Test Report

Product Name ： 2.4GHz Wireless Digital Audio Transmitter Module

Model No. ： AWD60XT

FCC ID. ： NGVAWD60XT

Applicant ： AIRWAVE TECHNOLOGIES INC.

Address ： 4F,NO.9 Industry E. 9th Road Science-based Industrial Park, Hsinchu, Taiwan,R.O.C.

Date of Receipt ： 2007/07/06

Issued Date ： 2007/07/16

Report No. ： 077136R-RFUSP07V01

Test Report Certification

Issued Date : 2007/07/16
Report No. : 077136R-RFUSP07V01

QuieTek

Product Name	:	2.4GHz Wireless Digital Audio Transmitter Module
Applicant	:	AIRWAVE TECHNOLOGIES INC.
Address	:	4F,NO.9 Industry E. 9th Road Science-based Industrial Park, Hsinchu, Taiwan,R.O.C.
Manufacturer	:	AIRWAVE TECHNOLOGIES INC.
Model No.	:	AWD60XT
FCC ID.	:	NGVAWD60XT
Rated Voltage	:	DC 3.3V
EUT Voltage	:	DC 3.3V
Trade Name	:	AIRWAVE
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.249: 2006
Test Result	:	Complied

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By : Sandy Chuang
(Sandy Chuang)

Tested By : Sheena Huang
(Sheena Huang)

Approved By : Roy Wang
(Roy Wang)

TABLE OF CONTENTS

Description		Page
1.	**General Information**	**4**
1.1.	EUT Description	4
1.2.	Operation Description	5
1.3.	Test Mode	6
1.4.	Tested System Details	7
1.5.	Configuration of tested System	8
1.6.	EUT Exercise Software	9
1.7.	Test Facility	10
2.	**Conducted Emission**	**11**
2.1.	Test Equipment	11
2.2.	Test Setup	11
2.3.	Limits	12
2.4.	Test Procedure	12
2.5.	Test Specification	12
2.6.	Test Result	13
2.7.	Test Photo	17
3.	**Radiated Emission**	**18**
3.1.	Test Equipment	18
3.2.	Test Setup	18
3.3.	Limits	19
3.4.	Test Procedure	20
3.5.	Test Specification	20
3.6.	Test Result	21
3.7.	Test Photo	41
4.	**Band Edge**	**43**
4.1.	Test Equipment	43
4.2.	Test Setup	44
4.3.	Limits	45
4.4.	Test Procedure	45
4.5.	Test Specification	45
4.6.	Test Result	46
Attachement		54
□	EUT Photograph	54

1. General Information

1.1. EUT Description

Product Name	2.4GHz Wireless Digital Audio Transmitter Module
Trade Name	AIRWAVE
Model No.	AWD60XT
Frequency Range	2400MHz ~2483.5MHz
Channel Number	8
Type of Modulation	GFSK
Channel Control	Manual
Antenna Gain	0dBi
Antenna Type	Soldered on PCB

Working Frequency of Each Channel	
Channel	Frequency
1	2401.920 MHz
2	2412.288 MHz
3	2422.656 MHz
4	2433.024 MHz
5	2448.576 MHz
6	2458.944 MHz
7	2469.312 MHz
8	2479.680 MHz

Note:

1. This device is 2.4GHz Wireless Digital Audio Transmitter Module which including 2.4GHz transmitting function.
2. The variation of model number is for different housing. The circuit of each model is identical.
3. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.
4. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
5. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 077192R-RFUSP01V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
EMI	Mode 1: Transmit
Final Test Mode	
TX	Mode 1: Transmit

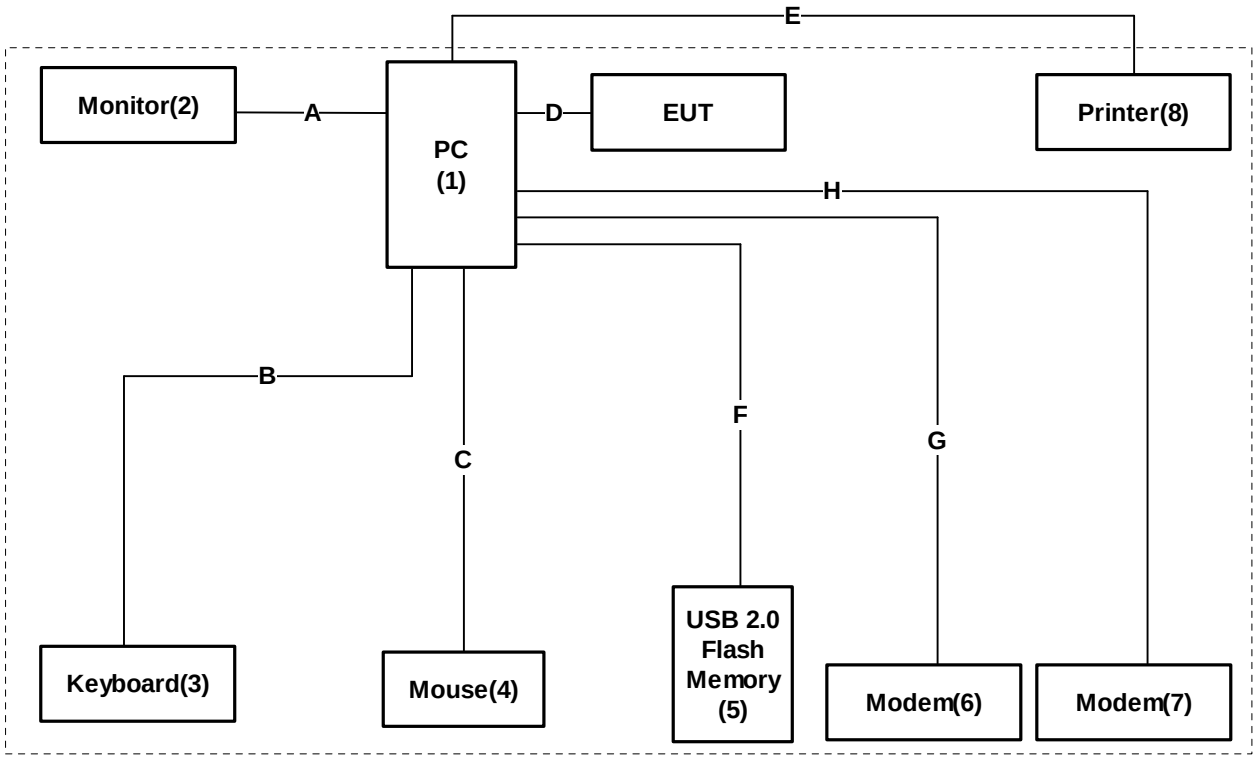
1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	PC	HP	DTPC27	SG21200950	DoC	Non-shielded, 1.8m
2	Monitor	CHI MEI	A170E1-09	3UC120955SA1227	DoC	Non-shielded, 1.8m
3	Keyboard	Logitech	Y-SM46	SY525U18106	DoC	--
4	Mouse	IBM	M-SAU-IBM6	23-029014	DoC	--
5	USB 2.0 Flash Memory	Ridata	PEN000-DP065-37	N/A	DoC	--
6	Modem	ACEEX	DM-1414	0102027543	DoC	Non-shielded, 1.6m
7	Modem	ACEEX	DM-1414	0102027544	DoC	Non-shielded, 1.6m
8	Printer	HP	C2642A	MY75N1D2BC	DoC	Non-shielded, 0.7m

1.5. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	VAG Cable	Shielded, 1.6m, two ferrite cores bonded.
B	Keyboard Cable	Shielded, 1.8m
C	Mouse Cable	Shielded, 1.8m
D	USB Cable	Shielded, 1.4m
E	Printer Cable	Shielded, 1.2m
F	USB 2.0 Flash Memory Cable	Shielded, 1.4m
G	Modem Cable	Shielded, 1.5m
H	Modem Cable	Shielded, 1.5m

1.6. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	Personal computer reads data from disk of EUT.
4	Data will be transmitted PC through EUT.
5	The transmission status will be shown on the monitor.
6	Repeat the above procedure (3) to (5).

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.249 Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.209 Radiated Emission	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

January 24, 2005 File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520

Accredited by CNLA
Accreditation Number: 1313
Effective through: September 27, 2007

1313
ILAC MRA

Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2007

Site Name: Quietek Corporation

Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
TEL : 886-3-592-8858 / FAX : 886-3-592-8859
E-Mail : service@quietek.com

2. Conducted Emission

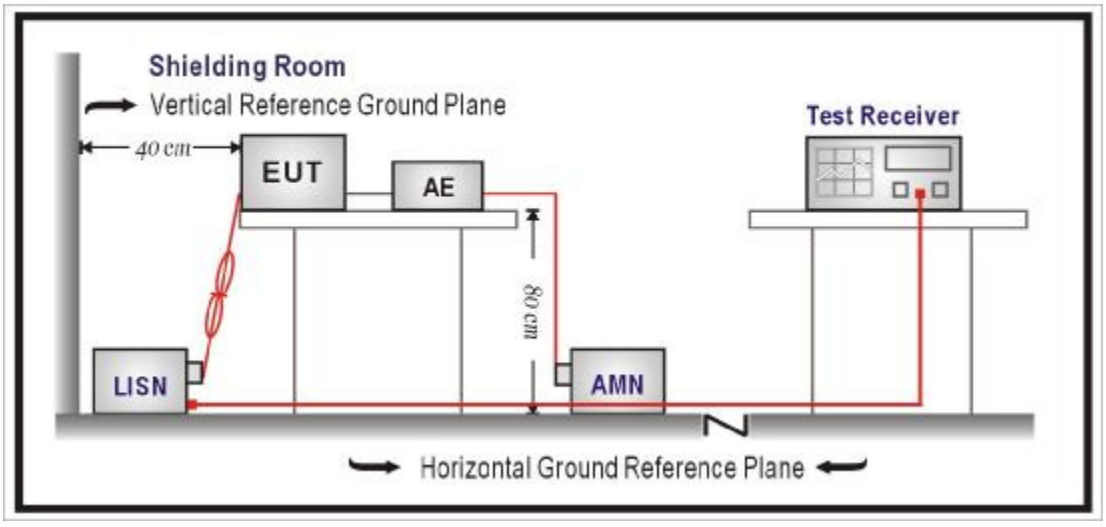
2.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
1	4-Wire ISN	R & S	ENY 41 / 837032/001	Feb., 2007	
2	Double 2-Wire ISN	R & S	ENY 22 / 835354/008	Feb., 2007	Peripherals
3	LISN	R&S	ESH3-Z5 / 836679/022	Jun., 2006	EUT
4	LISN	R & S	ESH3-Z5 / 836679/013	Dec., 2006	
5	Pulse Limiter	R & S	ESH3-Z2 / 100411	Oct., 2006	
6	Test Receiver	R & S	ESCS 30 / 100149	Oct., 2006	
7	No.3 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

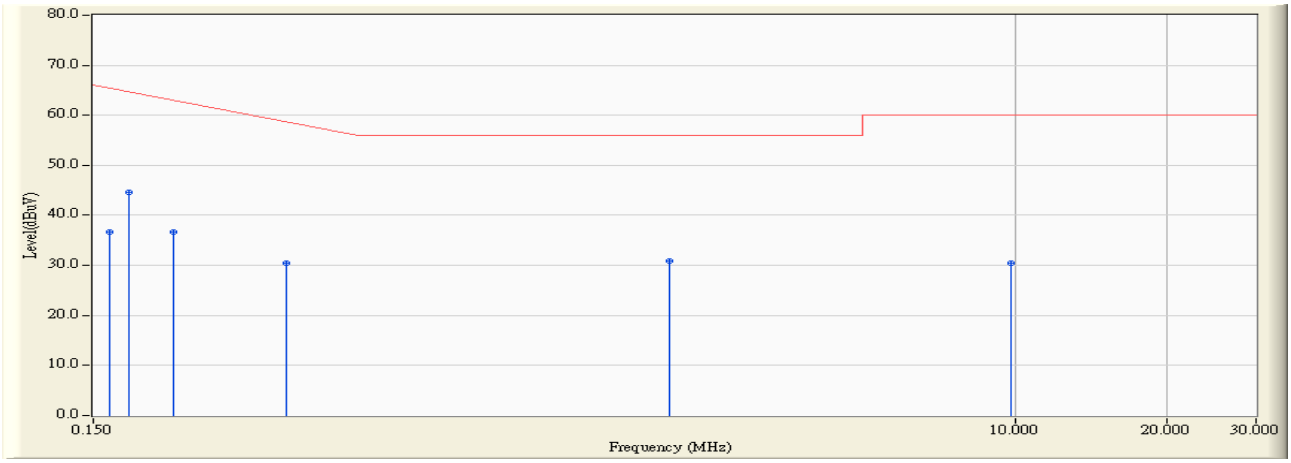
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.) Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement. Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2006

2.6. Test Result

Site : ShieldingRoom3	Time : 2007/07/12 - 10:13
Limit : CISPR_B_00M_QP	Margin : 0
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : SR3_LISN(16A) - Line1
Power : DC 3.3V	Note : Mode 1: Transmit

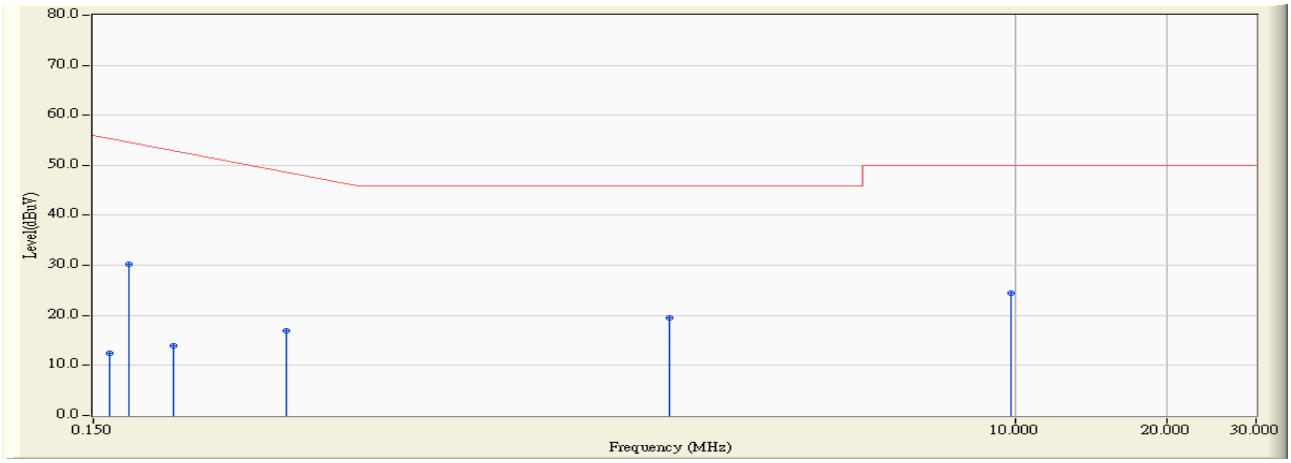


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.162	0.141	36.470	36.611	-29.046	65.657	QUASIPEAK
2	*	0.177	0.146	44.540	44.686	-20.543	65.229	QUASIPEAK
3		0.216	0.159	36.600	36.759	-27.355	64.114	QUASIPEAK
4		0.361	0.190	30.180	30.370	-29.601	59.971	QUASIPEAK
5		2.068	0.390	30.450	30.840	-25.160	56.000	QUASIPEAK
6		9.850	0.713	29.720	30.433	-29.567	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : ShieldingRoom3	Time : 2007/07/12 - 10:13
Limit : CISPR_B_00M_AV	Margin : 0
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : SR3_LISN(16A) - Line1
Power : DC 3.3V	Note : Mode 1: Transmit

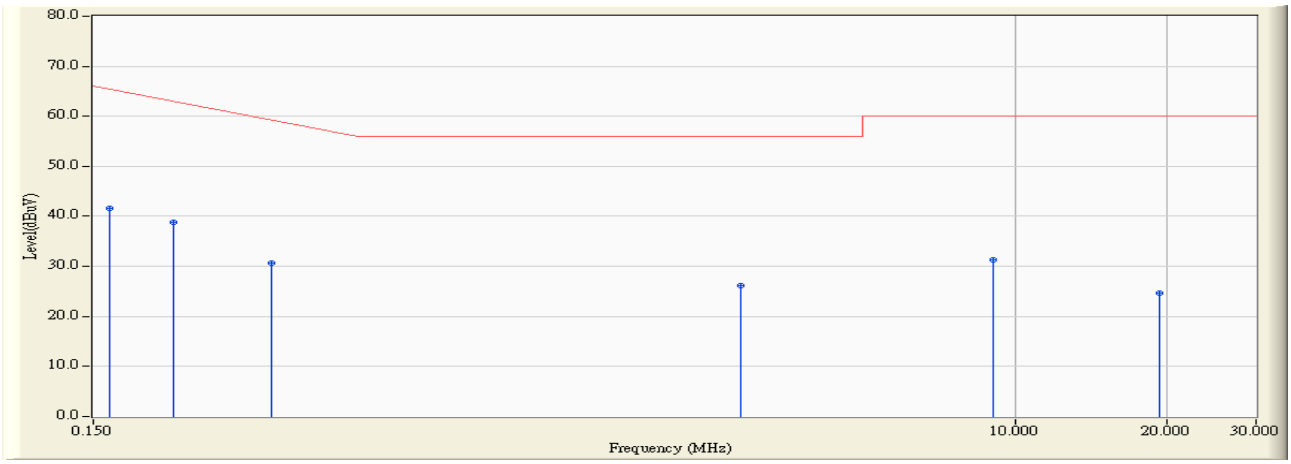


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.162	0.141	12.260	12.401	-43.256	55.657	AVERAGE
2	*	0.177	0.146	30.010	30.156	-25.073	55.229	AVERAGE
3		0.216	0.159	13.840	13.999	-40.115	54.114	AVERAGE
4		0.361	0.190	16.670	16.860	-33.111	49.971	AVERAGE
5		2.068	0.390	19.200	19.590	-26.410	46.000	AVERAGE
6		9.850	0.713	23.680	24.393	-25.607	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : ShieldingRoom3	Time : 2007/07/12 - 10:20
Limit : CISPR_B_00M_QP	Margin : 0
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : SR3_LISN(16A) - Line2
Power : DC 3.3V	Note : Mode 1: Transmit

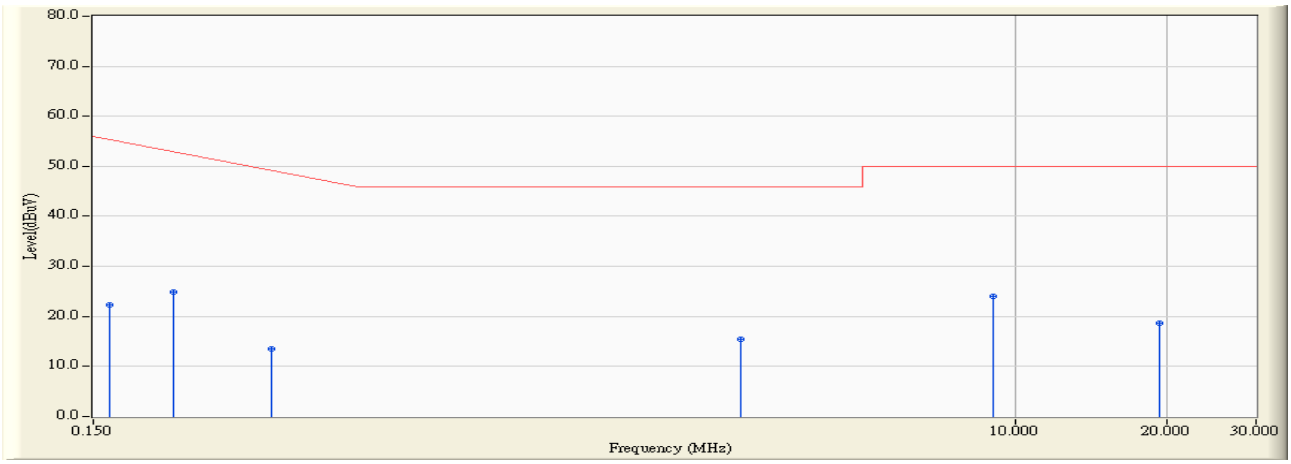


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.162	0.141	41.440	41.581	-24.076	65.657	QUASIPEAK
2		0.216	0.159	38.710	38.869	-25.245	64.114	QUASIPEAK
3		0.339	0.190	30.450	30.640	-29.960	60.600	QUASIPEAK
4		2.864	0.410	25.850	26.260	-29.740	56.000	QUASIPEAK
5		9.060	0.590	30.690	31.280	-28.720	60.000	QUASIPEAK
6		19.298	0.900	23.670	24.570	-35.430	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : ShieldingRoom3	Time : 2007/07/12 - 10:20
Limit : CISPR_B_00M_AV	Margin : 0
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : SR3_LISN(16A) - Line2
Power : DC 3.3V	Note : Mode 1: Transmit



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.162	0.141	22.160	22.301	-33.356	55.657	AVERAGE
2		0.216	0.159	24.800	24.959	-29.155	54.114	AVERAGE
3		0.339	0.190	13.250	13.440	-37.160	50.600	AVERAGE
4		2.864	0.410	15.090	15.500	-30.500	46.000	AVERAGE
5	*	9.060	0.590	23.530	24.120	-25.880	50.000	AVERAGE
6		19.298	0.900	17.720	18.620	-31.380	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Radiated Emission

3.1. Test Equipment

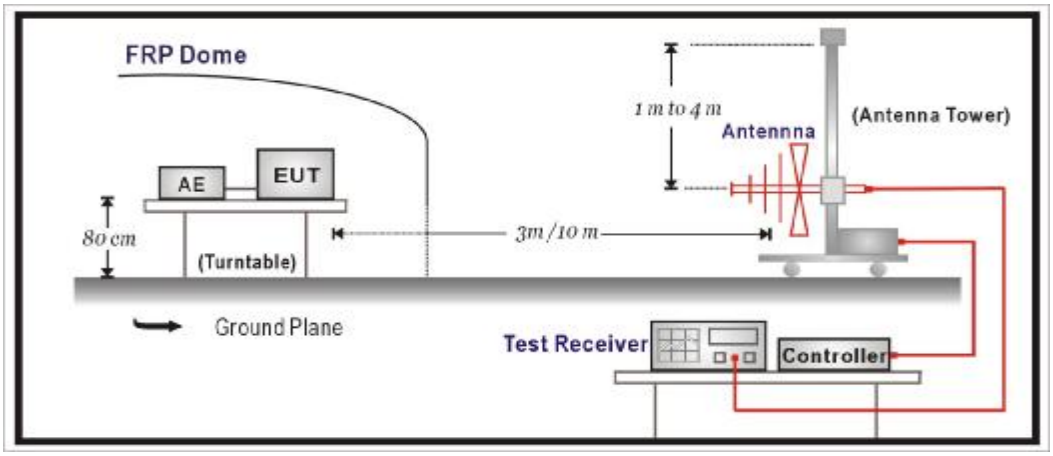
The following test equip

Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Test Receiver	R & S	ESCS 30 / 825442/017	Jan., 2007
2	X	Spectrum Analyzer	Advantest	R3261C / 81720266	N/A
3	X	Pre-Amplifier	HP	8447D / 2944A09276	N/A
4	X	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2006
5	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2006
6	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2007
7	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Jul., 2007
8	No.1 OATS				Sep., 2006

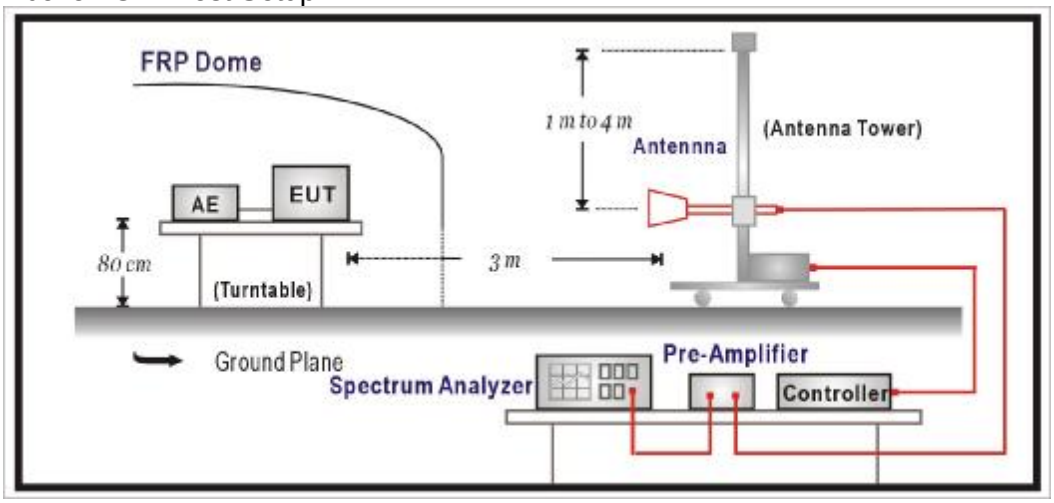
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark “X” test instruments are used to measure the final test results.

3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. Limits

Ø Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Fundamental Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	mV/m	dBuV/m	uV/m	dBuV/m
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

Ø Spurious electric field strength limits

FCC Part 15 Subpart C Paragraph 15.209 Limits			
Frequency MHz	uV/m	dBuV/m	Measurement distance (meter)
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

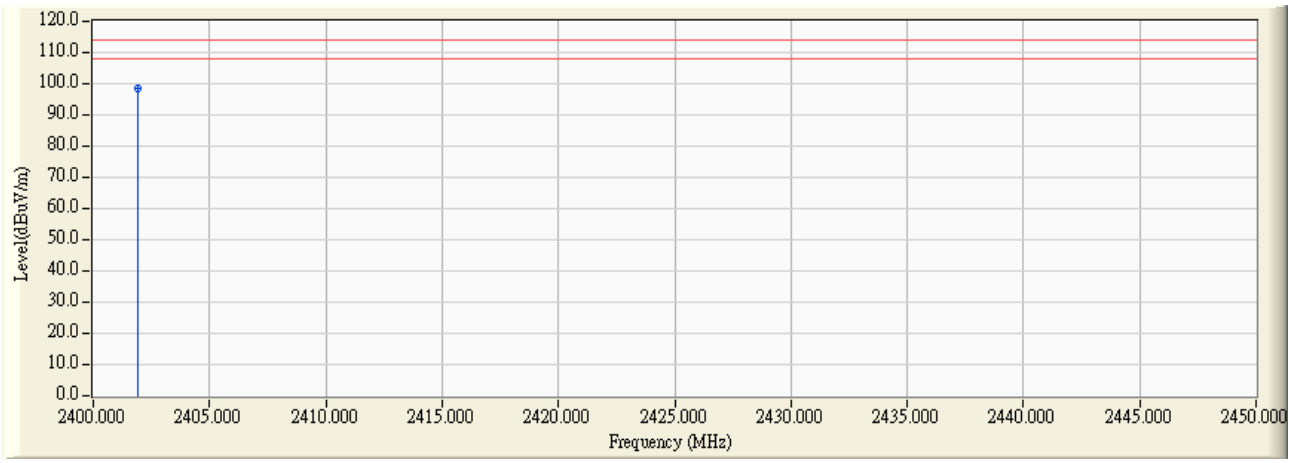
3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.209 and Paragraph 15.249: 2006

3.6. Test Result

Fundamental：

Site : Stie 1	**Time : 2007/07/10 - 23:40**
Limit : FCC_SpartC_15.249_F_03M_PK	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2401.920**

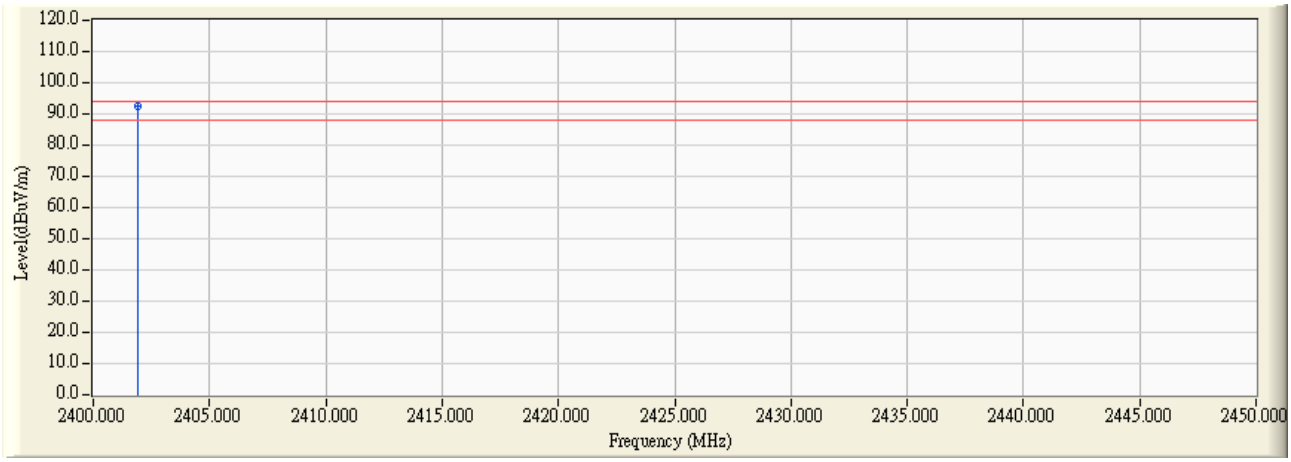


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2401.893	29.028	69.290	98.318	-15.682	114.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 23:41**
Limit : FCC_SpartC_15.249_F_03M_AV	**Margin : 6**
EUT : R2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2401.920**

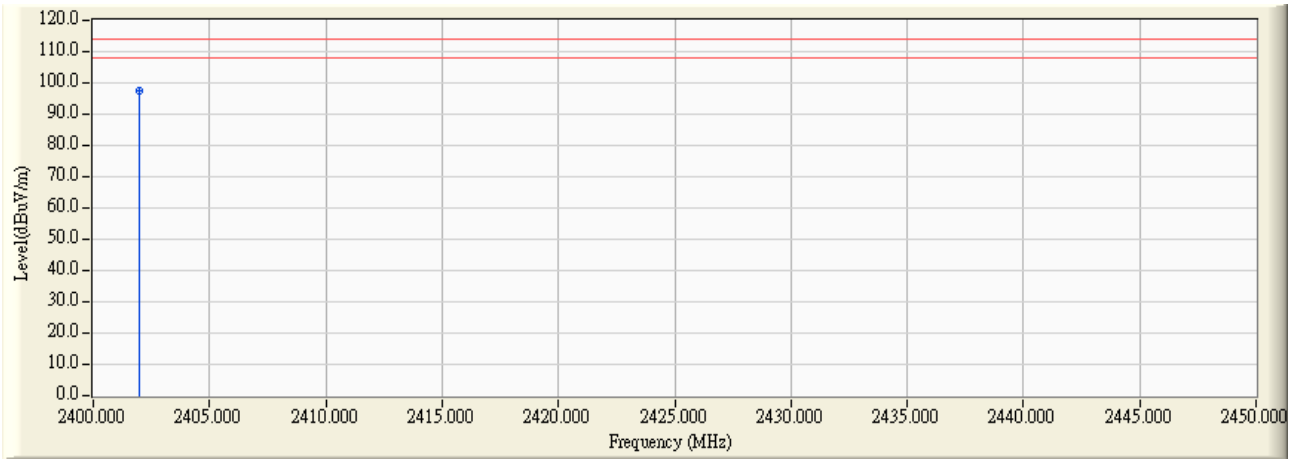


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2401.893	29.028	63.460	92.488	-1.512	94.000	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 23:42**
Limit : FCC_SpartC_15.249_F_03M_PK	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - VERTICAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2401.920**

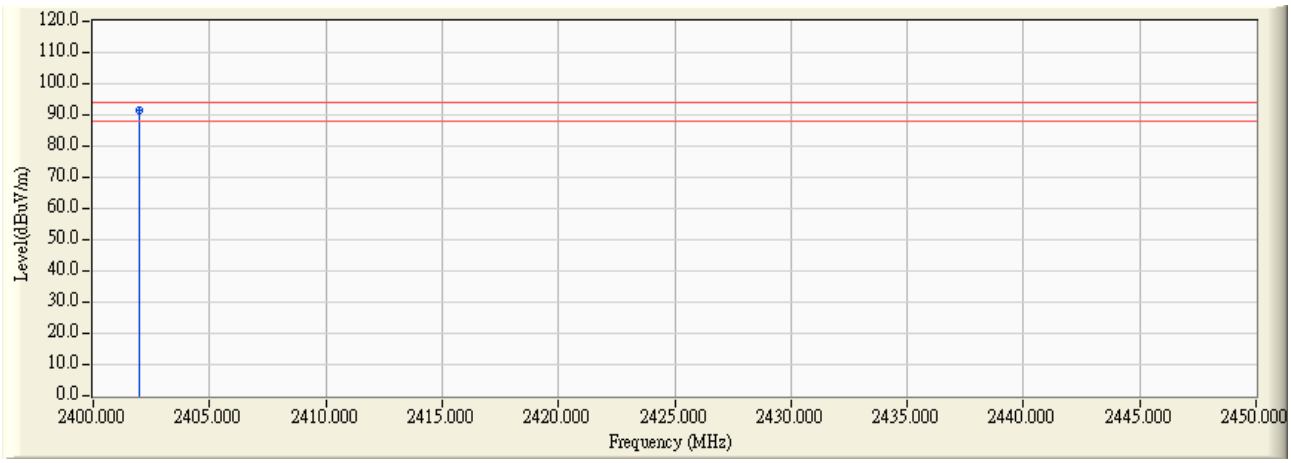


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2401.92080	27.428	70.020	97.448	-16.552	114.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 23:42**
Limit : FCC_SpartC_15.249_F_03M_AV	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - VERTICAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2401.920**

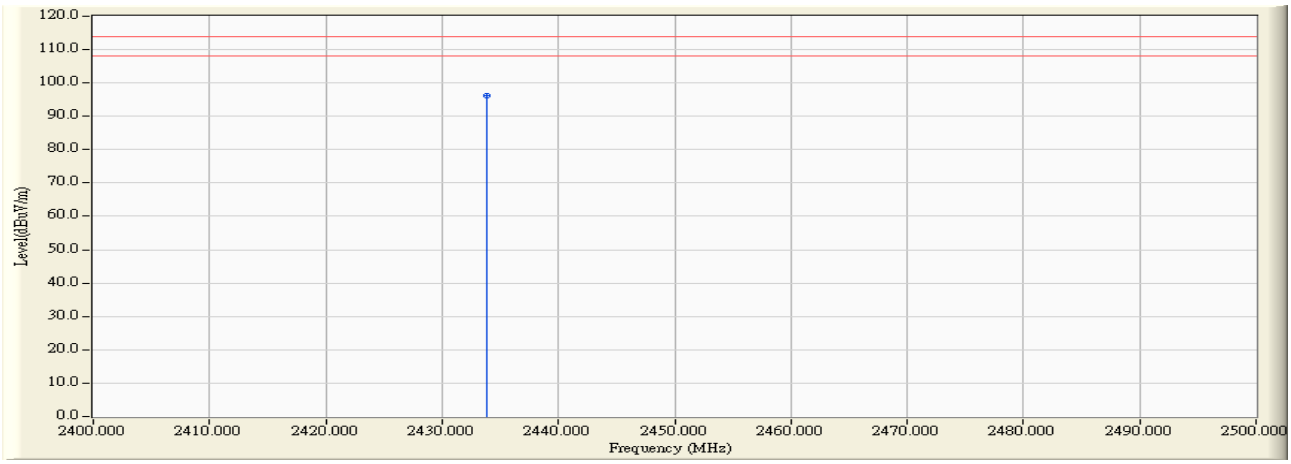


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2401.92050	27.428	64.050	91.478	-2.522	94.000	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/07/10 - 23:43
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL
Power : DC 3.3V	Note : Mode 1: Transmit-2433.024

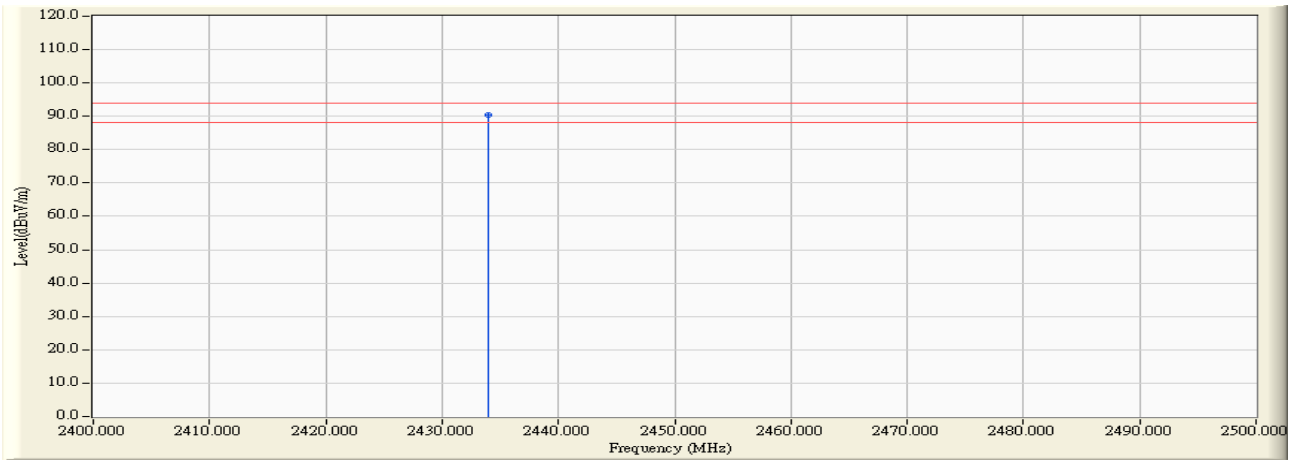


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2433.890	29.127	67.140	96.267	-17.733	114.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/07/10 - 23:55
Limit : FCC_SpartC_15.249_F_03M_AV	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL
Power : DC 3.3V	Note : Mode 1: Transmit-2433.9

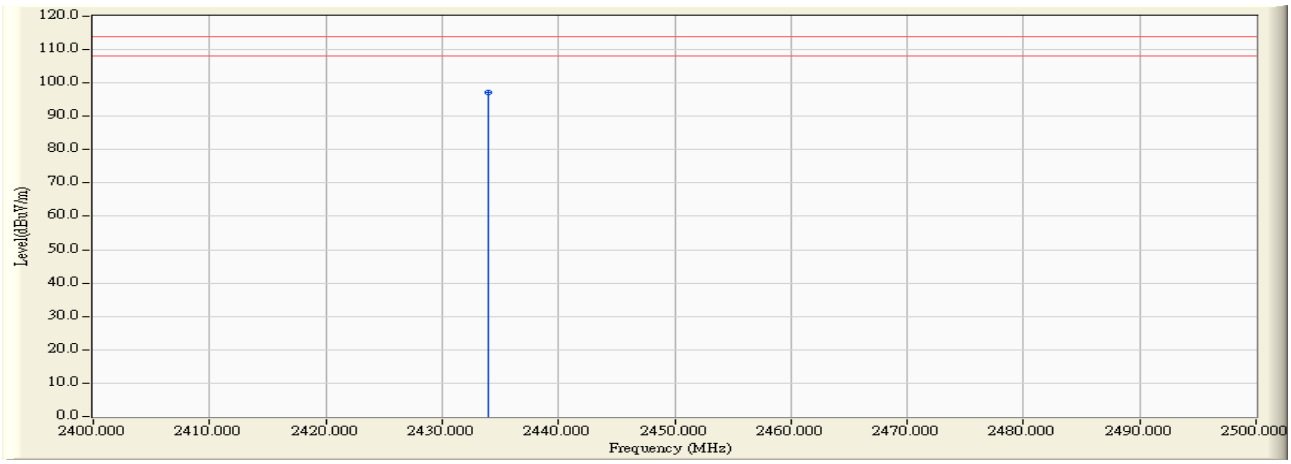


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2433.970	29.128	61.160	90.288	-3.712	94.000	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/07/10 - 23:44
Limit : FCC_SpartC_15.249_F_03M_PK	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - VERTICAL
Power : DC 3.3V	Note : Mode 1: Transmit-2433.024

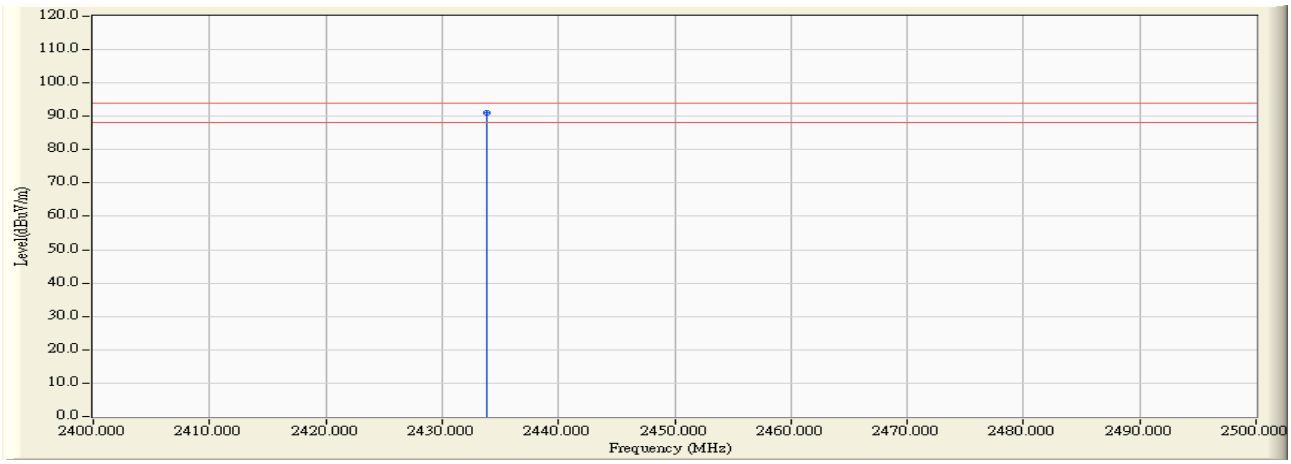


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2433.910	27.527	69.780	97.307	-16.693	114.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/07/10 - 23:47
Limit : FCC_SpartC_15.249_F_03M_AV	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - VERTICAL
Power : DC 3.3V	Note : Mode 1: Transmit-2433.024

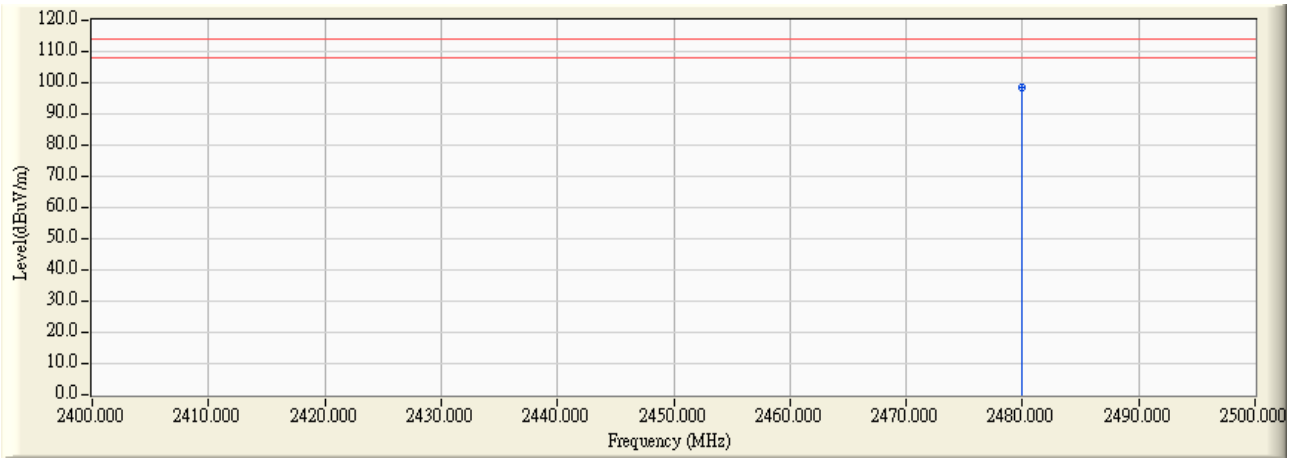


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2433.880	27.527	63.650	91.177	-2.823	94.000	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 23:48**
Limit : FCC_SpartC_15.249_F_03M_PK	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2479.680**

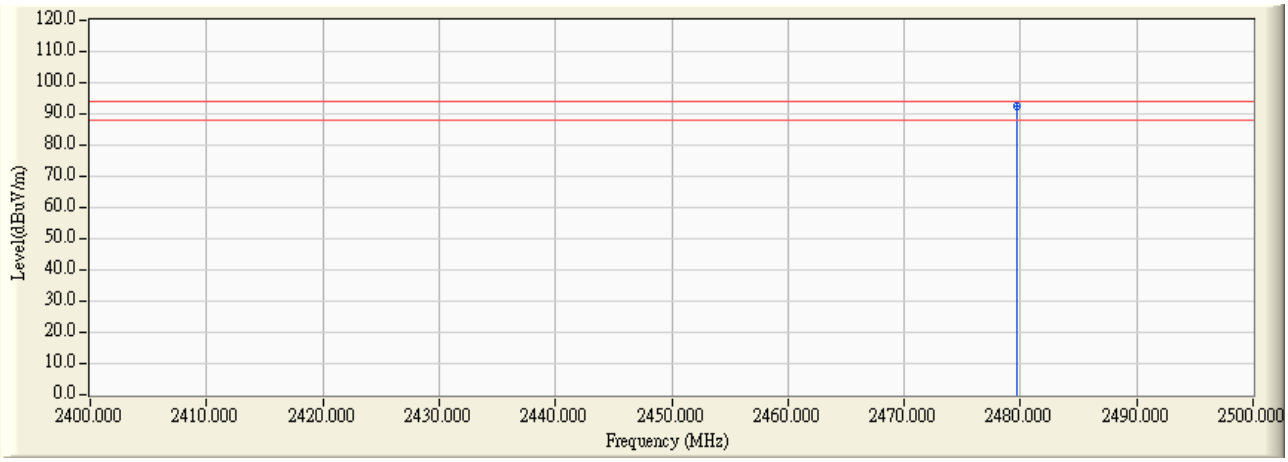


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2479.68000	29.283	69.250	98.533	-15.467	114.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 23:50**
Limit : FCC_SpartC_15.249_F_03M_AV	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2479.680**

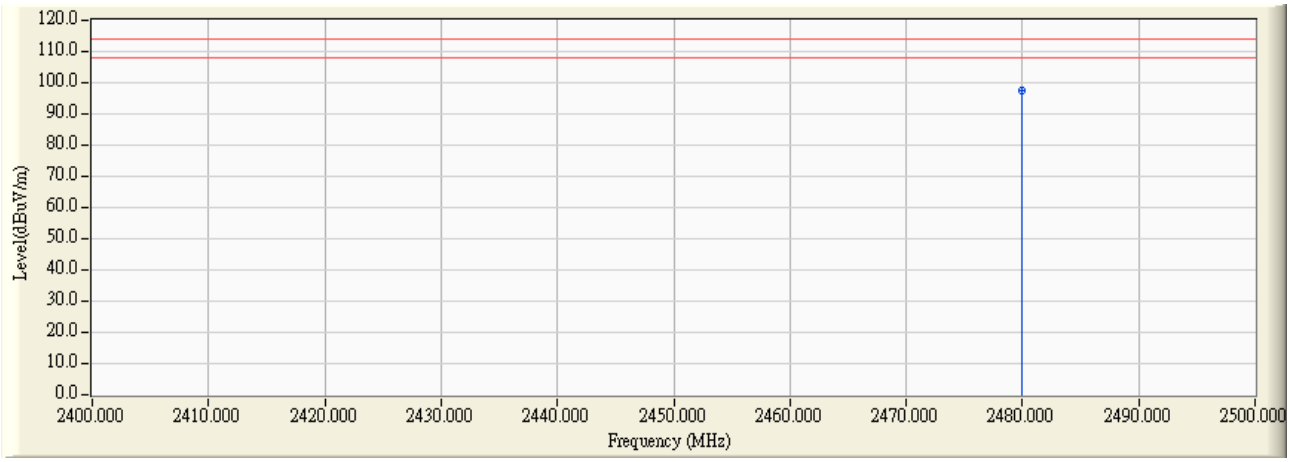


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2479.750	29.282	63.070	92.352	-1.648	94.000	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 23:53**
Limit : FCC_SpartC_15.249_F_03M_PK	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - VERTICAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2479.680**

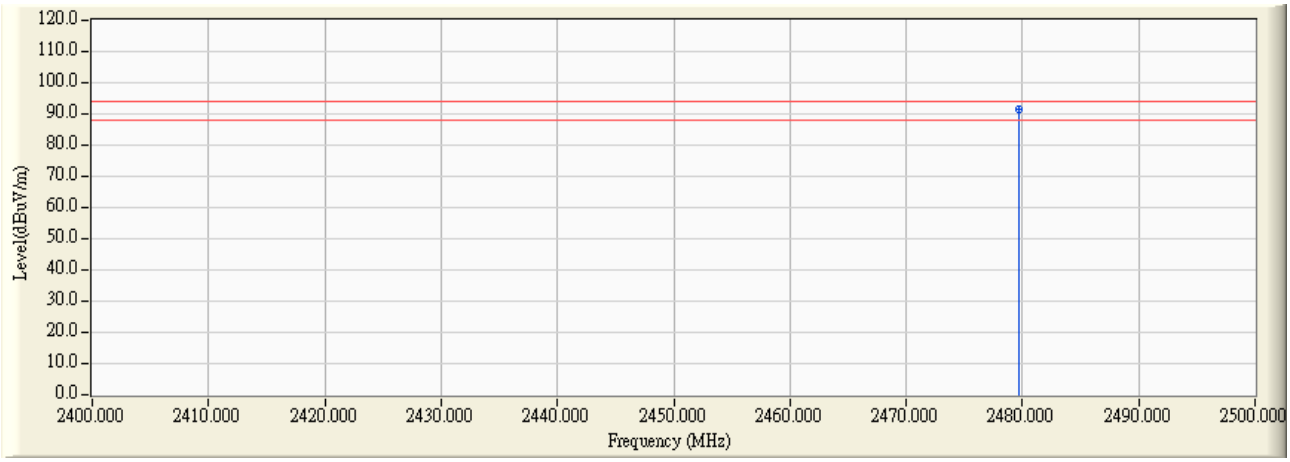


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2479.68010	27.683	69.990	97.673	-16.327	114.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 23:53**
Limit : FCC_SpartC_15.249_F_03M_AV	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - VERTICAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2479.680**



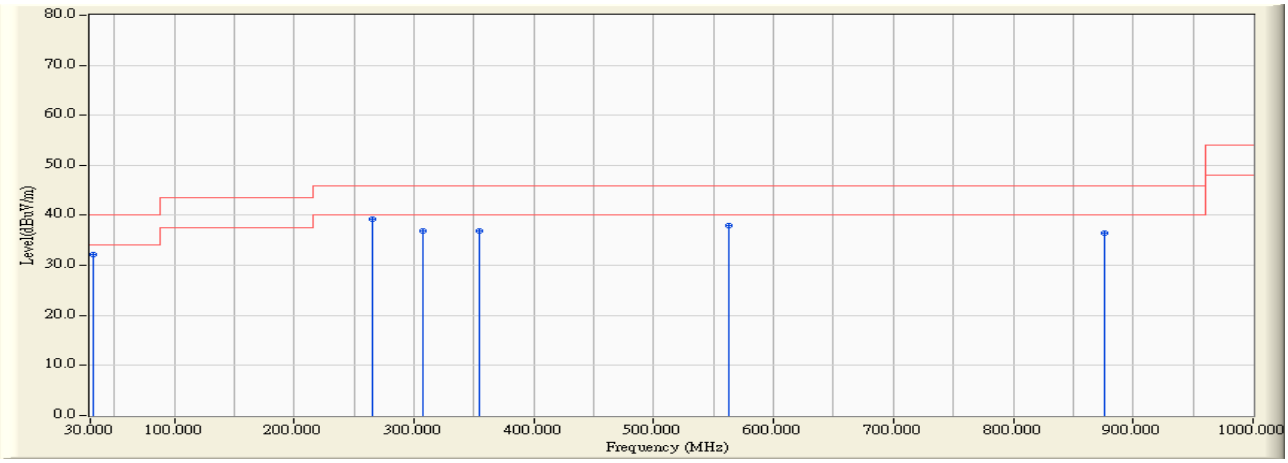
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2479.750	27.682	63.810	91.492	-2.508	94.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

30 MHz-1 GHz Spurious:

Site : Stie 1	Time : 2007/07/11 - 21:39
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_30-1G(200605) - HORIZONTAL
Power : DC 3.3V	Note : Mode 1: Transmit

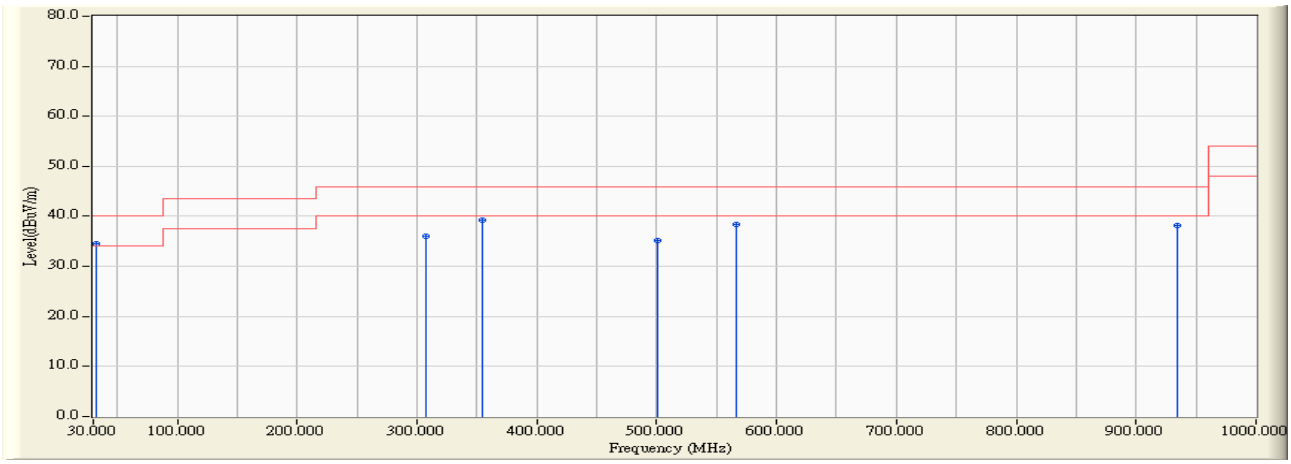


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		31.944	3.403	28.722	32.125	-7.875	40.000	Quasi-Peak
2	*	265.210	-7.281	46.620	39.339	-6.661	46.000	Quasi-Peak
3		307.976	-5.394	42.199	36.805	-9.195	46.000	Quasi-Peak
4		354.629	-5.077	41.884	36.807	-9.193	46.000	Quasi-Peak
5		562.625	3.860	34.208	38.068	-7.932	46.000	Quasi-Peak
6		875.591	5.426	31.060	36.486	-9.514	46.000	Quasi-Peak

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Stie 1	Time : 2007/07/11 - 21:39
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_30-1G(200605) - VERTICAL
Power : DC 3.3V	Note : Mode 1: Transmit



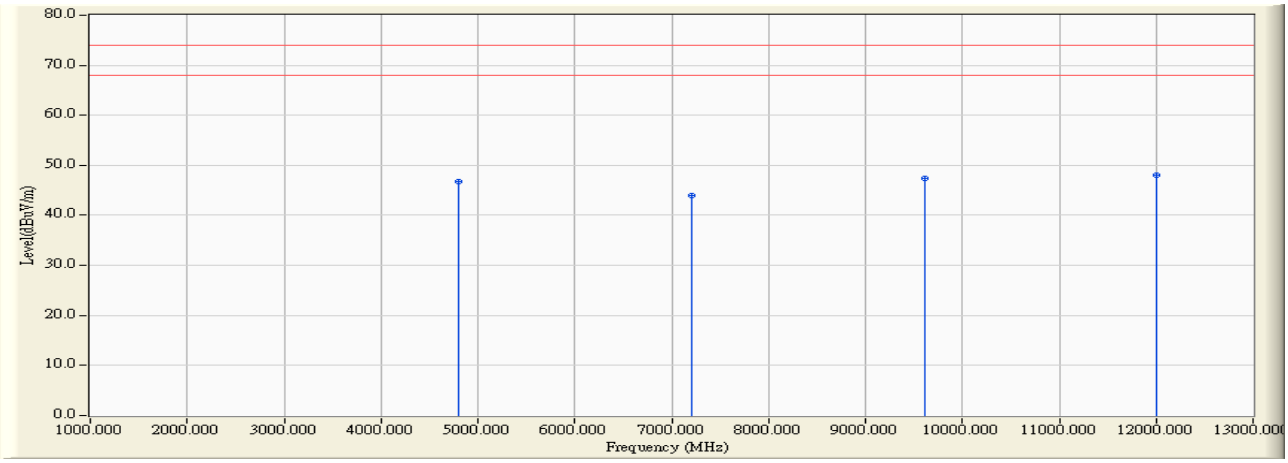
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	31.944	0.646	33.971	34.617	-5.383	40.000	Quasi-Peak
2		307.976	-6.425	42.477	36.052	-9.948	46.000	Quasi-Peak
3		354.629	-3.700	42.945	39.245	-6.755	46.000	Quasi-Peak
4		500.421	-3.103	38.343	35.240	-10.760	46.000	Quasi-Peak
5		566.513	3.254	35.089	38.343	-7.657	46.000	Quasi-Peak
6		933.908	7.251	30.920	38.171	-7.829	46.000	Quasi-Peak

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Spurious and Harmonics Emission：

Site : Site 1	Time : 2007/06/22 - 16:46
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL
Power : DC 3.3V	Note : Mode 1: Transmit-2401.920

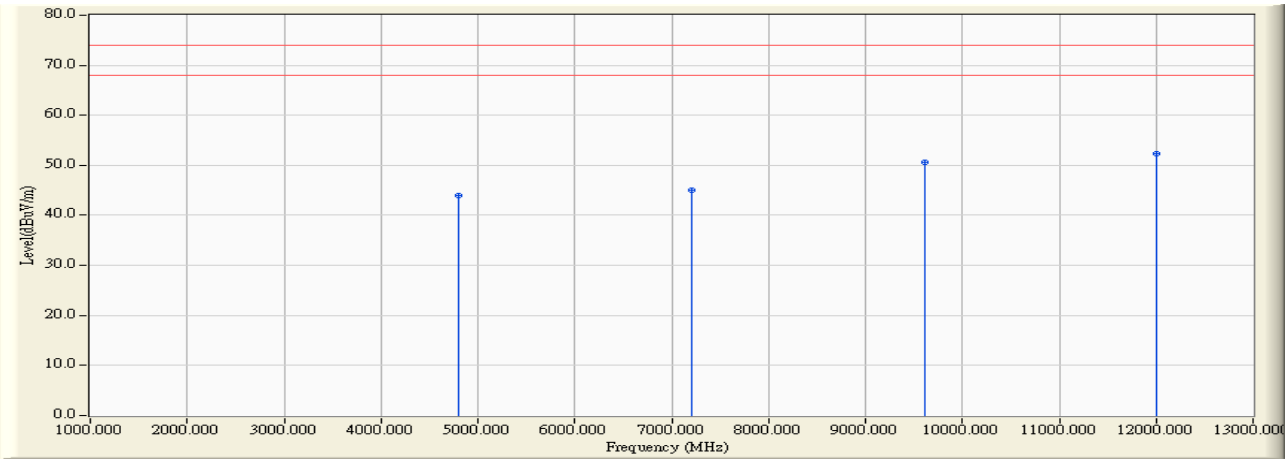


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	**Peak Limit (dBuV/m)**	**Average Limit (dBuV/m)**	Detector Type
1		4803.240	3.589	43.150	46.739	-27.231	74.000	54.000	PEAK
2		7204.990	8.690	35.320	44.010	-29.960	74.000	54.000	PEAK
3		9607.840	12.690	34.720	47.410	-26.560	74.000	54.000	PEAK
4	*	12010.940	11.075	37.010	48.085	-25.885	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/06/22 - 17:02
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - VERTICAL
Power : DC 3.3V	Note : Mode 1: Transmit-2401.920

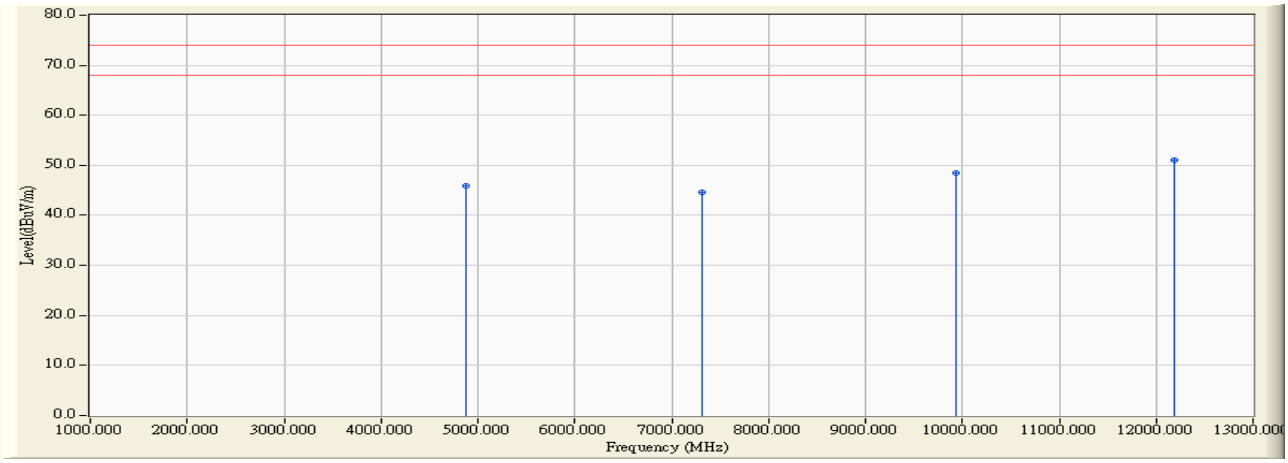


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	**Peak Limit (dBuV/m)**	**Average Limit (dBuV/m)**	Detector Type
1		4804.270	1.814	42.090	43.904	-30.066	74.000	54.000	PEAK
2		7206.210	8.635	36.360	44.996	-28.974	74.000	54.000	PEAK
3		9606.690	14.676	36.000	50.676	-23.294	74.000	54.000	PEAK
4	*	12010.630	16.612	35.640	52.252	-21.718	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/07/09 - 20:57
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL
Power : DC 3.3V	Note : Mode 1: Transmit-2433.024

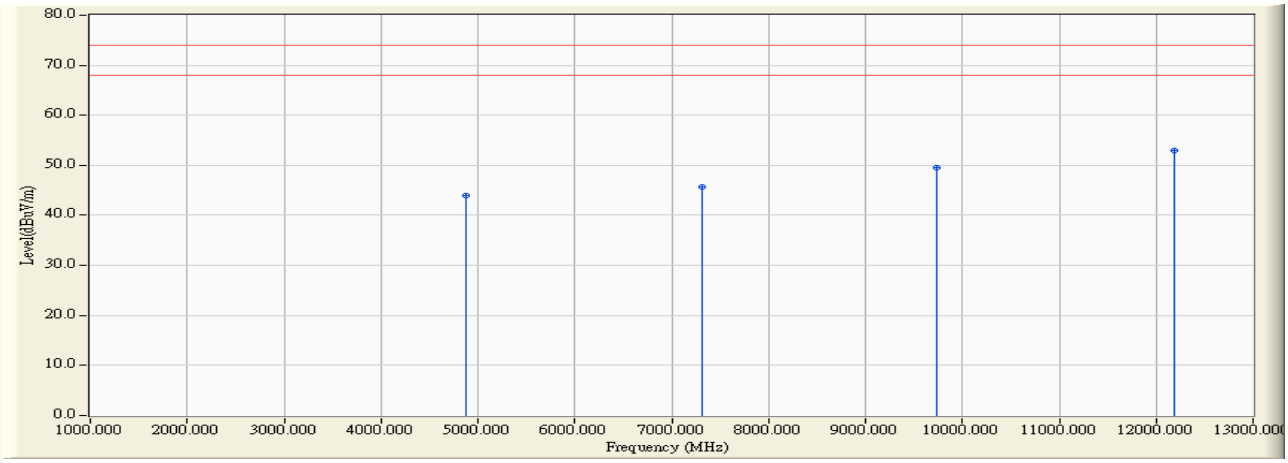


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	**Peak Limit (dBuV/m)**	**Average Limit (dBuV/m)**	Detector Type
1		4866.530	4.065	41.850	45.916	-28.054	74.000	54.000	PEAK
2		7299.130	8.844	35.850	44.694	-29.276	74.000	54.000	PEAK
3		9732.050	14.689	33.890	48.579	-25.391	74.000	54.000	PEAK
4	*	12165.730	18.979	32.130	51.109	-22.861	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/07/09 - 21:18
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - VERTICAL
Power : DC 3.3V	Note : Mode 1: Transmit-2433.024

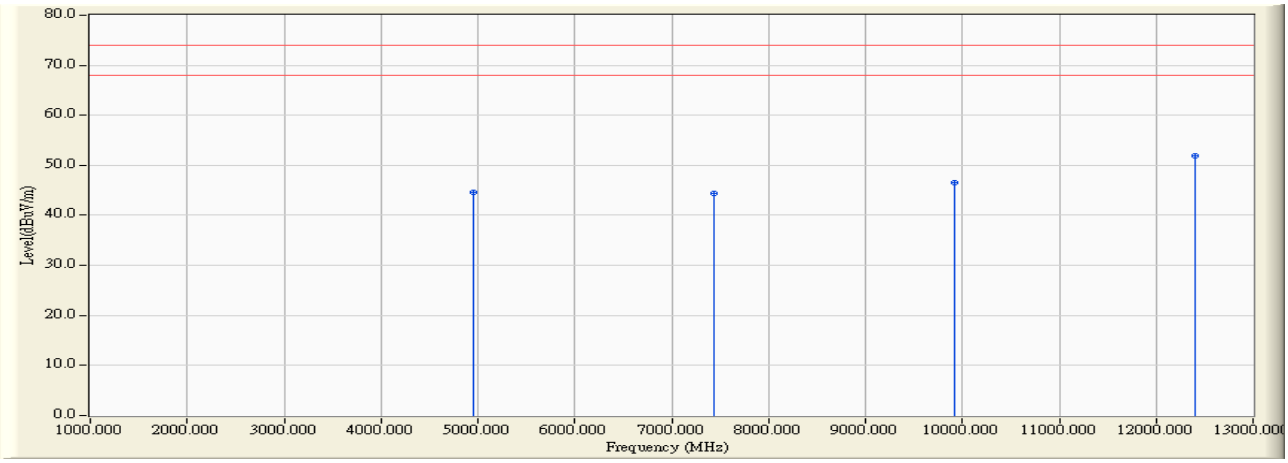


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	**Peak Limit (dBuV/m)**	**Average Limit (dBuV/m)**	Detector Type
1		4866.220	2.406	41.460	43.866	-30.104	74.000	54.000	PEAK
2		7299.520	8.844	36.880	45.724	-28.246	74.000	54.000	PEAK
3		9732.140	15.070	34.430	49.500	-24.470	74.000	54.000	PEAK
4	*	12165.370	19.295	33.730	53.024	-20.946	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/07/09 - 21:50
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL
Power : DC 3.3V	Note : Mode 1: Transmit-2479.680

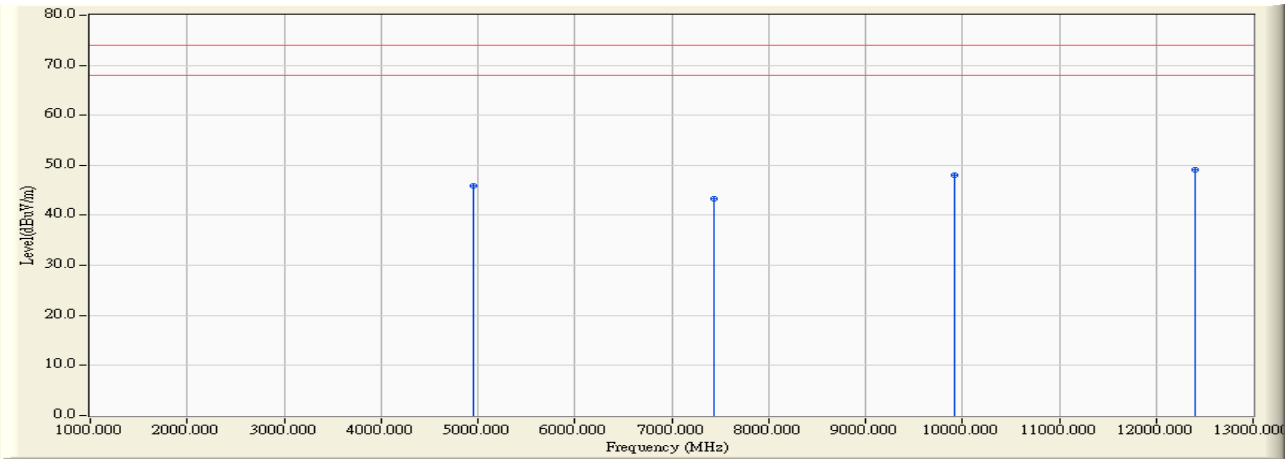


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	**Peak Limit (dBuV/m)**	**Average Limit (dBuV/m)**	Detector Type
1		4958.700	4.400	40.110	44.510	-29.460	74.000	54.000	PEAK
2		7439.950	9.017	35.470	44.486	-29.484	74.000	54.000	PEAK
3		9918.800	14.528	32.080	46.608	-27.362	74.000	54.000	PEAK
4	*	12398.600	20.539	31.290	51.829	-22.141	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/07/09 - 22:11
Limit : FCC_SpartC_15.249_H_03M_PK	Margin : 6
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	Probe : FCC_RF_1G-18G(2005-3) - VERTICAL
Power : DC 3.3V	Note : Mode 1: Transmit-2479.680



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	**Peak Limit (dBuV/m)**	**Average Limit (dBuV/m)**	Detector Type
1		4958.770	2.917	42.880	45.796	-28.174	74.000	54.000	PEAK
2		7439.570	9.016	34.340	43.356	-30.614	74.000	54.000	PEAK
3		9918.670	15.339	32.790	48.130	-25.840	74.000	54.000	PEAK
4	*	12397.630	16.189	32.860	49.048	-24.922	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

4. Band Edge

4.1. Test Equipment

The following test equipment are used during the test:

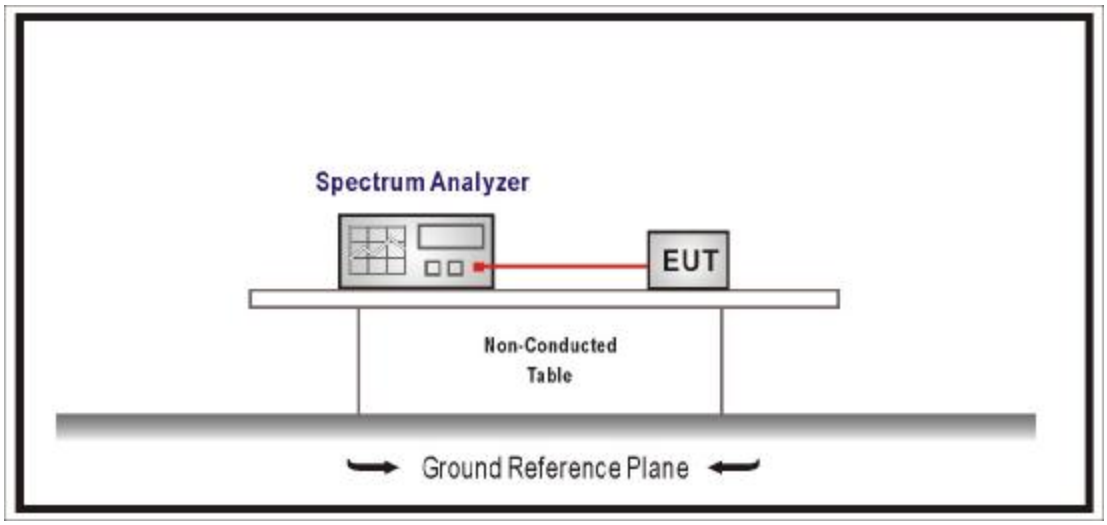
RF Conducted Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer		R & S	FSP / 100561	Mar., 2007
2	No.1 OATS				Sep., 2006
RF Radiated Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2006
2	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2007
3		Loop Antenna	R & S	HFH2-Z2 / 833799/004	Sep., 2006
4		BiconiLog Antenna	Schwarzbeck	VULB 9166 / 1061	Sep., 2006
5		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2006
6	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Sep., 2006
7	No.1 OATS				Sep., 2006

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

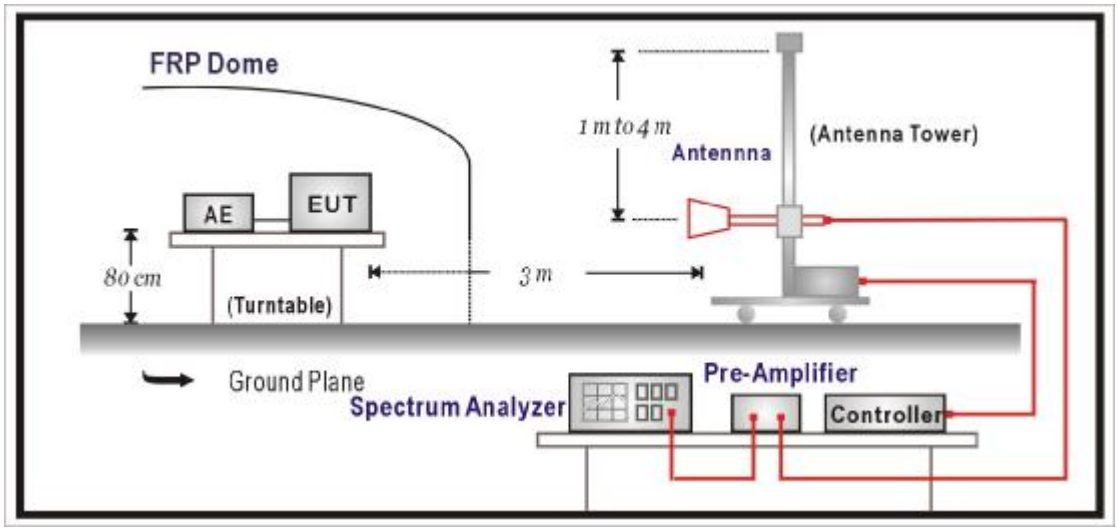
2. Mark “X” test instruments are used to measure the final test results.

4.2. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



4.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 50 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4-2003 on radiated measurement.

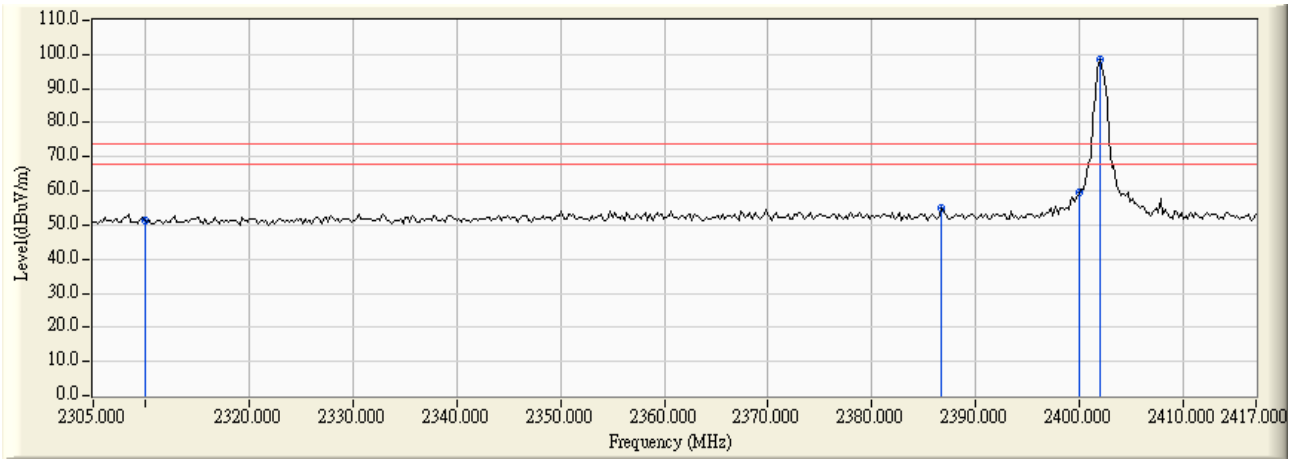
The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.249: 2006

4.6. Test Result

Site : Stie 1	**Time : 2007/07/09 - 23:38**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 0**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2401.920**

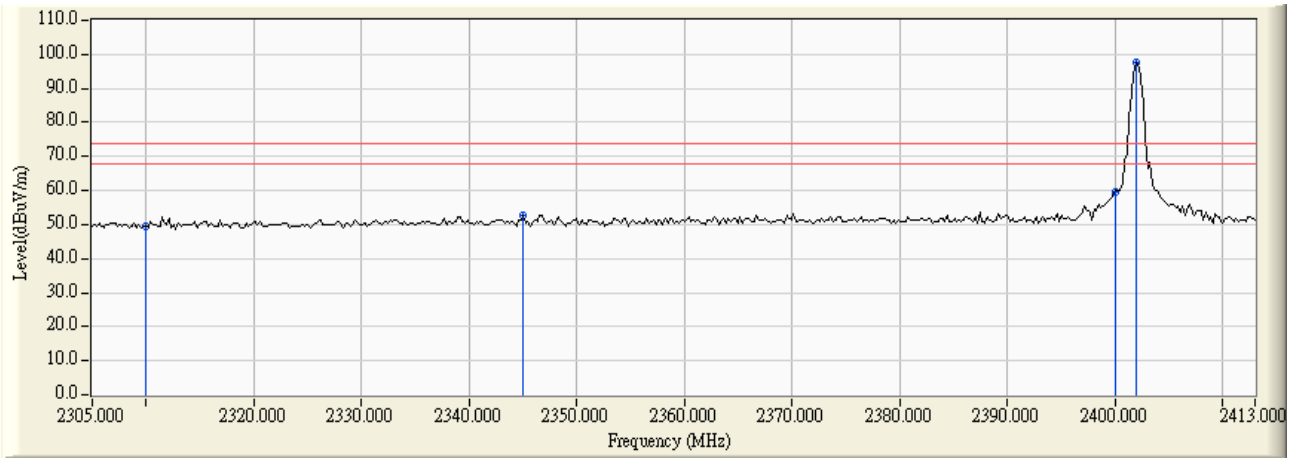


		Frequency (MHz)	Probe Factor (dB/m)	Cable Loss (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2386.699	24.464	4.506	25.811	54.781	-19.189	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 00:08**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - VERTICAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2401.920**

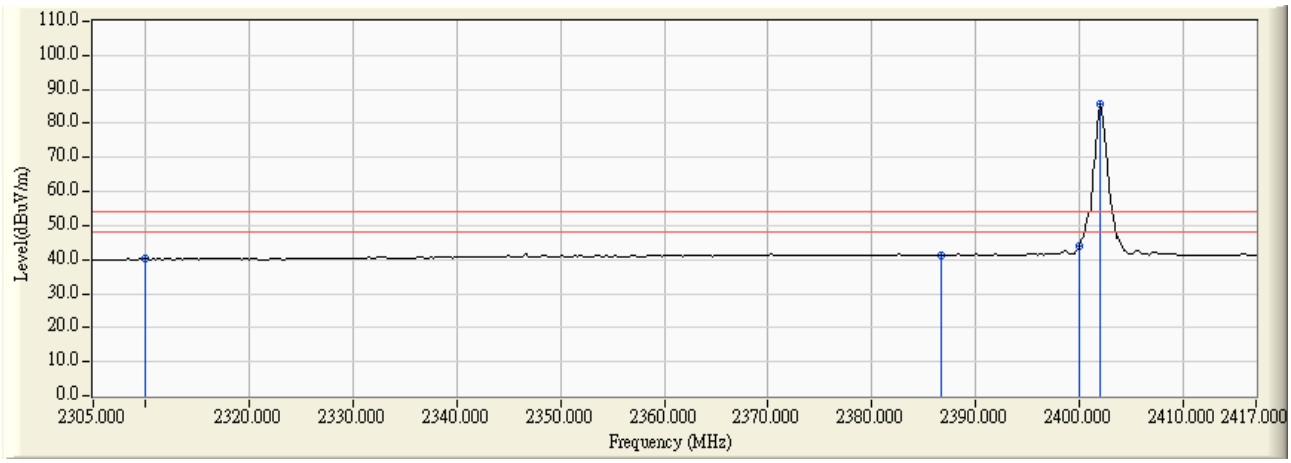


		Frequency (MHz)	Probe Factor (dB/m)	Cable Loss (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2345.040	22.736	4.472	25.703	52.911	-21.059	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/09 - 23:43**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2401.920**

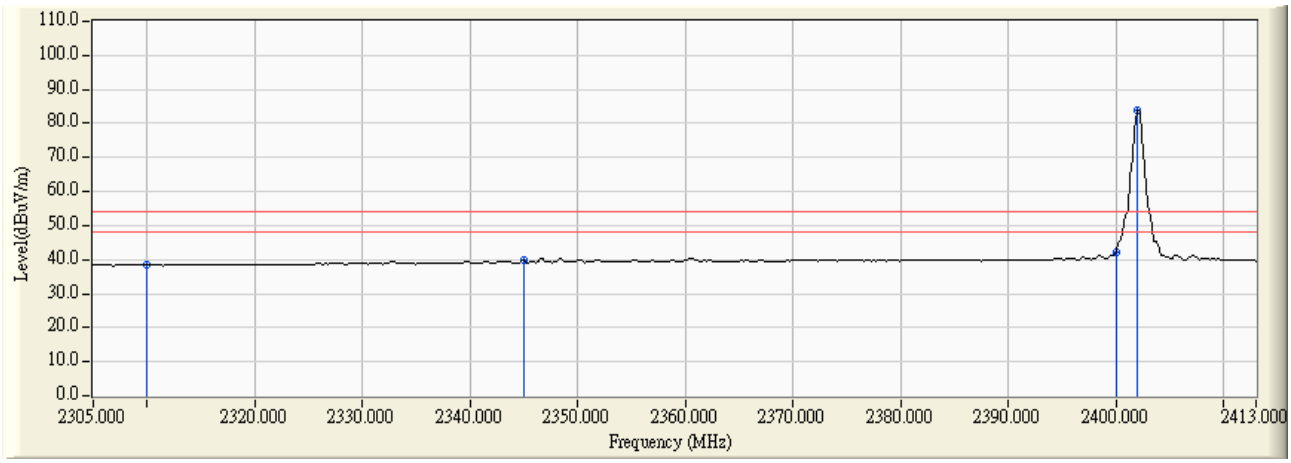


		Frequency (MHz)	Probe Factor (dB/m)	Cable Loss (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2386.699	24.464	4.506	12.424	41.394	-12.576	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 00:12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - VERTICAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2401.920**

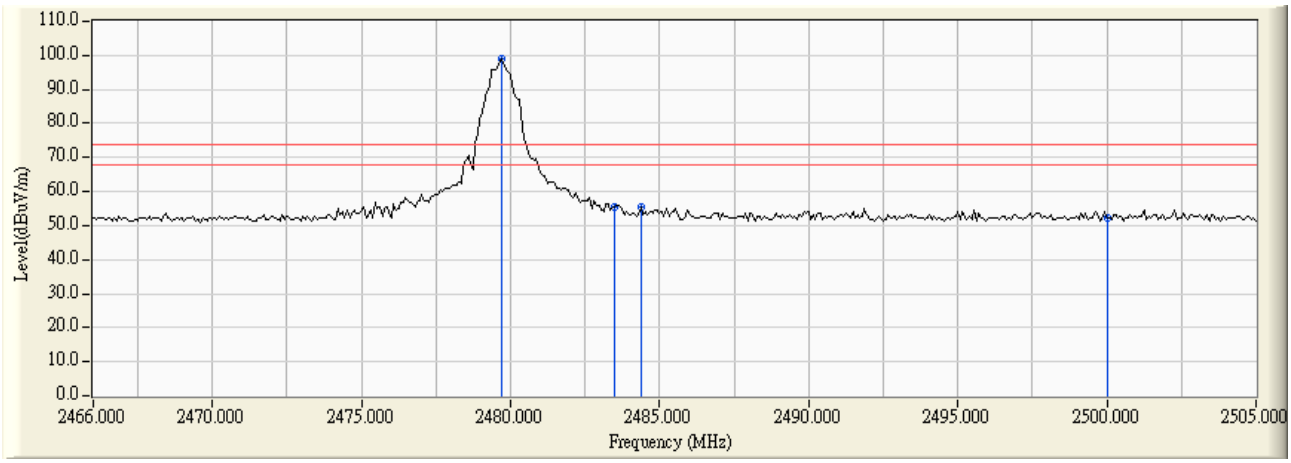


		Frequency (MHz)	Probe Factor (dB/m)	Cable Loss (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2345.040	22.736	4.472	12.594	39.802	-14.168	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 00:21**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2479.680**

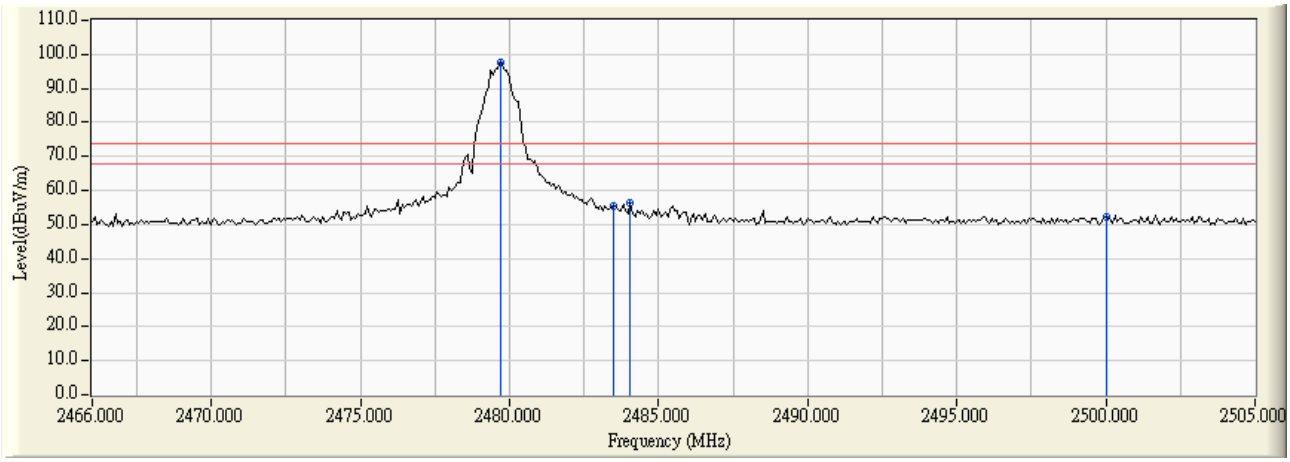


		Frequency (MHz)	Probe Factor (dB/m)	Cable Loss (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2484.367	24.723	4.573	25.985	55.281	-18.689	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 00:27**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - VERTICAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2479.680**

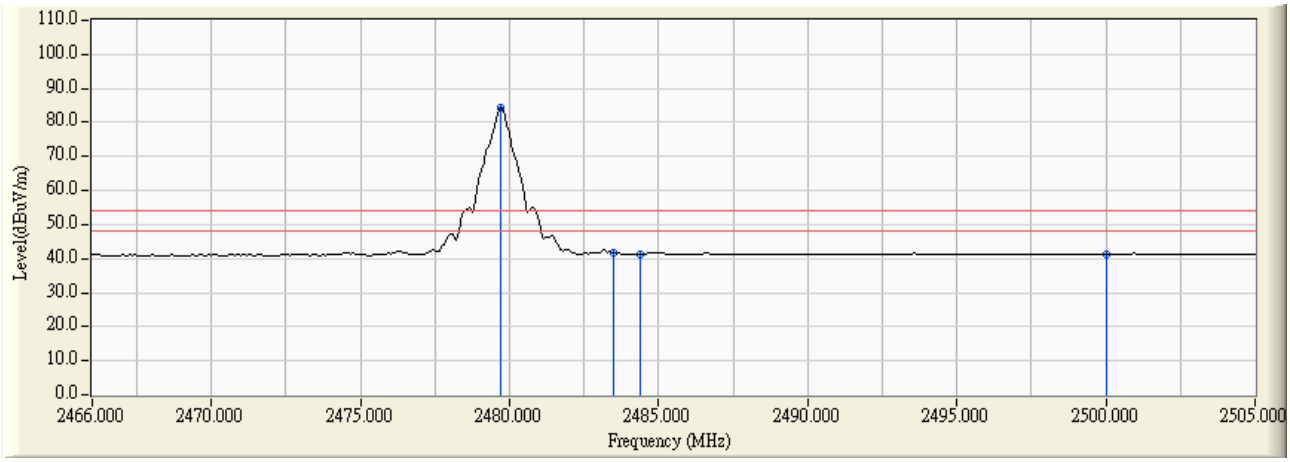


		Frequency (MHz)	Probe Factor (dB/m)	Cable Loss (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2484.054	23.122	4.573	28.650	56.345	-17.625	73.970	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 00:22**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2479.680**

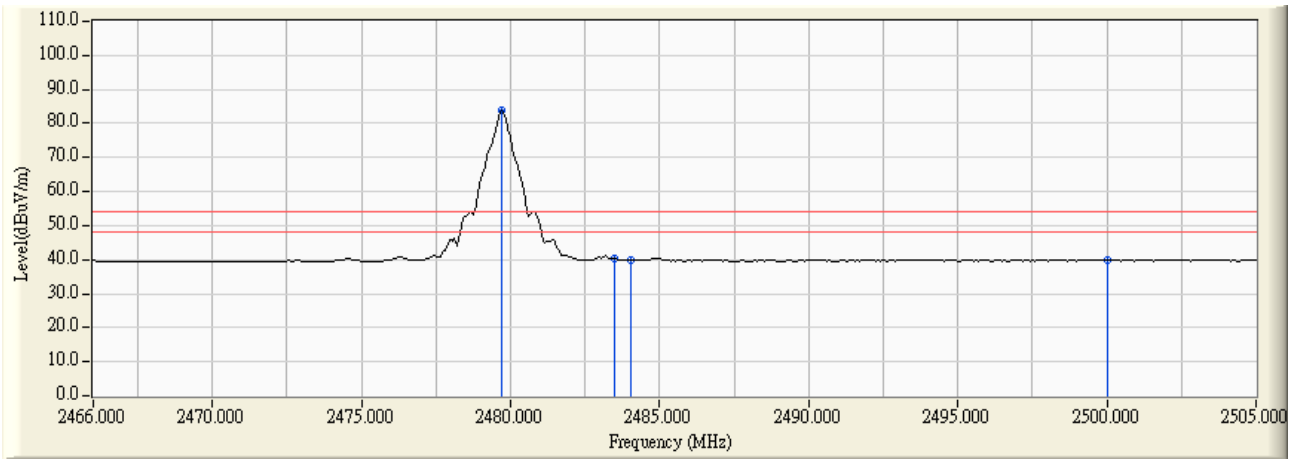


		Frequency (MHz)	Probe Factor (dB/m)	Cable Loss (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2484.367	24.723	4.573	12.107	41.403	-12.567	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Stie 1	**Time : 2007/07/10 - 00:28**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
EUT : 2.4GHz Wireless Digital Audio Transmitter Module	**Probe : FCC_RF_1G-18G(2005-3) - VERTICAL**
Power : DC 3.3V	**Note : Mode 1: Transmit-2479.680**



		Frequency (MHz)	Probe Factor (dB/m)	Cable Loss (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2484.054	23.122	4.573	12.117	39.812	-14.158	53.970	AVERAGE

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.