



Test Report

Product Name : Digital Wireless Microphone

Model No. : TF-102

FCC ID. : Y63TSK

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 : 2011/02/18

Issued Date : 2011/06/30

Report No. : 111202R-RFUSP43V01-A

Report Version : V2.0

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 : 2011/06/30

Report No. : 111202R-RFUSP43V01-A

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. : Y63TSK
EUT Voltage : AC 100-240V, 50/60Hz
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	0 dBi

Component	
3.5Φ & 6Φ Audio Output Connector (RX)	1Set
Power Adapter (RX)	GME, GFP051U-0965 I/P: AC 100-240V 50/60Hz 0.2A O/P: DC 9V, 0.65A Cable Out: Non-Shielded, 2.0m

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. 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-A 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: Receiver (TX)
Final Test Mode	
EMI	Mode 1: Receiver (TX)

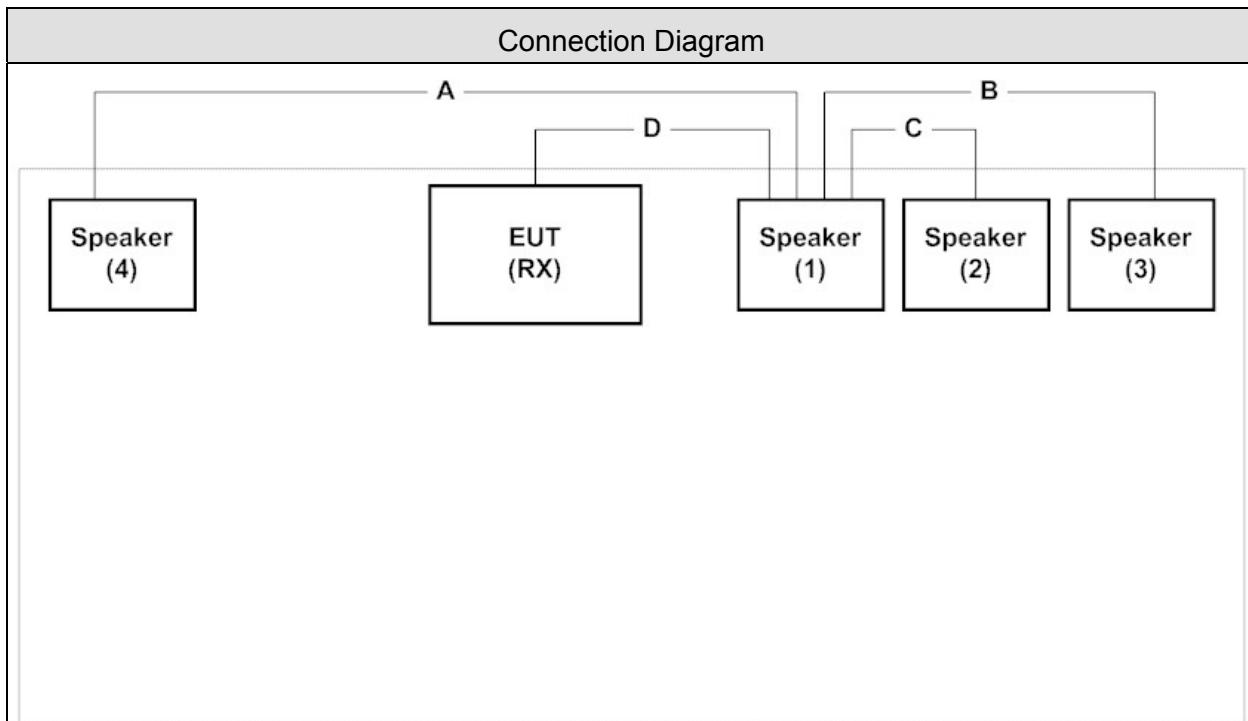
Emission	
Conducted Emission	Yes
Peak Power Output	Yes
Radiated Emission	Yes
Band Edge	Yes
Channel of Number	Yes
Channel Separation	Yes
Occupied Bandwidth	Yes
Dwell Time	Yes

1.4. Tested System Details

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

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Speaker	YAMADA	N/A	K9452068	Non-Shielded, 1.0m
2	Speaker	YAMADA	N/A	K9452068	--
3	Speaker	YAMADA	N/A	K9452068	--
4	Speaker	YAMADA	N/A	K9452068	--

1.5. Configuration of tested System



Signal Cable Type		Signal cable Description
A	Speaker Cable	Non-Shielded, 1.2m
B	Speaker Cable	Non-Shielded, 1.2m
C	Speaker Cable	Non-Shielded, 1.2m
D	Audio Cable	Non-Shielded, 1.0m

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	Connecting speakers to the receiver.
4	The receiver will continue transmit signals to the transmitter.
5	Repeat the above procedure (4).

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

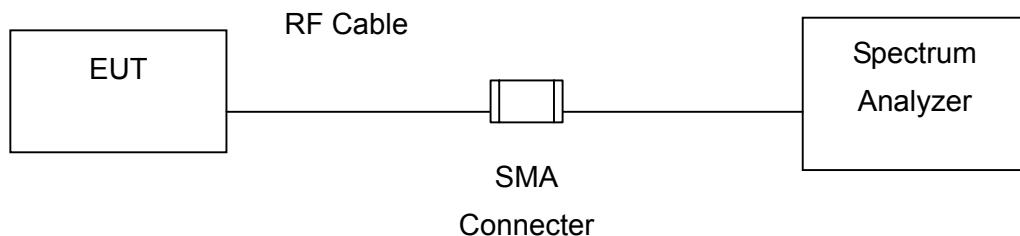
The following test equipments are used during the test:

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

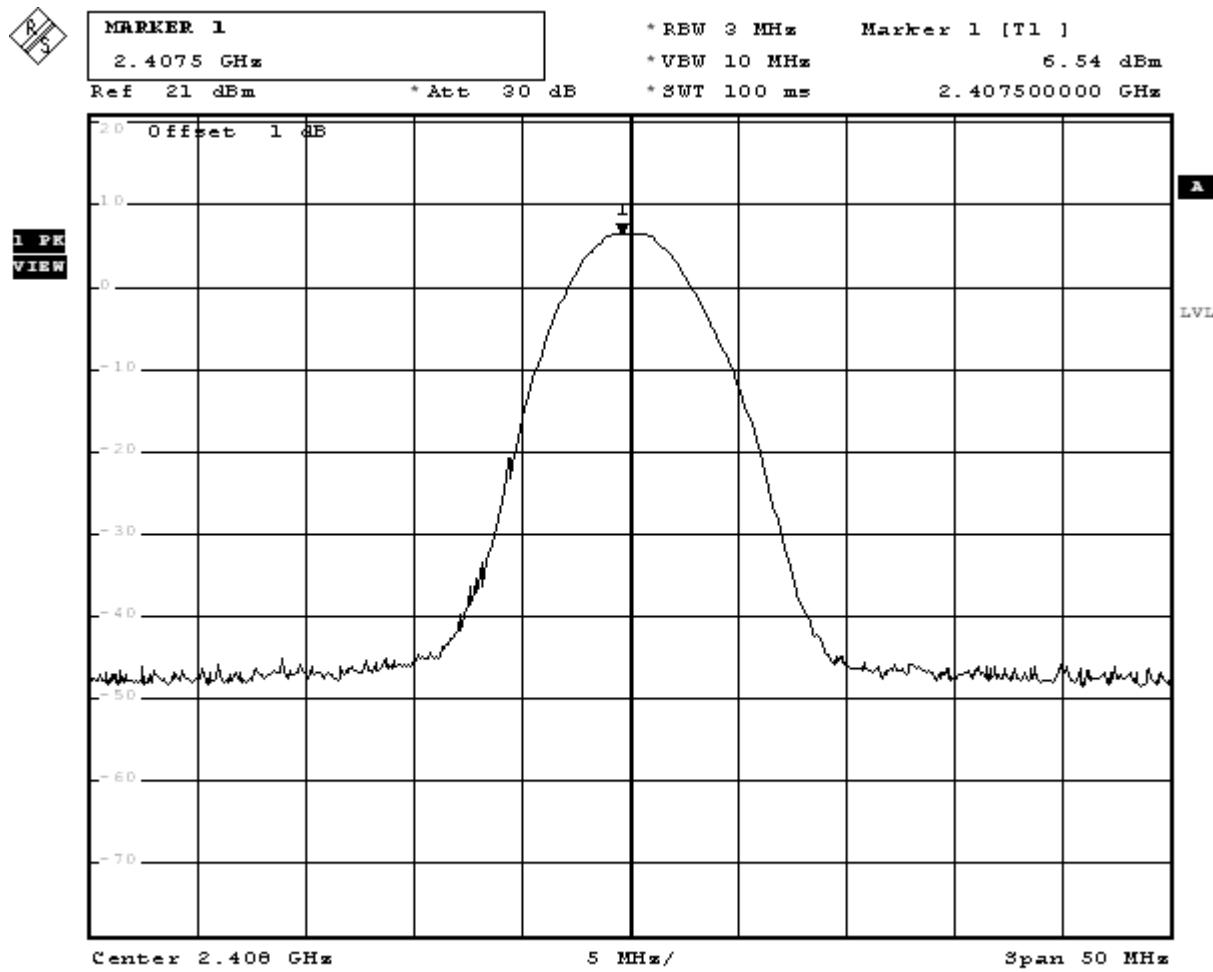
The measurement uncertainty is defined as ± 1.27 dB.

2.7. Test Result

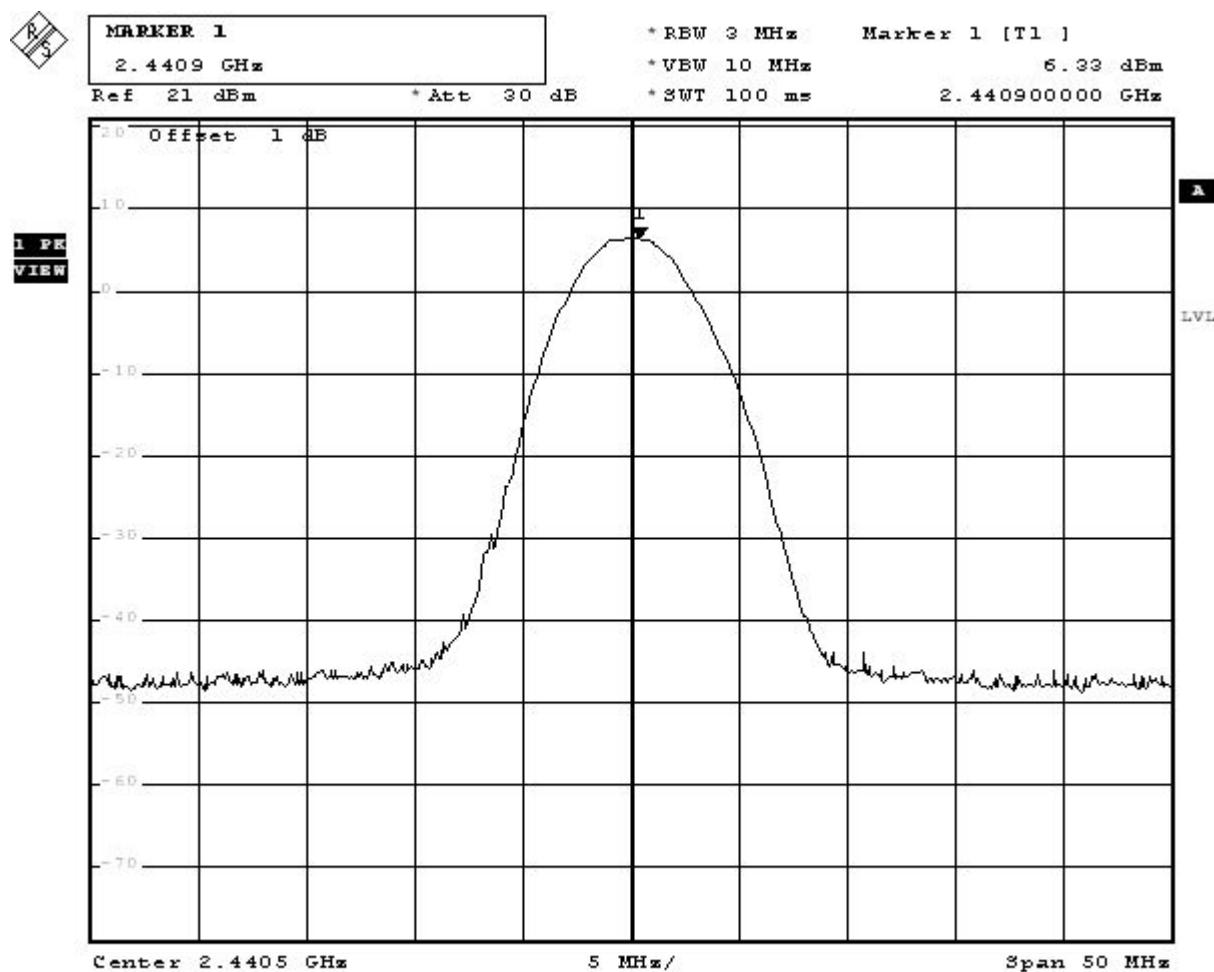
Product	Digital Wireless Microphone		
Test Item	Peak Power Output		
Test Mode	Mode 1: Receiver (TX)		
Date of Test	2011/06/27	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2408.0	6.54	1Watt= 30 dBm	Pass
25	2440.5	6.33	1Watt= 30 dBm	Pass
27	2475.5	5.97	1Watt= 30 dBm	Pass

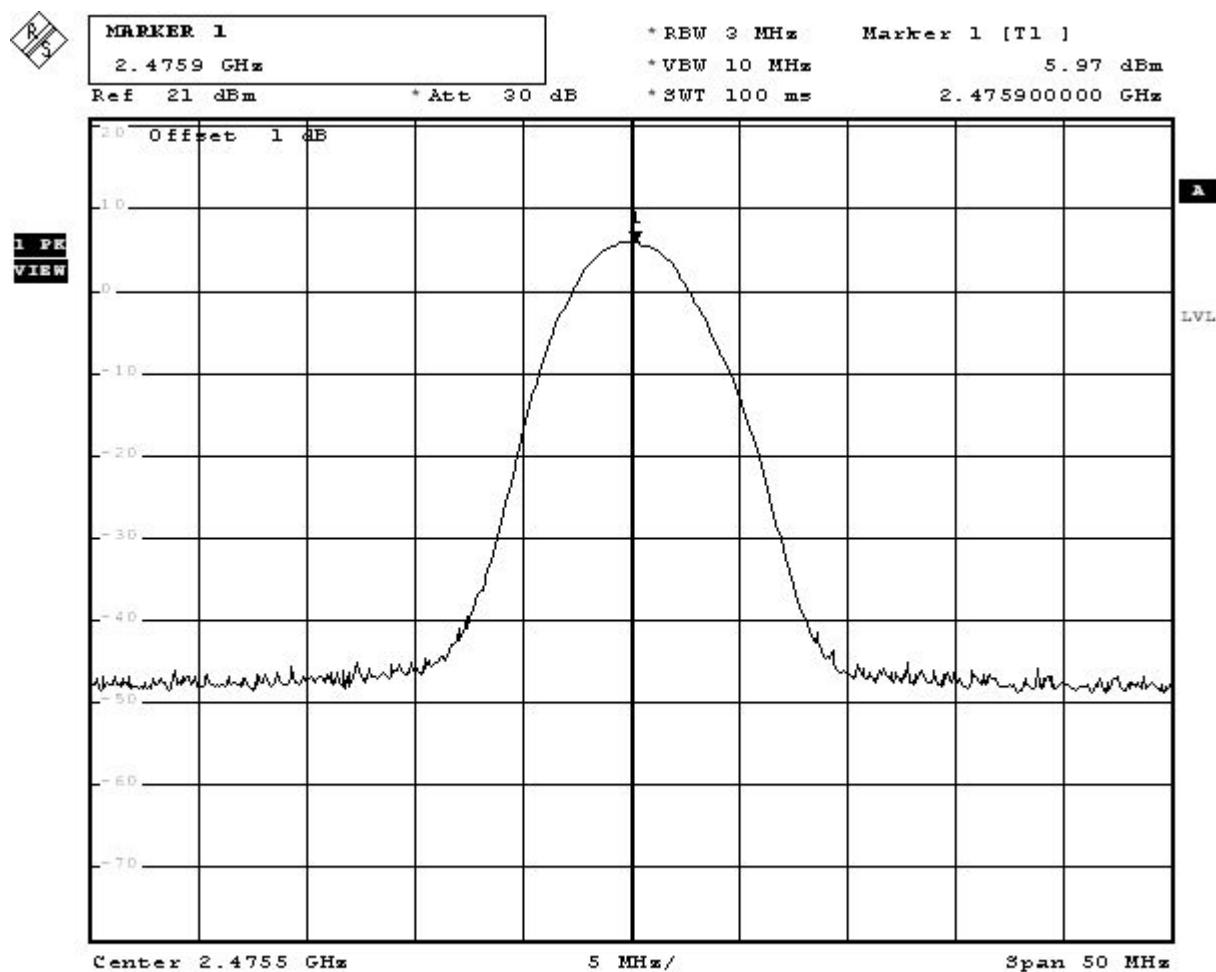
Channel 00



Date: 27.JUN.2011 14:04:12

Channel 25

Date: 27.JUN.2011 14:07:22

Channel 27

Date: 27.JUN.2011 14:05:17

3. Conducted Emission

3.1. Test Equipment

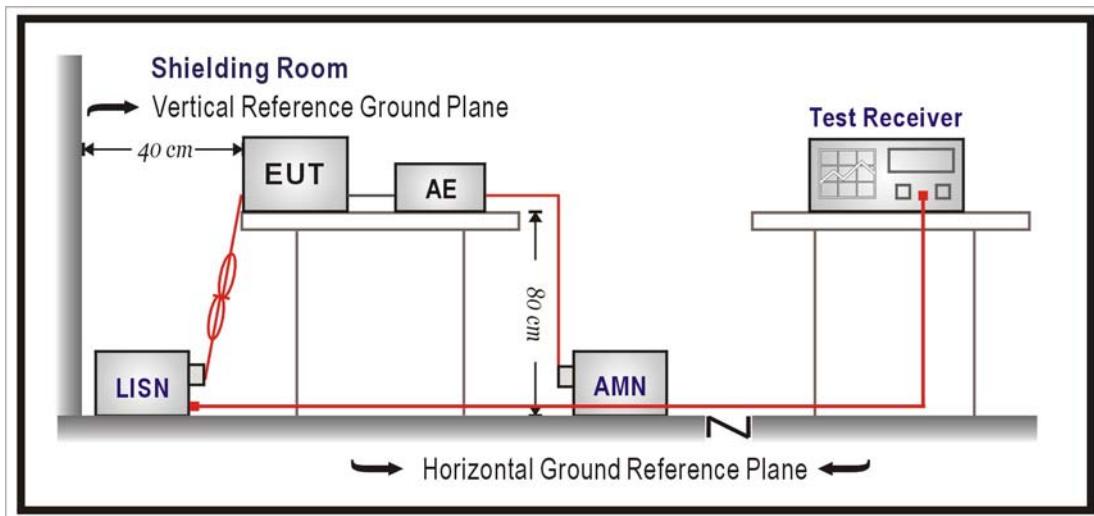
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal.
LISN	R&S	ENV216	100096	2011/09/20
LISN	R&S	ESH3-Z5	836679/022	2012/02/10
Test Receiver	R&S	ESCS 30	825442/017	2012/01/16

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

3.2. Test Setup



3.3. 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.

3.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

3.5. Test Specification

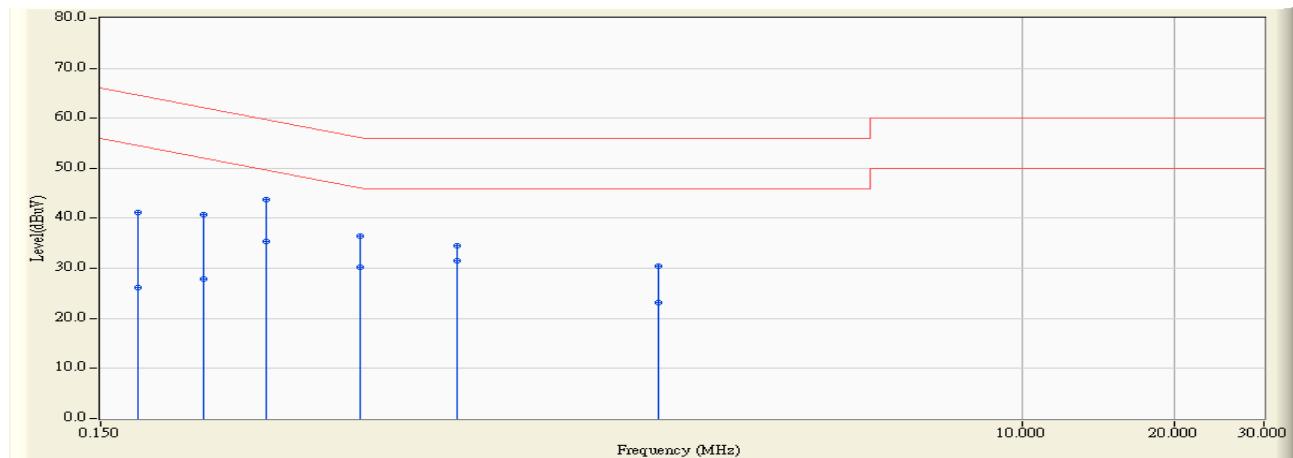
According to FCC Part 15 Subpart C Paragraph 15.207: 2009

3.6. Uncertainty

The measurement uncertainty is defined as \pm 2.26 dB.

3.7. Test Result

Site : SR3	Time : 2011/06/19 - 17:05
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR3_LISN(16A) - Line1	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)--2441MHz

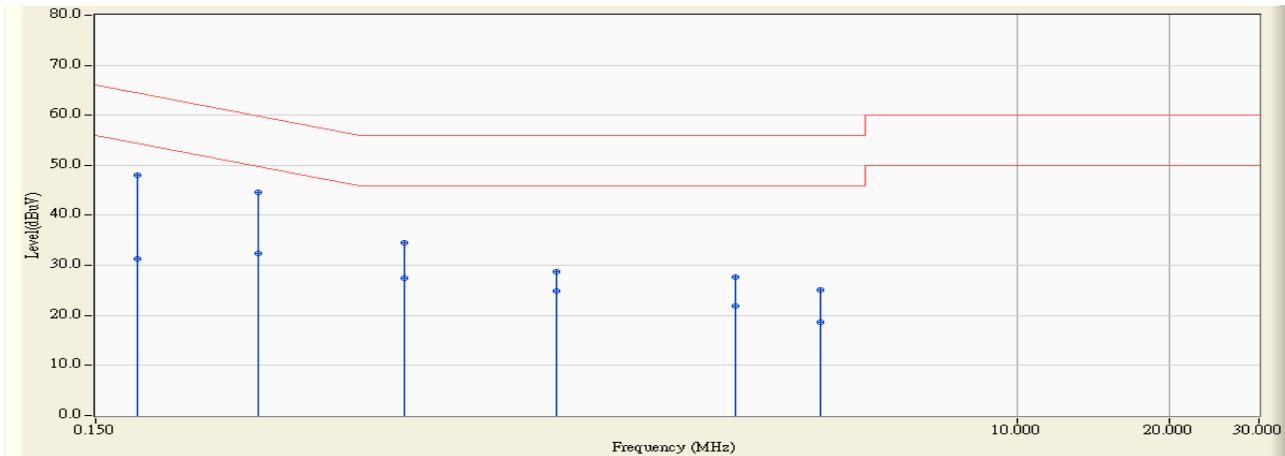


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	0.177	9.605	31.660	41.265	-23.344	64.609	QUASIPEAK
2	0.177	9.605	16.620	26.225	-28.384	54.609	AVERAGE
3	0.240	9.592	31.100	40.692	-21.409	62.102	QUASIPEAK
4	0.240	9.592	18.230	27.822	-24.279	52.102	AVERAGE
5	0.318	9.583	34.160	43.743	-16.016	59.760	QUASIPEAK
6	* 0.318	9.583	25.700	35.283	-14.476	49.760	AVERAGE
7	0.490	9.648	26.760	36.408	-19.763	56.170	QUASIPEAK
8	0.490	9.648	20.680	30.328	-15.843	46.170	AVERAGE
9	0.759	9.800	24.640	34.439	-21.561	56.000	QUASIPEAK
10	0.759	9.800	21.680	31.479	-14.521	46.000	AVERAGE
11	1.908	9.888	20.660	30.548	-25.452	56.000	QUASIPEAK
12	1.908	9.888	13.330	23.218	-22.782	46.000	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 : SR3	Time : 2011/06/19 - 17:08
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR3_LISN(16A) - Line2	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)--2441MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.181	9.626	38.490	48.116	-16.312	64.428	QUASIPEAK
2		0.181	9.626	21.740	31.366	-23.062	54.428	AVERAGE
3	*	0.314	9.610	34.960	44.570	-15.292	59.862	QUASIPEAK
4		0.314	9.610	22.860	32.470	-17.392	49.862	AVERAGE
5		0.611	9.726	24.760	34.487	-21.513	56.000	QUASIPEAK
6		0.611	9.726	17.720	27.447	-18.553	46.000	AVERAGE
7		1.220	9.857	18.810	28.667	-27.333	56.000	QUASIPEAK
8		1.220	9.857	14.960	24.817	-21.183	46.000	AVERAGE
9		2.759	9.950	17.700	27.650	-28.350	56.000	QUASIPEAK
10		2.759	9.950	12.000	21.950	-24.050	46.000	AVERAGE
11		4.068	10.049	14.950	24.999	-31.001	56.000	QUASIPEAK
12		4.068	10.049	8.620	18.669	-27.331	46.000	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

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the test:

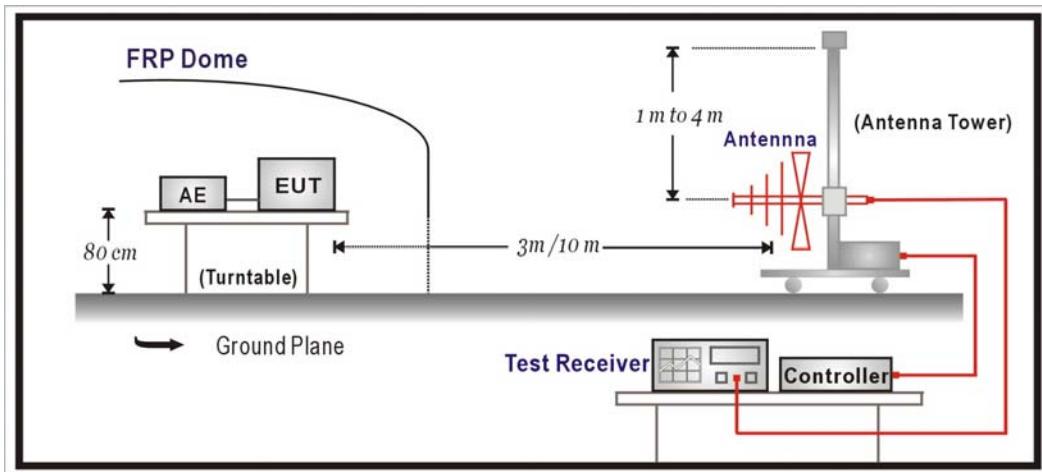
Radiated Emission / CB1

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	2012/01/14
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

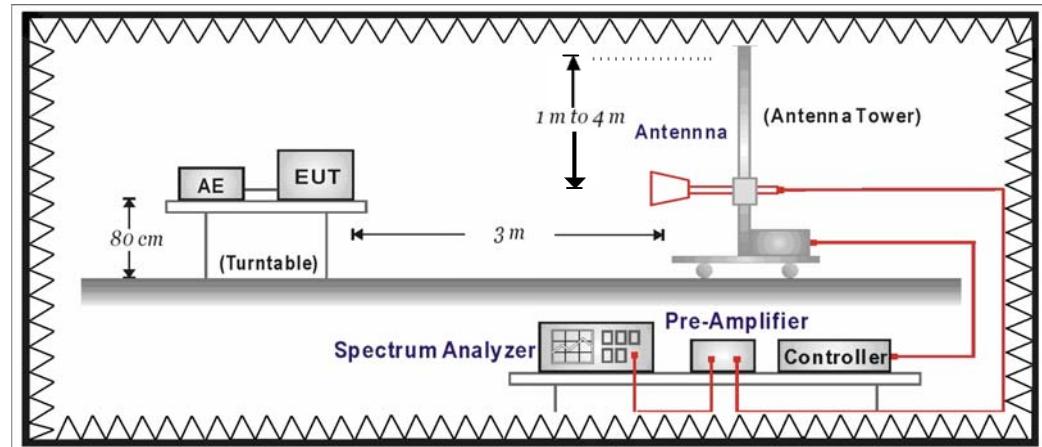
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. 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.

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 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.

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

4.6. Uncertainty

The measurement uncertainty

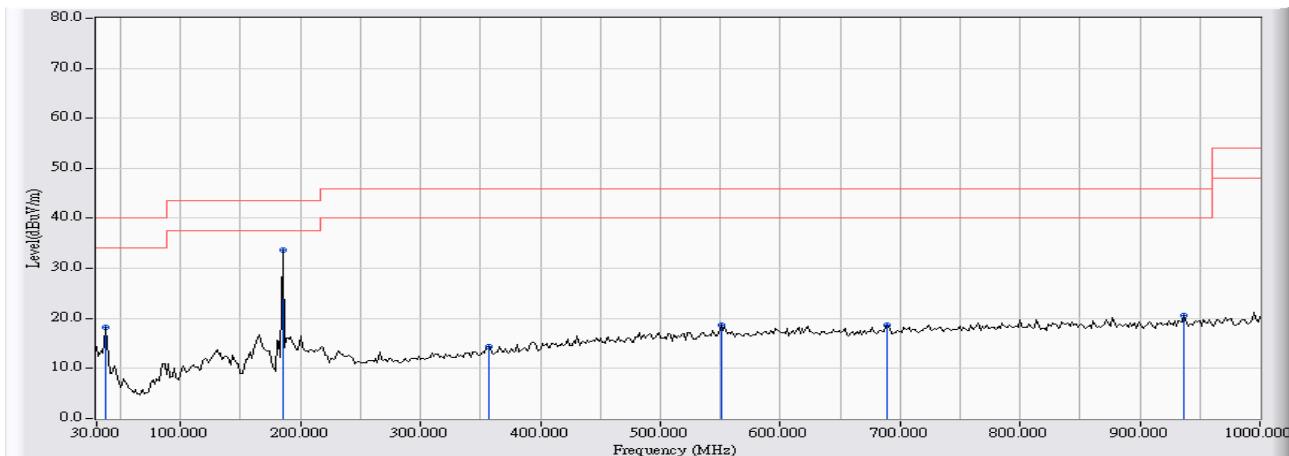
30MHz~1GHz as ± 3.43 dB

1GHz~26.5GHz as ± 3.65 dB

4.7. Test Result

Under 1GHz Spurious:

Site : CB1	Time : 2011/06/17 - 00:30
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2441MHz

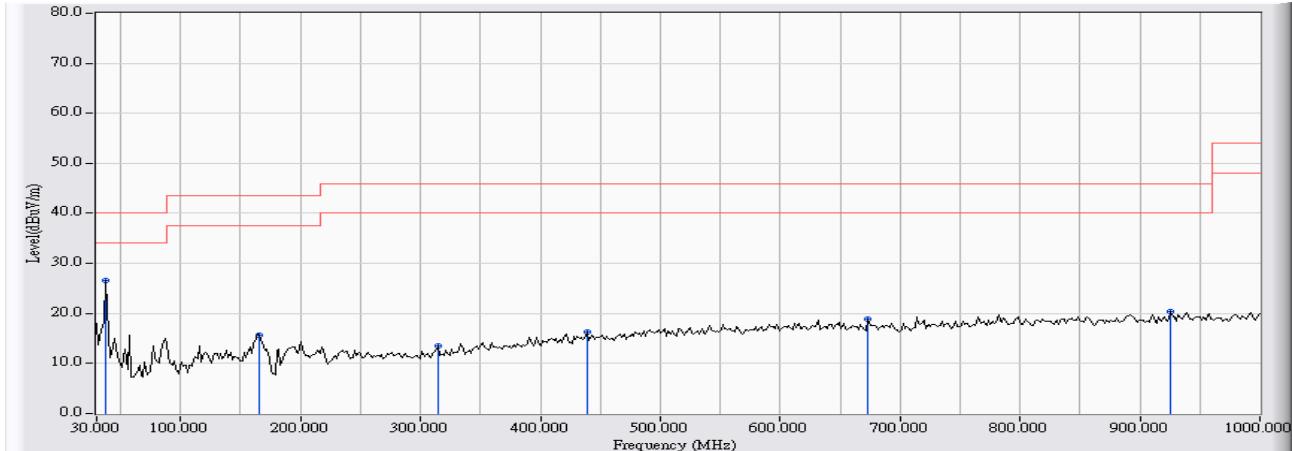


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	38.083	-12.172	30.477	18.306	-21.694	40.000	QUASIPEAK
2 *	185.200	-15.115	48.764	33.649	-9.851	43.500	QUASIPEAK
3	356.567	-9.081	23.472	14.391	-31.609	46.000	QUASIPEAK
4	550.567	-5.424	24.122	18.697	-27.303	46.000	QUASIPEAK
5	689.600	-4.577	23.301	18.723	-27.277	46.000	QUASIPEAK
6	936.950	-2.568	23.128	20.560	-25.440	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 : 2011/06/17 - 00:24
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2441MHz



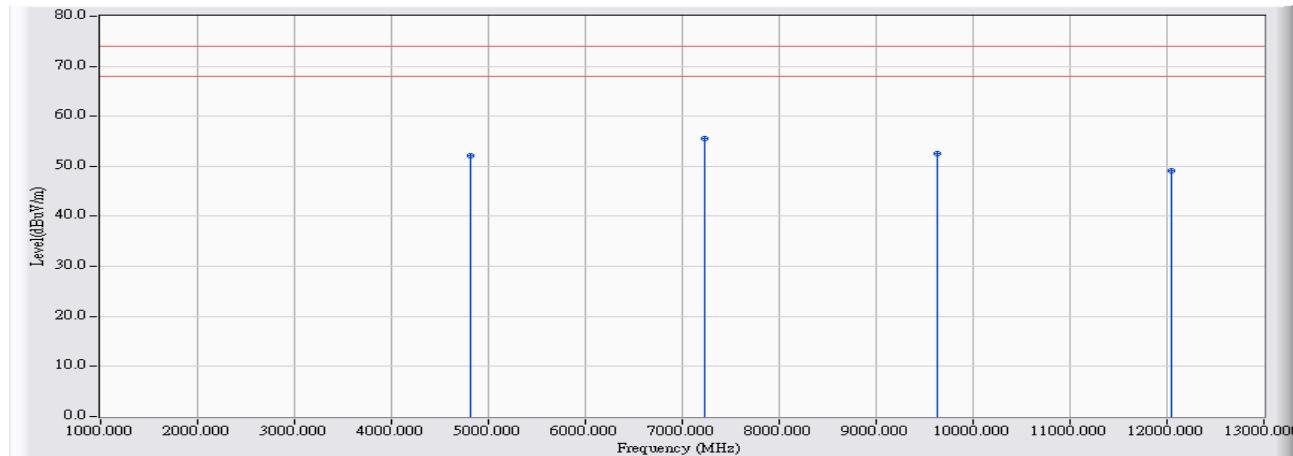
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	38.083	-12.172	38.769	26.598	-13.402	40.000	QUASIPEAK
2		165.800	-14.560	30.112	15.552	-27.948	43.500	QUASIPEAK
3		314.533	-10.263	23.878	13.615	-32.385	46.000	QUASIPEAK
4		439.017	-7.139	23.467	16.328	-29.672	46.000	QUASIPEAK
5		673.433	-4.642	23.555	18.914	-27.086	46.000	QUASIPEAK
6		925.633	-2.673	23.120	20.447	-25.553	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 : 2011/02/21 - 09:59
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2408

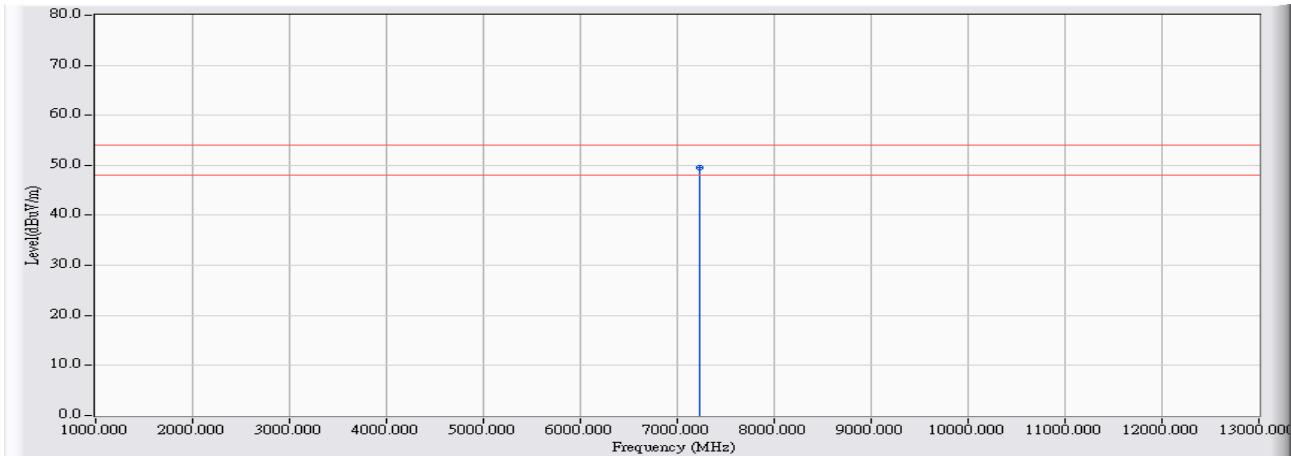


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4815.120	-1.522	53.701	52.179	-21.821	74.000	54.000	PEAK
2	*	7225.570	4.739	50.810	55.548	-18.452	74.000	54.000	PEAK
3		9630.800	7.439	45.060	52.499	-21.501	74.000	54.000	PEAK
4		12041.600	10.224	38.790	49.013	-24.987	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 : 2011/02/21 - 09:59
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2408

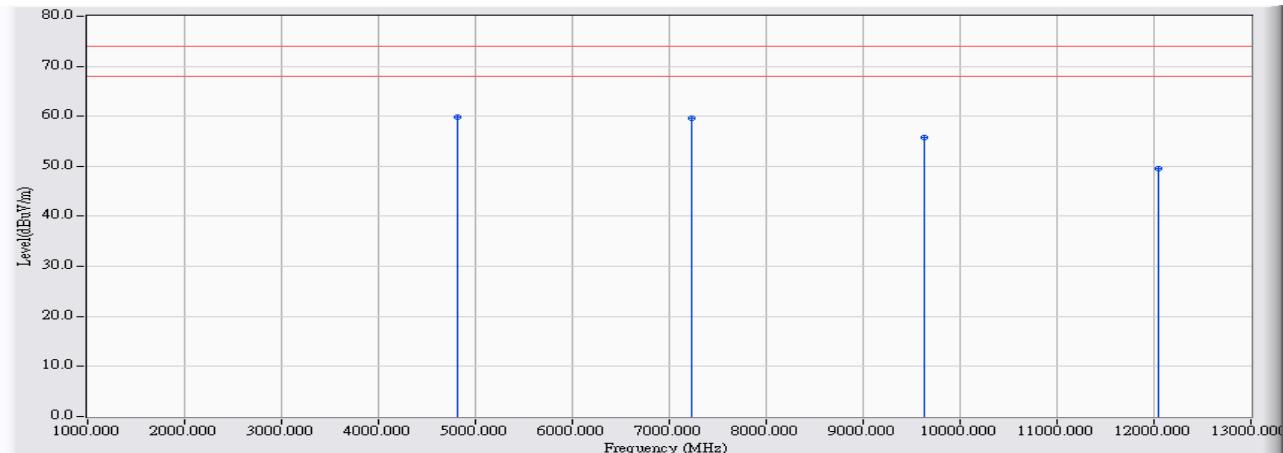


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	7225.000	4.737	44.860	49.597	-4.403	74.000	54.000	AVERAGE

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 : 2011/02/21 - 10:11
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2408

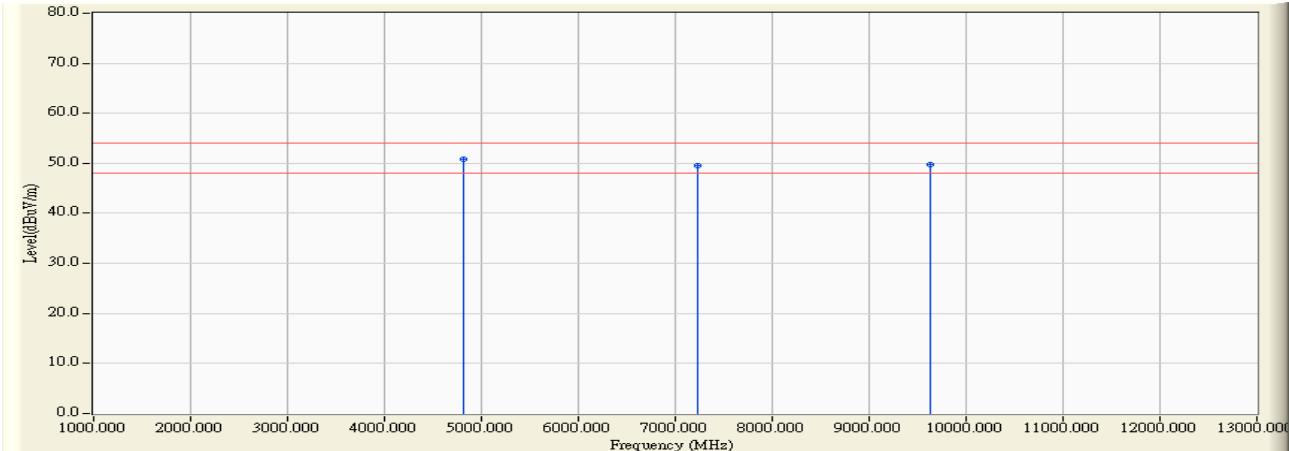


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4816.900	-1.518	61.340	59.822	-14.178	74.000	54.000	PEAK
2		7225.280	4.738	54.837	59.575	-14.425	74.000	54.000	PEAK
3		9632.900	7.442	48.400	55.842	-18.158	74.000	54.000	PEAK
4		12040.700	10.223	39.280	49.503	-24.497	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 : 2011/02/21 - 10:11
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2408

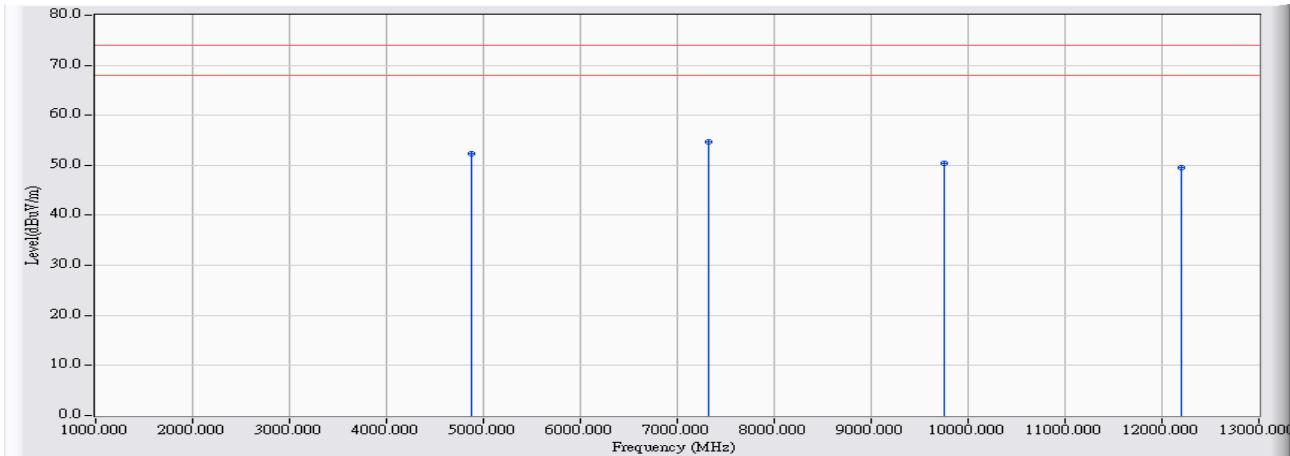


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4816.000	-1.520	52.333	50.813	-3.187	74.000	54.000	AVERAGE
2		7225.080	4.737	44.846	49.584	-4.416	74.000	54.000	AVERAGE
3		9632.900	7.442	42.300	49.742	-4.258	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 : 2011/02/21 - 10:26
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2440.5

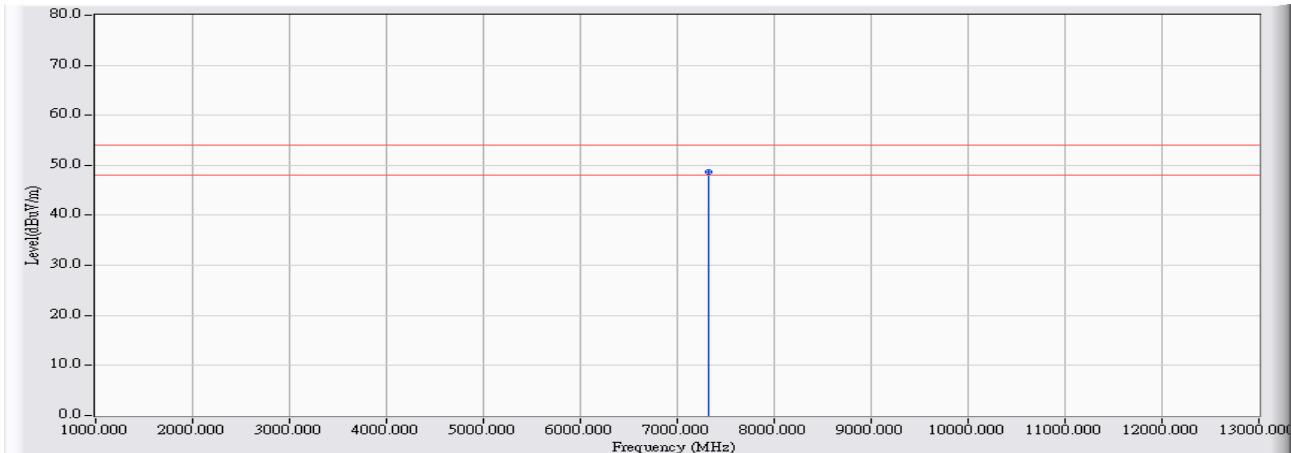


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4880.220	-1.381	53.634	52.253	-21.747	74.000	54.000	PEAK
2	*	7322.900	4.917	49.840	54.757	-19.243	74.000	54.000	PEAK
3		9759.300	7.626	42.720	50.346	-23.654	74.000	54.000	PEAK
4		12203.700	10.239	39.250	49.489	-24.511	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 : 2011/02/21 - 10:26
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2440.5

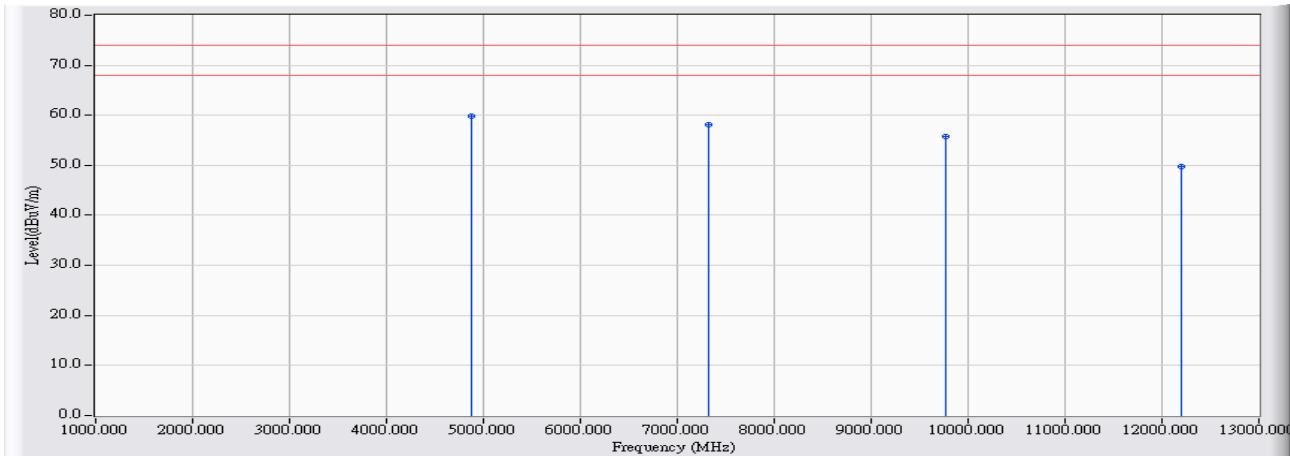


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	7322.500	4.916	43.740	48.656	-5.344	74.000	54.000	AVERAGE

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 : 2011/02/21 - 10:35
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2440.5

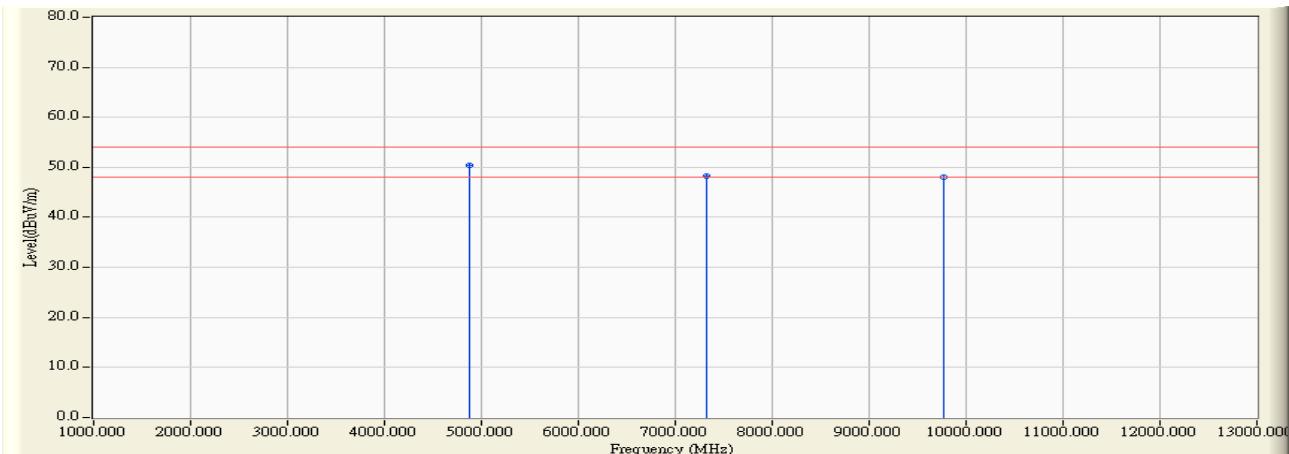


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4880.020	-1.382	61.131	59.749	-14.251	74.000	54.000	PEAK
2		7320.020	4.912	53.129	58.041	-15.959	74.000	54.000	PEAK
3		9763.900	7.633	48.150	55.783	-18.217	74.000	54.000	PEAK
4		12203.500	10.239	39.420	49.659	-24.341	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 : 2011/02/21 - 10:36
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2440.5

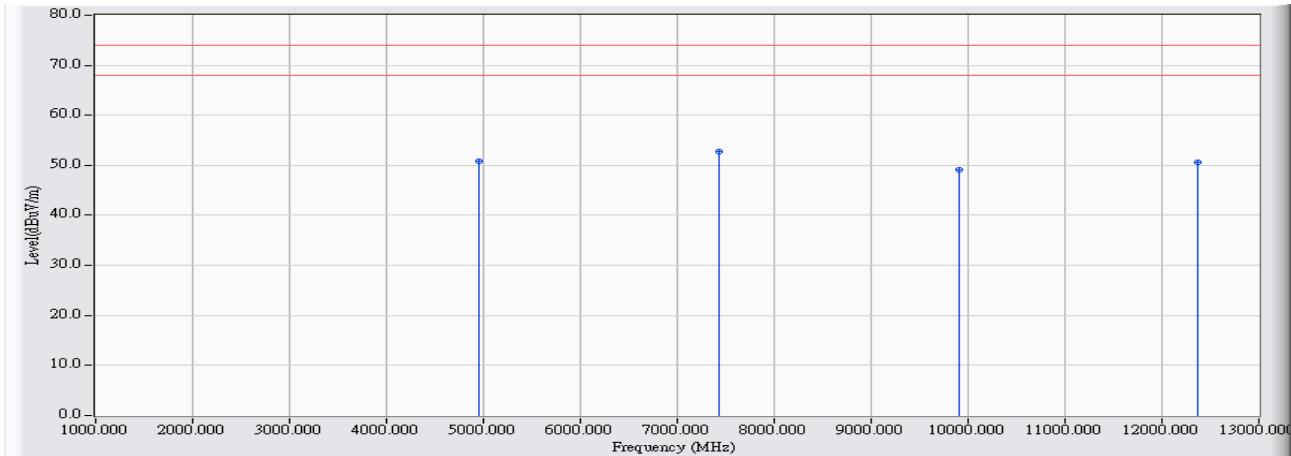


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4880.980	-1.379	51.884	50.505	-3.495	74.000	54.000	PEAK
2		7322.640	4.916	43.330	48.246	-5.754	74.000	54.000	PEAK
3		9762.900	7.631	40.460	48.091	-5.909	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 : 2011/02/21 - 10:57
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2475.5

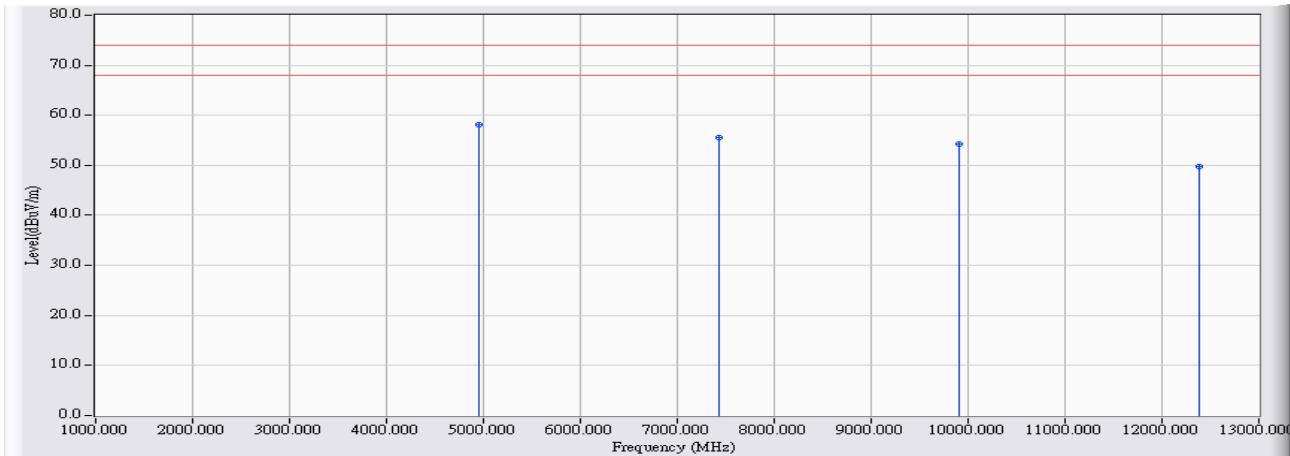


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4949.880	-1.231	52.035	50.804	-23.196	74.000	54.000	PEAK
2	*	7425.500	5.105	47.660	52.765	-21.235	74.000	54.000	PEAK
3		9902.600	7.834	41.260	49.094	-24.906	74.000	54.000	PEAK
4		12376.800	10.256	40.440	50.697	-23.303	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 : 2011/02/21 - 11:09
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2475.5

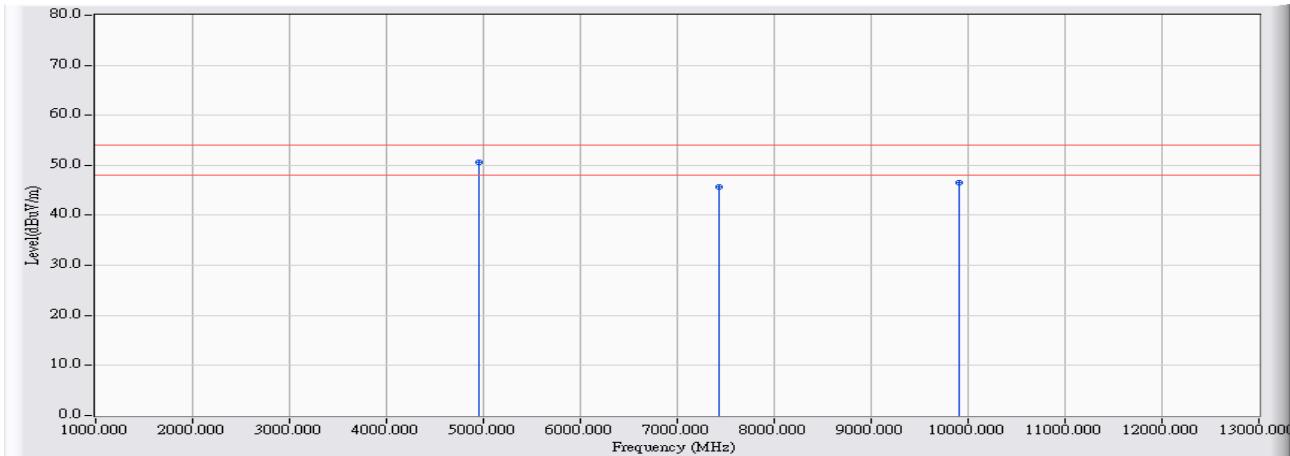


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4951.980	-1.226	59.383	58.157	-15.843	74.000	54.000	PEAK
2		7425.100	5.104	50.539	55.643	-18.357	74.000	54.000	PEAK
3		9903.700	7.836	46.390	54.226	-19.774	74.000	54.000	PEAK
4		12378.300	10.257	39.550	49.807	-24.193	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 : 2011/02/21 - 11:10
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (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	*	4950.980	-1.228	51.799	50.571	-3.429	74.000	54.000	AVERAGE
2		7427.640	5.109	40.542	45.651	-8.349	74.000	54.000	AVERAGE
3		9903.000	7.835	38.700	46.535	-7.465	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.

5. RF Conducted Emission

5.1. Test Equipment

The following test equipments are used during the test:

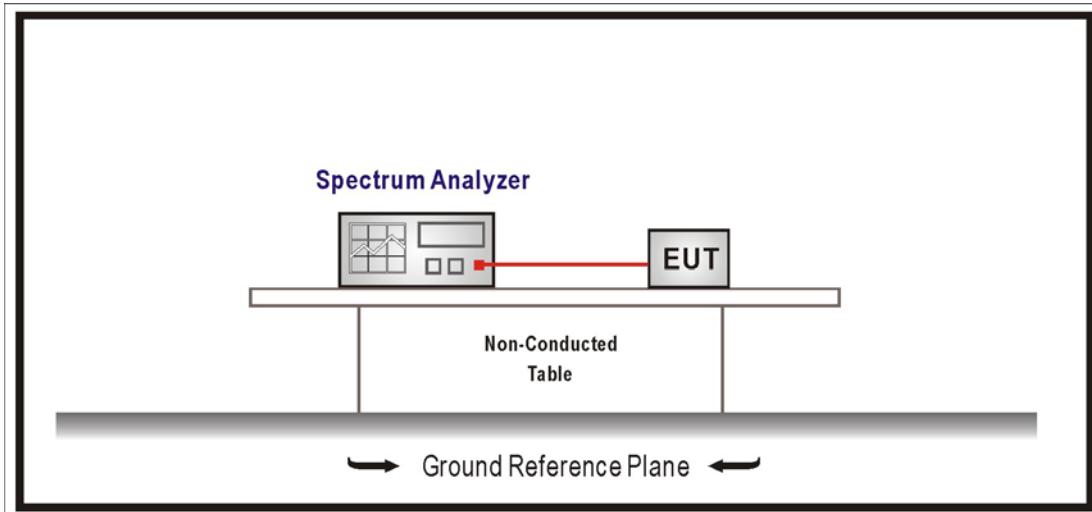
RF Antenna Conducted Test / SR7

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.

5.2. Test Setup

RF Conducted Measurement:



5.3. 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)).

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.

5.5. Test Specification

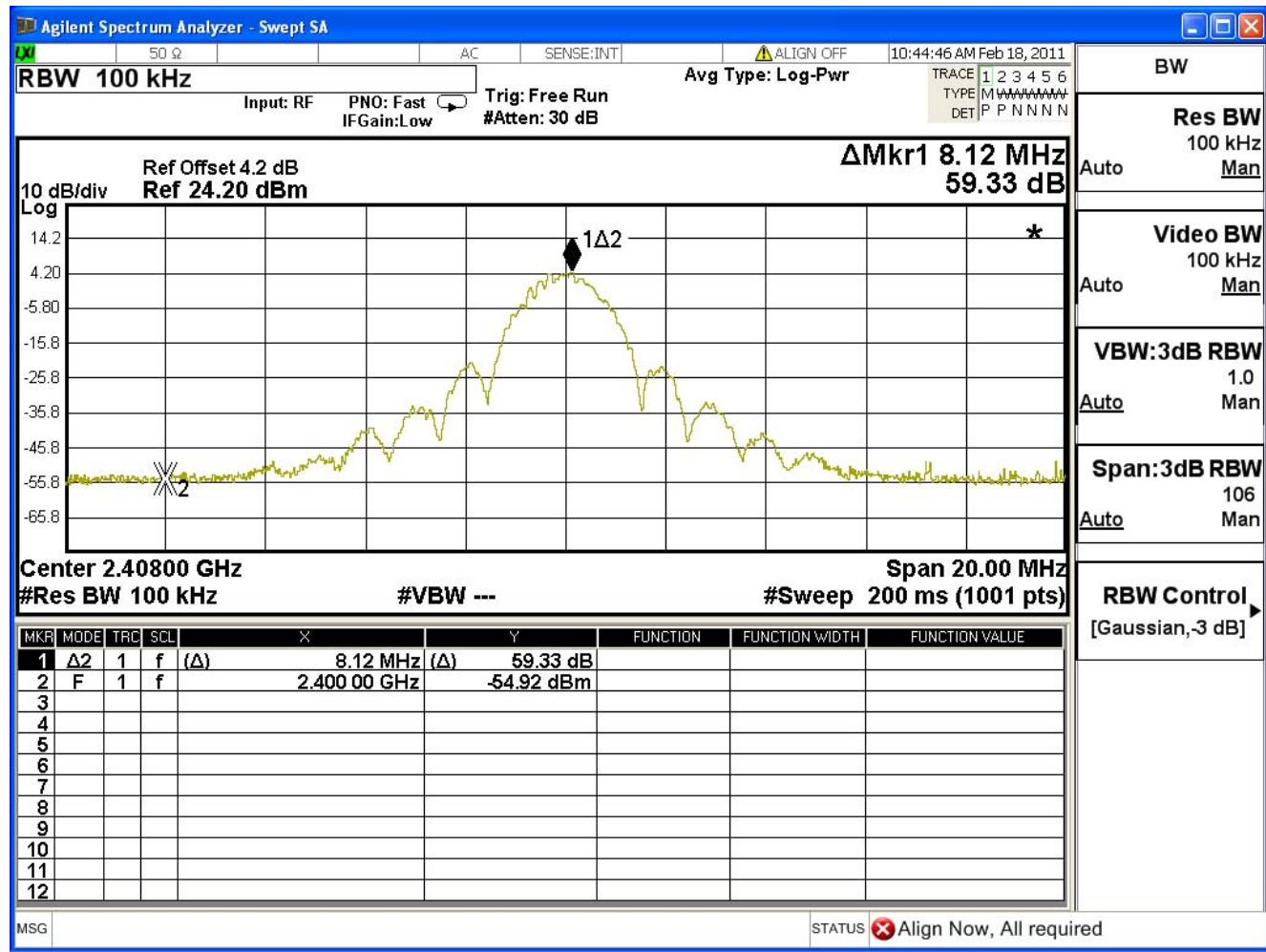
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

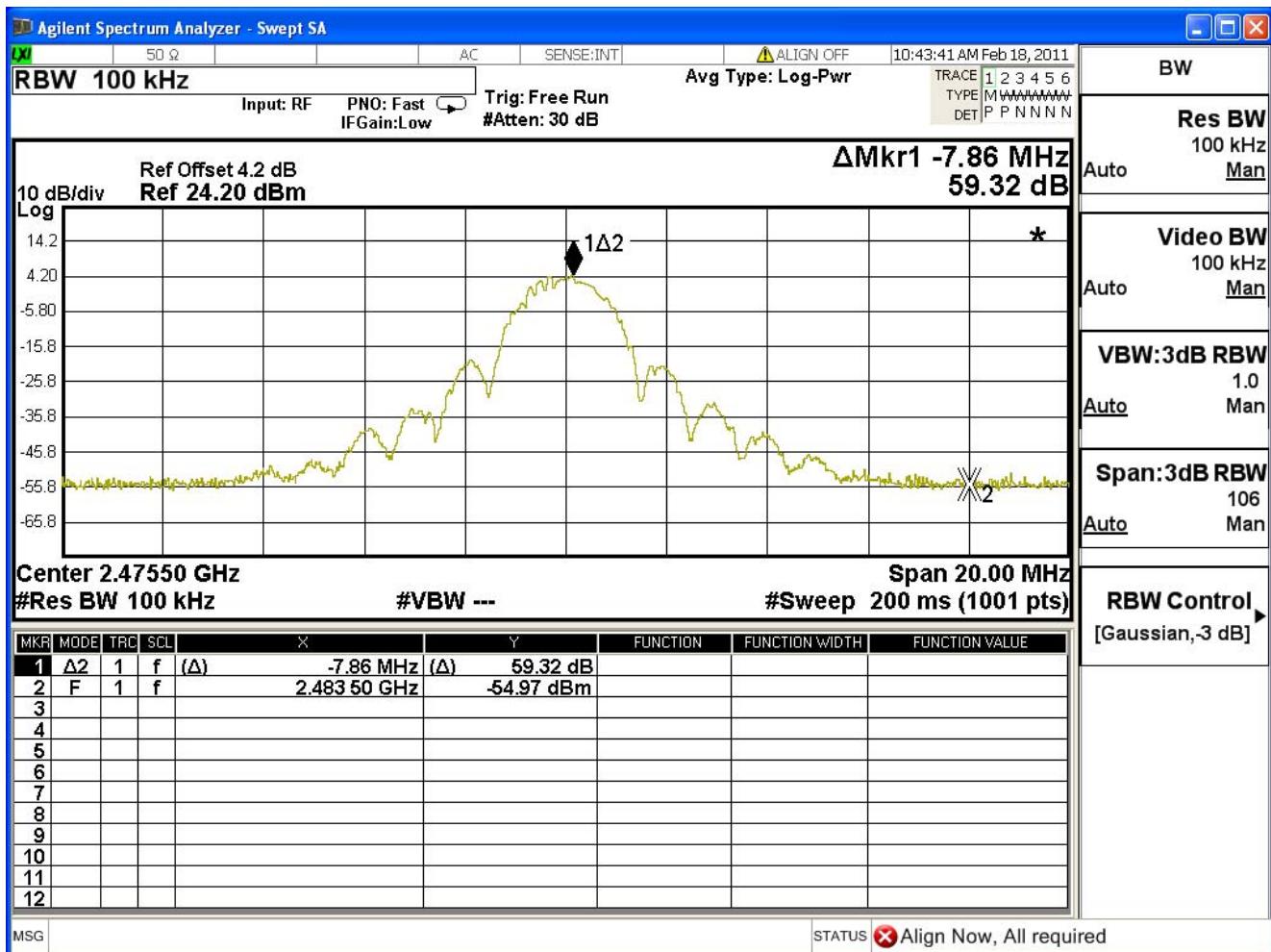
5.6. Test Result

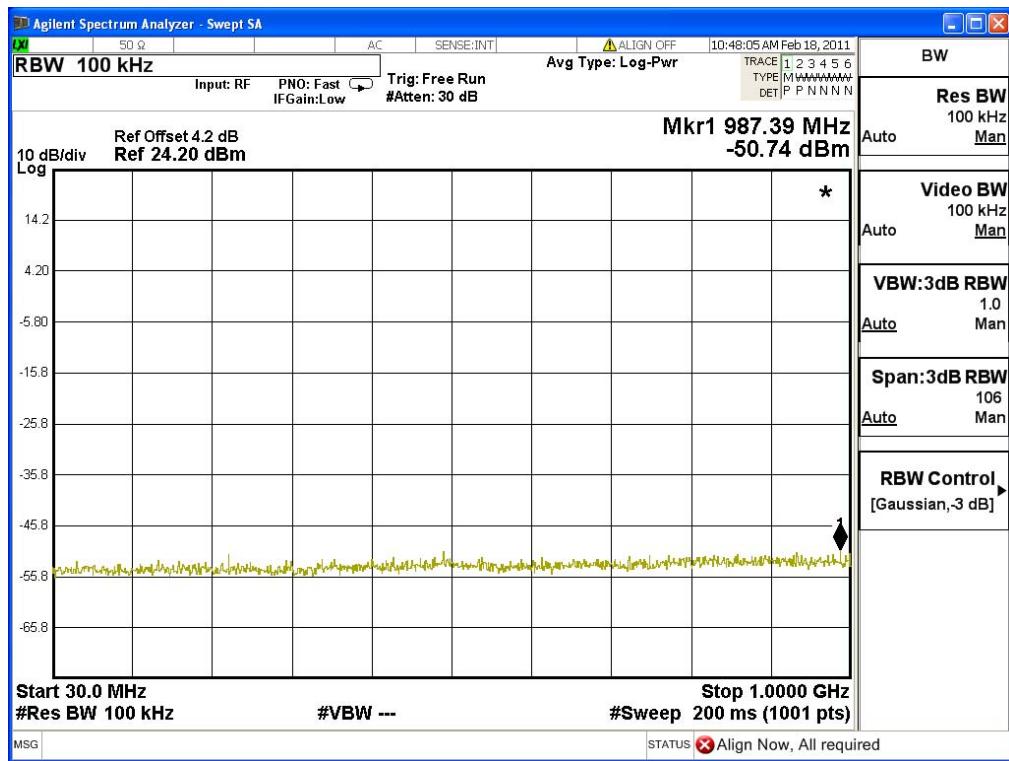
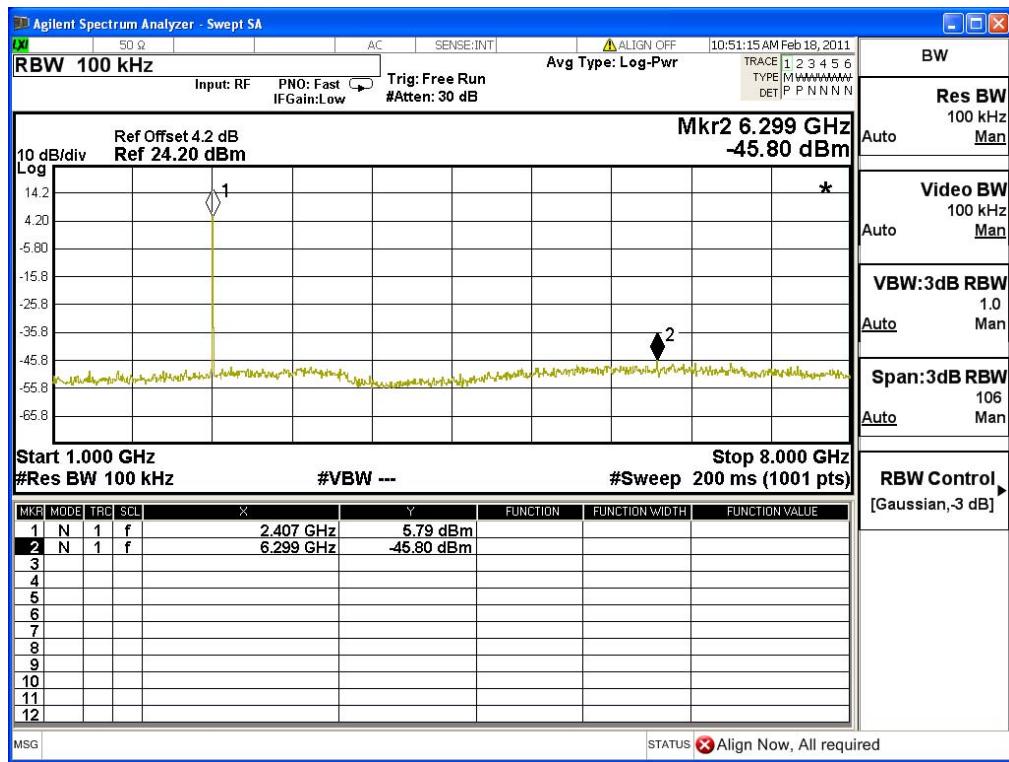
Product	Digital Wireless Microphone		
Test Item	RF Conducted Emissions		
Test Mode	Mode 1: Receiver (TX)		
Date of Test	2011/02/18	Test Site	SR7

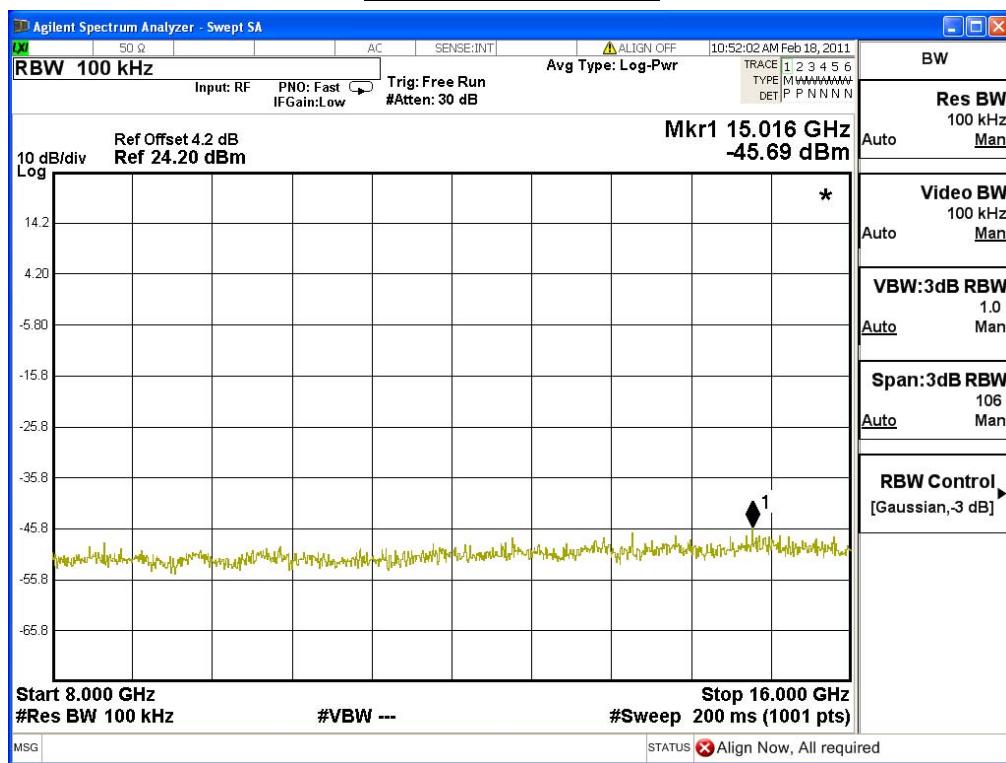
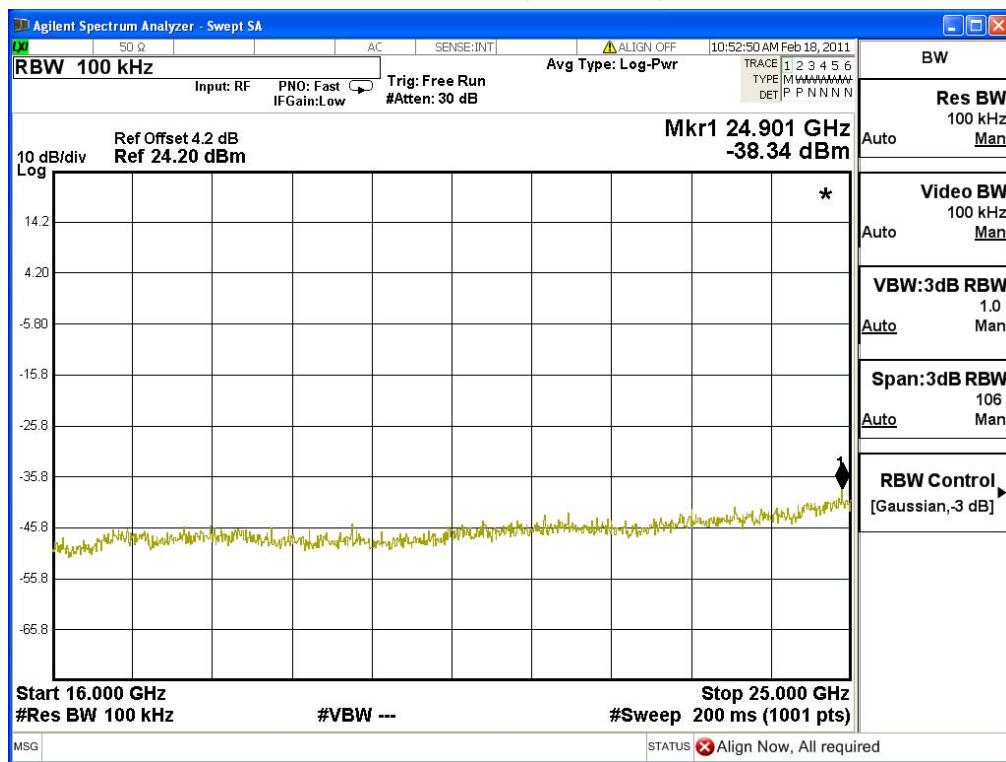
Channel No.	Frequency (MHz)	Measure Level (dBc)	Required Limit (dBc)	Result
00	2408.0	59.33	≥20	Pass
27	2475.5	59.32	≥20	Pass

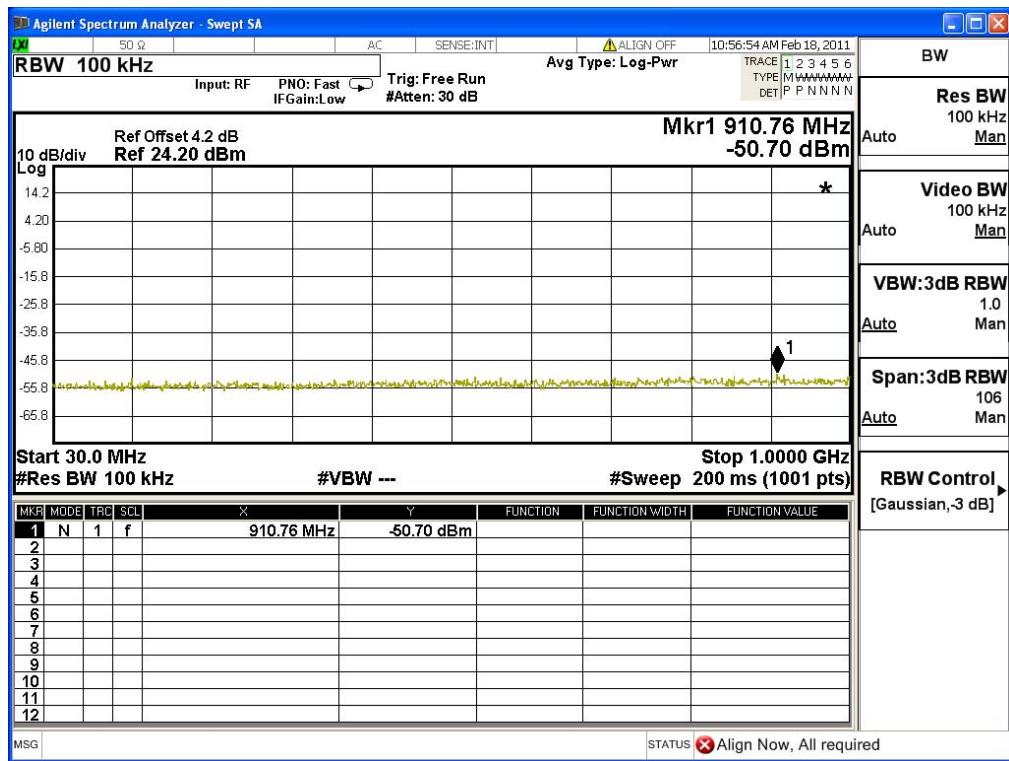
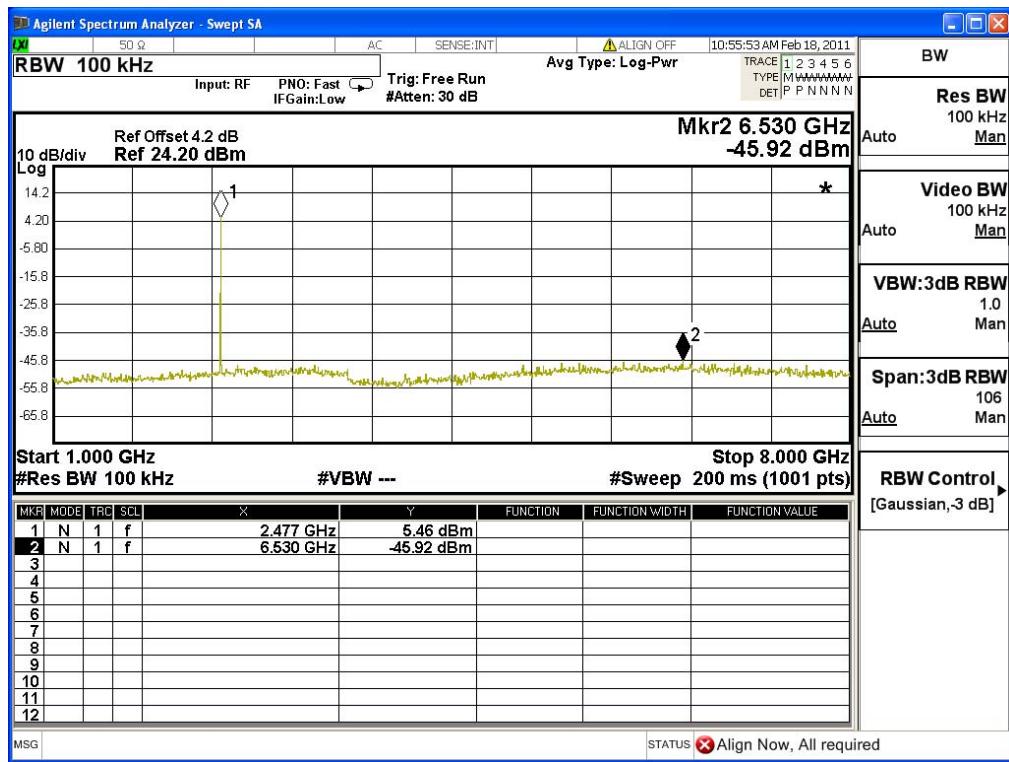
Channel 00

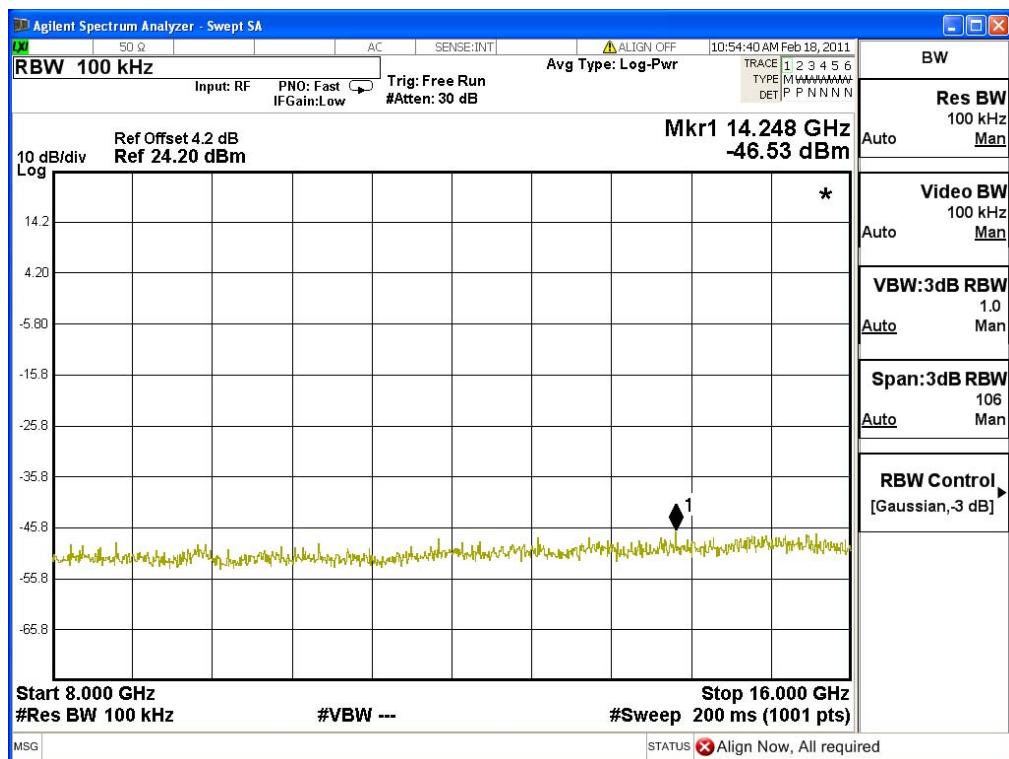
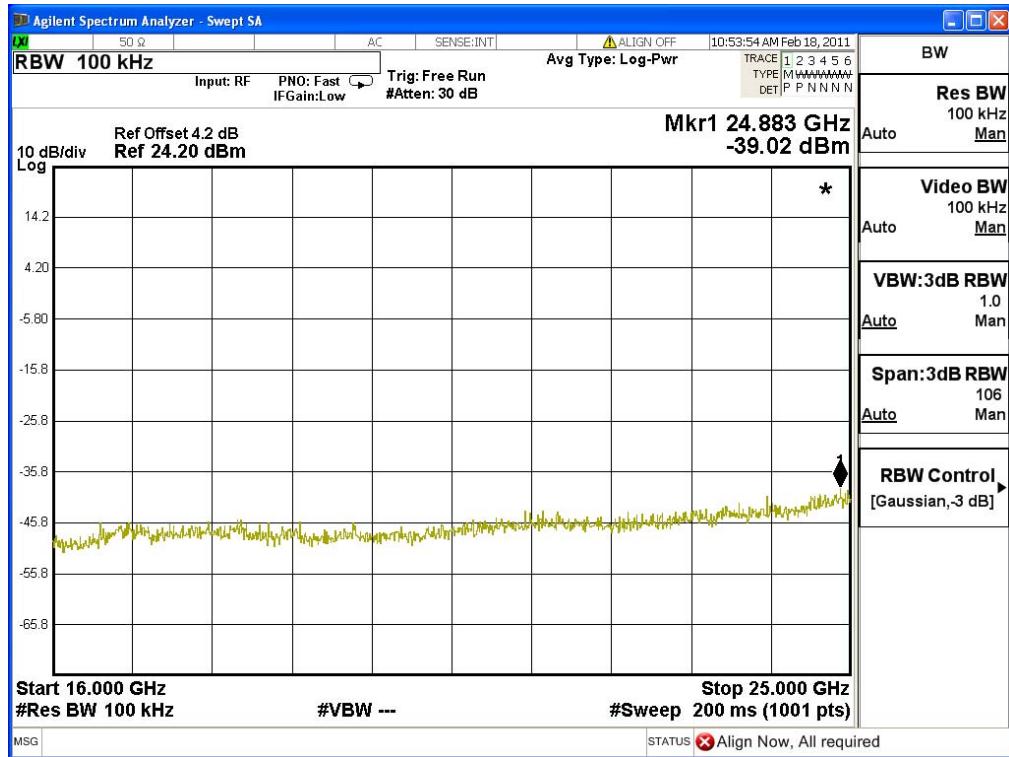


Channel 27

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)

6. Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

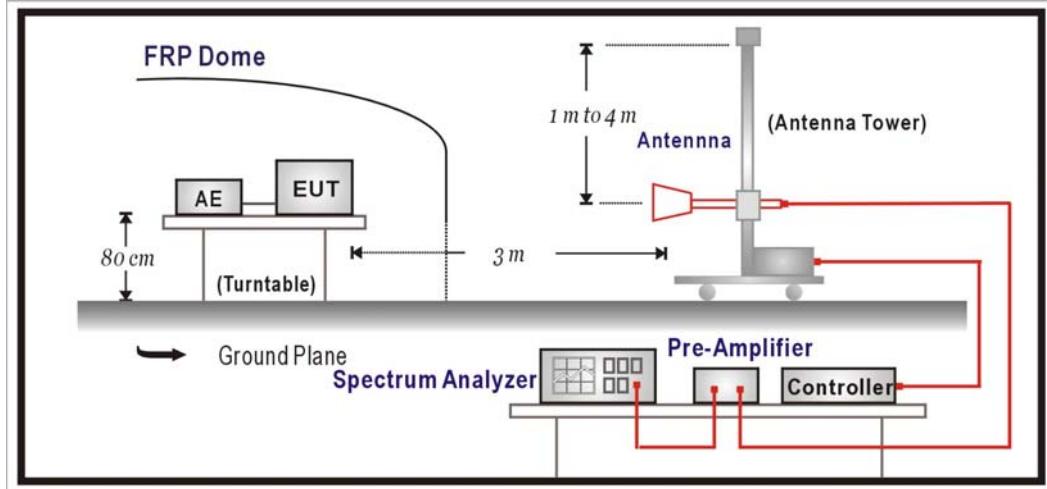
Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/14
Spectrum Analyzer	Agilent	E4440A	MY46187335	2012/01/14
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.

6.2. Test Setup

RF Radiated Measurement:



6.3. 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.

6.4. 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.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

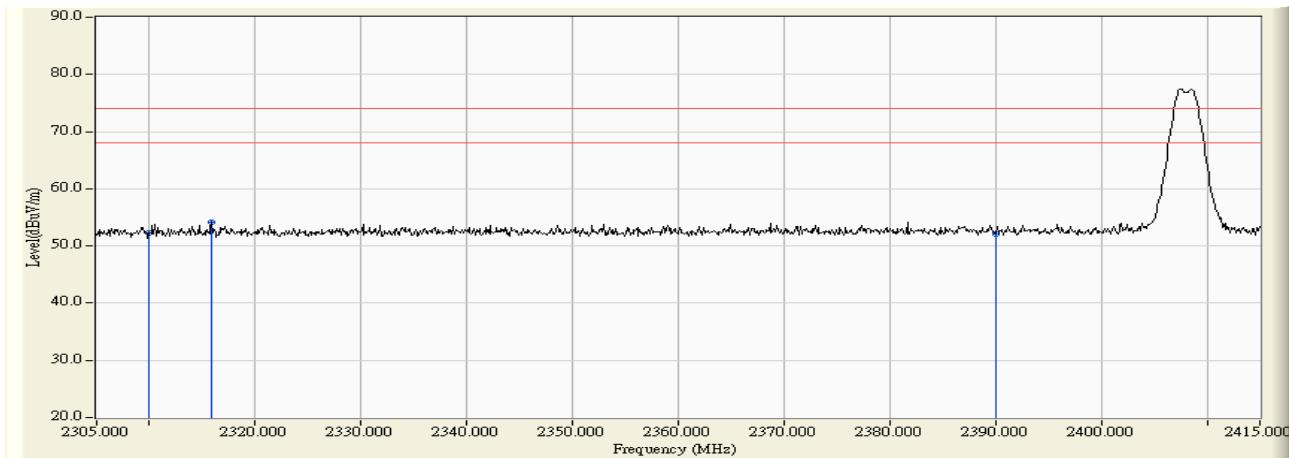
6.6. Uncertainty

The measurement uncertainty

± 3.9 dB above 1GHz

6.7. Test Result

Site : CB1	Time : 2011/02/25 - 17:14
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2408

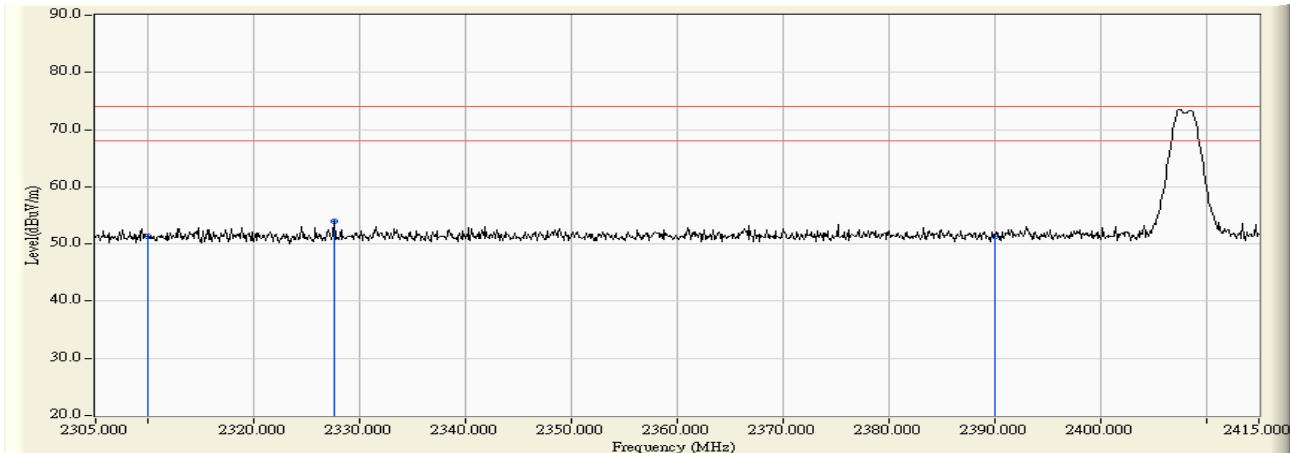


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	27.265	25.001	52.266	-21.734	74.000	PEAK
2	*	2315.890	27.290	26.812	54.102	-19.898	74.000	PEAK
3		2390.000	27.600	24.570	52.170	-21.830	74.000	PEAK

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 : 2011/02/25 - 17:19
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2408



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	27.265	24.033	51.298	-22.702	74.000	PEAK
2	* 2327.550	27.339	26.582	53.921	-20.079	74.000	PEAK
3	2390.000	27.600	23.801	51.401	-22.599	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 : 2011/02/25 - 17:16
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2408

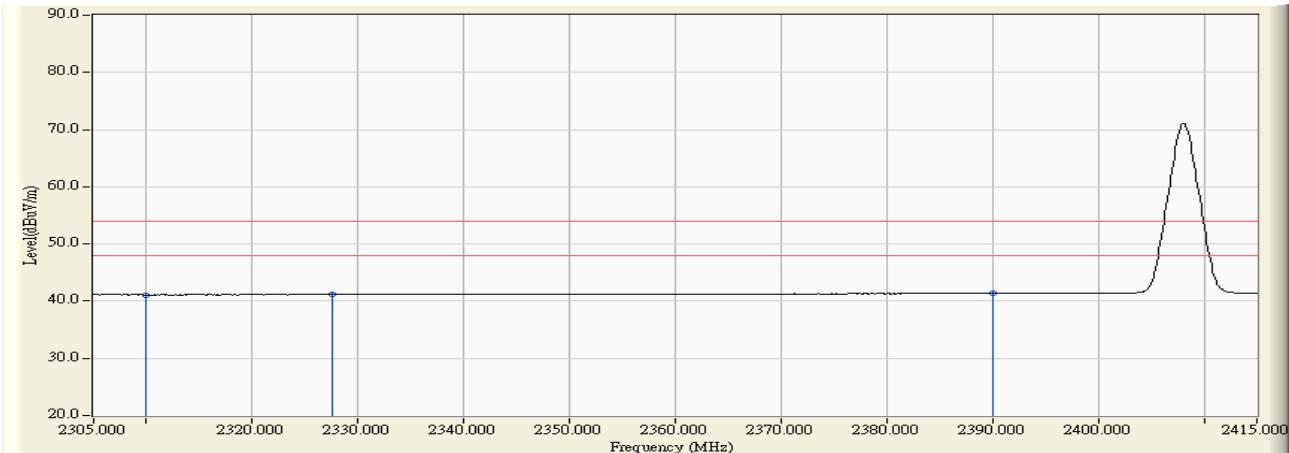


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	27.265	13.823	41.088	-12.912	54.000	AVERAGE
2	2315.890	27.290	13.796	41.086	-12.914	54.000	AVERAGE
3	* 2390.000	27.600	13.768	41.368	-12.632	54.000	AVERAGE

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 : 2011/02/25 - 17:22
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2408

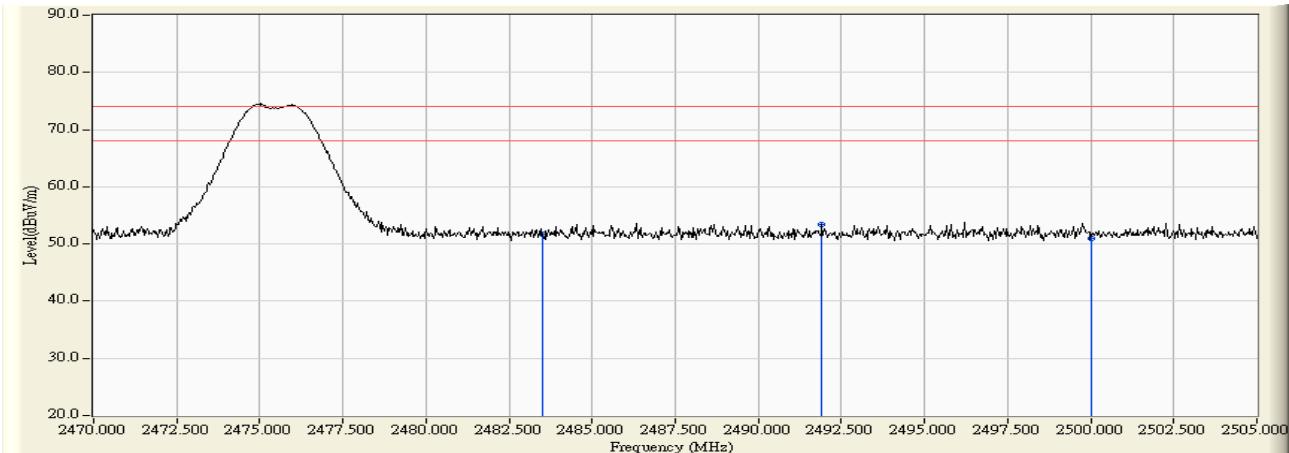


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2310.000	27.265	13.826	41.091	-12.909	54.000	AVERAGE
2	2327.550	27.339	13.822	41.161	-12.839	54.000	AVERAGE
3	* 2390.000	27.600	13.803	41.403	-12.597	54.000	AVERAGE

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 : 2011/02/25 - 17:29
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2475.5

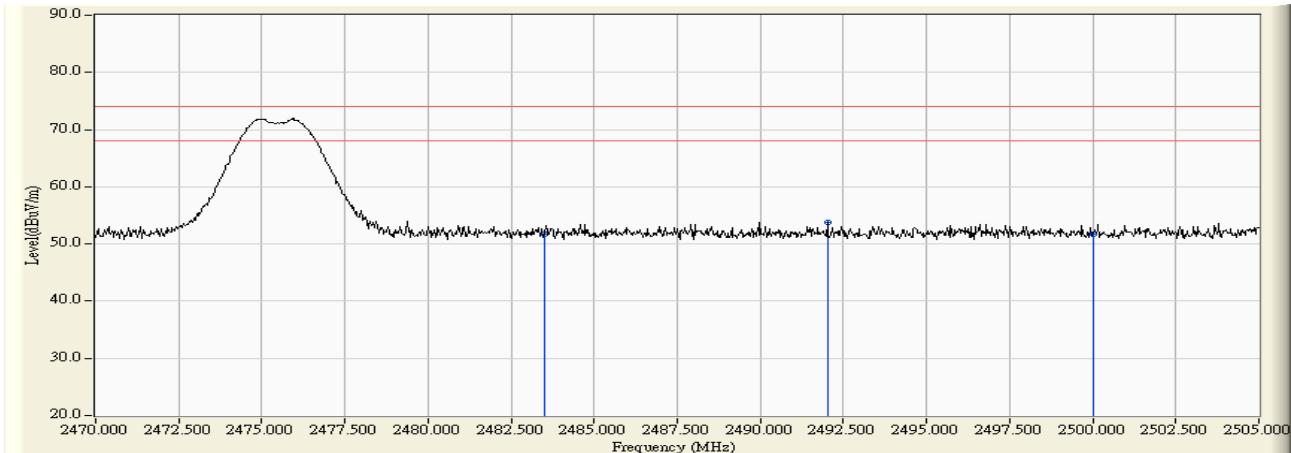


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	27.991	23.710	51.701	-22.299	74.000	PEAK
2	* 2491.910	28.026	25.472	53.498	-20.502	74.000	PEAK
3	2500.000	28.057	22.815	50.872	-23.128	74.000	PEAK

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 : 2011/02/25 - 17:33
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2475.5

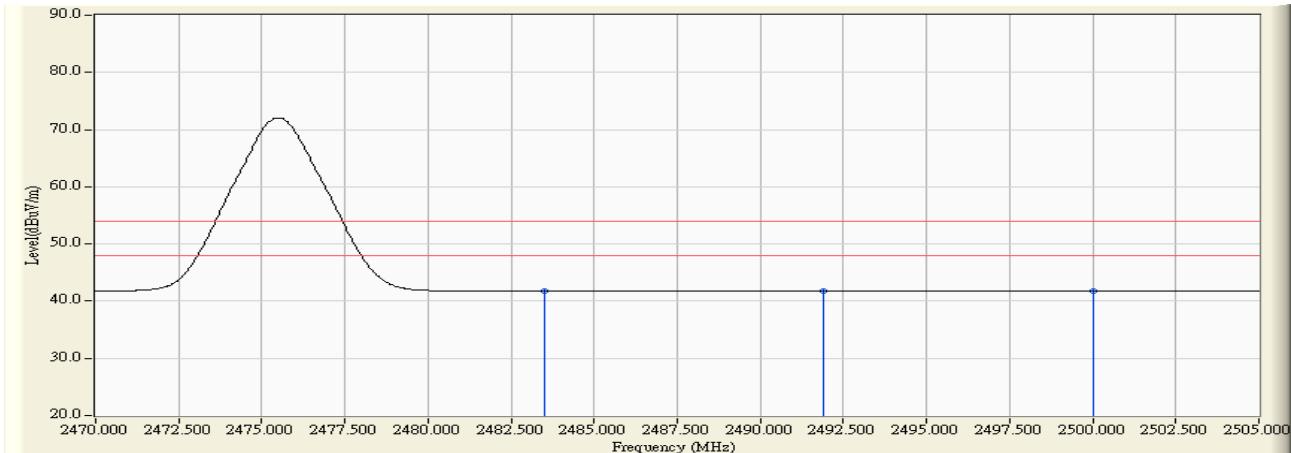


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	27.991	23.727	51.718	-22.282	74.000	PEAK
2	* 2492.015	28.026	25.755	53.782	-20.218	74.000	PEAK
3	2500.000	28.057	23.591	51.648	-22.352	74.000	PEAK

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 : 2011/02/25 - 17:29
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (TX)-2475.5

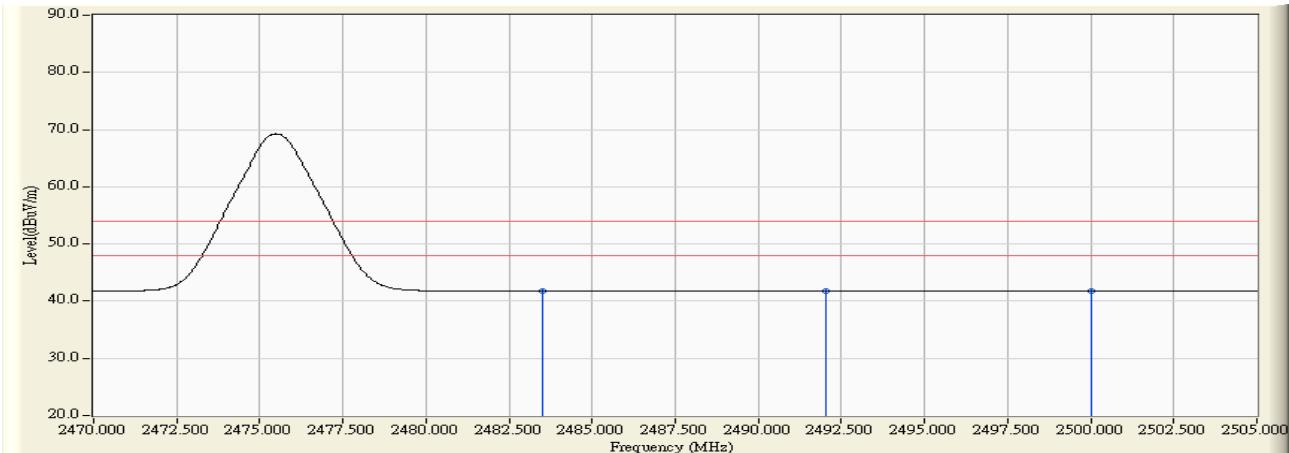


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2483.500	27.991	13.802	41.793	-12.207	54.000	AVERAGE
2	2491.910	28.026	13.740	41.766	-12.234	54.000	AVERAGE
3	*	28.057	13.761	41.818	-12.182	54.000	AVERAGE

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 : 2011/02/25 - 17:33
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : Digital Wireless Microphone	Note : Mode 1: Receiver (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	27.991	13.793	41.784	-12.216	54.000	AVERAGE
2	2492.015	28.026	13.742	41.769	-12.231	54.000	AVERAGE
3	* 2500.000	28.057	13.766	41.823	-12.177	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.

7. Number of hopping frequency

7.1. Test Equipment

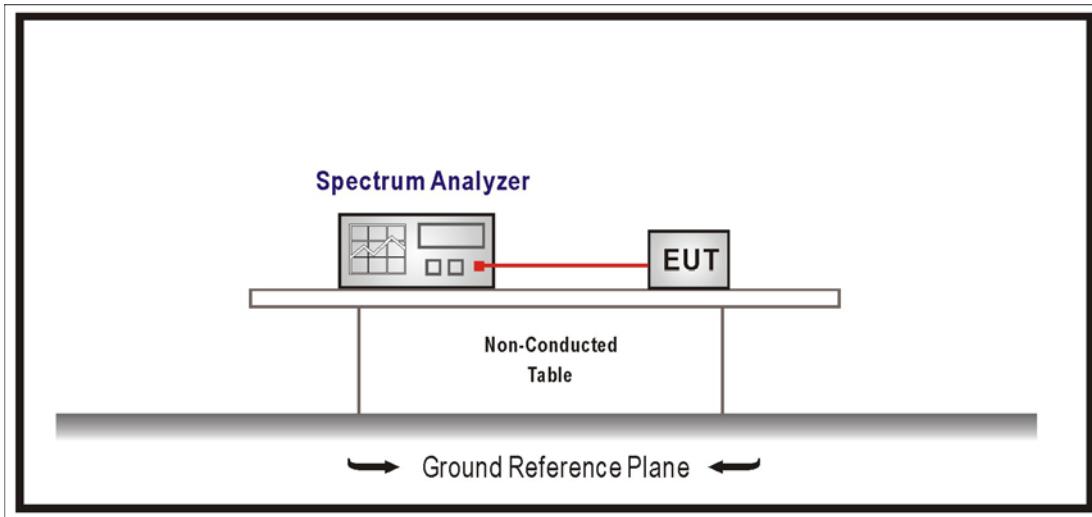
The following test equipments are used during the test:

Number Of Hopping Frequency / SR7

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

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 = the frequency band of operation

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

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

7.5. Test Specification

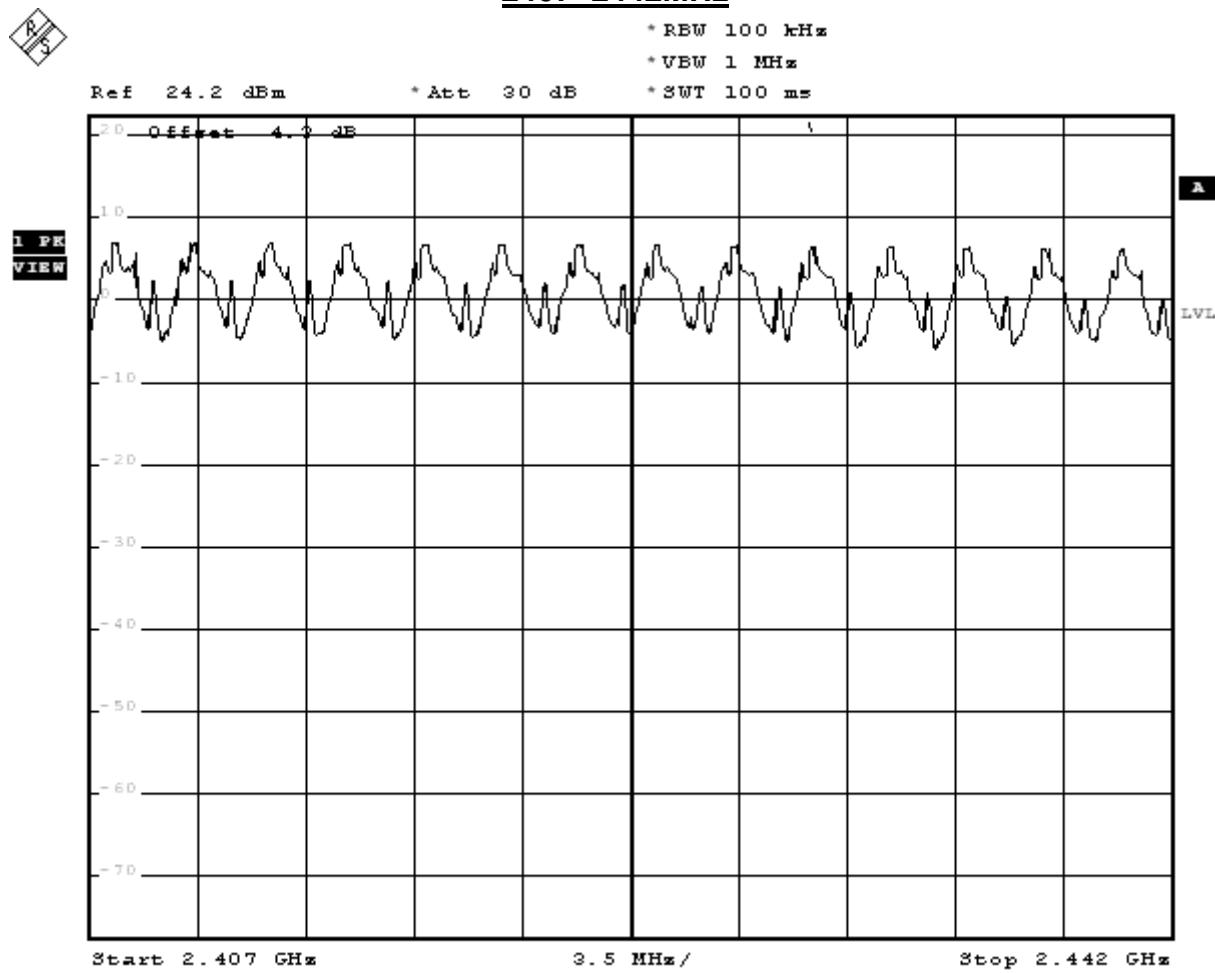
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

7.6. Test Result

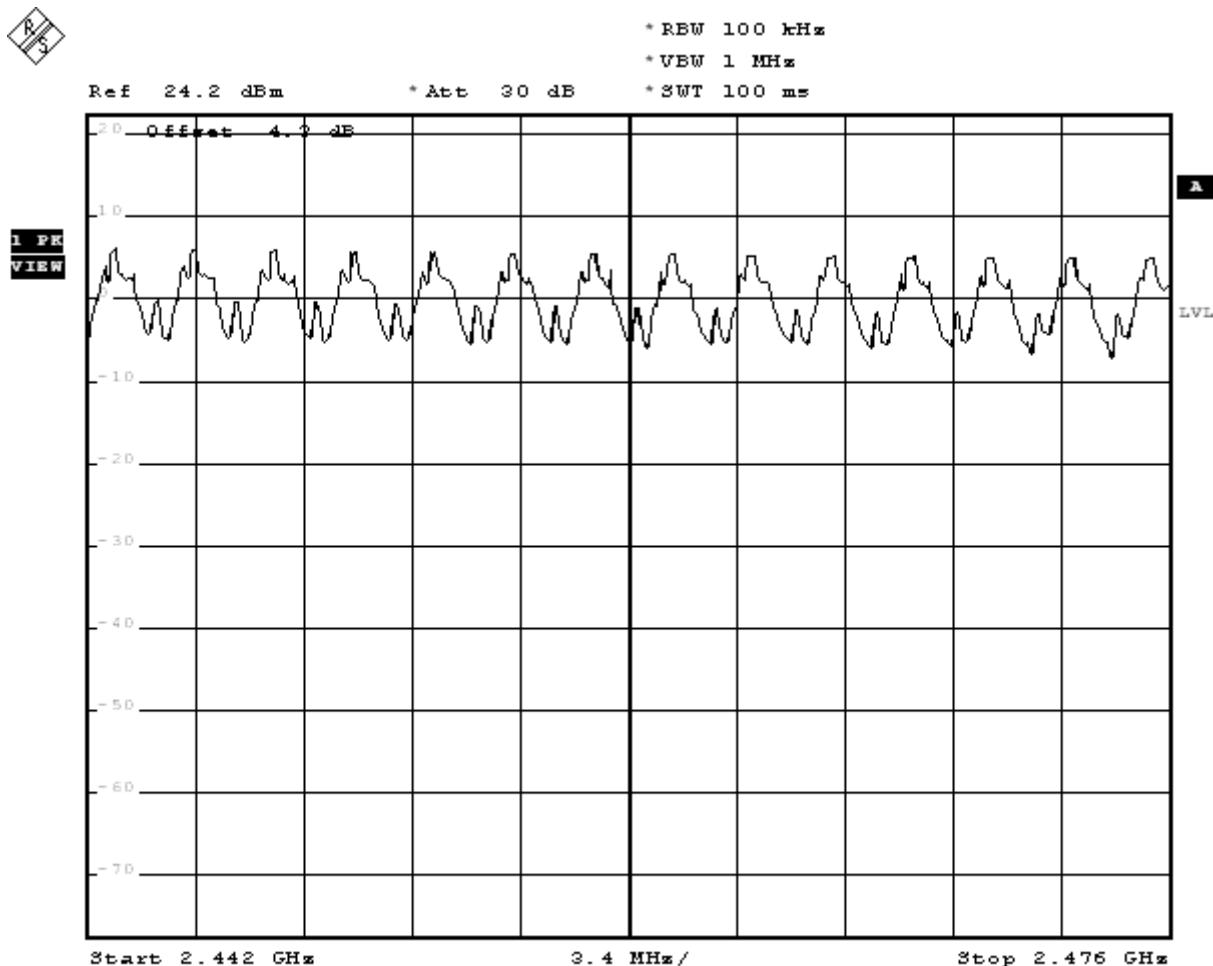
Product	Digital Wireless Microphone		
Test Item	Number of hopping frequency		
Test Mode	Mode 1: Receiver (TX)		
Date of Test	2011/02/18	Test Site	SR7

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

2407~2442MHz



Date: 14. feb. 2011 11:33:49

2442~2475.5MHz

Date: 14. feb. 2011 11:33:42

8. Carrier Frequency Separation

8.1. Test Equipment

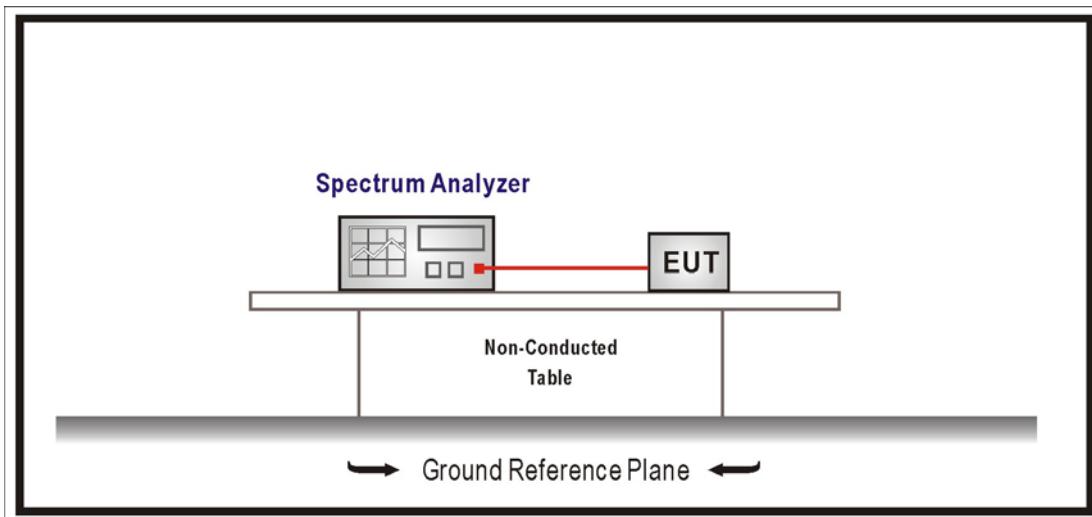
The following test equipment are used during the test:

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.

8.2. Test Setup



8.3. 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.

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

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

8.5. Test Specification

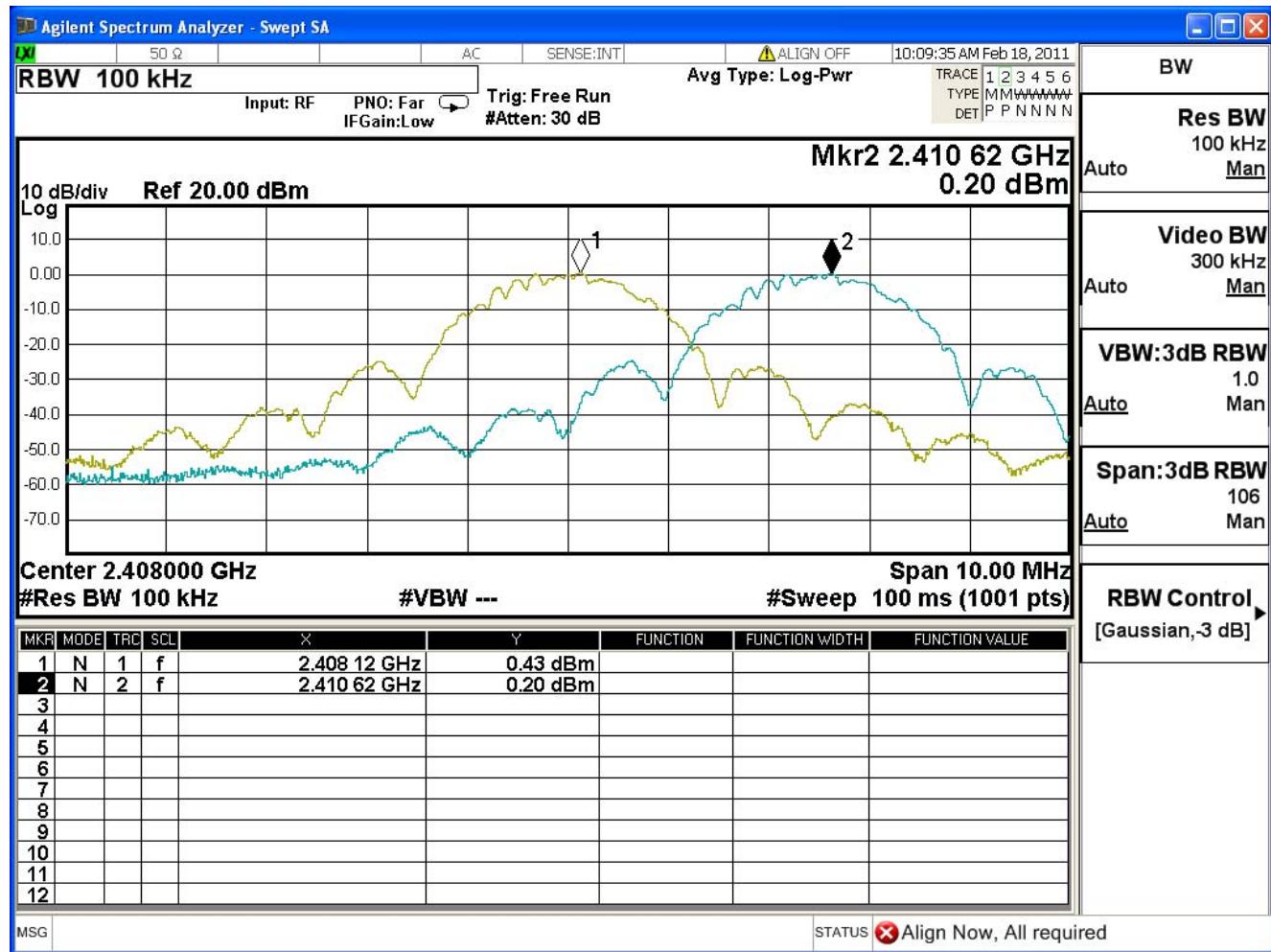
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

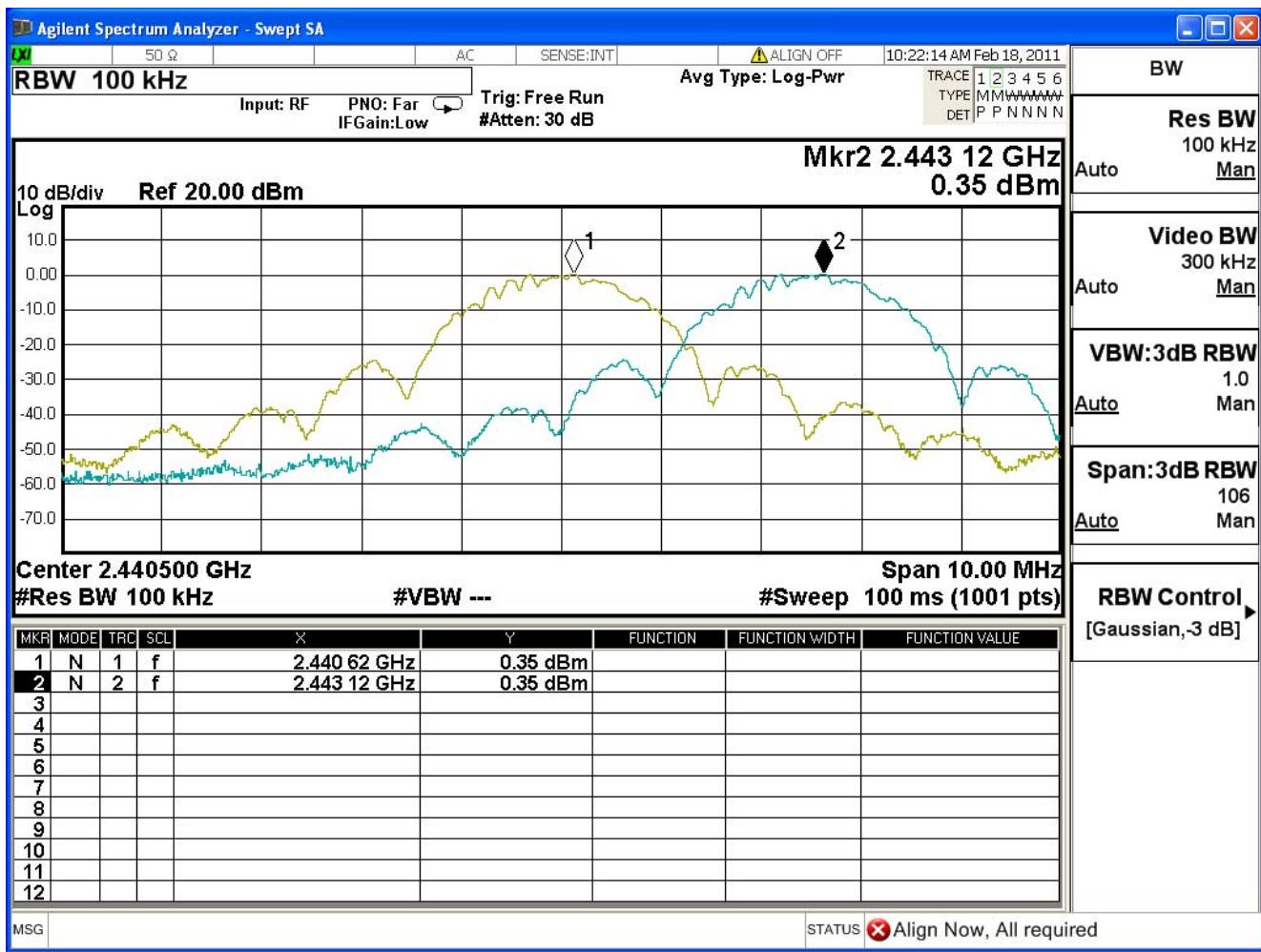
8.6. Test Result

Product	Digital Wireless Microphone		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Receiver (TX)		
Date of Test	2011/02/18	Test Site	SR7

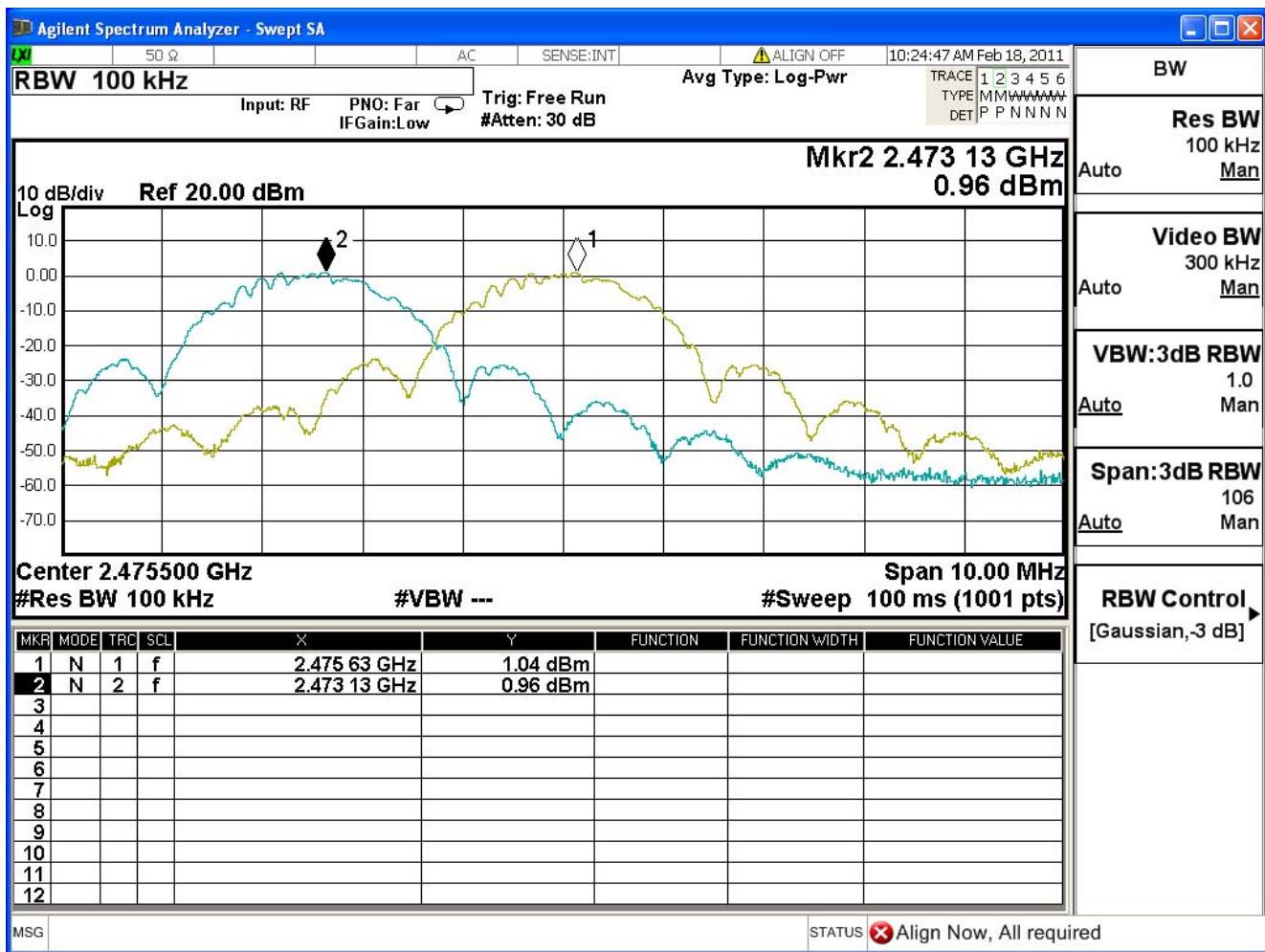
Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
00	2408.0	2500	≥ 1686	Pass
25	2440.5	2500	≥ 1686	Pass
27	2475.5	2500	≥ 1686	Pass

Channel 00



Channel 25

Channel 27



9. Occupied Bandwidth

9.1. Test Equipment

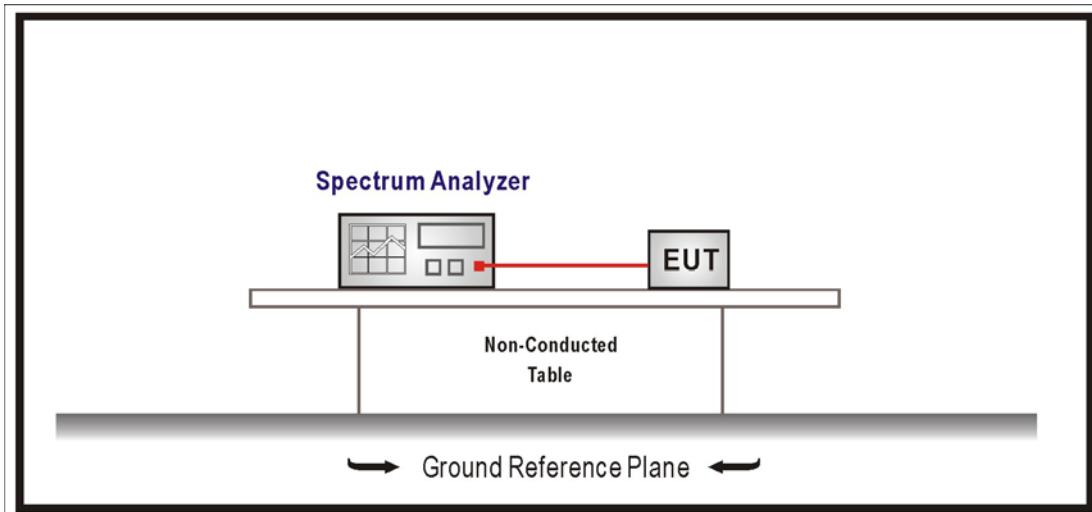
The following test equipment are used during the test:

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.

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. 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.

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

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.

9.5. Test Specification

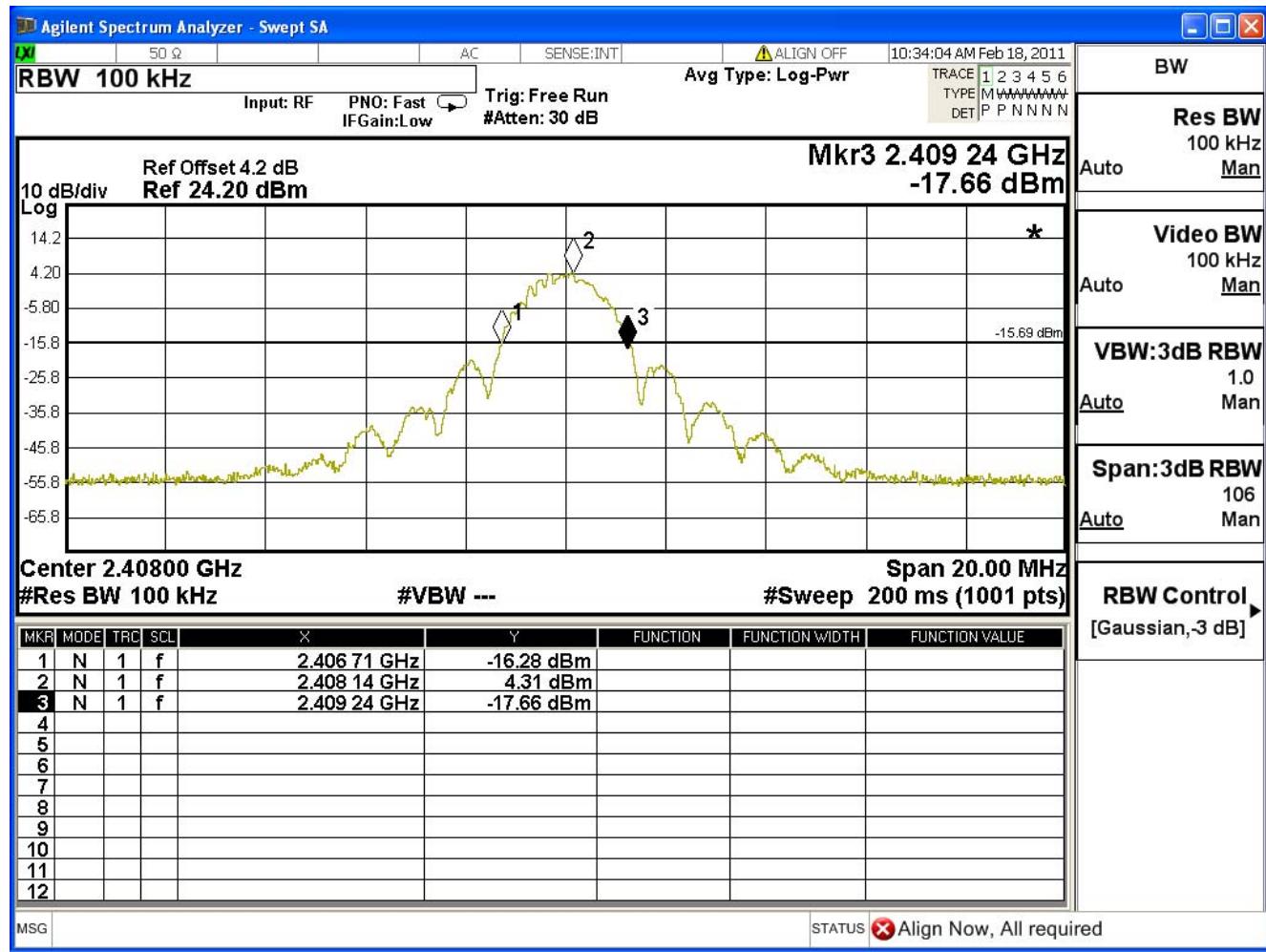
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

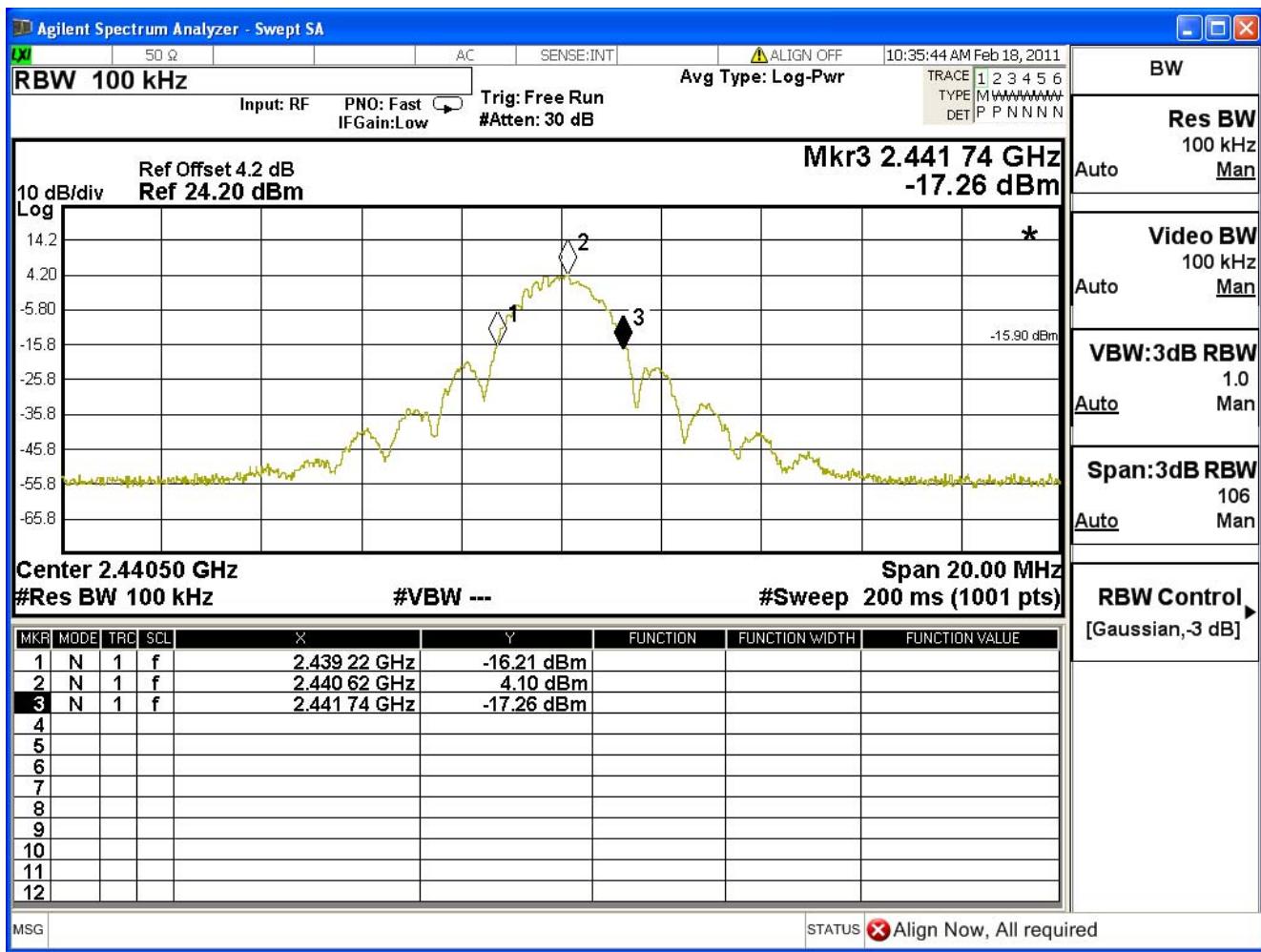
9.6. Test Result

Product	Digital Wireless Microphone		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Receiver (TX)		
Date of Test	2011/02/18	Test Site	SR7

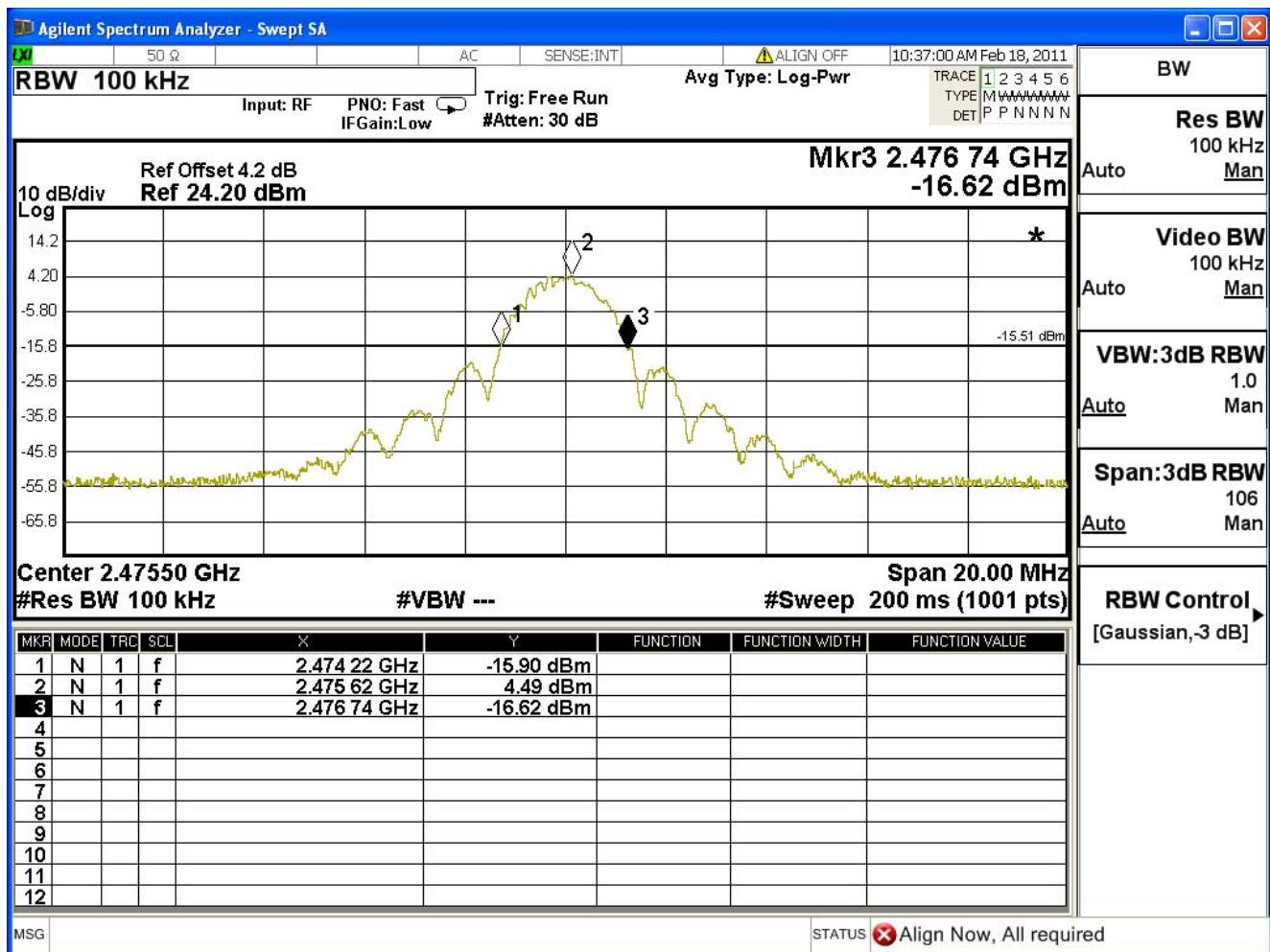
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)
00	2408.0	2.53	--
25	2440.5	2.52	--
27	2475.5	2.52	--

Channel 00



Channel 25

Channel 27



10. Dwell Time

10.1. Test Equipment

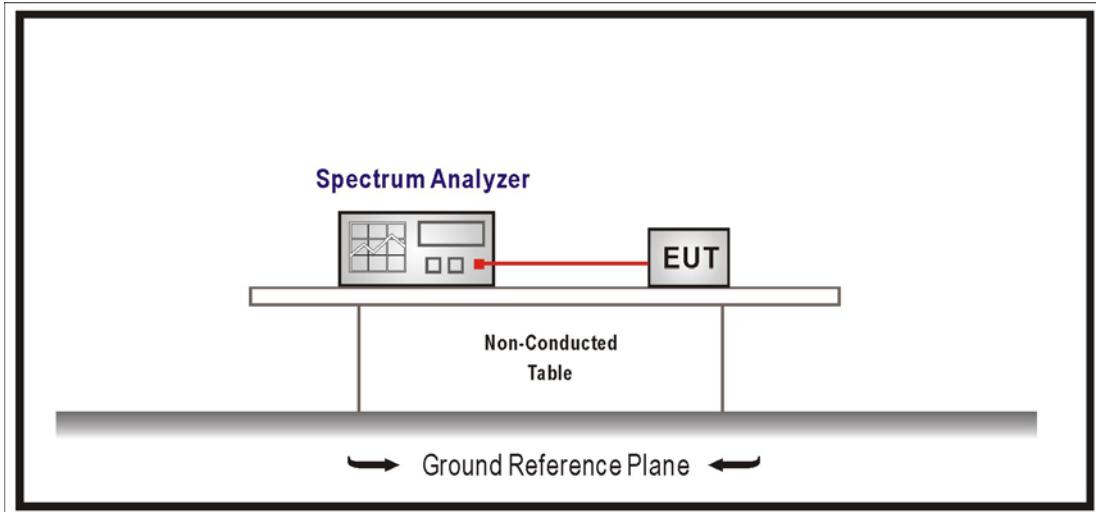
The following test equipment are used during the test:

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.

10.2. Test Setup



10.3. 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.

10.4. 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

10.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

10.6. Test Result

Product	Digital Wireless Microphone		
Test Item	Dwell Time		
Test Mode	Mode 1: Receiver (TX)		
Date of Test	2011/02/18	Test Site	SR7

Occupancy Time of Frequency Hopping System

A) 2408MHz Test Time Period: $0.4 \times 28 = 11.2$ sec , Hopping Times Within 1sec: $2/20\text{msec} = 100$ /sec

The Maximum Occupancy Time Within 11.2sec: $0.00284 * (100/28) * 11.2 = 0.1136$ sec.

B) 2440.5MHz Test Time Period: $0.4 \times 28 = 11.2$ sec , Hopping Times Within 1sec: $2/20 \text{msec} = 100 / \text{sec}$

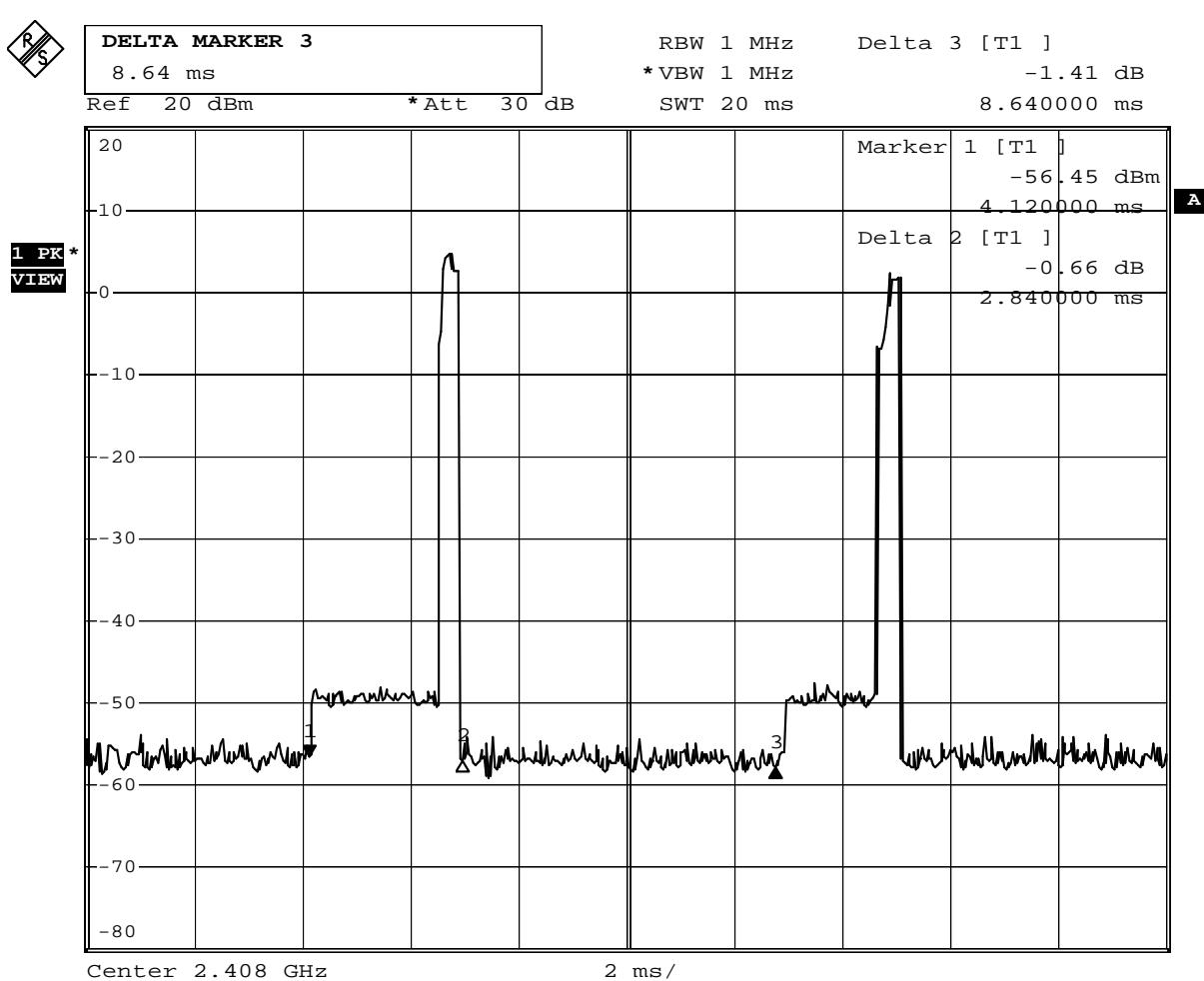
The Maximum Occupancy Time Within 11.2sec: $0.00284 * (100/28) * 11.2 = 0.1136$ sec.

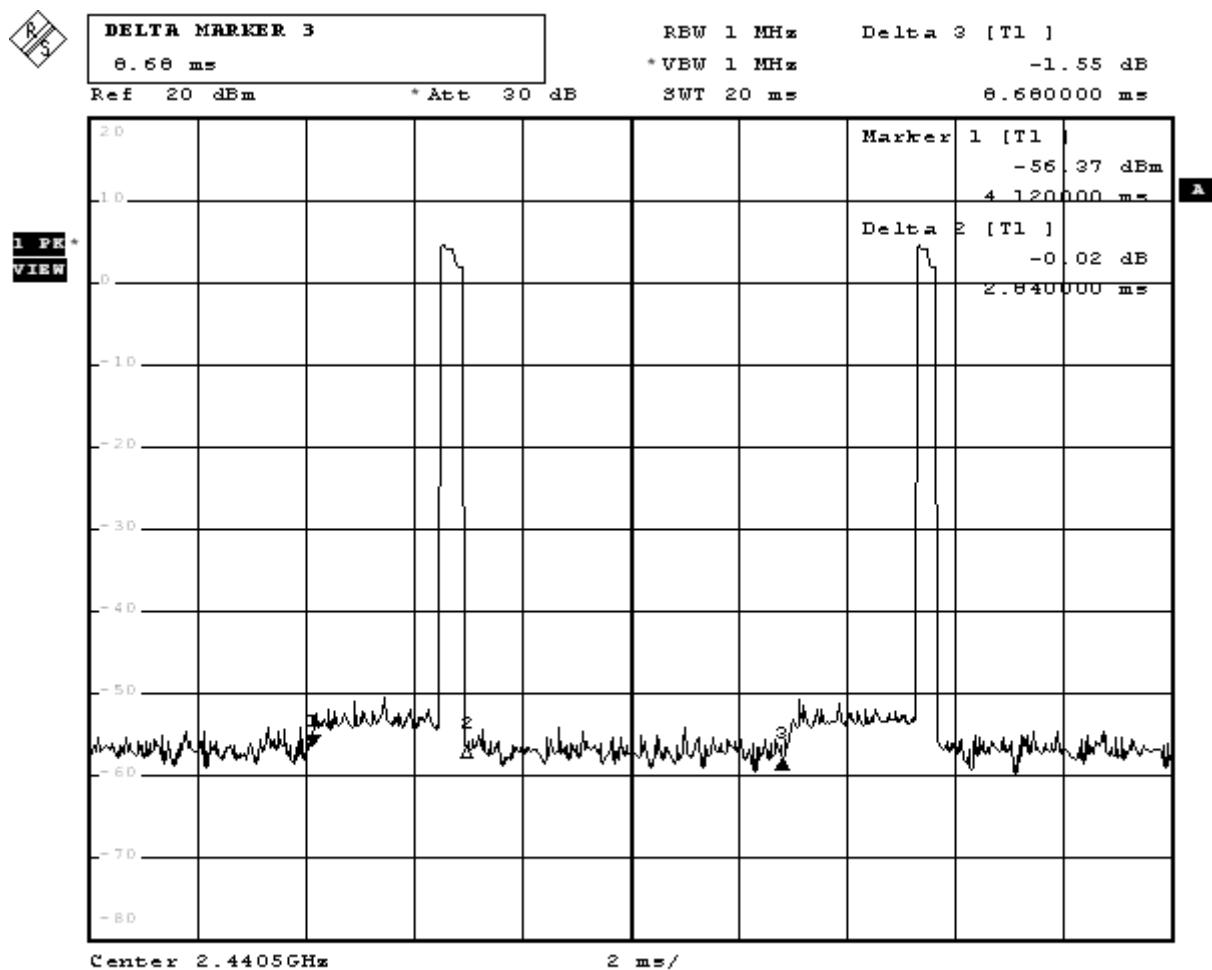
C) 2475.5MHz Test Time Period: $0.4 \times 28 = 11.2$ sec , Hopping Times Within 1sec: $2/20\text{msec} = 100$ /sec

The Maximum Occupancy Time Within 11.2sec: $0.0028 * (100/28) * 11.2 = 0.112$ sec.

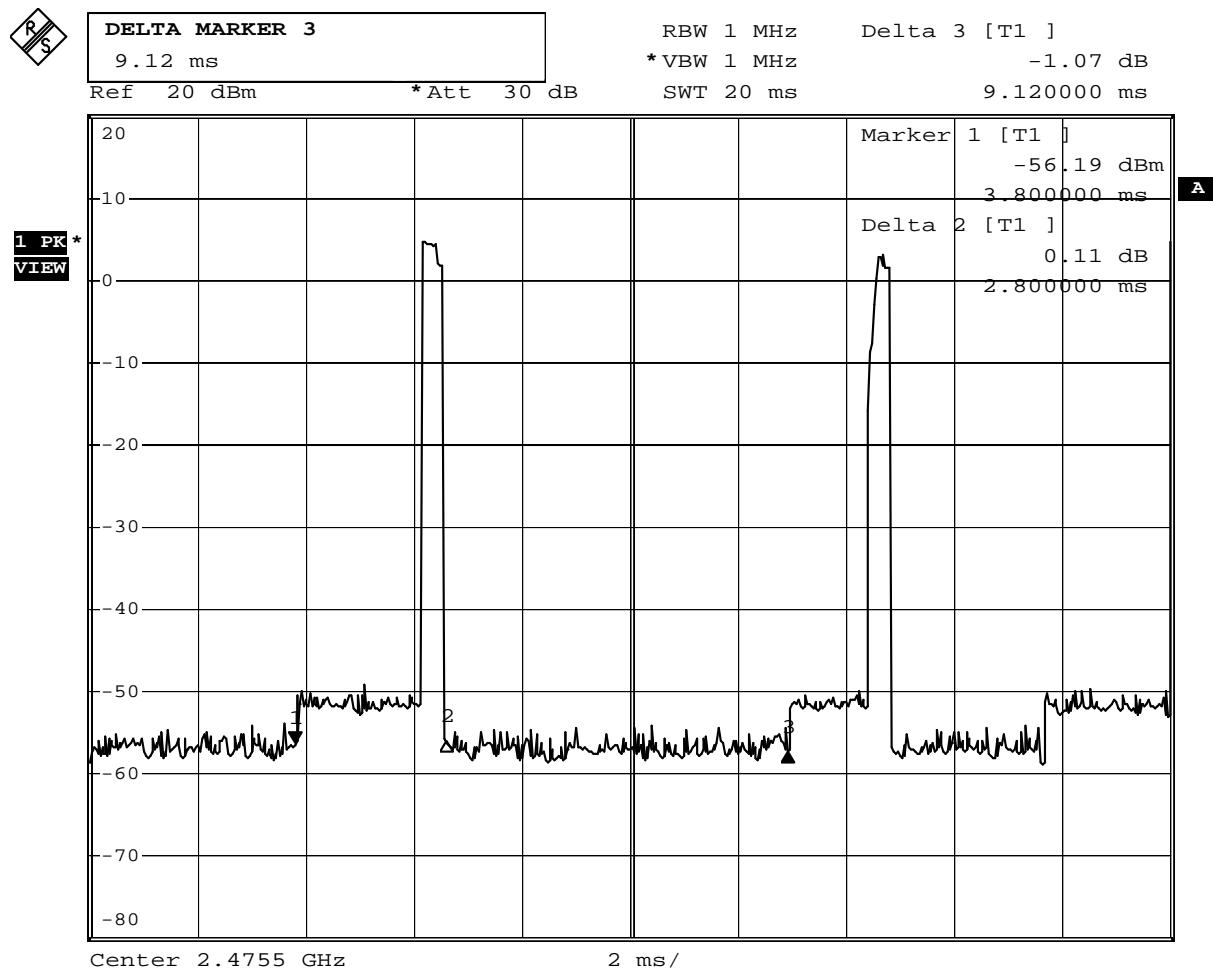
Test Result: The Average Occupancy Time of Each Highest, Middle and Lowest Channel Is Less

Than 0.4sec , And Corresponds to The Standard .



Hop rate-2440.5MHz

Date: 17.FEB.2011 11:33:43

Hop rate-2475.5MHz

Date: 17.FEB.2011 10:48:37

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