CHUNGBUK TECHNOPARK
#685-3, Yangcheong, Ochang, Cheongwon, Chungbuk, Korea
TEL:(043)270-2500 FAX:(043)270-2599 http://www.cbtp.or.kr

TEST REPORT

FCC PART 15 C

Applicant	Trade Name	SEBINE Technology, Inc.		
	Address	RN 302, Daedeok Radio Engineering Center, 694, Tamnip-dong, Yuseong-gu, Daejeon, Korea 305-510		
	Telephone Number	+82-42-935-2085	Fax Number	+82-42-935-2088
Product	Name	WTH		
	Model Name	WTH		
	Manufacturer	SEBINE Technology, Inc.		
Test Date		2012. 01. 17. - 2012. 01. 18.		
Issued Date		2012. 01. 20.		
Test Procedure		ANSI C63.4-2003		
Applicable Regulation		FCC Part 15.247		
FCC Classification		DTS / Digital Transmission System		
Test Result		■ Pass	□ Fail	

Test Engineer

Eunjung, Yang

Chief Engineer

Kook-Sun, Shin

CHUNGBUK TECHNOPARK

I, the undersigned, hereby declare that the equipment specified above conforms to the above FCC Rule(s) and Regulation(s) Part 15 as described in the attached test report.

This test report contains only the result of a single test of the sample supplied for the examination.

TABLE OF CONTENTS

1. Test Laboratory

1.1 General Information

Name of Laboratory	CHUNGBUK TECHNOPARK
Representative	Jongsung, Lim
Address	685-1 Yangcheong-ri, Ochang-eup, Cheongwon-gun, Chungcheongbuk-do, Korea
Telephone Number	043-270-2000
Fax Number	043-270-2099
Homepage	www.cbtp.or.kr

1.2 Location of Test Laboratory

Address	685-3 Yangcheong-ri, Ochang-eup, Cheongwon-gun, Chungcheongbuk-do, Korea
Telephone Number	043-270-2500
Fax Number	043-270-2599

1.3 Registration Information

Test item(s)	Facility	Registration Number
Radiated Emission Measurement	10m semi-anechoic chamber	647924
Conducted Emission Measurement	Shielded room	

2. Test Rule

2.1 Test Rule Part(s)

Test item(s)	Test Rule Part(s)	Test Result	
1. 6 dB bandwidth	15.247 (a)(2)	☐ Pass	☐ Fail
2. maximum peak conducted output power	15.247 (b)(3)	☐ Pass	☐ Fail
3. antenna requirement	15.247 (b)(4) 15.203	■ Pass	☐ Fail
4. 100 kHz bandwidth outside the frequency band	15.247 (d)	■ Pass	☐ Fail
5. power spectral density conducted	15.207 (e)	☐ Pass	☐ Fail
6. Radiated emissions	15.247(d) 15.209(a) 15.205(a)	■ Pass	☐ Fail

※ The EUT contains Transmitter Module FCC ID : YOPGS1011MIE.

2.2 Equipment Under Test(EUT) Modifications

No modifications were made to the EUT in order to achieve and maintain compliance to the standards described in this report.

3. Description for Equipment Under Test(EUT)

Item	Specification	
Name	WTH	
Dimension	110mm(L)×80mm(W)×33mm(H)	
Housing	ABS	
Weight	300g (w/o Battery, Antenna)	
Power Supply	AA size 3.6Volt LITHIUM BATTERY 1EA or 2EA	
Current Consumption	Tx 190mA, Rx 140mA (@3.6Vdc)	
Operating Temperature	-40℃ ~ +85℃	
RF Features	• Frequency : 2412 ~ 2472 MHz • Standard Supported: IEEE 802.11b • Transmitter Power : Max. 7mW • Modulation : IEEE 802.11b : DSSS : 1Mb/s and 2Mb/s IEEE 802.11b : CCK : 5.5Mb/s and 11Mb/s • Channels: Europe - 13 channels USA - 11 channels	
Performance	• RF Data Rate: 1Mb/s to 11Mbps	
I/O Interface	• USB Connector	
Antenna Interface	• SMA(Female, Reverse) • Impedance 50Ω	
Sensor	Temperature /Humidity	• Accuracy Humidity : ±3.0 Temperature : ±0.4 @℃

4. TEST EQUIPMENT

Type	Model	Manufacture	S/N	CAL. Due
PSA Spectrum Analyzer	E4440A	Agilent Technologies	MY46188056	2012.05.28
Programmable D.C Power Supply	PSS-3203	GW Instek	EH170900	2012.05.26
Test Receiver	ESIB26	Rohde & Schwarz	100359	2012.05.28
Horn Antenna	BBHA9120D	Schwarzbeck	9120D-539	2013.04.13
Antenna	CBL6112D	Schaffner	22022	2012.10.07

4.1 Operation of Equipment Under Test(EUT)

The Equipment Under Test was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the EUT and the supported equipments were installed to meet FCC requirement and operated in a manner and which tends to maximize its emission level in a typical application.

Channel	Frequency(MHz)
L	2 412
M	2 437
H	2 462

5. 6 dB bandwidth

5.1 Definition

Systems using digital modulation techniques may operate in the 2400-2483.5 MHz band.

5.2 Limits

The minimum 6 dB bandwidth shall be at least 500 kHz.

5.3 Test Results

Not apply.

※ The EUT contains Transmitter Module FCC ID : YOPGS1011MIE.

6. maximum peak conducted output power

6.1 Definition

6.2 Limits

The maximum peak conducted output power of the intentional radiator shall not exceed the following: For systems using digital modulation in the 2400-2483.5 MHz band: 1 Watt(30 dBm).

6.3 Test Results

Not apply.

※ The EUT contains Transmitter Module FCC ID : YOPGS1011MIE.

7. antenna requirement

7.1 Definition

7.2 Limits

15.247 (b)

antennas with directional gains that do not exceed 6 dBi.

15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

7.3 Test Results

Channel	antenna gain (dBi)
L	5.06
M	5.14
H	5.17

7.4 Antenna Connected Construction

The design utilizes a unique surface mount connector offering a connection for a coaxial cable. The antenna connection point complies with the unique antenna connection requirements. The requirements of 15.203 are fulfilled and there are no deviations or exceptions to the specification.

8. 100 kHz bandwidth outside the frequency band

8.1 Definition

8.2 Limits

The radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

In addition, radiated emissions which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a) (see Sec. 15.205(c)).

Table 1. Sec.15.209(a)

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100**	3
88–216	150**	3
216–960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.

Table 2. Sec.15.205(c)

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
[1] 0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	[2]
13.36–13.41.			

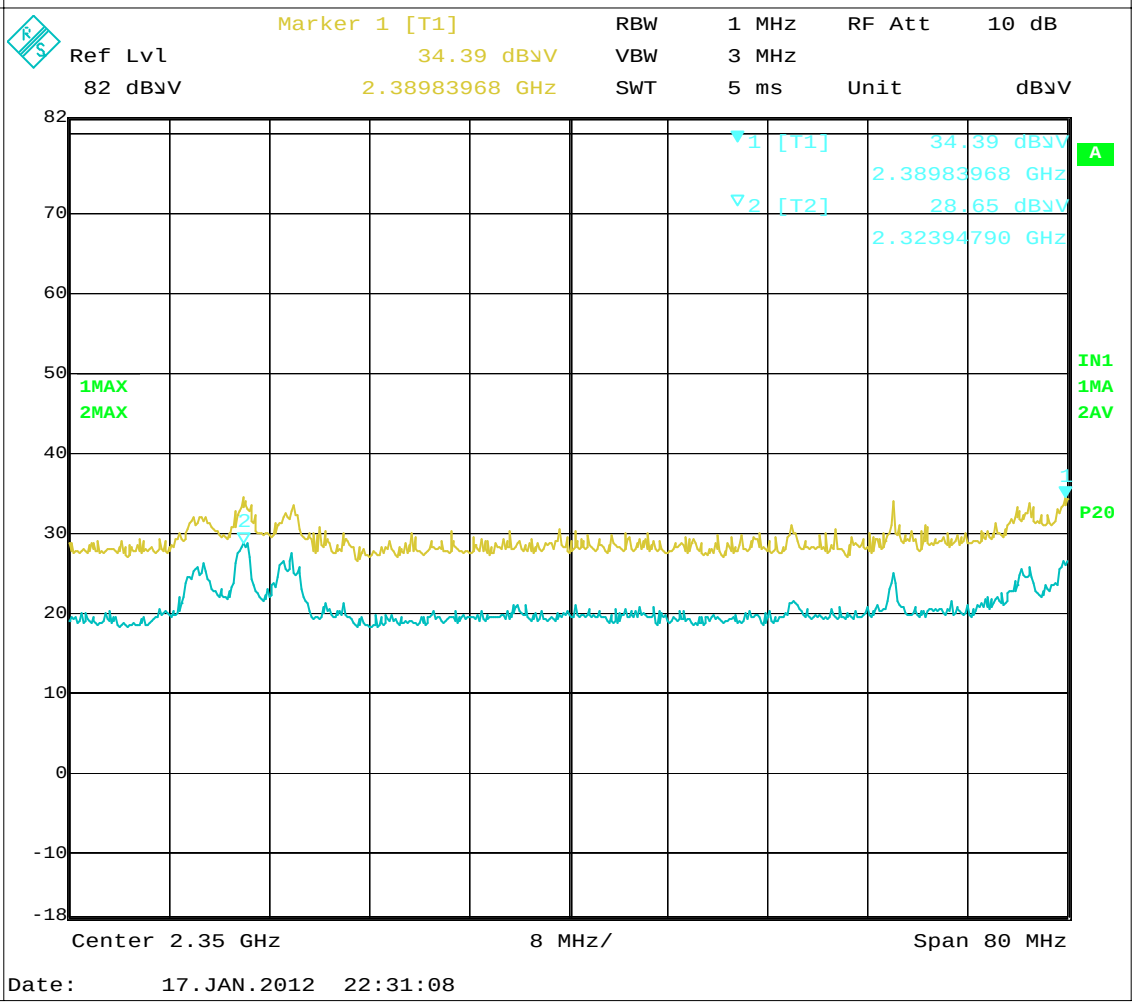
[1] Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.
[2] Above 38.6

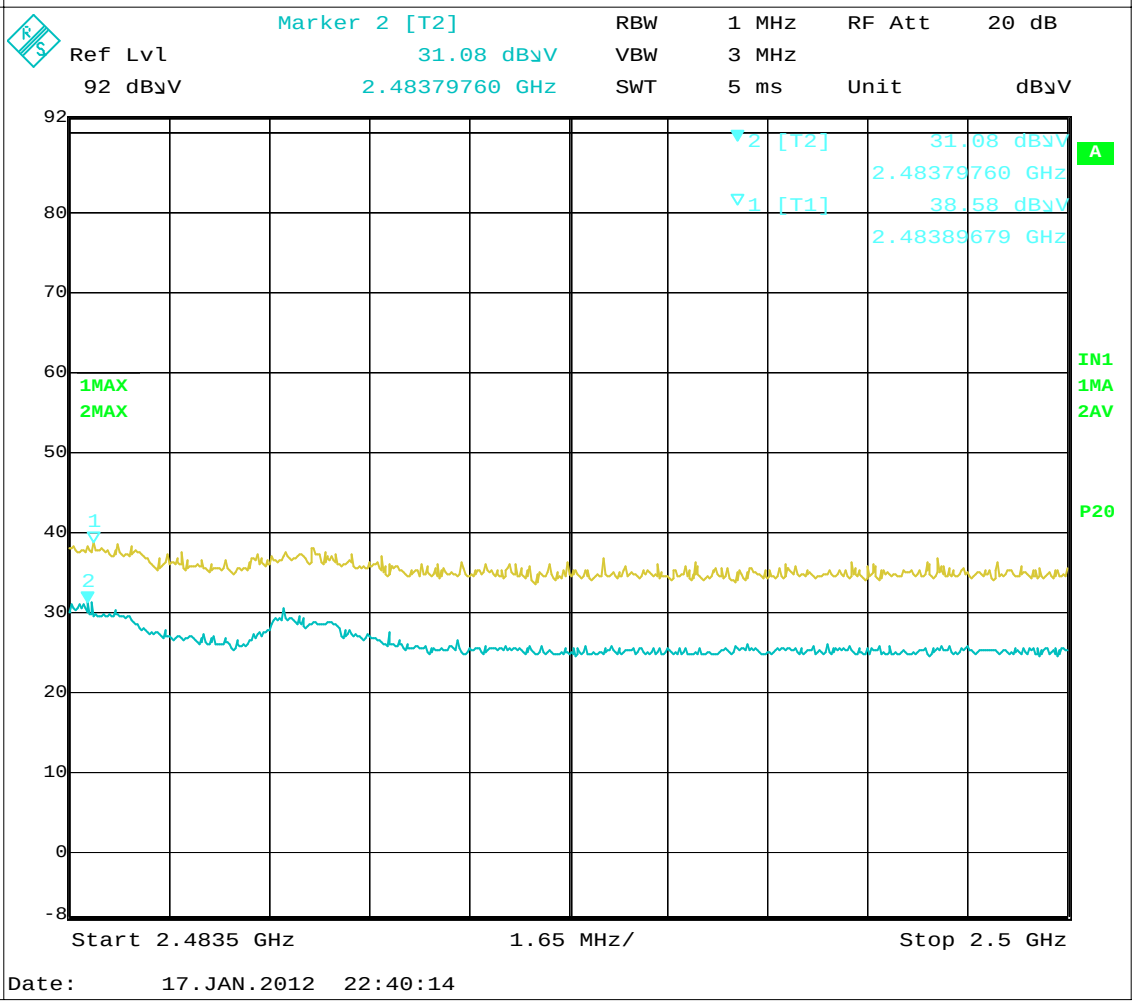
8.3 Test Results

Channel	PK/AV	Frequency (GHz)	Correction Factor			Antenna Height (m)	Result				
			Antenna (dB/m)	Amp (dB)	Cable (dB)		Polarity	Limit (dBuV/m)	Reading (dBuV/m)	Result (dBuV/m)	Margin (dB)
L	PK	2.389	27.16	24.23	8.21	1.00	H	73.98	34.39	45.53	28.45
	AV	2.324	26.99	24.08	8.04	1.00	H	53.98	28.65	39.60	14.38
H	PK	2.484	27.39	24.39	8.19	1.00	H	73.98	38.58	49.77	24.21
	AV	2.484	27.39	24.39	8.19	1.00	H	53.98	31.08	42.27	11.71

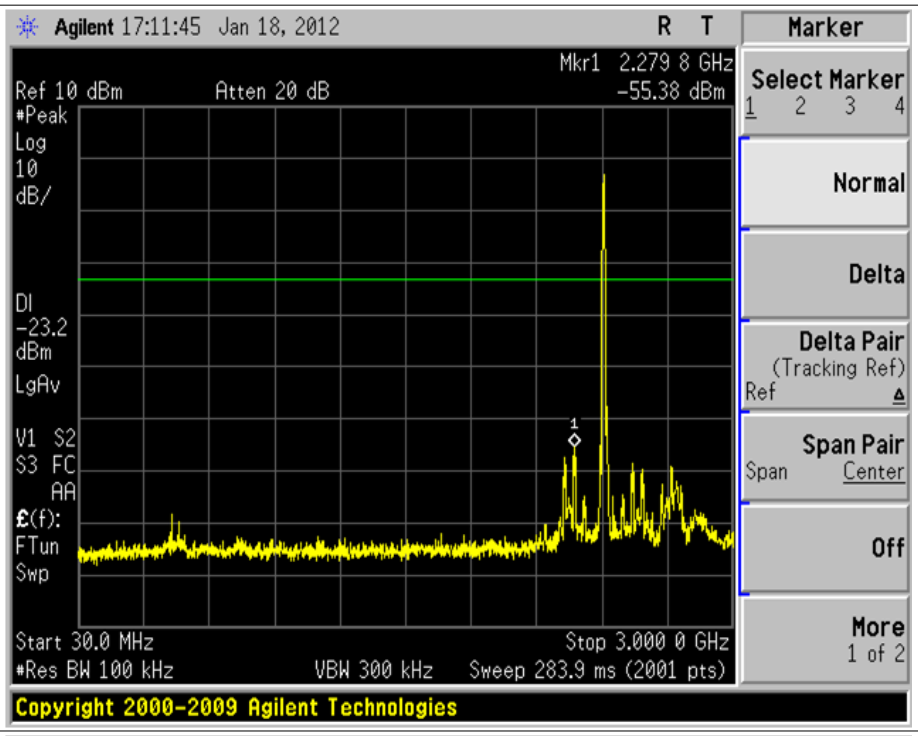
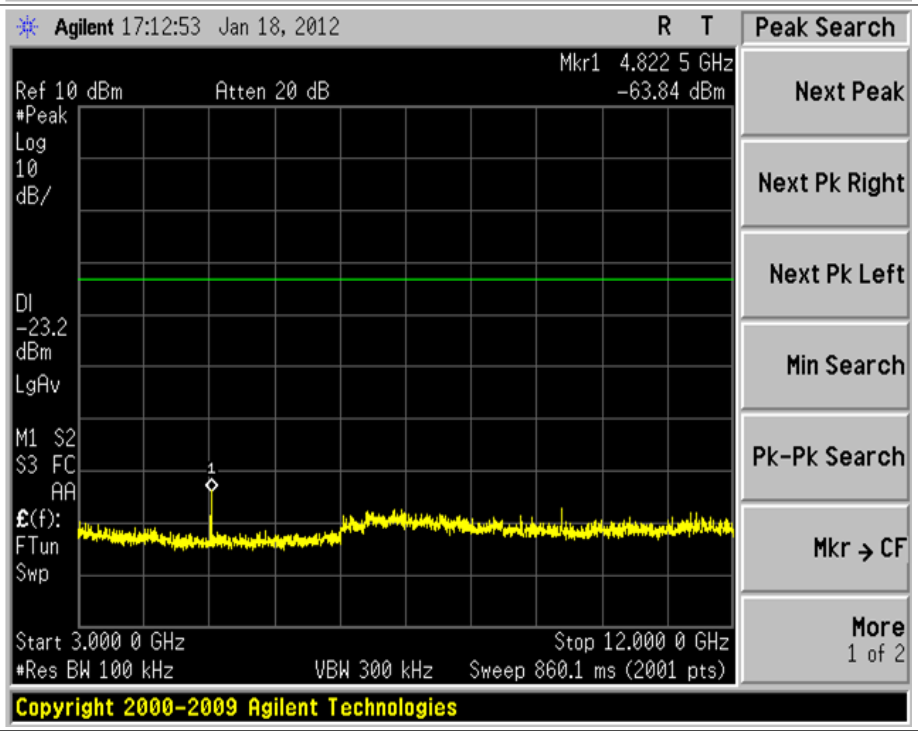
Refer to 8.4

8.4 Plots of 100 kHz bandwidth outside the frequency band

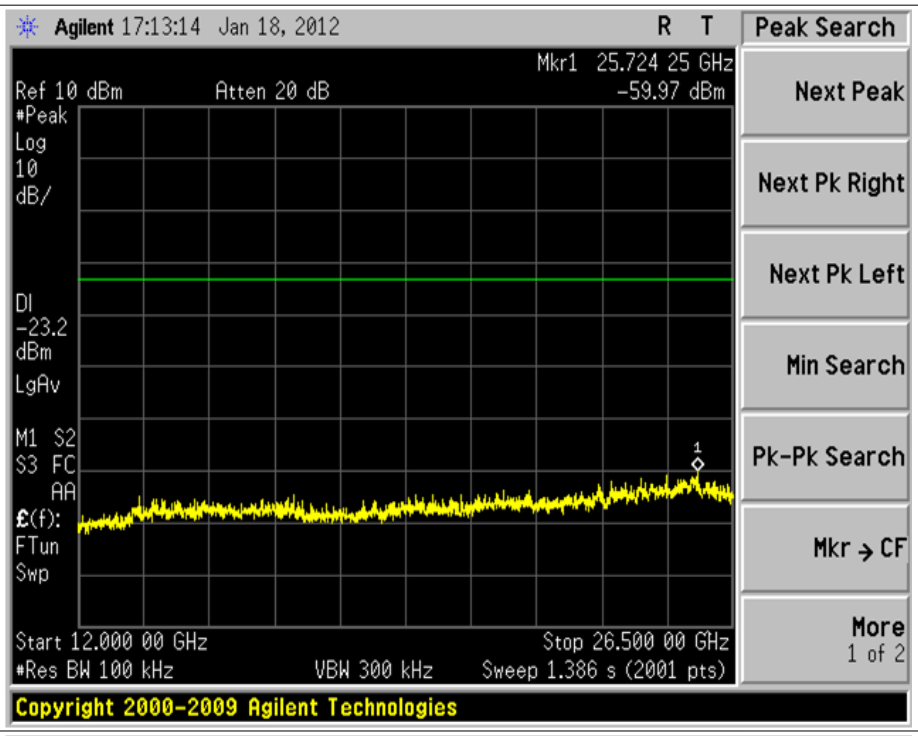
Channel	Plots of 100 kHz bandwidth outside the frequency band
L	

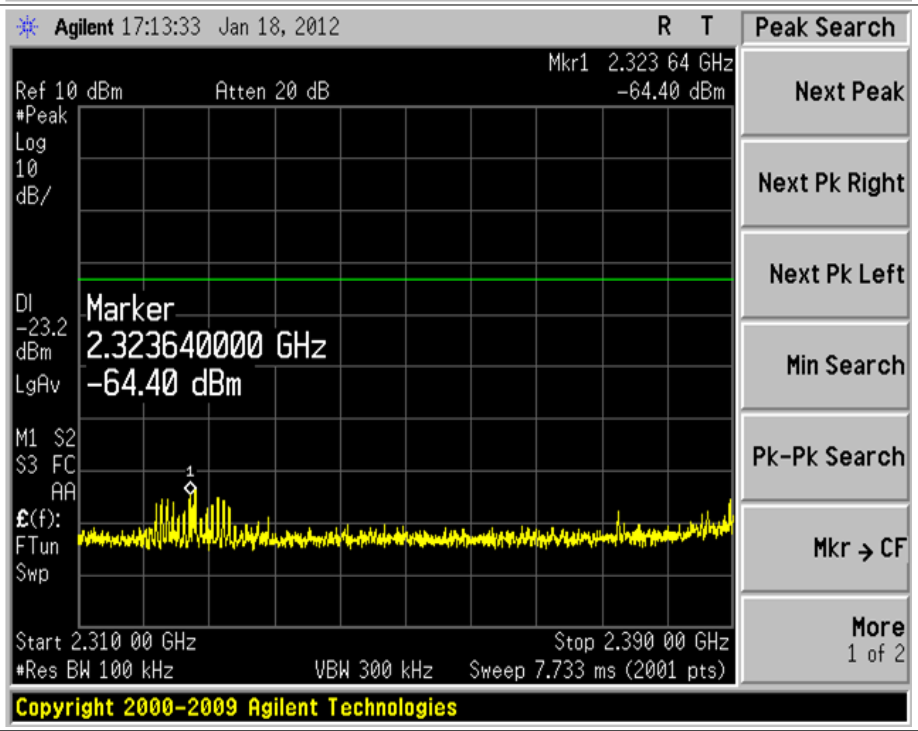
Channel	Plots of 100 kHz bandwidth outside the frequency band
H	

Channel	Plots of 100 kHz bandwidth outside the frequency band

Channel	Plots of 100 kHz bandwidth outside the frequency band
L	
	

Channel	Plots of 100 kHz bandwidth outside the frequency band





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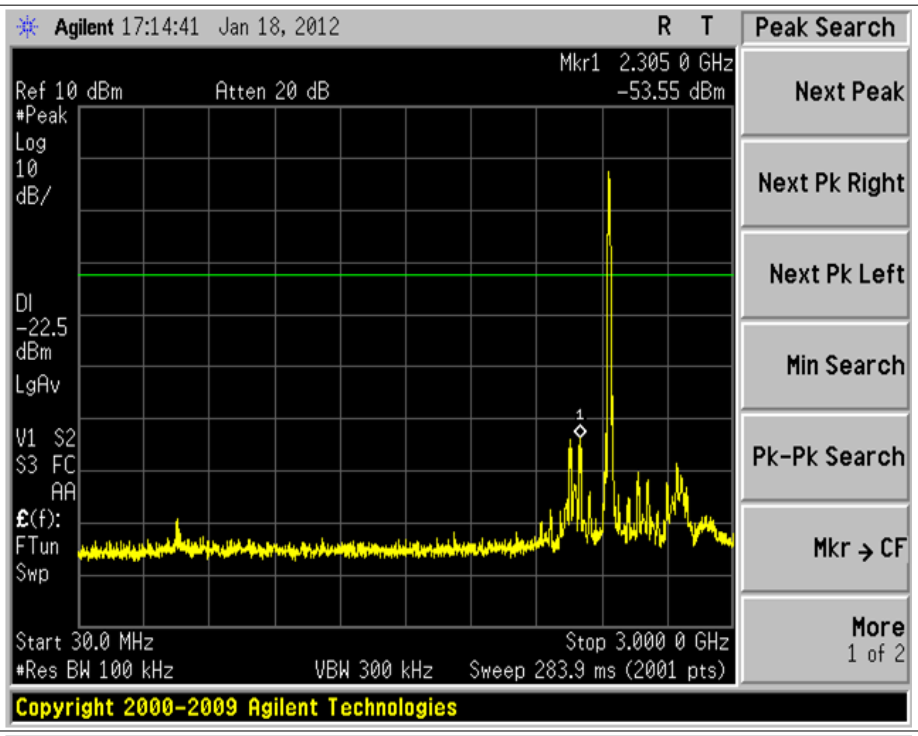
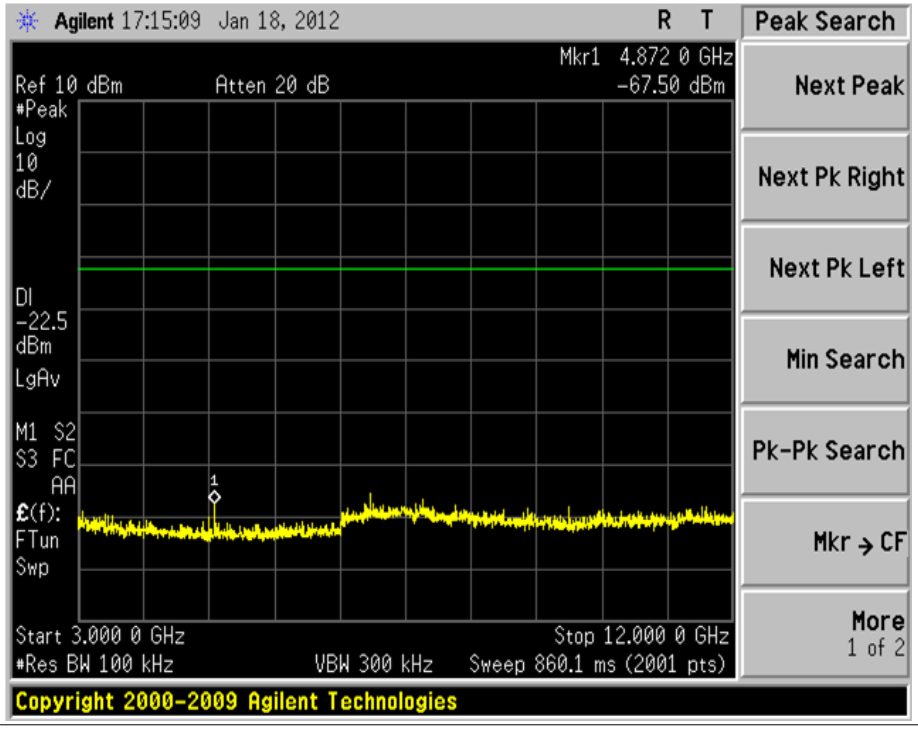
M	
	

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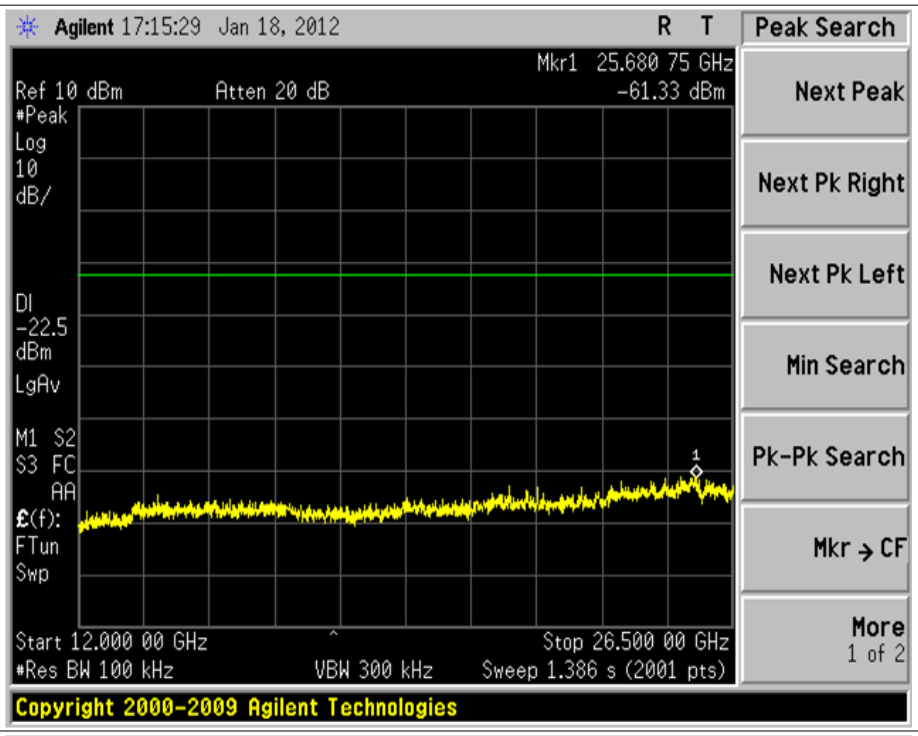
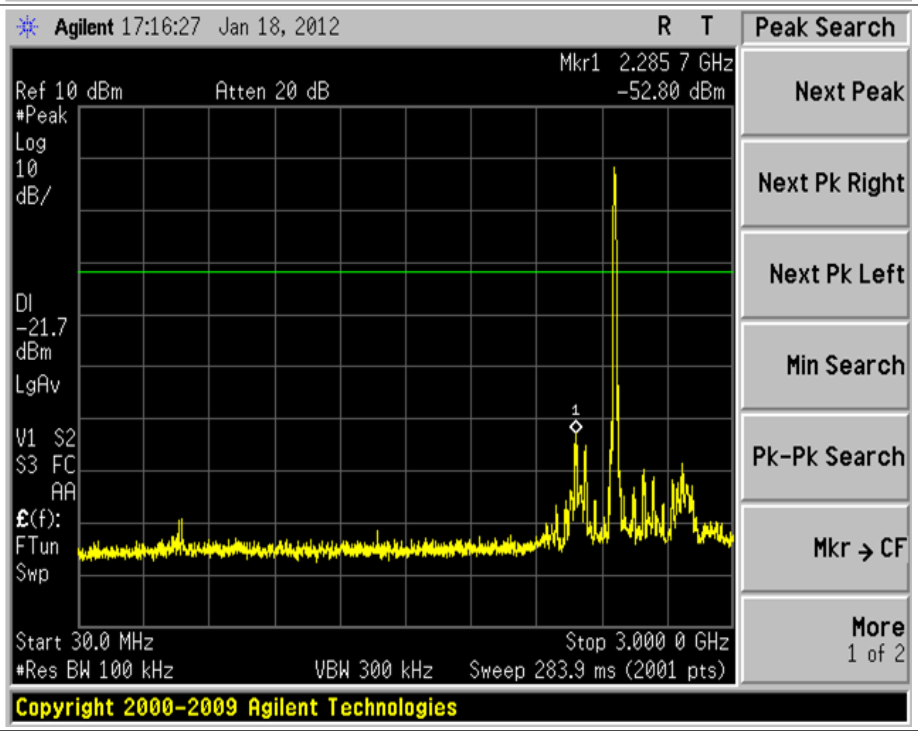
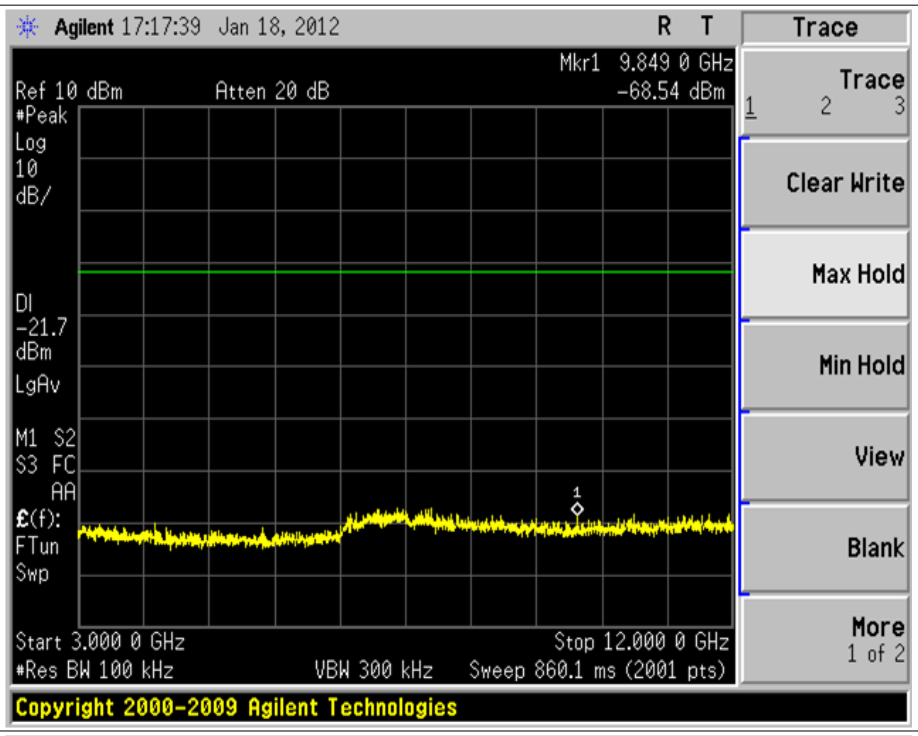
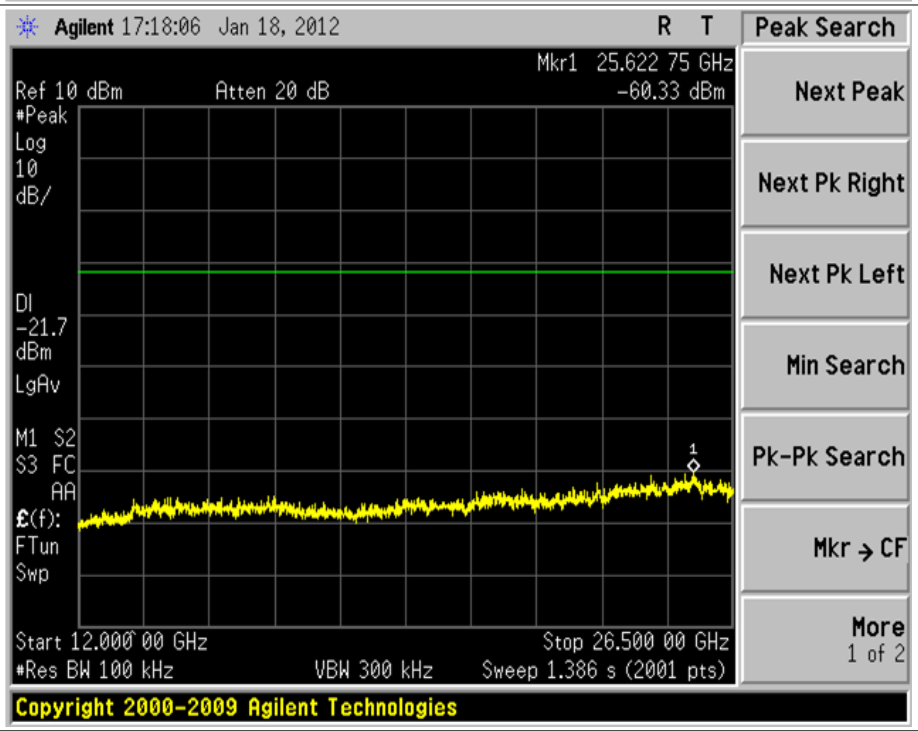
	
H	

Channel	Plots of 100 kHz bandwidth outside the frequency band





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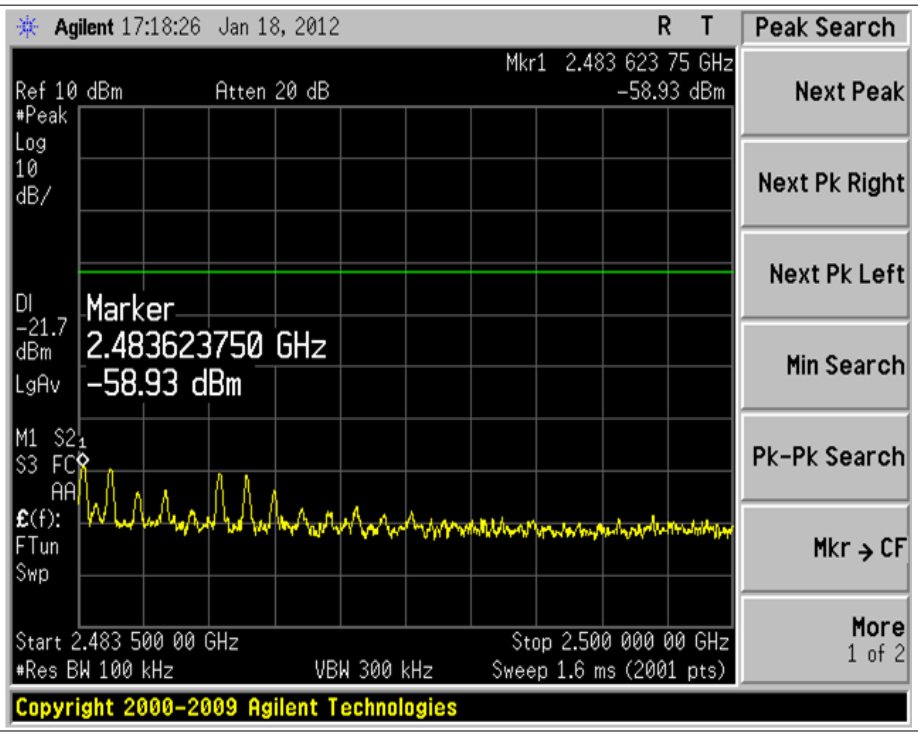
	

9. power spectral density conducted

9.1 Definition

9.2 Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

9.3 Test Results

Not apply.

※ The EUT contains Transmitter Module FCC ID : YOPGS1011MIE.

10. Radiated Emissions

10.1 Limits

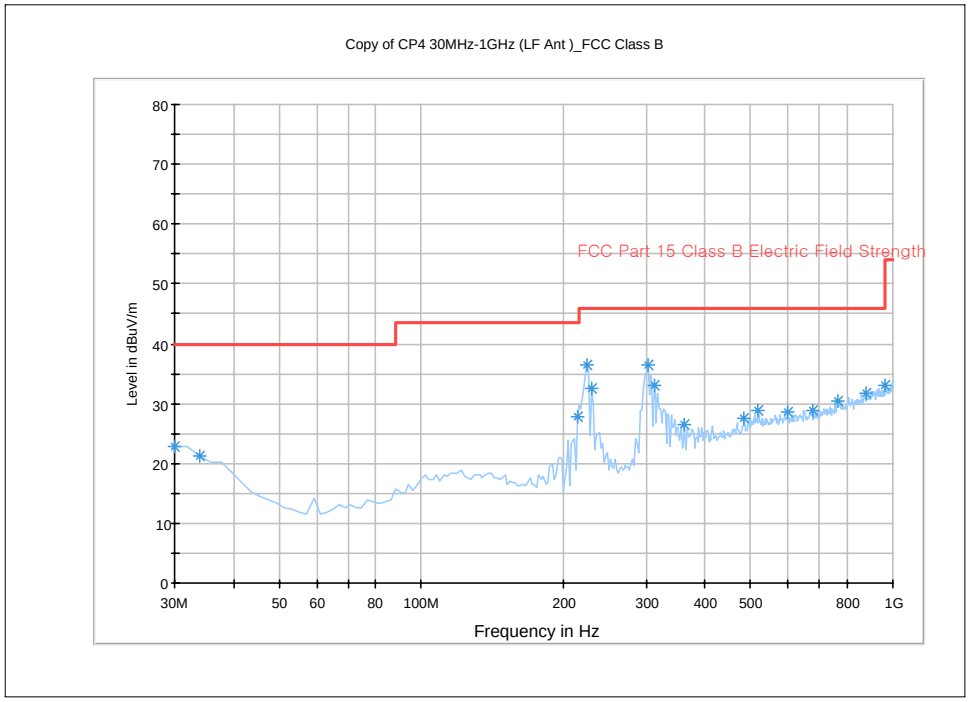
Frequency (MHz)	Class B Limit @ 3m	
	(dBuV/m)	(uV/m)
30 - 88	40.00	100
88 -216	43.52	150
216 - 960	46.02	200
Above 960	53.98	500

10.2 Test Results

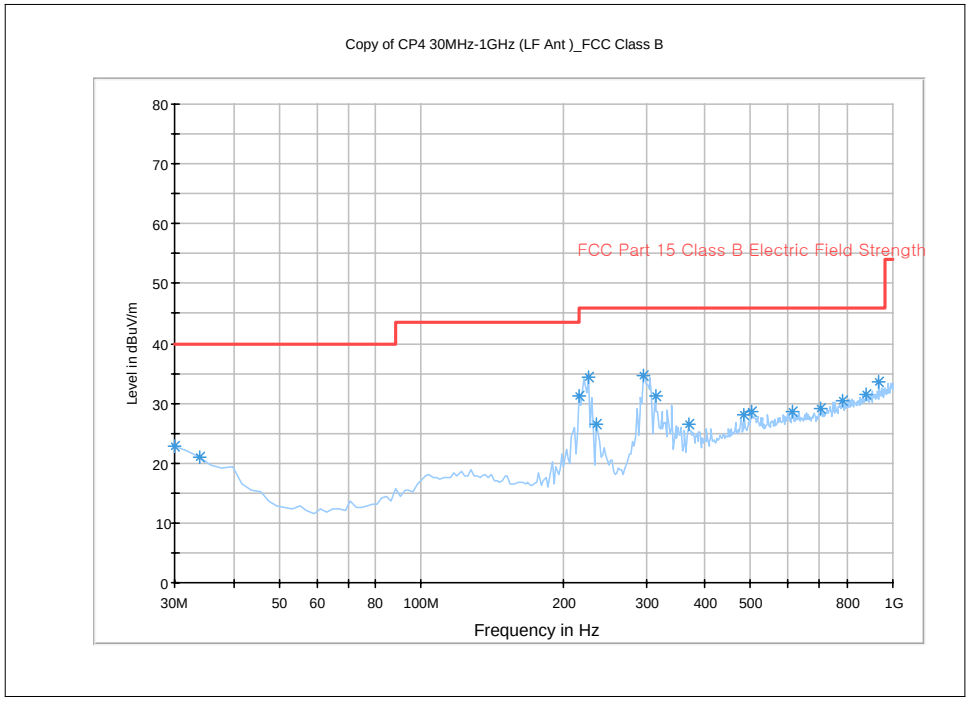
10.2.1 30 MHz ~ 1 GHz

Channel	Frequency (MHz)	Reading (dBuV)	Polarity	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Level (dBuV/m)	Margin (dB)
					Antenna (dB/m)	Cable (dB)			
L	223.84	21.96	H	1.50	11.77	1.93	46.02	35.66	10.36
	302.55	19.09	H	1.00	13.91	2.39	46.02	35.39	10.63
M	223.76	21.03	H	1.50	11.76	2.04	46.02	34.83	11.19
	299.27	16.90	H	1.00	13.85	2.35	46.02	33.10	12.92
H	226.69	15.71	H	1.50	11.92	1.88	46.02	29.51	16.51
	305.19	15.44	H	1.00	13.97	2.43	46.02	31.84	14.18

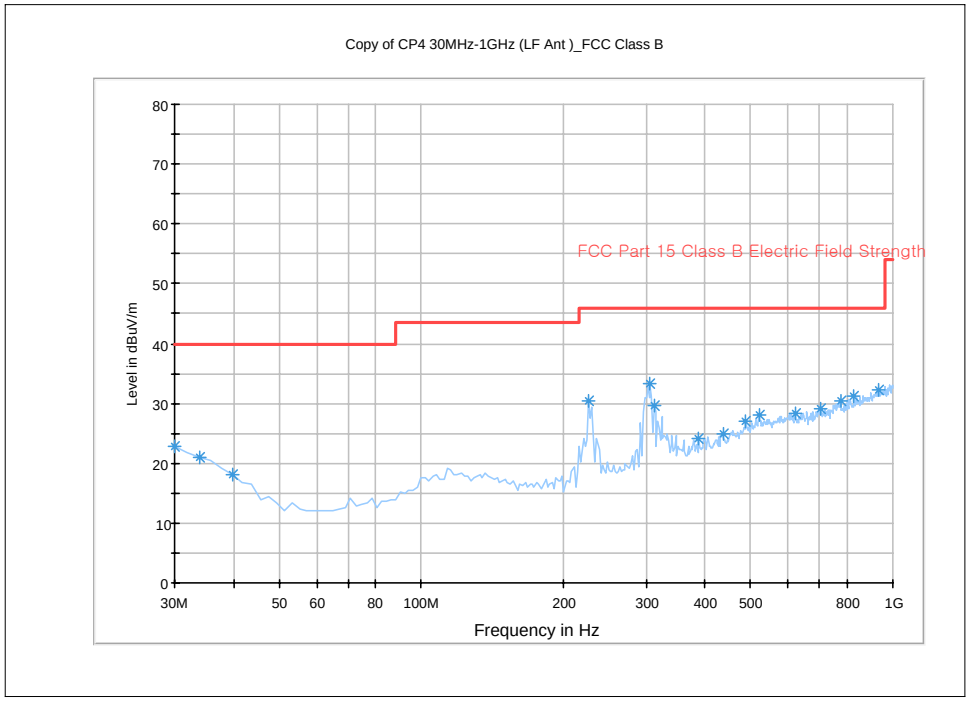
Graphical representation of radiated emissions, Low channel



Graphical representation of radiated emissions, Middle channel



Graphical representation of radiated emissions, High channel



10.2.2 1 GHz ~ 26.5 GHz

10.2.2.1 LOW channel(2 412 MHz)

Frequency (GHz)	Correction Factor			Antenna Height (m)	Peak					Average				
	Antenna (dB/m)	Amp (dB)	Cable (dB)		Polarity	Limit (dBuV/m)	Reading (dBuV/m)	Result (dBuV/m)	Margin (dB)	Polarity	Limit (dBuV/m)	Reading (dBuV/m)	Result (dBuV/m)	Margin (dB)
4.824	31.51	24.76	13.54	1.00	V	73.98	30.94	51.23	22.75	H	53.98	28.58	48.87	5.11

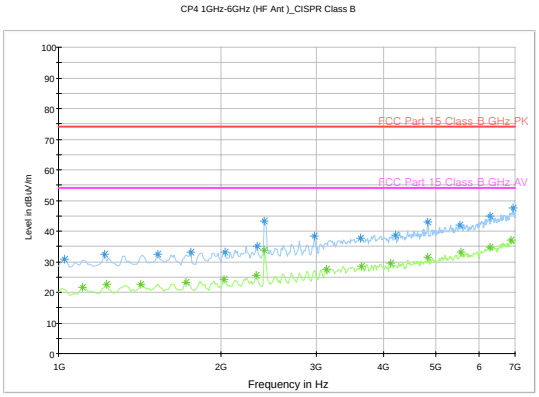
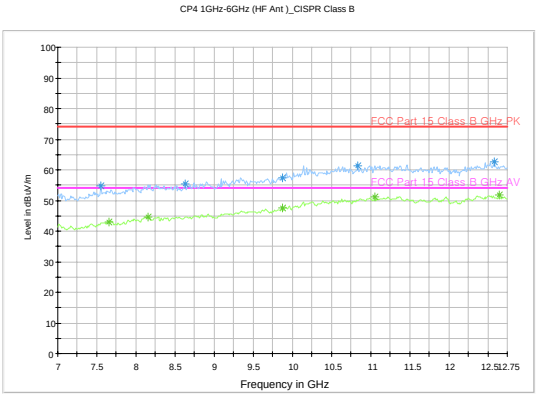
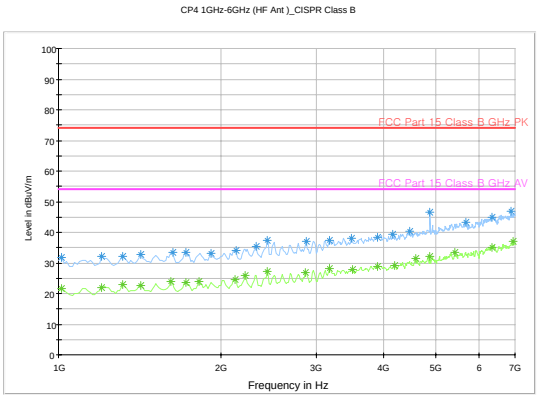
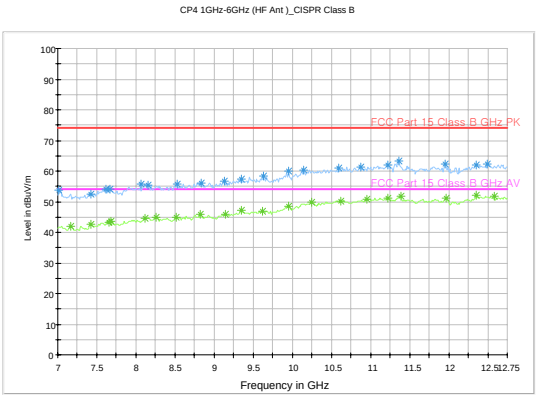
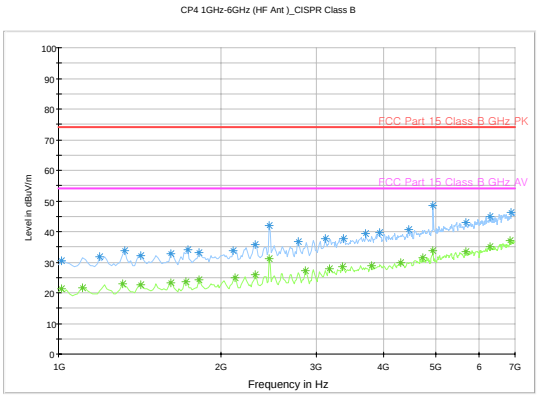
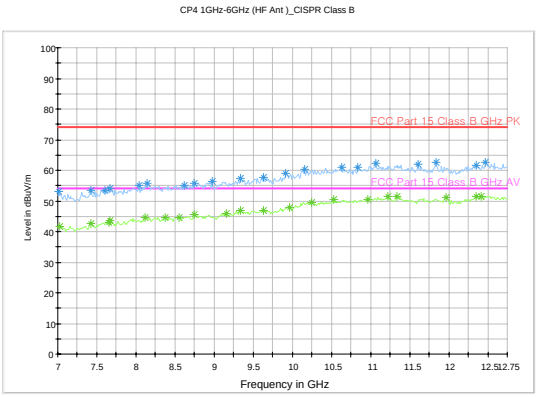
10.3.2.2 MIDDLE channel(2 437 MHz)

Frequency (GHz)	Correction Factor			Antenna Height (m)	Peak					Average				
	Antenna (dB/m)	Amp (dB)	Cable (dB)		Polarity	Limit (dBuV/m)	Reading (dBuV)	Result (dBuV/m)	Margin (dB)	Polarity	Limit (dBuV/m)	Reading (dBuV/m)	Result (dBuV/m)	Margin (dB)
4.874	31.59	25.05	13.61	1.00	V	73.98	32.09	52.24	21.74	H	53.98	27.82	47.97	6.01

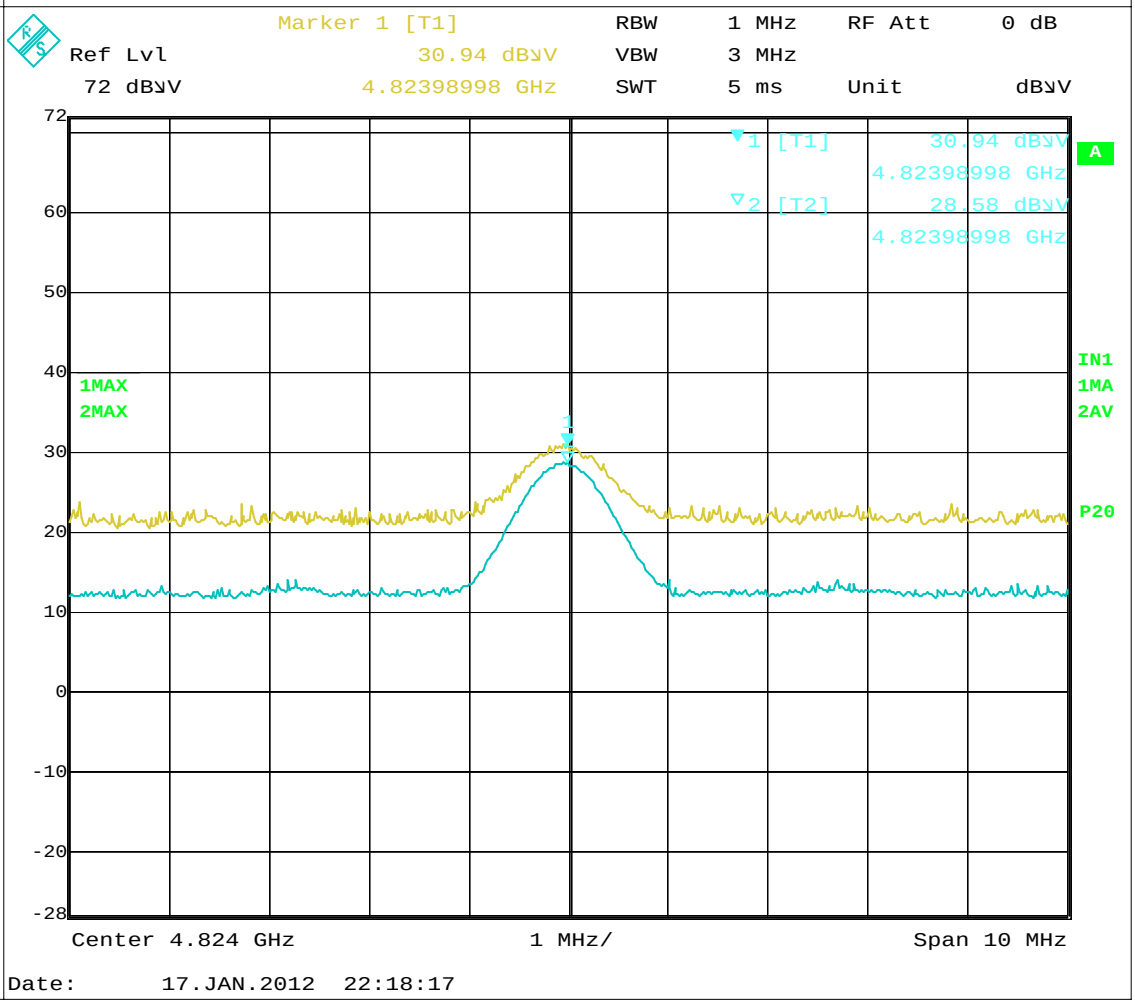
10.3.2.3 HIGH channel(2 462 MHz)

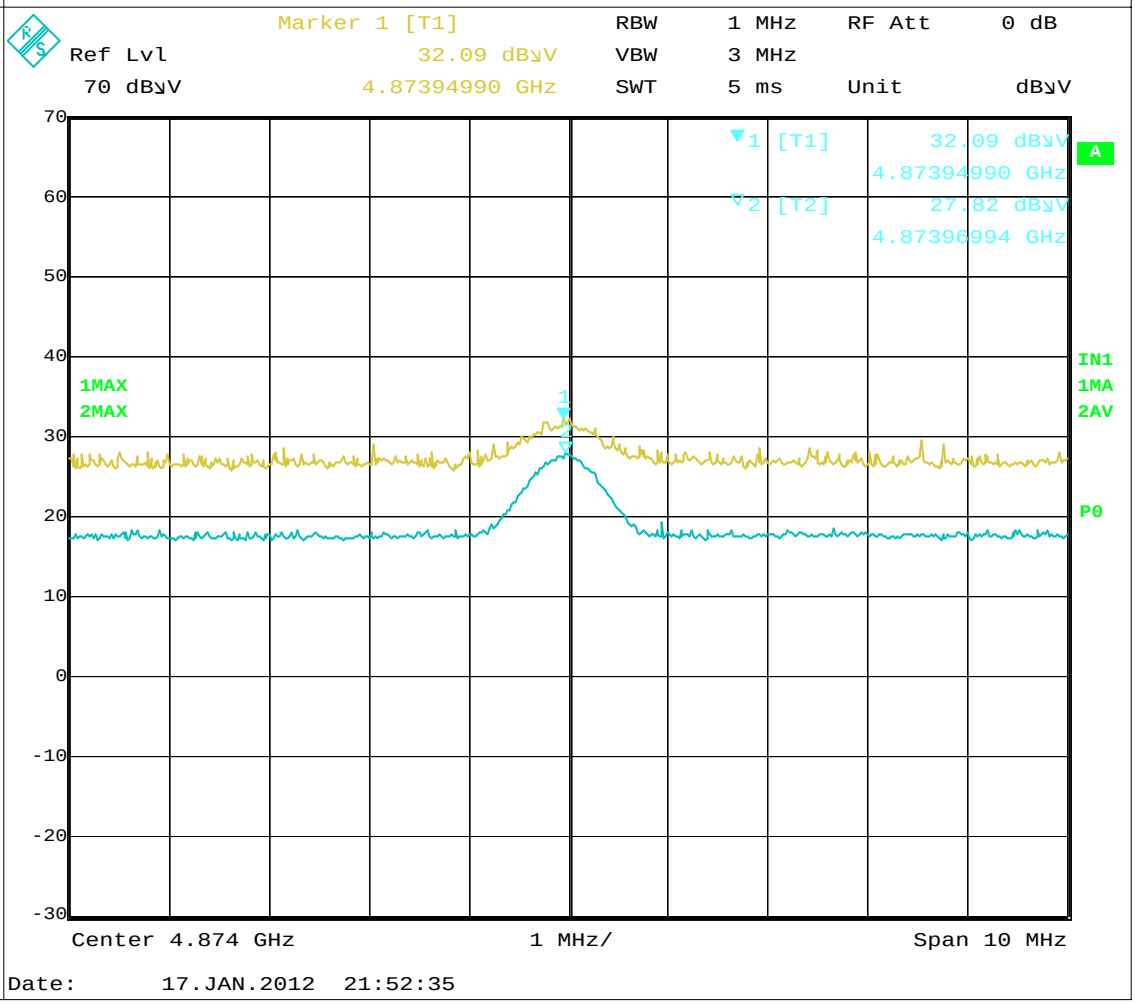
Frequency (GHz)	Correction Factor			Antenna Height (m)	Peak					Average				
	Antenna (dB/m)	Amp (dB)	Cable (dB)		Polarity	Limit (dBuV/m)	Reading (dBuV/m)	Result (dBuV/m)	Margin (dB)	Polarity	Limit (dBuV/m)	Reading (dBuV/m)	Result (dBuV/m)	Margin (dB)
4.924	31.67	24.87	13.59	1.00	V	73.98	32.76	53.15	20.83	H	53.98	29.22	49.61	4.37

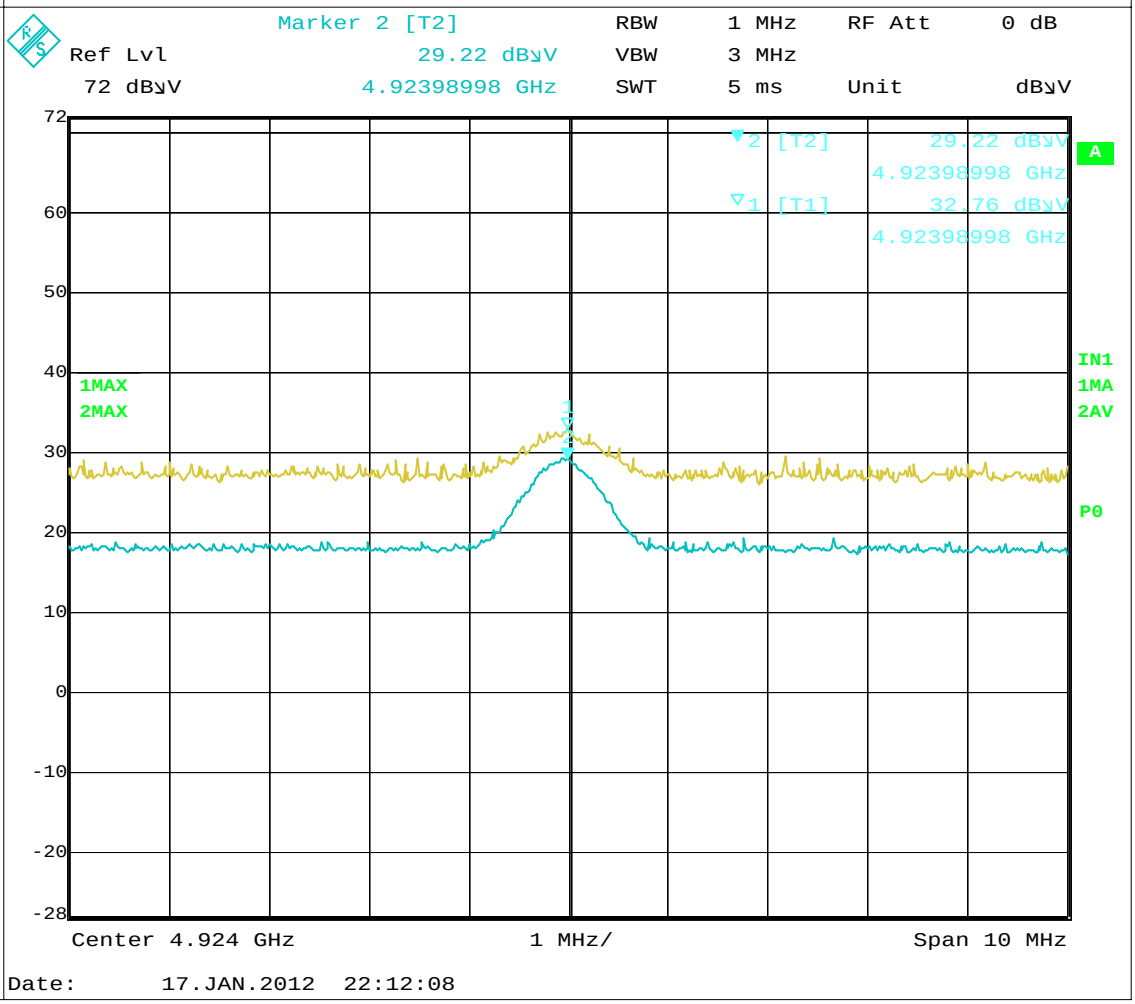
Graphical representation of radiated emissions

Channel	1 GHz ~ 7 GHz	7 GHz ~ 12.75 GHz
L		
M		
H		

Graphical representation of radiated emissions

Channel	Harmonics
L	

Channel	Harmonics
M	

Channel	Harmonics
H	

11. FCC Labelling Requirements

11.1 FCC Statement

Product shall be labelled the following statement in the manual:

> **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.**

When the device is so small or for such use that it is not practicable to place the statement on it, the information shall be placed in prominent location in the instruction manual or pamphlet supplied to the user. However, the FCC identifier or unique identifier, as appropriate, must be displayed on the device.

11.2 Label & Label Location

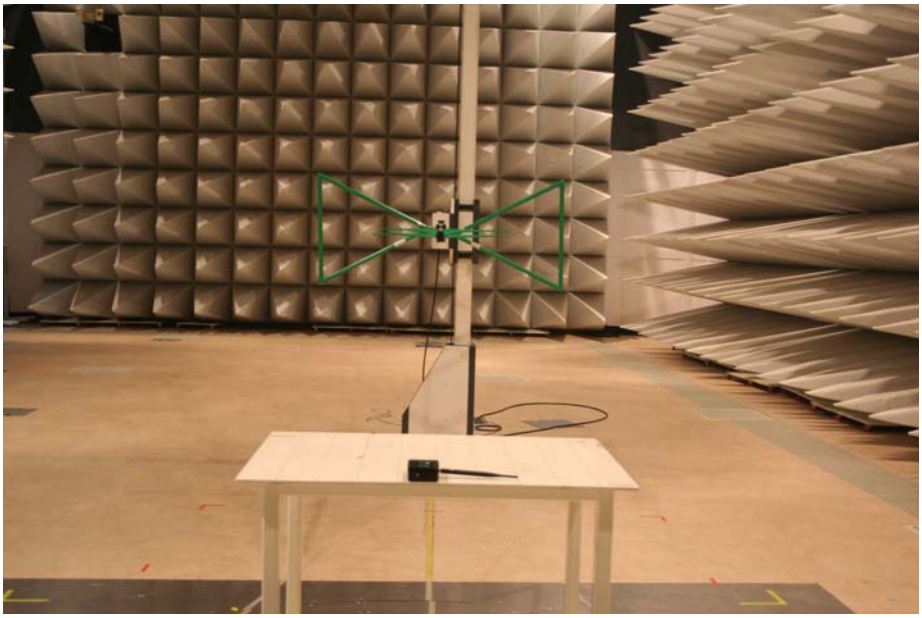
SEBINE Technology

SEBINE Technology, Inc.
Model : WTH
FCC ID : Y9AWTH
Made in Korea
Contains FCC ID: YOPGS1011MIE

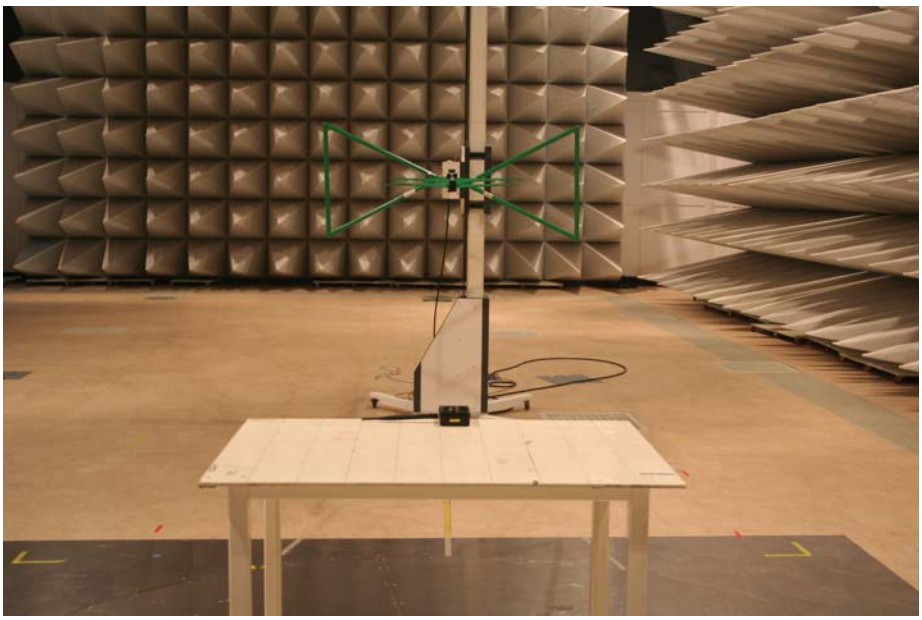
12. Test Setup Photographs

12.1 Radiated Emission Measurement, 30 MHz to 1000 MHz

[Front View]

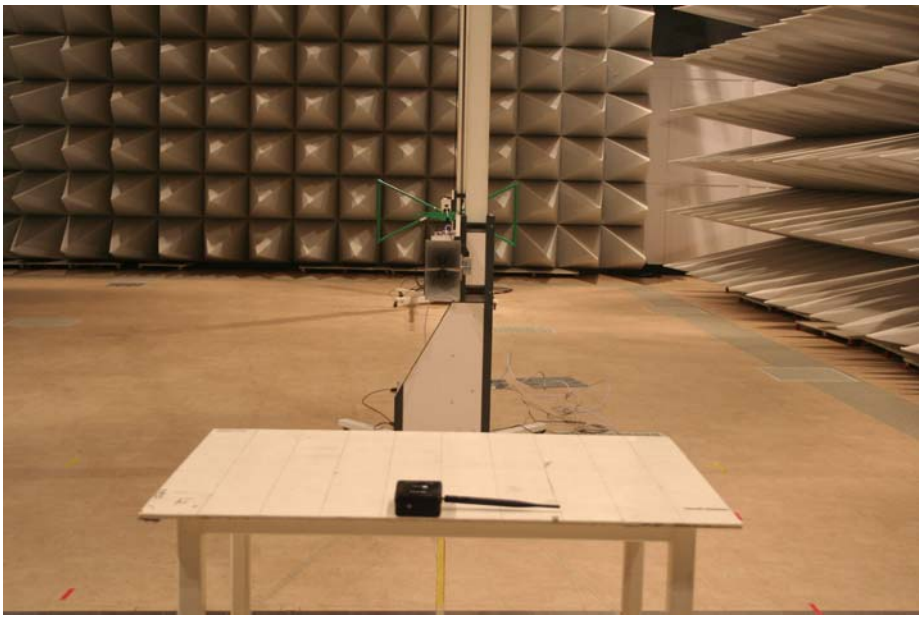


[Rear View]

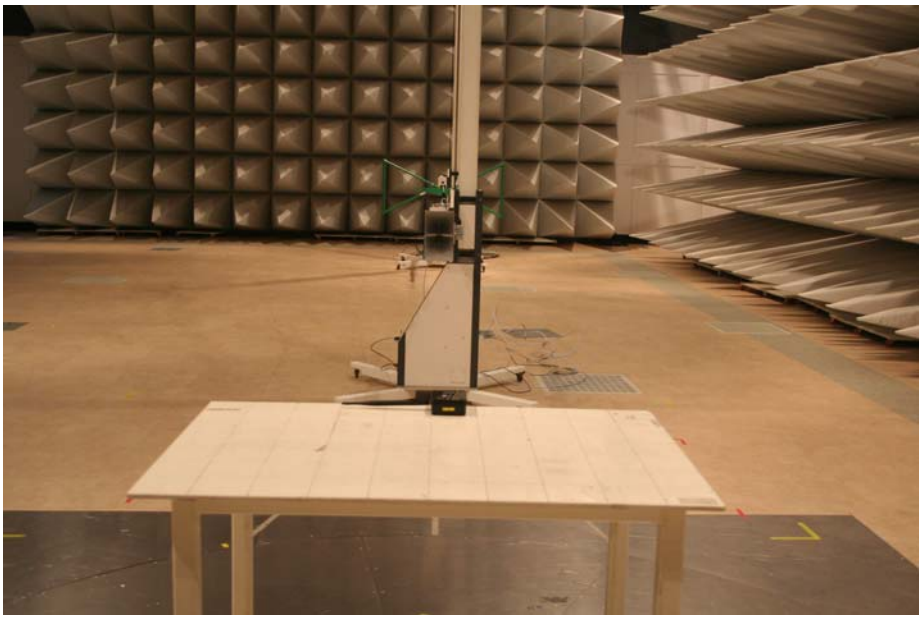


12.2 Radiated Emission Measurement, 1.0 GHz to 12.75 GHz

[Front View]



[Rear View]



13. Photographs of Equipment Under Test(EUT)

[Top Side View]

[Bottom Side View]

[Internal Photograph]