

CERTIFICATE of EMC Compliance

Report No: EMC-FCC-1348
Type of equipment: NETWORK VIDEO ENCODER
Model Name: SPE-101N
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.



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 31 336 4767

EMI TEST REPORT

Test report No.: EMC-FCC-1348
Type of Equipment: NETWORK VIDEO ENCODER
Model Name: SPE-101N
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
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. 08. 03

Date of testing: 2011. 08. 15

Issued date: 2011. 08. 24

Tested by:


CHO, MOON-SUP

Approved by:


YEOM, HAN-SEOK

Contents

1. Applicant information	3
2. Laboratory information	4
3. Test system configuration.....	5
3.1 Operation environment	5
3.2 Measurement Uncertainty	5
4. Description of E.U.T.	6
4.1 General information.....	6
4.2 Product description	7
4.3 Auxiliary equipments	7
4.4 Test configuration	8
4.5 Operating conditions	10
5. Summary of test results	11
5.1 Modification to the E.U.T.	11
5.2 Summary of EMI emission test results	11
6. Test results	12
6.1 Radiated Emission	12
7. E.U.T. photographs.....	22

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 31 336 4767

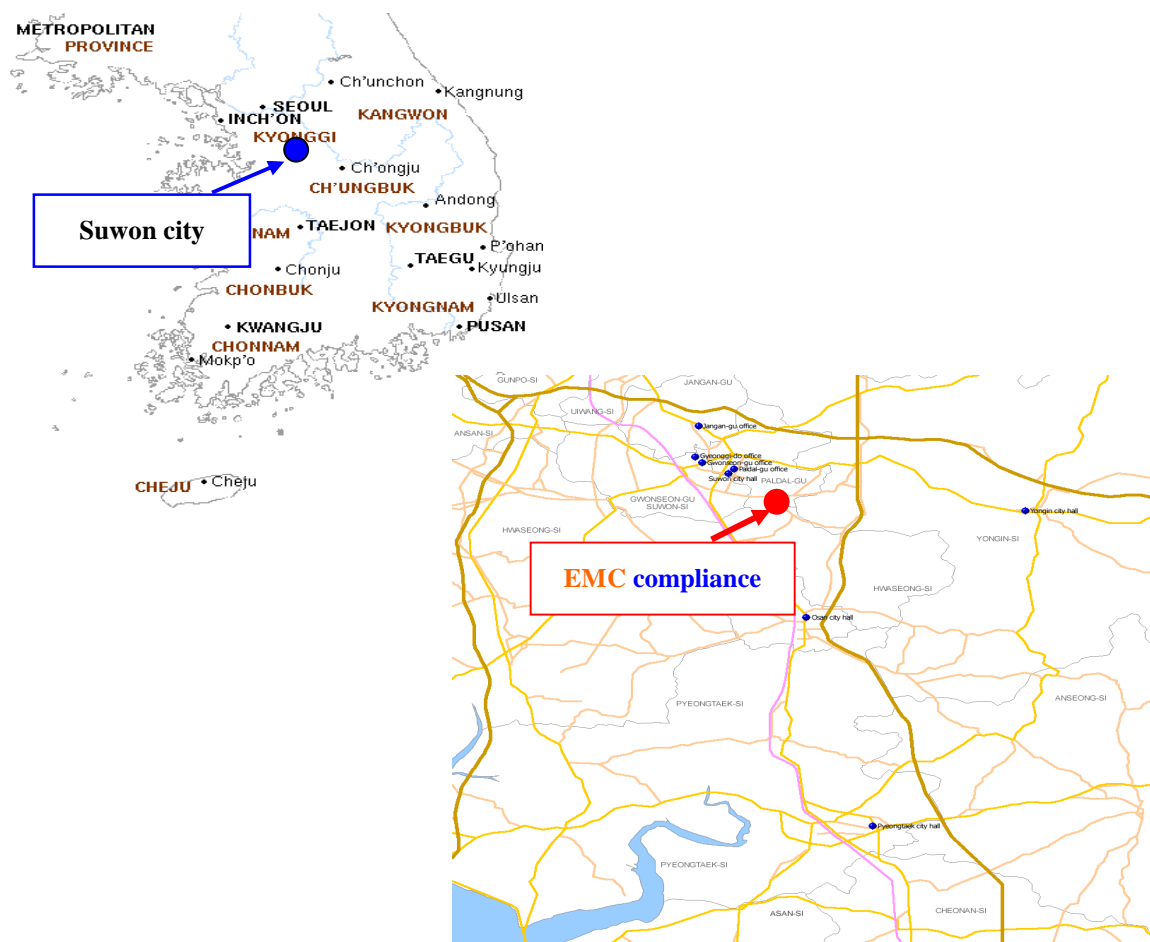
FCC CAB.: KR0040

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)	: 26 °C	48 % R.H.	-

Test site

These testing items were performed following locations;

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

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

	SPE-101N	SPE-101P
Operational		
Video In	CVBS : 1.0 Vp-p / 75Ω composite, NTSC/PAL Auto Detection	
De-interlacing Filter	Built-in	
Event Trigger	Motion Detection, Video Loss	
Remote Control Interface	1ea RS-422/485	
RS-485 Protocol	SAMSUNG-T/E, PELCO-P/D, Panasonic, VICON, Honeywell, AD, GE, BOSCH, SUNGJIN	
Network		
Ethernet	RJ-45 (10/100BASE-T)	
Video Compression Format	H.264, MPEG-4, Motion JPEG	
Resolution	704x480, 640x480, 352x240, 320x240	704x576, 640x480, 352x288, 320x240
Max. Framerate	30fps	25fps
Video Quality Adjustment	H.264, MPEG-4 : Compression Level, Target Bitrate Level Control Motion JPEG : Quality Level Control	
Bitrate Control Method	H.264, MPEG-4 : CBR or VBR Motion JPEG : VBR	
Streaming Capability	Multiple Streaming (Up to 10 Profiles)	
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	
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x	
Streaming Method	Unicast / Multicast	
Max. User Access	10 users at Unicast Mode	
ONVIF Conformance	Yes	
Web Viewer	Supported OS : Window XP(service pack 2 이상), Vista, 7, Mac OS X(10.4.8 이상) Supported Browser : MS IE 7.x, 8.x, FireFox 2.x, 3.x, Safari 3, 4, Google Chrome	
Central Management Software	NET-i viewer	
Environmental		
Operating Temperature / Humidity	-10°C ~ +50°C (+14°F ~ +122°F) / 20% ~ 80% RH	
Ingress Protection	-	
Electrical		
Input Voltage / Current	PoE(IEEE802.3af), DC12V	
Power Consumption	Max. 3.2W or 200mA	
Mechanical		
Color / Material	White/Mold, Silver/Press	
Dimension (WxHxD)	W43 x H29 x D95.5mm (1.69" x 1.41" x 3.76"), Connector included	
Weight	115g	

4.2 Product description

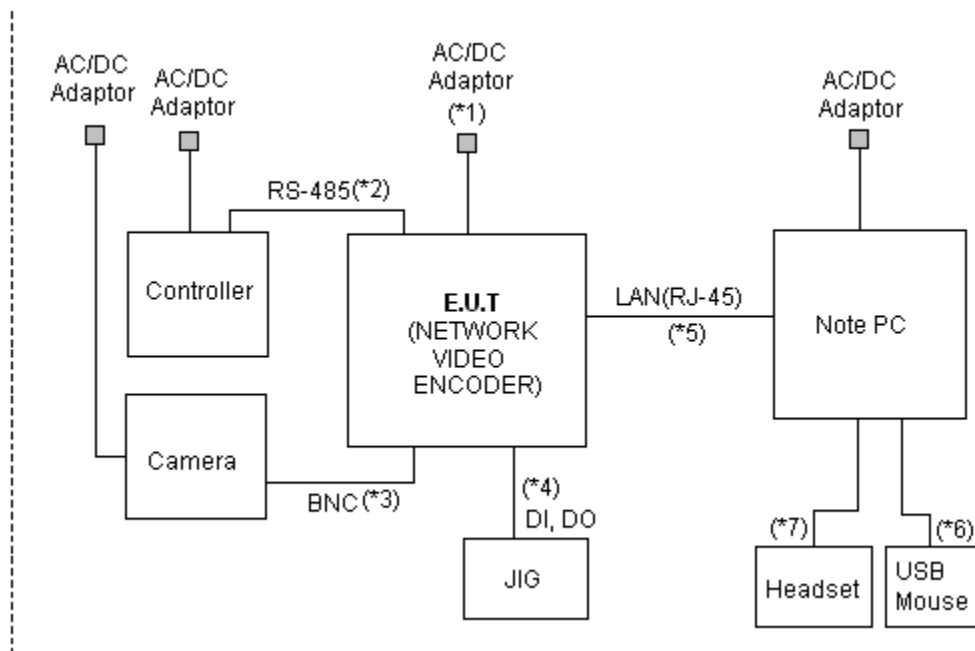
Type of product	NETWORK VIDEO ENCODER
Model name (Basic)	SPE-101N
Model name (Variant)	N/A
Difference	-
Trade name	-
Serial no	Engineering Sample
Testing voltage	DC 12 V / PoE
Product rating	DC 12 V / PoE
Internal clock frequency	108 MHz
Note	* AC/DC adaptor was not provided by the manufacturer. * PoE Switch was not provided by the manufacturer.

4.3 Auxiliary equipments

Type	Model / Part #	Serial number	Manufacturer
Note PC	C1321	472680432036	FUJITSU
USB Mouse	1088	8165900106545	Microsoft
JIG	-	-	-
Headset	SHS-250V	-	SAMSUNG
Controller	SC-3000	-	CNB
Camera	SDC-435P	C08C6V3Z245129	SAMSUNGTECHWIN
AC/DC adaptor	DAD12050DKA	-	Dream Electronics

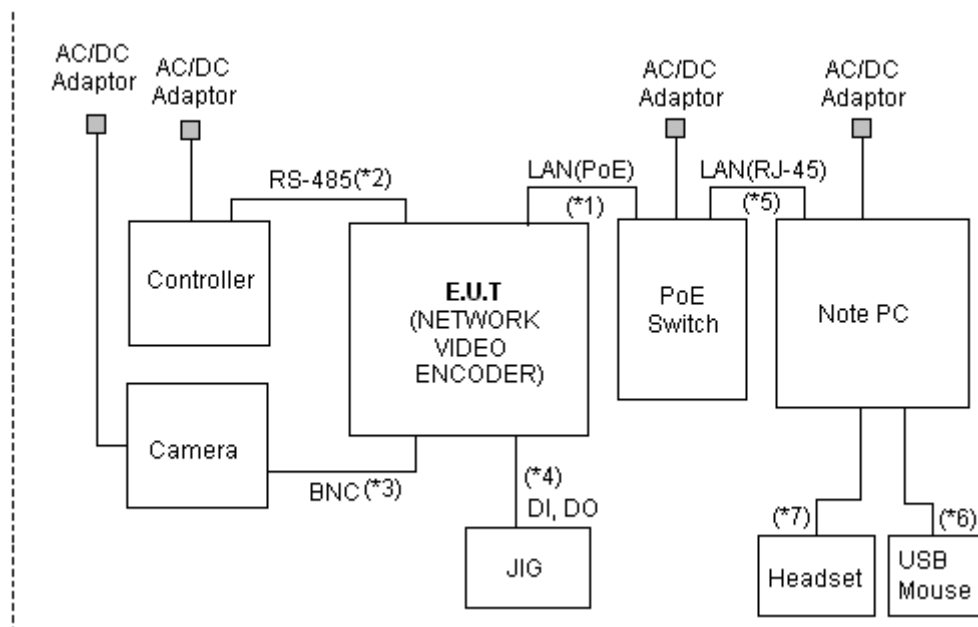
4.4 Test configuration

* AC/DC adaptor (DC 12V)



Note	Start		End		Cable	
*	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT (NETWORK VIDEO ENCODER)	Power	AC/DC Adaptor	Power	1.6	Non-Shield
2		RS-485	Controller	RS-485	3.0	Non-Shield
3		BNC	Camera	BNC	3.0	Shield
4		DI, DO	JIG	DI, DO	3.0	Non-Shield
5		LAN(RJ-45)	Note PC	LAN(RJ-45)	3.0	Non-Shield
6	Note PC	USB	USB Mouse	USB	1.7	Shield
7		Headset	Headset	Headset	2.0	Non-Shield

* PoE



* Power supplied from PoE Switch*

Note	Start		End		Cable	
*	Name	I/O port	Name	I/O port	Length (m)	Spec.
1	EUT (NETWORK VIDEO ENCODER)	LAN(PoE)	PoE Switch	LAN(PoE)	3.0	Non-Shield
2		RS-485	Controller	RS-485	3.0	Non-Shield
3		BNC	Camera	BNC	3.0	Shield
4		DI, DO	JIG	DI, DO	3.0	Non-Shield
5		LAN(RJ-45)	PoE Switch	LAN(RJ-45)	3.0	Non-Shield
6	Note PC	USB	USB Mouse	USB	1.7	Shield
7		Headset	Headset	Headset	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	Web viewer test mode.

* 2 types of powers are available for the product that are AC/DC adaptor (DC 12 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 - DC 12 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	Web viewer test mode.		
Date	2011. 08. 15		
Testing voltage	DC 12 V / PoE		
Test facility	10 m Chamber (Test distance: 10 m, 3 m)		
Temperature (°C)	26 °C	Humidity (% R.H.)	48 % R.H.
Remarks	Complied 30 MHz ~ 1 GHz Minimum limit margin is 5.8 dB at 64.173 MHz (AC/DC adaptor(DC 12 V)) 1 GHz ~ 2 GHz Minimum limit margin is 29.4 dB at 1134.250 MHz (PoE_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 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	11.12.01	<input checked="" type="checkbox"/>
Bi-Log Antenna	VULB 9168	9168-440	SCHWARZBECK	13.07.08	<input checked="" type="checkbox"/>
Amplifier	310N	293004	SONOMA INSTRUMENT	11.12.01	<input checked="" type="checkbox"/>
3 dB Attenuator	8491A	27444	HP	11.11.30	<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"/>
Amplifier	8449B	3008A01802	AGILENT	12.05.11	<input checked="" type="checkbox"/>
Horn ANT	3115	00086706	ETS	11.12.22	<input checked="" type="checkbox"/>
Spectrum Analyzer	FSP7	100289	R&S	11.12.17	<input checked="" 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

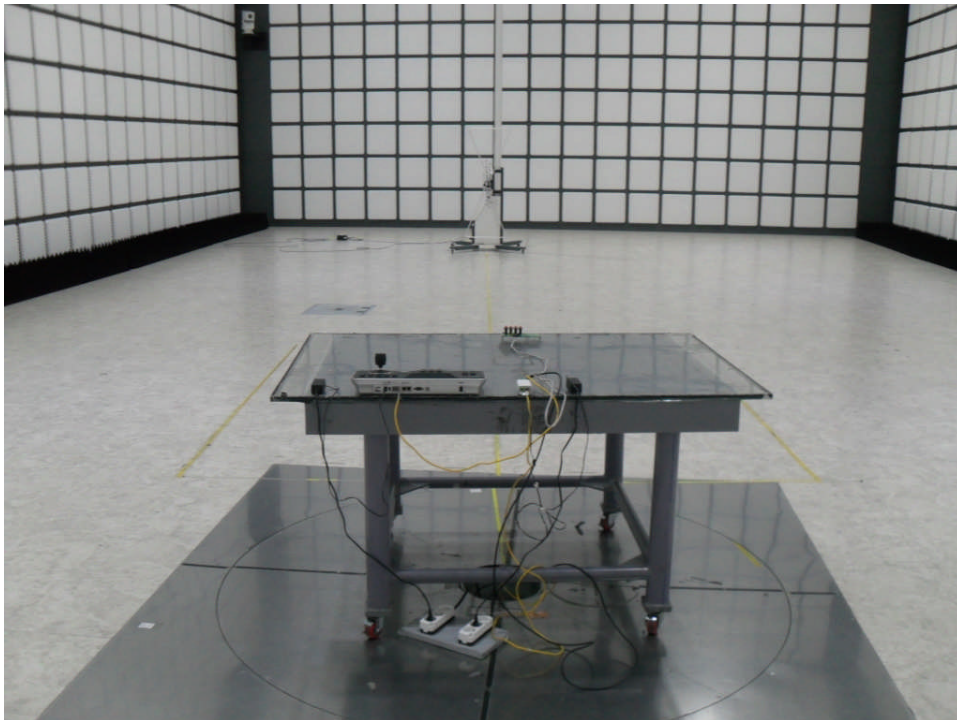
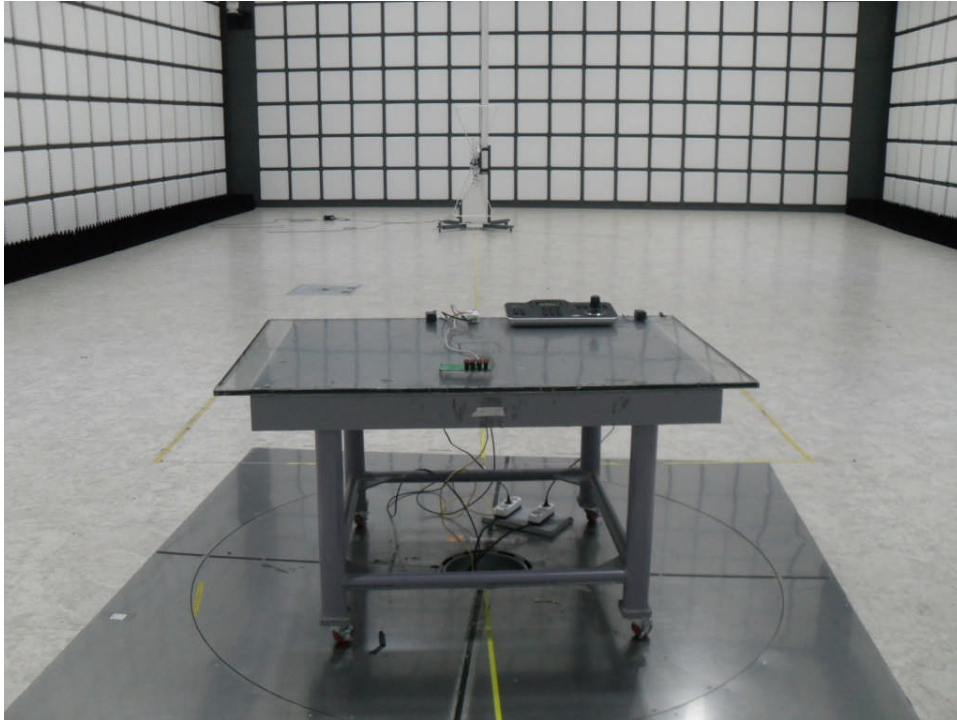
If M.R is 30 dB, A.F 12 dB, C.L 5 dB, 3 dB, A.G 35 dB

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

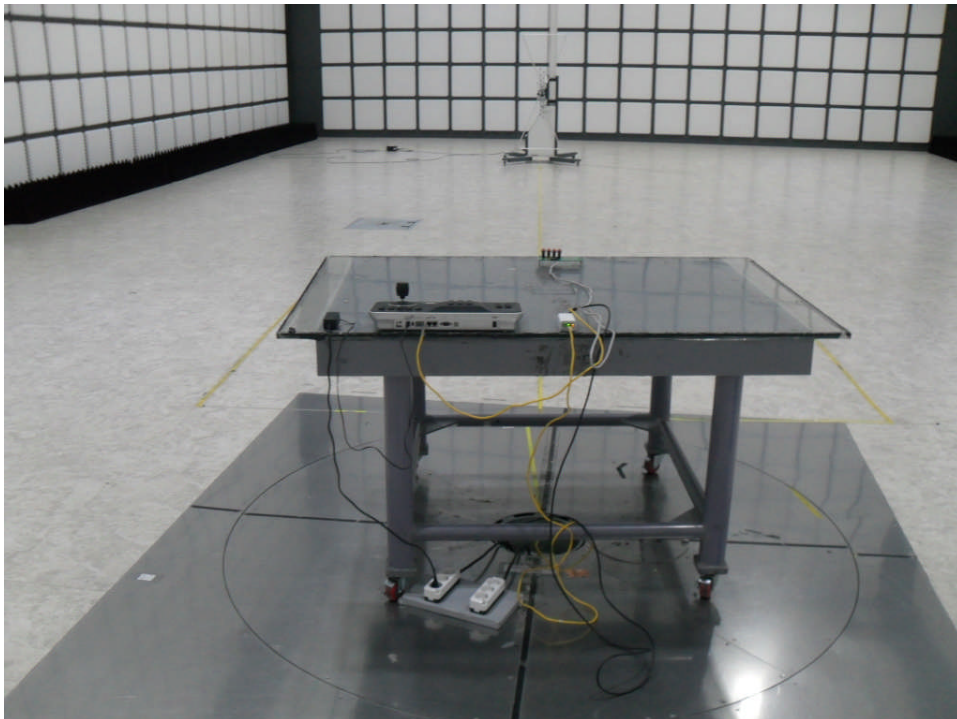
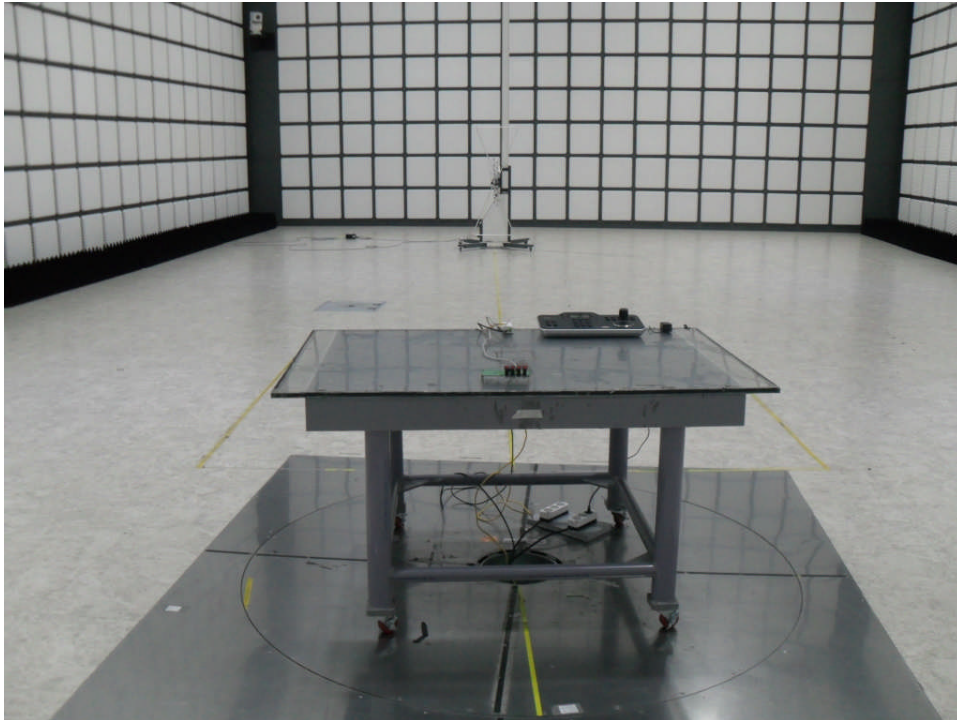
6.1.5 Photographs of test setup

* 30 MHz ~ 1 GHz

* AC/DC adaptor(DC 12 V)

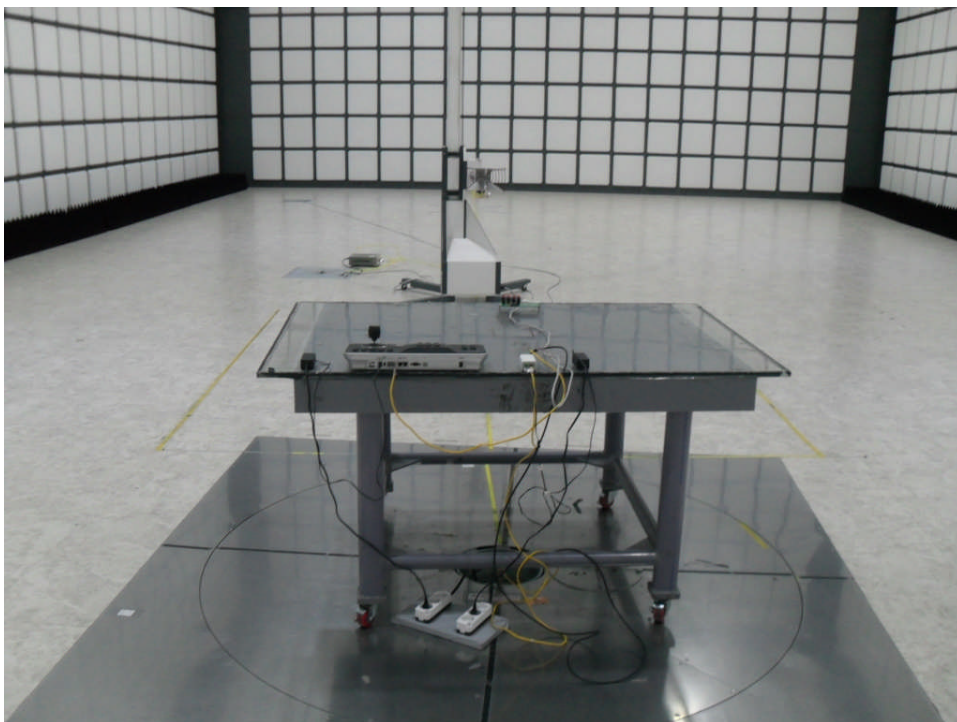
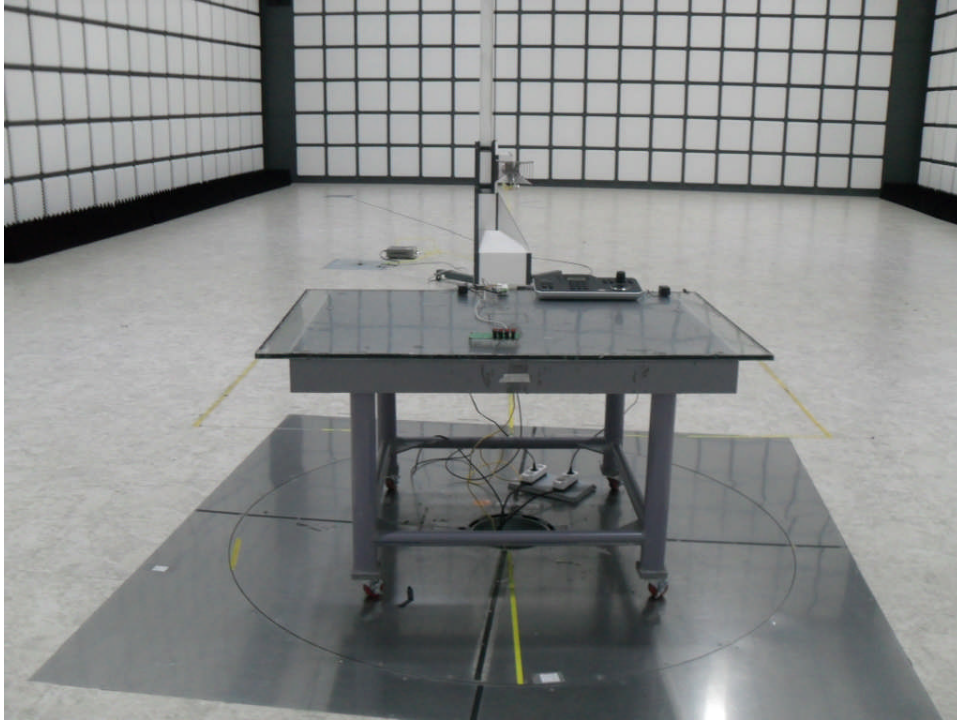


* PoE

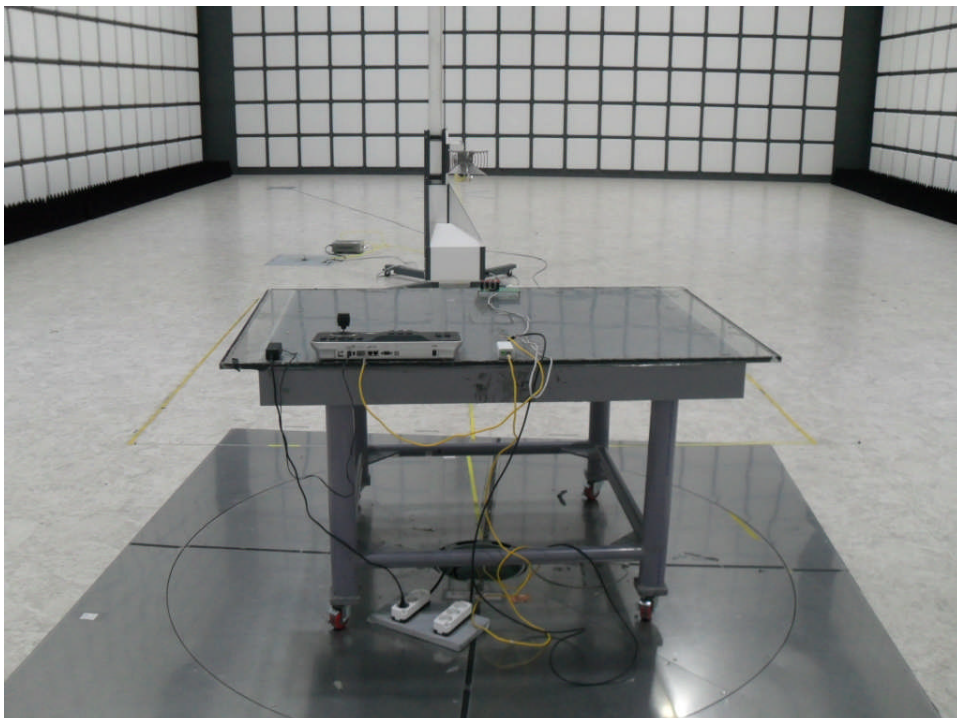
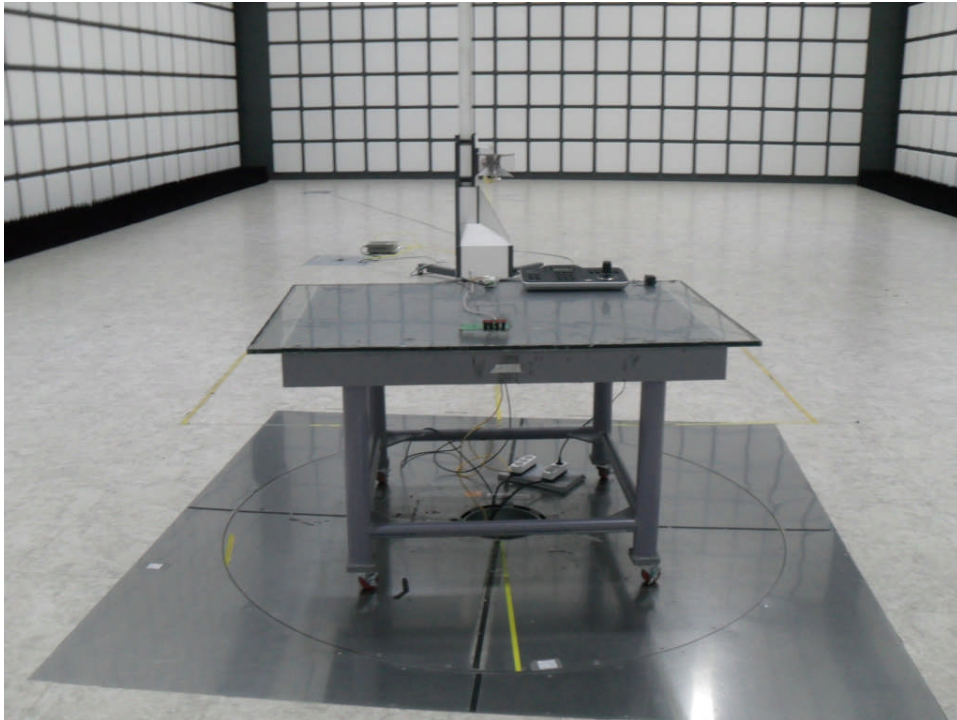


* 1 GHz ~ 2 GHz

* AC/DC adaptor(DC 12 V)



* PoE

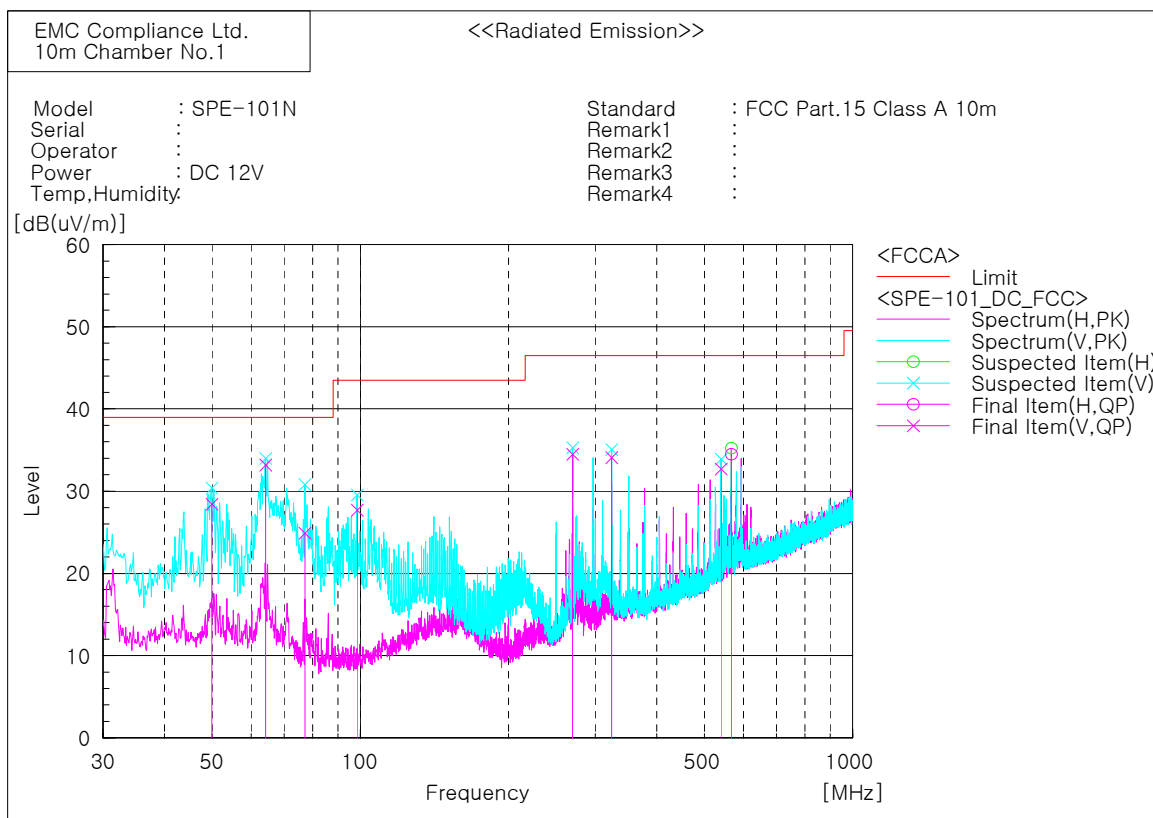


6.1.6 Radiated emission measurement result

* Graph and Data

* 30 MHz ~ 1 GHz

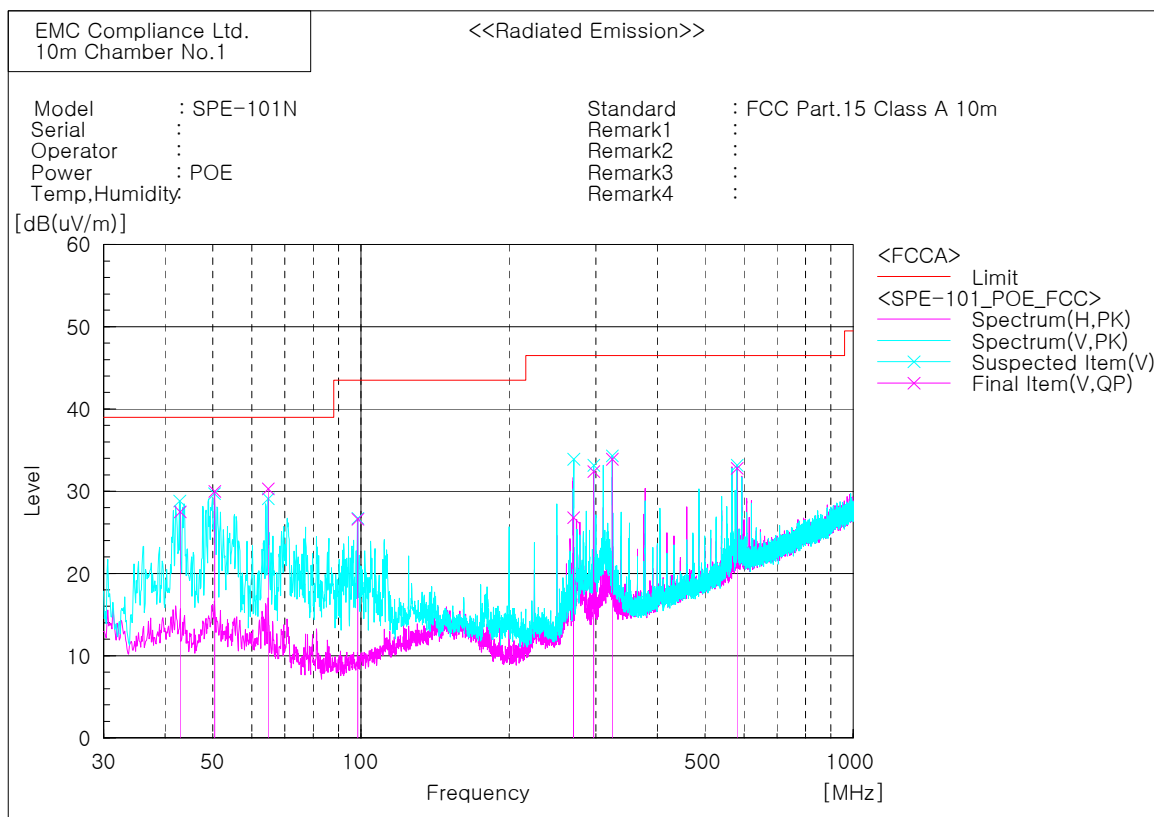
* AC/DC adaptor(DC 12 V)



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	49.885	V	42.9	-14.5	28.4	39.0	10.6	202.0	215.5
2	64.173	V	48.9	-15.7	33.2	39.0	5.8	202.0	103.9
3	77.193	V	42.9	-18.0	24.9	39.0	14.1	100.0	87.4
4	98.506	V	44.9	-17.2	27.7	43.5	15.8	202.0	89.5
5	269.954	V	47.4	-12.9	34.5	46.5	12.0	302.0	9.2
6	324.031	V	45.1	-11.0	34.1	46.5	12.4	100.0	344.6
7	540.099	V	38.2	-5.5	32.7	46.5	13.8	100.0	193.7
8	567.138	H	39.4	-4.9	34.5	46.5	12.0	298.0	24.5

* PoE

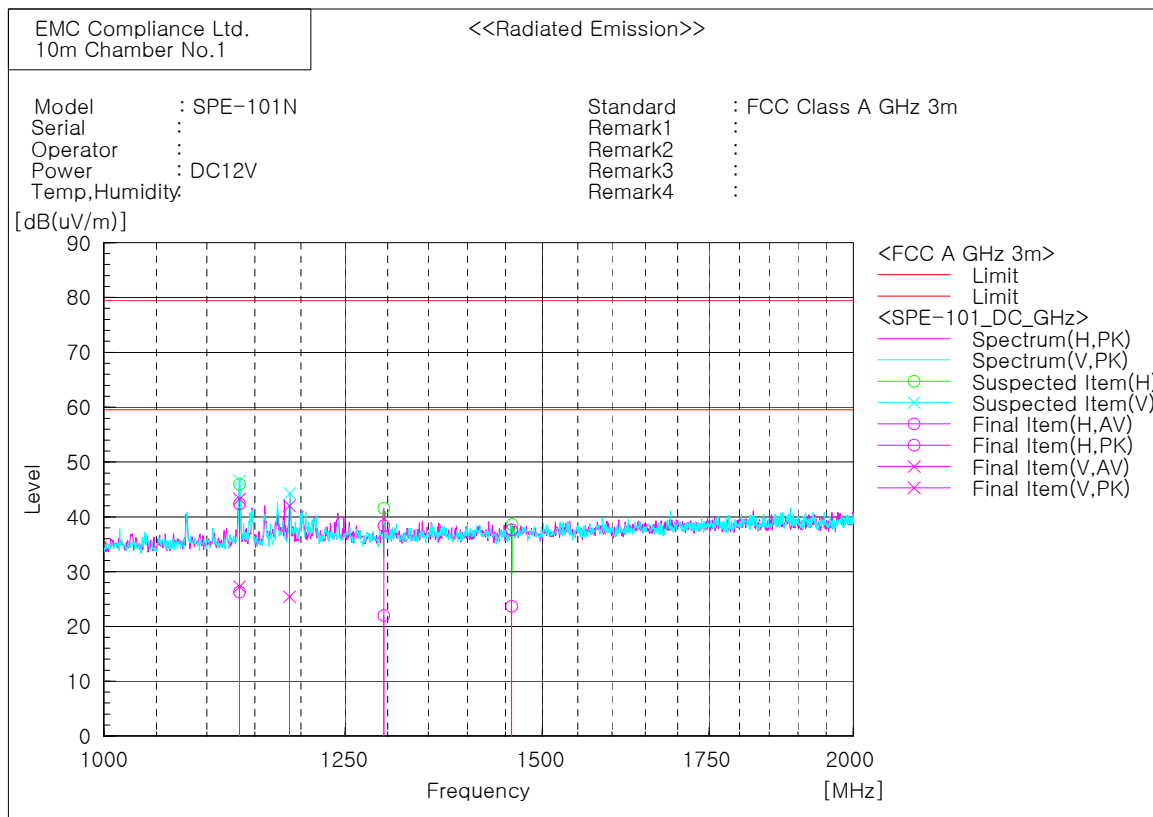


Final Result

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	50.447	V	44.5	-14.5	30.0	39.0	9.0	100.0	118.1
2	42.943	V	41.8	-14.3	27.5	39.0	11.5	100.0	223.1
3	64.789	V	46.1	-15.8	30.3	39.0	8.7	100.0	75.0
4	98.506	V	43.8	-17.2	26.6	43.5	16.9	201.0	54.5
5	269.982	V	39.7	-12.9	26.8	46.5	19.7	302.0	139.6
6	296.993	V	44.4	-12.0	32.4	46.5	14.1	100.0	320.0
7	324.031	V	44.9	-11.0	33.9	46.5	12.6	100.0	326.8
8	580.475	V	37.3	-4.5	32.8	46.5	13.7	100.0	132.4

* 1 GHz ~2 GHz

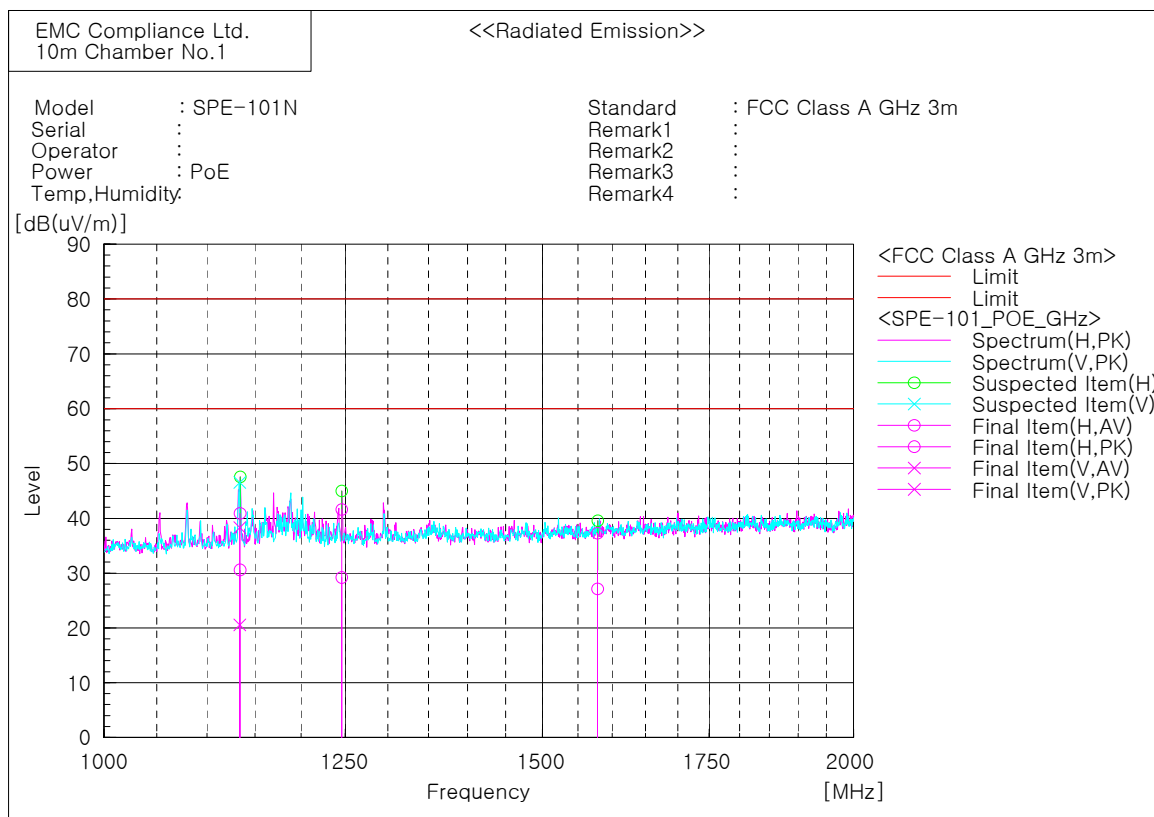
* AC/DC adaptor(DC 12 V)



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	1133.658	V	39.2	55.2	-11.9	27.3	43.3	59.5	79.5	32.2	36.2	100.0	230.1
2	1133.750	H	38.2	54.3	-11.9	26.3	42.4	59.5	79.5	33.2	37.1	100.0	327.4
3	1187.350	V	36.9	53.5	-11.5	25.4	42.0	59.5	79.5	34.1	37.5	100.0	2.8
4	1295.568	H	32.5	48.9	-10.5	22.0	38.4	59.5	79.5	37.5	41.1	100.0	347.5
5	1458.253	H	32.9	46.8	-9.2	23.7	37.6	59.5	79.5	35.8	41.9	100.0	277.1

* 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	1133.590	V	32.5	50.2	-11.9	20.6	38.3	60.0	80.0	39.4	41.7	100.0	235.8
2	1134.250	H	42.5	52.8	-11.9	30.6	40.9	60.0	80.0	29.4	39.1	100.0	189.5
3	1246.250	H	40.2	52.6	-11.0	29.2	41.6	60.0	80.0	30.8	38.4	199.0	254.3
4	1578.560	H	35.4	45.6	-8.3	27.1	37.3	60.0	80.0	32.9	42.7	100.0	84.0

7. E.U.T. photographs

Front View



Rear View



Left View



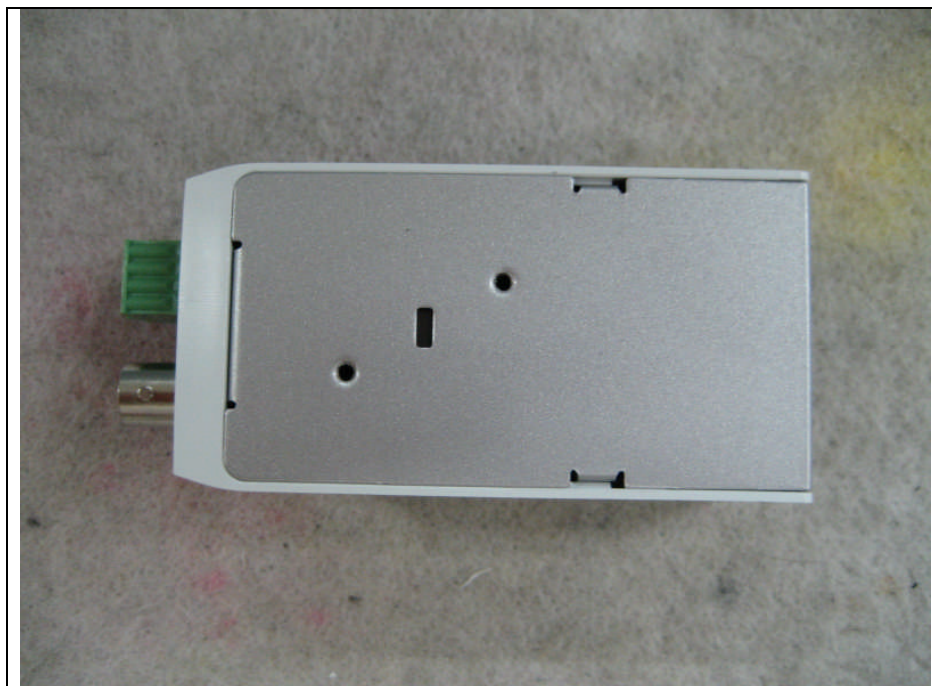
Right View



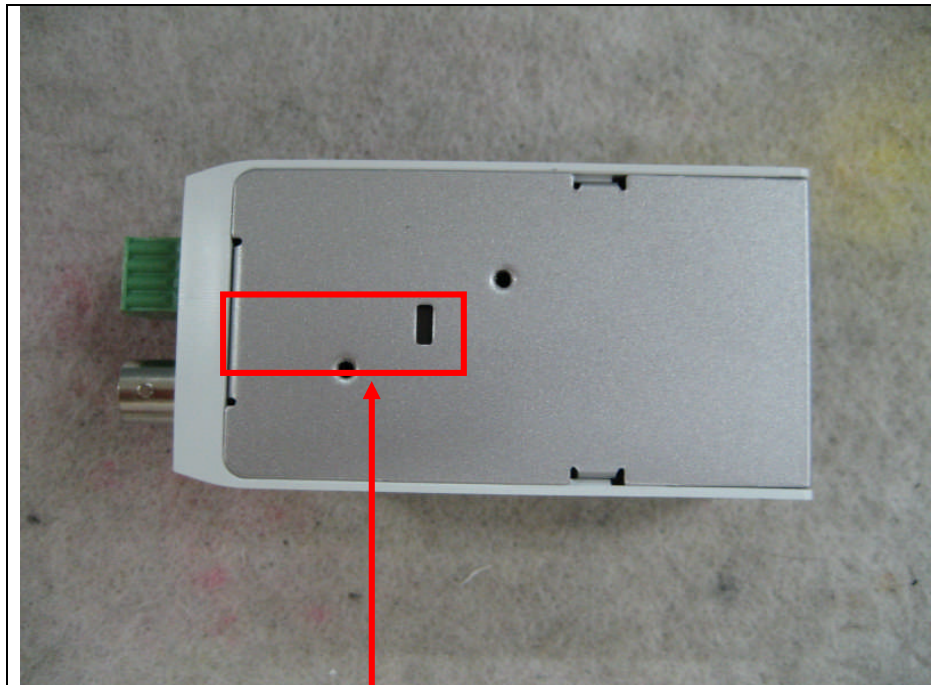
Top View



Bottom View



Label



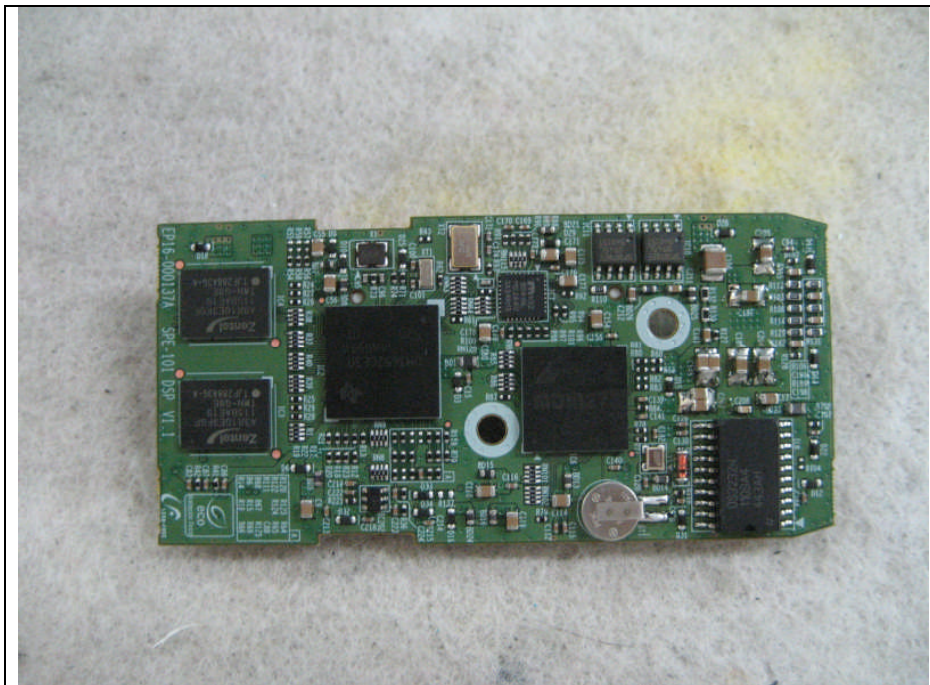
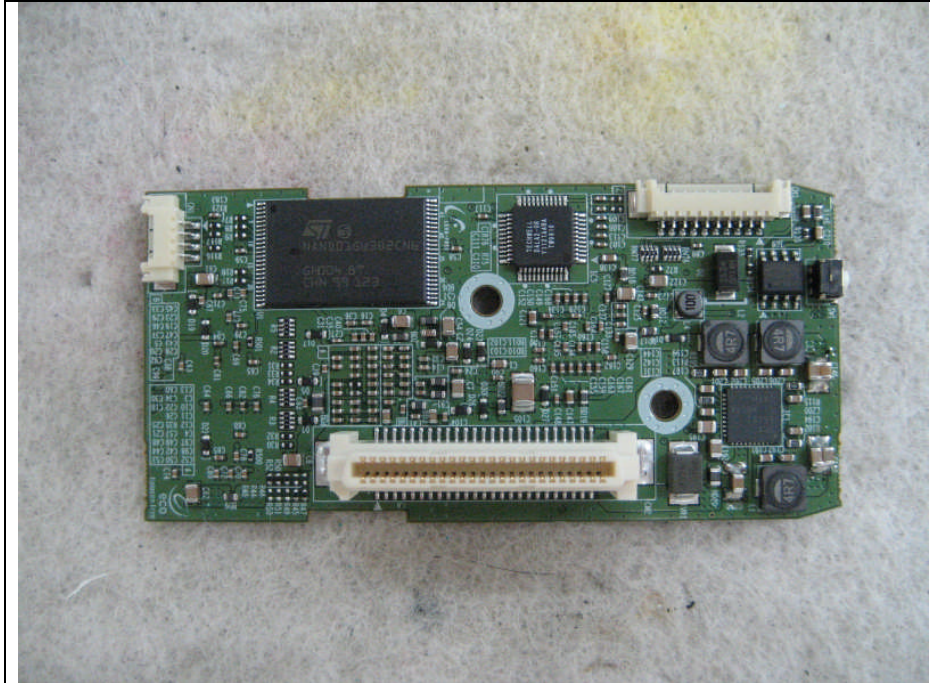
FCC Label Location

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



Power Board

