

**FCC PART 15.247  
TEST REPORT**

For

**HONG KONG IPRO TECHNOLOGY CO., LIMITED**

ROOM C1D, 6/F, WING HING INDUSTRIAL BUILDING,  
14 HING YIP STREET, KWUN TONG, KOWLOON, HONG KONG

**FCC ID: PQ4IPROVENUSL**

|                                        |                                                                                                                                                                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report | <b>Product Type:</b><br>GSM Mobile Phone                                                                                                                                                                                                                                                    |
| <b>Test Engineer:</b> Mick Yin         | <i>Mick Yin</i>                                                                                                                                                                                                                                                                             |
| <b>Report Number:</b> RSZ121115001-00B |                                                                                                                                                                                                                                                                                             |
| <b>Report Date:</b> 2012-12-19         |                                                                                                                                                                                                                                                                                             |
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\* This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★"

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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *HONG KONG IPRO TECHNOLOGY CO., LIMITED*'s product, model number: *VENUS L (FCC ID: PQ4IPROVENUSL)* or the "EUT" in this report was a *GSM Mobile Phone*, which was measured approximately: 10.5 cm (L) x 5.8 cm (W) x 1.1 cm (H), rated input voltage: DC 3.7 V Li-ion battery or DC 5V charging from adapter.

Adapter Information: AC Adapter  
Model: M49-050050  
Input: AC 100-240V ~ 50-60Hz 0.1A;  
Output: DC 5V 500mA.

*\* All measurement and test data in this report was gathered from production sample serial number: IPROVENUSL000001 (Assigned by Applicant). The EUT was received on 2012-11-15.*

### Objective

This test report is prepared on behalf of *HONG KONG IPRO TECHNOLOGY CO., 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, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

### Related Submittal(s)/Grant(s)

FCC Part 22H&24E PCE and Part 15B JBP submissions with FCC ID: PQ4IPROVENUSL.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, 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 on the 6/F, the 3<sup>rd</sup> 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 December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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 an ISO/IEC 17025 accredited laboratory, and is accredited by 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 testing mode which was controlled by bluetooth tester.

### Equipment Modifications

No modification was made to the EUT tested.

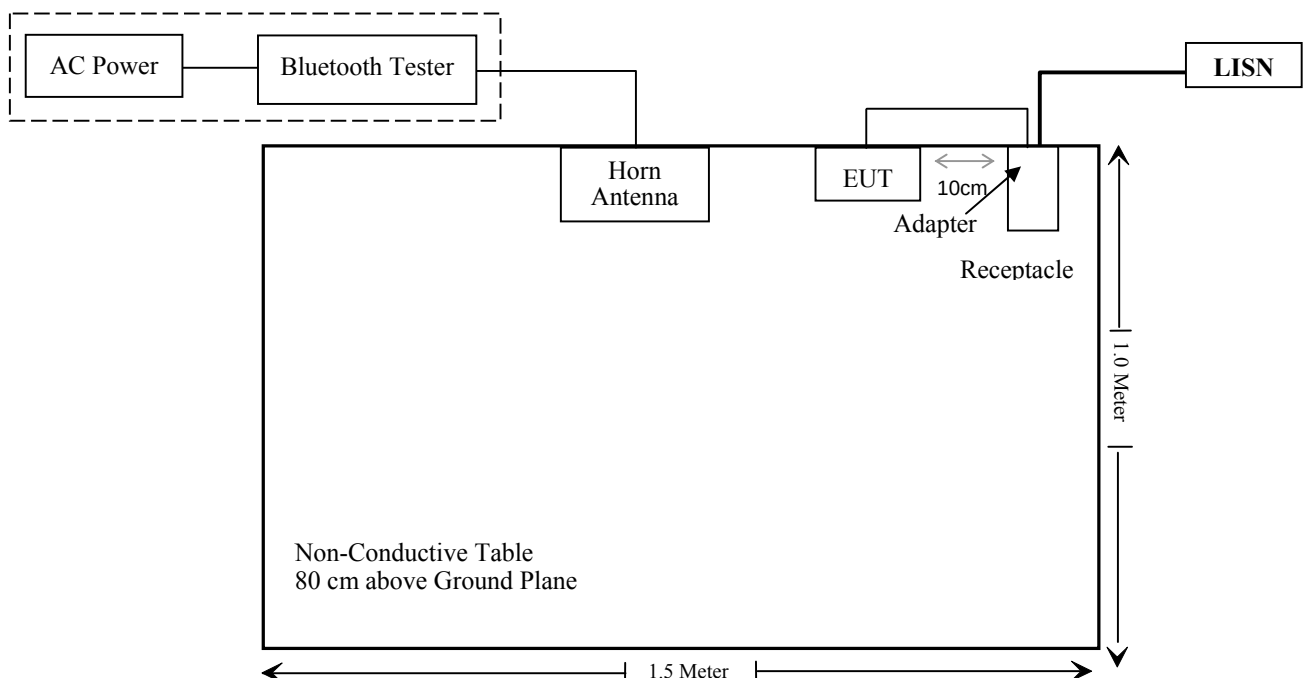
### Support Equipment List and Details

| Manufacturer | Description      | Model    | Serial Number |
|--------------|------------------|----------|---------------|
| TESCOM       | Bluetooth Tester | TC-3000B | 3000B650083   |

### External I/O Cable

| Cable Description                    | Length (m) | From Port | To      |
|--------------------------------------|------------|-----------|---------|
| Unshielded Detachable DC Power Cable | 1.0        | EUT       | Adapter |

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

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

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## **FCC §15.247 (i) & §2.1093 – RF EXPOSURE**

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### **Applicable Standard**

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance v05

### **Result**

According to FCC KDB 447498 D01 General RF Exposure Guidance v05 generic portable criteria

The distance between antenna and test point is 5 mm

The Max output power: 1.8mW

According to the Appendix A of KDB 447498, the exclusion thresholds for 2450 MHz is 10 mW

### **Conclusion:**

The time-averaged output power is 1.8 mW < the exclusion thresholds is 10 mW

Stand-alone SAR evaluation is not required.



**FCC §15.203 – ANTENNA REQUIREMENT**

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**Applicable Standard**

According to FCC § 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 integrated antenna arrangement for bluetooth, which was permanently attached and the gain was -2 dBi, fulfill the requirement of this section. Please refer to the internal photos.

**Result:** Compliance.

## FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

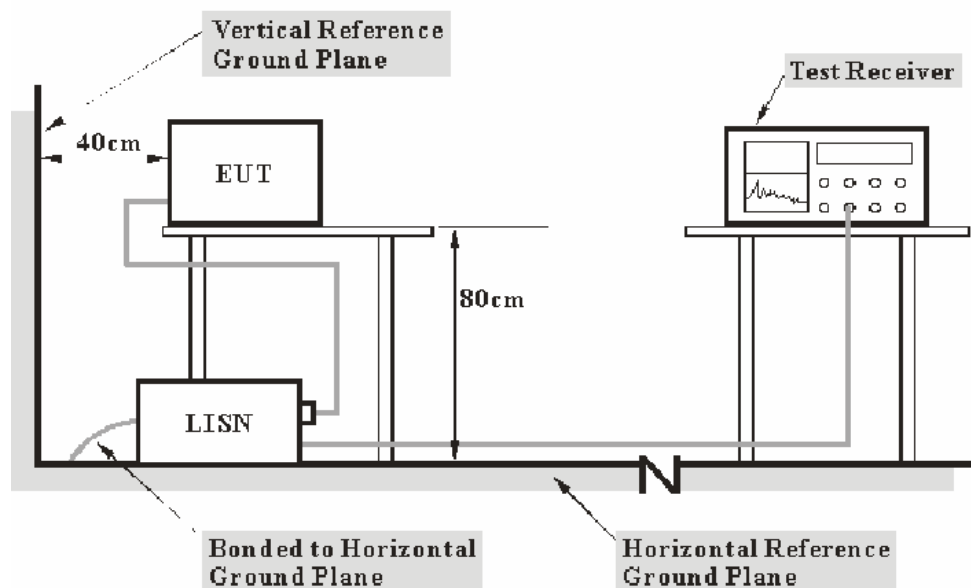
FCC §15.207

### 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 CISPR 16-4-4, 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 (k=2, 95% level of confidence), and the uncertainty will not be taken into consideration for all the test data recorded in the report.

### 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 C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm

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

## EMI Test Receiver Setup

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

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

| <u>Frequency Range</u> | <u>IF B/W</u> |
|------------------------|---------------|
| 150 kHz – 30 MHz       | 9 kHz         |

## Test Equipment List and Details

| Manufacturer    | Description       | Model   | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|---------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCS30  | 100176        | 2011-11-24       | 2012-11-23           |
| Rohde & Schwarz | L.I.S.N.          | ESH2-Z5 | 892107/021    | 2012-08-22       | 2013-08-21           |
| Rohde & Schwarz | Transient limiter | ESH3Z2  | DE25985       | 2012-07-08       | 2013-07-07           |
| BACL            | CE Test software  | BACL-CE | V1.0          | -                | -                    |

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

## Test Procedure

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

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

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

## Test Results Summary

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

**12.03 dB at 1.775 MHz in the Line conducted mode**

## Test Data

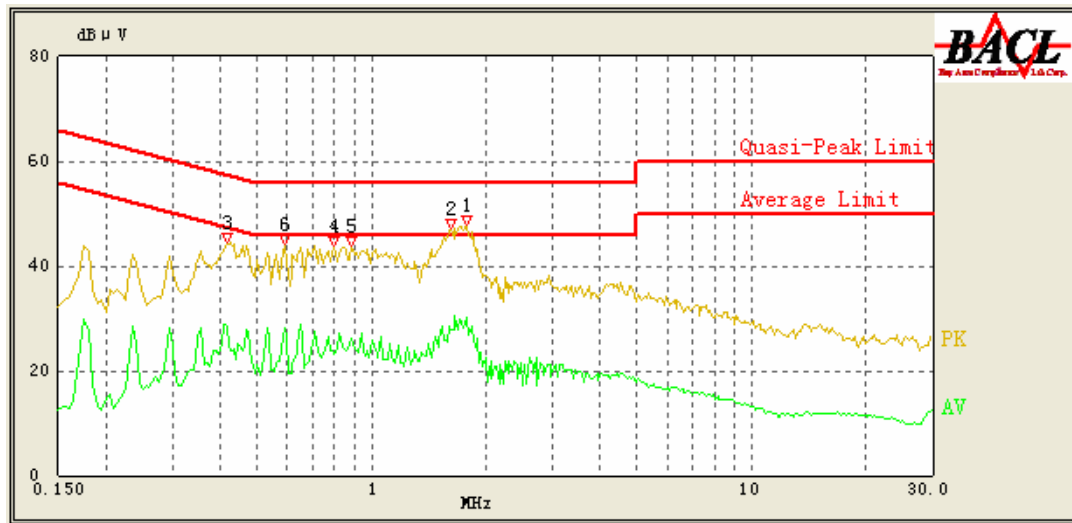
### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 48 %      |
| ATM Pressure:      | 100.0 kPa |

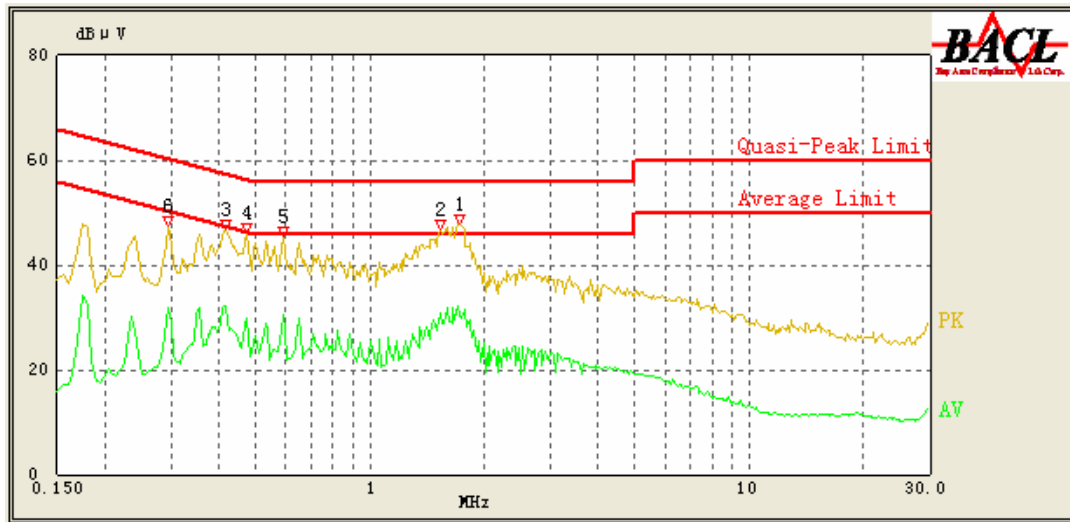
The testing was performed by Mick Yin on 2012-11-20.

Test Mode: Charging & Transmitting

AC 120 V, 60 Hz, Line:



| Conducted Emissions |                            |                        | FCC Part 15.207 |             |                       |
|---------------------|----------------------------|------------------------|-----------------|-------------|-----------------------|
| Frequency (MHz)     | Corrected Amplitude (dBμV) | Correction Factor (dB) | Limit (dBμV)    | Margin (dB) | Detector (PK/Ave./QP) |
| 1.775               | 43.97                      | 10.20                  | 56.00           | 12.03       | QP                    |
| 1.620               | 42.05                      | 10.19                  | 56.00           | 13.95       | QP                    |
| 1.775               | 30.12                      | 10.20                  | 46.00           | 15.88       | Ave.                  |
| 0.590               | 28.30                      | 10.24                  | 46.00           | 17.70       | Ave.                  |
| 1.625               | 27.72                      | 10.19                  | 46.00           | 18.28       | Ave.                  |
| 0.885               | 37.45                      | 10.19                  | 56.00           | 18.55       | QP                    |
| 0.885               | 26.29                      | 10.19                  | 46.00           | 19.71       | Ave.                  |
| 0.415               | 38.63                      | 10.26                  | 58.43           | 19.80       | QP                    |
| 0.415               | 28.58                      | 10.26                  | 48.43           | 19.85       | Ave.                  |
| 0.800               | 36.01                      | 10.20                  | 56.00           | 19.99       | QP                    |
| 0.590               | 35.37                      | 10.24                  | 56.00           | 20.63       | QP                    |
| 0.800               | 23.10                      | 10.20                  | 46.00           | 22.90       | Ave.                  |

**AC 120V, 60 Hz, Neutral:**

| Conducted Emissions |                            |                        | FCC Part 15.207 |             |                       |
|---------------------|----------------------------|------------------------|-----------------|-------------|-----------------------|
| Frequency (MHz)     | Corrected Amplitude (dBμV) | Correction Factor (dB) | Limit (dBμV)    | Margin (dB) | Detector (PK/Ave./QP) |
| 1.720               | 41.62                      | 10.19                  | 56.00           | 14.38       | QP                    |
| 1.535               | 41.07                      | 10.19                  | 56.00           | 14.93       | QP                    |
| 1.535               | 30.67                      | 10.19                  | 46.00           | 15.33       | Ave.                  |
| 0.590               | 30.66                      | 10.23                  | 46.00           | 15.34       | Ave.                  |
| 1.720               | 30.62                      | 10.19                  | 46.00           | 15.38       | Ave.                  |
| 0.590               | 40.53                      | 10.23                  | 56.00           | 15.47       | QP                    |
| 0.415               | 42.95                      | 10.25                  | 58.43           | 15.48       | QP                    |
| 0.475               | 40.80                      | 10.25                  | 56.71           | 15.91       | QP                    |
| 0.415               | 32.08                      | 10.25                  | 48.43           | 16.35       | Ave.                  |
| 0.475               | 29.89                      | 10.25                  | 46.71           | 16.82       | Ave.                  |
| 0.295               | 31.93                      | 10.25                  | 51.86           | 19.93       | Ave.                  |
| 0.295               | 40.32                      | 10.25                  | 61.86           | 21.54       | QP                    |

## FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

### Applicable Standard

FCC §15.205; §15.209; §15.247(d)

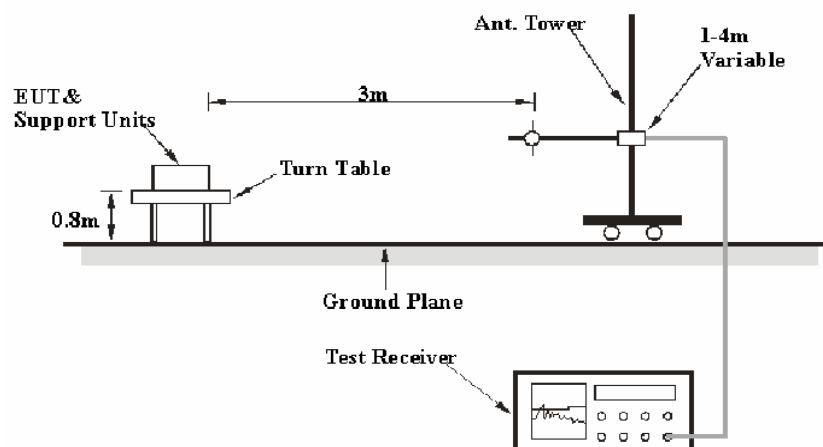
### Measurement Uncertainty

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.

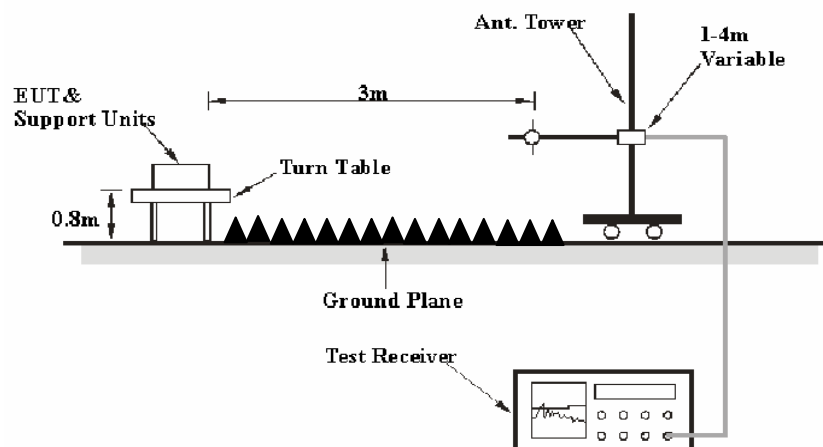
Based on CISPR 16-4-4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB. ( $k=2$ , 95% level of confidence), and the uncertainty will not be taken into consideration for all the test data recorded in the report.

### EUT Setup

#### Below 1 GHz:



#### Above 1 GHz:



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.4-2009. 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.

### EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

| Frequency Range   | RBW     | Video B/W | IF B/W | Detector |
|-------------------|---------|-----------|--------|----------|
| 30MHz – 1000 MHz  | 100 kHz | 300 kHz   | 120kHz | QP       |
| 1000 MHz – 25 GHz | 1MHz    | 3 MHz     | /      | PK       |
|                   | 1MHz    | 10 Hz     | /      | Ave.     |

### Test Procedure

For radiated emissions, the EUT was set to in a continuous transmitting with modulation mode.

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 -1 GHz and peak and Average detection modes for frequencies above 1 GHz.

### 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:

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

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

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

**Test Equipment List and Details**

| Manufacturer              | Description       | Model    | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------|-------------------|----------|---------------|------------------|----------------------|
| HP                        | Amplifier         | 8447E    | 1937A01046    | 2012-11-24       | 2013-11-23           |
| Rohde & Schwarz           | EMI Test Receiver | ESCI     | 101122        | 2012-08-08       | 2013-08-07           |
| Sunol Sciences            | Broadband Antenna | JB1      | A040904-2     | 2011-11-28       | 2014-11-27           |
| SUPER ULTRA               | Amplifier         | ZVA-213+ | N/A           | 2012-11-24       | 2013-11-23           |
| Sunol Sciences            | Horn Antenna      | DRH-118  | A052304       | 2011-12-01       | 2014-11-30           |
| Rohde & Schwarz           | Signal Analyzer   | FSIQ26   | 8386001028    | 2012-11-24       | 2013-11-23           |
| Agilent                   | Spectrum Analyzer | 8564E    | 3943A01781    | 2012-05-17       | 2013-05-16           |
| the electro-Mechanics Co. | Horn Antenna      | 3116     | 9510-2270     | 2010-10-14       | 2013-10-13           |

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

**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.

**Test Data****Environmental Conditions**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 25 °C     |
| <b>Relative Humidity:</b> | 56 %      |
| <b>ATM Pressure:</b>      | 100.1 kPa |

*The testing was performed by Mick Yin on 2012-12-03.*

*Test mode: Transmitting*



**30 MHz ~25 GHz:** (Scan with GFSK,  $\pi/4$ -DQPSK, 8DPSK, the worst case is BDR Mode (GFSK))

| Frequency<br>(MHz)        | Receiver            |                          | Turntable<br>Degree | Rx Antenna    |                | Corrected<br>Factor<br>(dB) | Corrected<br>Amplitude<br>(dBμV/m) | FCC Part 15.247   |                |          |
|---------------------------|---------------------|--------------------------|---------------------|---------------|----------------|-----------------------------|------------------------------------|-------------------|----------------|----------|
|                           | Reading<br>(dBμV/m) | Detector<br>(PK/QP/Ave.) |                     | Height<br>(m) | Polar<br>(H/V) |                             |                                    | Limit<br>(dBμV/m) | Margin<br>(dB) | Comment  |
| Low Channel (2402 MHz)    |                     |                          |                     |               |                |                             |                                    |                   |                |          |
| 607.3                     | 41.61               | QP                       | 123                 | 1.1           | V              | -9.1                        | 32.5                               | 46                | 13.5           | spurious |
| 2402.0                    | 94.83               | PK                       | 25                  | 1.2           | H              | 6.13                        | 100.96                             | /                 | /              | Fund.    |
| 2402.0                    | 51.76               | Ave.                     | 25                  | 1.2           | H              | 6.13                        | 57.89                              | /                 | /              | Fund.    |
| 2402.0                    | 92.36               | PK                       | 33                  | 1.1           | V              | 6.13                        | 98.49                              | /                 | /              | Fund.    |
| 2402.0                    | 49.17               | Ave.                     | 33                  | 1.1           | V              | 6.13                        | 55.30                              | /                 | /              | Fund.    |
| 2344.6                    | 35.73               | PK                       | 132                 | 1.3           | H              | 5.48                        | 41.21                              | 74                | 32.79          | spurious |
| 2344.6                    | 22.18               | Ave.                     | 132                 | 1.3           | H              | 5.48                        | 27.66                              | 54                | 26.34          | spurious |
| 2383.5                    | 36.73               | PK                       | 82                  | 1.2           | V              | 6.13                        | 42.86                              | 74                | 31.14          | spurious |
| 2383.5                    | 24.18               | Ave.                     | 82                  | 1.2           | V              | 6.13                        | 30.31                              | 54                | 23.69          | spurious |
| 2491.2                    | 35.63               | PK                       | 96                  | 1.1           | H              | 7.21                        | 42.84                              | 74                | 31.16          | spurious |
| 2494.2                    | 22.08               | Ave.                     | 96                  | 1.1           | H              | 7.21                        | 29.29                              | 54                | 24.71          | spurious |
| 4804.0                    | 48.72               | PK                       | 113                 | 1.0           | H              | 12.40                       | 61.12                              | 74                | 12.88          | Harmonic |
| 4804.0                    | 28.91               | Ave.                     | 113                 | 1.0           | H              | 12.40                       | 41.31                              | 54                | 12.69          | Harmonic |
| 7206.0                    | 36.33               | PK                       | 83                  | 1.1           | H              | 17.06                       | 53.39                              | 74                | 20.61          | Harmonic |
| 7206.0                    | 24.72               | Ave.                     | 83                  | 1.1           | H              | 17.06                       | 41.78                              | 54                | 12.22          | Harmonic |
| 9608.0                    | 35.12               | PK                       | 16                  | 1.2           | V              | 19.28                       | 54.40                              | 74                | 19.60          | Harmonic |
| 9608.0                    | 22.68               | Ave.                     | 16                  | 1.2           | V              | 19.28                       | 41.96                              | 54                | 12.04          | Harmonic |
| Middle Channel (2441 MHz) |                     |                          |                     |               |                |                             |                                    |                   |                |          |
| 607.3                     | 42.17               | QP                       | 123                 | 1.1           | V              | -9.1                        | 33.07                              | 46                | 12.93          | spurious |
| 2441.0                    | 94.02               | PK                       | 68                  | 1.1           | H              | 7.21                        | 101.23                             | /                 | /              | Fund.    |
| 2441.0                    | 50.83               | Ave.                     | 68                  | 1.1           | H              | 7.21                        | 58.04                              | /                 | /              | Fund.    |
| 2441.0                    | 91.44               | PK                       | 73                  | 1.2           | V              | 7.21                        | 98.65                              | /                 | /              | Fund.    |
| 2441.0                    | 48.35               | Ave.                     | 73                  | 1.2           | V              | 7.21                        | 55.56                              | /                 | /              | Fund.    |
| 2347.5                    | 35.22               | PK                       | 112                 | 1.5           | V              | 6.13                        | 41.35                              | 74                | 32.65          | spurious |
| 2347.5                    | 22.87               | Ave.                     | 112                 | 1.5           | V              | 6.13                        | 29.00                              | 54                | 25.00          | spurious |
| 2369.2                    | 34.68               | PK                       | 82                  | 1.1           | H              | 7.21                        | 41.89                              | 74                | 32.11          | spurious |
| 2369.2                    | 21.09               | Ave.                     | 82                  | 1.1           | H              | 7.21                        | 28.30                              | 54                | 25.70          | spurious |
| 2486.9                    | 34.56               | PK                       | 65                  | 1.3           | V              | 7.21                        | 41.77                              | 74                | 32.23          | spurious |
| 2486.9                    | 23.04               | Ave.                     | 65                  | 1.3           | V              | 7.21                        | 30.25                              | 54                | 23.75          | spurious |
| 4882.0                    | 46.85               | PK                       | 35                  | 1.2           | H              | 12.46                       | 59.31                              | 74                | 14.69          | Harmonic |
| 4882.0                    | 27.53               | Ave.                     | 35                  | 1.2           | H              | 12.46                       | 39.99                              | 54                | 14.01          | Harmonic |
| 7323.0                    | 32.68               | PK                       | 93                  | 1.1           | V              | 16.49                       | 49.17                              | 74                | 24.83          | Harmonic |
| 7323.0                    | 20.11               | Ave.                     | 93                  | 1.1           | V              | 16.49                       | 36.60                              | 54                | 17.40          | Harmonic |
| 9764.0                    | 35.42               | PK                       | 46                  | 1.2           | H              | 19.40                       | 54.82                              | 74                | 19.18          | Harmonic |
| 9764.0                    | 20.98               | Ave.                     | 46                  | 1.2           | H              | 19.40                       | 40.38                              | 54                | 13.62          | Harmonic |

| Frequency<br>(MHz)      | Receiver            |                          | Turntable<br>Degree | Rx Antenna    |                | Corrected<br>Factor<br>(dB) | Corrected<br>Amplitude<br>(dBμV/m) | FCC Part 15.247   |                |          |
|-------------------------|---------------------|--------------------------|---------------------|---------------|----------------|-----------------------------|------------------------------------|-------------------|----------------|----------|
|                         | Reading<br>(dBμV/m) | Detector<br>(PK/QP/Ave.) |                     | Height<br>(m) | Polar<br>(H/V) |                             |                                    | Limit<br>(dBμV/m) | Margin<br>(dB) | Comment  |
| High Channel (2480 MHz) |                     |                          |                     |               |                |                             |                                    |                   |                |          |
| 607.3                   | 41.99               | QP                       | 123                 | 1.1           | V              | -9.1                        | 32.89                              | 46                | 13.11          | spurious |
| 2480.0                  | 94.83               | PK                       | 55                  | 1.2           | H              | 7.21                        | 102.04                             | /                 | /              | Fund.    |
| 2480.0                  | 49.67               | Ave.                     | 55                  | 1.2           | H              | 7.21                        | 56.88                              | /                 | /              | Fund.    |
| 2480.0                  | 91.03               | PK                       | 32                  | 1.1           | V              | 7.21                        | 98.24                              | /                 | /              | Fund.    |
| 2480.0                  | 47.95               | Ave.                     | 32                  | 1.1           | V              | 7.21                        | 55.16                              | /                 | /              | Fund.    |
| 2336.2                  | 34.75               | PK                       | 14                  | 1.2           | H              | 5.48                        | 40.23                              | 74                | 33.77          | spurious |
| 2336.2                  | 23.05               | Ave.                     | 14                  | 1.2           | H              | 5.48                        | 28.53                              | 54                | 25.47          | spurious |
| 2381.4                  | 35.74               | PK                       | 85                  | 1.0           | H              | 6.13                        | 41.87                              | 74                | 32.13          | spurious |
| 2381.4                  | 22.19               | Ave.                     | 85                  | 1.0           | H              | 6.13                        | 28.32                              | 54                | 25.68          | spurious |
| 2492.3                  | 36.22               | PK                       | 32                  | 1.2           | H              | 7.21                        | 43.43                              | 74                | 30.57          | spurious |
| 2492.3                  | 23.73               | Ave.                     | 32                  | 1.2           | H              | 7.21                        | 30.94                              | 54                | 23.06          | spurious |
| 4960.0                  | 46.08               | PK                       | 12                  | 1.4           | H              | 12.50                       | 58.58                              | 74                | 15.42          | Harmonic |
| 4960.0                  | 27.31               | Ave.                     | 12                  | 1.4           | H              | 12.50                       | 39.81                              | 54                | 14.19          | Harmonic |
| 7440.0                  | 35.22               | PK                       | 85                  | 1.3           | H              | 15.90                       | 51.12                              | 74                | 22.88          | Harmonic |
| 7440.0                  | 20.93               | Ave.                     | 85                  | 1.3           | H              | 15.90                       | 36.83                              | 54                | 17.17          | Harmonic |
| 9920.0                  | 34.23               | PK                       | 135                 | 1.2           | H              | 19.38                       | 53.61                              | 74                | 20.39          | Harmonic |
| 9920.0                  | 20.11               | Ave.                     | 135                 | 1.2           | H              | 19.38                       | 39.49                              | 54                | 14.51          | Harmonic |

**Note:**

- 1) Corrected Amplitude = Corrected Factor + Reading
- 2) Corrected Factor=Antenna factor (RX) + cable loss – amplifier factor
- 3) Margin = Limit - Corrected Amplitude

**FCC §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 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.

**Test Procedure**

1. Set the EUT in transmitting mode, RBW of spectrum was set at 30 kHz, maxhold the channel.
2. Set the adjacent channel of the EUT and maxhold another trace
3. Measure the channel separation.

**Test Equipment List and Details**

| Manufacturer    | Description       | Model    | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|----------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI     | 101122        | 2012-08-08       | 2013-08-07           |
| TESCOM          | Bluetooth Tester  | TC-3000B | 3000B650083   | 2011-12-07       | 2012-12-06           |

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

**Test Data****Environmental Conditions**

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 56 %      |
| ATM Pressure:      | 100.1 kPa |

\* The testing was performed by Mick Yin on 2012-12-03.

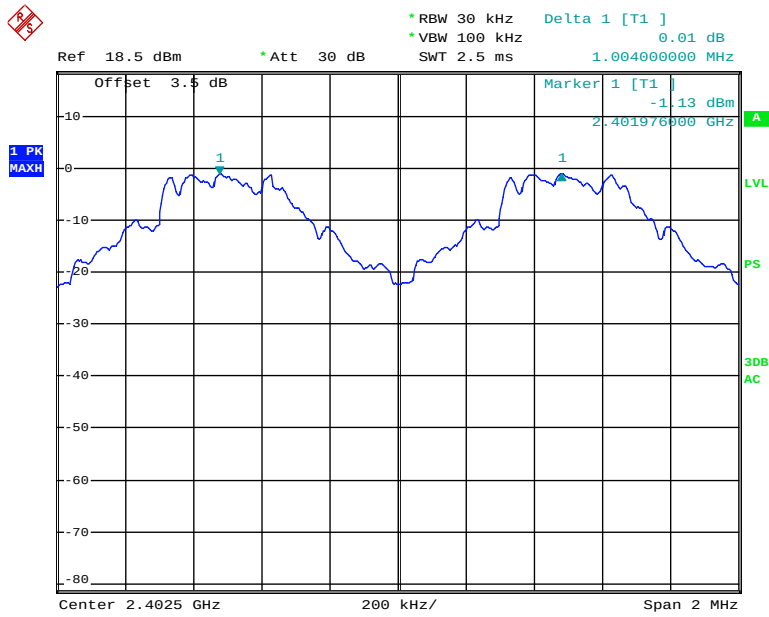
Test Mode: Transmitting

Test Result: Compliance. Please refer to following tables and plots

| Mode                                  | Channel  | Frequency (MHz) | Channel Separation (MHz) | $\geq$ Limit (MHz) | Result |
|---------------------------------------|----------|-----------------|--------------------------|--------------------|--------|
| <b>BDR (GFSK)</b>                     | Low      | 2402            | 1.004                    | 0.645              | Pass   |
|                                       | Adjacent | 2403            |                          |                    |        |
|                                       | Middle   | 2441            | 1.004                    | 0.645              | Pass   |
|                                       | Adjacent | 2442            |                          |                    |        |
|                                       | High     | 2480            | 1.004                    | 0.645              | Pass   |
|                                       | Adjacent | 2479            |                          |                    |        |
| <b>EDR (<math>\pi/4</math>-DQPSK)</b> | Low      | 2402            | 1.004                    | 0.864              | Pass   |
|                                       | Adjacent | 2403            |                          |                    |        |
|                                       | Middle   | 2441            | 1.004                    | 0.864              | Pass   |
|                                       | Adjacent | 2442            |                          |                    |        |
|                                       | High     | 2480            | 1.004                    | 0.864              | Pass   |
|                                       | Adjacent | 2479            |                          |                    |        |
| <b>EDR (8DPSK)</b>                    | Low      | 2402            | 1.004                    | 0.845              | Pass   |
|                                       | Adjacent | 2403            |                          |                    |        |
|                                       | Middle   | 2441            | 1.004                    | 0.845              | Pass   |
|                                       | Adjacent | 2442            |                          |                    |        |
|                                       | High     | 2480            | 1.004                    | 0.845              | Pass   |
|                                       | Adjacent | 2479            |                          |                    |        |

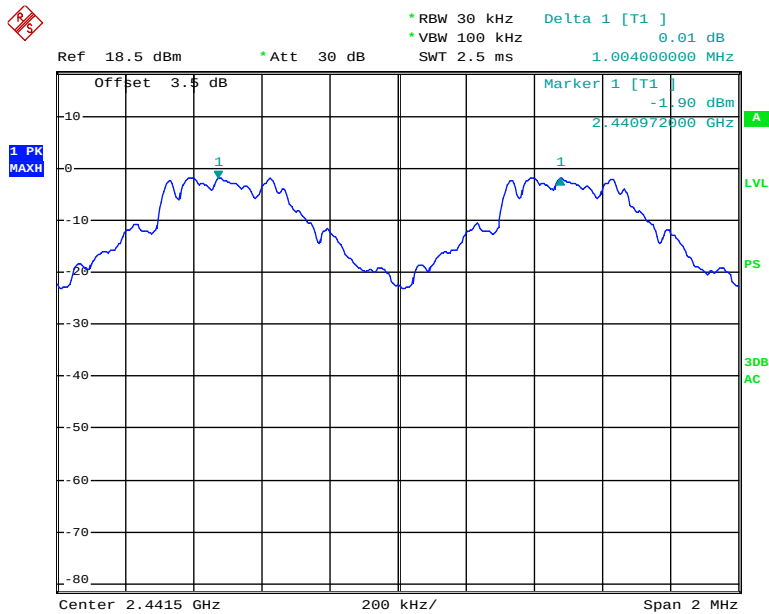
Note: Limit = 20 dB bandwidth \*2/3

### BDR (GFSK): Low Channel



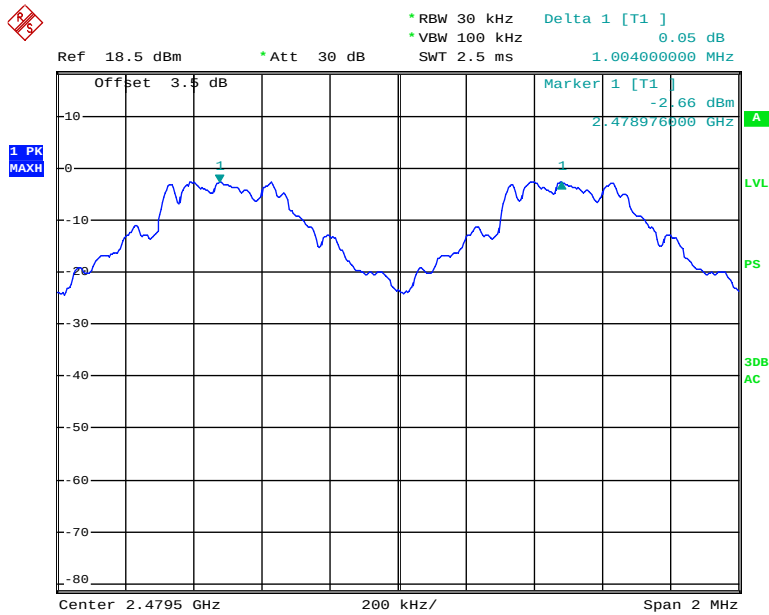
Date: 3.DEC.2012 20:05:19

### BDR (GFSK): Middle Channel



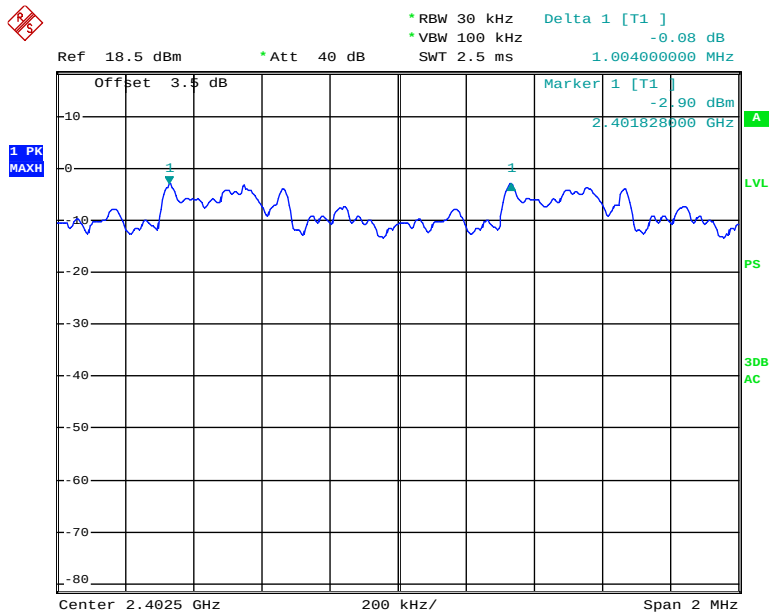
Date: 3.DEC.2012 20:06:37

### BDR (GFSK): High Channel



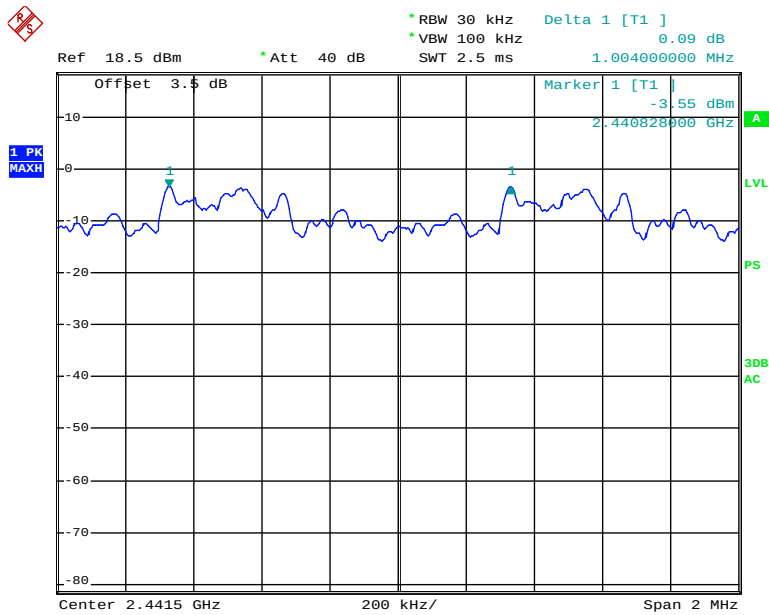
Date: 3.DEC.2012 20:07:48

### EDR ( $\pi/4$ -DQPSK): Low Channel



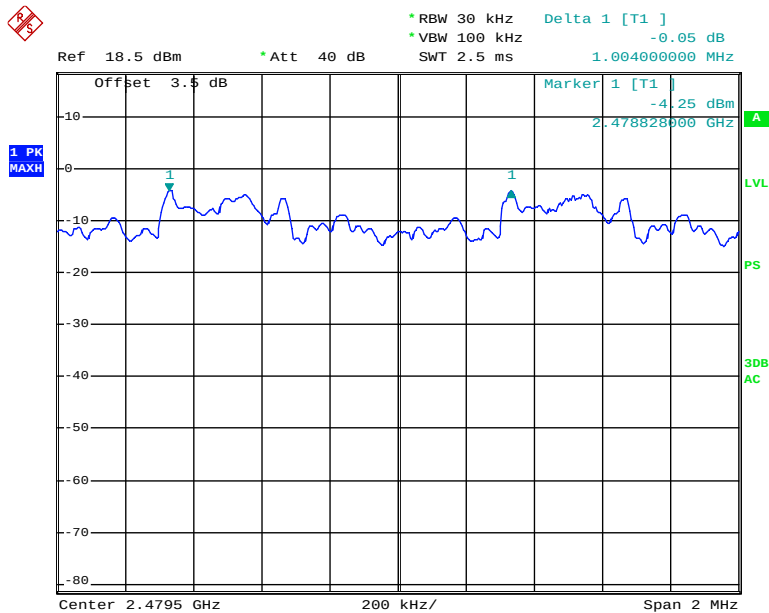
Date: 3.DEC.2012 20:42:26

### EDR ( $\pi/4$ -DQPSK): Middle Channel



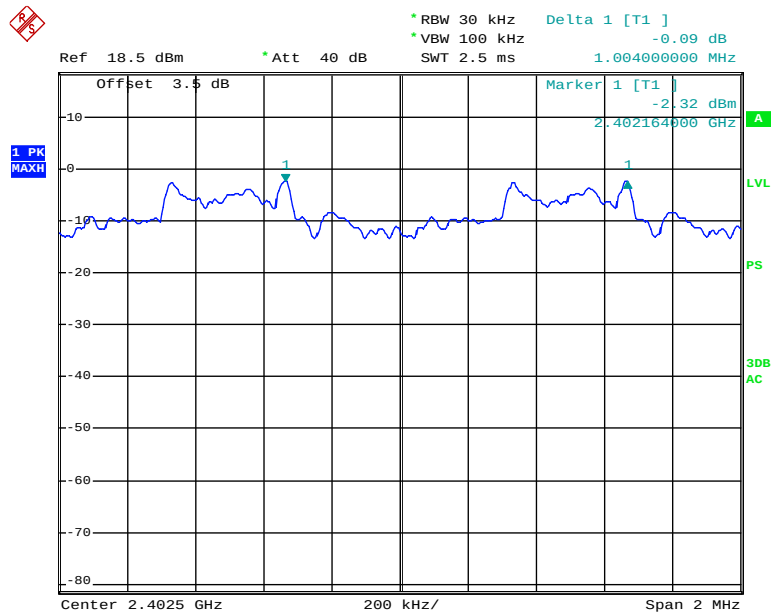
Date: 3.DEC.2012 20:44:50

### EDR ( $\pi/4$ -DQPSK): High Channel



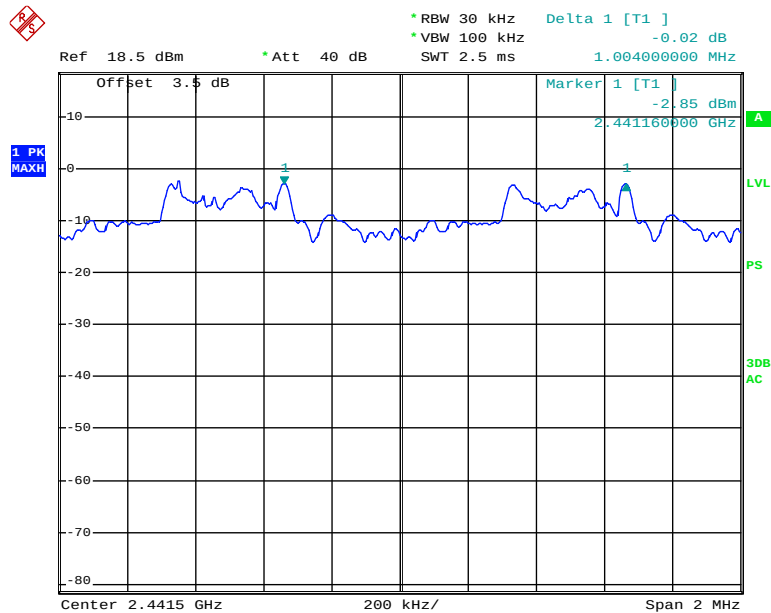
Date: 3.DEC.2012 20:45:49

### EDR (8DPSK): Low Channel



Date: 3.DEC.2012 20:47:30

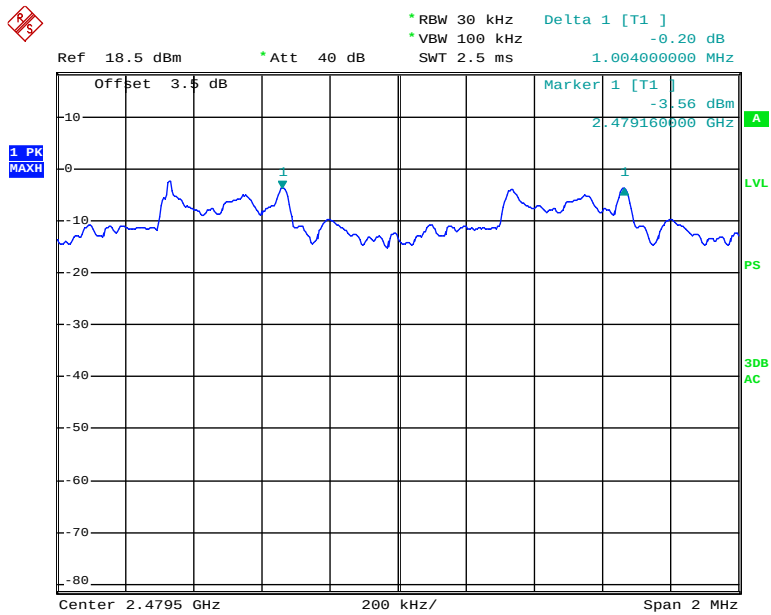
### EDR (8DPSK): Middle Channel



Date: 3.DEC.2012 20:48:29



EDR (8DPSK): High Channel



Date: 3.DEC.2012 20:46:43

## FCC §15.247(a) (1) – 20 dB EMISSION 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 125 mW.

### 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 Equipment List and Details

| Manufacturer    | Description       | Model    | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|----------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI     | 101122        | 2012-08-08       | 2013-08-07           |
| TESCOM          | Bluetooth Tester  | TC-3000B | 3000B650083   | 2011-12-07       | 2012-12-06           |

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

### Test Data

#### Environmental Conditions

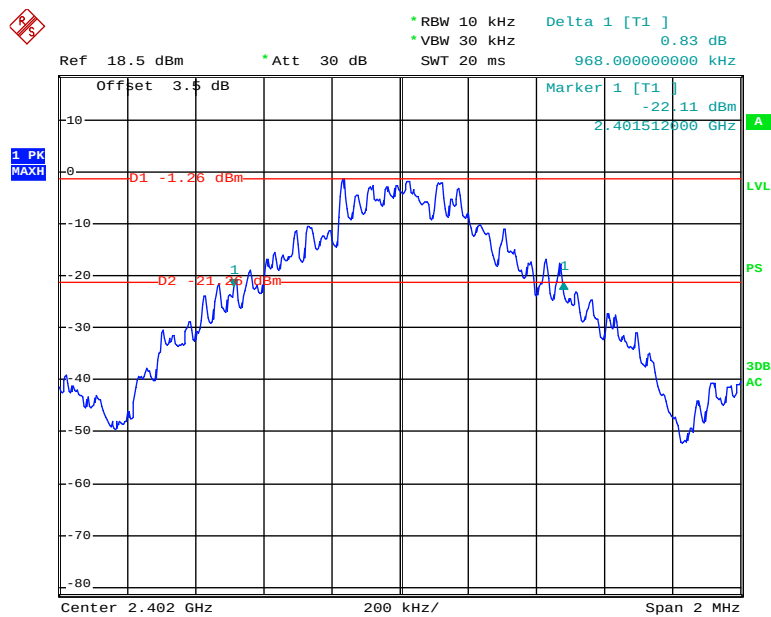
|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 56 %      |
| ATM Pressure:      | 100.1 kPa |

\* The testing was performed by Mick Yin on 2012-12-03.

Test Mode: Transmitting

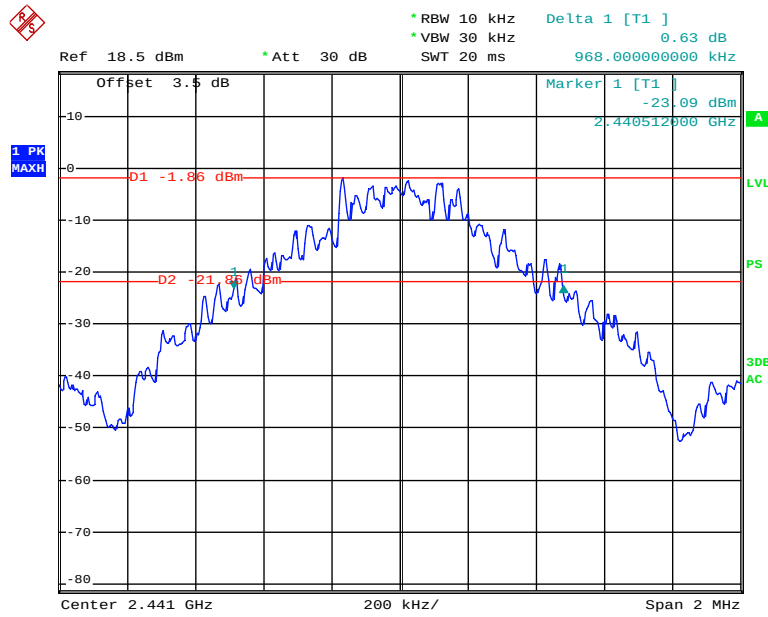
Test Result: Compliance. Please refer to following tables and plots

| Mode                                  | Channel | Frequency (MHz) | 20 dB Bandwidth (MHz) |
|---------------------------------------|---------|-----------------|-----------------------|
| <b>BDR (GFSK)</b>                     | Low     | 2402            | 0.968                 |
|                                       | Middle  | 2441            | 0.968                 |
|                                       | High    | 2480            | 0.968                 |
| <b>EDR (<math>\pi/4</math>-DQPSK)</b> | Low     | 2402            | 1.296                 |
|                                       | Middle  | 2441            | 1.296                 |
|                                       | High    | 2480            | 1.296                 |
| <b>EDR (8DPSK)</b>                    | Low     | 2402            | 1.268                 |
|                                       | Middle  | 2441            | 1.268                 |
|                                       | High    | 2480            | 1.268                 |

**BDR (GFSK): Low Channel**

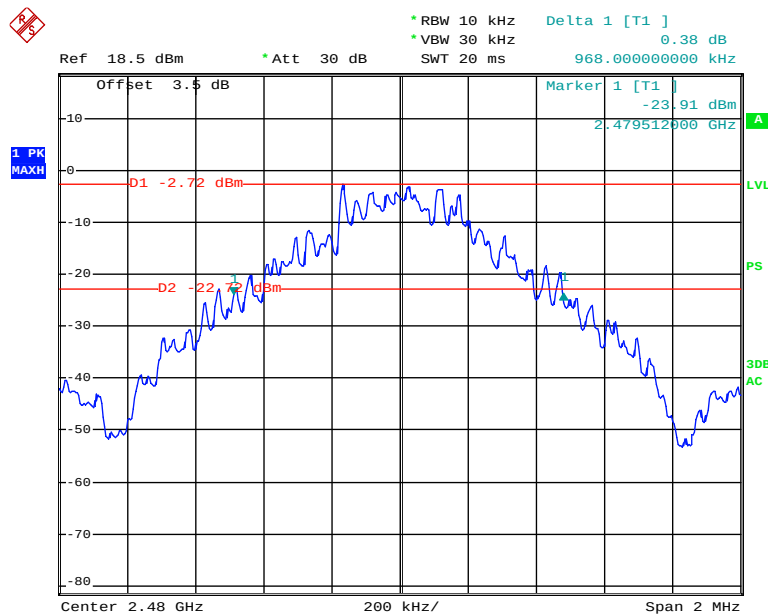
Date: 3.DEC.2012 19:56:26

### BDR (GFSK): Middle Channel



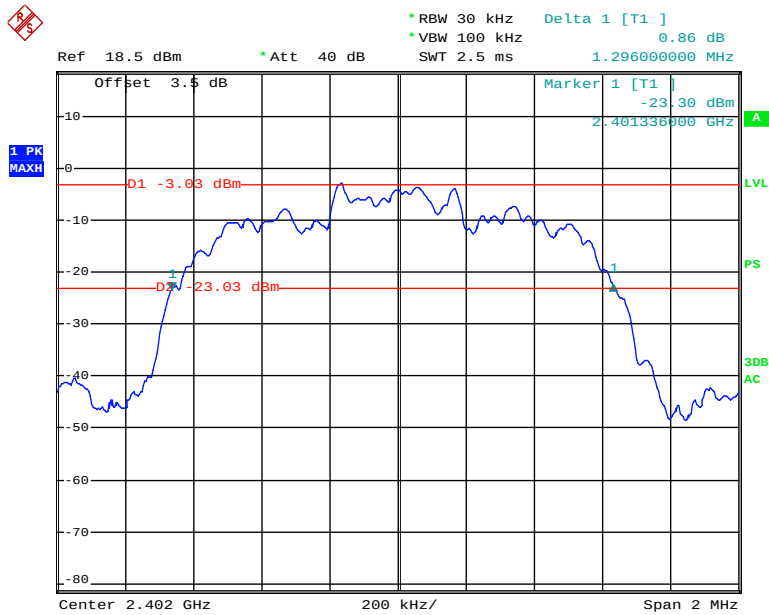
Date: 3.DEC.2012 19:55:43

### BDR (GFSK): High Channel



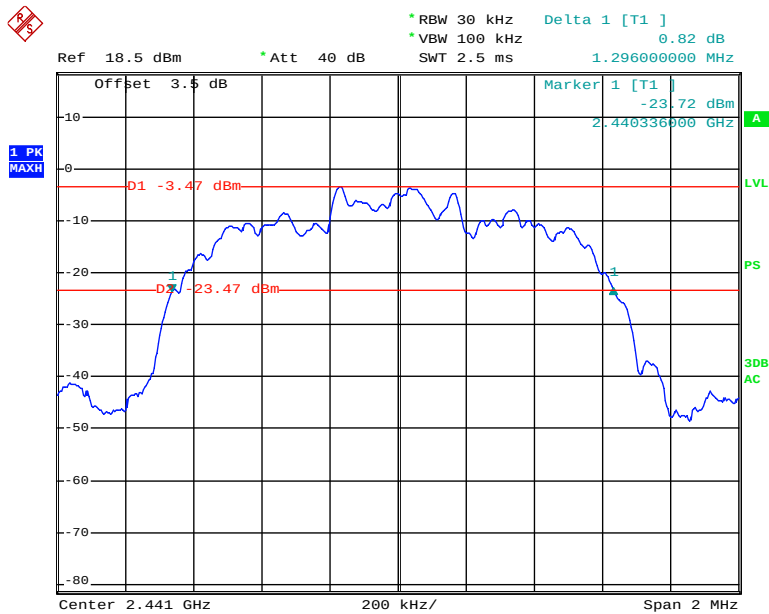
Date: 3.DEC.2012 19:58:13

### EDR ( $\pi/4$ -DQPSK): Low Channel

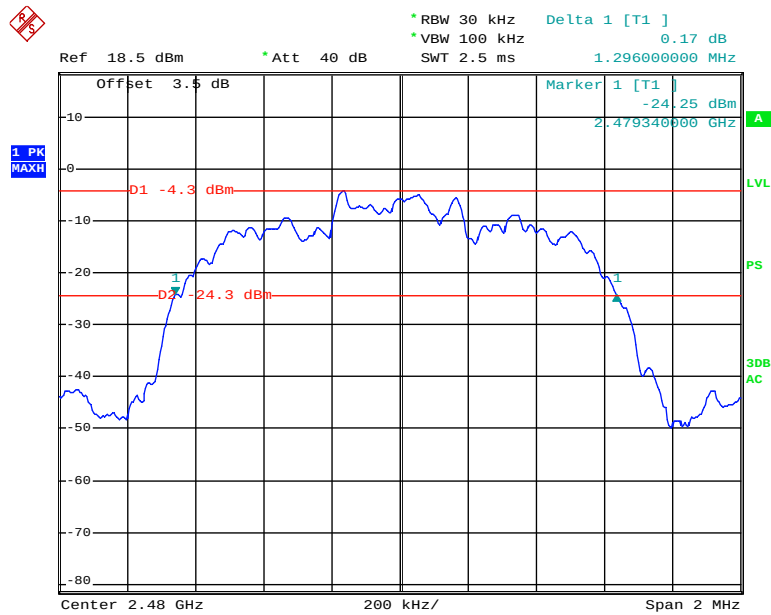


Date: 3.DEC.2012 20:56:15

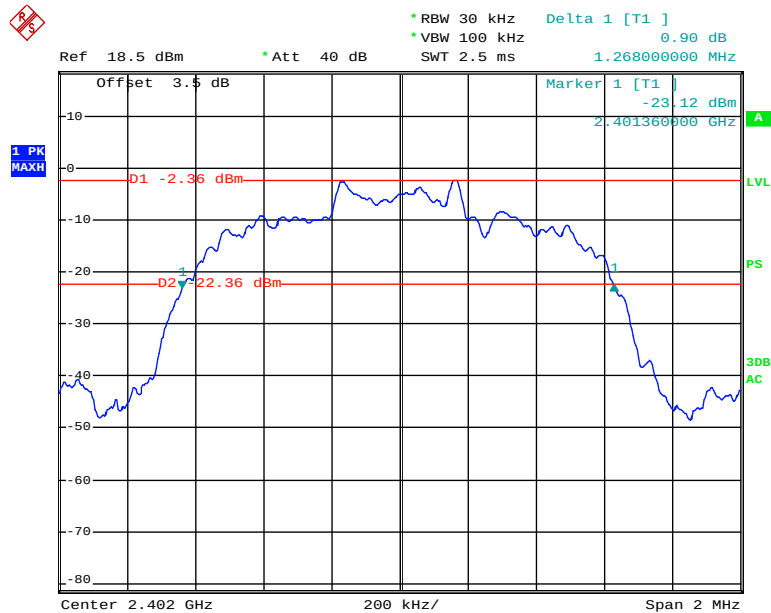
### EDR ( $\pi/4$ -DQPSK): Middle Channel



Date: 3.DEC.2012 20:57:03

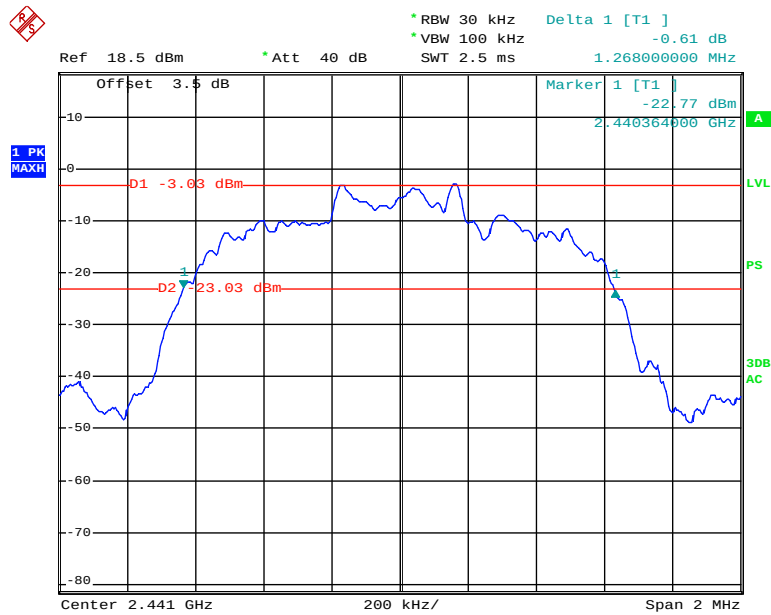
**EDR ( $\pi/4$ -DQPSK): High Channel**

Date: 3.DEC.2012 20:58:03

**EDR (8DPSK): Low Channel**

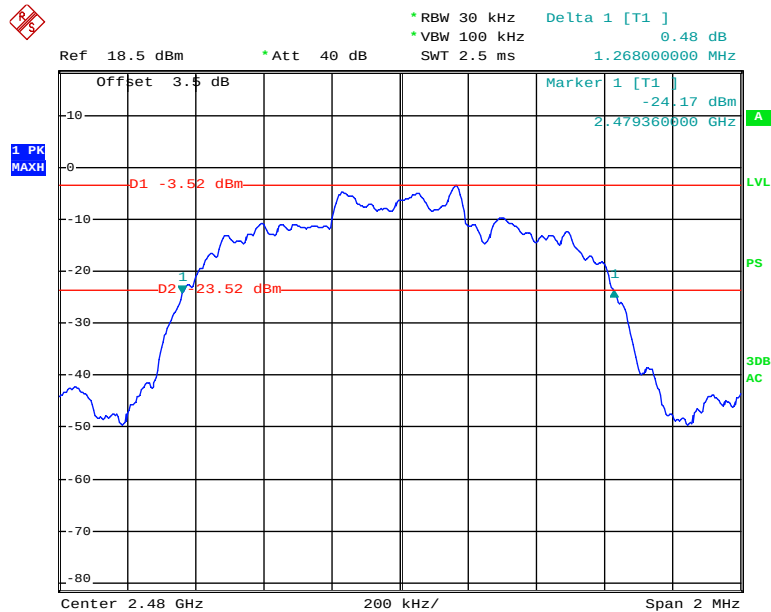
Date: 3.DEC.2012 21:00:09

### EDR (8DPSK): Middle Channel



Date: 3.DEC.2012 20:59:26

### EDR (8DPSK): High Channel



Date: 3.DEC.2012 20:58:46

**FCC §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 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 Equipment List and Details**

| Manufacturer    | Description       | Model    | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|----------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI     | 101122        | 2012-08-08       | 2013-08-07           |
| TESCOM          | Bluetooth Tester  | TC-3000B | 3000B650083   | 2011-12-07       | 2012-12-06           |

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

**Test Data****Environmental Conditions**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 25 °C     |
| <b>Relative Humidity:</b> | 56 %      |
| <b>ATM Pressure:</b>      | 100.1 kPa |

*The testing was performed by Mick Yin on 2012-12-03.*

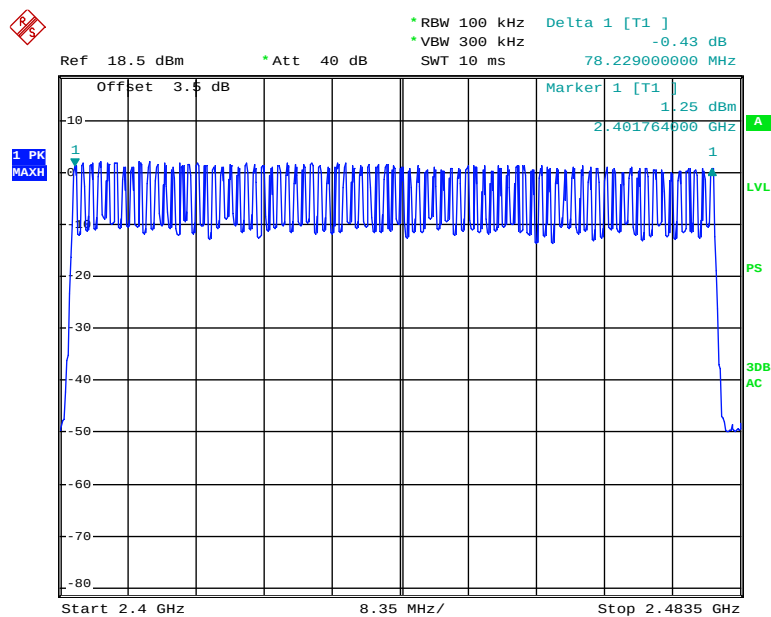
*Test Mode: Transmitting*

*Test Result: Compliance. Please refer to following tables and plots*



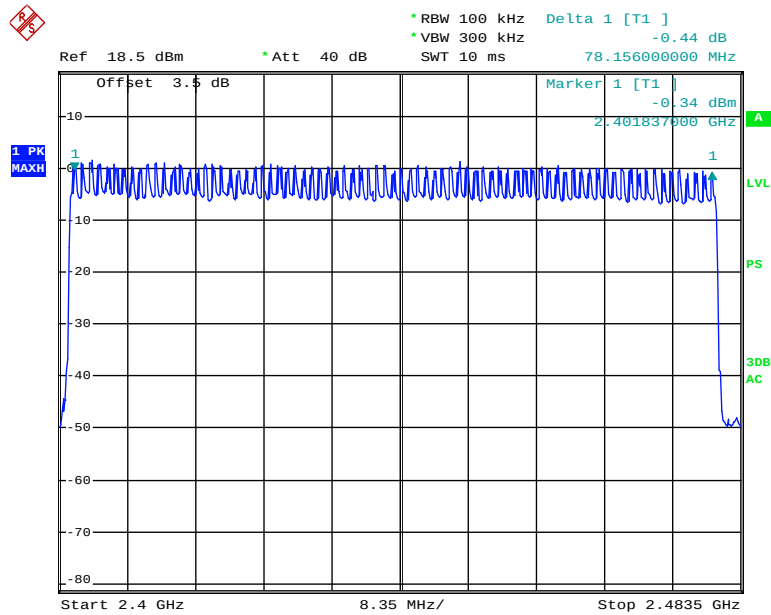
| Mode            | Frequency Range (MHz) | Number of Hopping Channel (CH) | Limit (CH) |
|-----------------|-----------------------|--------------------------------|------------|
| BDR (GFSK)      | 2400-2483.50          | 79                             | ≥15        |
| EDR (π/4-DQPSK) | 2400-2483.50          | 79                             | ≥15        |
| EDR (8DPSK)     | 2400-2483.50          | 79                             | ≥15        |

### BDR (GFSK): Number of Hopping Channels



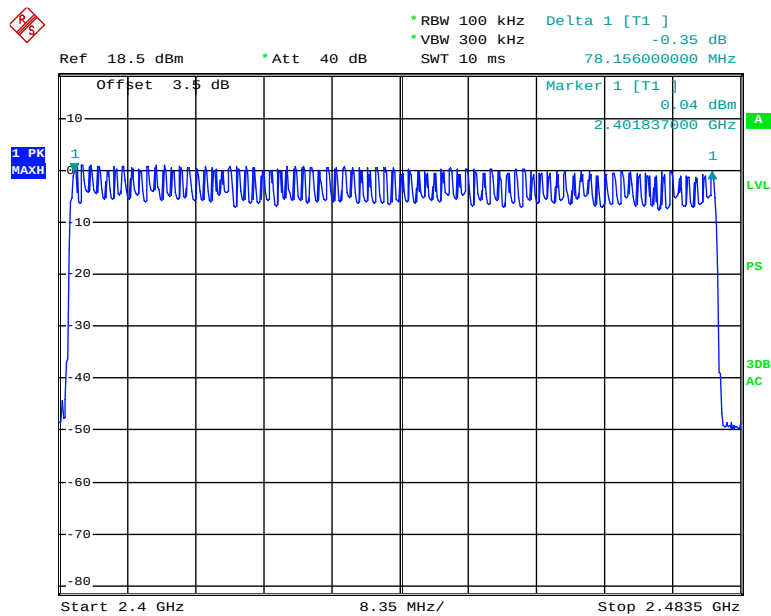
Date: 3.DEC.2012 20:21:38

### EDR ( $\pi/4$ -DQPSK): Number of Hopping Channels



Date: 3.DEC.2012 21:12:43

### (8DPSK): Number of Hopping Channels



Date: 3.DEC.2012 21:18:59

## **FCC §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 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 = Pulse time\*hop rate/number of hopping channels\*31.6S  
Hop rate=1600/S

### **Test Equipment List and Details**

| Manufacturer    | Description       | Model    | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|----------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI     | 101122        | 2012-08-08       | 2013-08-07           |
| TESCOM          | Bluetooth Tester  | TC-3000B | 3000B650083   | 2011-12-07       | 2012-12-06           |

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

### **Test Data**

#### **Environmental Conditions**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 25 °C     |
| <b>Relative Humidity:</b> | 56 %      |
| <b>ATM Pressure:</b>      | 100.1 kPa |

*The testing was performed by Mick Yin on 2012-12-03.*

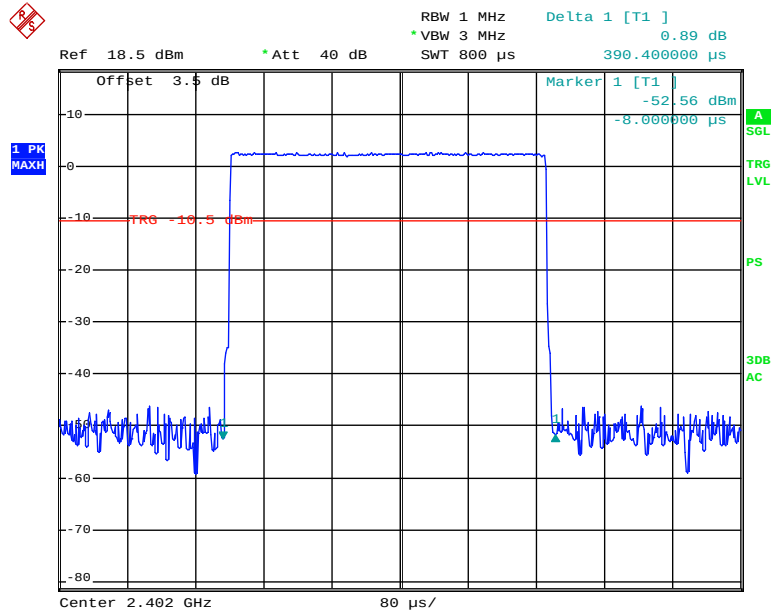
*Test Mode: Transmitting*

*Test Result: Compliance. Please refer to following tables and plots*

| Mode                  |      | Channel                                             | Pulse Width (ms) | Dwell Time (S) | Limit (S) | Result |
|-----------------------|------|-----------------------------------------------------|------------------|----------------|-----------|--------|
| BDR (GFSK)            | DH 1 | Low                                                 | 0.390            | 0.125          | 0.4       | Pass   |
|                       |      | Middle                                              | 0.390            | 0.125          | 0.4       | Pass   |
|                       |      | High                                                | 0.390            | 0.125          | 0.4       | Pass   |
|                       |      | Note: DH1:Dwell time = Pulse time*(1600/2/79)*31.6S |                  |                |           |        |
|                       | DH 3 | Low                                                 | 1.662            | 0.266          | 0.4       | Pass   |
|                       |      | Middle                                              | 1.662            | 0.266          | 0.4       | Pass   |
|                       |      | High                                                | 1.662            | 0.266          | 0.4       | Pass   |
|                       |      | Note: DH3:Dwell time = Pulse time*(1600/4/79)*31.6S |                  |                |           |        |
|                       | DH 5 | Low                                                 | 2.922            | 0.312          | 0.4       | Pass   |
|                       |      | Middle                                              | 2.922            | 0.312          | 0.4       | Pass   |
|                       |      | High                                                | 2.922            | 0.312          | 0.4       | Pass   |
|                       |      | Note: DH5:Dwell time = Pulse time*(1600/6/79)*31.6S |                  |                |           |        |
| EDR ( $\pi/4$ -DQPSK) | DH 1 | Low                                                 | 0.395            | 0.126          | 0.4       | Pass   |
|                       |      | Middle                                              | 0.395            | 0.126          | 0.4       | Pass   |
|                       |      | High                                                | 0.395            | 0.126          | 0.4       | Pass   |
|                       |      | Note: DH1:Dwell time = Pulse time*(1600/2/79)*31.6S |                  |                |           |        |
|                       | DH 3 | Low                                                 | 1.657            | 0.265          | 0.4       | Pass   |
|                       |      | Middle                                              | 1.657            | 0.265          | 0.4       | Pass   |
|                       |      | High                                                | 1.657            | 0.265          | 0.4       | Pass   |
|                       |      | Note: DH3:Dwell time = Pulse time*(1600/4/79)*31.6S |                  |                |           |        |
|                       | DH 5 | Low                                                 | 2.933            | 0.313          | 0.4       | Pass   |
|                       |      | Middle                                              | 2.933            | 0.313          | 0.4       | Pass   |
|                       |      | High                                                | 2.933            | 0.313          | 0.4       | Pass   |
|                       |      | Note: DH5:Dwell time = Pulse time*(1600/6/79)*31.6S |                  |                |           |        |
| EDR (8DPSK)           | DH 1 | Low                                                 | 0.397            | 0.127          | 0.4       | Pass   |
|                       |      | Middle                                              | 0.397            | 0.127          | 0.4       | Pass   |
|                       |      | High                                                | 0.397            | 0.127          | 0.4       | Pass   |
|                       |      | Note: DH1:Dwell time = Pulse time*(1600/2/79)*31.6S |                  |                |           |        |
|                       | DH 3 | Low                                                 | 1.663            | 0.266          | 0.4       | Pass   |
|                       |      | Middle                                              | 1.663            | 0.266          | 0.4       | Pass   |
|                       |      | High                                                | 1.663            | 0.266          | 0.4       | Pass   |
|                       |      | Note: DH3:Dwell time = Pulse time*(1600/4/79)*31.6S |                  |                |           |        |
|                       | DH 5 | Low                                                 | 2.913            | 0.311          | 0.4       | Pass   |
|                       |      | Middle                                              | 2.913            | 0.311          | 0.4       | Pass   |
|                       |      | High                                                | 2.913            | 0.311          | 0.4       | Pass   |
|                       |      | Note: DH5:Dwell time = Pulse time*(1600/6/79)*31.6S |                  |                |           |        |

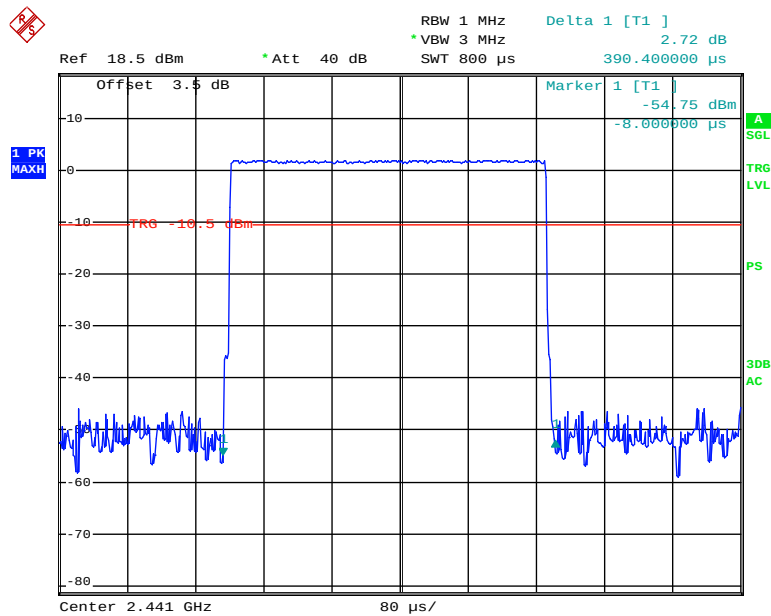
**BDR (GFSK):**

**Pulse time, Low Channel, DH1**



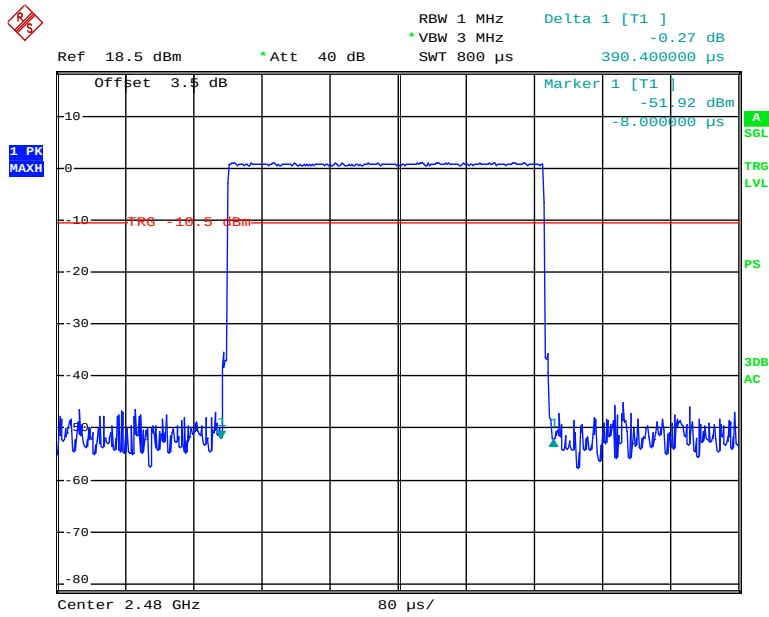
Date: 3.DEC.2012 20:09:46

**Pulse time, Middle Channel, DH1**



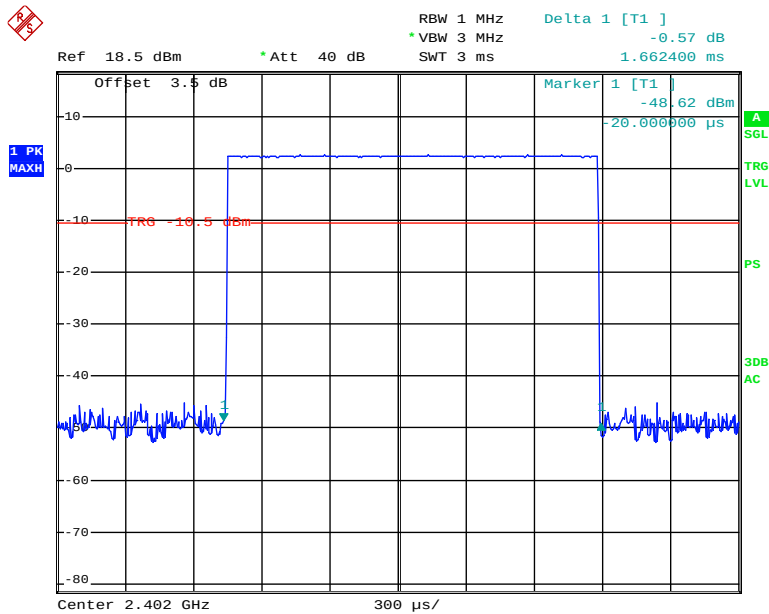
Date: 3.DEC.2012 20:10:38

### Pulse time, High Channel, DH1



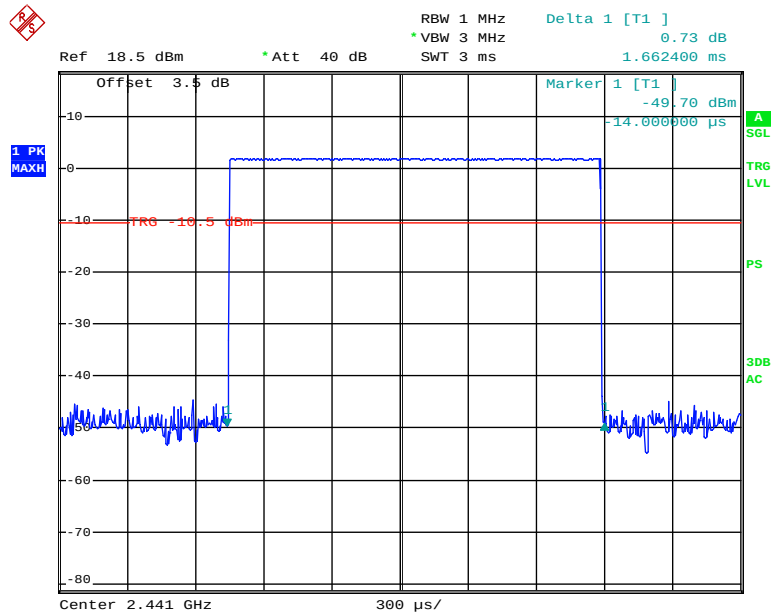
Date: 3.DEC.2012 20:10:52

### Pulse time, Low Channel, DH3



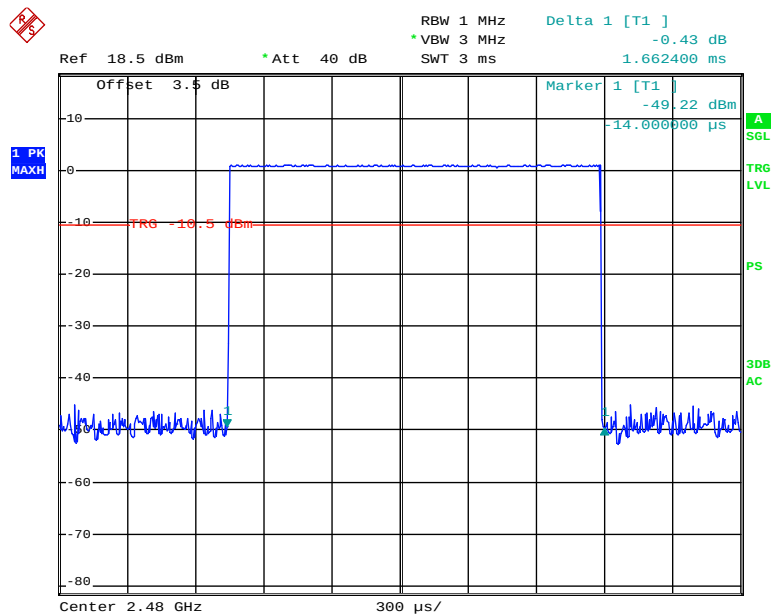
Date: 3.DEC.2012 20:11:40

### Pulse time, Middle Channel, DH3



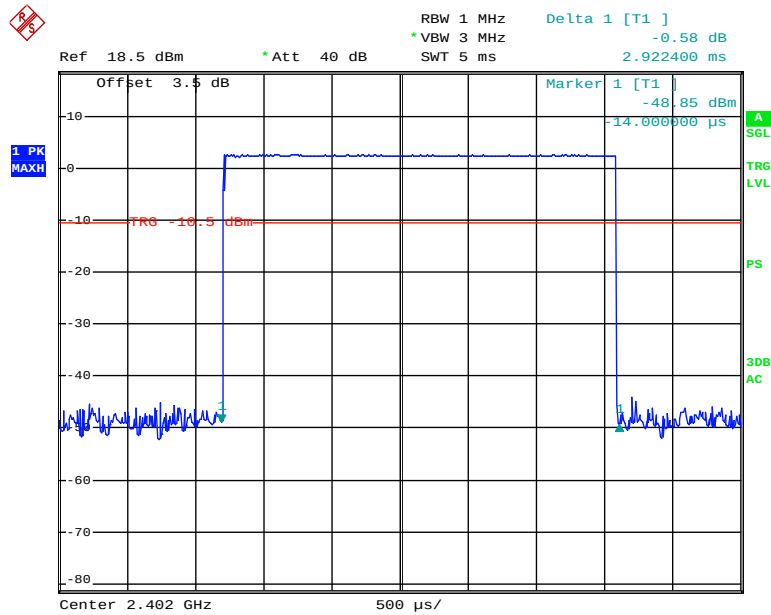
Date: 3.DEC.2012 20:12:05

### Pulse time, High Channel, DH3



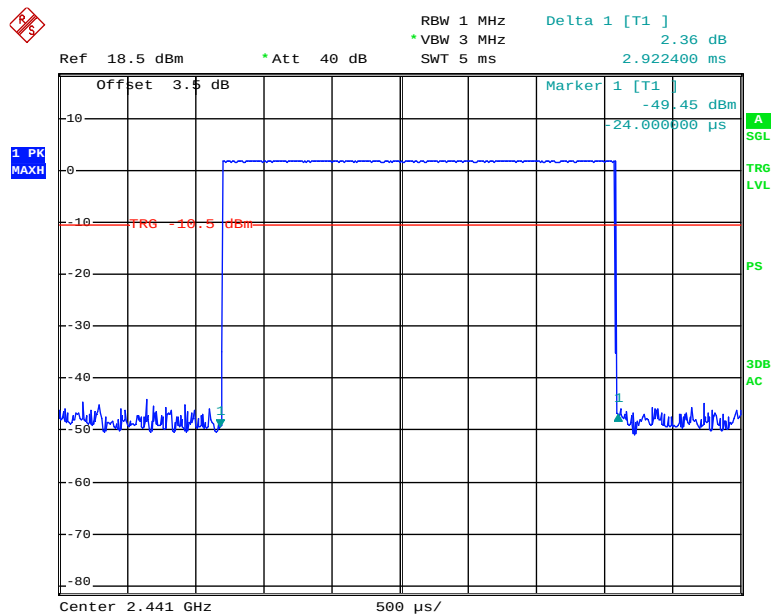
Date: 3.DEC.2012 20:12:36

### Pulse time, Low Channel, DH5



Date: 3.DEC.2012 20:13:09

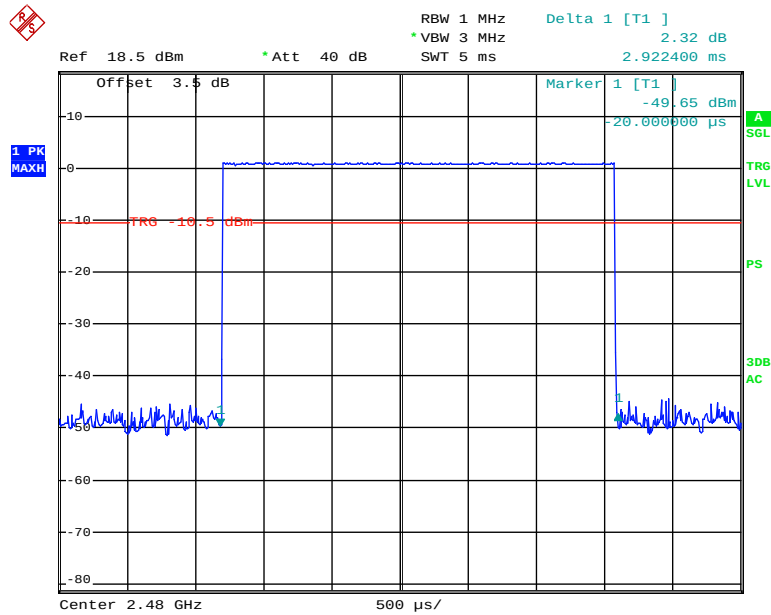
### Pulse time, Middle Channel, DH5



Date: 3.DEC.2012 20:13:34



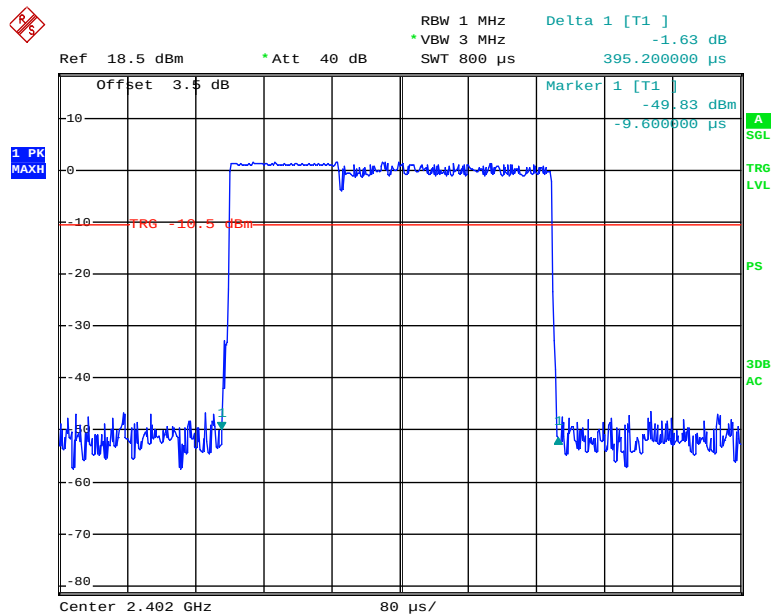
### Pulse time, High Channel, DH5



Date: 3.DEC.2012 20:25:26

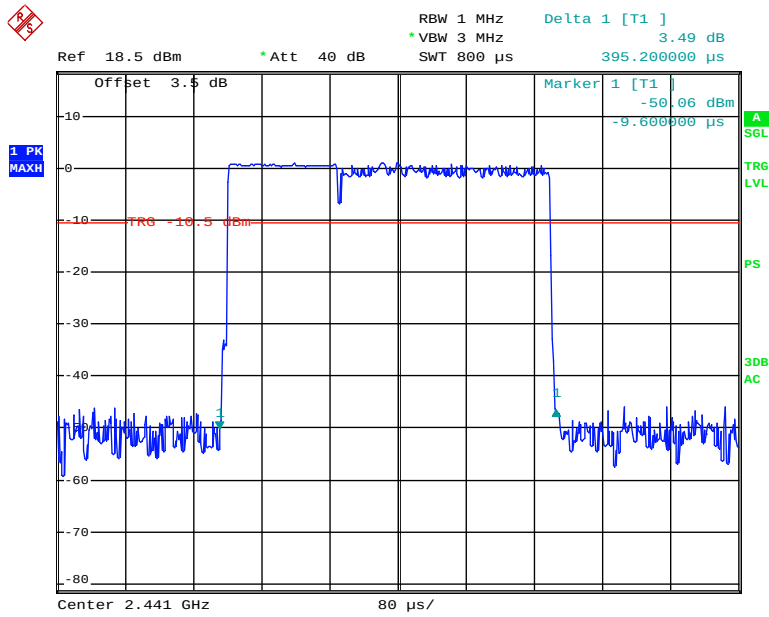
### EDR ( $\pi/4$ -DQPSK):

### Pulse time, Low Channel, DH1



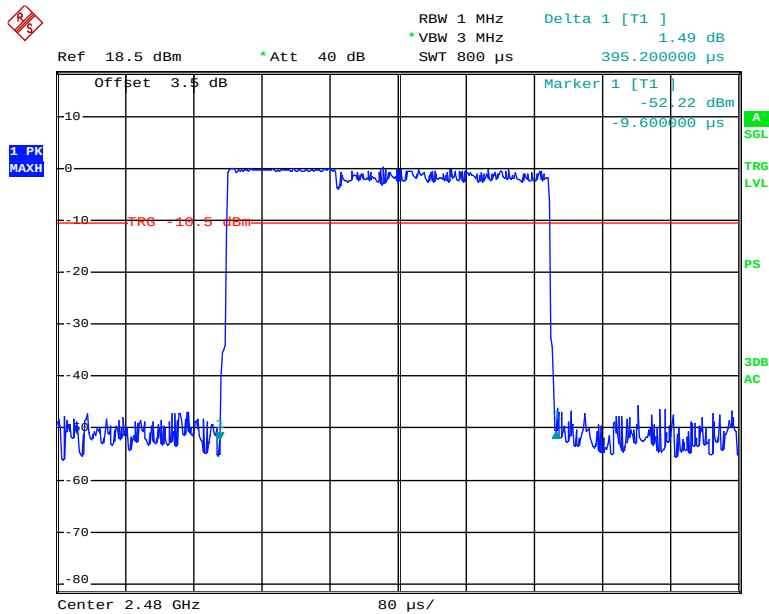
Date: 3.DEC.2012 20:30:30

### Pulse time, Middle Channel, DH1



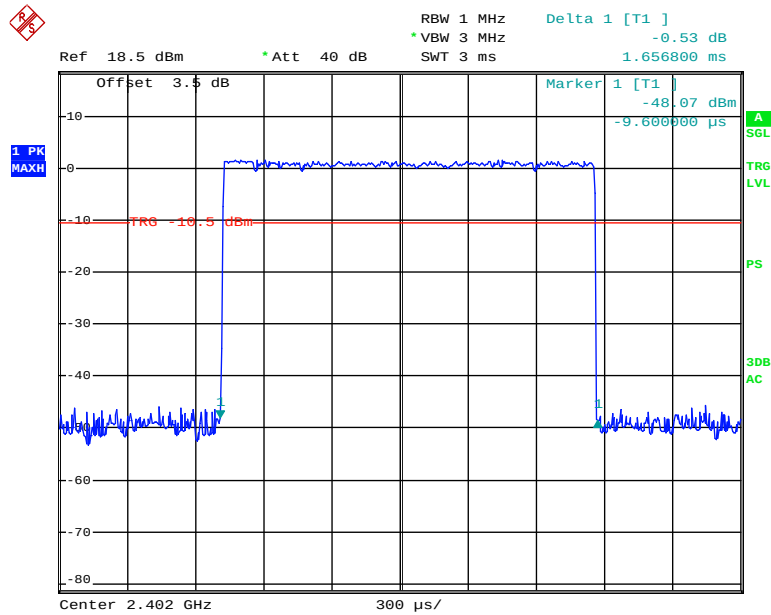
Date: 3.DEC.2012 20:30:43

### Pulse time, High Channel, DH1



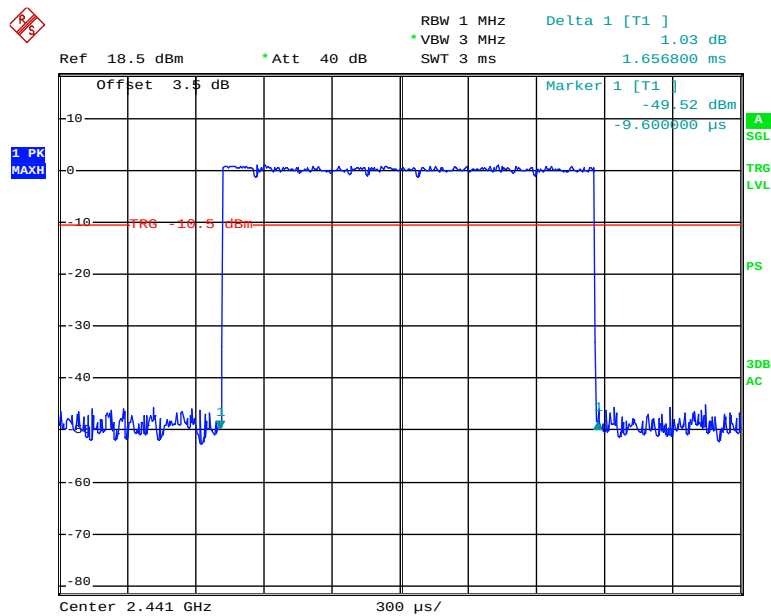
Date: 3.DEC.2012 20:30:59

### Pulse time, Low Channel, DH3



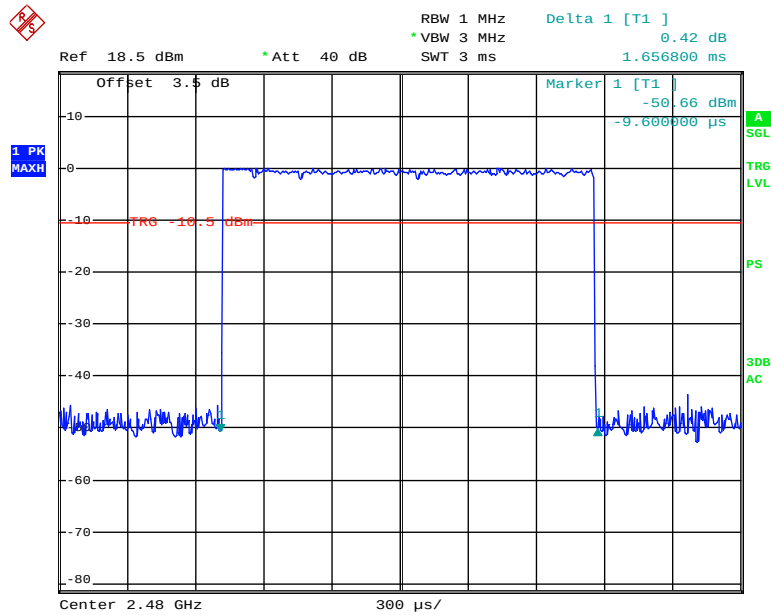
Date: 3.DEC.2012 20:33:08

### Pulse time, Middle Channel, DH3



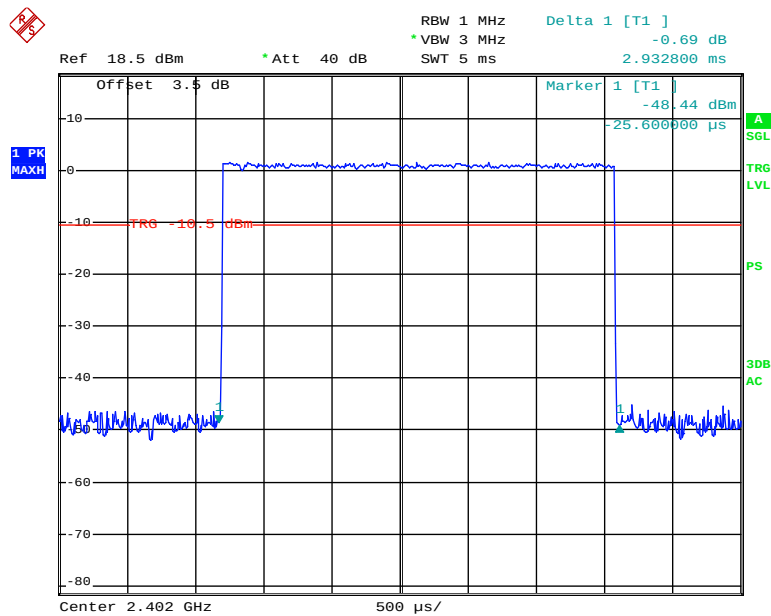
Date: 3.DEC.2012 20:32:49

### Pulse time, High Channel, DH3



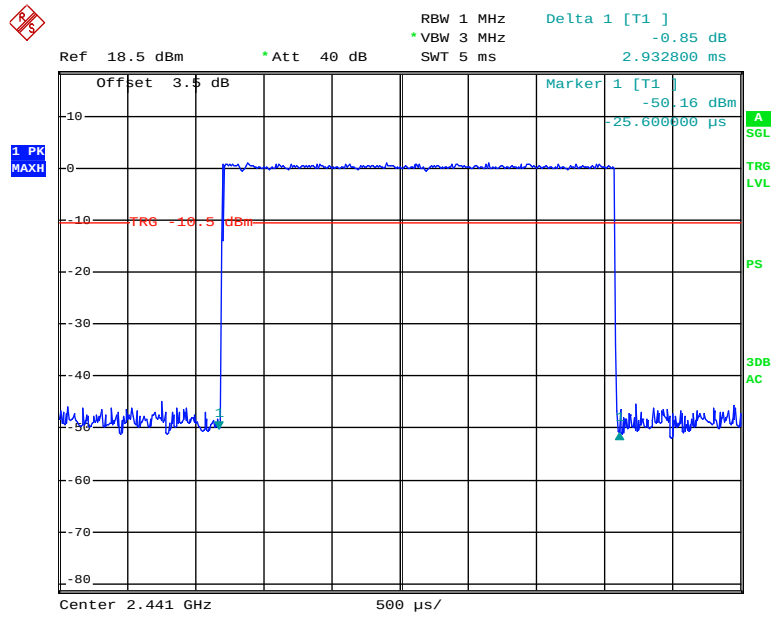
Date: 3.DEC.2012 20:33:24

### Pulse time, Low Channel, DH5



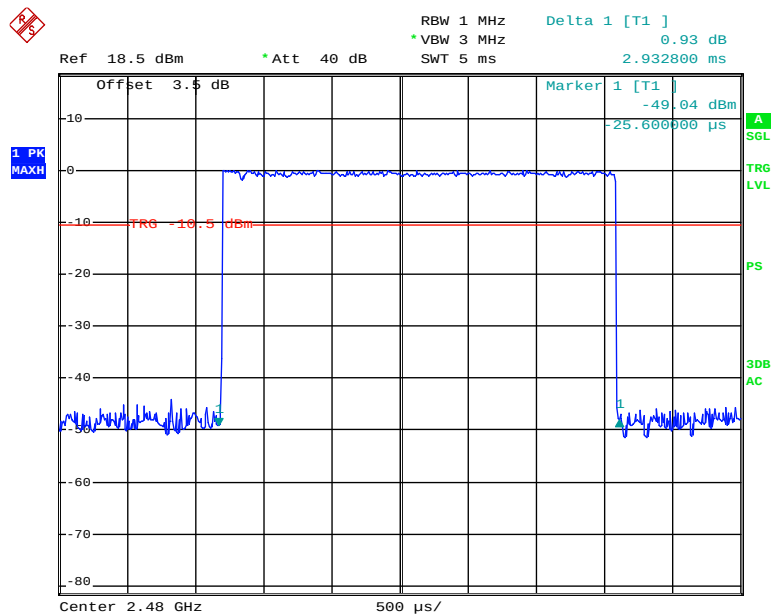
Date: 3.DEC.2012 20:37:07

### Pulse time, Middle Channel, DH5



Date: 3.DEC.2012 20:37:43

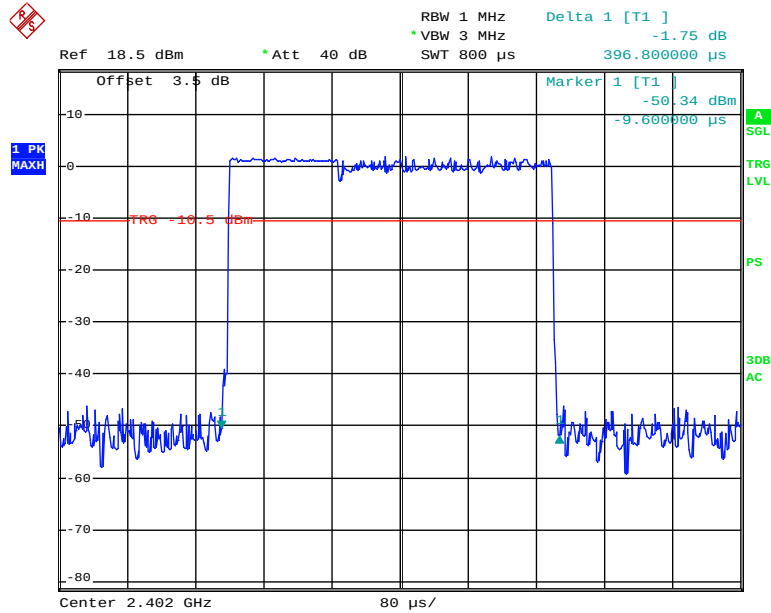
### Pulse time, High Channel, DH5



Date: 3.DEC.2012 20:38:17

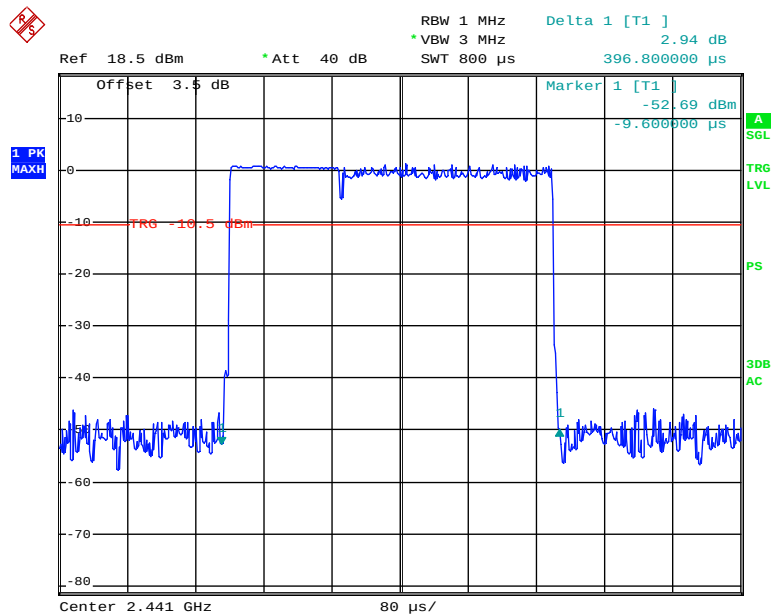
**EDR (8DPSK):**

**Pulse time, Low Channel, DH1**



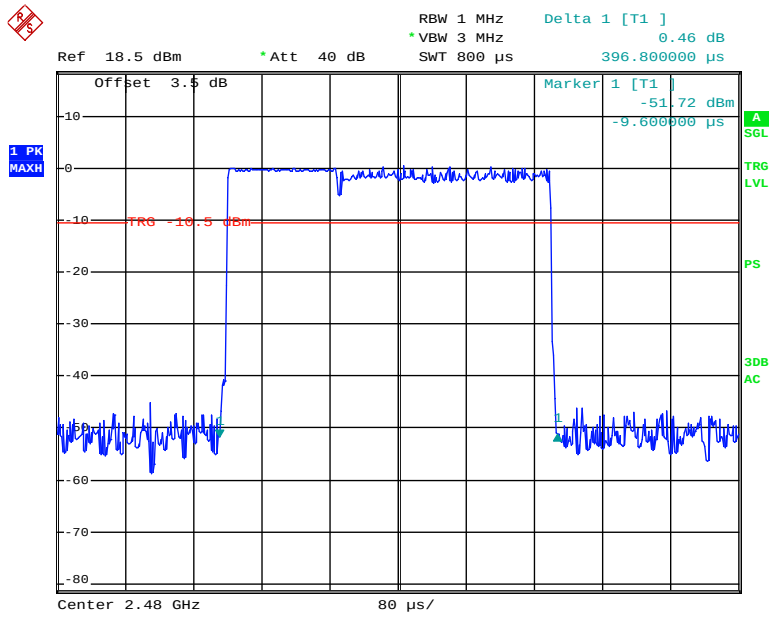
Date: 3.DEC.2012 20:31:39

**Pulse time, Middle Channel, DH1**



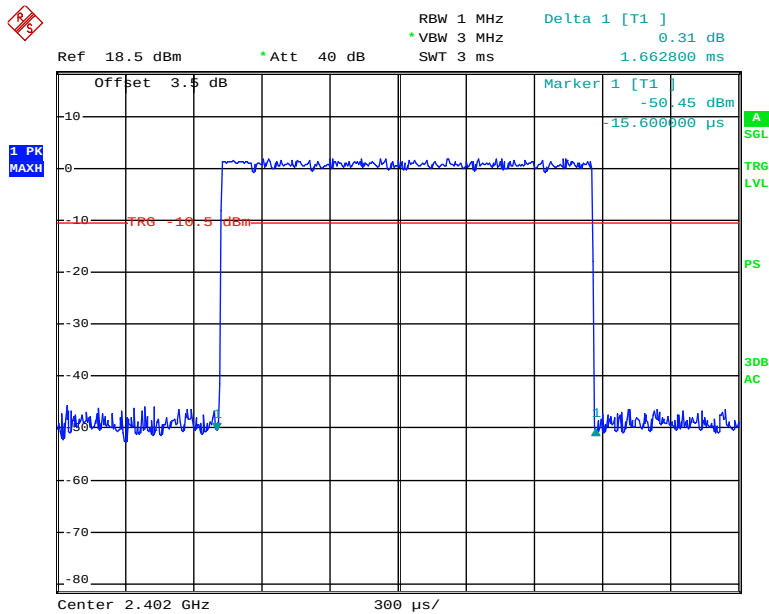
Date: 3.DEC.2012 20:31:54

### Pulse time, High Channel, DH1



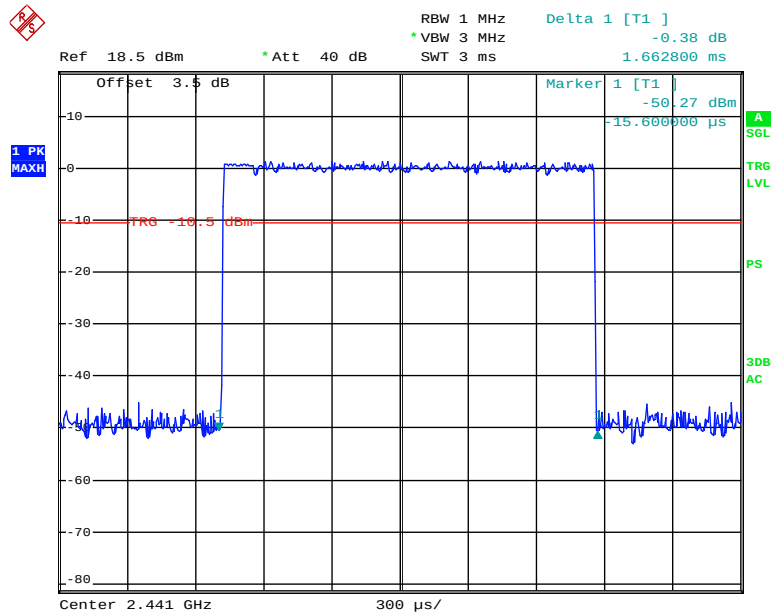
Date: 3.DEC.2012 20:31:22

### Pulse time, Low Channel, DH3



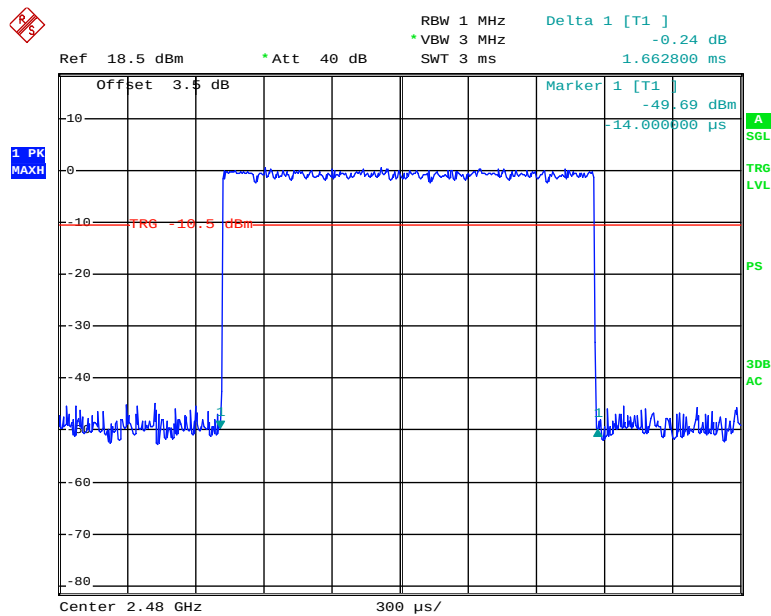
Date: 3.DEC.2012 20:36:26

### Pulse time, Middle Channel, DH3



Date: 3.DEC.2012 20:36:10

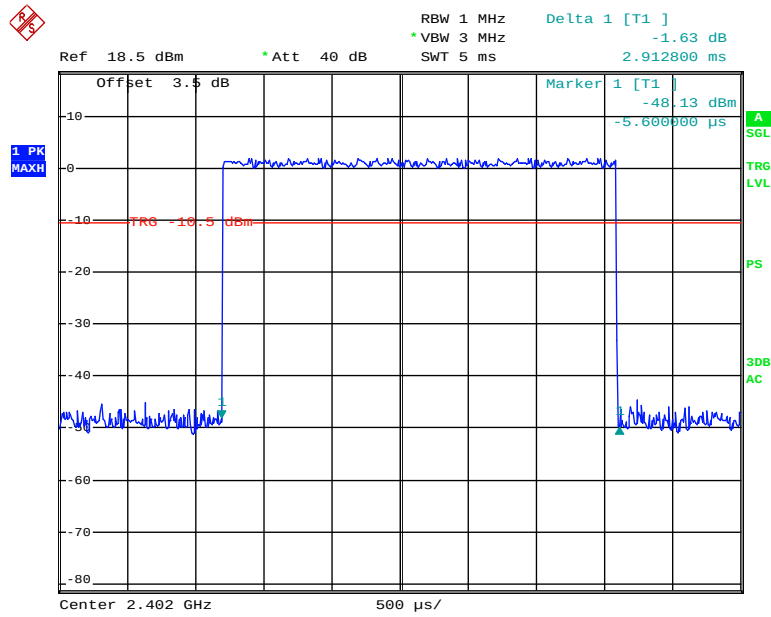
### Pulse time, High Channel, DH3



Date: 3.DEC.2012 21:02:58

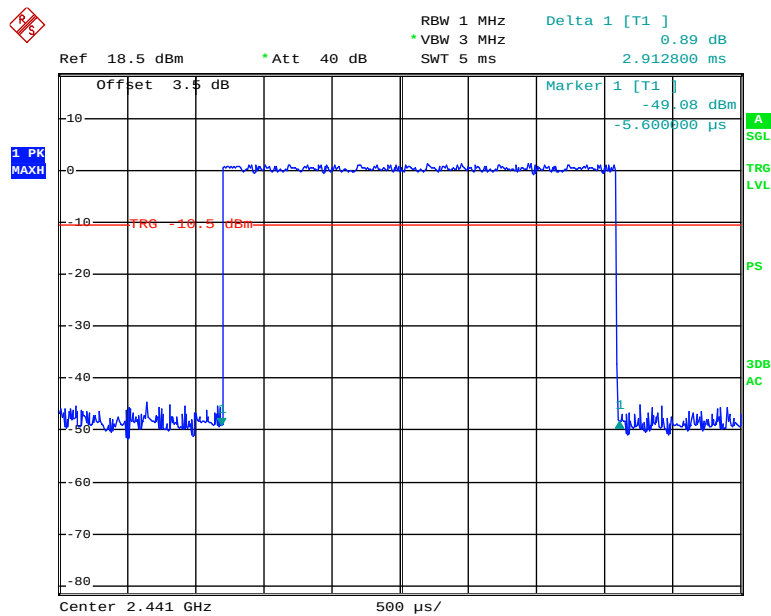


### Pulse time, Low Channel, DH5



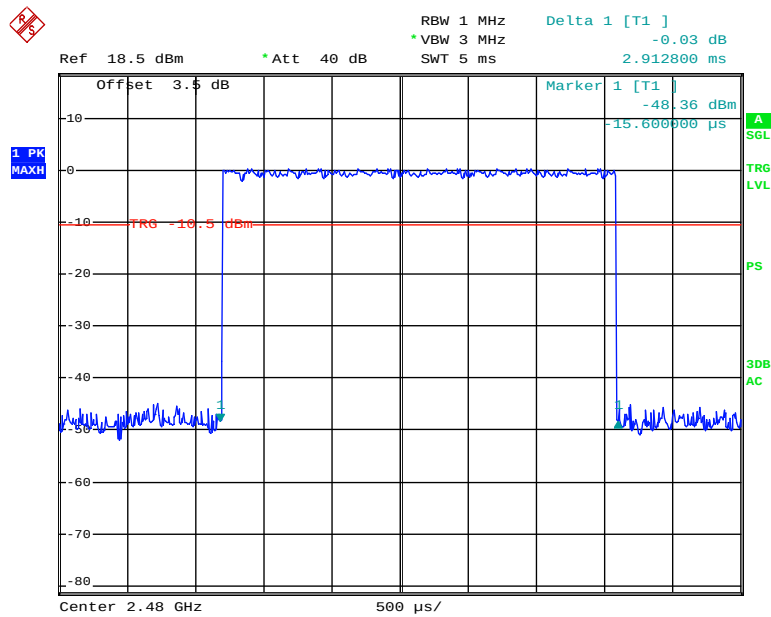
Date: 3.DEC.2012 20:39:56

### Pulse time, Middle Channel, DH5



Date: 3.DEC.2012 20:39:28

### Pulse time, High Channel, DH5



Date: 3.DEC.2012 20:38:49

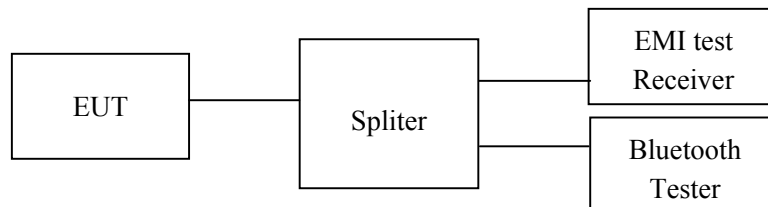
## FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

### 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. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

### 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 Equipment List and Details

| Manufacturer    | Description       | Model    | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|----------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI     | 101122        | 2012-08-08       | 2013-08-07           |
| TESCOM          | Bluetooth Tester  | TC-3000B | 3000B650083   | 2011-12-07       | 2012-12-06           |

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

### Test Data

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 56 %      |
| ATM Pressure:      | 100.1 kPa |

The testing was performed by Mick Yin on 2012-12-03.

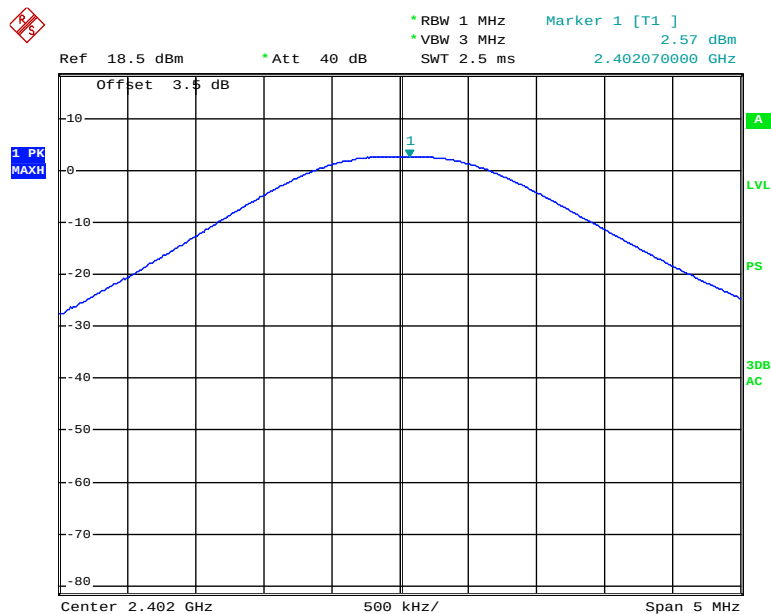
Test Mode: Transmitting

Test Result: Compliance. Please refer to following tables and plots

| Mode                  | Channel | Frequency (MHz) | Conducted Output Power |       | Limit (mW) |
|-----------------------|---------|-----------------|------------------------|-------|------------|
|                       |         |                 | (dBm)                  | (mW)  |            |
| BDR (GFSK)            | Low     | 2402            | 2.57                   | 1.807 | 1000       |
|                       | Middle  | 2441            | 1.94                   | 1.563 | 1000       |
|                       | High    | 2480            | 1.01                   | 1.262 | 1000       |
| EDR ( $\pi/4$ -DQPSK) | Low     | 2402            | 2.33                   | 1.710 | 1000       |
|                       | Middle  | 2441            | 1.74                   | 1.493 | 1000       |
|                       | High    | 2480            | 0.87                   | 1.222 | 1000       |
| EDR (8DPSK)           | Low     | 2402            | 2.60                   | 1.820 | 1000       |
|                       | Middle  | 2441            | 1.97                   | 1.574 | 1000       |
|                       | High    | 2480            | 1.13                   | 1.297 | 1000       |

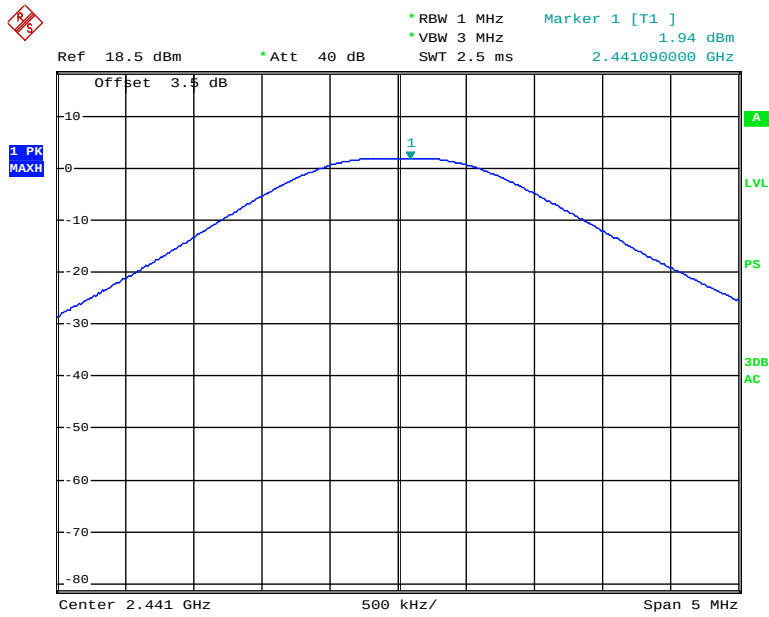
Note: The data above was tested in conducted mode.

### BDR (GFSK): Low Channel



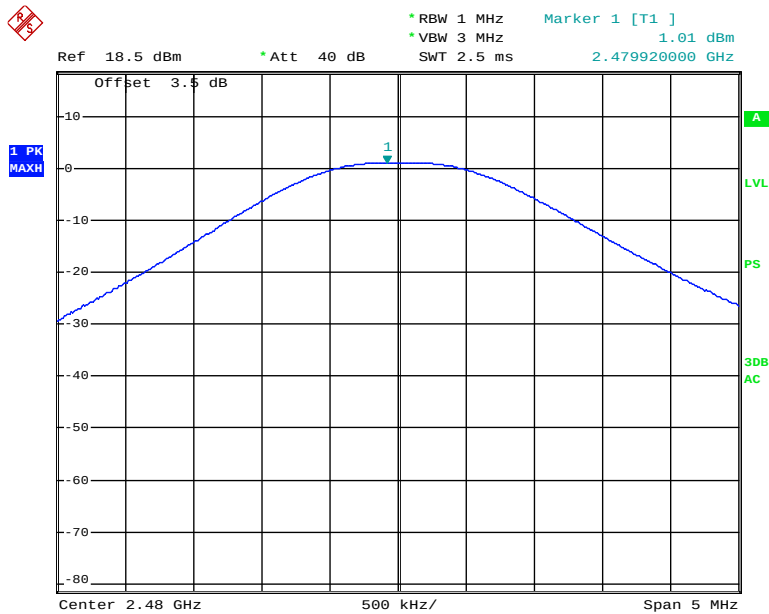
Date: 3.DEC.2012 20:16:17

### BDR (GFSK): Middle Channel



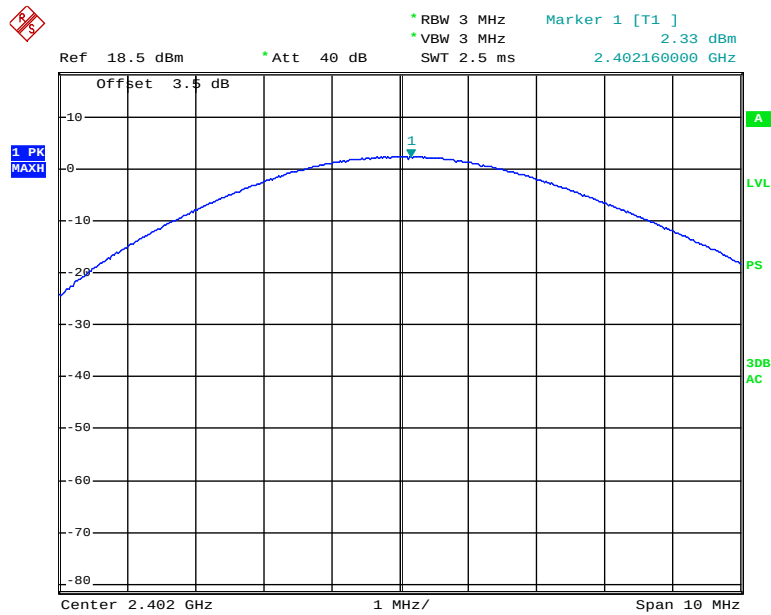
Date: 3.DEC.2012 20:16:38

### BDR (GFSK): High Channel



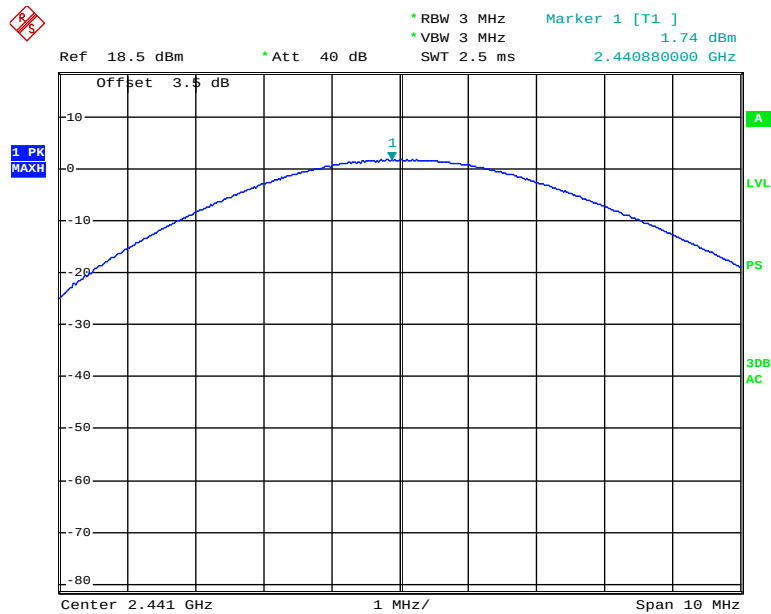
Date: 3.DEC.2012 20:16:53

### EDR( $\pi/4$ -DQPSK): Low Channel



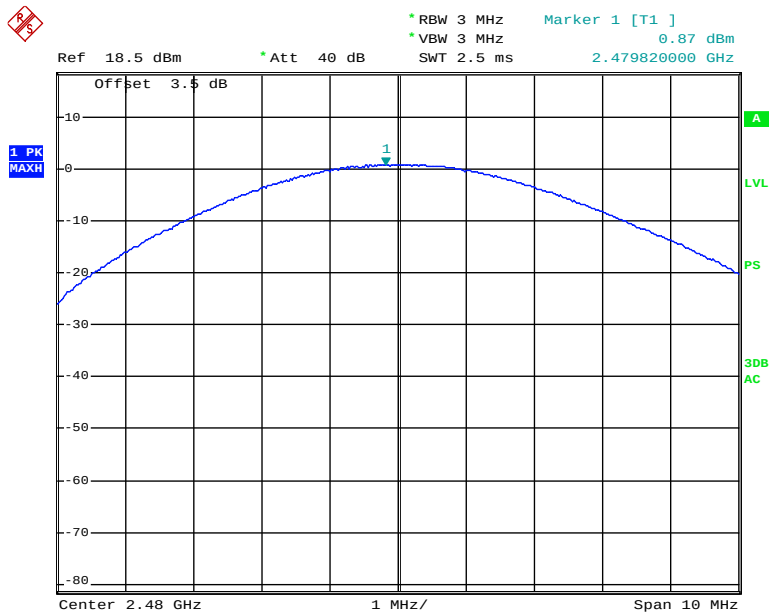
Date: 3.DEC.2012 20:26:35

### EDR( $\pi/4$ -DQPSK): Middle Channel



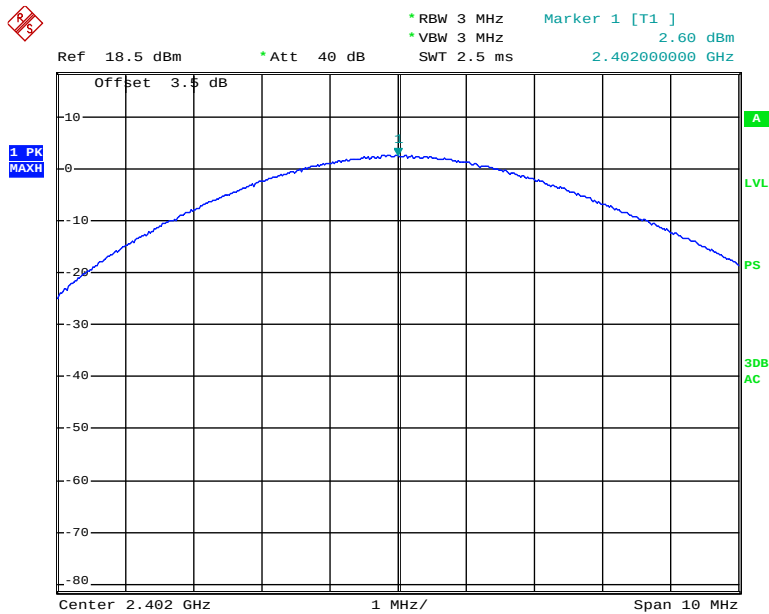
Date: 3.DEC.2012 20:27:01

### EDR( $\pi/4$ -DQPSK): High Channel



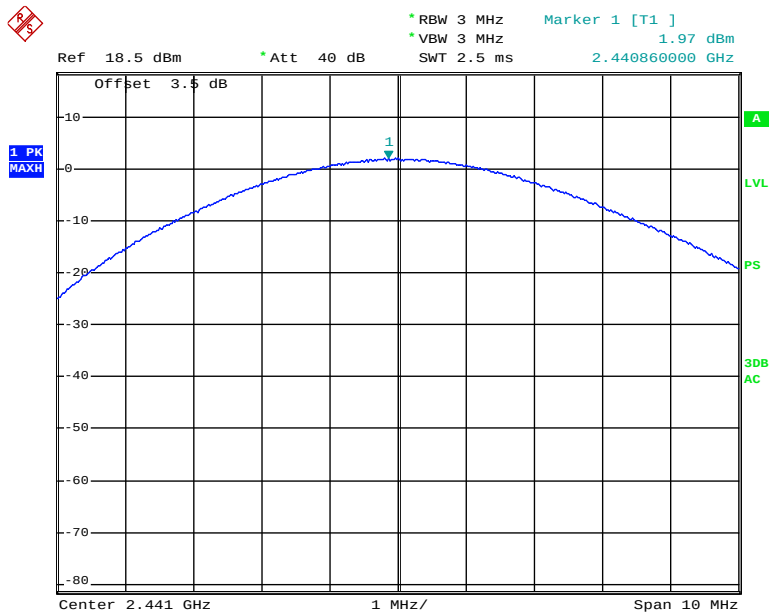
Date: 3.DEC.2012 20:27:20

### EDR(8DPSK): Low Channel



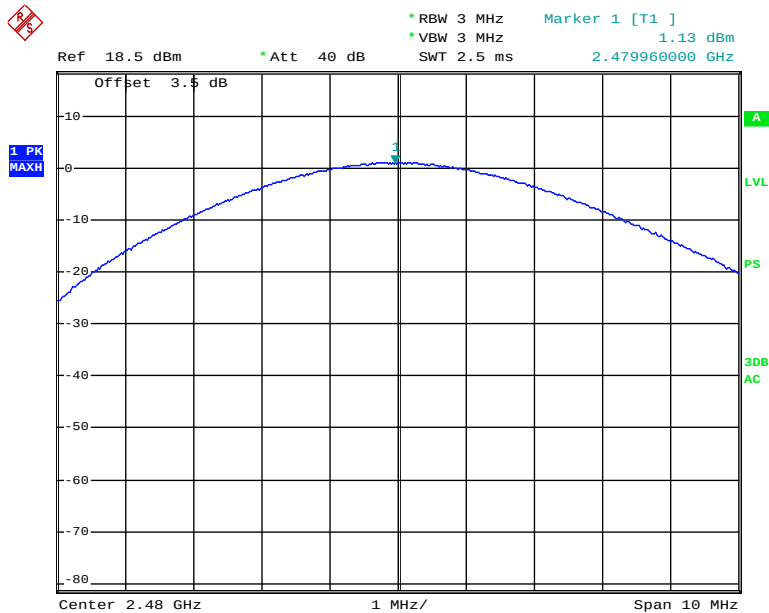
Date: 3.DEC.2012 20:28:36

### EDR(8DPSK): Middle Channel



Date: 3.DEC.2012 20:28:21

### EDR(8DPSK): High Channel



Date: 3.DEC.2012 20:28:03



## FCC §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 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 RBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

### Test Equipment List and Details

| Manufacturer    | Description       | Model    | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|----------|---------------|------------------|----------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI     | 101122        | 2012-08-08       | 2013-08-07           |
| TESCOM          | Bluetooth Tester  | TC-3000B | 3000B650083   | 2011-12-07       | 2012-12-06           |

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

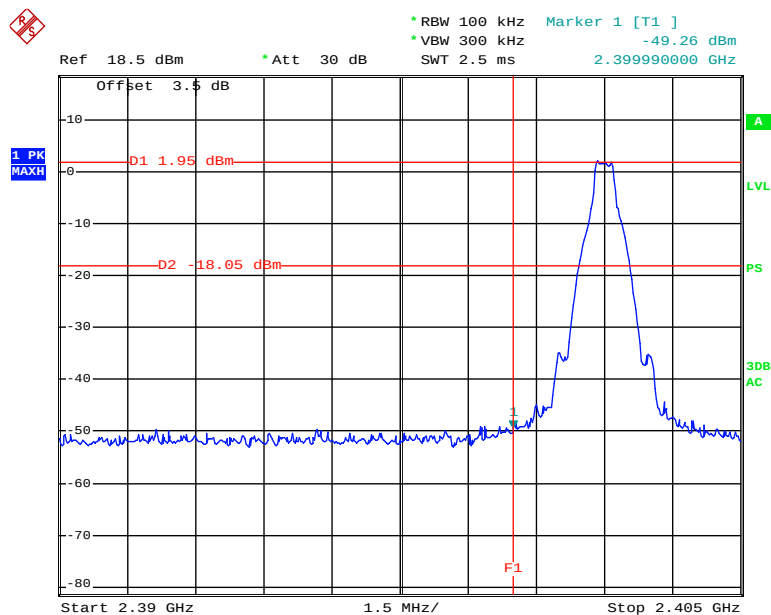
**Test Data****Environmental Conditions**

|                    |           |
|--------------------|-----------|
| Temperature:       | 25 °C     |
| Relative Humidity: | 56 %      |
| ATM Pressure:      | 100.1 kPa |

The testing was performed by Mick Yin on 2012-12-03.

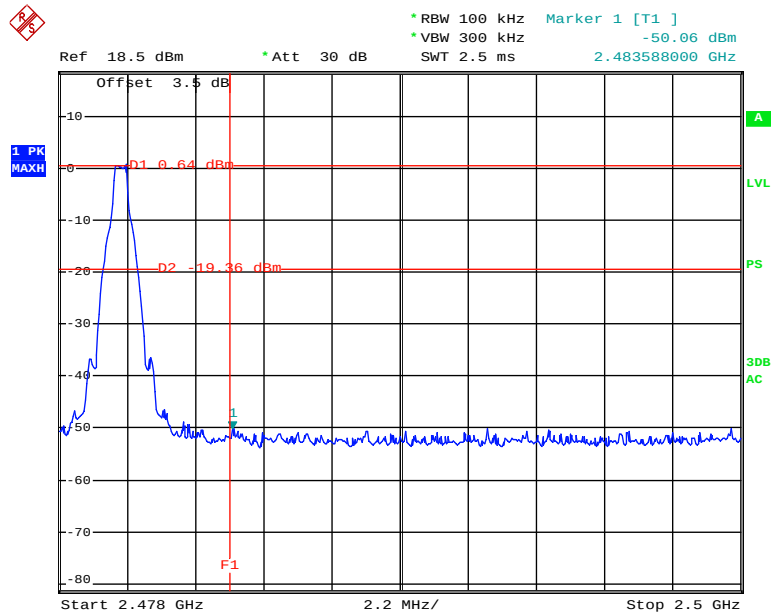
Test Mode: Transmitting

Test Result: Compliance. Please refer to following plots

**BDR (GFSK): Band Edge-Left Side**

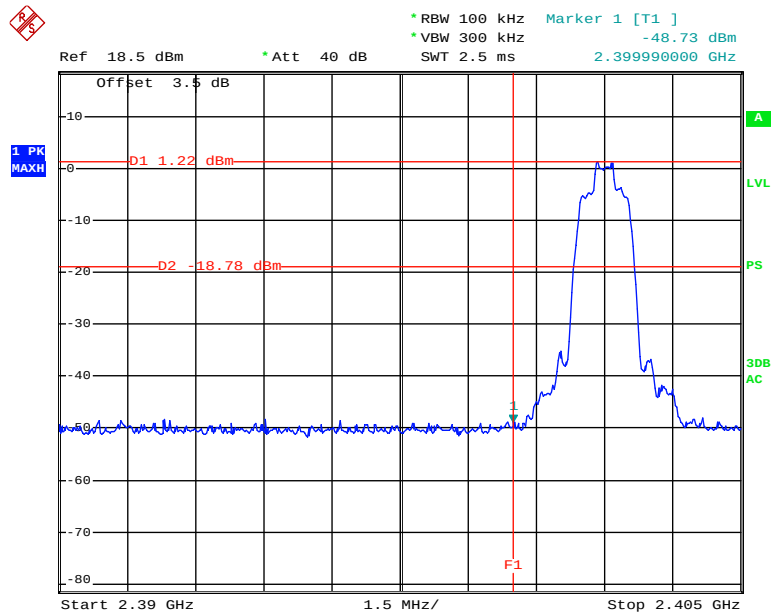
Date: 3.DEC.2012 20:01:19

### BDR (GFSK): Band Edge-Right Side



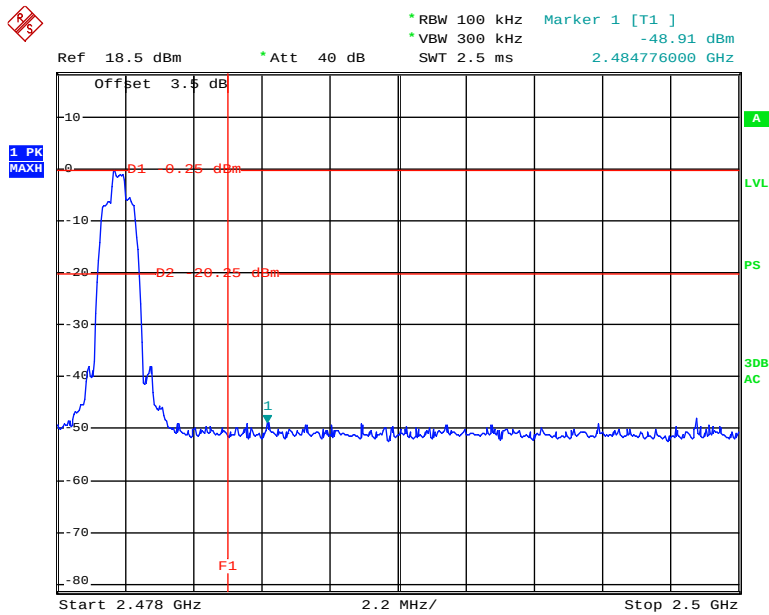
Date: 3.DEC.2012 20:02:56

### EDR ( $\pi/4$ -DQPSK): Band Edge-Left Side



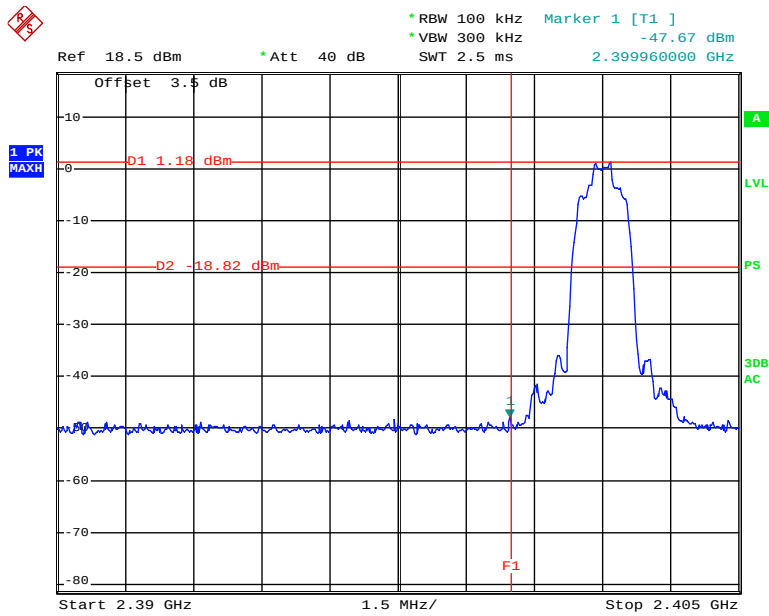
Date: 3.DEC.2012 20:51:41

### EDR ( $\pi/4$ -DQPSK): Band Edge-Right Side



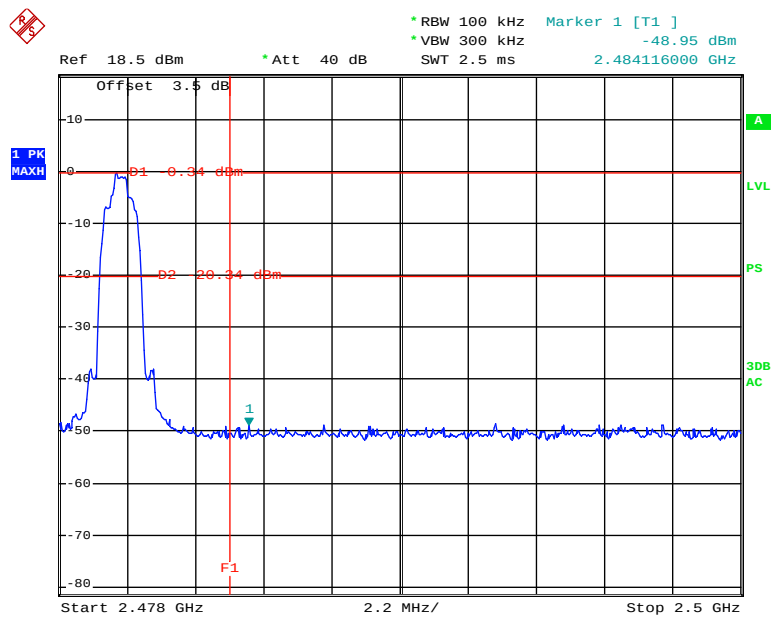
Date: 3.DEC.2012 20:55:14

### EDR (8DPSK): Band Edge-Left Side



Date: 3.DEC.2012 20:53:37

**BDR (8DPSK): Band Edge-Right Side**



Date: 3.DEC.2012 20:54:46

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