



Test Report

Product Name : Digital Wireless Microphone

Model No. : TF-102

FCC ID. : Y63TWK

Applicant : TWINKLE.SHARE CO., LTD

Address : No.15, Ln.185, Huanhe St., Xizhi Dist., New Taipei City 221,
Taiwan (R.O.C.)

Date of Receipt : 2010/12/20

Issued Date : 2011/02/24

Report No. : 111202R-RFUSP43V01

Report Version : V1.0

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.

Test Report Certification

Issued Date : 2011/02/24

Report No. : 111202R-RFUSP43V01

QuiTek

Product Name : Digital Wireless Microphone
Applicant : TWINKLE.SHARE CO., LTD
Address : No.15, Ln.185, Huanhe St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)
Manufacturer : TWINKLE.SHARE CO., LTD
Model No. : TF-102
FCC ID. : Y63TWK
EUT Voltage : DC 3V (Power by Battery)
Trade Name : TWK
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2009
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 QuiTek Corporation.

Documented By :



(Sandy Chuang / Adm. Specialist)

Tested By :



(Ben Huang / Engineer)

Approved By :



(Roy Wang / Manager)

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1. General Information**1.1. EUT Description**

Product Name	Digital Wireless Microphone
Trade Name	TWK
Model No.	TF-102
Frequency Range	2408 MHz ~ 2475.5MHz
Channel Number	28
Type of Modulation	GFSK
Channel Control	Auto
Antenna Type	Dipole Antenna
Antenna Gain	1.2dBi

Search for 28CH	Frequency(MHz)	Search for 28CH	Frequency(MHz)
CH0	2408	CH14	2450.5
CH1	2425.5	CH15	2468
CH2	2443	CH16	2418
CH3	2460.5	CH17	2435.5
CH4	2410.5	CH18	2453
CH5	2428	CH19	2470.5
CH6	2445.5	CH20	2420.5
CH7	2463	CH21	2438
CH8	2413	CH22	2455.5
CH9	2430.5	CH23	2473
CH10	2448	CH24	2423
CH11	2465.5	CH25	2440.5
CH12	2415.5	CH26	2458
CH13	2433	CH27	2475.5

Note:

1. This device is a Digital Wireless Microphone included a 2.4GHz transmitting.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. 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.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the 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 111202R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

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

Pre-Test Mode	
EMI	Mode 1: Transmitter (TX)
Final Test Mode	
EMI	Mode 1: Transmitter (TX)

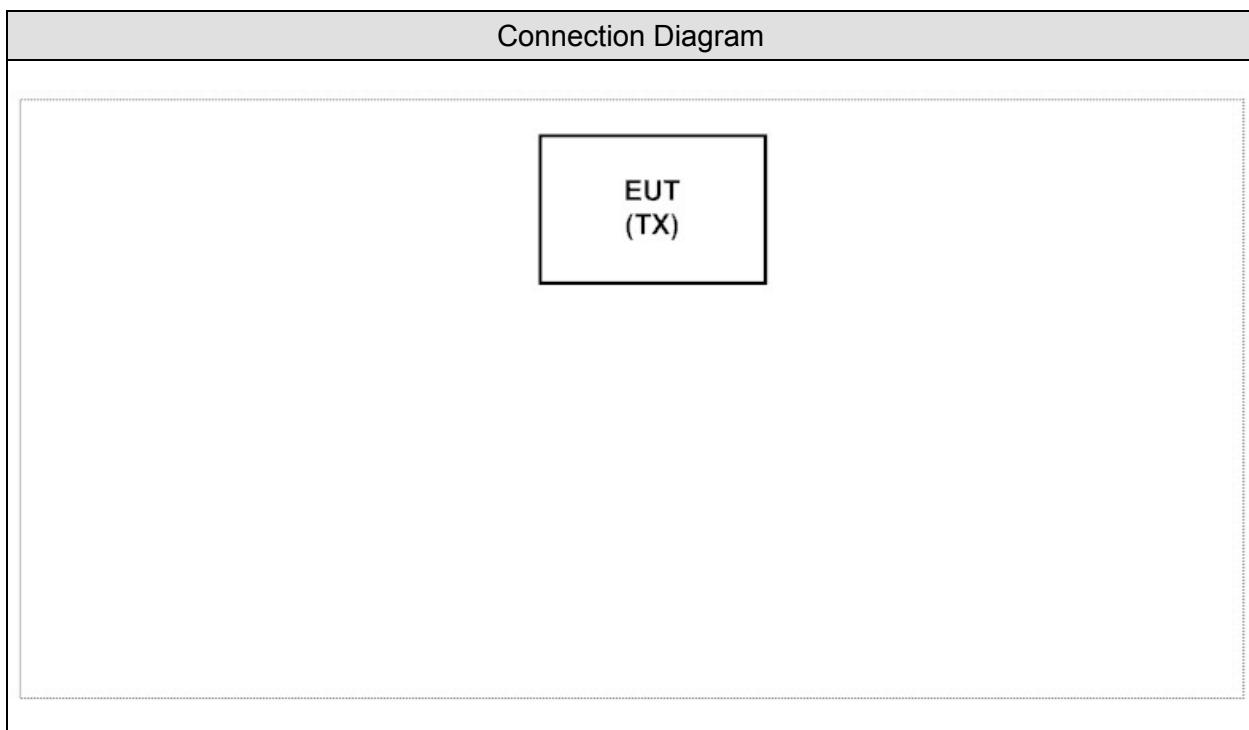
Emission	
Conducted Emission	No
Peak Power Output	Yes
Radiated Emission	Yes
Band Edge	Yes
Channel of Number	Yes
Channel Separation	Yes
Occupied Bandwidth	Yes
Dwell Time	Yes

1.4. Tested System Details

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

Test Mode	Mode 1: Transmitter (TX)
N/A	

1.5. Configuration of tested System



1.6. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.5.
2	Turn on the power of all equipment.
3	The transmitter will continue transmit through as the receiver.
4	Repeat at the above procedure (3).

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 15.247 Peak Power Output (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	58
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Of Number (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Separation (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (FHSS)	15 - 35	24
Humidity (%RH)		25 - 75	57
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Dwell Time (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	58
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description: September 27, 2010 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520



Accredited by TAF
Accreditation Number: 1313
Effective through: December 27, 2013



Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2011



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. Peak Power Output

2.1. Test Equipment

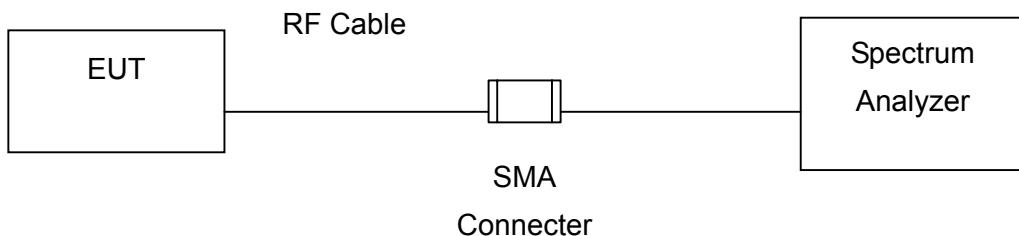
The following test equipments are used during the test:

Peak Power / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2012/01/16

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

2.2. Test Setup



2.3. Test procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

2.4. Limits

For frequency hopping systems operating in the 902-928 MHz band: 1 Watt for systems employing at least 50 hopping channels; and, 0.25 Watts for systems employing less than 50 hopping channels.

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watt.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

2.6. Uncertainty

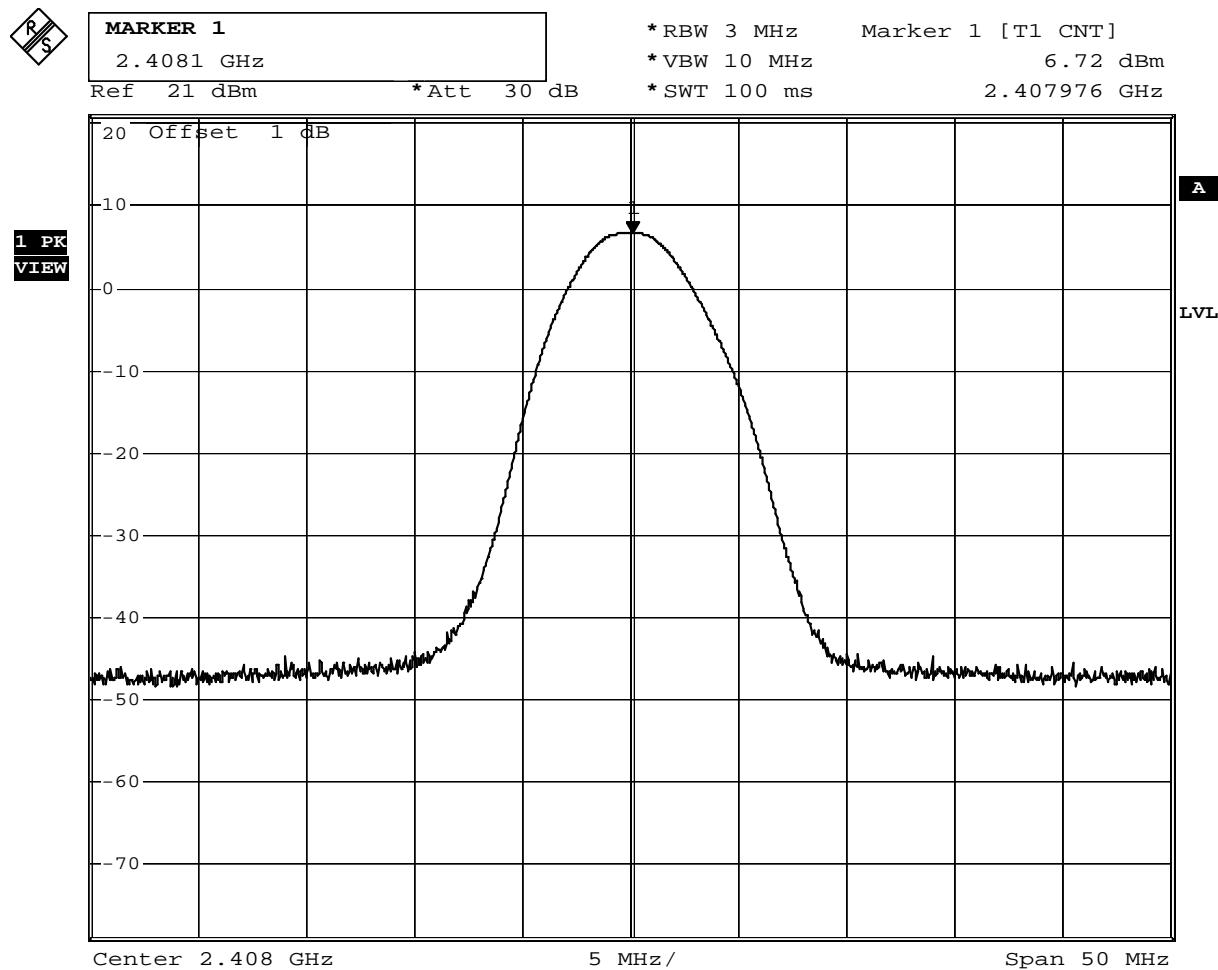
The measurement uncertainty is defined as ± 1.27 dB.

2.7. Test Result

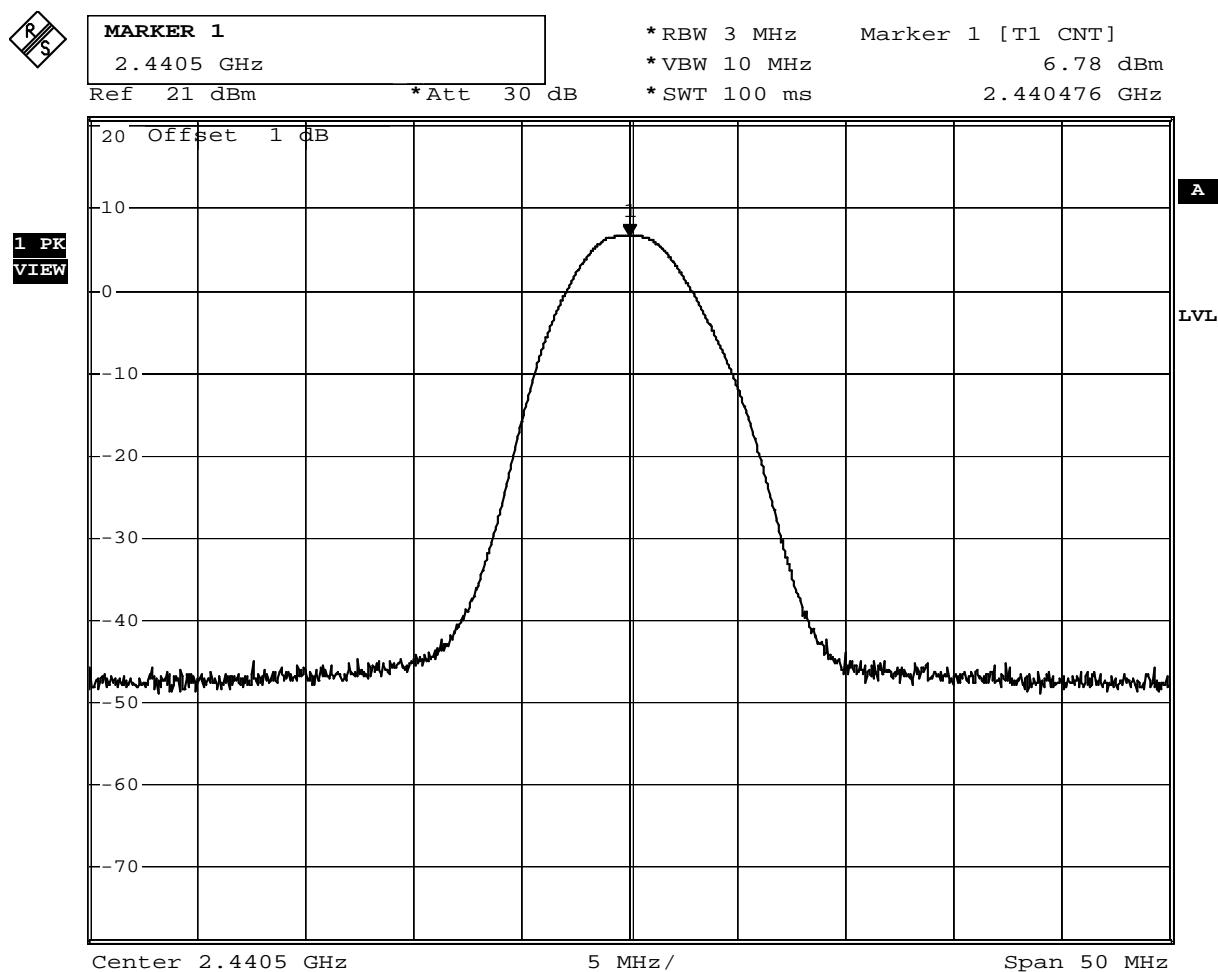
Product	Digital Wireless Microphone		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmitter (TX)		
Date of Test	2011/03/22	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2408.0	6.72	1Watt= 30 dBm	Pass
25	2440.5	6.78	1Watt= 30 dBm	Pass
27	2475.5	5.89	1Watt= 30 dBm	Pass

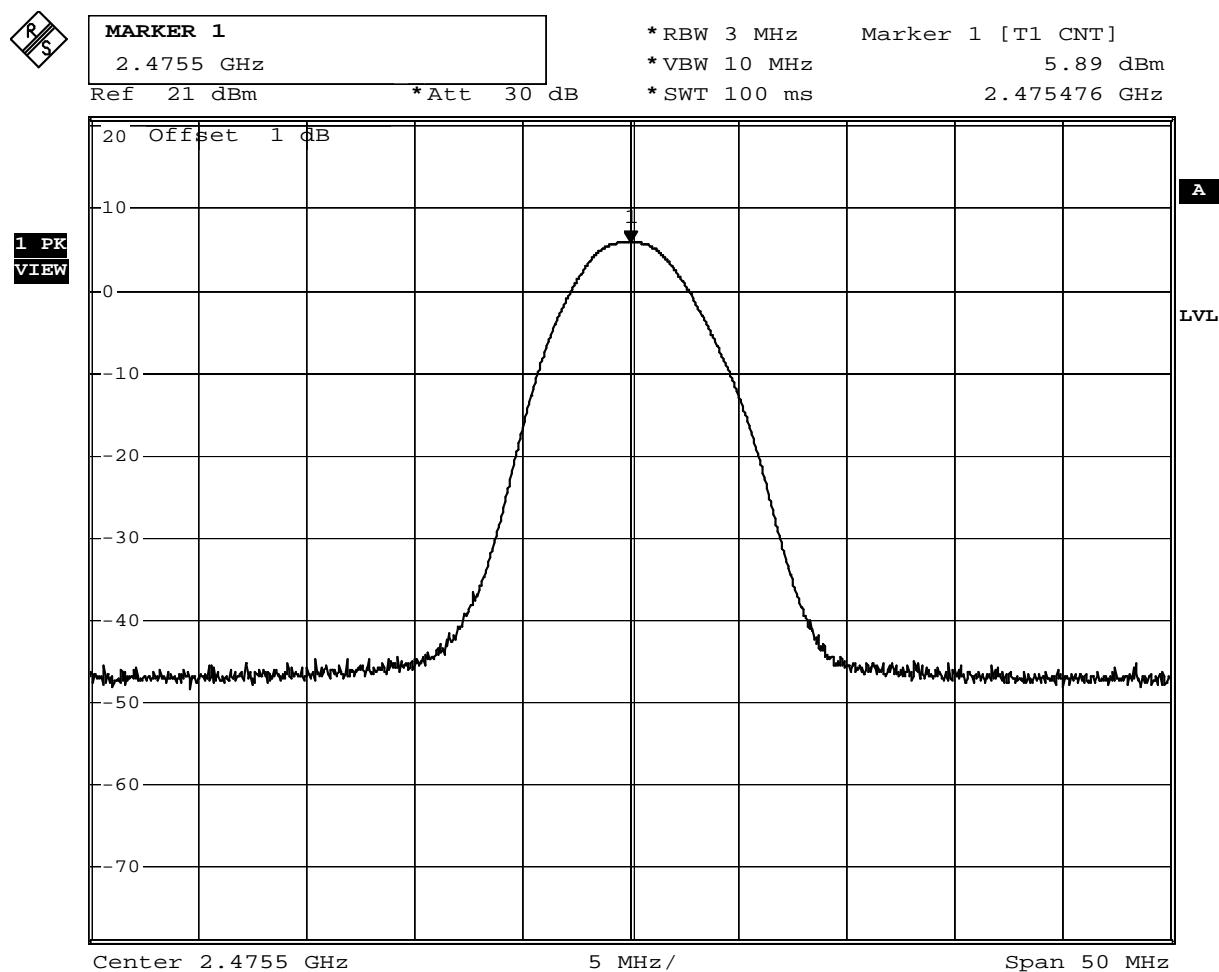
Channel 00



Date: 22.MAR.2011 13:43:11

Channel 25

Date: 22.MAR.2011 13:44:30

Channel 27

Date: 22.MAR.2011 13:45:56

3. Radiated Emission

3.1. Test Equipment

The following test equipments are used during the test:

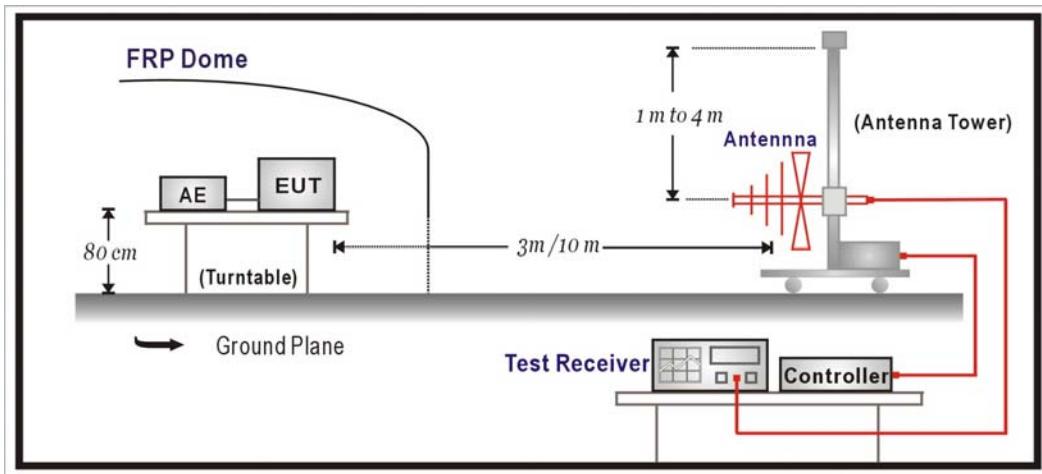
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2011/08/14
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/14
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2011/12/03
Pre-Amplifier	QuiTek	AP-025C	CHM-0706049	2011/03/25
Spectrum Analyzer	Agilent	E4440A	MY46187335	2011/01/14
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

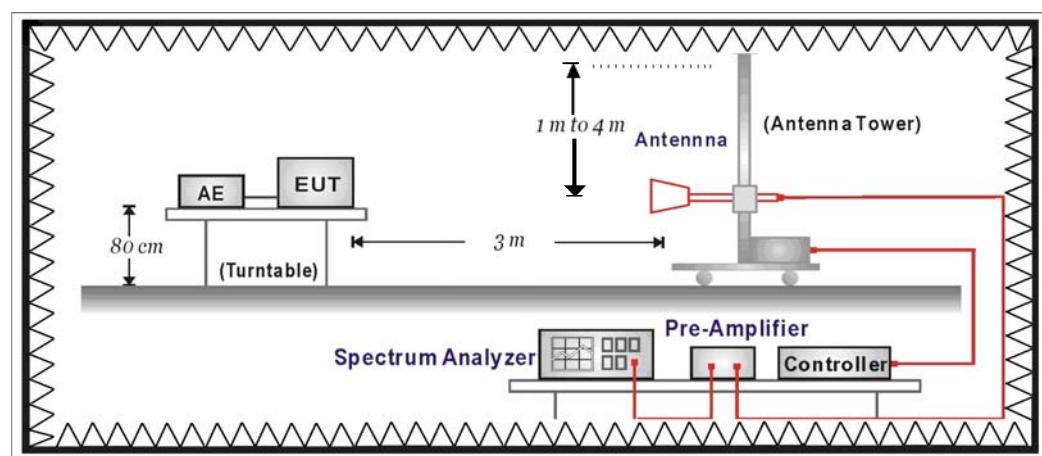
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m	dBuV/m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

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 C63.4:2009 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 15.247: 2009

3.6. Uncertainty

The measurement uncertainty

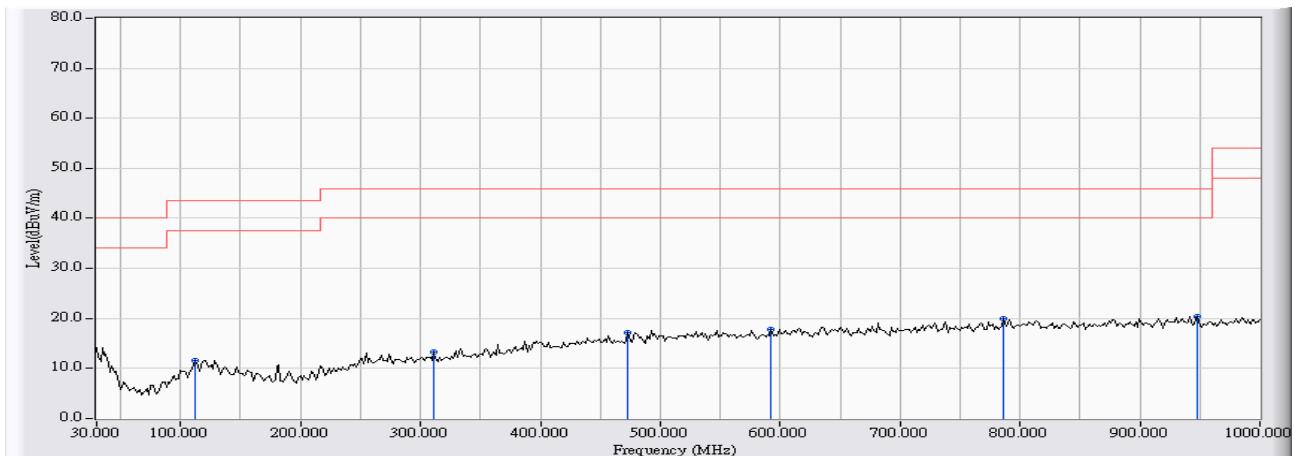
30MHz~1GHz as ± 3.43 dB

1GHz~26.5GHz as ± 3.65 dB

3.7. Test Result

Under 1GHz Spurious:

Site : CB1	Time : 2010/12/20 - 17:36
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2440.5

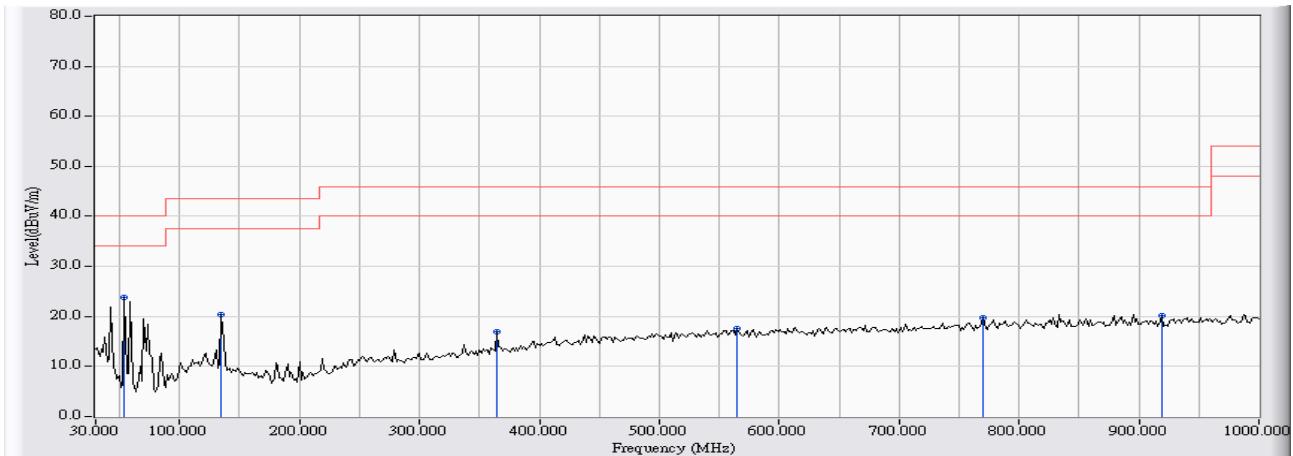


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		112.450	-12.843	24.459	11.615	-31.885	43.500	QUASIPEAK
2		311.300	-10.354	23.562	13.207	-32.793	46.000	QUASIPEAK
3		472.967	-6.540	23.668	17.128	-28.872	46.000	QUASIPEAK
4		592.600	-5.088	22.991	17.902	-28.098	46.000	QUASIPEAK
5		786.600	-3.507	23.383	19.876	-26.124	46.000	QUASIPEAK
6	*	948.267	-2.463	22.926	20.463	-25.537	46.000	QUASIPEAK

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 : CB1	Time : 2010/12/20 - 17:39
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2440.5



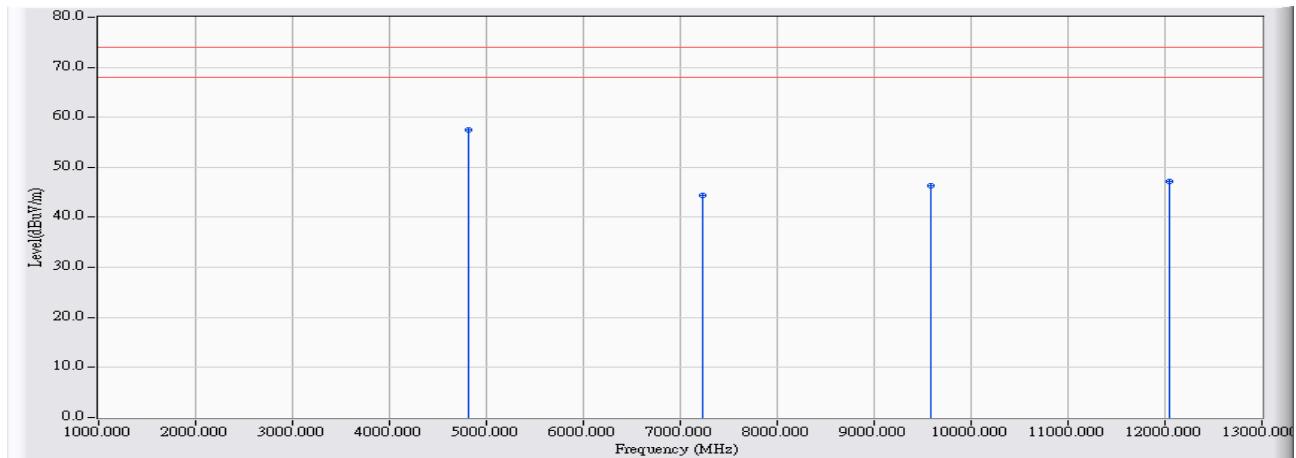
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	54.250	-17.364	41.273	23.910	-16.090	40.000	QUASIPEAK
2		135.083	-13.062	33.444	20.383	-23.117	43.500	QUASIPEAK
3		364.650	-8.855	25.761	16.905	-29.095	46.000	QUASIPEAK
4		565.117	-5.308	22.988	17.680	-28.320	46.000	QUASIPEAK
5		770.433	-3.699	23.467	19.769	-26.231	46.000	QUASIPEAK
6		919.167	-2.733	22.933	20.201	-25.799	46.000	QUASIPEAK

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.

Above 1GHz Spurious:

Site : CB1	Time : 2010/12/27 - 18:44
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2408

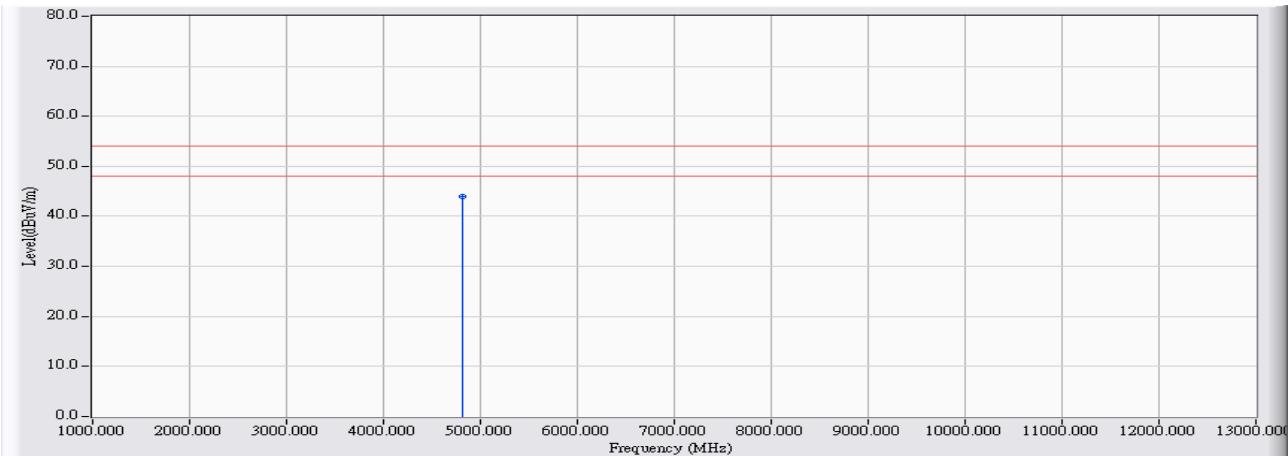


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4820.000	-1.215	58.650	57.435	-16.565	74.000	54.000	PEAK
2		7225.130	3.964	40.521	44.485	-29.515	74.000	54.000	PEAK
3		9580.000	6.891	39.386	46.277	-27.723	74.000	54.000	PEAK
4		12039.980	9.439	37.798	47.237	-26.763	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/21 - 13:49
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2408

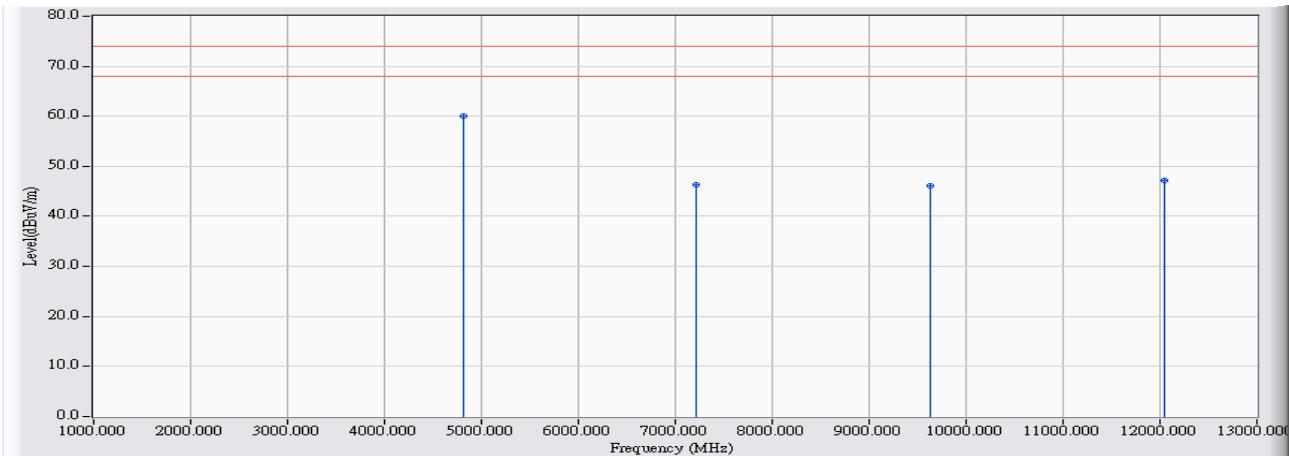


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4816.000	-1.220	45.265	44.045	-9.955	74.000	54.000

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/27 - 18:44
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2408

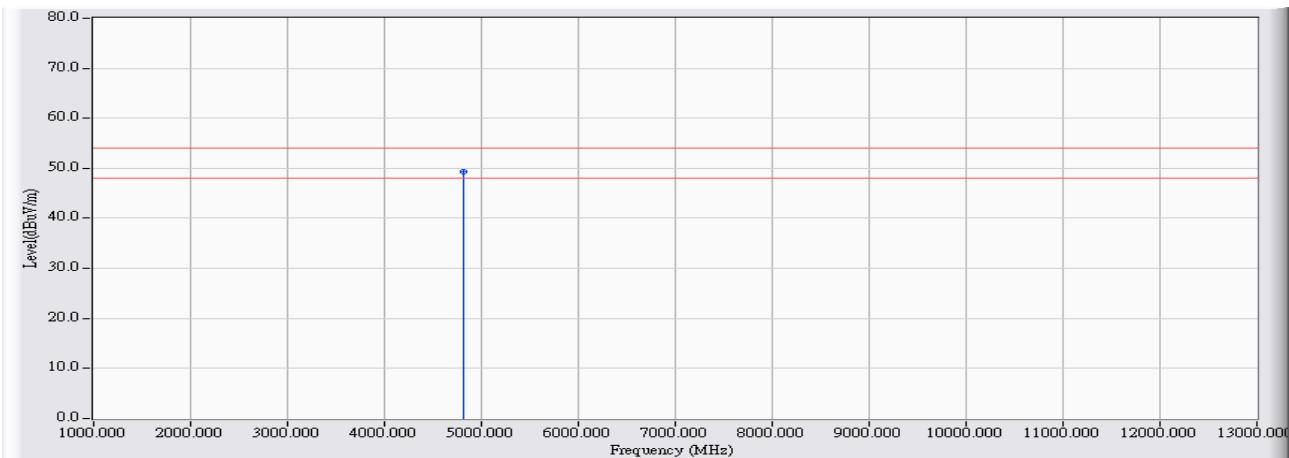


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	* 4820.000	-1.215	61.201	59.986	-14.014	74.000	54.000	PEAK
2	7220.000	3.950	42.332	46.282	-27.718	74.000	54.000	PEAK
3	9634.550	7.049	39.148	46.197	-27.803	74.000	54.000	PEAK
4	12040.720	9.438	37.692	47.131	-26.869	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/21 - 14:00
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2408

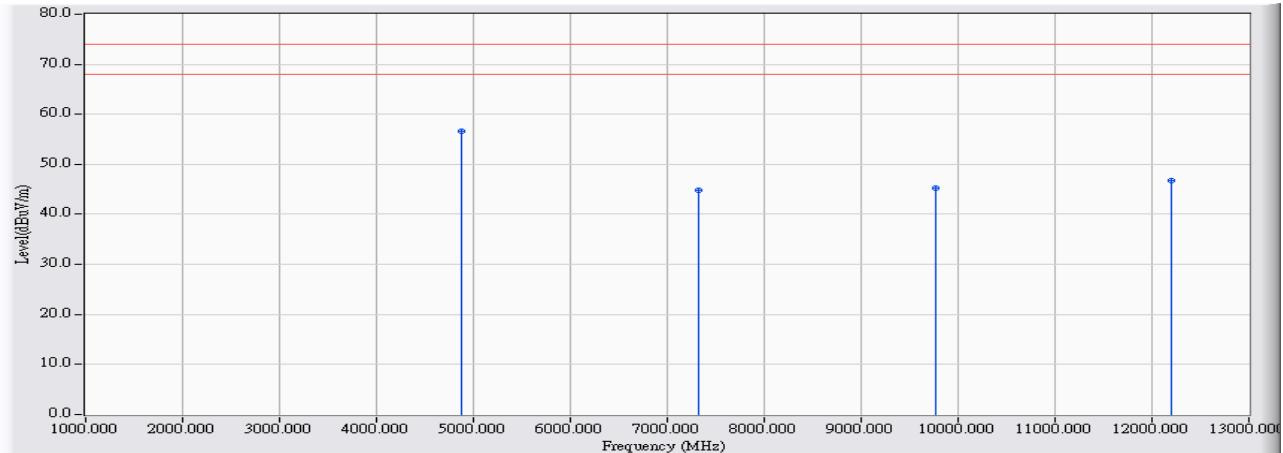


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4816.000	-1.220	50.570	49.350	-4.650	74.000	54.000

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/27 - 18:45
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2440.5

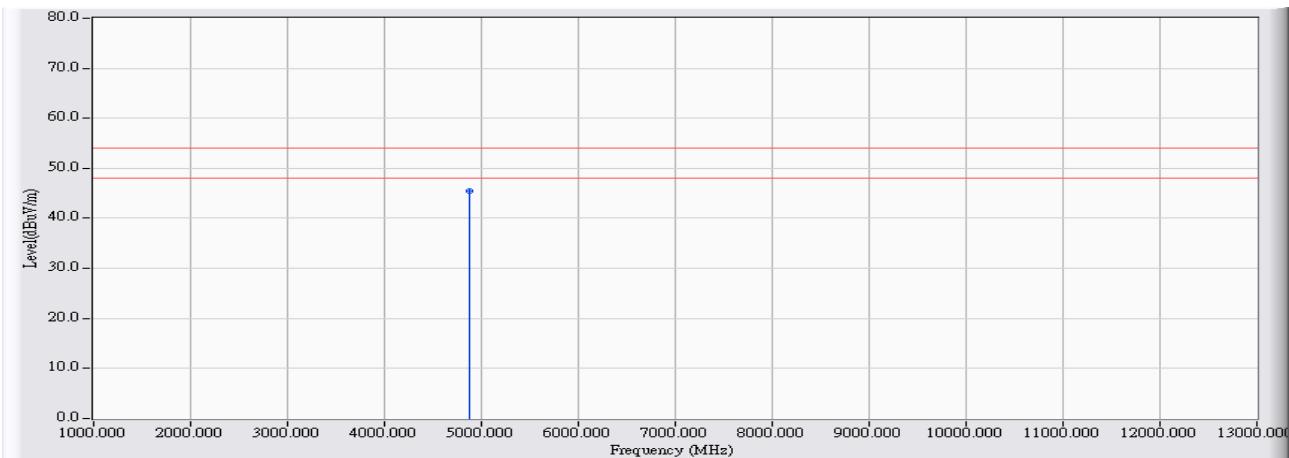


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4880.000	-1.133	57.679	56.546	-17.454	74.000	54.000	PEAK
2		7320.000	4.225	40.584	44.809	-29.191	74.000	54.000	PEAK
3		9762.830	7.420	37.756	45.176	-28.824	74.000	54.000	PEAK
4		12206.170	9.379	37.270	46.650	-27.350	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/21 - 14:10
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2440.5

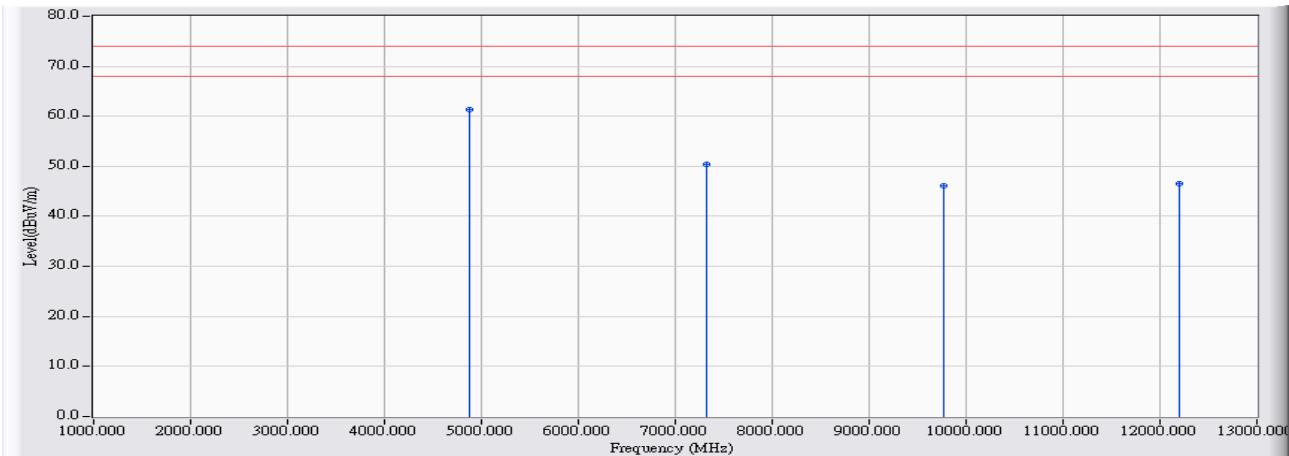


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type	
1	*	4881.000	-1.132	46.660	45.528	-8.472	74.000	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/27 - 18:45
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2440.5

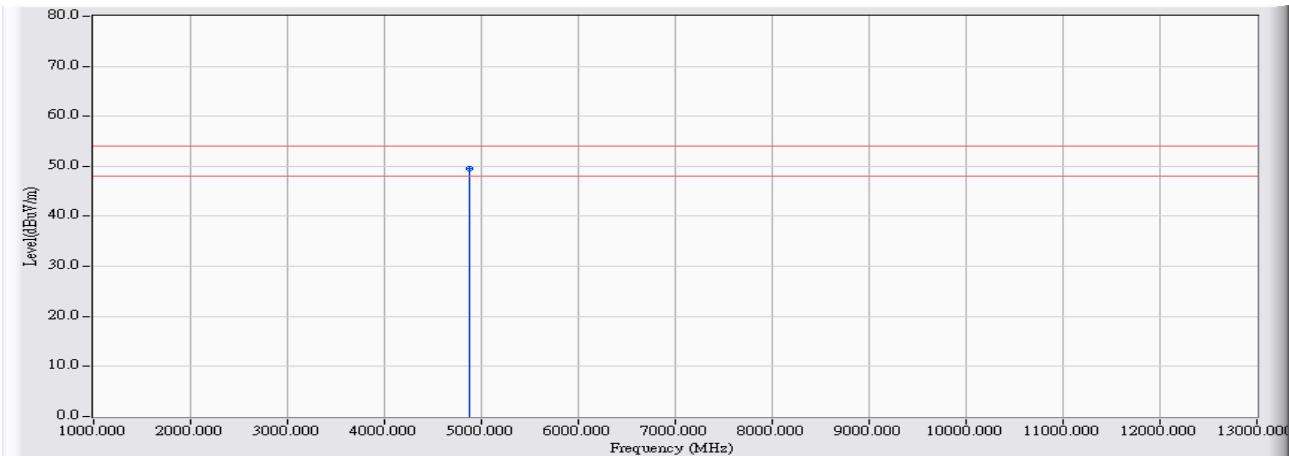


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	* 4880.000	-1.133	62.561	61.428	-12.572	74.000	54.000	PEAK
2	7320.000	4.225	46.171	50.396	-23.604	74.000	54.000	PEAK
3	9765.660	7.428	38.613	46.041	-27.959	74.000	54.000	PEAK
4	12206.280	9.380	37.181	46.561	-27.439	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/21 - 14:19
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2440.5

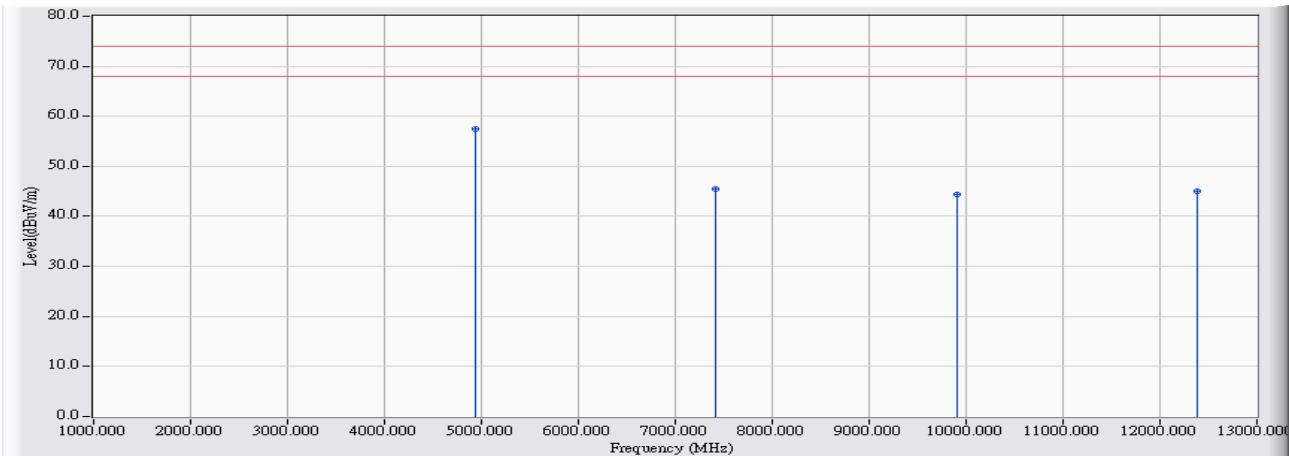


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4881.000	-1.132	50.604	49.472	-4.528	74.000	54.000

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/27 - 18:45
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2475.5

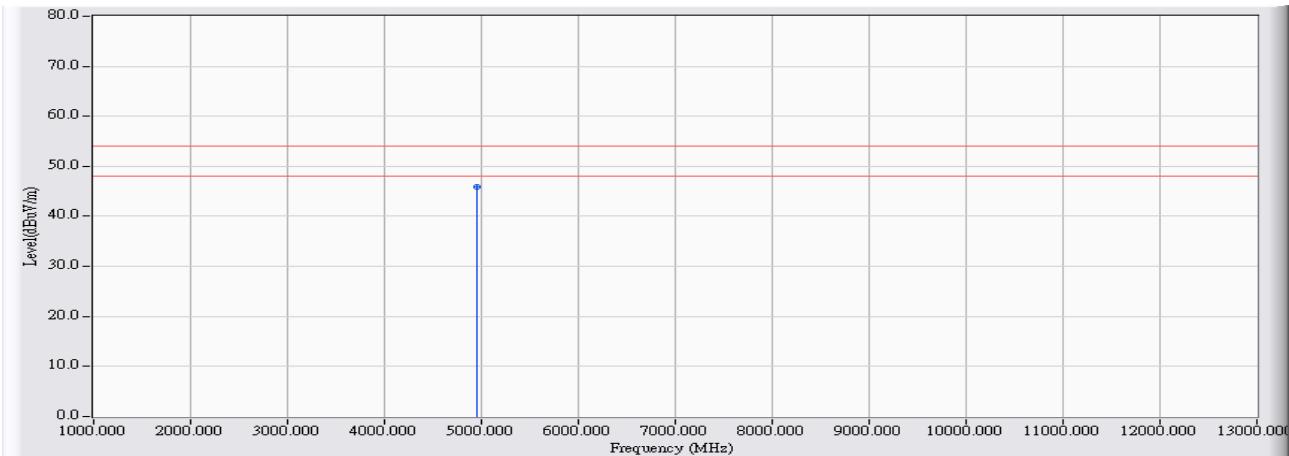


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	* 4940.000	-1.052	58.617	57.565	-16.435	74.000	54.000	PEAK
2	7420.000	4.500	40.997	45.497	-28.503	74.000	54.000	PEAK
3	9902.810	7.824	36.523	44.347	-29.653	74.000	54.000	PEAK
4	12381.460	9.318	35.690	45.007	-28.993	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/21 - 14:33
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2475.5

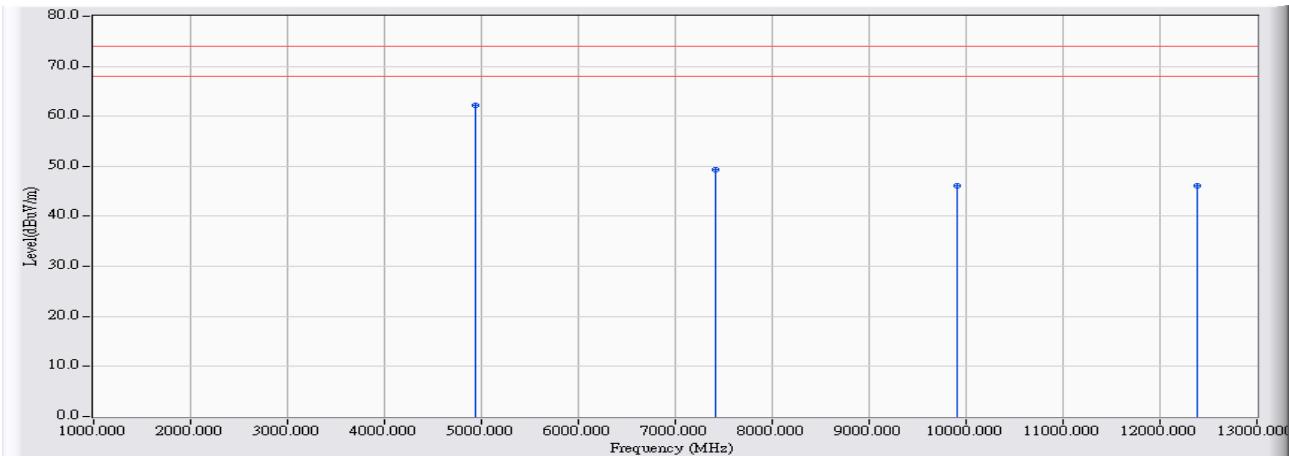


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4950.920	-1.038	46.870	45.833	-8.167	74.000	54.000

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/27 - 18:45
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2475.5

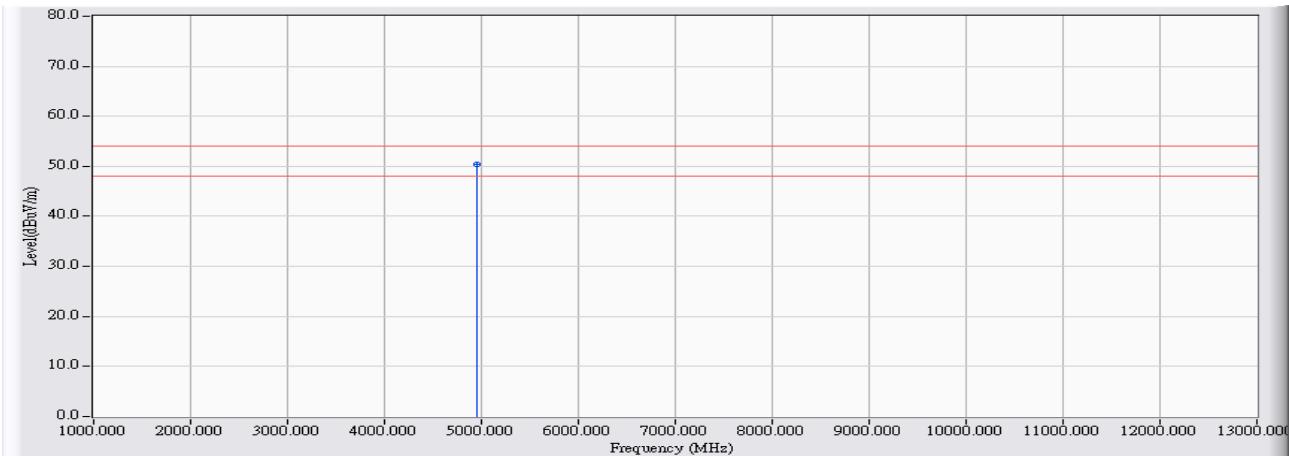


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type	
1	*	4940.000	-1.052	63.200	62.148	-11.852	74.000	54.000	PEAK
2		7420.000	4.500	44.848	49.348	-24.652	74.000	54.000	PEAK
3		9905.210	7.831	38.380	46.211	-27.789	74.000	54.000	PEAK
4		12381.710	9.317	36.724	46.041	-27.959	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/21 - 14:45
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2475.5



	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	*	4950.920	-1.038	51.480	50.443	-3.557	74.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

4. RF Conducted Emission

4.1. Test Equipment

The following test equipments are used during the test:

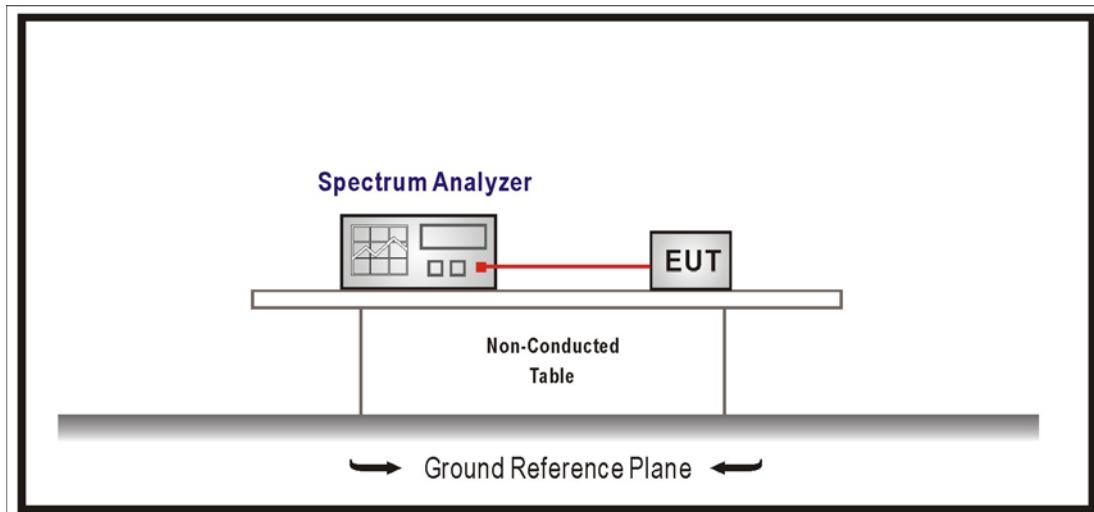
RF Antenna Conducted Test / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2012/01/16

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

4.2. Test Setup

RF Conducted 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 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. 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 was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

4.5. Test Specification

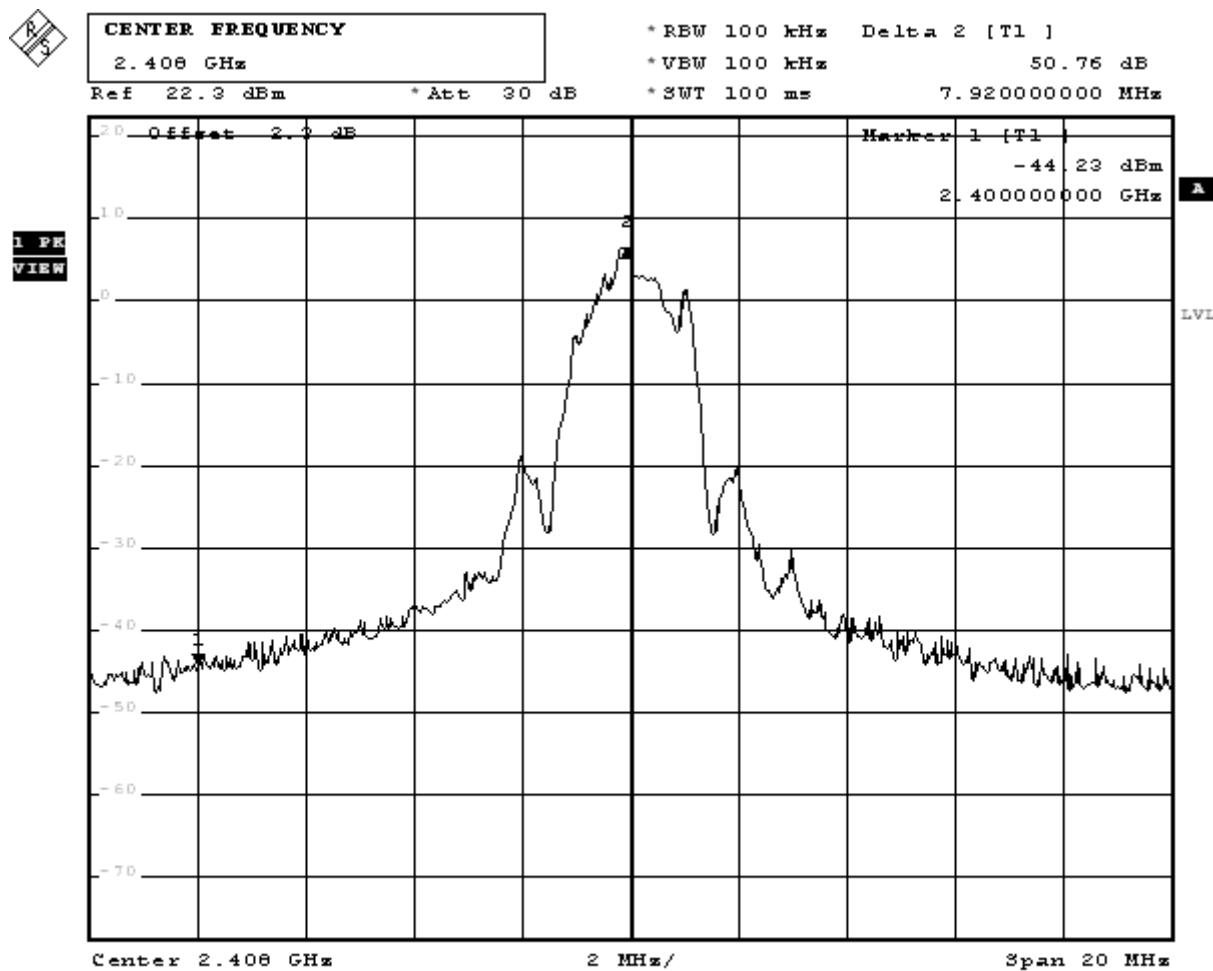
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

4.6. Test Result

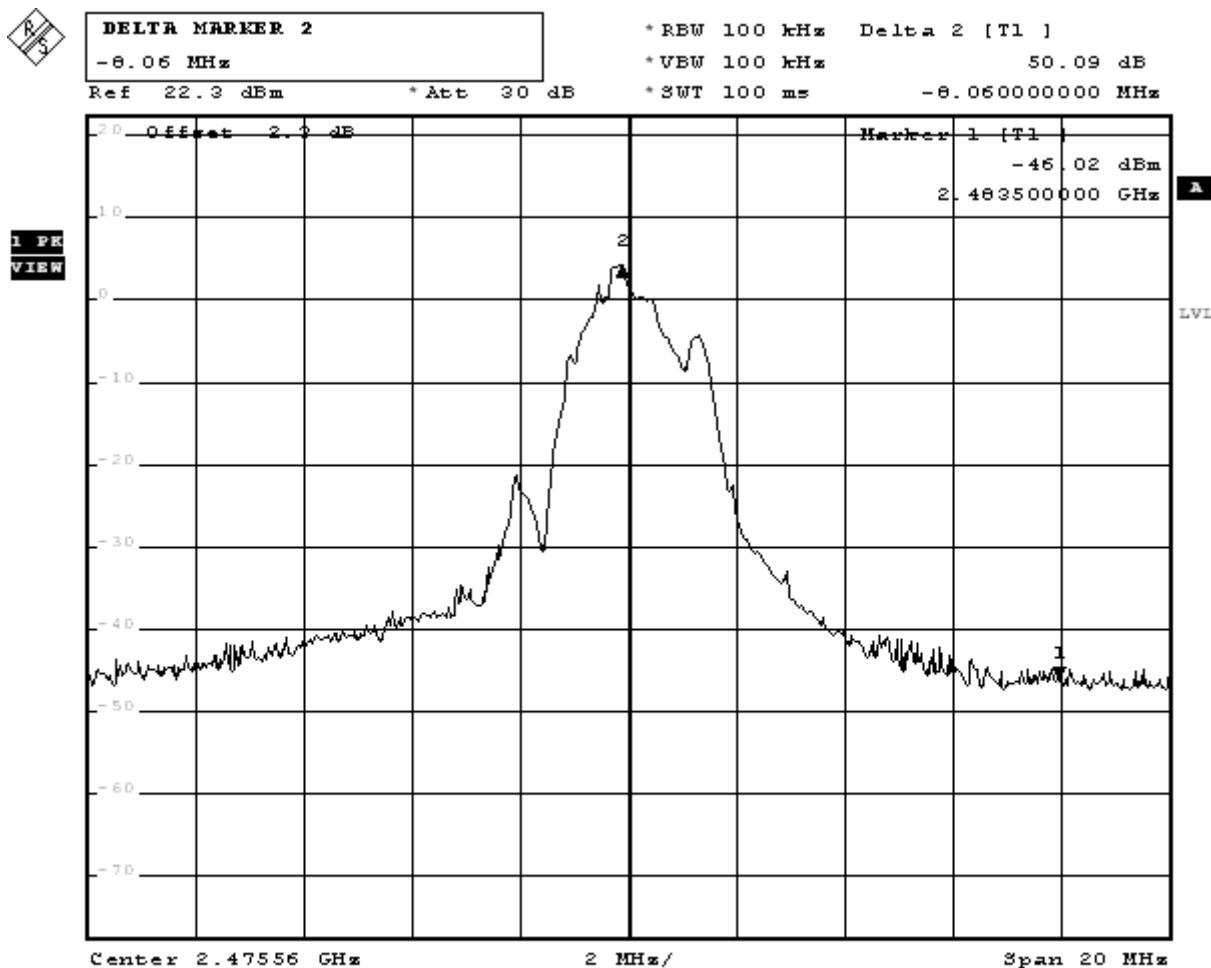
Product	Digital Wireless Microphone		
Test Item	RF Conducted Emissions		
Test Mode	Mode 1: Transmit		
Date of Test	2011/01/06	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (dBc)	Required Limit (dBc)	Result
00	2408.0	50.76	≥20	Pass
27	2475.5	50.09	≥20	Pass

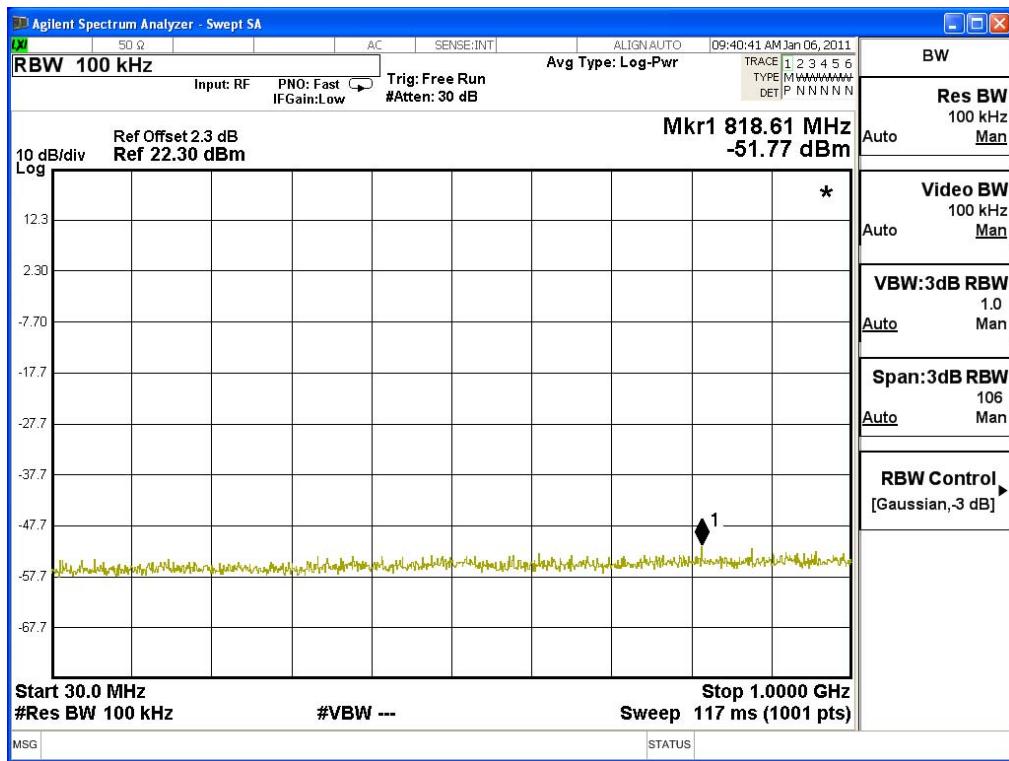
Channel 00



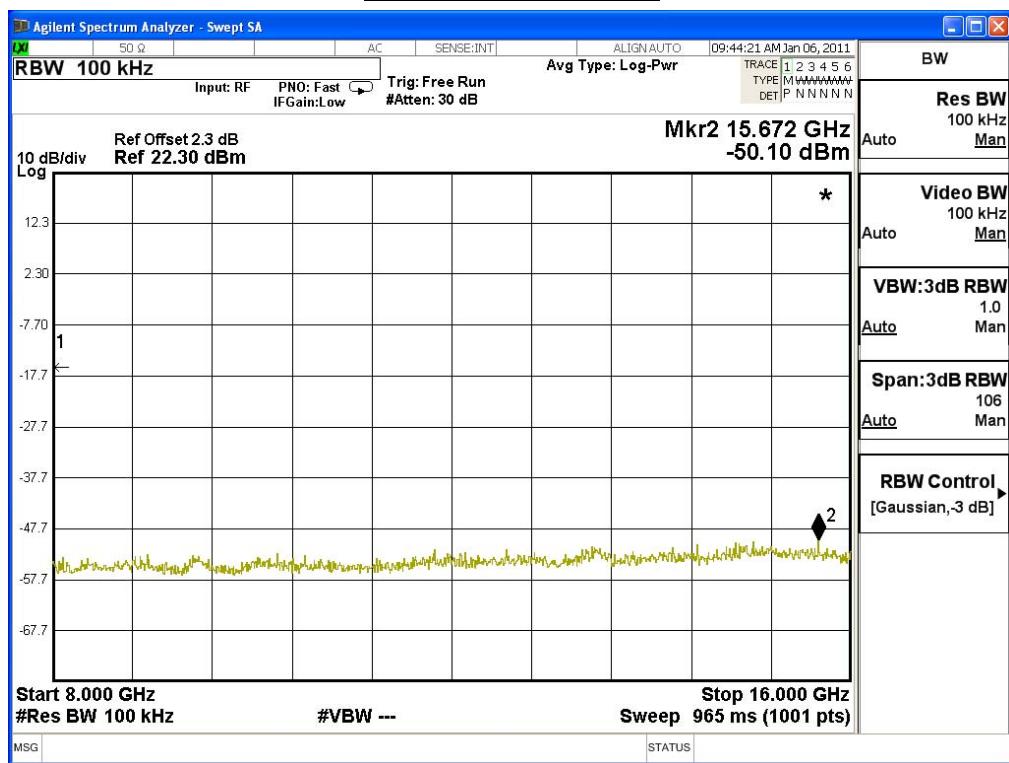
Date: 6.JAN.2011 01:42:26

Channel 27

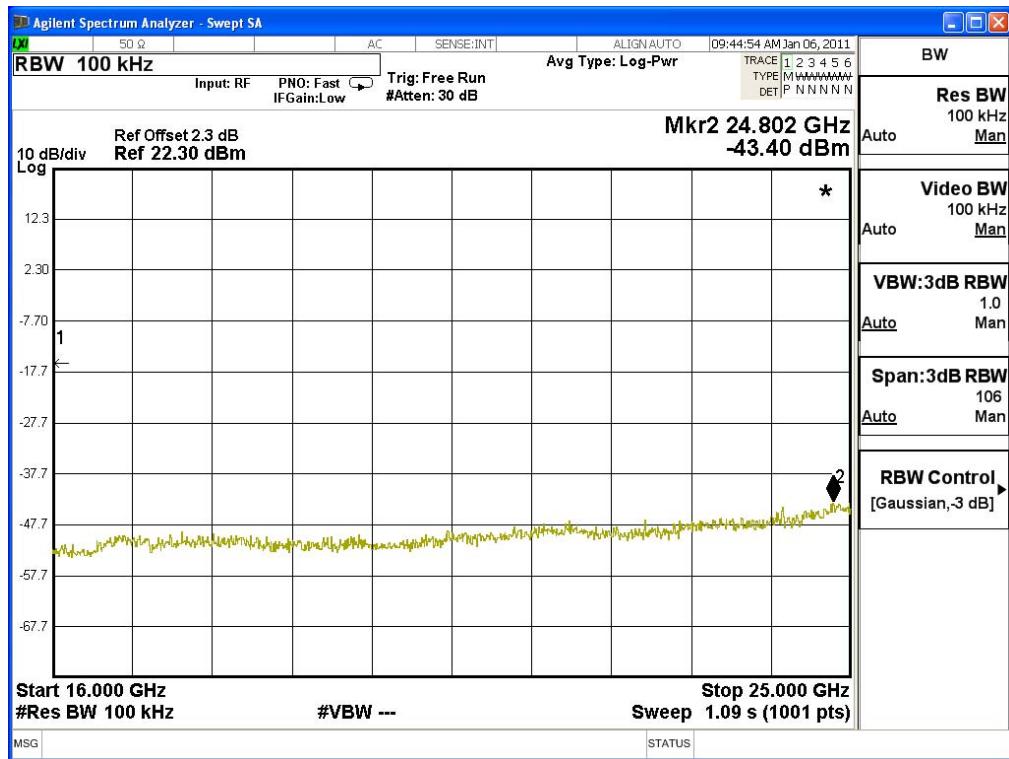
Date: 6.JAN.2011 01:48:29

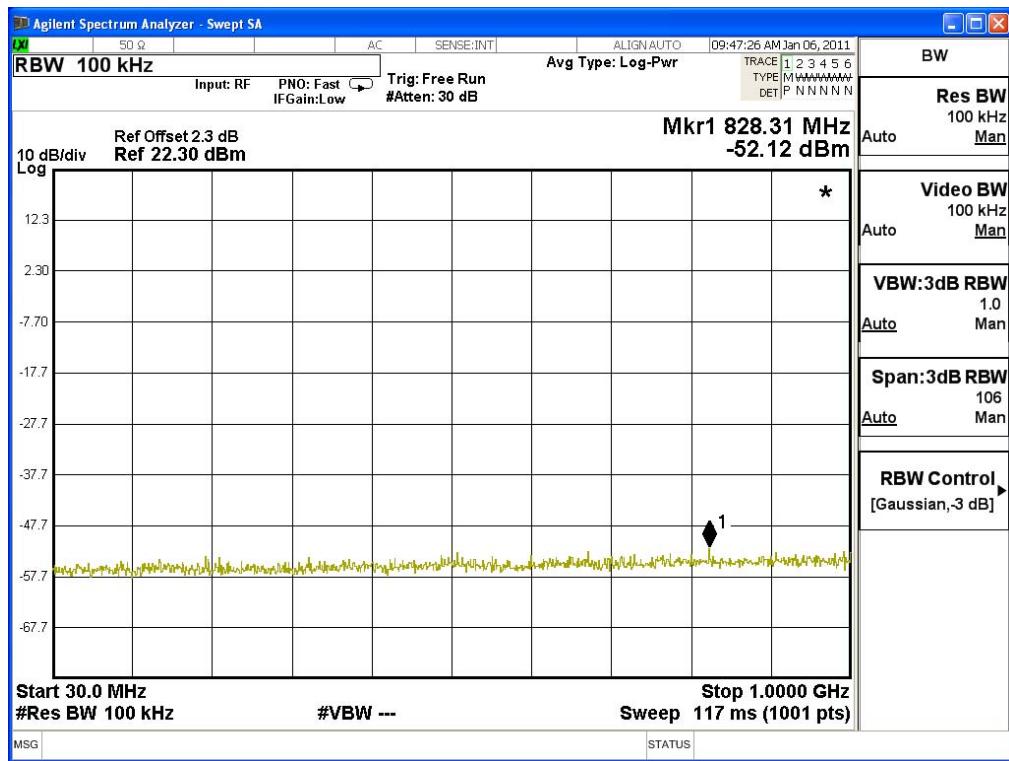
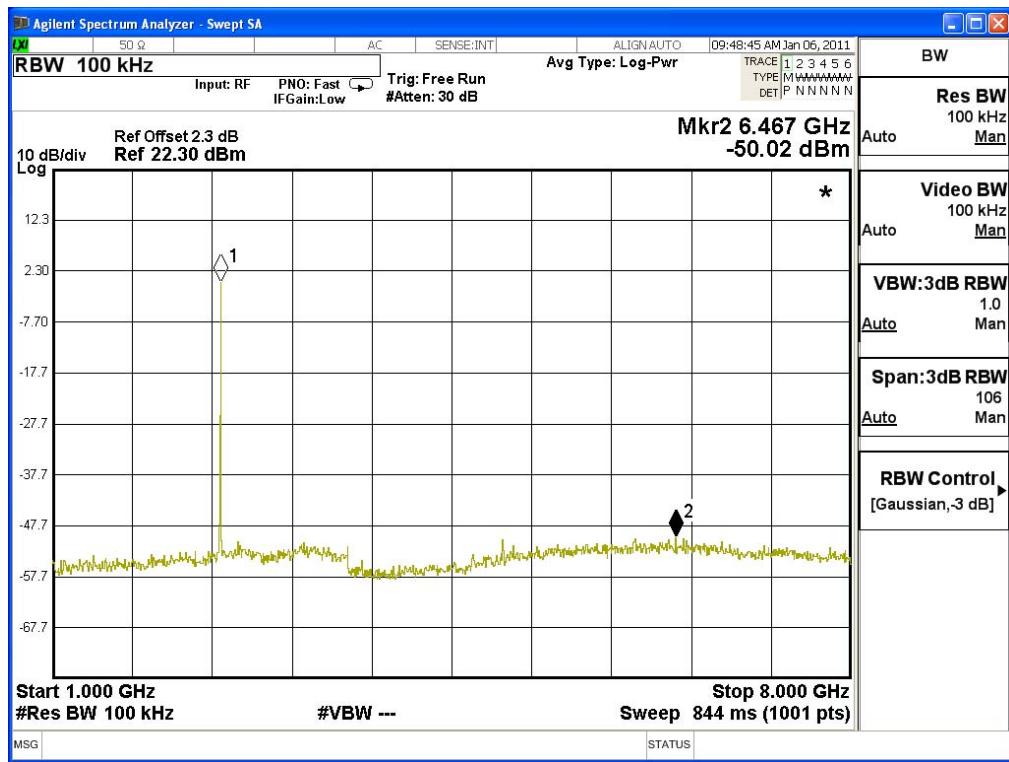
Channel 00 (30M~1G)Channel 00 (1G~8G)

Channel 00 (8G~16G)

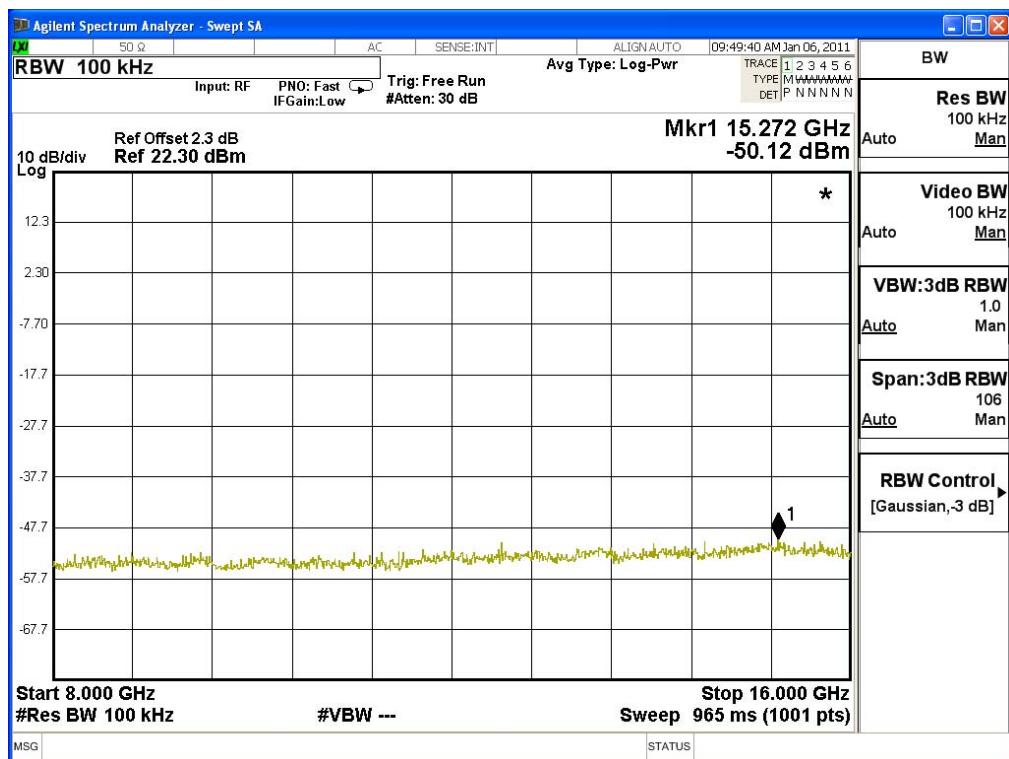


Channel 00 (16G~25G)

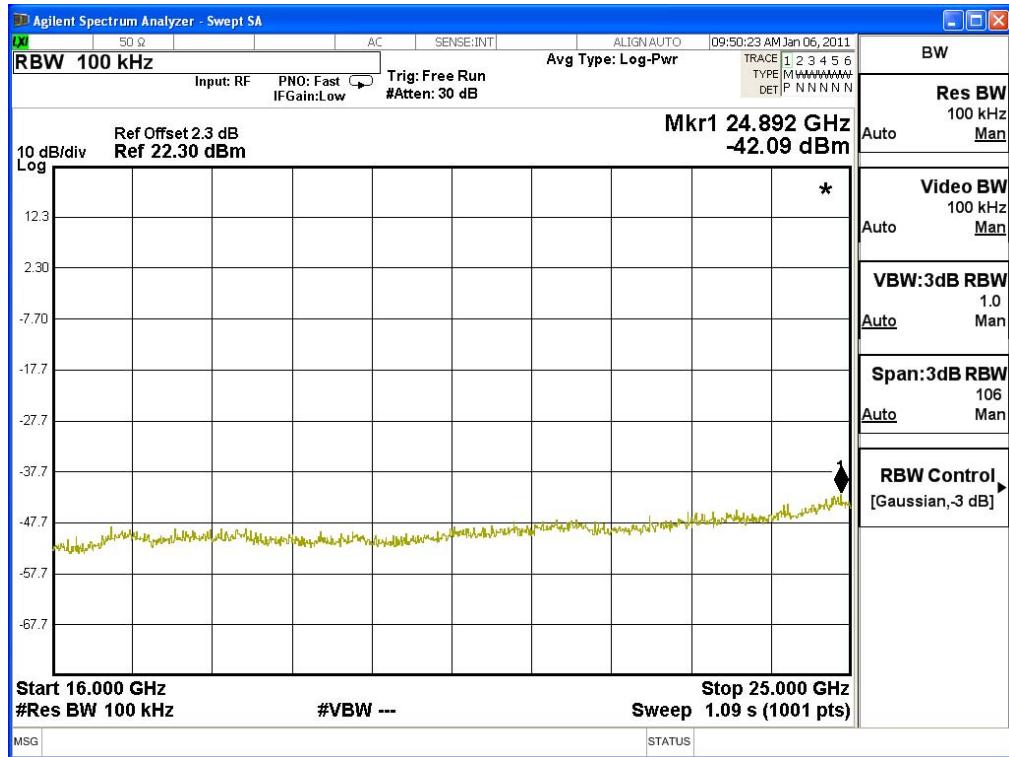


Channel 27 (30M~1G)Channel 27 (1G~8G)

Channel 27 (8G~16G)



Channel 27 (16G~25G)



5. Band Edge

5.1. Test Equipment

The following test equipments are used during the test:

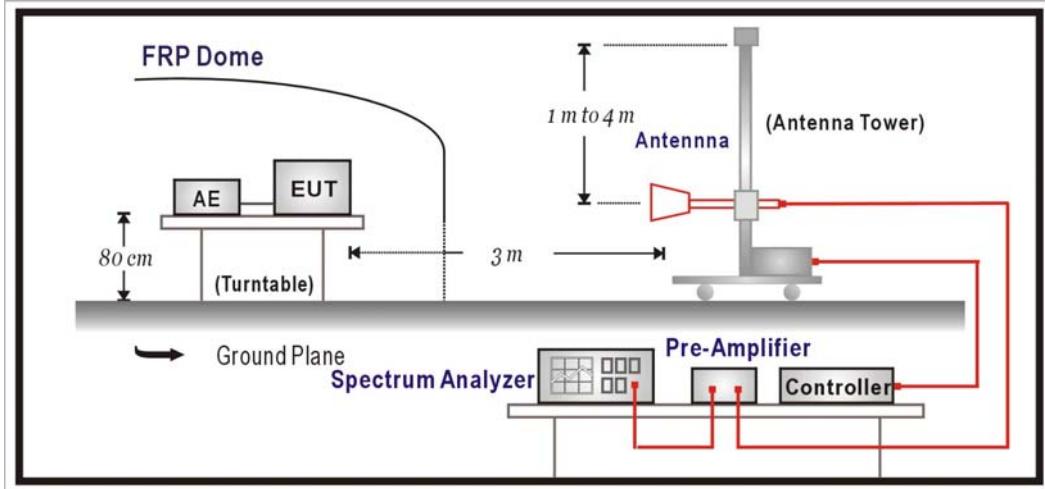
Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/14
Spectrum Analyzer	Agilent	E4440A	MY46187335	2011/01/14
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

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

5.2. Test Setup

RF Radiated Measurement:



5.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

5.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

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 C63.4:2009 on radiated measurement.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

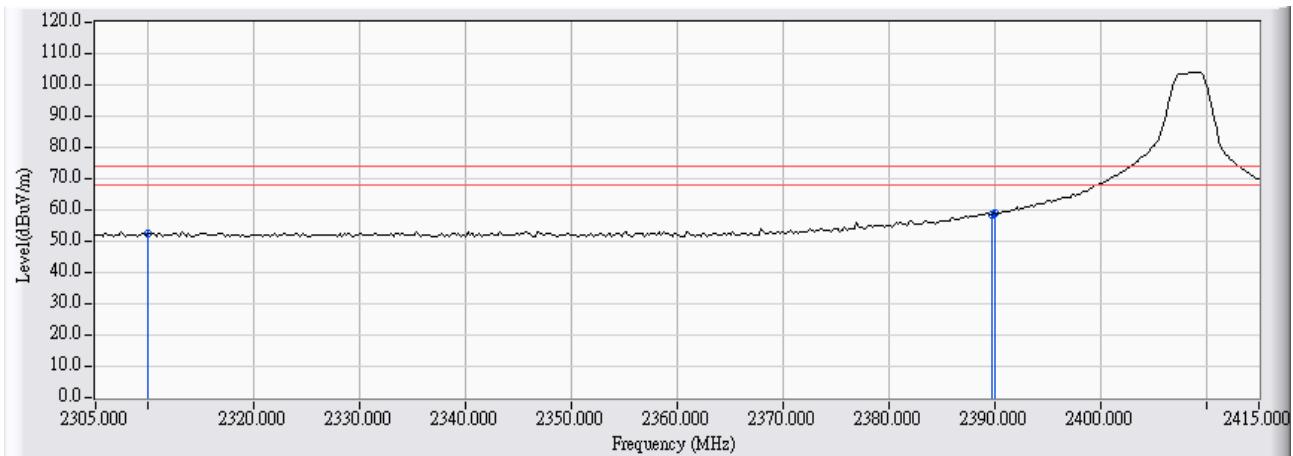
5.6. Uncertainty

The measurement uncertainty

± 3.9 dB above 1GHz

5.7. Test Result

Site : CB1	Time : 2010/12/29 - 16:07
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2408

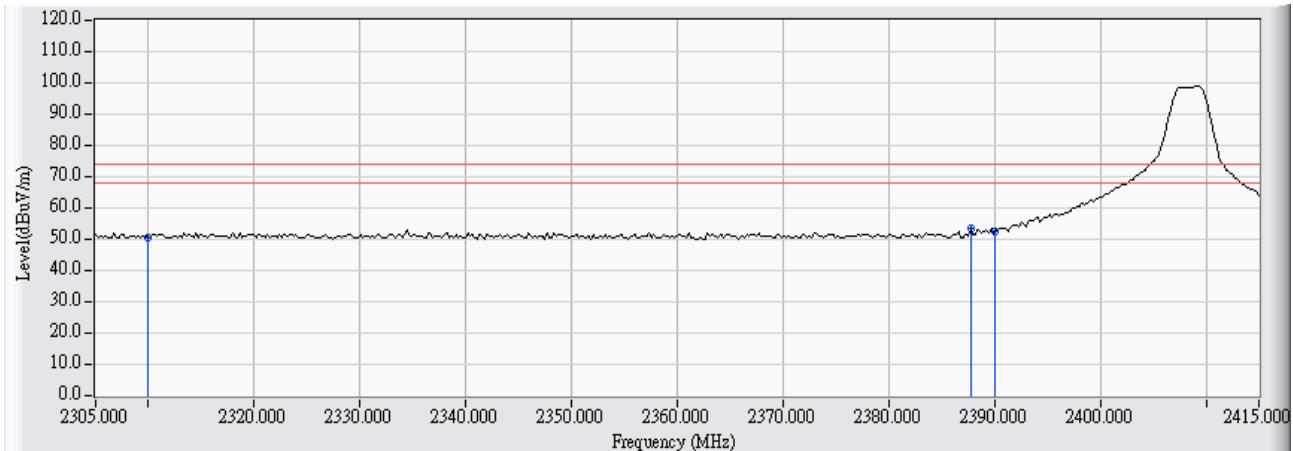


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	27.336	25.174	52.510	-21.490	74.000	PEAK
2		2389.700	27.669	30.986	58.656	-15.344	74.000	PEAK
3	*	2390.000	27.671	31.280	58.951	-15.049	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/29 - 16:26
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2408

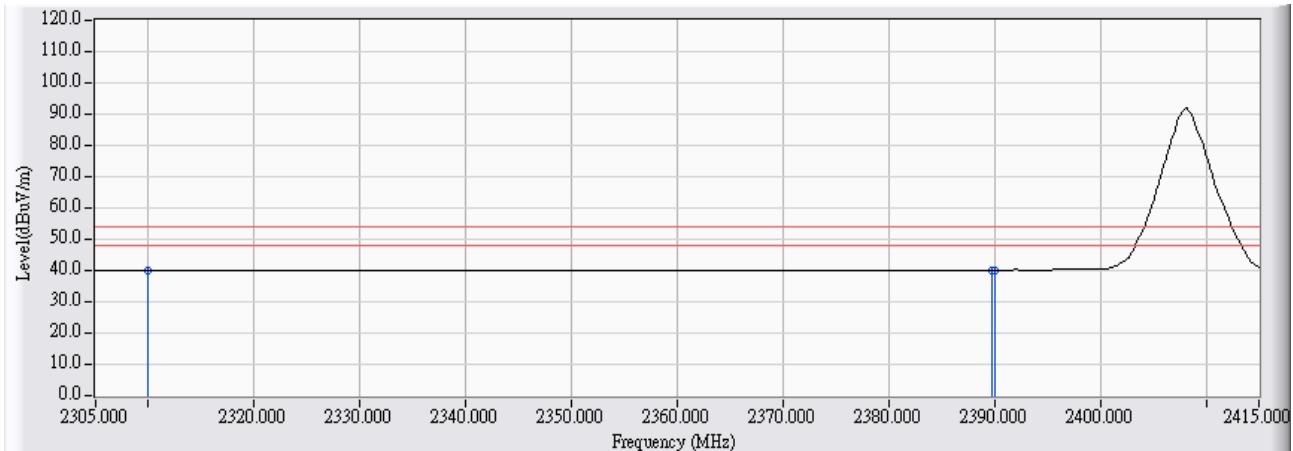


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	27.336	23.240	50.576	-23.424	74.000	PEAK
2	* 2387.720	27.661	26.020	53.682	-20.318	74.000	PEAK
3	2390.000	27.671	24.749	52.420	-21.580	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/29 - 16:09
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2408

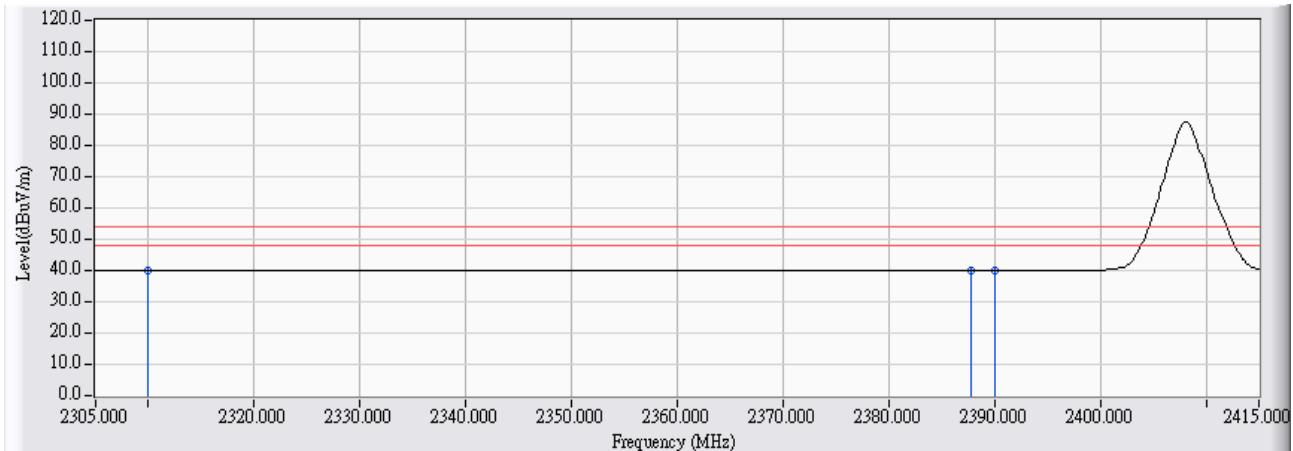


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	27.336	12.513	39.849	-14.151	54.000	AVERAGE
2	2389.700	27.669	12.449	40.119	-13.881	54.000	AVERAGE
3	* 2390.000	27.671	12.458	40.129	-13.871	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/29 - 16:28
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2408

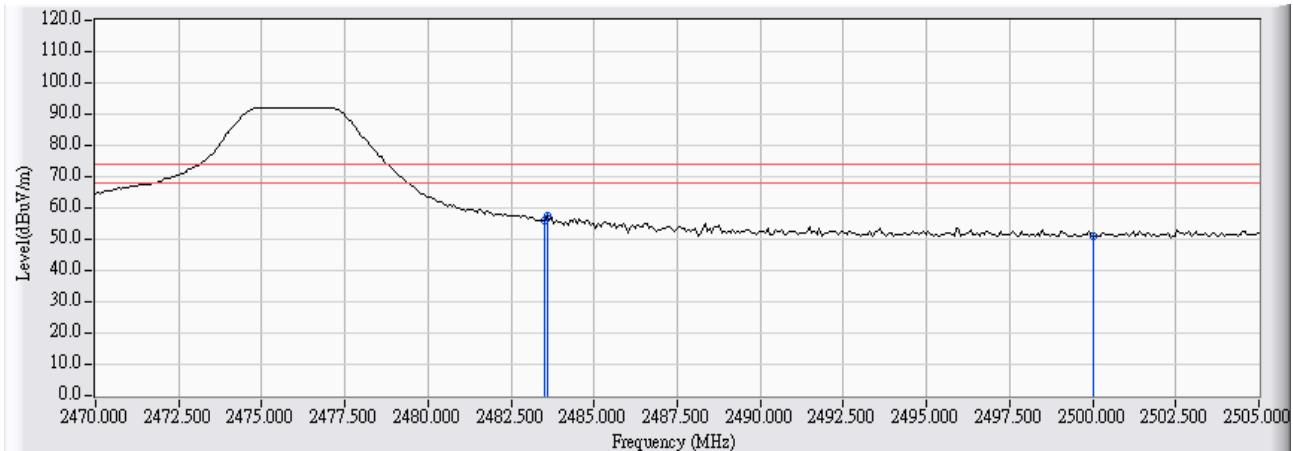


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	27.336	12.460	39.796	-14.204	54.000	AVERAGE
2	2387.720	27.661	12.362	40.024	-13.976	54.000	AVERAGE
3	* 2390.000	27.671	12.391	40.062	-13.938	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/29 - 16:37
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2475.5

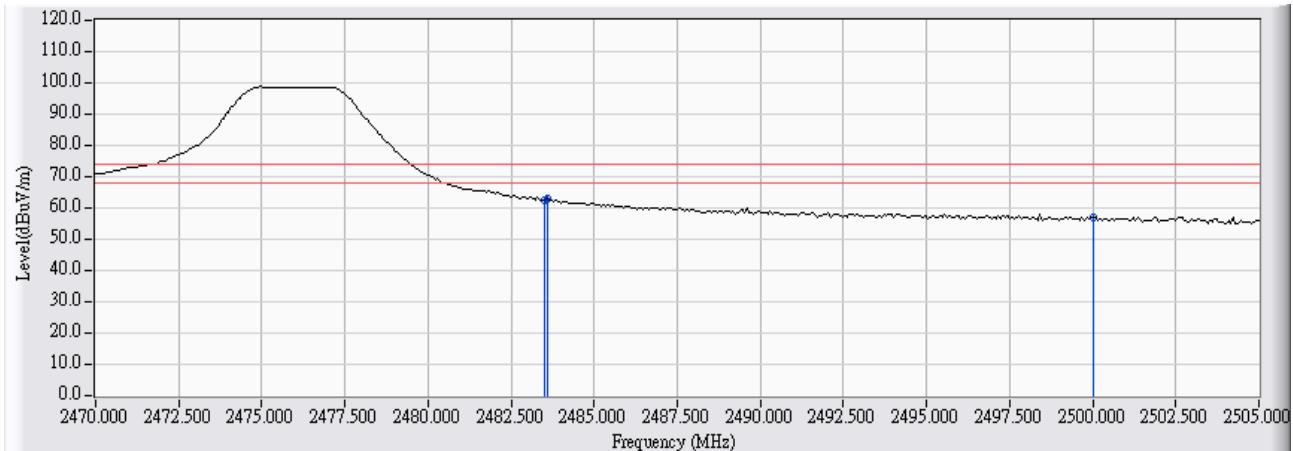


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	28.059	28.172	56.231	-17.769	74.000	PEAK
2	* 2483.580	28.059	29.242	57.301	-16.699	74.000	PEAK
3	2500.000	28.115	22.772	50.887	-23.113	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/29 - 16:47
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2475.5

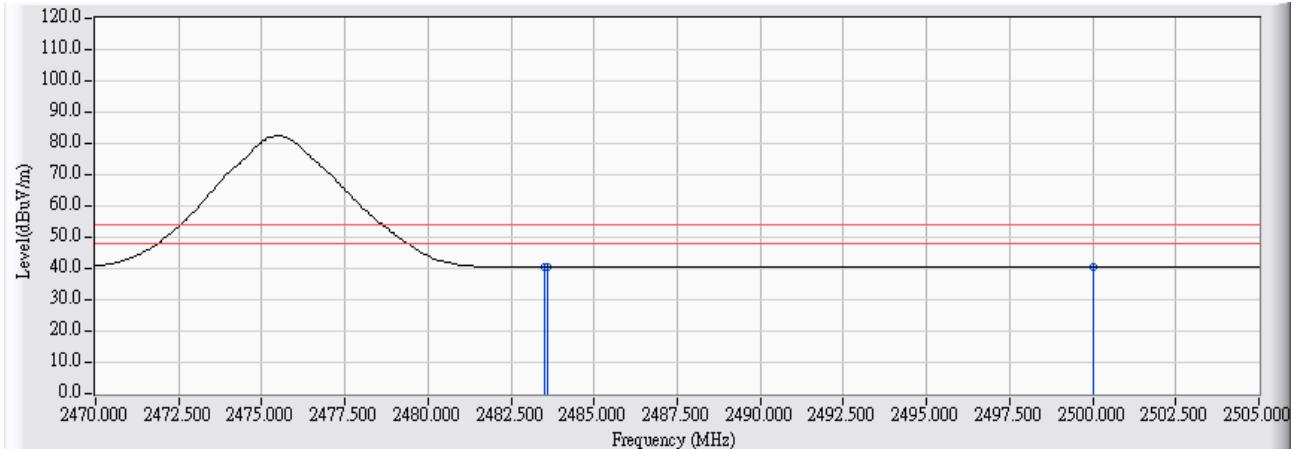


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	28.059	34.611	62.670	-11.330	74.000	PEAK
2	* 2483.580	28.059	34.722	62.781	-11.219	74.000	PEAK
3	2500.000	28.115	28.873	56.988	-17.012	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/29 - 16:38
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2475.5

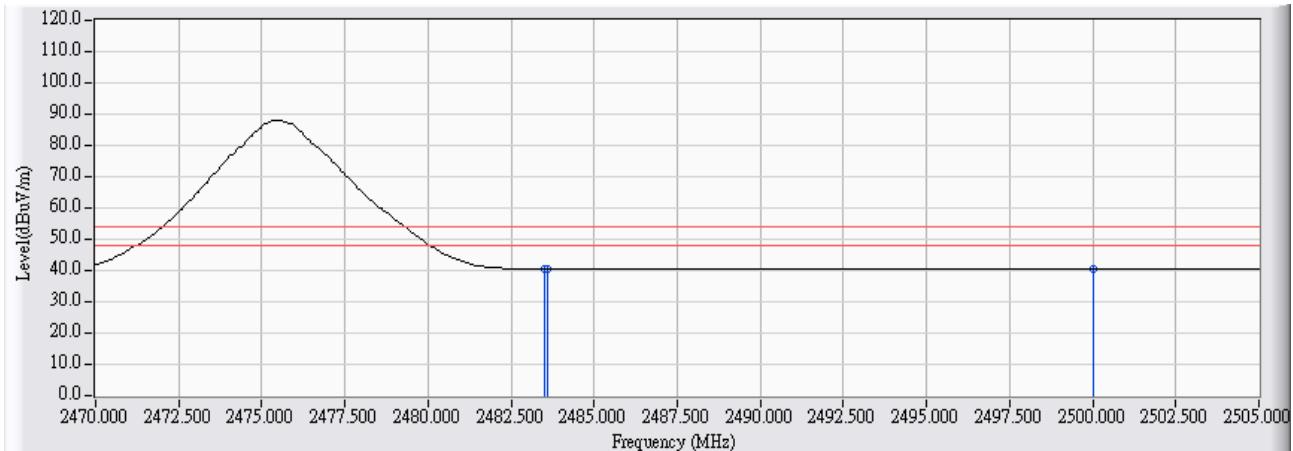


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	28.059	12.387	40.446	-13.554	54.000	AVERAGE
2	* 2483.580	28.059	12.390	40.449	-13.551	54.000	AVERAGE
3	2500.000	28.115	12.313	40.428	-13.572	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/29 - 16:49
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : DC 3V (Power by Battery)
EUT : Digital Wireless Microphone	Note : Mode 1: Transmitter (TX) -2475.5



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	28.059	12.500	40.559	-13.441	54.000	AVERAGE
2	* 2483.580	28.059	12.501	40.560	-13.440	54.000	AVERAGE
3	2500.000	28.115	12.280	40.395	-13.605	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

6. Number of hopping frequency

6.1. Test Equipment

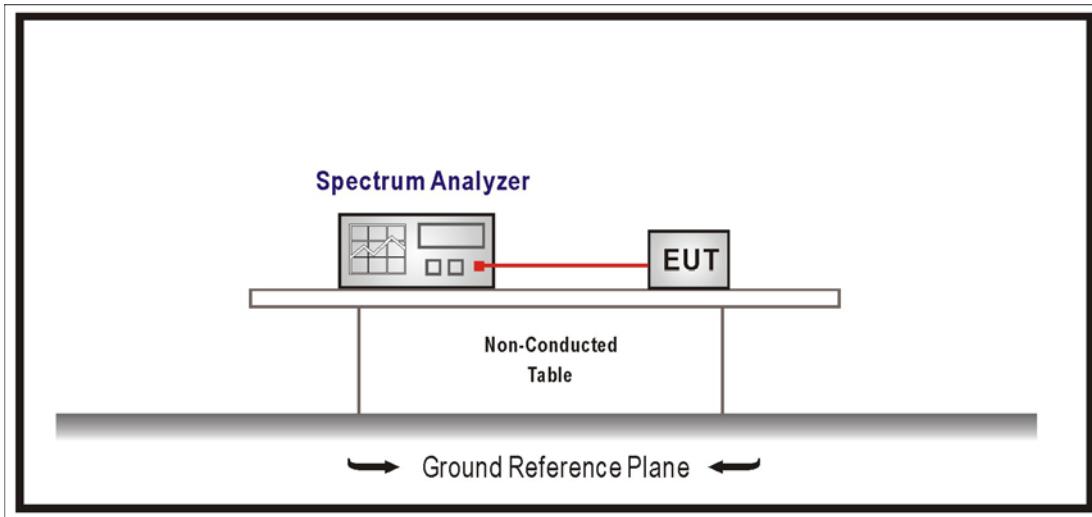
The following test equipments are used during the test:

Number Of Hopping Frequency / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2011/02/04

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

6.2. Test Setup



6.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

6.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = the frequency band of operation

RBW \geq 1% of the span , VBW \geq RBW

Sweep = auto, Detector function = peak, Trace = max hold

6.5. Test Specification

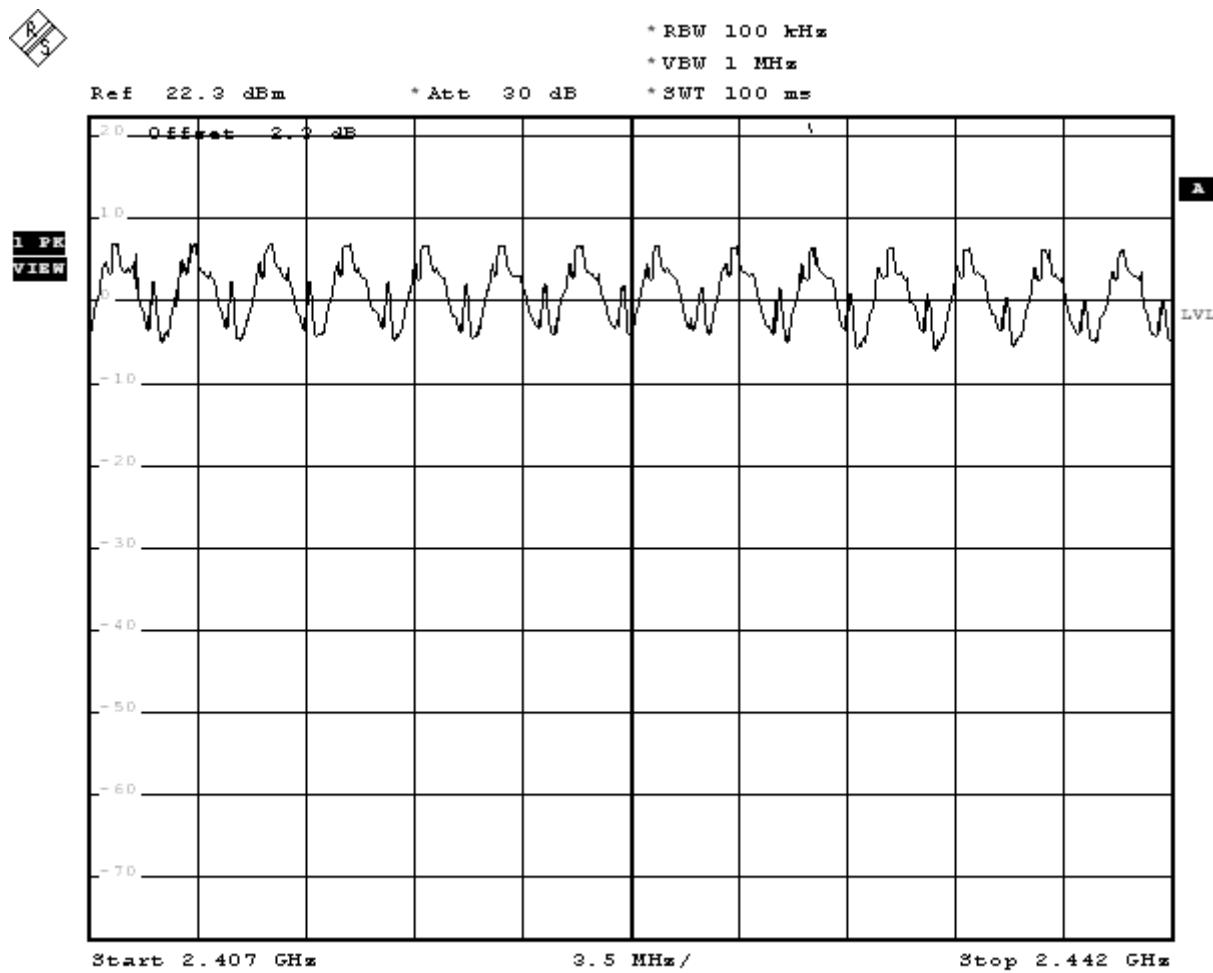
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

6.6. Test Result

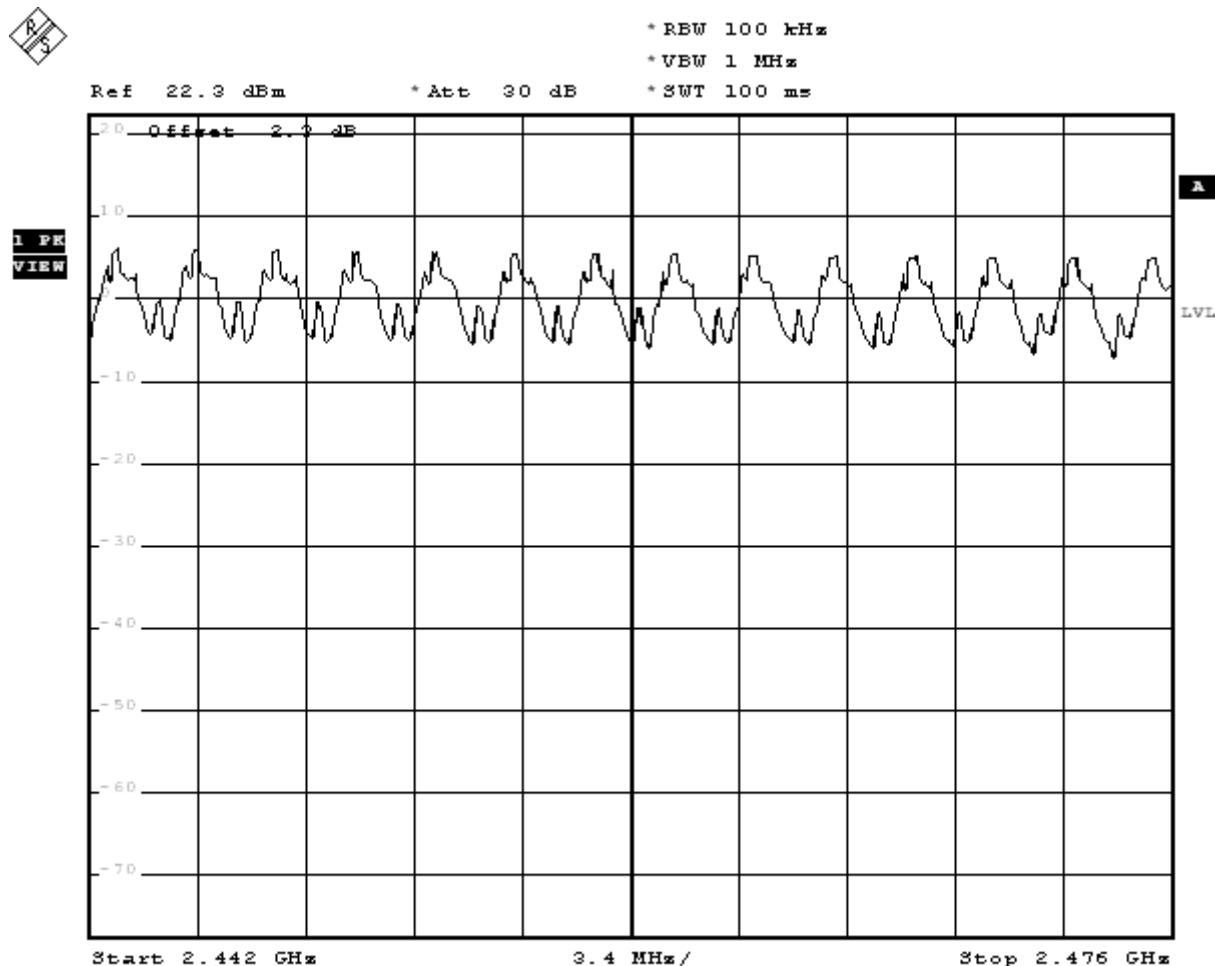
Product	Digital Wireless Microphone		
Test Item	Number of hopping frequency		
Test Mode	Mode 1: Transmitter (TX)		
Date of Test	2010/12/20	Test Site	SR7

Frequency Range (MHz)	Measure Level (Hopping Channel)	Limit (Hopping Channel)	Result
2408~2475.5	28	≥ 15	Pass

2407~2442MHz



Date: 6.JAN.2011 21:13:49

2442~2476MHz

Date: 6.JAN.2011 21:20:42

7. Carrier Frequency Separation

7.1. Test Equipment

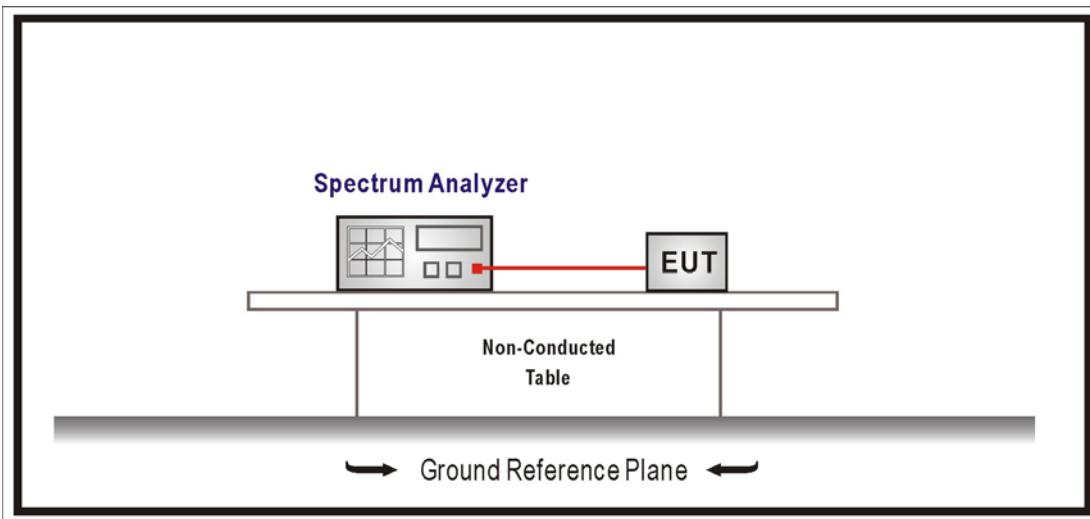
The following test equipment are used during the test:

Carrier Frequency Separation / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2012/01/16

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

7.2. Test Setup



7.3. Limits

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

7.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = wide enough to capture the peaks of two adjacent channels

Resolution Bandwidth (RBW) \geq 1% of the span, VBW \geq RBW

Sweep = auto, Detector function = peak, Trace = max hold

7.5. Test Specification

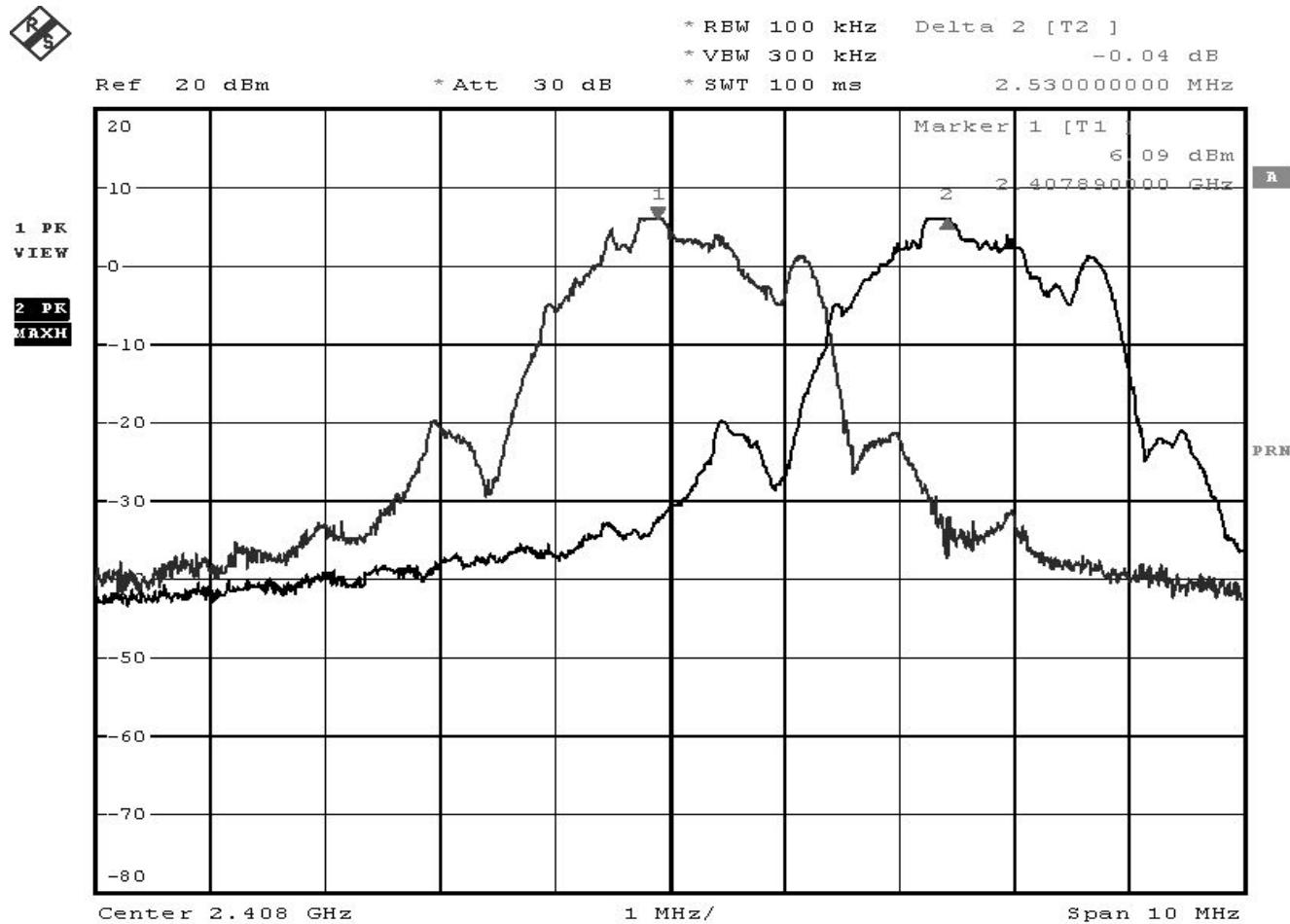
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

7.6. Test Result

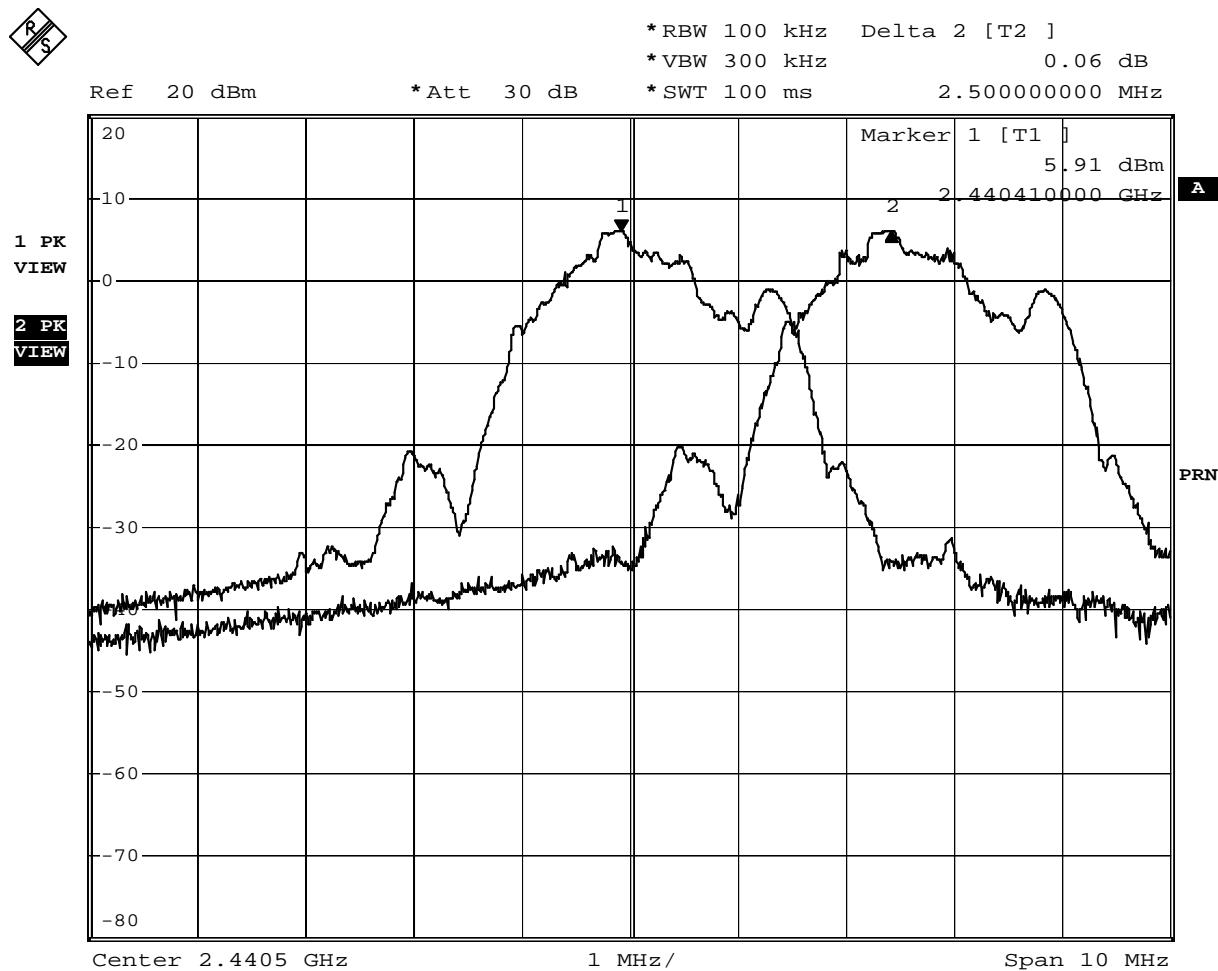
Product	Digital Wireless Microphone		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmitter (TX)		
Date of Test	2011/01/19	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
00	2408.0	2530	≥ 1653	Pass
25	2440.5	2500	≥ 1626	Pass
27	2475.5	2500	≥ 1653	Pass

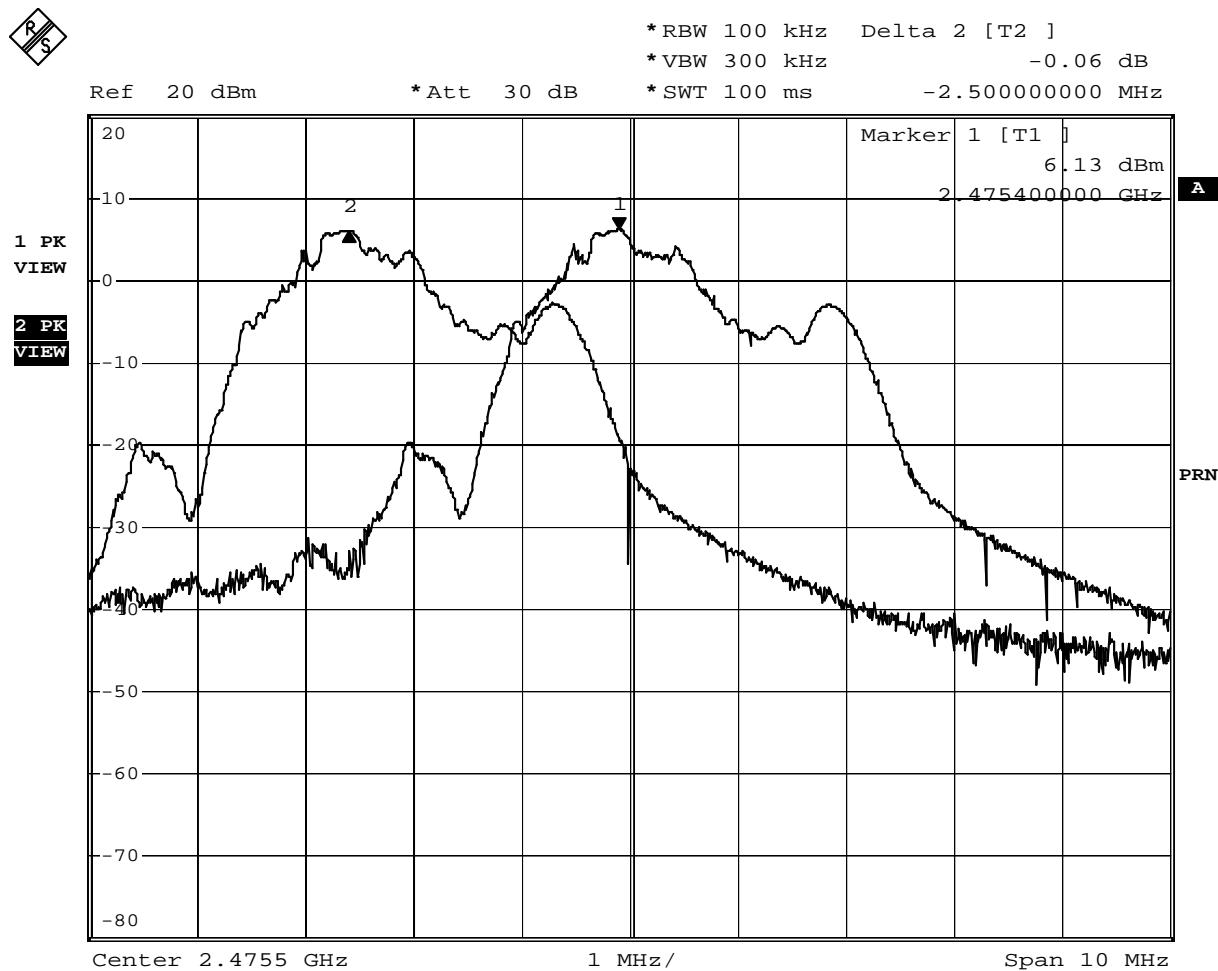
Channel 00



Date : 19.JAN.2011 10:25:26

Channel 25

Date: 19.JAN.2011 10:32:10

Channel 27

Date: 19.JAN.2011 10:34:43

8. Occupied Bandwidth

8.1. Test Equipment

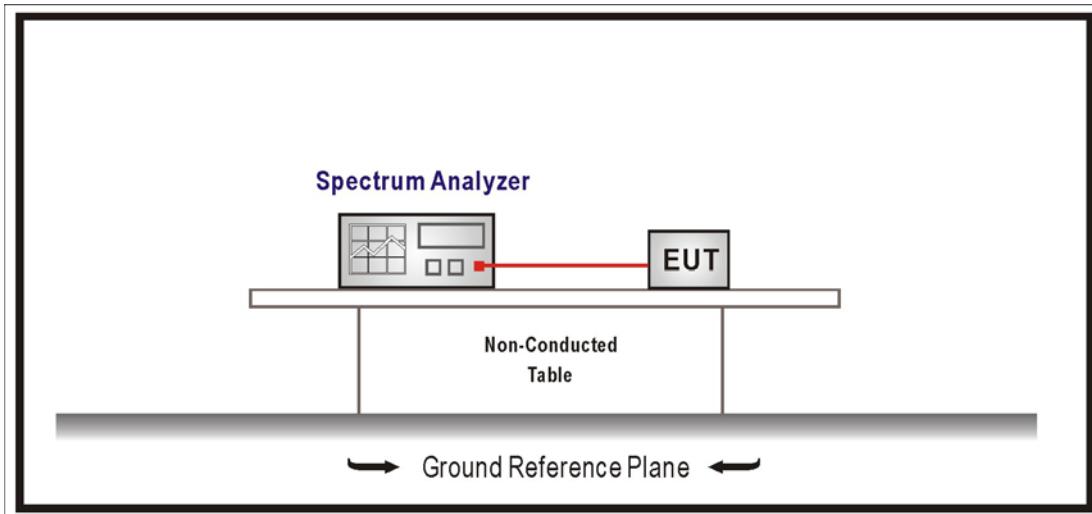
The following test equipment are used during the test:

Occupied Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2012/01/16

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

8.2. Test Setup



8.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW \geq 1% of the 20 dB bandwidth, VBW \geq RBW

Sweep = auto, Detector function = peak, Trace = max hold

The EUT should be transmitting at its maximum data rate.

8.5. Test Specification

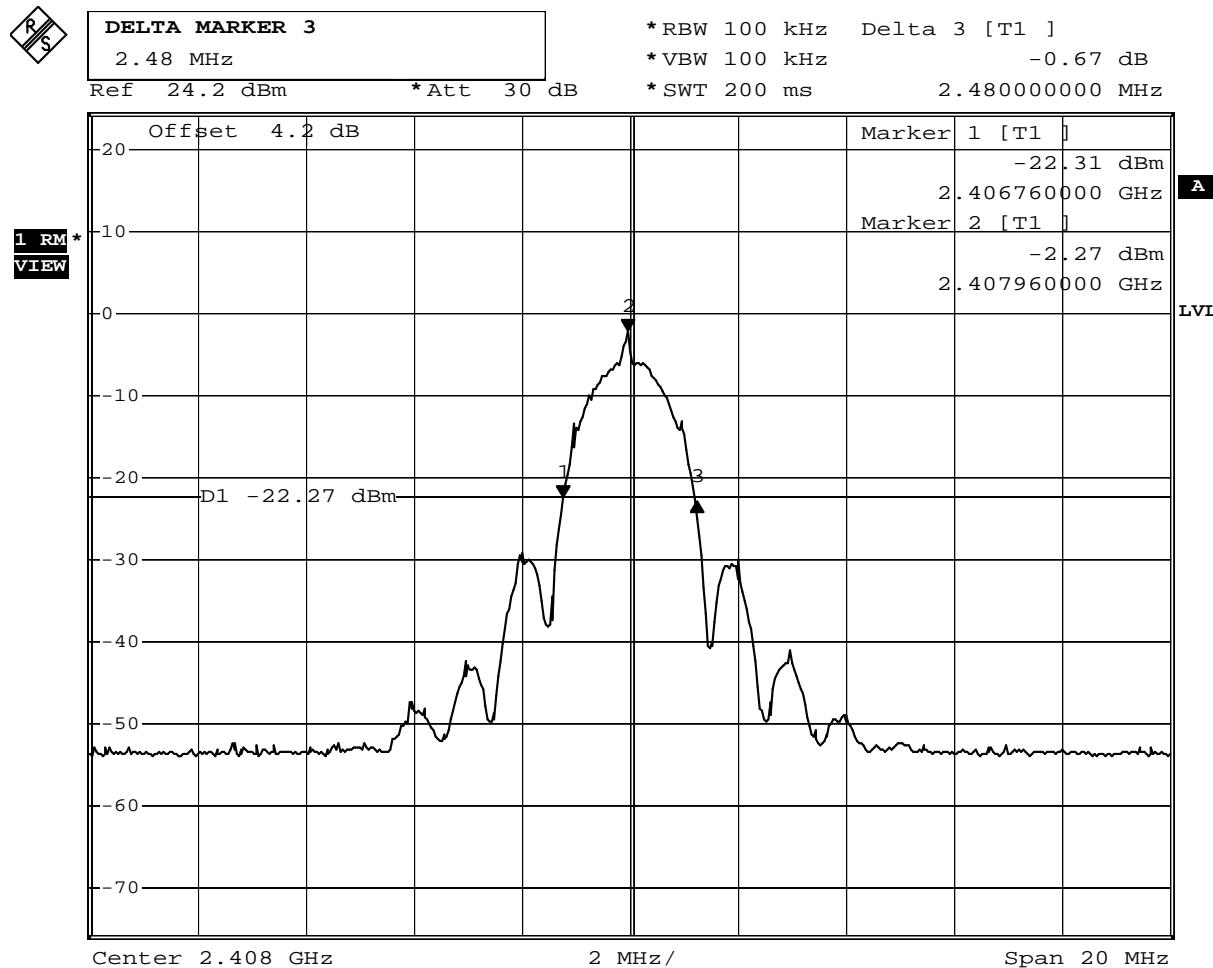
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

8.6. Test Result

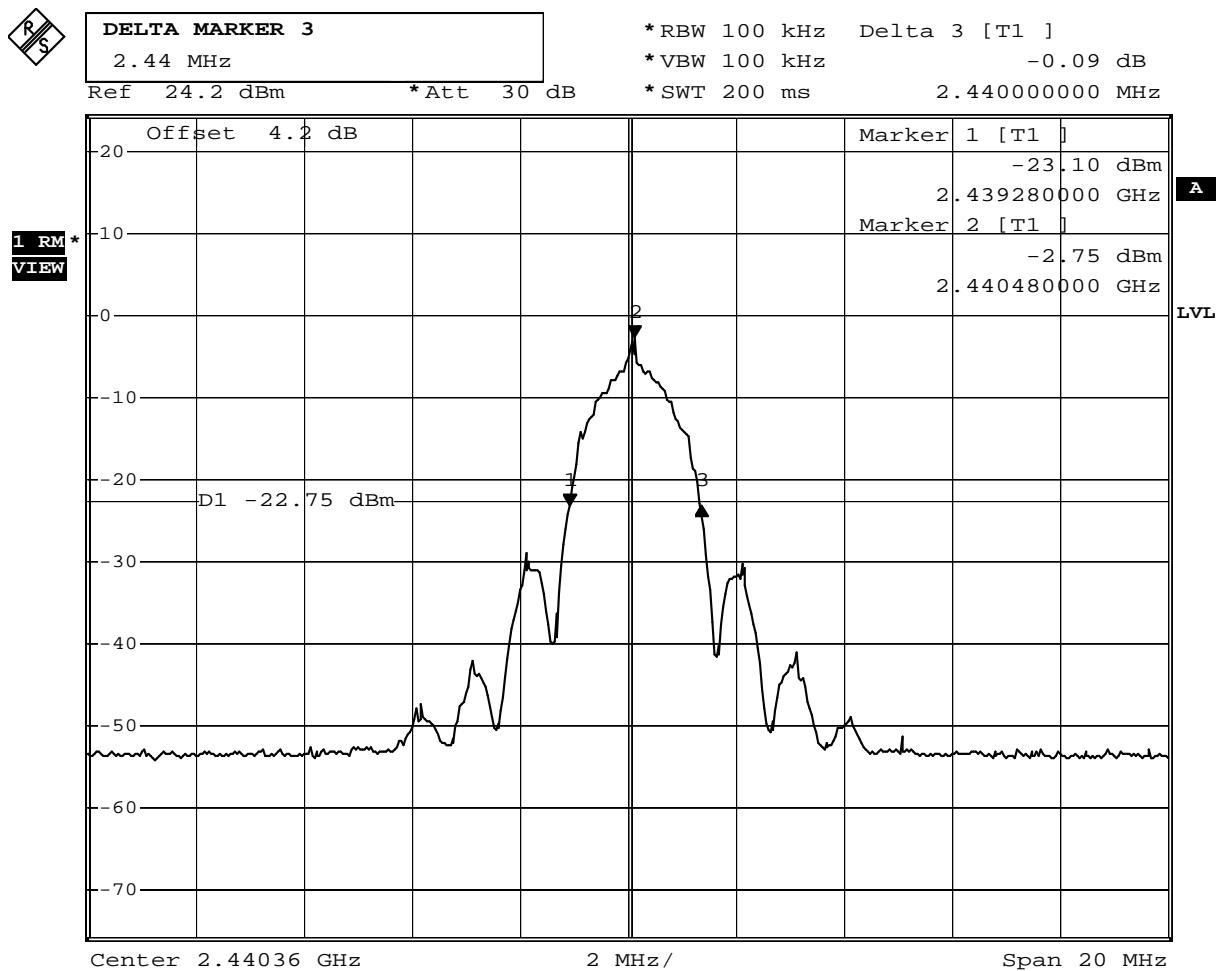
Product	Digital Wireless Microphone		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmitter (TX)		
Date of Test	2010/12/20	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)
00	2408.0	2.48	--
25	2440.5	2.44	--
27	2475.5	2.48	--

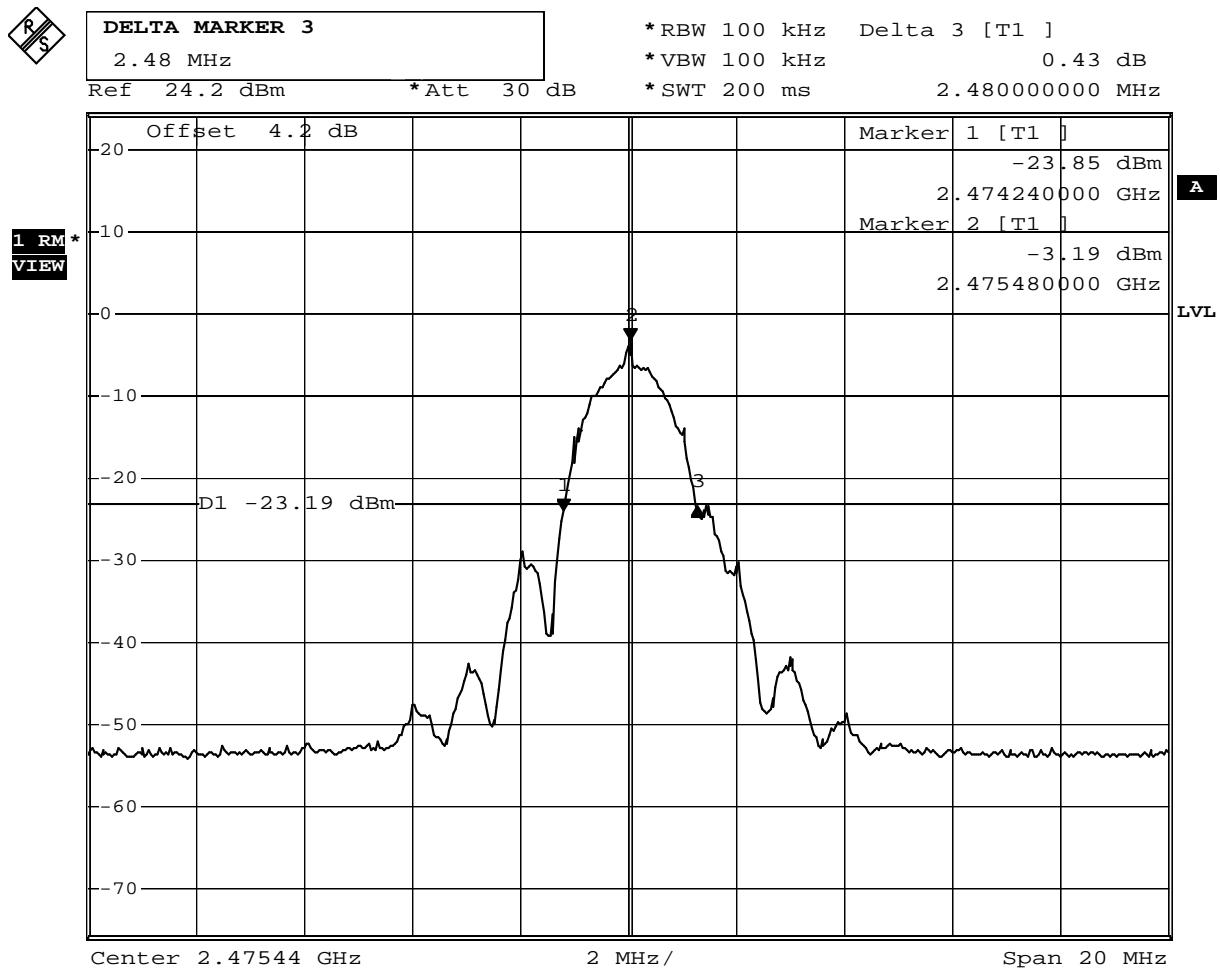
Channel 00



Date: 20.DEC.2010 13:51:22

Channel 25

Date: 20.DEC.2010 13:53:17

Channel 27

Date: 20.DEC.2010 13:55:25

9. Dwell Time

9.1. Test Equipment

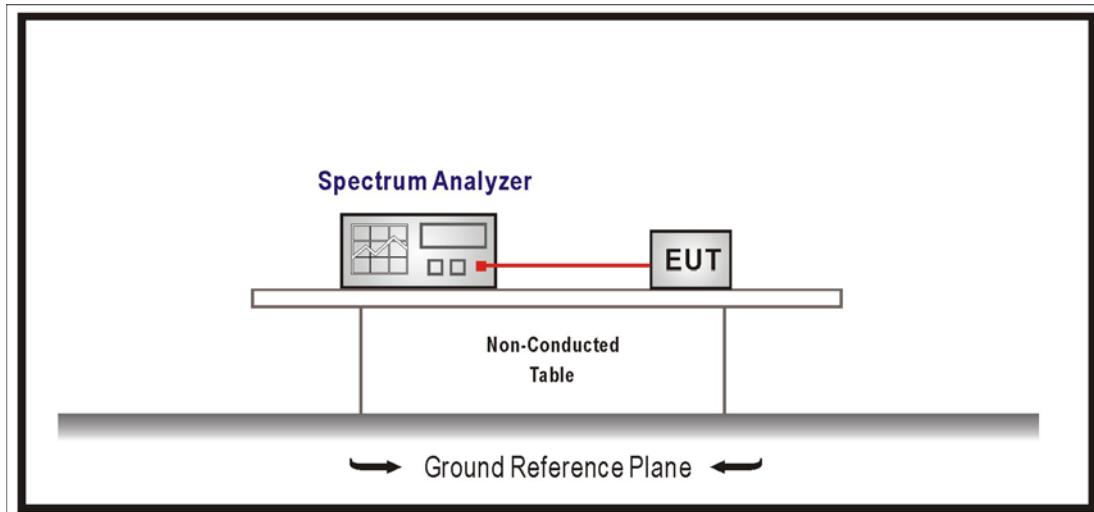
The following test equipment are used during the test:

Dwell Time / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2012/01/16

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

9.2. Test Setup



9.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

9.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = zero span, centered on a hopping channel

RBW = 1 MHz, VBW \geq RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak, Trace = max hold

9.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

9.6. Test Result

Product	Digital Wireless Microphone		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmitter (TX)		
Date of Test	2011/01/05	Test Site	SR7

Occupancy Time of Frequency Hopping System

A) 2408MHz Test Time Period: $0.4*28=11.2\text{sec}$, Hopping Times Within 1sec: $7/20\text{msec}=350\text{/sec}$
 The Maximum Occupancy Time Within 11.2sec: $0.0024*(350/28)*11.2=0.336\text{sec}$ 。

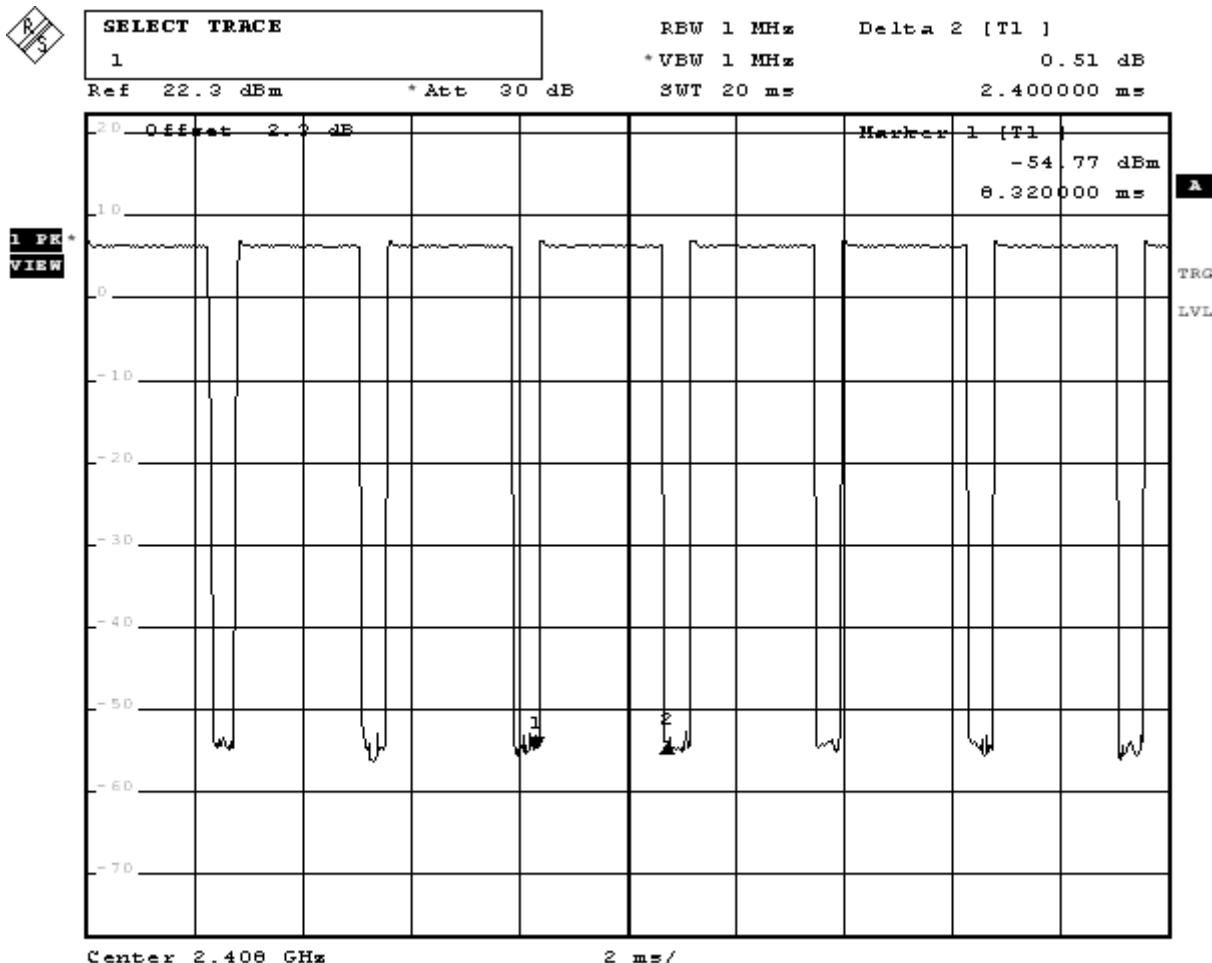
B) 2440.5MHz Test Time Period: $0.4*28=11.2\text{sec}$, Hopping Times Within 1sec: $7/20\text{msec}=350\text{/sec}$
 The Maximum Occupancy Time Within 11.2sec: $0.0024*(350/28)*11.2=0.336\text{sec}$ 。

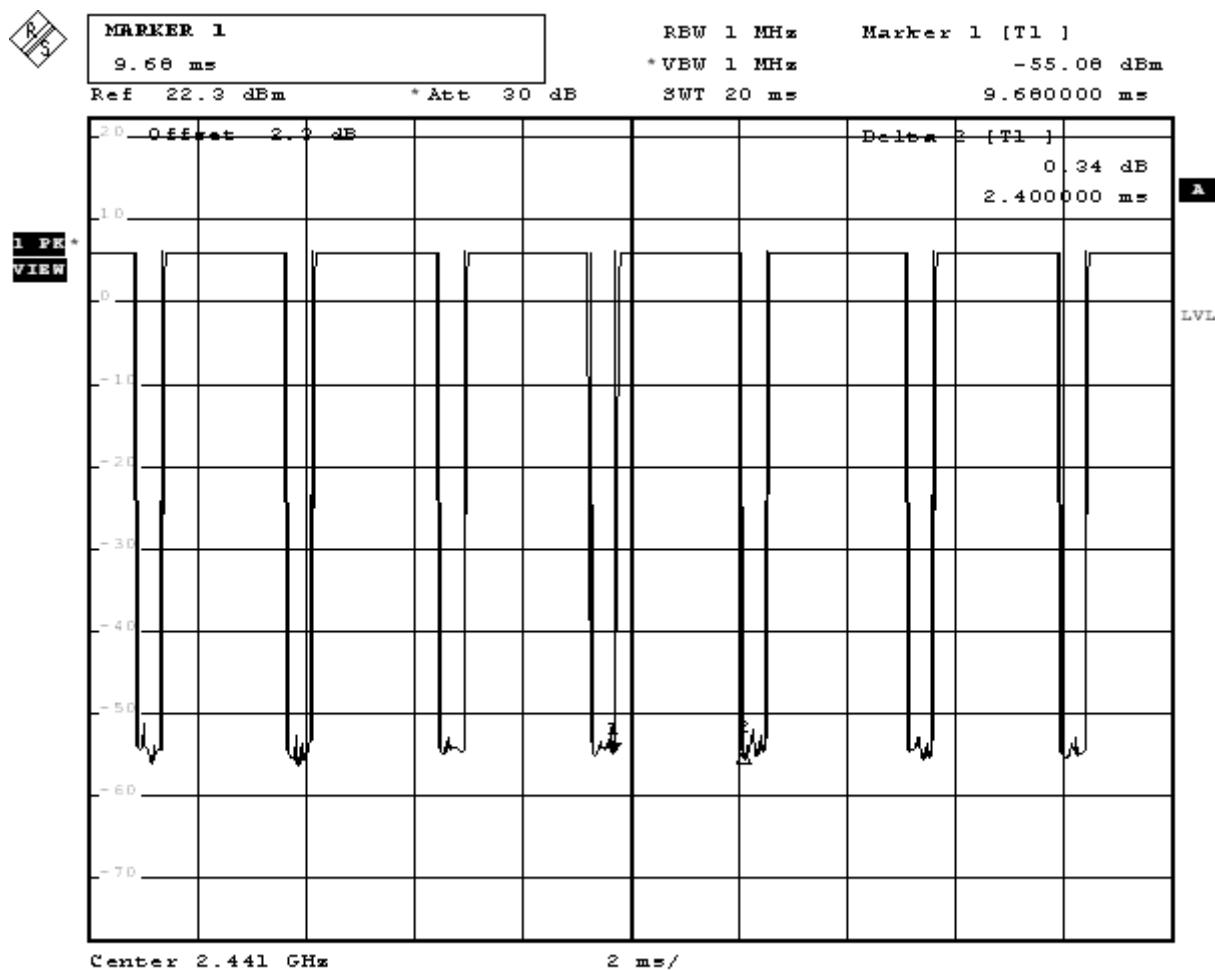
C) 2475.5MHz Test Time Period: $0.4*28=11.2\text{sec}$, Hopping Times Within 1sec: $7/20\text{msec}=350\text{/sec}$
 The Maximum Occupancy Time Within 11.2sec: $0.0024*(350/28)*11.2=0.336\text{sec}$ 。

Test Result: The Average Occupancy Time of Each Highest, Middle and Lowest Channel Is Less

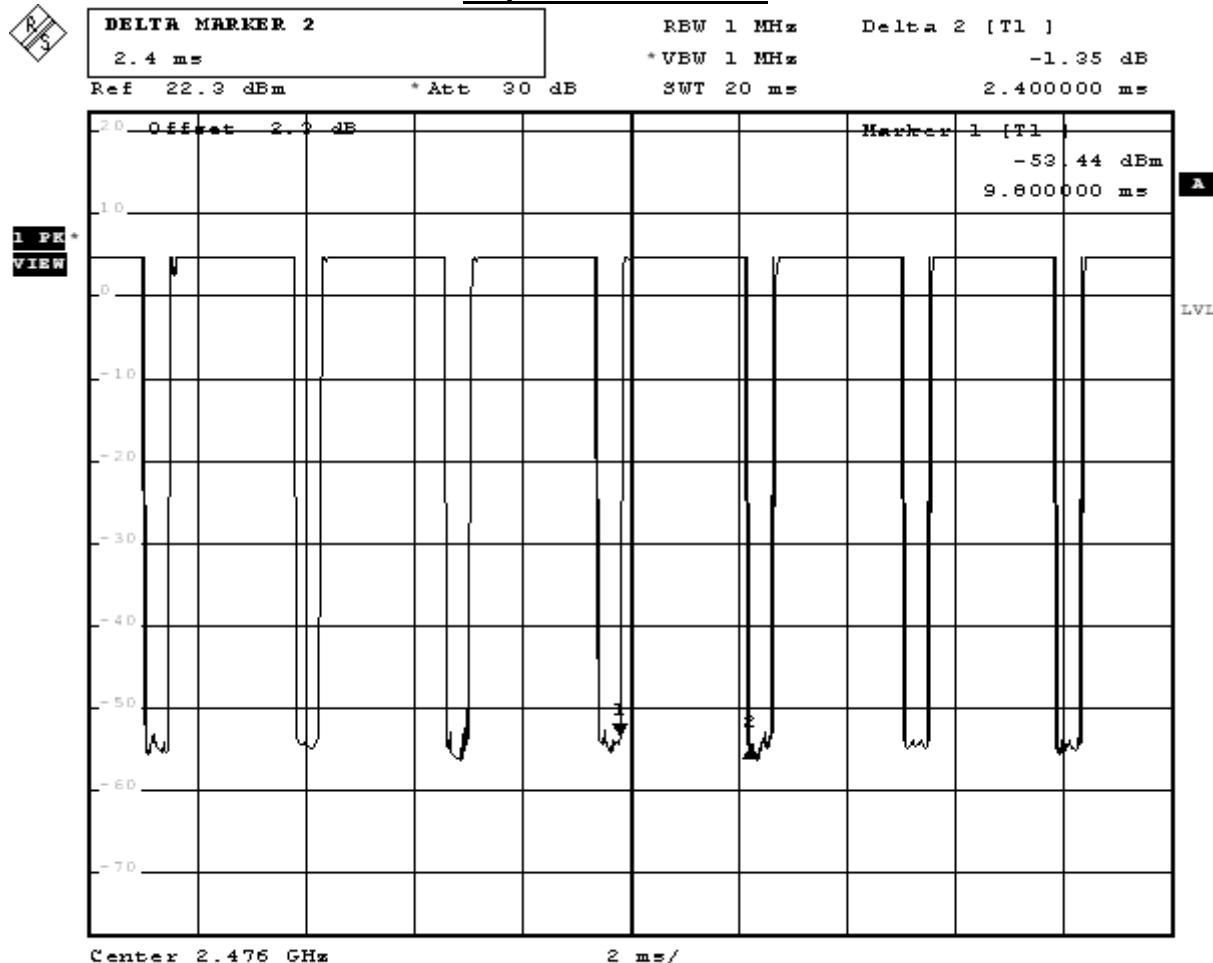
Than 0.4sec , And Corresponds to The Standard 。

Hop rate-2408MHz



Hop rate-2440.5MHz

Date: 5.JAN.2011 22:02:39

Hop rate-2475.5MHz

Date: 5.JAN.2011 22:04:46

Note: Dwell time = time slot length * hop rate / number of hopping channels * period