

TEST REPORT

For

Shenzhen Akun Electronic Co., Ltd.

Floor3, Third Building, No.3, Fu'an Industrial Park, Dayangtian Development Zone,

Fuyong, Shenzhen, Guangdong, China

FCC ID: ZCT-C3BR

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|--|--|
| Report Type: Original Report | Product Type: Bluetooth Mini Speaker |
| Test Engineer: Leon Chen <i>leon chen</i> | |
| Report Number: R1DG120815008-00A | |
| Report Date: 2012-08-31 | |
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* This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★"(Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Akun Electronic Co., Ltd.*'s product, model C3BR, S3BR, S4BR, N3BR, N3BR-D, N3BR-D3, R2BR, N1BR, R3BR, R4BR, S1BR, S2BR, R1BR, R5BR (*FCC ID: ZCT-C3BR*) (the "EUT") in this report is a Bluetooth Mini Speaker, which was measured approximately: 6.0 cm (L) x 6.0 cm (W) x 4.7 cm (H), rated input voltage: DC 3.7V from Lithium battery or DC 5.0V from system.

Note: model C3BR, S3BR, S4BR, N3BR, N3BR-D, N3BR-D3, R2BR, N1BR, R3BR, R4BR, S1BR, S2BR, R1BR, R5BR are electrically identical, the only difference is the model name. We selected C3BR for fully testing, the details was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 120815008 (Assigned by BACL, Dongguan). The EUT was received on 2012-08-16.*

Objective

This report is prepared on behalf of *Shenzhen Akun Electronic Co., Ltd.* 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 the compliance of EUT with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 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 C63.4-2009, 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. (Dongguan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ± 2.4 dB, the uncertainty of any radiation on emissions measurement is ± 4.0 dB

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) 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 February 02, 2012. 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.: 273710. 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 an engineering mode, which is provided by manufacturer.

EUT Exercise Software

The test was performed under “*Bluetest 3*” which was provided by the manufacturer.

Equipment Modifications

No modification was made to the EUT tested.

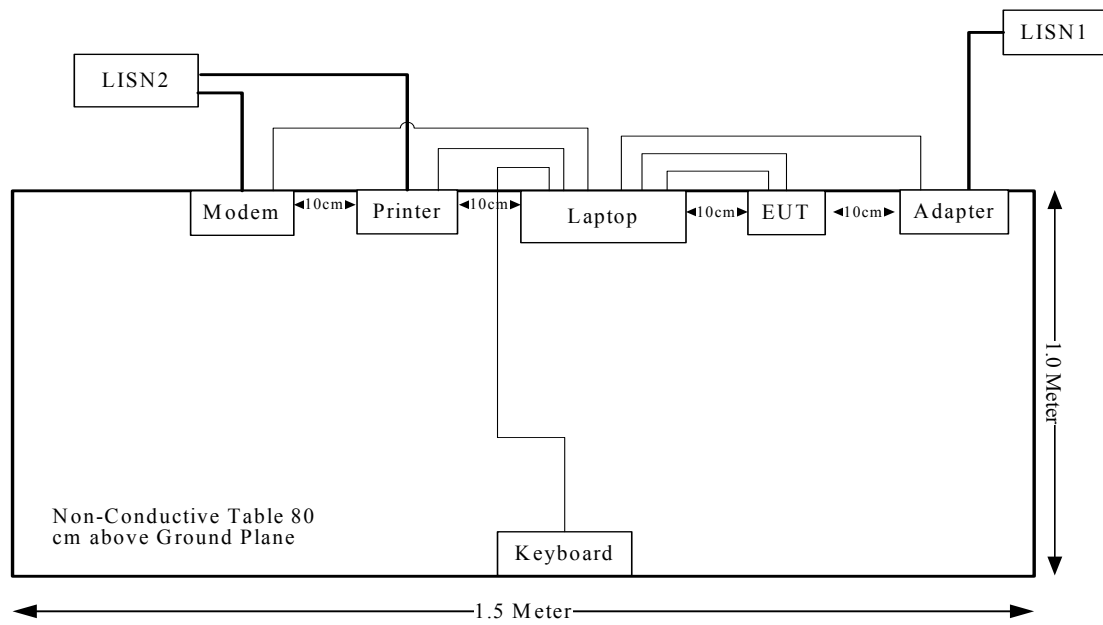
Local Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|----------|---------------------------|
| DELL | Keyboard | SK-8115 | CN-0DJ313-716716-05A-0DSO |
| SAST | Modem | AEM-2100 | 090200213 |
| HP | Printer | C3941A | JPTV013237 |
| DELL | Laptop | PP11L | N/A |

External Cable

| Cable Description | Length (m) | From Port | To |
|------------------------------------|------------|-------------------------|----------|
| Shielded Detachable Printer Cable | 1.2 | Parallel Port of Laptop | Printer |
| Shielded Detachable Serial Cable | 1.2 | Serial Port of Laptop | Modem |
| Shielded Detachable Keyboard Cable | 1.5 | Keyboard Port of Laptop | Keyboard |
| Audio Cable | 0.5 | Audio Port of Laptop | EUT |
| Shielded Detachable USB Cable | 1.0 | Serial Port of Laptop | EUT |

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|---------------------------------|----------------------------------|------------|
| §15.247(i) & §2.1091 | RF Exposure | Compliance |
| §15.203 | Antenna Requirement | Compliance |
| §15.207 (a) | 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 |

FCC §15.247 (i) & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247(i) and subpart §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.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| (B) 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

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

MPE Calculation

Predication of MPE limit at a given distance

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

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

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

G = gain of the antenna;

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

| Frequency (MHz) | Antenna Gain | | Conducted Out Power | | Evaluation Distance (cm) | Power Density (mW/cm ²) | MPE Limit (mW/cm ²) |
|-----------------|--------------|-----------|---------------------|------|--------------------------|-------------------------------------|---------------------------------|
| | (dBi) | (numeric) | (dBm) | (mW) | | | |
| 2441 | 2.7 | 1.86 | 1.14 | 1.3 | 20 | 0.0005 | 1.0 |

Result: The device meets FCC MPE at 20 cm distance.

FCC §15.203 - ANTENNA REQUIREMENT

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 internal antenna, which complied with 15.203, the maximum gain is 2.7 dBi, please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

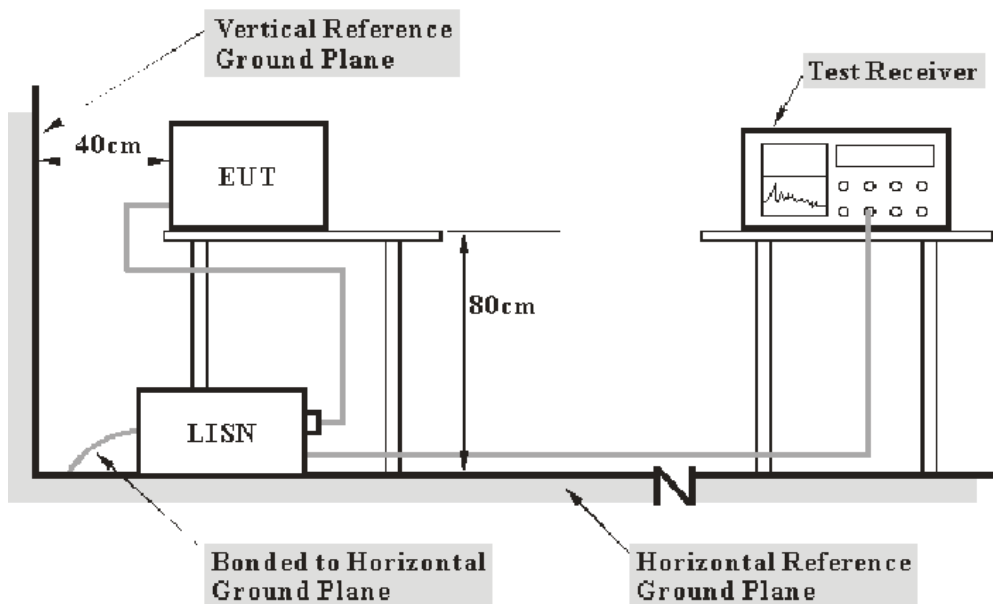
FCC §15.207

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 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Dongguan) is 2.4 dB, 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 external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

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

EMI Test Receiver Setup

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

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

| <i>Frequency Range</i> | <i>IF BW</i> |
|-------------------------------|---------------------|
| 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 | ESCS 30 | 830245/006 | 2011-10-8 | 2012-10-7 |
| Rohde & Schwarz | LISN | ESH3-Z5 | 843331/015 | 2011-10-8 | 2012-10-7 |
| Rohde & Schwarz | LISN | ESH3-Z5 | 100113 | 2011-10-8 | 2012-10-7 |

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

Test Procedure

During the conducted emission test, the notebook was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second 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:

7.43 dB at 0.270 MHz in the Line conducted mode

Test Data

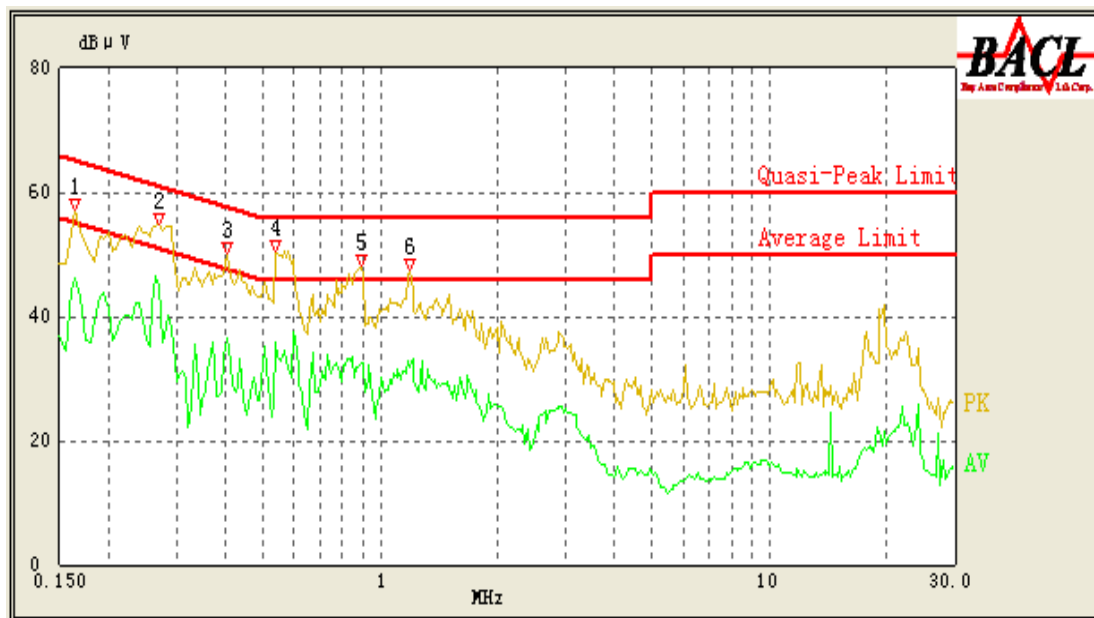
Environmental Conditions

| | |
|---------------------------|----------|
| Temperature: | 27.7 °C |
| Relative Humidity: | 54 % |
| ATM Pressure: | 99.6 kPa |

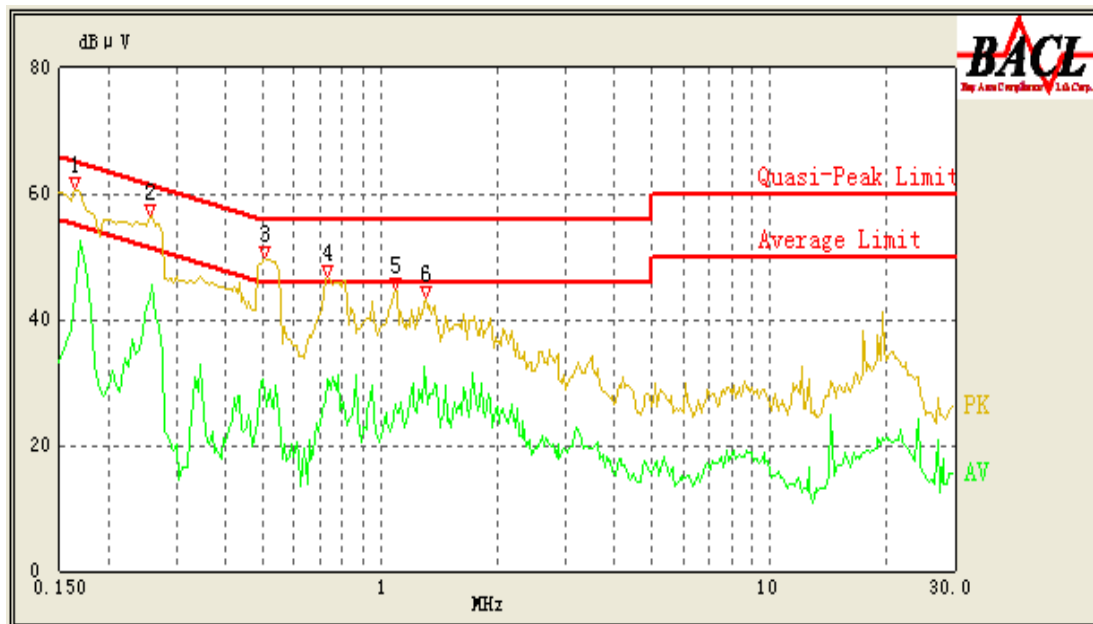
* The testing was performed by Leon Chen on 2012-08-27.

Test Mode: Transmitting

120V, 60 Hz, Line:



| Frequency (MHz) | Corrected Result (dBμV) | Correction Factor (dB) | Limit (dBμV) | Margin (dB) | Detector (PK /QP/Ave.) |
|-----------------|-------------------------|------------------------|--------------|-------------|------------------------|
| 0.270 | 45.14 | 0.42 | 52.57 | 7.43 | Ave. |
| 0.165 | 46.24 | 0.41 | 55.57 | 9.33 | Ave. |
| 0.165 | 55.73 | 0.41 | 65.57 | 9.84 | QP |
| 0.535 | 35.71 | 0.42 | 46.00 | 10.29 | Ave. |
| 0.540 | 45.28 | 0.42 | 56.00 | 10.72 | QP |
| 0.270 | 51.40 | 0.42 | 62.57 | 11.17 | QP |
| 0.405 | 36.37 | 0.42 | 48.71 | 12.34 | Ave. |
| 0.890 | 32.52 | 0.45 | 46.00 | 13.48 | Ave. |
| 1.185 | 31.74 | 0.46 | 46.00 | 14.26 | Ave. |
| 1.185 | 38.88 | 0.46 | 56.00 | 17.12 | QP |
| 0.405 | 39.39 | 0.42 | 58.71 | 19.32 | QP |
| 0.890 | 35.33 | 0.45 | 56.00 | 20.67 | QP |

120V, 60 Hz, Neutral:

| Frequency (MHz) | Corrected Result (dBμV) | Correction Factor (dB) | Limit (dBμV) | Margin (dB) | Detector (PK /QP/Ave.) |
|-----------------|-------------------------|------------------------|--------------|-------------|------------------------|
| 0.255 | 43.15 | 0.42 | 53.00 | 9.85 | Ave. |
| 0.255 | 53.02 | 0.42 | 63.00 | 9.98 | QP |
| 0.505 | 45.54 | 0.42 | 56.00 | 10.46 | QP |
| 0.165 | 54.61 | 0.41 | 65.57 | 10.96 | QP |
| 0.165 | 44.09 | 0.41 | 55.57 | 11.48 | Ave. |
| 0.735 | 43.17 | 0.44 | 56.00 | 12.83 | QP |
| 1.300 | 32.49 | 0.46 | 46.00 | 13.51 | Ave. |
| 0.500 | 30.53 | 0.42 | 46.00 | 15.47 | Ave. |
| 1.090 | 40.48 | 0.45 | 56.00 | 15.52 | QP |
| 0.730 | 30.35 | 0.44 | 46.00 | 15.65 | Ave. |
| 1.090 | 26.58 | 0.45 | 46.00 | 19.42 | Ave. |
| 1.310 | 35.76 | 0.46 | 56.00 | 20.24 | QP |

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

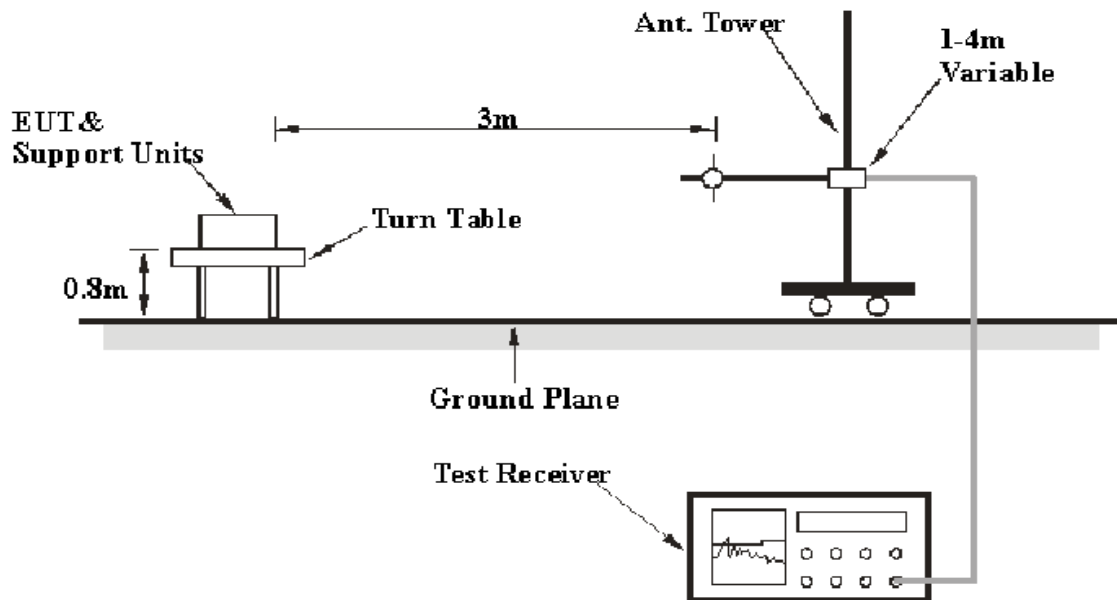
FCC §15.247 (d); §15.209; §15.205;

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 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of radiation emissions measurement from 30 MHz to 1 GHz at Bay Area Compliance Laboratories Corp. (Dongguan) is 4.0 dB, and the uncertainty will not be taken into consideration for all the test data recorded in the report.

EUT Setup



The radiated emission tests were performed in the 3 meters test site, 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.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

| <i>Frequency Range</i> | <i>RBW</i> | <i>Video BW</i> | <i>Detector</i> |
|-------------------------------|-------------------|------------------------|------------------------|
| 30 MHz – 1000 MHz | 100 kHz | 300 kHz | QP |
| 1000 MHz – 25 GHz | 1 MHz | 3 MHz | PK |
| 1000 MHz – 25 GHz | 1 MHz | 10 Hz | Ave. |

Test Procedure

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

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---------------------|--------------------|--------------|----------------------|-------------------------|-----------------------------|
| Rohde & Schwarz | EMI Test Receiver | ESCI | 1166.5950.03 | 2011-10-8 | 2012-10-7 |
| HP | Pre-amplifier | 8447D | 2727A05902 | 2012-3-15 | 2013-3-14 |
| Sunol Sciences | Hybrid Antennas | JB3 | A060611-2 | 2011-9-6 | 2012-9-5 |
| Rohde & Schwarz | Spectrum Analyzer | FSEM | 1079 8500 | 2011-10-9 | 2012-10-8 |
| Dayang | Horn Antenna | OMCDH10180 | 10279001B | 2011-7-30 | 2013-7-29 |
| mini-circuits | Wideband Amplifier | ZVA-183-S+ | 96901149 | 2012-4-24 | 2013-4-23 |

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

Corrected Amplitude & Margin Calculation

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

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

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

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

Test Results Summary

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

(BDR- GFSK): 3.39 dB at 2483.5 MHz in the Vertical polarization at high channel

Test Data

Environmental Conditions

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

The testing was performed by Leon Chen on 2012-08-27.

Test Mode: Transmitting (BDR- GFSK)

| Frequency (MHz) | Receiver | | Rx Antenna | | Cable Loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBµV/m) | Part 15.247/209 | |
|--------------------------|-------------------|------------------------|----------------|----------------|-----------------------|---------------------------|------------------------------------|-------------------|----------------|
| | Reading (dBµV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | Limit (dBµV/m) | Margin (dB) |
| Low Channel: 2402 MHz | | | | | | | | | |
| 2390 | 15.22 | AV | V | 30.98 | 3.84 | 0 | 50.05 | 54.00 | 3.95* |
| 255.37 | 44.32 | QP | V | 12.23 | 1.93 | 21.49 | 36.98 | 46.00 | 9.02 |
| 2390 | 29.43 | PK | V | 30.98 | 3.84 | 0 | 64.26 | 74.00 | 9.74 |
| 7206 | 22.02 | AV | V | 38.67 | 6.50 | 26.54 | 40.65 | 54.00 | 13.35 |
| 9608 | 17.98 | AV | V | 38.52 | 8.75 | 26.39 | 38.85 | 54.00 | 15.15 |
| 4804 | 47.69 | PK | V | 33.17 | 4.67 | 27.34 | 58.19 | 74.00 | 15.81 |
| 4804 | 27.39 | AV | V | 33.17 | 4.67 | 27.34 | 37.89 | 54.00 | 16.11 |
| 7206 | 36.35 | PK | V | 38.67 | 6.50 | 26.54 | 54.98 | 74.00 | 19.02 |
| 2925 | 21.48 | AV | V | 31.01 | 6.11 | 27.56 | 31.04 | 54.00 | 22.97 |
| 9608 | 28.75 | PK | V | 38.52 | 8.75 | 26.39 | 49.62 | 74.00 | 24.38 |
| 2925 | 36.3 | PK | V | 31.01 | 6.11 | 27.56 | 45.86 | 74.00 | 28.15 |
| 2402 | 65.87 | PK | V | 31.05 | 3.90 | 0 | 100.83 | N/A | N/A |
| 2402 | 32.95 | AV | V | 31.05 | 3.90 | 0 | 67.91 | N/A | N/A |
| 2402 | 65.19 | PK | H | 31.05 | 3.90 | 0 | 100.15 | N/A | N/A |
| 2402 | 32.62 | AV | H | 31.05 | 3.90 | 0 | 67.58 | N/A | N/A |
| Middle Channel: 2441 MHz | | | | | | | | | |
| 255.36 | 43.96 | QP | V | 12.23 | 1.93 | 21.49 | 36.62 | 46.00 | 9.38 |
| 4882 | 48.77 | PK | V | 33.34 | 4.75 | 27.04 | 59.82 | 74.00 | 14.18 |
| 9764 | 18.82 | AV | V | 38.83 | 8.58 | 26.54 | 39.68 | 54.00 | 14.32 |
| 7323 | 19.46 | AV | V | 38.88 | 6.72 | 26.67 | 38.40 | 54.00 | 15.60 |
| 9764 | 34.21 | PK | V | 38.83 | 8.58 | 26.54 | 55.07 | 74.00 | 18.93 |
| 4882 | 23.89 | AV | V | 33.34 | 4.75 | 27.04 | 34.94 | 54.00 | 19.06 |
| 7323 | 33.38 | PK | V | 38.88 | 6.72 | 26.67 | 52.32 | 74.00 | 21.68 |
| 2925 | 21.24 | AV | V | 31.01 | 6.11 | 27.56 | 30.80 | 54.00 | 23.21 |
| 2925 | 36.25 | PK | V | 31.01 | 6.11 | 27.56 | 45.81 | 74.00 | 28.20 |
| 2441 | 67.48 | AV | V | 31.27 | 3.99 | 0 | 102.74 | N/A | N/A |
| 2441 | 33.74 | PK | V | 31.27 | 3.99 | 0 | 69.00 | N/A | N/A |
| 2441 | 65.14 | PK | H | 31.27 | 3.99 | 0 | 100.40 | N/A | N/A |
| 2441 | 32.67 | AV | H | 31.27 | 3.99 | 0 | 67.93 | N/A | N/A |

| Frequency (MHz) | Receiver | | Rx Antenna | | Cable Loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Part 15.247/209 | |
|------------------------|-------------------|------------------------|----------------|----------------|-----------------------|---------------------------|------------------------------------|-------------------|----------------|
| | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | Limit (dBμV/m) | Margin (dB) |
| High Channel: 2480 MHz | | | | | | | | | |
| 2483.5 | 15.31 | AV | V | 31.51 | 3.80 | 0.00 | 50.61 | 54.00 | 3.39* |
| 255.39 | 44.13 | QP | V | 12.23 | 1.93 | 21.49 | 36.79 | 46.00 | 9.21 |
| 2483.5 | 28.06 | PK | V | 31.51 | 3.80 | 0.00 | 63.36 | 74.00 | 10.64 |
| 4960 | 47.88 | PK | V | 33.51 | 4.70 | 27.26 | 58.83 | 74.00 | 15.17 |
| 7440 | 19.33 | AV | V | 39.09 | 6.95 | 26.79 | 38.58 | 54.00 | 15.42 |
| 9920 | 17.18 | AV | V | 39.14 | 8.41 | 26.70 | 38.03 | 54.00 | 15.97 |
| 4960 | 26.29 | AV | V | 33.51 | 4.70 | 27.26 | 37.24 | 54.00 | 16.76 |
| 7440 | 33.63 | PK | V | 39.09 | 6.95 | 26.79 | 52.88 | 74.00 | 21.12 |
| 9920 | 30.99 | PK | V | 39.14 | 8.41 | 26.70 | 51.84 | 74.00 | 22.16 |
| 2926 | 21.11 | AV | V | 31.00 | 6.12 | 27.56 | 30.67 | 54.00 | 23.33 |
| 2926 | 36.38 | PK | V | 31.00 | 6.12 | 27.56 | 45.94 | 74.00 | 28.06 |
| 2480 | 62.7 | PK | H | 31.49 | 3.82 | 0.00 | 98.01 | N/A | N/A |
| 2480 | 33.18 | AV | H | 31.49 | 3.82 | 0.00 | 68.49 | N/A | N/A |
| 2480 | 63.55 | PK | V | 31.49 | 3.82 | 0.00 | 98.86 | N/A | N/A |
| 2480 | 31.57 | AV | V | 31.49 | 3.82 | 0.00 | 66.88 | N/A | N/A |

Test Mode: Transmitting (EDR- $\pi/4$ -QPSK)

| Frequency (MHz) | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Part 15.247/209 | |
|-----------------------|-------------------|------------------------|----------------|----------------|-----------------------|---------------------------|------------------------------------|-------------------|----------------|
| | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | Limit (dBμV/m) | Margin (dB) |
| Low Channel: 2402 MHz | | | | | | | | | |
| 2390 | 15.11 | AV | V | 30.98 | 3.84 | 0.00 | 49.94 | 54.00 | 4.06 |
| 255.37 | 44.28 | QP | V | 12.23 | 1.93 | 21.49 | 36.94 | 46.00 | 9.06 |
| 2390 | 27.51 | PK | V | 30.98 | 3.84 | 0.00 | 62.34 | 74.00 | 11.66 |
| 7206 | 22.43 | AV | V | 38.67 | 6.50 | 26.54 | 41.06 | 54.00 | 12.94 |
| 9608 | 17.69 | AV | V | 38.52 | 8.75 | 26.39 | 38.56 | 54.00 | 15.44 |
| 4804 | 47.36 | PK | V | 33.17 | 4.67 | 27.34 | 57.86 | 74.00 | 16.14 |
| 4804 | 27.22 | AV | V | 33.17 | 4.67 | 27.34 | 37.72 | 54.00 | 16.28 |
| 7206 | 36.51 | PK | V | 38.67 | 6.50 | 26.54 | 55.14 | 74.00 | 18.86 |
| 2925 | 21.42 | AV | V | 31.01 | 6.11 | 27.56 | 30.98 | 54.00 | 23.03 |
| 9608 | 28.78 | PK | V | 38.52 | 8.75 | 26.39 | 49.65 | 74.00 | 24.35 |
| 2925 | 36.39 | PK | V | 31.01 | 6.11 | 27.56 | 45.95 | 74.00 | 28.06 |
| 2402 | 64.59 | PK | V | 31.05 | 3.90 | 0.00 | 99.55 | N/A | N/A |
| 2402 | 32.32 | AV | V | 31.05 | 3.90 | 0.00 | 67.28 | N/A | N/A |
| 2402 | 63.14 | PK | H | 31.05 | 3.90 | 0.00 | 98.10 | N/A | N/A |
| 2402 | 32.12 | AV | H | 31.05 | 3.90 | 0.00 | 67.08 | N/A | N/A |

| Frequency (MHz) | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Part 15.247/209 | |
|--------------------------|-------------------|------------------------|----------------|----------------|-----------------------|---------------------------|------------------------------------|-------------------|----------------|
| | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | Limit (dBμV/m) | Margin (dB) |
| Middle Channel: 2441 MHz | | | | | | | | | |
| 255.68 | 43.87 | QP | V | 12.25 | 1.92 | 21.49 | 36.55 | 46.00 | 9.45 |
| 4882 | 48.71 | PK | V | 33.34 | 4.75 | 27.04 | 59.76 | 74.00 | 14.24 |
| 9764 | 18.32 | AV | V | 38.83 | 8.58 | 26.54 | 39.18 | 54.00 | 14.82 |
| 7323 | 19.39 | AV | V | 38.88 | 6.72 | 26.67 | 38.33 | 54.00 | 15.67 |
| 9764 | 34.28 | PK | V | 38.83 | 8.58 | 26.54 | 55.14 | 74.00 | 18.86 |
| 4882 | 23.84 | AV | V | 33.34 | 4.75 | 27.04 | 34.89 | 54.00 | 19.11 |
| 7323 | 33.35 | PK | V | 38.88 | 6.72 | 26.67 | 52.29 | 74.00 | 21.71 |
| 2925 | 21.18 | AV | V | 31.01 | 6.11 | 27.56 | 30.74 | 54.00 | 23.27 |
| 2925 | 36.31 | PK | V | 31.01 | 6.11 | 27.56 | 45.87 | 74.00 | 28.14 |
| 2441 | 67.22 | AV | V | 31.27 | 3.99 | 0.00 | 102.48 | N/A | N/A |
| 2441 | 33.02 | PK | V | 31.27 | 3.99 | 0.00 | 68.28 | N/A | N/A |
| 2441 | 65.12 | PK | H | 31.27 | 3.99 | 0.00 | 100.38 | N/A | N/A |
| 2441 | 32.21 | AV | H | 31.27 | 3.99 | 0.00 | 67.47 | N/A | N/A |
| High Channel: 2480 MHz | | | | | | | | | |
| 2483.5 | 15.11 | AV | V | 31.51 | 3.80 | 0.00 | 50.41 | 54.00 | 3.59* |
| 255.53 | 43.91 | QP | V | 12.24 | 1.92 | 21.49 | 36.58 | 46.00 | 9.42 |
| 2483.5 | 28.06 | PK | V | 31.51 | 3.80 | 0.00 | 63.36 | 74.00 | 10.64 |
| 4960 | 47.88 | PK | V | 33.51 | 4.70 | 27.26 | 58.83 | 74.00 | 15.17 |
| 7440 | 19.33 | AV | V | 39.09 | 6.95 | 26.79 | 38.58 | 54.00 | 15.42 |
| 9920 | 17.18 | AV | V | 39.14 | 8.41 | 26.70 | 38.03 | 54.00 | 15.97 |
| 4960 | 26.29 | AV | V | 33.51 | 4.70 | 27.26 | 37.24 | 54.00 | 16.76 |
| 7440 | 33.63 | PK | V | 39.09 | 6.95 | 26.79 | 52.88 | 74.00 | 21.12 |
| 9920 | 30.99 | PK | V | 39.14 | 8.41 | 26.70 | 51.84 | 74.00 | 22.16 |
| 2925 | 21.44 | AV | V | 31.01 | 6.11 | 27.56 | 31.00 | 54.00 | 23.01 |
| 2925 | 36.35 | PK | V | 31.01 | 6.11 | 27.56 | 45.91 | 74.00 | 28.10 |
| 2480 | 62.7 | PK | H | 31.49 | 3.82 | 0.00 | 98.01 | N/A | N/A |
| 2480 | 33.18 | AV | H | 31.49 | 3.82 | 0.00 | 68.49 | N/A | N/A |
| 2480 | 63.55 | PK | V | 31.49 | 3.82 | 0.00 | 98.86 | N/A | N/A |
| 2480 | 31.57 | AV | V | 31.49 | 3.82 | 0.00 | 66.88 | N/A | N/A |

Test Mode: Transmitting (EDR-8DPSK)

| Frequency (MHz) | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBµV/m) | Part 15.247/209 | |
|--------------------------|-------------------|------------------------|----------------|----------------|-----------------------|---------------------------|------------------------------------|-------------------|----------------|
| | Reading (dBµV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | Limit (dBµV/m) | Margin (dB) |
| Low Channel: 2402 MHz | | | | | | | | | |
| 2390 | 15.64 | AV | V | 30.98 | 3.84 | 0 | 50.47 | 54.00 | 3.53* |
| 255.66 | 43.68 | QP | V | 12.25 | 1.92 | 21.49 | 36.36 | 46.00 | 9.64 |
| 2390 | 29.25 | PK | V | 30.98 | 3.84 | 0 | 64.08 | 74.00 | 9.92 |
| 7206 | 22.11 | AV | V | 38.67 | 6.50 | 26.54 | 40.74 | 54.00 | 13.26 |
| 9608 | 17.48 | AV | V | 38.52 | 8.75 | 26.39 | 38.35 | 54.00 | 15.65 |
| 4804 | 27.22 | AV | V | 33.17 | 4.67 | 27.34 | 37.72 | 54.00 | 16.28 |
| 4804 | 47.13 | PK | V | 33.17 | 4.67 | 27.34 | 57.63 | 74.00 | 16.37 |
| 7206 | 36.08 | PK | V | 38.67 | 6.50 | 26.54 | 54.71 | 74.00 | 19.29 |
| 2925 | 21.43 | AV | V | 31.01 | 6.11 | 27.56 | 30.99 | 54.00 | 23.02 |
| 9608 | 28.79 | PK | V | 38.52 | 8.75 | 26.39 | 49.66 | 74.00 | 24.34 |
| 2925 | 36.21 | PK | V | 31.01 | 6.11 | 27.56 | 45.77 | 74.00 | 28.24 |
| 2402 | 64.92 | PK | V | 31.05 | 3.90 | 0 | 99.88 | N/A | N/A |
| 2402 | 32.25 | AV | V | 31.05 | 3.90 | 0 | 67.21 | N/A | N/A |
| 2402 | 64.19 | PK | H | 31.05 | 3.90 | 0 | 99.15 | N/A | N/A |
| 2402 | 32.12 | AV | H | 31.05 | 3.90 | 0 | 67.08 | N/A | N/A |
| Middle Channel: 2441 MHz | | | | | | | | | |
| 255.64 | 44.17 | QP | V | 12.24 | 1.92 | 21.49 | 36.85 | 46.00 | 9.15 |
| 9764 | 18.89 | AV | V | 38.83 | 8.58 | 26.54 | 39.75 | 54.00 | 14.25 |
| 4882 | 48.54 | PK | V | 33.34 | 4.75 | 27.04 | 59.59 | 74.00 | 14.41 |
| 7323 | 19.08 | AV | V | 38.88 | 6.72 | 26.67 | 38.02 | 54.00 | 15.98 |
| 9764 | 34.27 | PK | V | 38.83 | 8.58 | 26.54 | 55.13 | 74.00 | 18.87 |
| 4882 | 23.62 | AV | V | 33.34 | 4.75 | 27.04 | 34.67 | 54.00 | 19.33 |
| 7323 | 33.33 | PK | V | 38.88 | 6.72 | 26.67 | 52.27 | 74.00 | 21.73 |
| 2925 | 20.91 | AV | V | 31.01 | 6.11 | 27.56 | 30.47 | 54.00 | 23.54 |
| 2925 | 35.88 | PK | V | 31.01 | 6.11 | 27.56 | 45.44 | 74.00 | 28.57 |
| 2441 | 65.44 | AV | V | 31.27 | 3.99 | 0 | 100.70 | N/A | N/A |
| 2441 | 32.71 | PK | V | 31.27 | 3.99 | 0 | 67.97 | N/A | N/A |
| 2441 | 64.63 | PK | H | 31.27 | 3.99 | 0 | 99.89 | N/A | N/A |
| 2441 | 31.76 | AV | H | 31.27 | 3.99 | 0 | 67.02 | N/A | N/A |

| Frequency (MHz) | Receiver | | Rx Antenna | | Cable loss (dB) | Amplifier Gain (dB) | Corrected Amplitude (dBμV/m) | Part 15.247/209 | |
|------------------------|-------------------|------------------------|----------------|----------------|-----------------------|---------------------------|------------------------------------|-------------------|----------------|
| | Reading (dBμV) | Detector (PK/QP/AV) | Polar (H/V) | Factor (dB) | | | | Limit (dBμV/m) | Margin (dB) |
| High Channel: 2480 MHz | | | | | | | | | |
| 2483.5 | 15.01 | AV | V | 31.51 | 3.80 | 0 | 50.31 | 54.00 | 3.69* |
| 255.59 | 43.71 | QP | V | 12.24 | 1.92 | 21.49 | 36.38 | 46.00 | 9.62 |
| 2483.5 | 28.36 | PK | V | 31.51 | 3.80 | 0 | 63.66 | 74.00 | 10.34 |
| 7440 | 19.31 | AV | V | 39.09 | 6.95 | 26.79 | 38.56 | 54.00 | 15.44 |
| 4960 | 47.47 | PK | V | 33.51 | 4.70 | 27.26 | 58.42 | 74.00 | 15.58 |
| 9920 | 17.12 | AV | V | 39.14 | 8.41 | 26.70 | 37.97 | 54.00 | 16.03 |
| 4960 | 26.35 | AV | V | 33.51 | 4.70 | 27.26 | 37.30 | 54.00 | 16.70 |
| 7440 | 33.51 | PK | V | 39.09 | 6.95 | 26.79 | 52.76 | 74.00 | 21.24 |
| 9920 | 30.94 | PK | V | 39.14 | 8.41 | 26.70 | 51.79 | 74.00 | 22.21 |
| 2925 | 21.28 | AV | V | 31.01 | 6.11 | 27.56 | 30.84 | 54.00 | 23.17 |
| 2925 | 36.14 | PK | V | 31.01 | 6.11 | 27.56 | 45.70 | 74.00 | 28.31 |
| 2480 | 62.73 | PK | H | 31.49 | 3.82 | 0 | 98.04 | N/A | N/A |
| 2480 | 32.88 | AV | H | 31.49 | 3.82 | 0 | 68.19 | N/A | N/A |
| 2480 | 63.59 | PK | V | 31.49 | 3.82 | 0 | 98.90 | N/A | N/A |
| 2480 | 32.97 | AV | V | 31.49 | 3.82 | 0 | 68.28 | N/A | N/A |

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 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.50 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 | Spectrum Analyzer | FSP38 | 100478 | 2012-5-14 | 2013-5-13 |

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) 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 30 kHz, maxhold the trace.
2. Set the adjacent channel of the EUT maxhold another trace.
3. Measure the channel separation.

Test Data

Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 25 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 100.9kPa |

* The testing was performed by Leon Chen on 2012-08-27.

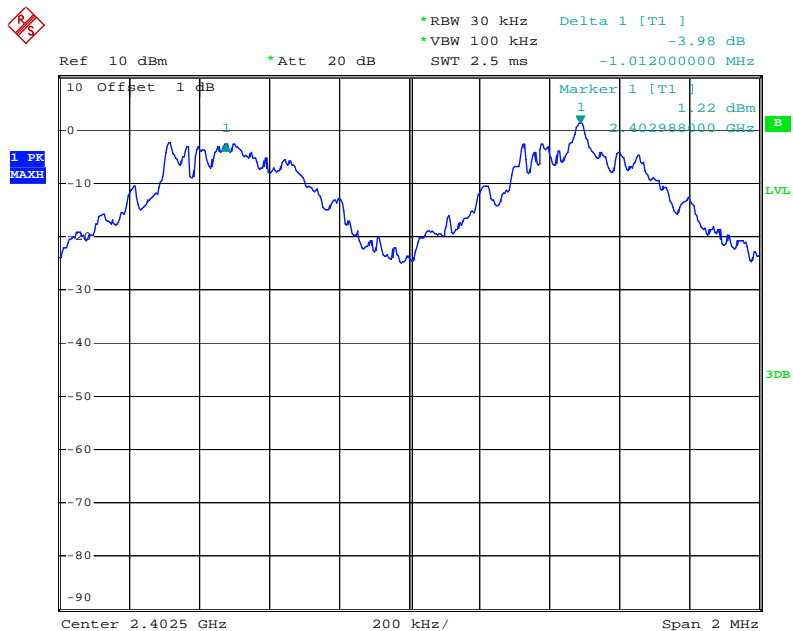
Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

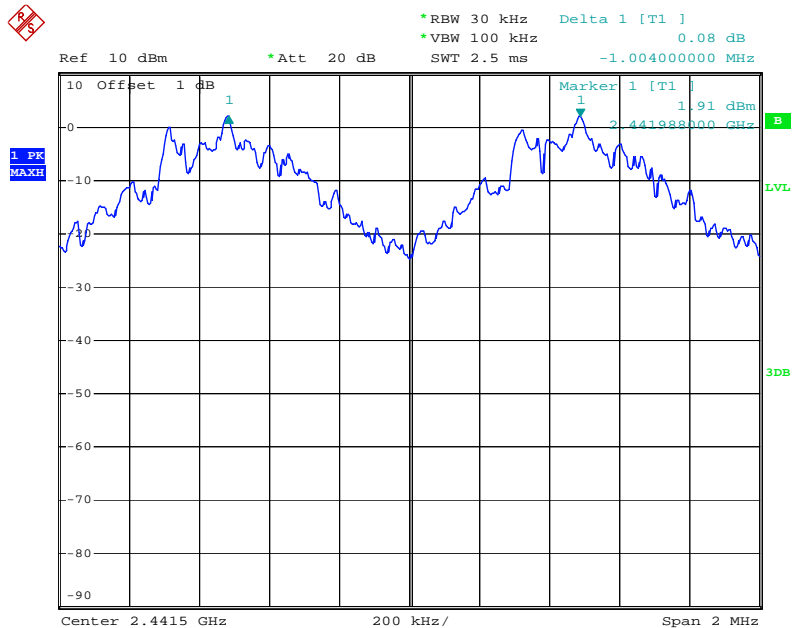
| Mode | Channel | Frequency (MHz) | Channel Separation (MHz) | Limit (MHz) | Result |
|---------------------------|----------|-----------------|--------------------------|-------------|--------|
| BDR Mode (GFSK) | Low | 2402 | 1.012 | 0.60 | Pass |
| | Adjacent | 2403 | | | |
| | Middle | 2441 | 1.004 | 0.61 | Pass |
| | Adjacent | 2442 | | | |
| | High | 2480 | 1.000 | 0.61 | Pass |
| | Adjacent | 2479 | | | |
| EDR Mode ($\pi/4$ -QPSK) | Low | 2402 | 1.024 | 0.81 | Pass |
| | Adjacent | 2403 | | | |
| | Middle | 2441 | 1.000 | 0.82 | Pass |
| | Adjacent | 2442 | | | |
| | High | 2480 | 1.000 | 0.81 | Pass |
| | Adjacent | 2479 | | | |
| EDR Mode (8DPSK) | Low | 2402 | 1.004 | 0.80 | Pass |
| | Adjacent | 2403 | | | |
| | Middle | 2441 | 1.000 | 0.81 | Pass |
| | Adjacent | 2442 | | | |
| | High | 2480 | 1.000 | 0.77 | Pass |
| | Adjacent | 2479 | | | |

BDR - Low Channel

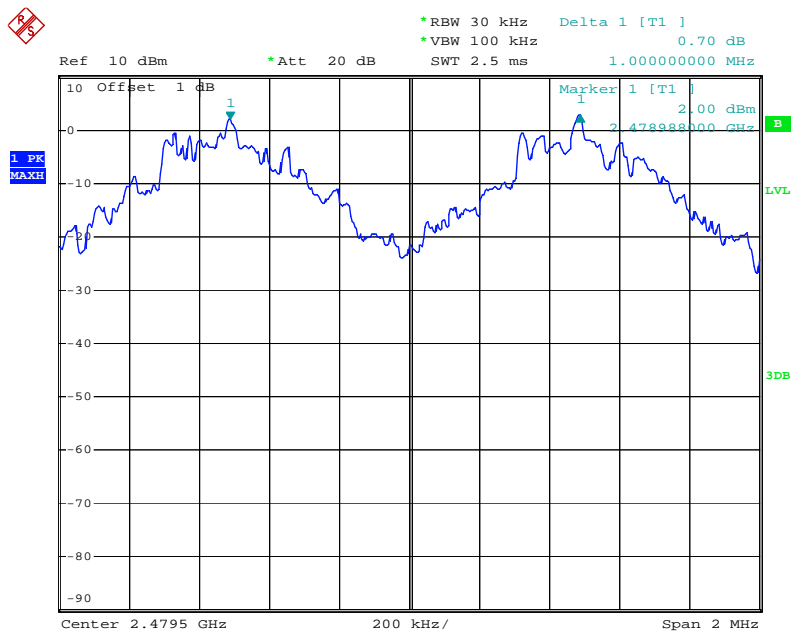


Date: 27.AUG.2012 14:51:24

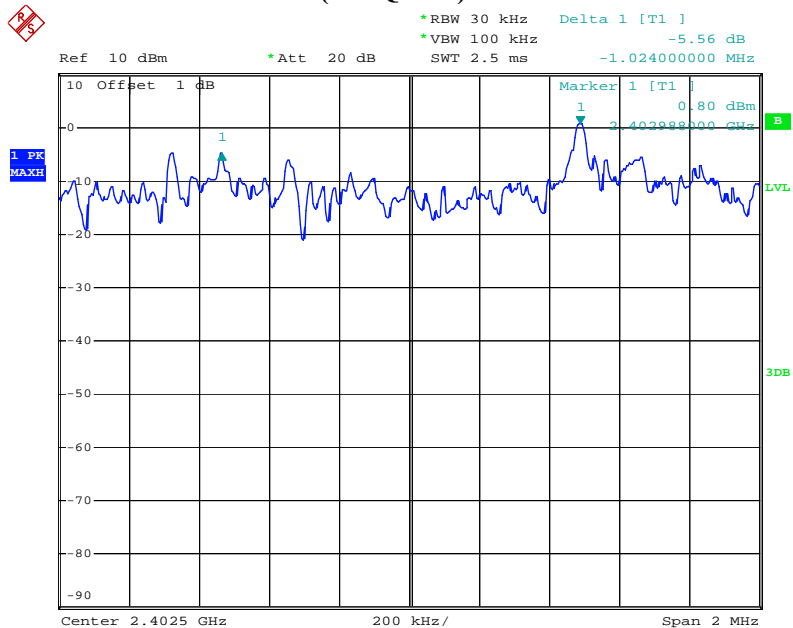
BDR - Middle Channel



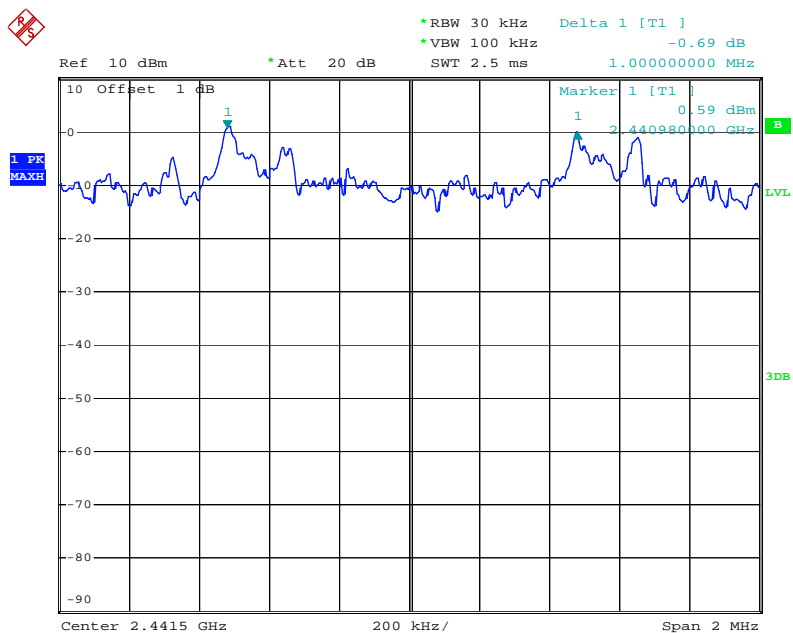
Date: 27.AUG.2012 14:53:22

BDR - High Channel

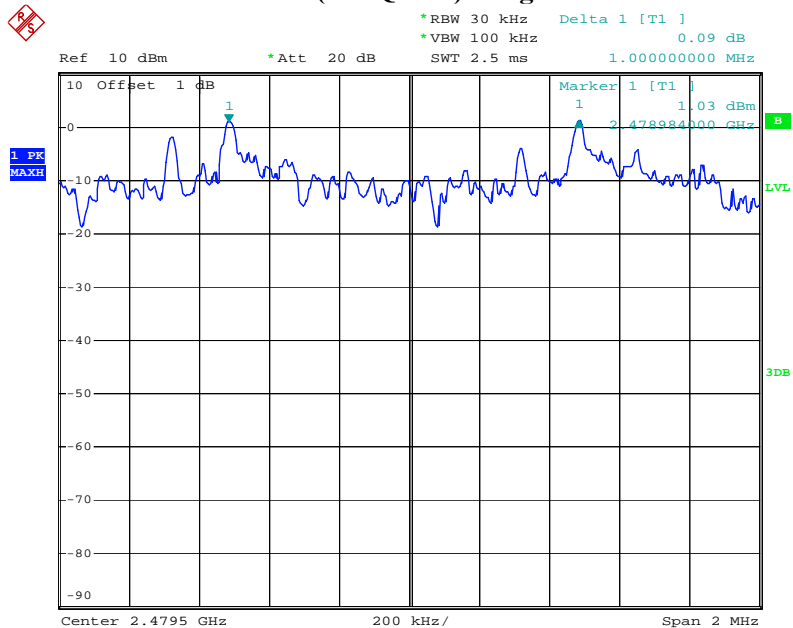
Date: 27.AUG.2012 14:57:18

EDR ($\pi/4$ -QPSK) - Low Channel

Date: 27.AUG.2012 15:52:12

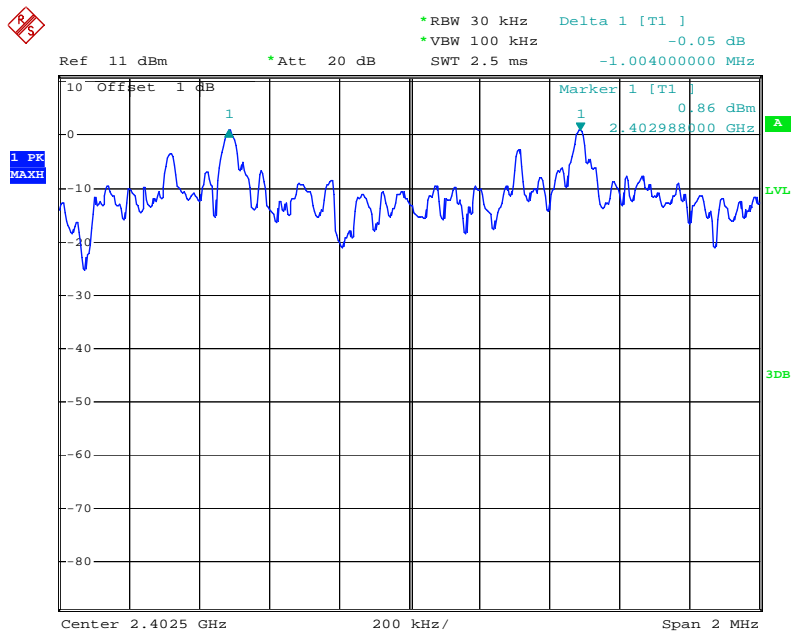
EDR ($\pi/4$ -QPSK) - Middle Channel

Date: 27.AUG.2012 15:54:33

EDR ($\pi/4$ -QPSK) - High Channel

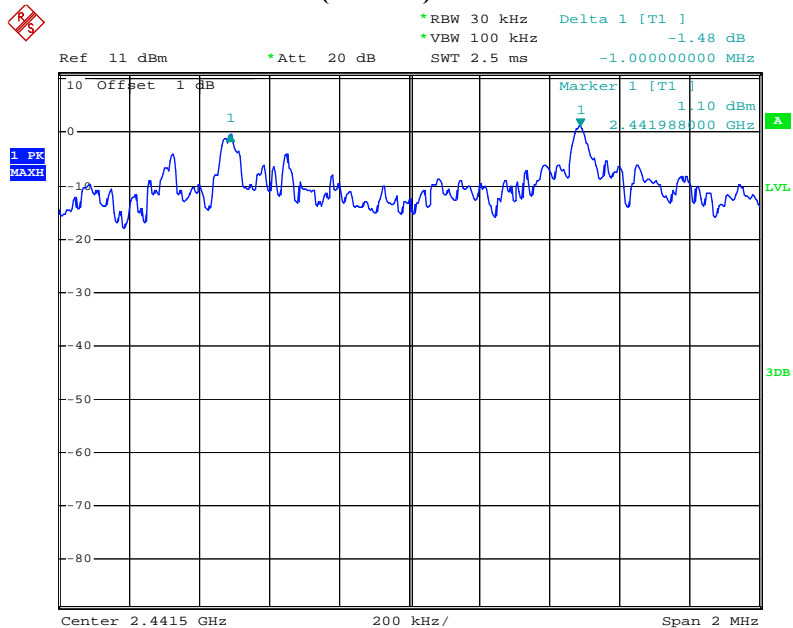
Date: 27.AUG.2012 15:56:00

EDR (8DPSK) - Low Channel



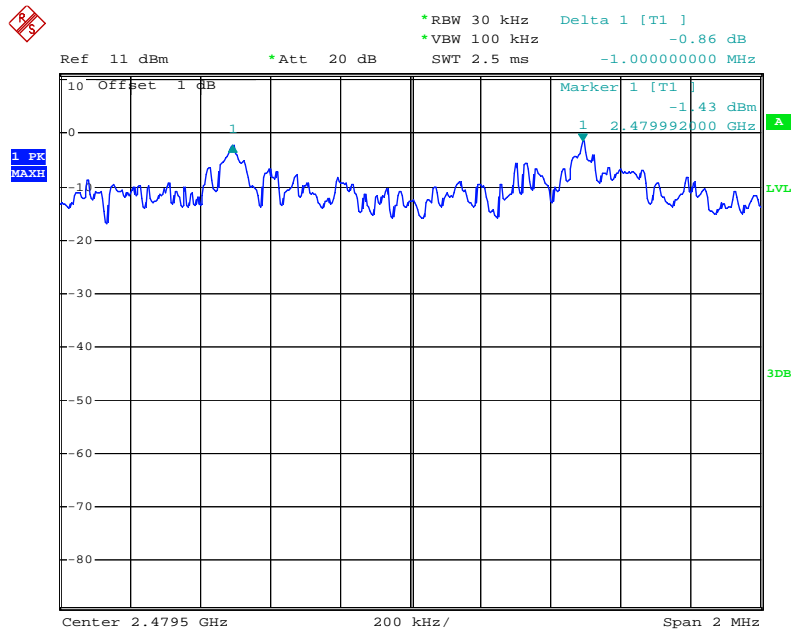
Date: 27.AUG.2012 16:34:43

EDR (8DPSK) - Middle Channel



Date: 27.AUG.2012 16:35:47

EDR (8DPSK) - High Channel



Date: 27.AUG.2012 16:36:48

FCC §15.247(a) (1) – 20 dB 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 on the test table without connection to measurement instrument. Turn on the EUT. 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 | Spectrum Analyzer | FSP38 | 100478 | 2012-5-14 | 2013-5-13 |

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

Test Data

Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 25 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 100.9kPa |

* The testing was performed by Leon Chen on 2012-08-27.

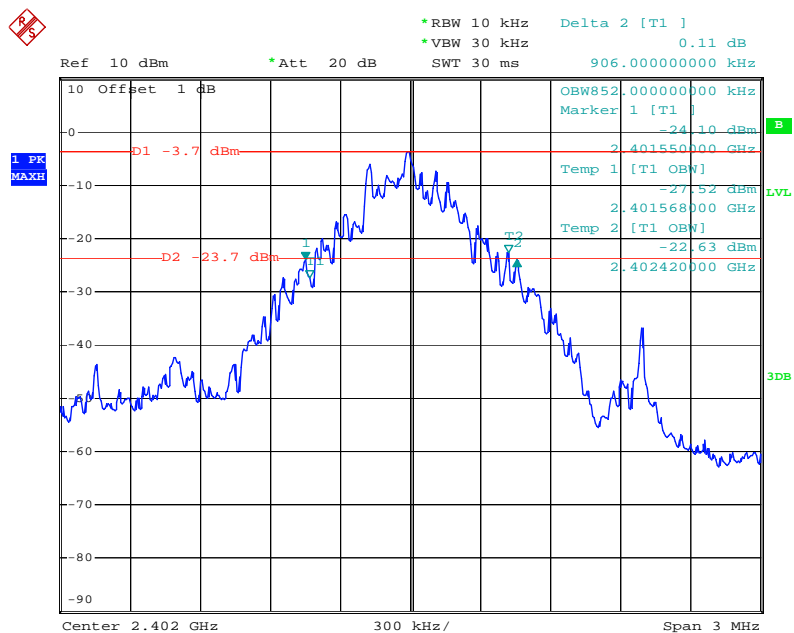
Test Result: Compliance.

Please refer to following tables and plots

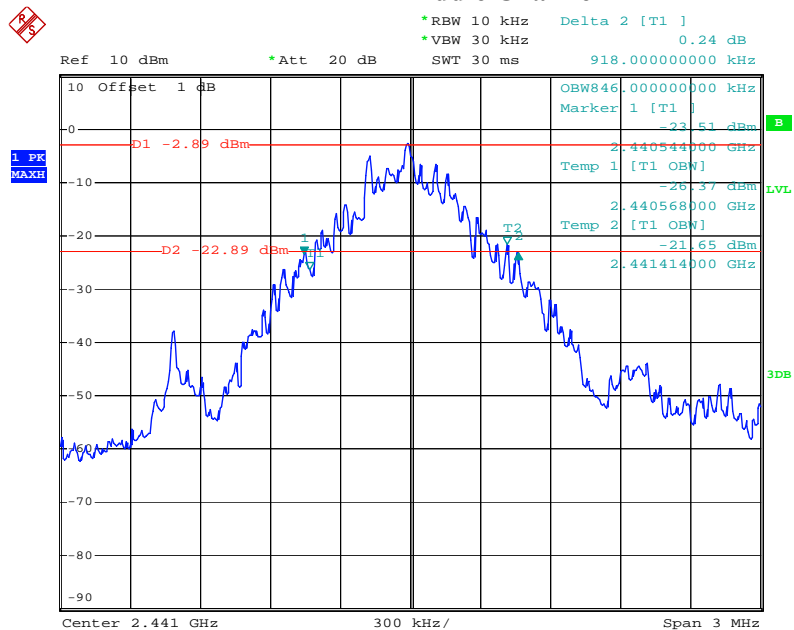
Test Mode: Transmitting

| Mode | Channel | Frequency (MHz) | 20 dB Bandwidth (MHz) |
|---------------------------|---------|-----------------|-----------------------|
| BDR Mode (GFSK) | Low | 2402 | 0.906 |
| | Middle | 2441 | 0.918 |
| | High | 2480 | 0.912 |
| EDR Mode ($\pi/4$ -QPSK) | Low | 2402 | 1.218 |
| | Middle | 2441 | 1.224 |
| | High | 2480 | 1.218 |
| EDR Mode (8DPSK) | Low | 2402 | 1.206 |
| | Middle | 2441 | 1.212 |
| | High | 2480 | 1.218 |

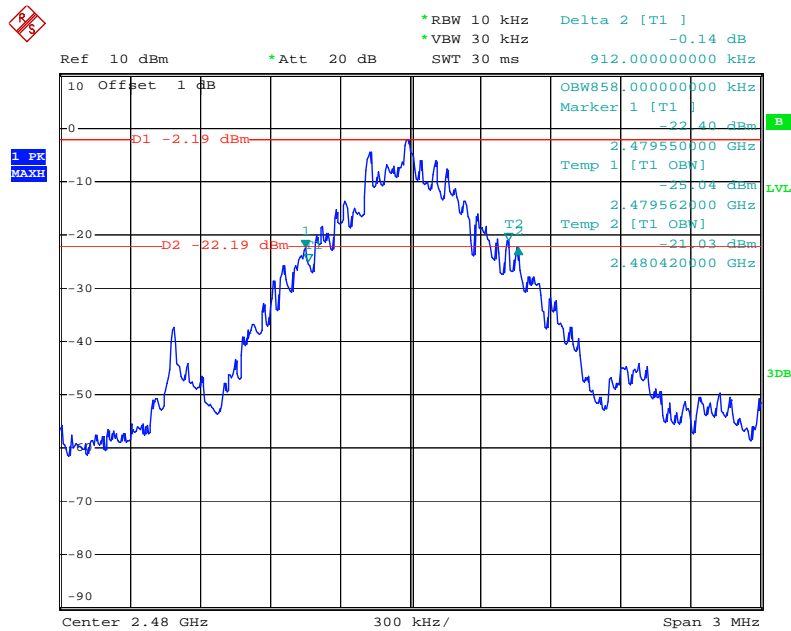
Please refer to the following plots.

BDR - Low Channel

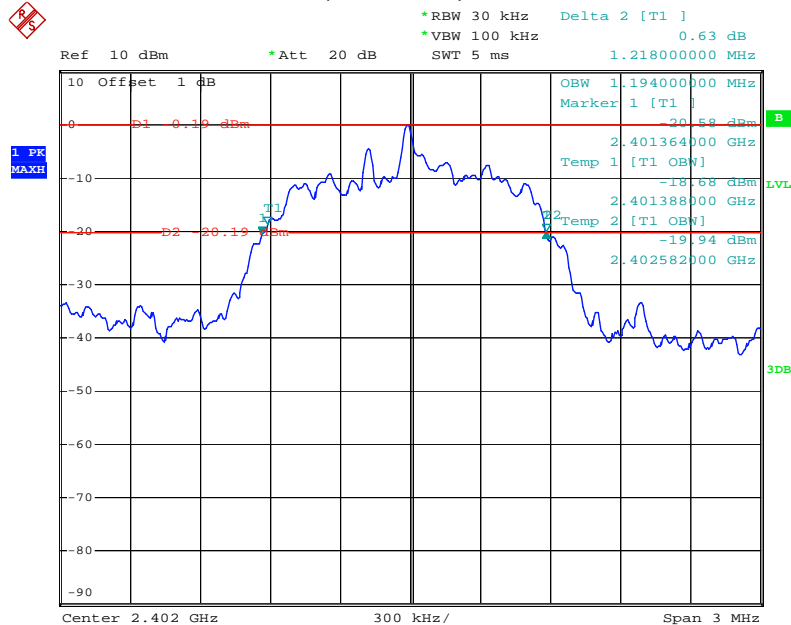
Date: 27.AUG.2012 14:14:56

BDR - Middle Channel

Date: 27.AUG.2012 14:31:11

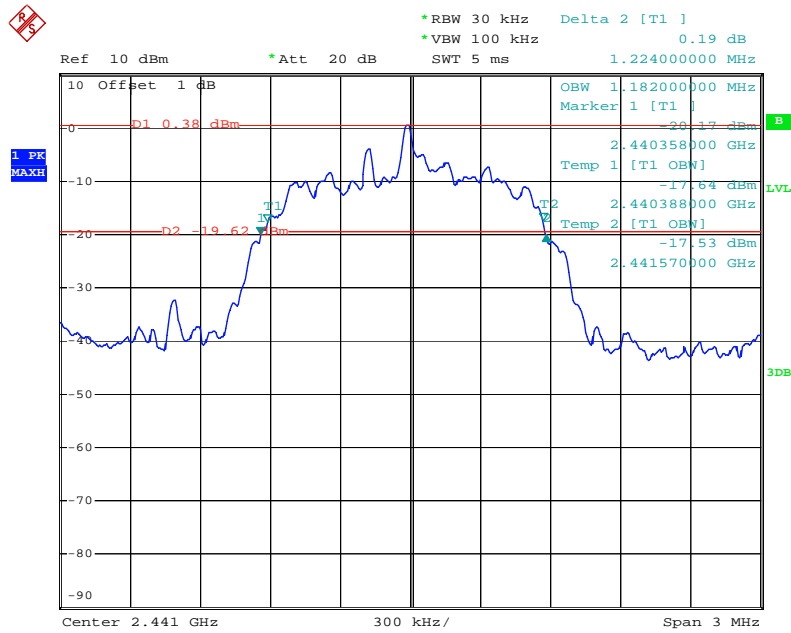
BDR - High Channel

Date: 27.AUG.2012 14:40:45

EDR ($\pi/4$ -QPSK) - Low Channel

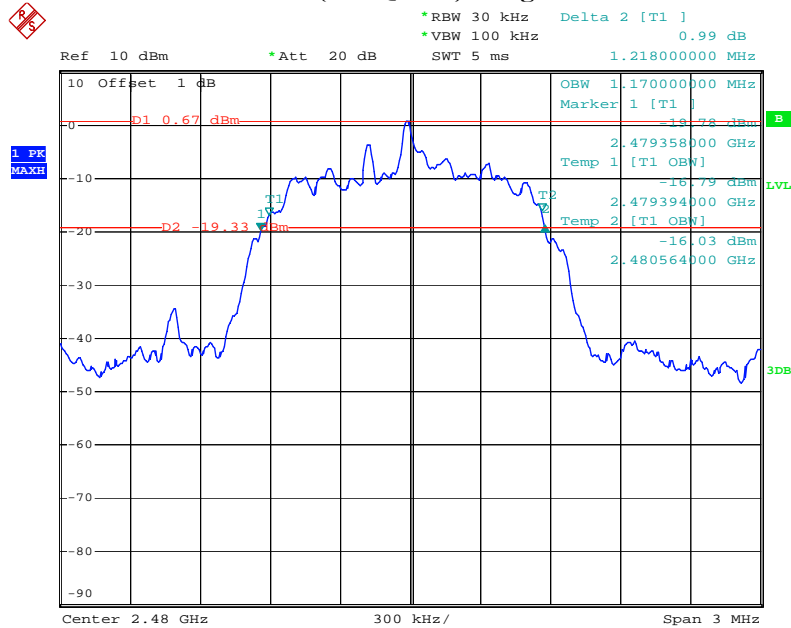
Date: 27.AUG.2012 16:10:32

EDR ($\pi/4$ -QPSK) - Middle Channel

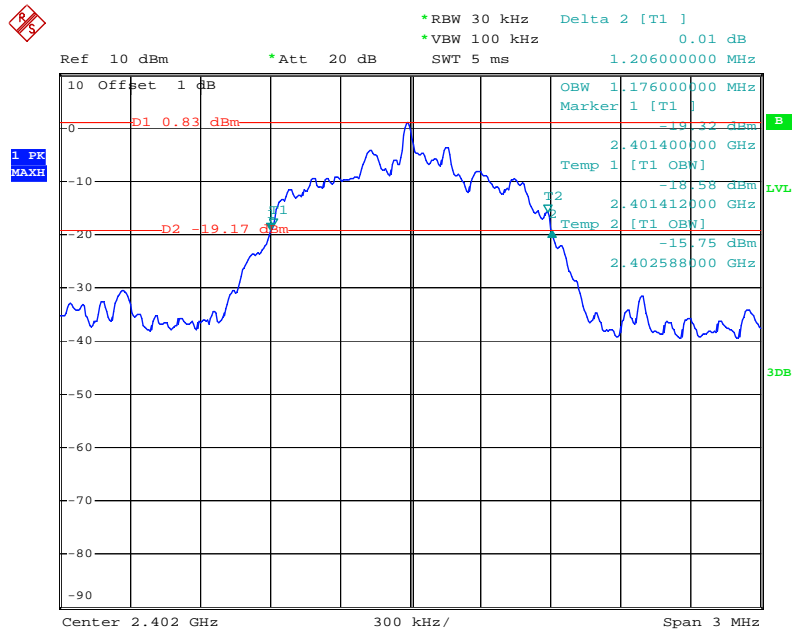


Date: 27.AUG.2012 16:07:51

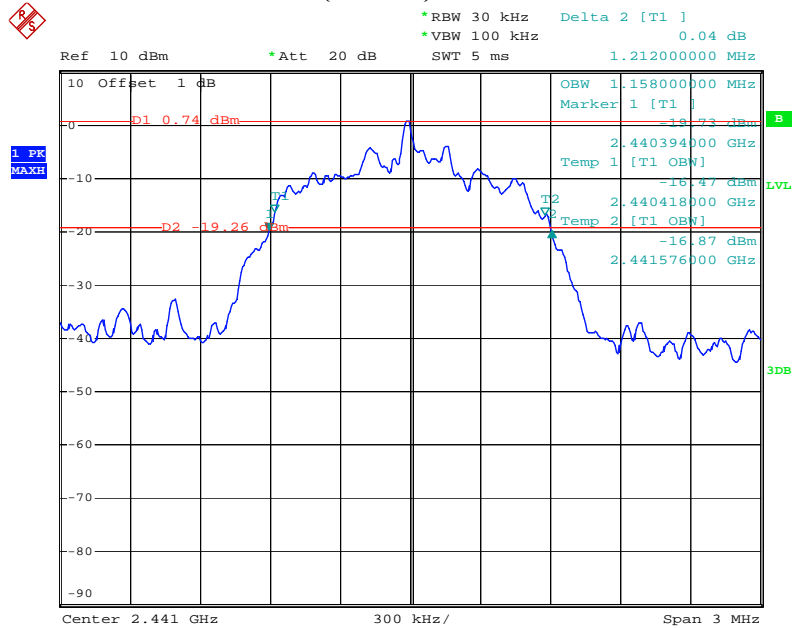
EDR ($\pi/4$ -QPSK) - High Channel



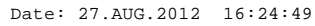
Date: 27.AUG.2012 16:02:01

EDR (8DPSK) - Low Channel

Date: 27.AUG.2012 16:20:38

EDR (8DPSK) - Middle Channel

Date: 27.AUG.2012 16:23:51



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 | Spectrum Analyzer | FSP38 | 100478 | 2012-5-14 | 2013-5-13 |

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

Test Data**Environmental Conditions**

| | |
|---------------------------|----------|
| Temperature: | 25 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 100.9kPa |

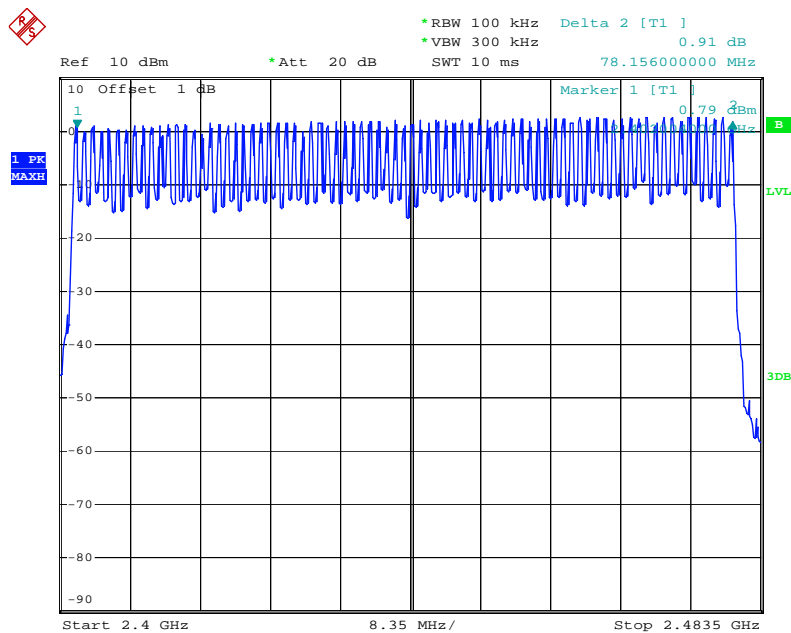
The testing was performed by Leon Chen on 2012-08-27.

Test Result: Compliance.

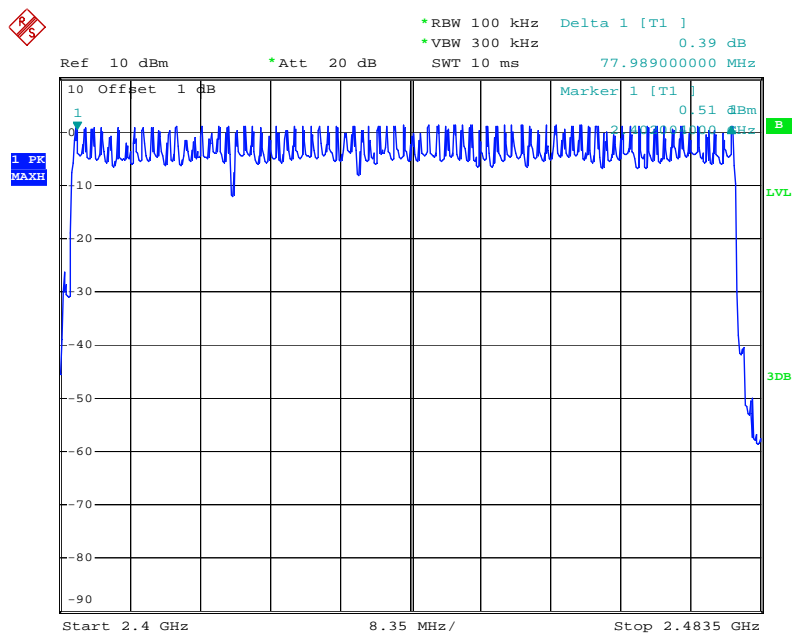
Please refer to following tables and plots

Test Mode: Transmitting

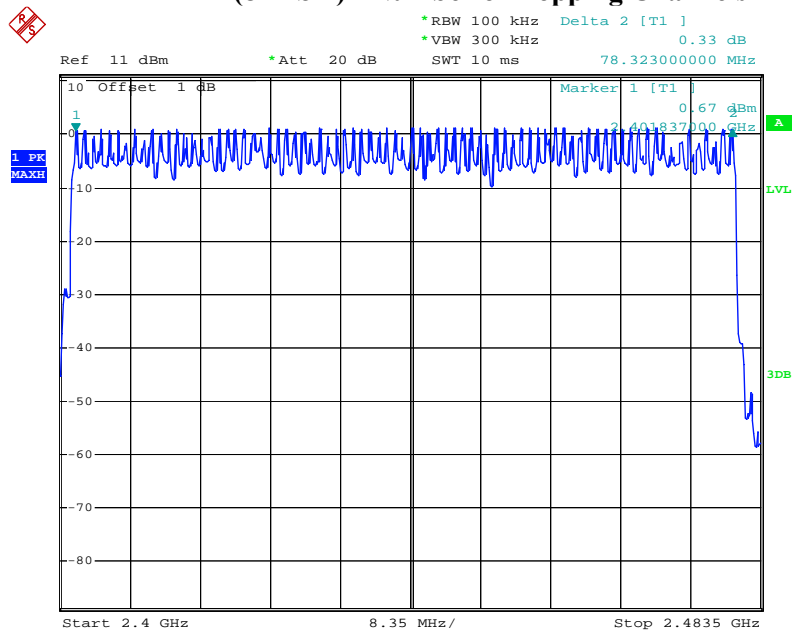
| Mode | Frequency Range (MHz) | Number of Hopping Channel | Limit |
|----------------------|-----------------------|---------------------------|-----------|
| BDR | 2400-2483.50 | 79 | ≥ 15 |
| EDR ($\pi/4$ -QPSK) | 2400-2483.50 | 79 | ≥ 15 |
| EDR (8DPSK) | 2400-2483.50 | 79 | ≥ 15 |

BDR - Number of Hopping Channels

Date: 27.AUG.2012 14:46:26

EDR ($\pi/4$ -QPSK) - Number of Hopping Channels

Date: 27.AUG.2012 15:58:11

EDR (8DPSK) - Number of Hopping Channels

Date: 27.AUG.2012 16:33:33

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 * channel no. (s), the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= Pulse idth * hop rate/ number of hopping channels * number of hopping channels * 0.4s
Hop rate=1600/s

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | Spectrum Analyzer | FSP38 | 100478 | 2012-5-14 | 2013-5-13 |

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

Test Data**Environmental Conditions**

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

* The testing was performed by Leon Chen on 2012-08-27.

Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

| Mode | Channel | Pulse Width (ms) | Dwell Time (s) | Limit (s) | Result |
|---------------------------|---|------------------|----------------|-----------|--------|
| BDR Mode (GFSK) | Low | 0.461 | 0.148 | 0.4 | Pass |
| | Middle | 0.461 | 0.148 | 0.4 | Pass |
| | High | 0.461 | 0.148 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/2/79)*31.6S | | | | |
| EDR Mode ($\pi/4$ -QPSK) | Low | 0.476 | 0.152 | 0.4 | Pass |
| | Middle | 0.461 | 0.148 | 0.4 | Pass |
| | High | 0.471 | 0.151 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/2/79)*31.6S | | | | |
| EDR Mode (8DPSK) | Low | 0.475 | 0.152 | 0.4 | Pass |
| | Middle | 0.460 | 0.147 | 0.4 | Pass |
| | High | 0.465 | 0.149 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/2/79)*31.6S | | | | |

1. PK
HANK

Ref 10 dBm Att 20 dB BW 1 MHz Delta 2 [T1] -2.16 dB VSW 3 MHz SWF 2.5 ms 461.000000 us

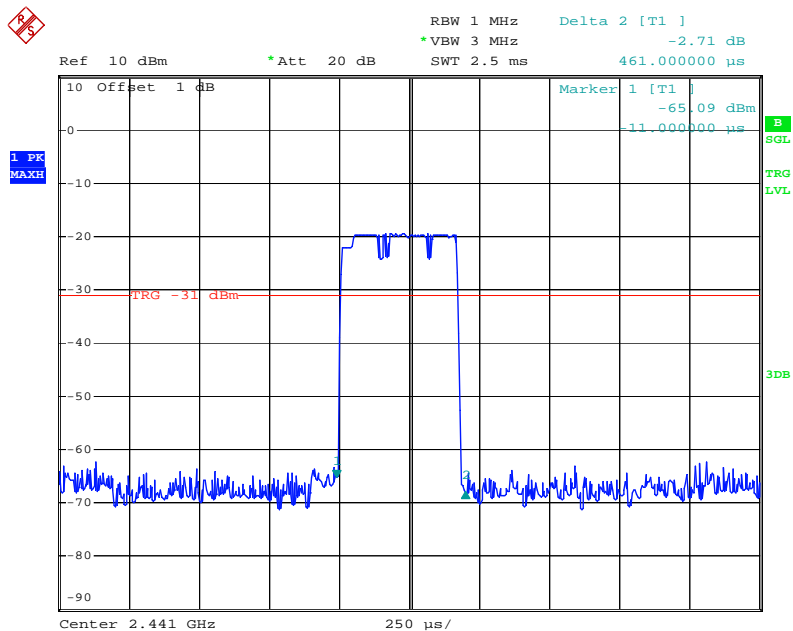
10 Offset 1 dB Marker= 1 [T1] -66.05 dBm -51.000000 us

-20 -21.5 dBm

Center: 2.402 GHz 250 us/

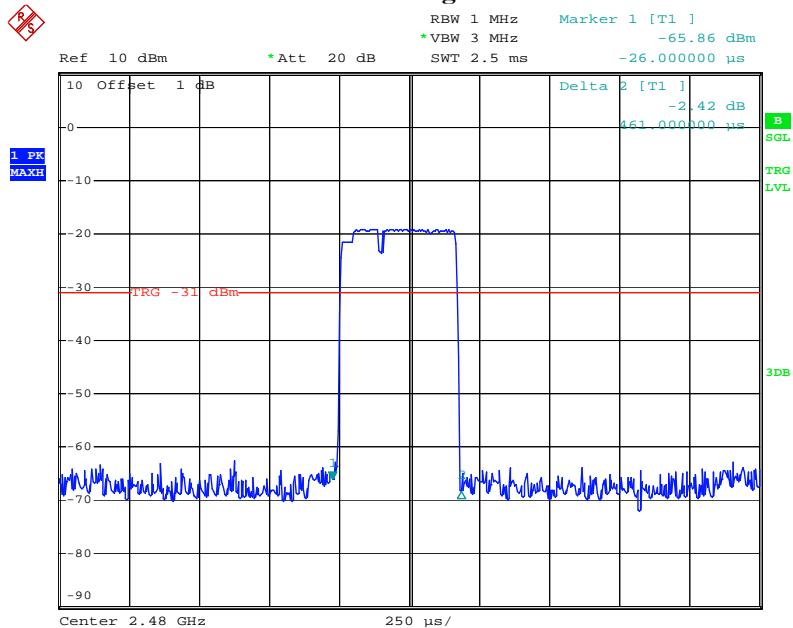
Date: 27.AUG.2012 15:22:32

BDR - Middle Channel

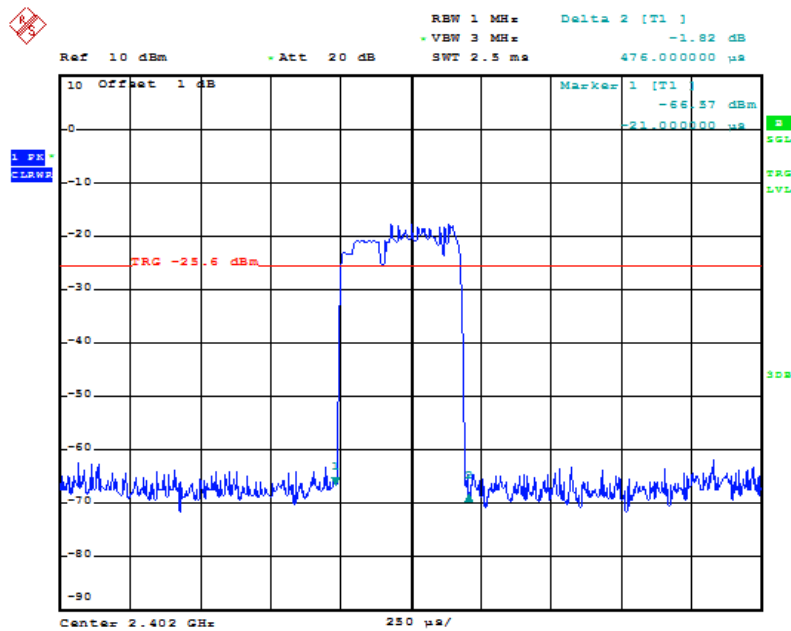


Date: 27.AUG.2012 15:17:29

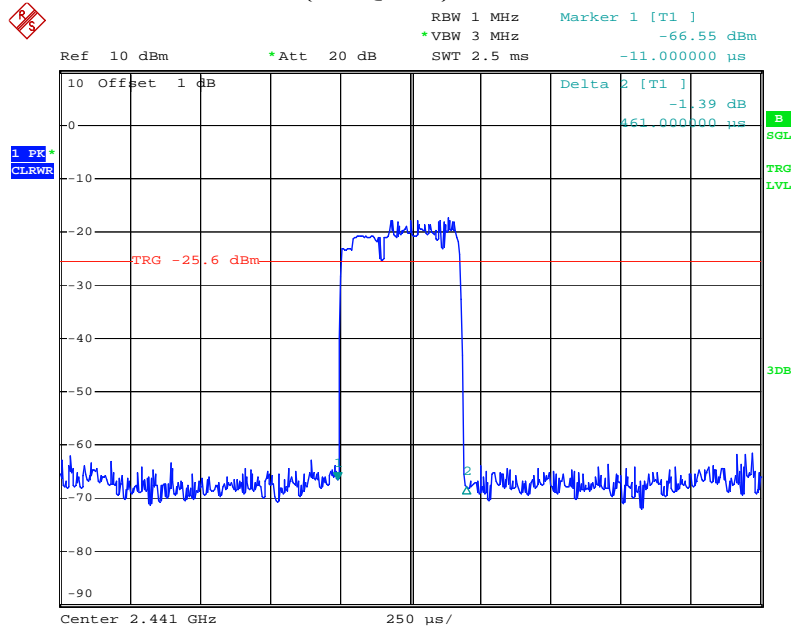
BDR - High Channel



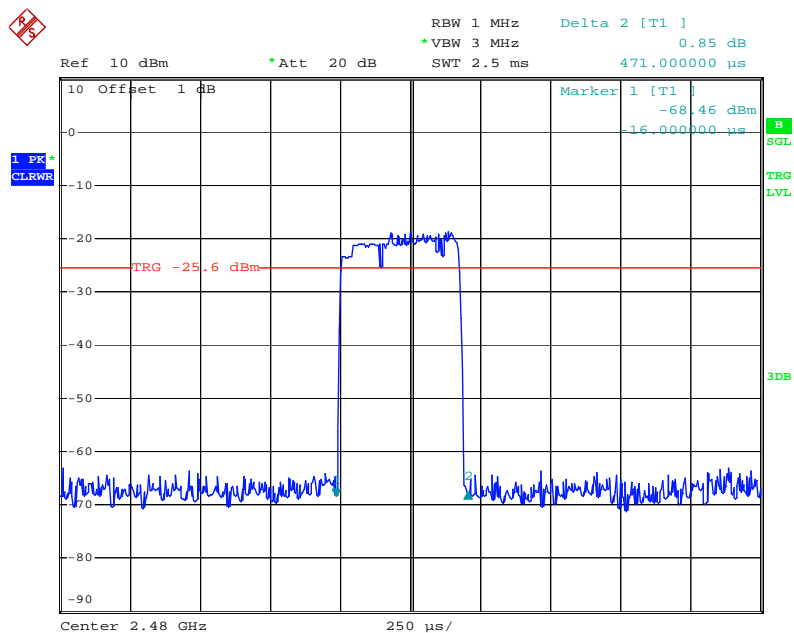
Date: 27.AUG.2012 15:16:39

EDR ($\pi/4$ -QPSK) - Low Channel

Date: 27.AUG.2012 15:31:49

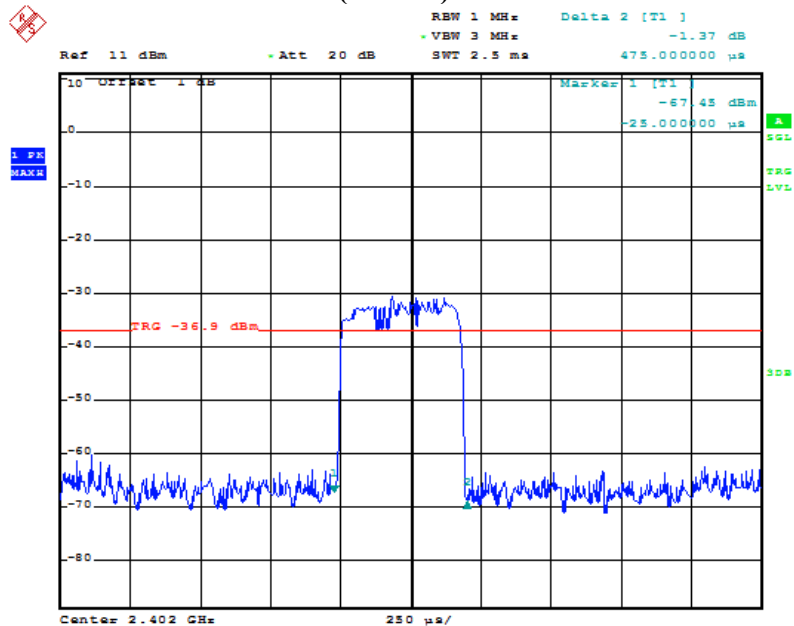
EDR ($\pi/4$ -QPSK) - Middle Channel

Date: 27.AUG.2012 15:32:43

EDR ($\pi/4$ -QPSK) - High Channel

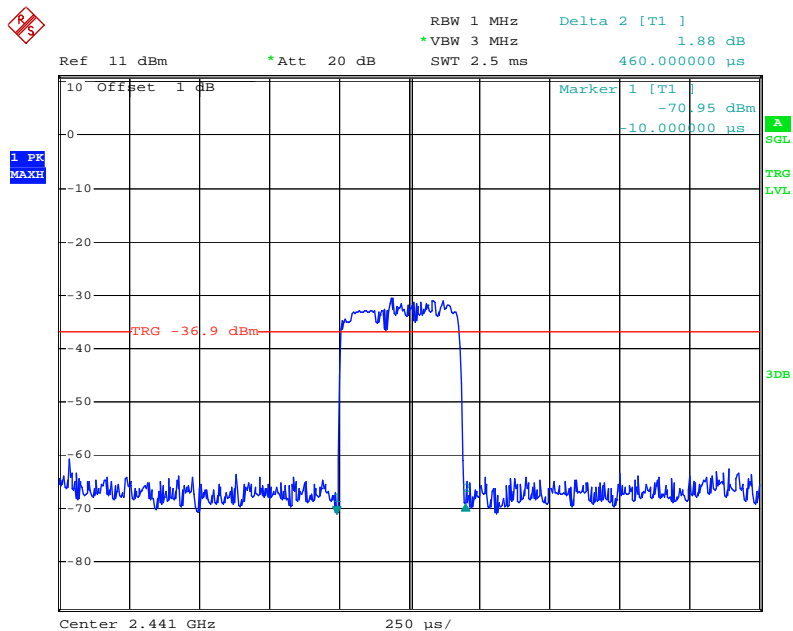
Date: 27.AUG.2012 15:33:17

EDR (8DPSK) - Low Channel



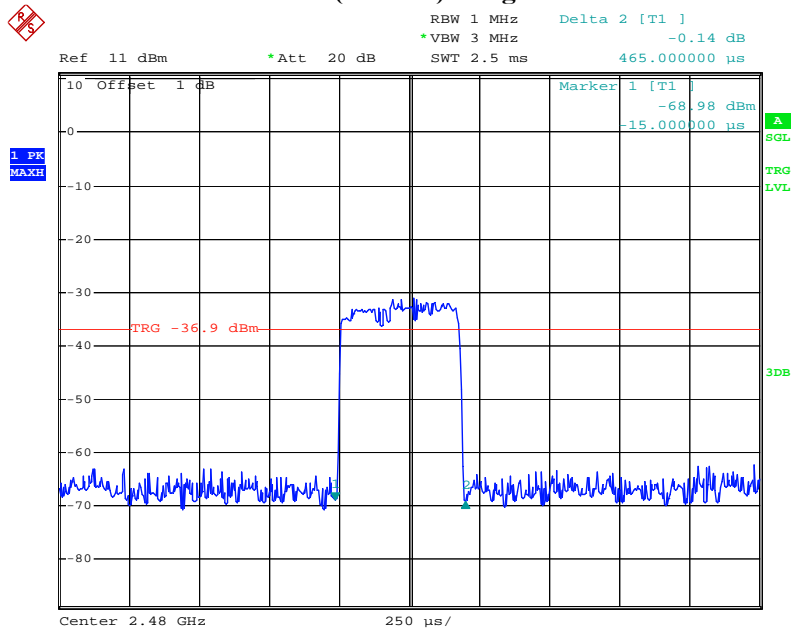
Date: 27.AUG.2012 16:39:15

EDR (8DPSK) - Middle Channel



Date: 27.AUG.2012 16:38:31

EDR (8DPSK) - High Channel

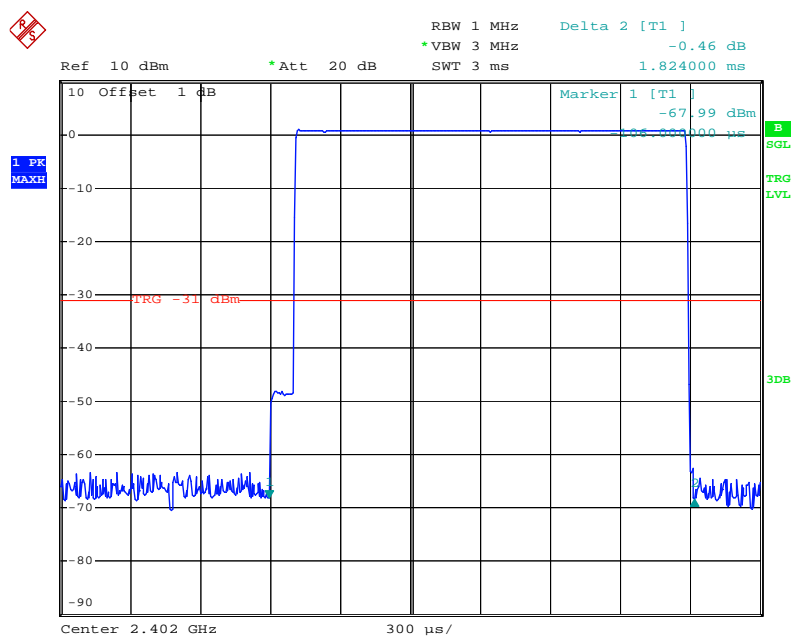


Date: 27.AUG.2012 16:40:28

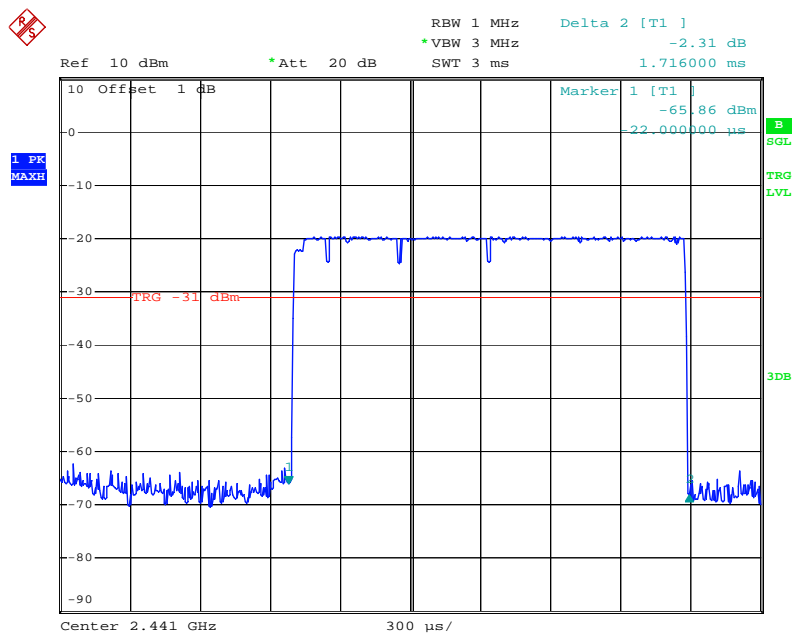
DH3:

Test Mode: Transmitting

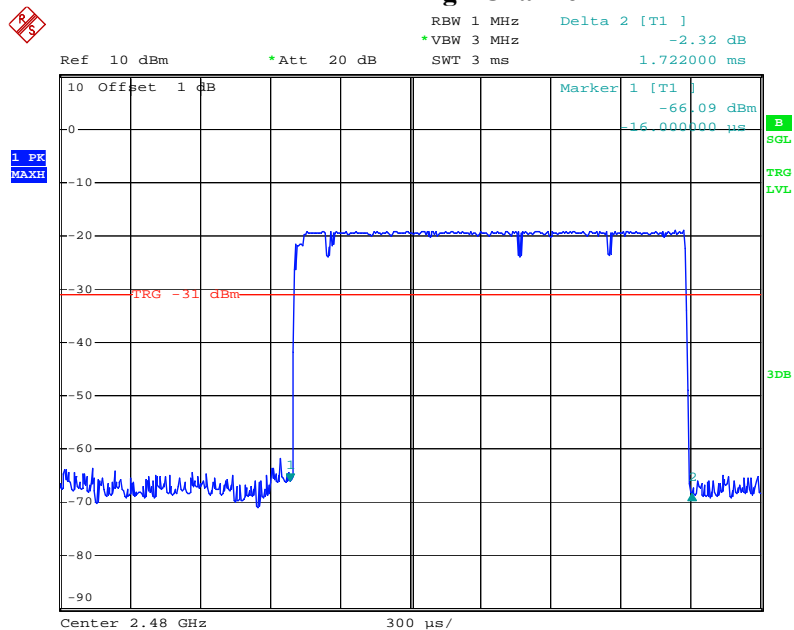
| Mode | Channel | Pulse Width (ms) | Dwell Time (s) | Limit (s) | Result |
|---------------------------|---|------------------|----------------|-----------|--------|
| BDR Mode (GFSK) | Low | 1.824 | 0.292 | 0.4 | Pass |
| | Middle | 1.716 | 0.275 | 0.4 | Pass |
| | High | 1.722 | 0.276 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/4/79)*31.6S | | | | |
| EDR Mode ($\pi/4$ -QPSK) | Low | 1.719 | 0.275 | 0.4 | Pass |
| | Middle | 1.749 | 0.280 | 0.4 | Pass |
| | High | 1.737 | 0.278 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/4/79)*31.6S | | | | |
| EDR Mode (8DPSK) | Low | 1.737 | 0.278 | 0.4 | Pass |
| | Middle | 1.731 | 0.277 | 0.4 | Pass |
| | High | 1.719 | 0.275 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/4/79)*31.6S | | | | |

BDR - Low Channel

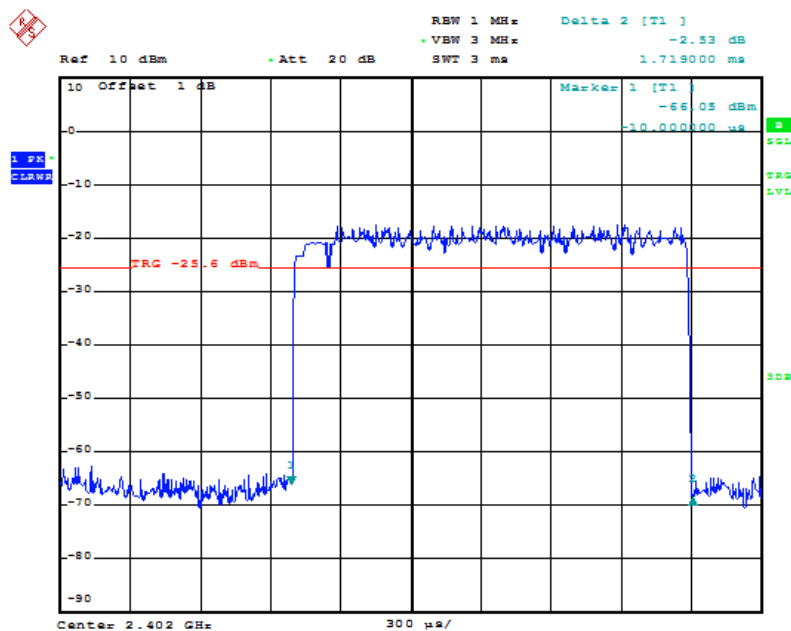
Date: 27.AUG.2012 15:03:25

BDR - Middle Channel

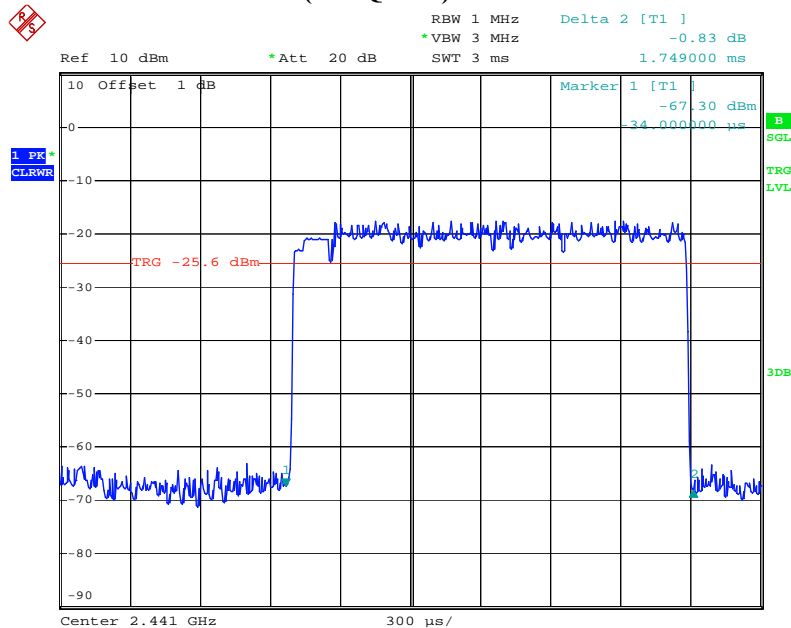
Date: 27.AUG.2012 15:02:39

BDR - High Channel

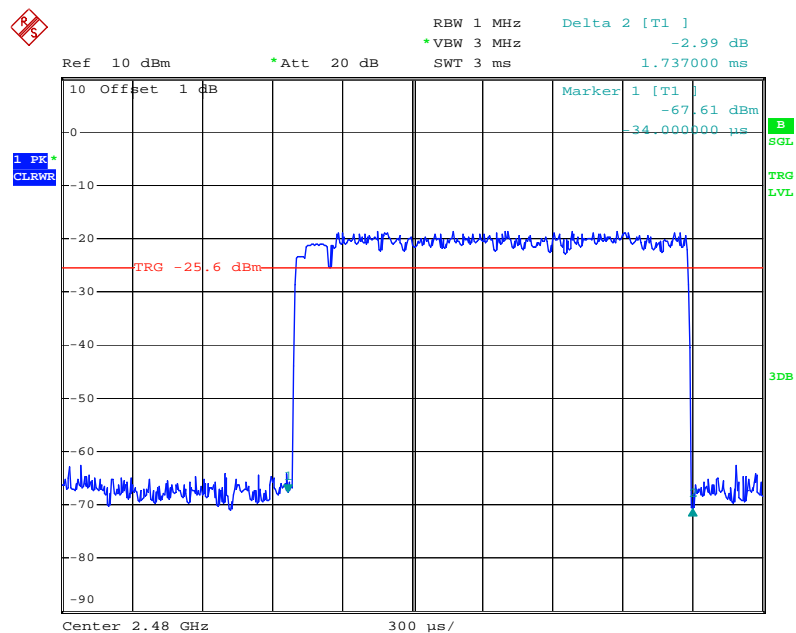
Date: 27.AUG.2012 15:01:55

EDR ($\pi/4$ -QPSK) - Low Channel

Date: 27.AUG.2012 15:48:11

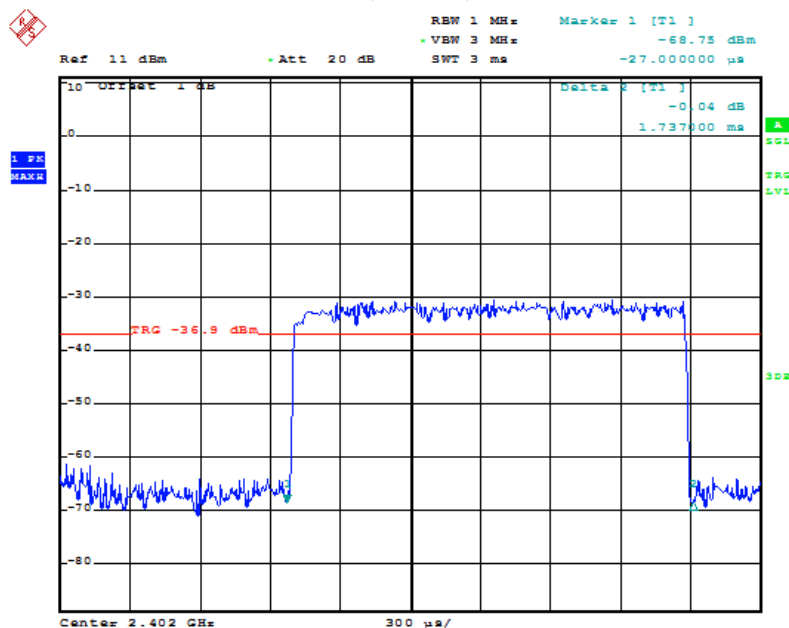
EDR ($\pi/4$ -QPSK) - Middle Channel

Date: 27.AUG.2012 15:35:10

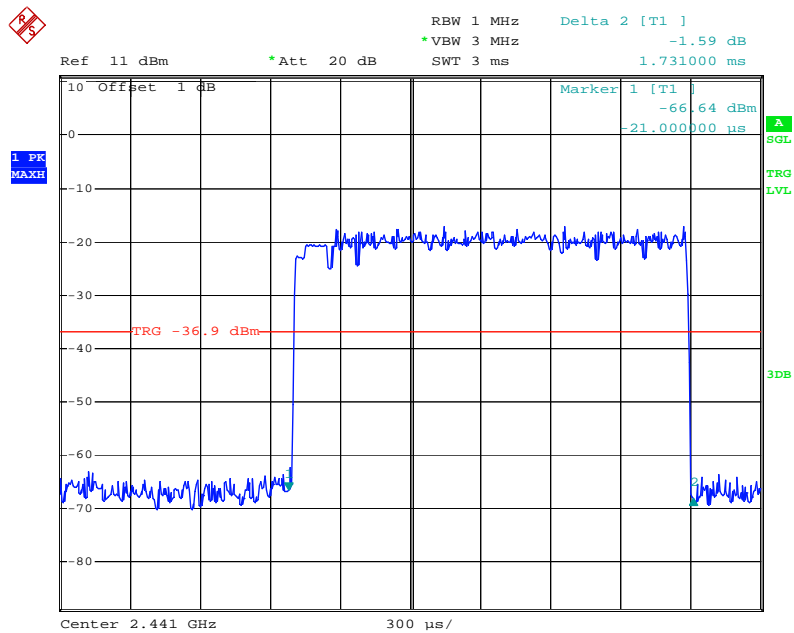
EDR ($\pi/4$ -QPSK) - High Channel

Date: 27.AUG.2012 15:34:19

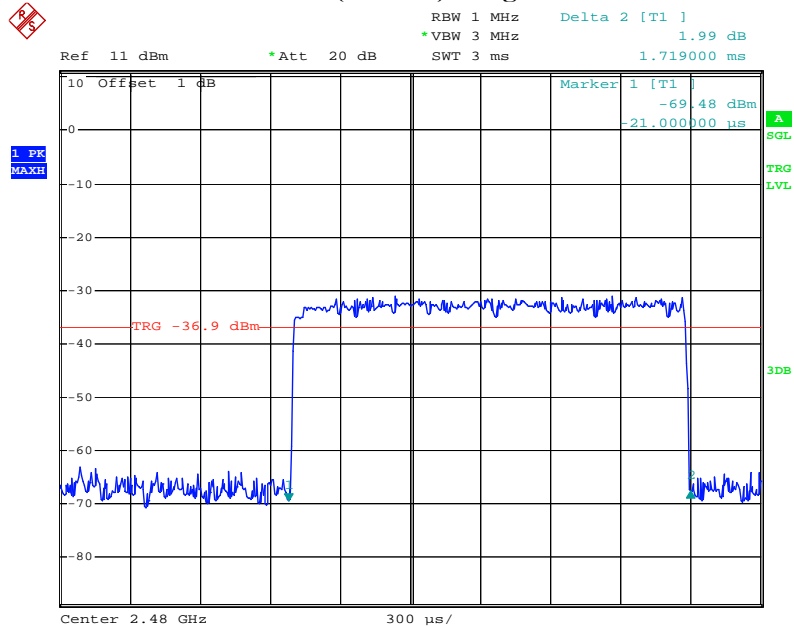
EDR (8DPSK) - Low Channel



Date: 27.AUG.2012 16:43:30

EDR (8DPSK) - Middle Channel

Date: 27.AUG.2012 16:42:56

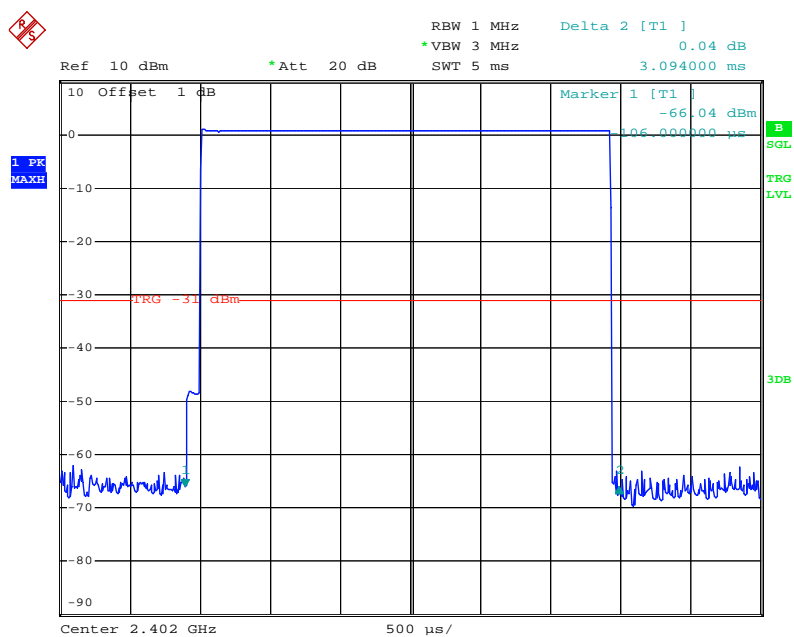
EDR (8DPSK) - High Channel

Date: 27.AUG.2012 16:42:20

DH5:

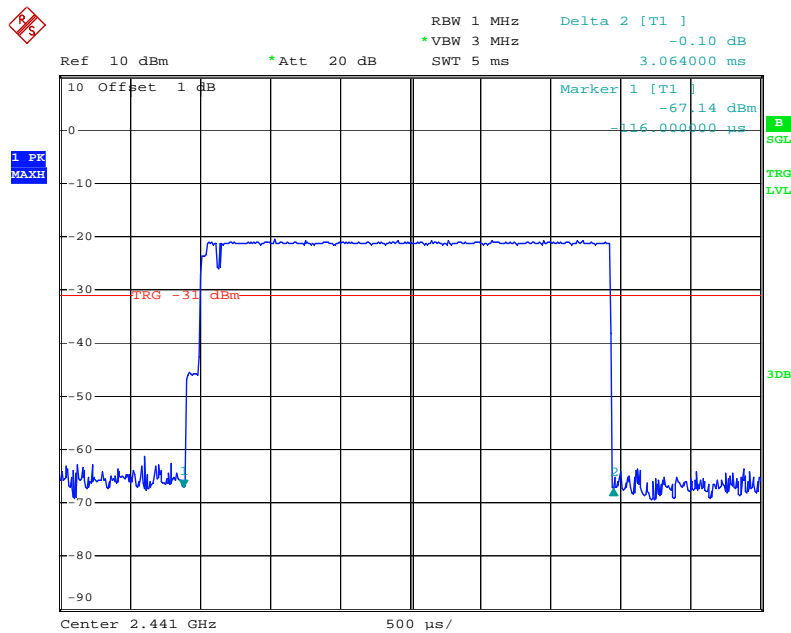
Test Mode: Transmitting

| Mode | Channel | Pulse Width (ms) | Dwell Time (s) | Limit (s) | Result |
|---------------------------|---|------------------|----------------|-----------|--------|
| BDR Mode (GFSK) | Low | 3.094 | 0.330 | 0.4 | Pass |
| | Middle | 3.064 | 0.327 | 0.4 | Pass |
| | High | 2.974 | 0.317 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/6/79)*31.6S | | | | |
| EDR Mode ($\pi/4$ -QPSK) | Low | 2.979 | 0.318 | 0.4 | Pass |
| | Middle | 2.979 | 0.318 | 0.4 | Pass |
| | High | 2.989 | 0.319 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/6/79)*31.6S | | | | |
| EDR Mode (8DPSK) | Low | 3.007 | 0.321 | 0.4 | Pass |
| | Middle | 2.997 | 0.320 | 0.4 | Pass |
| | High | 2.987 | 0.319 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/6/79)*31.6S | | | | |

BDR - Low Channel

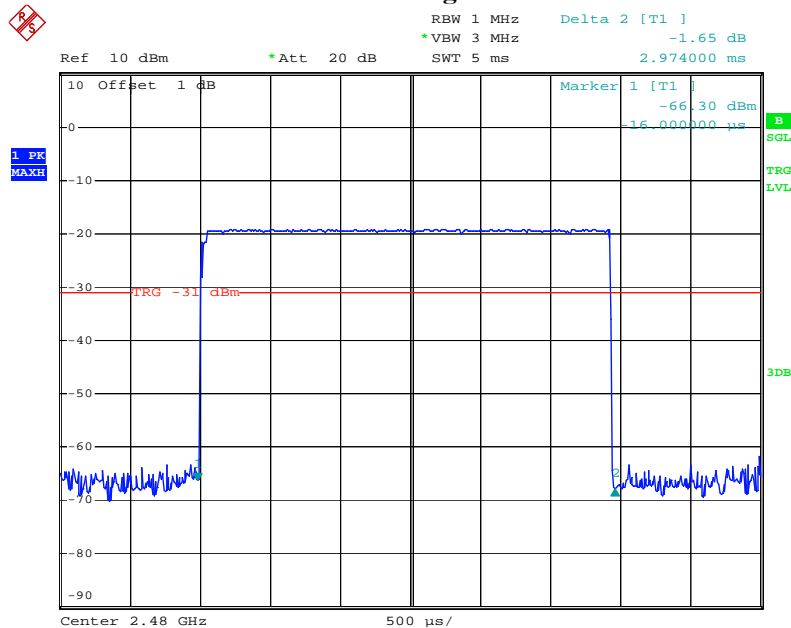
Date: 27.AUG.2012 15:04:14

BDR - Middle Channel

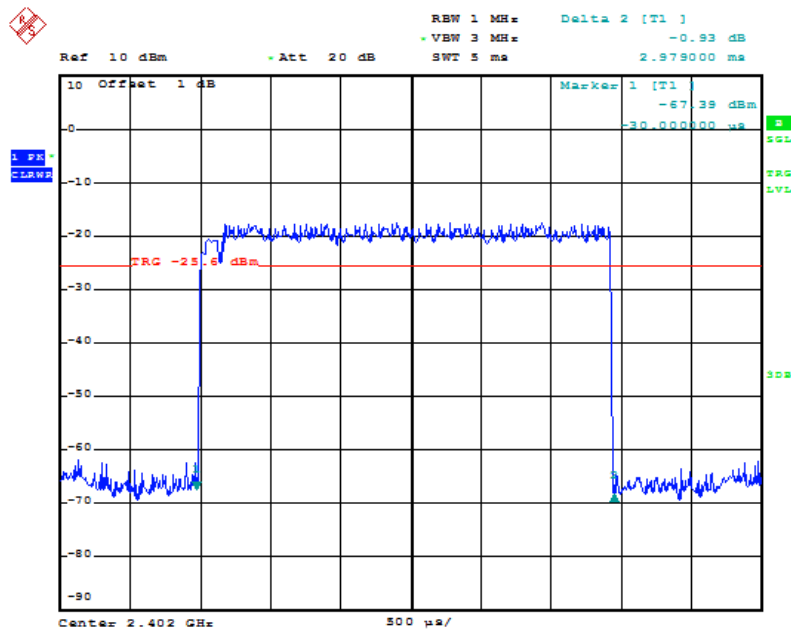


Date: 27.AUG.2012 15:04:52

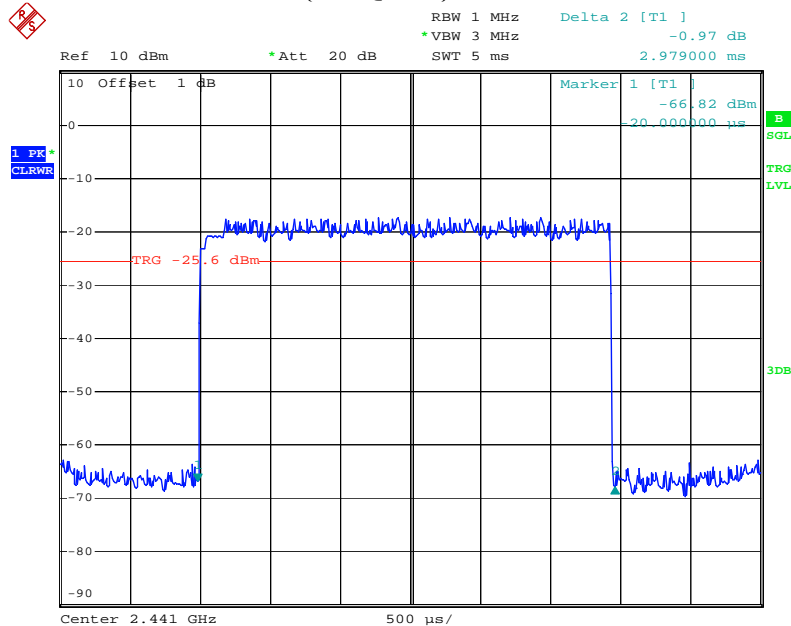
BDR - High Channel



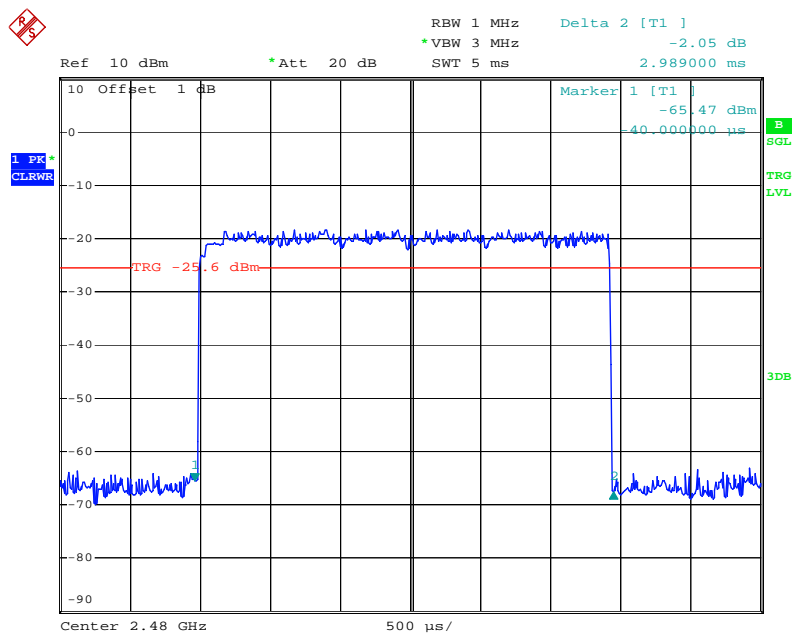
Date: 27.AUG.2012 15:05:36

EDR ($\pi/4$ -QPSK) - Low Channel

Date: 27.AUG.2012 15:49:01

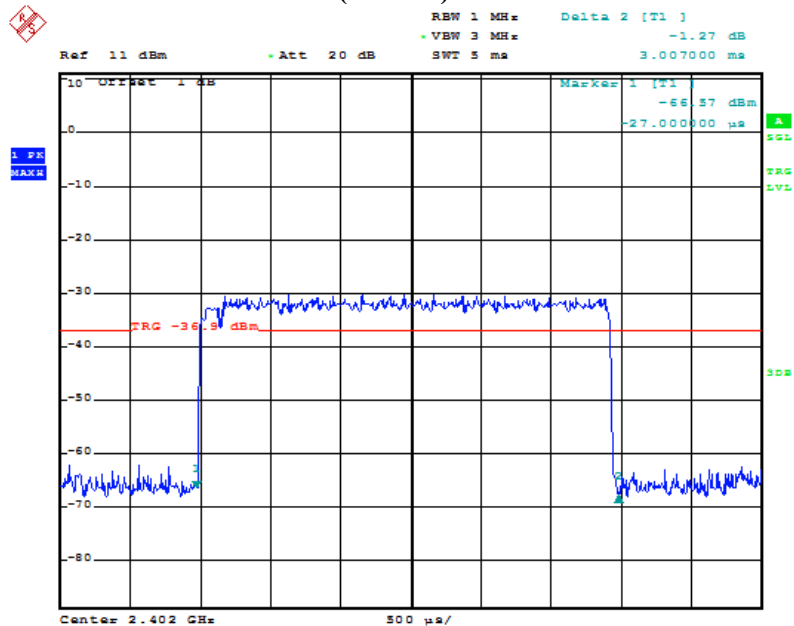
EDR ($\pi/4$ -QPSK) - Middle Channel

Date: 27.AUG.2012 15:49:38

EDR ($\pi/4$ -QPSK) - High Channel

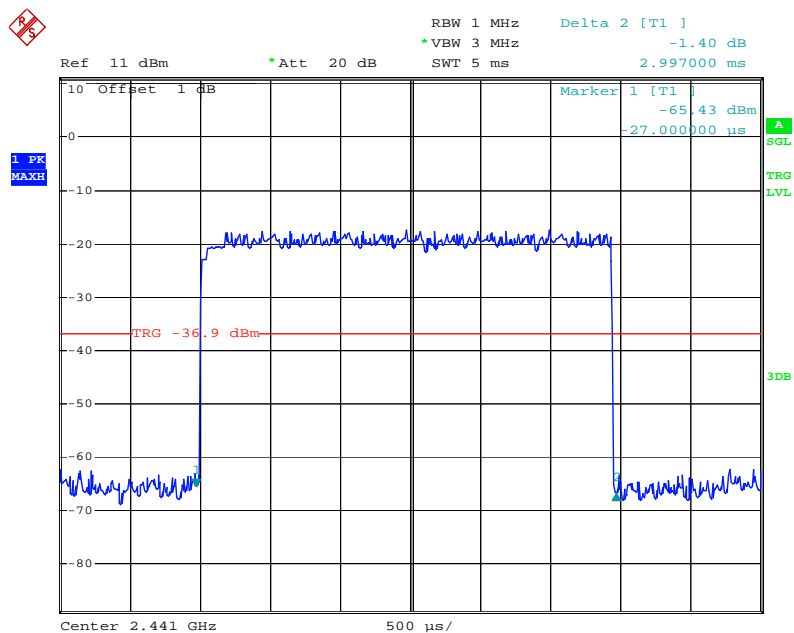
Date: 27.AUG.2012 15:50:07

EDR (8DPSK) - Low Channel



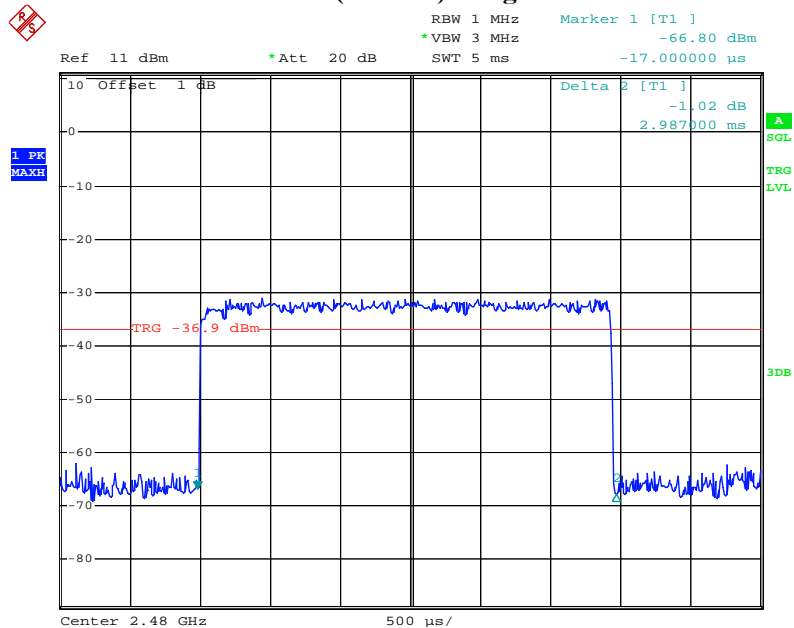
Date: 27.AUG.2012 16:46:27

EDR (8DPSK) - Middle Channel



Date: 27.AUG.2012 16:45:33

EDR (8DPSK) - High Channel



Date: 27.AUG.2012 16:47:00

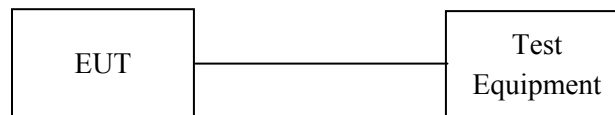
FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

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. 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 | Spectrum Analyzer | FSP38 | 100478 | 2012-5-14 | 2013-5-13 |

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

Test Data

Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 25 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 100.9kPa |

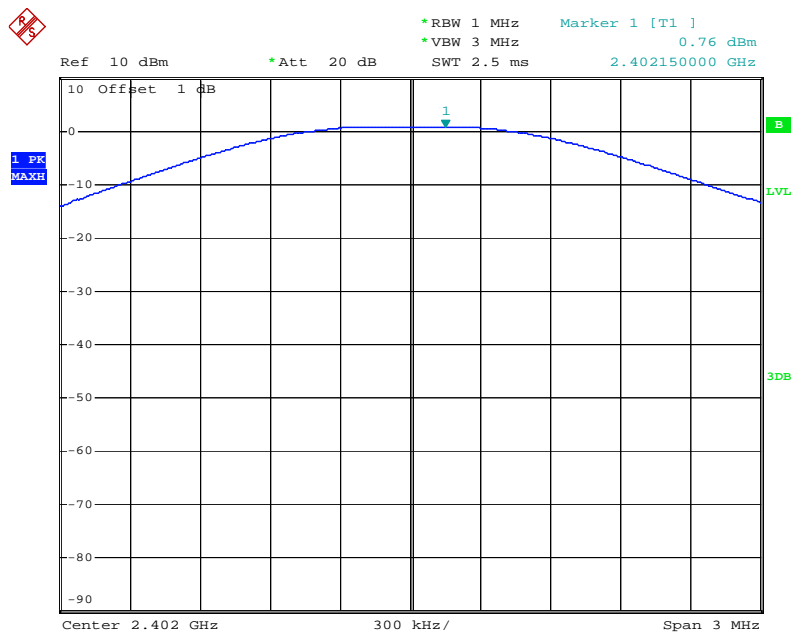
* The testing was performed by Leon Chen on 2012-08-27.

Test Result: Compliance.

Test Mode: Transmitting

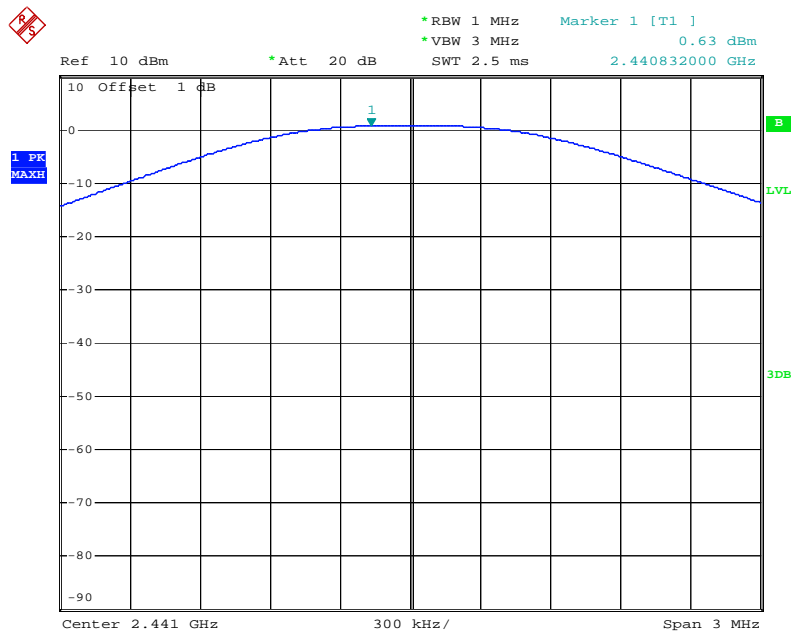
| Mode | Channel | Frequency (MHz) | Conducted Output Power (dBm) | Limit (dBm) |
|---------------------------|---------|-----------------|------------------------------|-------------|
| BDR Mode (GFSK) | Low | 2402 | 0.76 | 30 |
| | Middle | 2441 | 0.63 | 30 |
| | High | 2480 | 0.76 | 30 |
| EDR Mode ($\pi/4$ -QPSK) | Low | 2402 | 0.88 | 30 |
| | Middle | 2441 | 0.36 | 30 |
| | High | 2480 | 1.04 | 30 |
| EDR Mode (8DPSK) | Low | 2402 | 1.00 | 30 |
| | Middle | 2441 | 1.14 | 30 |
| | High | 2480 | 1.11 | 30 |

BDR: Output Power, Low



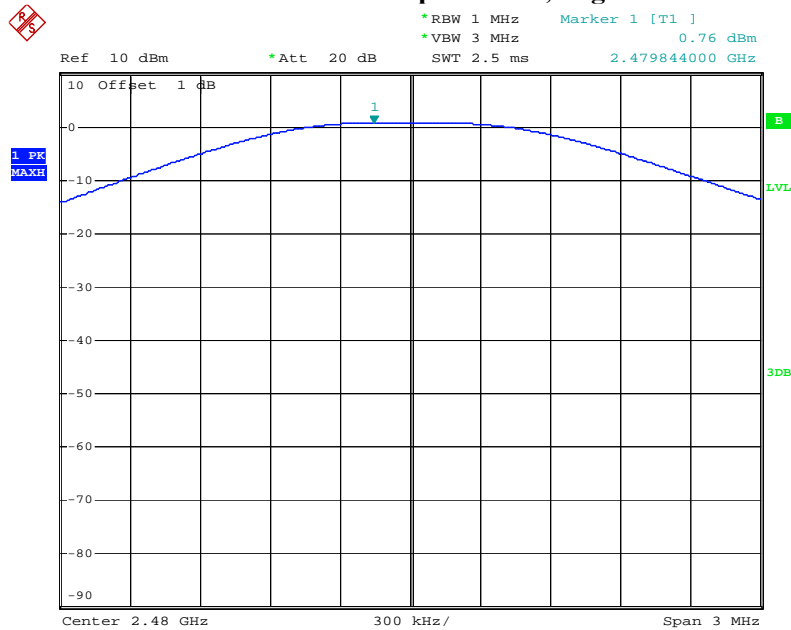
Date: 27.AUG.2012 14:10:50

BDR: Output Power, Middle



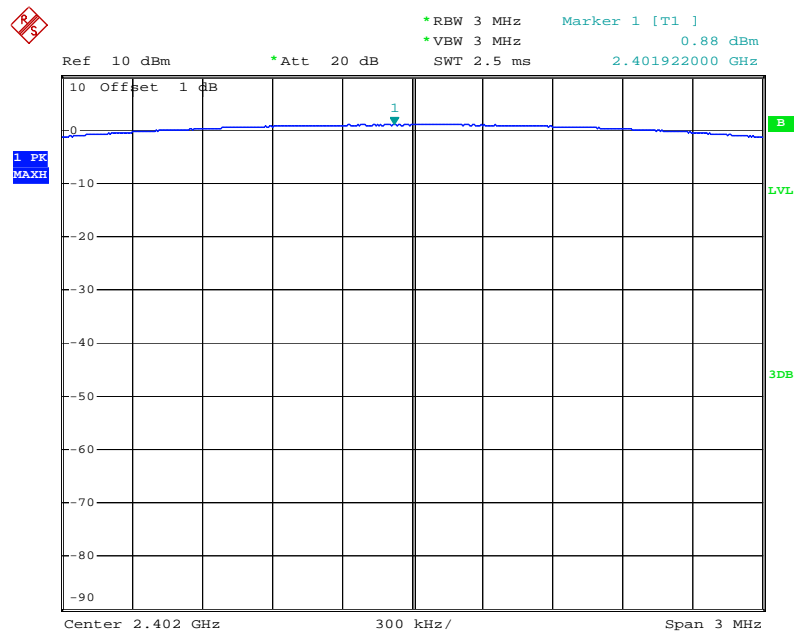
Date: 27.AUG.2012 14:43:16

BDR: Output Power, High



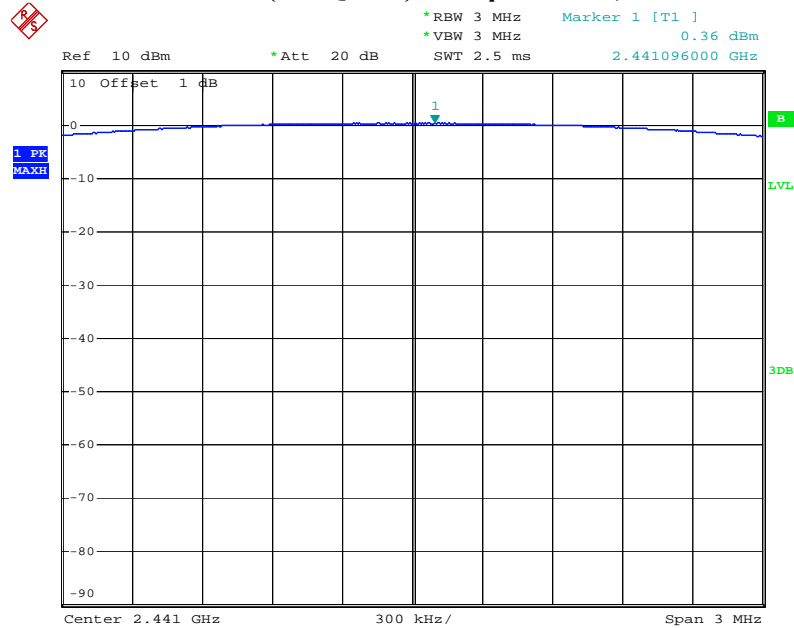
Date: 27.AUG.2012 14:44:15

EDR ($\pi/4$ -QPSK) : Output Power, Low



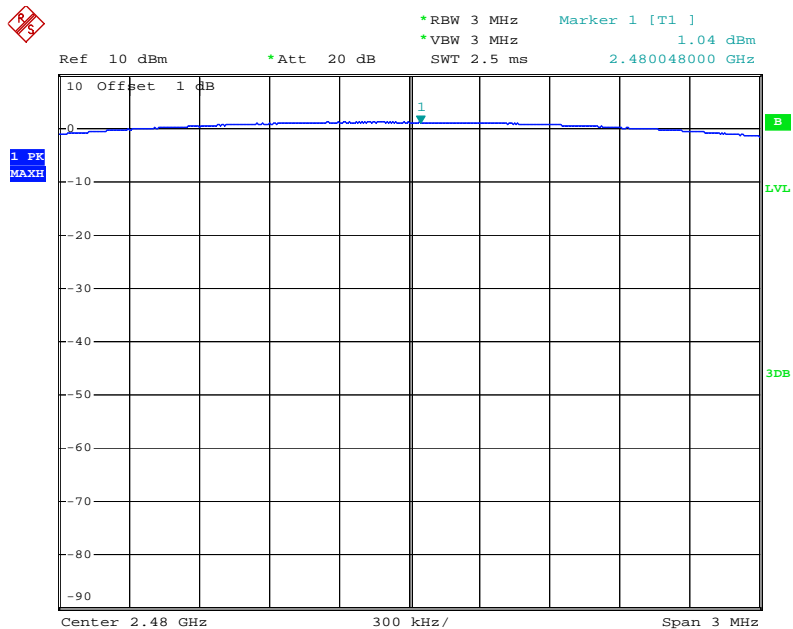
Date: 27.AUG.2012 15:59:08

EDR ($\pi/4$ -QPSK) : Output Power, Middle



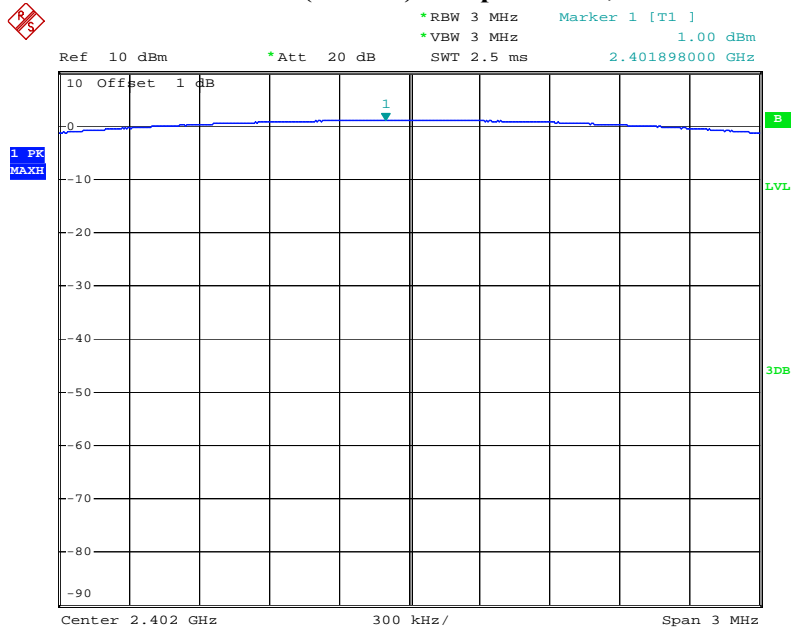
Date: 27.AUG.2012 16:00:03

EDR ($\pi/4$ -QPSK) : Output Power, High



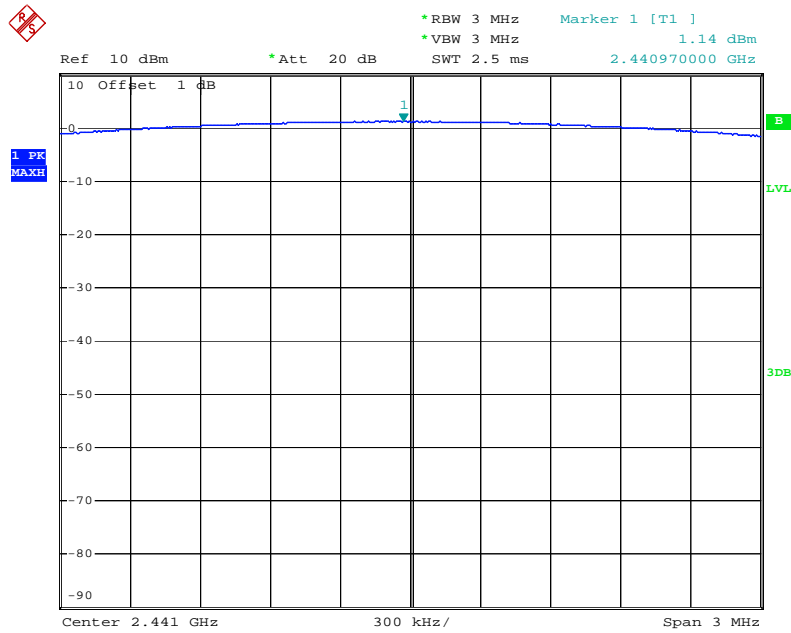
Date: 27.AUG.2012 16:00:48

EDR (8DPSK): Output Power, Low



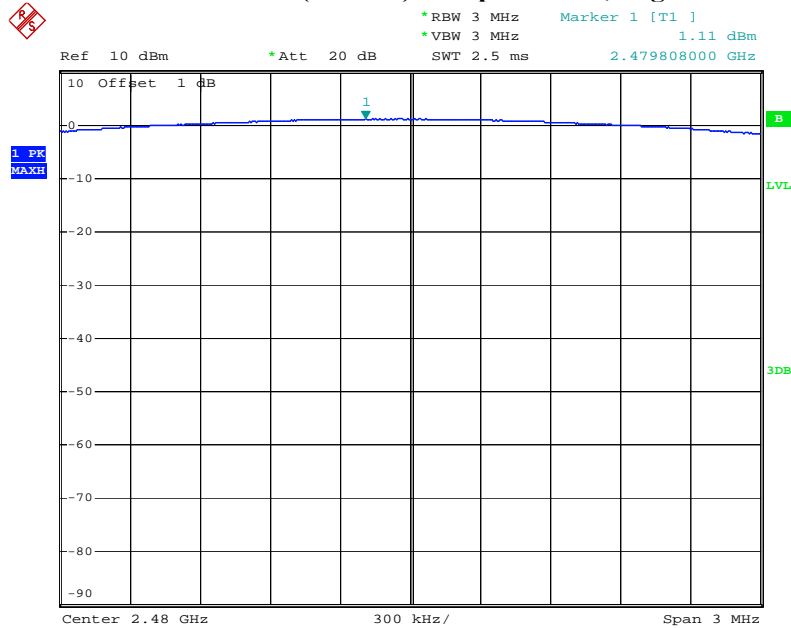
Date: 27.AUG.2012 16:19:40

EDR (8DPSK): Output Power, Middle



Date: 27.AUG.2012 16:22:57

EDR (8DPSK): Output Power, High



Date: 27.AUG.2012 16:25:34

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 and VBW of spectrum analyzer to 100 kHz/300 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 | Spectrum Analyzer | FSP38 | 100478 | 2012-5-14 | 2013-5-13 |

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

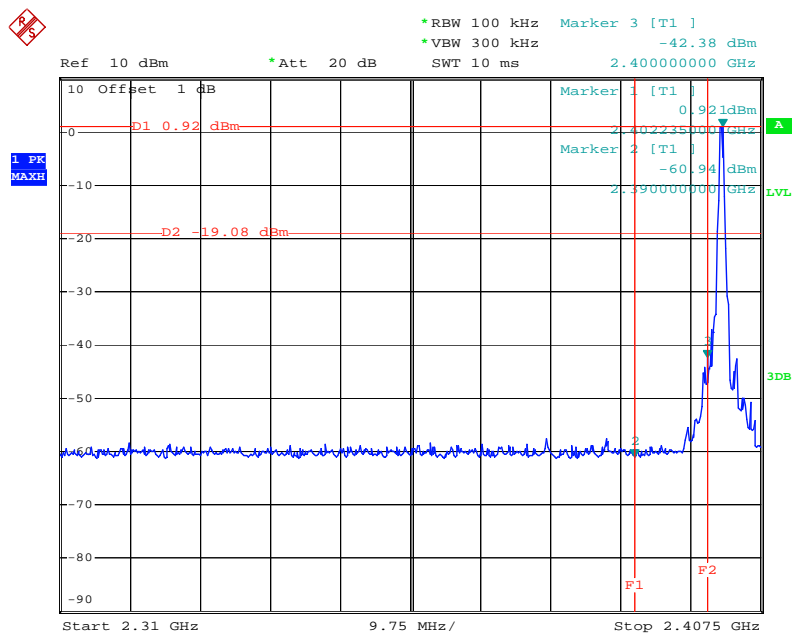
Test Data

Environmental Conditions

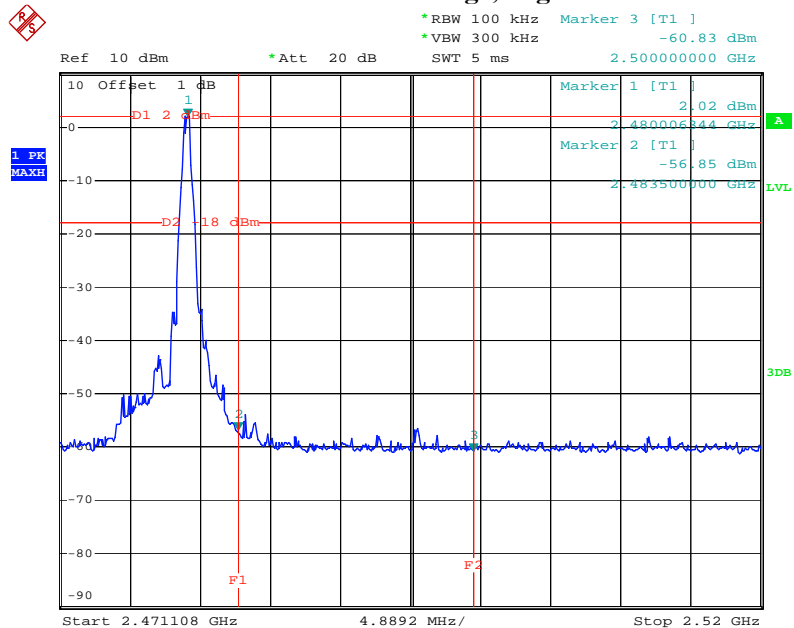
| | |
|--------------------|-----------|
| Temperature: | 26 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 100.9 kPa |

**The testing was performed by Leon Chen on 2012-08-27.*

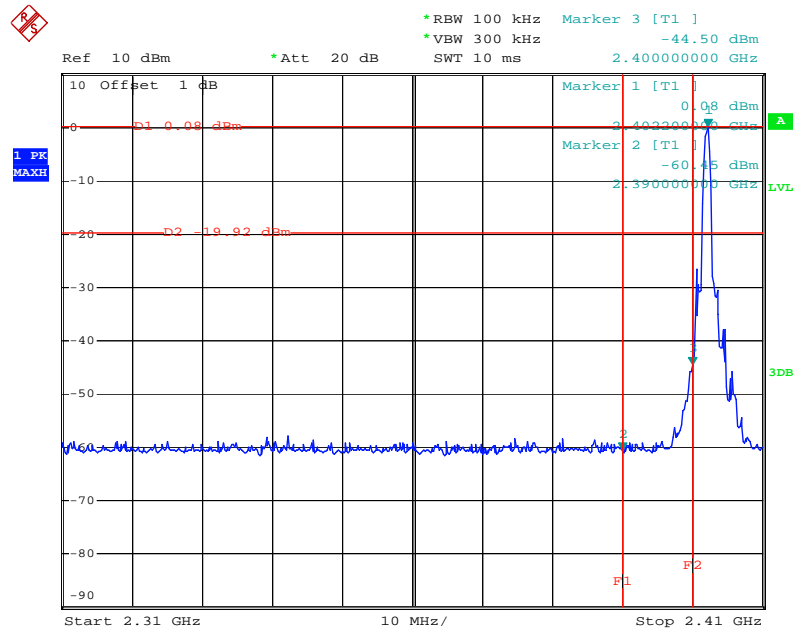
Test Result: Compliance

BDR: Band Edge, Left Side

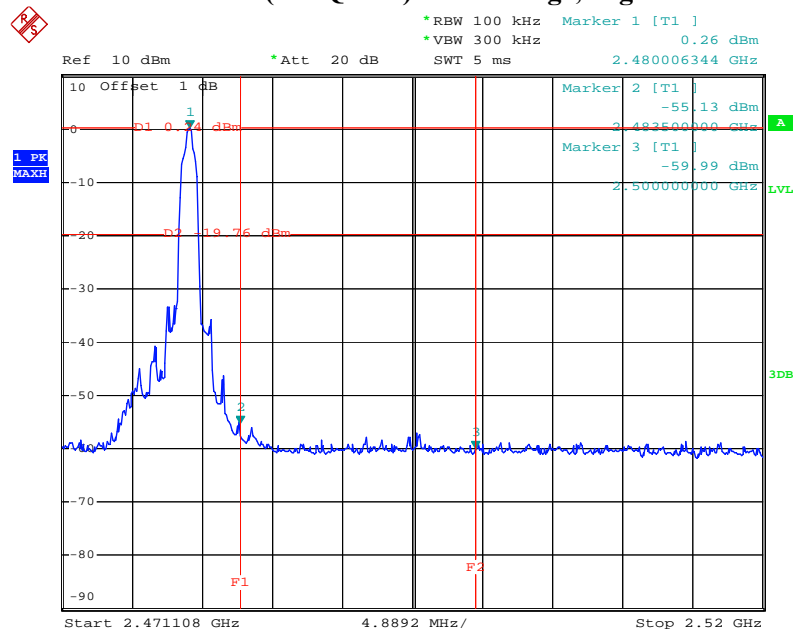
Date: 27.AUG.2012 16:50:50

BDR: Band Edge, Right Side

Date: 27.AUG.2012 16:53:11

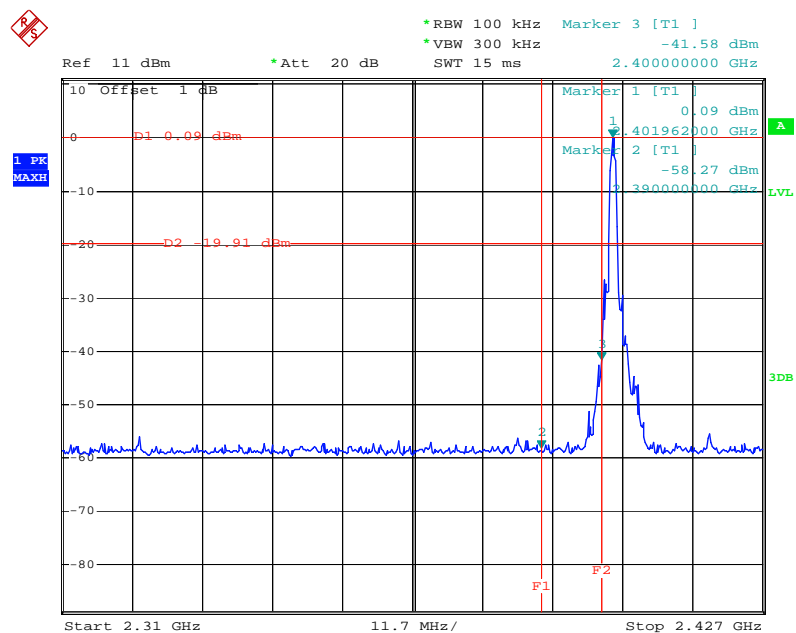
EDR ($\pi/4$ -QPSK) : Band Edge, Left Side

Date: 27.AUG.2012 16:56:52

EDR ($\pi/4$ -QPSK) : Band Edge, Right Side

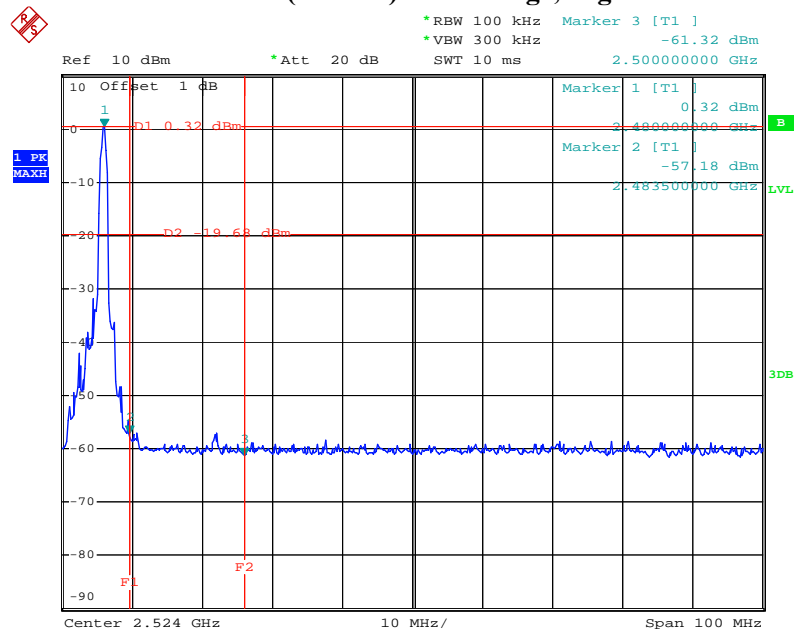
Date: 27.AUG.2012 16:54:52

EDR (8DPSK): Band Edge, Left Side



Date: 27.AUG.2012 16:30:45

EDR (8DPSK): Band Edge, Right Side



Date: 27.AUG.2012 16:26:54

DECLARATION LETTER

Shenzhen Akun Electronic Co.,Ltd.
Add: Floor3, Third Building, No.3, Fu'an Industrial Park, Dayangtian Development
Zone,, Fuyong, Shenzhen, China
Tel: 0755-29918703-8010 Fax: 0755-27336684

Product Similarity Declaration


Date: 2012-8-28

To Whom It May Concern,

We, Shenzhen Akun Electronic Co., Ltd., hereby declare that our product BLUETOOTH MINI SPEAKER, Model Number: S3BR, S4BR, N3BR, N3BR-D, N3BR-D3, R2BR, N1BR, R3BR, R4BR, S1BR, S2BR, R1BR, R5BR are electrically identical with the Model Number: C3BR that was certified by BACL. Their only difference is the model name.

The rest are the same.

Please contact me if you have any question.

Signature: 

Printed name: Jianping Zhang

Title: Manager

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