Lab Code: 200167-0

FCC PART 15C
MEASUREMENT AND TEST REPORT

For

LG-Nortel Co., Ltd.

533, Hogye-1dong, Dongan-gu,

Anyang-shi, Kyongki-do, Korea

FCC ID: TUIIP88XX
Model: IP8830/IP8840

Report Type:	**Product Type:**
Original Report	IP Phone

Test Engineer:	Victor Zhang
Report Number:	R0808183-15C
Report Date:	2008-09-04
Reviewed By:	Boni Baniqued Sr. RF Engineer
Prepared By: (66)	Bay Area Compliance Laboratories Corp. 1274 Anvilwood Ave Sunnyvale, CA 94089, USA Tel: (408) 732-9162 Fax: (408) 732 9164

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY

Revision #	Report Number	Description of Revision	Date of Revision
0	R0808183-15C	Original	2008-09-04

1 GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

The *LG Nortel's* product FCC ID: TUIIP88XX, Models: IP8830 and IP8840, or the "EUT" as referred to in this report is an IP phone with Class 2 (4dBm Max) Bluetooth Daughter type Module. It used RBCA-T001B Bluetooth module which is a single module for Bluetooth 2.4GHz systems including enhanced data rates (EDR) to 3Mbits/s. It also includes FM receiver and it is customized for LG Nortel.

1.2 Mechanical Description of EUT

The *LG Nortel's* product FCC ID: TUIIP88XX, Models: IP8830 and IP8840, measures approximately *200 mm L x 238 mm W x 40 mm H,* and weighs approximately *980g*.

1.3 EUT Photograph

Model: IP8830

Model: IP8840

Please refer to Exhibit C for more EUT photographs.

Notes:

Models IP 8830 and IP 8840 are identical in electronic, electrical, mechanical and cosmetics design except the LCD size and numbers of flexible buttons. We selected the model 8840 model for testing with the worst emissions during preliminary scan.

1.4 Objective

This type approval report is prepared on behalf of *LG Nortel* in accordance with Part 2, Subpart J, Part 15, Subparts A, B, and C.

1.5 Related Submittal(s)/Grant(s)

N/A

1.6 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2003.

1.7 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 values range from $\pm$2.0 for Conducted Emissions tests and $\pm$4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL.

Detailed instrumentation measurement uncertainties can be found in BACL report QAP-018.

1.8 Test Facility

The semi-anechoic chambers used by BACL to collect radiated and conducted emissions measurement data is located in the building at it's facility in Sunnyvale, California, USA.

BACL's test sites have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in accordance with ANSI C63.4 2003.

2.2 EUT Exercise Software

The software is provided by customer. The EUT exercise program used during radiated testing was designed to exercise the system components.

2.3 Special Accessories

As shown in following test block diagram.

2.4 Equipment Modifications

No modifications were made to the EUT.

2.5 Local Support Equipment

N/A

2.6 Interface Ports and Cabling

Cable Description	Length (m)	From	To
-	-	-	-

3 SUMMARY OF TEST RESULTS FOR FCC PART 15

FCC Rules	Description of Test	Results
§15.203	Antenna Requirements	Compliant
§15.207 (a)	Conducted Emissions	Compliant
§ 15.205, §15.209 & §15.247 (d)	Radiated Spurious Emissions	Compliant
§ 15.109	Receiver Spurious Emission	Compliant
§15.247 (a) (1)	Channel Bandwidth	Compliant
§15.247 (a) (1)	Hopping Channel Separation	Compliant
§15.247 (a) (1) (iii)	Number of Hopping Frequencies Used	Compliant
§15.247 (a) (1) (iii)	Dwell Time	Compliant
§15.247 (b) (1)	Maximum Peak Output Power	Compliant
§ 15.247 (d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§ 15.247 (i) & §2.1091	RF Exposure	Compliant

4 §15.203 - ANTENNA REQUIREMENT

4.1 Applicable Standard

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.

Refer to statement below for compliance.

“The antenna for this device is an integral antenna that the end user cannot access. Furthermore the device is for indoor/outdoor use as detailed in the Users Manual and Operational Description”.

4.2 Antenna Connected Construction

The antenna for this device is an integral antenna that the end user cannot access. It is fully enclosed by the EUT chassis and removal/modification would result in irreparable damage to the device.

5 §15.207 – Conducted Emissions

5.1 Applicable Standard

According to FCC §15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

**Decreases with the logarithm of the frequency*

5.2 EUT Setup

The conducted emissions tests were performed in the 10-meter test chamber, using the setup in accordance with ANSI C63.4-2003 measurement procedures. The specifications used were in accordance with FCC Part 15.207 limits.

The adapter of EUT was connected to a 120 V, 60 Hz AC mains power source.

5.3 Test Procedure

During the conducted emissions test, the power cord of the EUT was connected to the mains outlet of the LISN.

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

All data was recorded in the quasi-peak and average detection mode. Quasi-Peak readings are distinguished with a "QP". Average readings are distinguished with an "Ave".

5.4 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Solar Electronics	LISN	9252-R-24-BNC	511205	2008-07-31
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.595 0K03	100338	2008-05-07

****Statement of Traceability*:** BACL Corp. attests that all calibrations have been performed according to NVLAP requirements, traceable to the NIST.

5.5 Environmental Conditions

Temperature:	22 ° C
Relative Humidity:	47 %
ATM Pressure:	101.7 kPa

** The testing was performed by Victor Zhang on 2008-08-29*

Test Result: According to the data hereinafter, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.207 and 15.247 standard's Conducted emissions limits for class B devices, and had the worst margin of:

AC/DC adapter #1 (SN: H00034122)

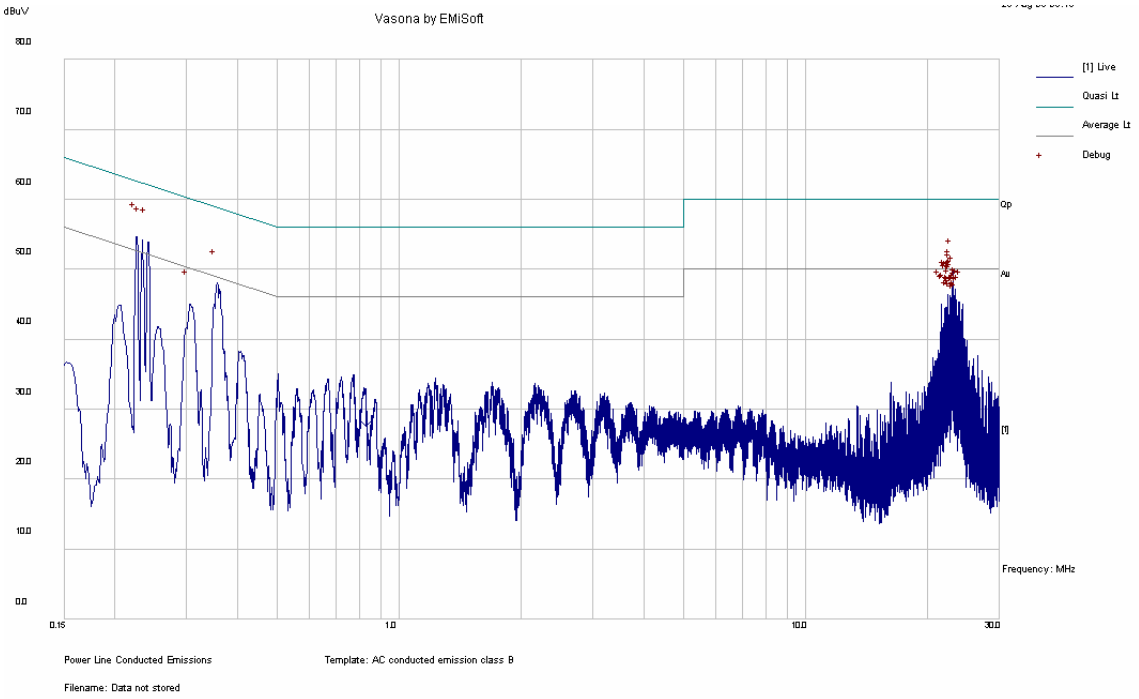
Connection: AC/DC adapter connected to 120 V/ 60 Hz			
Margin (dB)	**Frequency (MHz)**	**Conductor (Line/Neutral)**	**Range (MHz)**
-13.06	23.133	Line	0.150 to 30 MHz
-13.97	0.15	Neutral	0.150 to 30 MHz

AC/DC adapter #2 (SN: RA870000077)

Connection: AC/DC adapter connected to 120 V/ 60 Hz			
Margin (dB)	**Frequency (MHz)**	**Conductor (Line/Neutral)**	**Range (MHz)**
-7.55	0.25	Line	0.150 to 30 MHz
-7.32	0.294	Neutral	0.150 to 30 MHz

5.6 Conducted Emissions Test Data and Plots

AC/DC Adapter #1 (SN: H00034122)

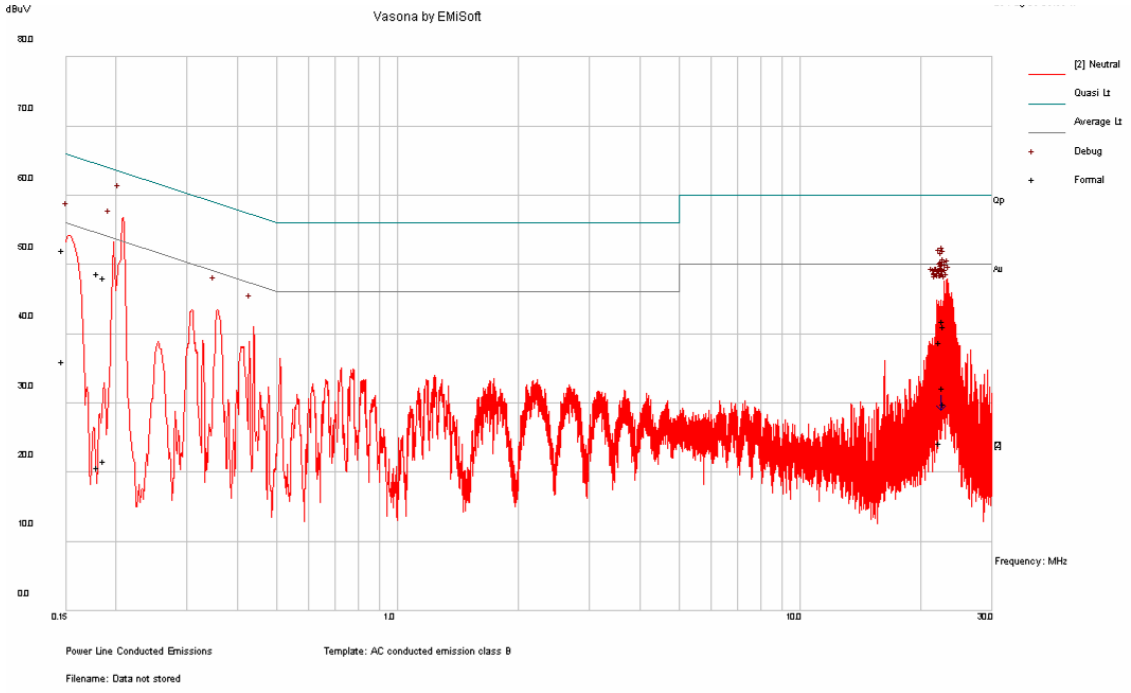


QP Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
0.209	46.54	Line	63.25	-16.71
0.215	46.17	Line	63.00	-16.84
0.366	41.10	Line	58.60	-17.50
23.133	42.37	Line	60.00	-17.63
0.225	44.88	Line	62.65	-17.77
23.045	40.00	Line	60.00	-20.00

Average Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
23.133	36.94	Line	50.00	-13.06
0.366	34.66	Line	48.60	-13.94
0.209	34.66	Line	53.25	-18.59
23.045	24.70	Line	50.00	-25.30
0.215	23.64	Line	53.000	-29.37
0.225	19.02	Line	52.65	-33.63



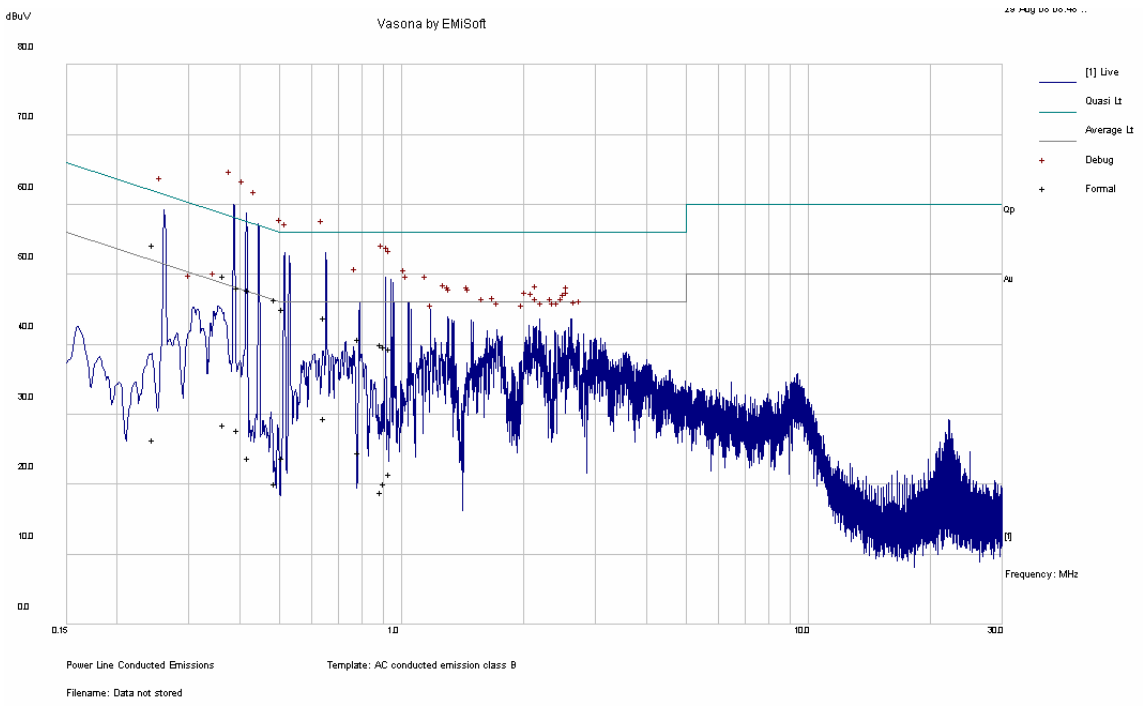
QP Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
0.150	52.03	Neutral	66.0	-13.97
0.184	48.72	Neutral	64.3	-15.58
0.191	48.17	Neutral	64.0	-15.84
23.135	41.85	Neutral	60.0	-18.15
23.328	41.14	Neutral	60.0	-18.86
22.771	38.79	Neutral	60.0	-21.21

Average Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
23.135	32.15	Neutral	50.0	-17.85
0.150	36.01	Neutral	56.0	-19.99
23.328	29.97	Neutral	50.0	-20.03
22.771	24.19	Neutral	50.0	-25.81
0.191	21.64	Neutral	54.0	-32.37
0.184	20.79	Neutral	54.3	-33.51

AC/DC adapter #2 (SN: RA870000077)

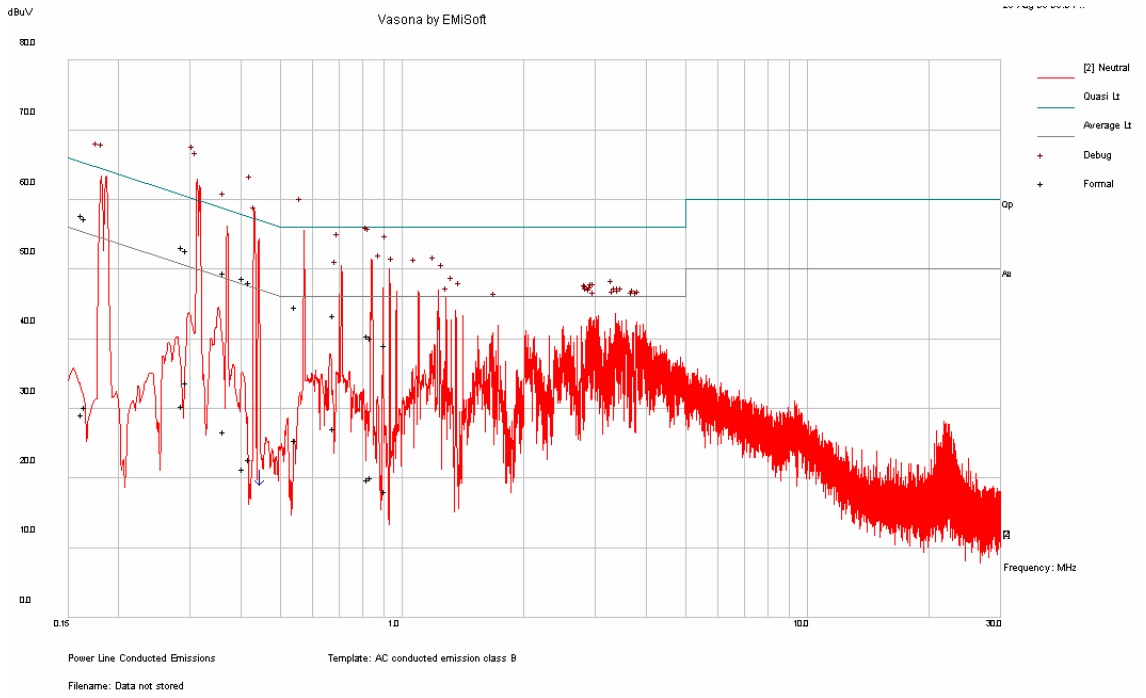


QP Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
0.250	54.21	Line	61.77	-7.55
0.374	49.74	Line	58.42	-8.68
0.430	47.76	Line	57.25	-9.49
0.403	48.16	Line	57.80	-9.63
0.498	46.41	Line	56.03	-9.63
0.658	43.86	Line	56.00	-12.14

Average Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
0.658	29.41	Line	46.00	-16.59
0.374	28.47	Line	48.42	-19.94
0.403	27.83	Line	47.80	-19.96
0.430	23.71	Line	47.25	-23.54
0.250	26.37	Line	51.77	-25.40
0.498	20.05	Line	46.03	-25.98



QP Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
0.294	53.10	Neutral	60.42	-7.32
0.166	57.73	Neutral	65.15	-7.42
0.300	52.70	Neutral	60.24	-7.54
0.169	57.37	Neutral	65.03	-7.67
0.415	48.75	Neutral	57.55	-8.81
0.557	44.52	Neutral	56.00	-11.48

Average Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)
0.294	33.78	Neutral	50.24	-16.46
0.166	30.31	Neutral	50.42	-20.11
0.300	25.48	Neutral	46.00	-20.52
0.169	30.22	Neutral	55.03	-24.81
0.415	29.14	Neutral	55.15	-26.01
0.557	21.33	Neutral	47.55	-26.22

6 §15.205, §15.209 &§15.247(D) – RADIATED SPURIOUS EMISSIONS

6.1 Applicable Standard:

FCC §15.205; §15.209 and §15.247(d).

6.2 Test Setup

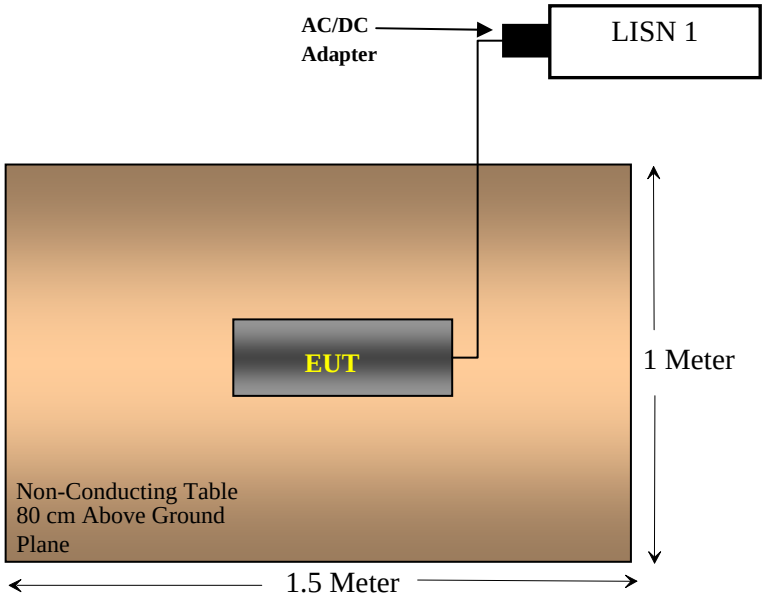
The radiated emissions tests were performed in the 3-meter semi-anechoic chamber test site, using the setup in accordance with ANSI C63.4-2003. The specification used was the FCC 15 Subpart C limits.

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 of EUT was connected to a 120 VAC/60 Hz power source.

6.3 Test Setup Diagram



6.4 Test Procedure

For the radiated emissions test, the EUT, and all support equipment power cords 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.

The EUT is set 3 meters away from the testing antenna, which is varied from 1-4 meters, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to

find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000MHz:

(1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Indicated Reading + Antenna Factor + Cable Factor - 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:

Margin = Corrected Amplitude - Limit

6.5 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Mini-Circuits	Pre amplifier	ZKL-2	7786100643	2008-01-02
HP	Pre amplifier	8449B	3147A00400	2007-11-02
Sunol Science Corp	Combination Antenna	JB1 Antenna	A103105-3	2008-03-25
A. H. Systems	Antenna, Horn, DRG	DRG-118/A	1132	2008-07-08
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

Statement of Traceability: BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

6.6 Environmental Conditions

Temperature:	22 ºC
Relative Humidity:	44 %
ATM Pressure:	101.2 kPa

**The testing was performed by Victor Zhang on 2008-08-29.*

6.7 Test Results

According to the data hereinafter, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247 standard's radiated emissions limits for class B devices, and had the worst margin of:

Model 8830:

30-1000 MHz (Worst-case)

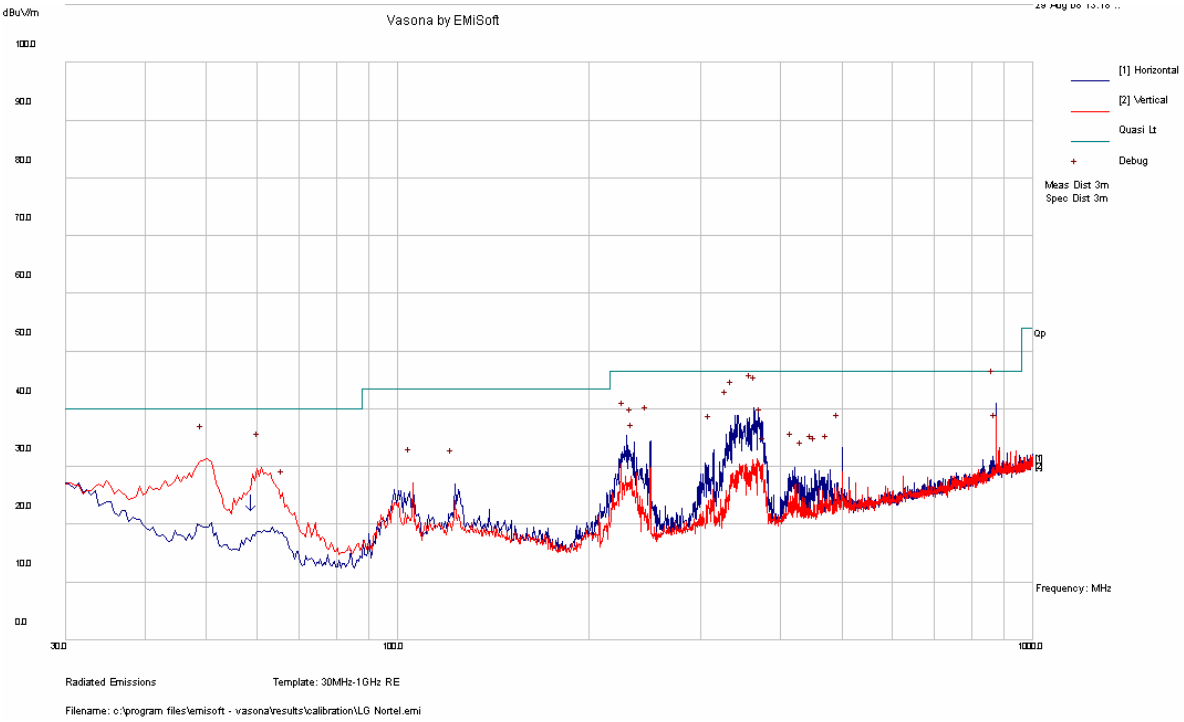
Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-9.69	874.83	Horizontal	Low, 30 MHz – 1GHz

Above 1GHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-7.79	7206	Horizontal	Low, 1GHz – 25GHz
-9.51	7323	Horizontal	Mid, 1GHz – 25GHz
-4.72	7440	Horizontal	High, 1GHz – 25GHz

Radiated Emission at 3 meters (30 MHz -1GHz)

(Worst case)



Frequency (MHz)	Quasi-Peak (dBµV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
874.83	36.81	100	4.99	H	70	46.5	-9.69
49.599	29.01	100	-10.86	V	109	40	-10.99
369.228	35.46	100	-2.65	H	60	46.5	-11.04
339.35	29.9	100	-3.32	H	225	46.5	-16.6
363.355	27.62	112	-2.65	H	53	46.5	-18.88
333.045	24.07	133	-3.42	H	23	46.5	-22.43

Radiated Emission at 3 meters, 1 GHz – 25 GHz

Low Channel 2402 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2402	60.4	95	1.24	V	29.1	3.68	0	93.18			Peak
2402	48.21	95	1.24	V	29.1	3.68	0	80.99			Ave
2402	69.39	9	1.36	H	29.1	3.68	0	102.17			Peak
2402	54.46	9	1.36	H	29.1	3.68	0	87.24			Ave
7206	38.05	44	1	H	38.1	6.36	36.3	46.21	54	-7.79	Ave
7206	34.78	59	1	V	38.1	6.36	36.3	42.94	54	-11.06	Ave
7206	47.38	44	1	H	38.1	6.36	36.3	55.54	74	-18.46	Peak
7206	44.1	59	1	V	38.1	6.36	36.3	52.26	74	-21.74	Peak

Middle Channel 2441 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2441	53.7	138	1.59	V	29.1	3.69	0	86.49			Peak
2441	43.55	138	1.59	V	29.1	3.69	0	76.34			Ave
2441	67.11	11	1.05	H	29.1	3.69	0	99.9			Peak
2441	53.24	11	1.05	H	29.1	3.69	0	86.03			Ave
7323	36.13	46	1	H	38.1	6.43	36.17	44.49	54	-9.51	Ave
7323	33.5	31	1.1	V	38.1	6.43	36.17	41.86	54	-12.14	Ave
7323	45.57	46	1	H	38.1	6.43	36.17	53.93	74	-20.07	Peak
7323	42.6	31	1.1	V	38.1	6.43	36.17	50.96	74	-23.04	Peak

High Channel 2480 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2480	59.24	99	1.49	V	29.2	3.7	0	92.14			Peak
2480	47.53	99	1.49	V	29.2	3.7	0	80.43			Ave
2480	70.28	10	1.28	H	29.2	3.7	0	103.18			Peak
2480	56.11	10	1.28	H	29.2	3.7	0	89.01			Ave
7440	40.75	45	1.04	H	38.1	6.56	36.13	49.28	54	-4.72	Ave
7440	39.89	24	1	V	38.1	6.56	36.13	48.42	54	-5.58	Ave
7440	46.96	45	1.04	H	38.1	6.56	36.13	55.49	74	-18.51	Peak
7440	44.25	24	1	V	38.1	6.56	36.13	52.78	74	-21.22	Peak

Restricted Band Edge (Near Band Edge): Low channel

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2390	29.97	304	1.29	V	29	3.68	39.02	23.63	54	-30.37	Ave
2390	29.89	245	1.17	H	29	3.68	39.02	23.55	54	-30.45	Ave
2390	43.39	304	1.29	V	29	3.68	39.02	37.05	74	-36.95	Peak
2380	43.32	245	1.17	H	29	3.68	39.02	36.98	74	-37.02	Peak

Restricted Band Edge (Near Band Edge): High channel

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2492	53.06	28	1	H	29.2	3.72	39.25	46.73	74	-27.27	Peak
2492	30.61	28	1	H	29.2	3.72	39.25	24.28	54	-29.72	Ave
2490	41.95	210	1	V	29.2	3.72	39.25	35.62	74	-38.38	Peak
2490	27.23	210	1	V	29.2	3.72	39.25	20.9	54	-33.1	Ave

Model 8840:

30-1000 MHz (Worst-case)

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-9.31	875.115	Horizontal	Low, 30 MHz – 1GHz

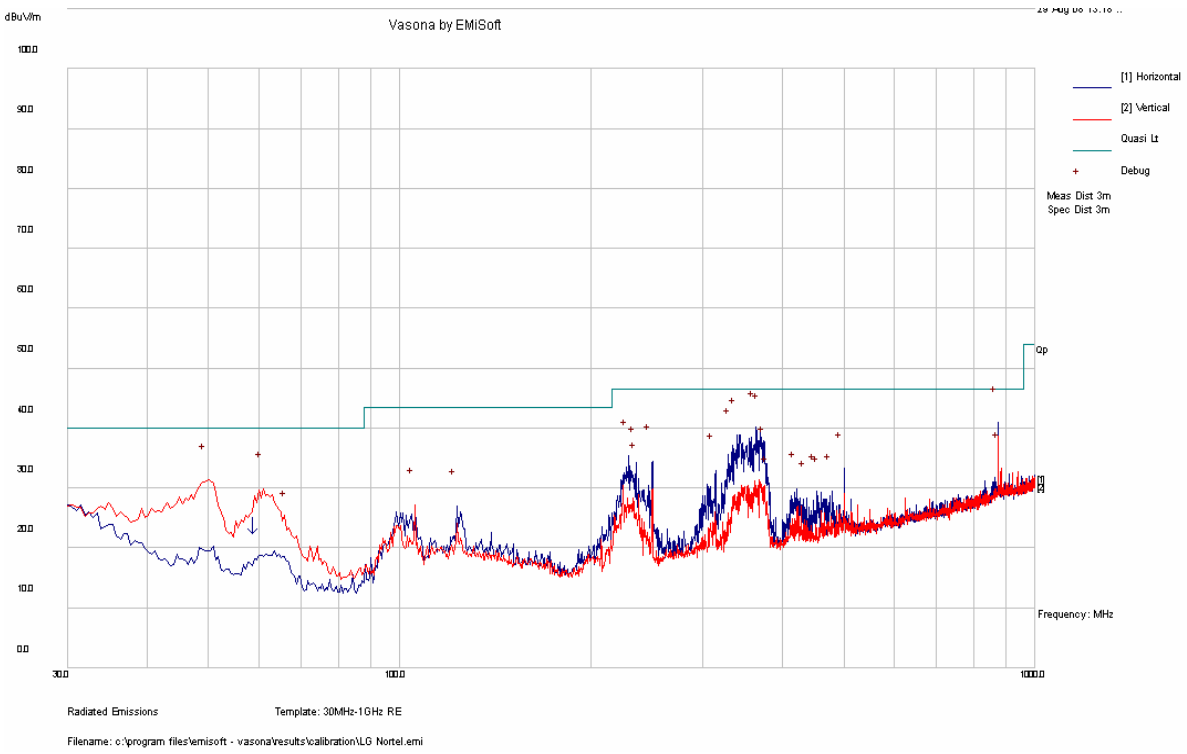
Above 1GHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-5.49	7206	Horizontal	Low, 1GHz – 25GHz
-6.41	7323	Horizontal	Mid, 1GHz – 25GHz
-0.62	7440	Horizontal	High, 1GHz – 25GHz

Please refer to the following table and plots for specific test result details

Radiated Emission at 3 meters (30MHz -1GHz)

(Worst case)



Frequency (MHz)	Quasi-Peak (dBµV/m)	Antenna Height (cm)	Correction Factor (dB)	Antenna Polarity (H/V)	Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
875.115	37.19	100	4.99	H	70	46.5	-9.31
49.979	29.39	100	-10.86	V	109	40.0	-10.61
369.608	35.84	100	-2.65	H	60	46.5	-10.66
339.730	30.28	100	-3.32	H	225	46.5	-16.22
363.735	28.00	112	-2.65	H	53	46.5	-18.50
333.425	24.45	133	-3.42	H	23	46.5	-22.05

Radiated Emission at 3 meters, 1 GHz – 25 GHz

Low channel 2402 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2402	62.10	95	1.24	V	29.1	3.68	0	94.88			Peak
2402	49.91	95	1.24	V	29.1	3.68	0	82.69			Ave
2402	71.09	9	1.36	H	29.1	3.68	0	103.87			Peak
2402	56.16	9	1.36	H	29.1	3.68	0	88.94			Ave
7206	40.35	44	1	H	38.1	6.36	36.3	48.51	54	-5.49	Ave
7206	37.08	59	1	V	38.1	6.36	36.3	45.24	54	-8.76	Ave
7206	49.68	44	1	H	38.1	6.36	36.3	57.84	74	-16.16	Peak
7206	46.40	59	1	V	38.1	6.36	36.3	54.56	74	-19.44	Peak

Middle channel 2441 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2441	54.80	138	1.59	V	29.1	3.69	0	87.59			Peak
2441	44.65	138	1.59	V	29.1	3.69	0	77.44			Ave
2441	68.21	11	1.05	H	29.1	3.69	0	101.00			Peak
2441	54.34	11	1.05	H	29.1	3.69	0	87.13			Ave
7323	39.23	46	1	H	38.1	6.43	36.17	47.59	54	-6.41	Ave
7323	36.60	31	1.1	V	38.1	6.43	36.17	44.96	54	-9.04	Ave
7323	48.67	46	1	H	38.1	6.43	36.17	57.03	74	-16.97	Peak
7323	45.70	31	1.1	V	38.1	6.43	36.17	54.06	74	-19.94	Peak

High channel 2480 MHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2480	60.29	99	1.49	V	29.2	3.7	0	93.19			Peak
2480	48.58	99	1.49	V	29.2	3.7	0	81.48			Ave
2480	71.33	10	1.28	H	29.2	3.7	0	104.23			Peak
2480	57.16	10	1.28	H	29.2	3.7	0	90.06			Ave
7440	44.85	45	1.04	H	38.1	6.56	36.13	53.38	54	-0.62	Ave
7440	43.99	24	1.00	V	38.1	6.56	36.13	52.52	54	-1.48	Ave
7440	56.16	45	1.04	H	38.1	6.56	36.13	64.69	74	-9.31	Peak
7440	53.45	24	1.00	V	38.1	6.56	36.13	61.98	74	-12.02	Peak

Restricted Band Edge (Near Band Edge): Low channel

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2389.270	28.95	304	1.29	V	29	3.68	39.02	22.61	54	-31.39	Ave
2379.414	28.87	245	1.17	H	29	3.68	39.02	22.53	54	-31.47	Ave
2389.270	42.37	304	1.29	V	29	3.68	39.02	36.03	74	-37.97	Peak
2379.414	42.30	245	1.17	H	29	3.68	39.02	35.96	74	-38.04	Peak

Restricted Band Edge (Near Band Edge): High channel

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
2492.025	54.09	28	1	H	29.2	3.72	39.25	47.76	74	-26.24	Peak
2492.025	31.64	28	1	H	29.2	3.72	39.25	25.31	54	-28.69	Ave
2489.021	42.98	210	1	V	29.2	3.72	39.25	36.65	74	-37.35	Peak
2489.021	28.26	210	1	V	29.2	3.72	39.25	21.93	54	-32.07	Ave

7 FCC §15.109 – UNWANTED SPURIOUS EMISSIONS, RECEIVER SPURIOUS EMISSIONS

7.1 Applicable Standard

According to §15.247(a)(2), Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field strength (microvolt/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

7.2 Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations.

The EUT is set 3 meters away from the testing antenna, which is varied from 1-4 meters, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

All data were recorded in the peak detection mode. Quasi-peak readings was performed only when an emissions was found to be marginal (within -4 dB of specification limits), and are distinguished with a "**QP**" in the data table.

7.3 Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Indicated Reading + Antenna Factor + Cable Factor - 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 for Class B. The equation for margin calculation is as follows:

Margin = Corrected Amplitude - Class B Limit

7.4 Equipment List

Manufacturer	Description	Model Number	Serial Number	Calibration Date
Mini-Circuits	Pre amplifier	ZKL-2	7786100643	2008-01-02
HP	Pre amplifier	8449B	3147A00400	2007-11-02
Sunol Science Corp	Combination Antenna	JB1 Antenna	A103105-3	2008-03-25
A. H. Systems	Antenna, Horn, DRG	DRG-118/A	1132	2008-07-08
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

7.5 Environmental Conditions

Temperature:	22 ºC
Relative Humidity:	44 %
ATM Pressure:	101.2 kPa

**The testing was performed by Victor Zhang on 2008-08-29.*

7.6 Test Results

According to the test data, the EUT complied with the ANSI C63.4 2003, with the closest margins from the limit listed below:

Model 8830:

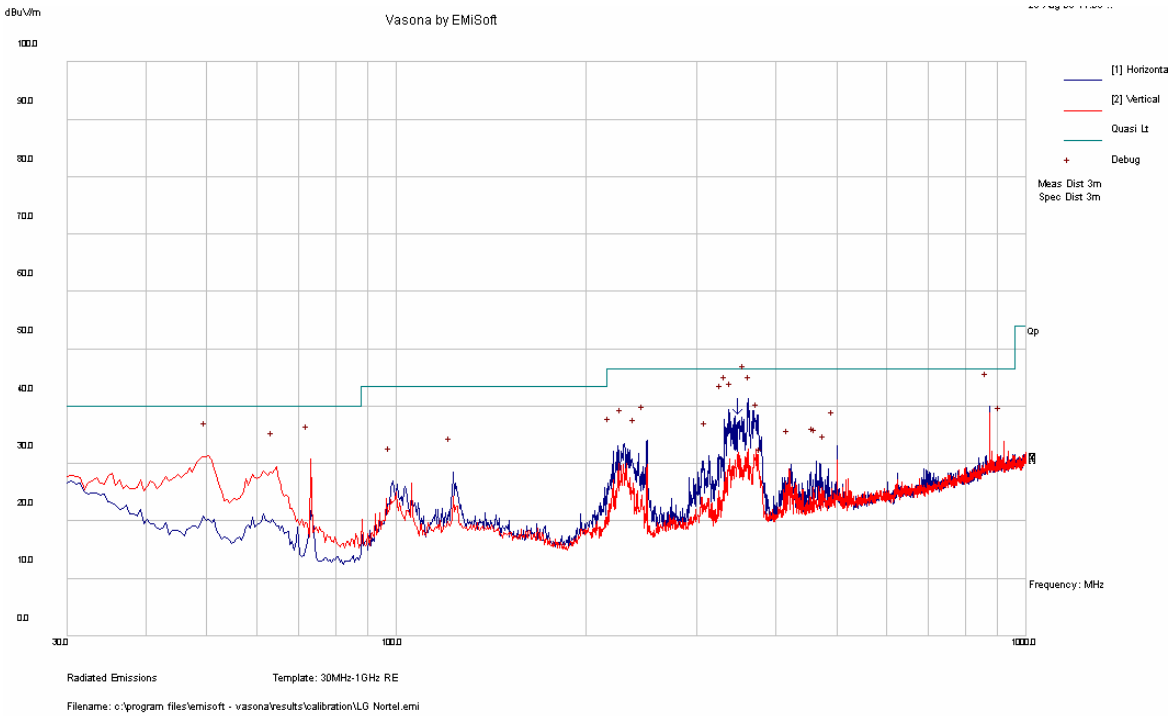
Unwanted Emissions and Receiving Spurious Emission, (30-1000 MHz):

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-10.22	874.992	Horizontal	30 MHz to 1000 MHz

Unwanted Emissions and Receiving Spurious Emission, (Above 1GHz):

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-15.40	7134	Horizontal	1GHz – 25GHz

Radiated Emission at 3 meters, 30 MHz -1GHz



Frequency (MHz)	Quasi-Peak (dBµV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
874.992	36.28	100	4.99	H	67	46.5	-10.22
49.138	24.37	123	-10.93	V	285	40	-15.63
361.423	29.53	100	-2.74	H	38	46.5	-16.97
368.711	27.39	100	-2.64	H	360	46.5	-19.11
344.755	24.21	285	-3.27	H	253	46.5	-22.29
337.002	23.17	329	-3.37	H	242	46.5	-23.33

Radiated Emission at 3 meters, 1 GHz – 25 GHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth Degrees	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
7134	30.54	95	1	H	38.1	6.33	36.37	38.60	54	-15.40	Ave
7098	29.68	100	1.04	V	38.1	6.33	36.37	37.74	54	-16.26	Ave
4947	37.24	15	1	V	33.5	4.94	38.23	37.45	54	-16.55	Ave
4809	31.35	9	1	H	33	4.99	38.53	30.81	54	-23.19	Ave
7134	42.4	95	1	H	38.1	6.33	36.37	50.46	74	-23.54	Peak
7098	42.28	100	1.04	V	38.1	6.33	36.37	50.34	74	-23.66	Peak
4947	47.39	15	1	V	33.5	4.94	38.23	47.6	74	-26.4	Peak
4809	43.54	9	1	H	33	4.99	38.53	43.00	74	-31.00	Peak

Model 8840:

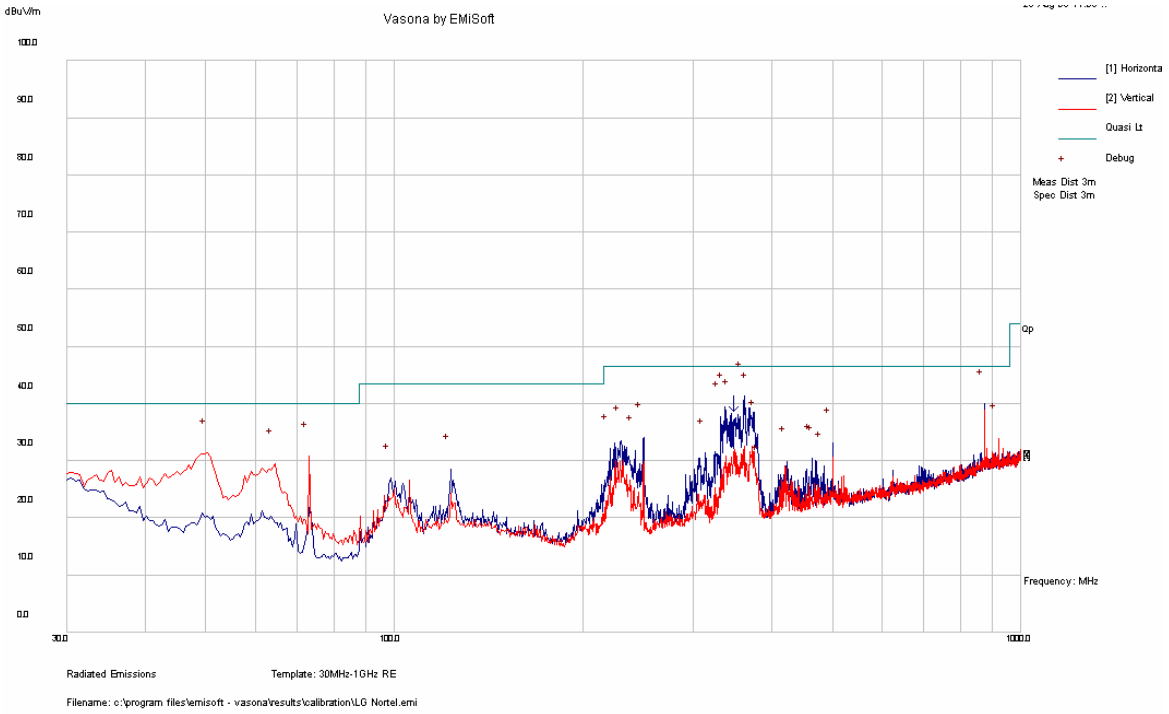
Unwanted Emissions and Receiving Spurious Emission, (30-1000 MHz):

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Range (MHz)**
-9.3	875.115	Horizontal	30 MHz to 1000 MHz

Unwanted Emissions and Receiving Spurious Emission, (Above 1GHz):

Mode: Receiving			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-15.17	7134	Horizontal	1GHz – 25GHz

Radiated Emission at 3 meters, 30 MHz -1GHz



Frequency (MHz)	Quasi-Peak (dBµV/m)	Antenna Height (cm)	Correction Factor (dB)	Ant. Polarity (H/V)	Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
875.115	37.20	100	4.99	H	67	46.5	-9.30
50.211	25.29	123	-10.93	V	285	40.0	-14.71
361.420	30.45	100	-2.74	H	38	46.5	-16.05
368.688	28.31	100	-2.64	H	360	46.5	-18.19
344.743	25.13	285	-3.27	H	253	46.5	-21.37
336.981	24.09	329	-3.37	H	242	46.5	-22.41

Radiated Emission at 3 meters, 1 GHz – 25 GHz

Frequency (MHz)	Receiver Reading (dBµV)	Azimuth (degree)	Ant. Height (m)	Ant. Polar. (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comments
7134	30.77	95	1	H	38.1	6.33	36.37	38.83	54	-15.17	Ave
7098	29.91	100	1.04	V	38.1	6.33	36.37	37.97	54	-16.03	Ave
4947	37.47	15	1	V	33.5	4.94	38.23	37.68	54	-16.32	Ave
4809	31.58	9	1	H	33	4.99	38.53	31.04	54	-22.96	Ave
7134	42.63	95	1	H	38.1	6.33	36.37	50.69	74	-23.31	Peak
7098	42.51	100	1.04	V	38.1	6.33	36.37	50.57	74	-23.43	Peak
4947	47.62	15	1	V	33.5	4.94	38.23	47.83	74	-26.17	Peak
4809	43.77	9	1	H	33.0	4.99	38.53	43.23	74	-30.77	Peak

8 §15.247 (a) (1) – HOPPING CHANNEL BANDWIDTH

8.1 Applicable Standard

According to §15.247(a)(l), the maximum 20 dB bandwidth of the hopping channel shall be presented.

8.2 Measurement Procedure

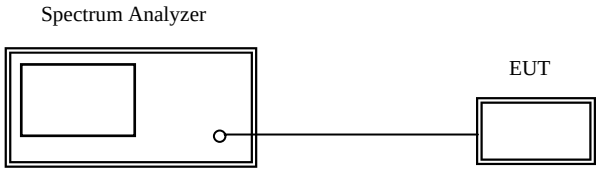
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency 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 emissions bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

8.3 Test Equipment

Manufacturer	Description	Model Number	Serial Number	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

8.4 Test Setup Diagram



8.5 Environmental Conditions

Temperature:	23 ºC
Relative Humidity:	47 %
ATM Pressure:	101.7 kPa

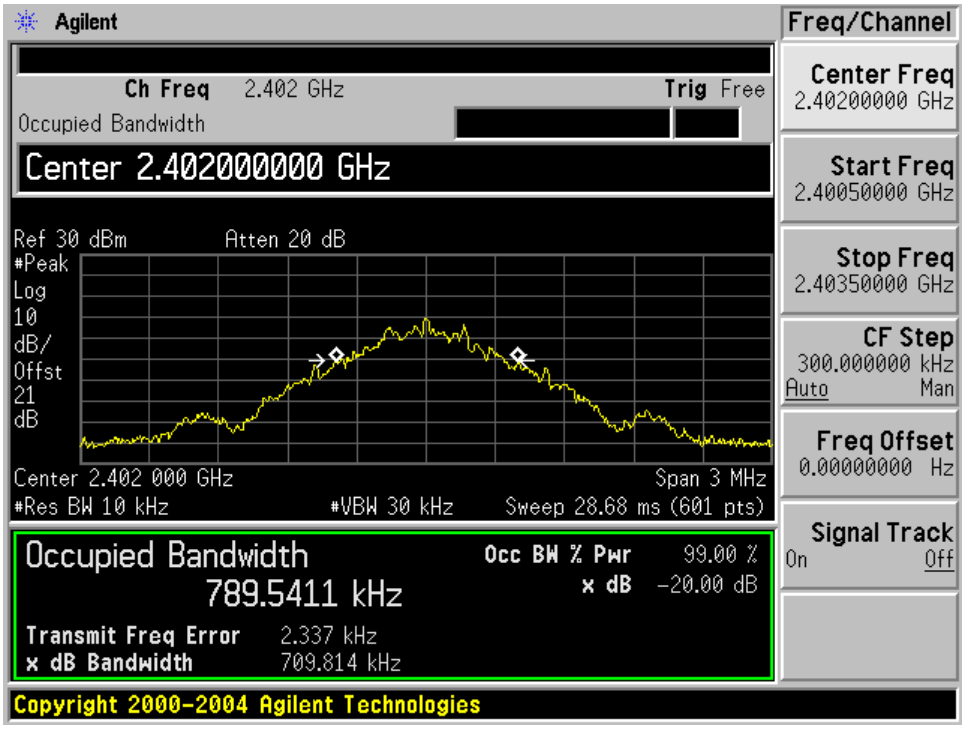
**The testing was performed by Victor Zhang on 2008-08-28.*

8.6 Test Results

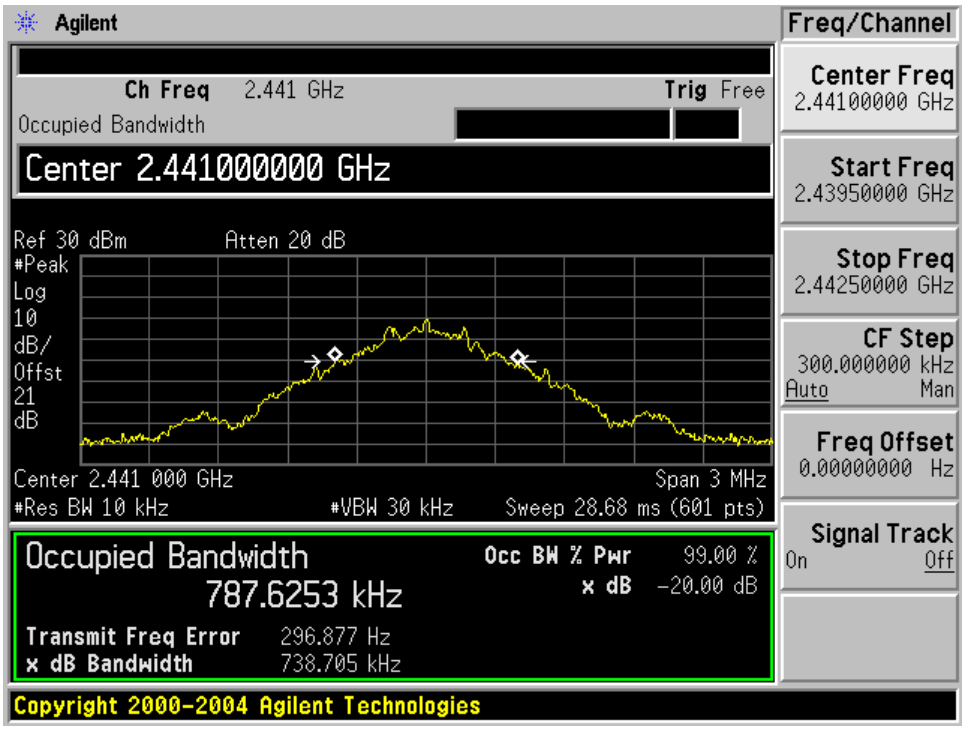
Channel	Frequency (MHz)	Channel Bandwidth (kHz)
Low	2402.0	709.814
Mid	2441.0	738.705
Low	2480.0	745.870

Please refer to the following plots.

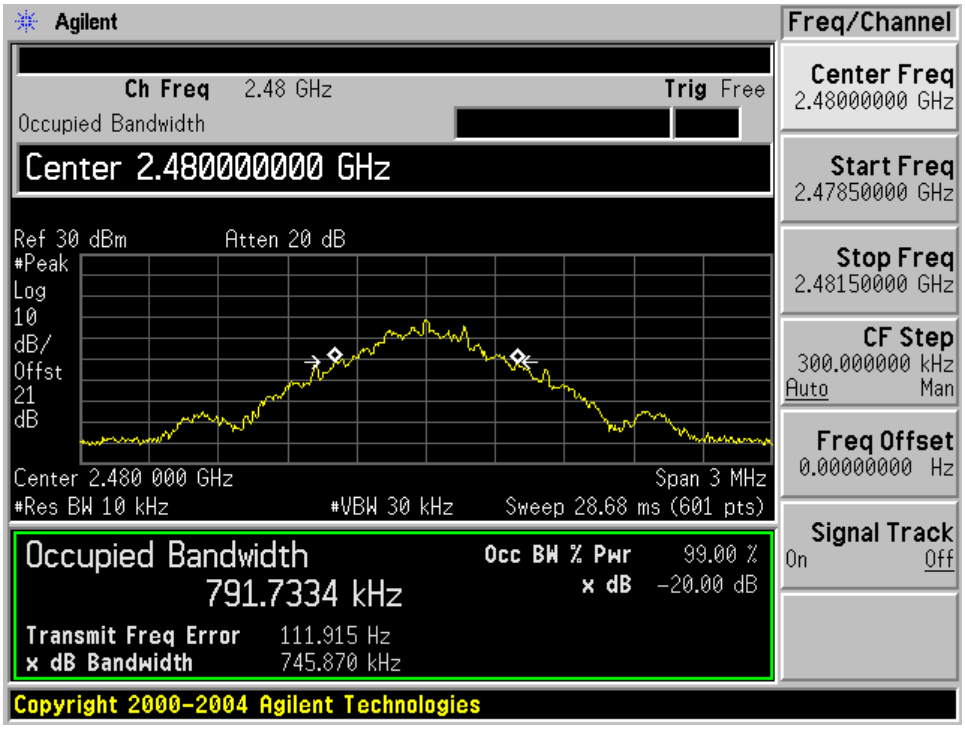
Low Channel



Middle Channel



High Channel



9 §15.247 (a) (1) - HOPPING CHANNEL SEPARATION

9.1 Applicable Standard

According to §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. 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 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

9.2 Measurement Procedure

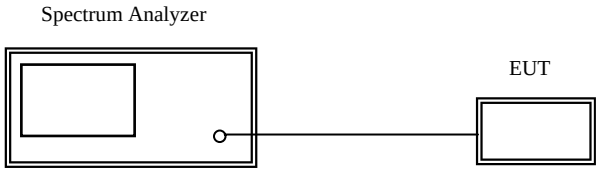
1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Position the EUT on a bench without connection to measurement instrument Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the Max-Hold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function, and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

9.3 Test Equipment

Manufacturer	Description	Model Number	Serial Number	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

9.4 Test Setup Diagram



9.5 Environmental Conditions

Temperature:	25 ºC
Relative Humidity:	40 %
ATM Pressure:	102.0 kPa

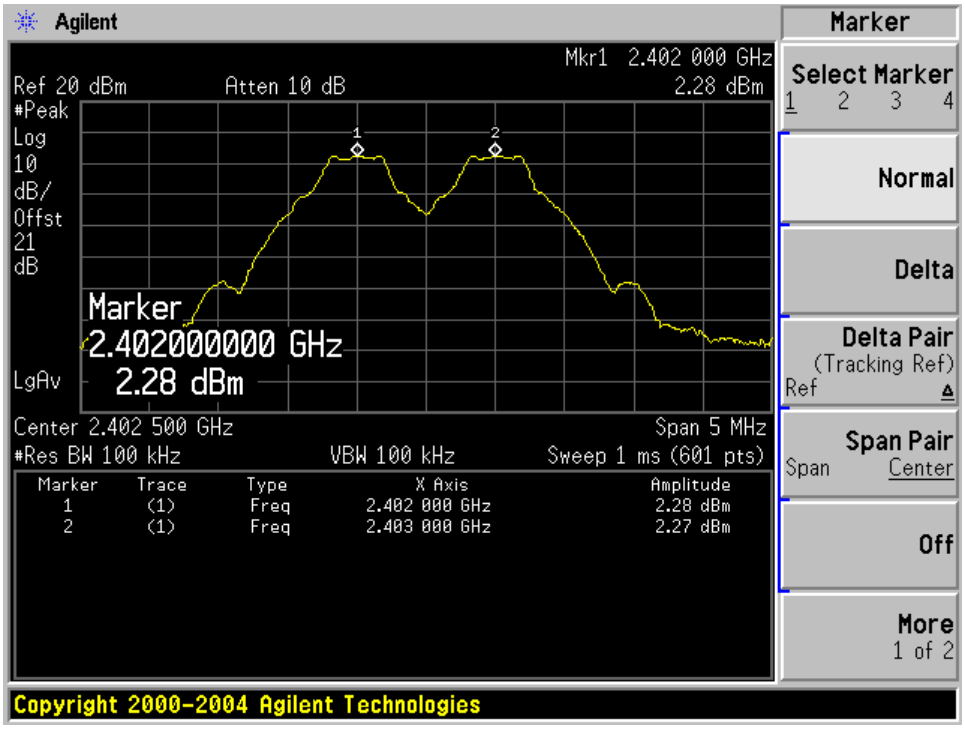
**The testing was performed by Victor Zhang on 2008-09-02*

9.6 Measurement Results

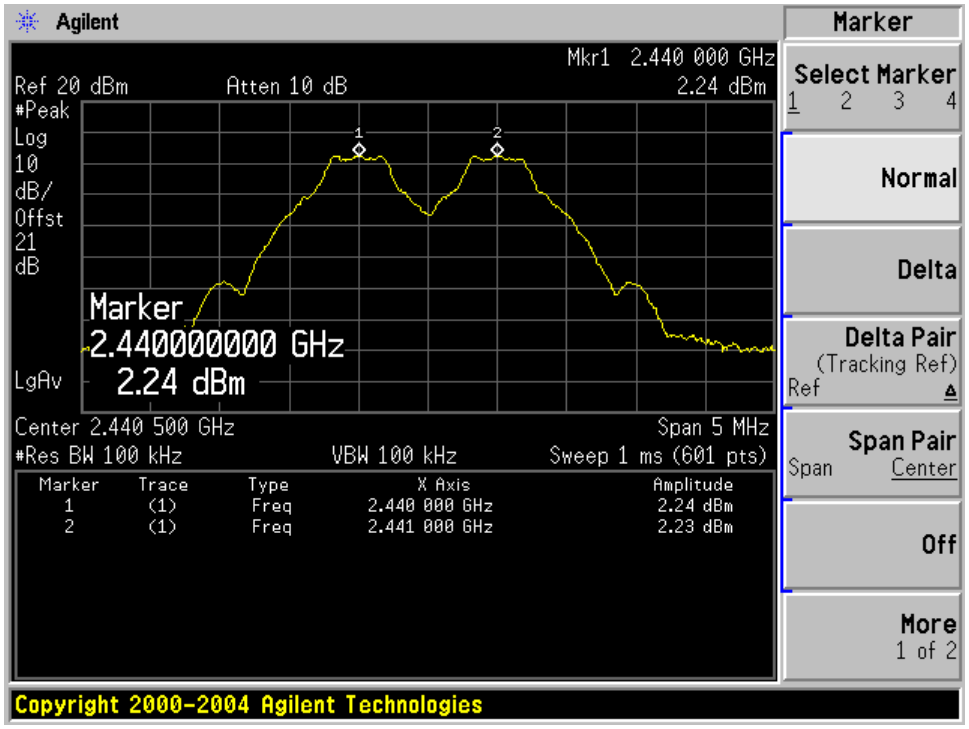
Channel	Frequency (MHz)	Channel Separation (kHz)	Limit > 20 dB BW (kHz)
Low	2402	1000	709.8 14
Mid	2441	1000	738.7 05
High	2480	1000	745.8 70

Please refer to the following plots.

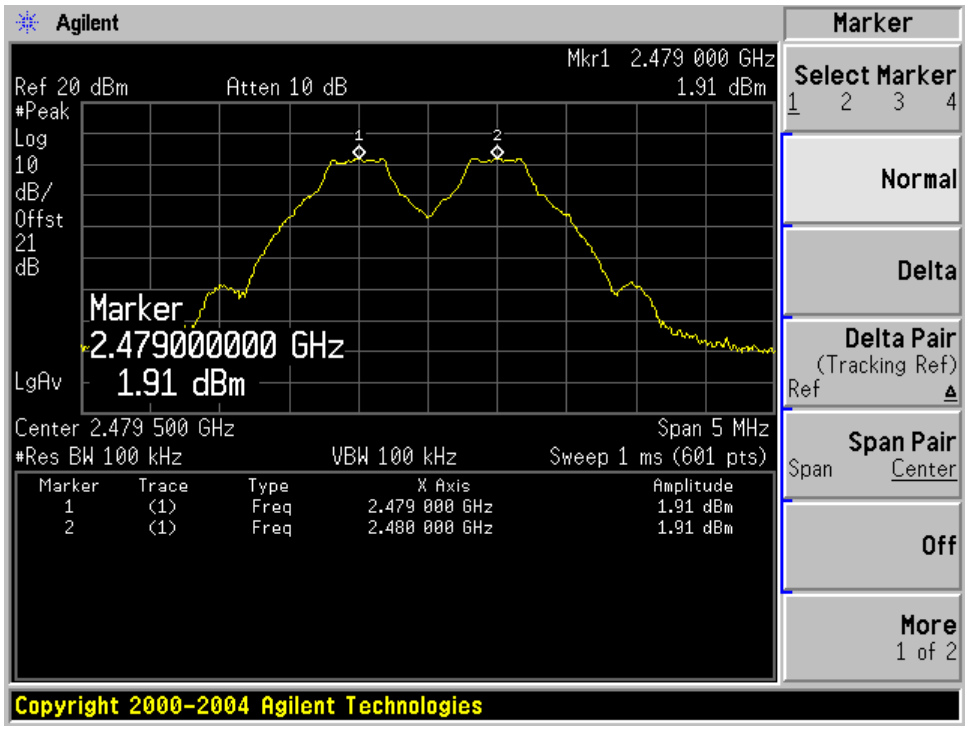
Low Channel



Middle Channel



High Channel



10 §15.247 (a) (1) (iii) - NUMBER OF HOPPING FREQUENCIES USED

10.1 Applicable Standard

According to §15.247(a) (1) (iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

10.2 Measurement Procedure

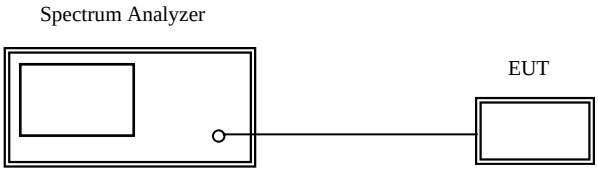
1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Position the EUT on the bench without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low 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 the SA on Max-Hold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
4. Set the SA on View mode and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

10.3 Test Equipment

Manufacturer	Description	Model Number	Serial Number	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

10.4 Test Setup Diagram



10.5 Environmental Conditions

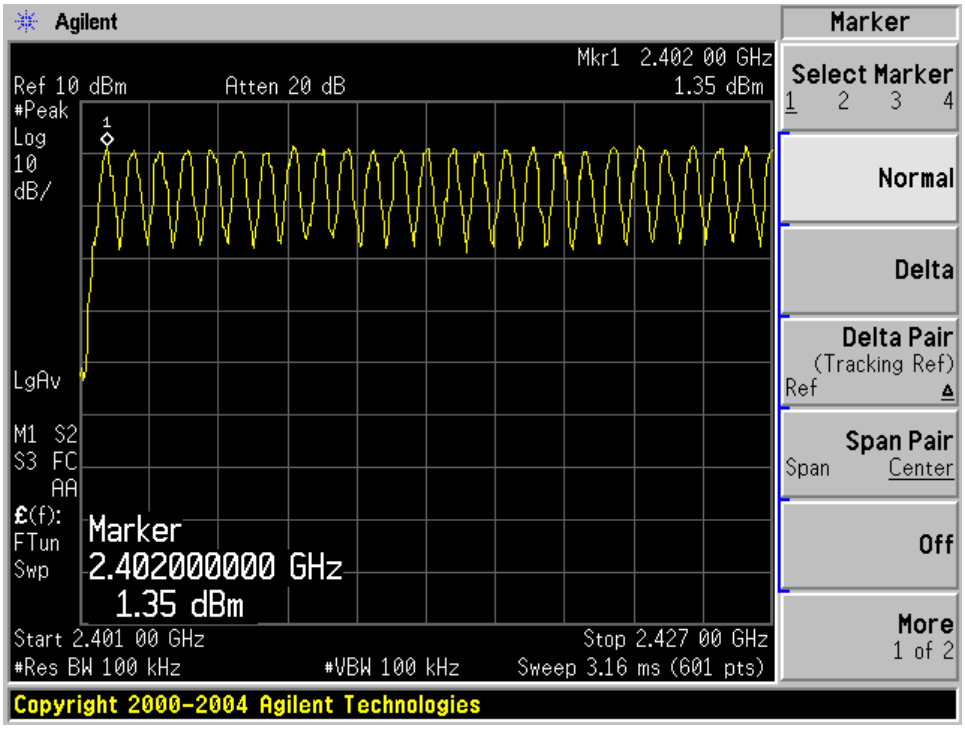
Temperature:	23 ºC
Relative Humidity:	47 %
ATM Pressure:	101.7 kPa

**The testing was performed by Victor Zhang on 2008-08-28.*

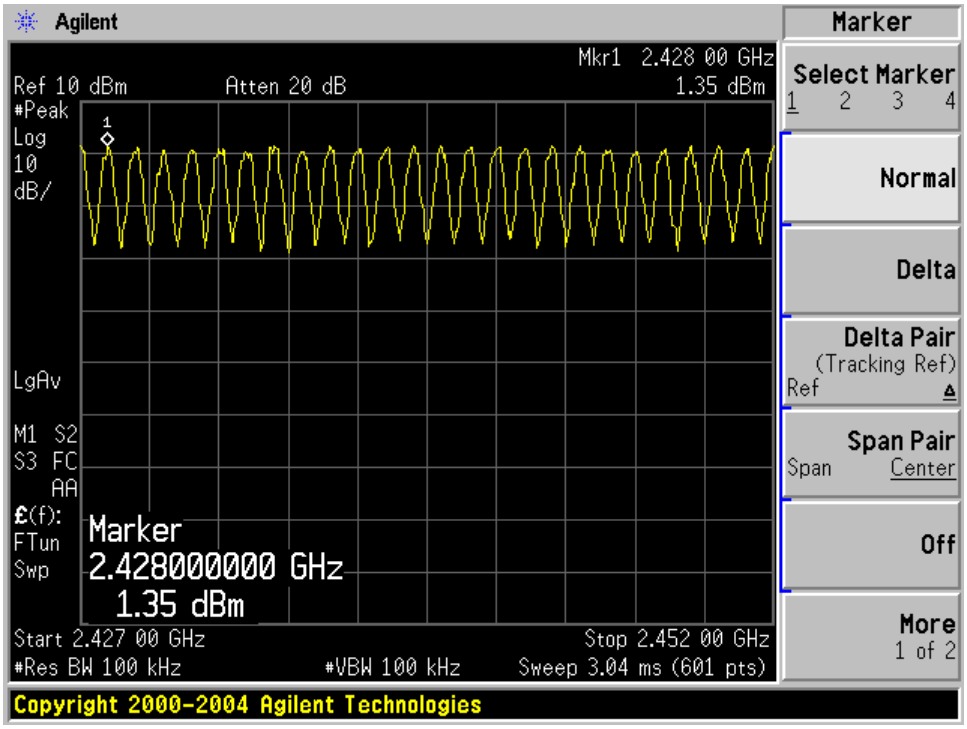
10.6 Test Result:

79 channels

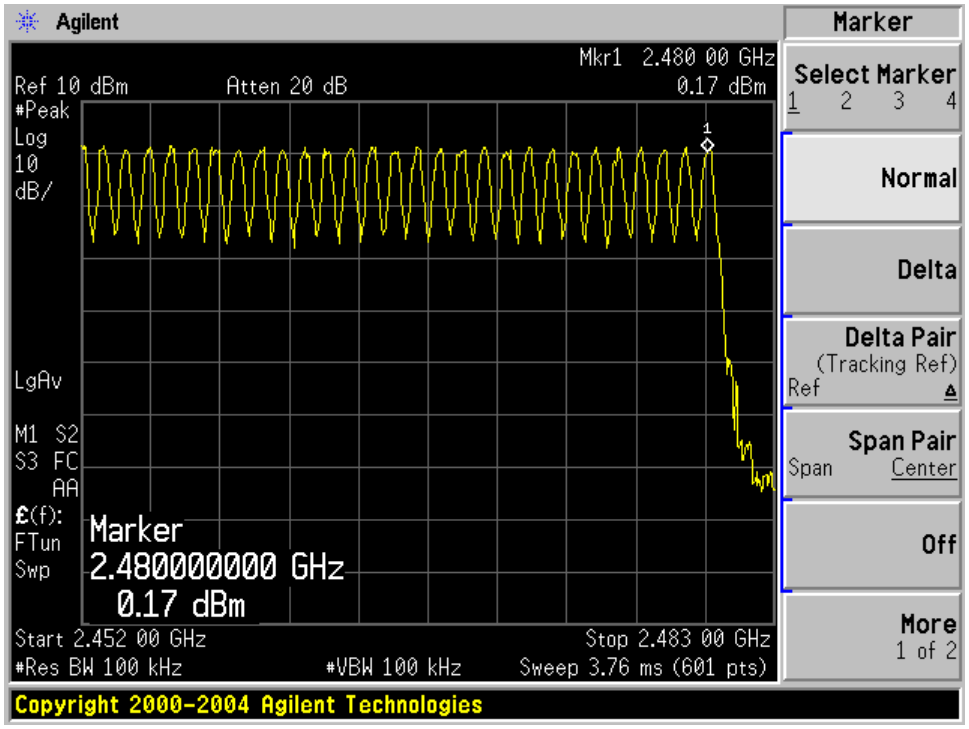
2402 MHz - 2427 MHz



2427 MHz - 2452 MHz



2452 MHz - 2480 MHz



11 §15.247(a) (1) (iii) - DWELL TIME

11.1 Applicable Standard

According to §15.247 (a)(1)(iii), 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.

11.2 Measurement Procedure

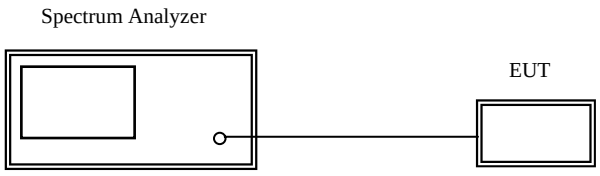
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.

11.3 Test Equipment

Manufacturer	Description	Model No.	Serial No.	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

11.4 Test Setup Diagram



11.5 Environmental Conditions

Temperature:	23 ºC
Relative Humidity:	47 %
ATM Pressure:	101.7 kPa

**The testing was performed by Victor Zhang on 2008-08-28.*

11.6 Test Results:

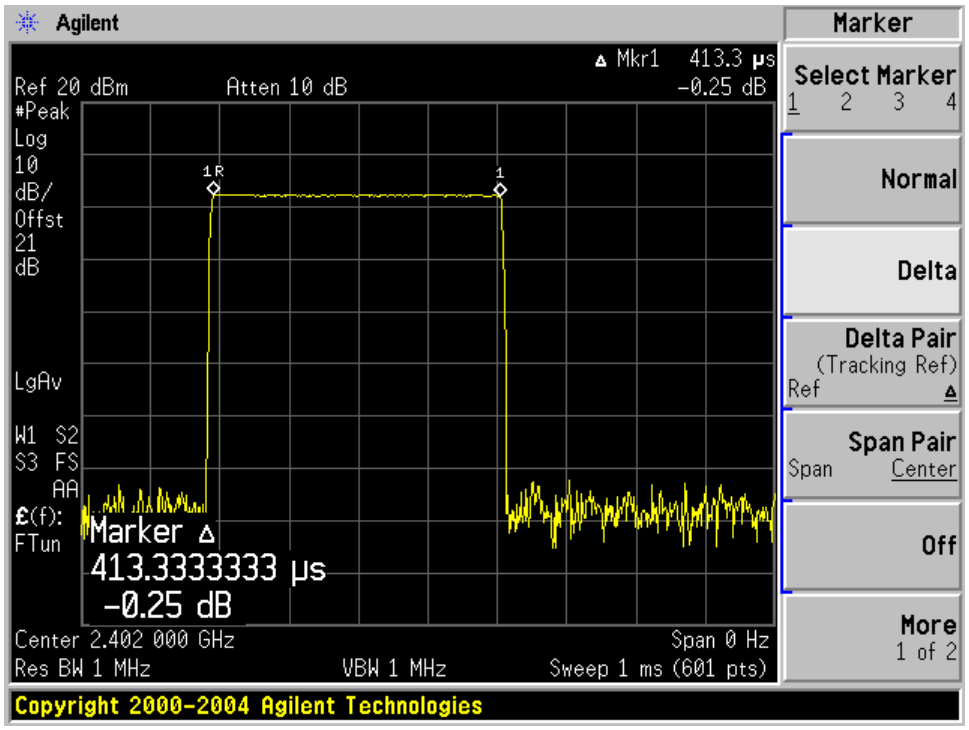
DH1: Packet Size = 27 byte

Channel	Pulse wide (msec)	Dwell time (sec)	Limit (sec)	Results
Low	0.413	0.1322	0.4	Pass
Mid	0.413	0.1322	0.4	Pass
High	0.417	0.1334	0.4	Pass

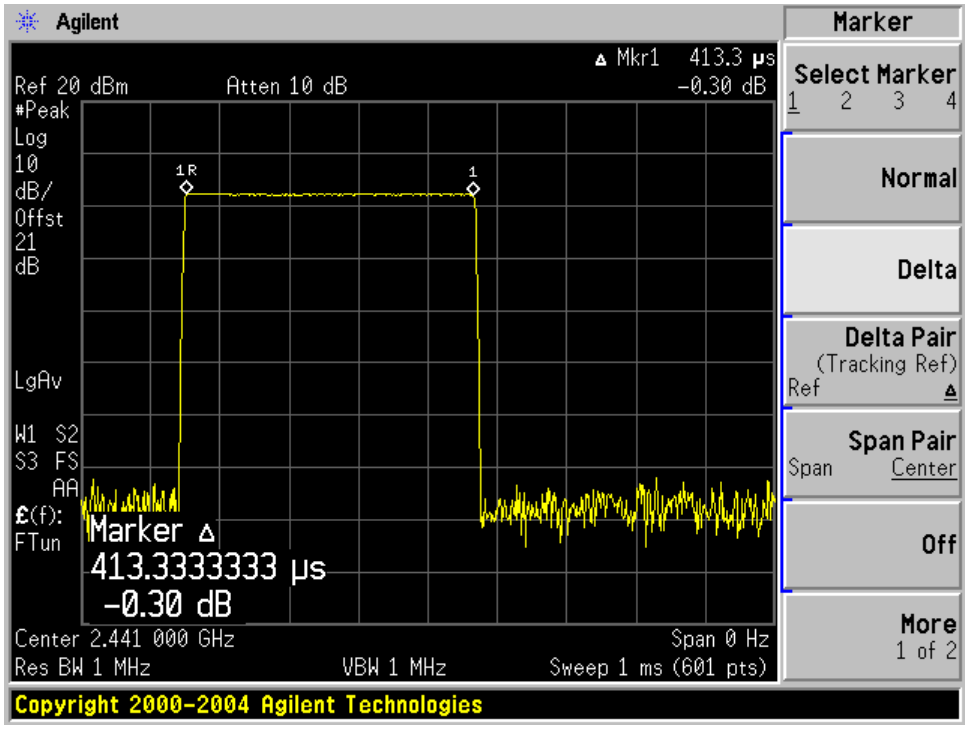
Note: Dwell time = Pulse time*(1600/2/79)*31.6S

Please refer to following plots:

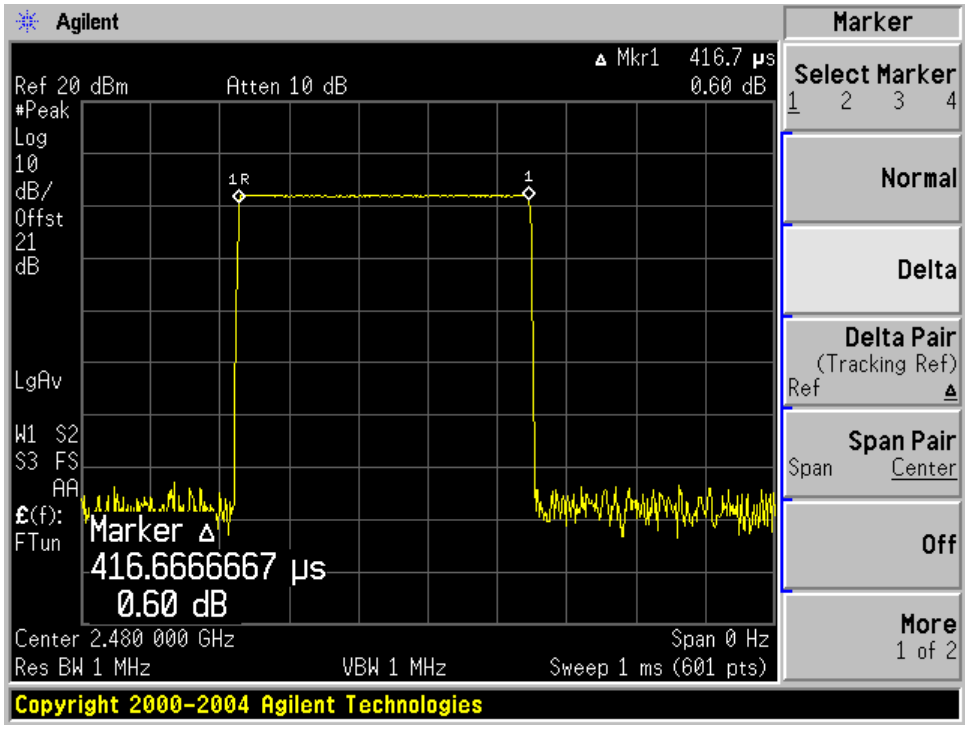
Plot 1: Pulse Width at Low Channel (DH1)



Plot 2: Pulse Width at Middle Channel (DH1)



Plot 3: Pulse Width at High Channel (DH1)



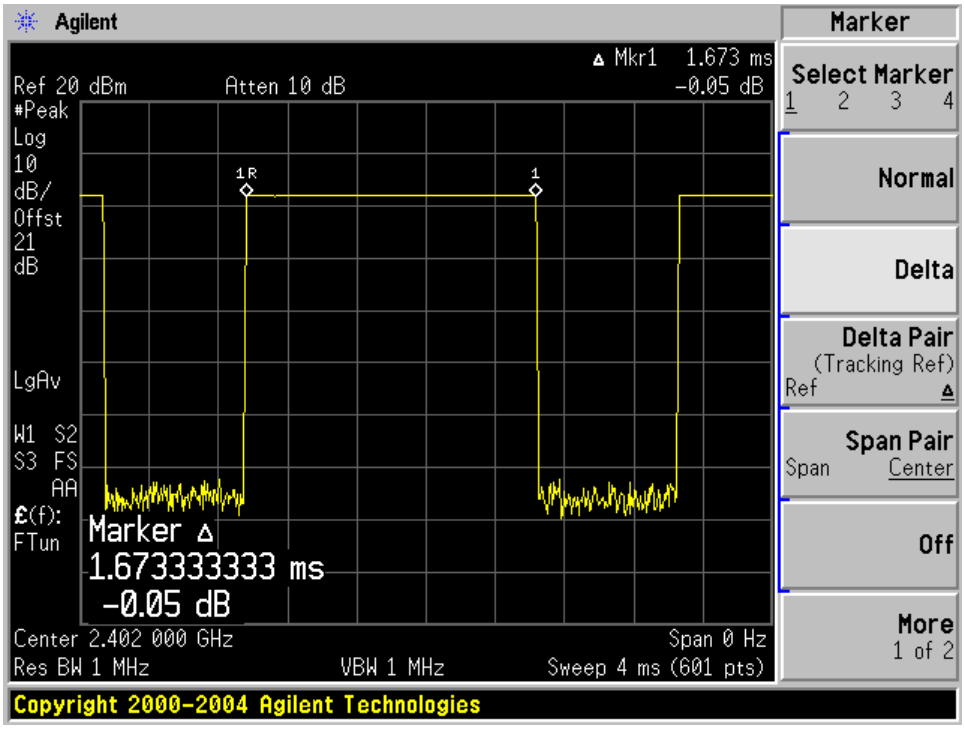
DH3: Packet Size = 183 bytes

Channel	Pulse wide (msec)	Dwell time (sec)	Limit (sec)	Results
Low	1.673	0.268	0.4	Pass
Mid l	1.667	0.267	0.4	Pass
High	1.673	0.268	0.4	Pass

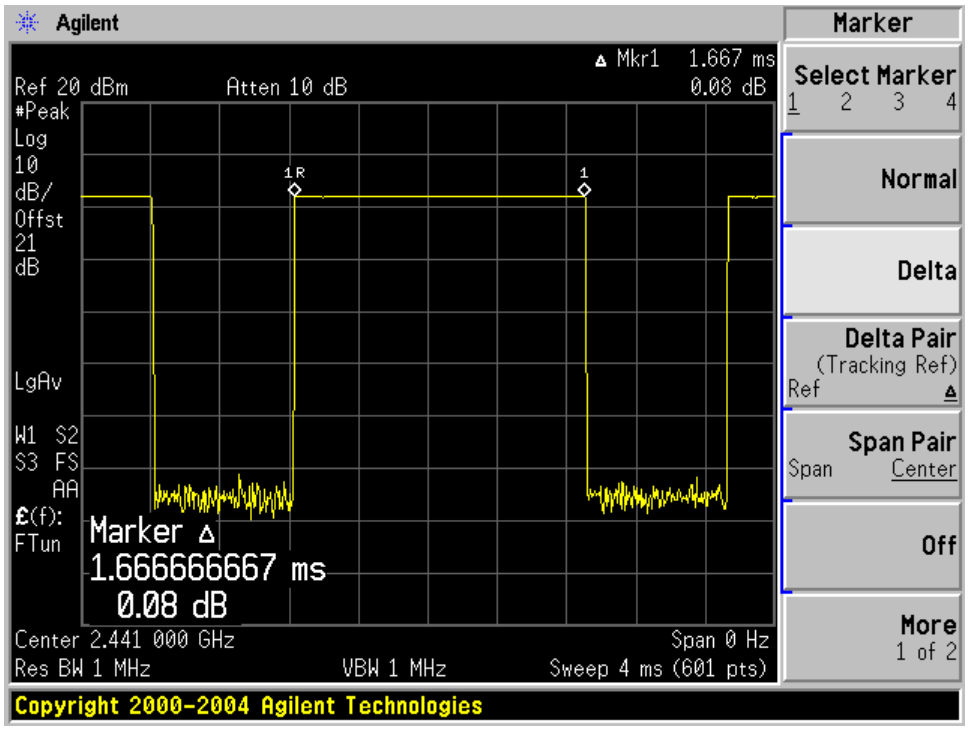
Note: Dwell time = Pulse time*(1600/4/79)*31.6S

Please refer to following plots:

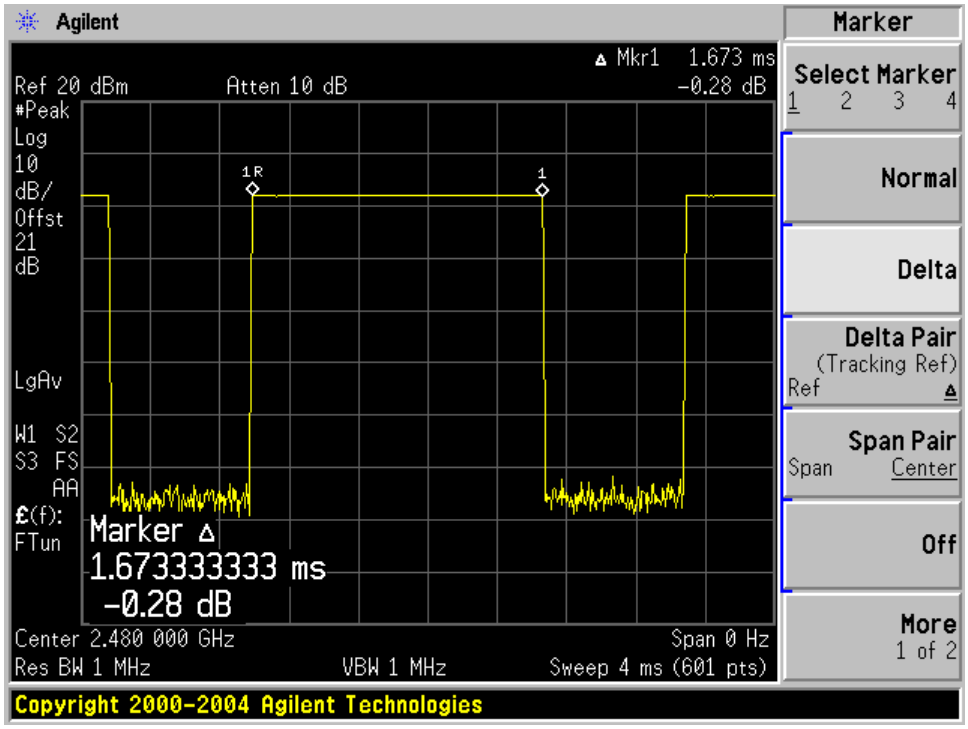
Plot 4: Pulse Width at Low Channel (DH3)



Plot 5: Pulse Width at Middle Channel (DH3)



Plot 6: Pulse Width at High Channel (DH3)



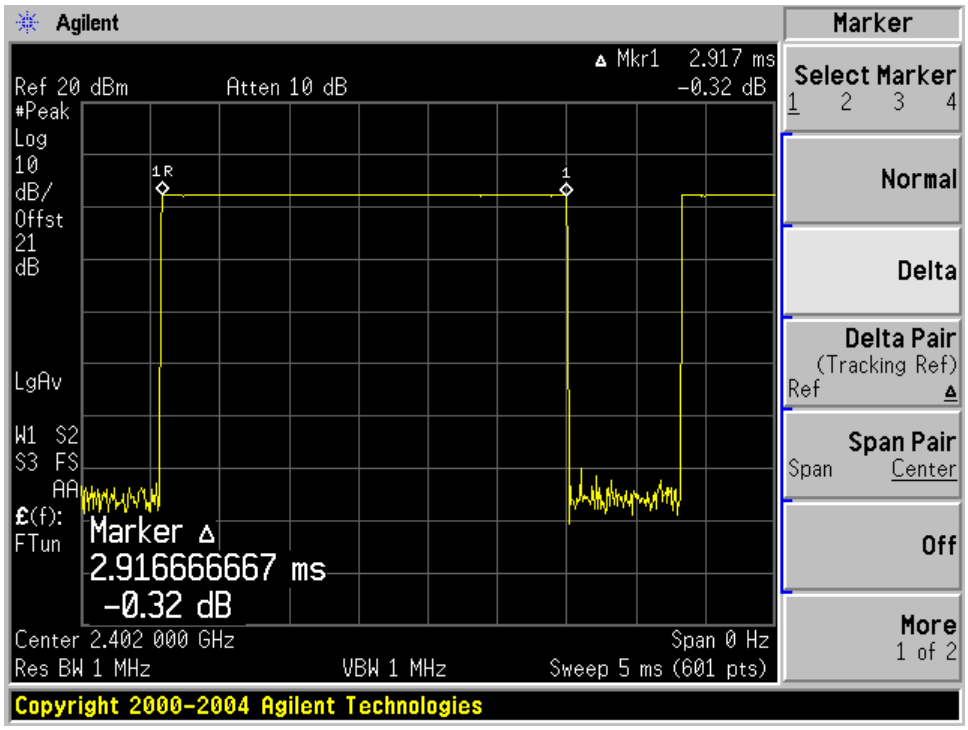
DH5: Packet Size = 339 bytes

Channel	Pulse wide (msec)	Dwell time (sec)	Limit (sec)	Results
Low	2.917	0.3264	0.4	Pass
Mid	2.917	0.3243	0.4	Pass
High	2.925	0.3243	0.4	Pass

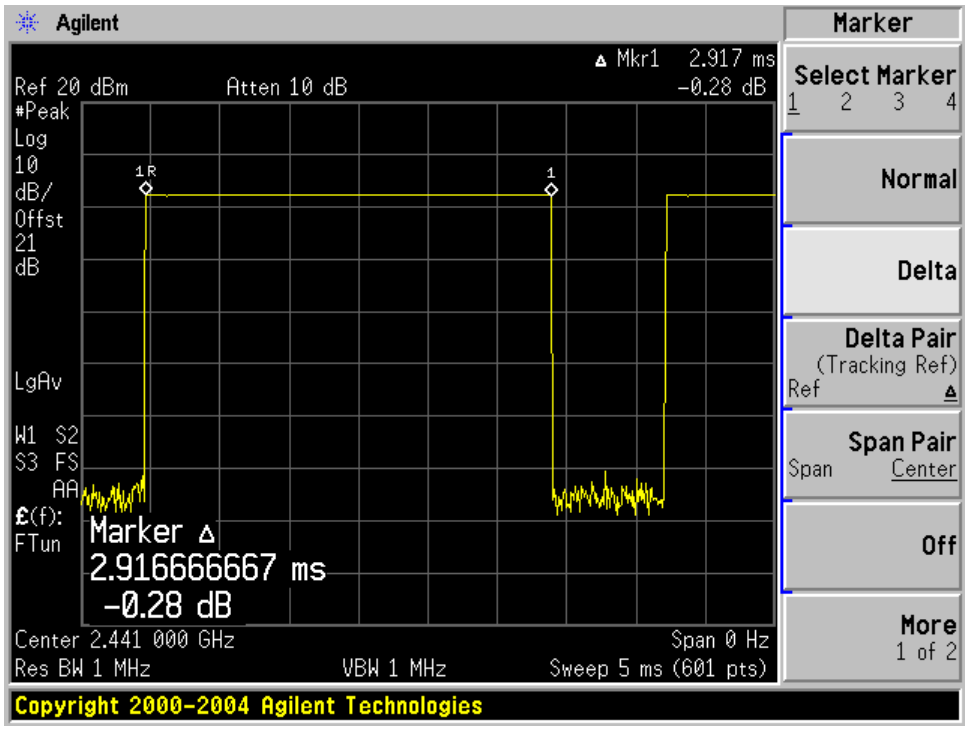
Note: Dwell time = Pulse time*(1600/6/79)*31.6S

Please refer to following plots:

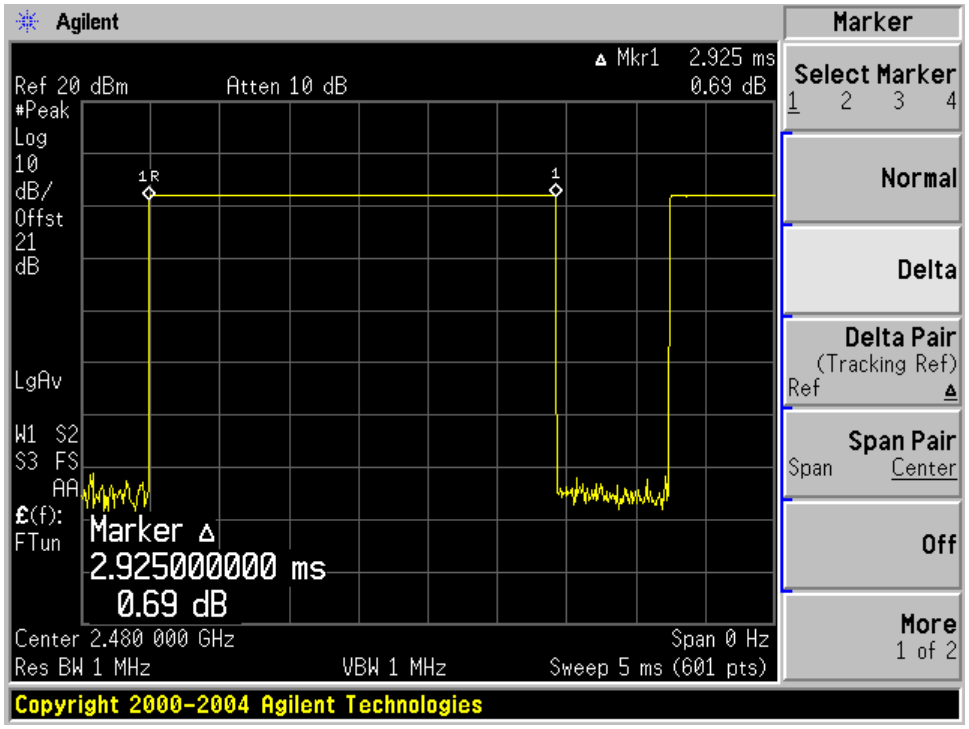
Plot 7: Pulse Width at Low Channel (DH5)



Plot 8: Pulse Width at Middle Channel (DH5)



Plot 9: Pulse Width at High Channel (DH5)



12 §15.247(B) (1) - MAXIMUM PEAK OUTPUT POWER

12.1 Applicable Standard

According to §15.247(b) (1), for frequency hopping systems in the 2400-2483.5MHz band employing at least 75 hopping channels, and all direct sequence systems, the maximum peak output power of the transmitter shall not exceed 1 Watt. For all other frequency hopping system in the 2400 – 2483.5 MHz band, the maximum peak output power of the transmitter shall not exceed 0.125 Watt.

12.2 Measurement Procedure

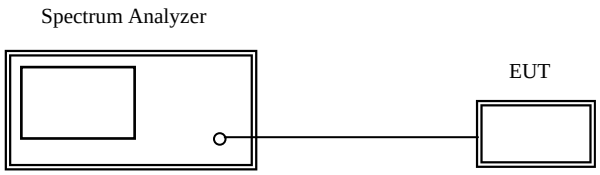
1. Place the EUT on the turntable and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

12.3 Test Equipment

Manufacturer	Description	Model Number	Serial Number	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

12.4 Test Setup Diagram



12.5 Environmental Conditions

Temperature:	23 ºC
Relative Humidity:	47 %
ATM Pressure:	101.7 kPa

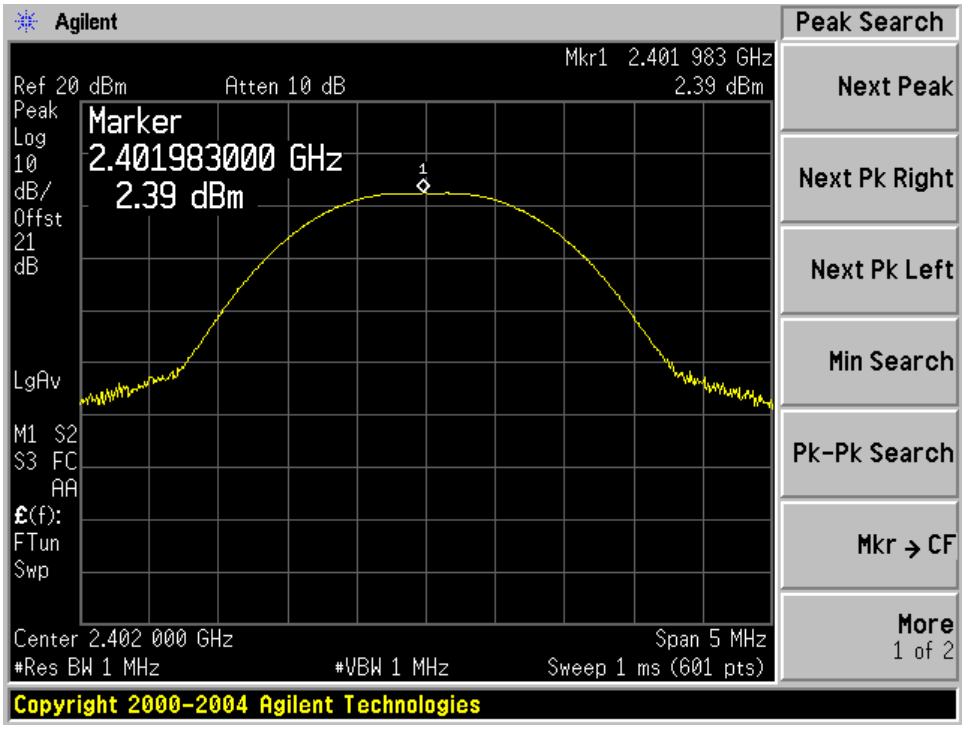
**The testing was performed by Victor Zhang on 2008-08-28.*

12.6 Test Result

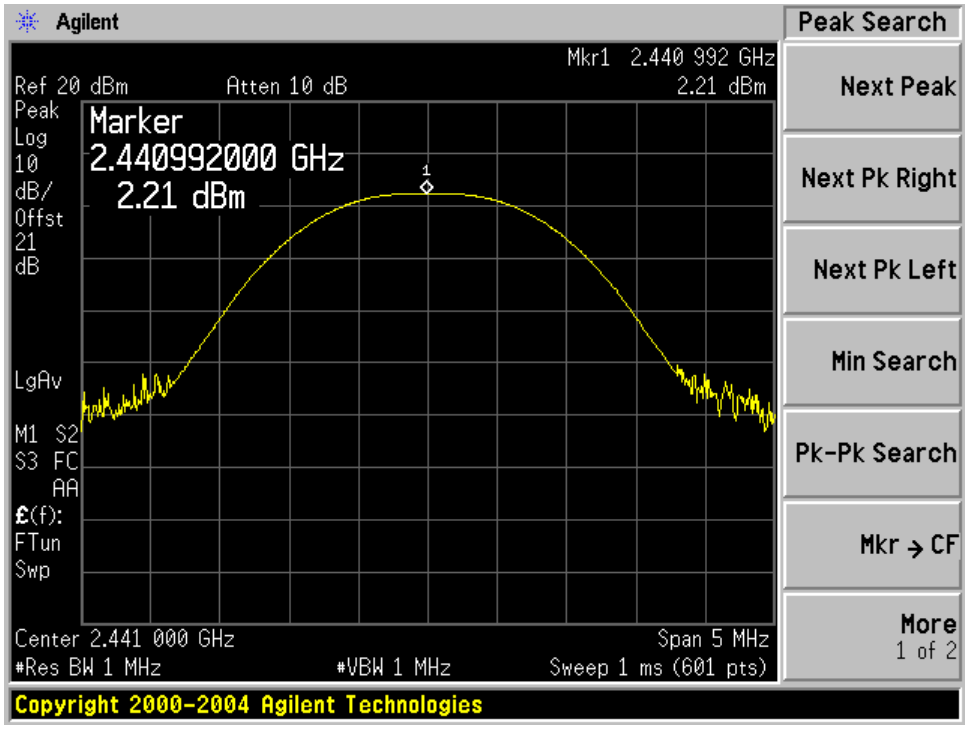
Channel	Frequency (MHz)	Max Peak Output Power		Limit (mw)	Results
		(dBm)	(mw)		
Low	2402	2.39	1.7338	1000	Compliant
Mid	2441	2.21	1.6634	1000	Compliant
High	2480	1.70	1.4791	1000	Compliant

Please see the following plots

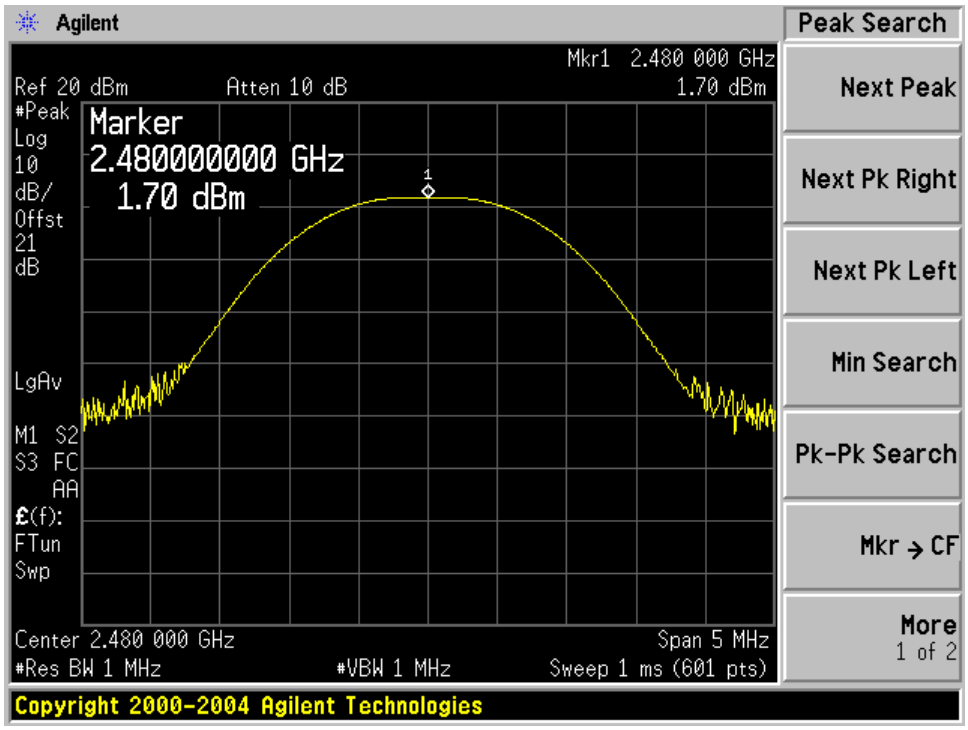
Low Channel



Middle Channel



High Channel



13 §15.247 (d) - 100 KHz BANDWIDTH OF BAND EDGES

13.1 Applicable Standard

According to §15.247(c), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required.

13.2 Measurement Procedure

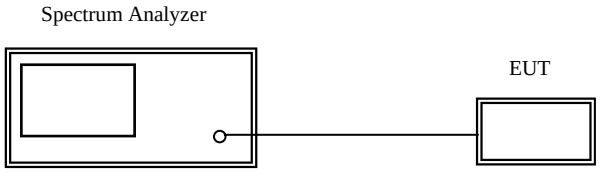
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then 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.

13.3 Test Equipment

Manufacturer	Description	Model Number	Serial Number	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2008-04-28

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

13.4 Test Setup Diagram



13.5 Environmental Conditions

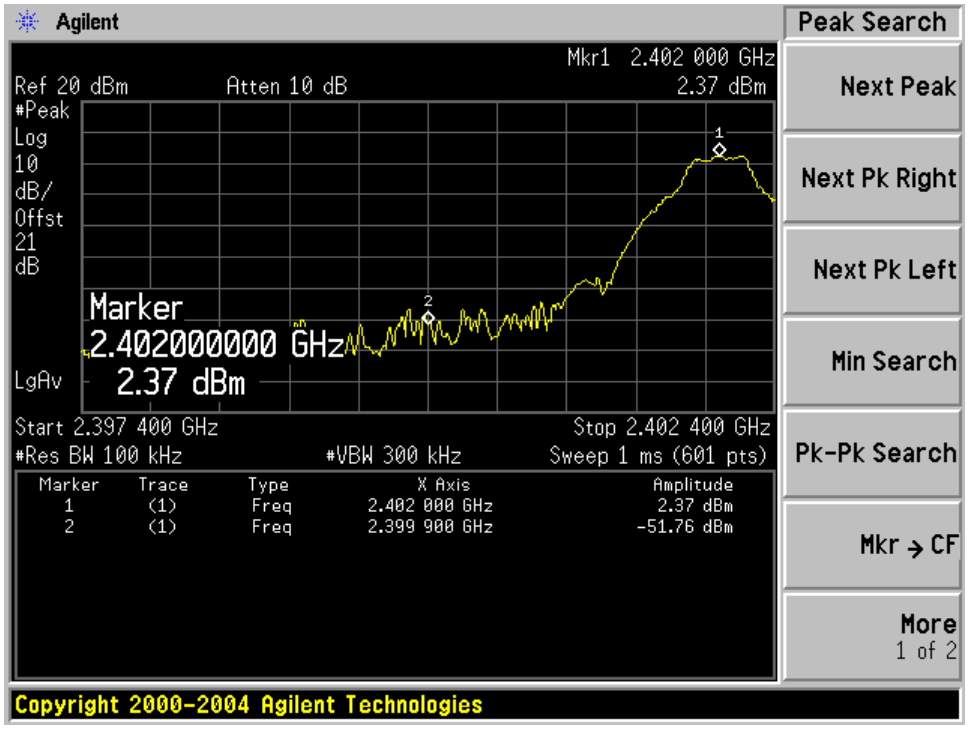
Temperature:	23 ºC
Relative Humidity:	47 %
ATM Pressure:	101.7 kPa

**The testing was performed by Victor Zhang on 2008-08-28.*

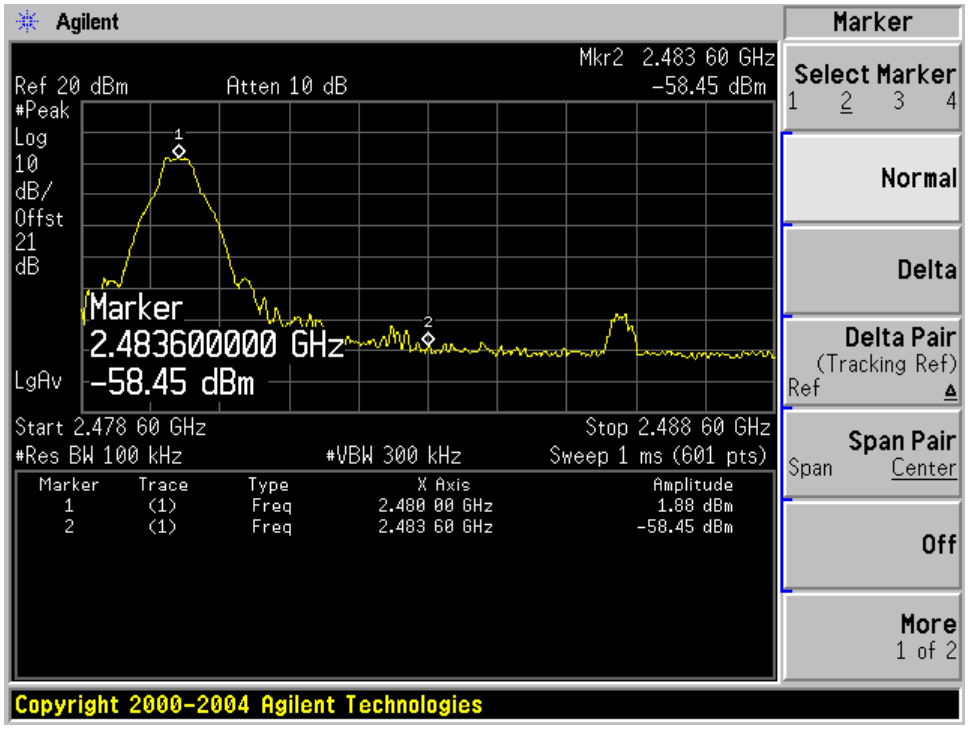
13.6 Test Result

Please refer to the following plots for results.

Lowest Channel



Highest Channel



14 § 15.247 (i) and § 2.1091 - RF EXPOSURE

14.1 Applicable Standard

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.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

14.2 MPE Prediction

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S = PG/4\pi R^2$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 2.39(dBm)
Maximum peak output power at antenna input terminal: 1.7338 (mw)
Prediction distance: 20 (cm)
Predication frequency: 2402 (MHz)
Antenna Gain (typical): 0.0 (dBi)
Antenna gain: 1.0 (numeric)
Power density at predication frequency at 20 cm: 0.000345(mW/cm^2)

MPE limit for uncontrolled exposure at prediction frequency: 1.0 (mW/cm^2)

14.3 Test Result

The EUT is a mobile device. The power density level at 20 cm is 0.000345mW/cm², which is below the uncontrolled exposure limit of 1.0mW/cm² at 2402 MHz.