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FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

UMEOX Mobile Limited

3409 Times Square Excellence, Futian District,

Shenzhen, Guangdong, China

FCC ID: WNKUMEOX-Q421

Report Type: Original Report	Product Type: Mobile Phone
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Report Number: RSZ09052206-15.247	
Report Date: 2009-07-07	
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* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk “*” Rev 2.0

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	5
SYSTEM TEST CONFIGURATION.....	6
DESCRIPTION OF TEST CONFIGURATION	6
EQUIPMENT MODIFICATIONS	6
LOCAL SUPPORT EQUIPMENT LIST AND DETAILS	6
CONFIGURATION OF TEST SETUP	6
BLOCK DIAGRAM OF TEST SETUP	7
SUMMARY OF TEST RESULTS	8
CFR47 §15.247 (i) and §2.1093 – RF EXPOSURE	9
STANDARD APPLICABLE	9
RESULT:	9
CFR47 §15.203 – ANTENNA REQUIREMENT	10
STANDARD APPLICABLE	10
ANTENNA CONNECTOR CONSTRUCTION	10
CFR47 §15.207 (a) - CONDUCTED EMISSIONS	11
APPLICABLE STANDARD	11
MEASUREMENT UNCERTAINTY.....	11
EUT SETUP	11
EMI TEST RECEIVER SETUP.....	12
TEST EQUIPMENT LIST AND DETAILS.....	12
TEST PROCEDURE	12
TEST RESULTS SUMMARY	12
TEST DATA	13
PLOT(S) OF TEST DATA	13
CFR47 §15.205, §15.209, §15.247 – RADIATED EMISSIONS.....	16
APPLICABLE STANDARD	16
MEASUREMENT UNCERTAINTY.....	16
EUT SETUP	16
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	17
TEST EQUIPMENT LIST AND DETAILS.....	17
TEST PROCEDURE	17
CORRECTED AMPLITUDE & MARGIN CALCULATION	17
TEST RESULTS SUMMARY	18
TEST DATA	18
CFR47 §15.247(a) (1)-CHANNEL SEPARATION TEST	22
APPLICABLE STANDARD	22
TEST EQUIPMENT LIST AND DETAILS.....	22
TEST PROCEDURE	22
TEST DATA	22

CFR47 §15.247(a) (1) – 20dB BANDWIDTH TESTING.....	25
APPLICABLE STANDARD	25
TEST EQUIPMENT LIST AND DETAILS.....	25
TEST PROCEDURE	25
TEST DATA	25
CFR47 §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST	28
APPLICABLE STANDARD	28
TEST EQUIPMENT LIST AND DETAILS.....	28
TEST PROCEDURE	28
TEST DATA	28
CFR47 §15.247(a) (1) (iii) -TIME OF OCCUPANCY (DWELL TIME).....	30
APPLICABLE STANDARD	30
TEST EQUIPMENT LIST AND DETAILS.....	30
TEST PROCEDURE	30
TEST DATA	30
CFR47 §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT	37
APPLICABLE STANDARD	37
TEST EQUIPMENT LIST AND DETAILS.....	37
TEST PROCEDURE	37
TEST DATA	38
CFR47 §15.247(d) - BAND EDGES TESTING	40
APPLICABLE STANDARD	40
TEST EQUIPMENT LIST AND DETAILS.....	40
TEST PROCEDURE	40
TEST DATA	41

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *UMEOX MOBILE LIMITED*'s product, model number: *UMEOX Q421* (FCC IC: *WNKUMEOX-Q421*) or the "EUT" as referred to in this report is a *Mobile Phone*, which measures approximately: 10.2 cm L x 5 cm W x 2.2 cm H, rated input voltage: DC 3.7 V battery.

Frequency Range:

Cellular Band: 824-849 MHz (TX), 869-894 MHz (RX)
PCS Band: 1850-1910 MHz (TX), 1930-1990 MHz (RX)
Bluetooth: 2400-2483.5 MHz (TX/RX)

Modulation Mode: GMSK (GSM850/PCS1900)
GFSK (Bluetooth)

Transmitter Output Power:

Cellular Band: 33±2 dBm
PCS Band: 30±2 dBm
Bluetooth: -8~4 dBm

All measurement and test data in this report was gathered from production sample serial number: 0905059(Assigned by BACL). The EUT was received on 2009-05-22.

Objective

This Type approval report is prepared on behalf of *UMEOX MOBILE LIMITED* 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, 15.207, 15.209 and 15.247 rules.

This measurement and test report only pertains to the Bluetooth portion of the EUT; for measurement and test results to the GSM850/PCS1900 function, please refer to report RSZ09042701-2224 issued by Shenzhen BACL.

Related Submittal(s)/Grant(s)

FCC Part 22H and 24E submission with FCC ID: WNKUMEOX-Q421.

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 21, 2007. 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).



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).

Equipment Modifications

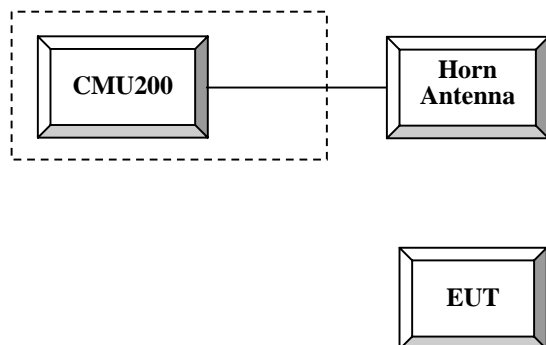
No modification was made to the unit tested.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
R & S	Universal Radio Commutation Tester	CMU200	109038	DoC

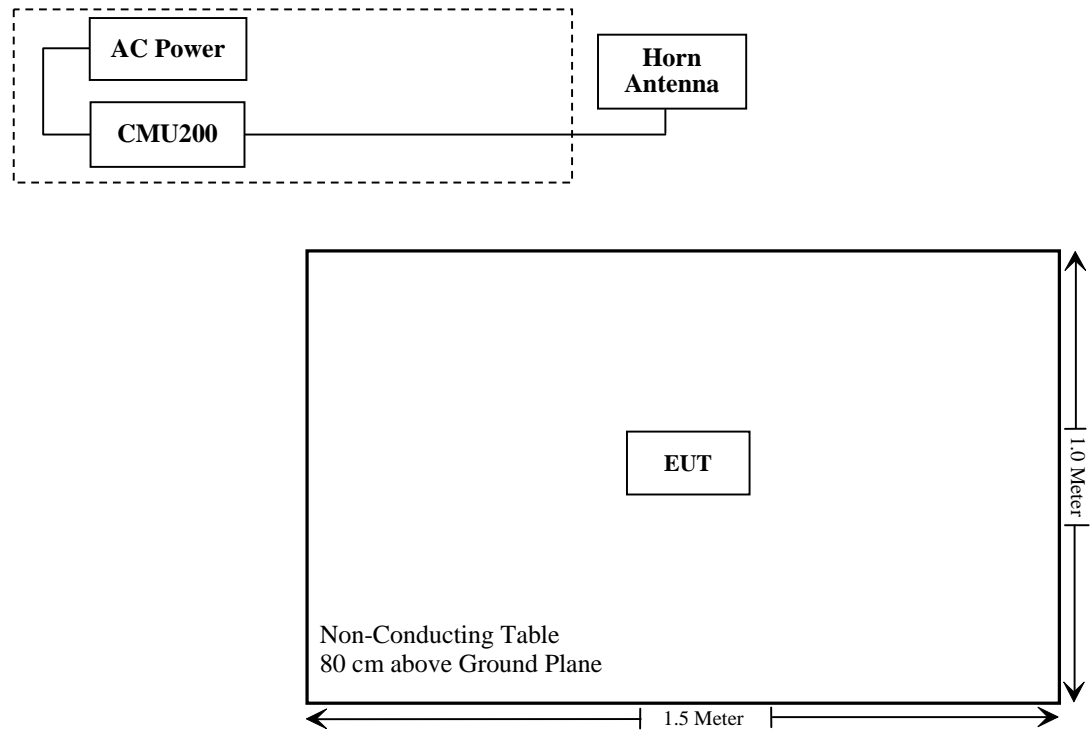
Configuration of Test Setup

Radiated Emission:



Block Diagram of Test Setup

Radiated Emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	Conducted Emissions	Compliant
§15.205, §15.209, §15.109, §15.247(d)	Radiated Emissions	Compliant
§15.247 (a)(1)	20 dB Bandwidth	Compliant
§15.247(a)(1)	Channel Separation Test	Compliant
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliant
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliant
§15.247(b)(1)	Peak Output Power Measurement	Compliant
§15.247(d)	Band Edges	Compliant

CFR47 §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.

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.

According to OET KDB 648474 D01 SAR Handsets Multi Xmitter and Ant. V01r05, SAR justification is required for simultaneous transmission

Result:

- (1) Antenna distance:
Bluetooth & GSM 0.5 cm < 2.5 cm
- (2) Bluetooth power (0.17 mw) < Pref and antenna-to-antenna is < 2.5 cm, Maximum SAR of GSM850/PCS is 0.304 W/Kg which is < 1.2 W/Kg. Stand-alone SAR is not required for Bluetooth.

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 an integral antenna on PCB, the gain is 0 dBi, please refer to the EUT internal photos.

Result: Compliant.

CFR47 §15.207 (a) - CONDUCTED EMISSIONS

Applicable Standard

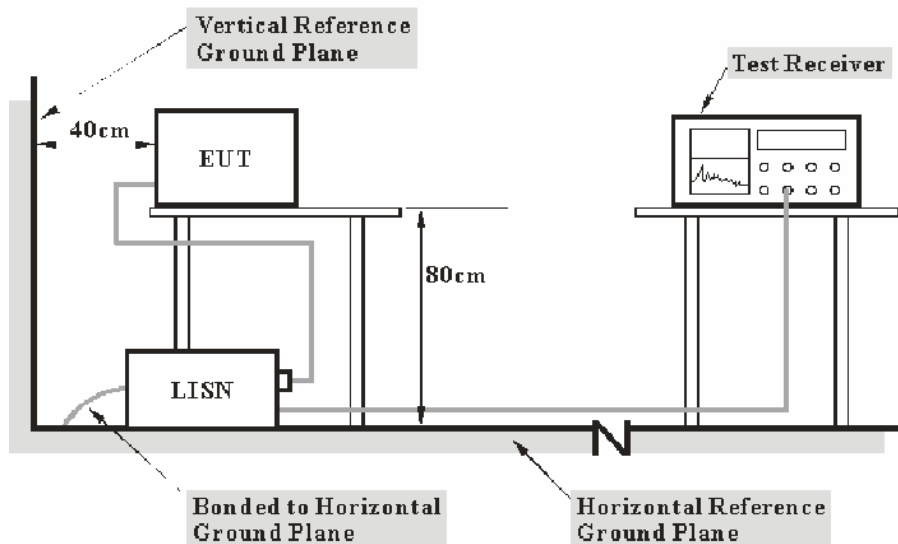
CFR47 §15.207

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 15.207 limits.

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

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	830245/006	2009-04-28	2010-04-27
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2009-04-28	2010-04-27

* 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 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:

10.62 **dB** at 0.195 **MHz** in the **Line** conductor mode

Test Data**Environmental Conditions**

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

* The testing was performed by Phoenix Liu on 2009-07-07.

Test Mode: charging & transmitting

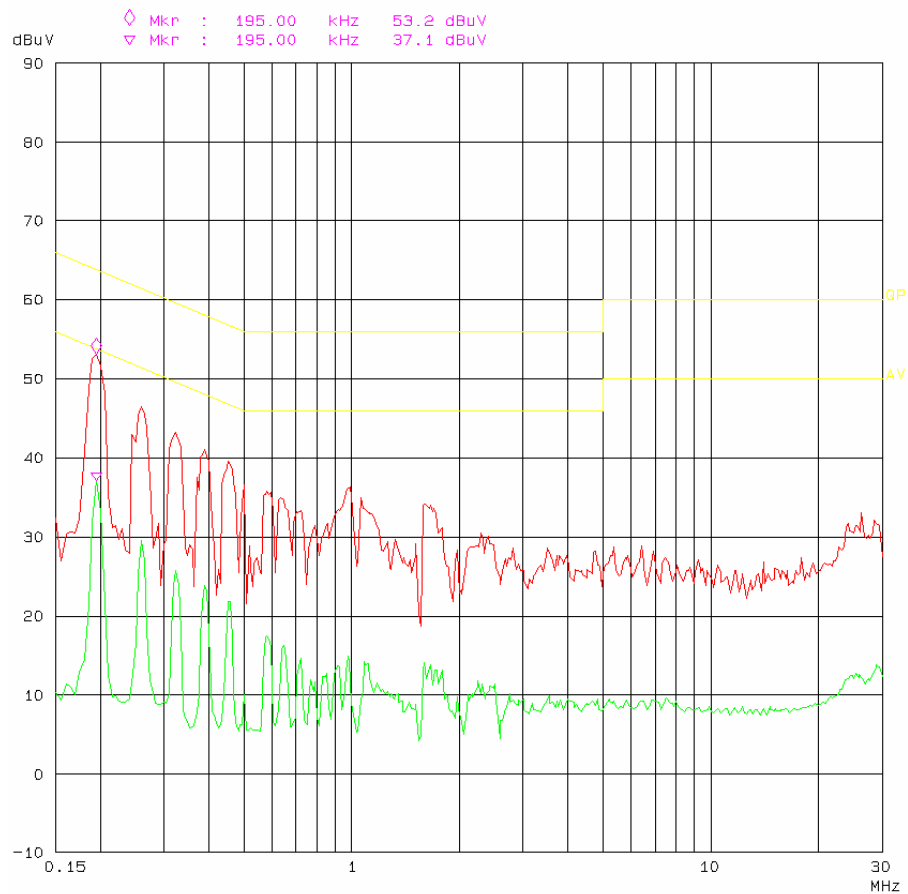
Line Conducted Emissions				FCC Part 15.207	
Frequency (MHz)	Amplitude (dBμV)	Detector (QP/AV)	Conductor (Line/Neutral)	Limit (dBμV)	Margin (dB)
0.195	52.8	QP	Neutral	63.82	11.02
0.260	45.0	QP	Neutra	61.43	16.43
0.390	40.7	QP	Neutra	58.06	17.36
0.460	38.6	QP	Neutra	56.69	18.09
0.515	36.8	QP	Neutra	56.00	19.20
0.580	34.9	QP	Neutra	56.00	21.10
0.195	37.9	AV	Neutra	53.82	15.92
0.260	29.7	AV	Neutra	51.43	21.73
0.390	26.5	AV	Neutra	48.06	21.56
0.460	22.1	AV	Neutra	46.69	24.59
0.515	22.7	AV	Neutra	46.00	23.30
0.580	22.3	AV	Neutra	46.00	23.70
0.195	53.2	QP	Line	63.82	10.62
0.260	46.5	QP	Line	61.43	14.93
0.325	43.1	QP	Line	59.58	16.48
0.390	41.0	QP	Line	58.06	17.06
0.455	39.5	QP	Line	56.78	17.28
0.580	35.8	QP	Line	56.00	20.20
0.195	37.1	AV	Line	23.82	16.72
0.260	29.5	AV	Line	51.43	21.93
0.325	25.7	AV	Line	49.58	23.88
0.390	23.9	AV	Line	48.06	24.16
0.455	21.9	AV	Line	46.78	24.88
0.580	17.4	AV	Line	46.00	28.60

Plot(s) of Test Data

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

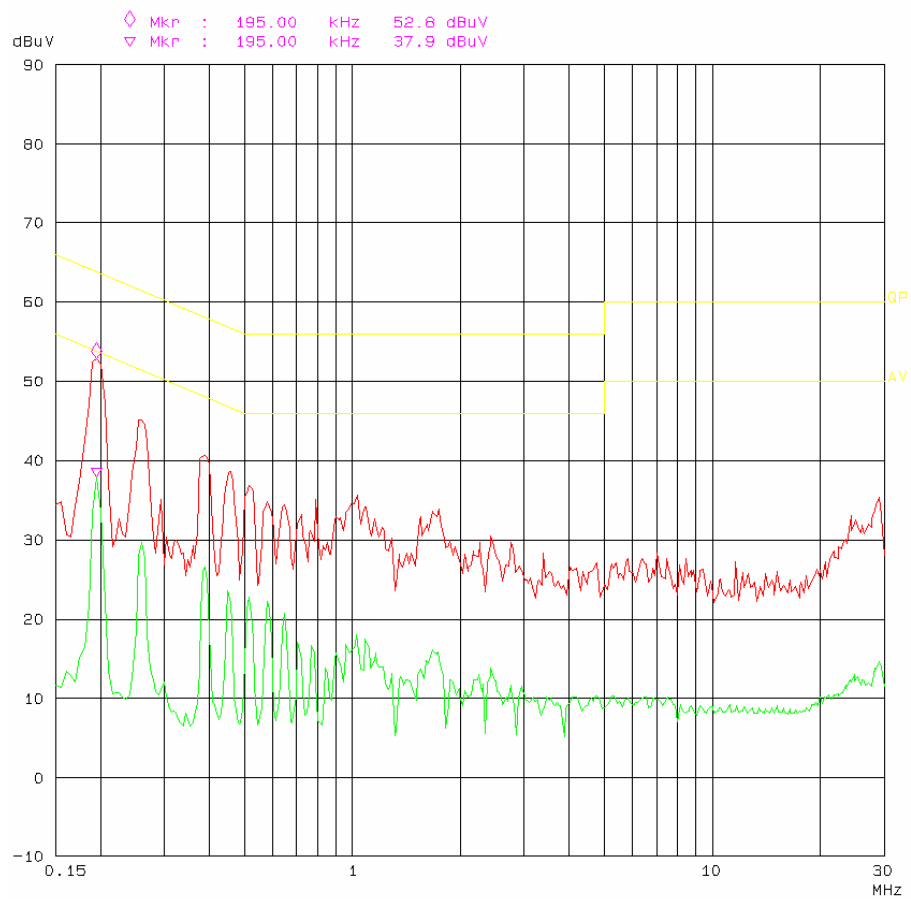
Conducted Emission FCC Part15

EUT: Mobile phone
Manuf: UMEOX
Op Cond: Transmitting & Charging
Operator: Phoenix
Test Spec: 120V/60Hz L
Comment: Temp: 25 Hum: 50%
BACL



Conducted Emission FCC Part15

EUT: Mobile phone
Manuf: UMOEX
Op Cond: Transmitting & Charging
Operator: Phoenix
Test Spec: 120V/60Hz N
Comment: Temp: 25 Hum: 50%
BACL



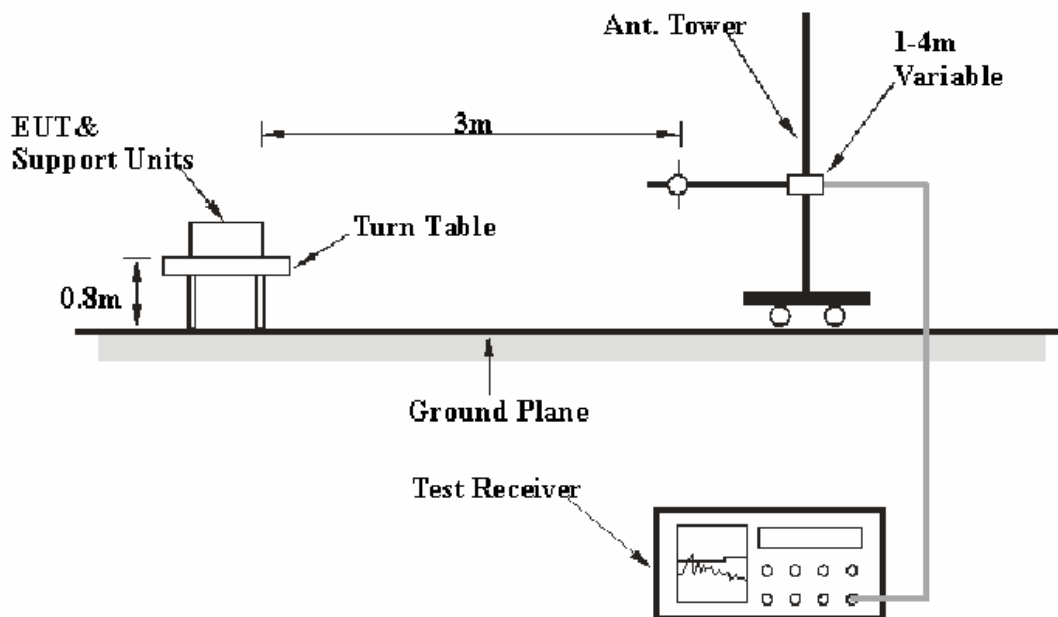
CFR47 §15.205, §15.209, §15.247 – RADIATED EMISSIONS**Applicable Standard**

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 15.209 and FCC 15.247 limits.

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	2008-08-02	2009-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2008-11-07	2009-11-06
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2009-03-11	2010-03-11
HP	Amplifier	8449B	3008A00277	2008-09-12	2009-09-11
Sunol Sciences	Horn Antenna	DRH-118	A052604	2008-09-25	2009-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2009-05-17	2010-05-17
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-08-28	2009-08-27

* **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:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

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

Transmitting mode (Below 1GHz):

9.2 dB at 755.916450 MHz in the Vertical polarization

Transmitting mode (Above 1 GHz):

10.40 dB at 4804.00 MHz in the Horizontal polarization (Low Channel)

10.08 dB at 4882.00 MHz in the Horizontal polarization (Middle Channel)

7.98 dB at 4960.00 MHz in the Horizontal polarization (High Channel)

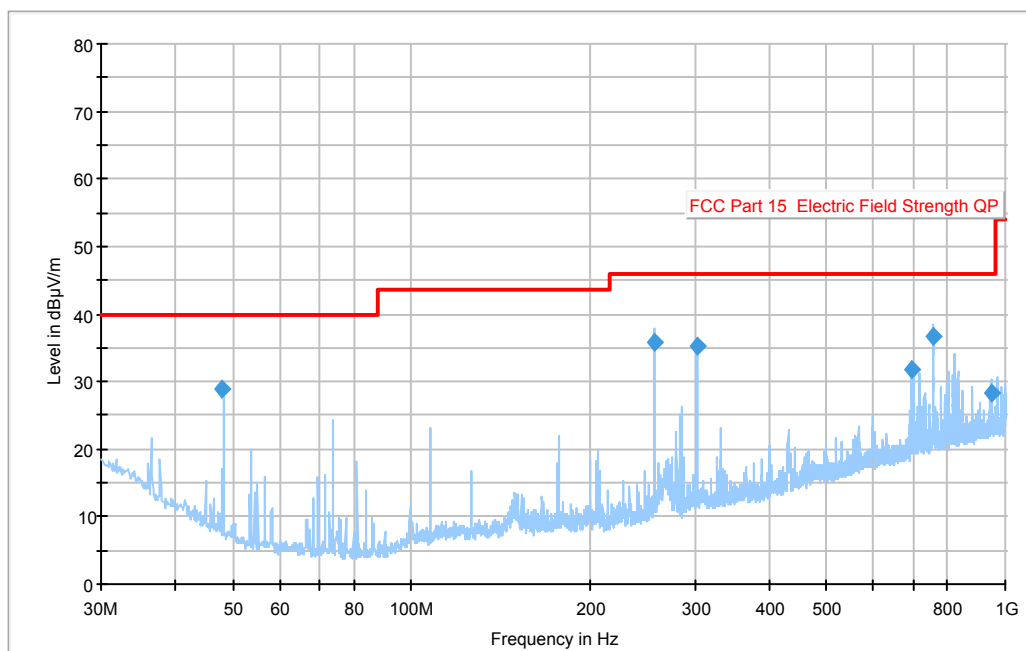
Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

** The testing was performed by Phoenix Liu on 2009-06-29.*

Test Mode: Transmitting (below 1 GHz)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBμV/m)	Margin (dB)
755.916450	36.8	129.0	V	166.0	-5.9	46.0	9.2
257.254875	35.9	113.0	V	203.0	-15.6	46.0	10.1
303.422975	35.2	115.0	V	114.0	-14.4	46.0	10.8
48.015275	28.8	110.0	V	269.0	-19.4	40.0	11.2
696.175700	31.9	139.0	V	155.0	-6.9	46.0	14.1
945.026150	28.2	110.0	V	176.0	-3.2	46.0	17.8

Test Mode: Transmitting (Above 1 GHz)

Frequency (MHz)	S.A. Reading (dBµV/m)	Detector PK/QP/AV	Direction Degree	Antenna			Cable Loss (dB)	Pre- Amp. Gain (dB)	Cord. Amp. (dBµV/m)	FCC Part 15.247/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	Remarks
Low Channel (2402 MHz)												
4804	32.14	AV	160	1.2	H	36.3	8.86	33.7	43.60	54	10.40	harmonic
7206	31.56	AV	10	1.0	H	39.2	5.11	33.6	42.27	54	11.73	harmonic
4804	30.23	AV	150	1.0	V	35	8.86	33.7	40.39	54	13.61	harmonic
7206	30.05	AV	10	1.0	V	38	5.11	33.6	39.56	54	14.44	harmonic
4804	45.65	PK	180	1.2	H	36.3	8.86	33.7	57.11	74	16.89	harmonic
1450.9	39.42	AV	10	1.2	H	26.7	5.37	34.6	36.89	54	17.11	spurious
7206	44.45	PK	0	1.0	H	39.2	5.11	33.6	55.16	74	18.84	harmonic
4804	44.28	PK	180	1.2	V	35	8.86	33.7	54.44	74	19.56	harmonic
1134.26	38.65	AV	30	1.2	H	25.9	2.77	34.8	32.52	54	21.48	spurious
7206	42.13	PK	0	1.2	V	38	5.11	33.6	51.64	74	22.36	harmonic
1450.9	34.85	AV	15	1.0	V	25.8	5.37	34.6	31.42	54	22.58	spurious
1134.26	38.46	AV	30	1.0	V	24.8	2.77	34.8	31.23	54	22.77	spurious
1450.9	51.18	PK	0	1.2	H	26.7	5.37	34.6	48.65	74	25.35	spurious
1450.9	49.13	PK	30	1.0	V	25.8	5.37	34.6	45.70	74	28.3	spurious
1134.26	50.49	PK	45	1.2	H	25.9	2.77	34.8	44.36	74	29.64	spurious
1134.26	51.46	PK	45	1.2	V	24.8	2.77	34.8	44.23	74	29.77	spurious
Middle Channel (2441 MHz)												
4882	32.46	AV	175	1.0	H	36.3	8.86	33.7	43.92	54	10.08	harmonic
7323	31.63	AV	15	1.1	H	39.2	5.11	33.6	42.34	54	11.66	harmonic
4882	31.96	AV	185	1.1	V	35	8.86	33.7	42.12	54	11.88	harmonic
7323	30.85	AV	10	1.0	V	38	5.11	33.6	40.36	54	13.64	harmonic
4882	46.89	PK	180	1.2	H	36.3	8.86	33.7	58.35	74	15.65	harmonic
4882	45.73	PK	180	1.2	V	35	8.86	33.7	55.89	74	18.11	harmonic
7323	44.32	PK	0	1.0	H	39.2	5.11	33.6	55.03	74	18.97	harmonic
7323	43.28	PK	0	1.2	V	38	5.11	33.6	52.79	74	21.21	harmonic
1448.89	35.26	AV	20	1.0	H	26.7	5.37	34.6	32.73	54	21.27	spurious
1448.89	33.45	AV	45	0.0	V	25.8	5.37	34.6	30.02	54	23.98	spurious
1260.52	33.56	AV	30	1.0	H	25.9	2.77	34.8	27.43	54	26.57	spurious
1260.52	34.63	AV	30	1.2	V	24.8	2.77	34.8	27.4	54	26.6	spurious
1448.89	48.95	PK	0	1.2	H	26.7	5.37	34.6	46.42	74	27.58	spurious
1448.89	46.24	PK	30	1.0	V	25.8	5.37	34.6	42.81	74	31.19	spurious
1260.52	48.26	PK	45	1.2	H	25.9	2.77	34.8	42.13	74	31.87	spurious
1260.52	47.37	PK	45	1.2	V	24.8	2.77	34.8	40.14	74	33.86	spurious

Frequency (MHz)	S.A. Reading (dBμV/m)	Detector PK/QP/AV	Direction Degree	Antenna			Cable Loss (dB)	Pre- Amp. Gain (dB)	Cord. Amp. (dBμV/m)	FCC Part 15.247/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	Remarks
High Channel (2480 MHz)												
4960	34.56	AV	0	1.0	H	36.3	8.86	33.7	46.02	54	7.98	harmonic
4960	32.85	AV	20	1.0	V	35	8.86	33.7	43.01	54	10.99	harmonic
7440	31.25	AV	0	1.1	H	39.2	5.11	33.6	41.96	54	12.04	harmonic
7440	30.63	AV	15	1.0	V	38	5.11	33.6	40.14	54	13.86	harmonic
4960	48.31	PK	20	1.2	H	36.3	8.86	33.7	59.77	74	14.23	harmonic
4960	46.74	PK	0	1.2	V	35	8.86	33.7	56.9	74	17.10	harmonic
7440	44.63	PK	10	1.0	H	39.2	5.11	33.6	55.34	74	18.66	harmonic
1450.9	35.12	AV	30	1	H	26.7	5.37	34.6	32.59	54	21.41	spurious
7440	42.35	PK	10	1.2	V	38	5.11	33.6	51.86	74	22.14	harmonic
1134.26	35.42	AV	20	1.0	H	25.9	2.77	34.8	29.29	54	24.71	spurious
1450.9	32.18	AV	0	1.0	V	25.8	5.37	34.6	28.75	54	25.25	spurious
1134.26	34.76	AV	0	1.0	V	24.8	2.77	34.8	27.53	54	26.47	spurious
1450.9	49.86	PK	0	1.2	H	26.7	5.37	34.6	47.33	74	26.67	spurious
1134.26	49.55	PK	30	1.2	H	25.9	2.77	34.8	43.42	74	30.58	spurious
1450.9	46.23	PK	30	1.0	V	25.8	5.37	34.6	42.8	74	31.2	spurious
1134.26	48.39	PK	20	1.2	V	24.8	2.77	34.8	41.16	74	32.84	spurious

Spurious emission in restricted band

Frequency (MHz)	S.A. Reading (dBμV/m)	Detector PK/QP/AV	Direction Degree	Antenna			Cable Loss (dB)	Pre- Amp. Gain (dB)	Corrd. Amp. (dBμV/m)	FCC Part 15.247/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	Remarks
2389.03	35.10	AV	0	1	V	33.9	7.9	30.3	46.60	54	7.40	spurious
2483.83	35.16	AV	0	1	H	33.9	7.9	30.9	46.06	54	7.94	spurious
2483.83	33.98	AV	0	1	V	33.9	7.9	30.3	45.48	54	8.52	spurious
2389.03	33.56	AV	0	1	H	33.9	7.9	30.9	44.46	54	9.54	spurious
2389.03	48.98	PK	30	1.2	V	33.9	7.9	30.3	60.48	74	13.52	spurious
2483.83	48.83	PK	10	1	H	33.9	7.9	30.9	59.73	74	14.27	spurious
2483.83	47.54	PK	0	1.2	V	33.9	7.9	30.3	59.04	74	14.96	spurious
2389.03	46.89	PK	20	1.2	H	33.9	7.9	30.9	57.79	74	16.21	spurious

CFR47 §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	2008-11-07	2009-11-06

* **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:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

* The testing was performed by Phoenix Liu on 2009-06-25.

Test Result: Compliant.

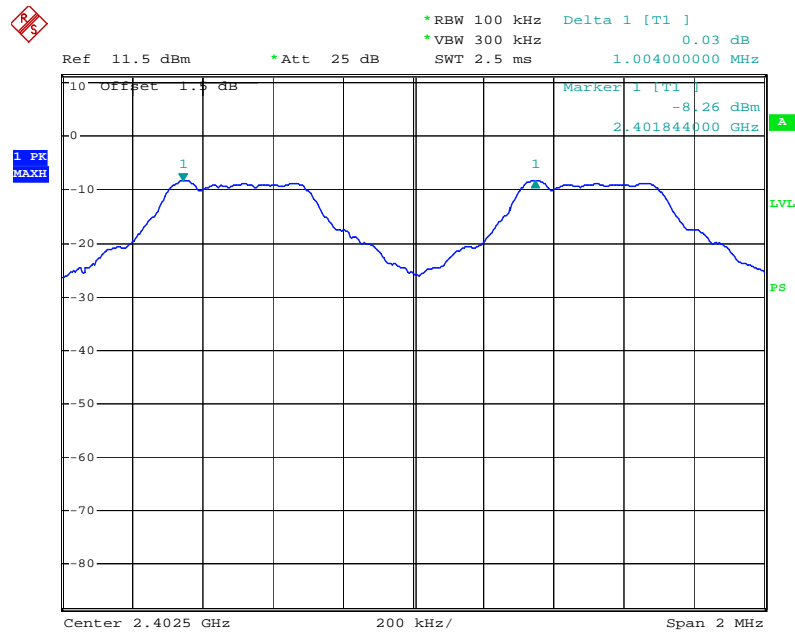
Please refer to following tables and plots

Test Mode: Transmitting

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
Low Channel	2402	1.004	0.587	Pass
Adjacent Channel	2403			
Mid Channel	2441	1.004	0.589	Pass
Adjacent Channel	2442			
High Channel	2480	1.004	0.589	Pass
Adjacent Channel	2479			

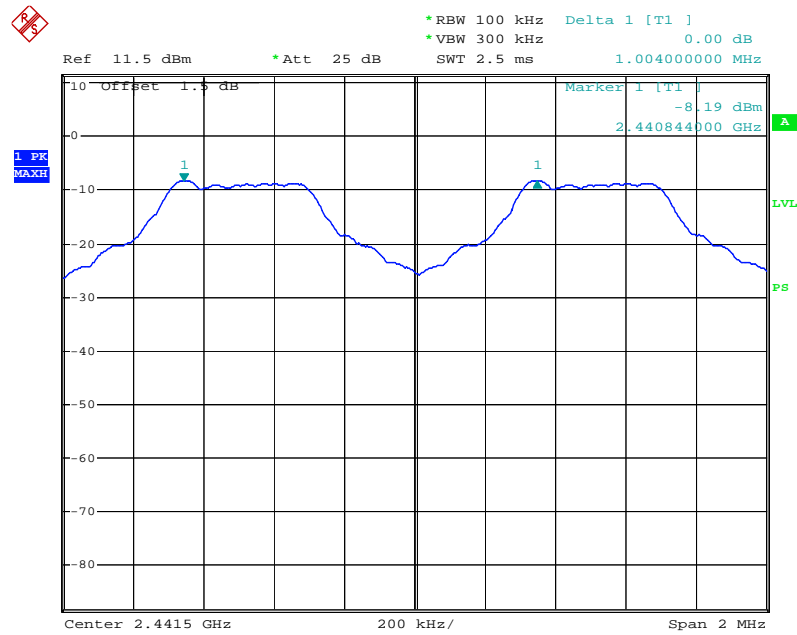
Please refer to the following plots.

Low Channel



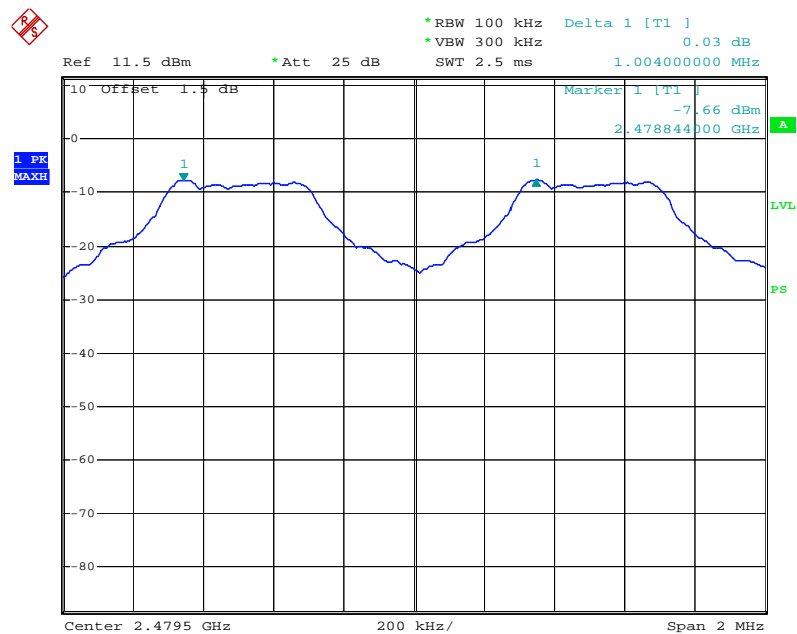
Date: 25.JUN.2009 06:12:15

Middle Channel



Date: 25.JUN.2009 06:13:07

High Channel



Date: 25.JUN.2009 06:14:07

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	2008-11-07	2009-11-06

* **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:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

* The testing was performed by Phoenix Liu on 2009-06-25.

Test Result: Compliant.

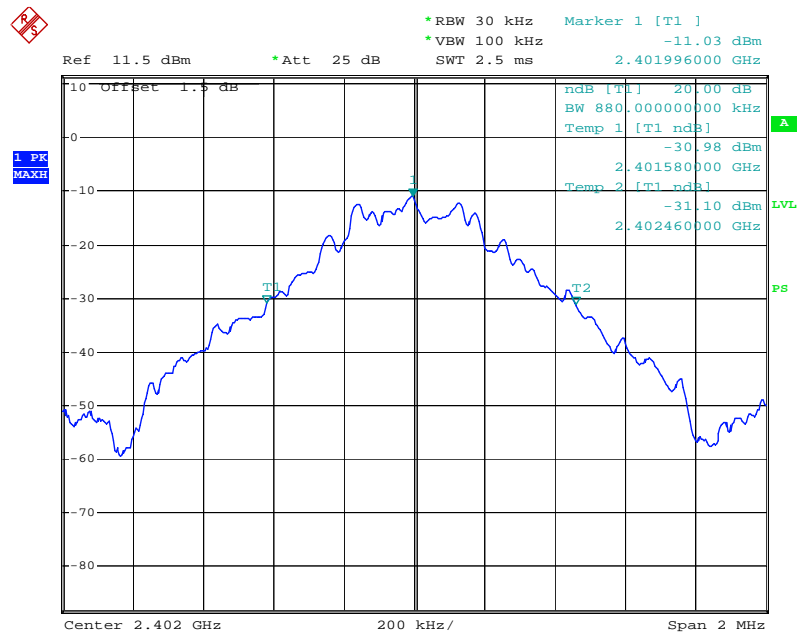
Please refer to following tables and plots

Test Mode: Transmitting

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	0.880
Middle	2441	0.884
High	2480	0.884

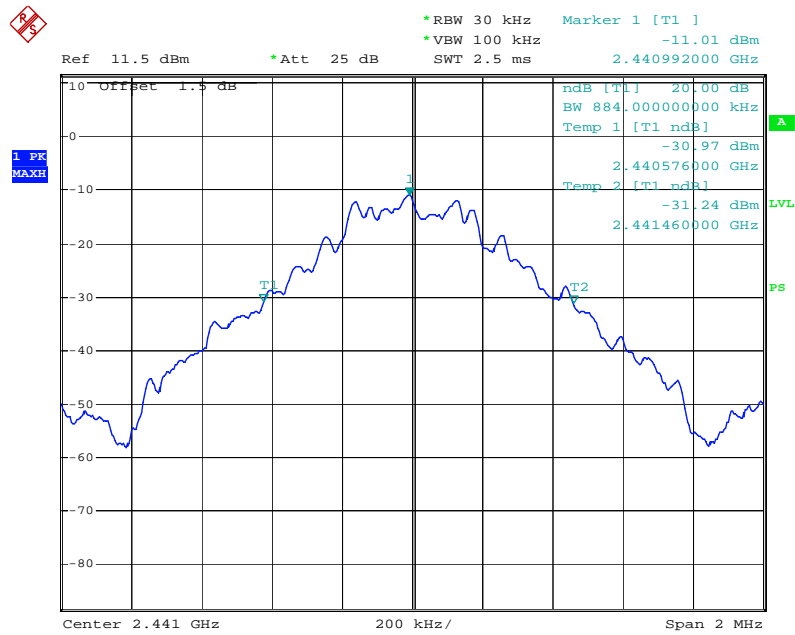
Please refer to the following plots.

Low Channel



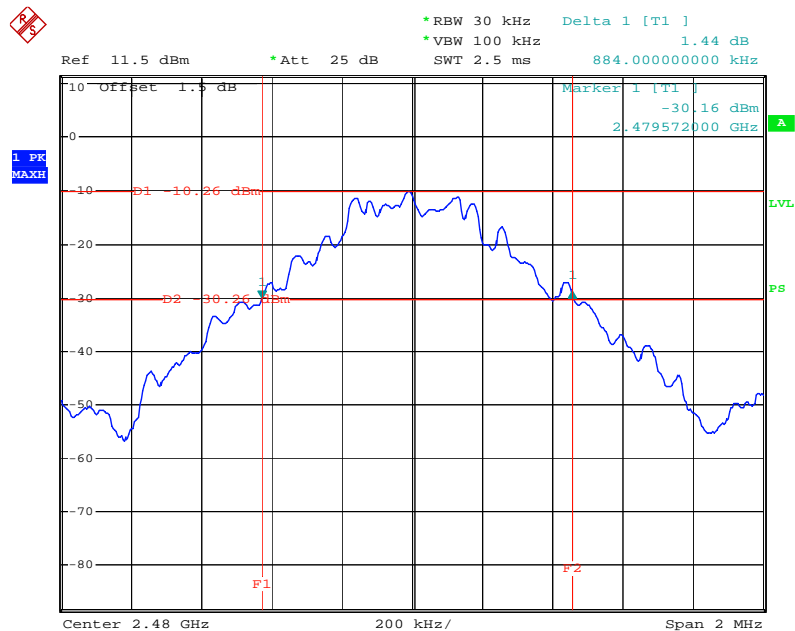
Date: 25.JUN.2009 06:04:04

Middle Channel



Date: 25.JUN.2009 06:03:33

High Channel



Date: 25.JUN.2009 06:10:18

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	2008-11-07	2009-11-06

* **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 hopping mode from first channel to last.
3. By using the Max-Hold function record the Quantity of the channel.

Test Data**Environmental Conditions**

Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

The testing was performed by Phoenix Liu on 2009-06-25.

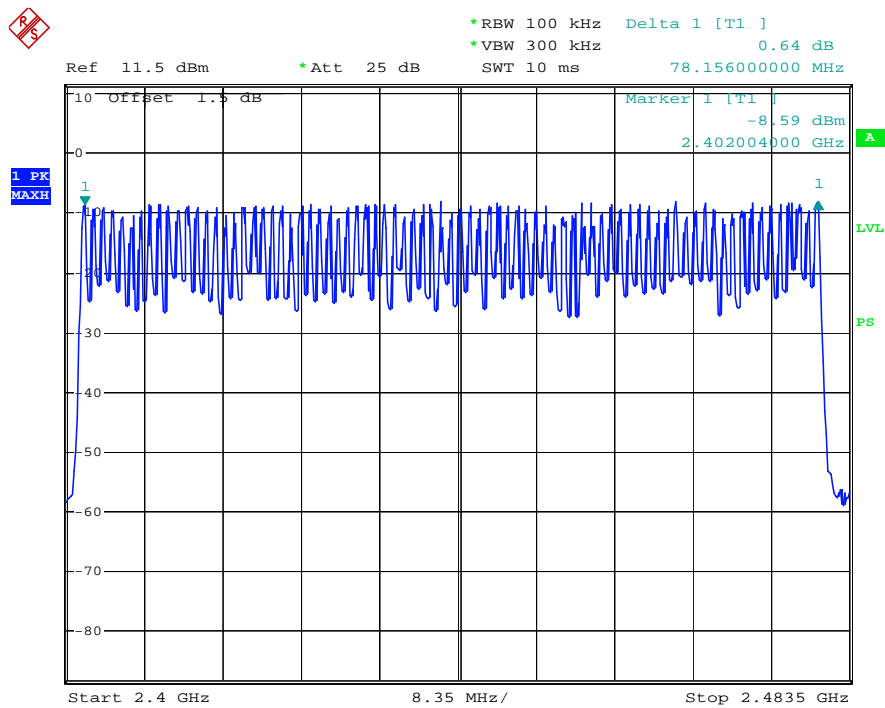
Test Result: Compliant.

Please refer to following tables and plots

Test Mode: Transmitting

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

Number of Hopping Channels



Date: 25.JUN.2009 06:15:53

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	2008-11-07	2009-11-06

* **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:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

* The testing was performed by Phoenix Liu on 2009-06-25.

Test Result: Compliant.

Please refer to following tables and plots

Test Mode: Transmitting

DH 1 Mode:

Channel	Pulse Width (ms)	Dwell Time (Sec)	Limit (Sec)	Result
Low	0.390	0.1248	0.4	Pass
Middle	0.390	0.1248	0.4	Pass
High	0.390	0.1248	0.4	Pass

Note: Dwell time=Pulse width (ms) \times (1600 \div 2 \div 79) \times 31.6 Second

DH 3 Mode:

Channel	Pulse Width (ms)	Dwell Time (Sec)	Limit (Sec)	Result
Low	1.656	0.2650	0.4	Pass
Middle	1.656	0.2650	0.4	Pass
High	1.668	0.2669	0.4	Pass

Note: Dwell time=Pulse width (ms) \times (1600 \div 4 \div 79) \times 31.6 Second

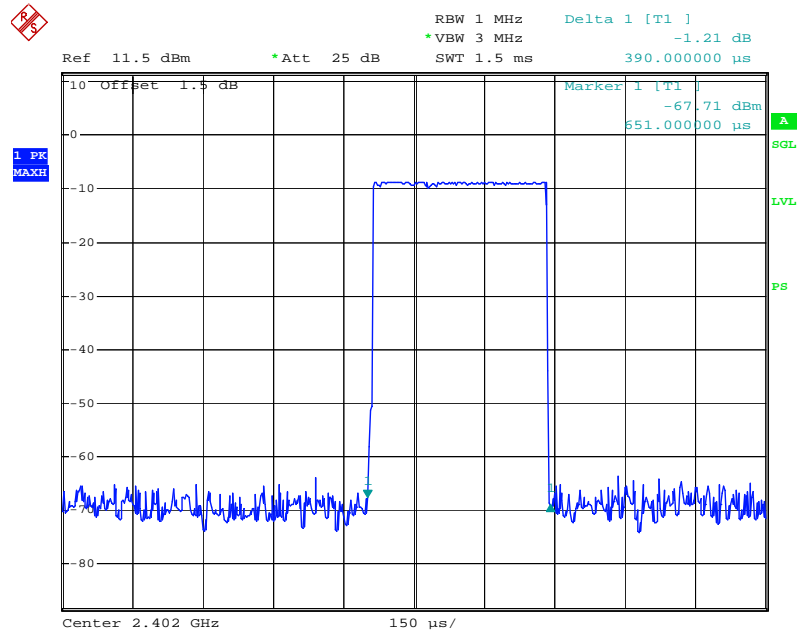
DH 5 Mode:

Channel	Pulse Width (ms)	Dwell Time (Sec)	Limit (Sec)	Result
Low	2.912	0.3106	0.4	Pass
Middle	2.912	0.3106	0.4	Pass
High	2.912	0.3106	0.4	Pass

Note: Dwell time=Pulse width (ms) \times (1600 \div 6 \div 79) \times 31.6 Second

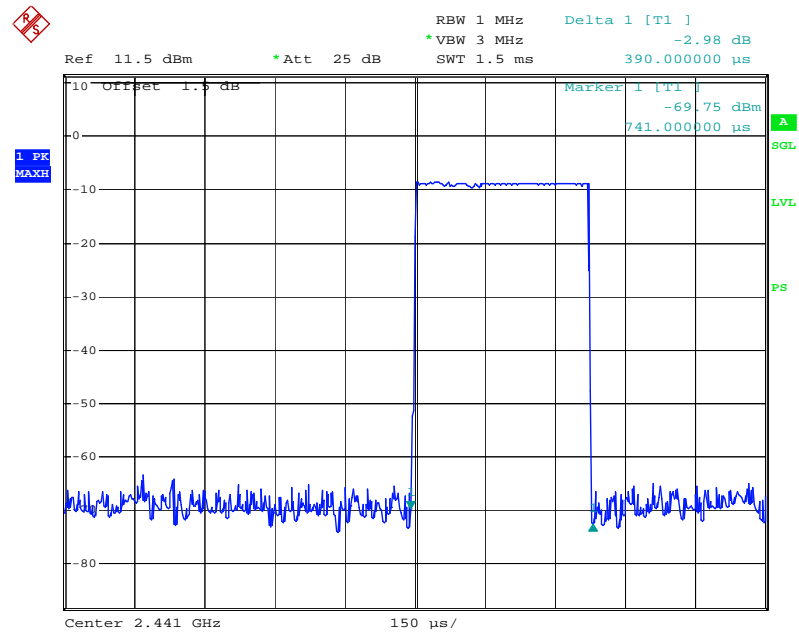
Please refer to the following plots.

Low Channel for DH1



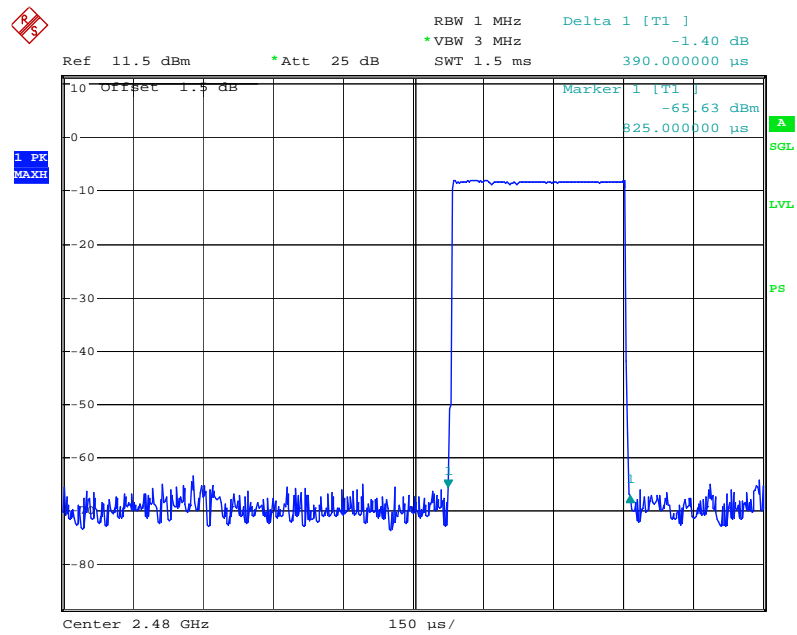
Date: 25.JUN.2009 06:40:45

Middle Channel for DH1



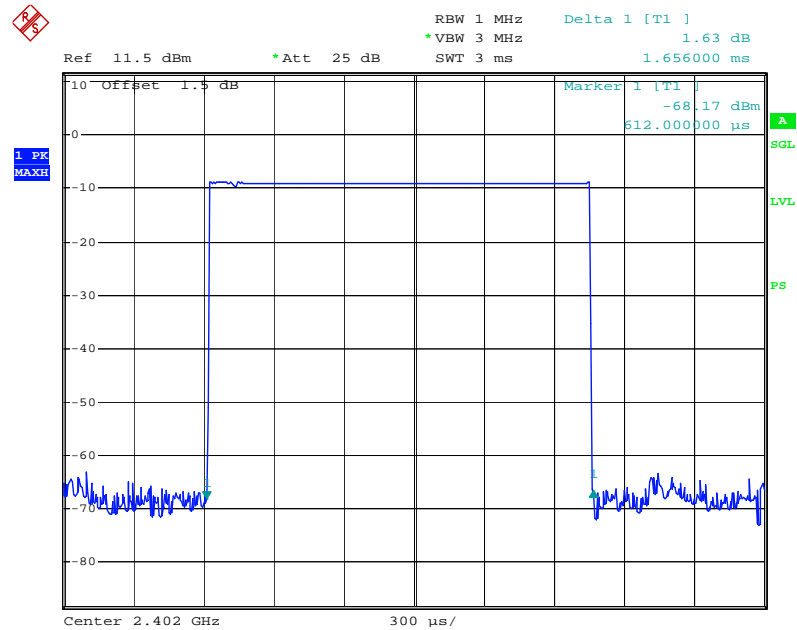
Date: 25.JUN.2009 06:41:27

High Channel for DH1



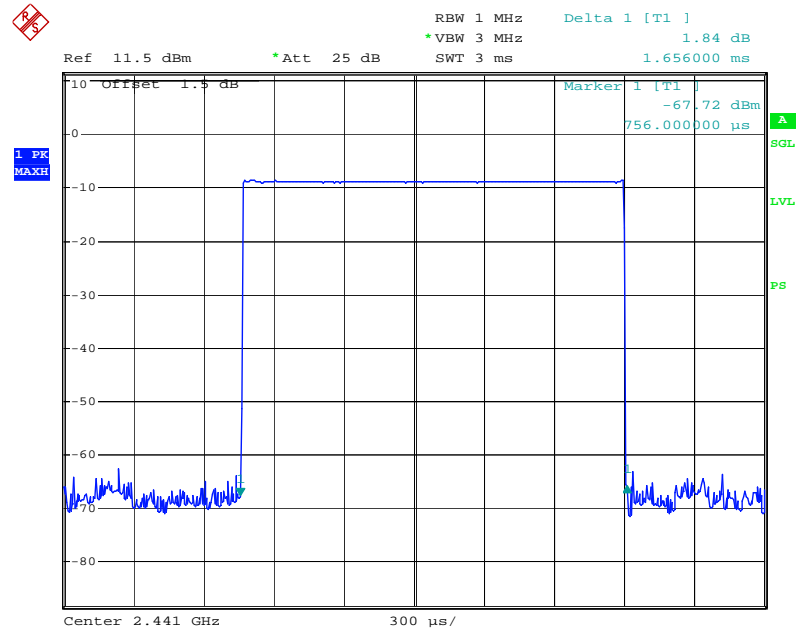
Date: 25.JUN.2009 06:42:00

Low Channel for DH3



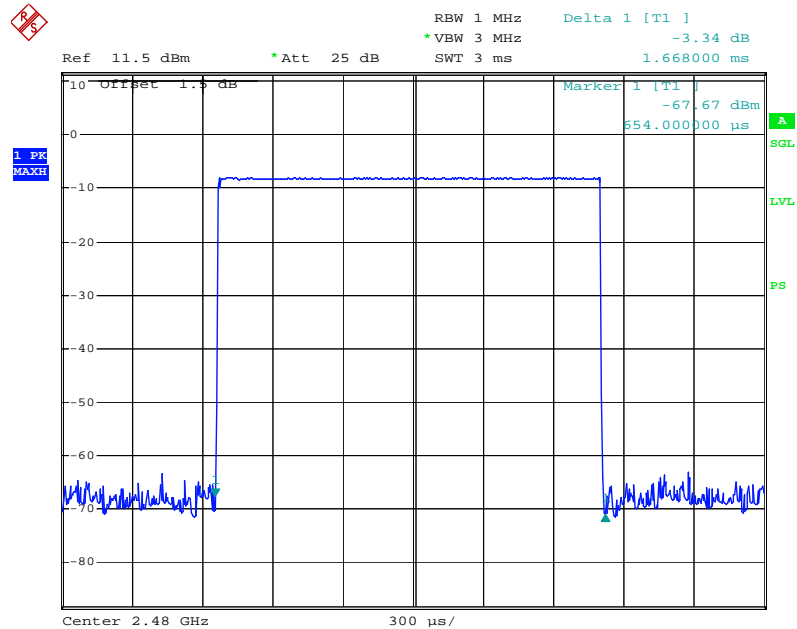
Date: 25.JUN.2009 06:43:17

Middle Channel for DH3



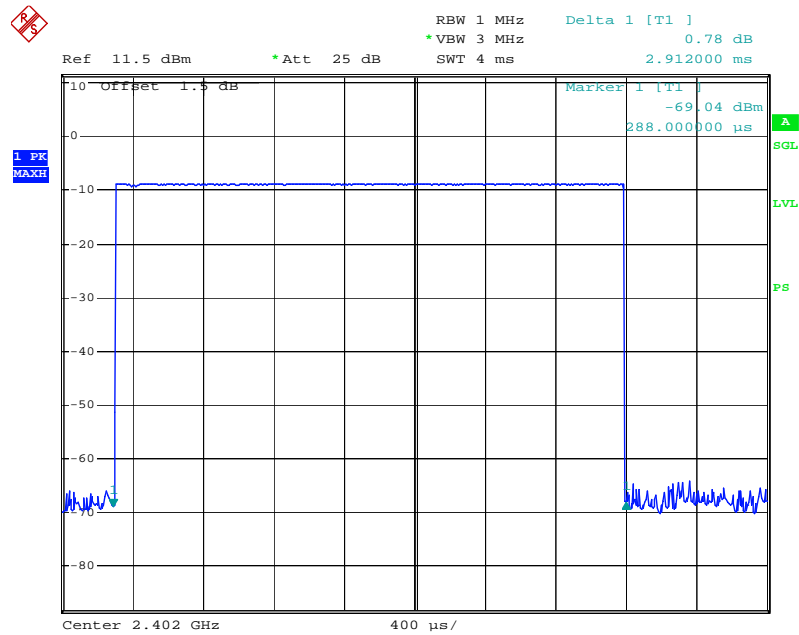
Date: 25.JUN.2009 06:43:52

High Channel for DH3



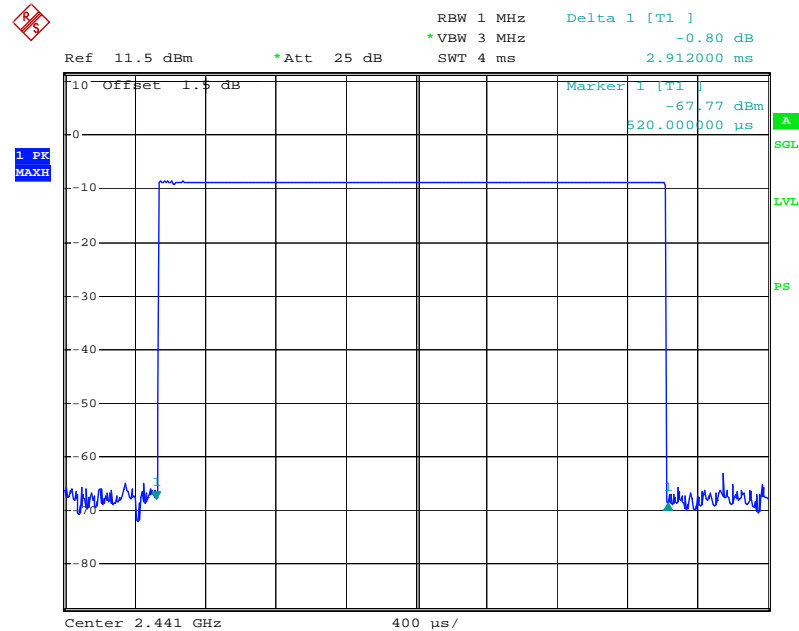
Date: 25.JUN.2009 06:44:25

Low Channel for DH5



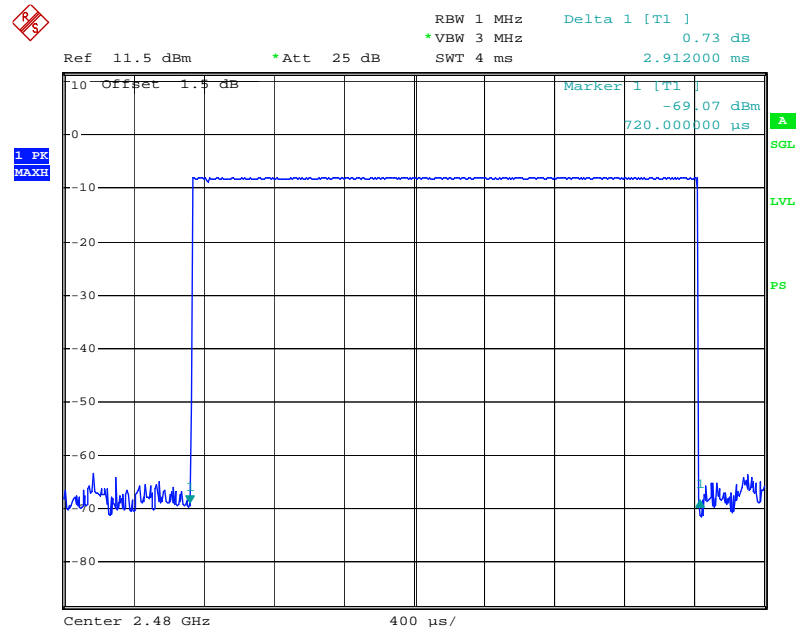
Date: 25.JUN.2009 06:45:37

Middle Channel for DH5



Date: 25.JUN.2009 06:46:22

High Channel for DH5



Date: 25.JUN.2009 06:47:08

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.

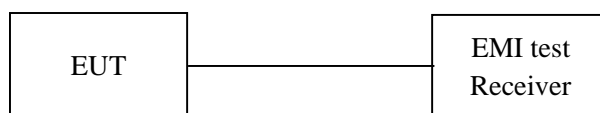
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2008-11-07	2009-11-06

* **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. Place the EUT on a bench and set 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**

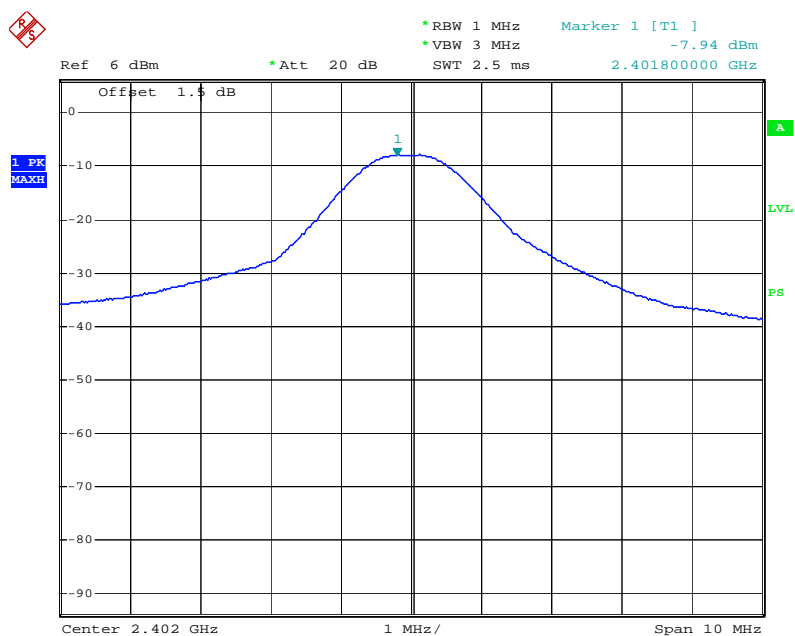
Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

* The testing was performed by Phoenix Liu on 2009-06-26.

Test Result: Compliant.

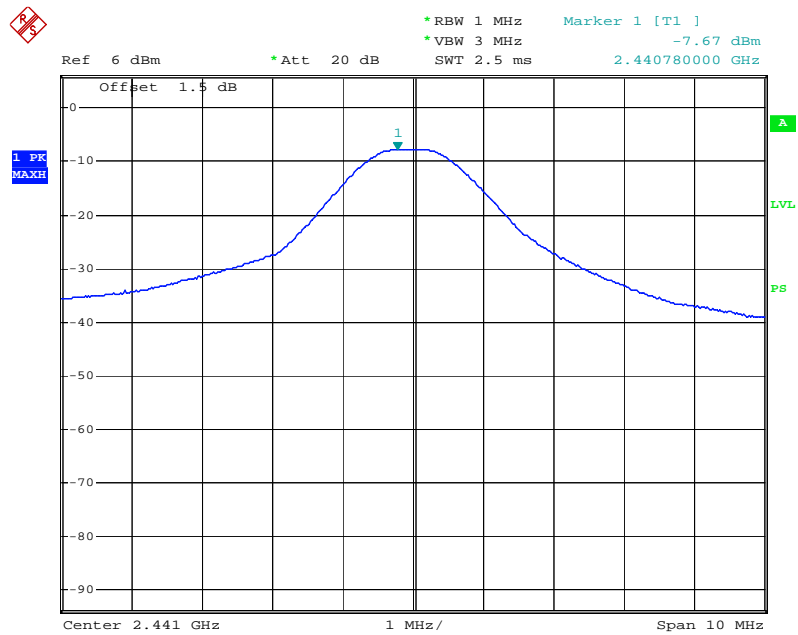
Test Mode: Transmitting

Channel	Channel Frequency (MHz)	Output Power (dBm)	Output Power (mw)	Limit (mw)
Low	2402	-7.94	0.161	125
Middle	2441	-7.67	0.171	125
High	2480	-8.43	0.144	125

Low Channel

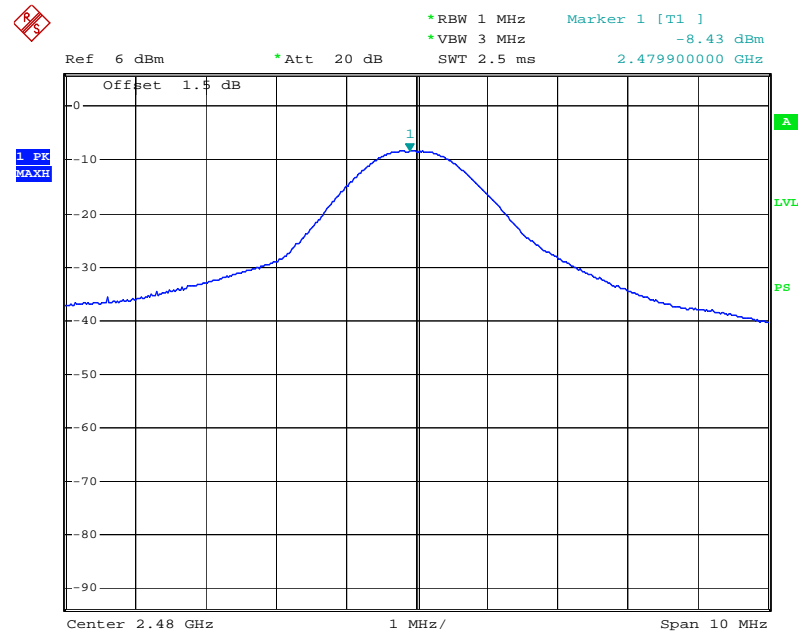
Date: 26.JUN.2009 07:46:40

Middle Channel



Date: 26.JUN.2009 07:47:44

High Channel



Date: 26.JUN.2009 07:49:02

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	2008-11-07	2009-11-06

* **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. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then 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:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

**The testing was performed by Phoenix Liu on 2009-06-25.*

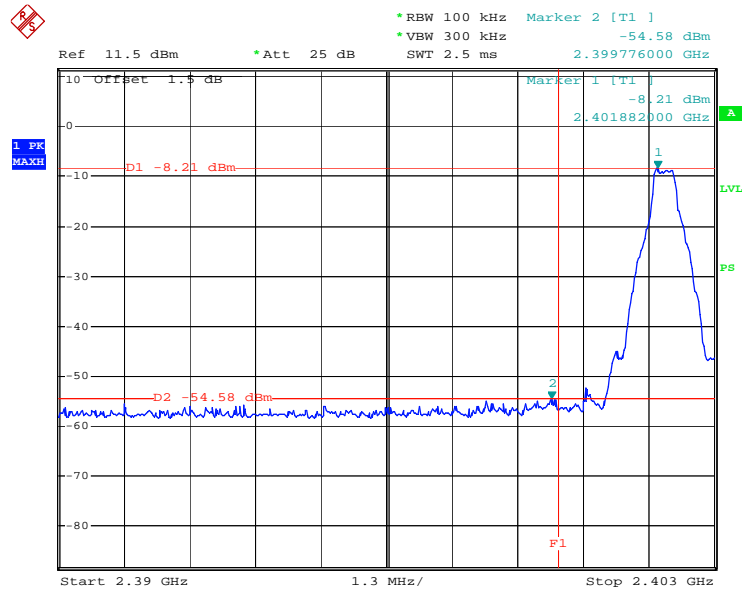
Test Result: Compliant

Please refer to the following table and plots.

Test Mode: Transmitting

Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)
2399.900	46.37	20
2483.600	48.43	20

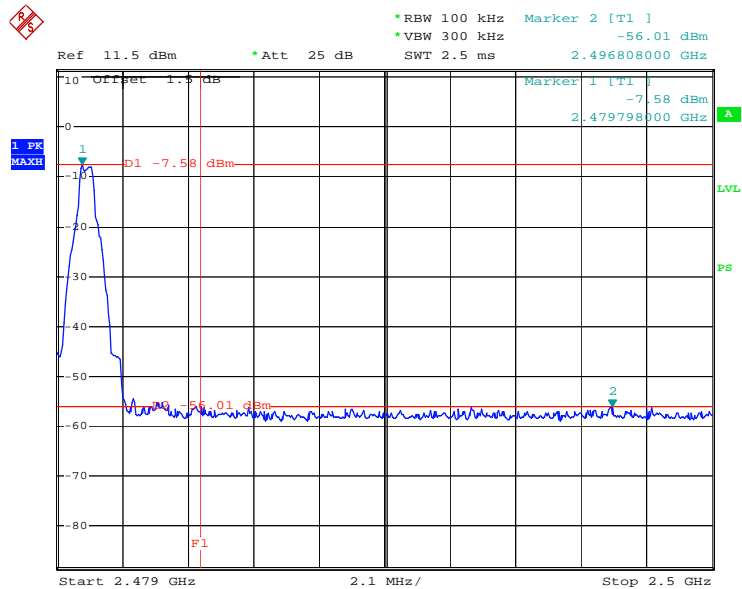
Band Edge: Left Side



F1=2399.9MHz

Date: 25.JUN.2009 06:21:14

Band Edge: Right Side



F1=2483.6MHz

Date: 25.JUN.2009 06:24:46

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