



NVLAP LAB CODE 200707-0



FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

GREAT WELL ELECTRONIC LIMITED

Industrial Area Gangtou Chenwu Village Guanlan Road Guanlan Town Baoan
District Shenzhen, Guangdong, China

FCC ID: RR7BTCK-006B

| | |
|---|--|
| This Report Concerns: | Equipment Type: |
| <input checked="" type="checkbox"/> Original Report | Bluetooth Car Kit |
| Test Engineer: | Andy Yan |
| Report No.: | RSZ07080803 |
| Test Date: | 2007-08-16 |
| Report Date: | 2007-08-27 |
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *GREAT WELL ELECTRONIC LIMITED* 's product, model number: GW-BTCK-006/VRBT200V or the "EUT" as referred to in this report is a Bluetooth Car Kit, which measures approximately: 12.0 cm L x 9.0 cm W x 4.7 cm H, rated input voltage: DC 3.7V Battery.

The series products, model name: GW-BTCK-006/VRBT200V only appearance is different. So, we select GW-BTCK-006 to test.

** The test data gathered are from production sample, serial number: 0708007 provided by the manufacturer, we receive the EUT on 2007-08-08.*

Objective

This Type approval report is prepared on behalf of *GREAT WELL ELECTRONIC 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, 15.209 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. 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>.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

EUT Exercise Software

N/A.

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.

Host System Configuration List and Details

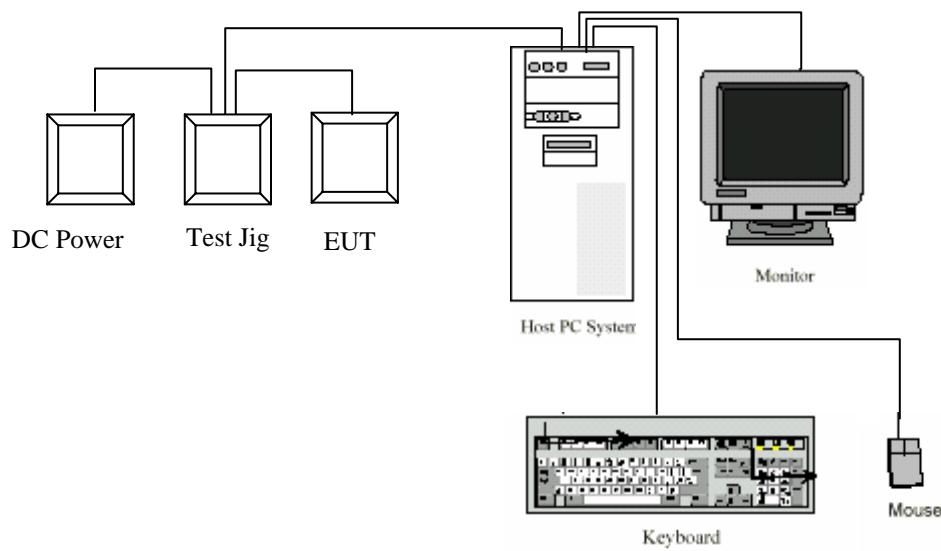
| Manufacturer | Description | Model | Serial Number | FCC ID |
|--------------|-------------|-------------------|--------------------------|--------|
| DELL | Motherboard | OWC297 | CN-OWC297-70821-566-02BR | DoC |
| DELL | Power | NPS-250KB D | CN-0H2678-17972-56E8NBM | DoC |
| Seagate | Hard Disk | ST340014A | 5JXK3NAD | DoC |
| DELL | 3.5' Floppy | N/A | CN-0N8893-69802-54Q-02OZ | DoC |
| Lite-ON | CD-Rom | LTN-489S | N/A | DoC |
| Intel | Ethernet | PRO 10/100 VE | N/A | DoC |
| Intel | CPU | Celeron D-2533 | N/A | DoC |
| ProMOS | Memory | V826632K24SATG-C0 | 0525-K1933700 | DoC |
| DELL | PC | DELL 170L | CN-0TC670-70821-560-F4WQ | DoC |

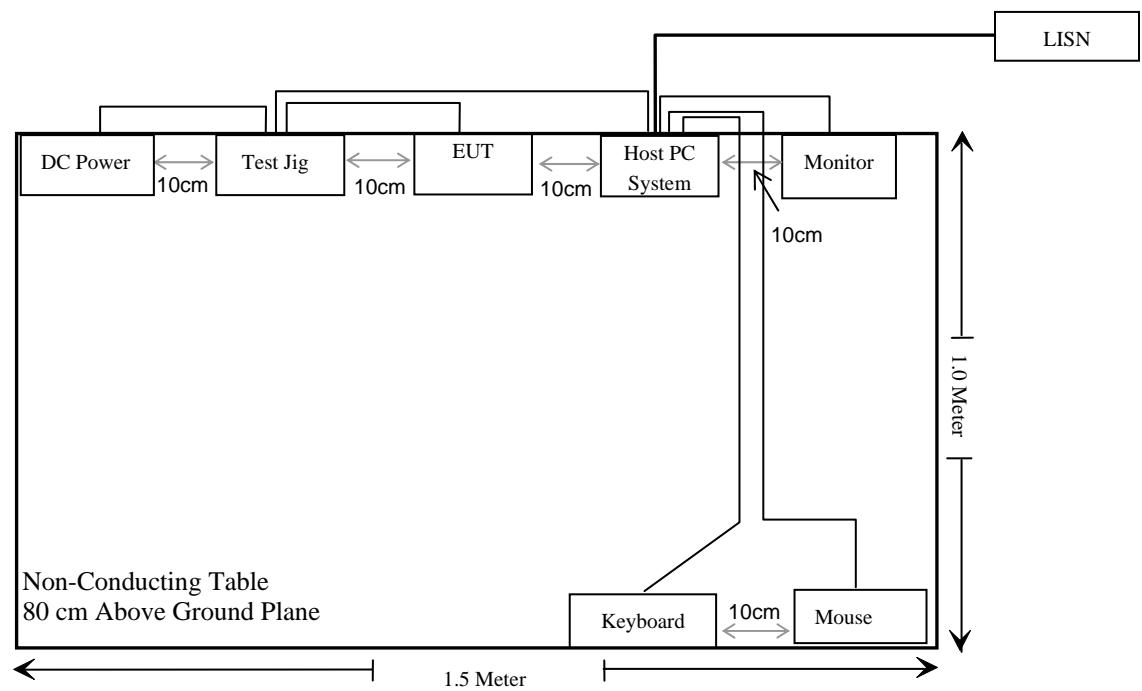
Local Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number | FCC ID |
|--------------|-----------------|---------|-------------------------|--------|
| DELL | Keyboard | SK-8110 | CN07N244-71616-56I-1I0O | DoC |
| DELL | Mouse | M071KC | 519046820 | DoC |
| DELL | LCD Monitor | 1505FP | Y4287-7168-574-GBSH | DoC |
| Zhaoxin | DC Power Supply | T-S076 | 20030842184 | DoC |

External I/O Cable

| Cable Description | Length (M) | From Port | To |
|---------------------------------|------------|------------------|---------|
| Shielded Detachable K/B Cable | 1.5 | K/B Port /Host | K/B |
| Shielded Detachable Mouse Cable | 1.5 | Mouse Port /Host | Mouse |
| Shielded Detachable VGA Cable | 1.5 | VGA Port/Host | Monitor |
| DC Power Cable | 0.8 | DC Power | EUT |
| RS 232 Cable | 0.5 | Test Jig | Host |
| Parell Port Cable | 0.5 | Test Jig | Host |

Configuration of Test Setup

Block Diagram of Test Setup

SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|------------------------------------|----------------------------------|-----------|
| §1.1310, §2.1091 §15.247 (i) | RF Exposure | Compliant |
| §15.203 | Antenna Requirement | Compliant |
| §15.107 (a) | Conducted Emission | N/A |
| §15.205 | Restricted Band | Compliant |
| §15.205, §15.209, §15.247(d) | Radiated Emission | 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 testing | Compliant |

§15.247 (i), §1.1310, §2.1091 - RF EXPOSURE**Limit**

According to §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

Test Data

Prediction of MPE limit at a given distance

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

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW) .

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally **numeric** gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Maximum peak output power at antenna input terminal: 1.49 (dBm)

Maximum peak output power at antenna input terminal: 1.409 (mW)

Prediction distance: >20 (cm)

Prediction frequency: 2402 (MHz)

Antenna Gain (typical): 2 (dBi)

Antenna Gain (typical): 1.585

The worst case is power density at prediction frequency at 20 cm: 0.0004448 (mW/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mW/cm²)

0.0004448 (mW/cm²) < 1 (mW/cm²)

Result: Compliance at 20 cm distance.

§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 a component antenna, which, in accordance to the above sections, is considered sufficient to comply with the provisions of this section. Please see EUT photo for details.

Result: Compliant.

§15.205, §15.209, §15.247 - RADIATED EMISSIONS

Applicable Standard

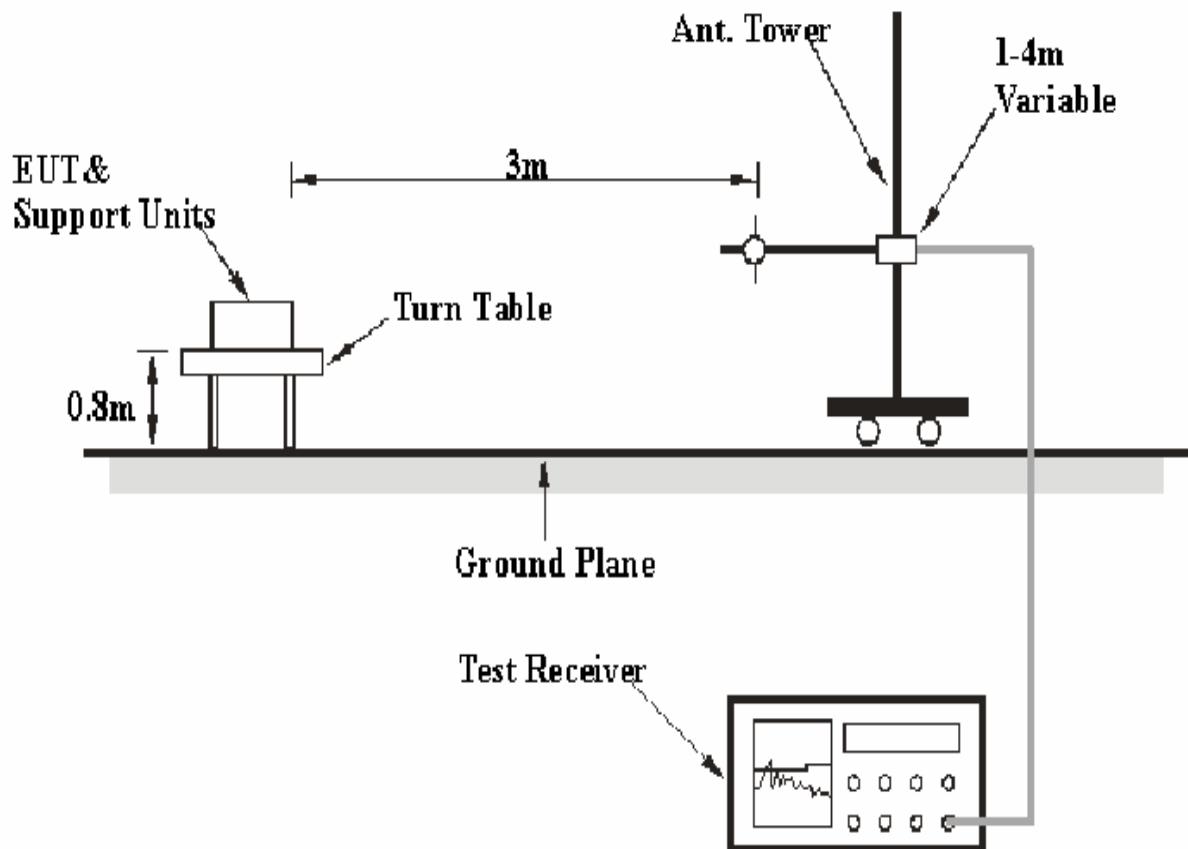
According to FCC §15.247 (d)

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 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.

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 host PC 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:

| <u>Frequency Range</u> | <u>RBW</u> | <u>Video B/W</u> |
|-------------------------------|-------------------|-------------------------|
| 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 | 2006-11-15 | 2007-11-15 |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 100035 | 2006-09-29 | 2007-09-29 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-1 | 2007-08-14 | 2008-08-14 |
| HP | Amplifier | 8449B | 3008A00277 | 2006-09-29 | 2007-09-29 |
| Sunol Sciences | Horn Antenna | DRH-118 | A052604 | 2006-09-25 | 2007-09-25 |
| Agilent | Spectrum Analyzer | 8564E | 3943A01781 | 2006-11-22 | 2007-11-22 |

*** 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 host PC 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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

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:

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

Test Results Summary

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

Transmitting mode: 7.1 dB at 38.184775 MHz in the **Vertical** polarization, **for 30 MHz-1000MHz**

Transmitting mode: 10.53 dB at 4804.0 MHz in the **Horizontal** polarization, **for above 1GHz (Low Channel)**

Transmitting mode: 11.31 dB at 4882.0 MHz in the **Horizontal** polarization, **for above 1GHz (Middle Channel)**

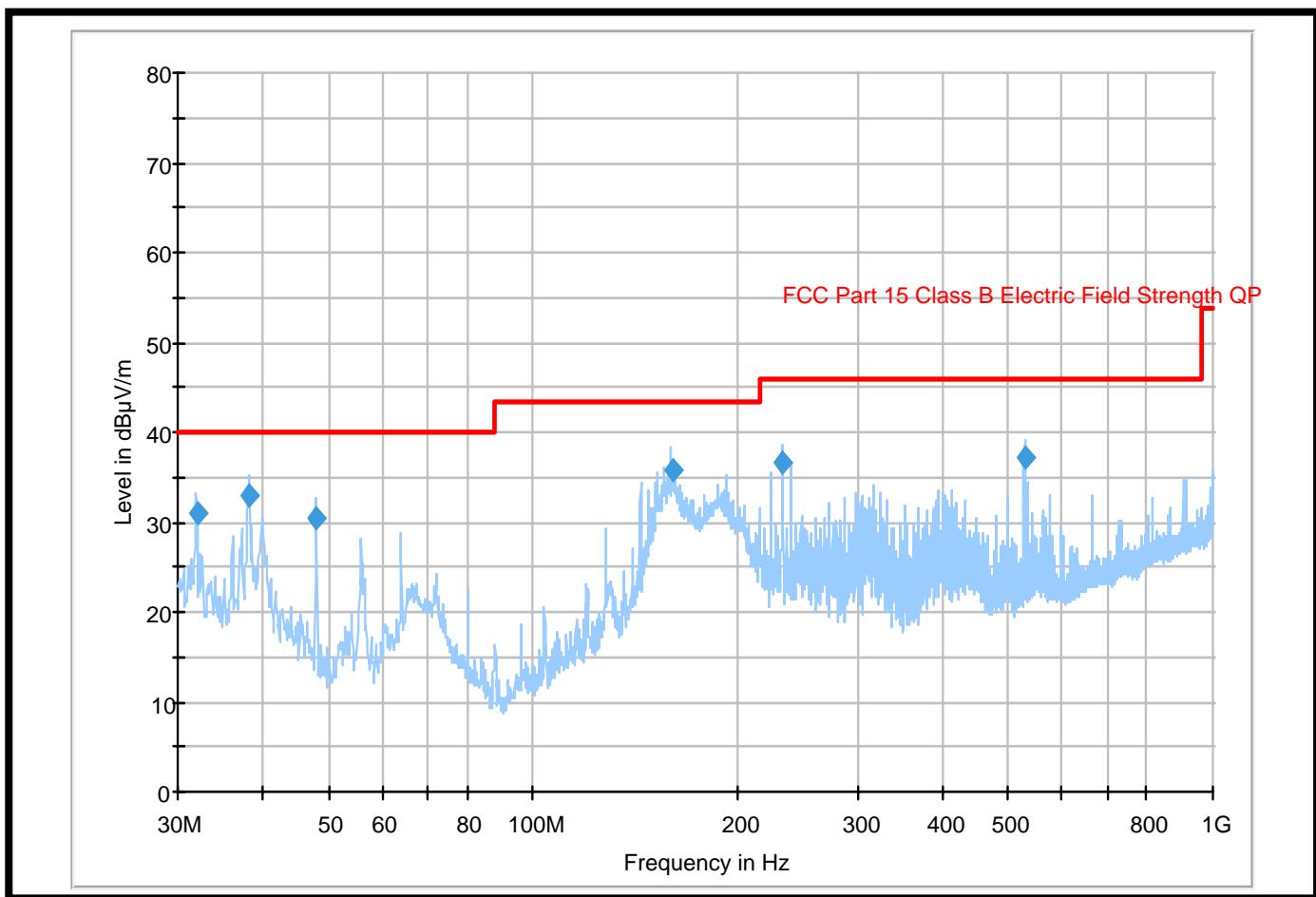
Transmitting mode: 1.93 dB at 4960.0 MHz in the **Horizontal** polarization, **for above 1GHz (High Channel)**

Test Data

Environmental Conditions

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

The testing was performed by Andy Yan on 2007-08-16

30-1000 MHz:

| Frequency (MHz) | Quasi-Peak (dB μ V/m) | Antenna Height (cm) | Polarity (H/V) | Turntable Position (deg) | Corr. (dB) | Limit (dB μ V/m) | Margin (dB) |
|-----------------|---------------------------|---------------------|----------------|--------------------------|------------|----------------------|-------------|
| 38.184775 | 32.9 | 389.0 | V | 91.0 | -9.5 | 40.0 | 7.1 |
| 160.141575 | 35.8 | 161.0 | H | 57.0 | -10.8 | 43.5 | 7.7 |
| 528.082175 | 37.3 | 101.0 | V | 3.0 | -3.5 | 46.0 | 8.7 |
| 32.014550 | 31.0 | 102.0 | V | 311.0 | -5.1 | 40.0 | 9.0 |
| 233.143925 | 36.6 | 99.0 | H | 54.0 | -10.6 | 46.0 | 9.4 |
| 48.016625 | 30.4 | 115.0 | V | 237.0 | -15.5 | 40.0 | 9.6 |

Above 1GHz:

| Freq. (MHz) | Meter Reading (dBuV) | Detector PK/QP/AV | Direction Degree | Ant. Height (m) | Polar H / V | Antenna Factor (dB/m) | Cable Loss (dB) | Pre- Amp. Gain (dB) | Corr. Amp. (dBuV/m) | FCC Part 15.247/209 | | |
|-----------------------|----------------------------|----------------------|---------------------|-----------------------|----------------|-----------------------------|-----------------------|------------------------------|---------------------------|---------------------|----------------|----------|
| | | | | | | | | | | Limit (dBuV/m) | Margin (dB) | Remarks |
| Low Channel | | | | | | | | | | | | |
| 2402 | 90.52 | PK | 90 | 1.0 | H | 30.6 | 3.61 | 35 | 89.73 | | | Fund. |
| 2402 | 87.63 | AV | 45 | 1.0 | H | 30.6 | 3.61 | 35 | 86.84 | | | Fund. |
| 2402 | 89.45 | PK | 90 | 1.0 | V | 30.6 | 3.61 | 35 | 88.66 | | | Fund. |
| 2402 | 80.97 | AV | 45 | 1.0 | V | 30.6 | 3.61 | 35 | 80.18 | | | Fund. |
| 4804 | 36.83 | AV | 90 | 1.0 | V | 35.4 | 4.64 | 33.4 | 43.47 | 54 | 10.53 | harmonic |
| 4804 | 34.10 | AV | 90 | 1.0 | H | 36.6 | 4.64 | 33.4 | 41.94 | 54 | 12.06 | harmonic |
| 4804 | 48.84 | PK | 180 | 1.2 | H | 36.6 | 4.64 | 33.4 | 56.68 | 74 | 17.32 | harmonic |
| 1601 | 41.99 | AV | 180 | 1.2 | V | 26.0 | 2.77 | 35.0 | 35.76 | 54 | 18.24 | spurious |
| 4804 | 48.97 | PK | 180 | 1.2 | V | 35.4 | 4.64 | 33.4 | 55.61 | 74 | 18.39 | harmonic |
| 1601 | 40.65 | AV | 180 | 1.2 | H | 26.5 | 2.77 | 35.0 | 34.92 | 54 | 19.08 | spurious |
| 1601 | 55.82 | PK | 45 | 1.2 | V | 26.0 | 2.77 | 35.0 | 49.59 | 74 | 24.41 | spurious |
| 1601 | 52.67 | PK | 45 | 1.2 | H | 26.5 | 2.77 | 35.0 | 46.94 | 74 | 27.06 | spurious |
| Middle Channel | | | | | | | | | | | | |
| 2441 | 91.88 | PK | 60 | 1.4 | V | 30.6 | 3.61 | 35 | 91.09 | | | Fund. |
| 2441 | 86.45 | AV | 152 | 1.3 | V | 30.6 | 3.61 | 35 | 85.66 | | | Fund. |
| 2441 | 90.40 | PK | 128 | 1.5 | H | 30.6 | 3.61 | 35 | 89.61 | | | Fund. |
| 2441 | 84.93 | AV | 156 | 1.2 | H | 30.6 | 3.61 | 35 | 84.14 | | | Fund. |
| 4882 | 34.85 | AV | 243 | 1.4 | H | 36.6 | 4.64 | 33.4 | 42.69 | 54 | 11.31 | harmonic |
| 4882 | 34.85 | AV | 142 | 1.6 | V | 35.4 | 4.64 | 33.4 | 41.49 | 54 | 12.51 | harmonic |
| 1627.8 | 43.81 | AV | 135 | 1.3 | V | 26.0 | 2.77 | 35.0 | 37.58 | 54 | 16.42 | spurious |
| 4882 | 48.50 | PK | 153 | 1.5 | H | 36.6 | 4.64 | 33.4 | 56.34 | 74 | 17.66 | harmonic |
| 1627.8 | 42.30 | AV | 85 | 1.5 | H | 26.5 | 2.77 | 36.0 | 35.57 | 54 | 18.43 | spurious |
| 4882 | 48.61 | PK | 234 | 1.8 | V | 35.4 | 4.64 | 33.4 | 55.25 | 74 | 18.75 | harmonic |
| 1627.8 | 57.07 | PK | 265 | 1.4 | H | 26.5 | 2.77 | 36.0 | 50.34 | 74 | 23.66 | spurious |
| 1627.8 | 56.32 | PK | 156 | 1.4 | V | 26.0 | 2.77 | 35.0 | 50.09 | 74 | 23.91 | spurious |
| High Channel | | | | | | | | | | | | |
| 2480 | 87.18 | PK | 89 | 1.5 | H | 30.6 | 3.61 | 35 | 86.39 | | | Fund. |
| 2480 | 82.70 | AV | 65 | 1.5 | H | 30.6 | 3.61 | 35 | 81.91 | | | Fund. |
| 2480 | 88.60 | PK | 65 | 1.4 | V | 30.6 | 3.61 | 35 | 87.81 | | | Fund. |
| 2480 | 80.05 | AV | 65 | 1.6 | V | 30.6 | 3.61 | 35 | 79.26 | | | Fund. |
| 4960 | 44.32 | AV | 256 | 1.8 | H | 36.6 | 4.55 | 33.4 | 52.07 | 54 | 1.93 | harmonic |
| 4960 | 41.24 | AV | 142 | 1.5 | V | 35.4 | 4.55 | 33.4 | 47.79 | 54 | 6.21 | harmonic |
| 1653 | 43.15 | AV | 210 | 1.2 | V | 26.0 | 2.77 | 35.0 | 36.92 | 54 | 17.08 | spurious |
| 4960 | 49.05 | PK | 145 | 1.4 | H | 36.6 | 4.55 | 33.4 | 56.8 | 74 | 17.2 | harmonic |
| 1653 | 41.91 | AV | 156 | 1.2 | H | 26.5 | 2.77 | 35.0 | 36.18 | 54 | 17.82 | spurious |
| 4960 | 48.83 | PK | 142 | 1.4 | V | 35.4 | 4.55 | 33.4 | 55.38 | 74 | 18.62 | harmonic |
| 1653 | 56.78 | PK | 240 | 1.4 | V | 26.0 | 2.77 | 35.0 | 50.55 | 74 | 23.45 | spurious |
| 1.203 | 38.65 | AV | 324 | 1.2 | V | 23.8 | 2.5 | 36.0 | 28.95 | 54 | 25.05 | spurious |
| 1653 | 54.13 | PK | 128 | 1.5 | H | 26.5 | 2.77 | 35.0 | 48.4 | 74 | 25.6 | spurious |
| 1.203 | 51.96 | PK | 324 | 1.3 | V | 23.8 | 2.5 | 36.0 | 42.26 | 74 | 31.74 | spurious |

§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.

Test Data

Environmental Conditions

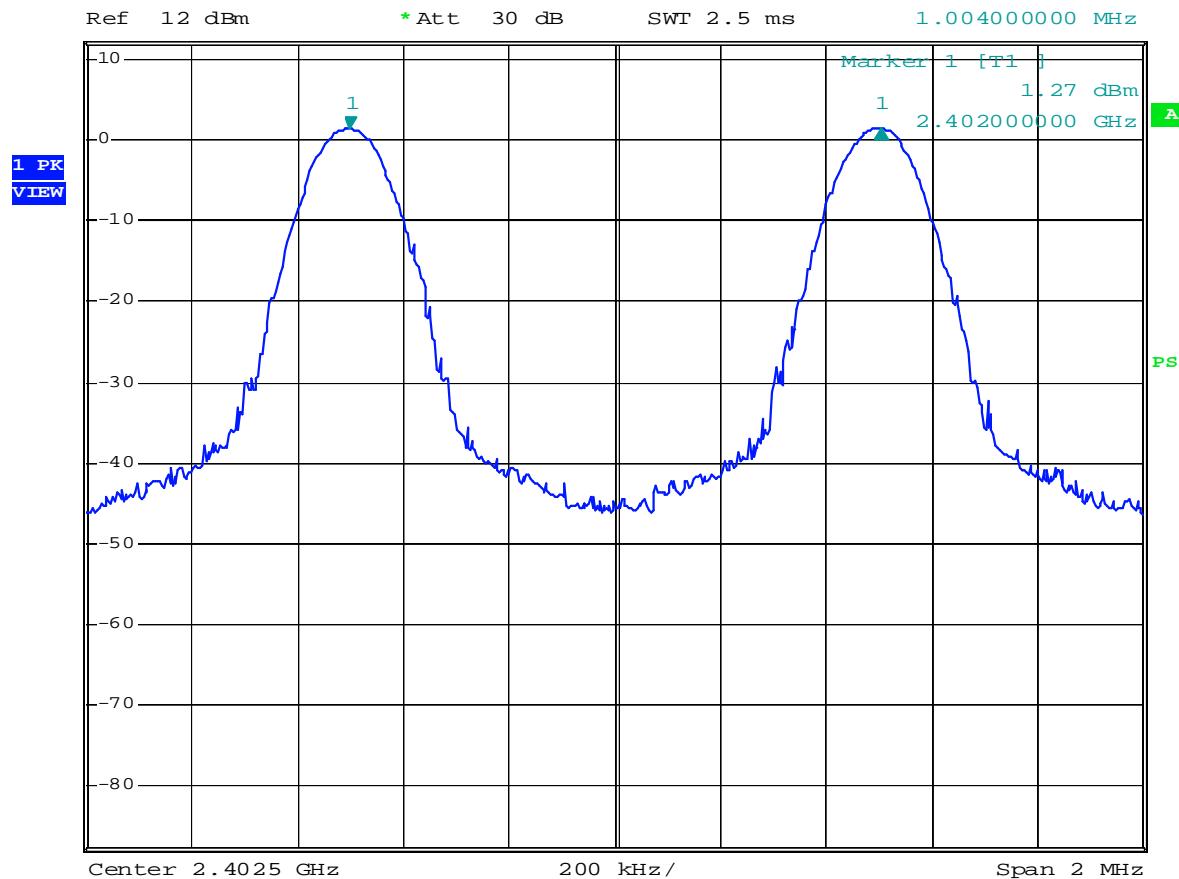
| | |
|--------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 50 % |
| ATM Pressure: | 1009 mbar |

The testing was performed by Andy Yan on 2007-08-16.

| Channel | Channel Frequency (MHz) | Channel Separation (kHz) | Limit (kHz) | Result |
|-------------------|-------------------------|--------------------------|-------------|--------|
| Low Channel | 2402 | 1004 | 184.00 | Pass |
| Adjacency Channel | 2403 | | | |
| Mid Channel | 2441 | 1004 | 189.33 | Pass |
| Adjacency Channel | 2442 | | | |
| High Channel | 2480 | 1004 | 194.67 | Pass |
| Adjacency Channel | 2479 | | | |

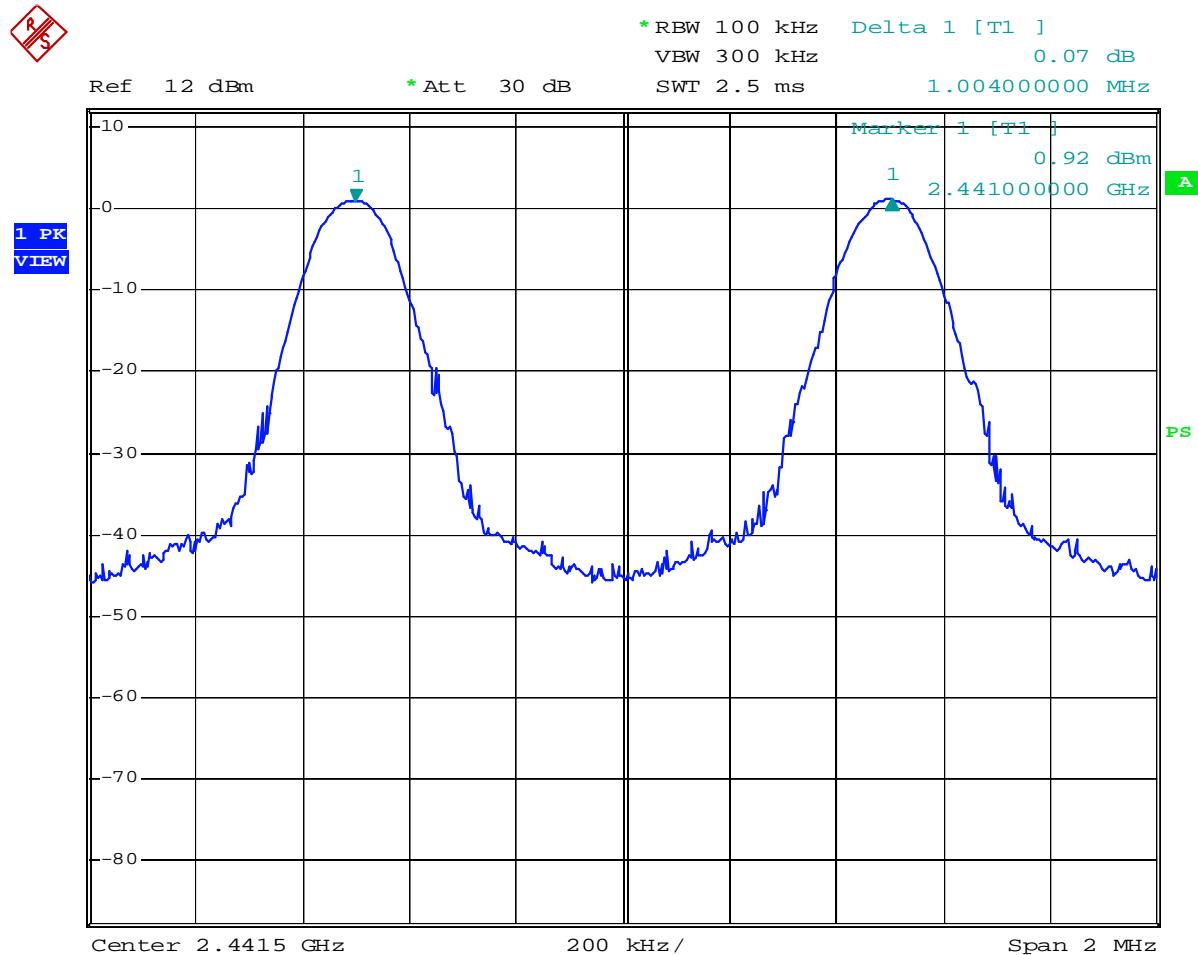
Test Result: Compliant. Please refer to following plots.

Low Channel



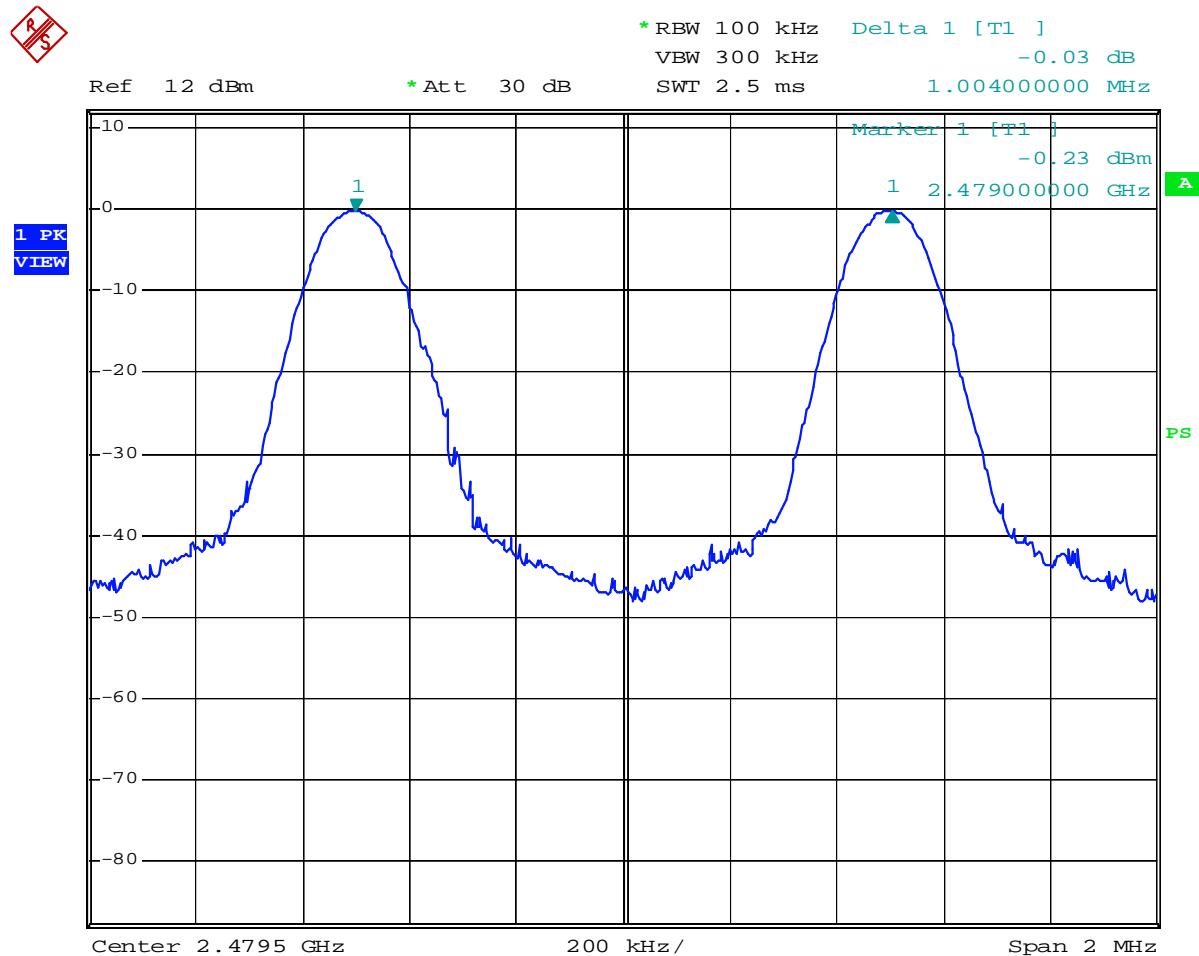
Great well Bluetooth Car Kit Low-channel channel separation

Date: 16.AUG.2007 11:33:09

Middle Channel

Great well Bluetooth Car Kit Middle-channel channel separation

Date: 16.AUG.2007 11:31:31

High Channel

Great well Bluetooth Car Kit High-channel channel seperati
on

Date: 16.AUG.2007 11:23:52

§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 | 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

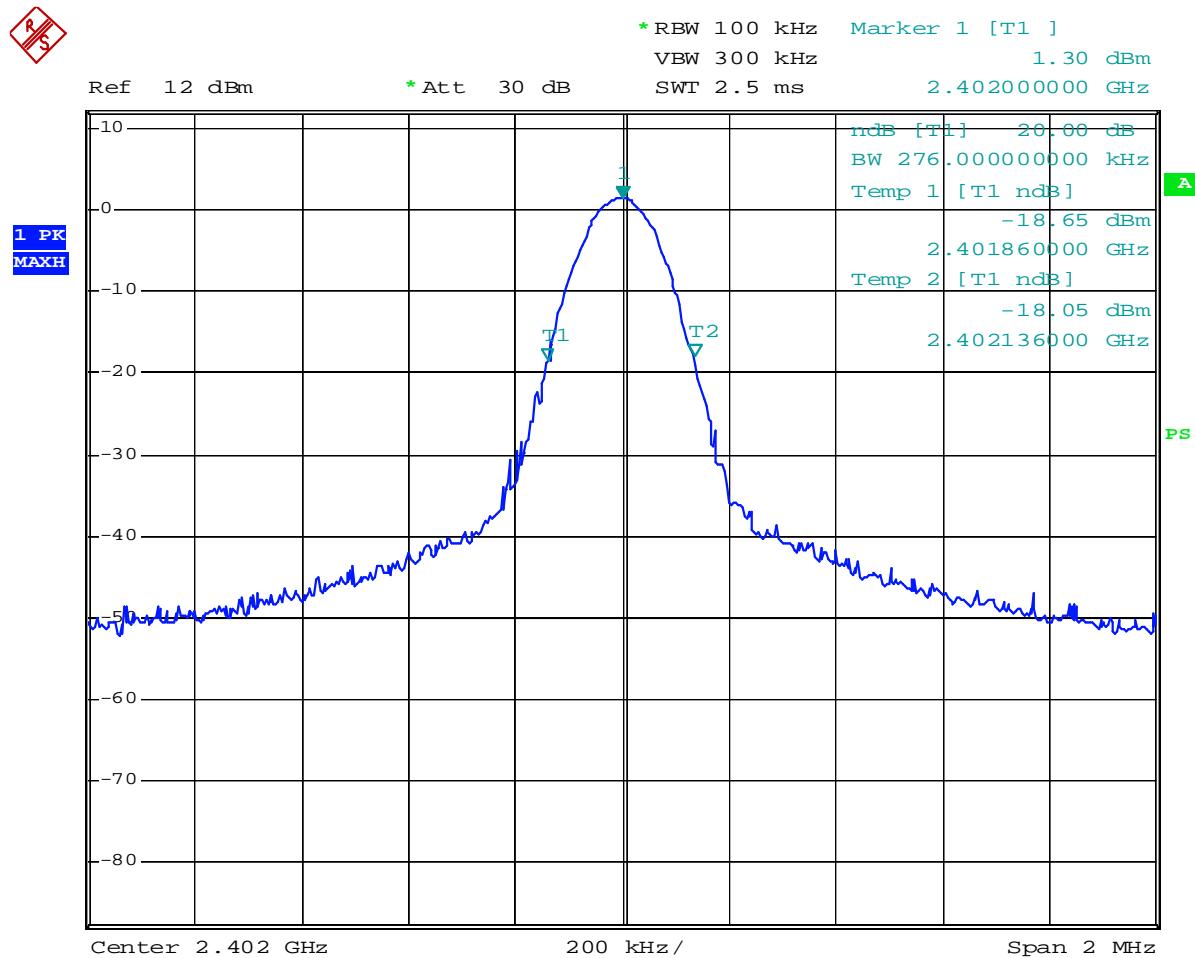
| | |
|--------------------|----------|
| Temperature: | 25 °C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1009mbar |

The testing was performed by Andy Yan on 2007-08-16

| Channel | Channel Frequency (MHz) | 20dB Bandwidth (kHz) |
|--------------|-------------------------|----------------------|
| Low Channel | 2402 | 276 |
| Mid Channel | 2441 | 284 |
| High Channel | 2480 | 292 |

Please refer to following plots.

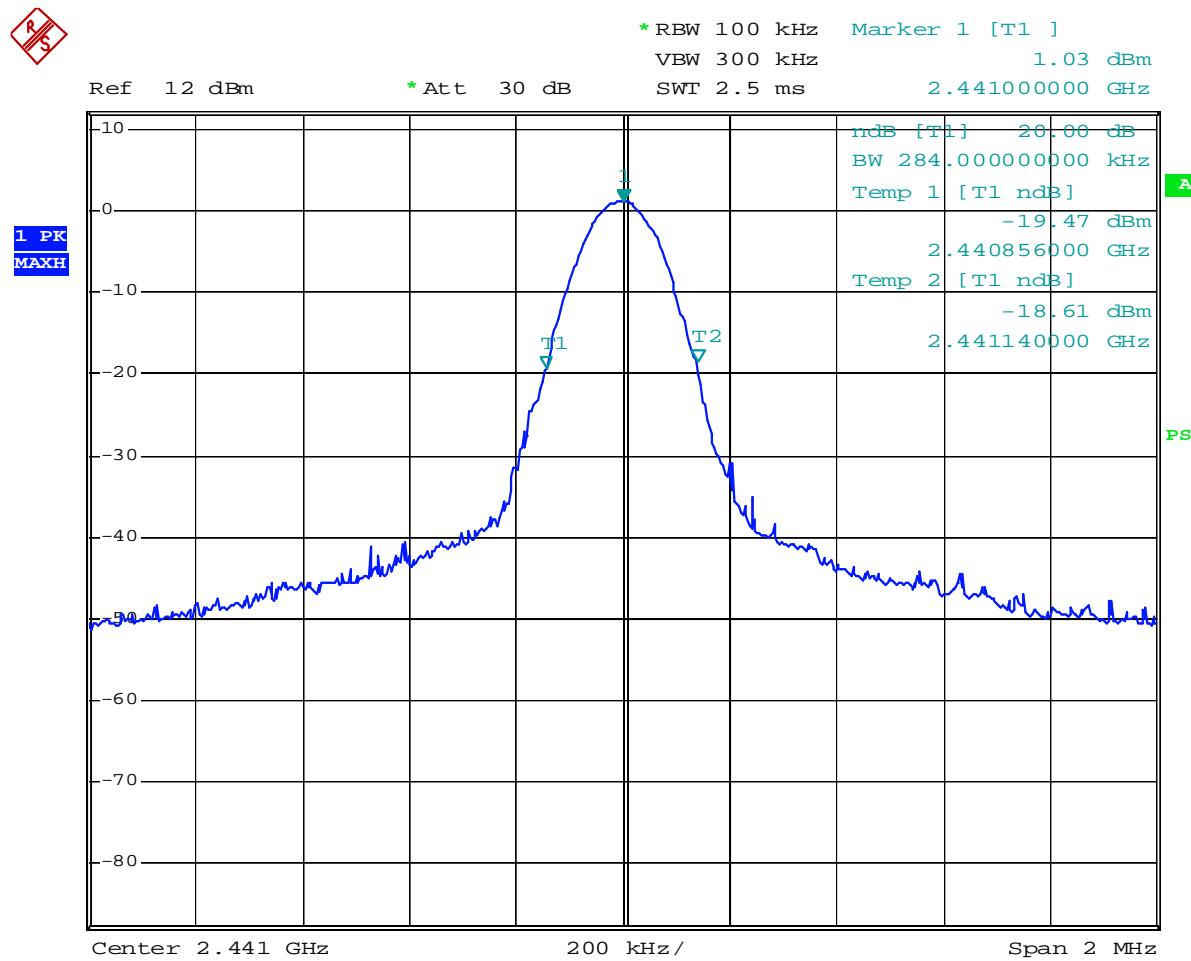
Low Channel



Great well Bluetooth Car Kit Low-channel 20dB bandwidth

Date: 16.AUG.2007 11:01:29

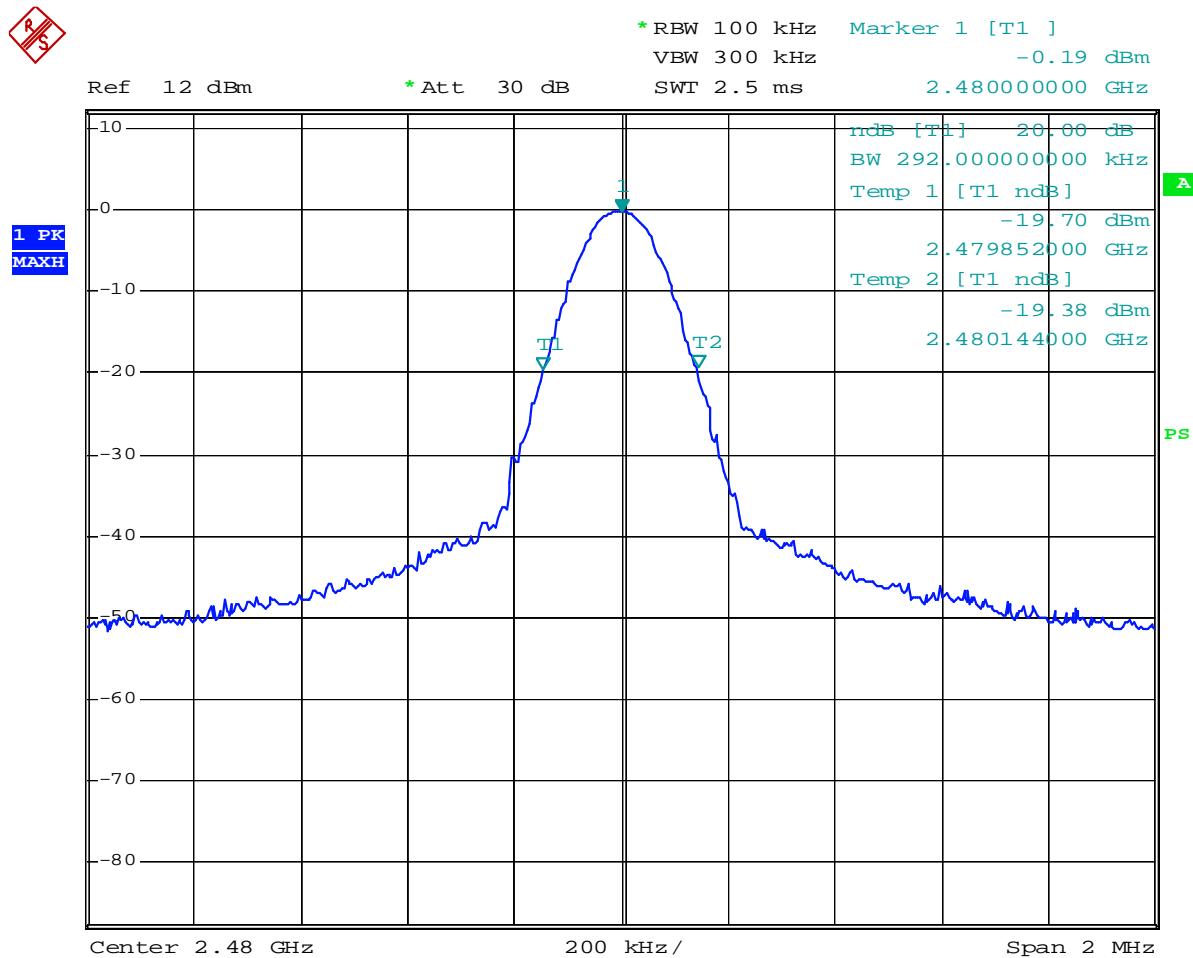
Middle Channel



Great well Bluetooth Car Kit Middle-channel 20dB bandwidth

Date: 16.AUG.2007 10:59:36

High Channel



Great well Bluetooth Car Kit High-channel 20dB bandwidth

Date: 16.AUG.2007 10:57:11

§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

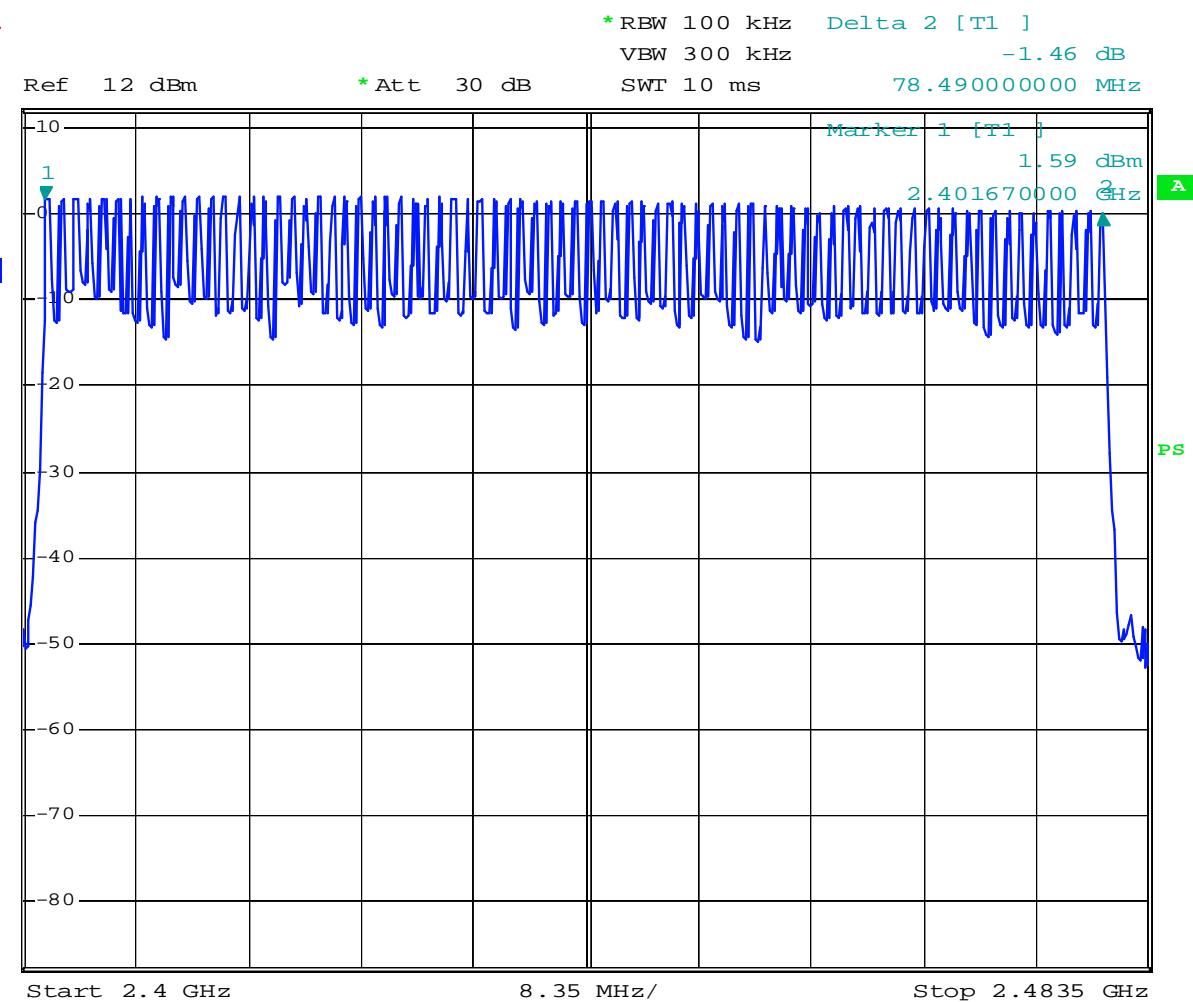
Environmental Conditions

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

The testing was performed by Andy Yan on 2007-08-16.

Test Result:

79 channels. Please refer to the following plot.



Great well Bluetooth Car Kit Hopping channels

Date: 16.AUG.2007 12:23:15

§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 pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= time slot length * hop 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 |

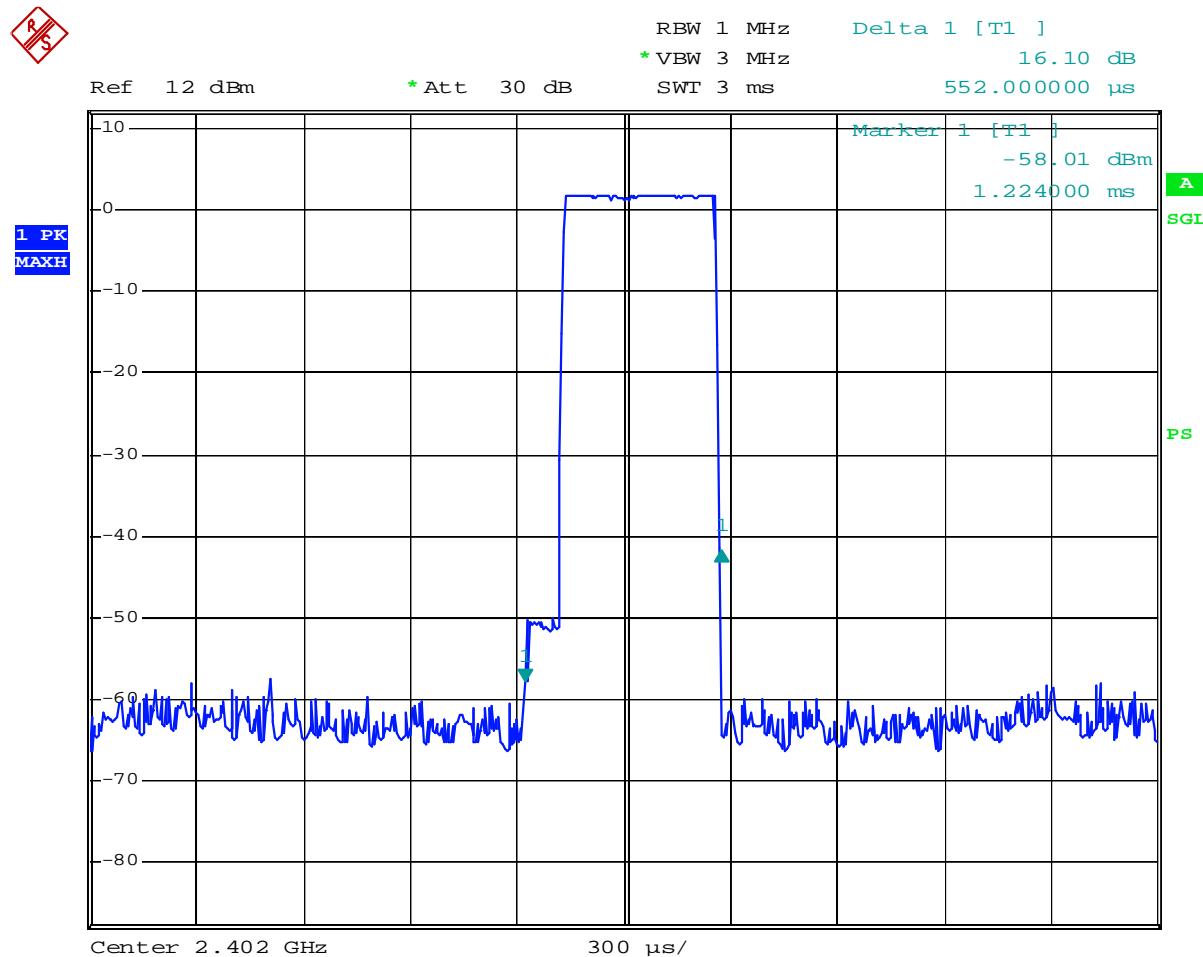
The testing was performed by Andy Yan on 2007-08-16.

| Channel | Pulse wide (sec.) | Dwell time (sec.) | Limit (sec.) | Result |
|---------------------|-------------------|-------------------|--------------|--------|
| Low Channel | 0.0005520 | 0.17664 | 0.4 | Pass |
| Mid Channel | 0.0005544 | 0.17741 | 0.4 | Pass |
| High Channel | 0.0005544 | 0.17741 | 0.4 | Pass |

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

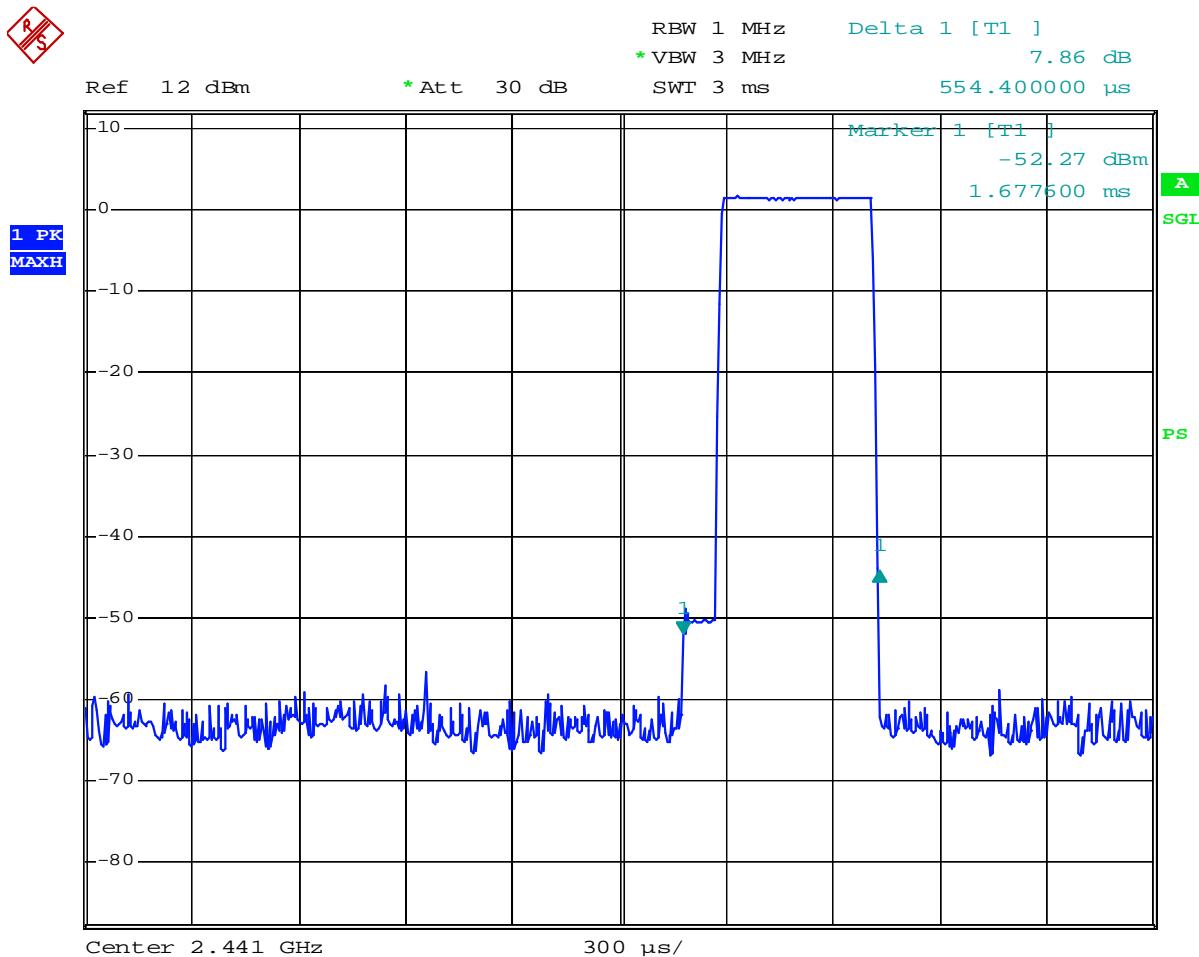
Test Result: Compliant. Please refer to following plots

Low Channel



Great well Bluetooth Car Kit Low channel dwell time

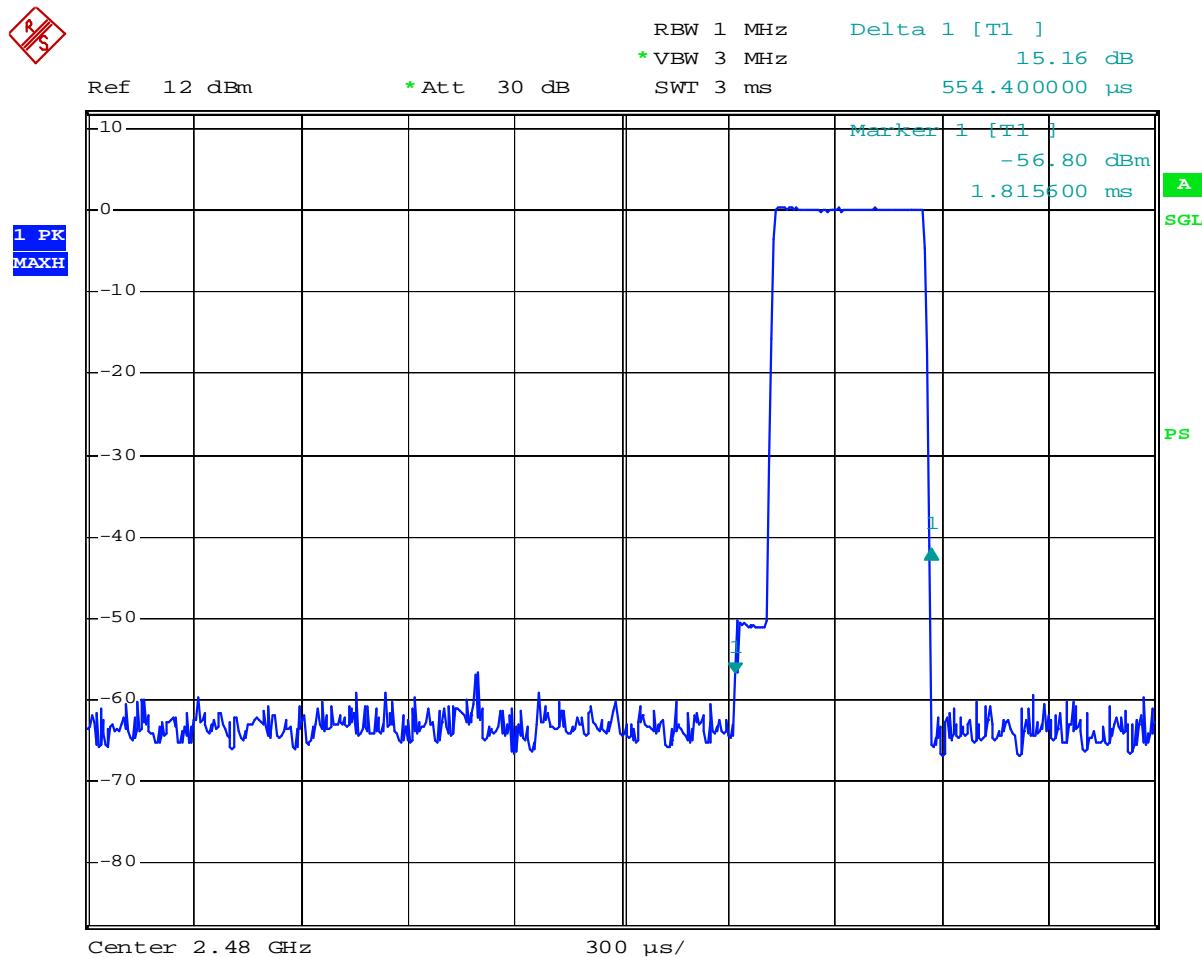
Date: 16.AUG.2007 12:37:39

Middle Channel

Great well Bluetooth Car Kit Middle channel dwell time

Date: 16.AUG.2007 12:44:01

High Channel



Great well Bluetooth Car Kit High channel dwell time

Date: 16.AUG.2007 12:49:30

§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.

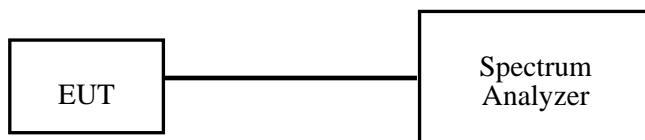
Test Equipment List and Details

| 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

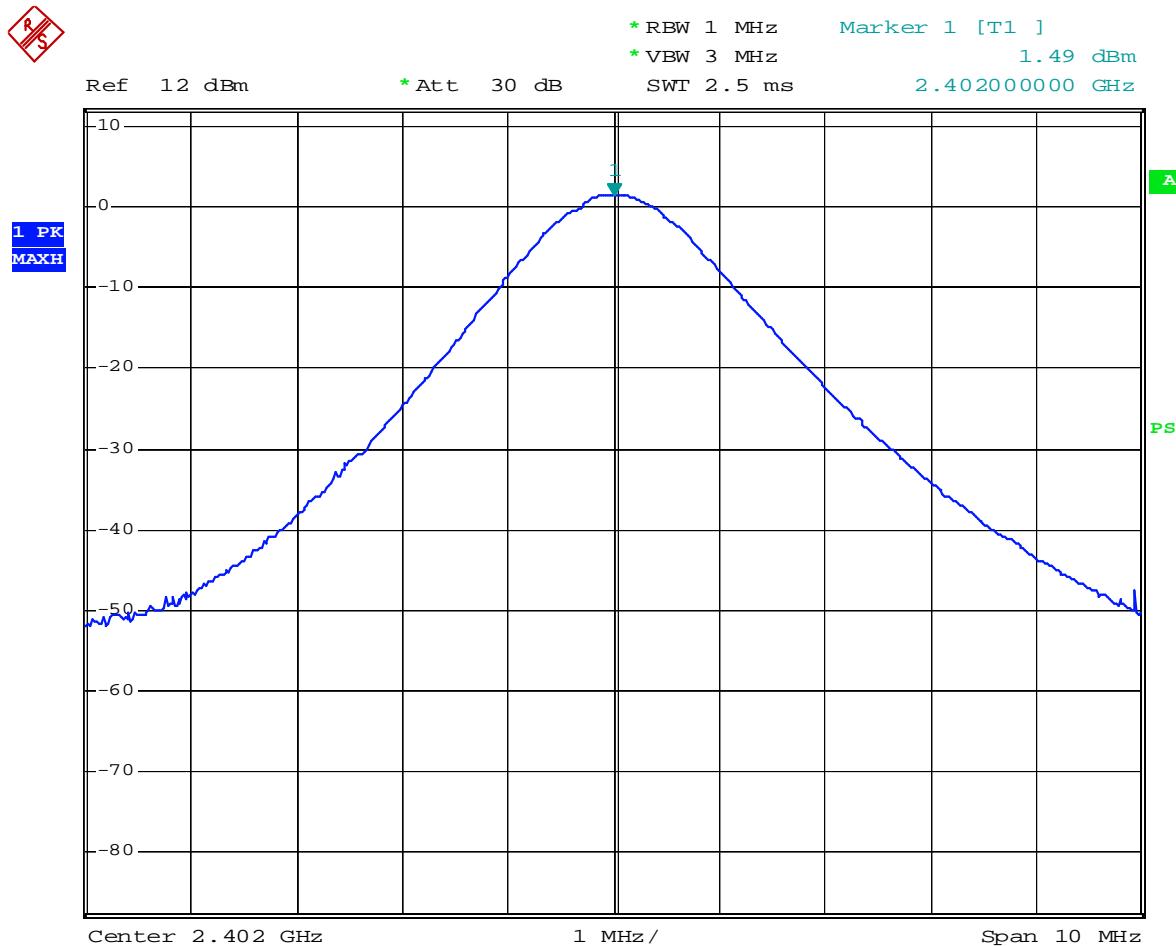
| | |
|--------------------|----------|
| Temperature: | 25 ° C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1009mbar |

The testing was performed by Andy Yan on 2007-08-16

| Channel | Channel Frequency (MHz) | Measured Power (dBm) | Output Power (W) | Limit (w) |
|---------|-------------------------|----------------------|------------------|-----------|
| Low | 2402 | 1.49 | 0.0014 | 1 |
| Mid | 2441 | 1.13 | 0.0013 | 1 |
| High | 2480 | -0.02 | 0.001 | 1 |

Test Result: Compliant. Please refer to the following plots

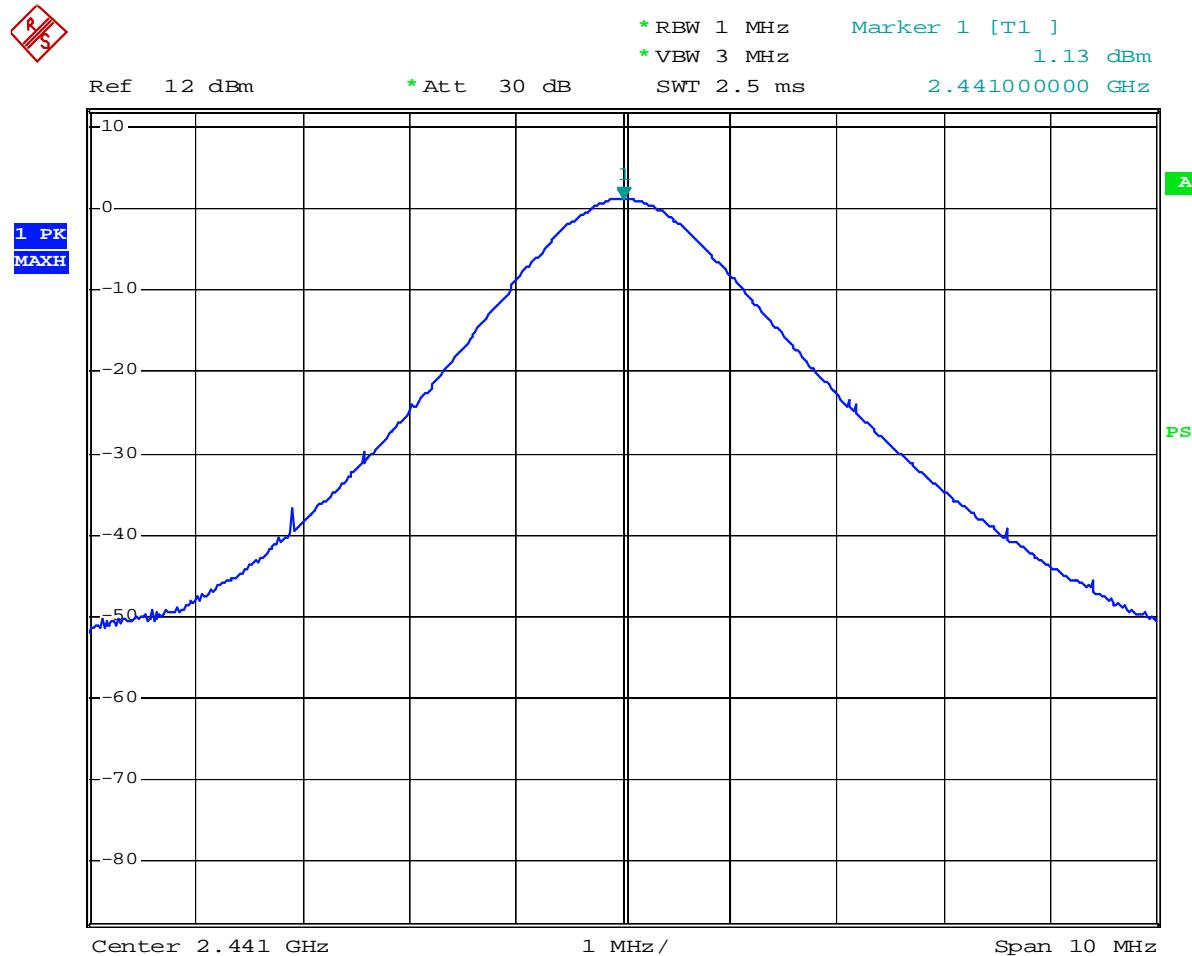
Low Channel



Great well Bluetooth Car Kit Low-channel Output Power

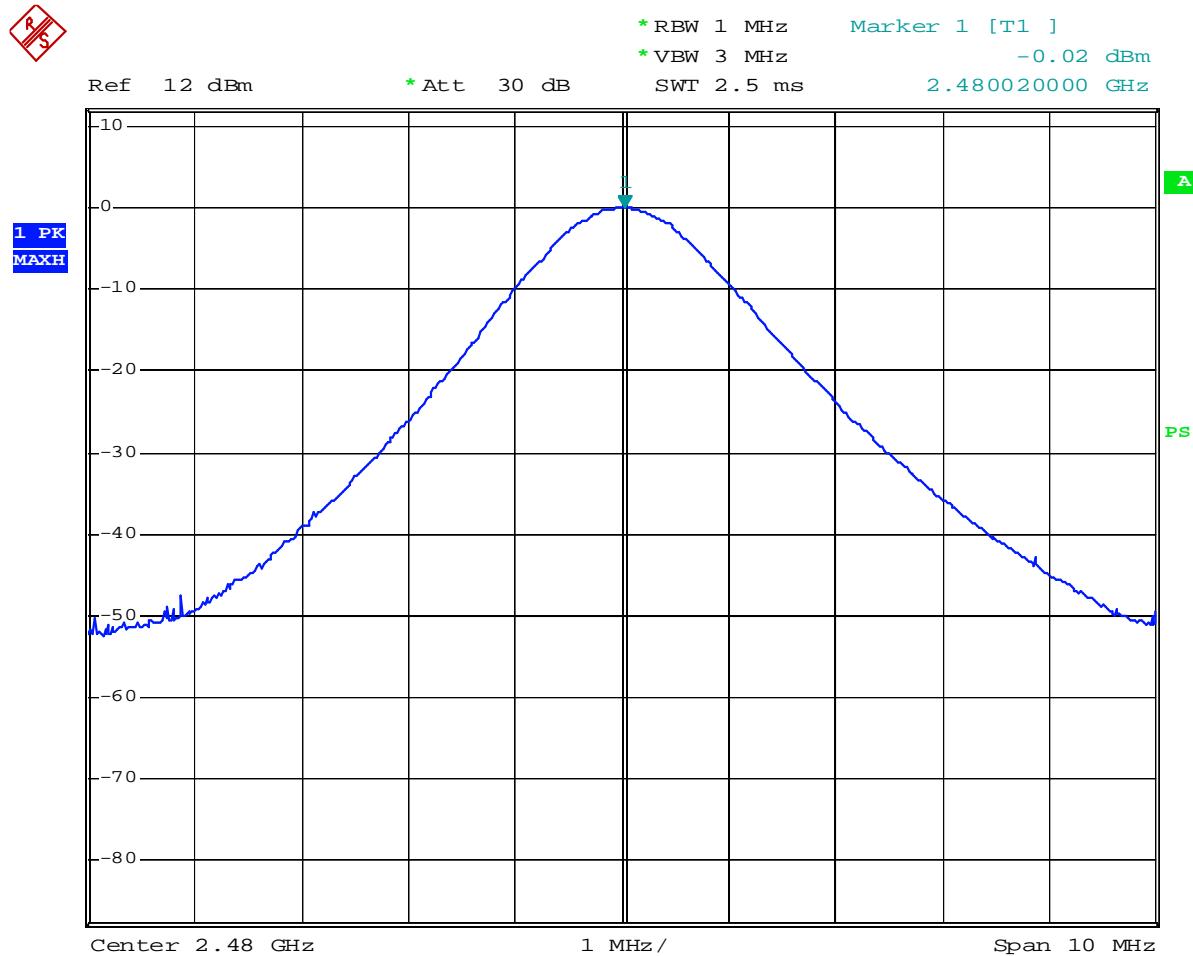
Date: 16.AUG.2007 12:04:09

Middle Channel



Great well Bluetooth Car Kit Middle-channel Output Power

Date: 16.AUG.2007 12:02:58

High Channel

Great well Bluetooth Car Kit High-channel Output Power

Date: 16.AUG.2007 12:01:44

§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. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Data

Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 1009mbar |

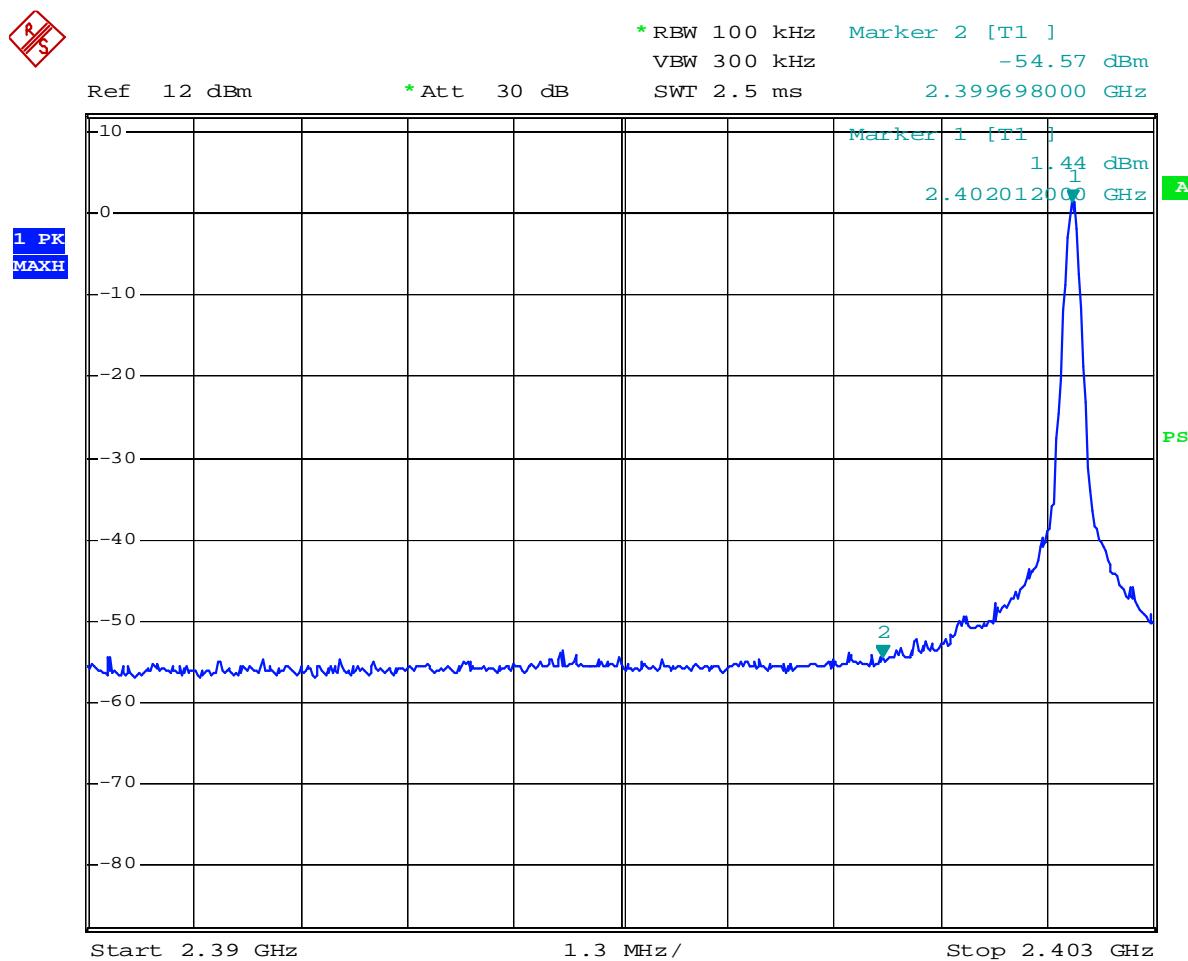
The testing was performed by Andy Yan on 2007-08-16.

| Frequency (MHz) | Band Edge (dBc) | Limit (dBc) |
|-----------------|-----------------|-------------|
| 2399.698 | 56.01 | 20 |
| 2495.968 | 53.62 | 20 |

Note: Band Edge=Highest Peak-Emission level

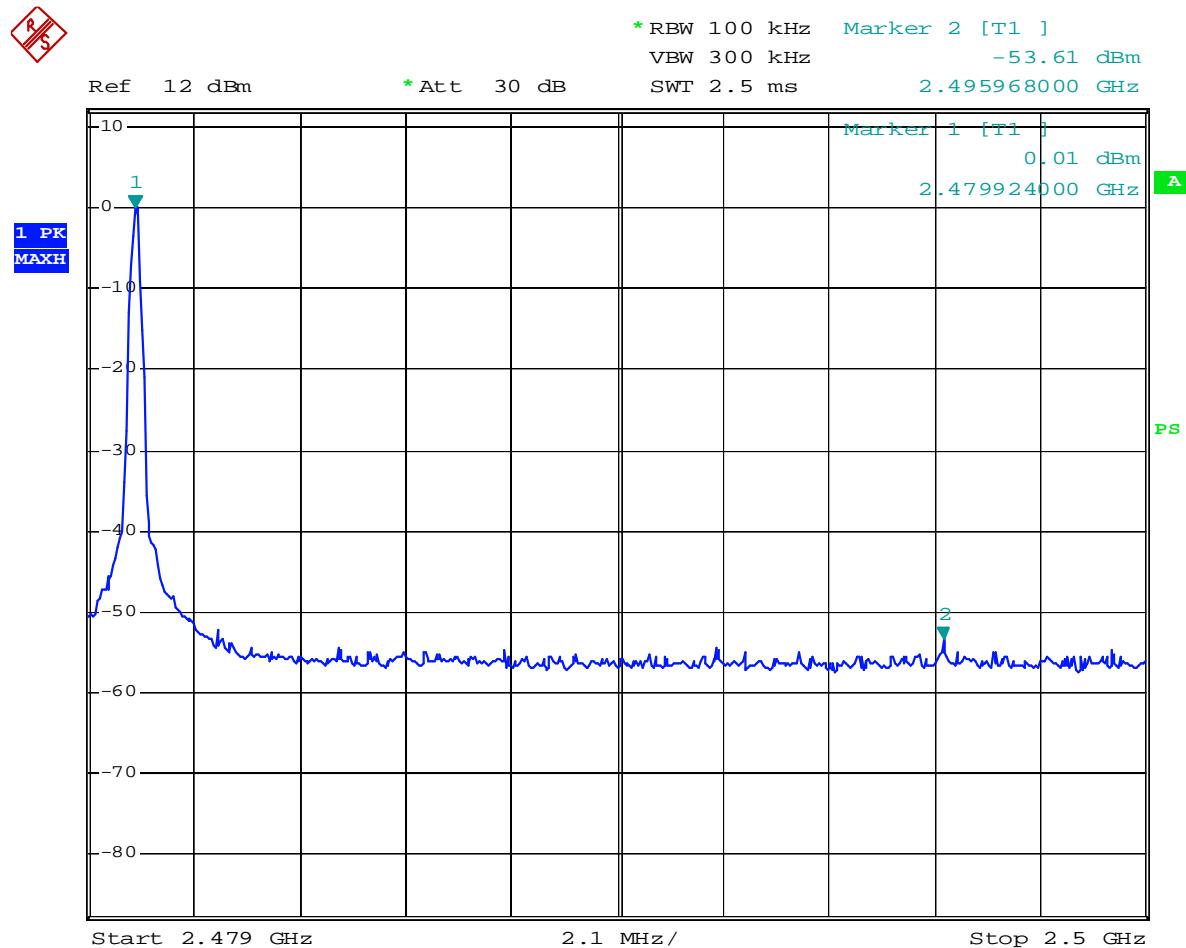
Test Result: Compliant. Please refer to the following plots

Lowest Channel



Great well Bluetooth Car Kit out of bandedge, left

Date: 16.AUG.2007 11:49:03

Highest Channel

Great well Bluetooth Car Kit out of bandedge, right

Date: 16.AUG.2007 11:58:13

Radiated Emissions in Restricted Band

| Freq. (MHz) | Receiver Reading (dBuV) | Detector (PK/AV) | Table Degree | Ant. Height (m) | Ant. Polar (H/V) | Antenna Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Corr. Amp. (dBuV/m) | FCC 15.209 | |
|----------------------------|-------------------------------|---------------------|-----------------|-----------------------|------------------------|-----------------------------|-----------------------|--------------------------|---------------------------|-------------------|----------------|
| | | | | | | | | | | Limit (dBuV/m) | Margin (dB) |
| (2310 – 2390 MHz) | | | | | | | | | | | |
| 2368.03 | 47.80 | PK | 180 | 1.2 | V | 30.6 | 3.61 | 35 | 47.01 | 54 | 6.99 |
| 2346.7 | 47.42 | PK | 60 | 1.5 | H | 30.6 | 3.61 | 35 | 46.63 | 54 | 7.37 |
| 2352.2 | 47.33 | PK | 180 | 1.2 | H | 30.6 | 3.61 | 35 | 46.54 | 54 | 7.46 |
| 2337.2 | 47.02 | PK | 90 | 1.1 | H | 30.6 | 3.61 | 35 | 46.23 | 54 | 7.77 |
| 2346.2 | 46.70 | PK | 45 | 1.2 | V | 30.6 | 3.61 | 35 | 45.91 | 54 | 8.09 |
| 2352.2 | 46.52 | PK | 90 | 1 | V | 30.6 | 3.61 | 35 | 45.73 | 54 | 8.27 |
| (2483.5 – 2500 MHz) | | | | | | | | | | | |
| 2493.08 | 48.14 | PK | 234 | 1.6 | V | 30.6 | 3.61 | 35 | 47.35 | 54 | 6.65 |
| 2494.08 | 47.90 | PK | 153 | 1.5 | H | 30.6 | 3.61 | 35 | 47.11 | 54 | 6.89 |
| 2492.69 | 47.64 | PK | 243 | 1.4 | H | 30.6 | 3.61 | 35 | 46.85 | 54 | 7.15 |
| 2491.2 | 47.52 | PK | 156 | 1.4 | V | 30.6 | 3.61 | 35 | 46.73 | 54 | 7.27 |

Note: Above Peak spurious emission levels are below the Average spurious emission limit of 54 dBuV/m, thus Average measurement has been omitted.

END OF REPORT