Test Report

Industry Canada RSS-Gen Issue 3/RSS-210 Issue 8
FCC Part15 Subpart C

Product Name	:	DWAM83 Wireless Audio Module
Model No.	:	1492549
FCC ID	:	AK81492549
IC	:	409B-1492549

Applicant	:	Sony Corporation
Address	:	1-7-1 Konan, Minato-ku, Tokyo 108-0075 Japan

Date of Receipt	:	17/06/2013
Test Date	:	17/06/2013~25/06/2013
Issued Date	:	12/07/2013
Report No.	:	136S028R-RF-US-P05V01
Report Version	:	V1.0

Test Report Certification

Issued Date : 12/07/2013
Report No. : 136S028R-RF-US-P05V01

QuieTek

Product Name	:	DWAM83 Wireless Audio Module
Applicant	:	Sony Corporation
Address	:	1-7-1 Konan, Minato-ku, Tokyo 108-0075 Japan
Manufacturer	:	Weifang GoerTek Electronics Co., Ltd
Address	:	Gaoxin 2 Road,Free Trade Zone, Weifang, Shandong, 261205, P.R. China
Model No.	:	1492549
FCC ID	:	AK81492549
IC	:	409B-1492549
EUT Voltage	:	DC 3.3V
Brand Name	:	Sony
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C: 2012 ANSI C63.4: 2009; KDB558074 Industry Canada RSS-Gen Issue 3/RSS-210 Issue 8
Test Result	:	Complied
Performed Location	:	Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392; IC Lab Code: 4075B

Documented By	:	Alice Ni
Reviewed By	:	Jame Yuan
Approved By	:	Robin Wu

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	DWAM83 Wireless Audio Module
Brand Name	Sony
Model No.	1492549
EUT Voltage	DC 3.3V
Frequency Range	2412 ~ 2464 MHz, 5180 ~ 5240 MHz, 5736 ~ 5814 MHz
Channel Number	9
Type of Modulation	QPSK
Channel Control	Auto
Antenna Delivery	1*Tx + 1*Rx
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

Antenna List

RF Port	Antenna	Manufacturer	Peak Gain
A#	Printed Antenna	Goertek	1.57dBi for 2.4GHz, 2.82dBi for 5.2GHz, 3dBi for 5.8GHz
B#	Printed Antenna	Goertek	0.82dBi for 2.4GHz, 0.67dBi for 5.2GHz, 2.8dBi for 5.8GHz

Note: The EUT just transmit in A or B antenna port alone.

Channel List

2.4GHz Band Center Frequency			
Channel	2412MHz	2438MHz	2464MHz
5.2GHz Band Center Frequency			
Channel	5180MHz	5210MHz	5240MHz
5.2GHz Band Center Frequency			
Channel	5736MHz	5762MHz	5814MHz

1.2. Mode of Operation

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

Test Mode	Mode 1: Transmit
	Mode 2: Receive

Note:

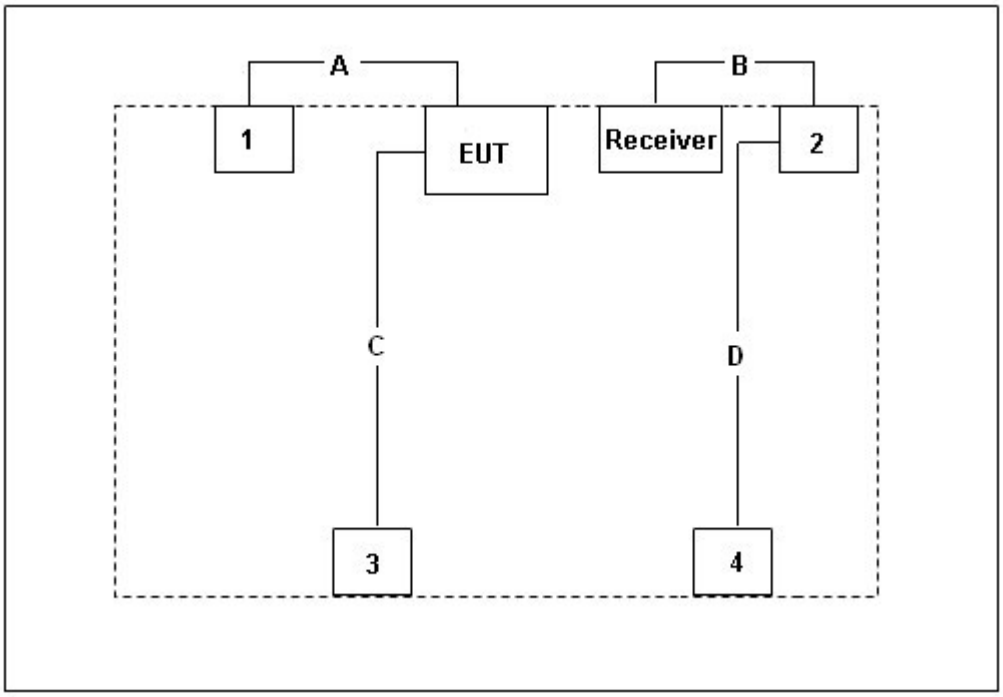
1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. This device is a composite device in accordance with Part 15 Subpart B regulations. The function for the receiver was measured and made a test report that the report number is 136S028R-RF-US-P01V02.

1.3. 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	Notebook	ASUS	N80V	8BN0AS226971468	Non-Shielded, 1.8m
2	Notebook	Dell	PP19L	JH097A01	N/A
3	USB Mouse	DELL	MOC5UO	10D00JJL	N/A
4	USB Mouse	DELL	MOC5UO	10D00JJL	N/A

1.4. Configuration of Tested System

Connection Diagram


Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 0.3m
B	USB Cable	Shielded, 0.3m
C	USB Cable	Shielded, 0.8m
D	USB Cable	Shielded, 0.8m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Execute some commands on the PC provided by applicant.
4	Setup the test channel and the test mode press “Write” to start continue transmit or receive.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.207	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.209	Yes	No
RF Antenna Conducted Spurious	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(d)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2011 15.247(d)	Yes	No
Operation Frequency Range of 20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2011 15.215(c)	Yes	No
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(a)(2)	Yes	No
Power Output	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(b)(3)	Yes	No
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2011 Section 15.247(e)	Yes	No

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	RSS-Gen Issue 3 December 2010 Section 7.2.2	Yes	No
Radiated Emission	RSS-210 Issue 8 December 2010 Section 2.7 Table 2 and Table 3	Yes	No
RF Antenna Conducted Spurious	RSS-210 Issue 8 December 2010 Section A8.5	Yes	No
Radiated Emission Band Edge	RSS-210 Issue 8 December 2010 Section A8.5	Yes	No
Occupied Bandwidth	RSS-Gen Issue 3 December 2010 Section 4.6.1 and 4.6.2 RSS-210 Issue 8 December 2010 Section A8.2(1)	Yes	No
Power Output	RSS-210 Issue 8 December 2010 Section A8.4(4)	Yes	No
Power Spectral Density	RSS-210 Issue 8 December 2010 Section A8.2(2)	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

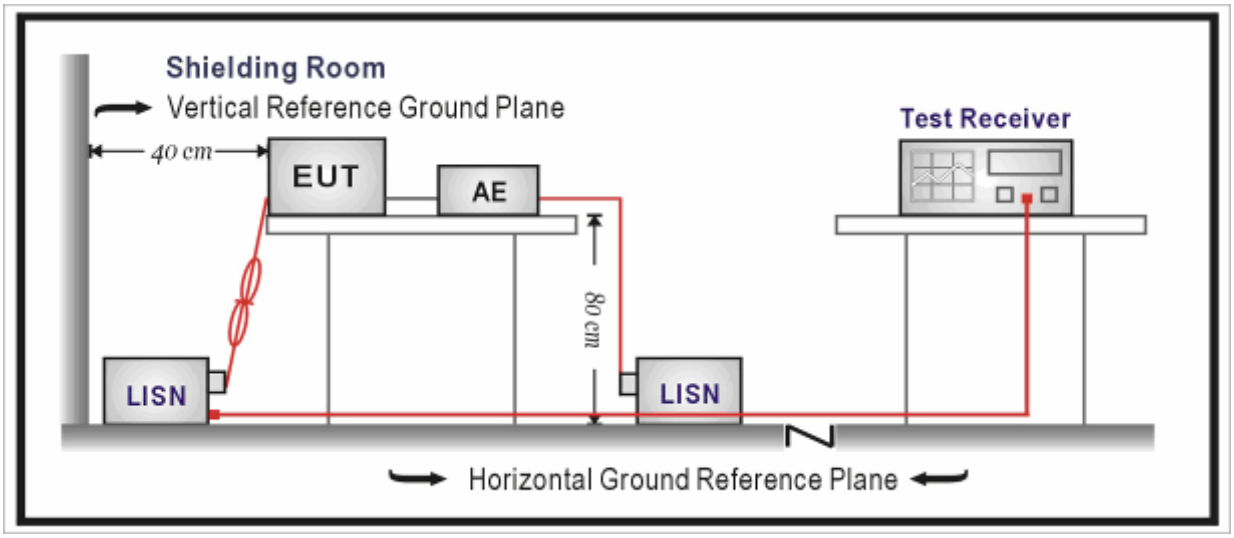
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100906	2014.01.07
Two-Line V-Network	R&S	ENV216	101043	2014.03.30
Two-Line V-Network	R&S	ENV216	101044	2013.09.17
50ohm Termination	SHX	TF2	07081401	2013.09.17
50ohm Termination	SHX	TF2	07081402	2013.09.17
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2014.01.10

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

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

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to 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.

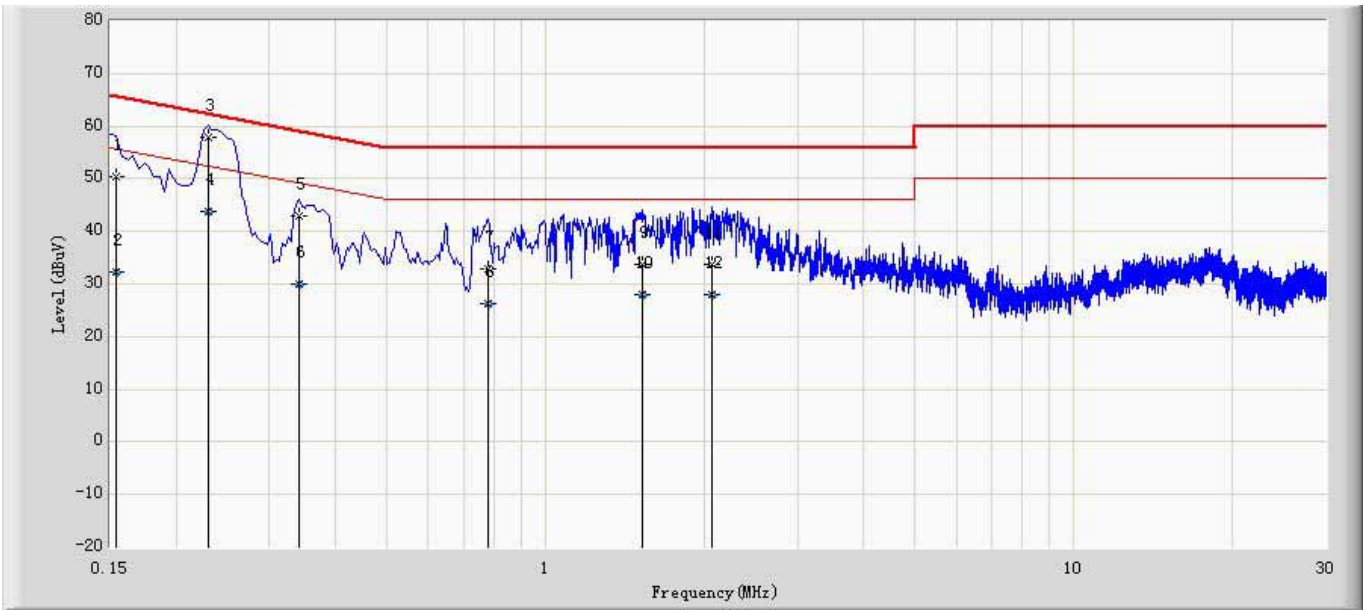
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

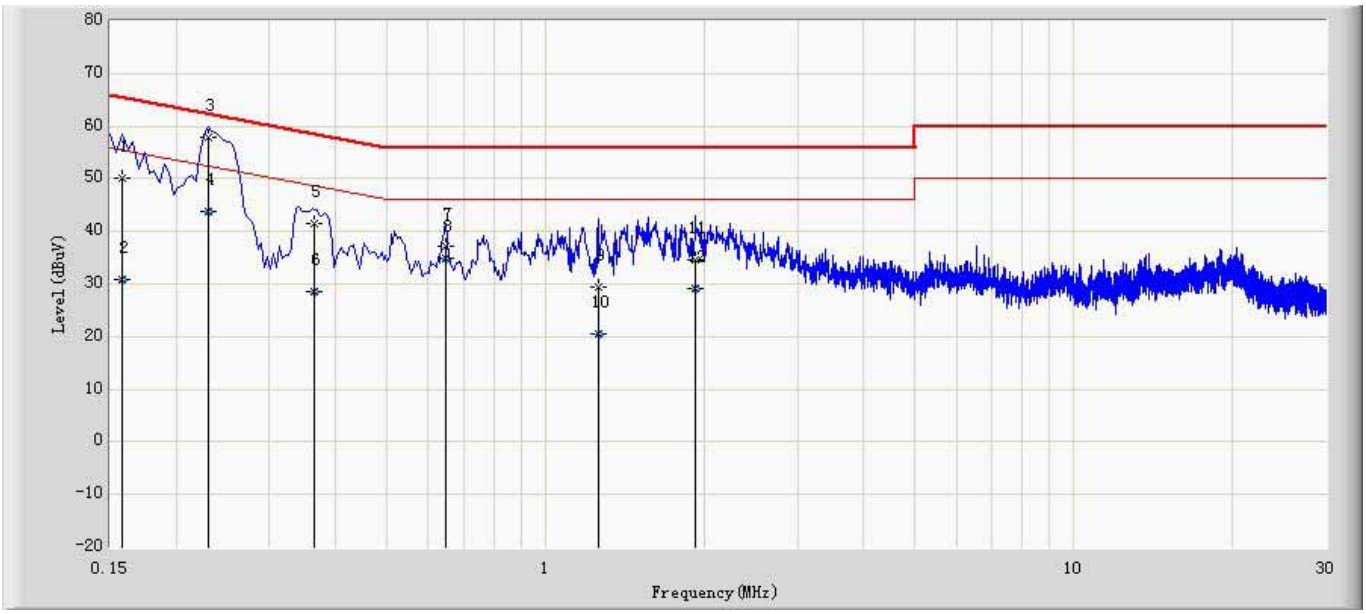
3.6. Test Result

Engineer: Brgant	
Site: TR1	Time: 2013/06/17 - 09:19
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: DWAM83 Wireless Audio Module	Power: AC 120V/60Hz
Note: Normal Operation	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.154	50.282	40.435	-15.500	65.781	9.846	QP
2		0.154	32.306	22.460	-23.475	55.781	9.846	AV
3	*	0.230	57.775	47.910	-4.675	62.450	9.864	QP
4		0.230	43.867	34.003	-8.582	52.450	9.864	AV
5		0.342	42.962	33.082	-16.193	59.155	9.879	QP
6		0.342	30.077	20.198	-19.078	49.155	9.879	AV
7		0.778	32.778	22.949	-23.222	56.000	9.829	QP
8		0.778	26.276	16.446	-19.724	46.000	9.829	AV
9		1.526	33.726	23.928	-22.274	56.000	9.799	QP
10		1.526	27.912	18.113	-18.088	46.000	9.799	AV
11		2.070	33.791	24.001	-22.209	56.000	9.790	QP
12		2.070	28.081	18.291	-17.919	46.000	9.790	AV

Engineer: Brgant	
Site: TR1	Time: 2013/06/22 - 21:20
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: DWAM83 Wireless Audio Module	Power: AC 120V/60Hz
Note: Normal Operation	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.158	50.020	40.175	-15.548	65.568	9.846	QP
2		0.158	30.804	20.958	-24.765	55.568	9.846	AV
3	*	0.230	58.000	48.136	-4.449	62.450	9.864	QP
4		0.230	43.799	33.935	-8.650	52.450	9.864	AV
5		0.366	41.565	31.683	-17.026	58.591	9.883	QP
6		0.366	28.529	18.646	-20.063	48.591	9.883	AV
7		0.646	37.132	27.274	-18.868	56.000	9.859	QP
8		0.646	34.795	24.937	-11.205	46.000	9.859	AV
9		1.258	29.385	19.586	-26.615	56.000	9.799	QP
10		1.258	20.505	10.706	-25.495	46.000	9.799	AV
11		1.922	34.638	24.844	-21.362	56.000	9.793	QP
12		1.922	29.088	19.295	-16.912	46.000	9.793	AV

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2014.03.30
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.10.15
Coaxial Cable	Huber+Suhner	RG 214	AC2-C	2014.03.01
Temperature/Humidity Meter	zhicheng	ZC1-2	AC2-TH	2014.01.09
EMI Test Receiver	R&S	ESCI	100573	2014.03.30

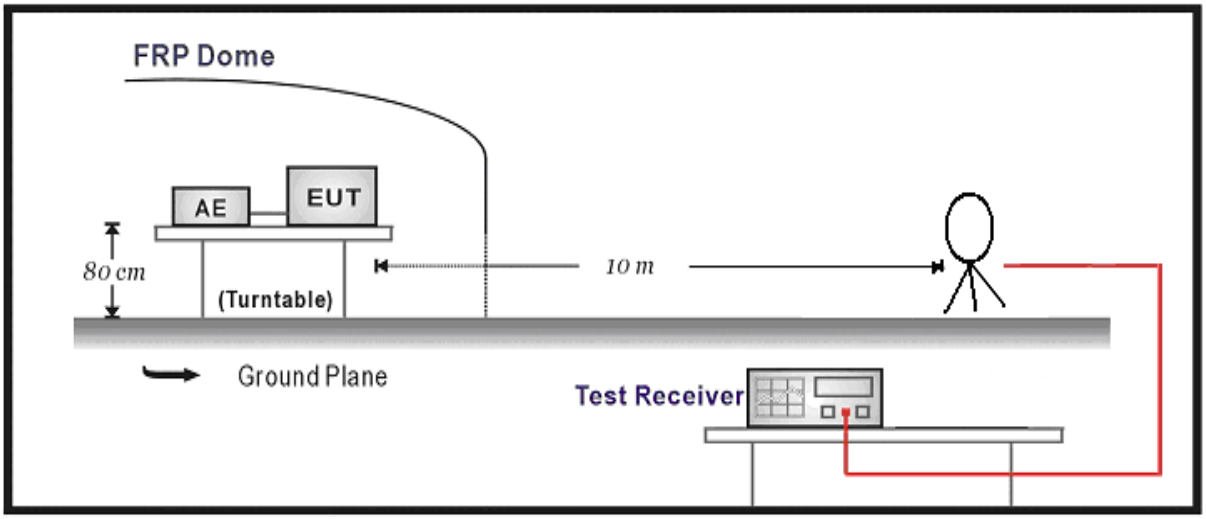
Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2014.05.03
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Temperature/Humidity Meter	zhicheng	ZC1-2	AC5-TH	2014.01.11
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2014.01.10

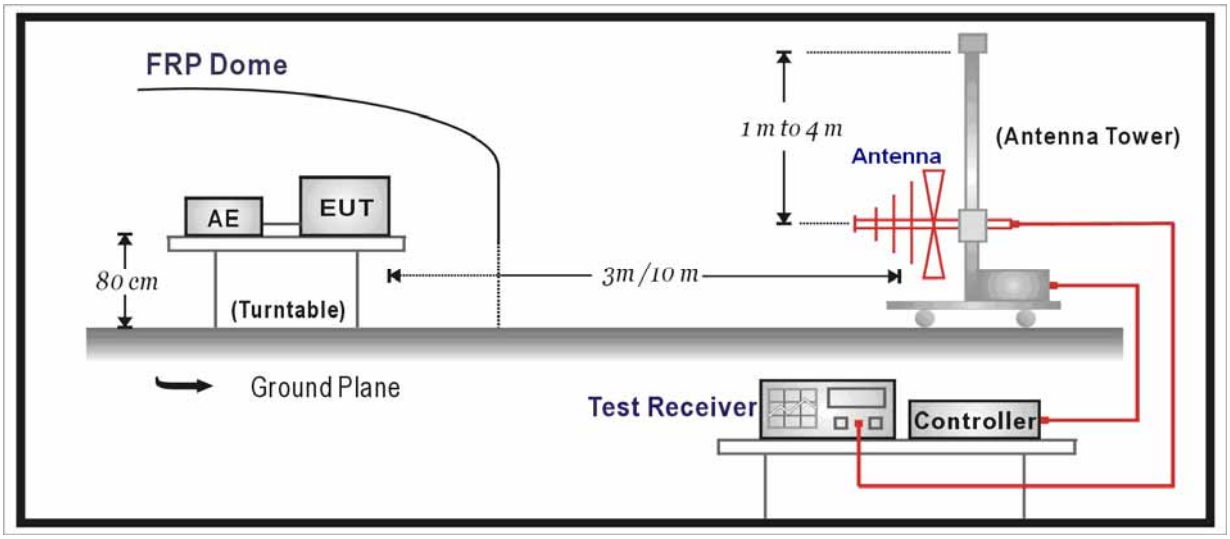
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

4.2. Test Setup

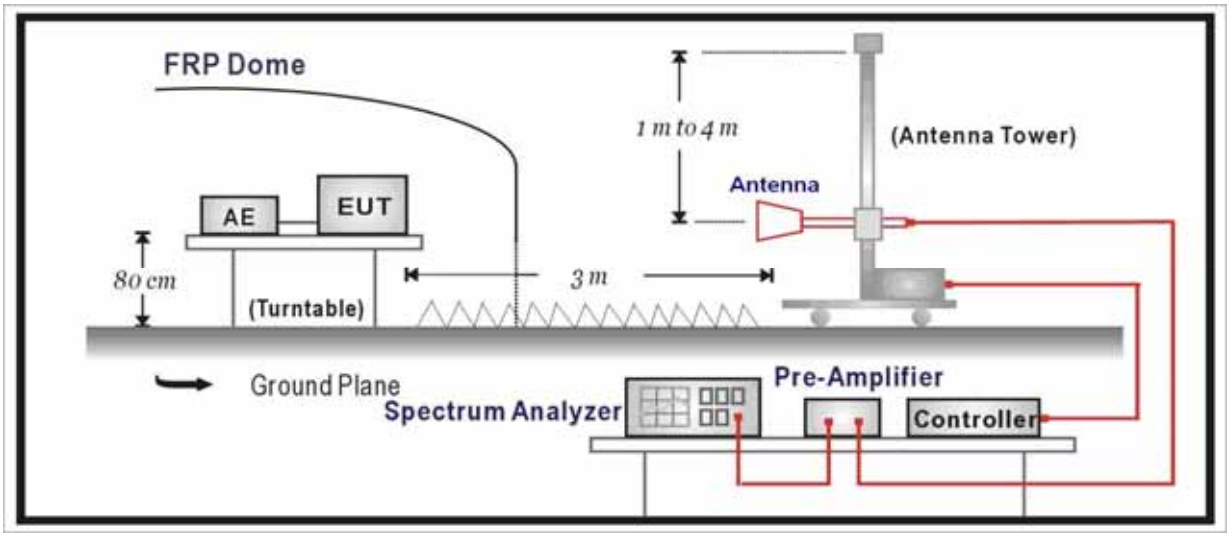
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

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

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

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to KDB558074 and KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 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 is scanned from 1 meter to 4 meters to find out the maximum emission level. This

is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

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

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60 degrees for H-plane and 90 degrees for E-plane.

4.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB

below 1G is defined as ± 3.8 dB

4.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:

Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;

Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Measure Level = Reading Level + Cable Loss + Antenna Factor - Preamplifier Gain

Chain	FR	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant A	2412	H	4824.0	44.5	-8.3	36.2	54(note3)	-17.8	PK
		V	4825.0	47.8	-8.4	39.4	54(note3)	-14.6	PK
		H	7236.0	41.0	-3.4	37.6	54(note3)	-16.4	PK
		V	7236.0	41.3	-3.4	37.9	54(note3)	-16.1	PK
		H	9648.0	35.7	2.6	38.3	54(note3)	-15.7	PK
		V	9648.0	35.7	2.6	38.3	54(note3)	-15.7	PK
	2438	H	4876.0	50.9	-8.3	42.6	54(note3)	-11.4	PK
		V	4876.0	46.5	-8.3	38.2	54(note3)	-15.8	PK
		H	7314.0	43.6	-3.3	40.3	54(note3)	-13.7	PK
		V	7314.0	43.3	-3.3	40.0	54(note3)	-14.0	PK
		H	9752.0	36.8	2.7	39.5	54(note3)	-14.5	PK
		V	9752.0	38.2	2.8	41.0	54(note3)	-13.0	PK
	2464	H	4928.0	44.2	-8.4	35.8	54(note3)	-18.2	PK
		V	4928.0	43.7	-8.3	35.4	54(note3)	-18.6	PK
		H	7392.0	40.7	-3.0	37.7	54(note3)	-16.3	PK
		V	7392.0	41.1	-3.0	38.1	54(note3)	-15.9	PK
		H	9856.0	34.4	3.1	37.5	54(note3)	-16.5	PK
		V	9856.0	34.5	3.2	37.7	54(note3)	-16.3	PK
	5736	H	11472.0	34.7	5.9	40.6	54(note3)	-13.4	PK
		V	11472.0	34.3	5.8	40.1	54(note3)	-13.9	PK
		H	17208.0	33.5	10.4	43.9	54(note3)	-10.1	PK
		V	17208.0	34.3	10.5	44.8	54(note3)	-9.2	PK
	5762	H	11524.0	35.1	6.2	41.3	54(note3)	-12.7	PK
		V	11524.0	34.3	6.1	40.4	54(note3)	-13.6	PK
		H	17286.0	34.8	10.5	45.3	54(note3)	-8.7	PK
		V	17286.0	35.0	10.6	45.6	54(note3)	-8.4	PK
	5814	H	11628.0	34.6	6.5	41.1	54(note3)	-12.9	PK
		V	11628.0	34.6	6.4	41.0	54(note3)	-13.0	PK

		H	17442.0	32.3	10.5	42.8	54(note3)	-11.2	PK
		V	17442.0	32.5	10.6	43.1	54(note3)	-10.9	PK
Ant B	2412	H	4825.0	51.4	-8.3	43.1	54(note3)	-10.9	PK
		V	4825.0	49.1	-8.4	40.7	54(note3)	-13.3	PK
		H	7236.0	43.1	-3.4	39.7	54(note3)	-14.3	PK
		V	7236.0	42.6	-3.4	39.2	54(note3)	-14.8	PK
		H	9648.0	37.1	2.6	39.7	54(note3)	-14.3	PK
		V	9648.0	38.1	2.6	40.7	54(note3)	-13.3	PK
	2438	H	4876.0	50.8	-8.3	42.5	54(note3)	-11.5	PK
		V	4876.0	48.5	-8.3	40.2	54(note3)	-13.8	PK
		H	7314.0	43.4	-3.3	40.1	54(note3)	-13.9	PK
		V	9752.0	36.7	2.7	39.4	54(note3)	-14.6	PK
		H	7314.0	42.8	-3.3	39.5	54(note3)	-14.5	PK
		V	9752.0	38.4	2.8	41.2	54(note3)	-12.8	PK
	2464	H	4928.0	44.3	-8.4	35.9	54(note3)	-18.1	PK
		V	4928.0	44.0	-8.3	35.7	54(note3)	-18.3	PK
		H	7392.0	40.8	-3.0	37.8	54(note3)	-16.2	PK
		V	7392.0	40.2	-3.0	37.2	54(note3)	-16.8	PK
		H	9856.0	34.1	3.1	37.2	54(note3)	-16.8	PK
		V	9856.0	35.3	3.2	38.5	54(note3)	-15.5	PK
	5736	H	11472.0	33.8	5.9	39.7	54(note3)	-14.3	PK
		V	11472.0	34.5	5.8	40.3	54(note3)	-13.7	PK
		H	17208.0	33.4	10.4	43.8	54(note3)	-10.2	PK
		V	17208.0	34.0	10.5	44.5	54(note3)	-9.5	PK
	5762	H	11524.0	34.3	6.2	40.5	54(note3)	-13.5	PK
		V	11524.0	35.0	6.1	41.1	54(note3)	-12.9	PK
		H	17286.0	34.7	10.5	45.2	54(note3)	-8.8	PK
		V	17286.0	33.8	10.6	44.4	54(note3)	-9.6	PK
	5814	H	11628.0	34.9	6.5	41.4	54(note3)	-12.6	PK
		V	11628.0	34.9	6.4	41.3	54(note3)	-12.7	PK
		H	17442.0	32.7	10.5	43.2	54(note3)	-10.8	PK
		V	17442.0	33.1	10.6	43.7	54(note3)	-10.3	PK

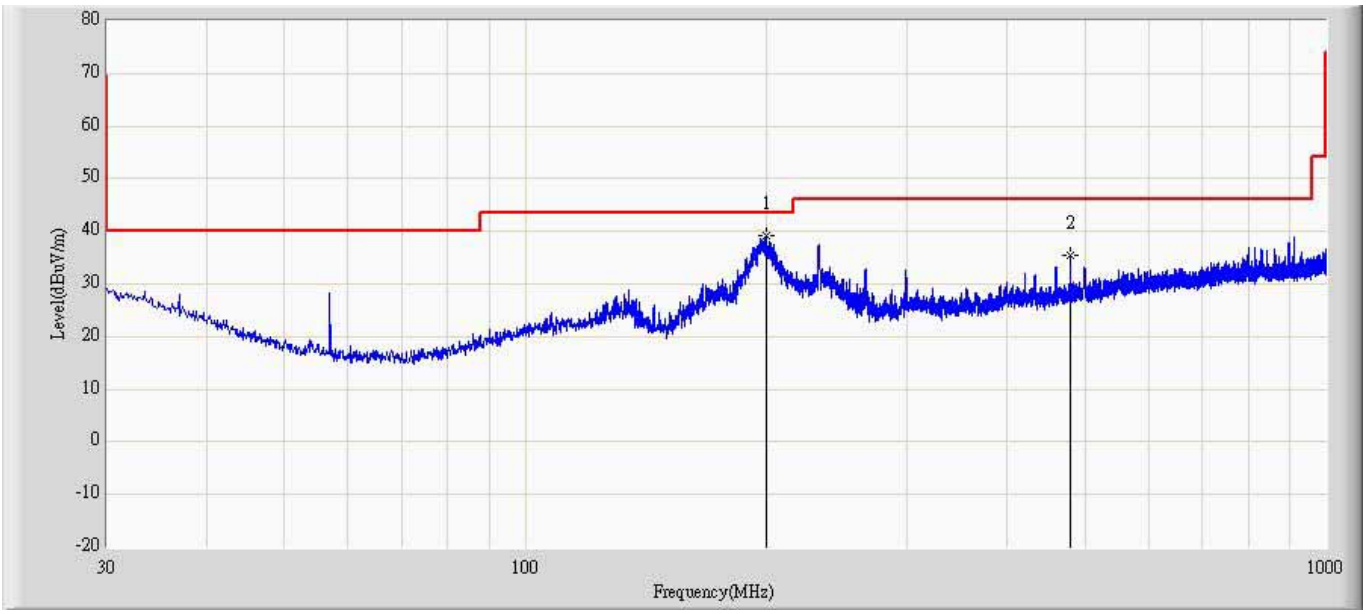
Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

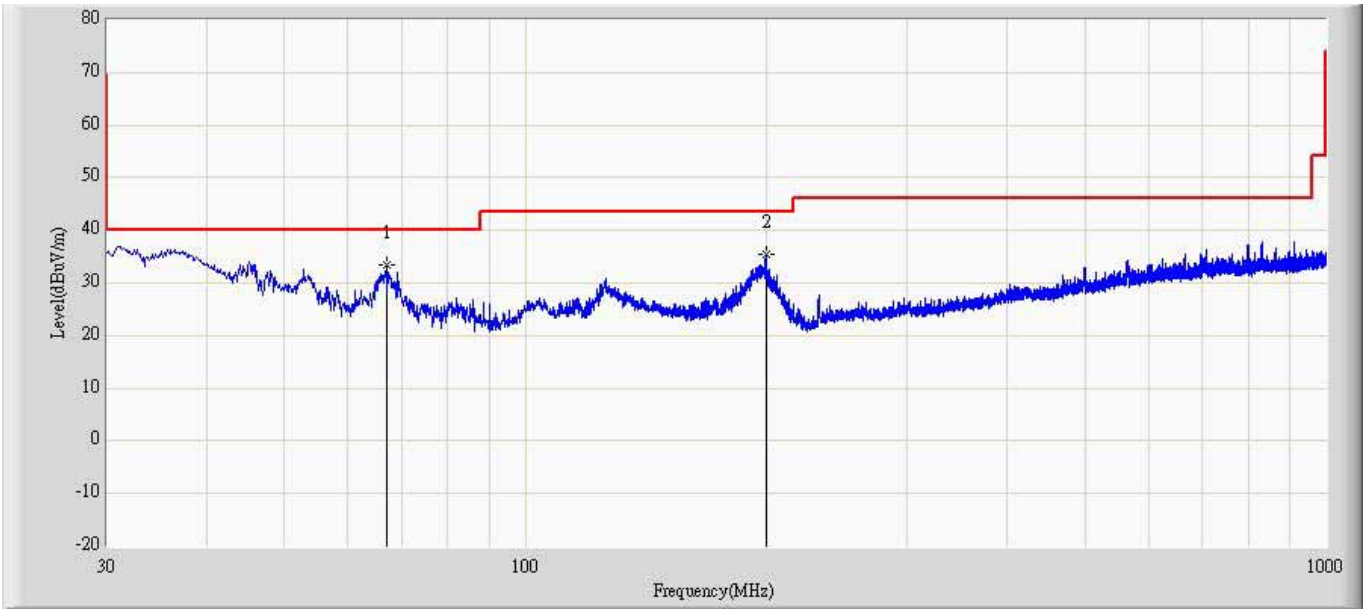
The worst case of Radiated Emission below 1GHz:

Site: AC2	Time: 2013/06/17 - 10:20
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: AC 120V/60Hz
Note: Mode1: Transmit	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	199.750	39.162	23.051	-4.338	43.500	16.111	QP
2		480.080	35.551	10.355	-10.449	46.000	25.196	QP

Site: AC2	Time: 2013/06/17 - 10:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: AC 120V/60Hz
Note: Mode1: Transmit	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	66.981	33.380	21.664	-6.620	40.000	11.716	QP
2		199.871	35.358	19.250	-8.142	43.500	16.109	QP

5. RF Antenna Conducted Spurious

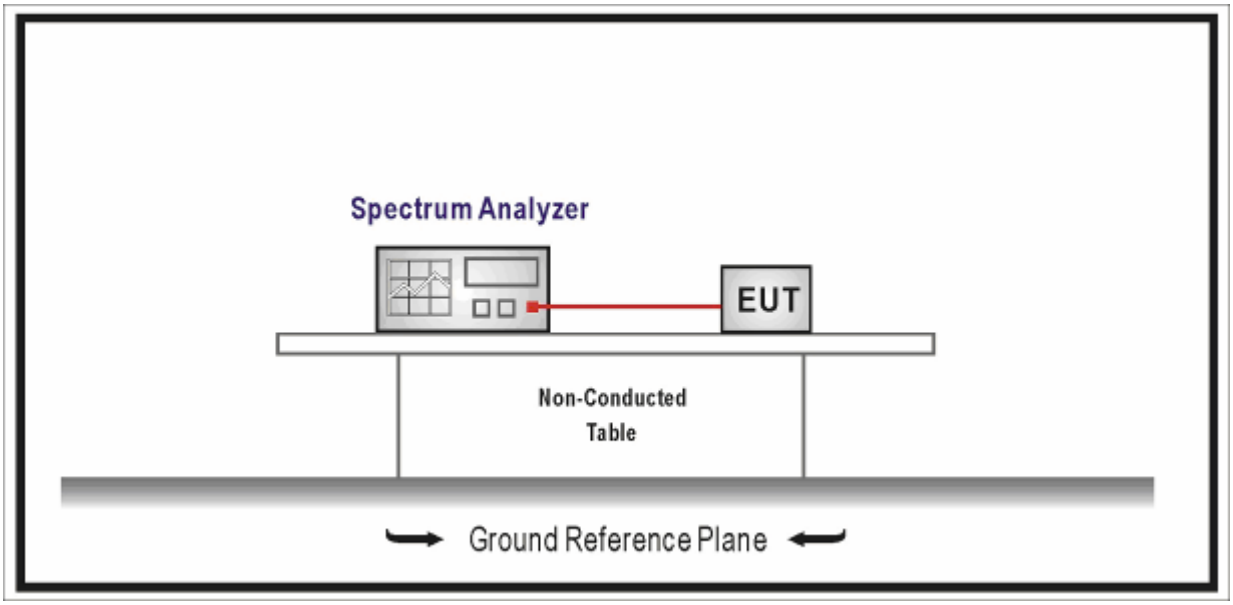
5.1. Test Equipment

Operation Frequency Range of 20dB Bandwidth /TR8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014/01/21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2014/05/08

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2. Test Setup



5.3. Limit

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.

5.4. Test Procedure

The EUT was tested according to KDB558074 and KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

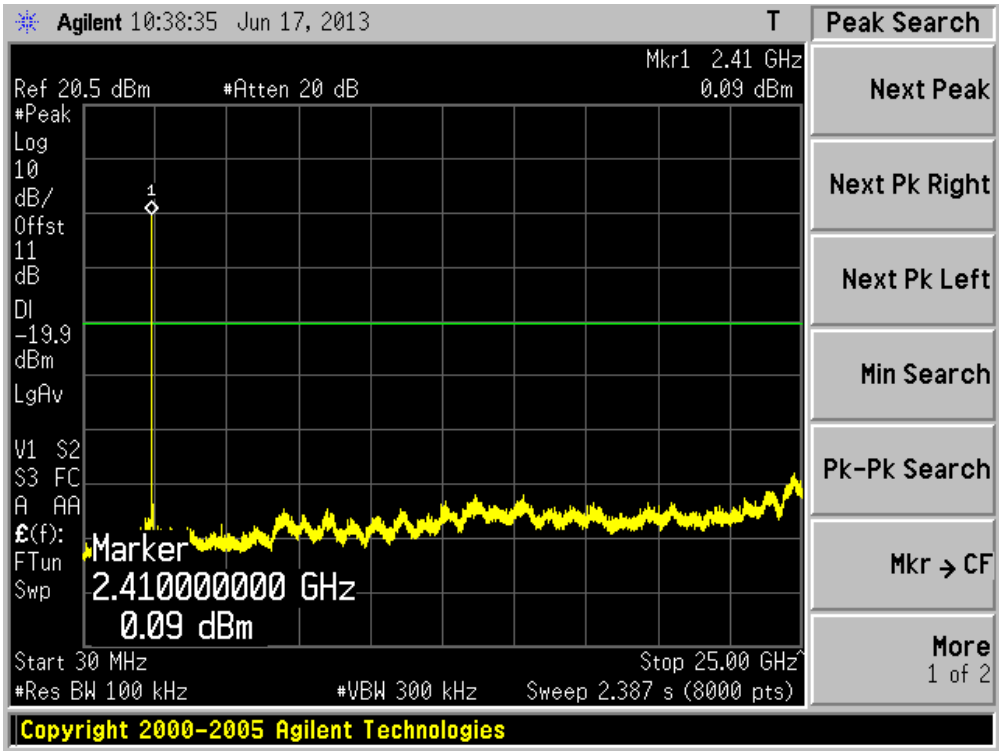
5.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

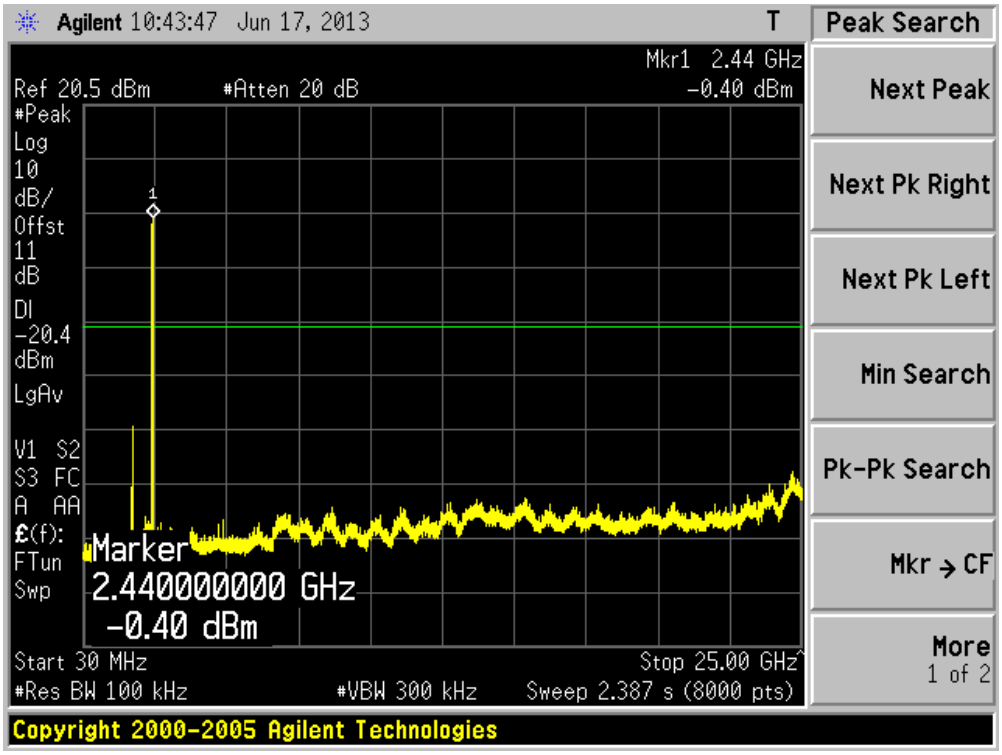
5.6. Test Result

Product	:	DWAM83 Wireless Audio Module
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant A

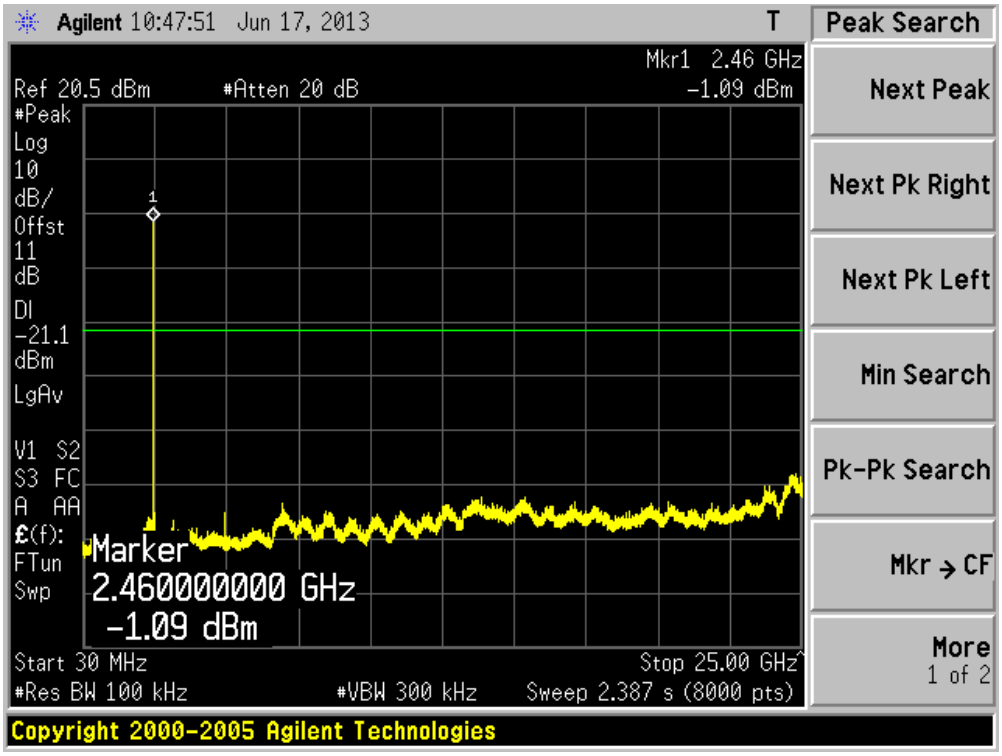
2412MHz



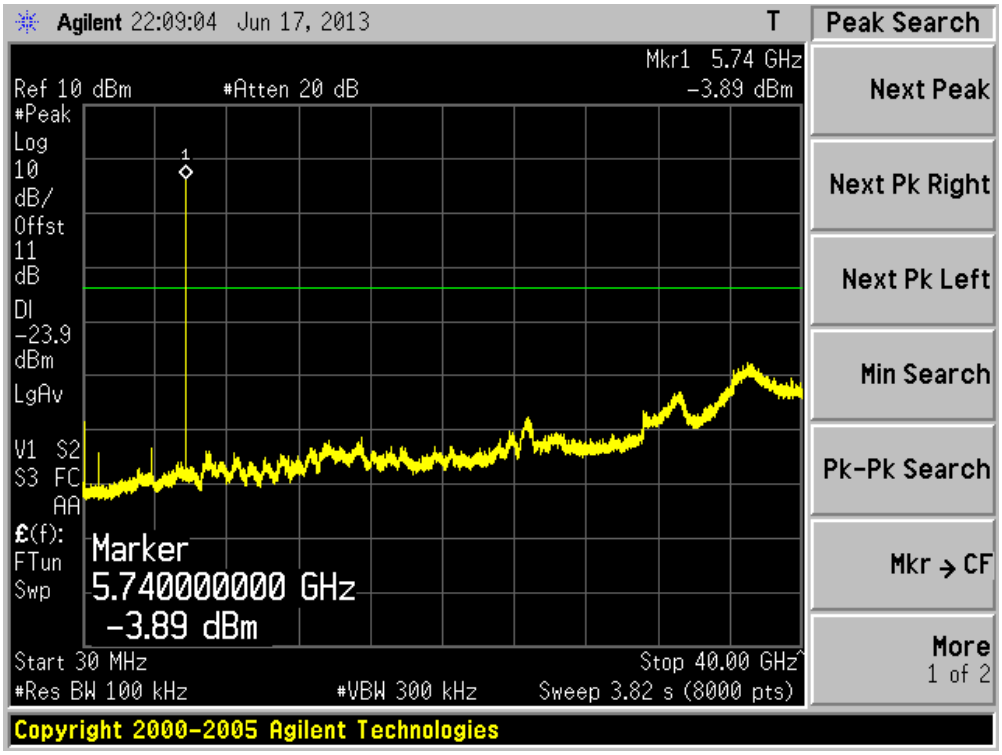
2438MHz



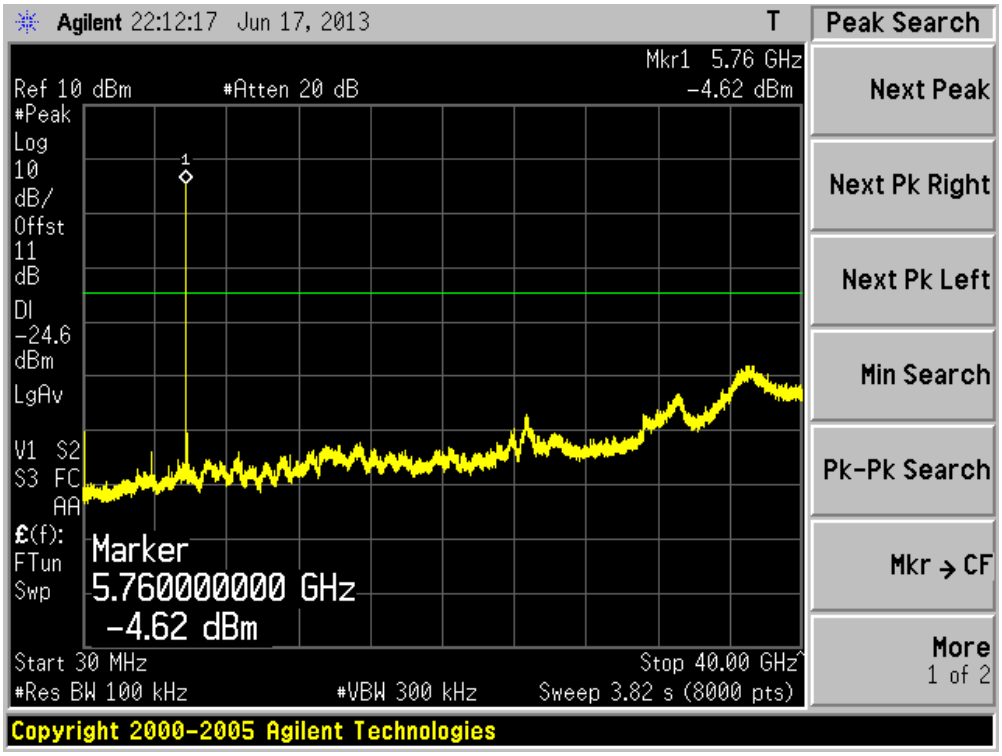
2464MHz



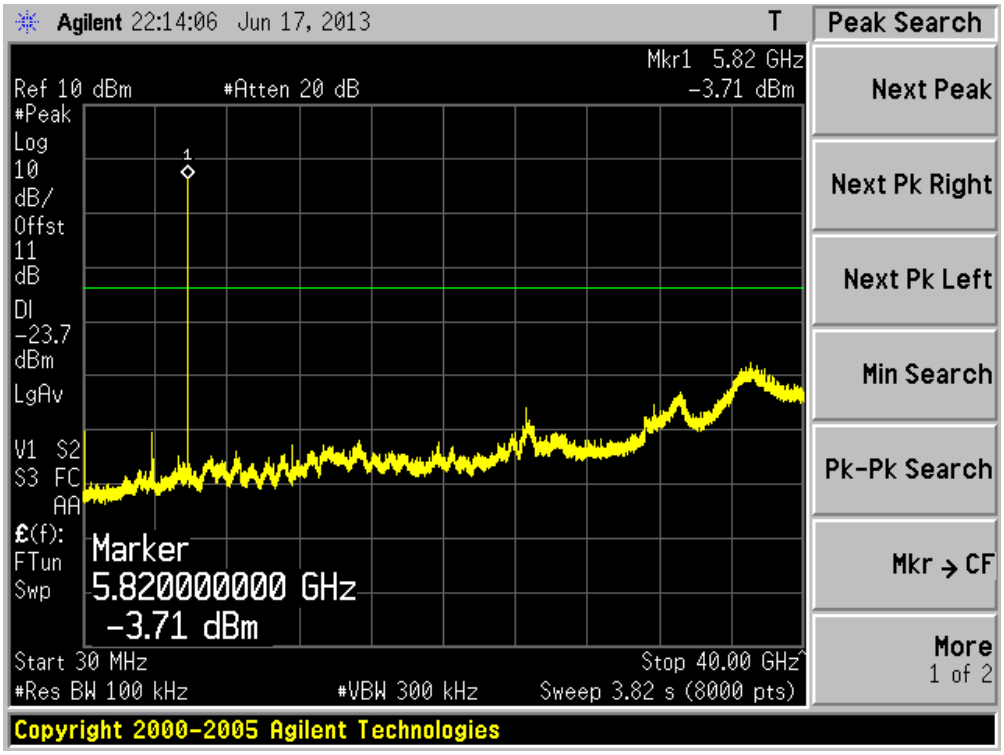
5736MHz



5762MHz

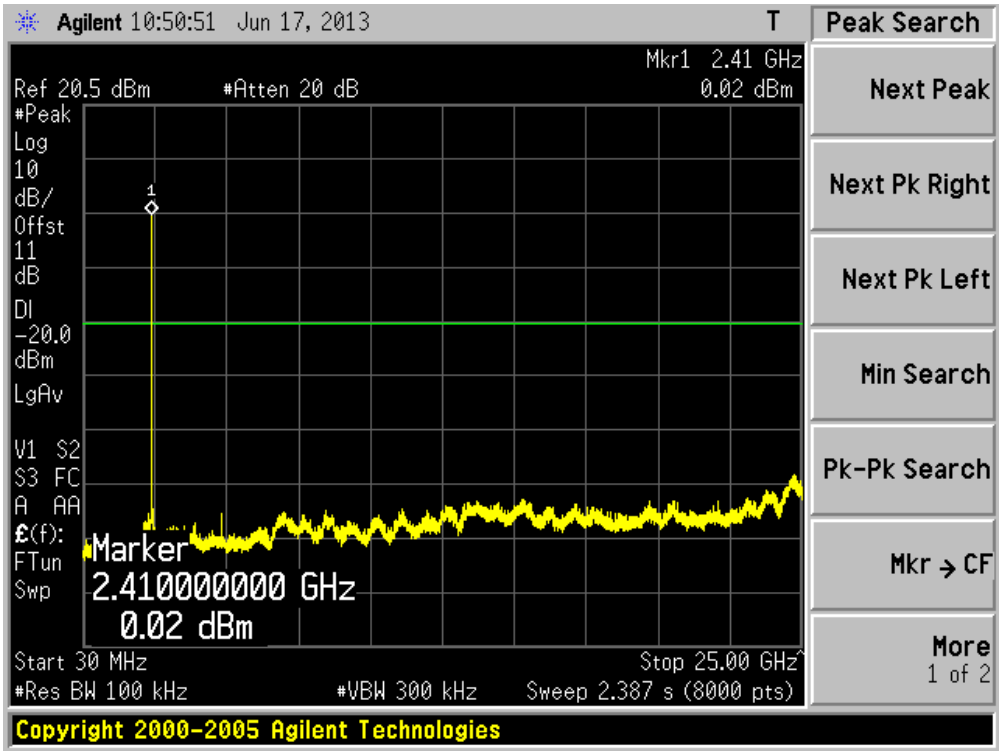


5814MHz

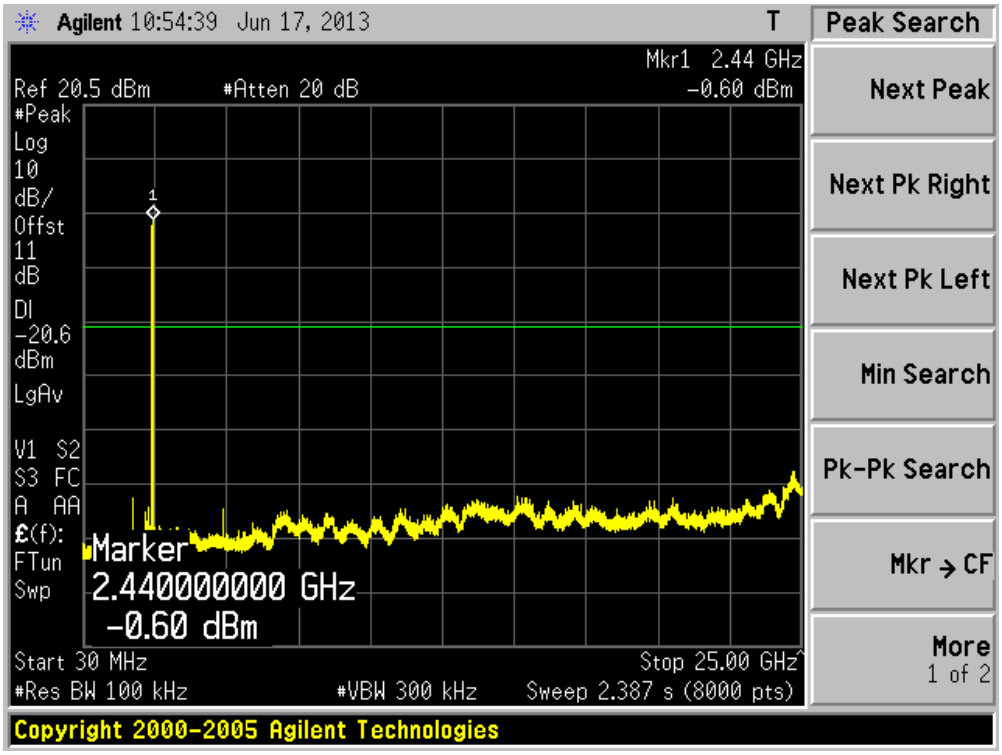

Agilent 22:14:06 Jun 17, 2013
T
Peak Search
Mkr1 5.82 GHz
Ref 10 dBm
#Atten 20 dB
-3.71 dBm
Next Peak
#Peak
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-23.7
dBm
Next Pk Left
LgAv
Min Search
V1 S2
S3 FC
AA
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
Marker
5.820000000 GHz
-3.71 dBm
More
1 of 2
Start 30 MHz
Stop 40.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 3.82 s (8000 pts)
Copyright 2000-2005 Agilent Technologies

Product	:	DWAM83 Wireless Audio Module
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit (Ant B)

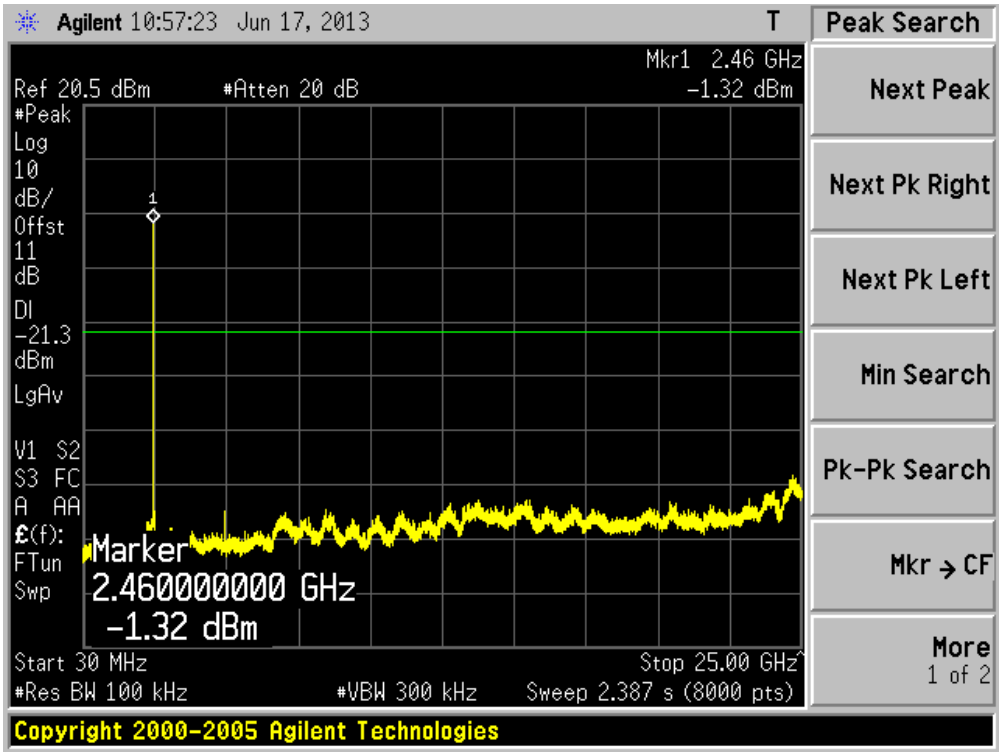
2412MHz



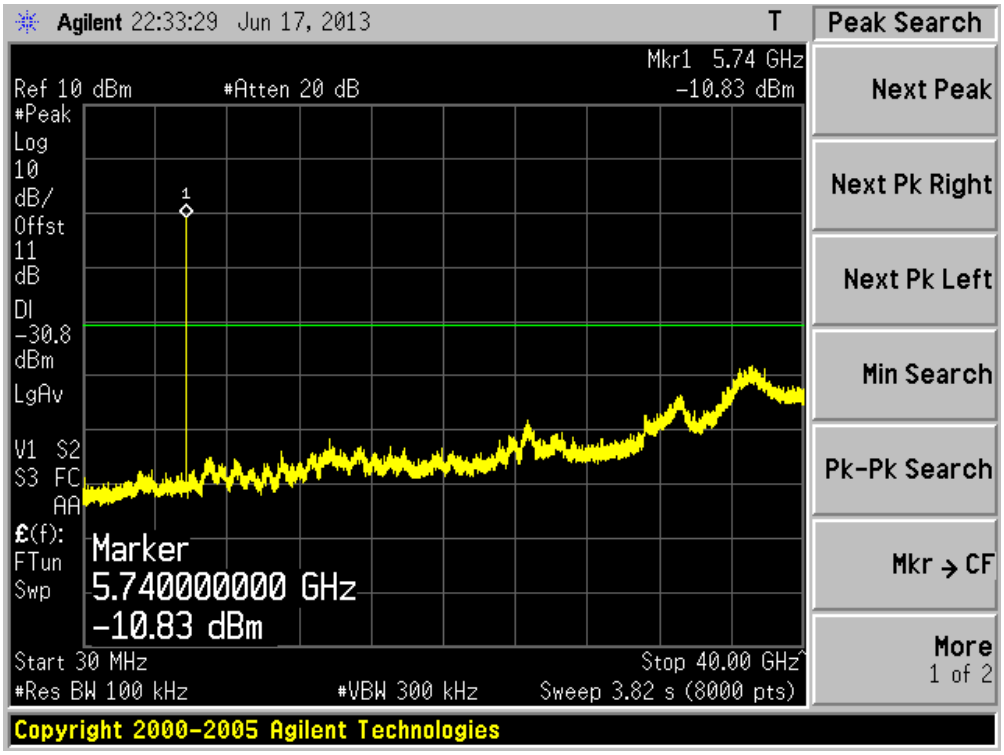
2438MHz



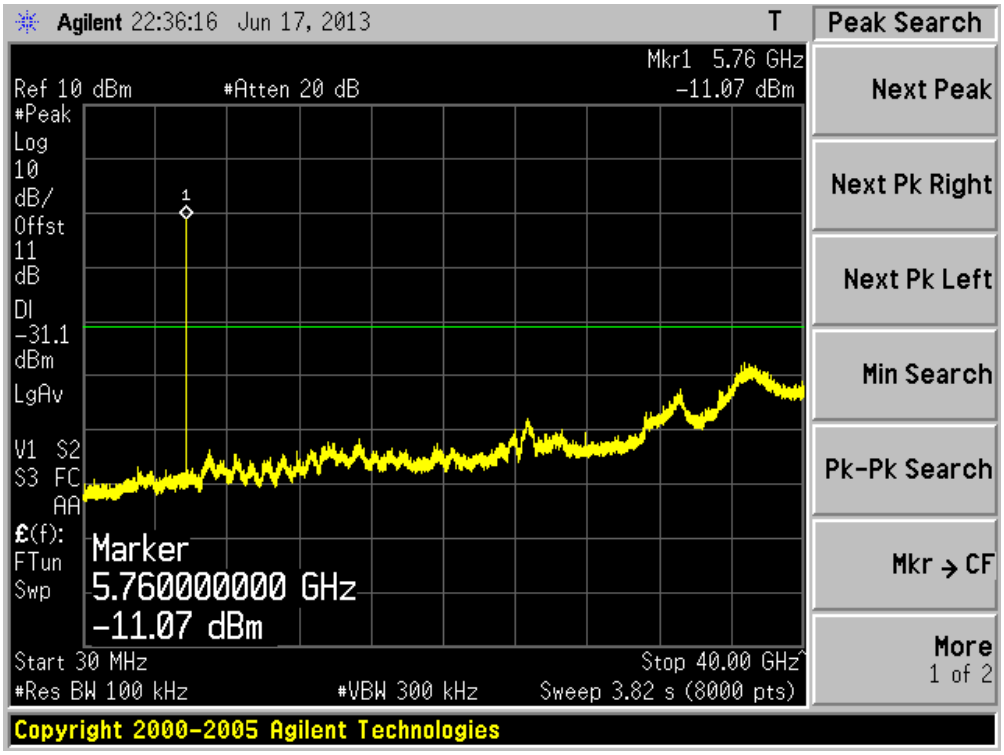
2464MHz



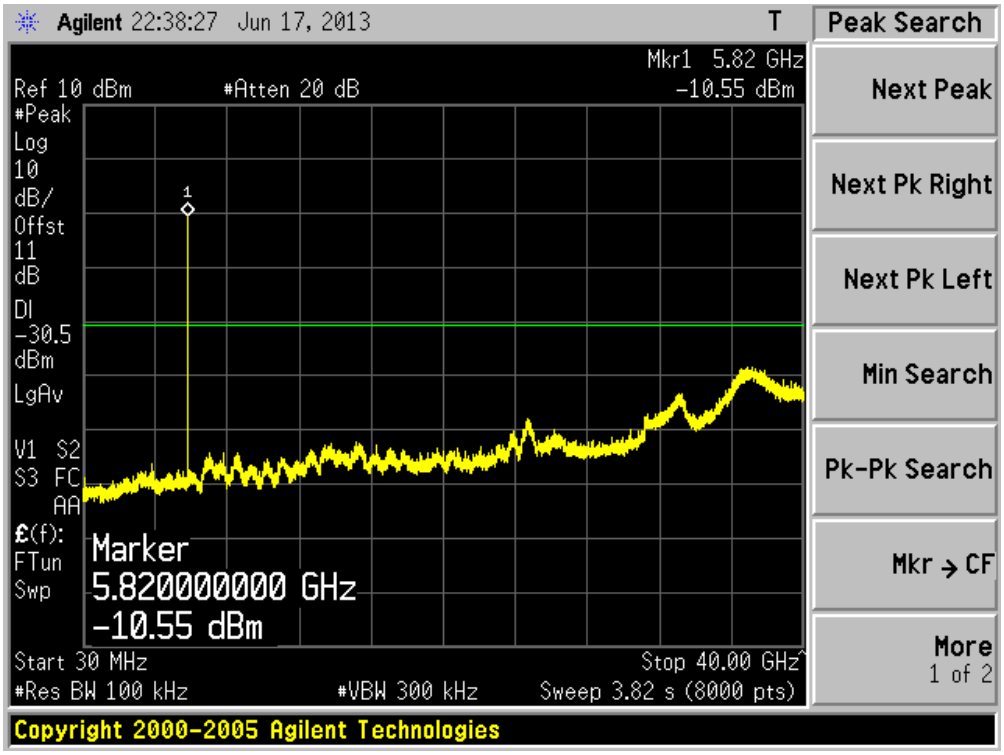
5736MHz



5762MHz



5814MHz


Agilent 22:38:27 Jun 17, 2013
T
Peak Search
Mkr1 5.82 GHz
Ref 10 dBm
#Atten 20 dB
-10.55 dBm
Next Peak
#Peak
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-30.5
dBm
Next Pk Left
LgAv
Min Search
V1 S2
S3 FC
AA
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
Marker
5.820000000 GHz
-10.55 dBm
More
1 of 2
Start 30 MHz
Stop 40.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 3.82 s (8000 pts)
Copyright 2000-2005 Agilent Technologies

6. Radiated Emission Band Edge

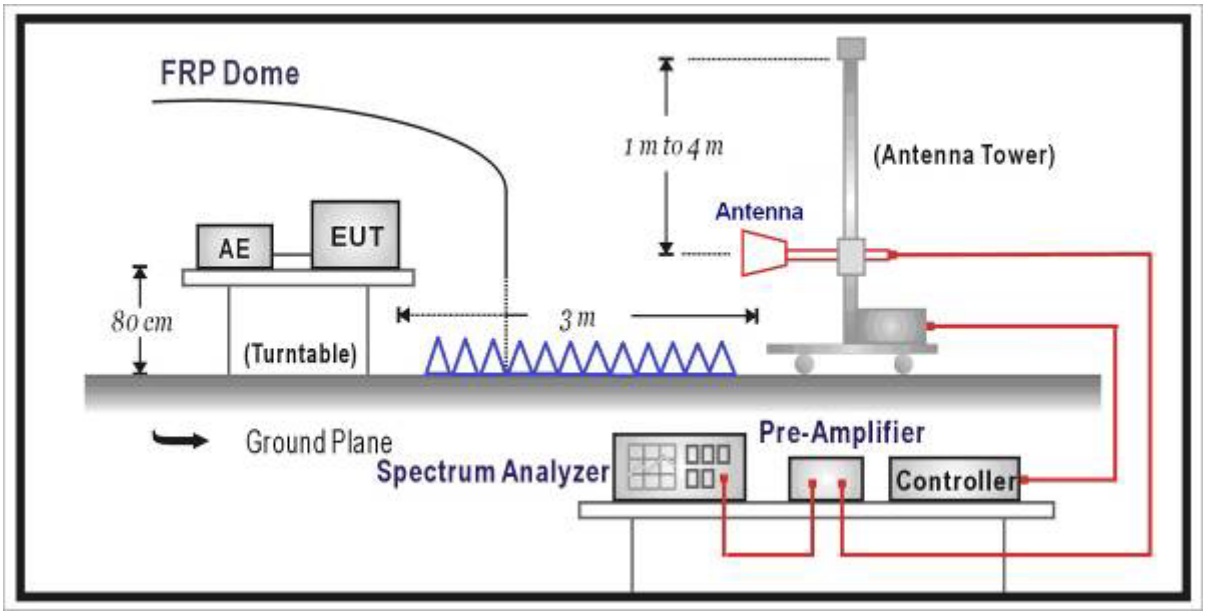
6.1. Test Equipment

☒Radiated Emission Band Edge / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2014.03.30
EMI Test Receiver	R&S	ESCI	100573	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2014.05.03
Preamplifier	QuieTek	AP-040G	CHM-0906001	2014.05.03
Bilog Type Antenna	Schaffner	CBL6112B	2932	2013.10.15
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2014.06.08
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2014.03.01
Temperature/Humidity Meter	zhicheng	ZC1-2	AC5-TH	2014.01.11

Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

6.2. Test Setup



6.3. Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.4. Test Procedure

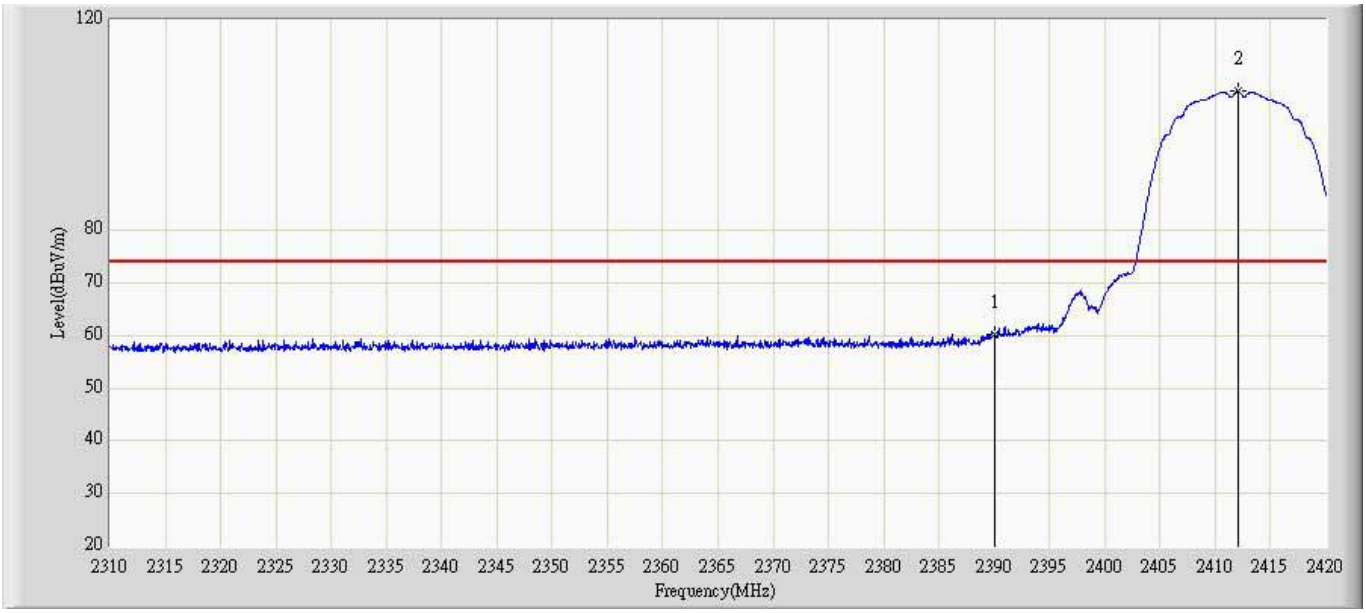
The EUT was setup according to ANSI C63.4: 2009 and tested according to KDB558074 and KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

6.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB

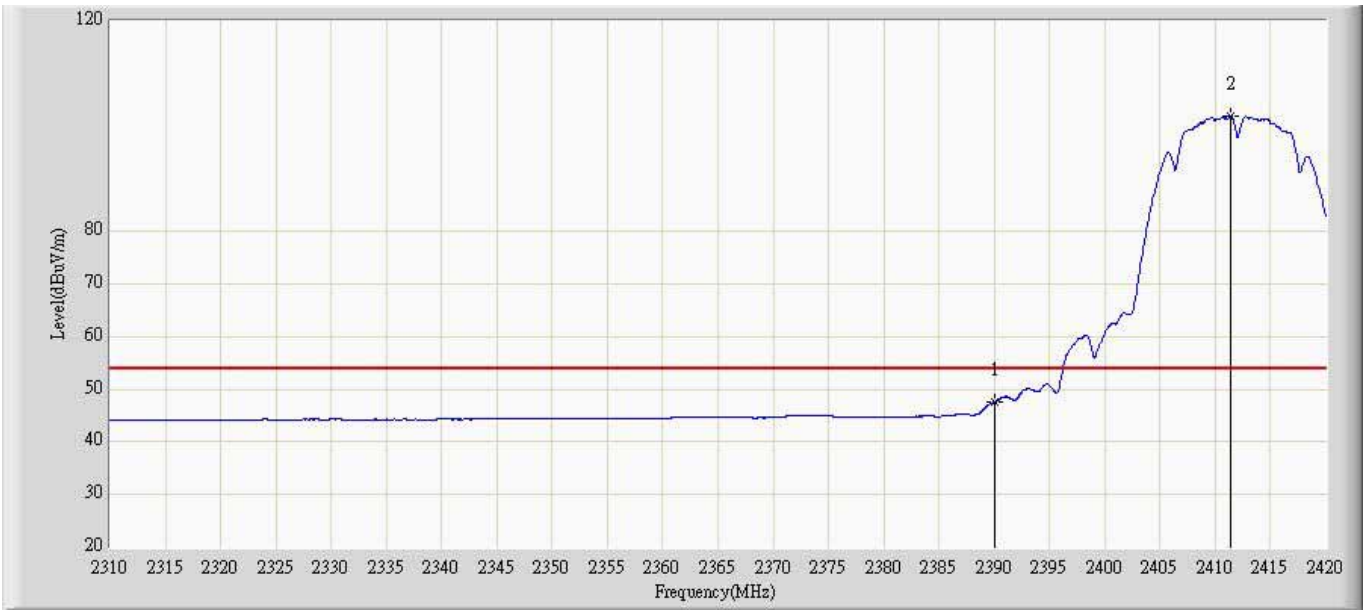
6.6. Test Result

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 14:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2412MHz Ant A	



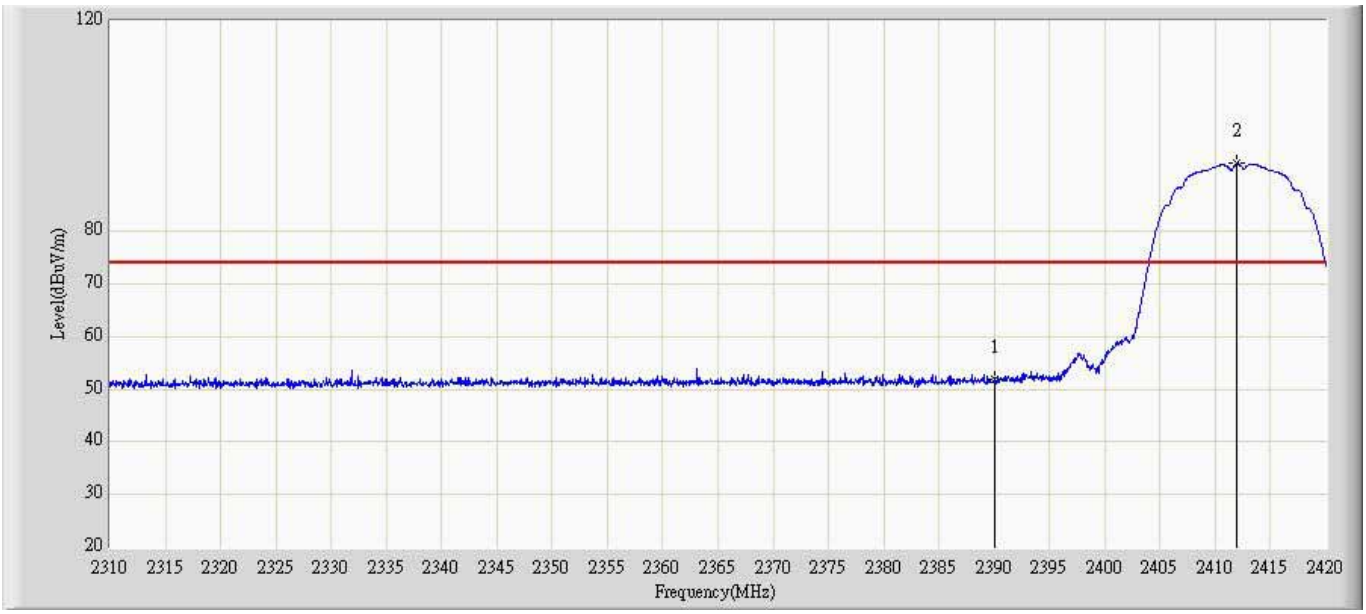
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	60.254	23.953	-13.746	74.000	36.302	PK
2		*	2412.080	106.398	69.915	N/A	N/A	36.483	PK

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 14:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2412MHz Ant A	



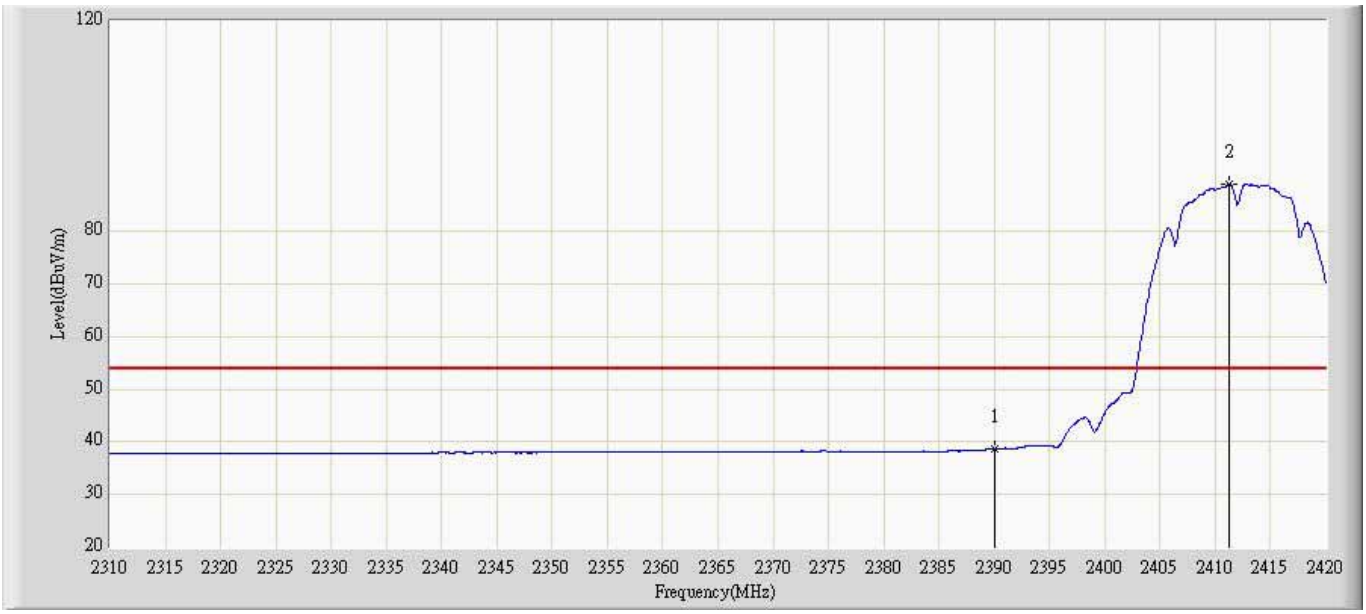
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	47.530	11.229	-6.470	54.000	36.302	AV
2		*	2411.365	102.023	65.546	N/A	N/A	36.477	AV

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 14:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2412MHz Ant A	



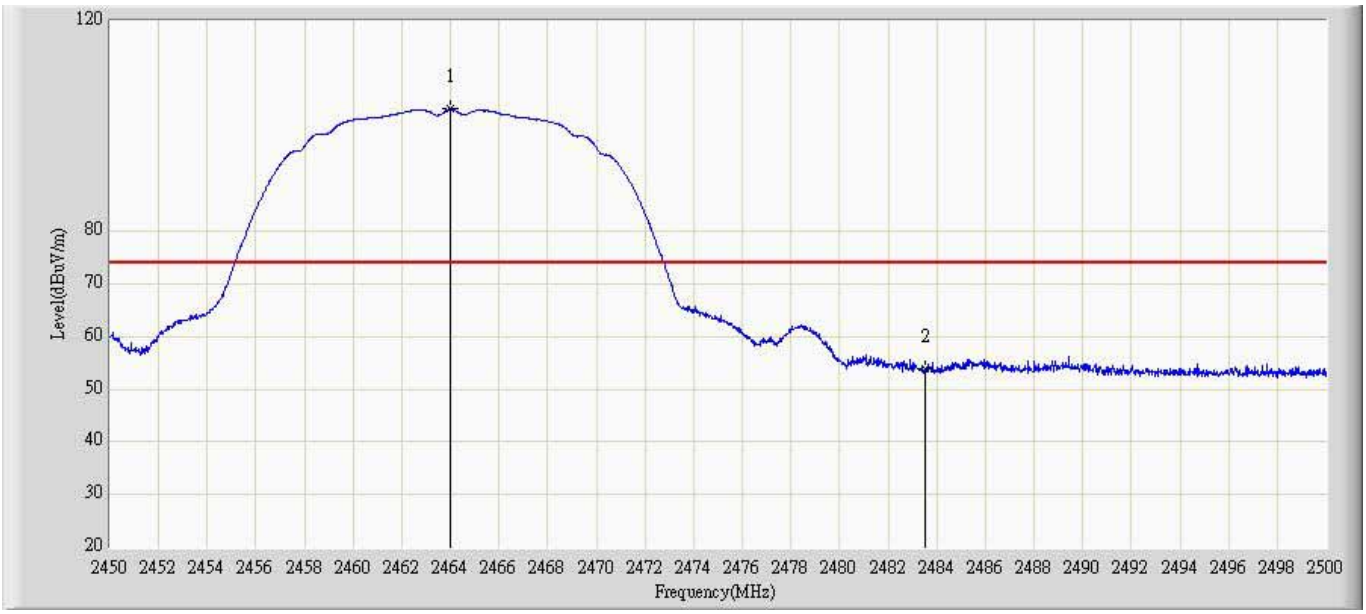
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	51.767	16.126	-22.233	74.000	35.642	PK
2		*	2411.970	92.883	57.148	N/A	N/A	35.734	PK

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 14:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2412MHz Ant A	



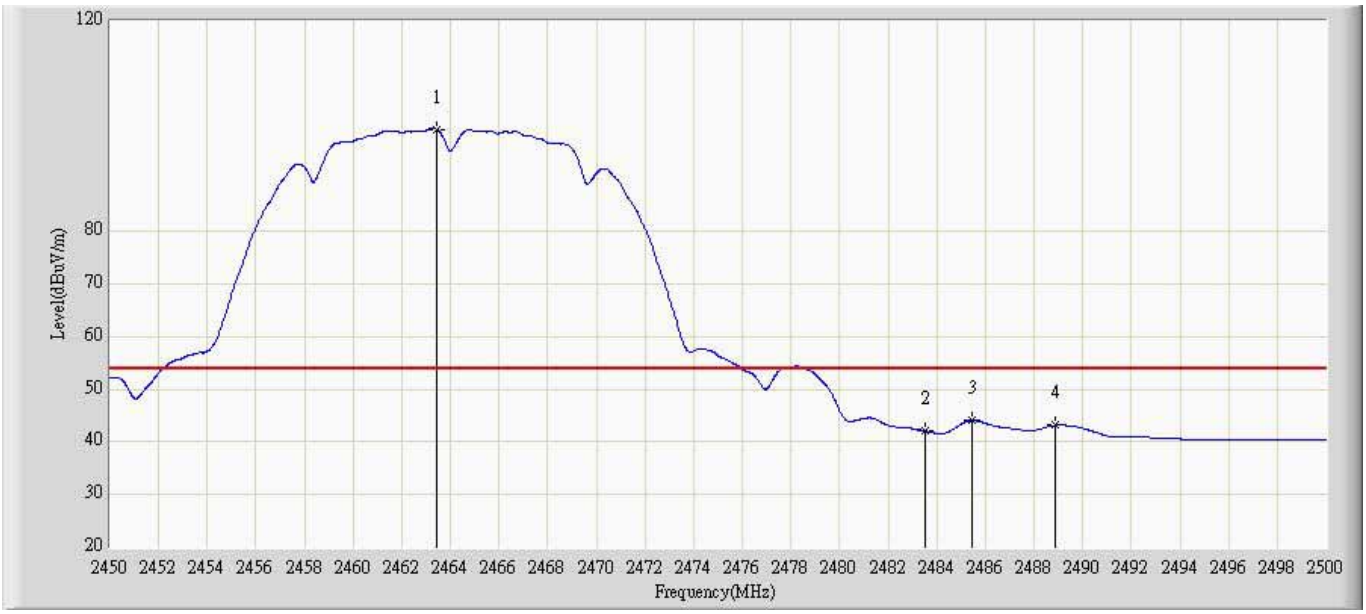
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	38.620	2.979	-15.380	54.000	35.642	AV
2		*	2411.200	88.972	53.241	N/A	N/A	35.731	AV

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 14:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode1 : Transmit at channel 2464MHz Ant A	



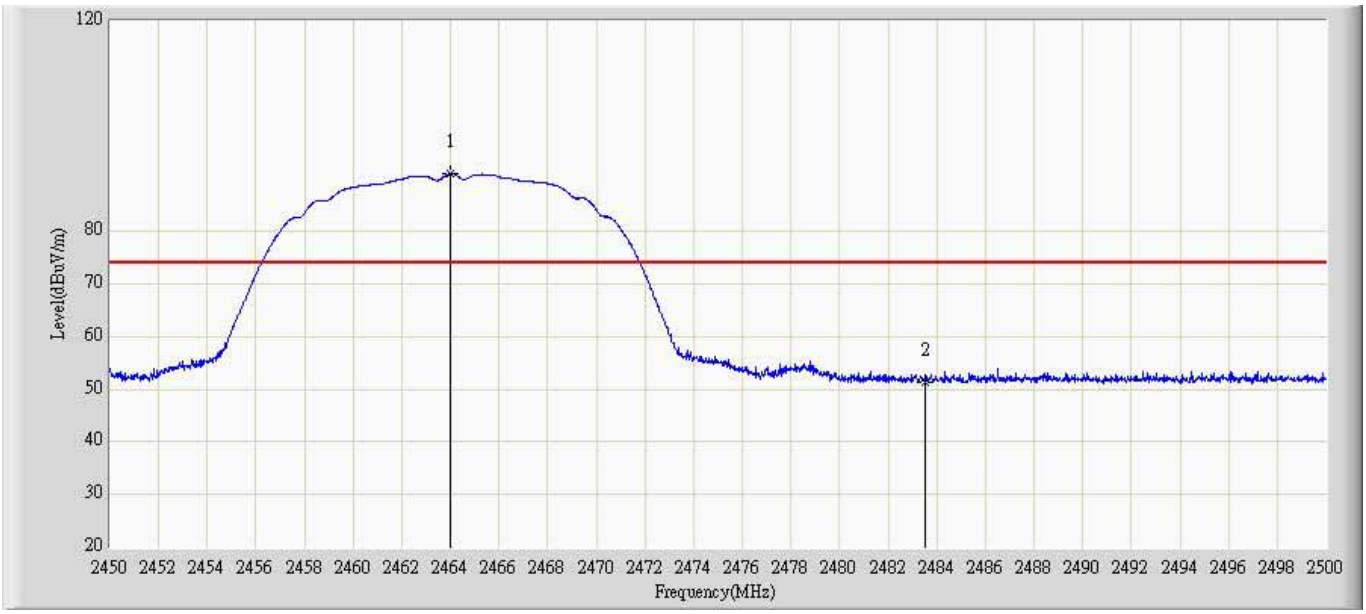
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2463.975	103.234	66.307	N/A	N/A	36.927	PK
2			2483.500	54.037	16.947	-19.963	74.000	37.089	PK

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 14:34
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode1 : Transmit at channel 2464MHz Ant A	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2463.425	99.400	62.477	N/A	N/A	36.923	AV
2			2483.500	42.100	5.010	-11.900	54.000	37.089	AV
3			2485.425	44.039	6.932	-9.961	54.000	37.107	AV
4			2488.875	43.141	6.004	-10.859	54.000	37.138	AV

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 14:35
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2464MHz Ant A	

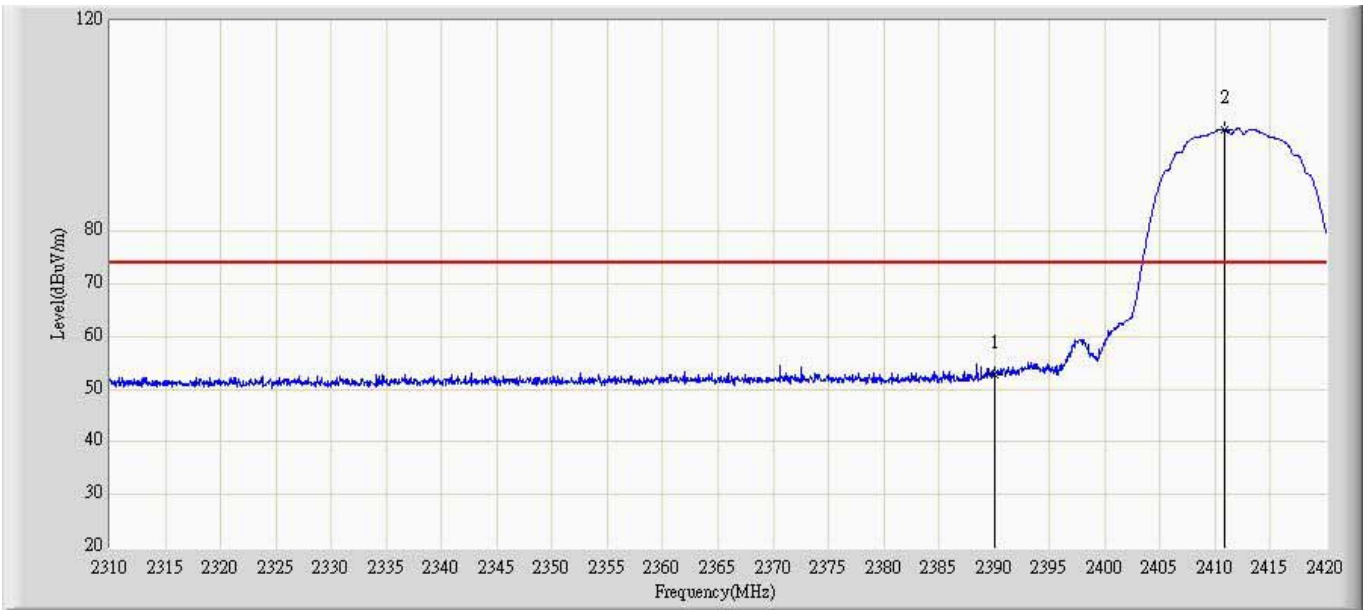


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2463.975	90.911	54.940	N/A	N/A	35.971	PK
2			2483.500	51.232	15.176	-22.768	74.000	36.055	PK

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 14:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2464MHz Ant A	

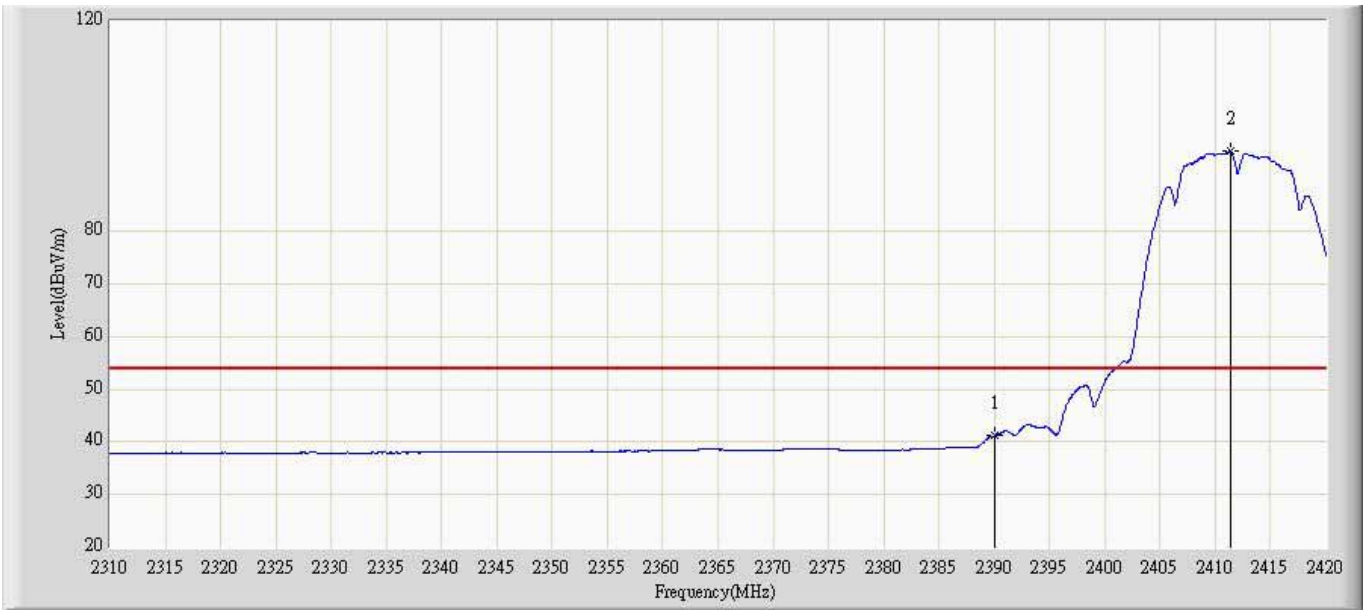
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2463.275	87.253	51.285	N/A	N/A	35.969	AV
2			2483.500	38.948	2.892	-15.052	54.000	36.055	AV

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 15:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2412MHz Ant B	



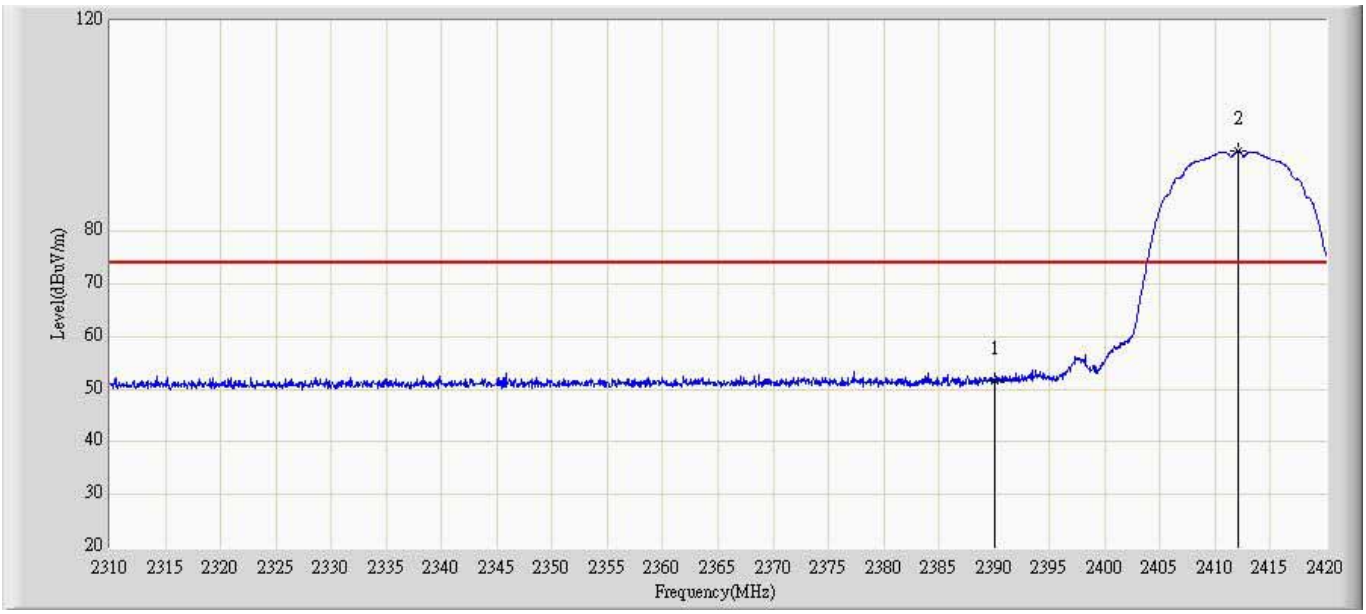
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	52.716	16.415	-21.284	74.000	36.302	PK
2		*	2410.870	99.401	62.928	N/A	N/A	36.473	PK

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 15:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2412MHz Ant B	



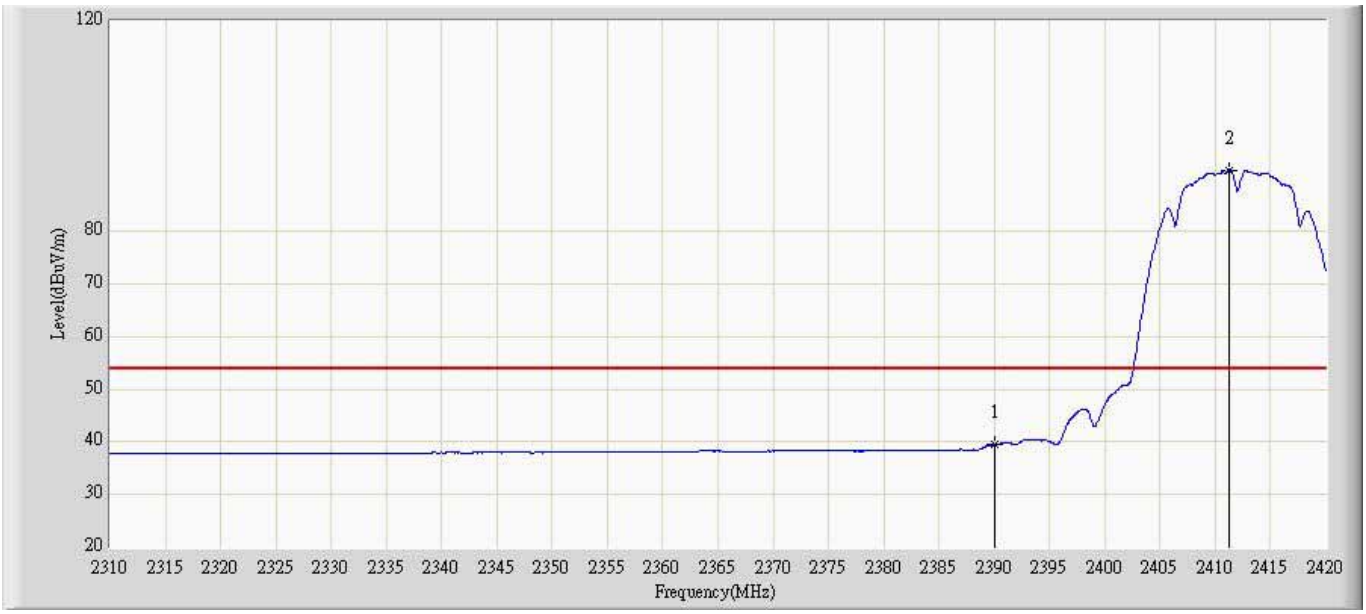
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	41.129	4.828	-12.871	54.000	36.302	AV
2		*	2411.365	95.202	58.725	N/A	N/A	36.477	AV

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 15:26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2412MHz Ant B	



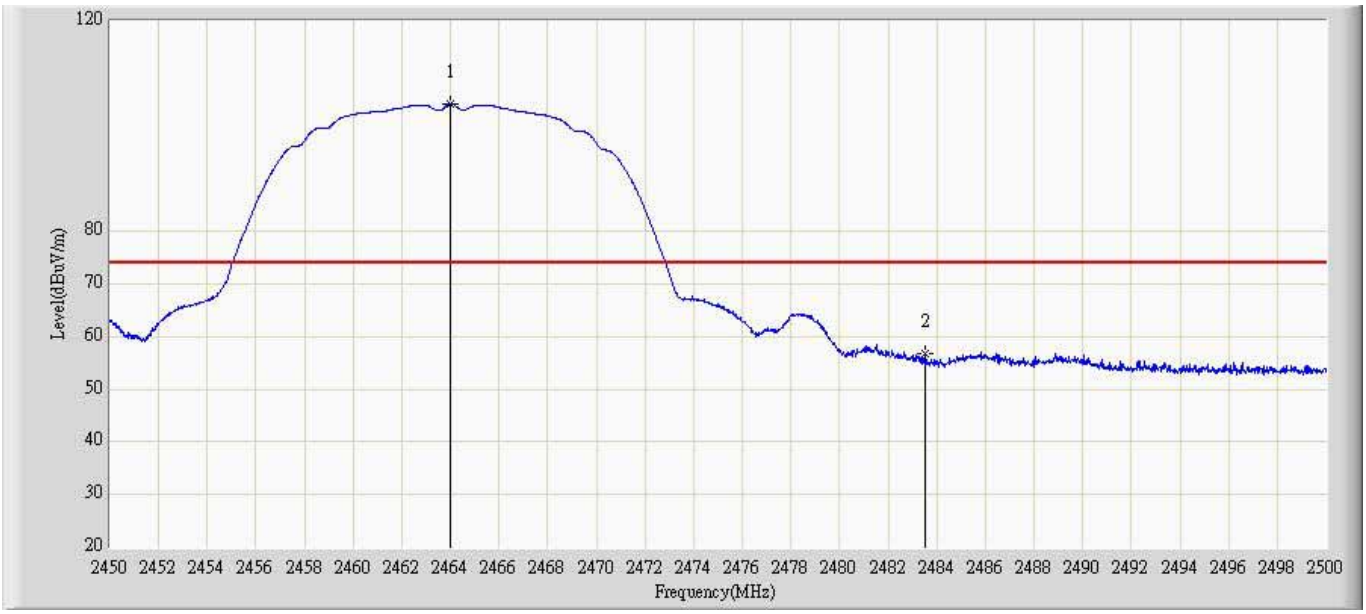
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	51.700	16.059	-22.300	74.000	35.642	PK
2		*	2412.080	95.277	59.542	N/A	N/A	35.735	PK

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 15:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode1 : Transmit at channel 2412MHz Ant B	



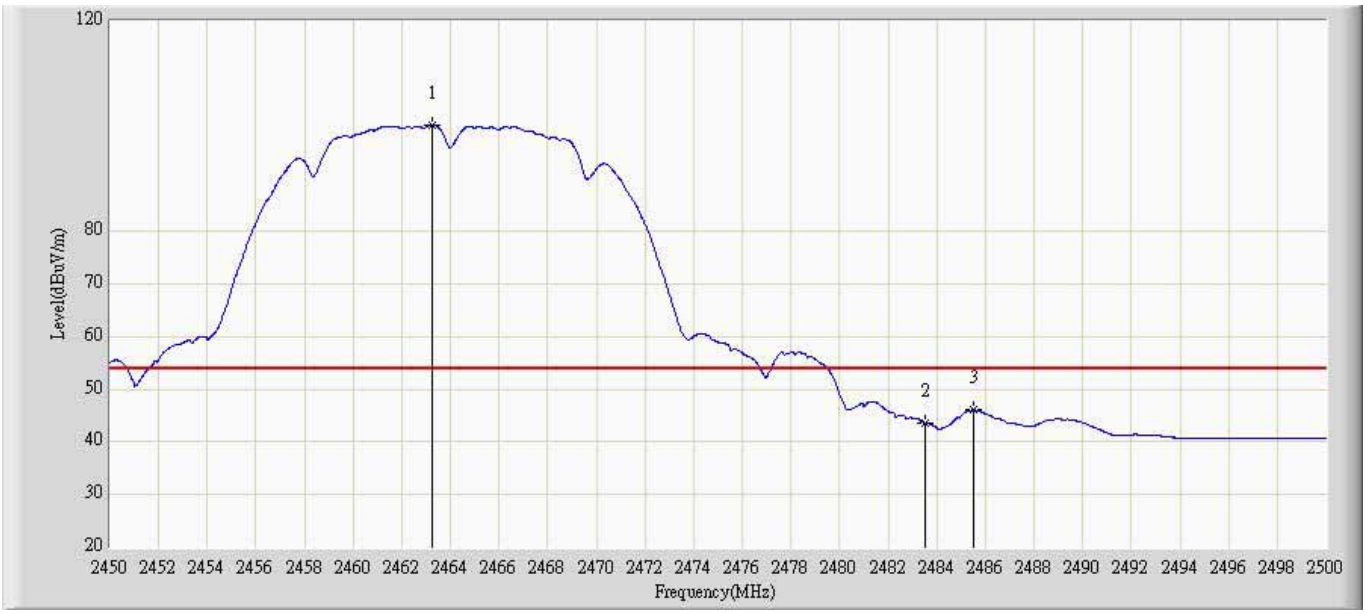
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			2390.000	39.459	3.818	-14.541	54.000	35.642	AV
2		*	2411.200	91.678	55.947	N/A	N/A	35.731	AV

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 15:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2464MHz Ant B	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2464.000	104.327	67.400	N/A	N/A	36.927	PK
2			2483.500	56.825	19.735	-17.175	74.000	37.089	PK

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 15:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2464MHz Ant B	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2463.275	100.244	63.323	N/A	N/A	36.922	AV
2			2483.500	43.673	6.583	-10.327	54.000	37.089	AV
3			2485.500	46.030	8.923	-7.970	54.000	37.108	AV

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 15:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode 1: Transmit at channel 2464MHz Ant B	

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2463.900	99.528	63.557	N/A	N/A	35.971	PK
2			2483.500	51.492	15.436	-22.508	74.000	36.055	PK

Engineer: Jack	
Site: AC5	Time: 2013/06/10 - 15:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC 5V
Note: Mode1 : Transmit at channel 2464MHz Ant B	

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	2463.350	96.029	60.060	N/A	N/A	35.969	AV
2			2483.500	40.405	4.349	-13.595	54.000	36.055	AV
3			2485.500	41.535	5.470	-12.465	54.000	36.066	AV

7. Operation Frequency Range of 20dB Bandwidth

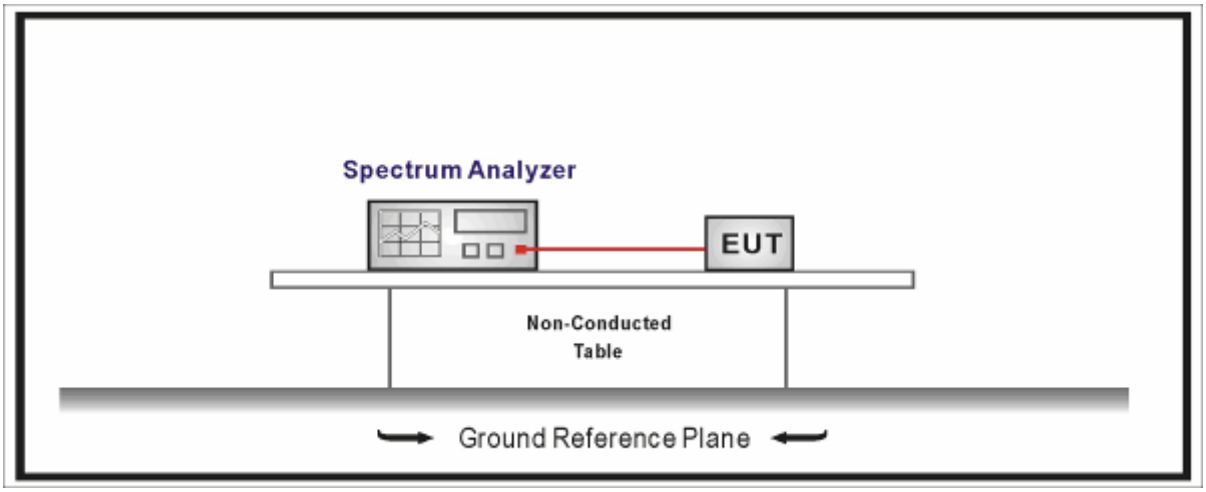
7.1. Test Equipment

Operation Frequency Range of 20dB Bandwidth /TR8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014/01/21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2014/05/08

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

7.2. Test Setup



7.3. Limit

20 dB bandwidth of the emission is contained within the operation frequency band.

7.4. Test Procedure

The EUT was tested according to KDB558074 and KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Span greater than RBW.

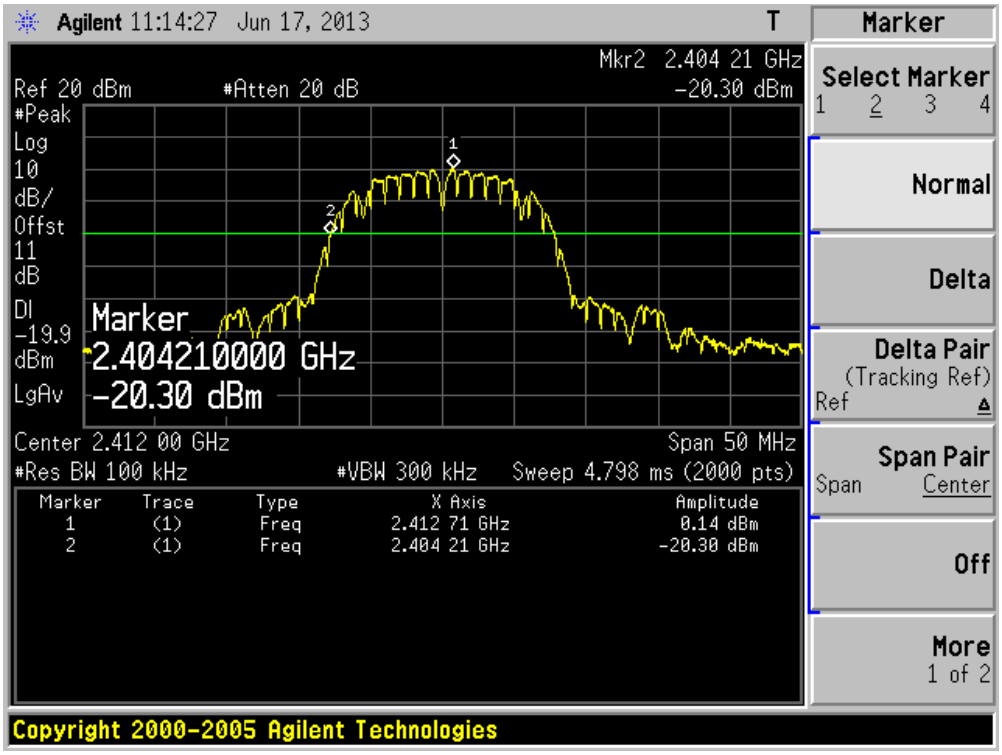
7.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz

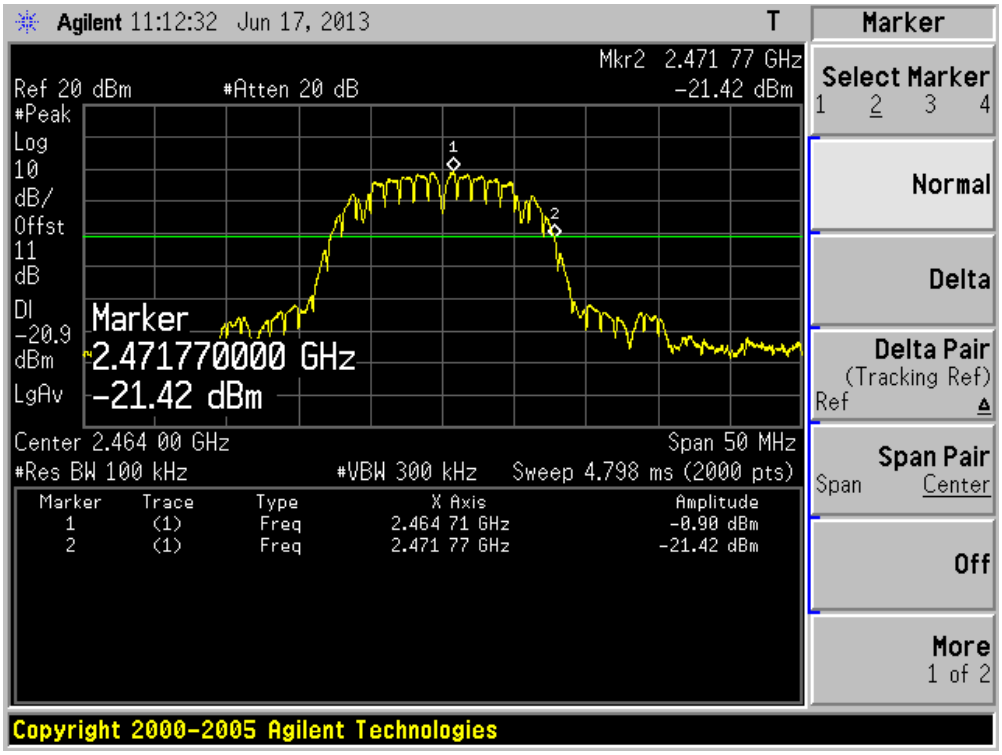
7.6. Test Result

Product	:	DWAM83 Wireless Audio Module
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant A

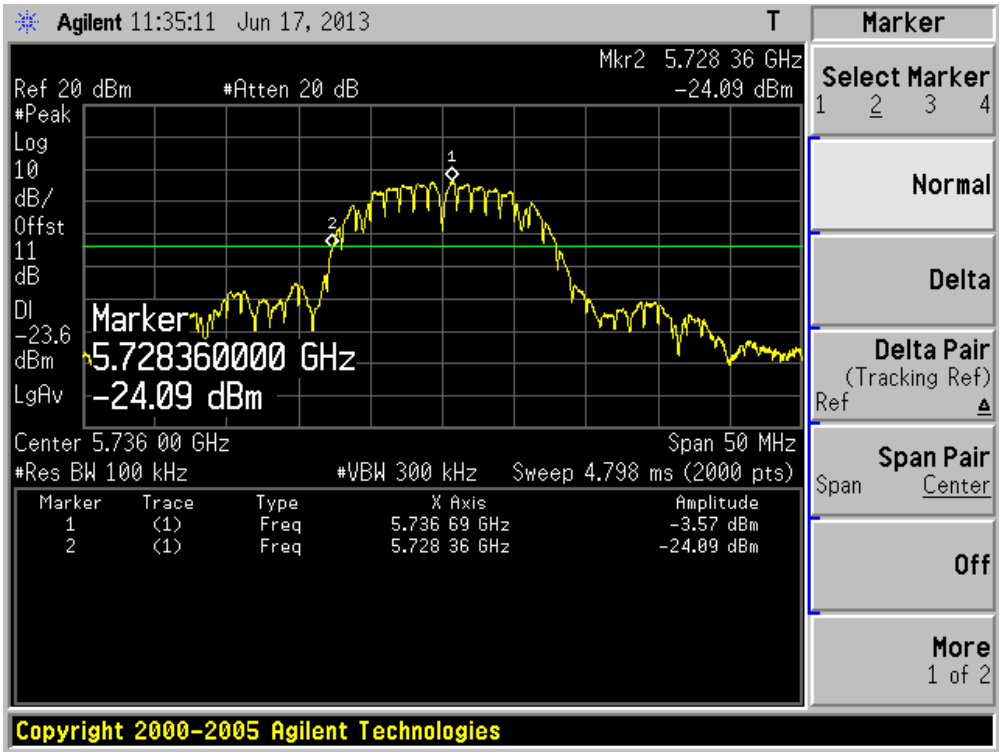
2412MHz



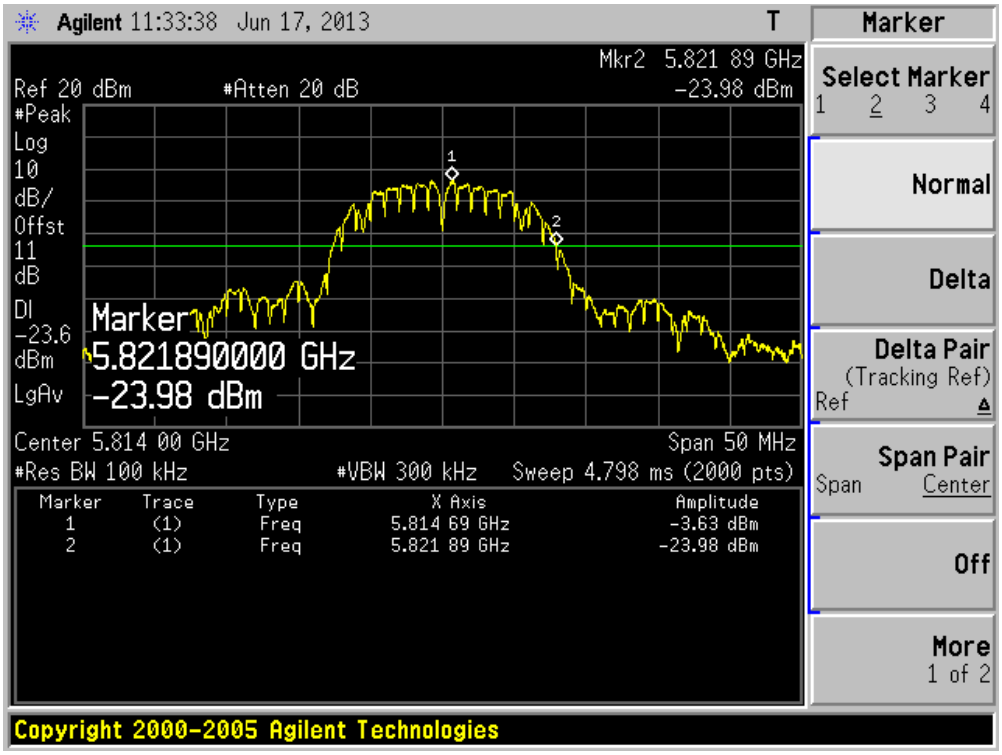
2464MHz



5736MHz



5814MHz


Agilent 11:33:38 Jun 17, 2013
T
Marker
Mkr2 5.821 89 GHz
Ref 20 dBm
#Atten 20 dB
-23.98 dBm
#Peak
Log
10
dB/
Offst
11
dB
Dl
-23.6
dBm
LgAv
Marker
5.821890000 GHz
-23.98 dBm
Center 5.814 00 GHz
Span 50 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 4.798 ms (2000 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 5.814 69 GHz -3.63 dBm
2 (1) Freq 5.821 89 GHz -23.98 dBm
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
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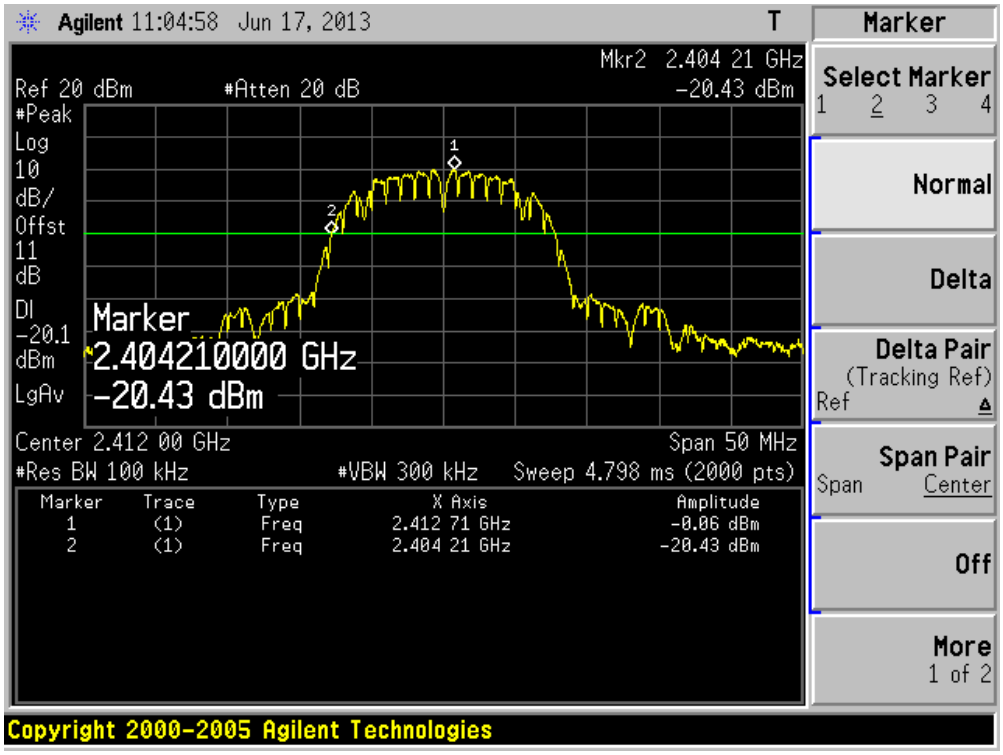
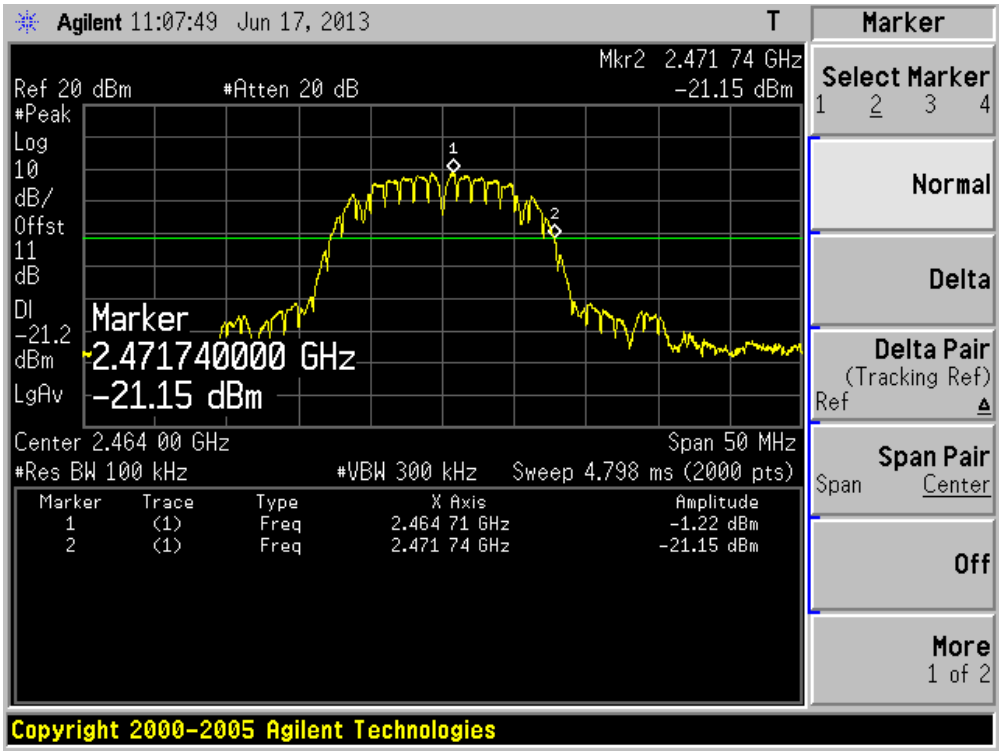
Product	:	DWAM83 Wireless Audio Module
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant B

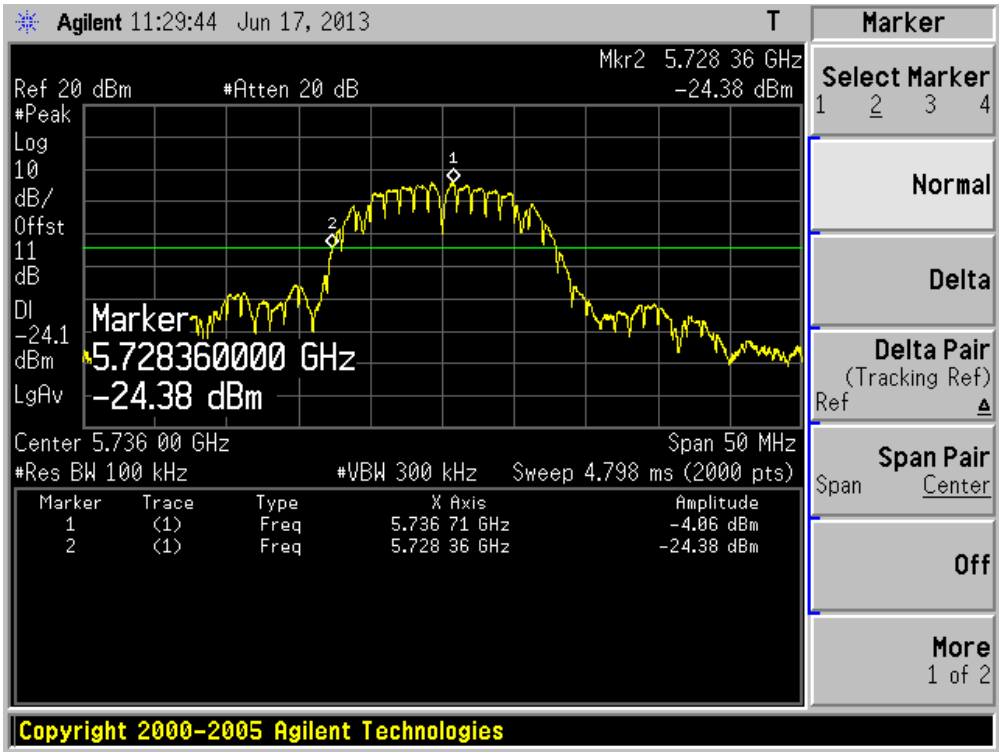
2412MHz



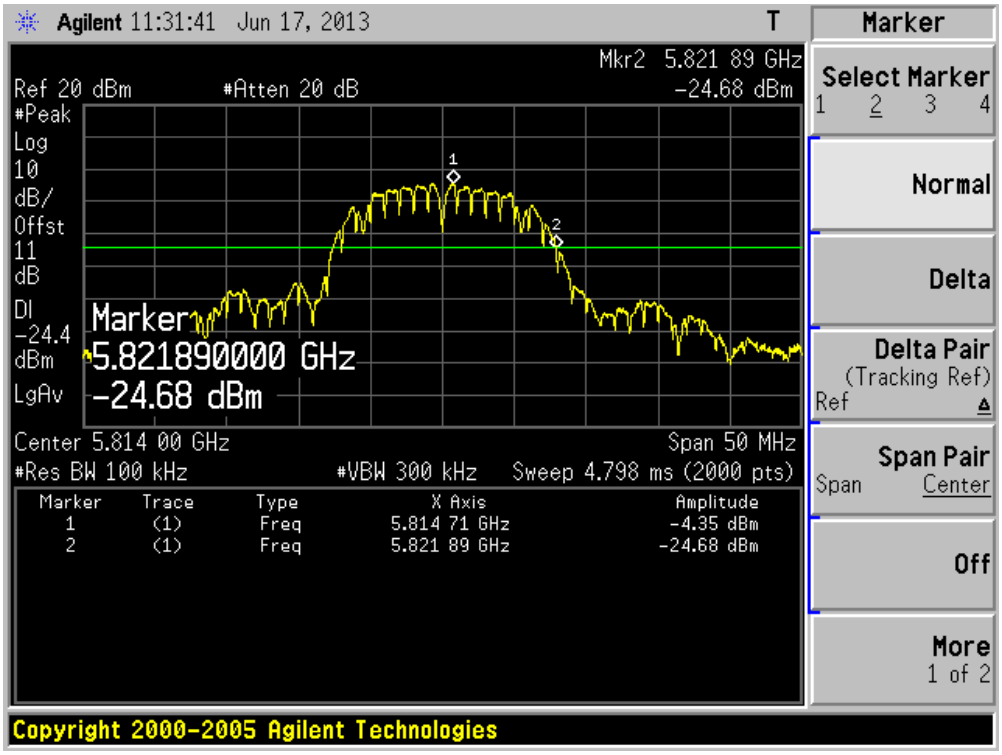
2464MHz



5736MHz



5814MHz


Agilent 11:31:41 Jun 17, 2013
T
Marker
Mkr2 5.821 89 GHz
-24.68 dBm
Ref 20 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
11
dB
Dl
-24.4
dBm
LgAv
Marker
5.821890000 GHz
-24.68 dBm
Center 5.814 00 GHz
Span 50 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 4.798 ms (2000 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 5.814 71 GHz -4.35 dBm
2 (1) Freq 5.821 89 GHz -24.68 dBm
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
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8. Occupied Bandwidth

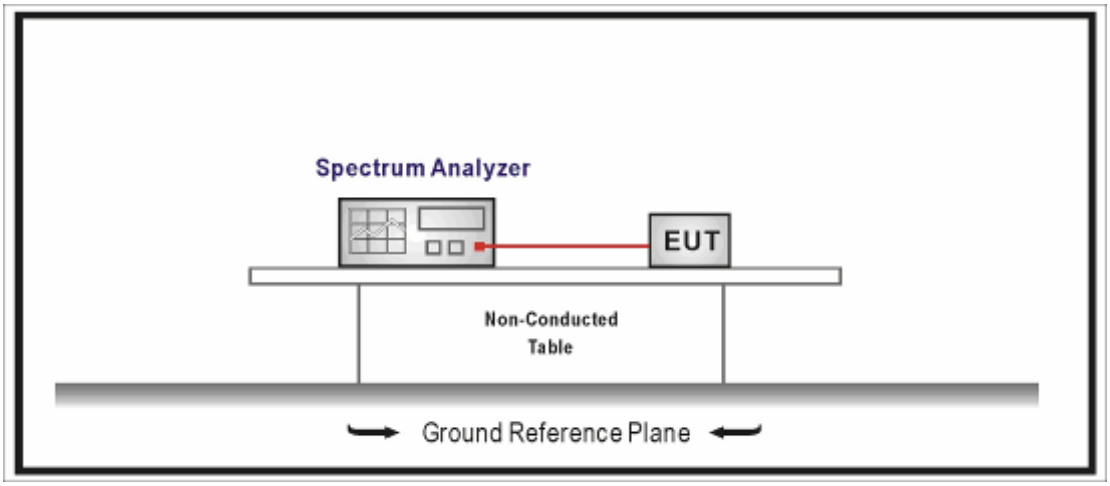
8.1. Test Equipment

Operation Frequency Range of 20dB Bandwidth /TR8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014/01/21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2014/05/08

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

8.2. Test Setup



8.3. Limit

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

8.4. Test Procedure

The EUT was tested according to KDB558074 and KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Span greater than RBW.

8.5. Uncertainty

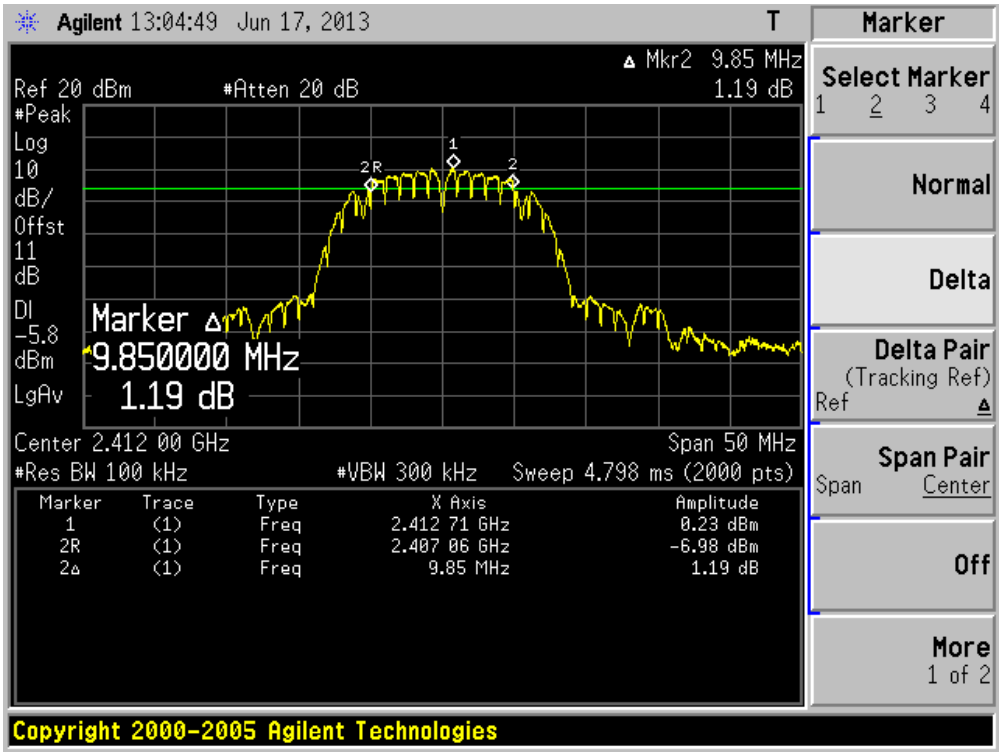
The measurement uncertainty is defined as ± 1 kHz

8.6. Test Result

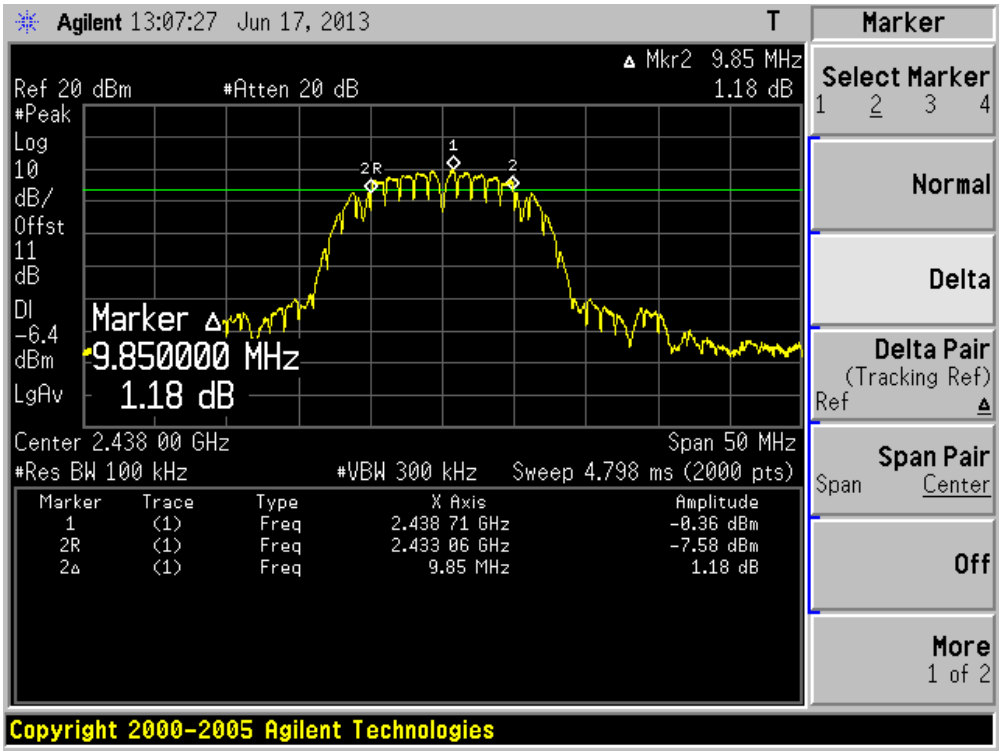
Product	:	DWAM83 Wireless Audio Module
Test Item	:	6dB Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant A

Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
2412	9850	500	Pass
2438	9850	500	Pass
2464	9830	500	Pass
5736	9850	500	Pass
5762	9850	500	Pass
5814	9850	500	Pass

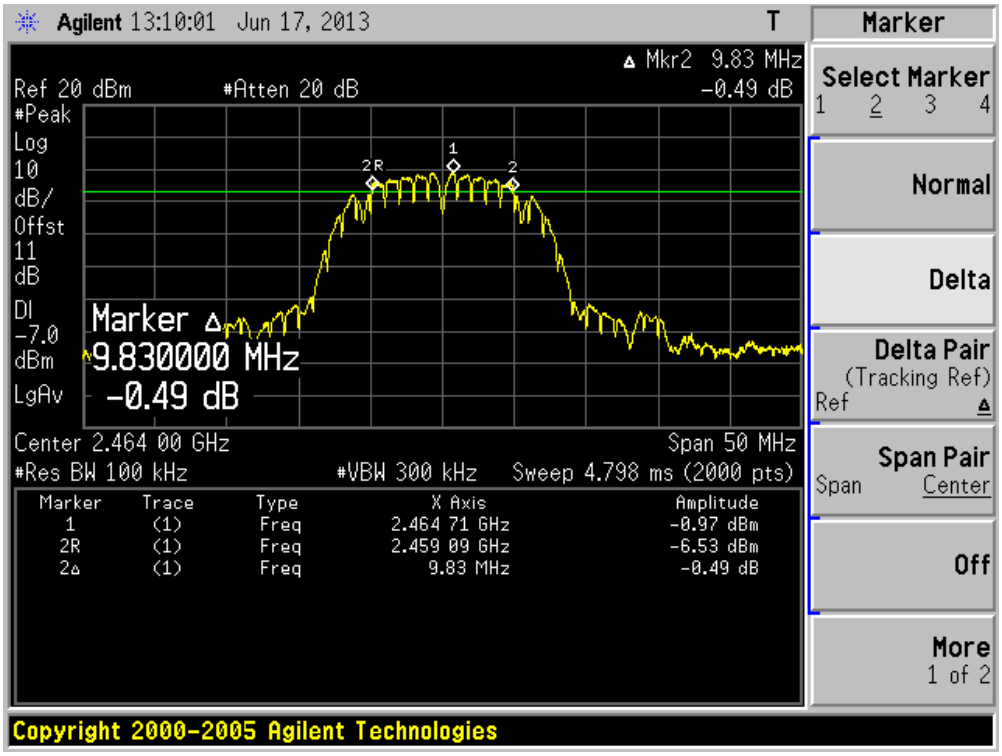
2412MHz



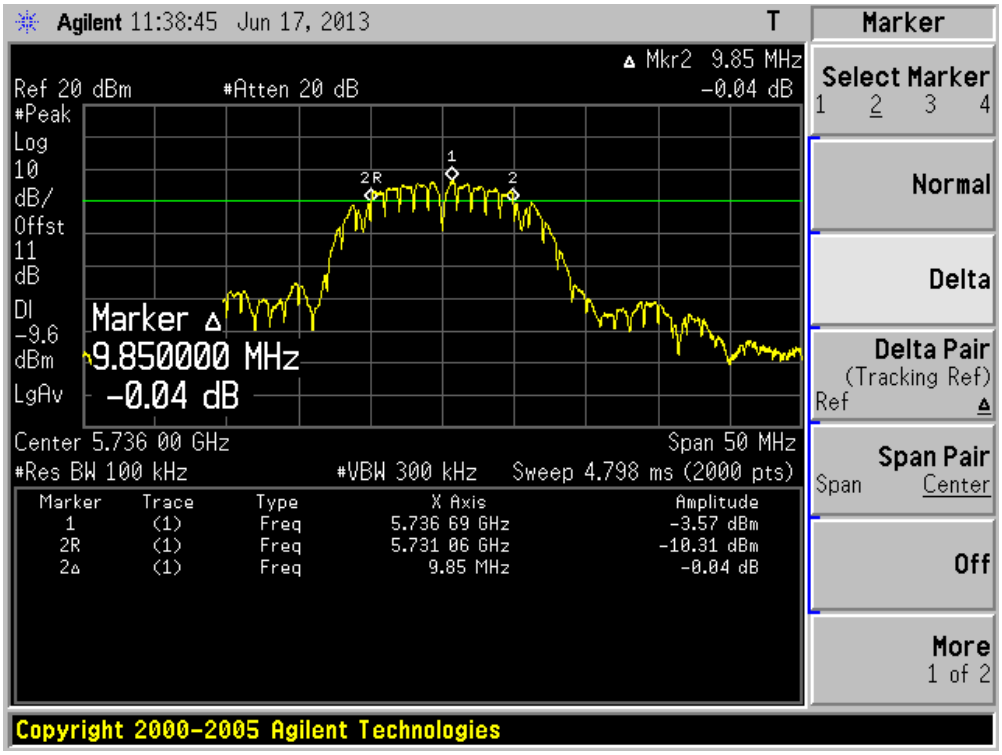
2438MHz



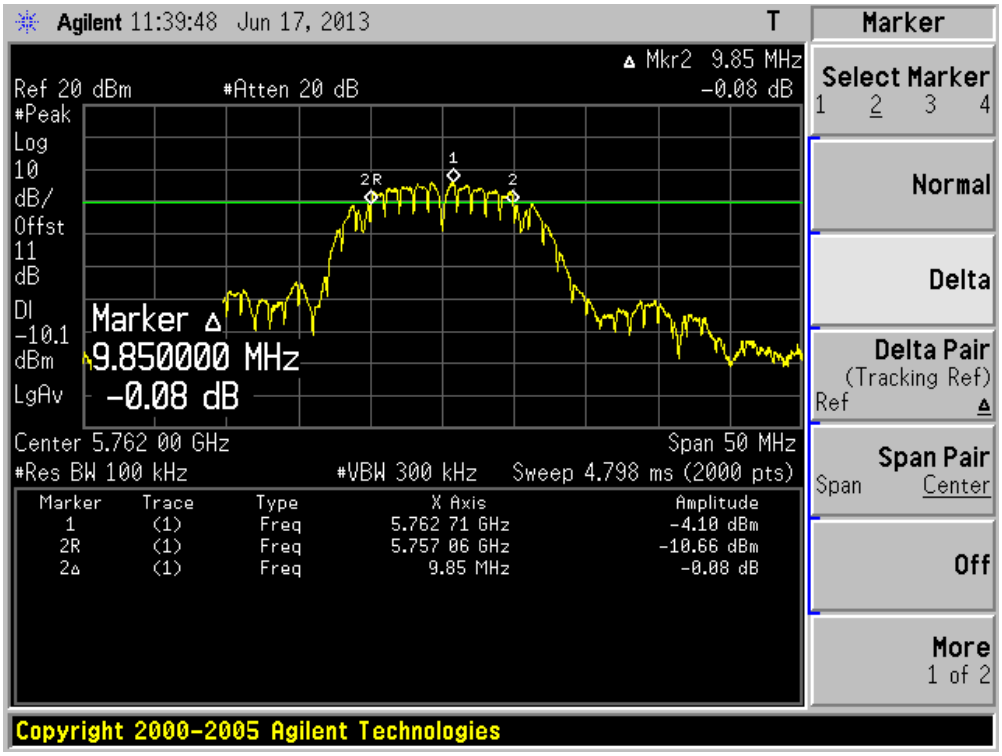
2464MHz



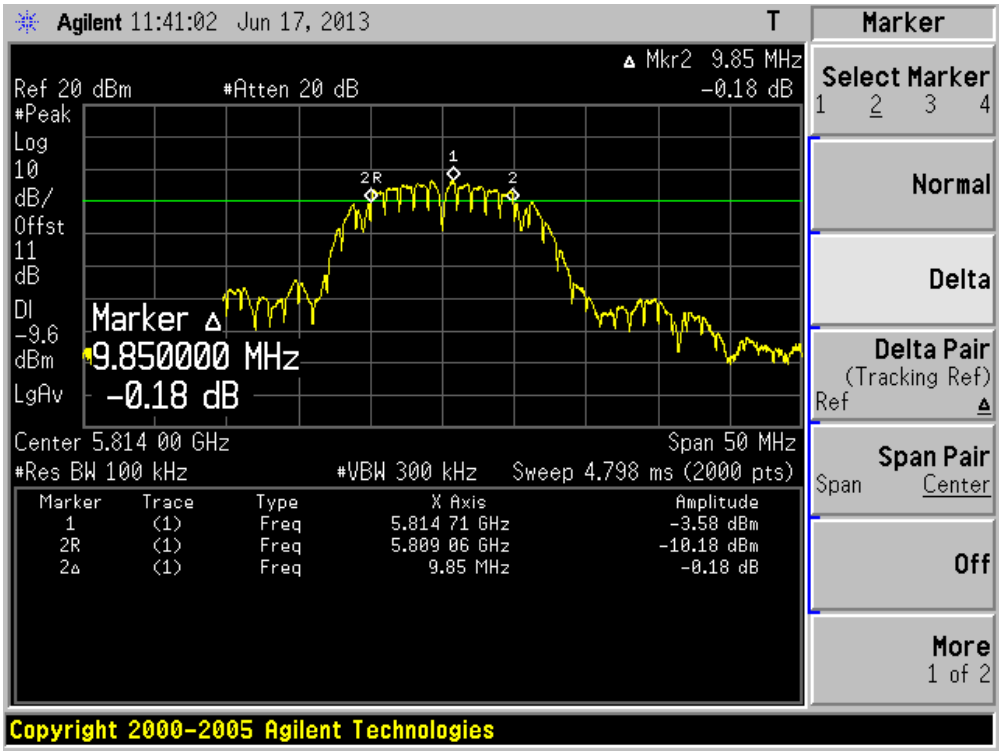
5736MHz



5762MHz



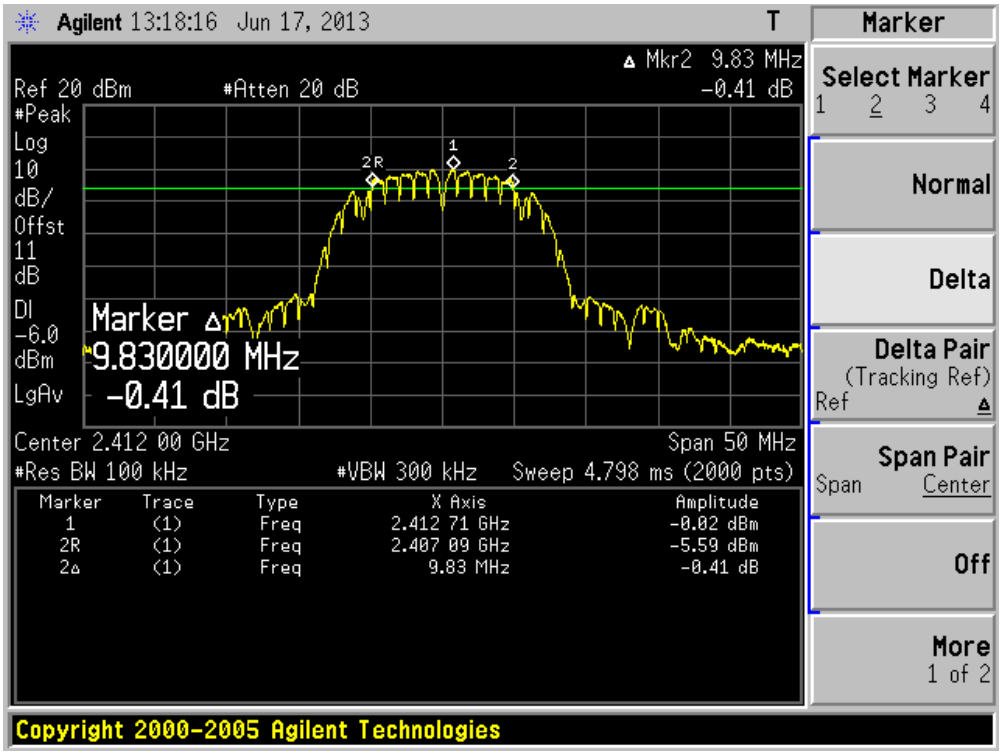
5814MHz


Agilent 11:41:02 Jun 17, 2013
T
Marker
Mkr2 9.85 MHz
-0.18 dB
Ref 20 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
11
dB
Dl
-9.6
dBm
LgAv
Marker Δ
9.850000 MHz
-0.18 dB
Center 5.814 00 GHz
Span 50 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 4.798 ms (2000 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 5.814 71 GHz -3.58 dBm
2R (1) Freq 5.809 06 GHz -10.18 dBm
2Δ (1) Freq 9.85 MHz -0.18 dB
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Copyright 2000-2005 Agilent Technologies

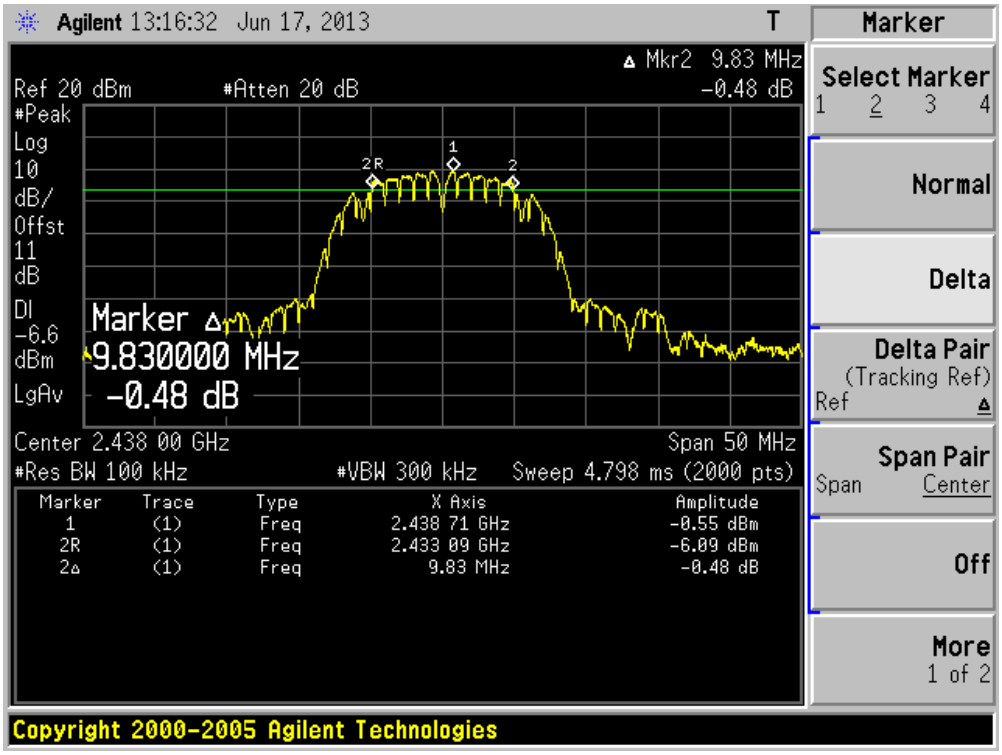
Product	:	DWAM83 Wireless Audio Module
Test Item	:	6dB Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant B

Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
2412	9830	500	Pass
2438	9830	500	Pass
2464	9830	500	Pass
5736	9850	500	Pass
5762	9850	500	Pass
5814	9850	500	Pass

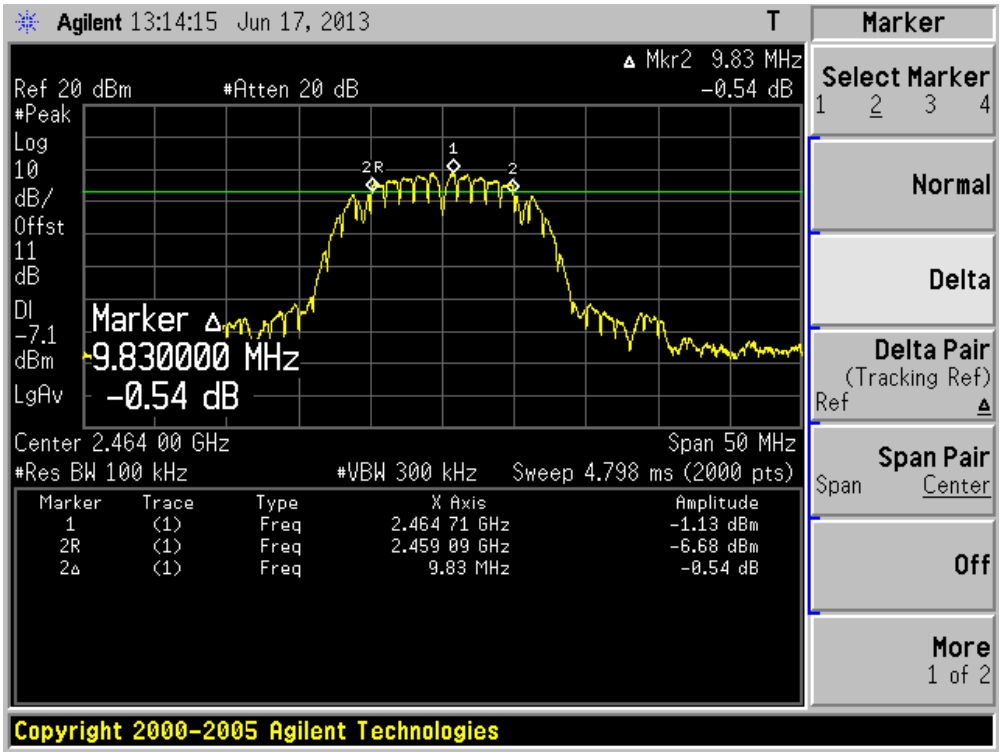
2412MHz



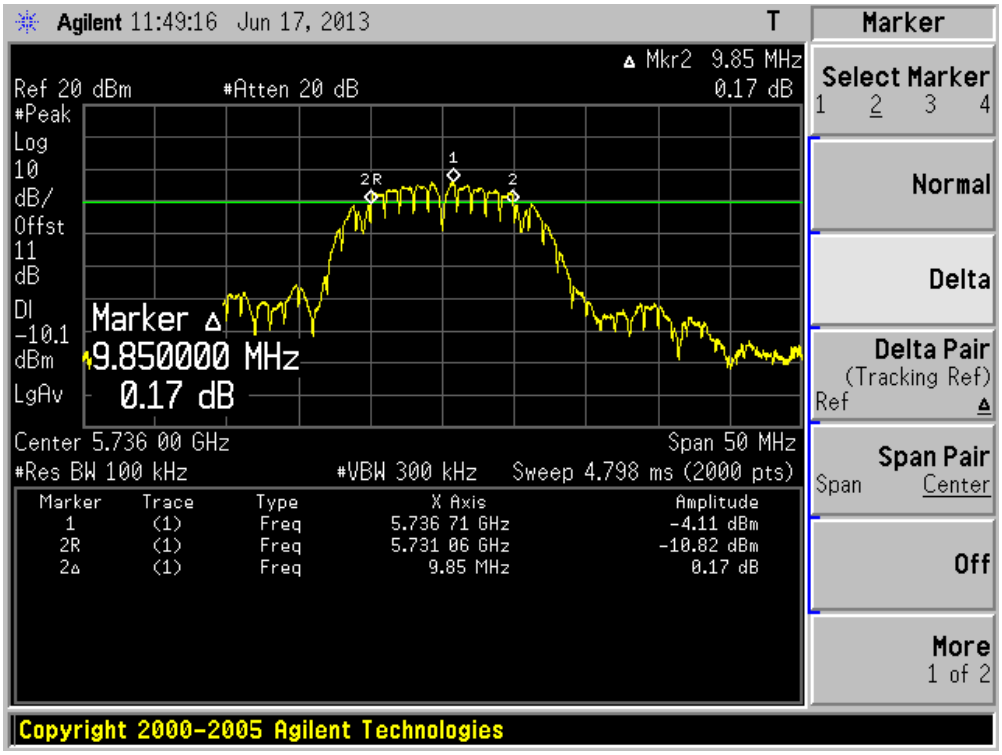
2438MHz



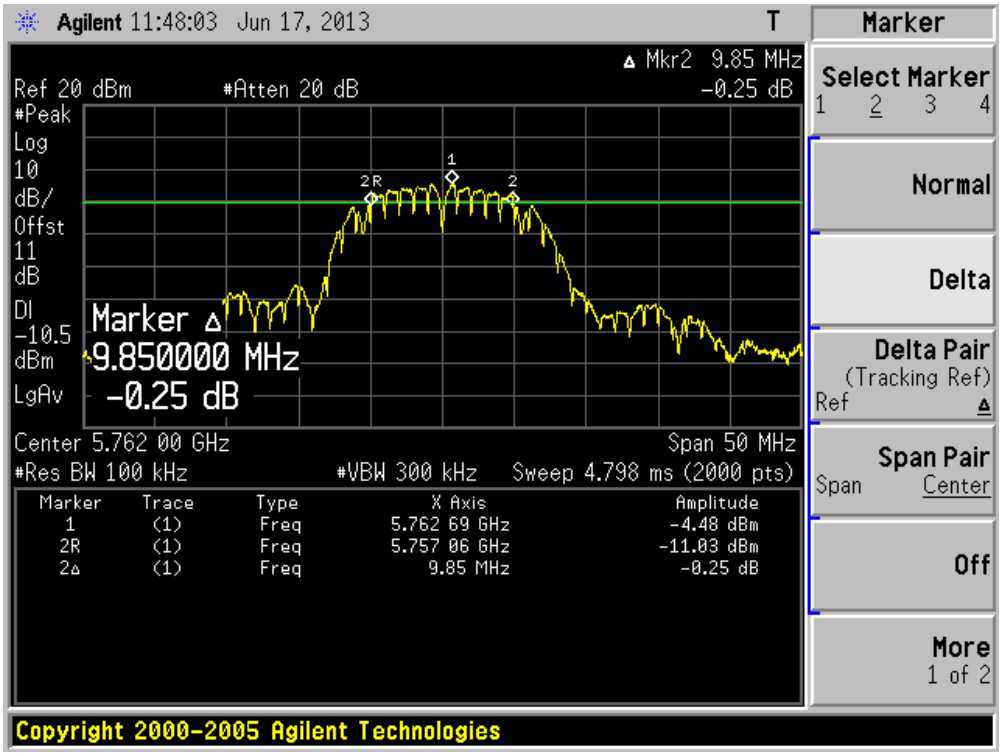
2464MHz



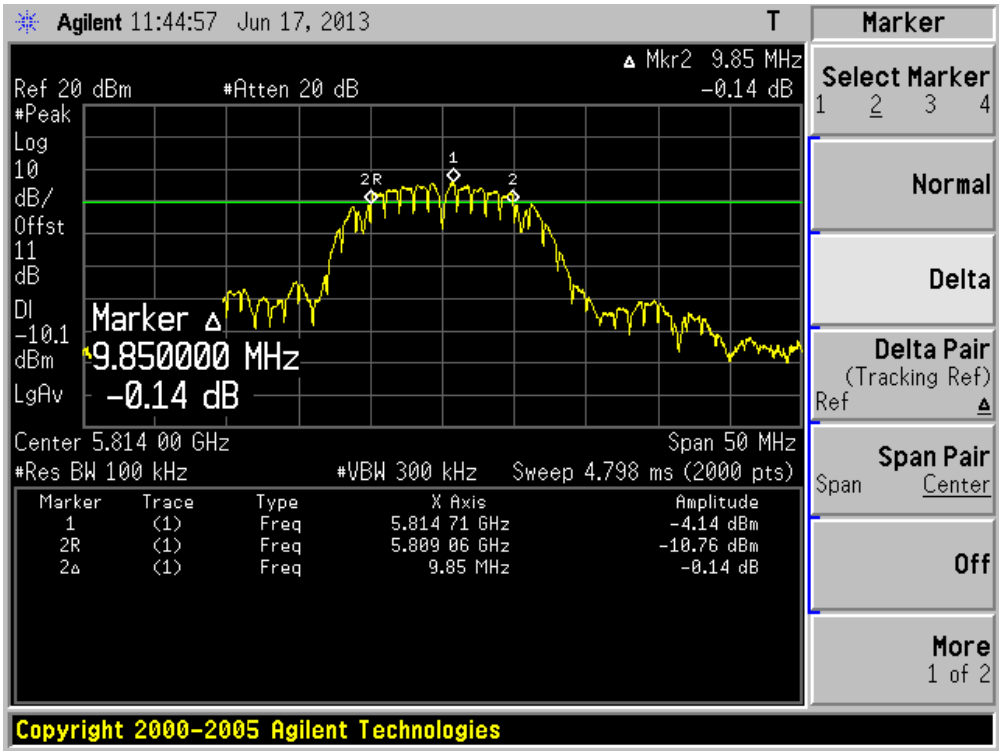
5736MHz



5762MHz



5814MHz


Agilent 11:44:57 Jun 17, 2013
T
Marker
Mkr2 9.85 MHz
-0.14 dB
Ref 20 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
11
dB
Dl
-10.1
dBm
LgAv
Marker Δ
9.850000 MHz
-0.14 dB
Center 5.814 00 GHz
Span 50 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 4.798 ms (2000 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 5.814 71 GHz -4.14 dBm
2R (1) Freq 5.809 06 GHz -10.76 dBm
2Δ (1) Freq 9.85 MHz -0.14 dB
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
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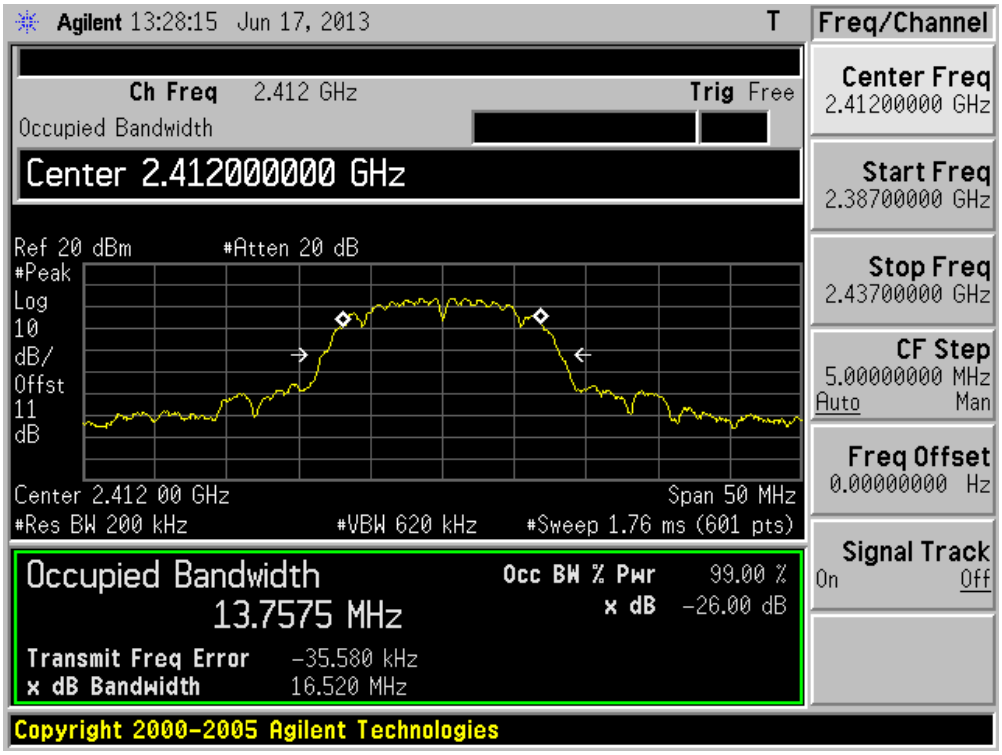
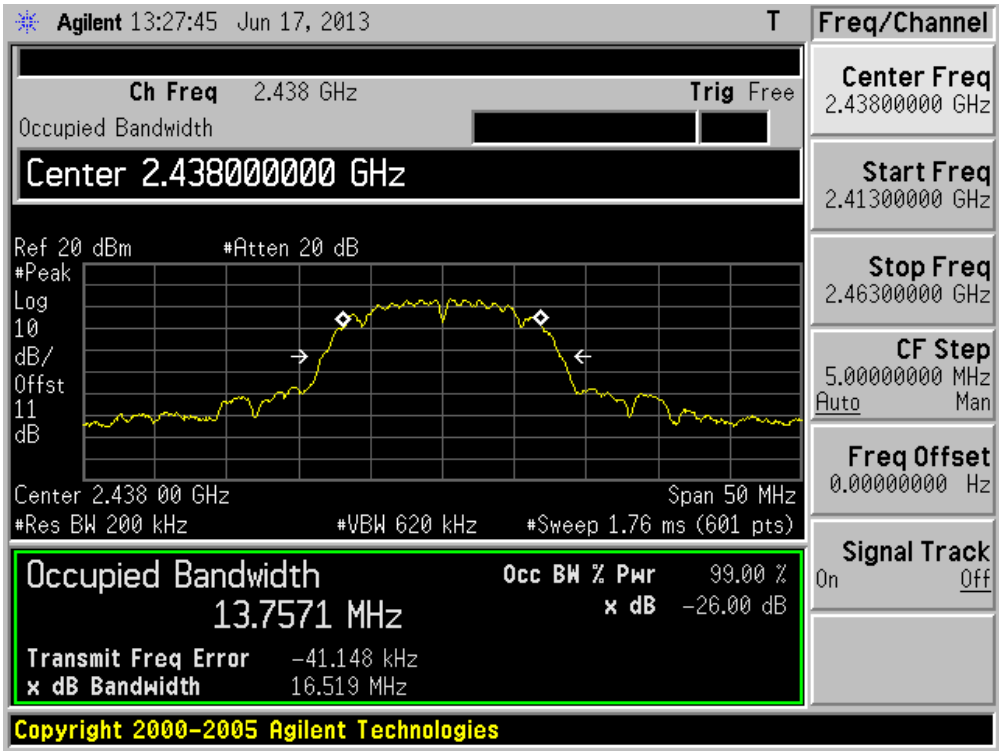
Product	:	DWAM83 Wireless Audio Module
Test Item	:	99% Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant A

Frequency (MHz)	99% Bandwidth (kHz)
2412	13757.5
2438	13757.1
2464	13760.7
5736	13798.2
5762	13830.4
5814	13813.6

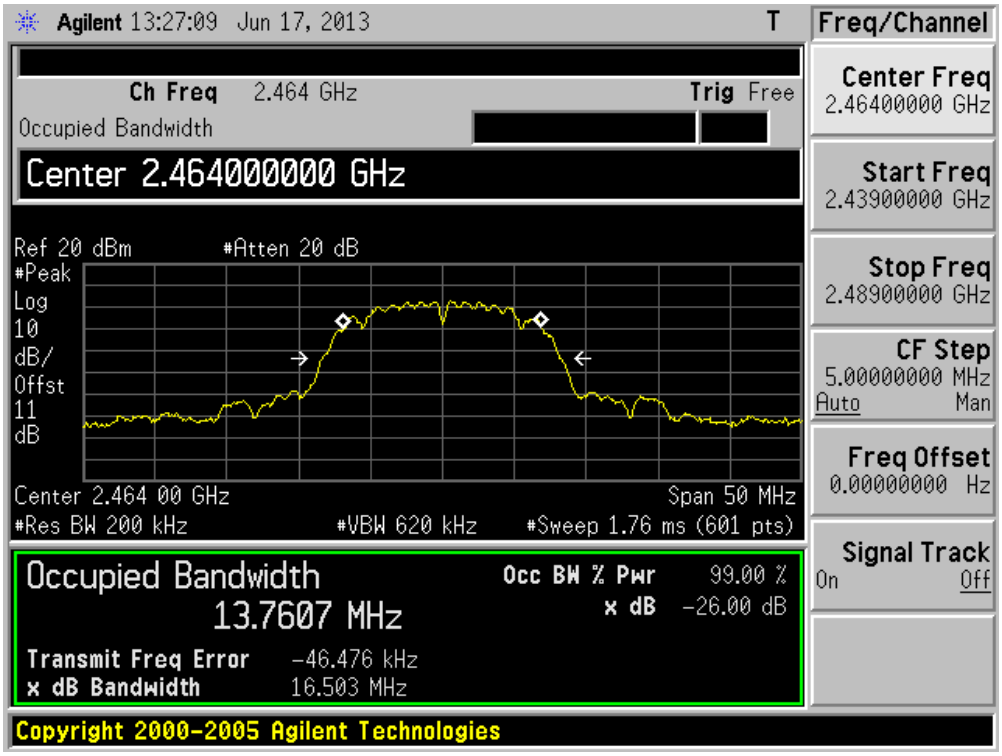
2412MHz



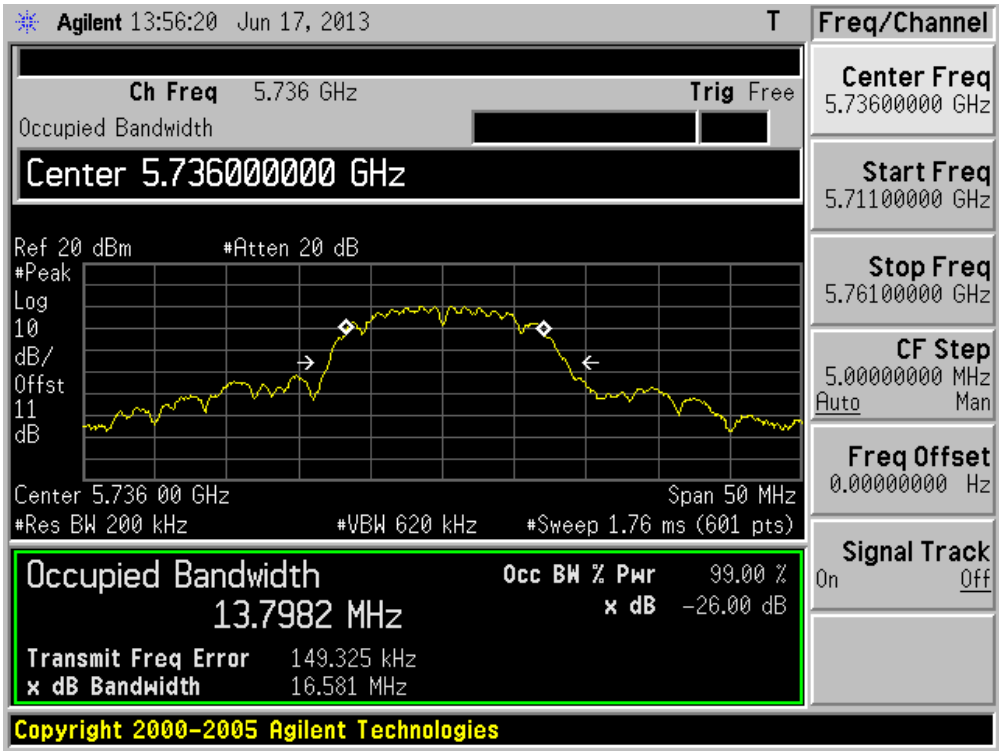
2438MHz



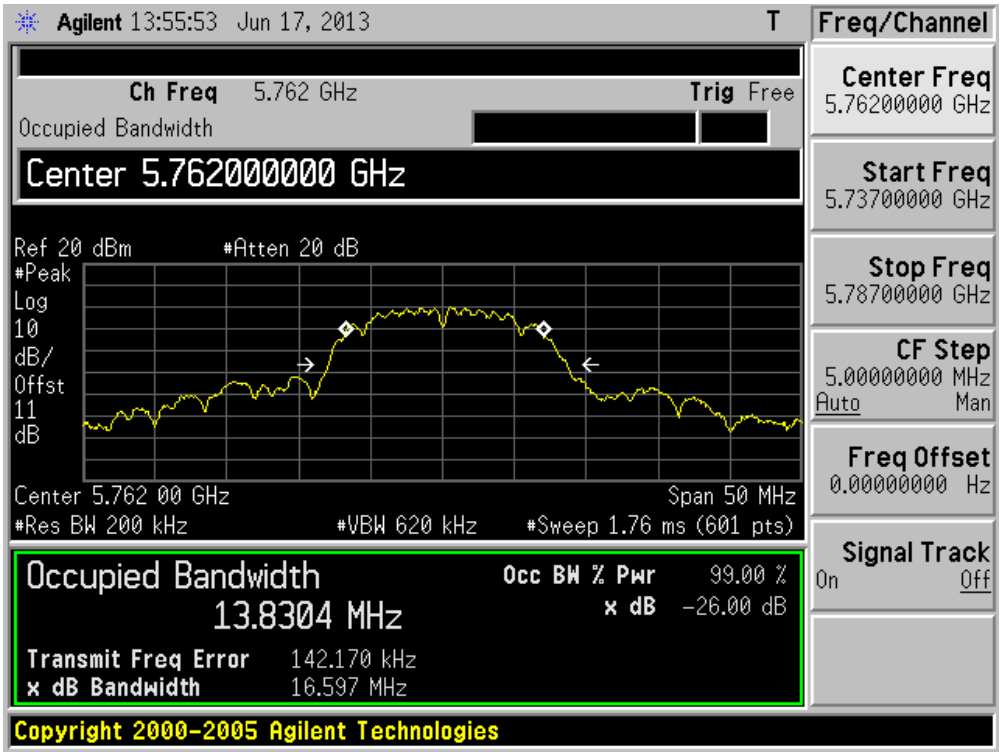
2464MHz



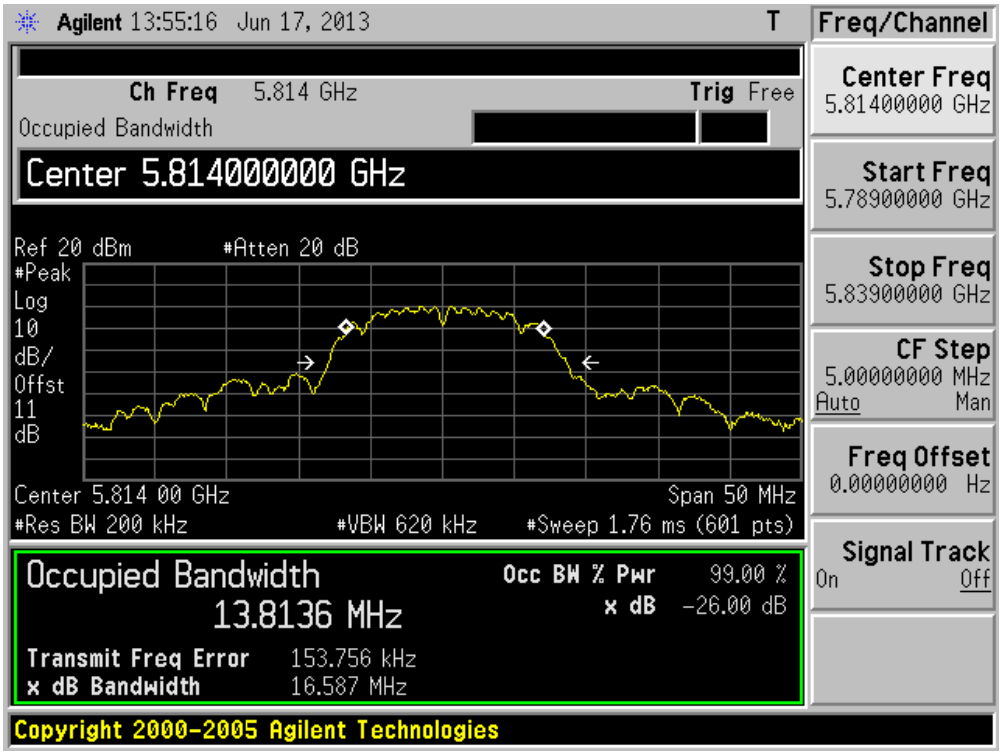
5736MHz



5762MHz



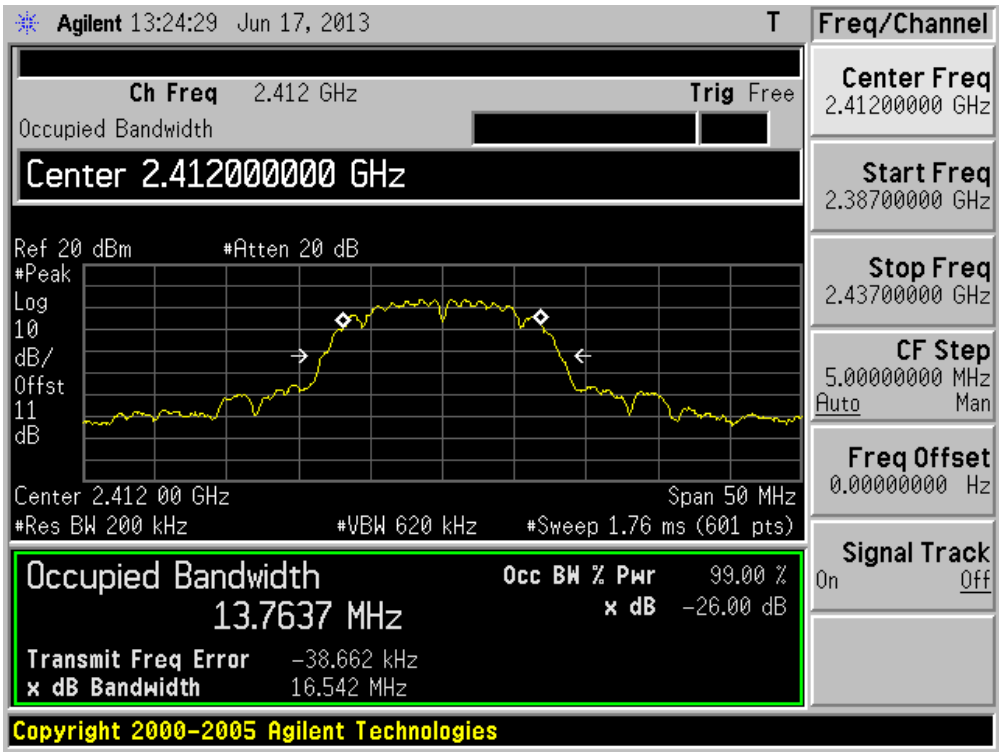
5814MHz


Agilent 13:55:16 Jun 17, 2013
T
Freq/Channel
Ch Freq 5.814 GHz
Trig Free
Occupied Bandwidth
Center 5.814000000 GHz
Ref 20 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
11
dB
Center 5.814 00 GHz
Span 50 MHz
#Res BW 200 kHz
#VBW 620 kHz
#Sweep 1.76 ms (601 pts)
Occupied Bandwidth
13.8136 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 153.756 kHz
x dB Bandwidth 16.587 MHz
Center Freq
5.81400000 GHz
Start Freq
5.78900000 GHz
Stop Freq
5.83900000 GHz
CF Step
5.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2005 Agilent Technologies

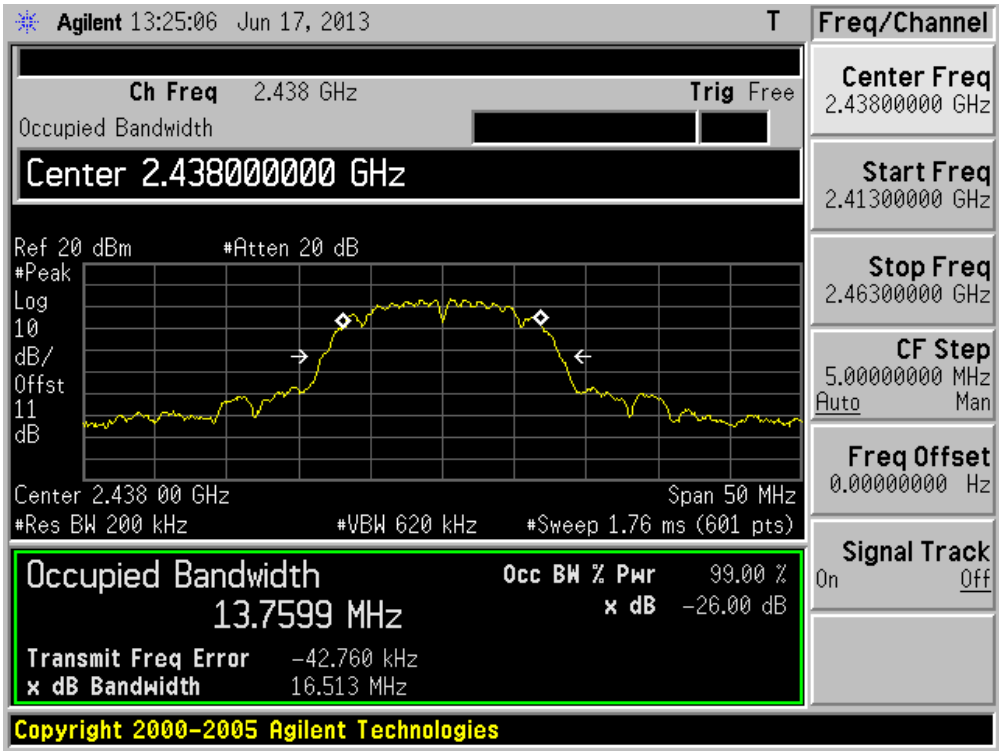
Product	:	DWAM83 Wireless Audio Module
Test Item	:	99% Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant B

Frequency (MHz)	99% Bandwidth (kHz)
2412	13763.7
2438	13759.9
2464	13759.1
5736	13788.6
5762	13827.6
5814	13812.1

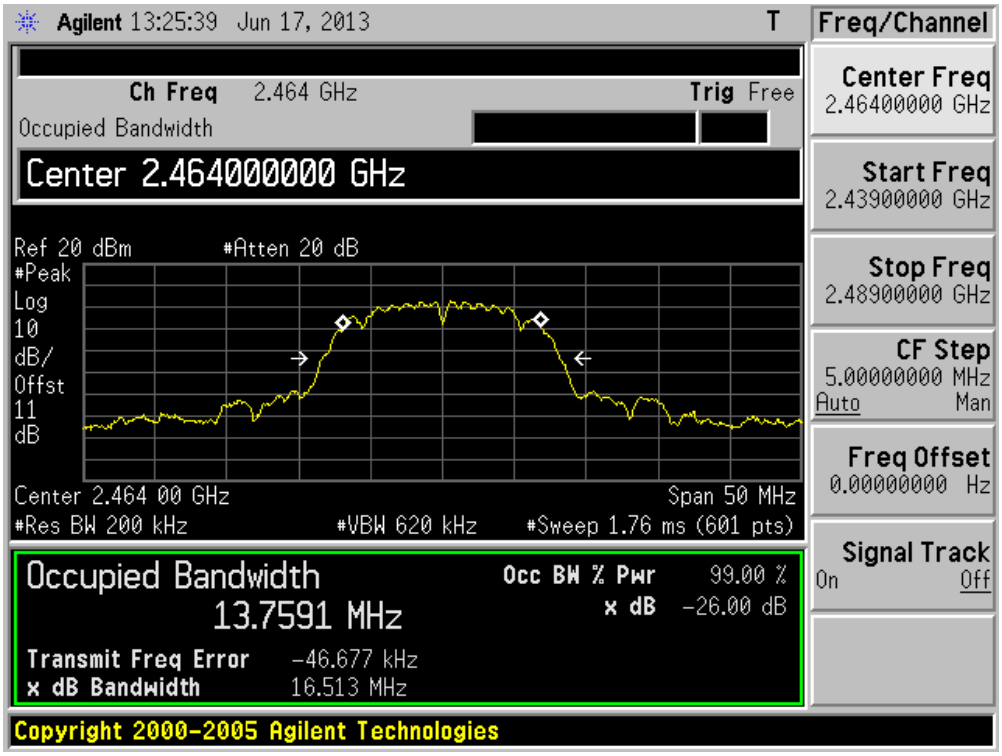
2412MHz



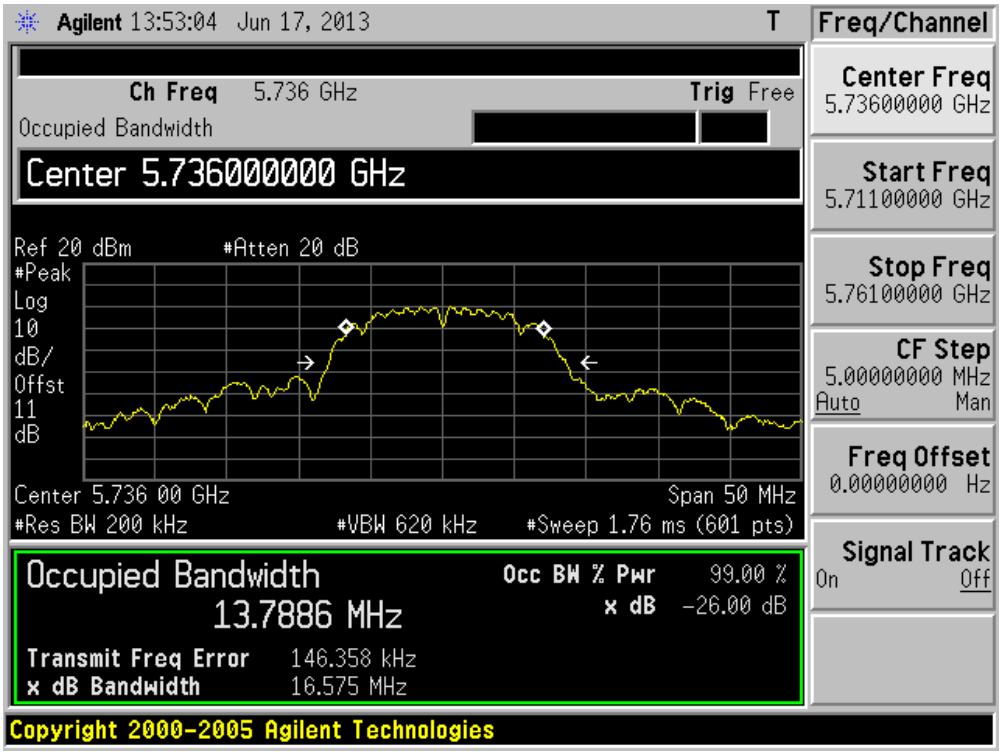
2438MHz



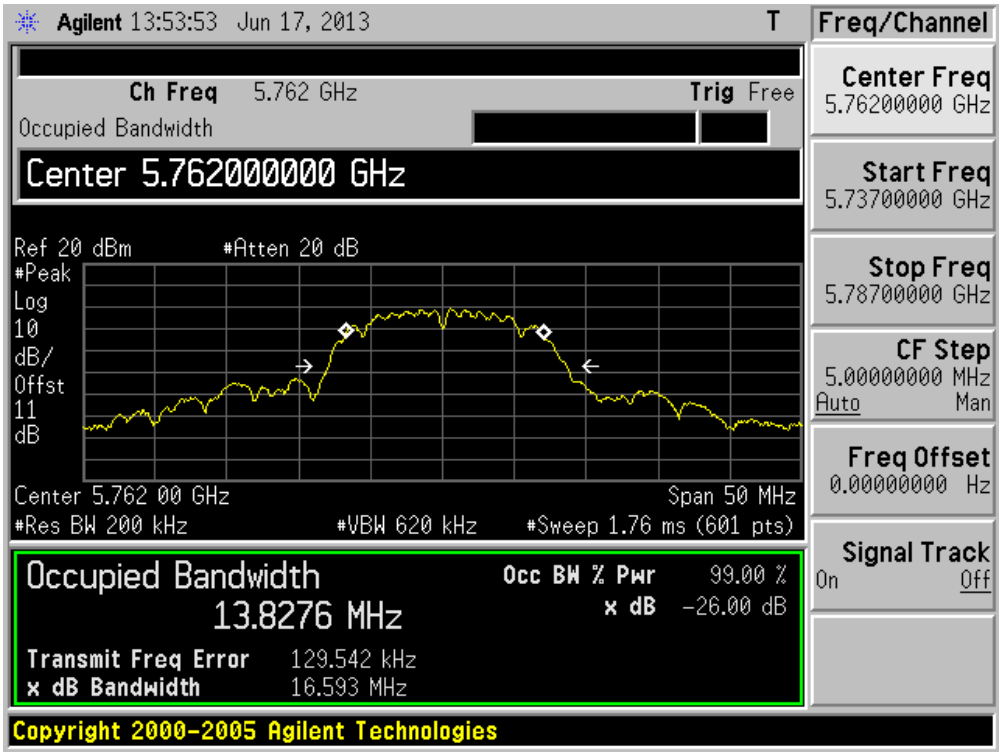
2464MHz



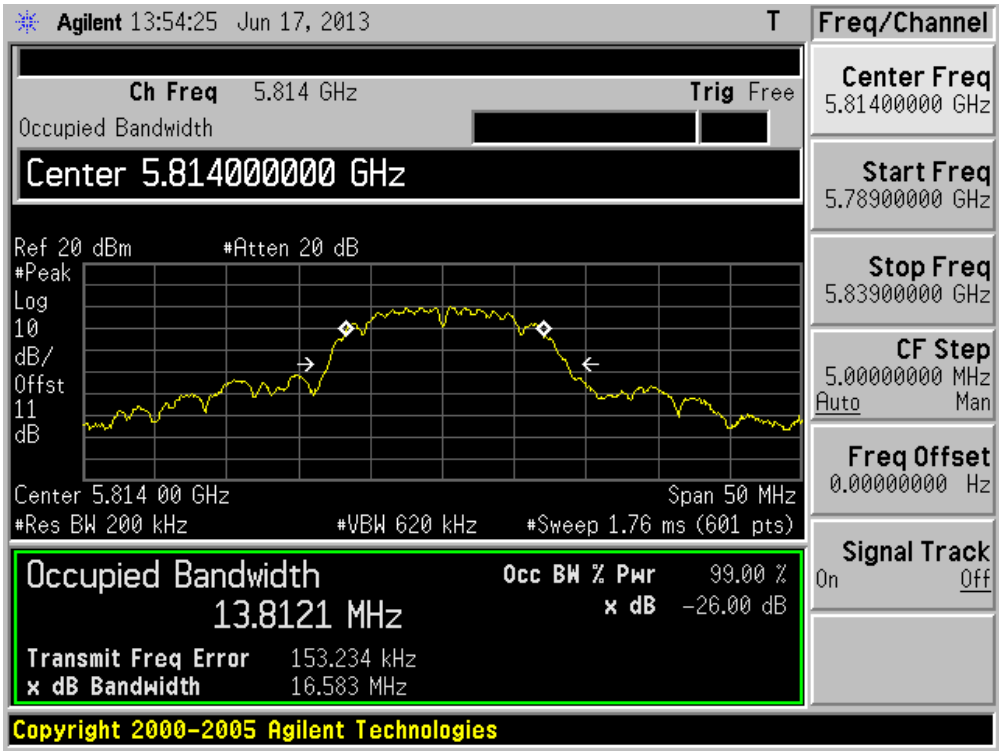
5736MHz



5762MHz



5814MHz


Agilent 13:54:25 Jun 17, 2013
T
Freq/Channel
Ch Freq 5.814 GHz
Trig Free
Occupied Bandwidth
Center 5.814000000 GHz
Ref 20 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
11
dB
Center 5.814 00 GHz
Span 50 MHz
#Res BW 200 kHz
#VBW 620 kHz
#Sweep 1.76 ms (601 pts)
Occupied Bandwidth
13.8121 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 153.234 kHz
x dB Bandwidth 16.583 MHz
Center Freq
5.81400000 GHz
Start Freq
5.78900000 GHz
Stop Freq
5.83900000 GHz
CF Step
5.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2005 Agilent Technologies

9. Power Output

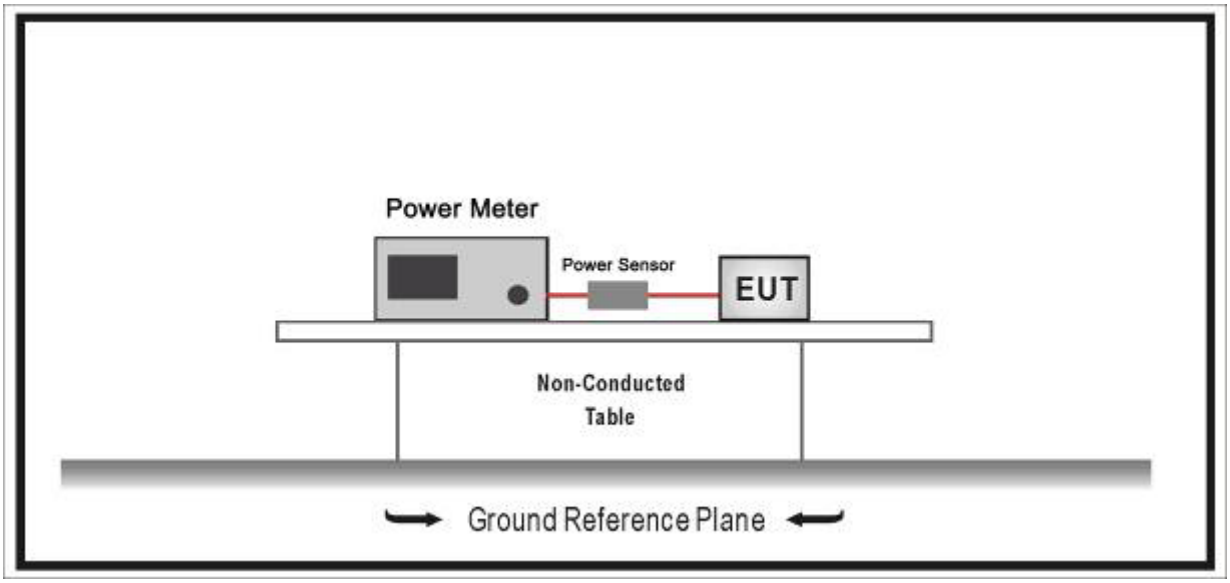
9.1. Test Equipment

Power Output / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2013.11.10
Power Sensor	Anritsu	MA2411B	0846014	2013.11.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2014.05.08

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

9.2. Test Setup



9.3. Limit

The maximum peak power shall be less 1 Watt (30dBm).

Note: the conducted output power limit specified above is based on the use the antennas with directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

9.4. Test Procedure

The EUT was tested according to KDB558074 and KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

Use the wideband power meter to test peak power and record the result.

9.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

9.6. Test Result

Product	:	DWAM83 Wireless Audio Module
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 1: Transmit by Ant A

Frequency (MHz)	Measurement Power Output (dBm)		Total Power (dBm)	Limit (dBm)	Result
	Ant A	Ant B			
2412	18.64	N/A	18.64	30.00	Pass
2438	18.17	N/A	18.17	30.00	Pass
2464	18.52	N/A	18.52	30.00	Pass
5736	14.94	N/A	14.94	30.00	Pass
5762	14.43	N/A	14.43	30.00	Pass
5814	15.01	N/A	15.01	30.00	Pass

Product	:	DWAM83 Wireless Audio Module
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 1: Transmit by Ant B

Frequency (MHz)	Measurement Power Output (dBm)		Total Power (dBm)	Limit (dBm)	Result
	Ant A	Ant B			
2412	N/A	18.74	18.74	30.00	Pass
2438	N/A	18.27	18.27	30.00	Pass
2464	N/A	18.23	18.23	30.00	Pass
5736	N/A	14.78	14.78	30.00	Pass
5762	N/A	14.64	14.64	30.00	Pass
5814	N/A	14.82	14.82	30.00	Pass

10. Power Spectral Density

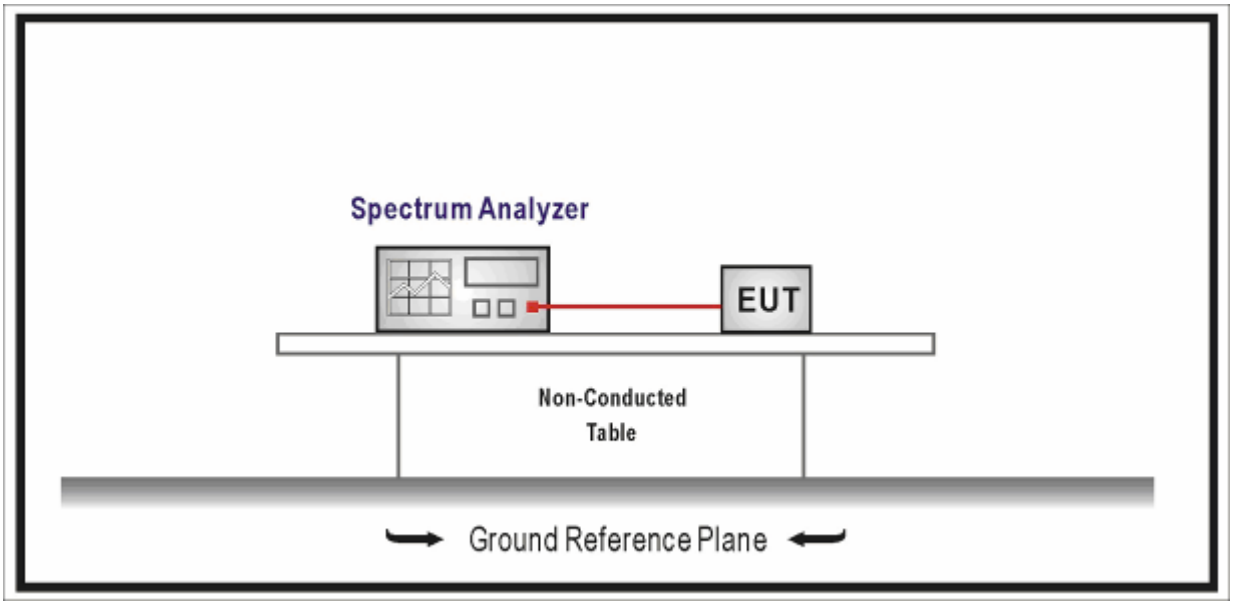
10.1. Test Equipment

Operation Frequency Range of 20dB Bandwidth /TR8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014/01/21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2014/05/08

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

10.2. Test Setup



10.3. Limit

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

10.4. Test Procedure

The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
Set analyzer center frequency to DTS channel center frequency, the span to 1.5 times the DTS channel bandwidth, RBW ≧ 3 kHz, Set VBW ≧ 3 * RBW, Sweep time = auto couple, Detector = peak, Trace mode = max hold, Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level. If measured value exceed limit reduce RBW (no less than 3kHz) and repeat.

10.5. Uncertainty

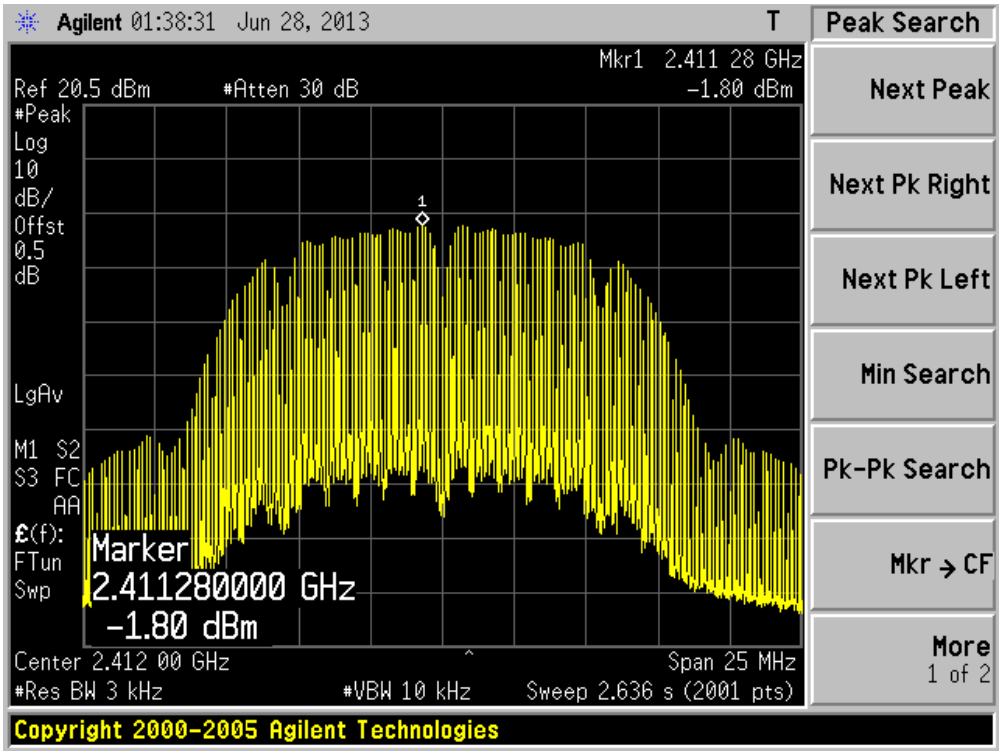
The measurement uncertainty is defined as ± 1.27 dB

10.6. Test Result

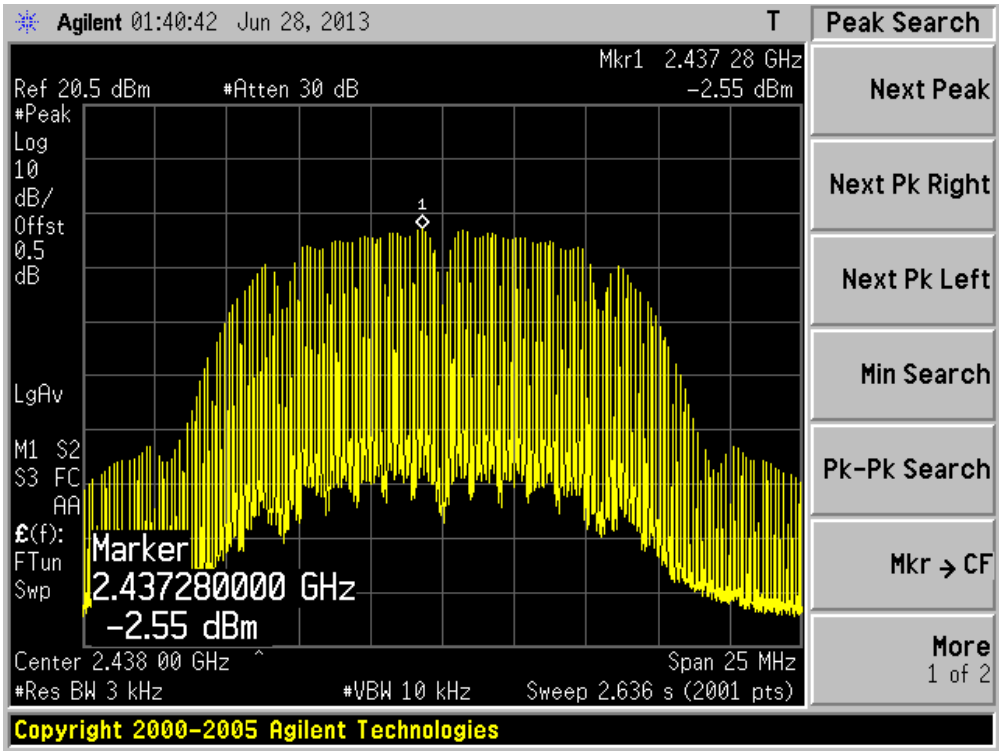
Product	:	DWAM83 Wireless Audio Module
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant A

Frequency (MHz)	Measurement PPSD (dBm)		Total PPSD (dBm)	Limit (dBm)	Result
	Ant A	Ant B			
2412	-1.80	N/A	-1.80	8	Pass
2438	-2.55	N/A	-2.55	8	Pass
2464	-3.19	N/A	-3.19	8	Pass
5736	-5.41	N/A	-5.41	8	Pass
5762	-5.72	N/A	-5.72	8	Pass
5814	-5.22	N/A	-5.22	8	Pass

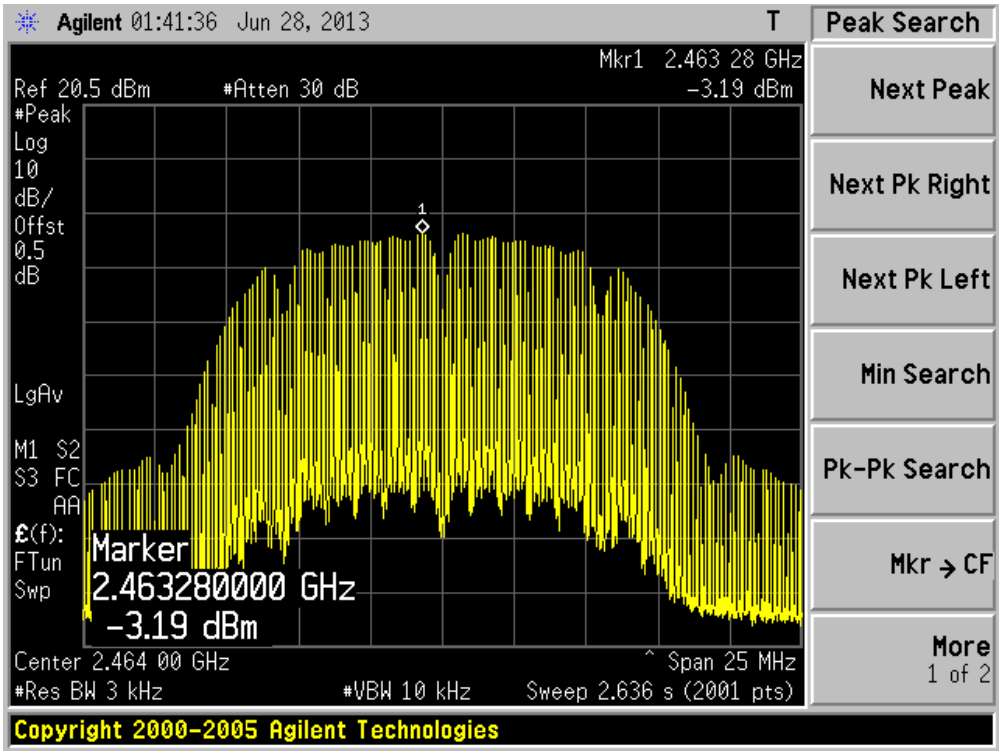
2412MHz



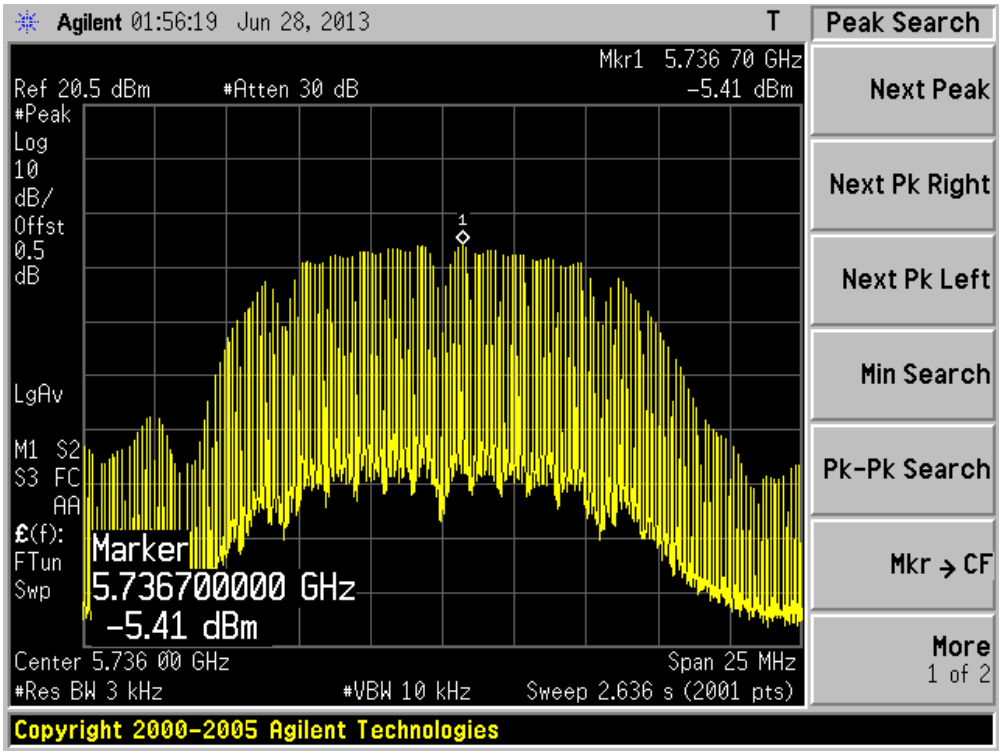
2438MHz



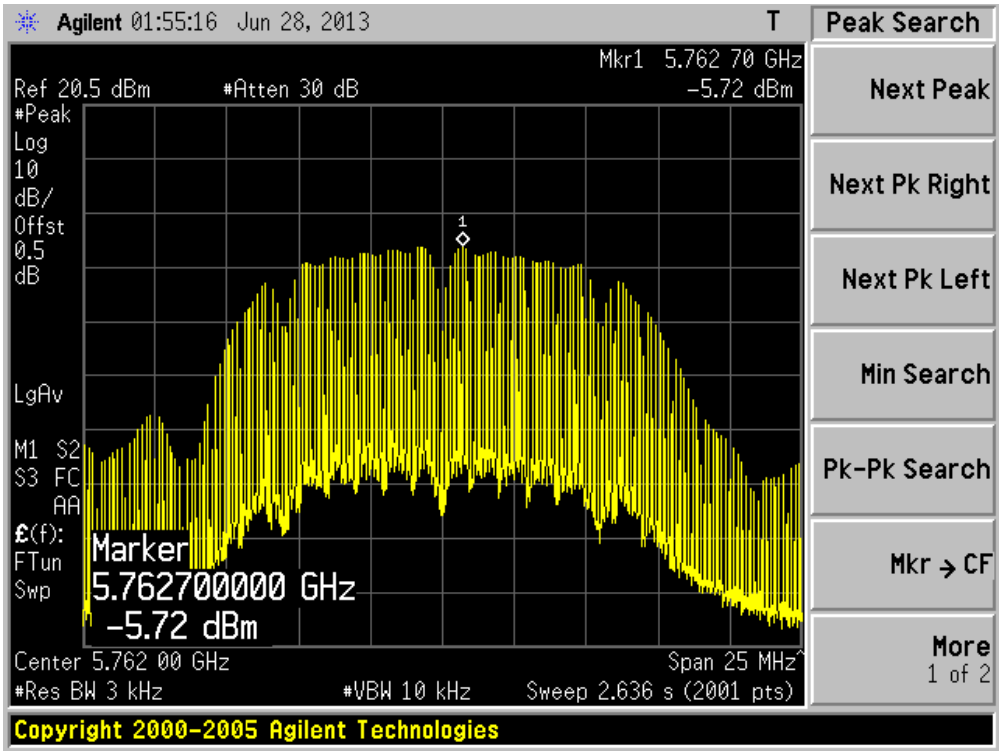
2464MHz



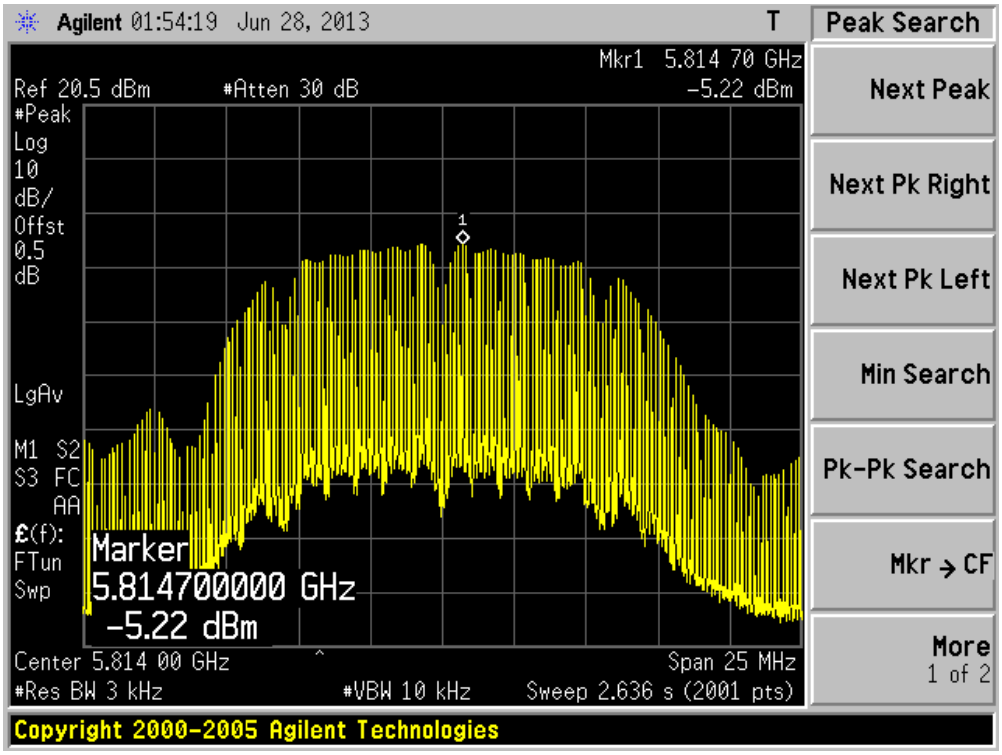
5736MHz



5762MHz



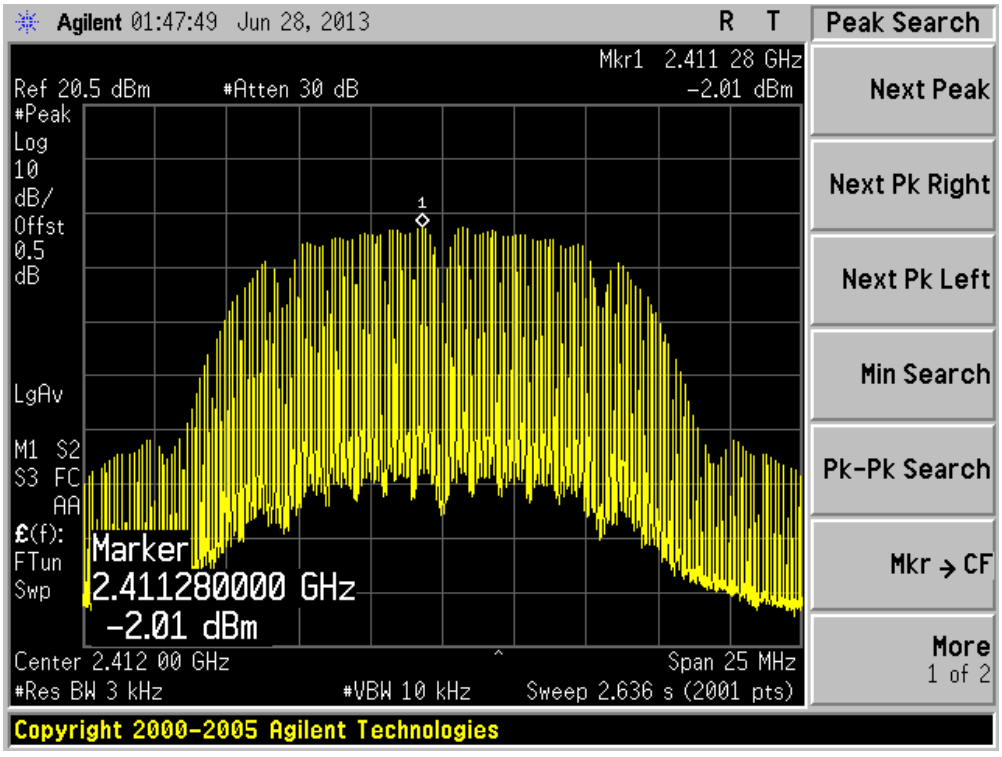
5814MHz


Agilent 01:54:19 Jun 28, 2013
T
Peak Search
Mkr1 5.814 70 GHz
Ref 20.5 dBm
#Atten 30 dB
-5.22 dBm
Next Peak
#Peak
Log
10
dB/
Offst
0.5
dB
Next Pk Right
Next Pk Left
Min Search
LgAv
M1 S2
S3 FC
AA
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
Marker
5.814700000 GHz
-5.22 dBm
More
1 of 2
Center 5.814 00 GHz
Span 25 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 2.636 s (2001 pts)
Copyright 2000-2005 Agilent Technologies

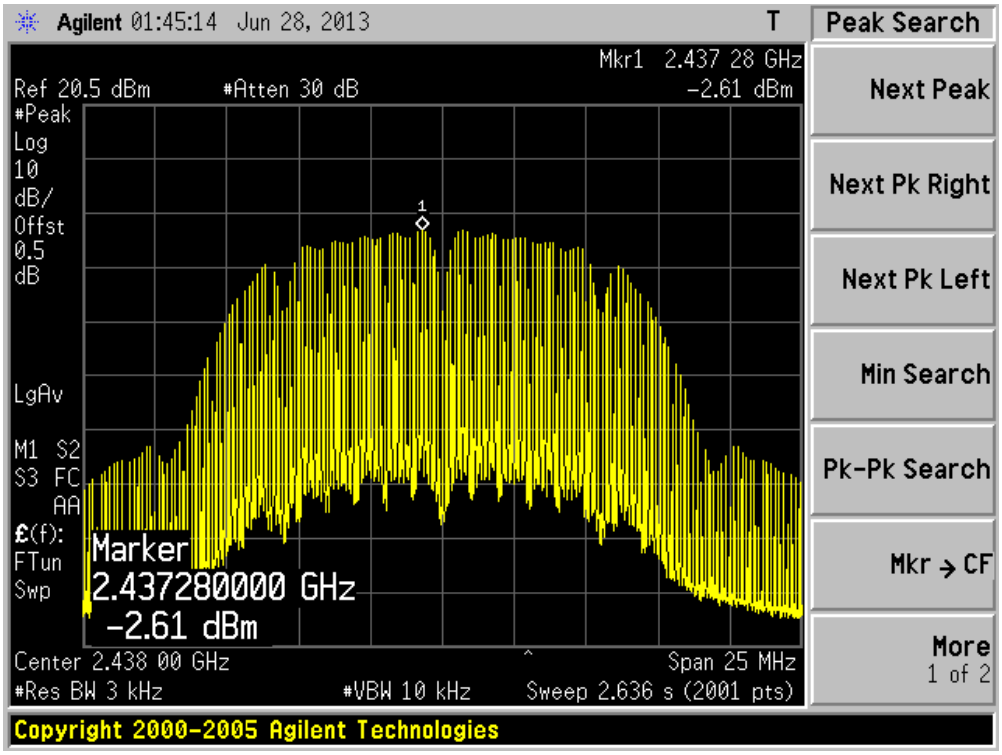
Product	:	DWAM83 Wireless Audio Module
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by Ant B

Frequency (MHz)	Measurement PPSD (dBm)		Total PPSD (dBm)	Limit (dBm)	Result
	Ant A	Ant B			
2412	N/A	-2.01	-2.01	8	Pass
2438	N/A	-2.61	-2.61	8	Pass
2464	N/A	-3.23	-3.23	8	Pass
5736	N/A	-5.68	-5.68	8	Pass
5762	N/A	-6.55	-6.55	8	Pass
5814	N/A	-5.99	-5.99	8	Pass

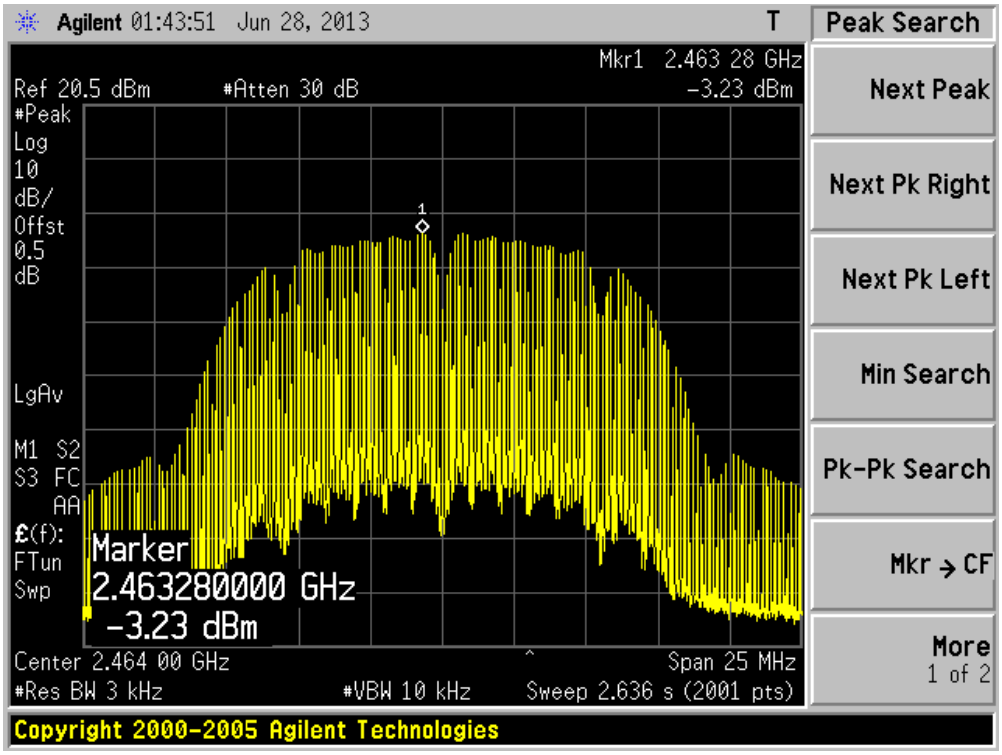
2412MHz



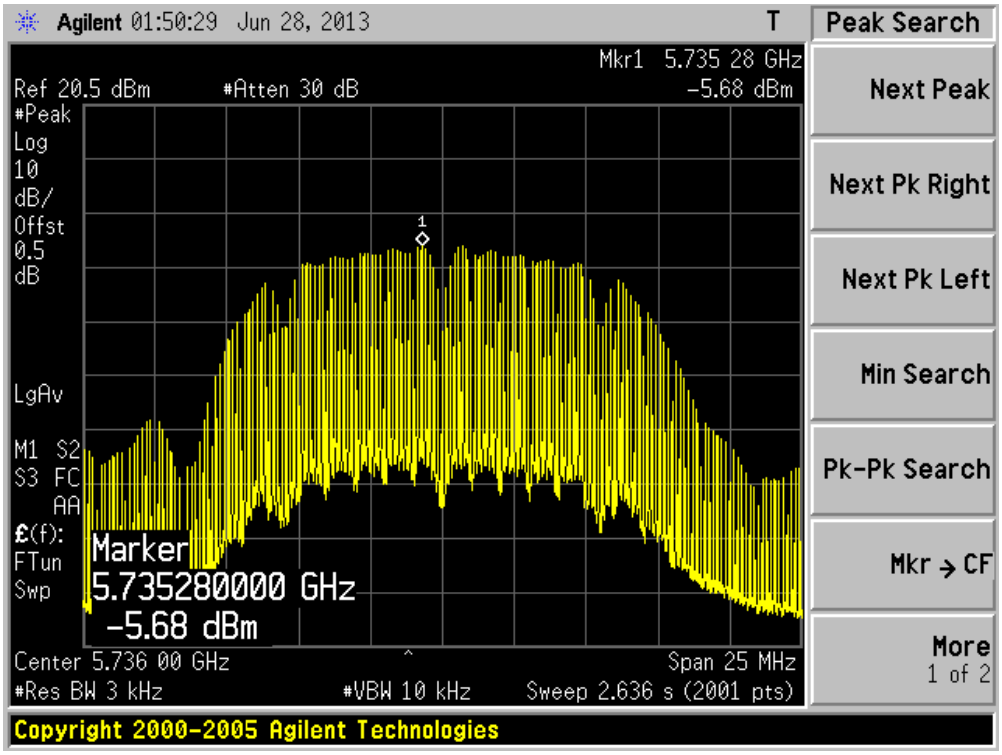
2438MHz



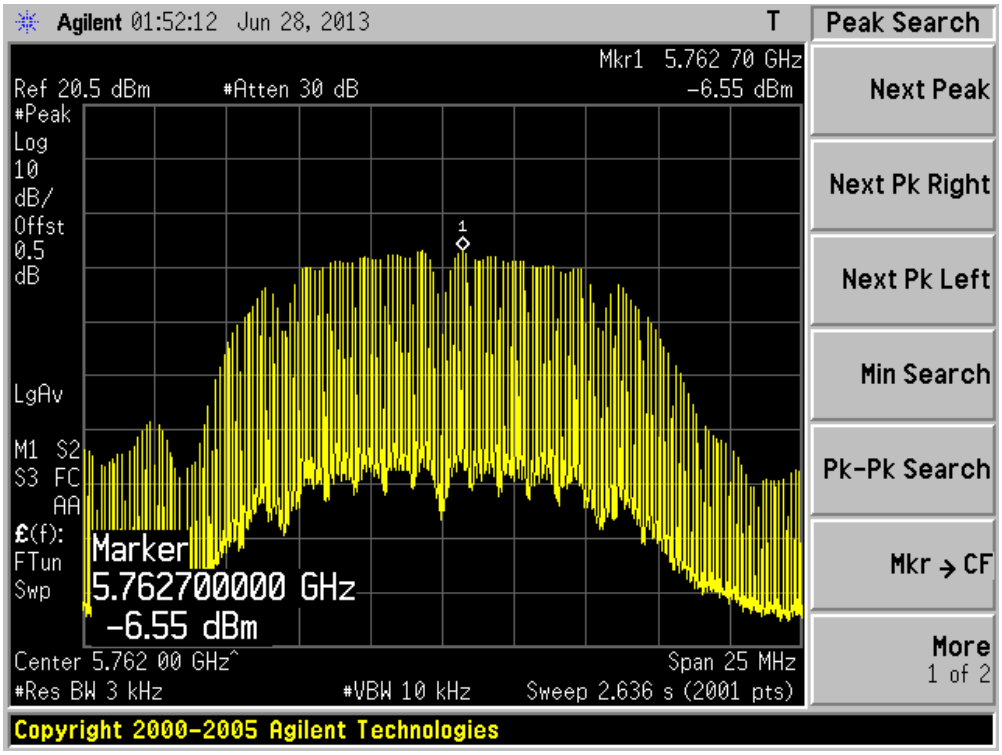
2464MHz



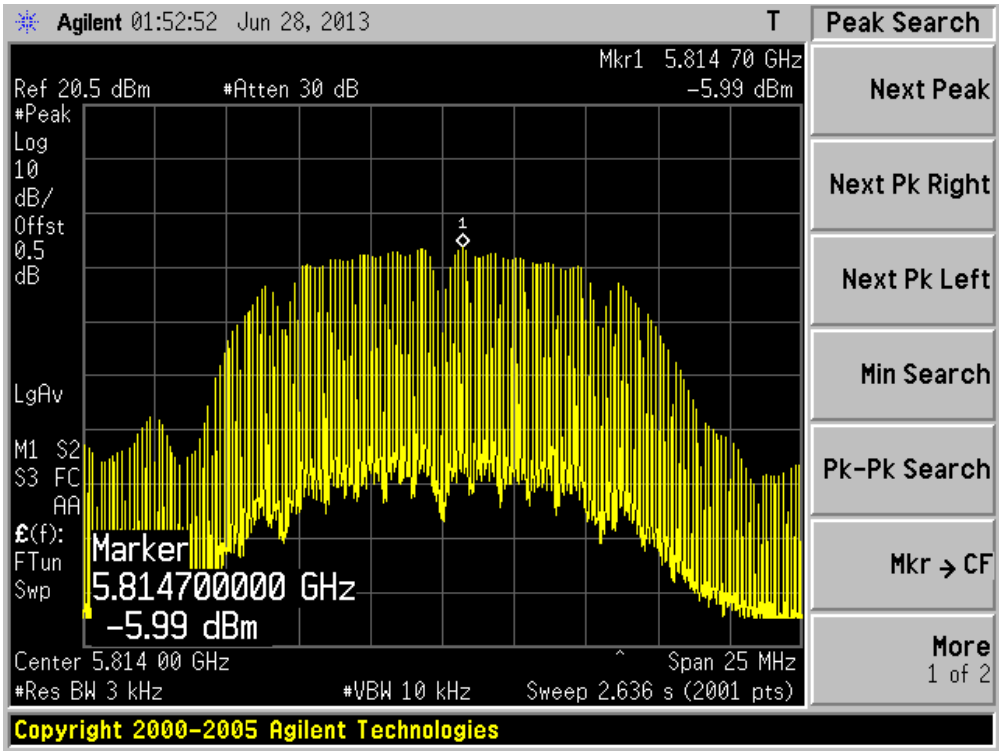
5736MHz



5762MHz



5814MHz


Agilent 01:52:52 Jun 28, 2013
T
Peak Search
Mkr1 5.814 70 GHz
Ref 20.5 dBm
#Atten 30 dB
-5.99 dBm
Next Peak
#Peak
Log
10
dB/
Offst
0.5
dB
Next Pk Right
Next Pk Left
Min Search
LgAv
M1 S2
S3 FC
AA
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
Marker
5.814700000 GHz
-5.99 dBm
More
1 of 2
Center 5.814 00 GHz
Span 25 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 2.636 s (2001 pts)
Copyright 2000-2005 Agilent Technologies

11. Receiver Spurious Emission for Industry Canada RSS-Gen Requirement

11.1. Test Equipment

Radiated Emission / AC-2

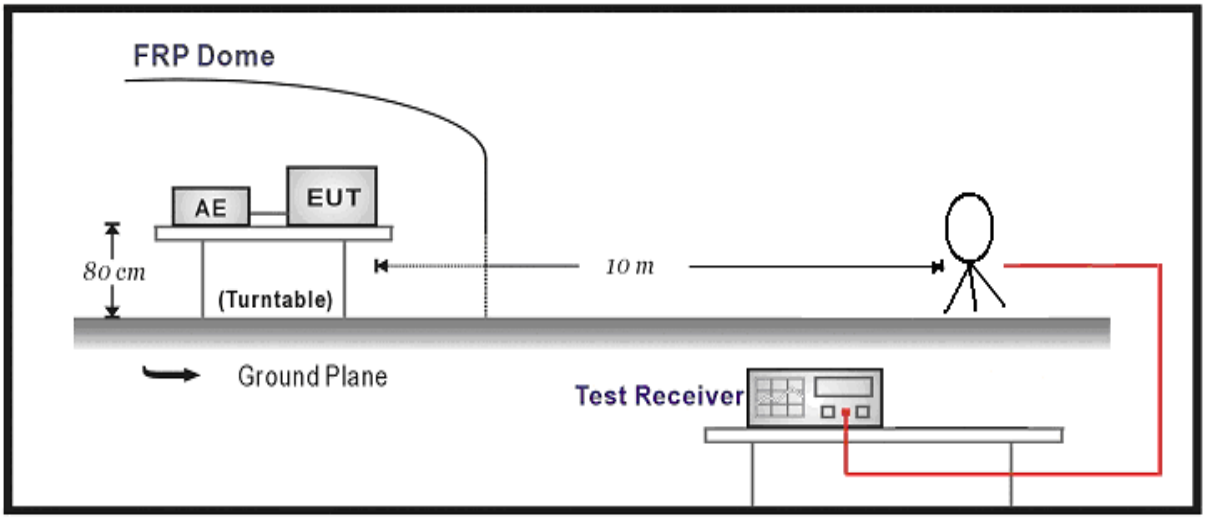
Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2014.03.30
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.10.15
Coaxial Cable	Huber+Suhner	RG 214	AC2-C	2014.03.01
Temperature/Humidity Meter	zhicheng	ZC1-2	AC2-TH	2014.01.09
EMI Test Receiver	R&S	ESCI	100573	2014.03.30

Radiated Emission / AC-5

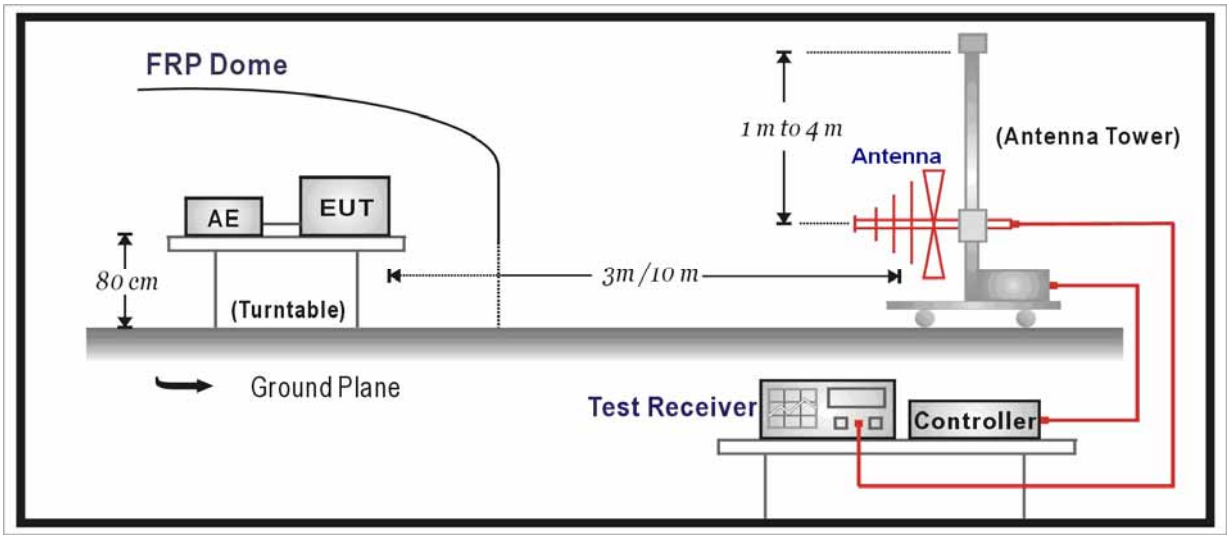
Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2014.05.03
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Temperature/Humidity Meter	zhicheng	ZC1-2	AC5-TH	2014.01.11
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2014.01.11

11.2. Test Setup

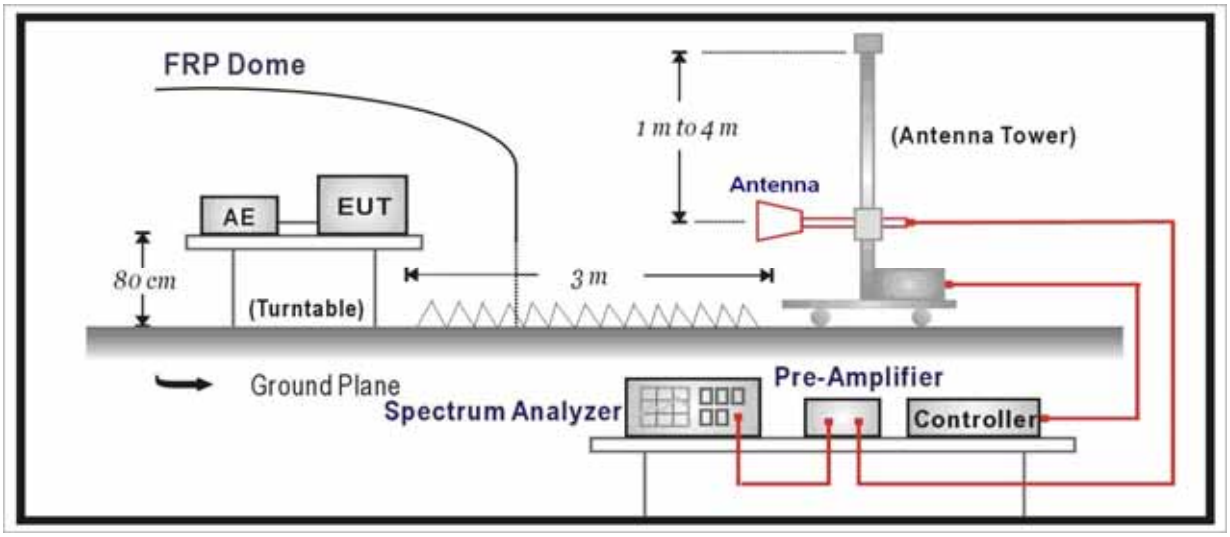
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



11.3. Limit

FCC Part 15 Subpart B Paragraph 15.109		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

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

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

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

11.4. Test Procedure

According to KDB558074.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 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 is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
The frequency range from 9kHz to10th harmonic is checked.
Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

11.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB
below 1G is defined as ± 3.8 dB

11.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.
Measure Level = Reading Level + Cable Loss + Antenna Factor - Preamplifier Gain

Mode 2: Receive by Ant A

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2412	H	1501.5	55.5	-19.4	36.1	54(Note1)	-17.9	PK
	V	2003.0	55.1	-17.9	37.2	54(Note1)	-16.8	PK
2438	H	1501.5	54.6	-19.4	35.2	54(Note1)	-18.8	PK
	V	2003.0	55.7	-17.9	37.8	54(Note1)	-16.2	PK
2464	H	1671.5	56.2	-19.3	37.0	54(Note1)	-17.0	PK
	V	2003.0	55.3	-17.9	37.3	54(Note1)	-16.7	PK
5736	H	1501.5	55.7	-19.4	36.3	54(Note1)	-17.7	PK
	V	2003.0	55.4	-17.9	37.4	54(Note1)	-16.6	PK
5762	H	1663.0	57.3	-19.3	38.0	54(Note1)	-16.0	PK
	V	2003.0	56.0	-17.9	38.1	54(Note1)	-15.9	PK
5814	H	1331.5	58.3	-19.5	38.7	54(Note1)	-15.3	PK
	V	2003.0	55.9	-17.9	38.0	54(Note1)	-16.0	PK

Note1: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

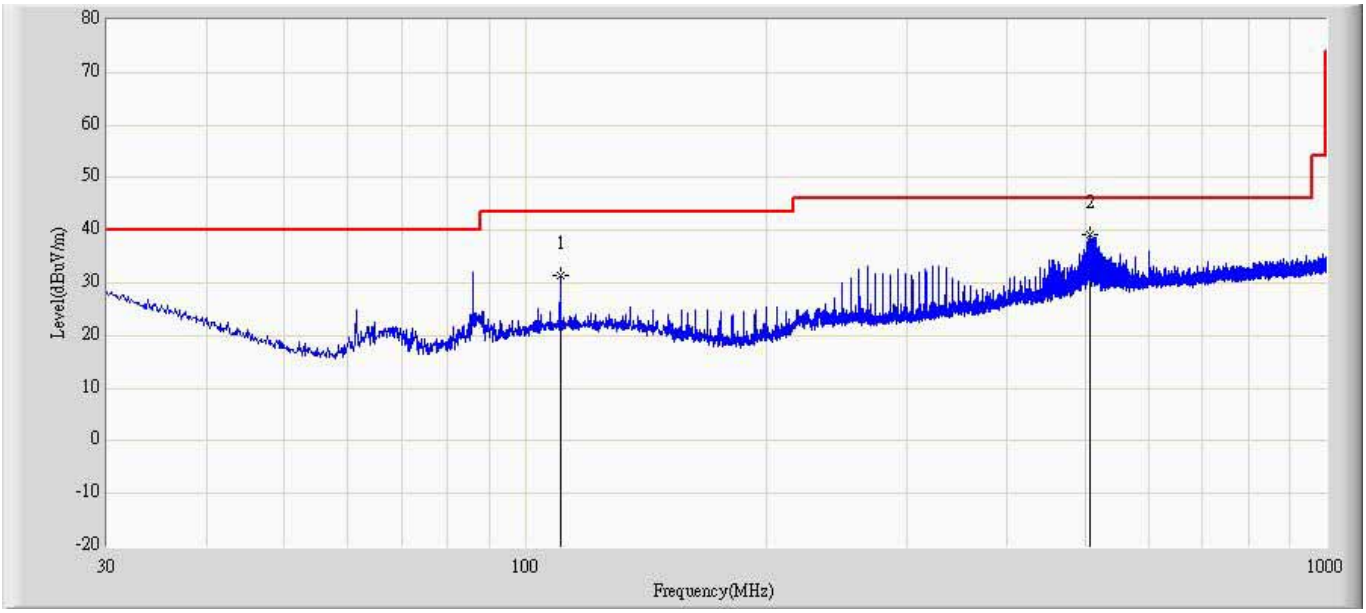
Mode 2: Receive by Ant B

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2412	H	1501.5	55.1	-19.4	35.7	54(Note1)	-18.3	PK
	V	2003.1	56.7	-17.9	38.8	54(Note1)	-15.2	PK
2438	H	1501.5	56.9	-19.4	37.5	54(Note1)	-16.5	PK
	V	2003.0	55.6	-17.9	37.6	54(Note1)	-16.4	PK
2464	H	1501.3	55.4	-19.4	36.0	54(Note1)	-18.0	PK
	V	2003.3	55.3	-17.9	37.3	54(Note1)	-16.7	PK
5736	H	1501.5	56.3	-19.4	36.9	54(Note1)	-17.1	PK
	V	2003.0	55.5	-17.9	37.6	54(Note1)	-16.4	PK
5762	H	1501.5	56.9	-19.4	37.5	54(Note1)	-16.5	PK
	V	2003.0	55.6	-17.9	37.6	54(Note1)	-16.4	PK
5814	H	1501.5	55.9	-19.4	36.5	54(Note1)	-17.5	PK
	V	2003.0	55.5	-17.9	37.5	54(Note1)	-16.5	PK

Note1: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

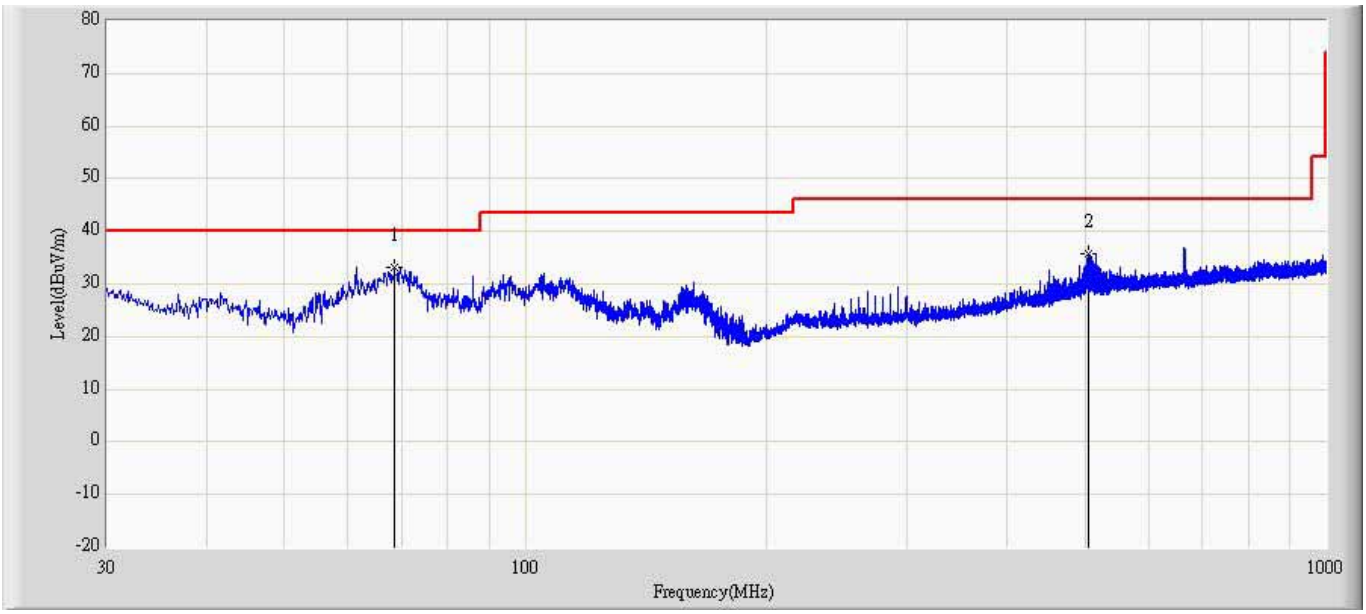
The worst case of Radiated Emission below 1GHz:

Engineer: Toms	
Site: AC2	Time: 2013/06/25 - 15:21
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Horizontal
EUT: DWAM83 Wireless Audio Module	Power: DC
Note: Mode2	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		110.631	31.376	12.766	-12.124	43.500	18.610	QP
2	*	508.089	39.078	13.539	-6.922	46.000	25.539	QP

Engineer: Toms	
Site: AC2	Time: 2013/06/25 - 15:21
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Vertical
EUT: DWAM83 Wireless Audio Module	Power: DC
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	68.558	33.178	21.300	-6.822	40.000	11.878	QP
2		505.785	35.705	10.185	-10.295	46.000	25.520	QP

The End