



FCC TEST REPORT

According to

FCC CFR Title 47 Part 15 Subpart C

Applicant	: Matrix Sound Limited
Address	: 95 High Street Hail Weston St Neots Cambridgeshire PE19 5JS
Equipment	: Wireless sound
Model No.	: WS10i
FCC ID	: OSY-WS10I

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of **CerpPASS Technology Corp.** the test report shall not be reproduced except in full.
- The test report must not be used by the clients to claim product certification approval by **NVLAP** or any agency of the Government.

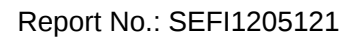


Table of Contents

1. Report of Measurements and Examinations	6
1.1. List of Measurements and Examinations	6
2. Test Configuration of Equipment under Test	7
2.1. Feature of Equipment under Test	7
2.2. Carrier Frequency of Channels	8
2.3. Test Manner	9
2.4. Description of Test System	10
2.5. General Information of Test	11
2.6. Measurement Uncertainty	11
3. Antenna Requirements	12
3.1. Standard Applicable	12
3.2. Antenna Construction and Directional Gain	12
4. Test of Conducted Emission	13
4.1. Test Limit	13
4.2. Test Procedures	13
4.3. Typical Test Setup	14
4.4. Measurement Equipment	14
4.5. Test Result and Data	15
5. Test of Radiated Emission	17
5.1. Test Limit	17
5.2. Test Procedures	17
5.3. Typical Test Setup	18
5.4. Measurement Equipment	19
5.5. Test Result and Data	20
6. Occupied Bandwidth	24
6.1. Test Limit	24
6.2. Test Procedures	24
6.3. Test Setup Layout	24
6.4. Measurement Equipment	24
6.5. Test Result and Data	25
7. Maximum Peak Output Power	27
7.1. Test Limit	27
7.2. Test Procedure	27
7.3. Test Setup Layout	27
7.4. Measurement Equipment	27
7.5. Test Result and Data	28
8. Band Edges Measurement	31
8.1. Test Limit	31
8.2. Test Procedure	31
8.3. Test Setup Layout	31
8.4. Measurement Equipment	31
8.5. Test Result and Data	31
8.6. Restrict Band Emission Measurement Data	34



9. Power Spectral Density	35
9.1. Test Limit.....	35
9.2. Test Procedure	35
9.3. Test Setup Layout.....	35
9.4. Measurement Equipment	35
9.5. Test Result and Data	36
10. Restricted Bands of Operation	38
10.1. Labeling Requirement	38

[illegible]



FCC TEST REPORT

according to

FCC CFR Title 47 Part 15 Subpart C

Applicant	: Matrix Sound Limited
Address	: 95 High Street Hail Weston St Neots Cambridgeshire PE19 5JS
Equipment	: Wireless sound
Model No.	: WS10i
FCC ID	: OSY-WS10I

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2009** and the energy emitted by this equipment was **passed** **CISPR PUB. 22 and FCC Part 15** in both radiated and conducted emission class B limits. Testing was carried out on Aug 02, 2012 at **CerpPASS Technology Corp.**

Documented By:

Jeff Fang/ Administration

Approved By:

Miro Chueh/ Technical director



1. Report of Measurements and Examinations

1.1. List of Measurements and Examinations

FCC Rule	Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. Conducted Emission	Pass
15.209 15.247(d)	. Radiated Emission	Pass
15.247(a)(2)	. 6dB Bandwidth	Pass
15.247(b)	. Maximum Peak Output Power	Pass
15.247(d)	. 100kHz Bandwidth of Frequency Band Edges	Pass
15.247(e)	. Power Spectral Density	Pass
1.1307 1.1310 2.1091 2.1093	. RF Exposure Compliance	Pass



2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Wireless sound	Model No:	WS10i
	Rating:	100-240Vac, 50/60Hz, 110W
SWITCHING POWER SUPPLY	Model No.:	CPS008050100V
	Input:	100-240V~ 50/60Hz 0.2A
	Output:	5V,1A
SWITCHING POWER SUPPLY	Model No.:	AS650-270-AB240
	Input:	100-240V~ 50/60Hz 1.6A
	Output:	27.0V, 2.4A
TRANSMITTER	Model No.:	2.4G WIRELESS AUDIO TRANSMITTER
	Audio Latency	1.8MS
	Operation Frequency	2.4G
	Audio Sampling Rating	48kHz
	Max. Audio input	2V RMS
	Frequency response	20-22kHz
Remote control	Model No.:	RMT-UNIV01
AC Cable	Shielded, 1.8m	
Audio Cable	Shielded, 1.0m	

Note: please refer to the clients's user mannual.

Module	DARR-82/STS
Spreading	QPSK
Number of Channels	3
Data Rate	22 Mbps
Antenna	PIFA (1.5 dBi)

**2.2. Carrier Frequency of Channels**

Channel	Frequency(MHz)	Channel	Frequency(MHz)
Low	2412	---	---
Mid	2438	---	---
High	2464	---	---



2.3. Test Manner

Test Manner	
a	During testing, the interface cables and equipment positions were varied according to 47 CFR, Part 2, Part 15
b	Adjust the EUT at the test mode and the test channel. Then test.
The test modes:	
The EUT transmitting and receiving with two antennas(A and B) working at 2412MHz,2438MHz and 2464MHz. But the antennas can not work at the same time. After pre-test we found the antenna A has the worst-case . Then, the EUT configuration and cable configuration of the above highest emission mode was recorded for all final test items.	



2.4. Description of Test System

No	Device	Manufacturer	Model No.	Description
1	N/A	N/A	N/A	N/A



2.5. General Information of Test

Test Site:	CerpPASS Technology Corp.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz

Laboratory accreditation



2.6. Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	±2.71 dB
Radiated Emission	30 MHz ~ 25GHz	Vertical	±4.11 dB
		Horizontal	±4.10 dB
Occupied Bandwidth	---	---	±7500 Hz
Maximum Peak Output Power	---	---	±1.4 dB
Band Edges	---	---	±2.2 dB
Power Spectral Density	---	---	±2.2 dB



3. Antenna Requirements

3.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2. Antenna Construction and Directional Gain

Antenna :

Antenna type: PIFA Antenna

Antenna Gain: 1.5 dBi

The antenna is permanently attached antenna.



4. Test of Conducted Emission

4.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

4.2. Test Procedures

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)

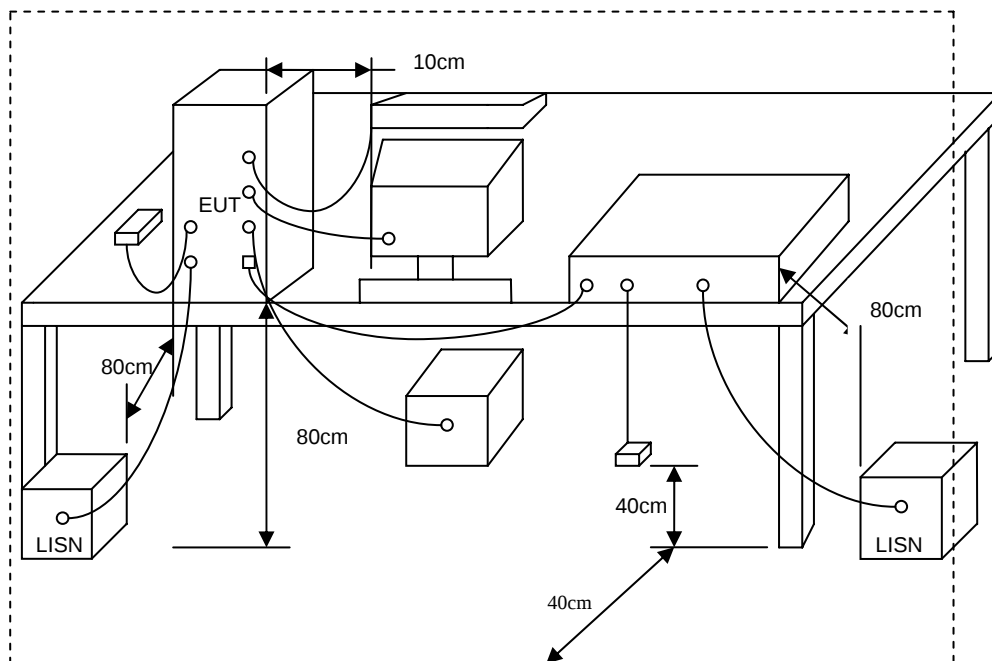
Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

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 9kHz.



4.3. Typical Test Setup



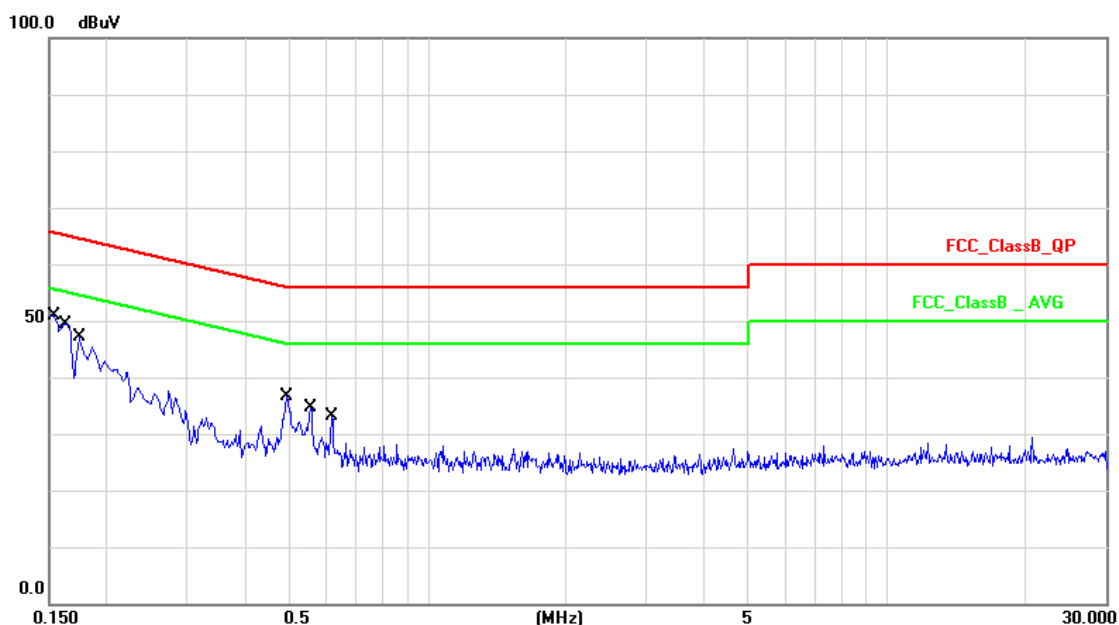
4.4. Measurement Equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2012.01.15	2013.01.14
AMN	R&S	ESH2-Z5	100182	2012.03.14	2013.03.13
Two-Line V-Network	R&S	ENV216	100325	2012.03.14	2013.03.13
ISN	FCC	FCC-TLISN-T 2-02	20379	201203.14	2013.03.13
ISN	FCC	FCC-TLISN-T 4-02	20380	2012.03.14	2013.03.13
ISN	FCC	FCC-TLISN-T 8-02	20381	2012.03.14	2013.03.13
Attenuator	R&S	ESH3-Z2	100529	2012.01.11	2013.01.10
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2011.08.14	2012.08.13



4.5. Test Result and Data

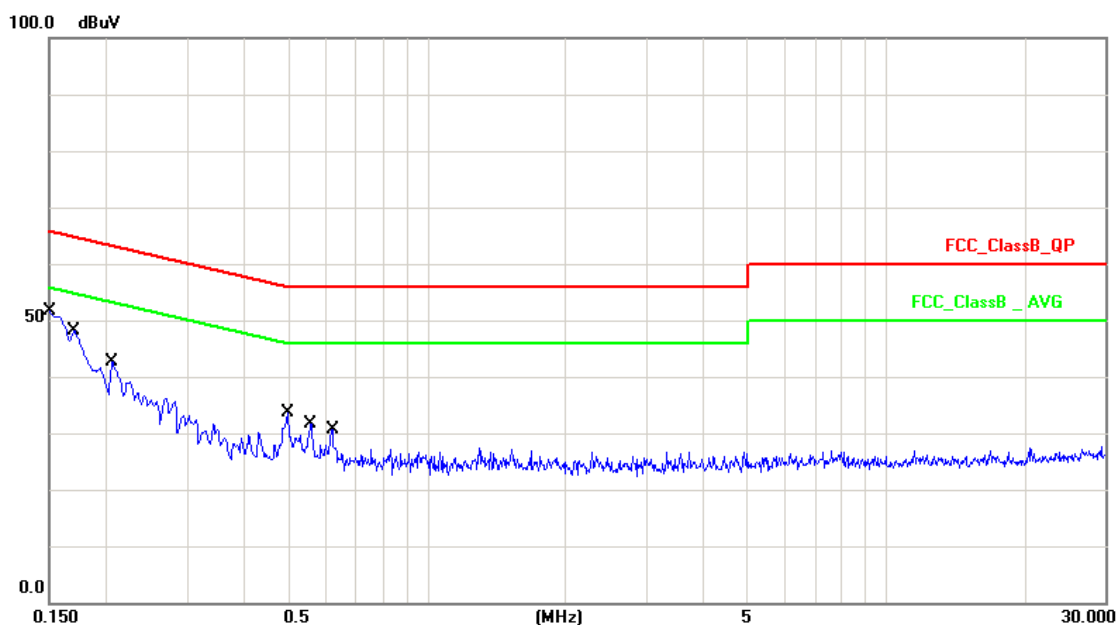
Test Mode :	Normal Operation		
AC Power :	AC 110V	Phase :	LINE
Temperature :	22°C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2012/04/26



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1539	19.87	28.25	48.12	65.78	-17.66	QP
2	0.1539	19.87	12.06	31.93	55.78	-23.85	AVG
3	0.1641	19.87	26.71	46.58	65.25	-18.67	QP
4	0.1641	19.87	9.09	28.96	55.25	-26.29	AVG
5	0.1740	19.87	24.61	44.48	64.76	-20.28	QP
6	0.1740	19.87	7.63	27.50	54.76	-27.26	AVG
7	0.4940	19.85	13.41	33.26	56.10	-22.84	QP
8	0.4940	19.85	10.25	30.10	46.10	-16.00	AVG
9	0.5580	19.85	10.32	30.17	56.00	-25.83	QP
10	0.5580	19.85	8.60	28.45	46.00	-17.55	AVG
11	0.6180	19.85	9.82	29.67	56.00	-26.33	QP
12	0.6180	19.85	8.76	28.61	46.00	-17.39	AVG



Test Mode :	Normal Operation		
AC Power :	AC 110V	Phase :	NEUTRAL
Temperature :	22°C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2012/04/26



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	19.50	28.26	47.76	65.99	-18.23	QP
2	0.1500	19.50	11.27	30.77	55.99	-25.22	AVG
3	0.1700	19.50	25.21	44.71	64.96	-20.25	QP
4	0.1700	19.50	6.84	26.34	54.96	-28.62	AVG
5	0.2060	19.50	17.82	37.32	63.36	-26.04	QP
6	0.2060	19.50	3.75	23.25	53.36	-30.11	AVG
7	0.4980	19.50	9.43	28.93	56.03	-27.10	QP
8	0.4980	19.50	6.88	26.38	46.03	-19.65	AVG
9	0.5580	19.50	8.17	27.67	56.00	-28.33	QP
10	0.5580	19.50	6.22	25.72	46.00	-20.28	AVG
11	0.6220	19.50	7.35	26.85	56.00	-29.15	QP
12	0.6220	19.50	5.80	25.30	46.00	-20.70	AVG

Note: Measurement Level = Reading Level + Correct Factor



5. Test of Radiated Emission

5.1. Test Limit

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2009. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance Meters	Radiated ($\mu V / M$)	Radiated (dB $\mu V / M$)
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

Frequency (MHz)	Distance Meters	Radiated (dB $\mu V / M$)
30-230	10	30
230-1000	10	37

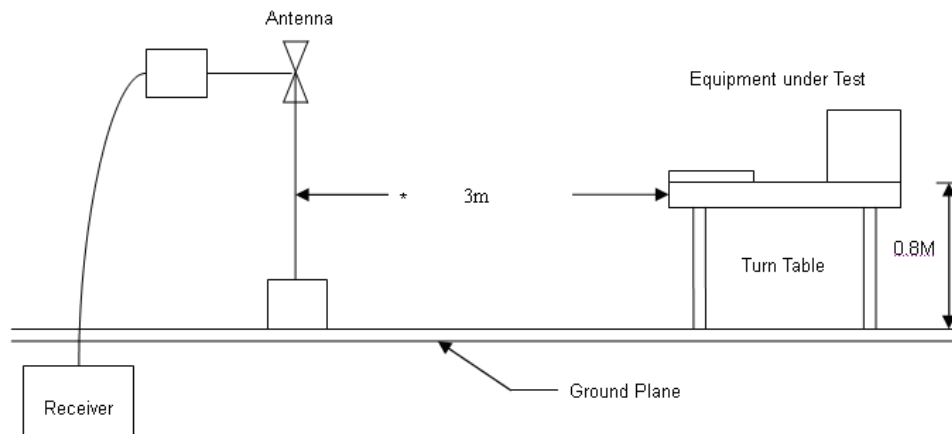
5.2. Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

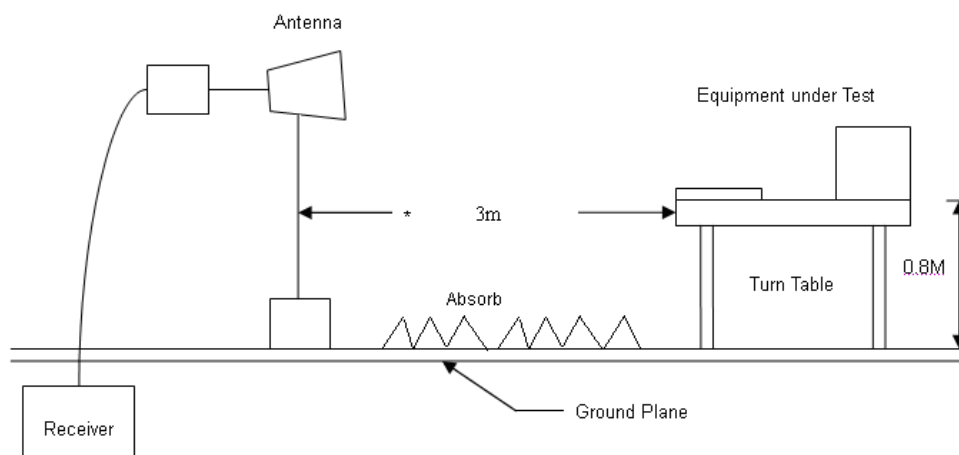


5.3. Typical Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup





5.4. Measurement Equipment

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
EMI Test Receiver	ESCI	R&S	101183	2012.05.11	2013.05.10
H64 Amplifier	8447F	HP	3113A05582	2011.08.14	2012.08.13
Preamplifier	8449B	Agilent	3008A02342	2012.02.10	2013.02.09
Ultra Broadband Antenna	HL562	R&S	100363	2012.05.07	2013.05.06
Broad-Band Horn Antenna	BBHA9120D	Schwarzbeck	9120D-619	2012.05.07	2013.05.06
Spectrum Analyzer	FSP40	R&S	100324	2011.08.14	2012.08.13
Temperature/ Humidity Meter	ZC1-11	Zhicheng	CEP-TH-002	2011.08.17	2012.08.16



5.5. Test Result and Data

Under 1G:

Engineer : Matt	
Site : EMC Lab AC 102	Time : 2012-8-2
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : Wireless sound	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V	Note : Normal Link

Freq. (MHz)	Ant.Pol. H/V	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
36.32	V	53.84	-12.74	41.10	46.00	-4.9	Peak
195.92	V	47.21	-8.36	38.85	46.00	-7.15	Peak
285.92	V	46.98	-5.36	41.62	46.00	-4.38	Peak
426.91	V	45.82	-4.81	41.01	46.00	-4.99	Peak
669.21	V	44.65	-2.11	42.54	46.00	-3.46	Peak
853.68	V	39.76	2.56	42.32	46.00	-3.68	Peak
145.52	H	54.56	-12.74	41.82	46.00	-4.18	Peak
169.02	H	48.87	-8.36	40.51	46.00	-5.49	Peak
285.91	H	43.92	-5.36	38.56	46.00	-7.44	Peak
452.31	H	44.72	-4.81	39.91	46.00	-6.09	Peak
667.29	H	38.87	2.56	41.43	46.00	-4.57	Peak
848.68	H	43.21	4.35	47.56	54.00	-6.44	Peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Above 1G(1GHz-26GHz):

Engineer :Matt	
Site : EMC Lab AC 102	Time : 2012-8-2
Limit : FCC_15_03M_PK	Margin : 6
EUT : Wireless sound	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V	Note : Channel Low (2412MHz)

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m)	AV (dBuV/m)				
4825.67	V	46.92	35.92	6.53	53.45	42.45	74.00	54.00	-11.55	average
4824.85	H	45.92	34.98	6.53	52.45	41.51	74.00	54.00	-12.49	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Engineer : Matt	
Site : EMC Lab AC 102	Time : 2012-8-2
Limit : FCC_15_03M_PK	Margin : 6
EUT : Wireless sound	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V	Note : Channel Middel (2438MHz)

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m)	AV (dBuV/m)				
4876.23	V	44.67	34.89	6.85	51.52	41.74	74.00	54.00	-12.26	average
4876.91	H	44.98	34.98	6.53	51.51	41.51	74.00	54.00	-12.49	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Engineer : Matt	
Site : EMC Lab AC 102	Time : 2012-8-2
Limit : FCC_15_03M_PK	Margin : 6
EUT : Wireless sound	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V	Note : Channel High (2464MHz)

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m)	AV (dBuV/m)				
4928.09	V	45.87	35.25	6.99	52.86	42.24	74.00	54.00	-11.76	average
4928.26	H	44.87	35.88	6.99	51.86	42.87	74.00	54.00	-11.13	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



6. Occupied Bandwidth

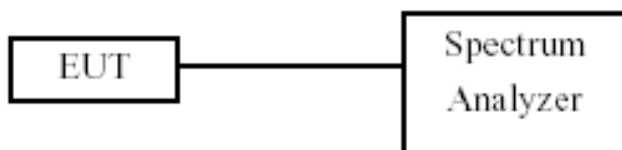
6.1. Test Limit

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725- 5850 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.

6.2. Test Procedures

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 1~5% of the emission bandwidth and $VBW \geq 3 \times RBW$.
- The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.
- The 6dB Bandwidth was measured and recorded.

6.3. Test Setup Layout



6.4. Measurement Equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	FSP40	R&S	100324	2011.08.14	2012.08.13

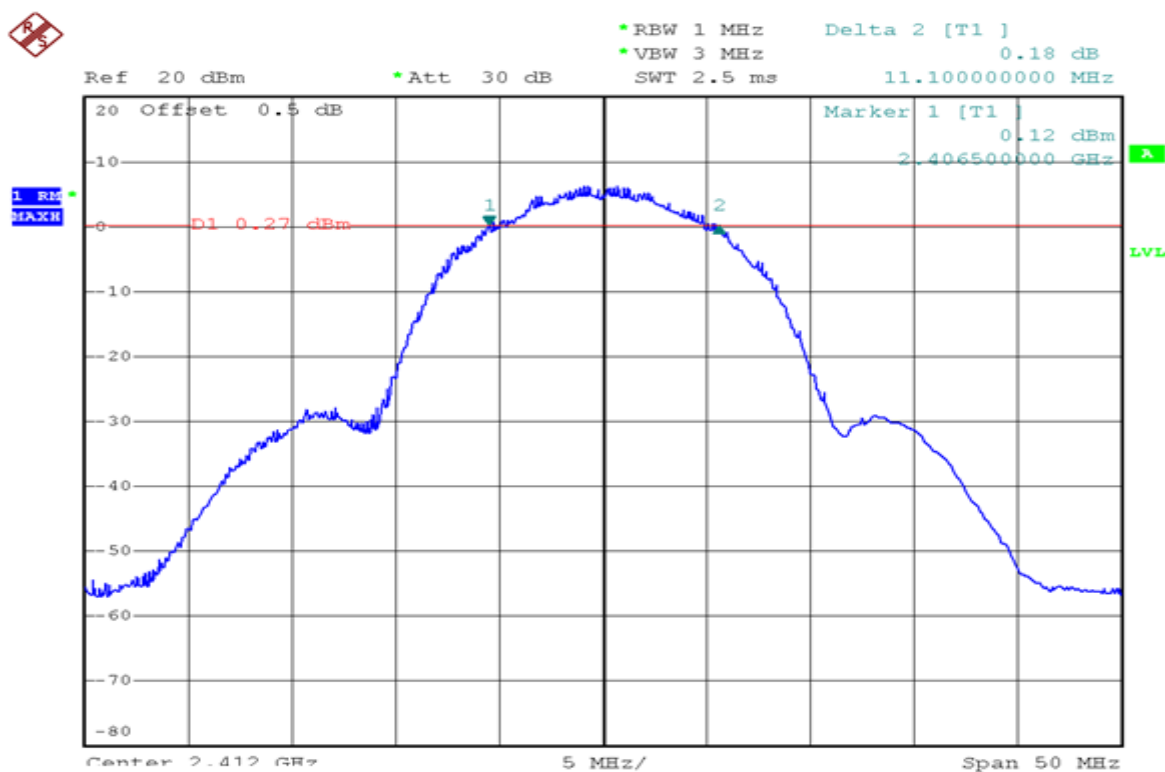


6.5. Test Result and Data

Test Item	Occupied Bandwidth
Test Date	2012-8-2

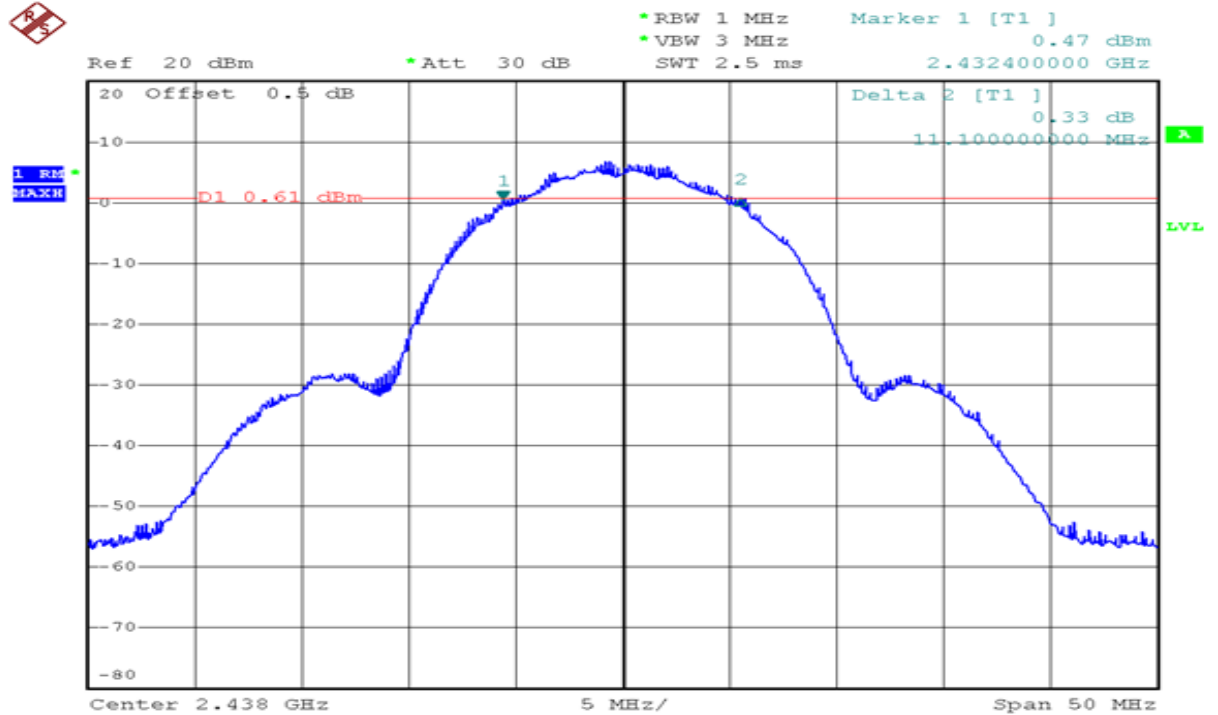
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
Low	2412	11100	500	Pass
Middle	2438	11100	500	Pass
High	2464	11200	500	Pass

Channel 01 (2412MHz)

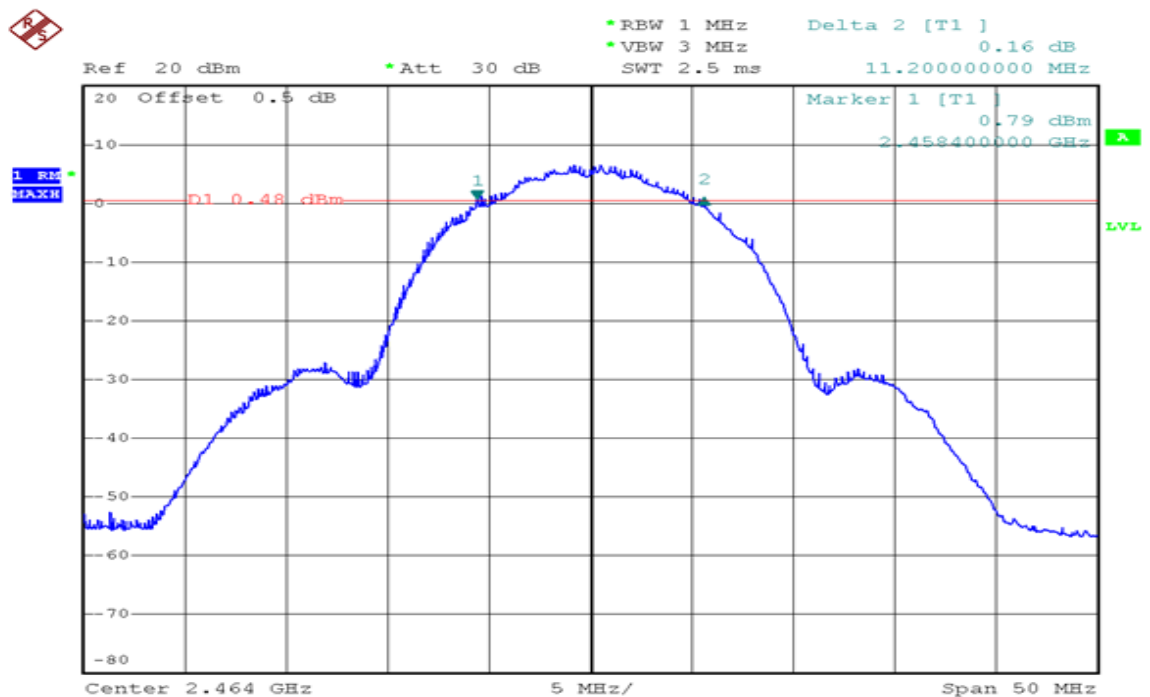




Channel 06 (2437MHz)



Channel11(2462MHz)





7. Maximum Peak Output Power

7.1. Test Limit

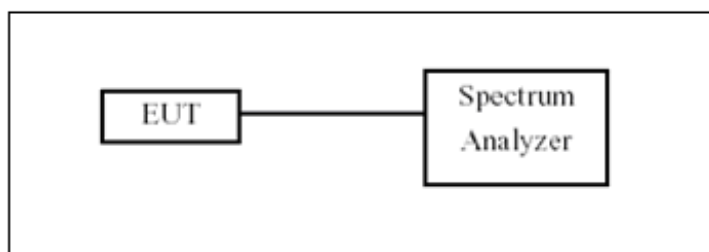
The maximum peak power shall be less 1Watt (30dBm).

The conducted output power limits specified in §15.247(b) are based on the use of transmit antennae with directional gains that do not exceed 6 dBi. If transmit antennae with an effective directional gain greater than 6 dBi are used, then the conducted output power from the EUT shall be reduced as specified in §15.247(b) and (c).

7.2. Test Procedure

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz.
- Set detector mode to peak (for peak output power) or set detector mode to RMS (for average output power).
- Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges.
- The maximum peak and average output power was measured and recorded.

7.3. Test Setup Layout



7.4. Measurement Equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	FSP40	R&S	100324	2011.08.14	2012.08.13

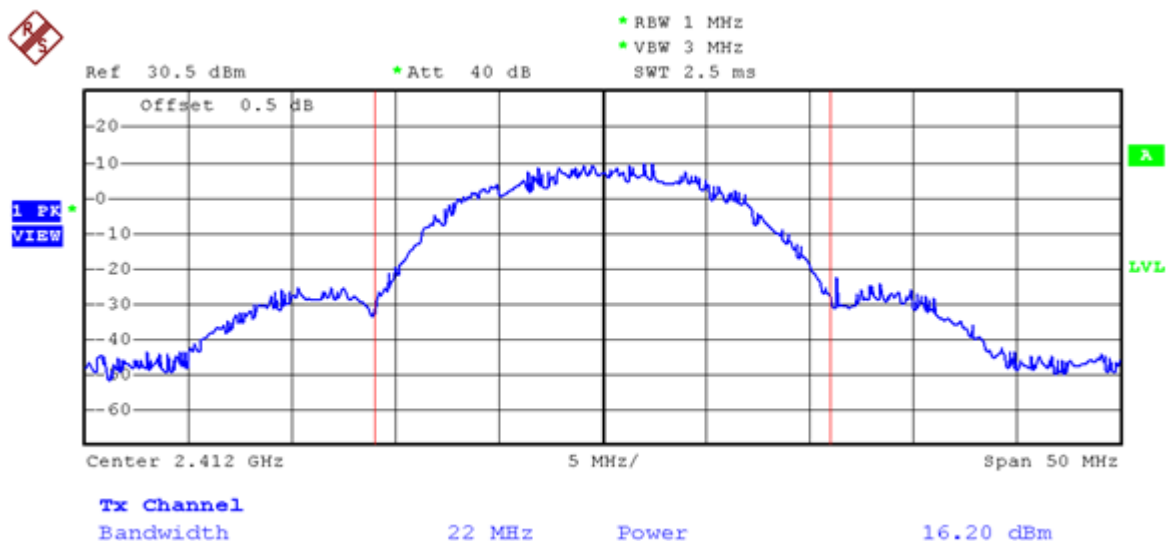


7.5. Test Result and Data

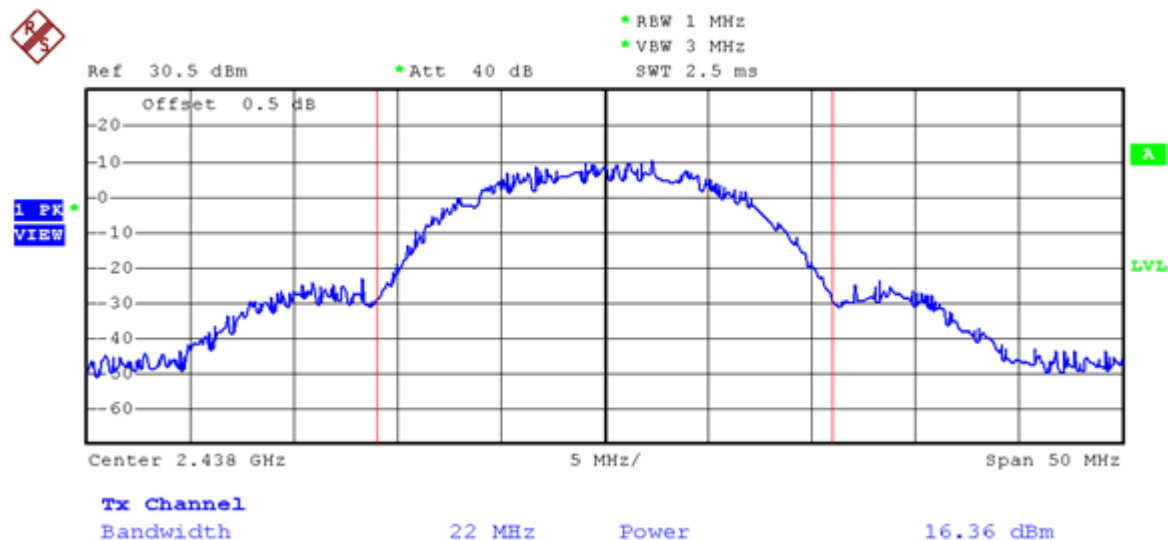
Test Item	Maximum Peak Output Power				
Test Date	2012-8-2				
Channel No.	Frequency (MHz)	Measurement (dBm)		Required Limit (dBm)	Result
		Peak	Average		
Low	2412	16.20	11.28	30	Pass
Middel	2438	16.36	11.69	30	Pass
High	2464	16.58	11.76	30	Pass

Peak:

Transmit by Channel Low

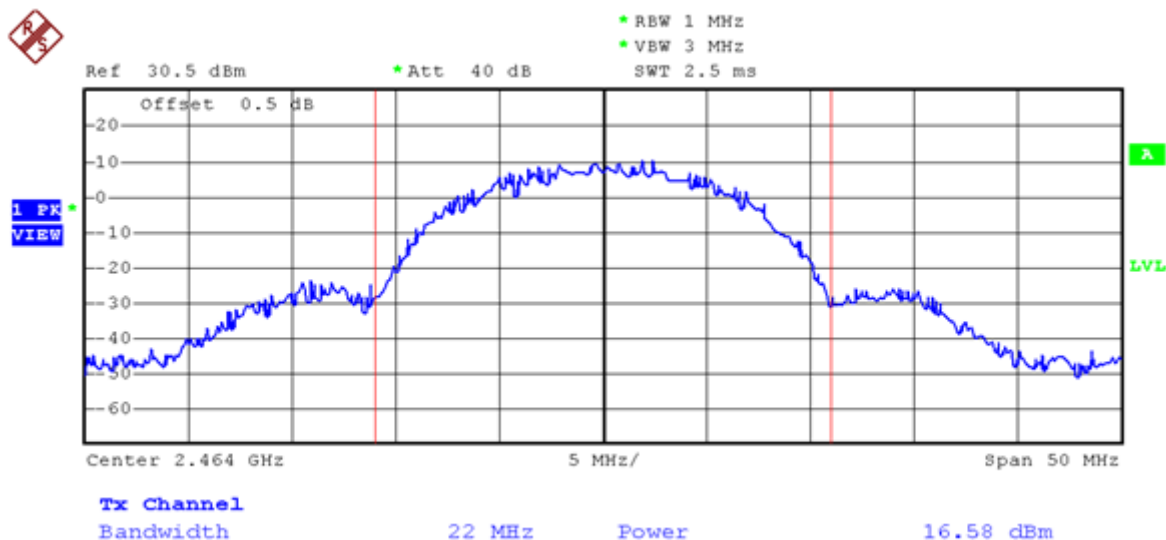


Transmit by Channel Middle



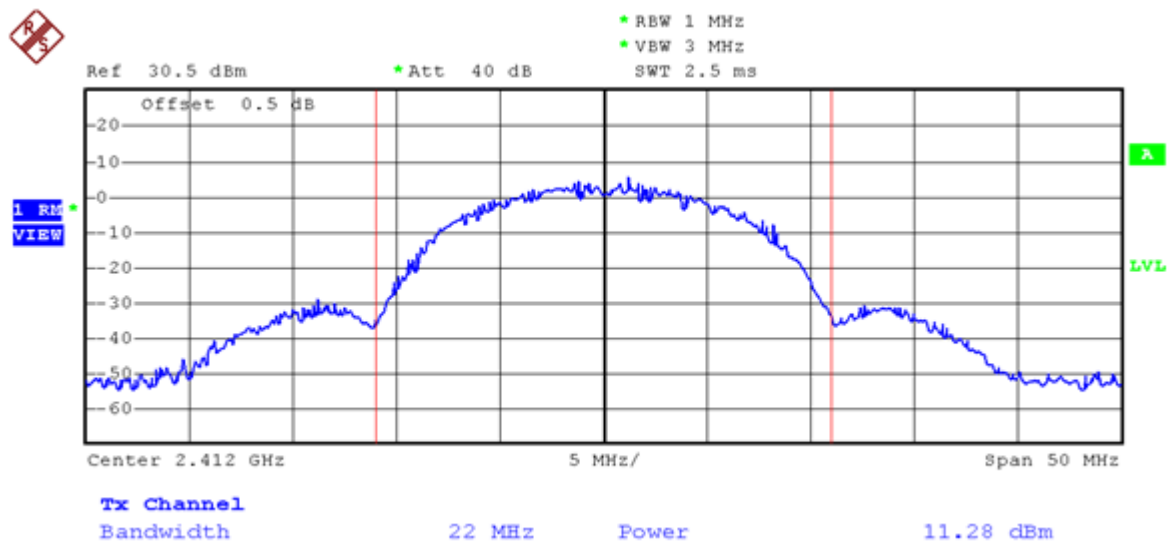


Transmit by Channel High



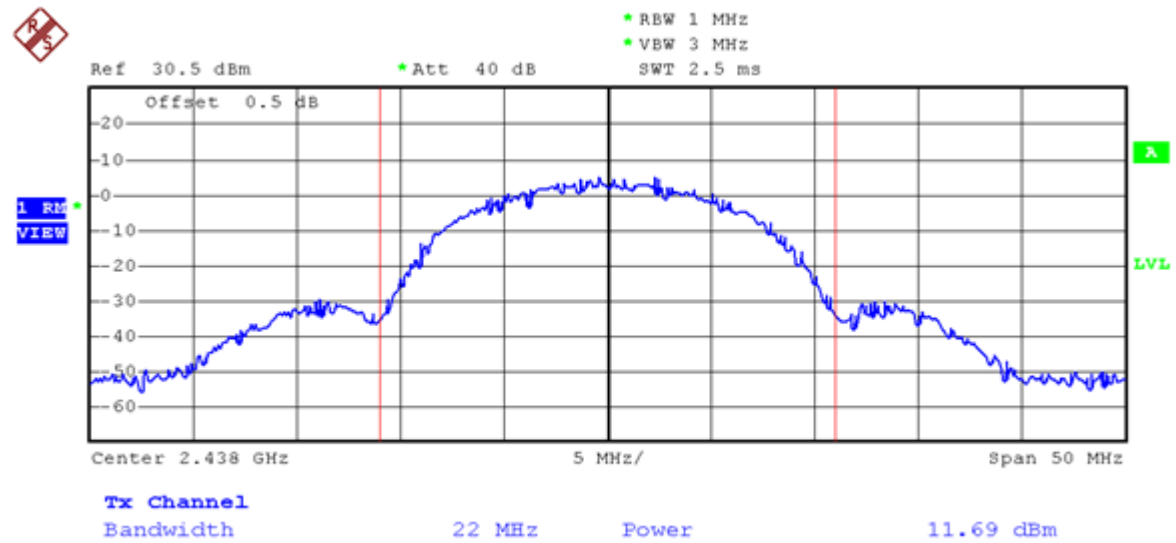
Average:

Transmit by Channel Low

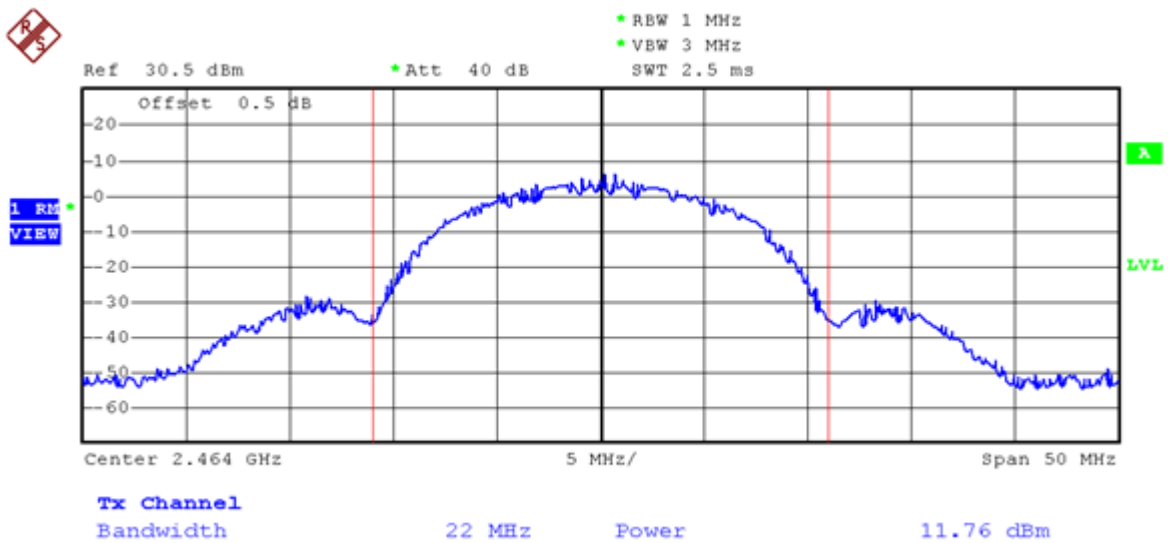




Transmit by Channel Middle



Transmit by Channel High





8. Band Edges Measurement

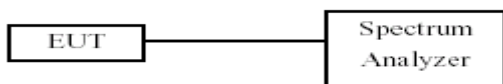
8.1. Test Limit

Below -20dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

8.2. Test Procedure

- The transmitter output was connected to the spectrum analyzer via a low lose cable.
- Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
- The band edges was measured and recorded.

8.3. Test Setup Layout



8.4. Measurement Equipment

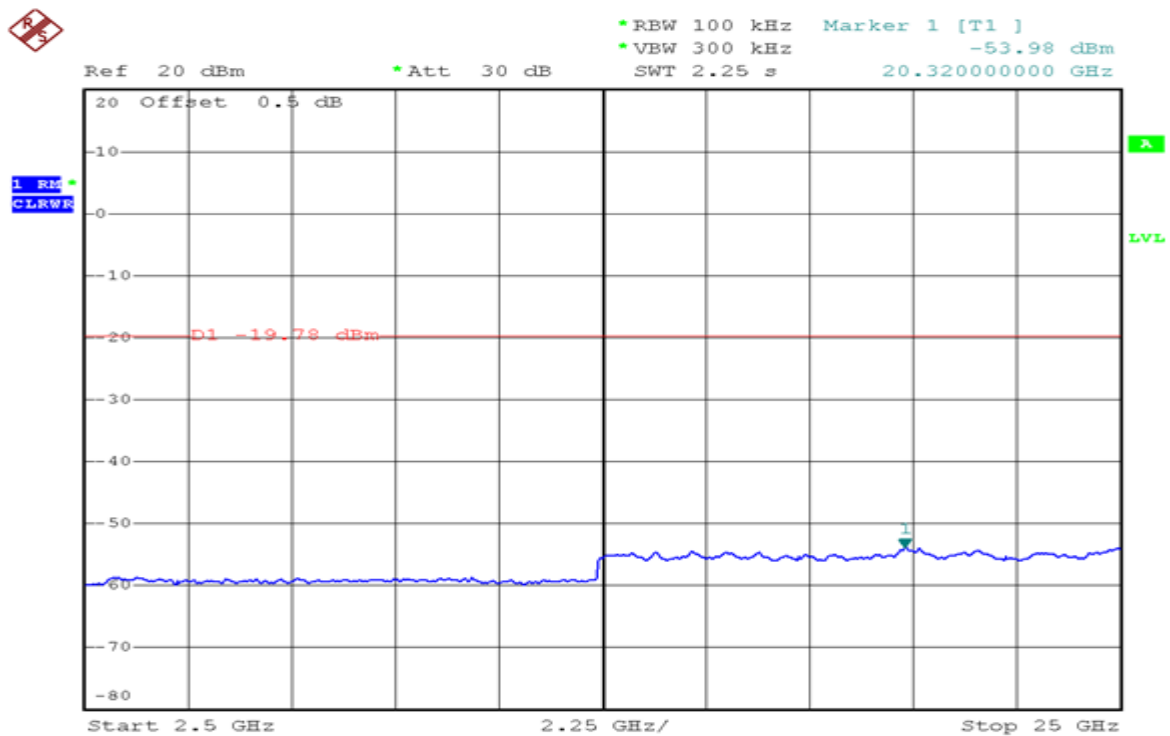
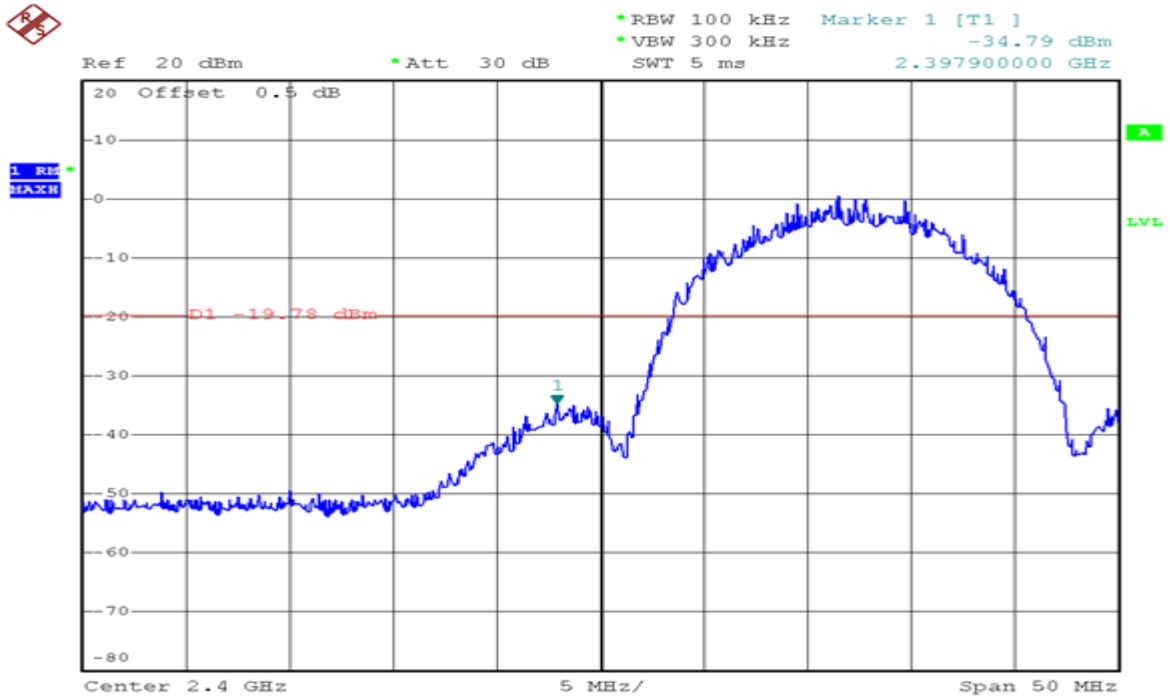
Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	FSP40	R&S	100324	2011.08.14	2012.08.13

8.5. Test Result and Data

Channel	Frequency (MHz)	maximum value in frequency (MHz)	maximum value(dBm)
01	2412	2397.9	-34.79
11	2462	2483.5	-49.93

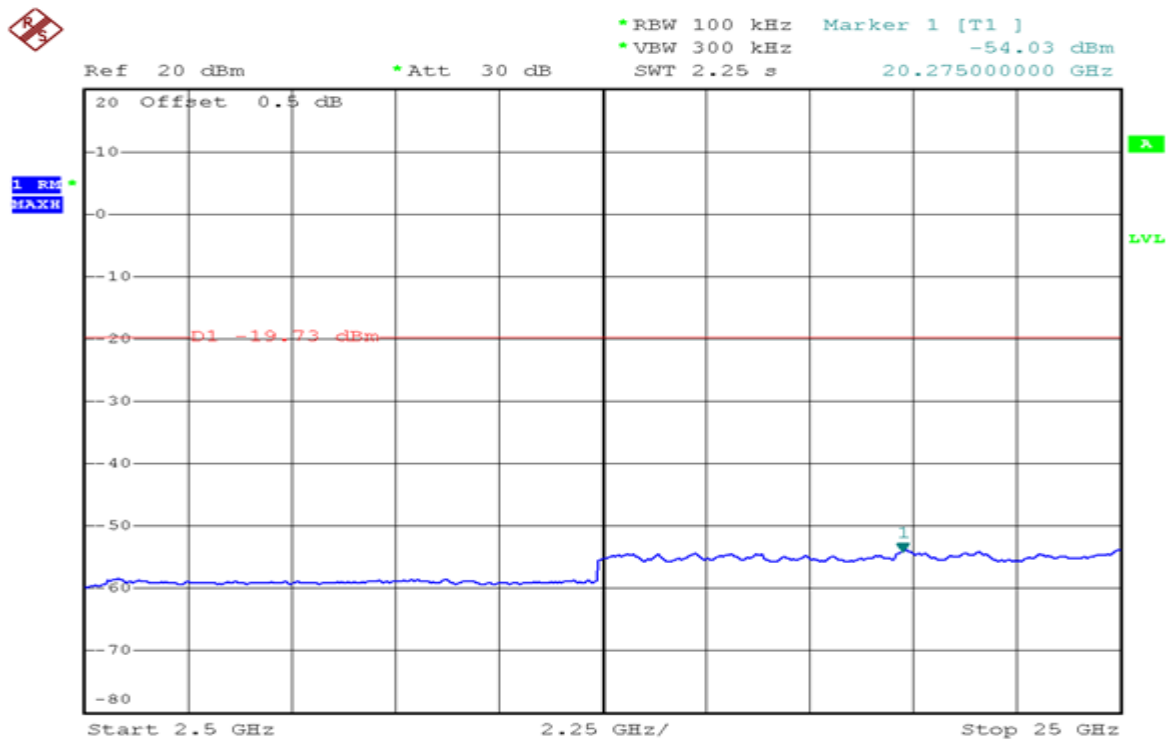
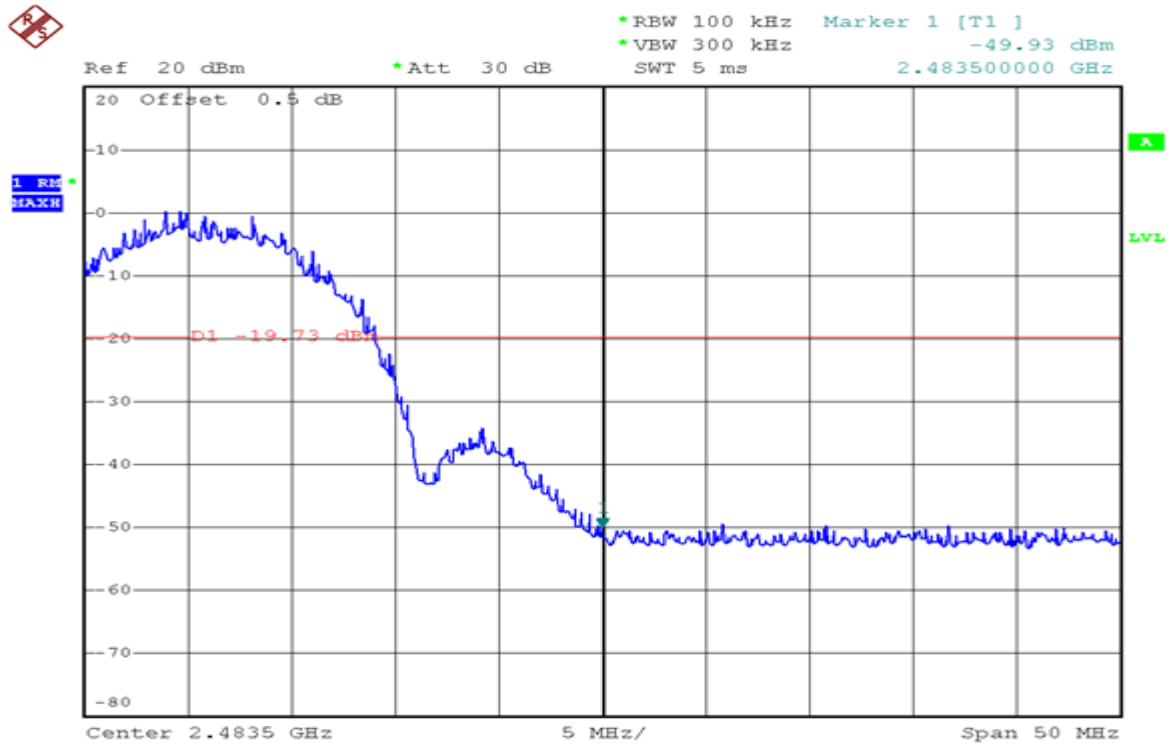


Transmit by Channel Low





Transmit by Channel Middle





8.6. Restrict Band Emission Measurement Data

Test Date : August 2, 2012
Temperature : 24 °C
Humidity : 52 %
Atmospheric Pressure : 1023 hPa
Test Mode 1 :

Channel Low						Fundamental Frequency: 2412 MHz				
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (m)
						Peak	Ave.			
2357.745	H	54.68	10.60	64.68	Peak	74	54	-9.32	360	100
-----	H	-----	-----	-----	Ave	74	54	-----	-----	-----
2374.34	V	55.45	10.98	66.43	Peak	74	54	-7.57	360	100
2374.34	V	35.82	10.98	46.80	Ave	74	54	-7.20	0	100
Channel High						Fundamental Frequency: 2464 MHz				
2488.51	H	54.81	10.72	65.53	Peak	74	54	-8.47	50	100
-----	H	-----	-----	-----	Ave	74	54	-----	-----	-----
2485.87	V	53.77	11.02	64.79	Peak	74	54	-9.21	0	100
2485.66	V	33.67	11.02	44.69	Ave	74	54	-9.31	180	100

Notes:

1. Result = Meter Reading + Factor
2. Factor = Antenna Factor + Cable Loss – Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.



9. Power Spectral Density

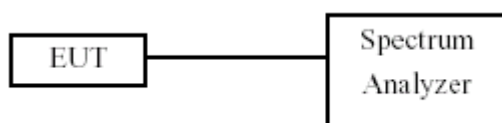
9.1. Test Limit

The Maximum of Power Spectral Density Measurement is 8dBm.

9.2. Test Procedure

- The transmitter output was connected to spectrum analyzer.
- The spectrum analyzer's resolution bandwidth were set at 100KHz RBW and 300KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.
- Scale the observed power level to an equivalent value in 3 kHz by adjusting the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100) = -15.2\text{ dB}$.
- The power spectral density was measured and recorded.

9.3. Test Setup Layout



9.4. Measurement Equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	FSP40	R&S	100324	2011.08.14	2012.08.13

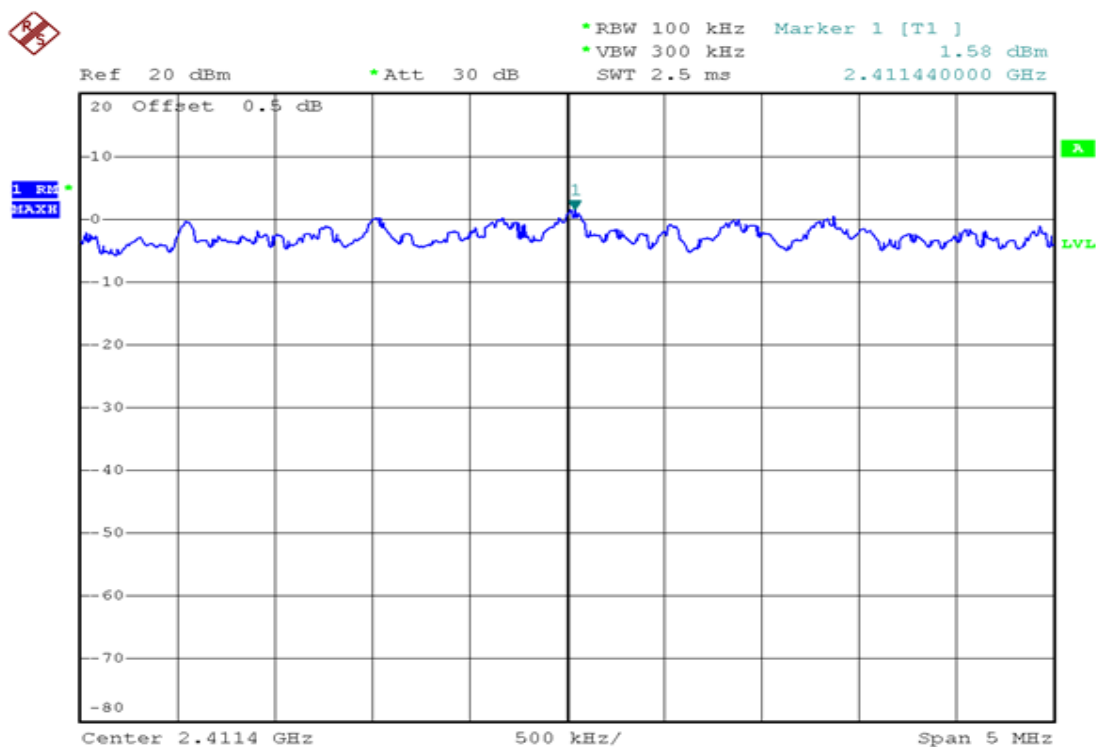


9.5. Test Result and Data

Test Item	Power Spectral Density
Test Date	2012-8-2

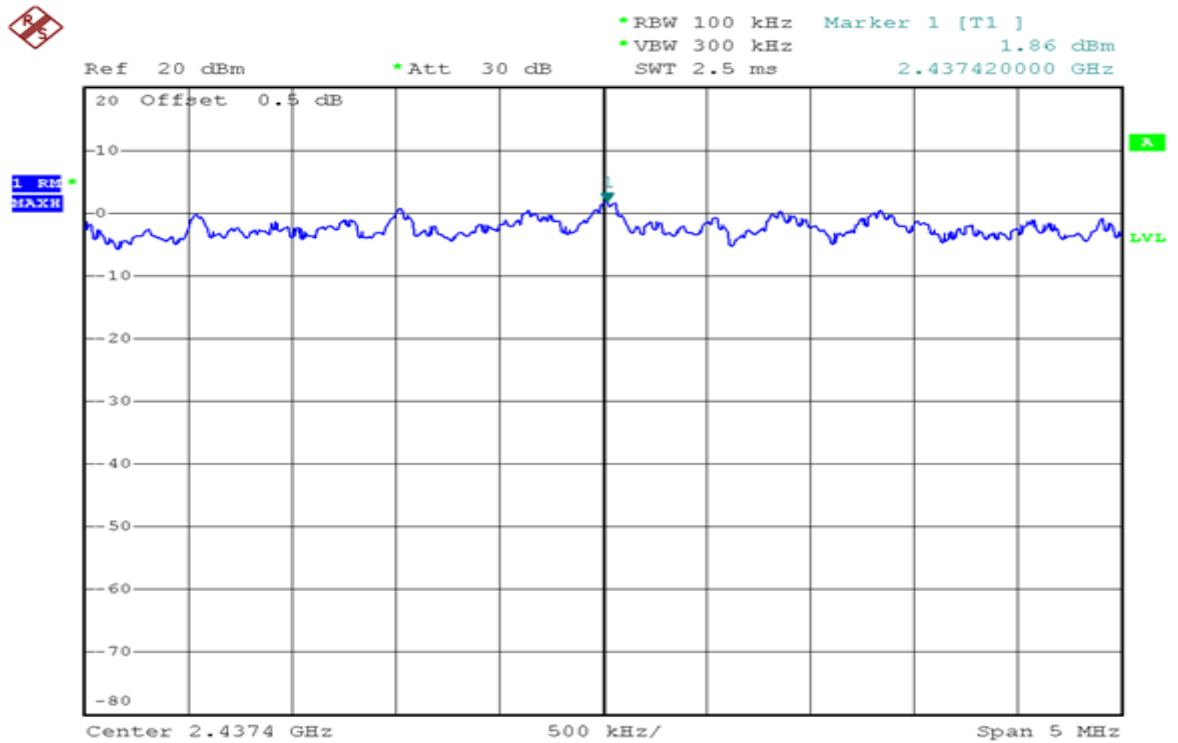
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low	2412	-13.62	8	Pass
Middle	2438	-13.34	8	Pass
High	2464	-13.46	8	Pass

Channel Low (2412MHz)

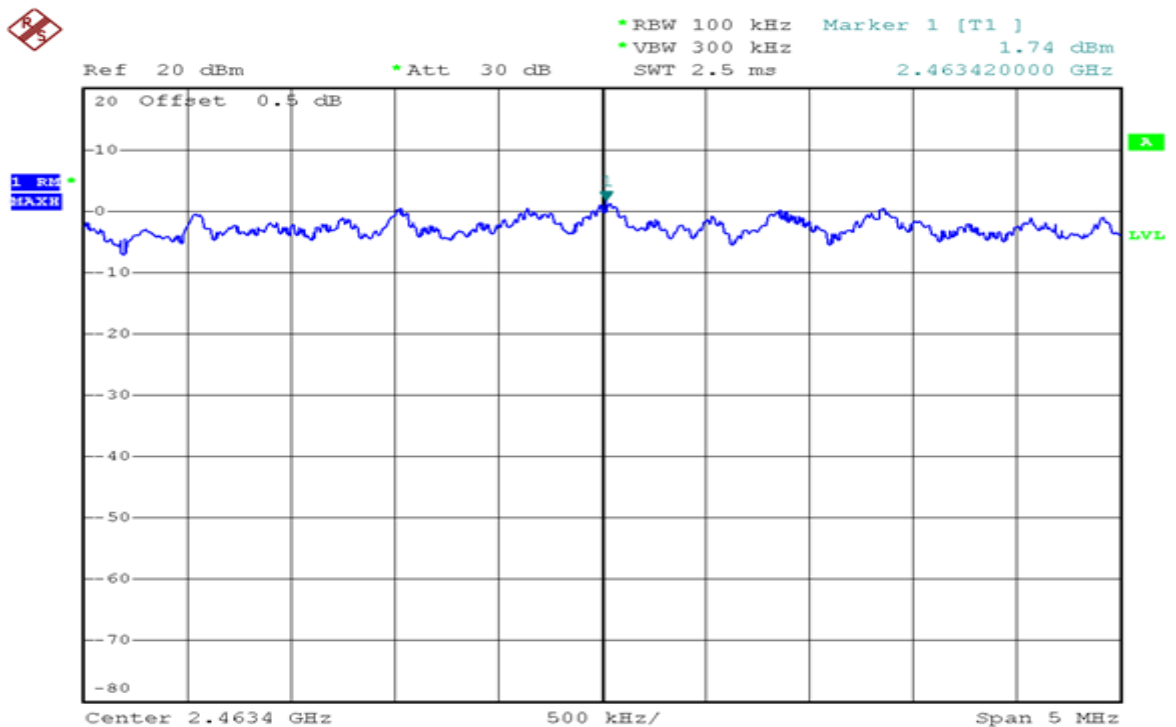




Channel Miidle (2437MHz)



Channel 11 (2462MHz)





10. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

10.1. Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.