FCC Test Report

for

Electronic remote control system

Main Model Number :LDS4B8041A+

Series Model Number: LDS4B8042A+, LDS4B8043A+, LDS4B8021B+, LDS4B8022B+, LDS4B8023B+

FCC ID : UX5-R300

Report Number : RF-T013-0808-141

Date of Receipt : Aug. 1, 2008

Date of Report : Dec. 10, 2008

Prepared for

Maxitrol Company

23555 Telegraph Road Box 2230 Southfield, MI 48033 USA

Prepared by

Central Research Technology Co.

EMC Test Laboratory

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NVLAP LAB CODE 200575-0

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Certification

Equipment under Test	**: Electronic remote control system**
Main Model Number	**: LDS4B8041A+**
Series Model Number	**: LDS4B8042A+, LDS4B8043A+ , LDS4B8021B+, LDS4B8022B+, LDS4B8023B+**
FCC ID	**: UX5-R300**
Manufacturer	**: FORWARD Electronics Co., Ltd.**
Applicant	**: Maxitrol Company**
Address	**: 23555 Telegraph Road Box 2230 Southfield, MI 48033 USA**
Date of Testing	**: Aug. 1~ Aug. 4, 2008**
Applicable Standards	**: 47 CFR part 15, Subpart C** - Field strength of Fundamental* - Radiated Emission Measurement *
Deviation	**: Some items subcontracted to WTS "*" Marked**
Condition of Test Sample	**: Engineering Sample**

We, **Central Research Technology Co**., hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's RF characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY : Cathy Chen , **DATE :** Dec. 10, 2008
(Cathy Chen/ Technical Manager)

APPROVED BY : J. Y. Shih , **DATE :** Dec. 10, 2008
(Tsun-Yu Shih/Laboratory Head)

Contents

1 General Description 4

1.1 General Description of EUT 4
1.2 Test Methodology 4
1.3 Applied standards 5
1.4 The Support Units 7
1.5 Layout of Setup 7
1.6 Test Capability 8
1.7 Measurement Uncertainty 10

2 Field strength of Fundamental 11

2.1 Applied standard 11
2.2 Test Instruments 11
2.3 Test Data 12

3 Radiated Emission Measurement 19

3.1 Applied standard 19
3.2 Test Instruments 20
3.3 Test Data 21

4 Antenna Requirement 39

4.1 Applied standard 39
4.2 Antenna Information 39
4.3 Result 39

Attachment 1 – Photographs of the Test Configurations
Attachment 2 –External Photographs of EUT
Attachment 3 –Internal Photographs of EUT

1 General Description

1.1 General Description of EUT

Equipment under Test : Electronic remote control system
Main Model Number : LDS4B8041A+
Series Model Number : LDS4B8042A+, LDS4B8043A+, LDS4B8021B+, LDS4B8022B+, LDS4B8023B+
Power in : 3Vdc
Test Voltage : 3Vdc(battery*1)
Manufacturer : FORWARD Electronics Co., Ltd.
Channel Numbers : 1
Frequency Range : 915MHz
Modulation : FSK
Function Description :

The EUT is used to transmit control command. Please refer to the user's manual for the details.

There are one receiver and three types of transmitter and which are shown as below.

EUT Type	Type Description	Model No.
EUT 1	Standard	LDS4B8041A+, LDS4B8021B+
EUT 2	Display	LDS4B8042A+, LDS4B8022B+
EUT 3	Thermostatic	LDS4B8043A+, LDS4B8023B+

Since the EUT is considered a potable unit, it was pre-tested on the positioned of each 3 axis. There for only the test data of the worse case- X axis was used for Radiated test.

1.2 Test Methodology

For this EUT, both conducted and radiated emissions were performed according to the procrdures illustrated in ANSI C63.4:2003 and other required measurements were illustrated in separate sections of this test report for detail.

1.3 Applied standards

(1) Conduction Emission Requirement

For intentional device, according to §15.207(a) line conduction emission limit is as below table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency.

(2) Field strength of fundamental

According to 15.249(a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

(3) Radiated Emission Requirement

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For intentional device, according to §15.209, the general requirement of field strength of radiated emissions from intentional radiator at a distance of 3 meters shall not exceed the below table.

Frequency (MHz)	Measurement Distance (m)	Field Strength (uV/m)	Field Strength (dBuV/m)
30 – 88	3	100	40.0
88 – 216	3	150	43.5
216 – 960	3	200	46.0
960 – 1610	3	500	54.0
above 1610	3	500	54.0

Note 1- The lower limit shall apply at the transition frequency.

(4) Restricted Band

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
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			

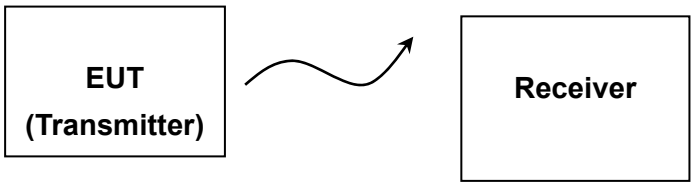
[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

1.4 The Support Units

No.	Unit	Model No./ Serial No.	Trade Name	Power Code	Supported by lab.
NA	-	-	-	-	-

1.5 Layout of Setup



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
NA	-	-	-	-	-	-	

Justification :

For both conducted and radiated emission below 1GHz, the system was configured for typical fashion as a customer could normal use it. The peripherals other than EUT was connected in normally standing by situation.

1.6 Test Capability

Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16-1-4, CISPR16-2-3 and ANSI C63.4.

Test Room	Type of Test Room	Descriptions
TR1	10m semi-anechoic chamber (23m×14m×9m)	Complying with the NSA requirements in documents CISPR 22 and ANSI C63.4. For the radiated emission measurement.
TR10	3m semi-anechoic chamber (9m × 6m × 6m)	
TR11	3m semi-anechoic chamber (9m × 6m × 6m)	
TR13	Chamber	For the RF conducted emission measurement.
TR5	Shielding Room (8m×5m×4m)	For the conducted emission measurement.

Test Laboratory Competence Information

Central Research Technology Co. has been accredited / filed / authorized by the agencies listed in the following table.

Certificate	Nation	Agency	Code	Mark
Accreditation Certificate	USA	NVLAP	200575-0	ISO/IEC 17025
	R.O.C. (Taiwan)	TAF	0905	ISO/IEC 17025
	R.O.C. (Taiwan)	BSMI	SL2-IN-E-0033, SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033	ISO/IEC 17025
Site Filing Document	USA	FCC	474046, TW1021	Test facility list & NSA Data
	Canada	IC	4699A-1,-2,-3	Test facility list & NSA Data
	Japan	VCCI	R-1527,C-1609,T-131,T-1441	Test facility list & NSA Data
Authorization Certificate	Germany	TUV	10021687-2007	ISO/IEC 17025
	Norway	Nemko	ELA212	ISO/IEC 17025

The copy of each certificate can be downloaded from our web site: www.crc-lab.com

Worldwide Testing Services(Taiwan) Co., Ltd. has been accredited/filed/authorized by the agencies listed in the following table.

Certificate	Nation	Agency	Code	Mark
Accreditation Certificate	USA	A2LA	2732.01	
Site Filing Document	USA	FCC	930600	Test facility list & NSA Data
	Canada	IC	5679A-1	Test facility list & NSA Data

1.7 Measurement Uncertainty

The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than U_{cispr} in table 1 of CISPR 16-4-2.

Test Item	Measurement Uncertainty	
Peak Output Power	1.1dB	
Radiated Emission: (30MHz~200MHz)	Horizontal 2.8dB；Vertical 3.5 dB	
Radiated Emission: (200MHz~1GHz)	Horizontal 3.4dB；Vertical 2.8dB	
Radiated Emission: (1GHz~18GHz)	Horizontal 2.5dB；Vertical 2.4dB	
Radiated Emission: (18GHz~26.5GHz)	Horizontal 4.0dB；Vertical 3.9dB	
Line Conducted Emission	ESH2-Z5	3.1dB
	ENV 4200	3.8dB

2 Field strength of Fundamental

Result: Pass

2.1 Applied standard

Fundamental Frequency	Peak	Average
☑ 902 – 928 MHz	500mV/m (**114dBuV/m**)	50mV/m (**94dBuV/m**)
☐2400 – 2483.5 MHz	500 mV/m (**114dBuV/m**)	50 mV/m (**94dBuV/m**)
☐ 5725 – 5875 MHz	500 mV/m (**114dBuV/m**)	50 mV/m (**94dBuV/m**)
☐ 24.0 – 24.25 GHz	2500 mV/m (**128dBuV/m**)	250 mV/m (**108dBuV/m**)

2.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ETSI 26/ 831438/001	2008/10/8	2009/10/7
Test Receiver	R&S	ETSI 40/ 832427/004	2008/9/22	2009/9/21
Antenna	EMCO	3148/34429	2008/4/23	2009/4/22

2.3 Test Data

Test Mode : EUT 1 **Tester :** Danny

Frequency (MHz)	Polarization	Reading Data (dBuV)		Correction Factor (dB/m)	Output Field Strength (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
914.95	V	73.52	67.46	-0.56	72.96	66.90	114	94	41.04	27.10
	H	79.22	72.96	-0.56	78.66	72.40	114	94	35.34	21.60

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Output Field Strength (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Output Field Strength

Test Mode : EUT 2 **Tester :** Danny

Frequency (MHz)	Polarization	Reading Data (dBuV)		Correction Factor (dB/m)	Output Field Strength (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
914.95	V	73.10	66.68	-0.56	72.54	66.12	114	94	41.46	27.88
	H	81.05	74.14	-0.56	80.49	73.58	114	94	33.51	20.42

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Output Field Strength (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Output Field Strength

Test Mode : EUT 3 **Tester :** Danny

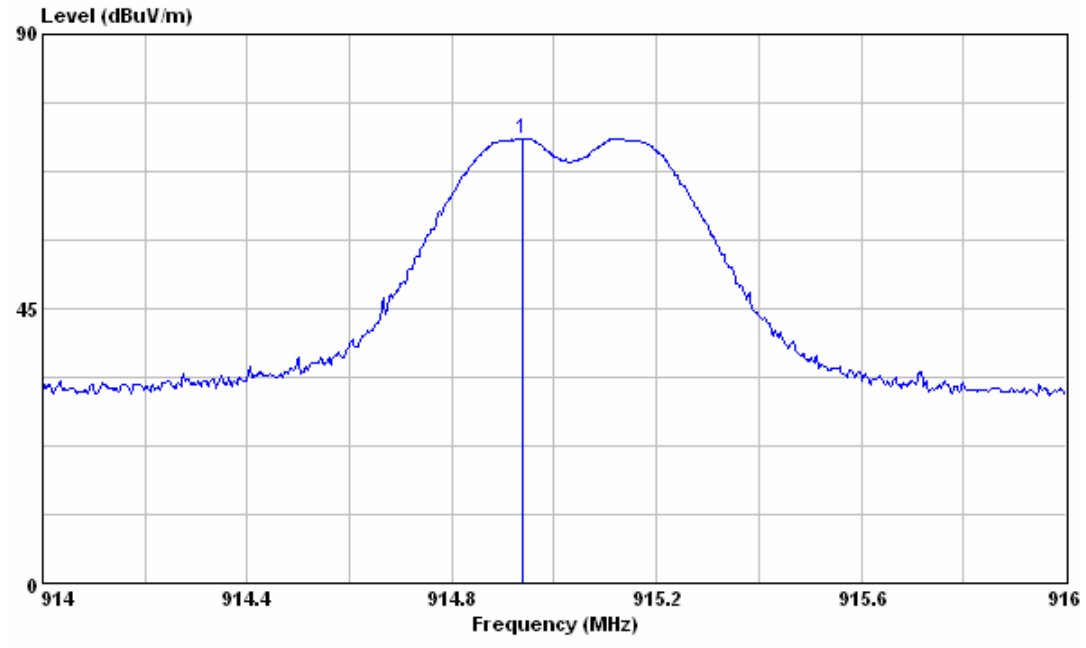
Frequency (MHz)	Polarization	Reading Data (dBuV)		Correction Factor (dB/m)	Output Field Strength (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
914.95	V	69.93	63.84	-0.56	69.37	63.28	114	94	44.63	30.72
	H	82.15	75.55	-0.56	81.59	74.99	114	94	32.41	19.01

Note：

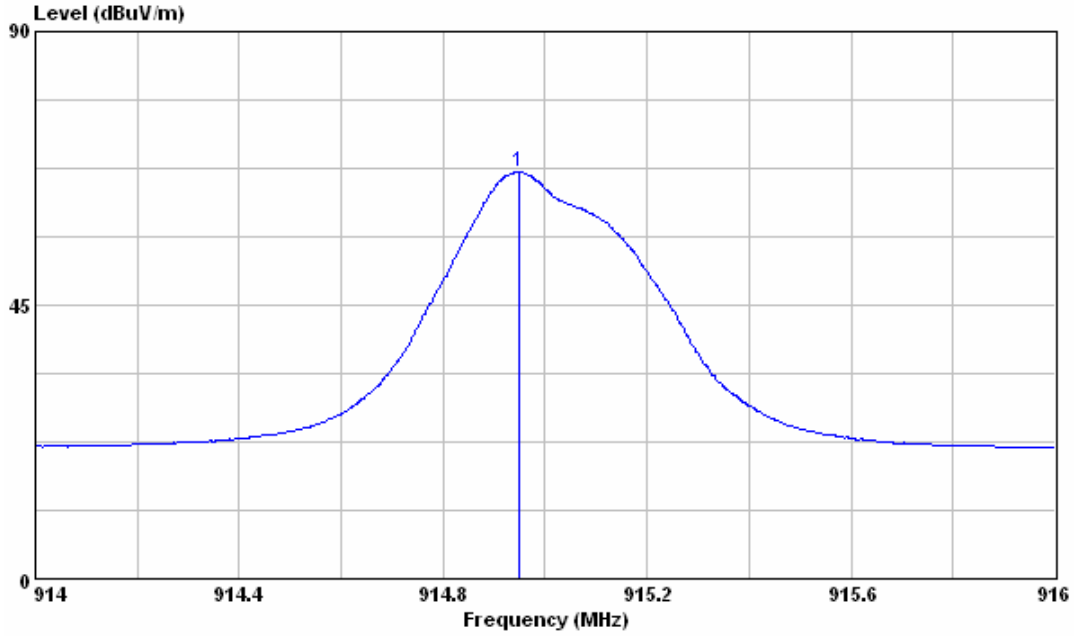
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Output Field Strength (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Output Field Strength

EUT1

Vertical- PK

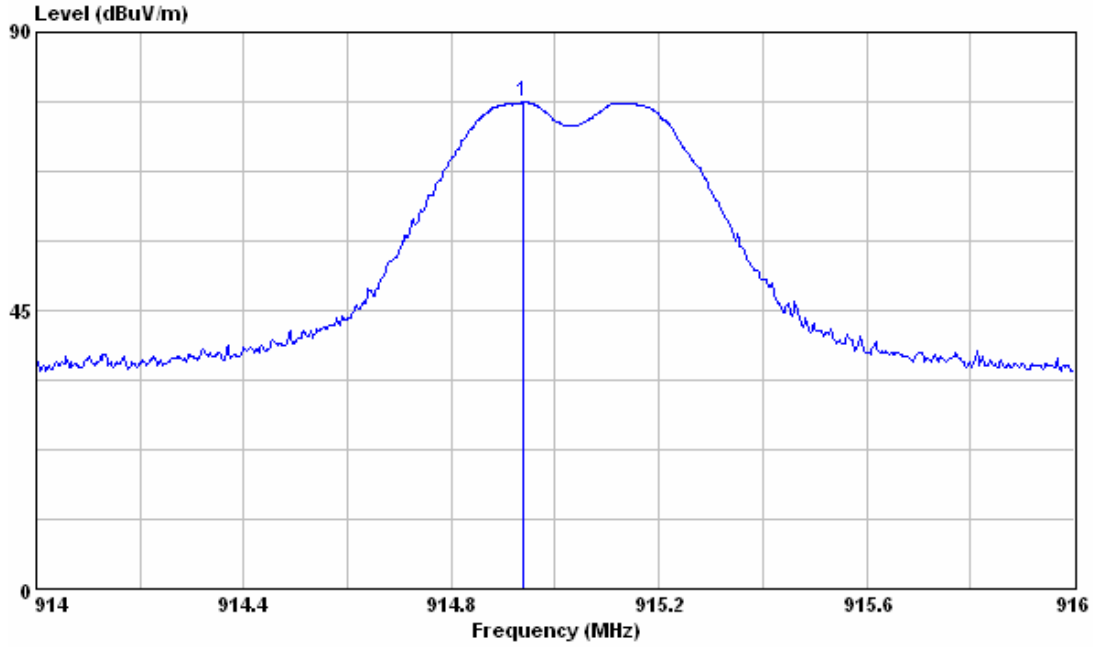


Vertical- AV

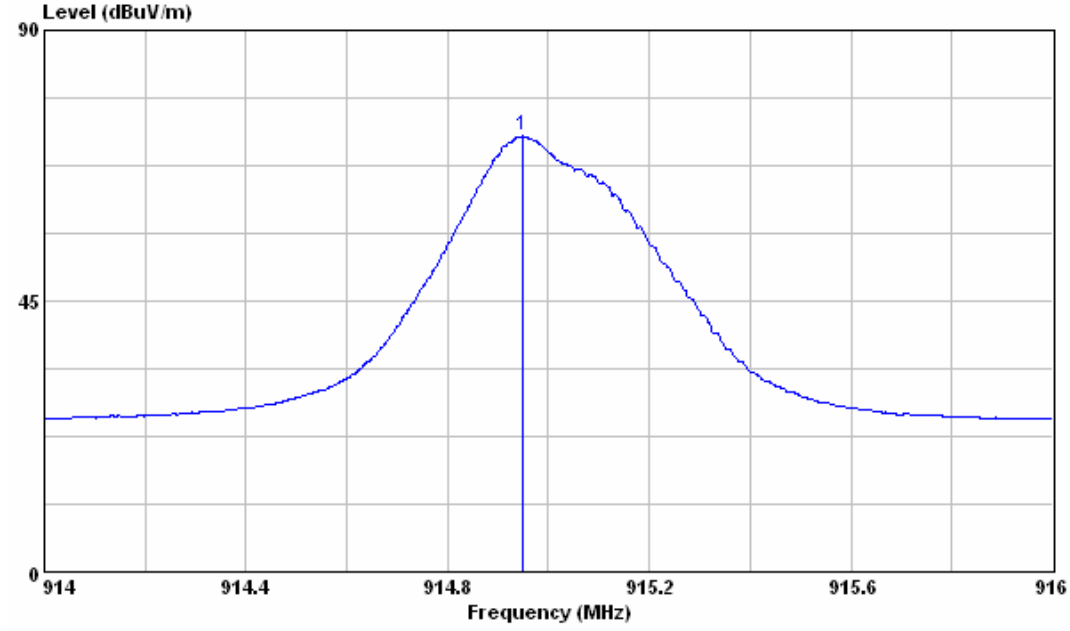


EUT1

Horizontal- PK

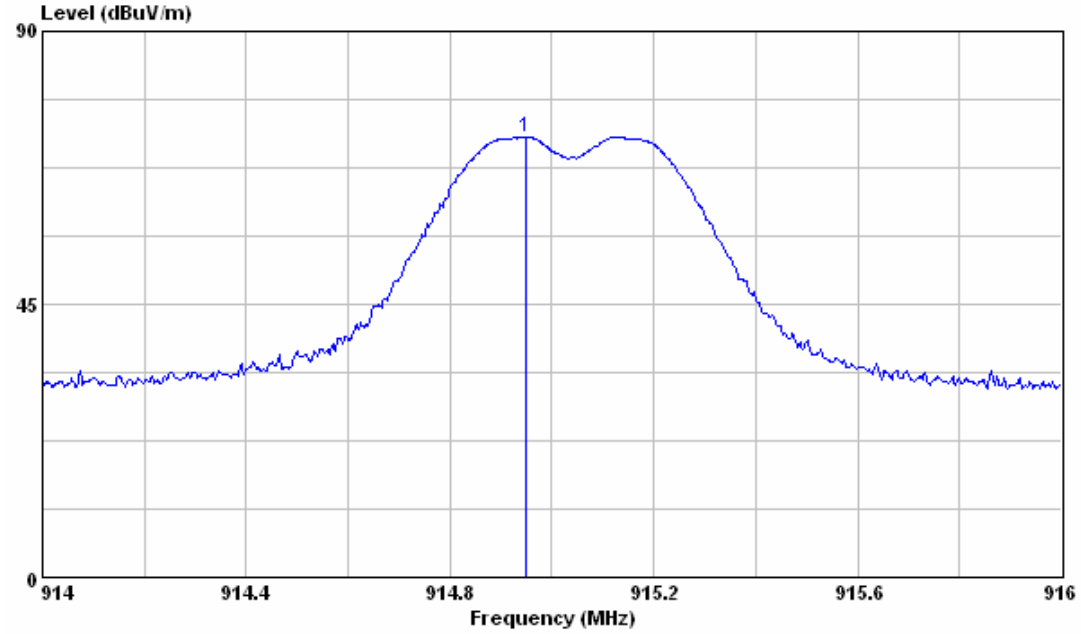


Horizontal- AV

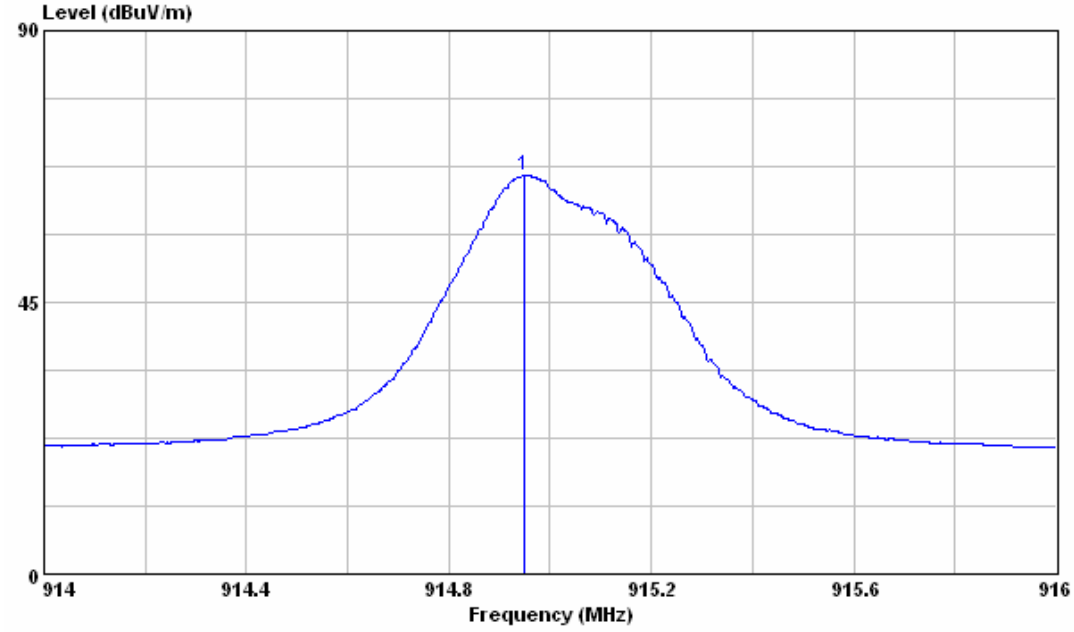


EUT2

Vertical- PK

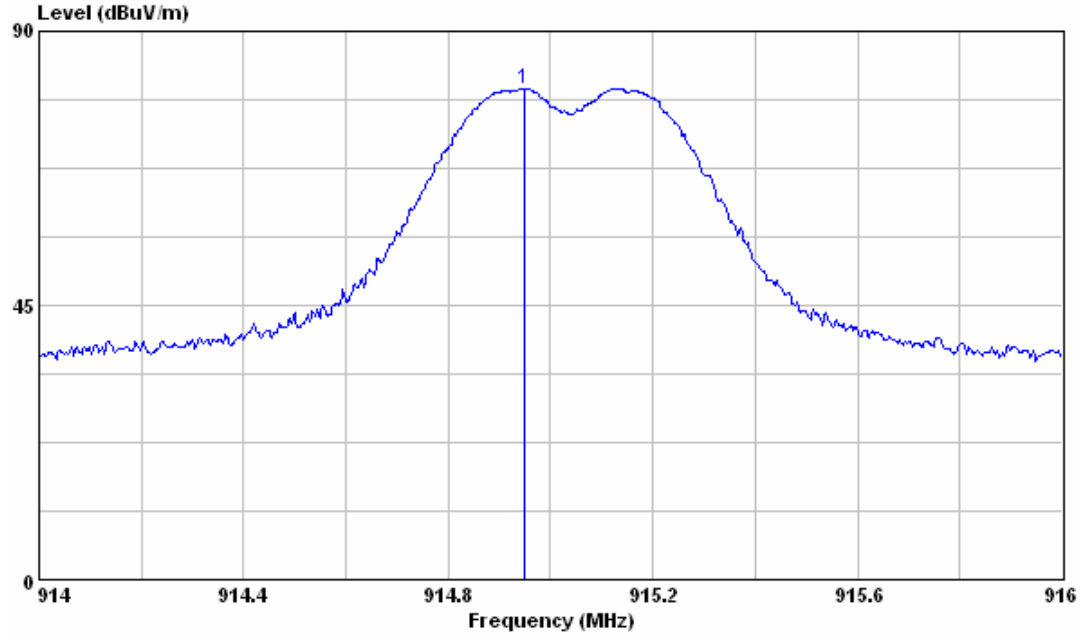


Vertical- AV

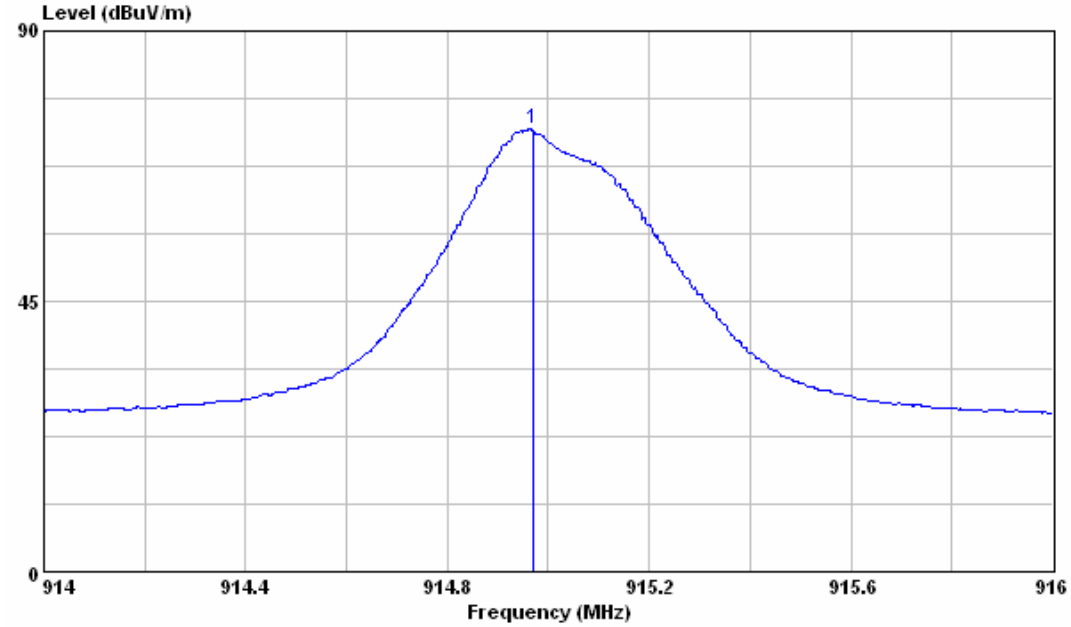


EUT2

Horizontal- PK

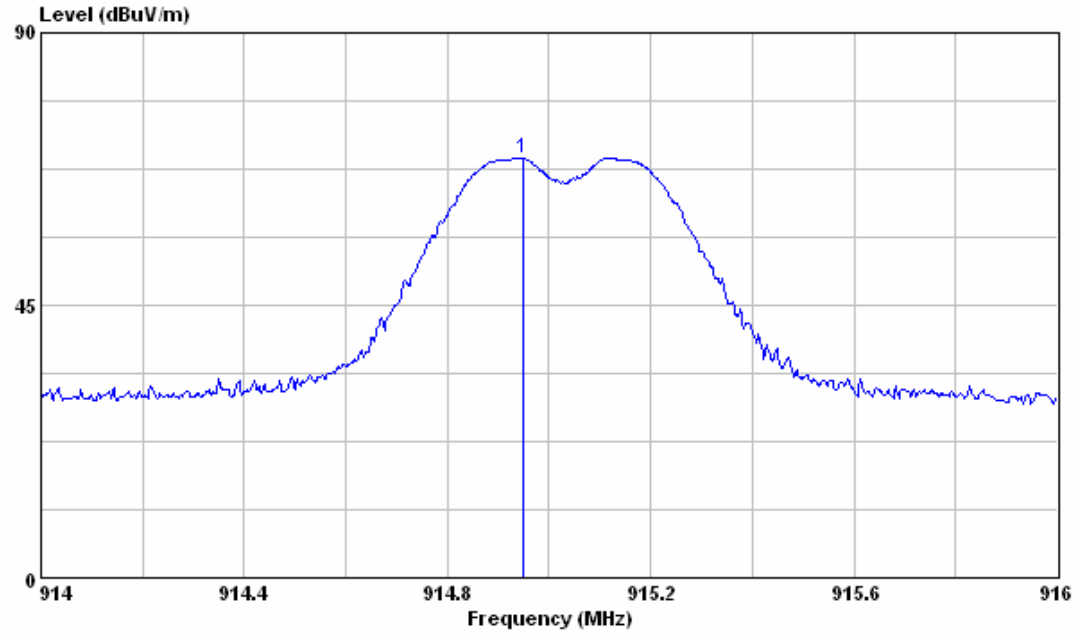


Horizontal- AV

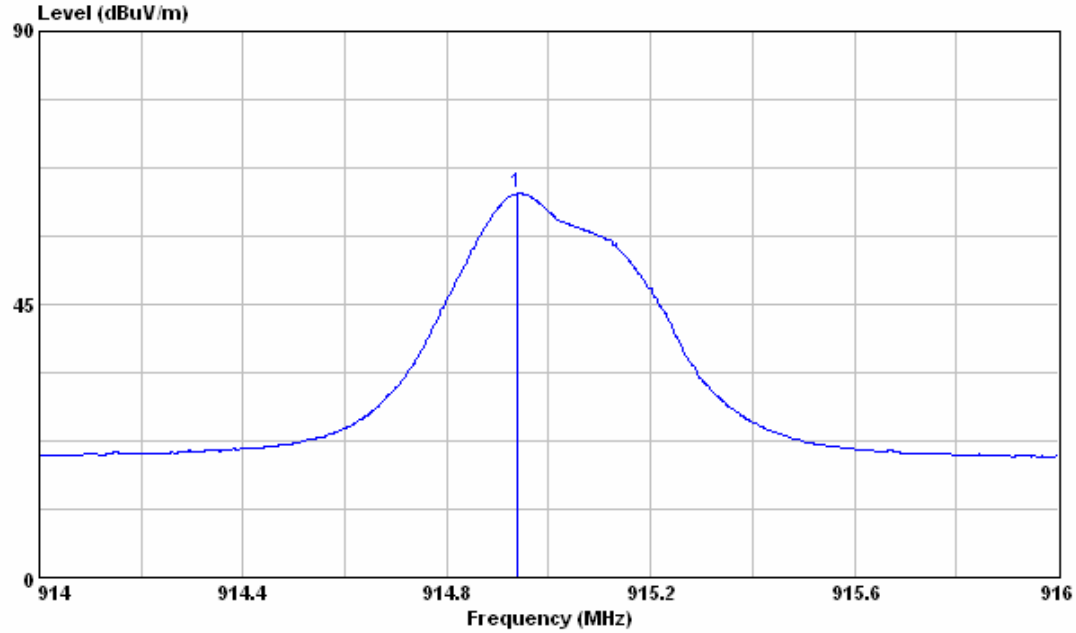


EUT3

Vertical- PK

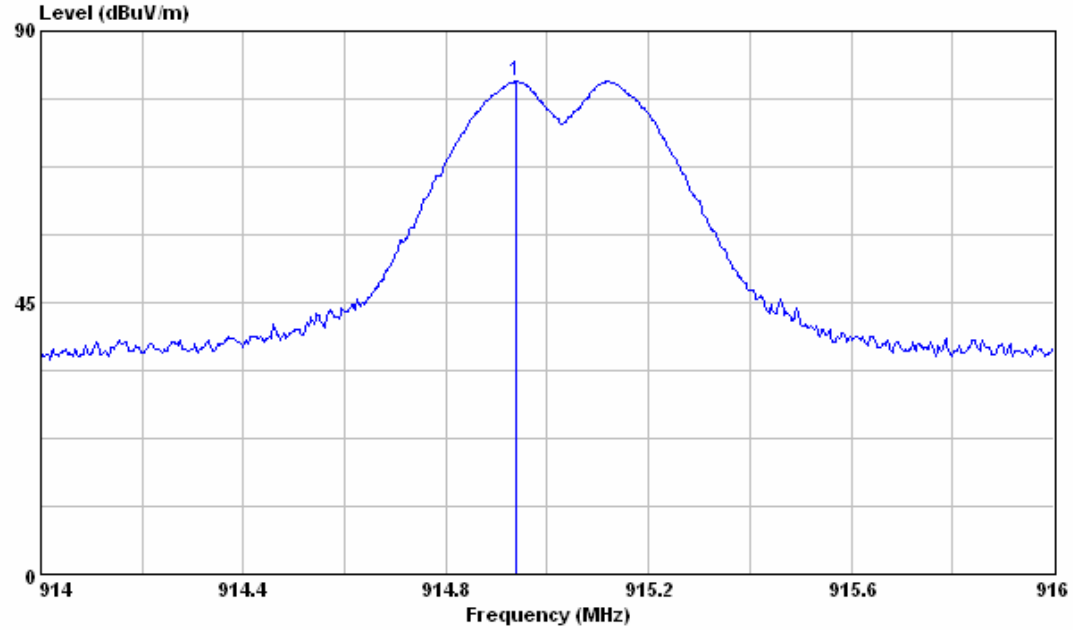


Vertical- AV

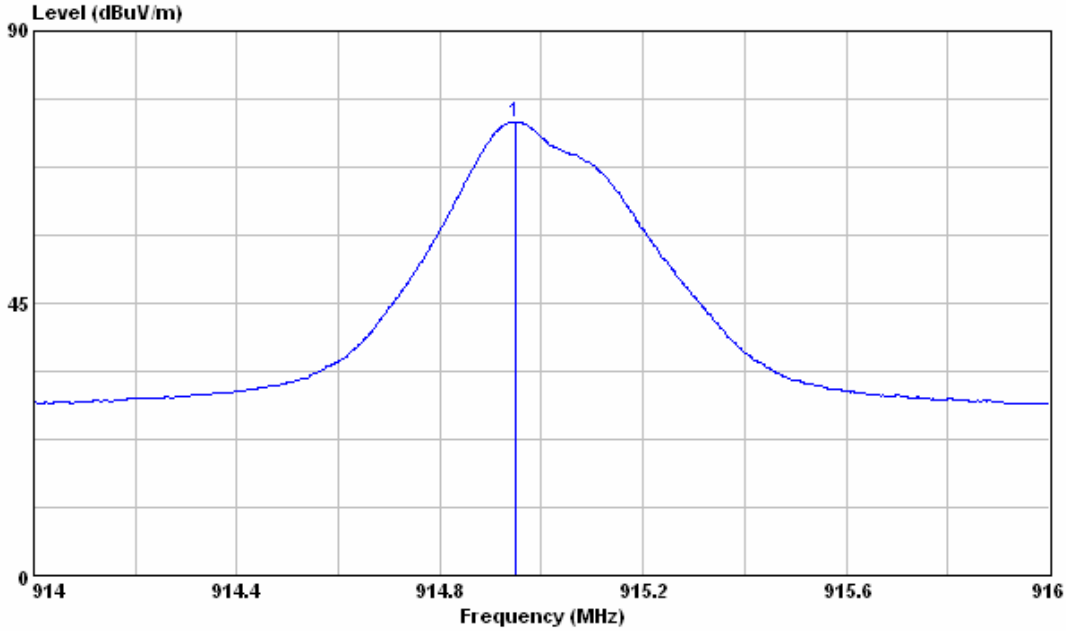


EUT3

Horizontal- PK



Horizontal- AV



3 Radiated Emission Measurement

Result: Pass

3.1 Applied standard

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Limit for Harmonics Radiation Emission Measurement

Fundamental Frequency	Field Strength of Harmonics
☑ 902 – 928 MHz	500 uV/m (54dBuV/m)
☐2400 – 2483.5 MHz	500 uV/m (54dBuV/m)
☐ 5725 – 5875 MHz	500 uV/m (54dBuV/m)
☐ 24.0 – 24.25 GHz	2500 uV/m(68dBuV/m)

Limit for Other Emissions except Harmonics

Frequency (MHz)	Quasi-peak (dBμV/m)	
30 to 88	40	
88 to 216	43.5	
216 to 960	46	
960 to 1000	54	
Frequency (MHz)	**Peak (dBμV/m)**	**Average (dBμV/m)**
Above 1000	74	54

Note 1- The lower limit shall apply at the transition frequency.
Note 2- Additional provisions may be required for cases where interference occurs.

3.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ETSI 26/ 831438/001	2008/10/8	2009/10/7
Test Receiver	R&S	ETSI 40/ 832427/004	2008/9/22	2009/9/21
Antenna	EMCO	3117/00035224	2008/3/26	2009/3/25
Antenna	EMCO	3148/34429	2008/4/23	2009/4/22
Antenna	EMCO	3109/33524	2008/4/23	2009/4/22

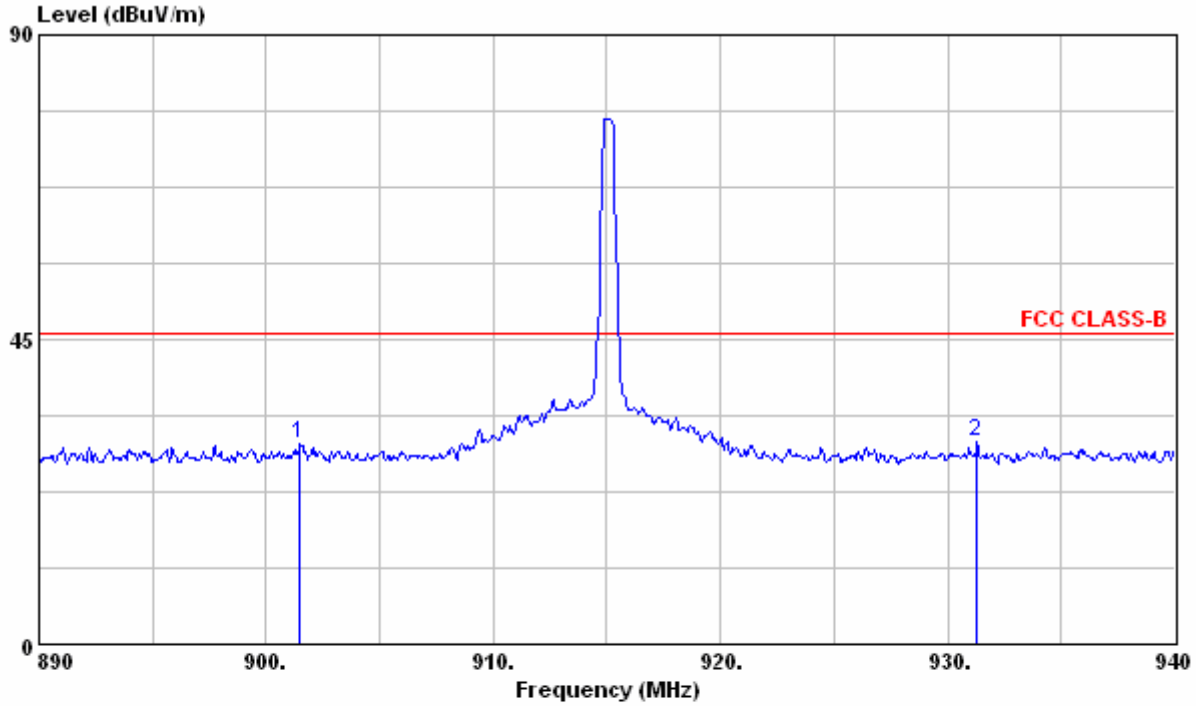
3.3 Test Data

Band Edge

Test Mode **: EUT 1**

Test Distance **:** 3m **Tester** **:** Danny

Polarization **:**Vertical



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	901.500	29.53	30.13	-0.60	46.00	-16.47	---	---	VERTICAL	
2	931.300	29.78	30.30	-0.52	46.00	-16.22	---	---	VERTICAL	

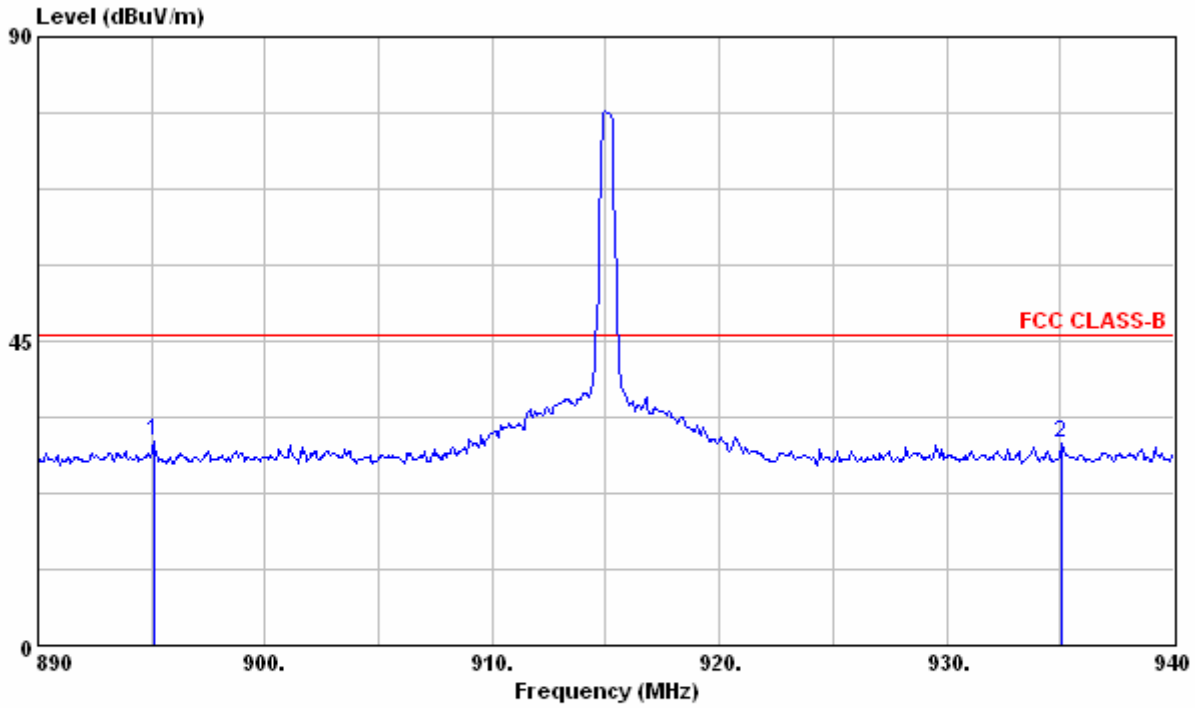
Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode **: EUT 1**

Test Distance **:** 3m **Tester** **:** Danny

Polarization **:**Horizontal



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	895.100	30.33	31.03	-0.70	46.00	-15.67	---	---	HORIZONTAL	
2	935.100	29.77	30.28	-0.51	46.00	-16.23	---	---	HORIZONTAL	

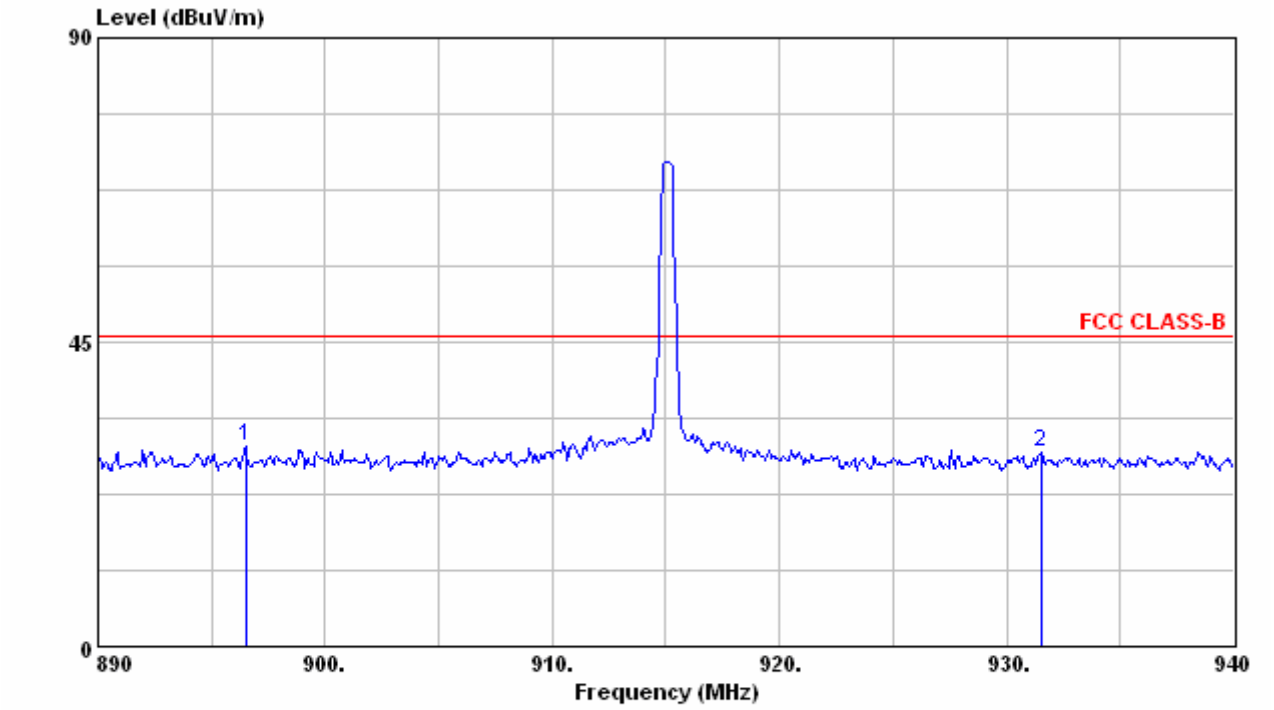
Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode : **EUT 2**

Test Distance : 3m **Tester** : Danny

Polarization :Vertical



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	896.500	29.49	30.16	-0.67	46.00	-16.51	---	---	VERTICAL	
2 @	931.550	28.73	29.25	-0.52	46.00	-17.27	---	---	VERTICAL	

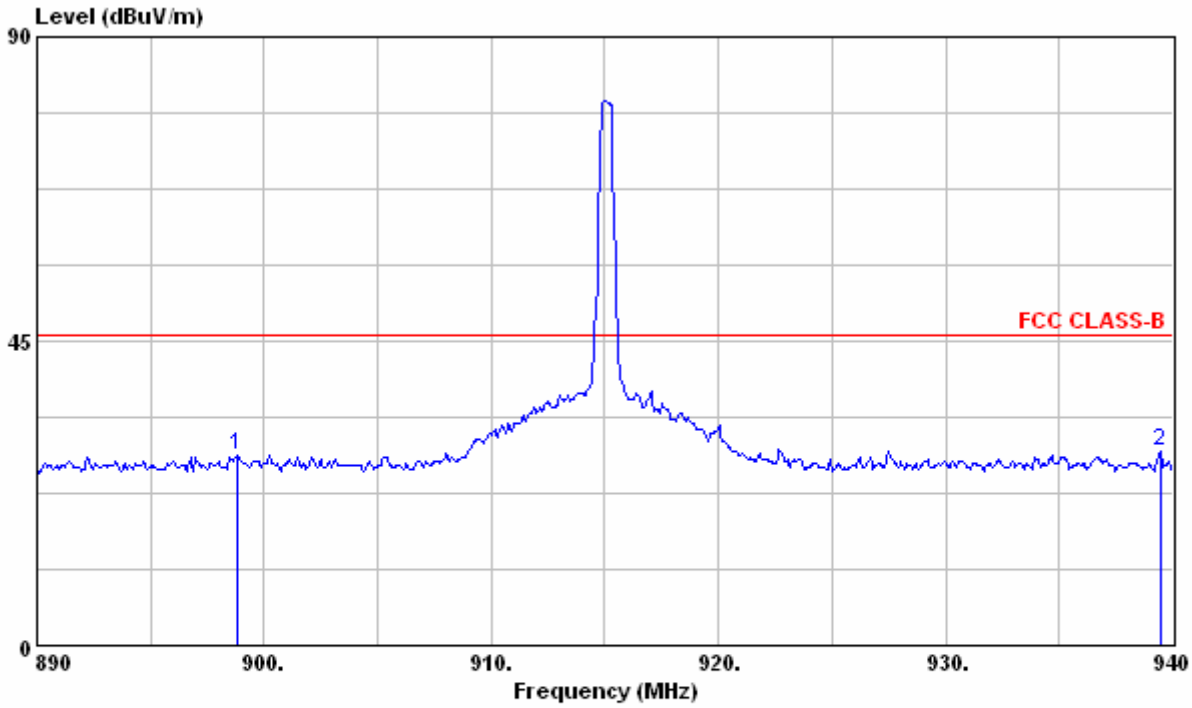
Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode **: EUT 2**

Test Distance **:** 3m **Tester** **:** Danny

Polarization **:**Horizontal



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	898.850	28.23	28.86	-0.63	46.00	-17.77	---	---	HORIZONTAL	
2 @	939.450	28.80	29.29	-0.49	46.00	-17.20	---	---	HORIZONTAL	

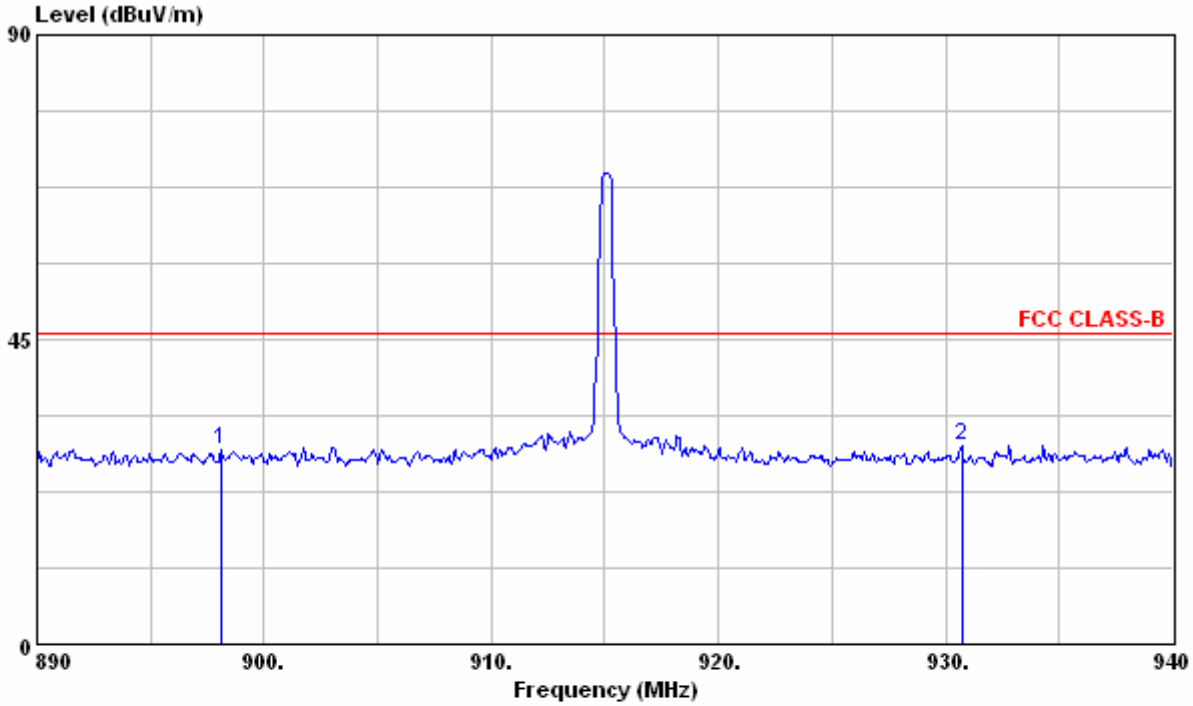
Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode **: EUT 3**

Test Distance **:** 3m **Tester** **:** Danny

Polarization **:**Vertical



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	898.100	28.64	29.28	-0.64	46.00	-17.36	---	---	VERTICAL	
2 @	930.700	29.42	29.94	-0.52	46.00	-16.58	---	---	VERTICAL	

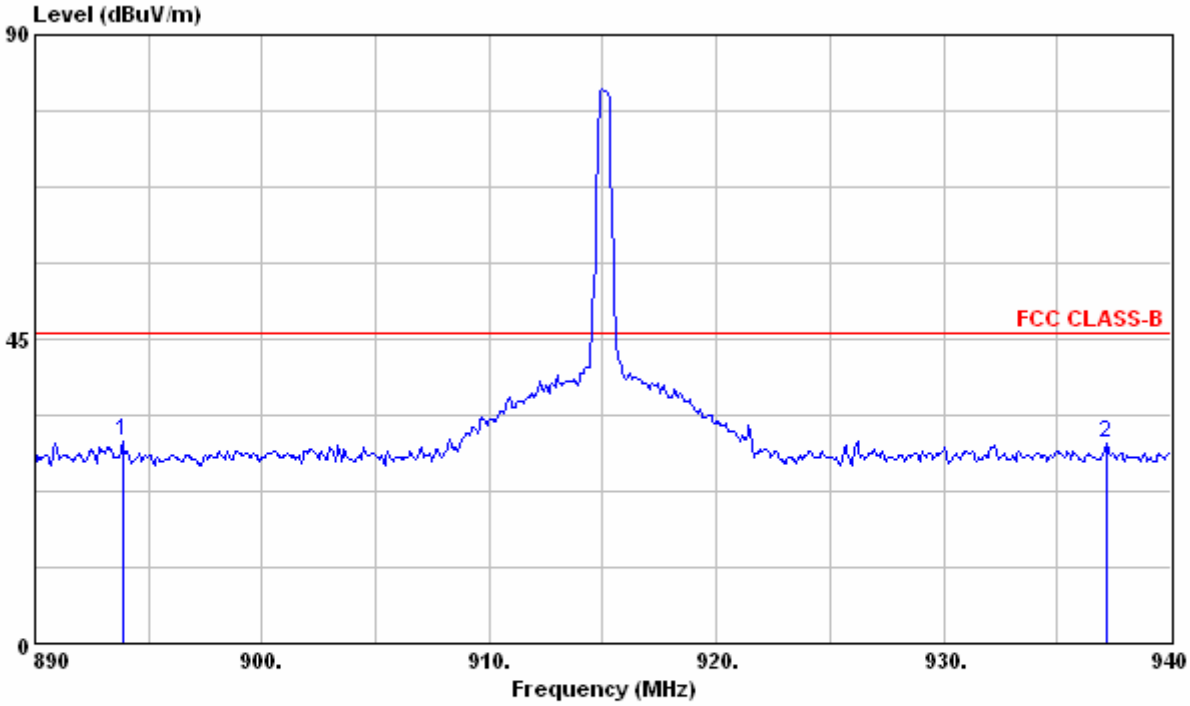
Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode **: EUT 3**

Test Distance **:** 3m **Tester** **:** Danny

Polarization **:**Horizontal



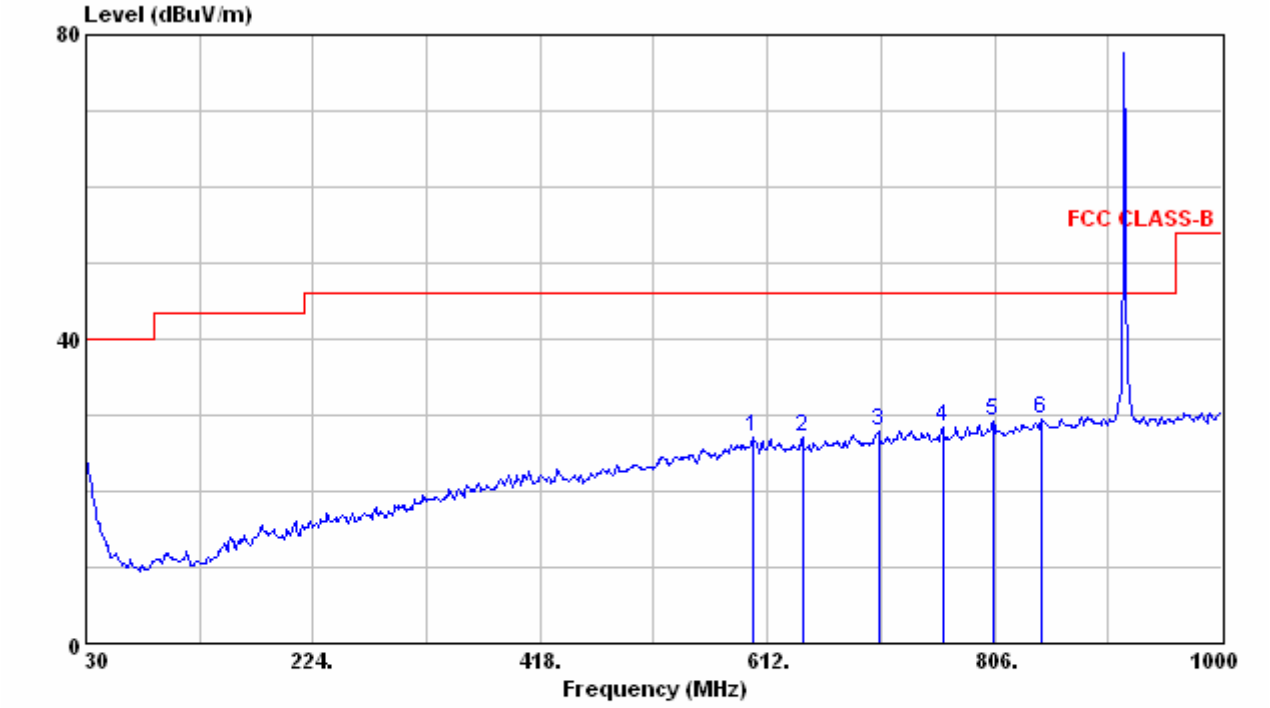
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	893.850	29.90	30.62	-0.72	46.00	-16.10	---	---	HORIZONTAL	
2 @	937.200	29.54	30.05	-0.51	46.00	-16.46	---	---	HORIZONTAL	

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Radiated Emission Measurement below 1000MHz

Test Mode	**: EUT 1**		
Test Distance	: 3m	**Tester**	: Danny
Polarization	: Vertical	**Frequency Range**	: 30MHz~1000MHz

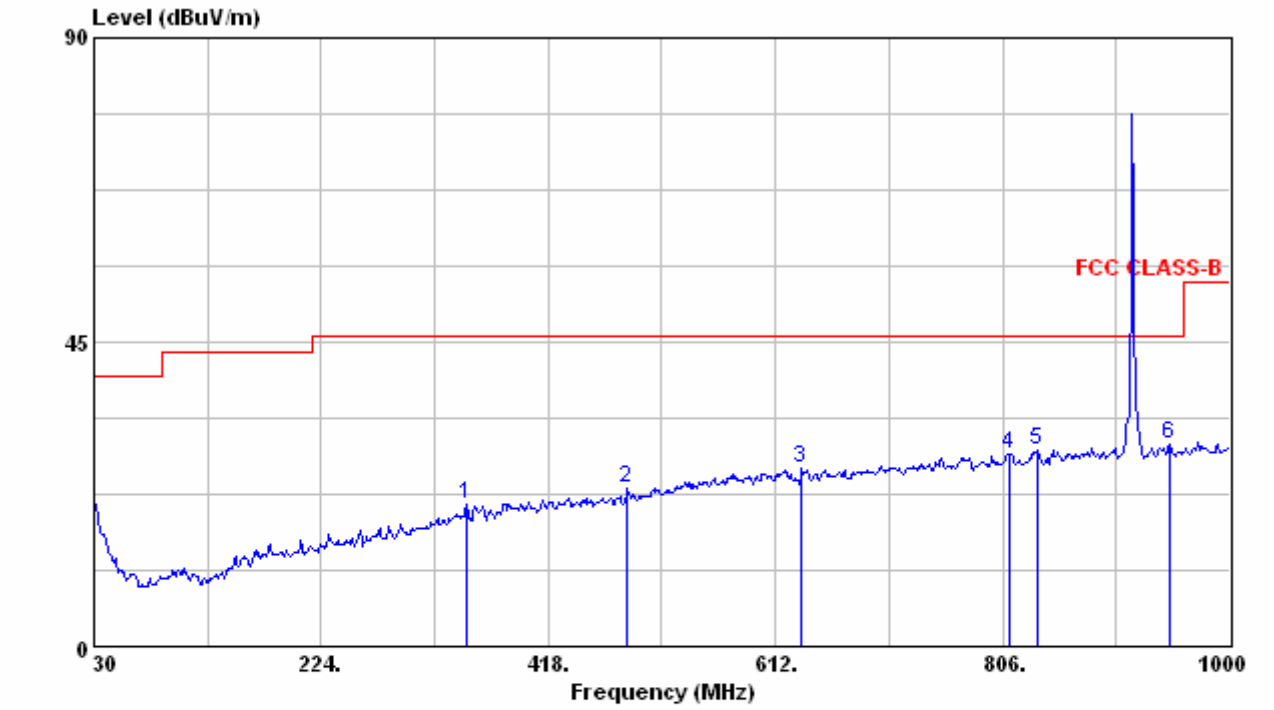


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	600.360	27.01	31.72	-4.71	46.00	-18.99	---	---	VERTICAL	Peak
2	642.070	27.13	31.70	-4.57	46.00	-18.87	---	---	VERTICAL	Peak
3	707.060	27.94	31.04	-3.10	46.00	-18.06	---	---	VERTICAL	Peak
4	761.380	28.40	31.15	-2.75	46.00	-17.60	---	---	VERTICAL	Peak
5	805.030	29.11	31.40	-2.29	46.00	-16.89	---	---	VERTICAL	Peak
6	845.770	29.50	31.12	-1.62	46.00	-16.50	---	---	VERTICAL	Peak

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode	**: EUT 1**		
Test Distance	**:** 3m	**Tester**	**:** Danny
Polarization	**:** Horizontal	**Frequency Range**	**:** 30MHz~1000MHz

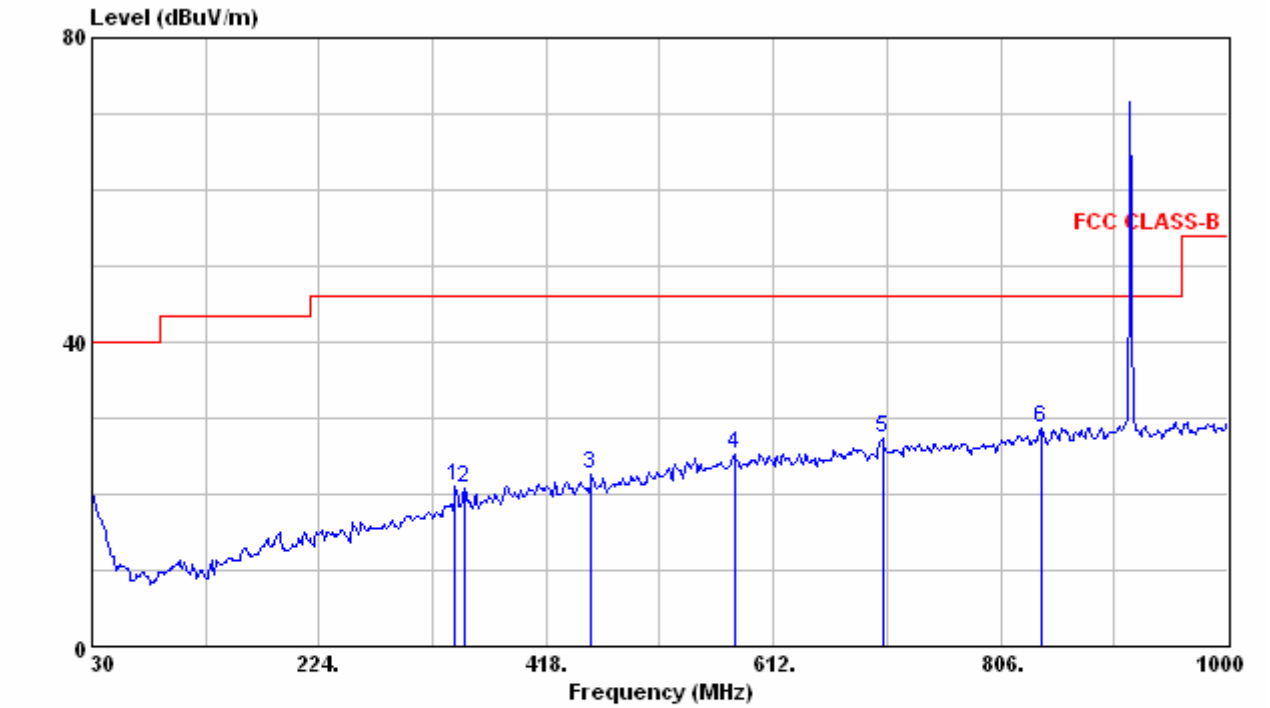


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	348.160	20.92	31.45	-10.53	46.00	-25.08	---	---	HORIZONTAL	Peak
2	485.900	23.31	30.76	-7.45	46.00	-22.69	---	---	HORIZONTAL	Peak
3	634.310	26.37	30.96	-4.59	46.00	-19.63	---	---	HORIZONTAL	Peak
4	811.820	28.44	30.61	-2.17	46.00	-17.56	---	---	HORIZONTAL	Peak
5	836.070	29.00	30.78	-1.78	46.00	-17.00	---	---	HORIZONTAL	Peak
6 @	948.590	29.93	30.41	-0.48	46.00	-16.07	---	---	HORIZONTAL	Peak

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode	**: EUT 2**		
Test Distance	**:** 3m	**Tester**	**:** Danny
Polarization	**:** Vertical	**Frequency Range**	**:** 30MHz~1000MHz

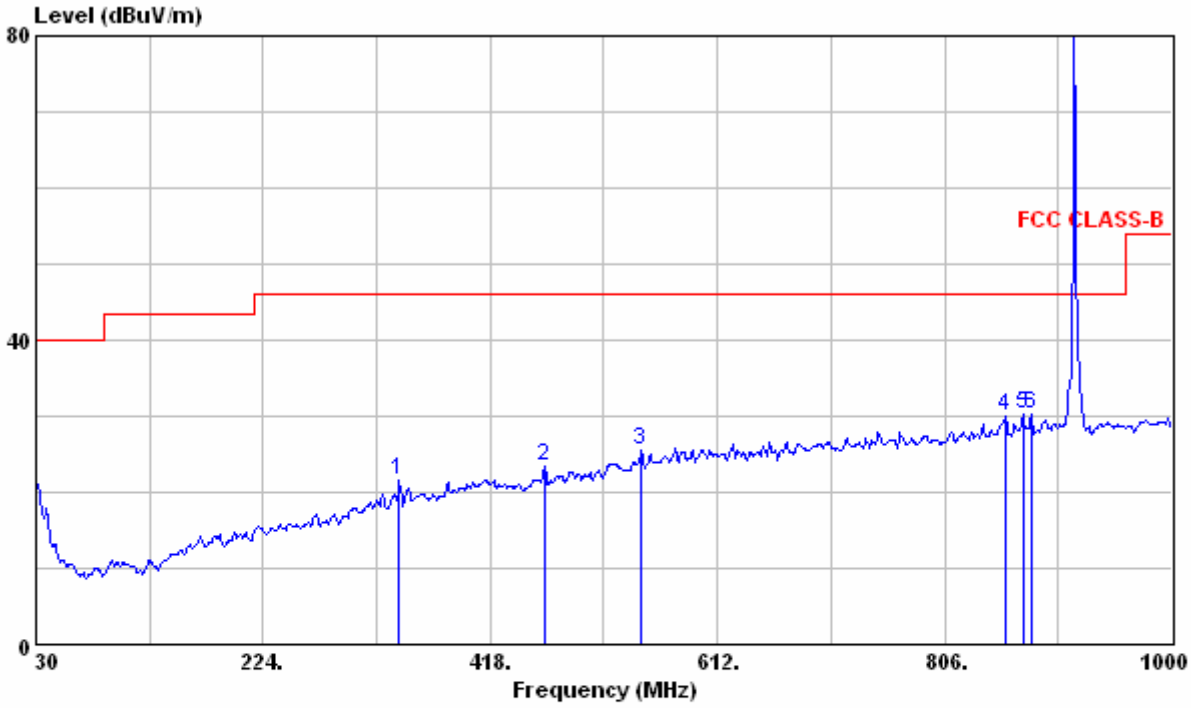


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	340.400	21.07	31.91	-10.84	46.00	-24.93	---	---	VERTICAL	Peak
2 @	348.160	20.72	31.25	-10.53	46.00	-25.28	---	---	VERTICAL	Peak
3 @	456.800	22.53	30.74	-8.21	46.00	-23.47	---	---	VERTICAL	Peak
4 @	579.020	25.37	30.42	-5.05	46.00	-20.63	---	---	VERTICAL	Peak
5 @	705.120	27.31	30.42	-3.11	46.00	-18.69	---	---	VERTICAL	Peak
6 @	840.920	28.72	30.42	-1.70	46.00	-17.28	---	---	VERTICAL	Peak

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode	**: EUT 2**		
Test Distance	**:** 3m	**Tester**	**:** Danny
Polarization	**:** Horizontal	**Frequency Range**	**:** 30MHz~1000MHz

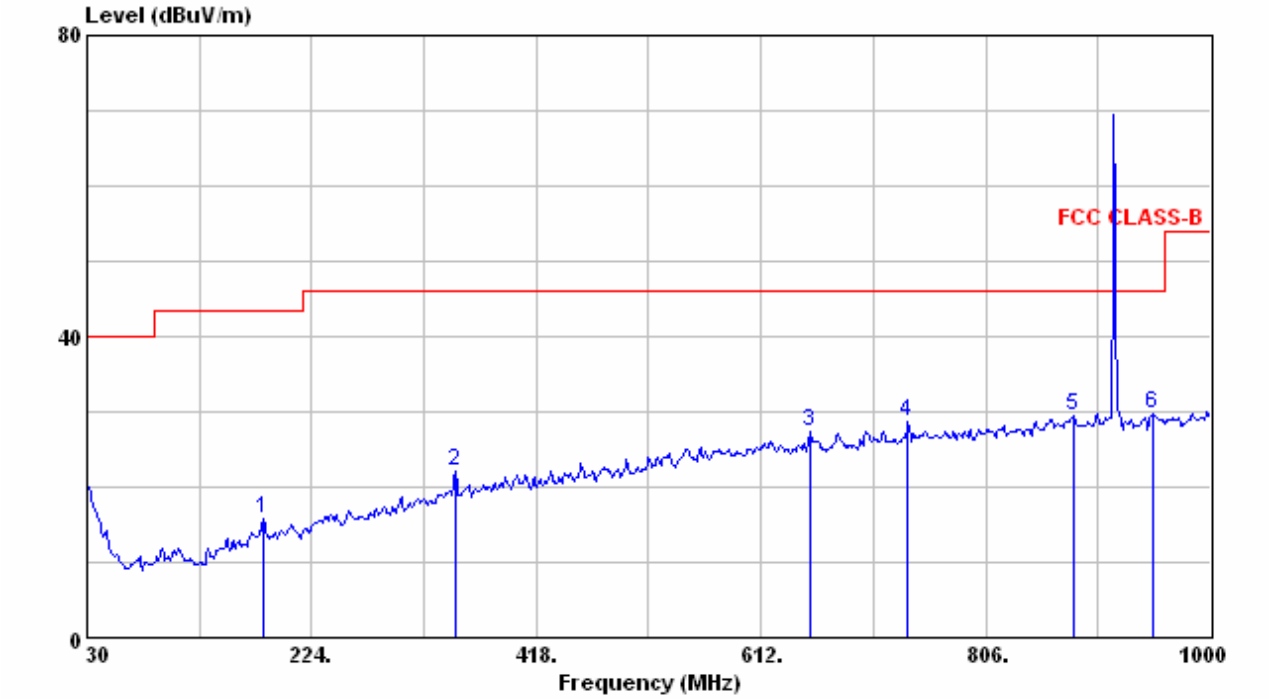


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	340.400	21.48	32.32	-10.84	46.00	-24.52	---	---	HORIZONTAL	Peak
2 @	464.560	23.30	31.31	-8.01	46.00	-22.70	---	---	HORIZONTAL	Peak
3 @	547.010	25.54	31.16	-5.62	46.00	-20.46	---	---	HORIZONTAL	Peak
4 @	858.380	29.93	31.33	-1.40	46.00	-16.07	---	---	HORIZONTAL	Peak
5 @	872.930	30.22	31.34	-1.12	46.00	-15.78	---	---	HORIZONTAL	Peak
6 @	879.720	30.30	31.28	-0.98	46.00	-15.70	---	---	HORIZONTAL	Peak

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode	**: EUT 3**		
Test Distance	**:** 3m	**Tester**	**:** Danny
Polarization	**:** Vertical	**Frequency Range**	**:** 30MHz~1000MHz

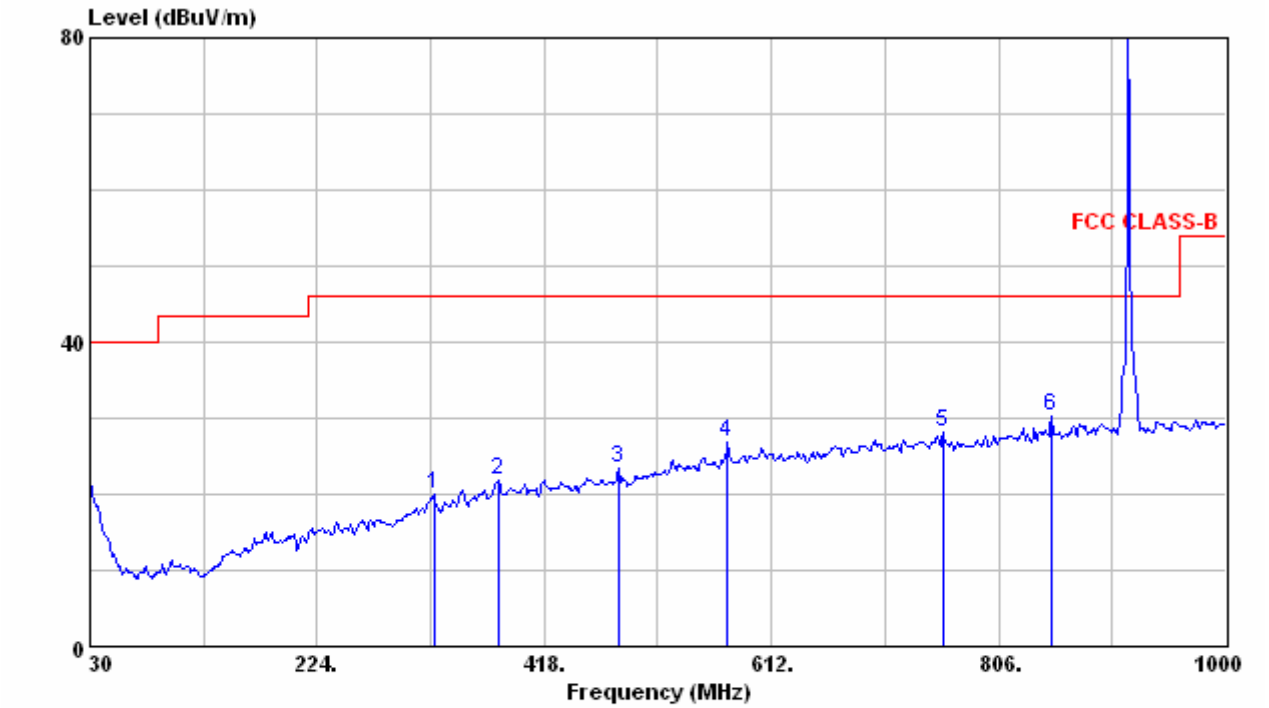


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	182.290	15.69	31.14	-15.45	43.50	-27.81	---	---	VERTICAL	Peak
2 @	348.160	22.22	32.75	-10.53	46.00	-23.78	---	---	VERTICAL	Peak
3 @	653.710	27.25	31.69	-4.44	46.00	-18.75	---	---	VERTICAL	Peak
4 @	739.070	28.76	31.68	-2.92	46.00	-17.24	---	---	VERTICAL	Peak
5 @	882.630	29.36	30.29	-0.93	46.00	-16.64	---	---	VERTICAL	Peak
6 @	950.530	29.63	30.10	-0.47	46.00	-16.37	---	---	VERTICAL	Peak

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode	**: EUT 3**		
Test Distance	**:** 3m	**Tester**	**:** Danny
Polarization	**:** Horizontal	**Frequency Range**	**:** 30MHz~1000MHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	323.910	19.91	31.38	-11.47	46.00	-26.09	---	---	HORIZONTAL	Peak
2 @	379.200	21.82	31.38	-9.56	46.00	-24.18	---	---	HORIZONTAL	Peak
3 @	481.050	23.34	30.91	-7.57	46.00	-22.66	---	---	HORIZONTAL	Peak
4 @	574.170	26.72	31.85	-5.13	46.00	-19.28	---	---	HORIZONTAL	Peak
5 @	758.470	28.27	31.05	-2.78	46.00	-17.73	---	---	HORIZONTAL	Peak
6 @	850.620	30.25	31.79	-1.54	46.00	-15.75	---	---	HORIZONTAL	Peak

Note：

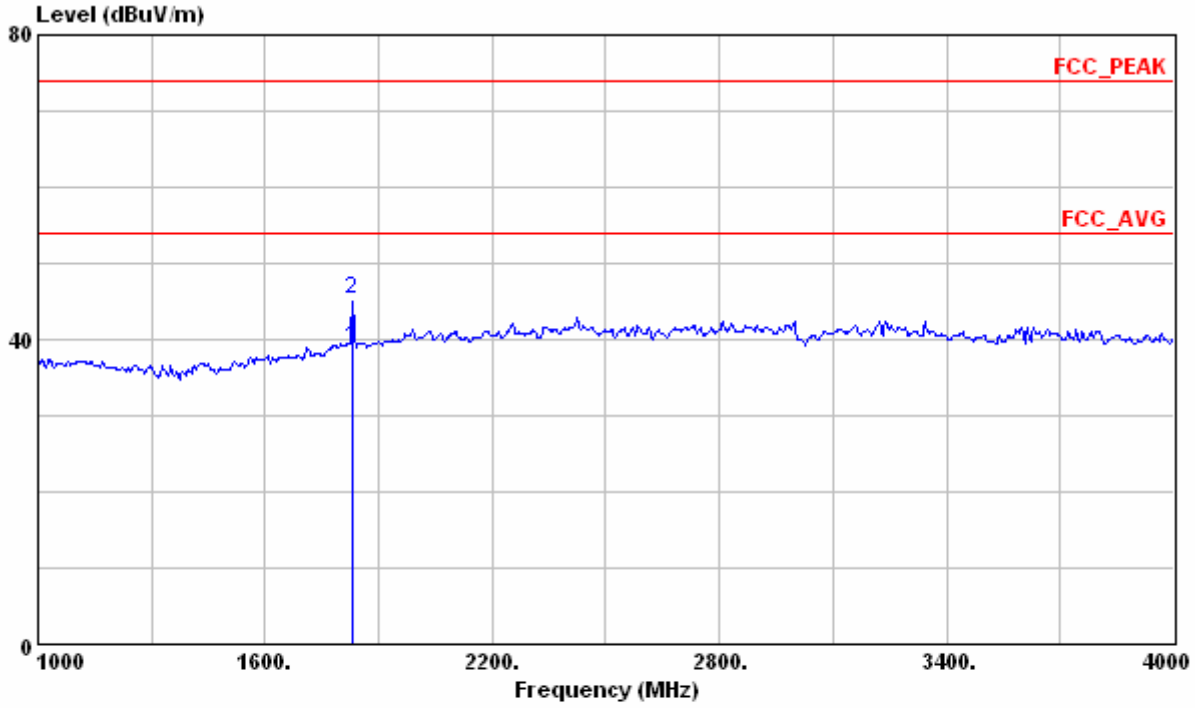
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Radiated Emission Measurement above 1000MHz

Test Model : **EUT 1**

Test Distance : 3m **Tester** : Danny

Antenna Polarization : Vertical **Frequency Range** :1GHz~9.5GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1830.012	39.00	68.92	-29.92	54.00	-15.00	179	122	VERTICAL	Average
2	1830.262	45.17	75.09	-29.92	74.00	-28.83	179	122	VERTICAL	Peak

Note:

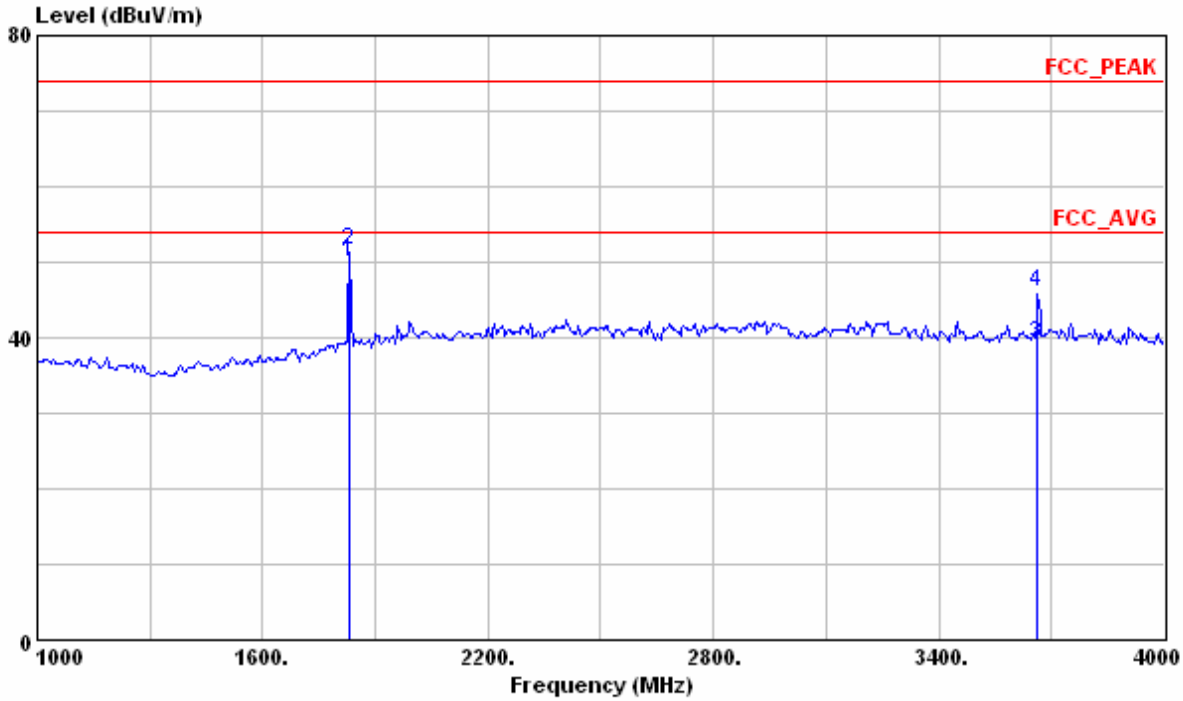
1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 4GHz to 9.5GHz, so the graphs are omitted above 4GHz.

Test Model : **EUT 1**

Test Distance : 3m **Tester** : Danny

Antenna Polarization : Horizontal **Frequency Range** :1GHz~9.5GHz



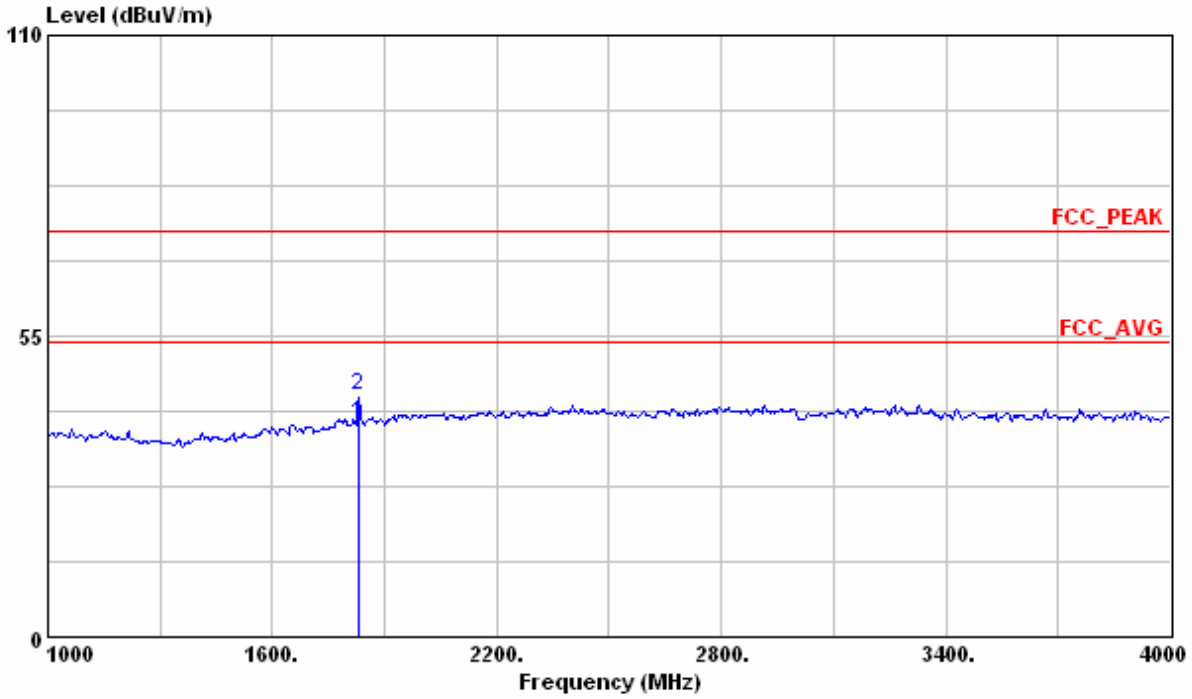
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	1829.988	49.96	79.88	-29.92	54.00	-4.04	217	193	HORIZONTAL	Average
2	1830.000	51.59	81.51	-29.92	74.00	-22.41	217	193	HORIZONTAL	Peak
3	3659.930	39.16	65.12	-25.96	54.00	-14.84	195	198	HORIZONTAL	Average
4	3660.205	45.93	71.89	-25.96	74.00	-28.07	195	198	HORIZONTAL	Peak

Note:

1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 4GHz to 9.5GHz, so the graphs are omitted above 4GHz.

Test Model	**: EUT 2**		
Test Distance	**:** 3m	**Tester**	**:** Danny
Antenna Polarization	**:** Vertical	**Frequency Range**	**:**1GHz~9.5GHz



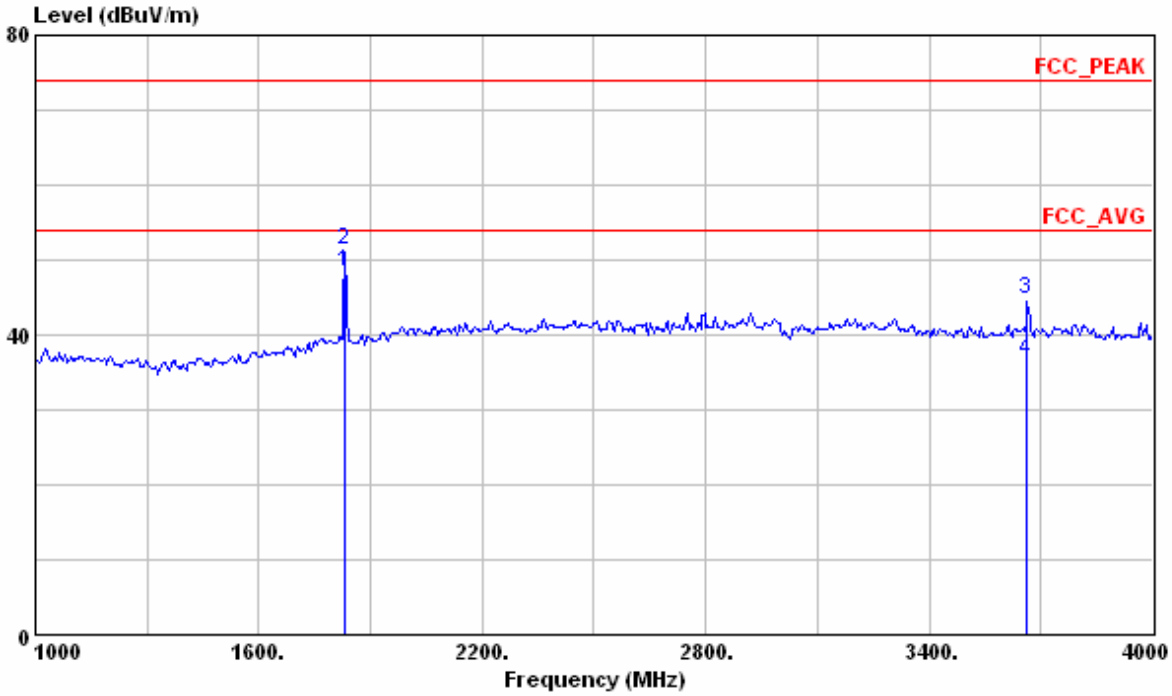
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	1830.125	39.19	69.11	-29.92	54.00	-14.81	183	123	VERTICAL	Average
2	1830.238	44.24	74.16	-29.92	74.00	-29.76	183	123	VERTICAL	Peak

Note:

1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 4GHz to 9.5GHz, so the graphs are omitted above 4GHz.

Test Model	**: EUT 2**		
Test Distance	**:** 3m	**Tester**	**:** Danny
Antenna Polarization	**:** Horizontal	**Frequency Range**	**:**1GHz~9.5GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	1830.125	48.37	78.29	-29.92	54.00	-5.63	147	148	HORIZONTAL	Average
2	1830.225	51.37	81.29	-29.92	74.00	-22.63	147	148	HORIZONTAL	Peak
3	3659.800	44.63	70.59	-25.96	74.00	-29.37	189	298	HORIZONTAL	Peak
4	3660.100	36.71	62.67	-25.96	54.00	-17.29	189	298	HORIZONTAL	Average

Note:

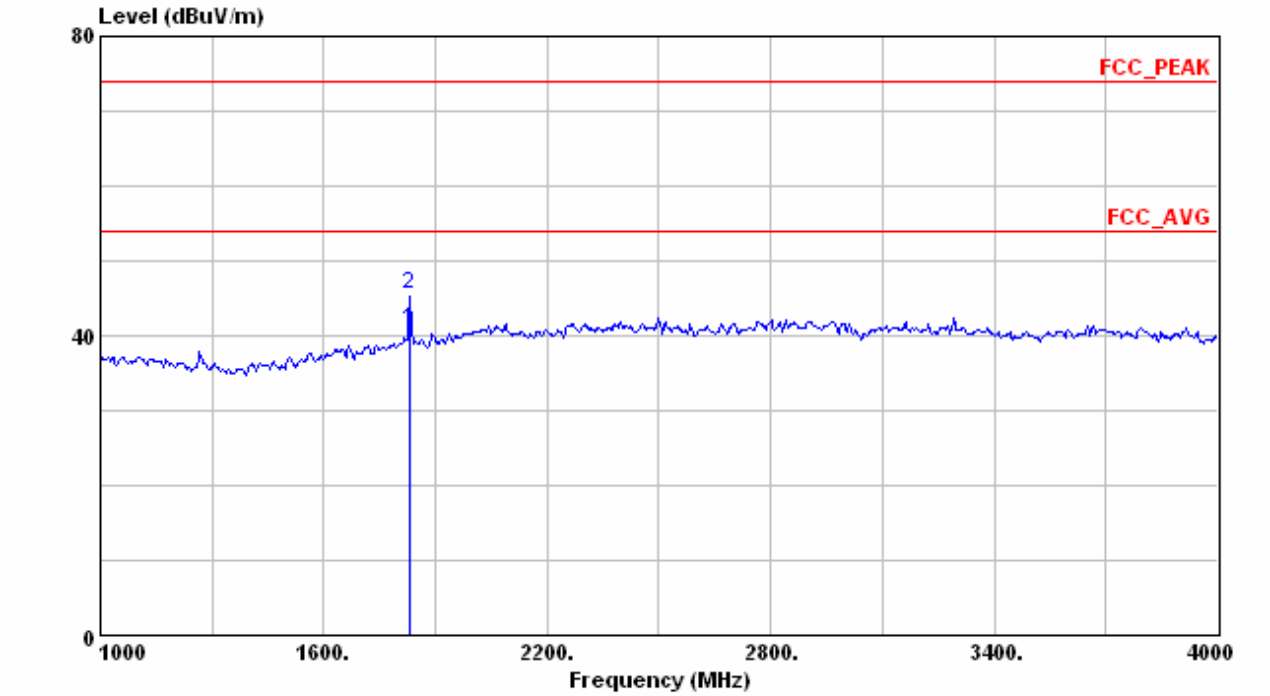
1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 4GHz to 9.5GHz, so the graphs are omitted above 4GHz.

Test Model : **EUT 3**

Test Distance : 3m **Tester** : Danny

Antenna Polarization : Vertical **Frequency Range** :1GHz~9.5GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1829.950	40.71	70.63	-29.92	54.00	-13.29	241	332	VERTICAL	Average
2	1830.113	45.63	75.55	-29.92	74.00	-28.37	241	332	VERTICAL	Peak

Note:

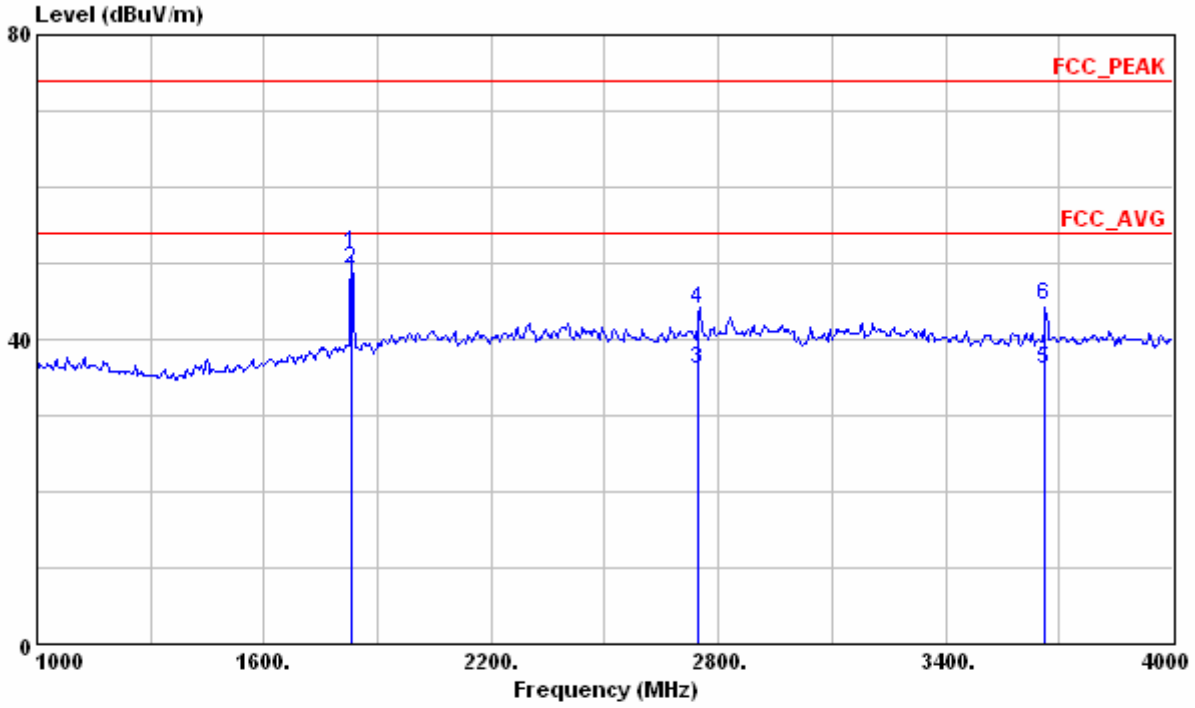
1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 4GHz to 9.5GHz, so the graphs are omitted above 4GHz.

Test Model : **EUT 3**

Test Distance : 3m **Tester** : Danny

Antenna Polarization : Horizontal **Frequency Range** :1GHz~9.5GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1829.780	51.21	81.14	-29.93	74.00	-22.79	216	39	HORIZONTAL	Peak
2 @	1829.993	49.32	79.24	-29.92	54.00	-4.68	216	39	HORIZONTAL	Average
3	2744.950	35.95	63.42	-27.47	54.00	-18.05	216	218	HORIZONTAL	Average
4	2745.150	44.07	71.54	-27.47	74.00	-29.93	216	218	HORIZONTAL	Peak
5	3659.875	36.05	62.01	-25.96	54.00	-17.95	221	126	HORIZONTAL	Average
6	3660.000	44.38	70.34	-25.96	74.00	-29.62	271	126	HORIZONTAL	Peak

Note:

1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 4GHz to 9.5GHz, so the graphs are omitted above 4GHz.

4 Antenna Requirement

4.1 Applied standard

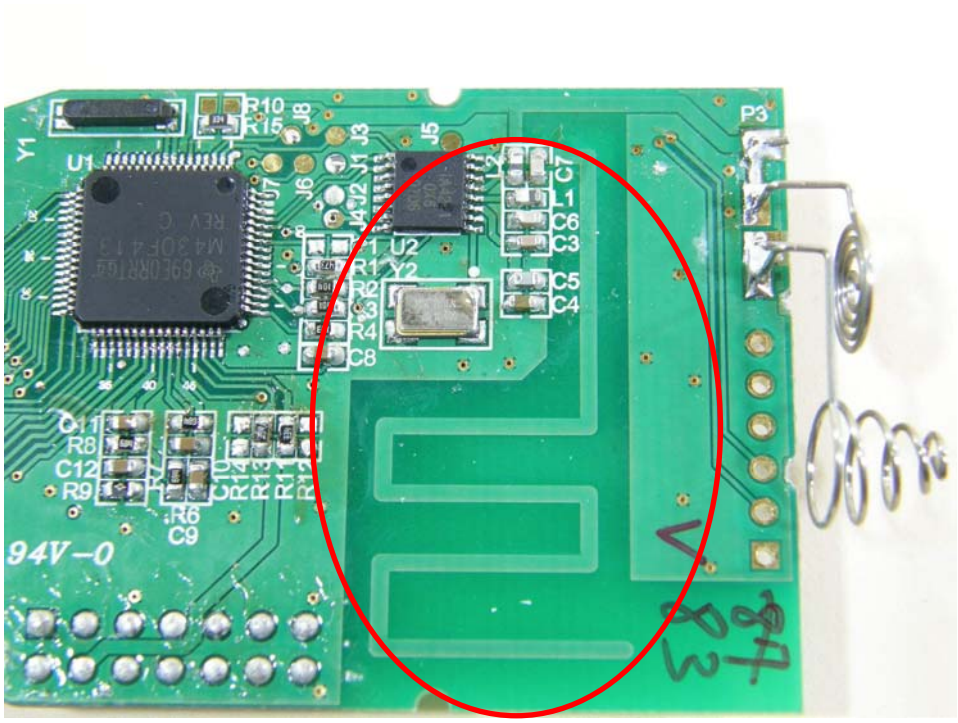
According to 15.247(4), The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi

4.2 Antenna Information

This antenna's relative information as follow:

Brand	Model	Frequency Range (MHz)	Gain (dBi)	Comment
Maxitrol	N/A	915	0	Printed antenna

Antenna Position:



4.3 Result

Gain of the antenn is less than 6dBi.