NVLAP LAB CODE 200707-0

FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

Xinwei Electronic Co., Ltd., Quanzhou

Wan An Tang Xi Industrial Area. Luo Jiang Quanzhou, Fujian, China

FCC ID: UUPHST15S

This Report Concerns:	Equipment Type:
☒ Original Report	Stereo Bluetooth Headset

Test Engineer:	Jim Li Jim Li
Report No.:	RSZ08052702
Test Date:	2008-06-12 to 2008-06-20
Report Date:	2008-06-20
Reviewed By:	EMC Manager: Green Xu Green.Xu
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008

Note: This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Shenzhen) This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Xinwei Electronic Co., Ltd., Quanzhou's* product, model number: *T15S o*r the "EUT" as referred to in this report is a *Stereo Bluetooth Headset,* which measures approximately: 4.5 cm L x 3.0 cm W x 0.9 cm H, rated input voltage: DC 3.7 V battery.

** All measurement and test data in this report was gathered from production sample serial number: 0805043 (Assigned by BACL, Shenzhen). The EUT was received on 2008-05-27.*

Objective

This Type approval report is prepared on behalf of *Xinwei Electronic Co., Ltd., Quanzhou in* accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

NVLAP LAB CODE 200707-0

The current scope of accreditations can be found at
http://ts.nist.gov/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

Blue test.

Special Accessories

N/A

Equipment Modifications

No modification was made to the unit tested.

Local Support Equipment List and Details

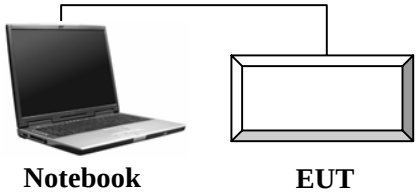
Manufacturer	Description	Model	Serial Number	FCC ID
Great quality	Notebook	RX-7336	N/A	DoC
WELL STAR	DC Power	PS-303	T-S601	DoC

External I/O Cable

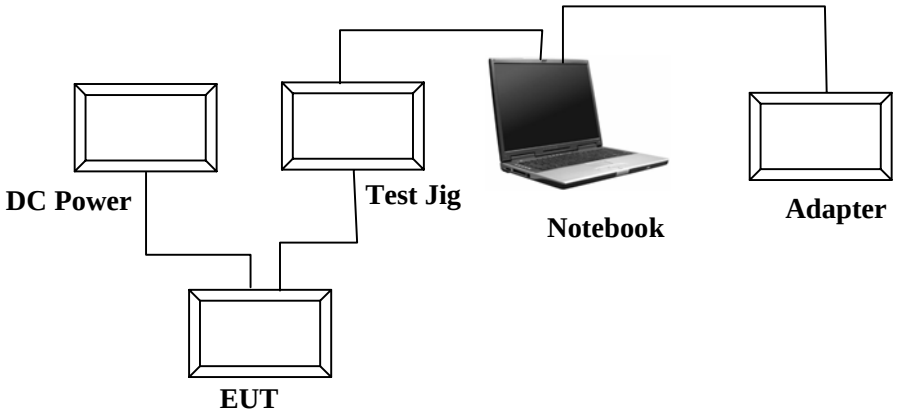
Cable Description	Length (m)	From Port	To
Unshielded Detachable DC Cable	0.44	EUT	Notebook
Unshielded Detachable DC Cable	1.80	Notebook	Adapter
Unshielded Detachable Signal Cable	1.60	Notebook	Test Jig
Unshielded Detachable Signal Cable	0.06	Test Jig	EUT
Unshielded Detachable DC Cable	0.40	DC Power	EUT

Configuration of Test Setup

Charging mode:

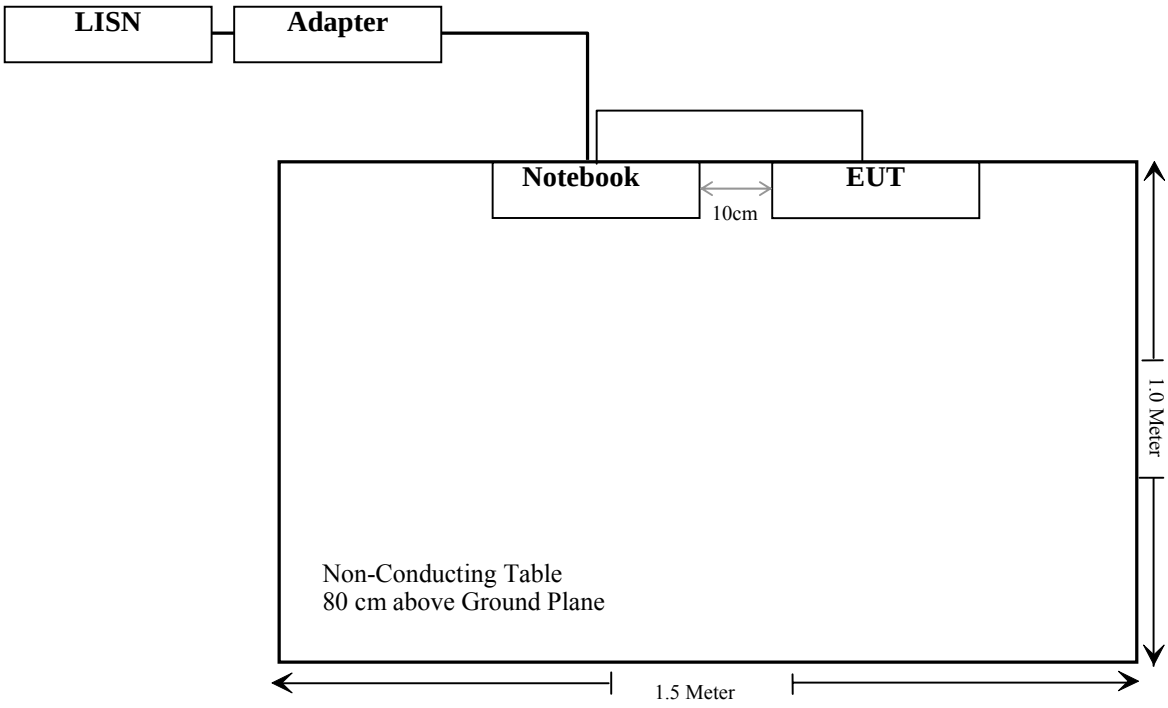


Transmitting mode:



Block Diagram of Test Setup

Charging mode:



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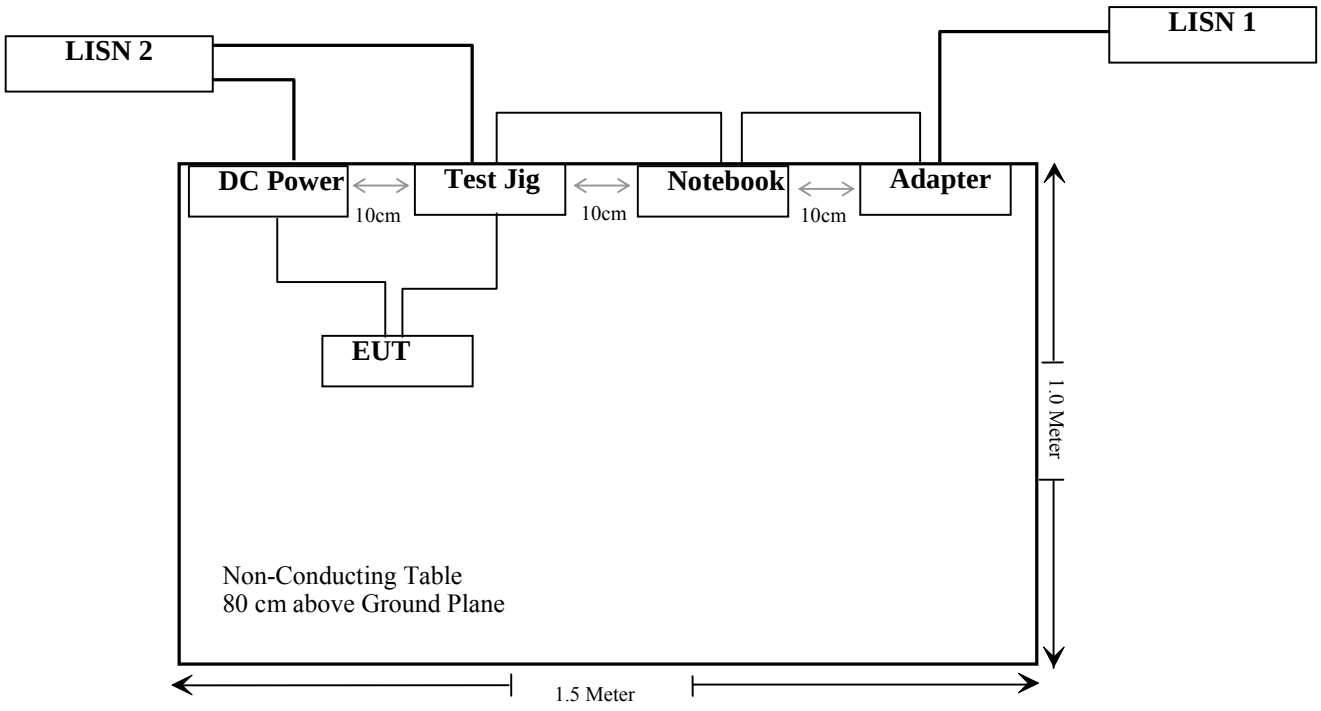


SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
CFR47 §15.247 (i) and §1.1307(b) (1)	Maximun Permissible exposure	Compliant
CFR47 §15.203	Antenna Requirement	Compliant
CFR47 §15.207 (a)	Conducted Emissions	Compliant
CFR47 §15.205, §15.209, §15.247(d)	Radiated Emissions	Compliant
CFR47 §15.247 (a)(1)	20 dB Bandwidth	Compliant
CFR47 §15.247(a)(1)	Channel Separation Test	Compliant
CFR47 §15.247(a)(1)(iii)	Time of occupancy (Dwell Time)	Compliant
CFR47 §15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliant
CFR47 §15.247(b)(1)	Peak Output Power Measurement	Compliant
CFR47 §15.247(d)	Band edges	Compliant

§15.247 (i) and §2.1093 - RF EXPOSURE

Standard Applicable

According to §15.247 (i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

According to FCC Exclusion list, In the following table, fGHz is mid-band frequency in GHz, and d is the distance to a person'sbody, excluding hands, wrists, feet, and ankles.

Exposure category	low threshold	high threshold
general population	$(60/f_{GHz})$ mW, $d < 2.5$ cm $(120/f_{GHz})$ mW, $d \geq 2.5$ cm	$(900/f_{GHz})$ mW, $d < 20$ cm
occupational	$(375/f_{GHz})$ mW, $d < 2.5$ cm $(900/f_{GHz})$ mW, $d \geq 2.5$ cm	$(2250/f_{GHz})$ mW, $d < 20$ cm

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

Result:

This is a portable device and the Max peak output power is 0.82 mW< 24.58 = (60/2.441GHz) mW

The SAR measurement is exempt.

CFR47 §15.203 - ANTENNA REQUIREMENT

Standard Applicable

According to CFr47 § 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has a printed antenna on PCB. The maximum gain is 2dBi; please refer to the internal photos.

Result: Compliance.

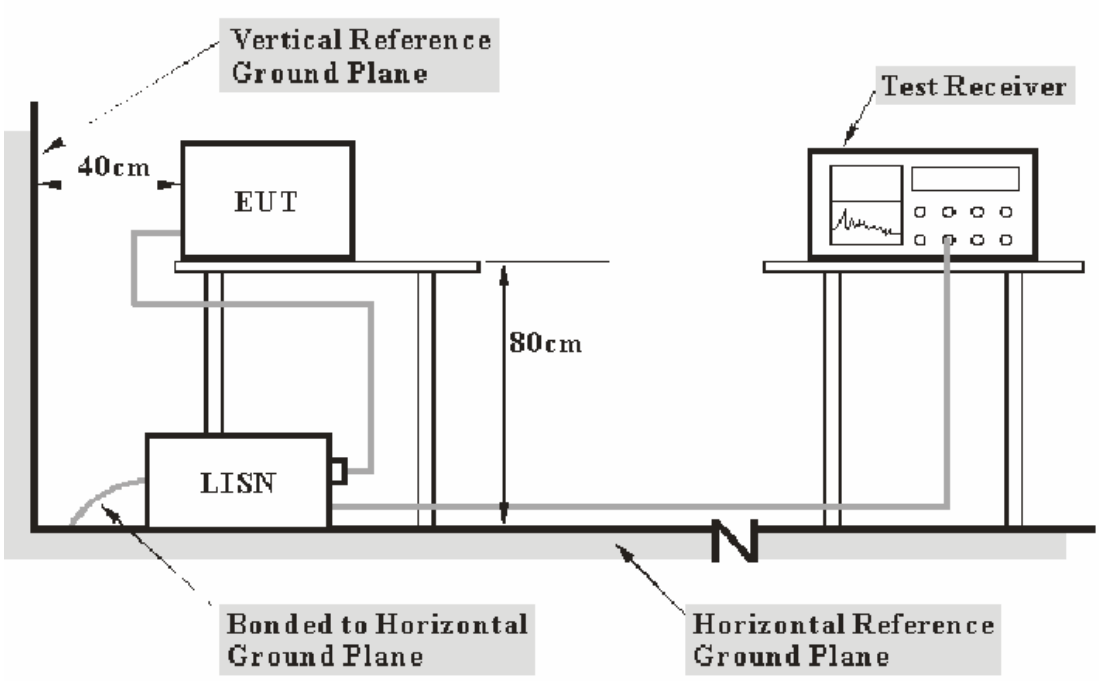
§15.207 (a) - CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ±2.4 dB.

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The EUT was connected to the USB port of laptop.

The adapter of laptop was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***IF B/W***
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCS30	DE25330	2008-03-25	2009-03-25
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2008-03-25	2009-03-25

***** Com-Power's LISN were used as the supporting equipment.
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

15.6 dB at **0.240 MHz** in the **Hot** conductor mode

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Jim Li on 2008-06-10

Test Mode: Charging

Line Conducted Emissions				FCC Part 15.207	
Frequency (MHz)	**Amplitude (dBµV)**	**Detector (QP/AV)**	**Conductor (Hot/Neutral)**	**Limit (dBµV)**	**Margin (dB)**
0.240	36.50	AV	Hot	52.10	15.60
0.240	34.50	AV	Neutral	52.10	17.60
11.595	42.20	QP	Neutral	60.00	17.80
11.660	42.20	QP	Hot	60.00	17.80
1.440	25.80	AV	Hot	46.00	20.20
24.015	29.60	AV	Hot	50.00	20.40
11.710	29.50	AV	Hot	50.00	20.50
24.010	29.20	AV	Neutral	50.00	20.80
4.405	34.30	QP	Neutral	56.00	21.70
11.650	27.90	AV	Neutral	50.00	22.10
0.360	26.50	AV	Neutral	48.73	22.23
1.440	33.60	QP	Hot	56.00	22.40
1.435	23.50	AV	Neutral	46.00	22.50
0.240	39.10	QP	Hot	62.10	23.00
3.360	22.90	AV	Hot	46.00	23.10
0.240	38.00	QP	Neutral	62.10	24.10
4.410	21.80	AV	Neutral	46.00	24.20
1.435	31.70	QP	Neutral	56.00	24.30
3.360	30.30	QP	Hot	56.00	25.70
0.360	22.50	AV	Hot	48.73	26.23
24.015	32.50	QP	Hot	60.00	27.50
24.010	32.00	QP	Neutral	60.00	28.00
0.360	30.70	QP	Neutral	58.73	28.03
0.360	29.90	QP	Hot	58.73	28.83

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

CONDUCTED EMISSION TEST

10. Jun 08 22:32

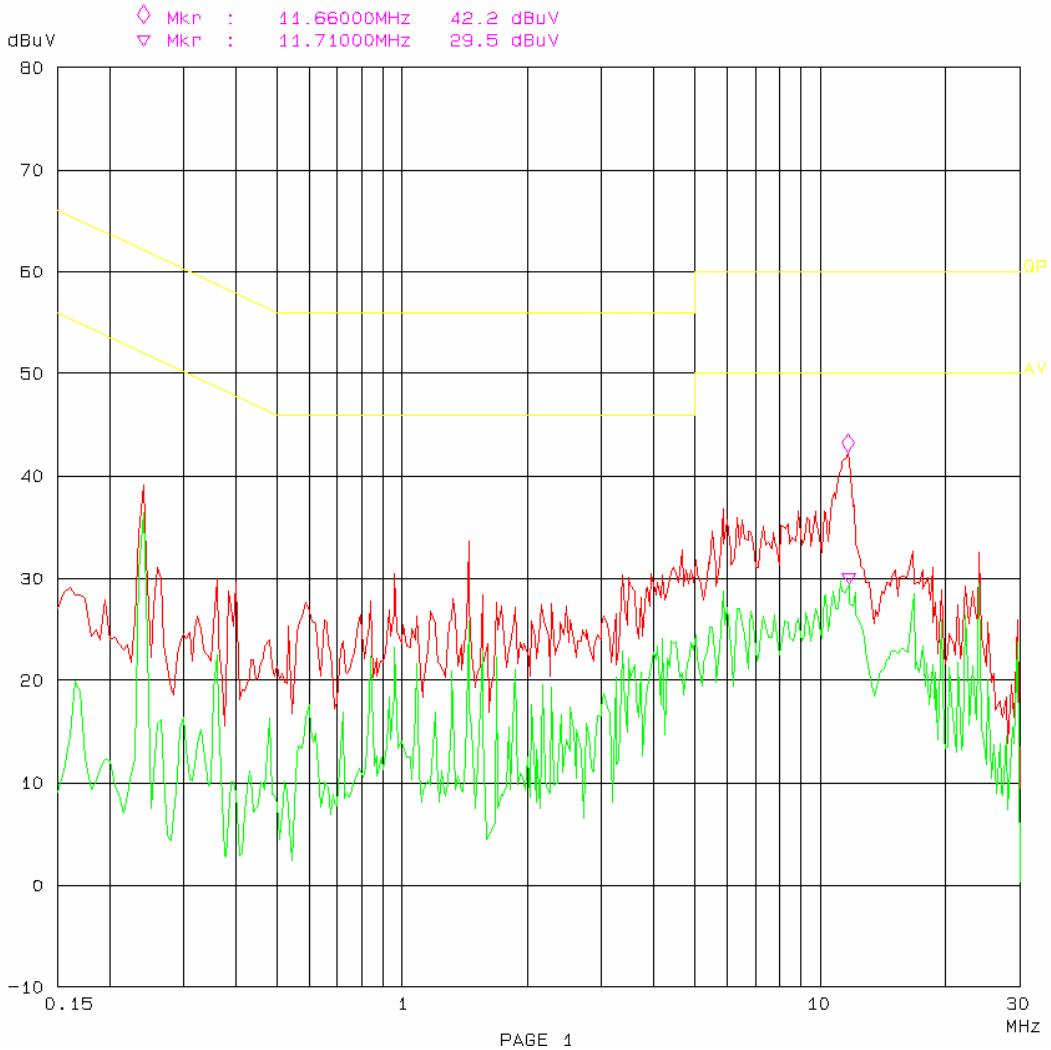
FCC PART15.247

EUT: Stereo Bluetooth Headset M/N: T15S
Manuf: XinWei
Op Cond: charging
Operator: Jim
Test Spec: AC120V/60HZ hot
Comment: Temp: 25Humi: 56%

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	10ms	AUTO	LN OFF

Transducer	No.	Start	Stop	Name
	5	9k	30M	ESH2_Z5



PAGE 1

CONDUCTED EMISSION TEST 10. Jun 08 22:12

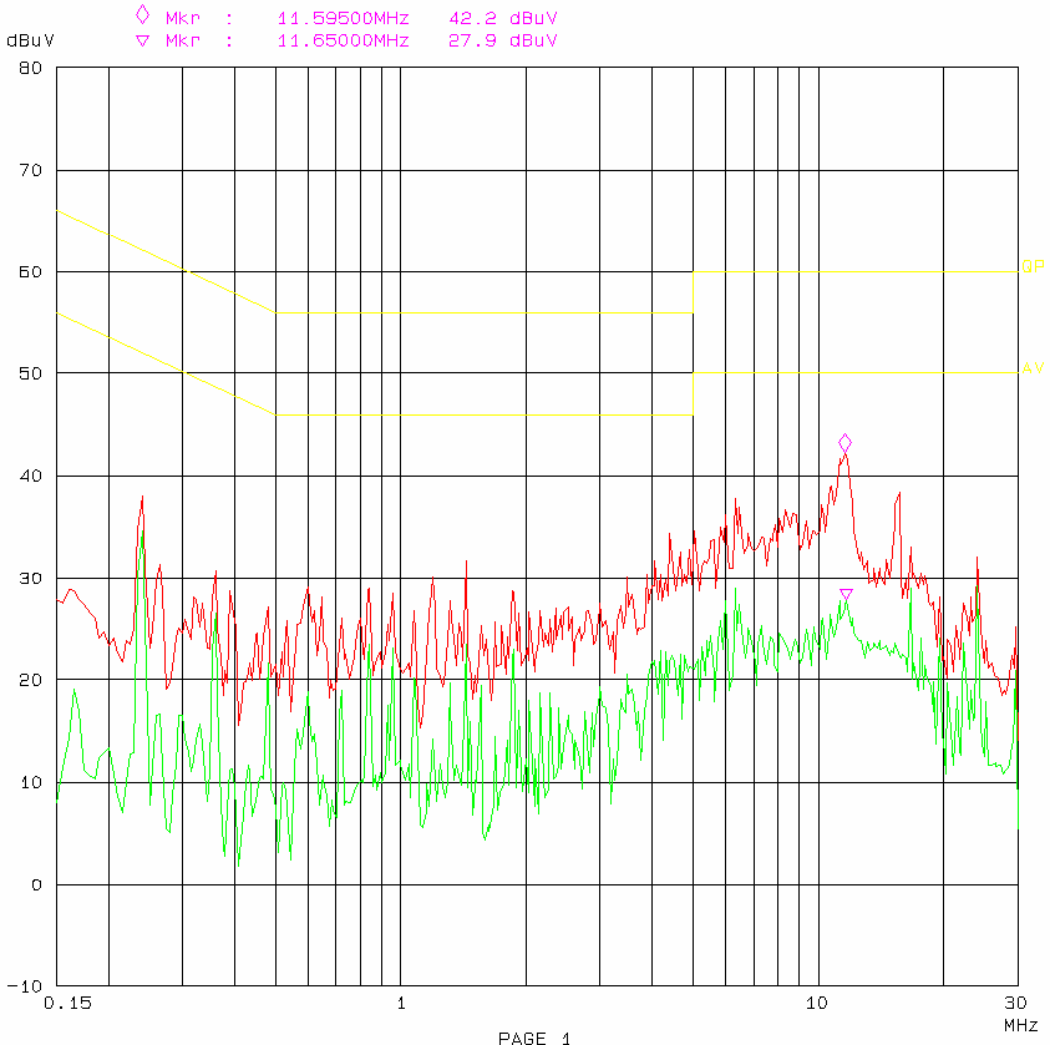
FCC PART15.247

EUT: Stereo Bluetooth Headset M/N: T15S
Manuf: XinWei
Op Cond: charging
Operator: Jim
Test Spec: AC120V/60HZ neutral
Comment: Temp: 25Humi: 56%

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	10ms	AUTO	LN OFF

Transducer	No.	Start	Stop	Name
	5	9k	30M	ESH2_Z5



PAGE 1

CFR47 §15.205, §15.209, §15.247 - RADIATED EMISSIONS

Applicable Standard

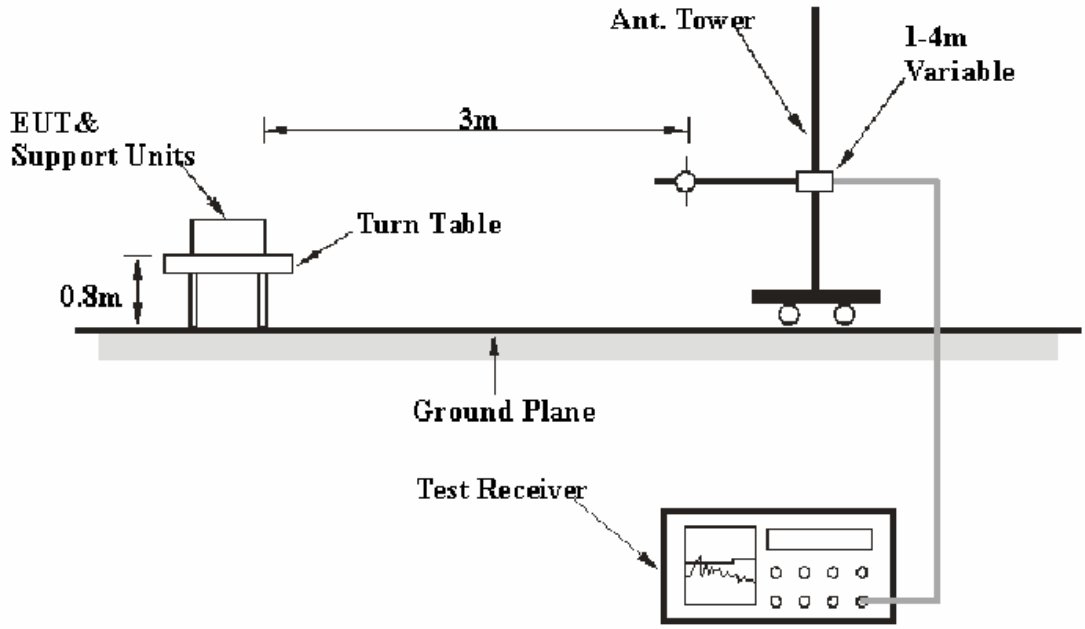
CFR47 §15.205; §15.209; §15.247 (d).

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.109, FCC 15.209 and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	***RBW***	***Video B/W***
30MHz – 1000 MHz	100 kHz	300 kHz
1000 MHz – 25 GHz	1 MHz	3 MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2007-11-15	2008-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2008-03-11	2009-03-11
HP	Amplifier	8449B	3008A00277	2007-09-29	2008-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2007-09-25	2008-09-25
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-05-09	2009-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz and peak and Average detection modes for frequencies above 1GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit for Class B. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.109, 15.205, 15.209, and 15.247, with the worst margin reading of:

Transmitting mode (30 - 1000 MHz):

5.4 dB at **60.005375 MHz** in the **Vertical** polarization

Transmitting mode (Above 1 GHz):

8.44 dB at **4804 MHz** in the **Vertical** polarization **(Low Channel)**
9.51 dB at **4882 MHz** in the **Horizontal** polarization **(Middle Channel)**
14.33 dB at **4960 MHz** in the **Vertical** polarization **(High Channel)**

Charging mode:

10.2 dB at 959.702438 **MHz** in the **Vertical** polarization

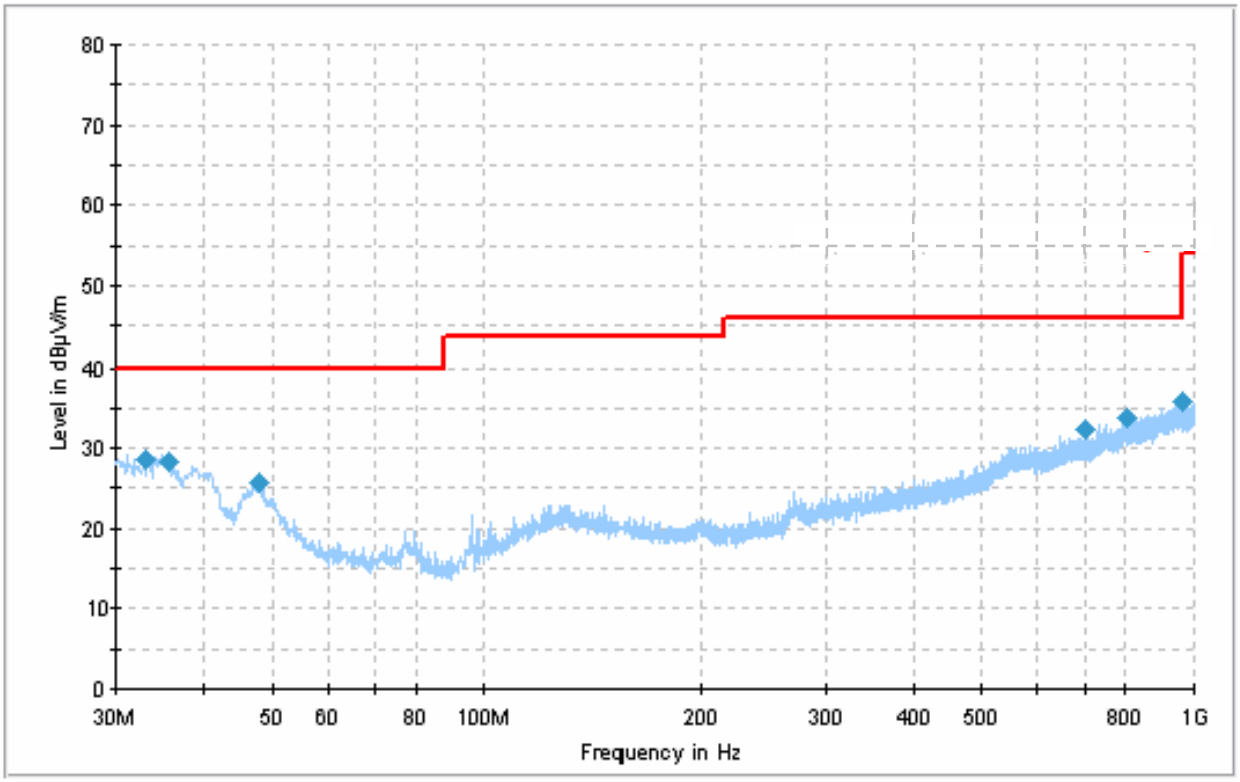
Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.8 kPa

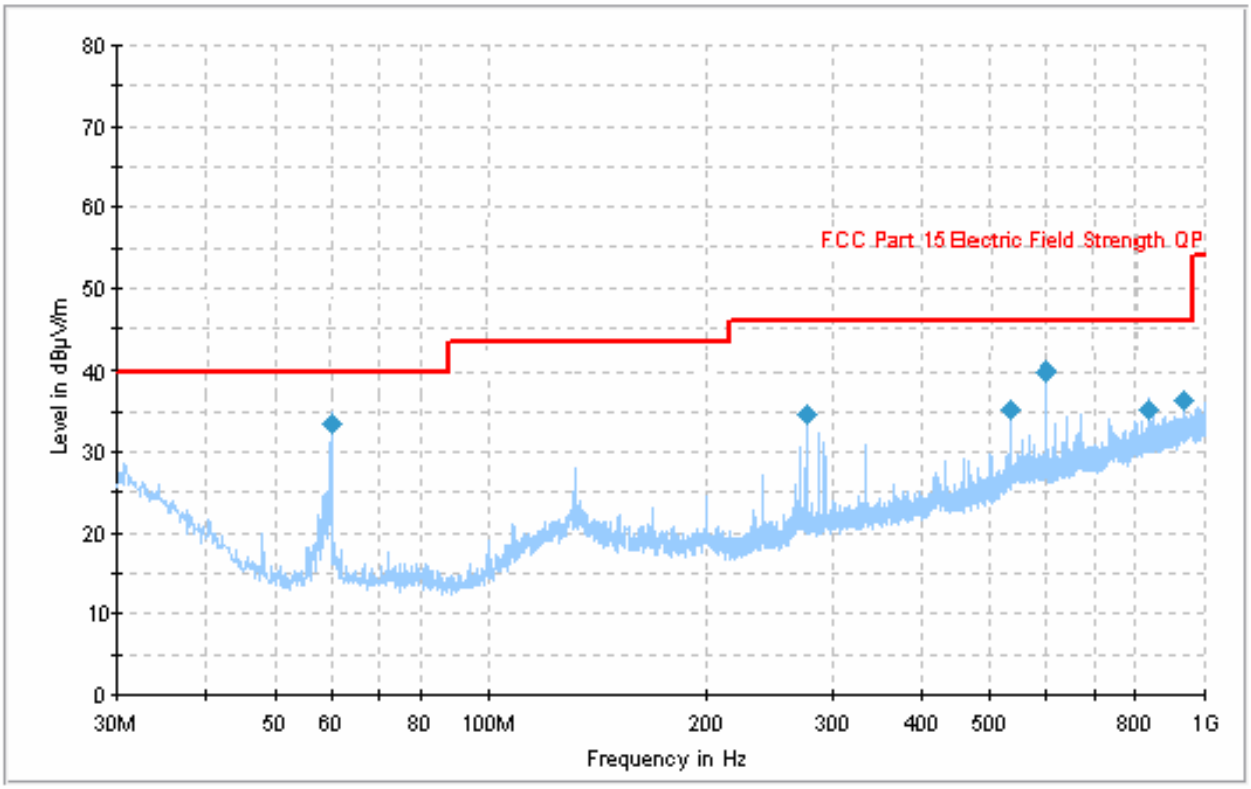
The testing was performed by Jim Li on 2008-06-12

Test Mode: Charging (30 - 1000 MHz)



Frequency (MHz)	Corrected Amp. (dBµV/m)	Ant. Height (cm)	Ant. Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
959.702438	35.8	273.0	V	150.0	1.9	46.0	10.2
33.158188	28.7	102.0	V	0.0	-6.2	40.0	11.3
35.801625	28.4	114.0	V	0.0	-8.0	40.0	11.6
802.405125	33.8	111.0	H	0.0	-0.3	46.0	12.2
700.176125	32.4	263.0	V	221.0	-2.0	46.0	13.6
47.819250	25.7	103.0	V	354.0	-16.1	40.0	14.3

Test Mode: Transmitting (30 - 1000 MHz)



Frequency (MHz)	Corrected Amp. (dBµV/m)	Ant. Height (cm)	Ant. Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
60.005375	33.6	103.0	V	37.0	-17.3	40.0	5.4
599.979938	39.9	187.0	V	267.0	-3.7	46.0	6.1
935.571875	36.4	162.0	V	0.0	1.8	46.0	9.6
833.884750	35.3	357.0	H	16.0	0.2	46.0	10.7
533.303375	35.1	192.0	V	265.0	-4.5	46.0	10.9
277.694938	34.6	320.0	V	25.0	-9.8	46.0	11.4

Test Mode: Transmitting (Above 1GHz)

Freq. (MHz)	Meter Reading (dBuV)	Detector PK/QP/AV	Direction Degree	Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Corr. Amp. (dBuV/m)	FCC Part 15.247/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBuV/m)	Margin (dB)	Remarks
Frequency in Low Channel												
4804	39.62	AV	90	1.0	V	34.7	4.64	33.4	45.56	54	8.44	Harmonic
4804	34.21	AV	90	1.0	H	34.6	4.64	33.4	40.05	54	13.95	Harmonic
4804	45.56	PK	90	1.2	V	34.7	4.64	33.4	51.5	74	22.5	Harmonic
1054	39.01	AV	320	1.1	V	24.5	1.20	35.0	29.71	54	24.29	Spurious
1054	38.42	AV	180	1.3	H	24.5	1.20	35.0	29.12	54	24.88	Spurious
4804	41.32	PK	180	1.3	H	34.6	4.64	33.4	47.16	74	26.84	Harmonic
1054	42.92	PK	60	1.2	V	24.5	1.20	35.0	33.62	74	40.38	Spurious
1054	41.84	PK	120	1.2	H	24.5	1.20	35.0	32.54	74	41.46	Spurious
Frequency in Middle Channel												
4882	38.55	AV	142	1.1	H	34.7	4.64	33.4	44.49	54	9.51	Harmonic
4882	38.63	AV	243	1.0	V	34.6	4.64	33.4	44.47	54	9.53	Harmonic
1054	39.85	AV	135	1.3	H	24.5	1.20	35.0	30.55	54	23.45	Spurious
1054	39.26	AV	85	1.0	V	24.5	1.20	35.0	29.96	54	24.04	Spurious
4882	42.14	PK	153	1.5	V	34.6	4.64	33.4	47.98	74	26.02	Harmonic
4882	41.33	PK	234	1.0	H	34.7	4.64	33.4	47.27	74	26.73	Harmonic
1054	42.66	PK	265	1.4	V	24.5	1.20	35.0	33.36	74	40.64	Spurious
1054	41.57	PK	156	1.2	H	24.5	1.20	35.0	32.27	74	41.73	Spurious
Frequency in High Channel												
4960	33.82	AV	142	1.1	V	34.7	4.55	33.4	39.67	54	14.33	Harmonic
1054	48.18	AV	210	1.2	V	24.5	1.20	35.0	38.88	54	15.12	Spurious
4960	33.02	AV	256	1.3	H	34.6	4.55	33.4	38.77	54	15.23	Harmonic
1054	38.32	AV	156	1.2	H	24.5	1.20	35.0	29.02	54	24.98	Spurious
4960	41.24	PK	142	1.4	V	34.7	4.55	33.4	47.09	74	26.91	Harmonic
4960	38.61	PK	145	1.2	H	34.6	4.55	33.4	44.36	74	29.64	Harmonic
1054	41.53	PK	240	1.4	V	24.5	1.20	35.0	32.23	74	41.77	Spurious
1054	41.22	PK	128	1.5	H	24.5	1.20	35.0	31.92	74	42.08	Spurious

CFR47 §15.247(a) (1)-CHANNEL SEPARATION TEST

Applicable Standard

Frequency hopping systems shall have hoping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Set the EUT in transmitting mode, spectrum Bandwidth was set at 100 kHz, maxhold the channel.
2. Set the adjacent channel of the EUT maxhold another truce
3. Measure the channel separation.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.8 kPa

The testing was performed by Jim Li on 2008-06-12.

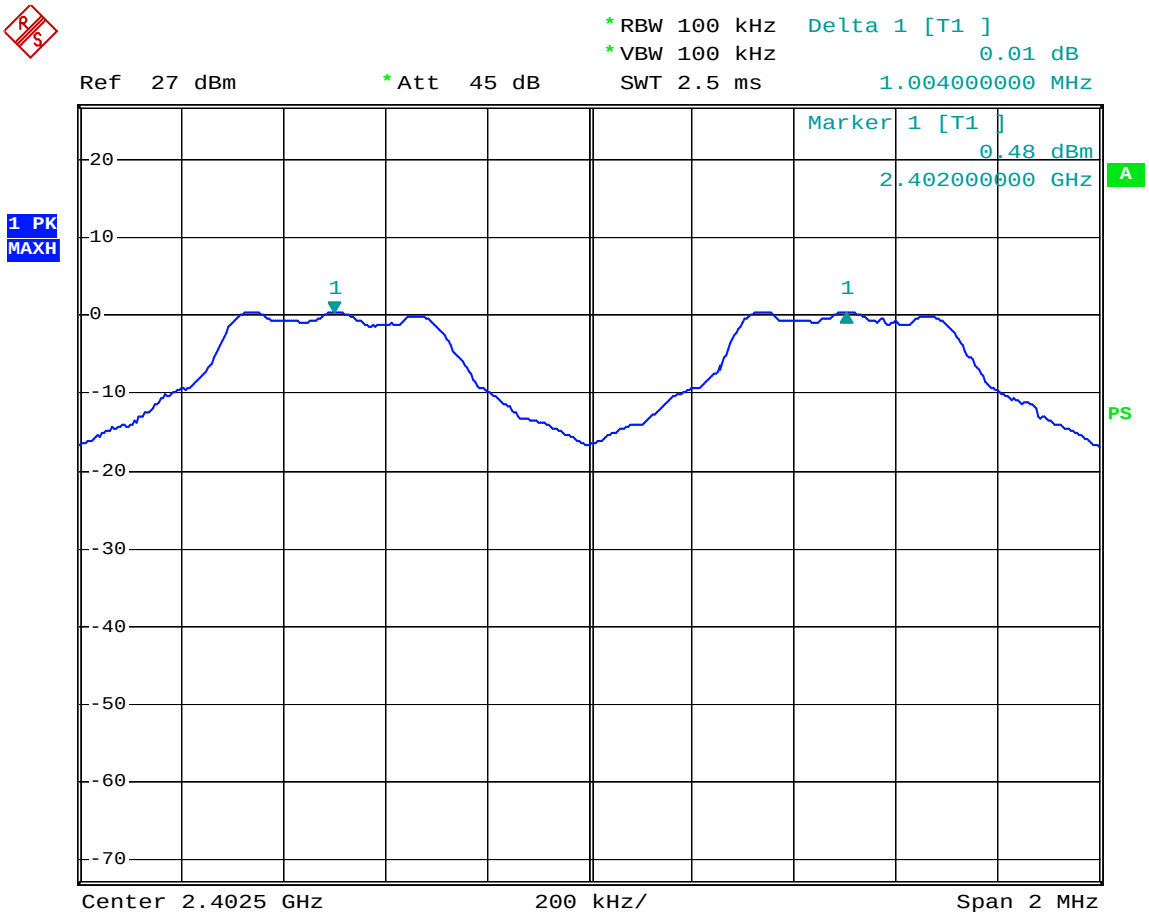
Test Mode: Transmitting

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
Low Channel	2402	1.004	0.592	Pass
Adjacent Channel	2403			
Mid Channel	2441	1.004	0.597	Pass
Adjacent Channel	2442			
High Channel	2480	1.004	0.595	Pass
Adjacent Channel	2479			

Test Result: Compliance.

Please refer to following plots.

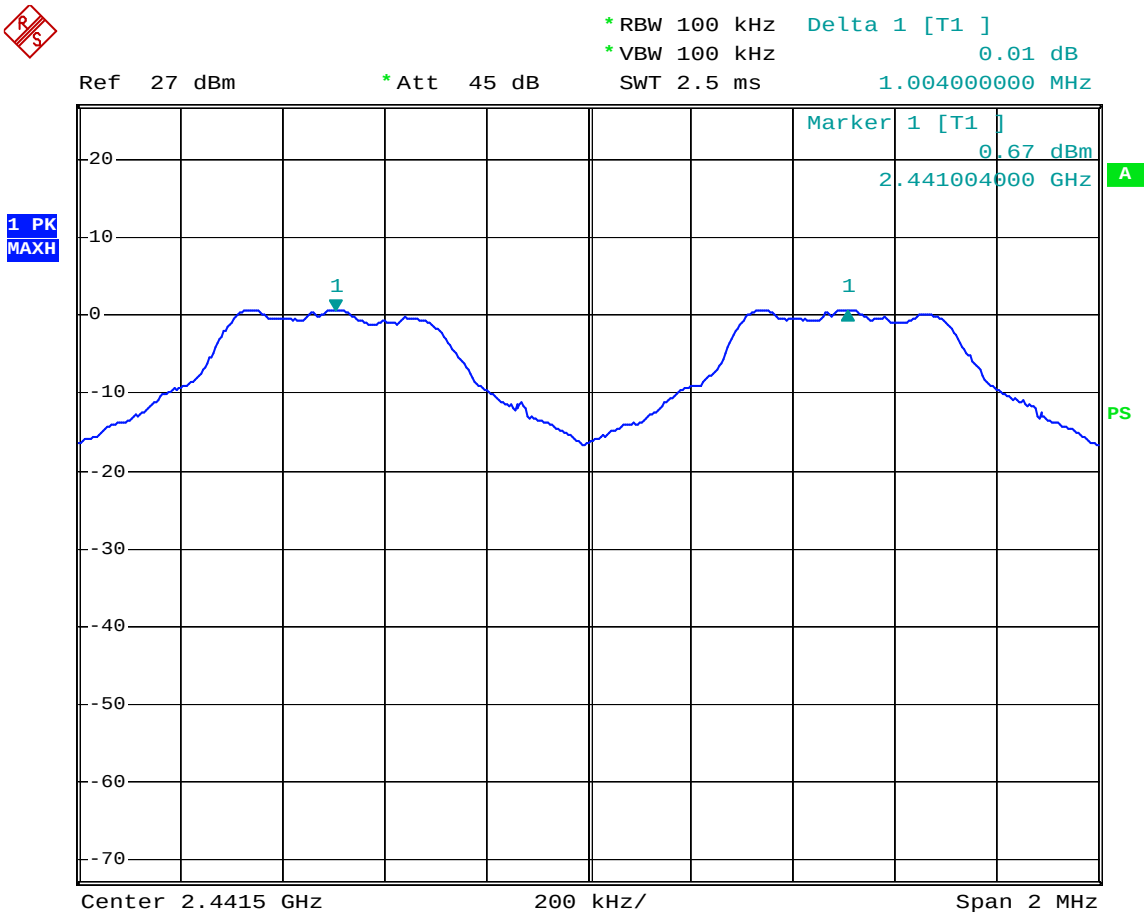
Low Channel



Xinwei M/N:T15s channel separation low channel

Date: 12.JUN.2008 10:47:31

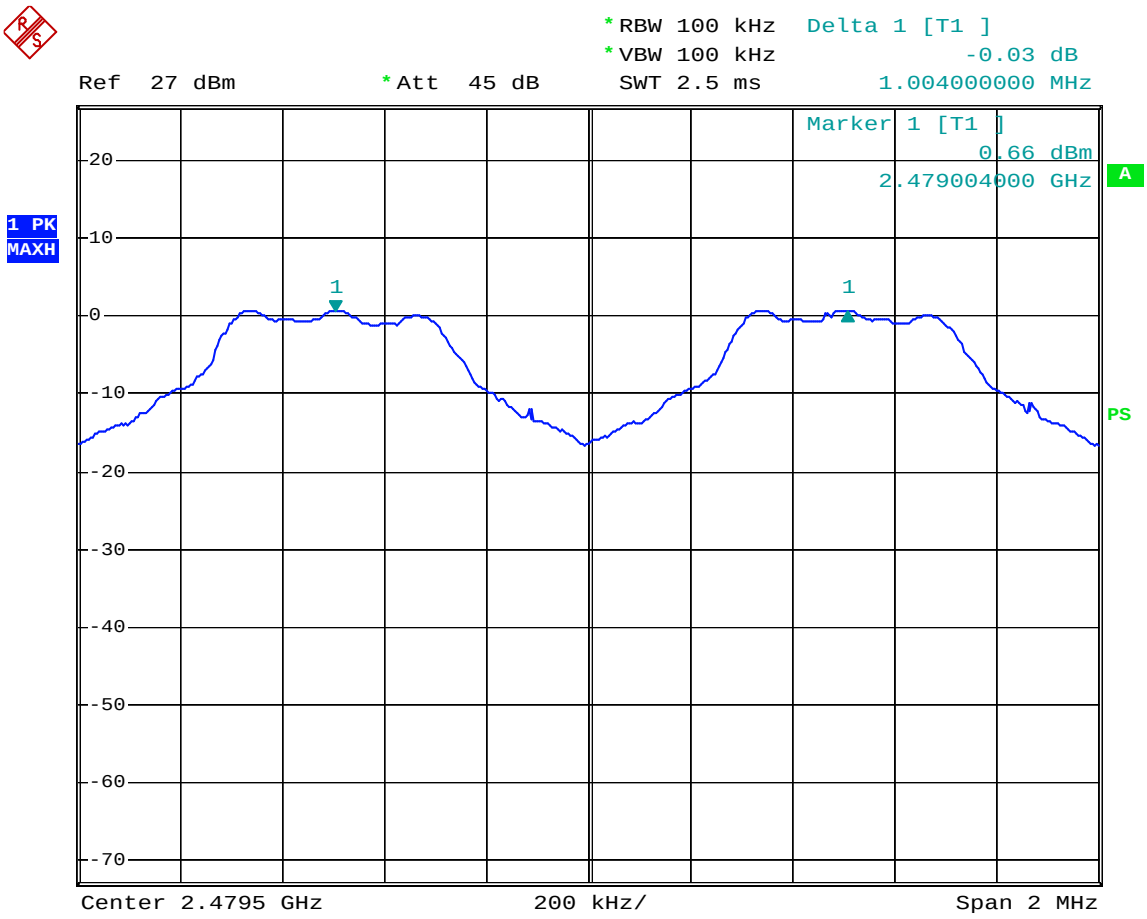
Middle Channel



Xinwei M/N:T15s channel separation middle channel

Date: 12.JUN.2008 10:49:13

High Channel



Xinwei M/N:T15s channel separation high channel

Date: 12.JUN.2008 10:50:56

CFR47 §15.247(a) (1) – 20dB BANDWIDTH TESTING

Applicable Standard

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.8 kPa

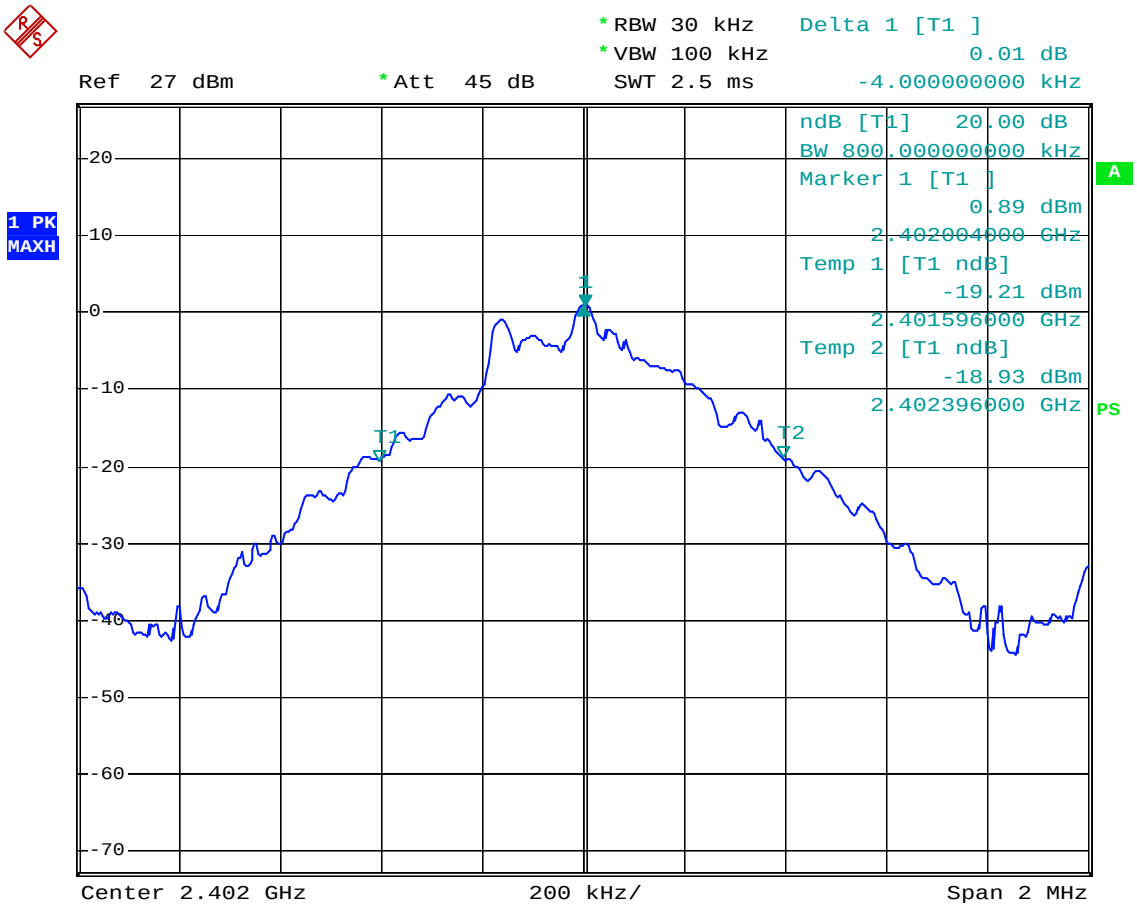
The testing was performed by Jim Li on 2008-06-12.

Test Mode: Transmitting

Channel	Channel Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	0.800
Middle	2441	0.820
High	2480	0.848

Test Result: Please refer to following plots

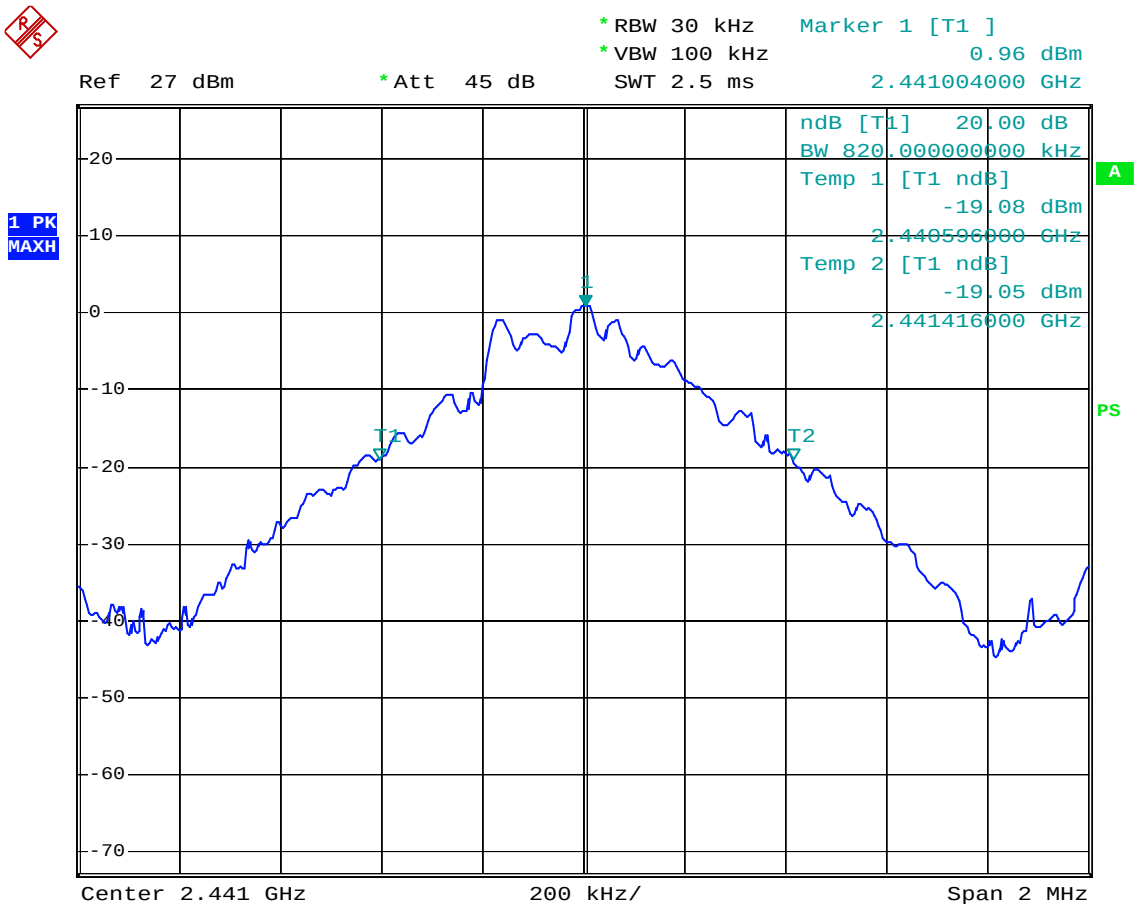
Low Channel



Xinwei M/N:T15s 20dB low channel

Date: 12.JUN.2008 10:41:25

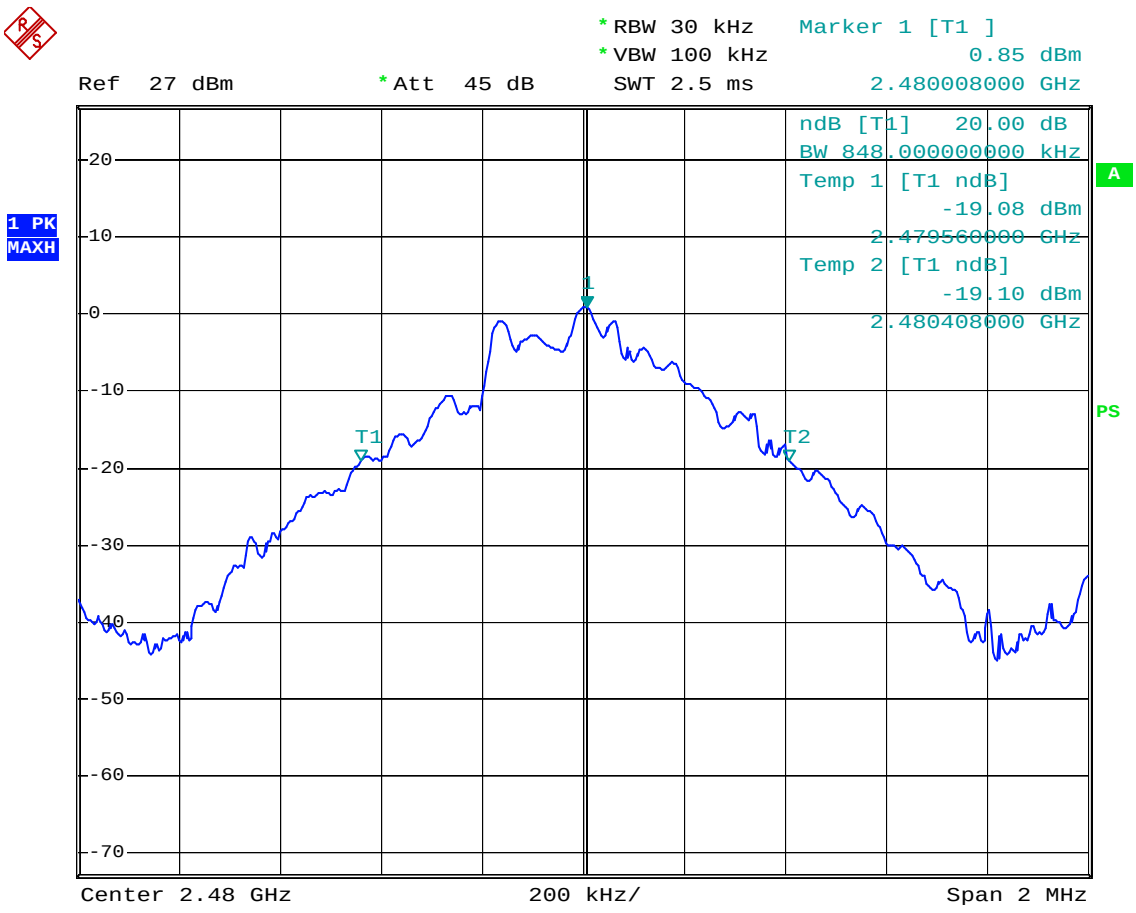
Middle Channel



Xinwei M/N:T15s 20dB middle channel

Date: 12.JUN.2008 10:43:37

High Channel



Xinwei M/N:T15s 20dB high channel

Date: 12.JUN.2008 10:44:39

CFR47 §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST

Applicable Standard

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Set the EUT in transmitting mode from first channel to last.
3. By using the Max-Hold function record the Quantity of the channel.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.8 kPa

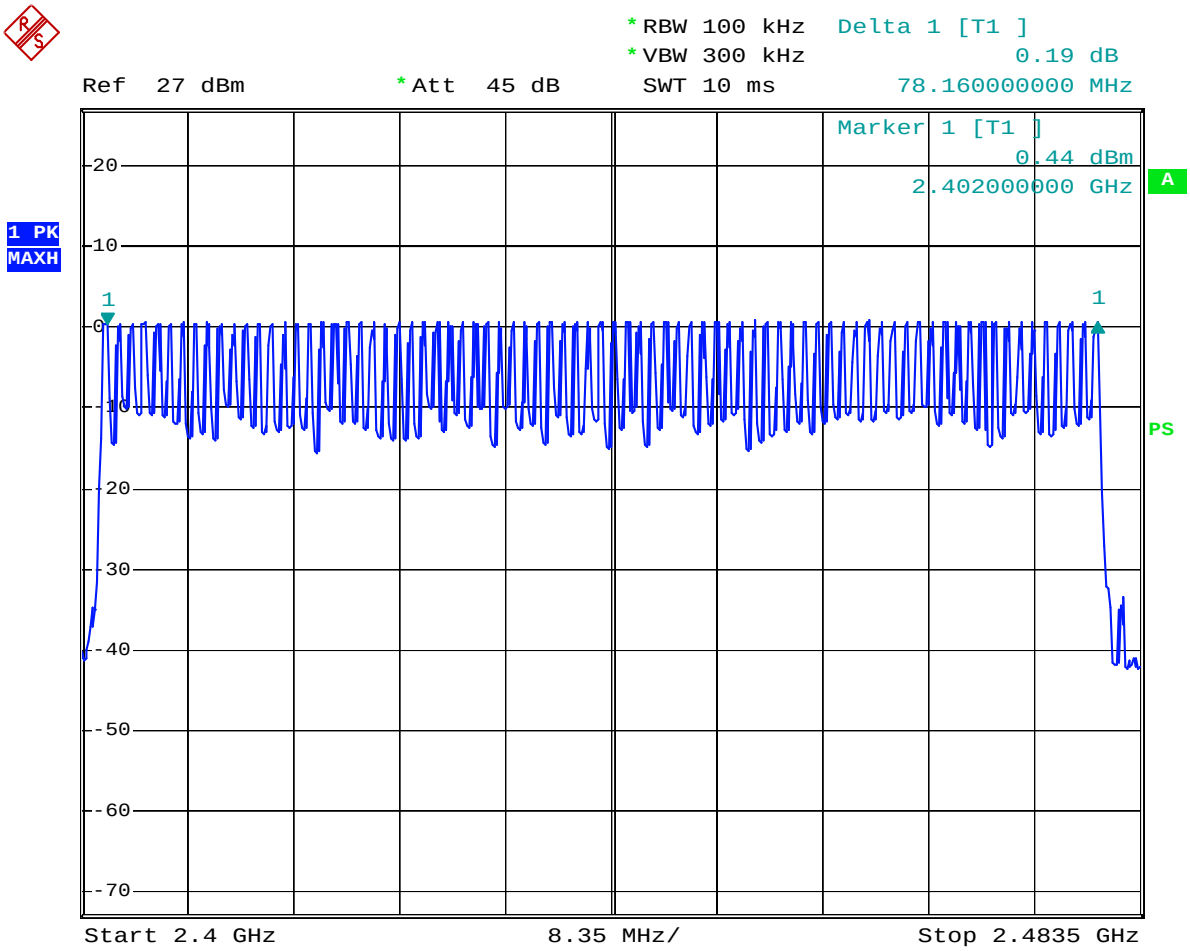
The testing was performed by Jim Li on 2008-06-12.

Test Result: Compliance.

Please refer to following plot

Hopping Channel Frequency Range (MHz)	Number of Hopping Channel (CH)	Limit (CH)
2400-2483.5	79	≥15

Number of Hopping Channels



Xinwei M/N:T15s hopping channel

Date: 12.JUN.2008 11:08:53

CFR47 §15.247(a) (1) (iii) -TIME OF OCCUPANCY (DWELL TIME)

Applicable Standard

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The EUT was worked in channel hopping; Spectrum SPAN was set as 0. Sweep was set as 0.4 X channel no. (s), the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= time slot length * hope rate/ number of hopping channels * 31.6s
Hop rate=1600/s

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.8 kPa

The testing was performed by Jim Li on 2008-06-12 and 2008-06-20.

Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

DH 1

Channel	Pulse Width (ms)	Dwell time (s)	Limit (s)	Result
Low	0.465	0.1488	0.4	Pass
Middle	0.460	0.1472	0.4	Pass
High	0.465	0. 1488	0.4	Pass

DH 3

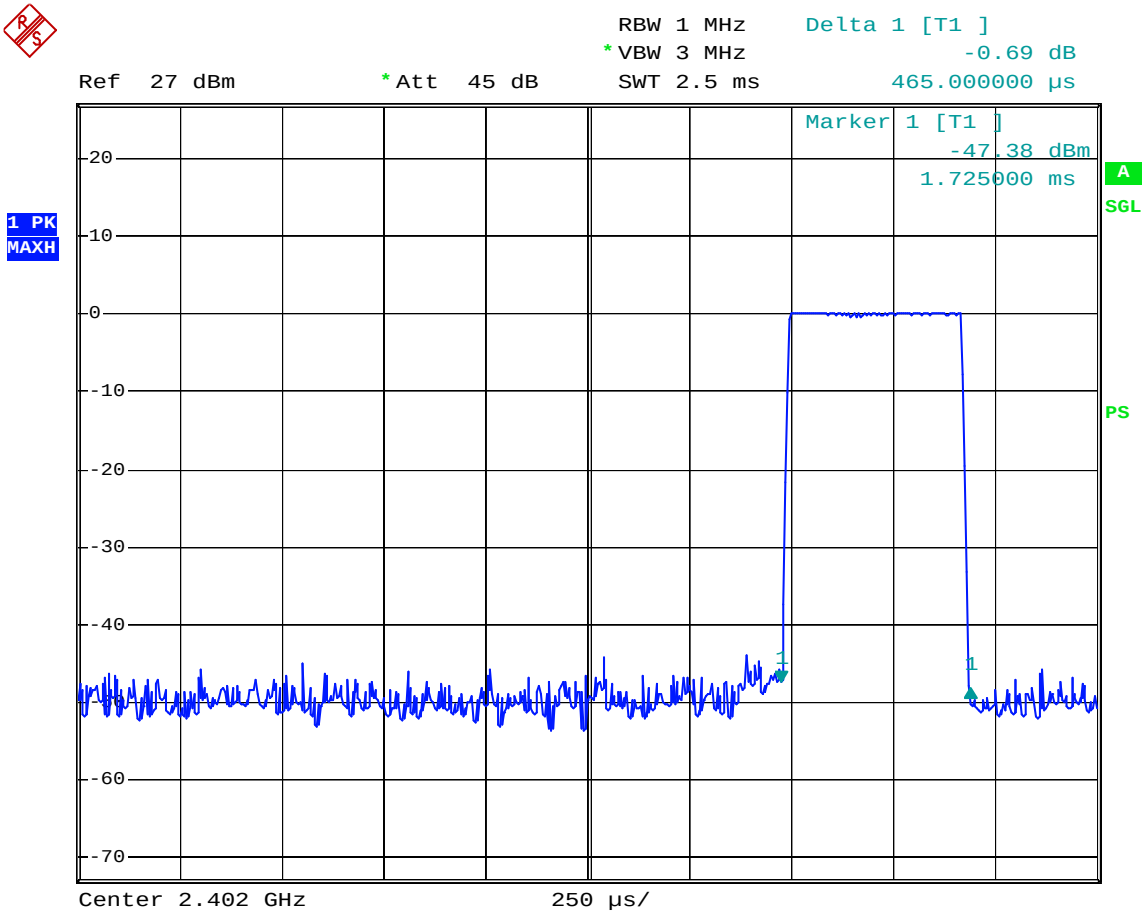
Channel	Pulse Width (ms)	Dwell time (s)	Limit (s)	Result
Low	1.85	0.296	0.4	Pass
Middle	1.85	0.296	0.4	Pass
High	1.85	0.296	0.4	Pass

DH 5

Channel	Pulse Width (ms)	Dwell time (s)	Limit (s)	Result
Low	3.12	0.3328	0.4	Pass
Middle	3.12	0.3328	0.4	Pass
High	3.11	0.3317	0.4	Pass

NOTE: Dwell time=Pulse width (ms) × (1600 ÷ 6 ÷ 79) ×31.6 Second

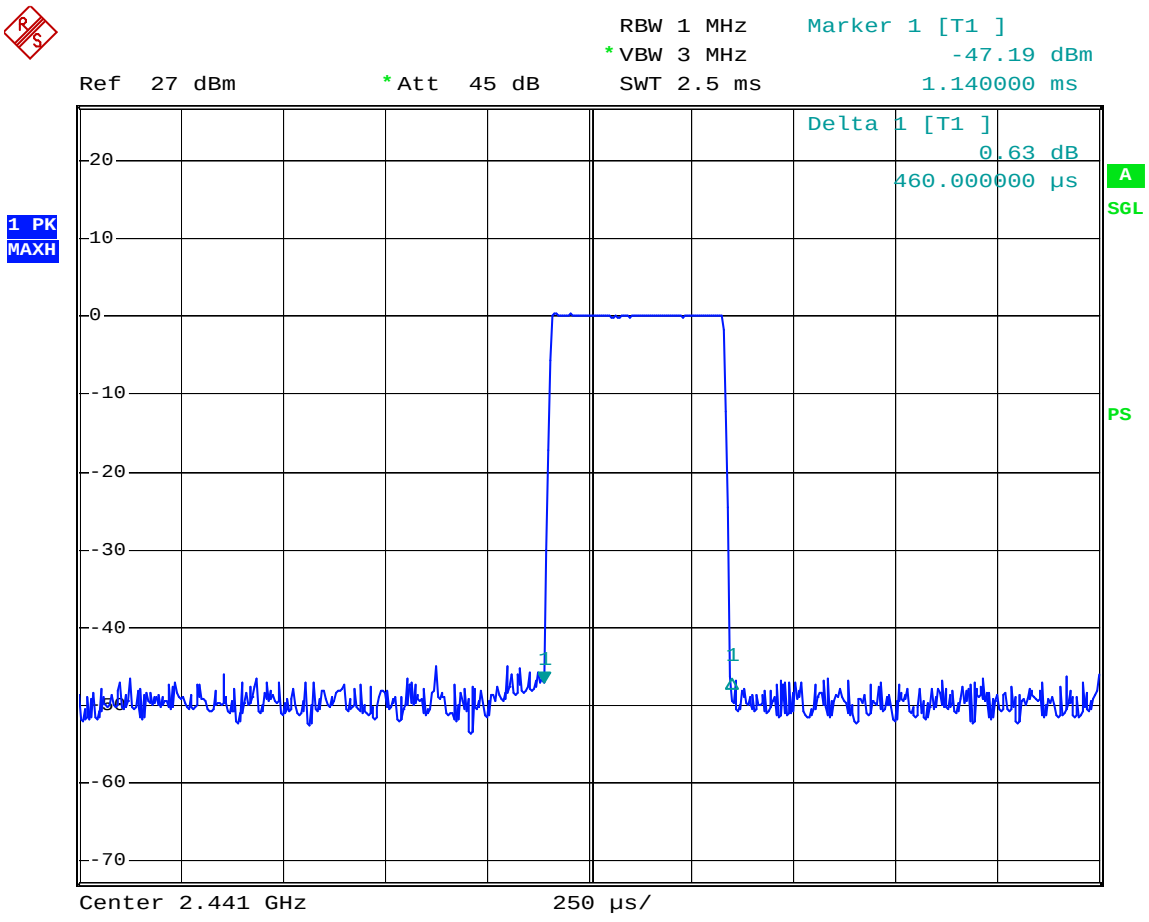
Low Channel for DH1



Xinwei M/N:T15s dwell time low channel

Date: 12.JUN.2008 11:15:23

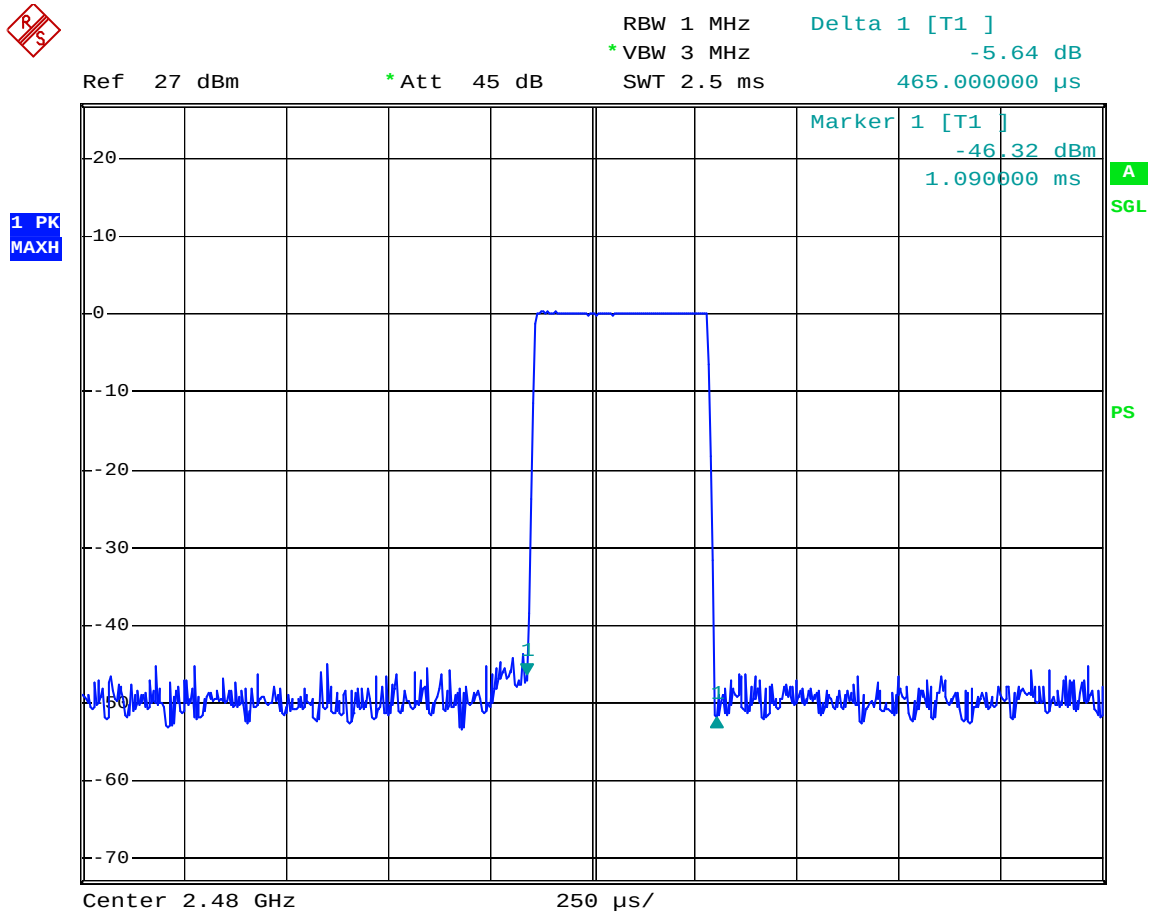
Middle Channel for DH1



Xinwei M/N:T15s dwell time middle channel

Date: 12.JUN.2008 11:16:58

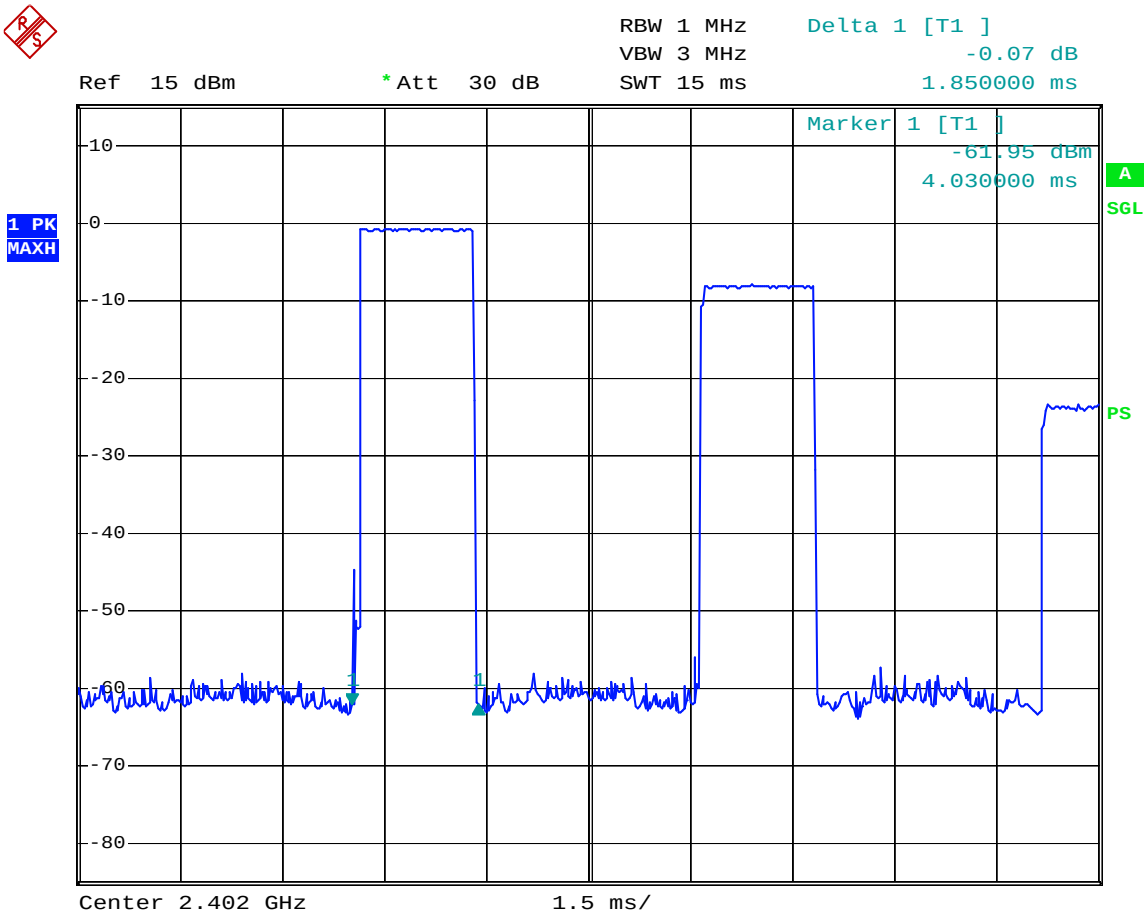
High Channel for DH1



Xinwei M/N:T15s dwell time high channel

Date: 12.JUN.2008 11:17:52

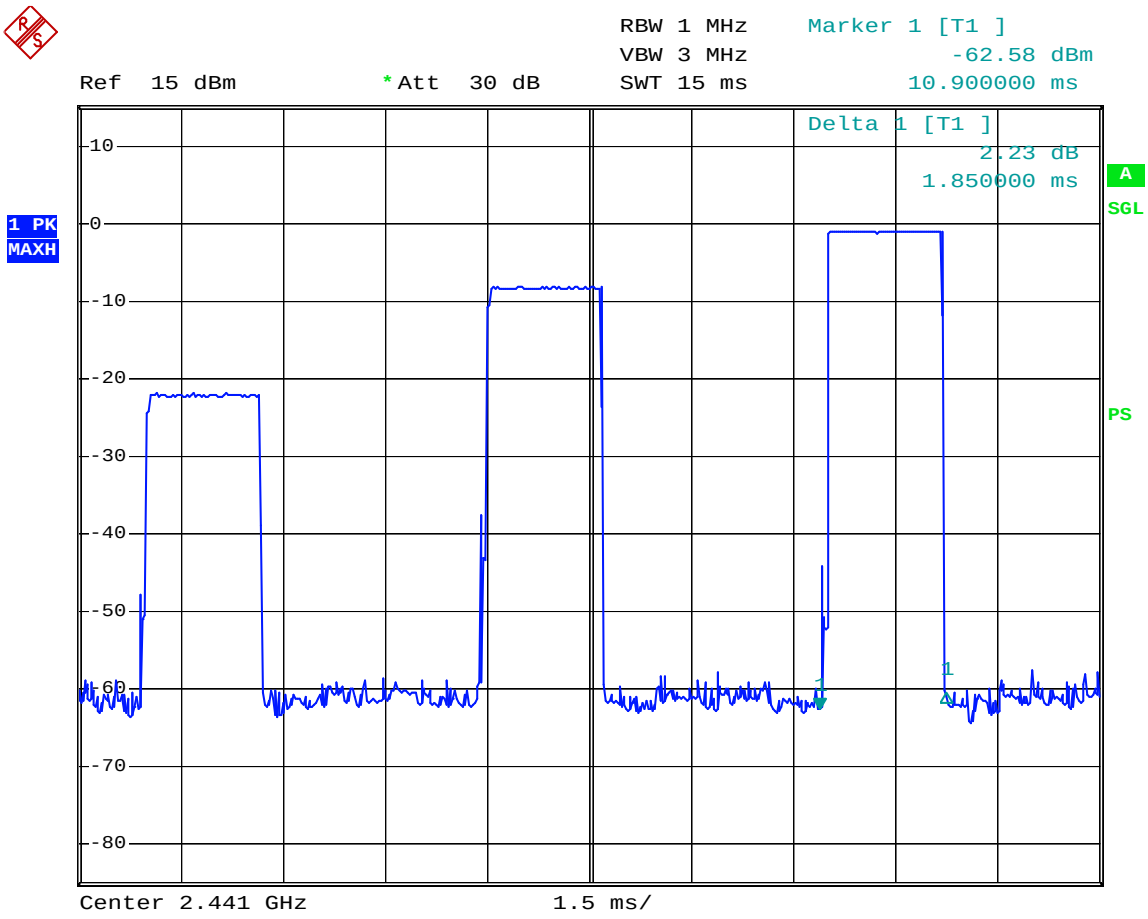
Low Channel for DH3



dwell time DH3

Date: 20.JUN.2008 17:12:50

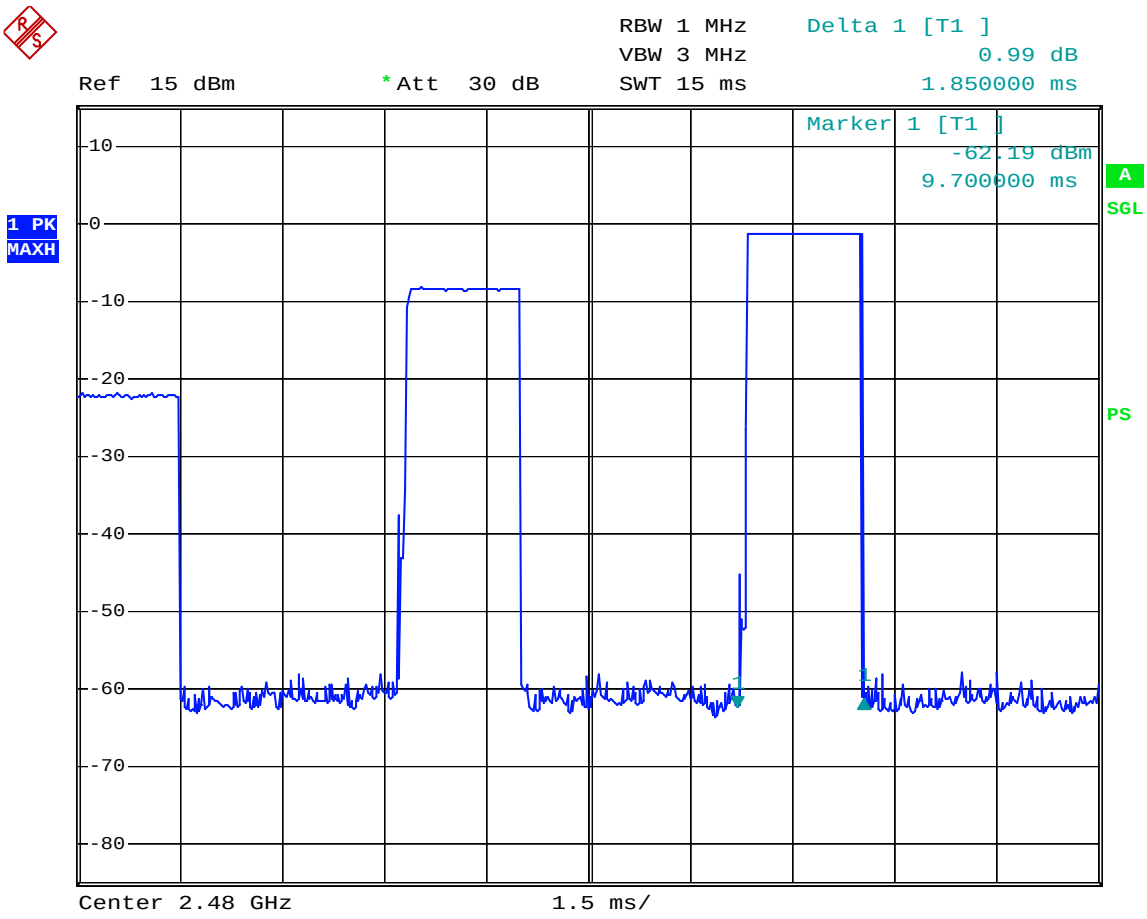
Middle Channel for DH3



Dwell time middle channel DH3

Date: 20.JUN.2008 17:15:37

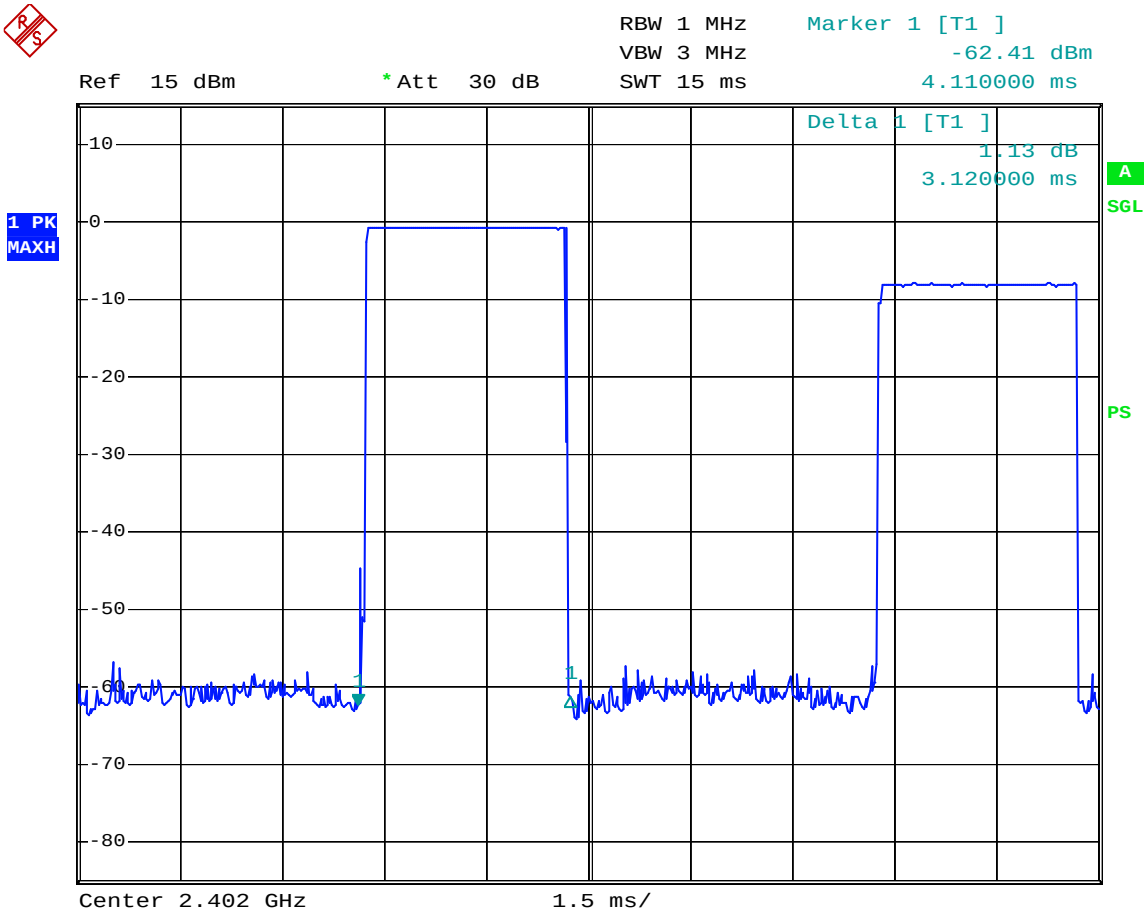
High Channel for DH3



Dwell time high channel DH3

Date: 20.JUN.2008 17:18:06

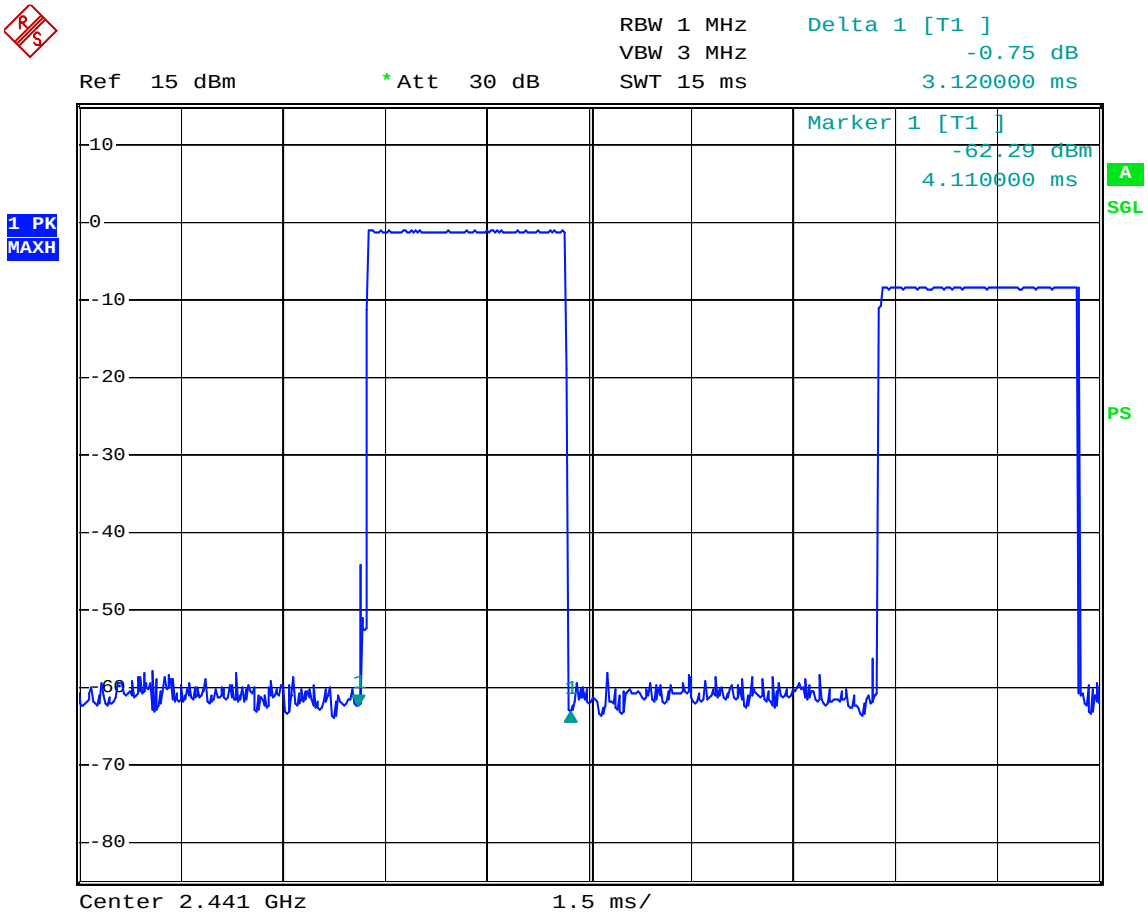
Low Channel for DH5



Dwell time low channel DH5

Date: 20.JUN.2008 17:23:24

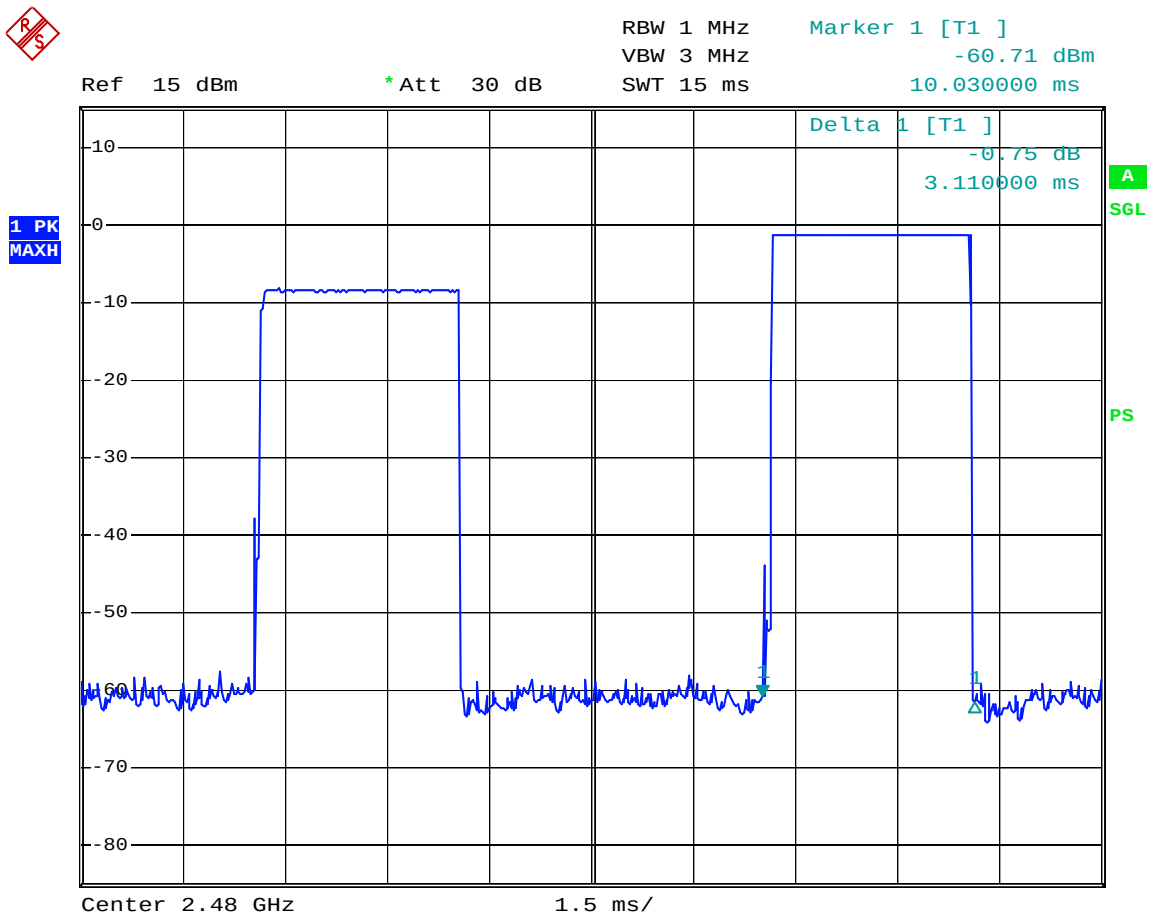
Middle Channel for DH5



Dwell time middle channel DH5

Date: 20.JUN.2008 17:21:56

High Channel for DH5



Dwell time high channel DH5

Date: 20.JUN.2008 17:20:39

CFR47 §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2007-11-15	2008-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16
HP	Amplifier	8449B	3008A00277	2007-09-29	2008-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2007-09-25	2008-09-25
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-05-09	2009-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in peak detection modes.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude. = Meter Reading + Antenna Factor + Cable Loss- Amplifier Gain

Test Data

Environmental Conditions

Temperature:	25°C
Relative Humidity:	56 %
ATM Pressure:	100.8kPa

The testing was performed by Jim Li on 2008-06-20.

Test Result: Compliance.

Freq. (MHz)	Receiver Reading (dBμV)	Detector PK/AV	Table Direction Degree	Test Antenna		Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBμV/m)	Tran. Factor (dB)	EIRP		FCC 15.247 Limit (mW)
				Height (m)	Factor (dB/m)					(dBm)	(mW)	
Low Channel												
2402	95.31	PK	90	1.0	30.6	3.36	35	94.27	95.27	-1	0. 79	1000
Middle Channel												
2441	95.02	PK	128	1.5	30.6	3.36	35	93.98	95.27	-1.29	0.74	1
High Channel												
2480	95.44	PK	65	1.4	30.6	3.36	35	94.4	95.27	-0.87	0.82	1

Note: P (dBm) = E (dBμV/m) – 95.27

CFR47 §15.247(d) - BAND EDGES TESTING

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2007-10-16	2008-10-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.

3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz.

4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

5. Repeat above procedures until all measured frequencies were complete.

Test Data

Environmental Conditions

Temperature:	25°C
Relative Humidity:	56 %
ATM Pressure:	100.8kPa

The testing was performed by Jim Li on 2008-06-12.

Test Mode: Transmitting

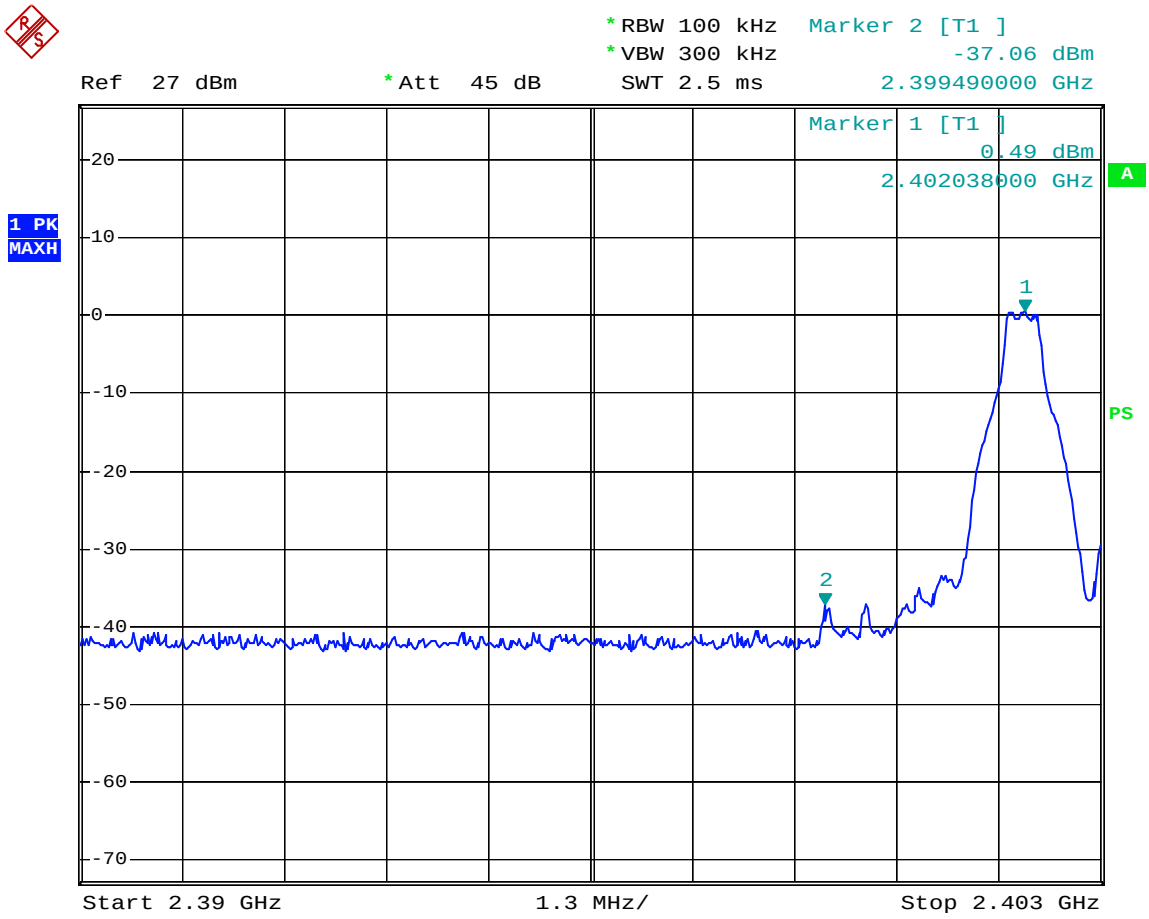
Frequency (MHz)	Attenuation (dBc)	Limit (dBc)
2399.490	37.55	20
2482.150	35.08	20

Note: Attenuation = Peaklevel – Emission Level

Test Result: Compliance.

Please refer to following plot.

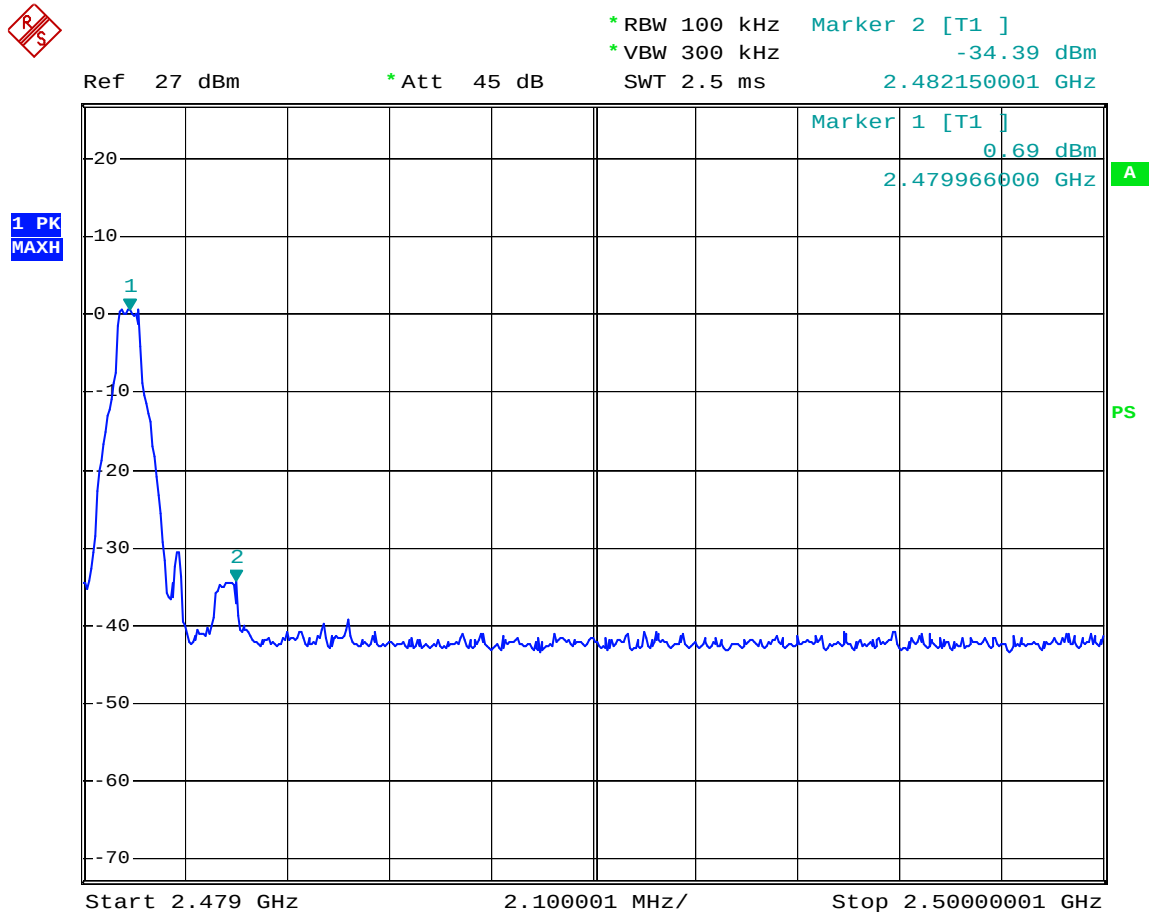
Band Edge Left Side



Xinwei M/N:T15s band edge left

Date: 12.JUN.2008 11:23:10

Band Edge Right Side



Xinwei M/N:T15s band edge right

Date: 12.JUN.2008 11:27:11

******* END OF REPORT *******