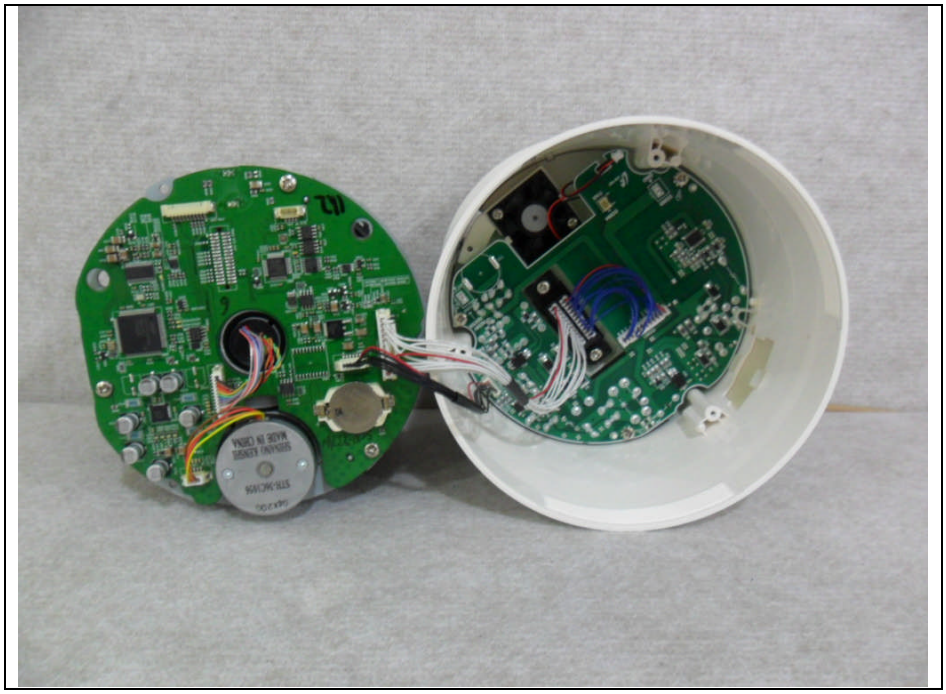


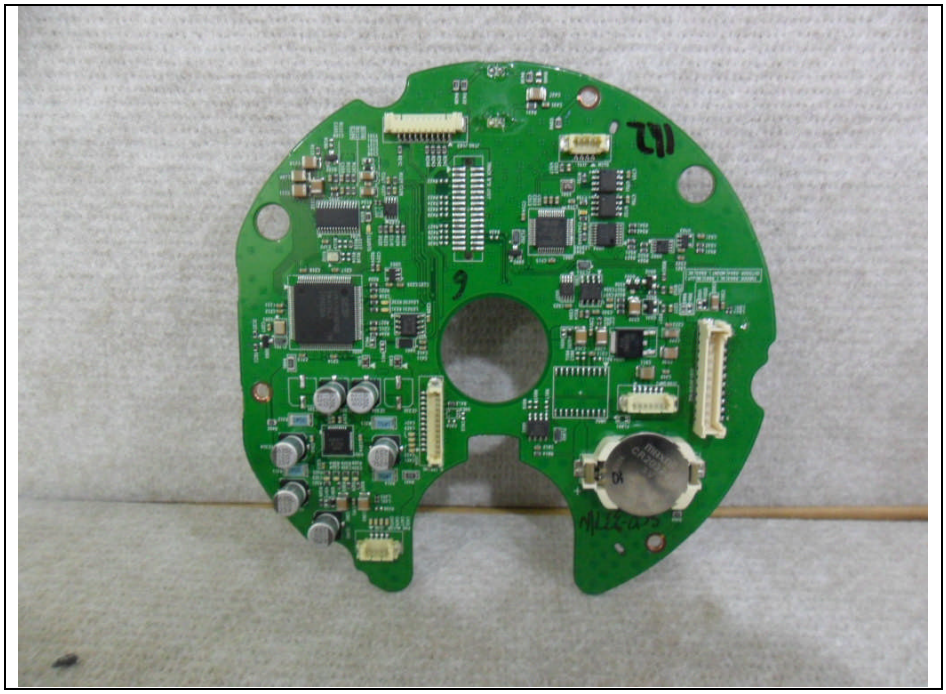
FCC Label Location

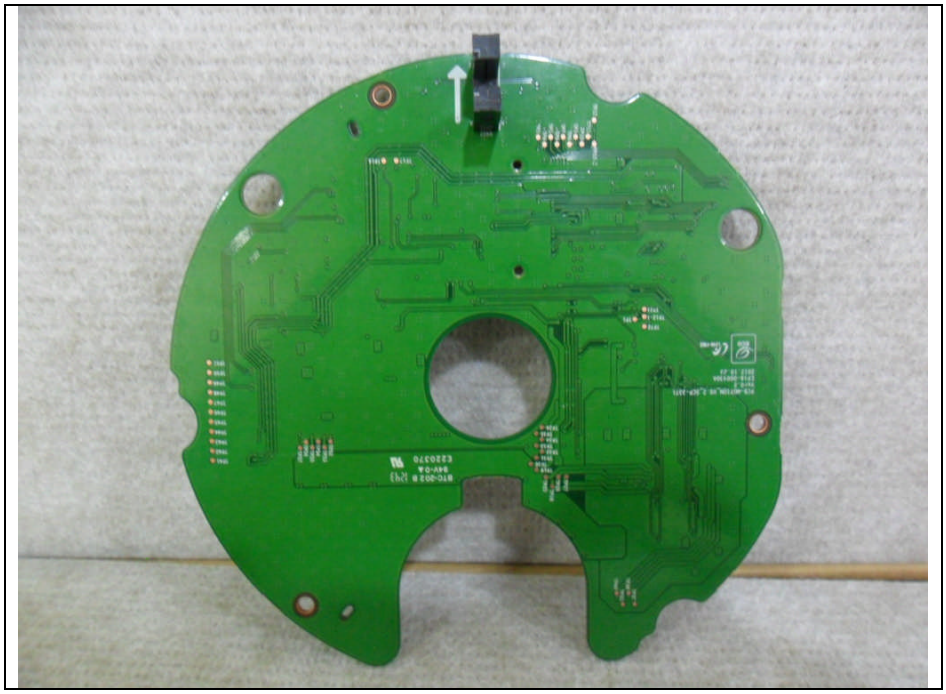
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Inside

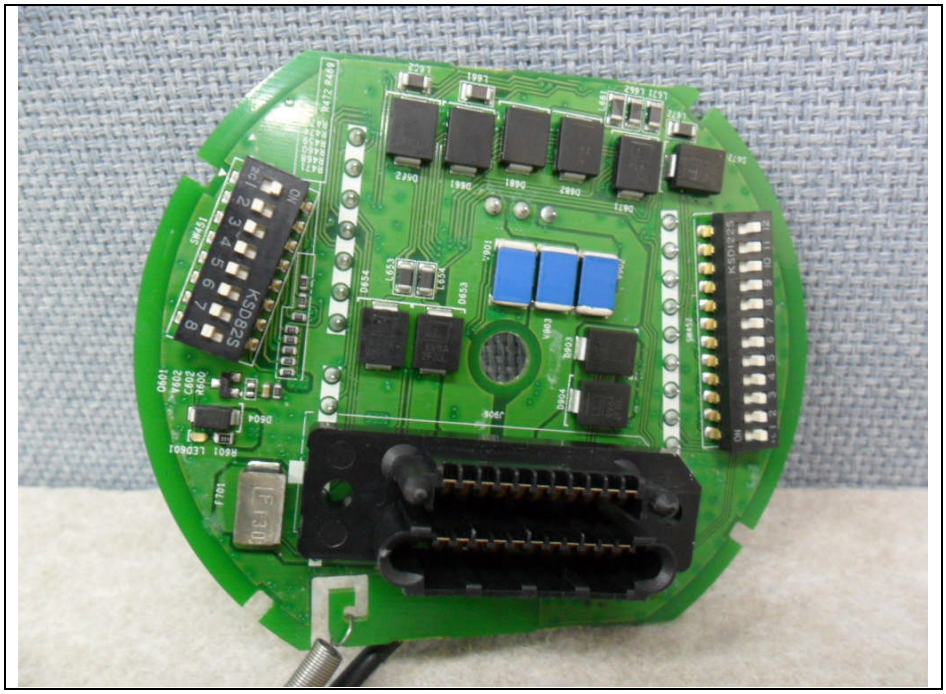


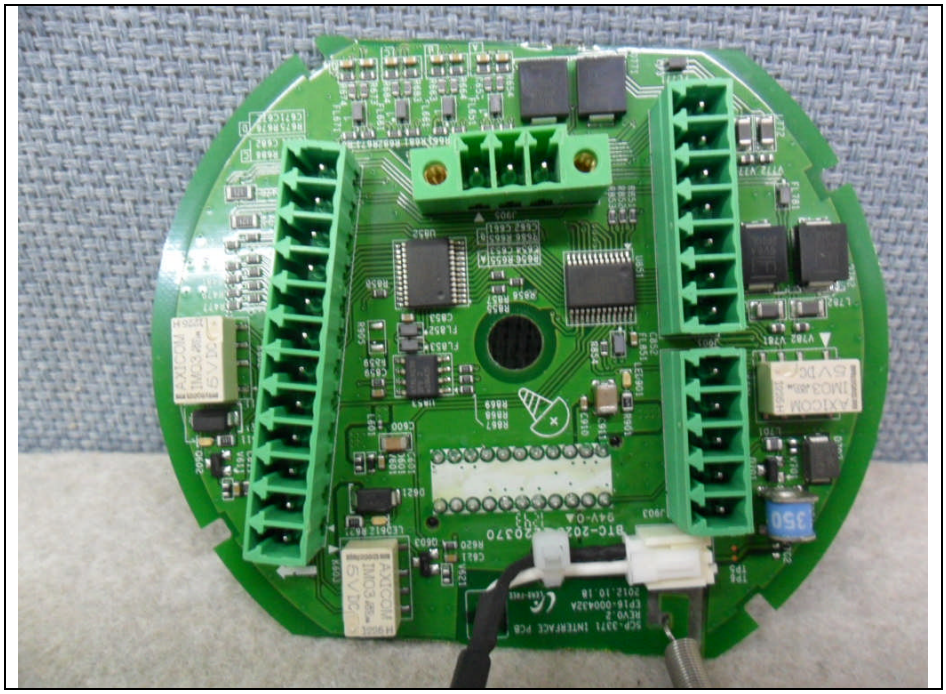
Main Board



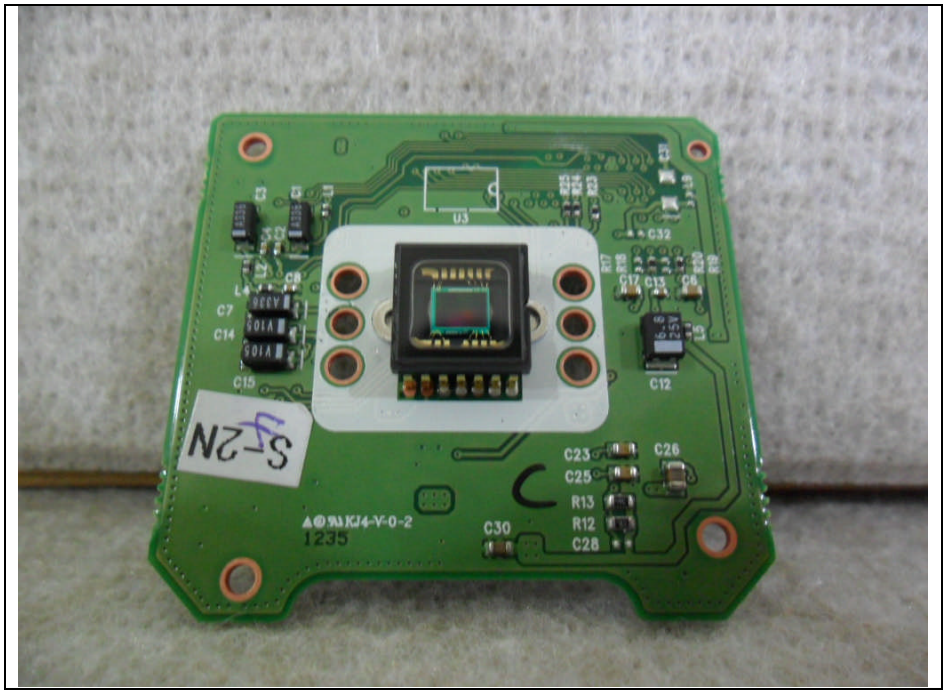


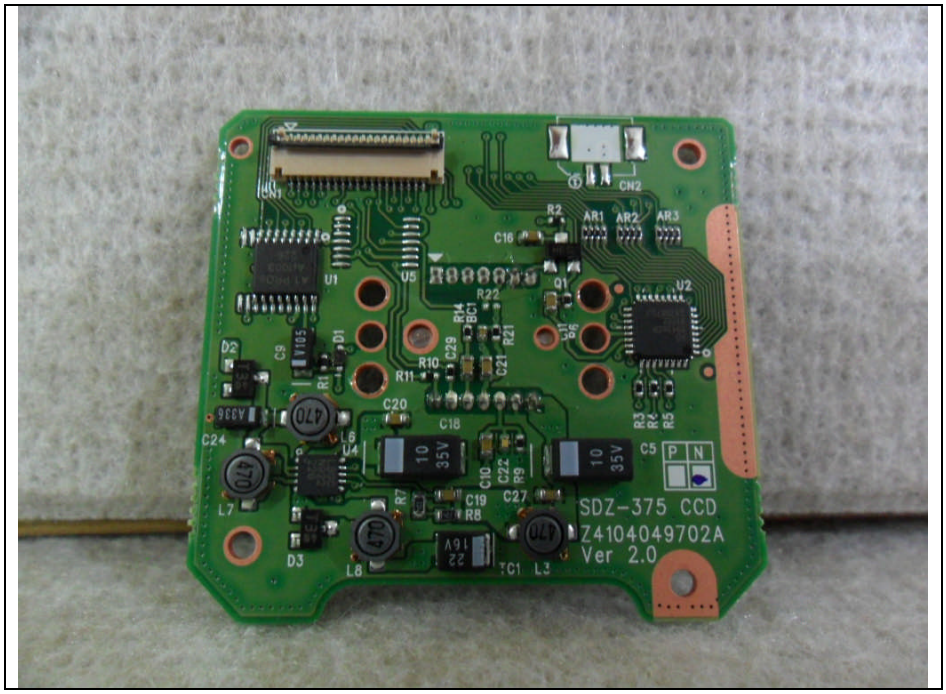
Terminal Board





CCD Board





CCD Main Board