



NVLAP LAB CODE 200707-0



FCC PART 15.247

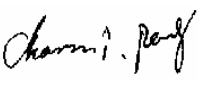

EMI MEASUREMENT AND TEST REPORT

For

Xinwei Electronic Co. Ltd., Quanzhou

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

FCC ID: UUPHSH21A

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: Bluetooth Headset
Test Engineer: Charmi Peng 	
Report No.: RSZ06112303	
Test Date: 2006-12-09 to 2006-12-22	
Report Date: 2006-12-25	
Reviewed By: EMC Manager: Boni Baniqued 	
Prepared By: Bay Area Compliance Laboratory 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 Laboratory 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 U.S. Government.

TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY	4
TEST FACILITY	4
EXTERNAL I/O CABLE.....	5
SYSTEM TEST CONFIGURATION.....	6
DESCRIPTION OF TEST CONFIGURATION	6
EUT EXERCISE SOFTWARE	6
SPECIAL ACCESSORIES	6
EQUIPMENT MODIFICATIONS	6
CONFIGURATION OF TEST SETUP	7
BLOCK DIAGRAM OF TEST SETUP	8
SUMMARY OF TEST RESULTS	9
§15.247(b) (5) - RF EXPOSURE	10
LIMIT	10
§15.203 - ANTENNA REQUIREMENT.....	11
STANDARD APPLICABLE	11
ANTENNA CONNECTOR CONSTRUCTION	11
§15.107 (a) - CONDUCTED EMISSION.....	12
MEASUREMENT UNCERTAINTY	12
EUT SETUP	12
EMI TEST RECEIVER SETUP.....	13
TEST EQUIPMENT LIST AND DETAILS.....	13
TEST PROCEDURE	13
TEST RESULTS SUMMARY	13
TEST DATA	14
PLOT(S) OF TEST DATA	14
§15.109, §15.205, §15.209, §15.247 - RADIATED EMISSION	17
APPLICABLE STANDARD	17
MEASUREMENT UNCERTAINTY	17
EUT SETUP	17
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	18
TEST EQUIPMENT LIST AND DETAILS.....	18
TEST PROCEDURE	18
CORRECTED AMPLITUDE & MARGIN CALCULATION	18
TEST RESULTS SUMMARY	19
TEST DATA	19
§15.247(a) (1)-CHANNEL SEPARATION TEST	23
APPLICABLE STANDARD	23
TEST EQUIPMENT LIST AND DETAILS.....	23
TEST PROCEDURE	23
TEST DATA	23
§15.247(a) (1) –20dB BANDWIDTH TESTING	27
APPLICABLE STANDARD	27
TEST EQUIPMENT LIST AND DETAILS.....	27
TEST PROCEDURE	27
TEST DATA	27
§15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST	31

APPLICABLE STANDARD	31
TEST EQUIPMENT LIST AND DETAILS.....	31
TEST PROCEDURE	31
TEST DATA	31
§15.247(a) (1) (iii) -TIME OF OCCUPANCY (DWELL TIME).....	33
APPLICABLE STANDARD	33
TEST EQUIPMENT LIST AND DETAILS.....	33
TEST PROCEDURE	33
TEST DATA	33
§15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT	40
APPLICABLE STANDARD	40
TEST EQUIPMENT LIST AND DETAILS.....	40
TEST PROCEDURE	40
TEST DATA	40
§15.247(d) - BAND EDGES TESTING.....	44
APPLICABLE STANDARD	44
TEST EQUIPMENT LIST AND DETAILS.....	44
TEST PROCEDURE	44
TEST DATA	45

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Xinwei Electronic Co. Ltd., Quanzhou*'s product, model number: *H21* or the "EUT" as referred to in this report is a *Bluetooth Headset*, which measures approximately: 4.5 cm L x 2.5 cm W x 3.0 cm H, rated input voltage: 3.7V Battery.

Power Adapter:

Manufacturer: Mountronix Switching Power, Model: GFP051T-0510

Input: AC 100-240V 50/60Hz 0.2A, Output: DC 5V 1A

** The test data gathered are from production sample, serial number: 0611032 provided by the manufacturer, we receive the EUT on 2006-11-23.*

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 Laboratory 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 Laboratory 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 Laboratory 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 and Industrial Canada registration test site No.: 5500A. 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 Laboratory Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm>

External I/O Cable

Cable Description	Length (M)	From/Port	To
Detachable USB DC Cable	0.8	EUT	Adapter

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing mode.

EUT Exercise Software

The exercise software is Minitest.

Special Accessories

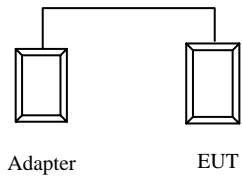
The special accessories were provided by Bay Area Compliance Laboratory Corp. (Shenzhen).

Equipment Modifications

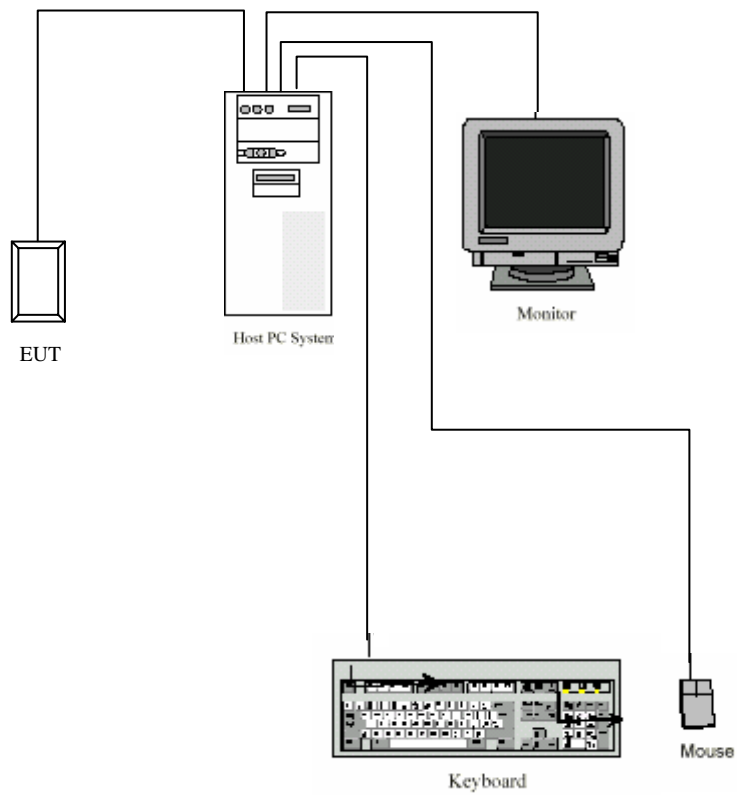
Bay Area Compliance Laboratory Corp. (Shenzhen) has not done any modification on the EUT.

Configuration of Test Setup

Charging Mode:

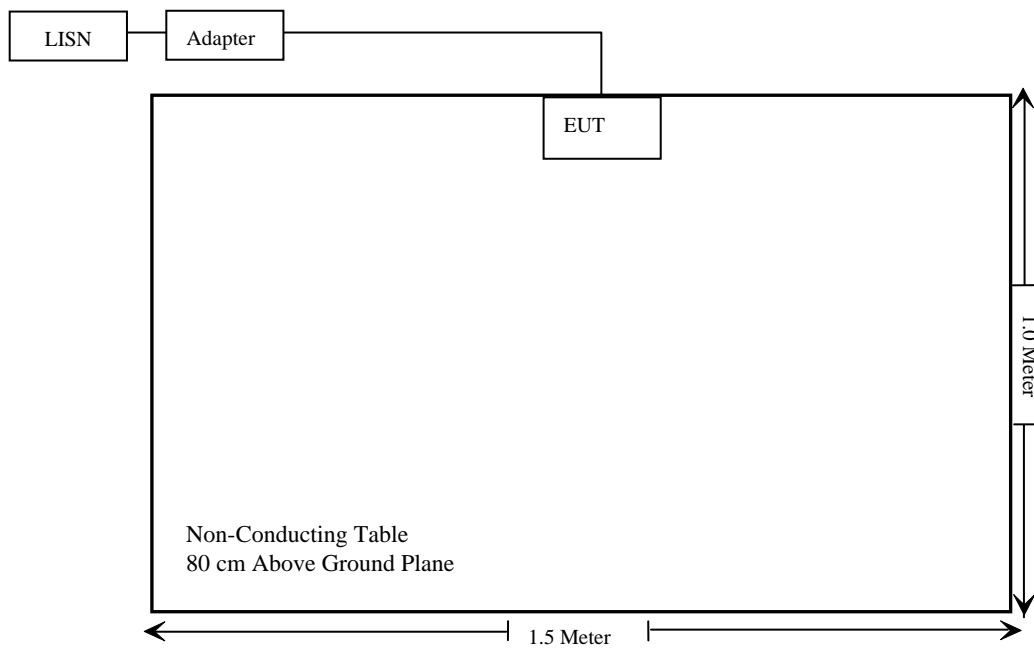


Transmitting Mode:

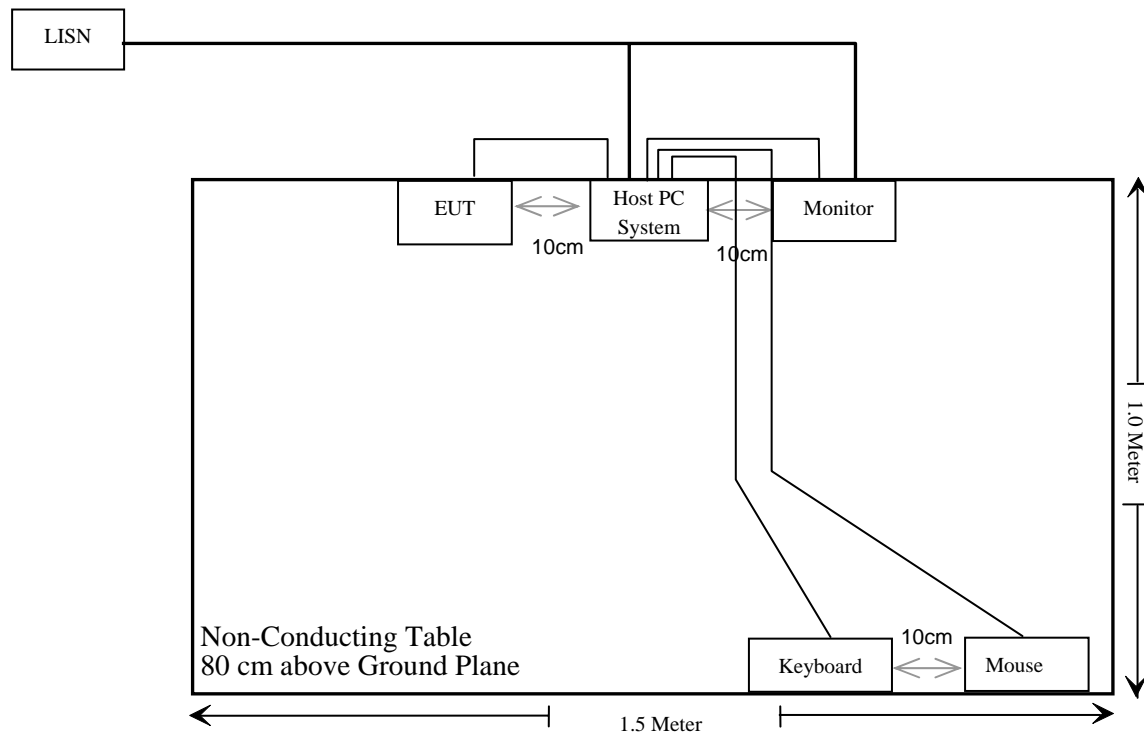


Block Diagram of Test Setup

Charging Mode:



Transmitting Mode:



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.107 (a)	Conducted Emission	Compliant
§15.247 (b)	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.205	Restricted Band	Compliant
§15.109, §15.205, §15.209, §15.247(d)	Radiated Emission	Compliant
§15.247 (a)(1)	20 dB Bandwidth	Compliant
§15.247(a)(1)	Channel Separation	Compliant
§15.247(a)(1)(iii)	Time of occupancy (Dwell Time)	Compliant
§15.247(a)(1)(iii)	Number of hopping channel	Compliant
§15.247(b)(1)	Peak Output Power Measurement	Compliant
§15.247(d)	Band edges	Compliant

§15.247(b) (5) - RF EXPOSURE

Limit

According to §15.247 (b) (5) ,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 levels in excess of the Commission's guidelines. See §1.1307(b) (1) of CFR47.

Result: Since the output power of this device was so low (0.235 mW), it is below the TCB low threshold (60/2.4=25 mW) and met the RF Exposure Requirement.

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

According to § 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.

Antenna Connector Construction

The EUT has an integral antenna which, in accordance to the above sections, is considered sufficient to comply with the provisions of these sections. Please see EUT photo for details.

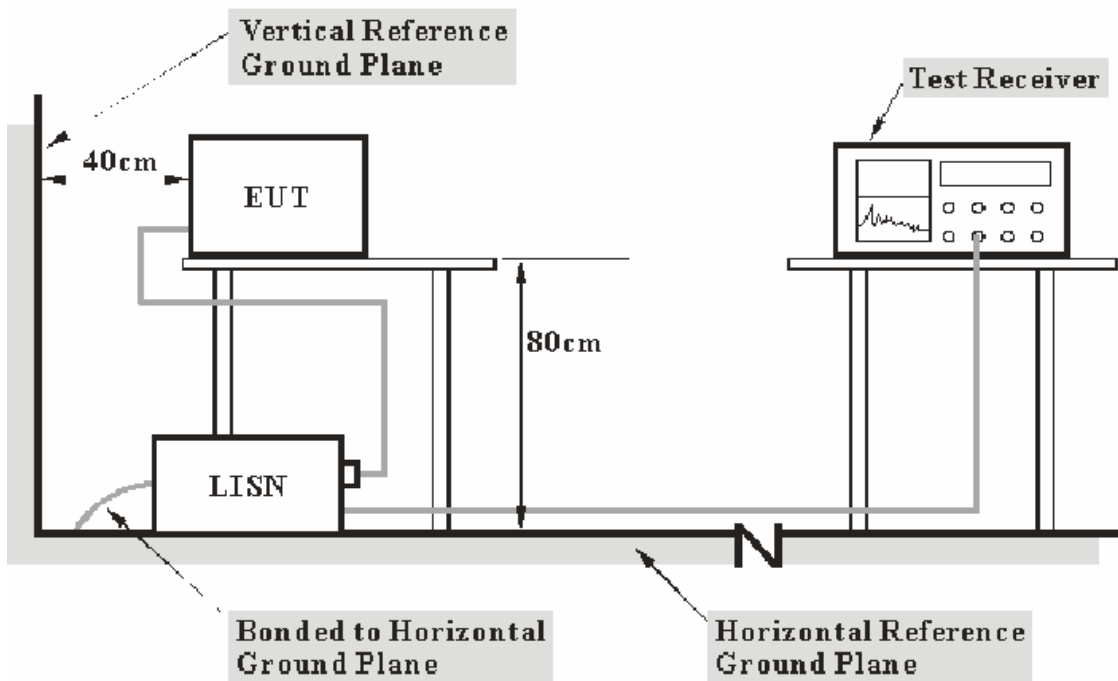
§15.107 (a) - CONDUCTED EMISSION

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 Laboratory 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 Class B 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 adapter 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:

<i>Frequency Range</i>	<i>IF B/W</i>
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	2006-03-20	2007-03-19
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2006-03-01	2007-03-01

* Com-Power's LISN were used as the supporting equipment.

* **Statement of Traceability:** Bay Area Compliance Laboratory 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 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 Class B, with the worst margin reading of:

5.60 dB at 0.355 MHz in the **Live** conductor mode.

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	1000mbar

The testing was performed by Charmi Peng on 2006-12-22.

Test Mode: Charging

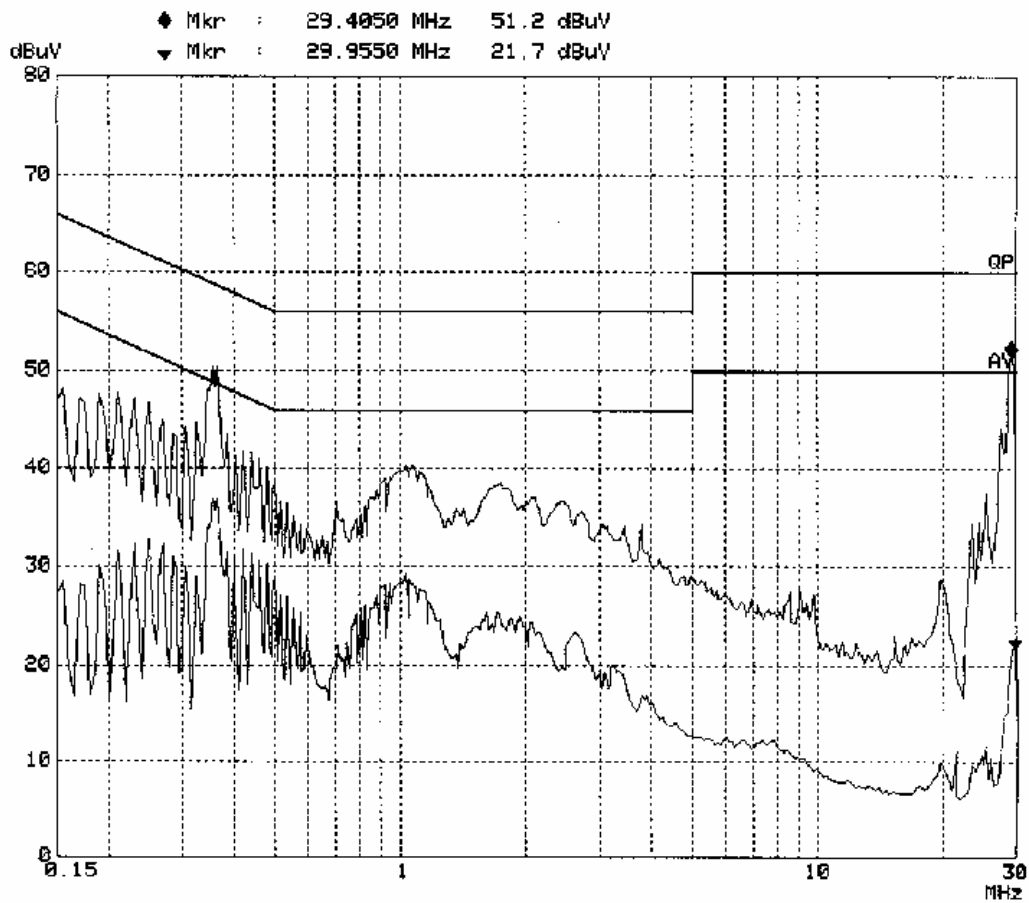
LINE CONDUCTED EMISSIONS				FCC PART 15 CLASS B	
Frequency (MHz)	Amplitude (dBμV)	Detector (QP/AV)	Phase (L/N)	Limit (dBμV)	Margin (dB)
0.355	50.40	QP	Live	56.00	5.60
29.405	51.20	QP	Live	60.00	8.80
29.840	49.30	QP	Neutral	60.00	10.70
0.355	36.90	AV	Live	48.84	11.94
0.250	46.60	QP	Live	58.84	12.24
0.345	46.70	QP	Neutral	59.08	12.38
0.155	48.20	QP	Live	61.76	13.56
1.075	40.40	QP	Live	56.00	15.60
1.745	38.60	QP	Live	56.00	17.40
0.645	38.30	QP	Neutral	56.00	17.70
1.075	28.00	AV	Live	46.00	18.00
0.170	46.50	QP	Neutral	64.96	18.46
2.050	37.10	QP	Neutral	56.00	18.90
0.250	32.80	AV	Live	51.76	18.96
0.345	30.00	AV	Neutral	49.08	19.08
2.810	36.90	QP	Neutral	56.00	19.10
1.745	24.00	AV	Live	46.00	22.00
0.645	23.20	AV	Neutral	46.00	22.80
0.155	28.50	AV	Live	55.73	27.23
29.840	22.50	AV	Neutral	50.00	27.50
2.050	18.10	AV	Neutral	46.00	27.90
29.405	21.70	AV	Live	50.00	28.30
0.170	26.00	AV	Neutral	54.96	28.96
2.810	16.10	AV	Neutral	46.00	29.90

Plot(s) of Test Data

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

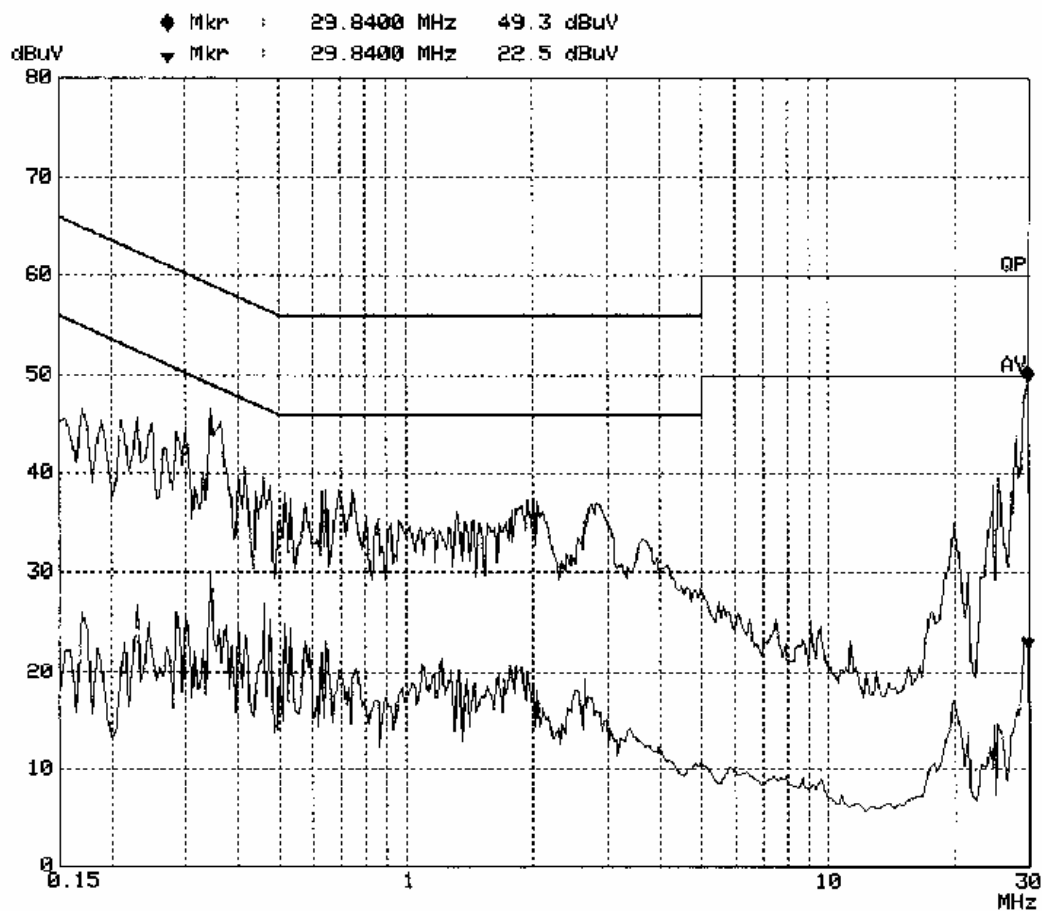
Conducted Emission Test FCC Part 15

EUT: Bluetooth headset M/N:H21
Manuf: Xinwei
Op Cond: Charging
Operator: Charmi.peng
Test Spec: AC 120V/60Hz L
Comment: Temp:25'C Humi:56%
Date: 22. Dec 06 08:38



Conducted Emission Test FCC Part 15

EUT: Bluetooth headset M/N:H21
Manuf: Xinwei
Op Cond: Charging
Operator: Charmi.peng
Test Spec: AC 120V/60Hz N
Comment: Temp:25'C Humi:56%
Date: 22. Dec 06 09:04



§15.109, §15.205, §15.209, §15.247 - RADIATED EMISSION

Applicable Standard

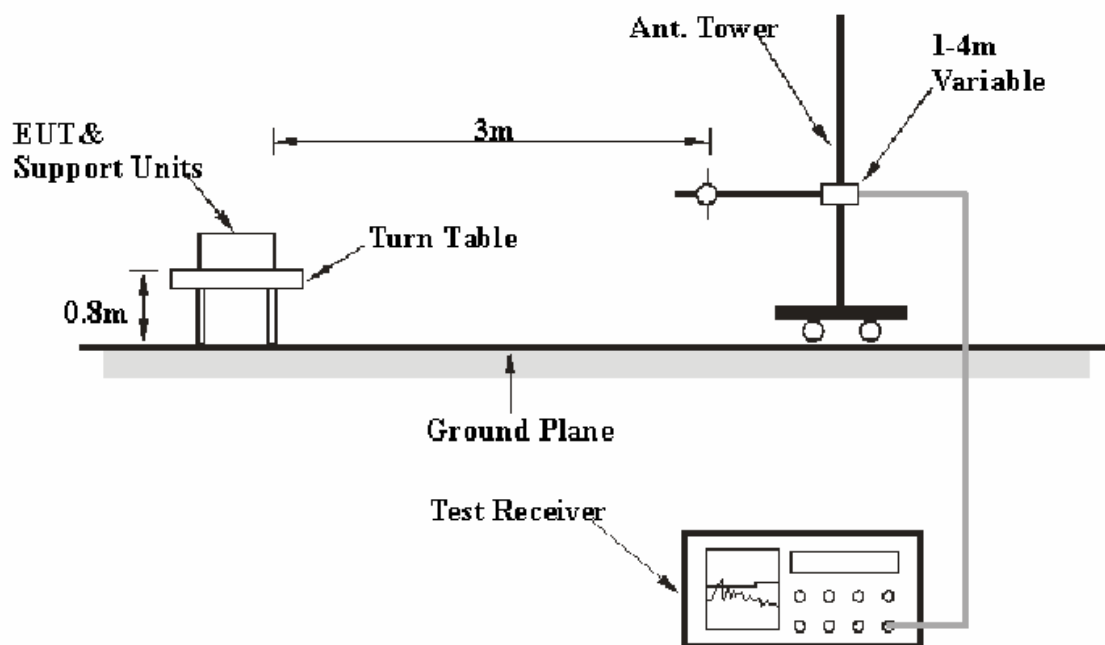
According to FCC §15.247 (d)

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 Laboratory Corp. (Shenzhen) is ± 4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber, 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 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:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
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	2006-09-29	2007-09-29
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2006-08-14	2007-08-14
HP	Amplifier	8449B	3008A00277	2006-09-29	2007-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2006-07-20	2007-07-20
Agilent	Spectrum Analyzer	8564E	3943A01781	2005-11-22	2006-11-22

* **Statement of Traceability:** Bay Area Compliance Laboratory 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.

All data was recorded in the PK&AV detection mode.

Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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 maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corr. Ampl.}$$

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:

30-1000MHz: 4.9 dB at 39.4252 MHz in the Vertical polarization.

Above 1GHz: 11.4 dB at 3202 MHz in the Vertical polarization, for Low Channel

Above 1GHz: 14.24 dB at 3254 MHz in the Horizontal polarization, for Middle Channel

Above 1GHz: 15.6 dB at 3306 MHz in the Horizontal polarization, for High Channel

Charging Mode: **4.9 dB at 605.323375 MHz in the Vertical polarization.**

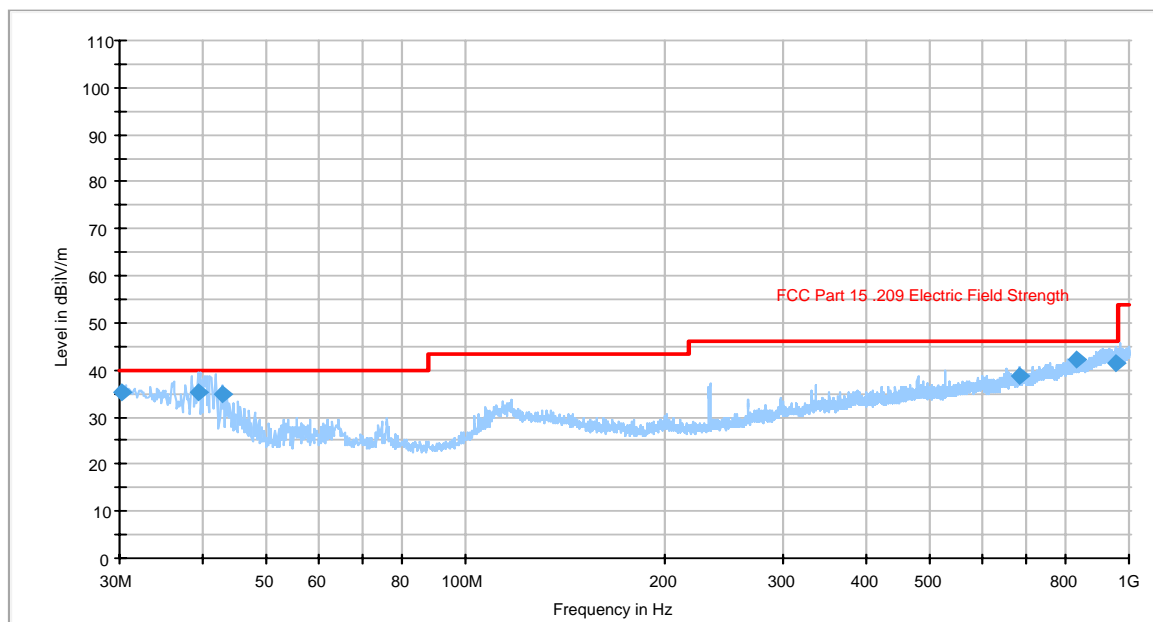
Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	52%
ATM Pressure:	1009mbar

The testing was performed by Charmi Peng on 2006-12-09.

Test Mode: Transmitting (30-1000MHz)

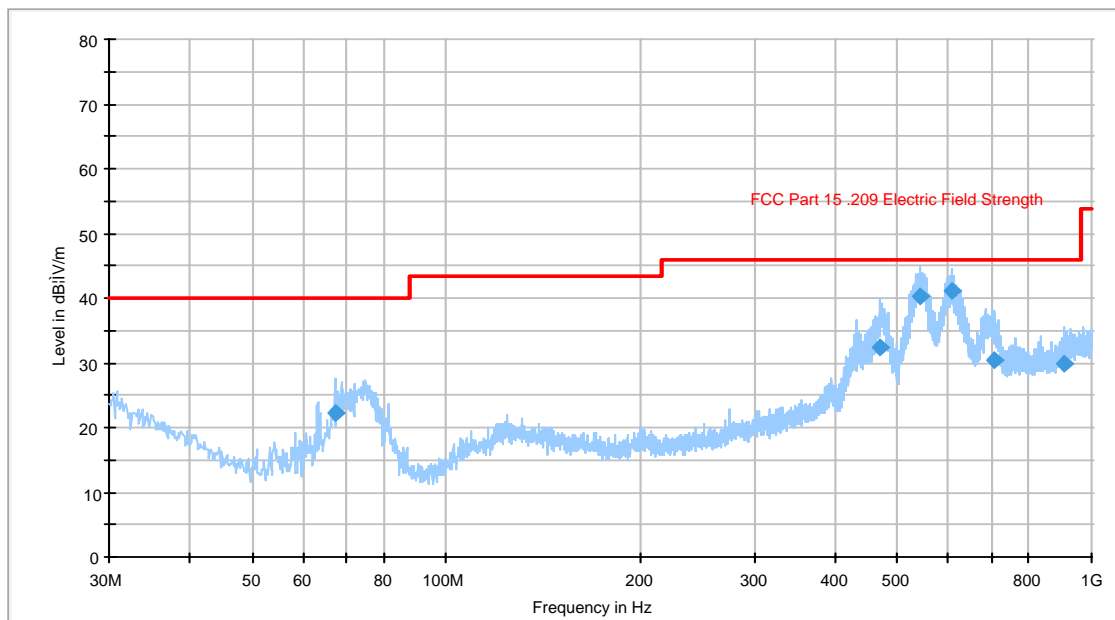


Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)
39.425200	35.1	101.0	V	175.0	-12.6	40.0	4.9
42.818400	34.8	118.0	V	195.0	-14.8	40.0	5.2
956.683175	41.5	381.0	V	213.0	1.3	46.0	10.5
30.191090	35.2	377.0	H	350.0	-5.4	40.0	11.8
832.815475	42.2	156.0	V	150.0	-1.3	46.0	12.8
684.222750	38.6	130.0	H	26.0	-3.7	46.0	14.4

Test Mode: Transmitting (Above 1GHz)

Frequency (MHz)	Meter Reading (dBuV/m)	Detector PK/QP/AV	Direction Degree	Height Meter	Polar H / V	Antenna Factor (dB)	Cable loss (dB)	Amplifier Gain (dB)	Corr. Ampl. (dBuV/m)	FCC Part 15.247		
										Limit (dBuV/m)	Margin (dB)	Remarks
Low Channel												
2402	91.67	PK	20	1.2	H	27.4	3.61	35	87.68	<div></div>	<div></div>	fundamental
2402	90.33	AV	263	1.4	H	27.4	3.61	35	86.34			fundamental
2402	92.33	PK	18	1.6	V	27.4	3.61	35	88.34			fundamental
2402	91.17	AV	45	1.0	V	27.4	3.61	35	87.18			fundamental
3202	41.17	AV	90	1.2	V	31.0	3.83	33.4	42.60	54	11.40	spurious
3202	39.33	AV	261	1.0	H	32.0	3.83	33.4	41.76	54	12.24	spurious
4804	32.83	AV	180	1.6	V	31.3	4.64	33.4	35.37	54	18.63	harmonic
4804	29.67	AV	270	1.6	H	31.3	4.64	33.4	32.21	54	21.79	harmonic
3202	47.17	PK	180	1.3	H	32.0	3.83	33.4	49.60	74	24.40	spurious
3202	48.17	PK	180	1.0	V	31.0	3.83	33.4	49.60	74	24.40	spurious
4804	43.67	PK	250	1.0	V	31.3	4.64	33.4	46.21	74	27.79	harmonic
4804	42.50	PK	49	1.2	H	31.3	4.64	33.4	45.04	74	28.96	harmonic
Middle Channel												
2441	91.50	PK	197	1.6	H	27.4	3.61	35	87.51	<div></div>	<div></div>	fundamental
2441	90.17	AV	197	1.6	H	27.4	3.61	35	86.18			fundamental
2441	91.00	PK	182	1.2	V	27.4	3.61	35	87.01			fundamental
2441	89.83	AV	182	1.2	V	27.4	3.61	35	85.84			fundamental
3254	37.33	AV	45	1.0	H	32.0	3.83	33.4	39.76	54	14.24	spurious
3254	35.50	AV	90	1.2	V	32.0	3.83	33.4	37.93	54	16.07	spurious
4882	31.83	AV	180	1.6	V	31.3	4.64	33.4	34.37	54	19.63	harmonic
4882	30.50	AV	109	1.2	H	31.3	4.64	33.4	33.04	54	20.96	harmonic
3254	46.83	PK	180	1.0	H	32.0	3.83	33.4	49.26	74	24.74	spurious
3254	46.00	PK	90	1.2	V	32.0	3.83	33.4	48.43	74	25.57	spurious
4882	45.17	PK	45	1.0	V	31.3	4.64	33.4	47.71	74	26.29	harmonic
4882	44.00	PK	109	1.2	H	31.3	4.64	33.4	46.54	74	27.46	harmonic
High Channel												
2480	93.00	PK	197	1.6	H	27.4	3.61	35	89.01	<div></div>	<div></div>	fundamental
2480	92.00	AV	197	1.6	H	27.4	3.61	35	88.01			fundamental
2480	89.83	PK	182	1.2	V	27.4	3.61	35	85.84			fundamental
2480	89.00	AV	182	1.2	V	27.4	3.61	35	85.01			fundamental
3306	35.67	AV	45	1.0	H	32.3	3.83	33.4	38.40	54	15.60	spurious
3306	35.83	AV	90	1.2	V	31.5	3.83	33.4	37.76	54	16.24	spurious
4960	34.33	AV	180	1.6	V	32.0	4.64	33.4	37.57	54	16.43	harmonic
4960	31.17	AV	109	1.2	H	32.0	4.64	33.4	34.41	54	19.59	harmonic
4960	44.83	PK	45	1.0	V	32.0	4.64	33.4	48.07	74	25.93	harmonic
3306	44.83	PK	180	1.0	H	32.3	3.83	33.4	47.56	74	26.44	spurious
4960	43.50	PK	109	1.2	H	32.0	4.64	33.4	46.74	74	27.26	harmonic
3306	44.17	PK	90	1.2	V	31.5	3.83	33.4	46.10	74	27.90	spurious

Test Mode: Charging



Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)
605.323375	41.1	101.0	V	1.0	-5.4	46.0	4.9
542.648750	40.2	102.0	V	9.0	-5.9	46.0	5.8
470.605312	32.4	117.0	V	5.0	-7.0	46.0	13.6
705.277000	30.4	113.0	V	86.0	-3.9	46.0	15.6
905.503812	30.0	119.0	V	9.0	0.3	46.0	16.0
67.340812	22.3	122.0	V	5.0	-18.2	40.0	17.7

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

Applicable Standard

Frequency hopping systems shall have hopping 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	2006-09-29	2007-09-29

* **Statement of Traceability:** Bay Area Compliance Laboratory 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.

Limit

FCC Part 15, Subpart C Section 15.247(a)(1). Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB Bandwidth of the hopping channel, whichever is greater.

FREQUENCY RANGE (MHz)	Limit (kHz)
902-928	>25kHz or the 20dB bandwidth
2400-2483.5	>25kHz or two-thirds of the 20dB bandwidth
5725-5850	>25kHz or the 20dB bandwidth

Test Data

Environmental Conditions

Temperature:	27 °C
Relative Humidity:	50 %
ATM Pressure:	1009 mbar

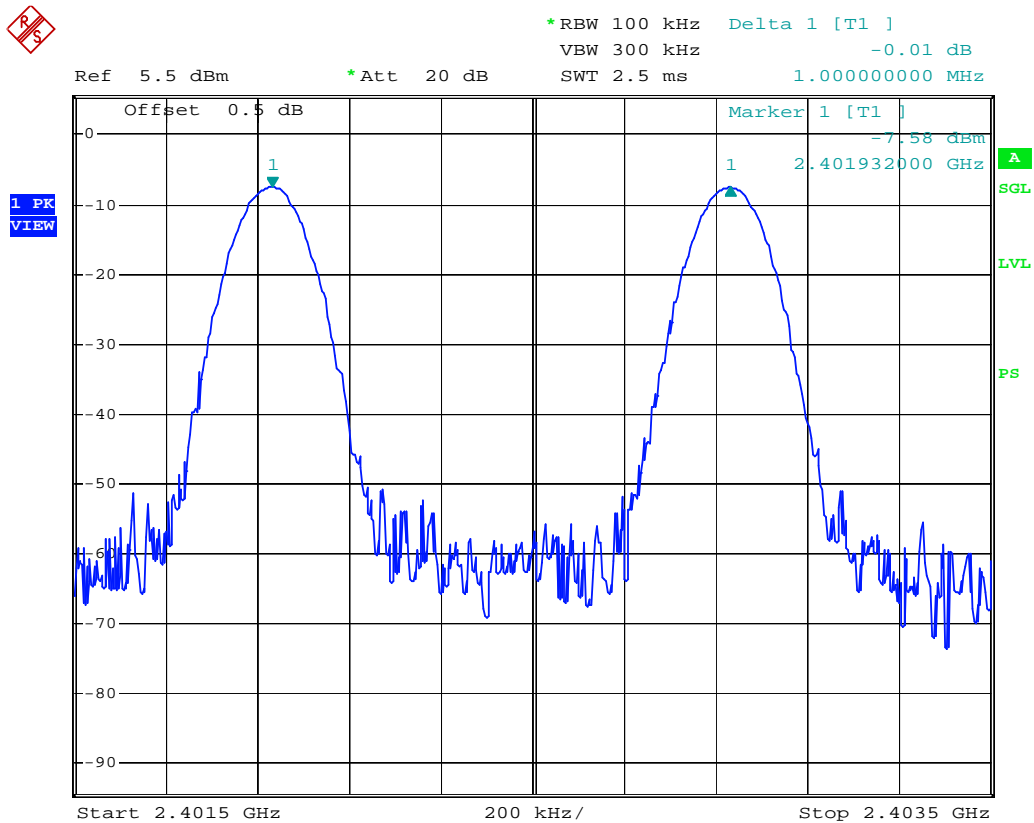
The testing was performed by Charmi Peng on 2006-12-09.

Test mode: Transmitting

Channel	Channel Frequency (MHz)	Channel Separation (KHz)	Limit (KHz)	Result
Low Channel	2402	1000	180	Pass
Adjacency Channel	2403			
Mid Channel	2441	1000	180	Pass
Adjacency Channel	2442			
High Channel	2480	1000	180	Pass
Adjacency Channel	2479			

Test Result: Pass

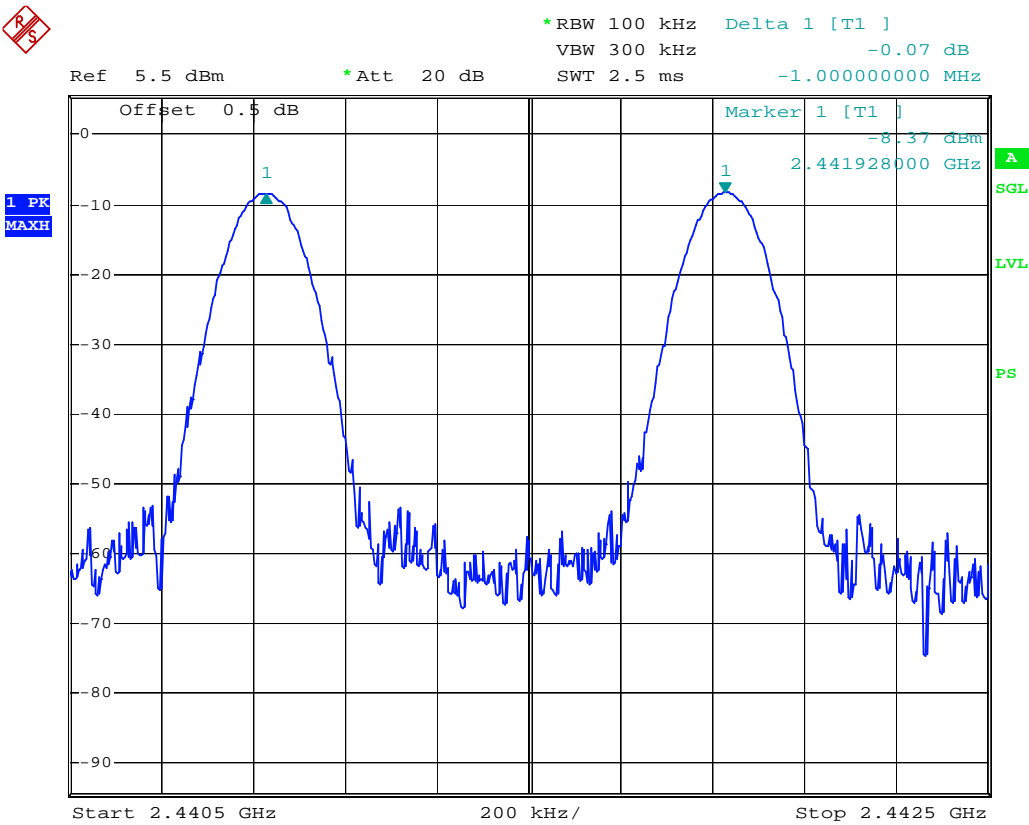
Low channel:



Xinwei channel separation low channel

Date: 9.DEC.2006 10:03:32

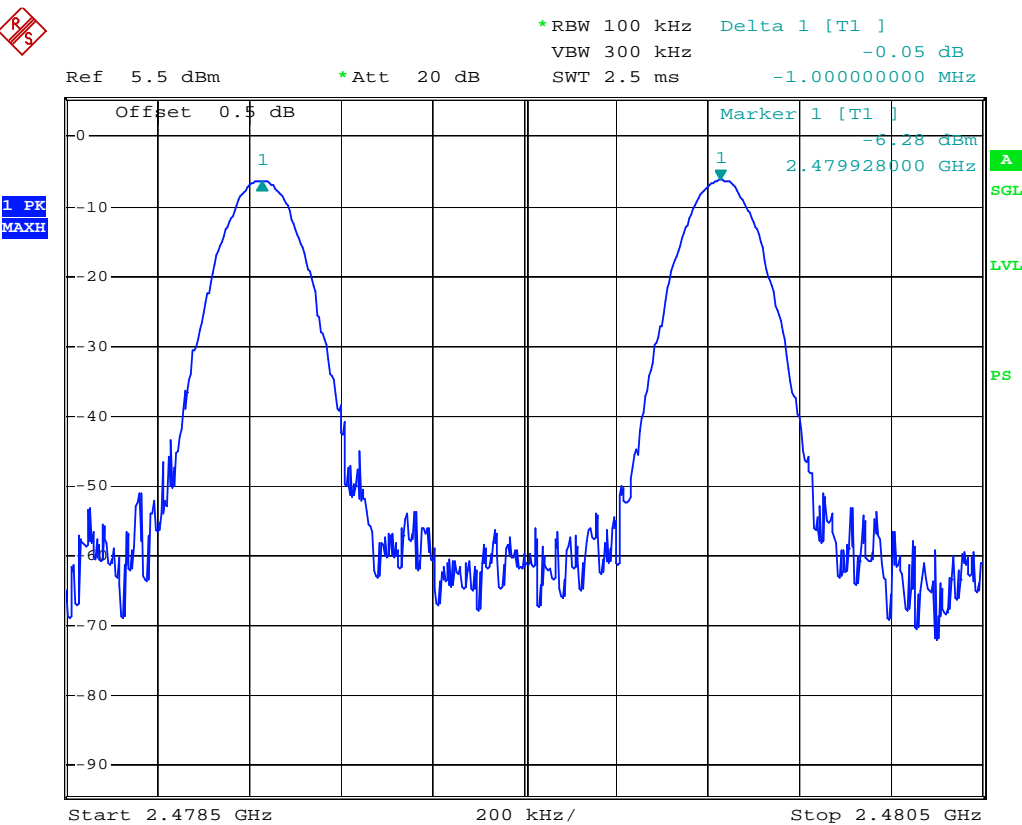
Middle channel



Xinwei channel separation mid channel

Date: 9.DEC.2006 10:04:44

High channel



Xinwei channel separation high channel

Date: 9.DEC.2006 10:05:52

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

Applicable Standard

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde&Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29

*** Statement of Traceability:** Bay Area Compliance Laboratory 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

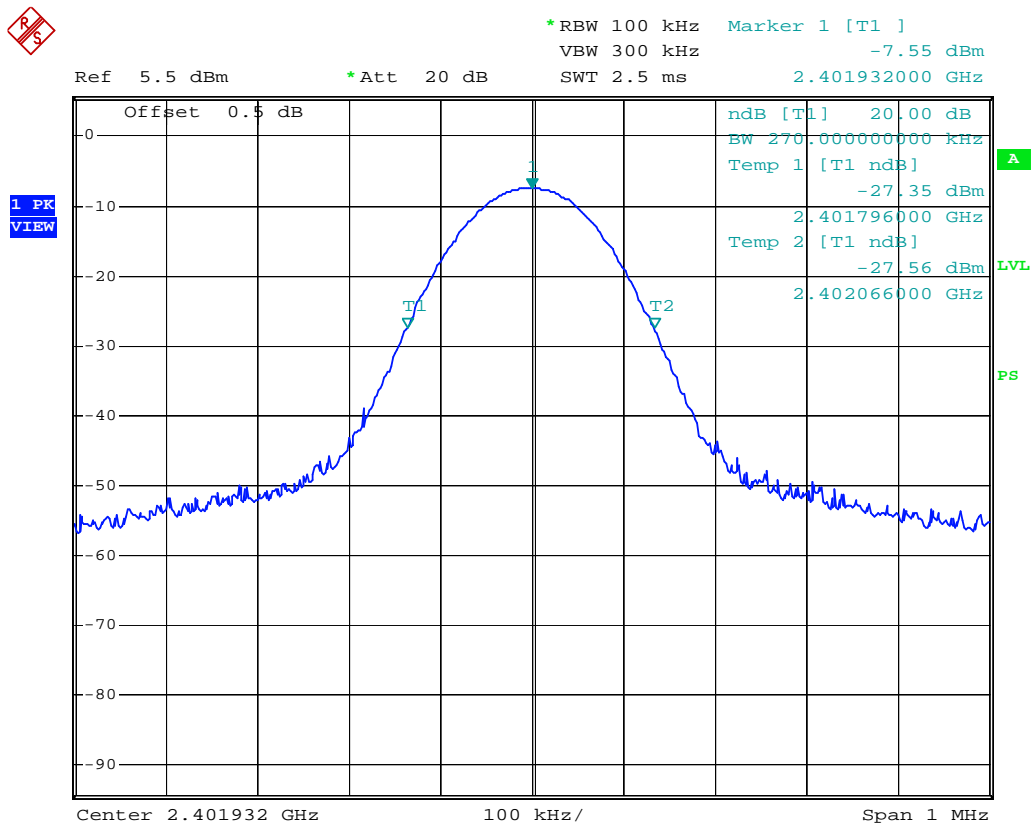
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	53%
ATM Pressure:	1009mbar

The testing was performed by Charmi Peng on 2006-12-09.

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)
Low Channel	2402	270
Mid Channel	2441	270
High Channel	2480	270

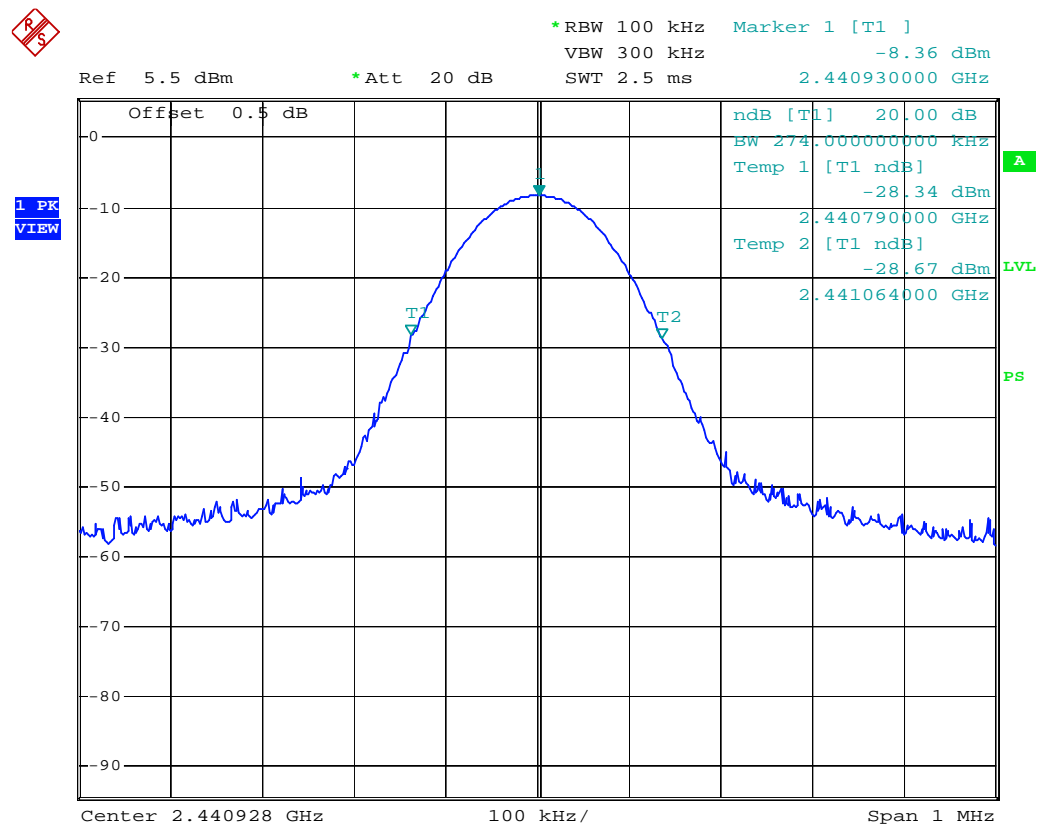
Low channel



Xinwei 20dB bandwidth low channel

Date: 9.DEC.2006 10:01:42

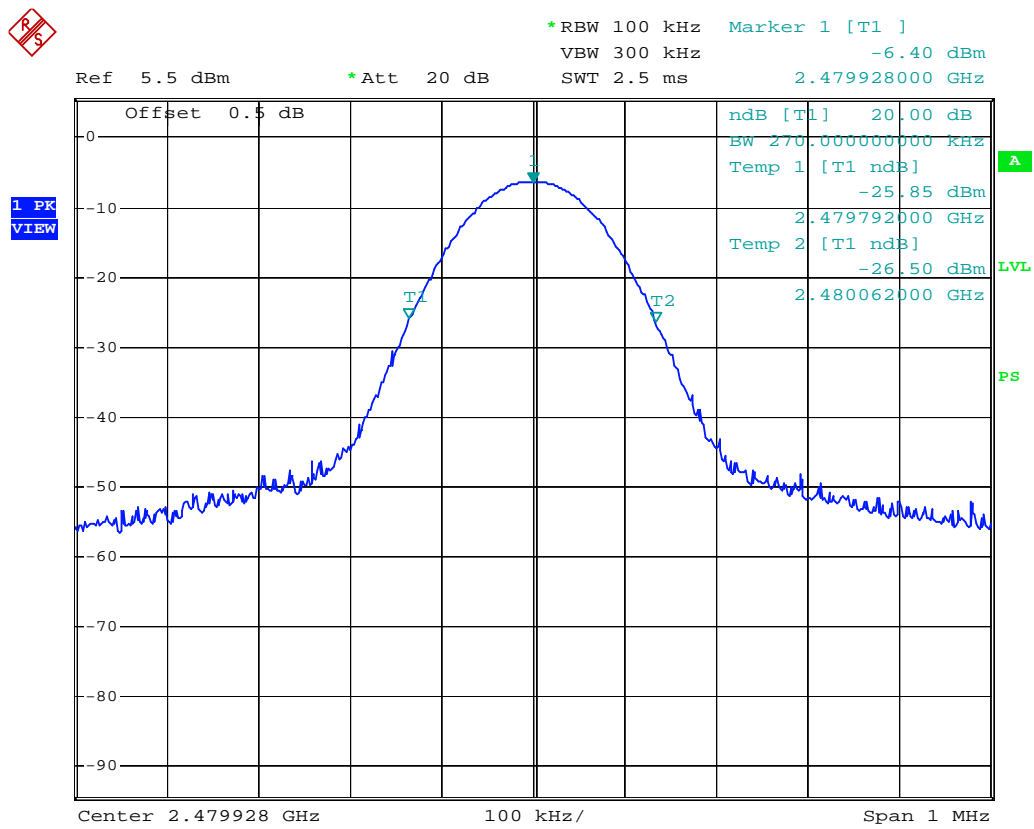
Middle channel



Xinwei 20dB bandwidth mid channel

Date: 9.DEC.2006 10:00:59

High channel



Xinwei 20dB bandwidth high channel

Date: 9.DEC.2006 10:00:13

§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	2006-09-29	2007-09-29

* **Statement of Traceability:** Bay Area Compliance Laboratory 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:	27 °C
Relative Humidity:	50 %
ATM Pressure:	1009 mbar

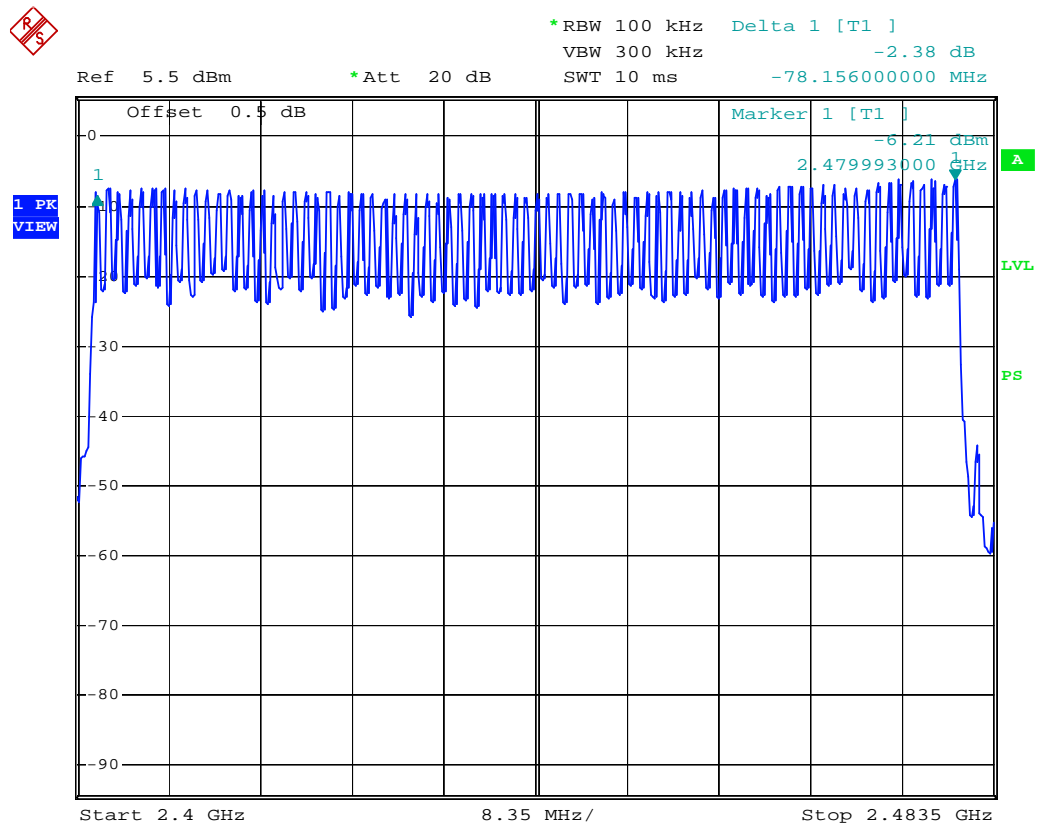
The testing was performed by Charmi Peng on 2006-12-09.

Test mode: Transmitting

Frequency Range in 2400 to 2483.5 MHz	Number of Hopping Channels	Limit
2402-2480	79	>15

Test Result: Pass

Please refer to the plot attached.



Xinwei quantity of channel

Date: 9.DEC.2006 10:09:17

§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	2006-09-29	2007-09-29

* **Statement of Traceability:** Bay Area Compliance Laboratory 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 False was get from single sweep. In addition, the time of single Pluses was tested.

Limit

FCC Part 15, Subpart C Section 15.247.

FREQUENCY RANGE (MHz)	LIMIT (ms)		
	20dB bandwidth <250kHz (50 Channel)	20dB bandwidth >250kHz (50 Channel)	20dB bandwidth <1 MHz (79 Channel)
902-928	N/A	N/A	N/A
2400-2483.5	N/A	N/A	31.6s
5725-5850	N/A	N/A	N/A

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

Hop rate=1600/s

Test Data

Environmental Conditions

Temperature:	27 °C
Relative Humidity:	50 %
ATM Pressure:	1009 mbar

The testing was performed by Charmi Peng on 2006-12-09.

Test mode: Transmitting

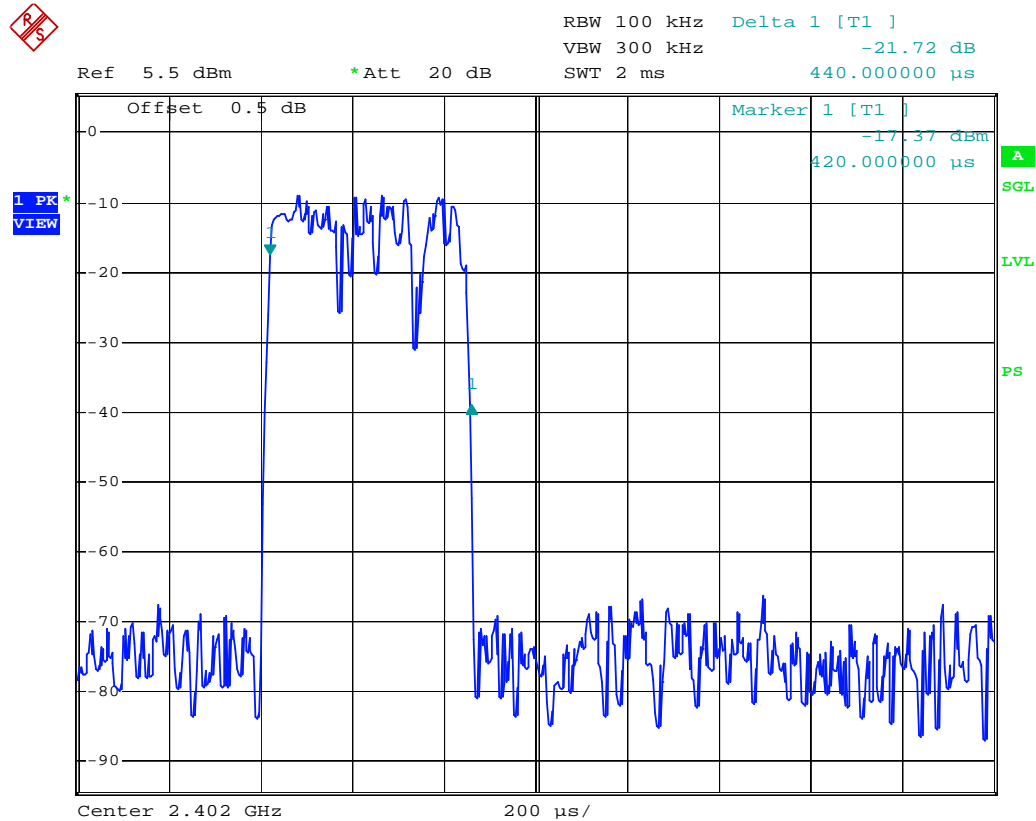
Channel	Pulse wide (msec)	Number of hopping Pulses in 0.4xCh No. (31.6 Sec)	Dwell time (sec)	Limit (sec)	Result
Low Channel	0.440	320	0.1408	0.4	Pass
Mid Channel	0.444	320	0.1421	0.4	Pass
High Channel	0.448	320	0.1434	0.4	Pass

Test Result: Pass

Please refer to the plots attached.

Low channel:

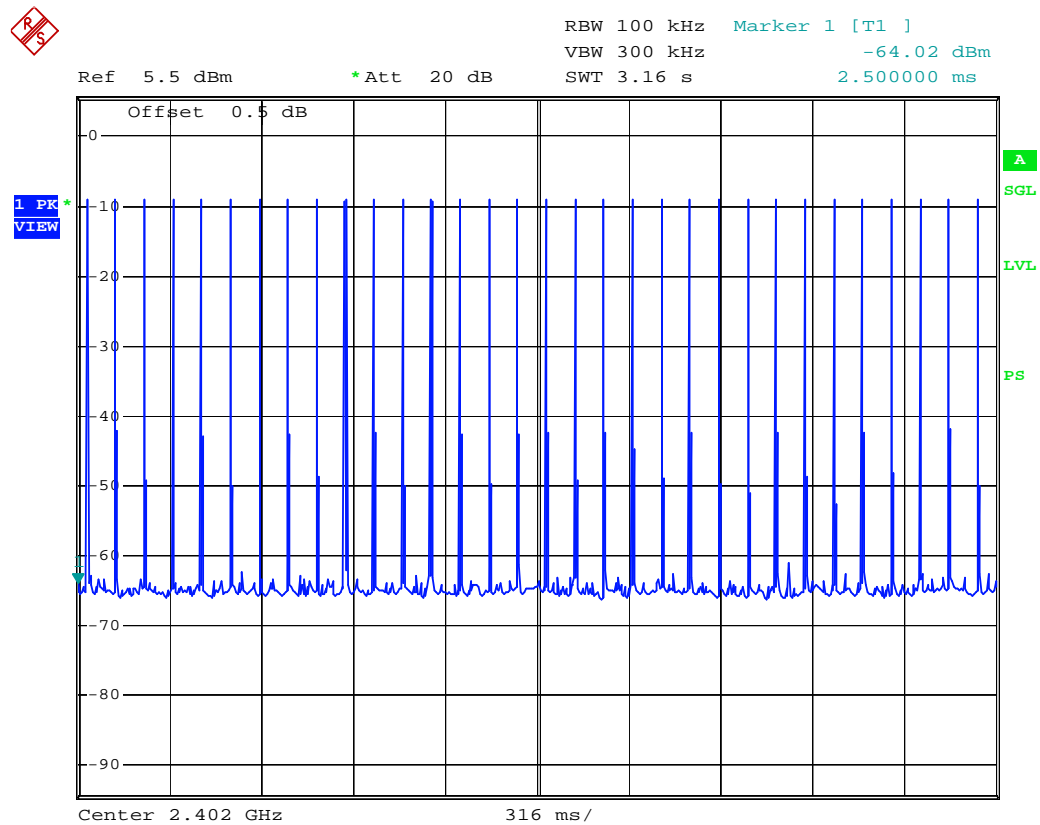
(Width of pulse)



Xinwei occupied time pulse width low channel

Date: 9.DEC.2006 10:15:55

(Number of pulse)

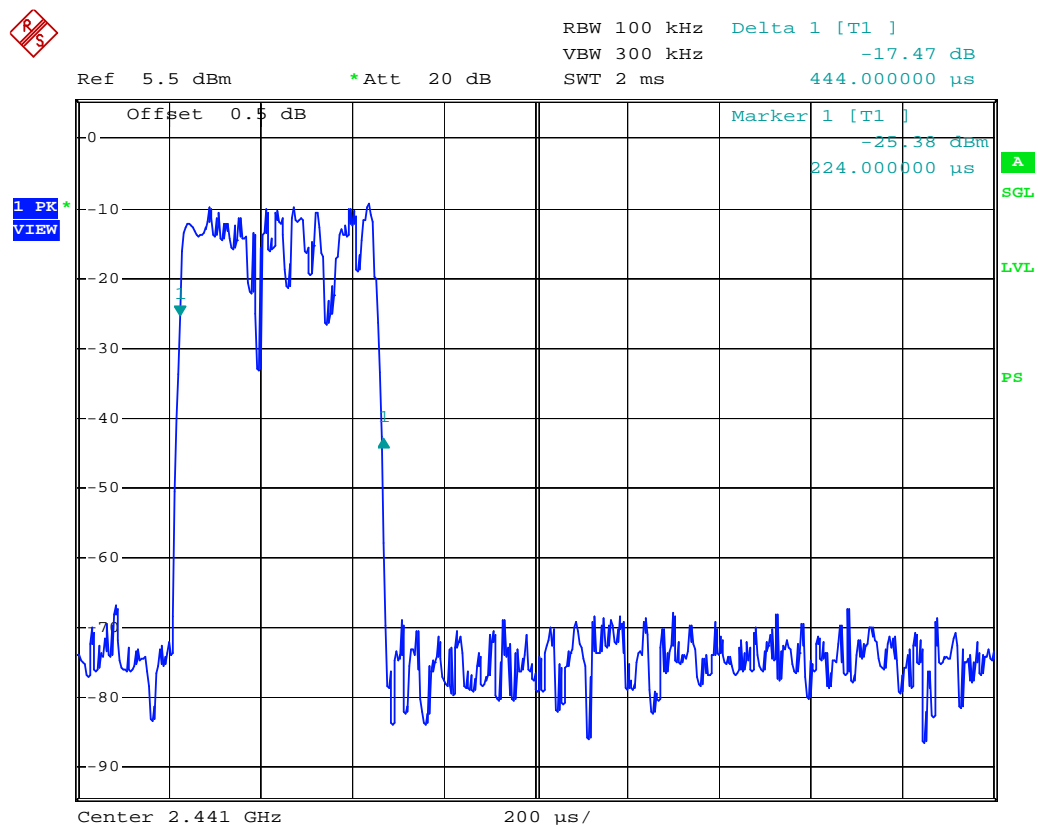


Xinwei occupied time No.of pulse low channel

Date: 9.DEC.2006 10:14:01

Middle channel

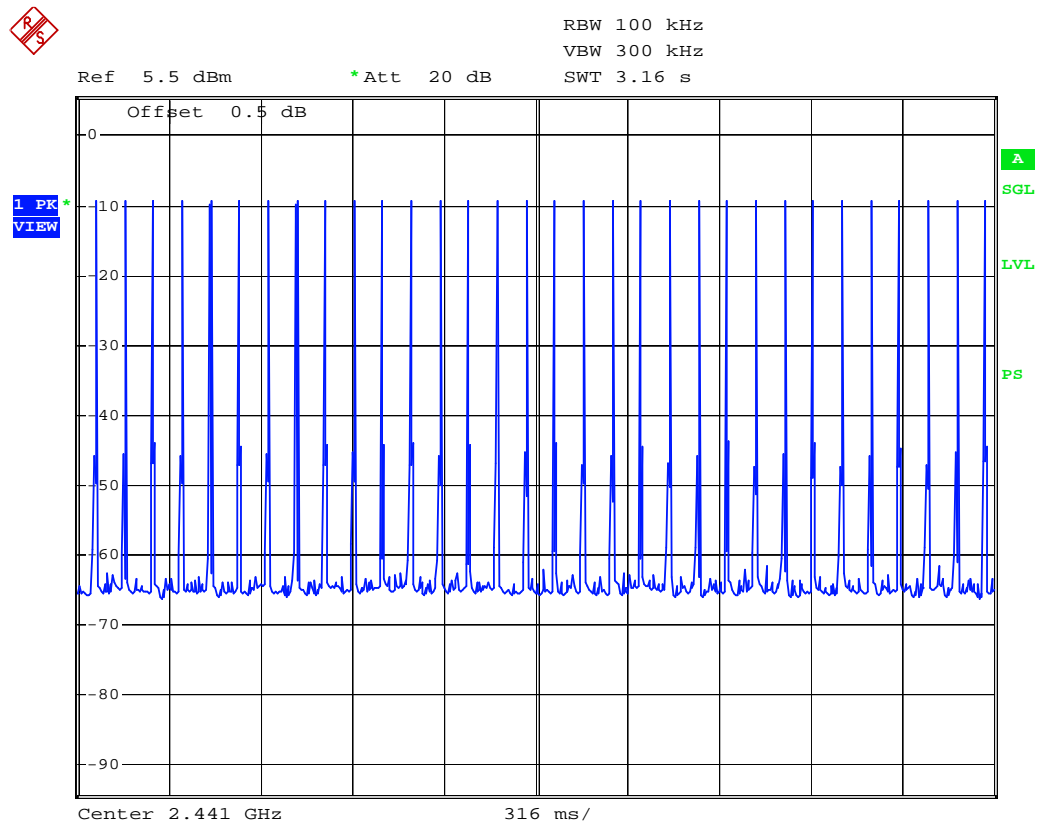
(Width of pulse)



Xinwei occupied time pulse width mid channel

Date: 9.DEC.2006 10:17:00

(Number of pulse)

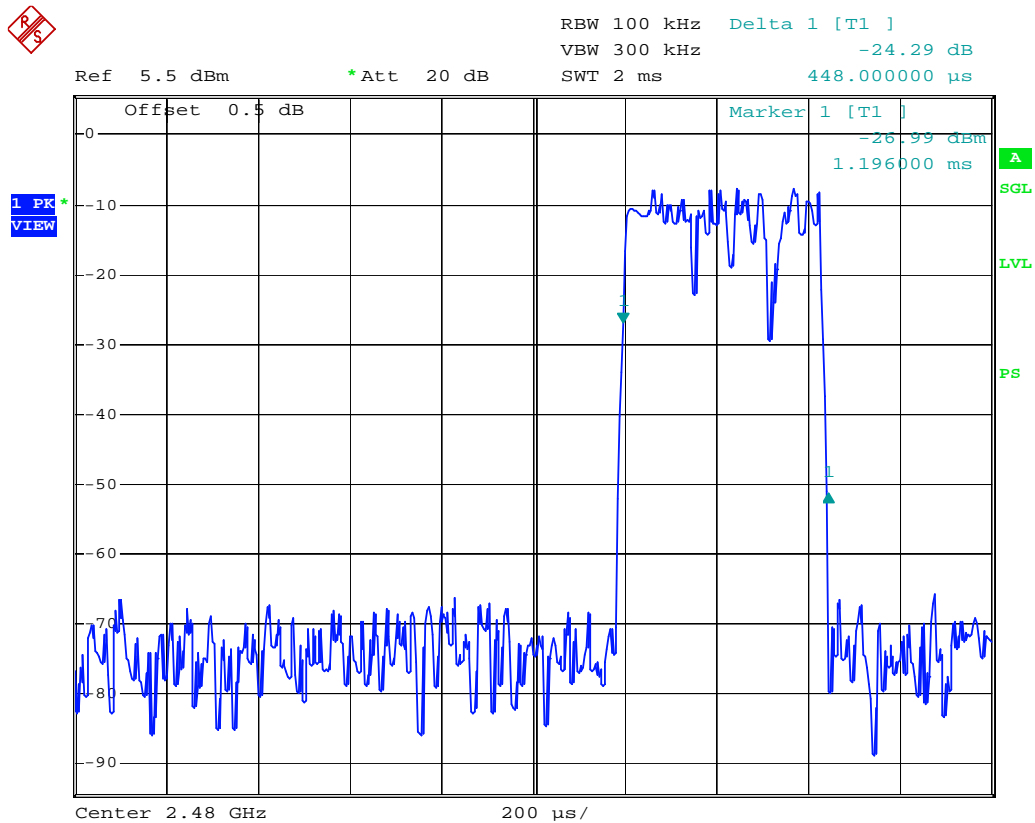


Xinwei occupied time No.of pulse mid channel

Date: 9.DEC.2006 10:17:55

High channel

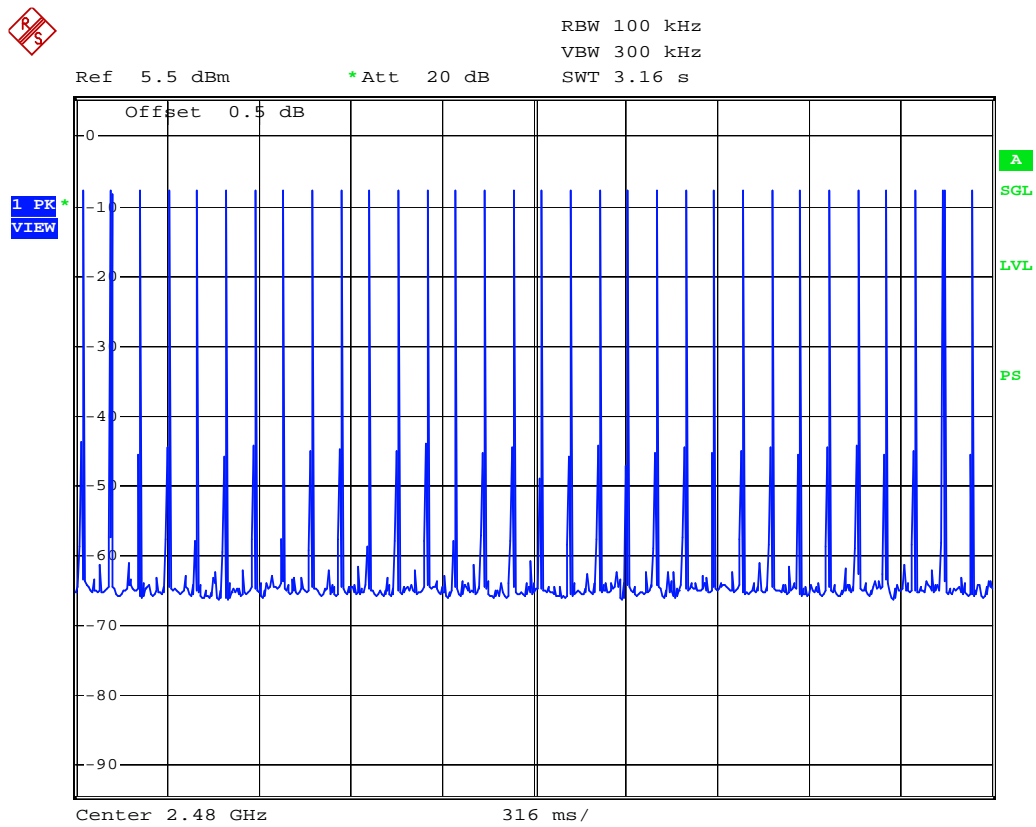
(Width of pulse)



Xinwei occupied time pulse width high channel

Date: 9.DEC.2006 10:20:27

(Number of pulse)



Xinwei occupied time No.of pulse high channel

Date: 9.DEC.2006 10:18:42

§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.

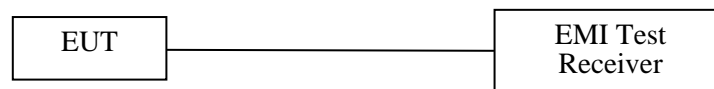
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde&Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29

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

Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI Test Receiver.
3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	53%
ATM Pressure:	1009mbar

The testing was performed by Charmi Peng on 2006-12-09.

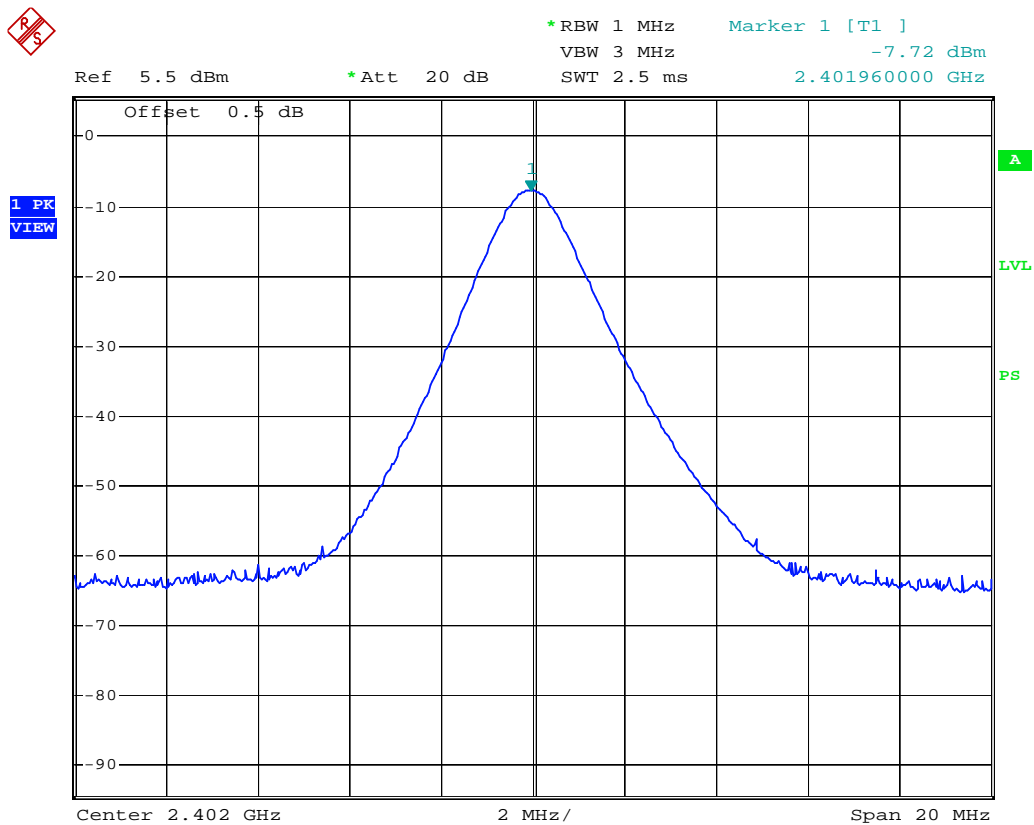
Test mode: Transmitting

Channel	Channel Frequency (MHz)	Reading Power (dBm)	Power Output (watt)	Limit (watt)
Low Channel	2402	-7.72	0.000169	1
Mid Channel	2441	-8.40	0.000145	1
High Channel	2480	-6.29	0.000235	1

Test Result: Pass

Please refer to the following plots.

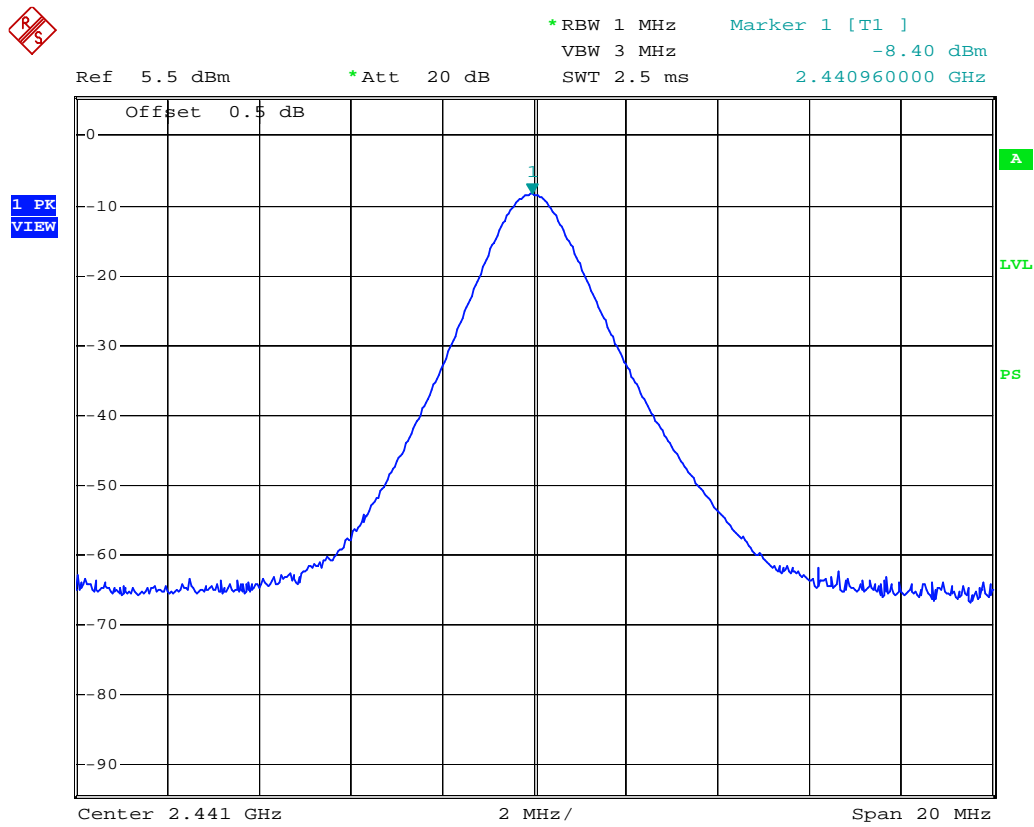
Low channel



Xinwei output power low channel

Date: 9.DEC.2006 09:57:28

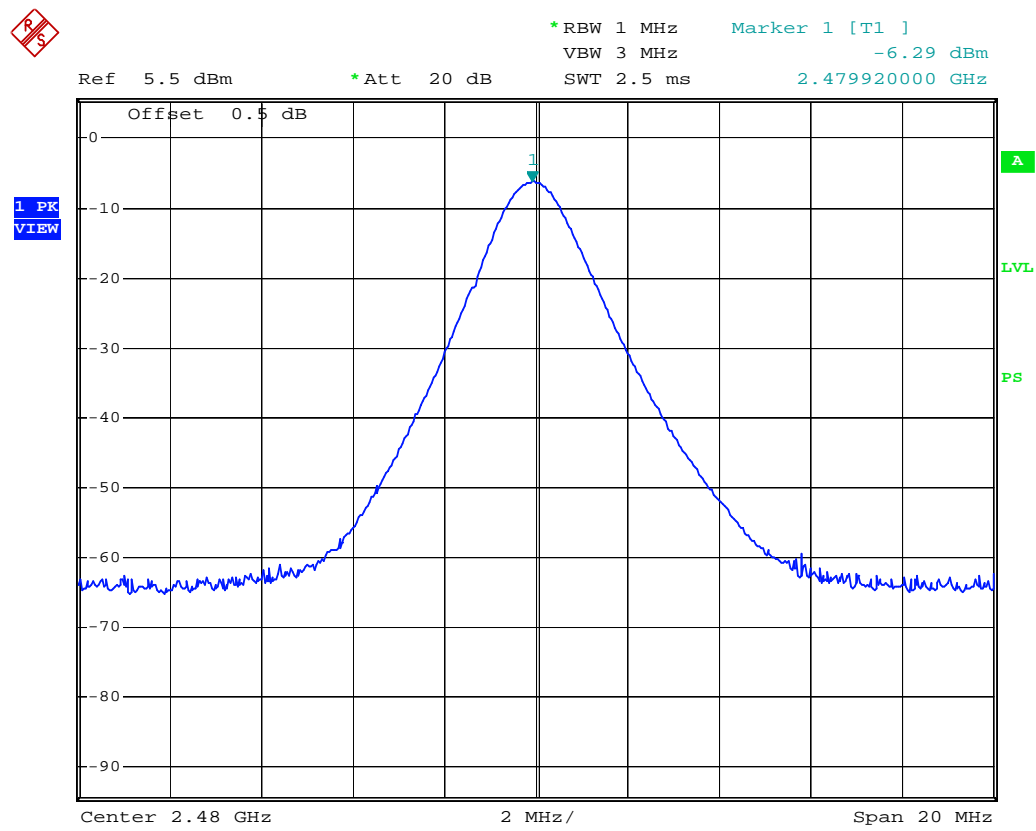
Middle channel



Xinwei output power mid channel

Date: 9.DEC.2006 09:58:10

High channel



Xinwei output power high channel

Date: 9.DEC.2006 09:58:45

§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	2006-09-29	2007-09-29

* **Statement of Traceability:** Bay Area Compliance Laboratory 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 its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency 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.
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:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009mbar

The testing was performed by Charmi Peng on 2006-12-22.

Test Mode: Transmitting

Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Result
2399.9	30.52	54	Pass
2483.6	31.03	54	Pass

Test Result: Pass