

FCC PART 15.247

TEST REPORT

For

Nexpro International Limitada

San Jose-Goicoechea, Guadalupe, Barrio Tournon, Frente Al Hotel Villas Tournon, Oficinas Del Bufete
Facio Y Canas, Costa Rica

FCC ID: ZYPB4010

| | |
|--|---|
| Report Type: Original Report | Product Type: MOBILE PHONE |
| Test Engineer: Allen Qiao <i>Allen Qiao</i> | |
| Report Number: R1DG120612001-00A | |
| Report Date: 2012-06-21 | |
| Reviewed By: Jerry Zhang <i>Jerry Zhang</i> EMC Engineer | |
| Test Laboratory: | Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn |

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

TABLE OF CONTENTS

| | |
|--|-----------|
| GENERAL INFORMATION..... | 4 |
| PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) | 4 |
| OBJECTIVE | 4 |
| RELATED SUBMITTAL(S)/GRANT(S)..... | 4 |
| TEST METHODOLOGY | 4 |
| TEST FACILITY | 5 |
| SYSTEM TEST CONFIGURATION..... | 6 |
| DESCRIPTION OF TEST CONFIGURATION | 6 |
| EQUIPMENT MODIFICATIONS | 6 |
| SUPPORT EQUIPMENT LIST AND DETAILS | 6 |
| BLOCK DIAGRAM OF TEST SETUP | 6 |
| SUMMARY OF TEST RESULTS | 7 |
| FCC §15.247 (I) AND §2.1093 – RF EXPOSURE | 8 |
| APPLICABLE STANDARD | 8 |
| RESULT: COMPLIANCE | 9 |
| FCC §15.203 - ANTENNA REQUIREMENT..... | 10 |
| APPLICABLE STANDARD | 10 |
| ANTENNA CONNECTOR CONSTRUCTION | 10 |
| FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS | 11 |
| APPLICABLE STANDARD | 11 |
| MEASUREMENT UNCERTAINTY..... | 11 |
| EUT SETUP..... | 12 |
| EMI TEST RECEIVER SETUP..... | 12 |
| TEST EQUIPMENT LIST AND DETAILS..... | 13 |
| TEST PROCEDURE | 13 |
| TEST RESULTS SUMMARY | 13 |
| TEST DATA | 13 |
| FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS..... | 16 |
| APPLICABLE STANDARD | 16 |
| MEASUREMENT UNCERTAINTY | 16 |
| EUT SETUP | 17 |
| EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP | 17 |
| TEST PROCEDURE | 17 |
| TEST EQUIPMENT LIST AND DETAILS..... | 18 |
| CORRECTED AMPLITUDE & MARGIN CALCULATION | 18 |
| TEST RESULTS SUMMARY | 19 |
| TEST DATA | 19 |
| FCC §15.247(a) (1) - CHANNEL SEPARATION TEST | 23 |
| APPLICABLE STANDARD | 23 |
| TEST EQUIPMENT LIST AND DETAILS S.A..... | 23 |
| TEST PROCEDURE | 23 |
| TEST DATA | 23 |
| FCC §15.247(a) (1) – 20 dB BANDWIDTH TESTING | 30 |

| | |
|--|-----------|
| APPLICABLE STANDARD | 30 |
| TEST PROCEDURE | 30 |
| TEST EQUIPMENT LIST AND DETAILS S.A..... | 30 |
| TEST DATA | 30 |
| FCC §15.247(a) (1) (iii) - QUANTITY OF HOPPING CHANNEL TEST | 37 |
| APPLICABLE STANDARD | 37 |
| TEST PROCEDURE | 37 |
| TEST EQUIPMENT LIST AND DETAILS..... | 37 |
| TEST DATA | 37 |
| FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)..... | 40 |
| APPLICABLE STANDARD | 40 |
| TEST PROCEDURE | 40 |
| TEST EQUIPMENT LIST AND DETAILS..... | 40 |
| TEST DATA | 40 |
| FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT | 56 |
| APPLICABLE STANDARD | 56 |
| TEST PROCEDURE | 56 |
| TEST EQUIPMENT LIST AND DETAILS S.A..... | 56 |
| TEST DATA | 56 |
| FCC §15.247(d) - BAND EDGES TESTING | 62 |
| APPLICABLE STANDARD | 62 |
| TEST PROCEDURE | 62 |
| TEST EQUIPMENT LIST AND DETAILS..... | 62 |
| TEST DATA | 63 |

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Nexpro International Limitada*'s product, model number: *B4010 (FCC ID: ZYPB4010)* (the "EUT") in this report was a MOBILE PHONE(*JOY*), which was measured approximately: 11.0 cm (L) x 5.8cm (W) x 1.2cm (H), rated input voltage: DC 3.7V Lithium battery or DC 5.0V from adapter for charging.

Adapter Information:

MODEL NO:C325A50070

ADAPTER AC/DC

INPUT: 100-240V, 50/60 Hz, 120mA

OUTPUT: 5.0V, 700mA

** All measurement and test data in this report was gathered from production sample serial number: 120612001 (Assigned by BACL, Dongguan). The EUT was received on 2012-06-14.*

Objective

This report is prepared on behalf of the *Nexpro International Limitada* 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)

FCC Part 22H&24E PCE submissions with FCC ID: ZYPB4010.

FCC Part 15B JBP submissions with FCC ID: ZYPB4010.

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 ± 0.96 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.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which is provided by manufacturer.

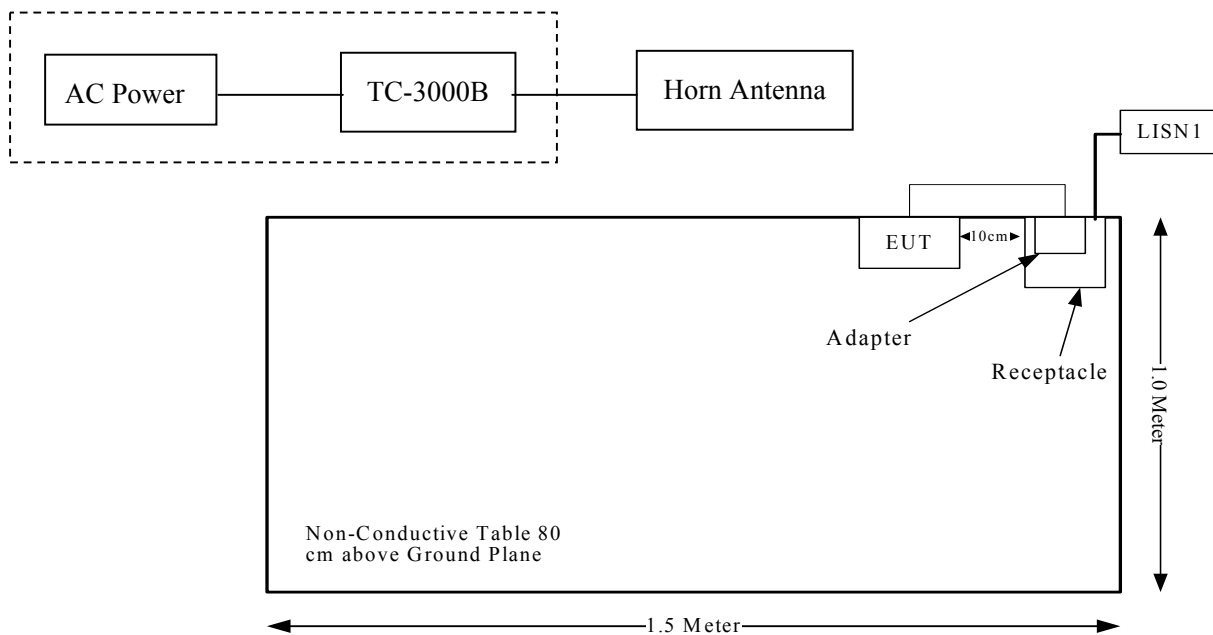
Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

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

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) | Conducted Emissions | Compliance |
| §15.205, §15.209, §15.247(d) | Radiated Emissions | Compliance |
| §15.247 (a)(1) | 20 dB 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) AND §2.1093 – RF EXPOSURE

Applicable Standard

According to §15.247 (i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Table 2 – Summary of SAR Evaluation Requirements for a Cell Phone with Multiple Transmitters

| | Individual Transmitter | Simultaneous Transmission |
|--------------------------------|---|--|
| Licensed Transmitters | <u>Routine evaluation required</u> | SAR not required: <u>Unlicensed only</u> |
| Unlicensed Transmitters | <p>When there is no simultaneous transmission –</p> <ul style="list-style-type: none"> output ≤ 60/f: SAR not required output > 60/f: stand-alone SAR required <p>When there is simultaneous transmission –</p> <p><u>Stand-alone SAR not required when</u></p> <ul style="list-style-type: none"> output $\leq 2 \cdot P_{Ref}$ and antenna is ≥ 5.0 cm from other antennas output $\leq P_{Ref}$ and antenna is ≥ 2.5 cm from other antennas output $\leq P_{Ref}$ and antenna is < 2.5 cm from other antennas, each with either output power $\leq P_{Ref}$ or 1-g SAR < 1.2 W/kg <p><u>Otherwise stand-alone SAR is required</u></p> <p>When stand-alone SAR is required</p> <ul style="list-style-type: none"> test SAR on highest output channel for each wireless mode and exposure condition if SAR for highest output channel is $> 50\%$ of SAR limit, evaluate all channels according to normal procedures | <ul style="list-style-type: none"> when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas <p><u>Licensed & Unlicensed</u></p> <ul style="list-style-type: none"> when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3 <p>SAR required:</p> <p><u>Licensed & Unlicensed</u></p> <p>antenna pairs with SAR to peak location separation ratio ≥ 0.3; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition</p> <p>Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply</p> |
| Jaw, Mouth and Nose | <p><u>Flat phantom SAR required</u></p> <ul style="list-style-type: none"> when measurement is required in tight regions of SAM and it is not feasible or the results can be questionable due to probe tilt, calibration, positioning and orientation issues position rectangular and clam-shell phones according to flat phantom procedures and conduct SAR measurements for these specific locations | When simultaneous transmission SAR testing is required, contact the FCC Laboratory for interim guidance. |

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

- 1) Bluetooth can transmit simultaneously with GSM.
- 2) The distance between BT and GSM antenna is $7.3\text{cm} > 5\text{cm}$. The max output power of Bluetooth antenna is $(5.38\text{dBm}) 3.45\text{mW} < 2P_{\text{Ref}}(24\text{mW})$. According to KDB648474, stand-alone SAR is not required for BT antenna and simultaneous SAR evaluation is not required for Bluetooth and GSM antennas.
- 3) P_{Ref} is defined as the maximum conducted power available at the antenna according to source-based time-averaging requirements of Section 2.1093(d) (5).

Result: Compliance

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 a PIFA antenna, which complied with 15.203, the maximum gain is 1.23dBi, please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

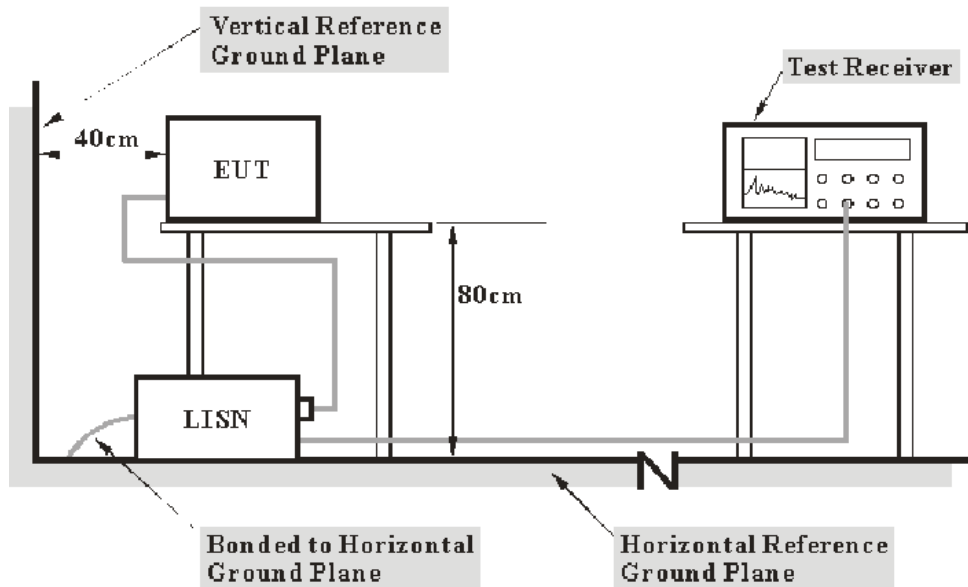
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.5 dB (150 kHz to 30 MHz), and conducted disturbance at telecommunication port using AAN is 5.0 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

| Measurement | U_{cisp} |
|---|------------|
| Conducted disturbance at mains port using AMN (9 kHz to 150 kHz) | 3.8 dB |
| (150 kHz to 30 MHz) | 3.4 dB |
| Conducted disturbance at mains port using voltage probe (9 kHz to 30 MHz) | 2.9 dB |
| Conducted disturbance at telecommunication port using AAN (150 kHz to 30 MHz) | 5.0 dB |
| Conducted disturbance at telecommunication port using CVP (150 kHz to 30 MHz) | 3.9 dB |
| Conducted disturbance at telecommunication port using CP (150 kHz to 30 MHz) | 2.9 dB |

EUT Setup



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 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 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:

| <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 Reciever | ESCS 30 | 830245/006 | 2011-10-08 | 2012-10-07 |
| Rohde & Schwarz | LISN | ESH3-Z5 | 843331/015 | 2011-10-08 | 2012-10-07 |
| Rohde & Schwarz | LISN | ESH3-Z5 | 100113 | 2011-10-08 | 2012-10-07 |

Test Procedure

During the conducted emission test, the Adapter was connected to the outlet of the LISN.

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

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

Test Results Summary

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

16.26 dB at 0.170 MHz in the Neutral conducted mode.

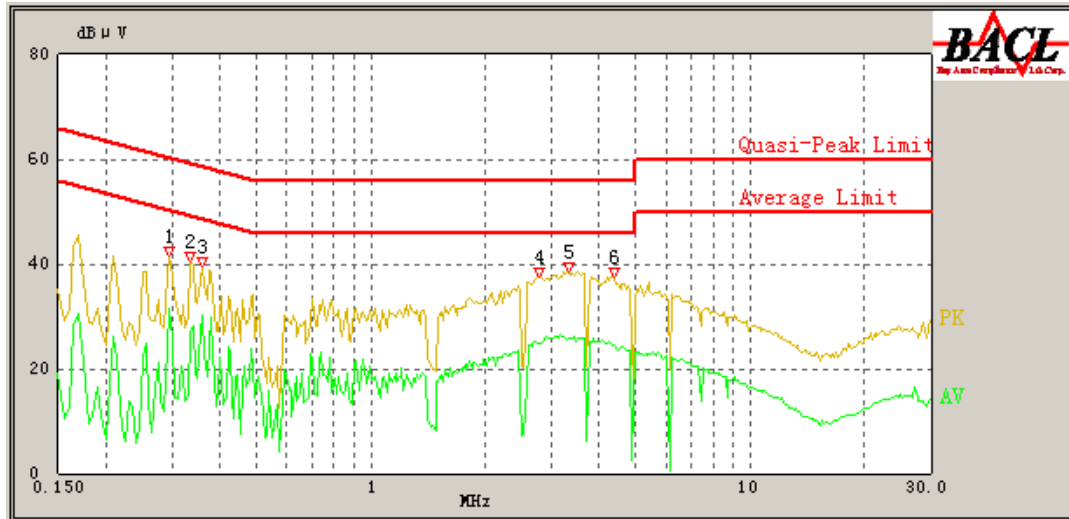
Test Data**Environmental Conditions**

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

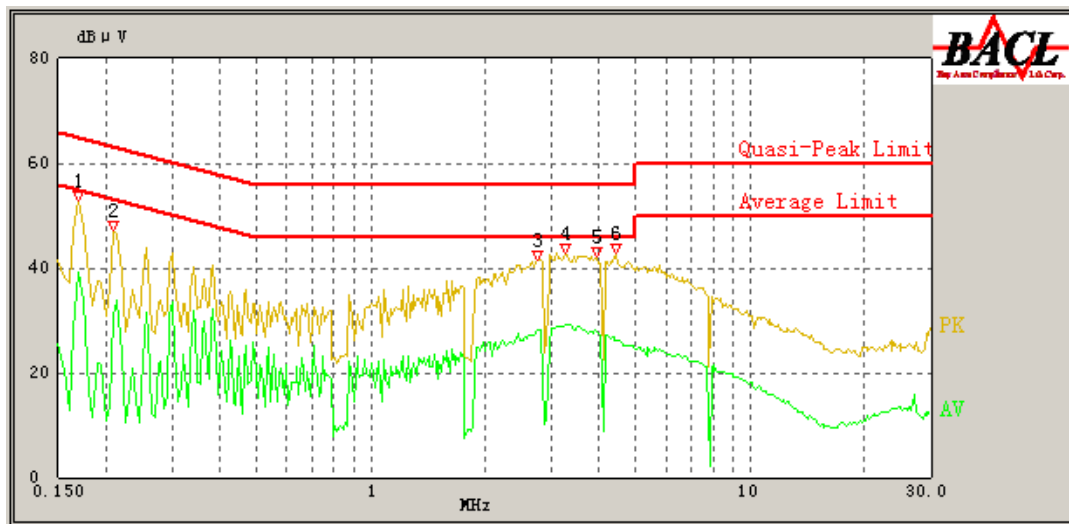
** The testing was performed by Allen Qiao on 2012-06-14.*

Test Mode: Transmitting

120V, 60 Hz, Line:



| Frequency (MHz) | Corrected Result (dBμV) | Correction Factor (dB) | Limit (dBμV) | Margin (dB) | Detector (PK/QP/Ave.) |
|-----------------|-------------------------|------------------------|--------------|-------------|-----------------------|
| 0.360 | 30.14 | 0.42 | 50.00 | 19.86 | Ave |
| 3.305 | 25.58 | 0.49 | 46.00 | 20.42 | Ave |
| 0.295 | 31.34 | 0.42 | 51.86 | 20.52 | Ave |
| 2.785 | 24.84 | 0.49 | 46.00 | 21.16 | Ave |
| 4.365 | 24.57 | 0.50 | 46.00 | 21.43 | Ave |
| 0.295 | 39.77 | 0.42 | 61.86 | 22.09 | QP |
| 3.320 | 32.96 | 0.49 | 56.00 | 23.04 | QP |
| 0.360 | 36.44 | 0.42 | 60.00 | 23.56 | QP |
| 0.335 | 27.06 | 0.42 | 50.71 | 23.65 | Ave |
| 2.780 | 32.23 | 0.49 | 56.00 | 23.77 | QP |
| 0.335 | 36.76 | 0.42 | 60.71 | 23.95 | QP |
| 4.365 | 31.36 | 0.50 | 56.00 | 24.64 | QP |

120V, 60 Hz, Neutral:

| Frequency (MHz) | Corrected Result (dBμV) | Correction Factor (dB) | Limit (dBμV) | Margin (dB) | Detector (PK/QP/Ave.) |
|-----------------|-------------------------|------------------------|--------------|-------------|-----------------------|
| 0.170 | 39.17 | 0.41 | 55.43 | 16.26 | Ave |
| 3.270 | 29.25 | 0.49 | 46.00 | 16.75 | Ave |
| 3.905 | 28.01 | 0.50 | 46.00 | 17.99 | Ave |
| 2.730 | 27.69 | 0.49 | 46.00 | 18.31 | Ave |
| 3.270 | 37.61 | 0.49 | 56.00 | 18.39 | QP |
| 3.945 | 36.18 | 0.50 | 56.00 | 19.82 | QP |
| 4.405 | 26.05 | 0.50 | 46.00 | 19.95 | Ave |
| 4.440 | 34.77 | 0.50 | 56.00 | 21.23 | QP |
| 2.760 | 34.04 | 0.49 | 56.00 | 21.96 | QP |
| 0.170 | 43.17 | 0.41 | 65.43 | 22.26 | QP |
| 0.210 | 30.81 | 0.42 | 54.29 | 23.48 | Ave |
| 0.210 | 38.72 | 0.42 | 64.29 | 25.57 | QP |

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

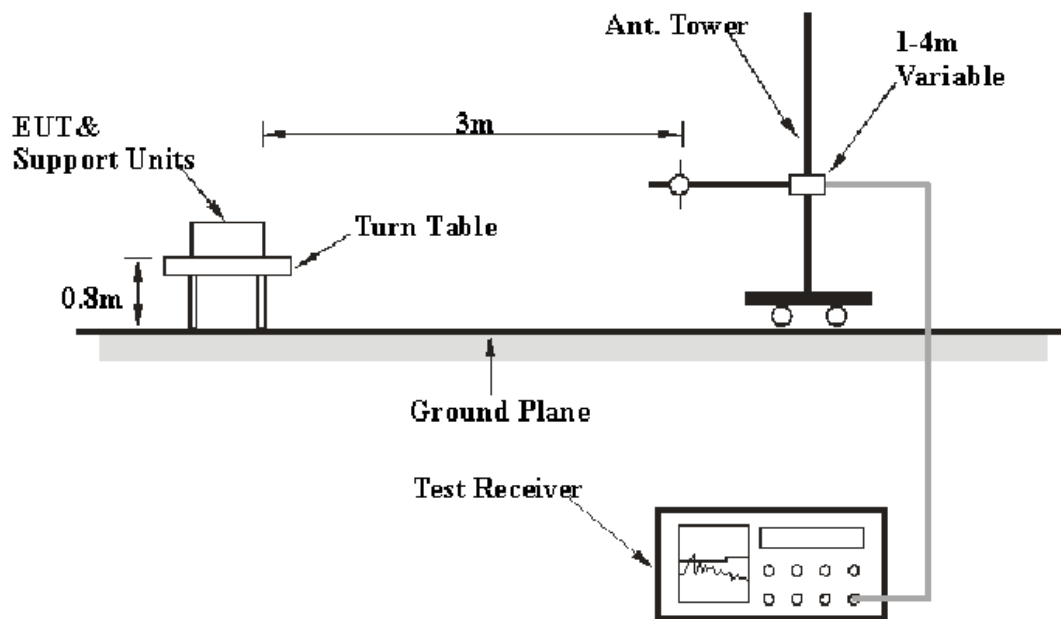
1G~6GHz: 4.45 dB

6G~18GHz: 5.23 dB

Table 1 – Values of U_{cisp}

| Measurement | U_{cisp} |
|--|------------|
| Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz) | 6.3 dB |
| Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz) | 5.2 dB |
| Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz) | 5.5 dB |

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.

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

| <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 Reciever | ESCI | 100224 | 2011-11-11 | 2012-11-10 |
| Sunol Sciences | Hybrid Antennas | JB3 | A060611-1 | 2011-09-06 | 2012-09-05 |
| HP | Pre-amplifier | 8447E | 2434A02181 | 2011-10-08 | 2012-10-07 |
| Rohde & Schwarz | Spectrum Analyzer | FSEM | 1079 8500 | 2011-10-09 | 2012-10-08 |
| Dayang | Horn Antenna | OMCDH10180 | 10279001B | 2011-07-30 | 2012-07-29 |
| mini-circuits | Wideband Amplifier | ZVA-183-S+ | 96901149 | 2012-04-24 | 2013-04-23 |

Corrected Amplitude & Margin Calculation

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

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

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

Transmitting ($EDR-\pi/4$ -DQPSK) Mode: 11.10 dB at 2389.71 MHz in the Vertical

Test Data**Environmental Conditions**

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

The testing was performed by Allen Qiao on 2012-06-14.

Test Mode: Transmitting (BDR- GFSK)

| Frequency (MHz) | Reading (dBuV) | Detector (PK/QP /Ave.) | Polar (H/V) | Corrected Amplitude (dB/m) | Correction Data (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Comment |
|--------------------------|-------------------|------------------------------|----------------|----------------------------------|--------------------------------|-------------------|----------------|-------------|
| Low Channel (2402MHz) | | | | | | | | |
| 2389.67 | 34.79 | Ave. | V | 6.75 | 41.54 | 54 | 12.46 | spurious |
| 2387.65 | 28.39 | Ave. | H | 6.75 | 35.14 | 54 | 18.86 | spurious |
| 2389.67 | 46.71 | PK | V | 6.75 | 53.46 | 74 | 20.54 | spurious |
| 4804 | 22.47 | Ave. | H | 10.54 | 33.01 | 54 | 20.99 | Harmonic |
| 331.58 | 30.21 | QP | V | -5.45 | 24.76 | 46 | 21.24 | spurious |
| 331.58 | 29.68 | QP | H | -5.45 | 24.23 | 46 | 21.77 | spurious |
| 4804 | 21.36 | Ave. | V | 10.54 | 31.9 | 54 | 22.1 | Harmonic |
| 2387.65 | 43.22 | PK | H | 6.75 | 49.97 | 74 | 24.03 | spurious |
| 4804 | 38.78 | PK | H | 10.79 | 49.57 | 74 | 24.43 | Harmonic |
| 4804 | 35.74 | PK | V | 10.79 | 46.53 | 74 | 27.47 | Harmonic |
| 2402 | 62.18 | PK | H | 34.91 | 97.09 | N/A | N/A | Fundamental |
| 2402 | 30.81 | Ave. | H | 34.91 | 65.72 | N/A | N/A | Fundamental |
| 2402 | 59.39 | PK | V | 34.91 | 94.3 | N/A | N/A | Fundamental |
| 2402 | 30.46 | Ave. | V | 34.91 | 65.37 | N/A | N/A | Fundamental |
| Middle Channel (2441MHz) | | | | | | | | |
| 4882 | 20.5 | Ave. | H | 11.07 | 31.57 | 54 | 22.43 | Harmonic |
| 4882 | 20.38 | Ave. | V | 11.07 | 31.45 | 54 | 22.55 | Harmonic |
| 282.14 | 29.36 | QP | V | -6.43 | 22.93 | 46 | 23.07 | spurious |
| 282.14 | 28.79 | QP | H | -6.43 | 22.36 | 46 | 23.64 | spurious |
| 4882 | 35.41 | PK | H | 11.07 | 46.48 | 74 | 27.52 | Harmonic |
| 4882 | 35.3 | PK | V | 11.07 | 46.37 | 74 | 27.63 | Harmonic |
| 2441 | 64.89 | PK | H | 35.24 | 100.13 | N/A | N/A | Fundamental |
| 2441 | 31.56 | Ave. | H | 35.24 | 66.8 | N/A | N/A | Fundamental |
| 2441 | 61.66 | PK | V | 35.24 | 96.9 | N/A | N/A | Fundamental |
| 2441 | 30.48 | Ave. | V | 35.24 | 65.72 | N/A | N/A | Fundamental |
| High Channel (2480MHz) | | | | | | | | |
| 2485.33 | 34.18 | Ave. | V | 6.83 | 40.79 | 54 | 13.21 | spurious |
| 421.75 | 29.35 | QP | H | -3.41 | 25.94 | 46 | 20.06 | spurious |
| 4960 | 22.24 | Ave. | H | 10.96 | 33.2 | 54 | 20.8 | Harmonic |
| 421.75 | 28.61 | QP | V | -3.41 | 25.2 | 46 | 20.8 | spurious |
| 4960 | 21.86 | Ave. | V | 10.96 | 32.82 | 54 | 21.18 | Harmonic |
| 2485.33 | 45.91 | PK | V | 6.83 | 52.68 | 74 | 21.32 | spurious |
| 2484.17 | 20.78 | Ave. | H | 6.83 | 27.43 | 54 | 26.57 | spurious |
| 4960 | 36.29 | PK | H | 10.96 | 47.25 | 74 | 26.75 | Harmonic |
| 4960 | 35.78 | PK | V | 10.96 | 46.74 | 74 | 27.26 | Harmonic |
| 2484.17 | 35.37 | PK | H | 6.83 | 41.55 | 74 | 32.45 | spurious |
| 2480 | 62.32 | PK | H | 35.3 | 97.62 | N/A | N/A | Fundamental |
| 2480 | 30.09 | Ave. | H | 35.3 | 65.39 | N/A | N/A | Fundamental |
| 2480 | 57.97 | PK | V | 35.3 | 93.27 | N/A | N/A | Fundamental |
| 2480 | 30.48 | Ave. | V | 35.3 | 65.78 | N/A | N/A | Fundamental |

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

| Frequency (MHz) | Reading (dBuV) | Detector (PK/QP /Ave.) | Polar (H/V) | Corrected Amplitude (dB/m) | Correction Data (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Comment |
|--------------------------|-------------------|------------------------------|----------------|----------------------------------|--------------------------------|-------------------|----------------|-------------|
| Low Channel (2402MHz) | | | | | | | | |
| 2389.71 | 36.15 | Ave. | V | 6.75 | 42.90 | 54 | 11.10 | spurious |
| 2389.54 | 27.64 | Ave. | H | 6.75 | 34.39 | 54 | 19.61 | spurious |
| 2389.71 | 47.58 | PK | V | 6.75 | 54.33 | 74 | 19.67 | spurious |
| 4804 | 21.78 | Ave. | H | 10.54 | 32.32 | 54 | 21.68 | Harmonic |
| 4804 | 21.24 | Ave. | V | 10.54 | 31.78 | 54 | 22.22 | Harmonic |
| 297.16 | 27.94 | QP | H | -6.2 | 21.74 | 46 | 24.26 | spurious |
| 297.16 | 27.63 | QP | V | -6.2 | 21.43 | 46 | 24.57 | spurious |
| 2389.54 | 42.36 | PK | H | 6.75 | 49.11 | 74 | 24.89 | spurious |
| 4804 | 37.69 | PK | H | 10.79 | 48.48 | 74 | 25.52 | Harmonic |
| 4804 | 35.78 | PK | V | 10.79 | 46.57 | 74 | 27.43 | Harmonic |
| 2402 | 62.98 | PK | H | 34.91 | 97.89 | N/A | N/A | Fundamental |
| 2402 | 30.69 | Ave. | H | 34.91 | 65.6 | N/A | N/A | Fundamental |
| 2402 | 58.38 | PK | V | 34.91 | 93.29 | N/A | N/A | Fundamental |
| 2402 | 30.35 | Ave. | V | 34.91 | 65.26 | N/A | N/A | Fundamental |
| Middle Channel (2441MHz) | | | | | | | | |
| 4882 | 21.36 | Ave. | H | 11.07 | 32.43 | 54 | 21.57 | Harmonic |
| 4882 | 21.21 | Ave. | V | 11.07 | 32.28 | 54 | 21.72 | Harmonic |
| 4882 | 38.42 | PK | H | 11.07 | 49.49 | 74 | 24.51 | Harmonic |
| 254.25 | 29.35 | QP | V | -7.98 | 21.37 | 46 | 24.63 | spurious |
| 254.25 | 28.96 | QP | H | -7.98 | 20.98 | 46 | 25.02 | spurious |
| 4882 | 37.69 | PK | V | 11.07 | 48.76 | 74 | 25.24 | Harmonic |
| 2441 | 64 | PK | H | 35.24 | 99.24 | N/A | N/A | Fundamental |
| 2441 | 31.26 | Ave. | H | 35.24 | 66.5 | N/A | N/A | Fundamental |
| 2441 | 59.62 | PK | V | 35.24 | 94.86 | N/A | N/A | Fundamental |
| 2441 | 30.18 | Ave. | V | 35.24 | 65.42 | N/A | N/A | Fundamental |
| High Channel (2480MHz) | | | | | | | | |
| 2483.72 | 35.54 | Ave. | V | 6.83 | 40.79 | 54 | 13.21 | spurious |
| 446.33 | 30.24 | QP | H | -3.16 | 27.08 | 46 | 18.92 | spurious |
| 446.33 | 29.68 | QP | V | -3.16 | 26.52 | 46 | 19.48 | Spurious |
| 2483.72 | 46.99 | PK | V | 6.83 | 52.68 | 74 | 21.32 | spurious |
| 4960 | 21.33 | Ave. | H | 10.96 | 32.29 | 54 | 21.71 | Harmonic |
| 4960 | 21.01 | Ave. | V | 10.96 | 31.97 | 54 | 22.03 | Harmonic |
| 4960 | 36.57 | PK | H | 10.96 | 47.53 | 74 | 26.47 | Harmonic |
| 2483.69 | 21.24 | Ave. | H | 6.83 | 27.43 | 54 | 26.57 | spurious |
| 4960 | 35.82 | PK | V | 10.96 | 46.78 | 74 | 27.22 | Harmonic |
| 2483.69 | 36.30 | PK | H | 6.83 | 41.55 | 74 | 32.45 | spurious |
| 2480 | 60.63 | PK | H | 35.3 | 95.93 | N/A | N/A | Fundamental |
| 2480 | 31.46 | Ave. | H | 35.3 | 66.76 | N/A | N/A | Fundamental |
| 2480 | 58.44 | PK | V | 35.3 | 93.74 | N/A | N/A | Fundamental |
| 2480 | 31.98 | Ave. | V | 35.3 | 67.28 | N/A | N/A | Fundamental |

Test Mode: Transmitting (EDR-8DPSK)

| Frequency (MHz) | Reading (dBuV) | Detector (PK/QP /Ave.) | Polar (H/V) | Corrected Amplitude (dB/m) | Correction Data (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Comment |
|--------------------------|-------------------|------------------------------|----------------|----------------------------------|--------------------------------|-------------------|----------------|-------------|
| Low Channel (2402MHz) | | | | | | | | |
| 2388.14 | 35.74 | Ave. | V | 6.75 | 42.49 | 54 | 11.51 | spurious |
| 2389.65 | 30.45 | Ave. | H | 6.75 | 37.20 | 54 | 16.80 | spurious |
| 2388.14 | 48.04 | PK | V | 6.75 | 54.79 | 74 | 19.21 | spurious |
| 4804 | 21.58 | Ave. | H | 10.54 | 32.12 | 54 | 21.88 | Harmonic |
| 302 | 28.93 | QP | H | -4.83 | 24.10 | 46 | 21.90 | spurious |
| 302 | 28.76 | QP | V | -4.83 | 23.93 | 46 | 22.07 | spurious |
| 2389.65 | 44.95 | PK | H | 6.75 | 51.70 | 74 | 22.30 | spurious |
| 4804 | 20.97 | Ave. | V | 10.54 | 31.51 | 54 | 22.49 | Harmonic |
| 4804 | 38.26 | PK | H | 10.79 | 49.05 | 74 | 24.95 | Harmonic |
| 4804 | 36.43 | PK | V | 10.79 | 47.22 | 74 | 26.78 | Harmonic |
| 2402 | 62.54 | PK | H | 34.91 | 97.45 | N/A | N/A | Fundamental |
| 2402 | 32.62 | Ave. | H | 34.91 | 67.53 | N/A | N/A | Fundamental |
| 2402 | 58.21 | PK | V | 34.91 | 93.12 | N/A | N/A | Fundamental |
| 2402 | 31.4 | Ave. | V | 34.91 | 66.31 | N/A | N/A | Fundamental |
| Middle Channel (2441MHz) | | | | | | | | |
| 4882 | 21.54 | Ave. | H | 11.07 | 32.61 | 54 | 21.39 | Harmonic |
| 4882 | 21.36 | Ave. | V | 11.07 | 32.43 | 54 | 21.57 | Harmonic |
| 263 | 28.36 | QP | V | -6.72 | 21.64 | 46 | 24.36 | spurious |
| 263 | 28.12 | QP | H | -6.72 | 21.4 | 46 | 24.60 | spurious |
| 4882 | 35.92 | PK | V | 11.07 | 46.99 | 74 | 27.01 | Harmonic |
| 4882 | 35.83 | PK | H | 11.07 | 46.90 | 74 | 27.10 | Harmonic |
| 2441 | 64.15 | PK | H | 35.24 | 99.39 | N/A | N/A | Fundamental |
| 2441 | 31.11 | Ave. | H | 35.24 | 66.35 | N/A | N/A | Fundamental |
| 2441 | 59.5 | PK | V | 35.24 | 94.74 | N/A | N/A | Fundamental |
| 2441 | 30.85 | Ave. | V | 35.24 | 66.09 | N/A | N/A | Fundamental |
| High Channel (2480MHz) | | | | | | | | |
| 2485.64 | 36.41 | Ave. | V | 6.83 | 40.79 | 54 | 13.21 | spurious |
| 352 | 29.02 | QP | V | -2.52 | 26.50 | 46 | 19.50 | spurious |
| 352 | 27.36 | QP | H | -2.52 | 24.84 | 46 | 21.16 | spurious |
| 2485.64 | 48.63 | PK | V | 6.83 | 52.68 | 74 | 21.32 | spurious |
| 4960 | 21.02 | Ave. | H | 10.96 | 31.98 | 54 | 22.02 | Harmonic |
| 4960 | 20.95 | Ave. | V | 10.96 | 31.91 | 54 | 22.09 | Harmonic |
| 4960 | 36.59 | PK | H | 10.96 | 47.55 | 74 | 26.45 | Harmonic |
| 2486.59 | 20.47 | Ave. | H | 6.83 | 27.43 | 54 | 26.57 | spurious |
| 4960 | 35.88 | PK | V | 10.96 | 46.84 | 74 | 27.16 | Harmonic |
| 2486.59 | 36.81 | PK | H | 6.83 | 41.55 | 74 | 32.45 | spurious |
| 2480 | 61.37 | PK | H | 35.3 | 96.67 | N/A | N/A | Fundamental |
| 2480 | 33.52 | Ave. | H | 35.3 | 68.82 | N/A | N/A | Fundamental |
| 2480 | 57.84 | PK | V | 35.3 | 93.14 | N/A | N/A | Fundamental |
| 2480 | 32.13 | Ave. | V | 35.3 | 67.43 | N/A | N/A | Fundamental |

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 S.A

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | Spectrum Analyzer | FSEM | DE31388 | 2012-03-15 | 2013-03-14 |

Test Procedure

1. Set the EUT in transmitting mode, spectrum Bandwidth was set at 100 kHz, maxhold the channel.
2. Set the adjacent channel of the EUT maxhold another 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 Allen Qiao on 2012-06-16.

Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

| Mode | Channel | Frequency (MHz) | Channel Separation (MHz) | Limit (MHz) | Result |
|--|----------|-----------------|--------------------------|-------------|--------|
| <i>BDR Mode (GFSK)</i> | Low | 2402 | 1.002 | 0.644 | Pass |
| | Adjacent | 2403 | | | |
| | Middle | 2441 | 1.034 | 0.644 | Pass |
| | Adjacent | 2442 | | | |
| | High | 2480 | 1.038 | 0.644 | Pass |
| | Adjacent | 2479 | | | |
| <i>EDR Mode ($\pi/4$-DQPSK)</i> | Low | 2402 | 1.010 | 0.861 | Pass |
| | Adjacent | 2403 | | | |
| | Middle | 2441 | 1.006 | 0.861 | Pass |
| | Adjacent | 2442 | | | |
| | High | 2480 | 1.030 | 0.861 | Pass |
| | Adjacent | 2479 | | | |
| <i>EDR Mode (8DPSK)</i> | Low | 2402 | 1.002 | 0.869 | Pass |
| | Adjacent | 2403 | | | |
| | Middle | 2441 | 1.010 | 0.869 | Pass |
| | Adjacent | 2442 | | | |
| | High | 2480 | 1.002 | 0.869 | Pass |
| | Adjacent | 2479 | | | |

Ref Lvl 10.5 dBm Delta 1 [T1] -0.28 dB RBW 30 kHz RF Att 20 dB

1.00200401 MHz SWT 6 ms Unit dBm

0.5 dB Offset

Center 2.4025 GHz 200 kHz Span 2 MHz

1MA

1.00200401 MHz -0.28 dB -4.00 dBm 2.40189279 GHz

Date: 16.JUN.2012 09:44:39

Ref Lvl 10.5 dBm Delta 1 [T1] 0.25 dB RBW 30 kHz RF Att 20 dB
 10.5 dBm 1.03406814 MHz SWT 6 ms Unit dBm

0.5 dB Offset

1MAX

1 [T1]

1.03406814 MHz

0.25 dB

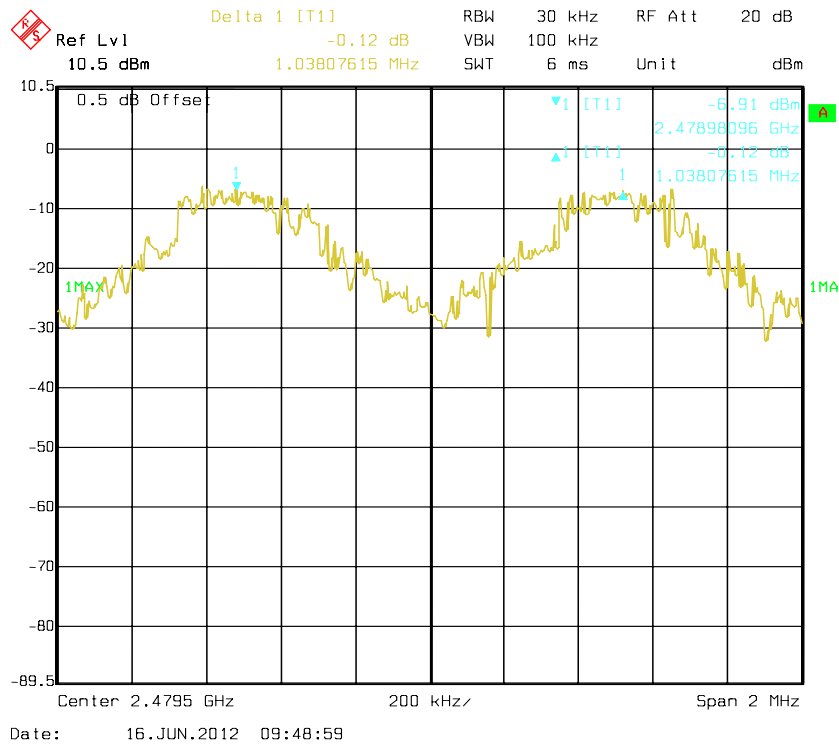
-5.33 dBm

2.44094890 GHz

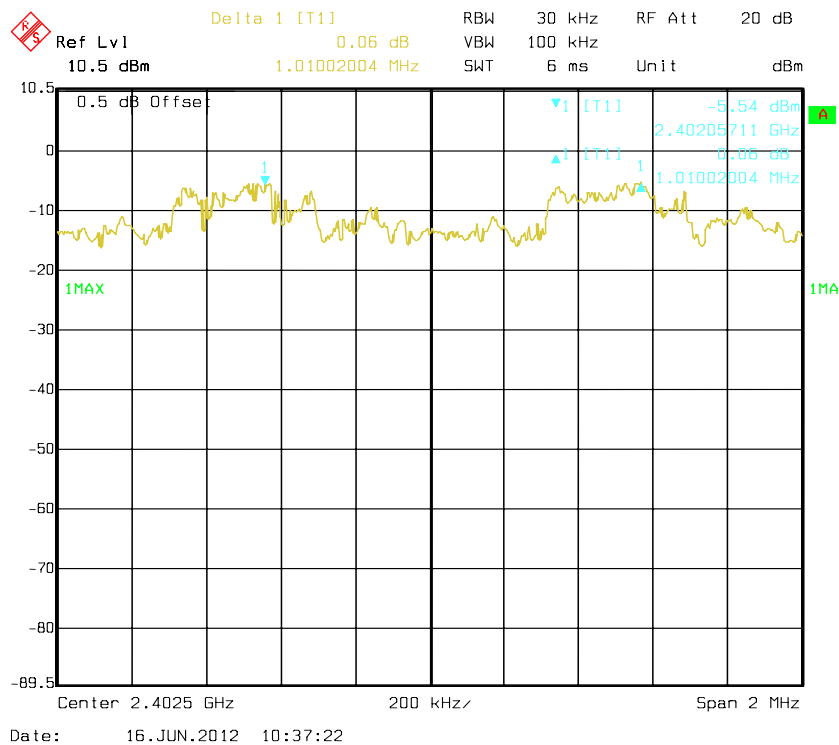
Center 2.4415 GHz 200 kHz Span 2 MHz

Date: 16 JUN 2012 09:47:04

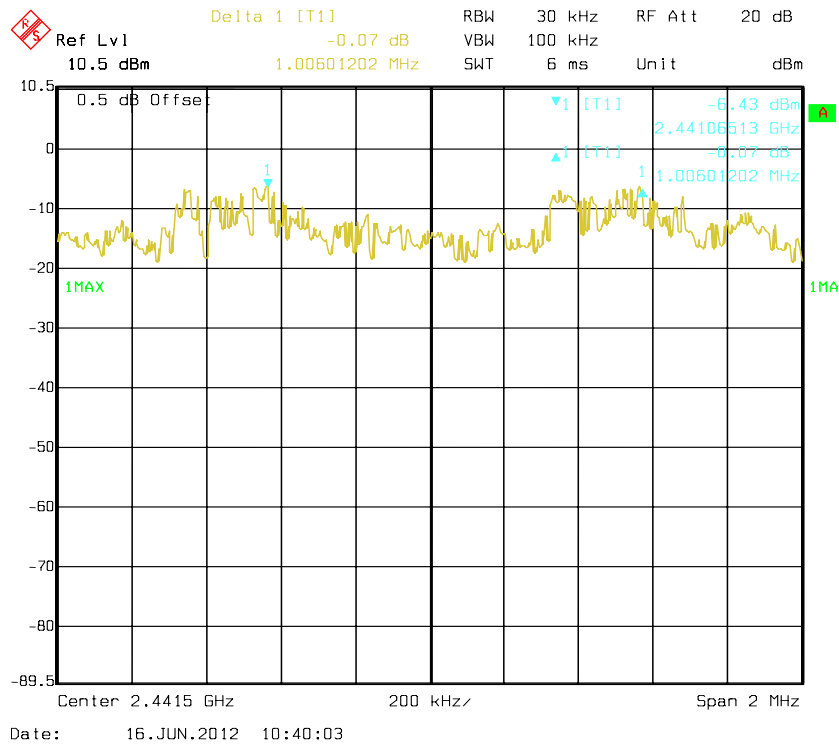
BDR - High Channel



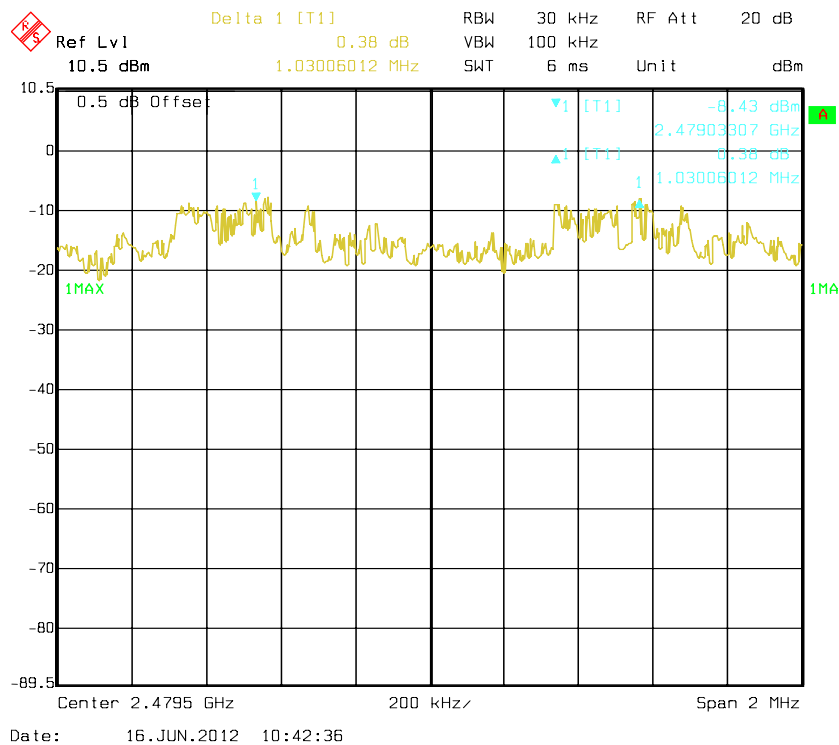
EDR ($\pi/4$ -DQPSK) - Low Channel



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



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



Ref Lvl 10.5 dBm Delta 1 [T1] -0.51 dB RBW 30 kHz RF Att 20 dB
 1.00200401 MHz SWT 6 ms Unit dBm

0.5 dB Offset

1MAX

1 [T1] -5.10 dBm
 2.40217735 GHz
 1 [T1] -0.51 dB
 1.00200401 MHz

Center 2.4025 GHz 200 kHz Span 2 MHz

Date: 16 JUN 2012 11:38:21

Ref Lvl 10.5 dBm

Delta 1 [T1] -1.60 dB

RBW 30 kHz RF Att 20 dB

VBW 100 kHz

6 ms Unit dBm

0.5 dB Offset

1 [T1] -5.98 dBm

2.44117735 GHz

1.01002004 MHz

1MAX

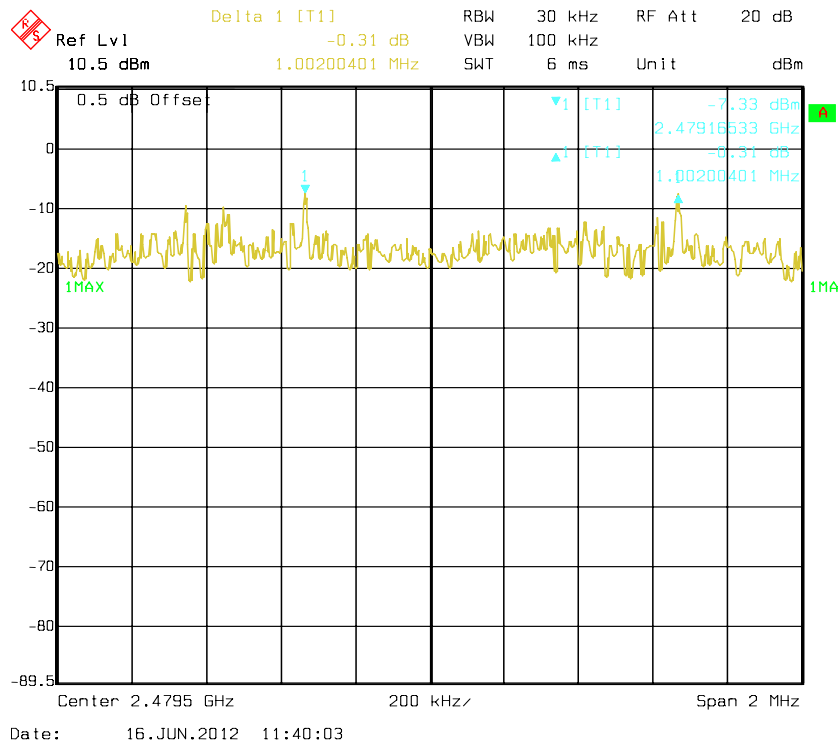
Center 2.4415 GHz

200 kHz

Span 2 MHz

Date: 16 JUN 2012 11:39:23

EDR (8DPSK) - High Channel



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 S.A

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | Spectrum Analyzer | FSEM | DE31388 | 2012-03-15 | 2013-03-14 |

Test Data

Environmental Conditions

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

* The testing was performed by Allen Qiao on 2012-06-16.

Test Result: Compliance.

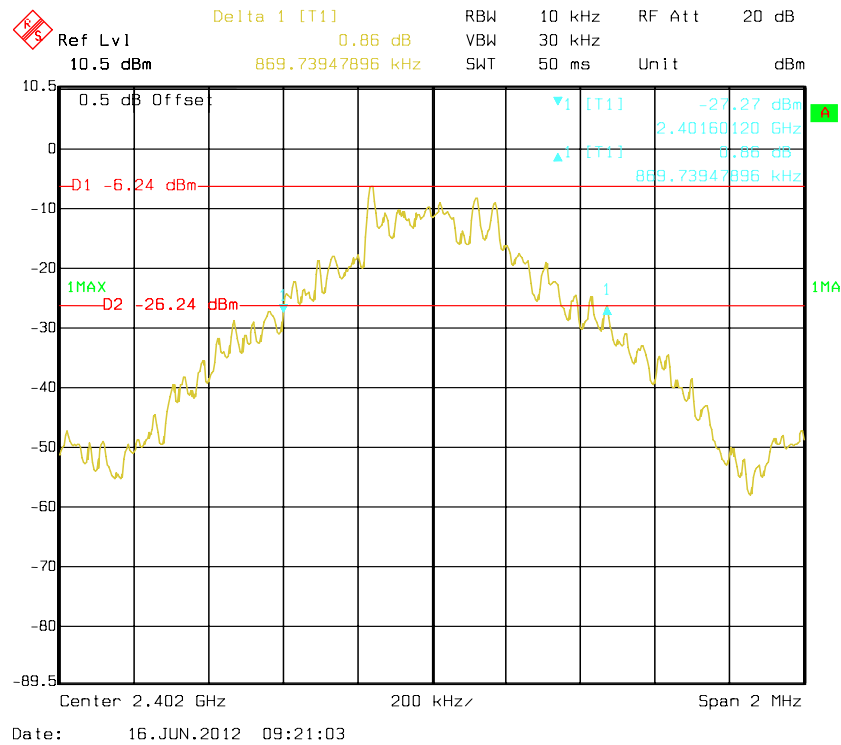
Please refer to following tables and plots

Test Mode: Transmitting

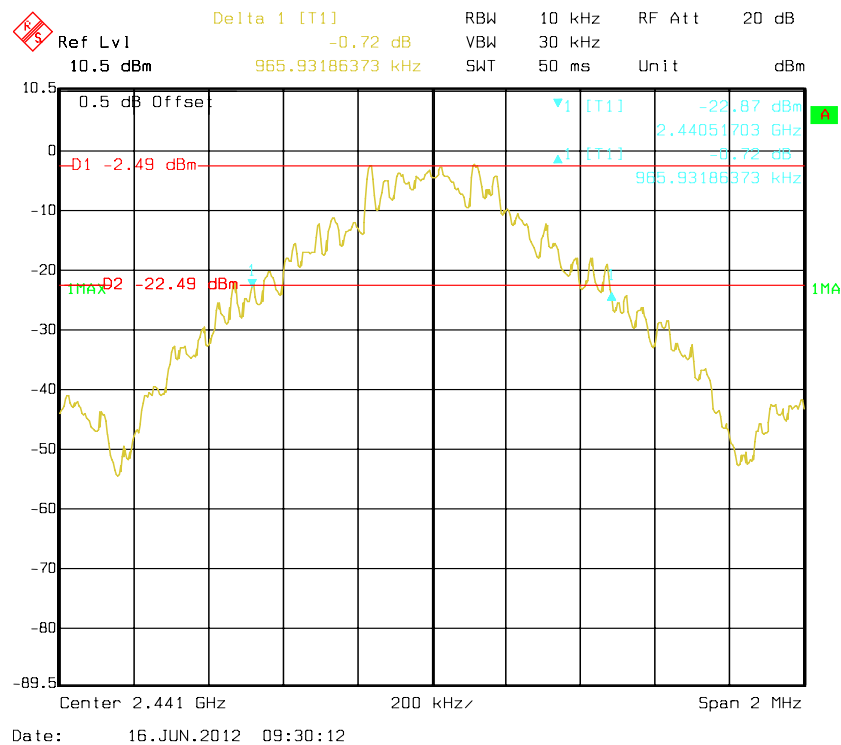
| | Channel | Frequency (MHz) | 20 dB Bandwidth (MHz) |
|--|---------|--------------------|--------------------------|
| <i>BDR Mode (GFSK)</i> | Low | 2402 | 0.870 |
| | Middle | 2441 | 0.966 |
| | High | 2480 | 0.962 |
| <i>EDR Mode ($\pi/4$-DQPSK)</i> | Low | 2402 | 1.222 |
| | Middle | 2441 | 1.291 |
| | High | 2480 | 1.283 |
| <i>EDR Mode (8DPSK)</i> | Low | 2402 | 1.271 |
| | Middle | 2441 | 1.299 |
| | High | 2480 | 1.303 |

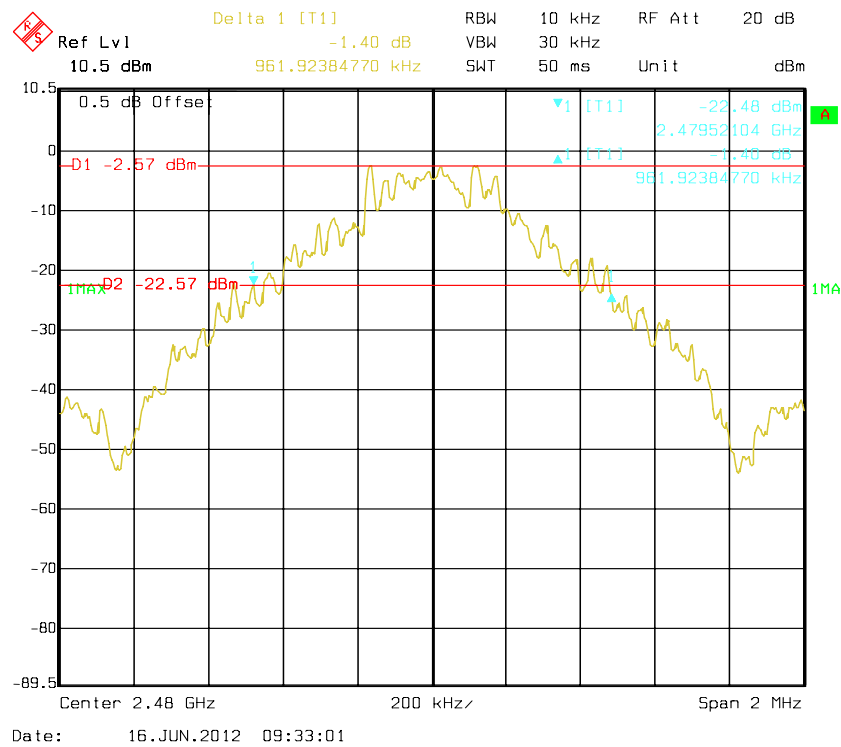
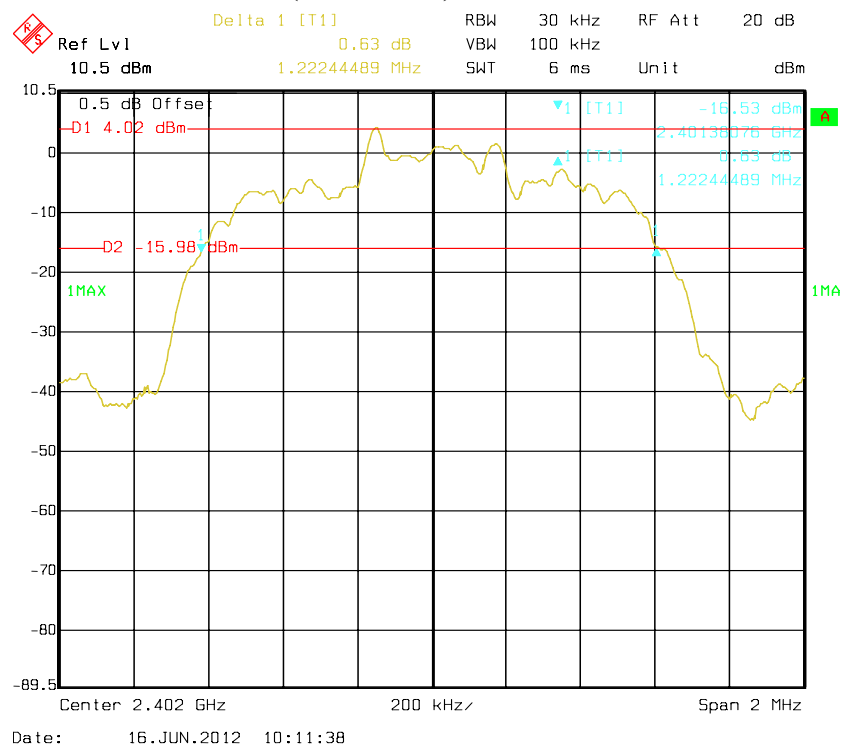
Please refer to the following plots.

BDR - Low Channel

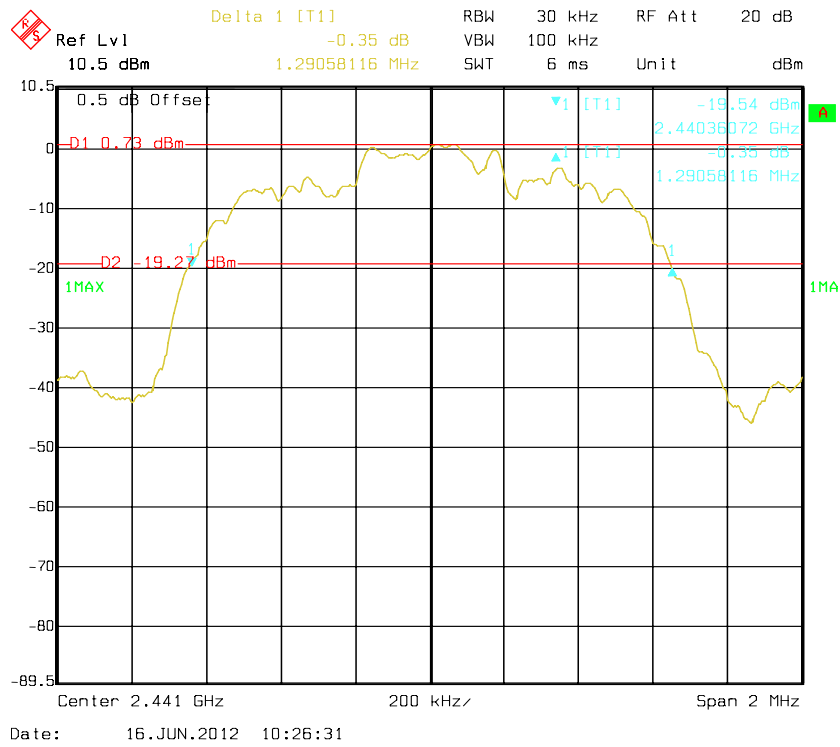


BDR - Middle Channel

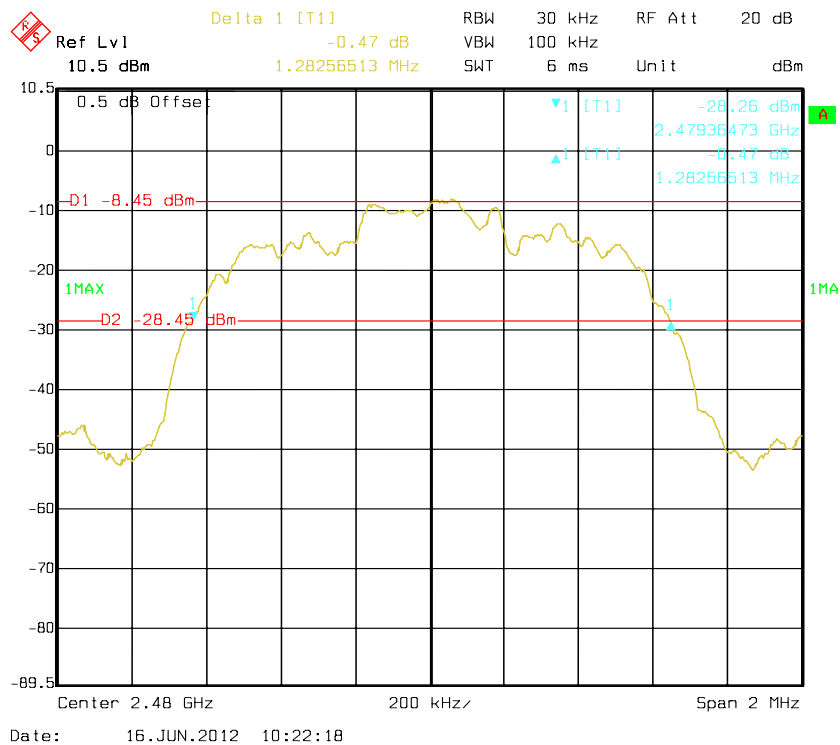


BDR - High Channel**EDR ($\pi/4$ -DQPSK) - Low Channel**

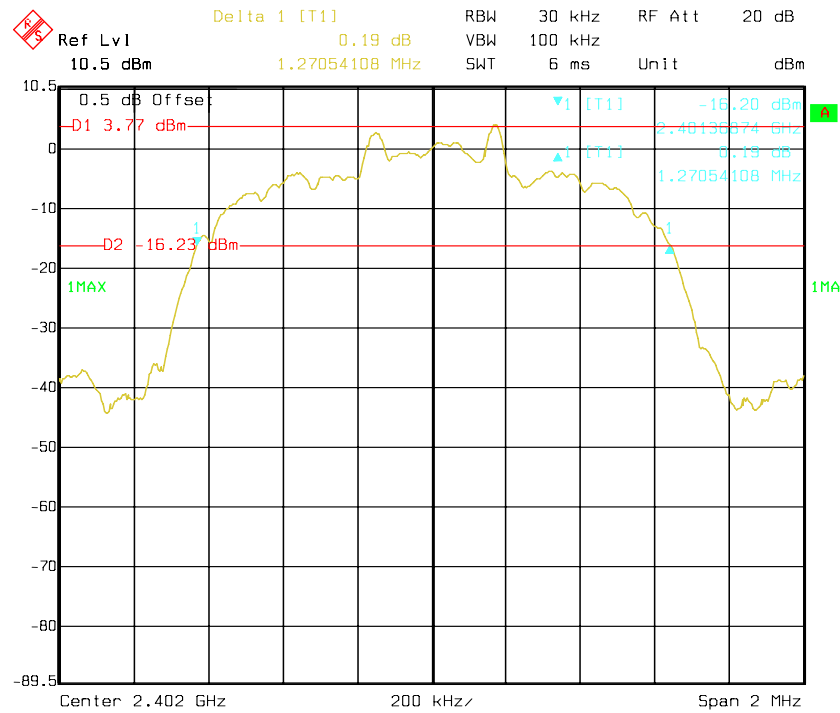
EDR ($\pi/4$ -DQPSK) - Middle Channel



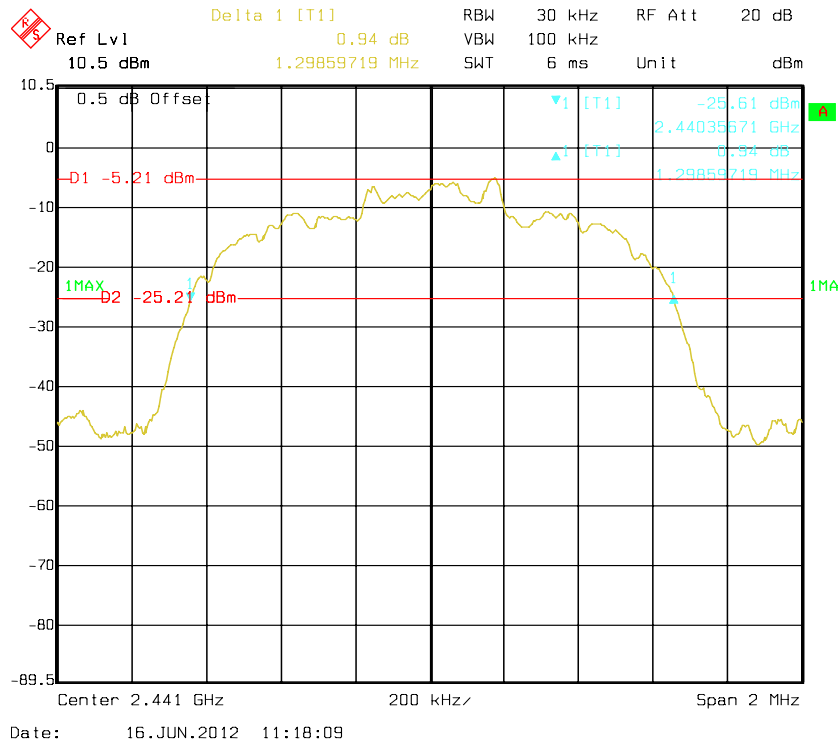
EDR ($\pi/4$ -DQPSK) - High Channel



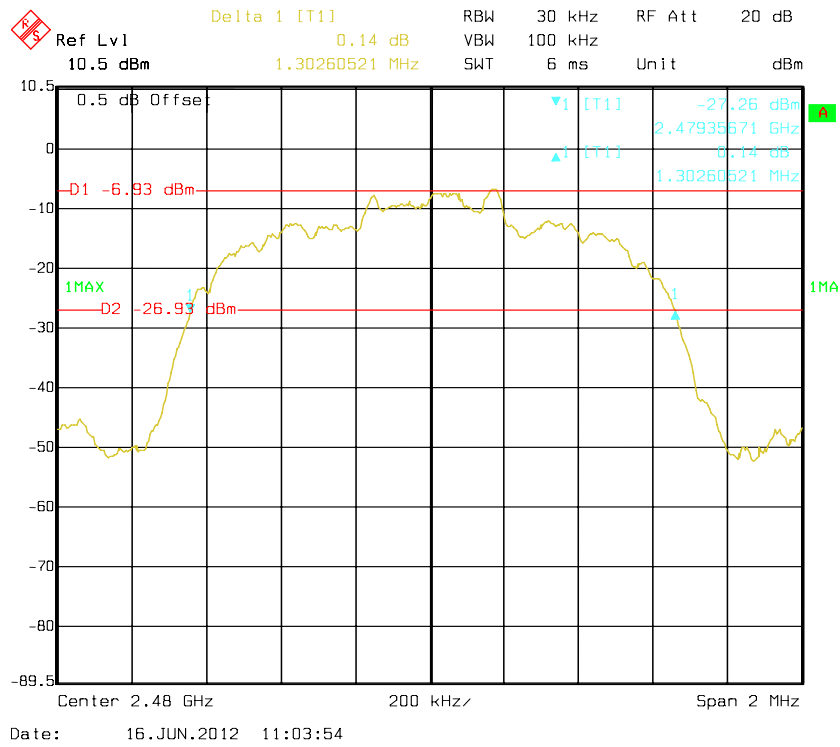
EDR (8DPSK) - Low Channel



EDR (8DPSK) - Middle Channel



EDR (8DPSK) - High Channel



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 | FSEM | DE31388 | 2012-03-15 | 2013-03-14 |

Test Data**Environmental Conditions**

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

The testing was performed by Allen Qiao on 2012-06-16.

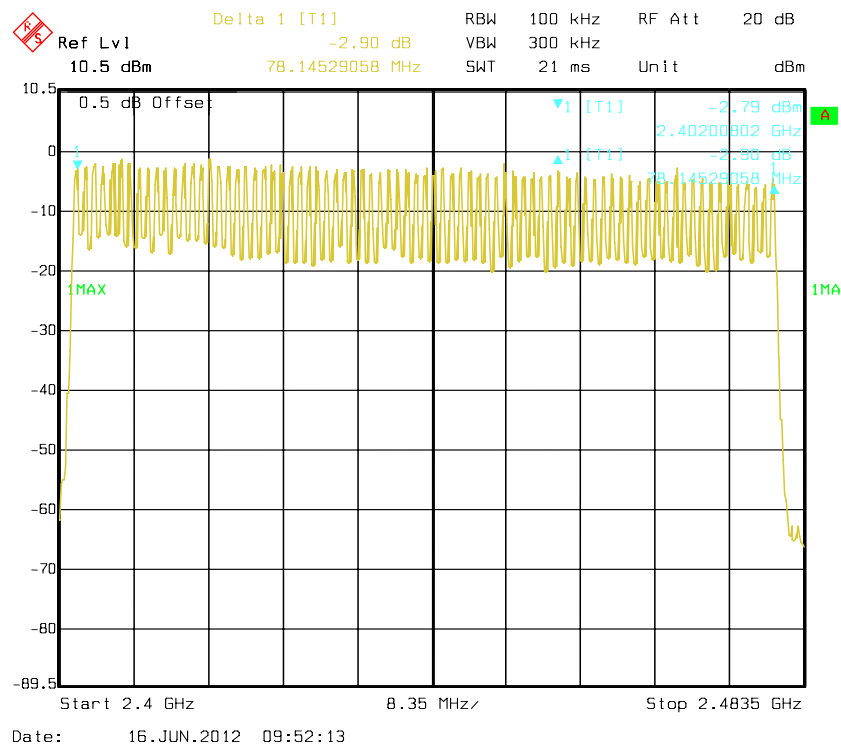
Test Result: Compliance.

Please refer to following tables and plots

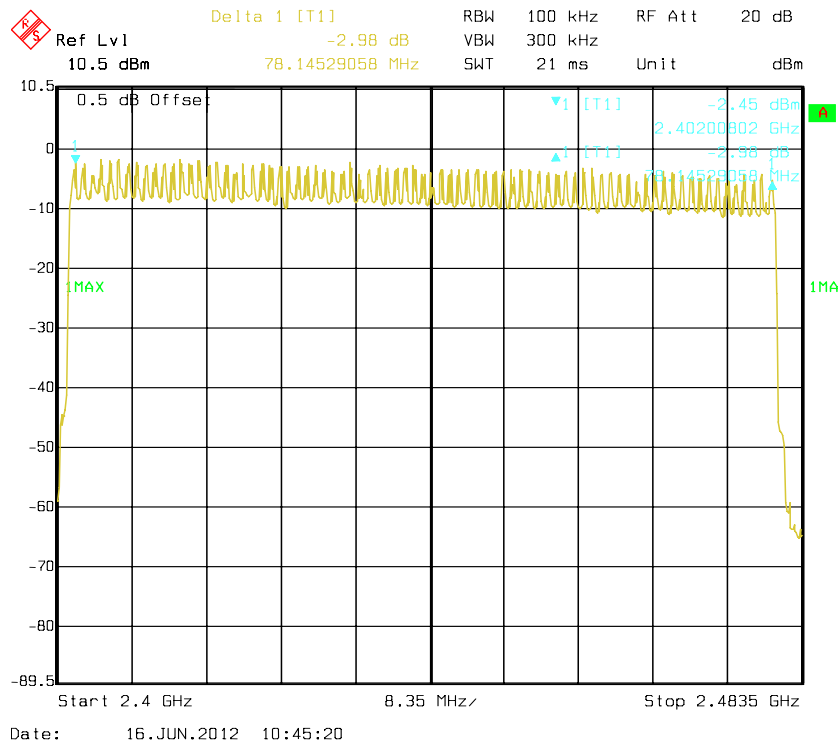
Test Mode: Transmitting (BDR & EDR)

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

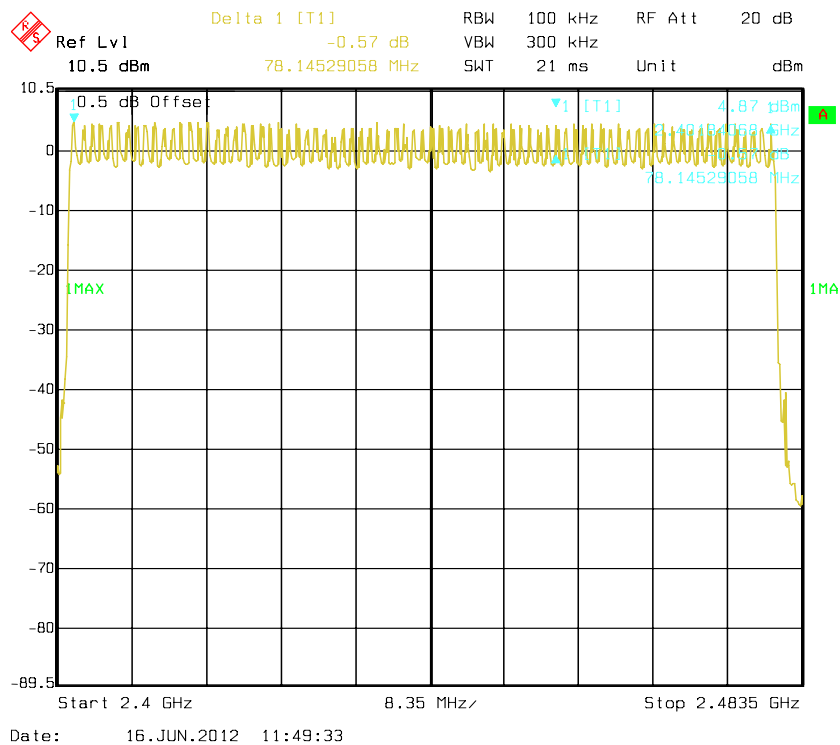
BDR - Number of Hopping Channels



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



EDR (8DPSK) - Number of Hopping Channels



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 $0.4 \times \text{channel no. (s)}$, the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= time slot length * hope rate/ number of hopping channels * 31.6s

Hop rate=1600/s

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | Spectrum Analyzer | FSEM | DE31388 | 2012-03-15 | 2013-03-14 |

Test Data**Environmental Conditions**

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

** The testing was performed by Allen Qiao on 2012-06-16.*

Test Result: Compliance.

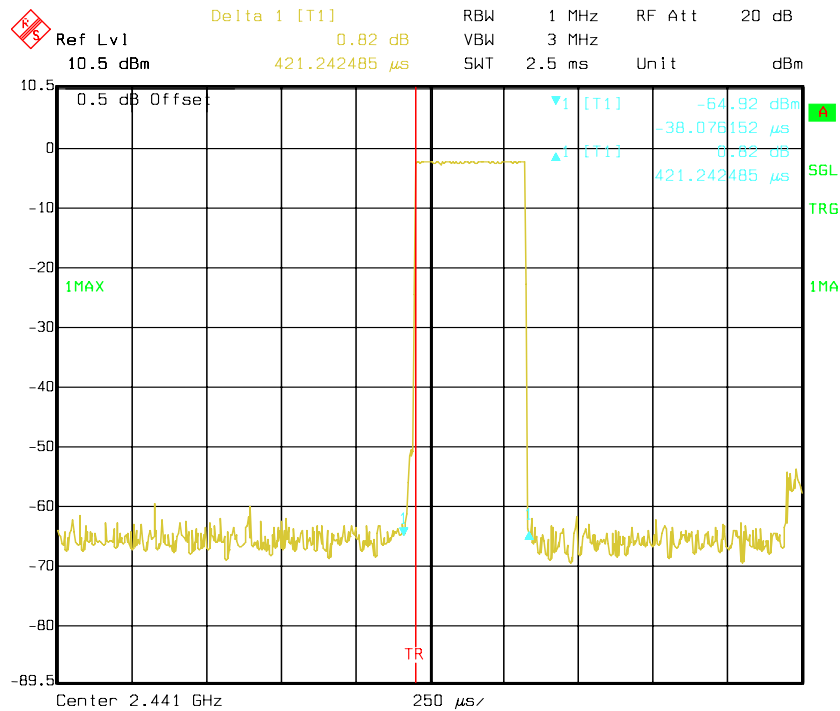
Please refer to following tables and plots

Test Mode: Transmitting

BDR - Low Channel

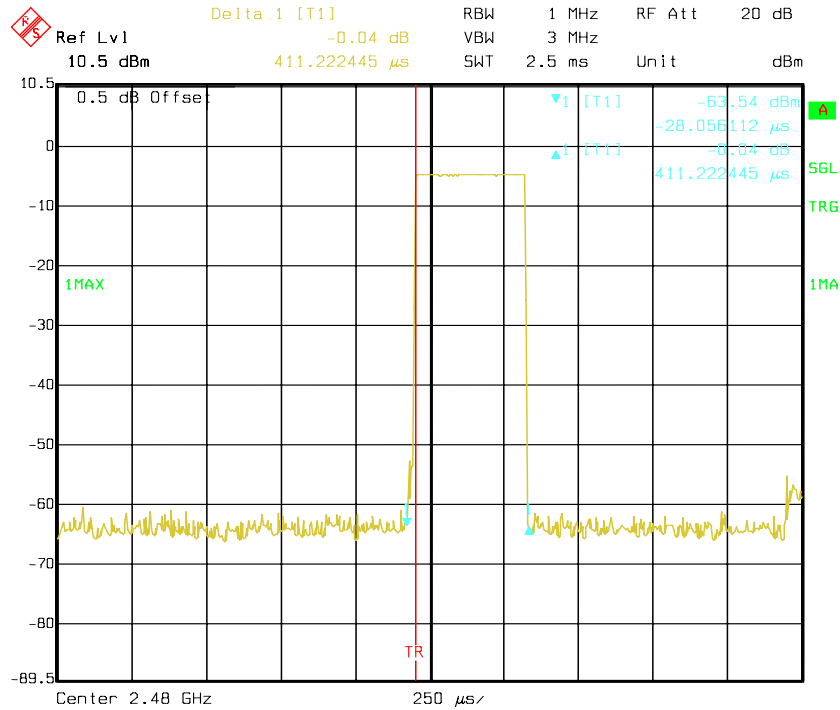


BDR - Middle Channel



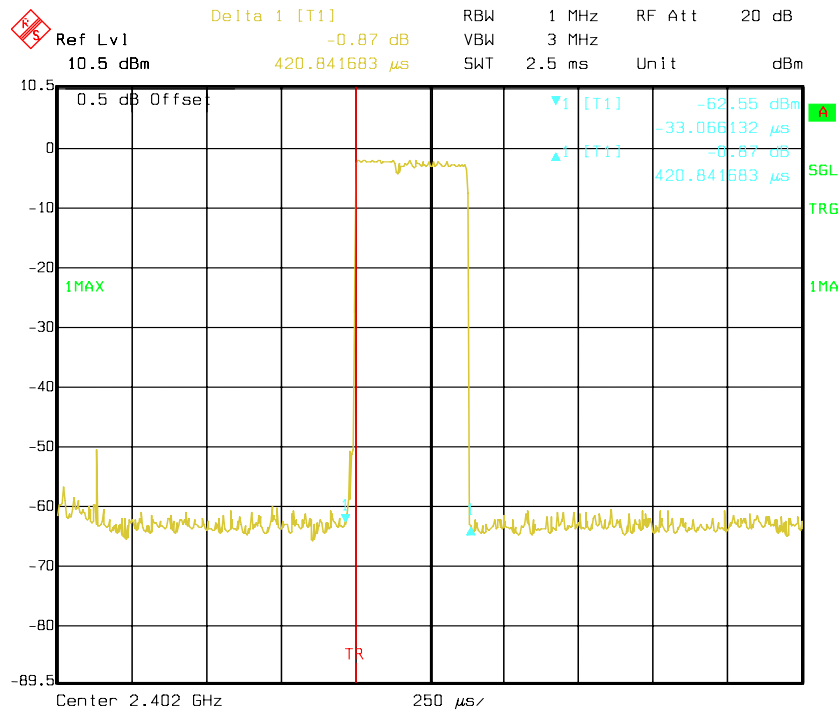
Date: 16.JUN.2012 09:58:12

BDR - High Channel

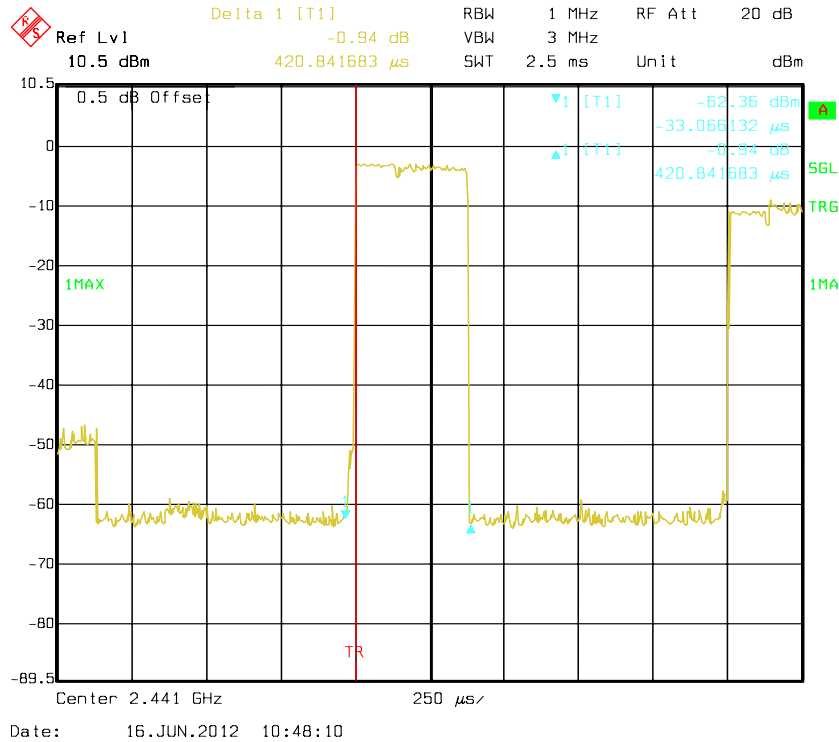


Date: 16.JUN.2012 09:58:48

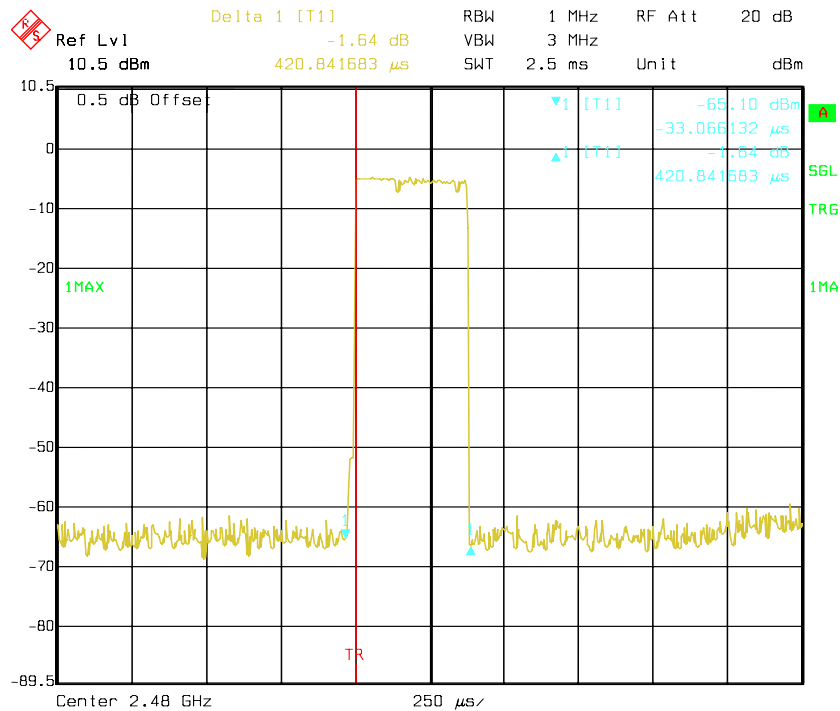
EDR ($\pi/4$ -DQPSK) - Low Channel



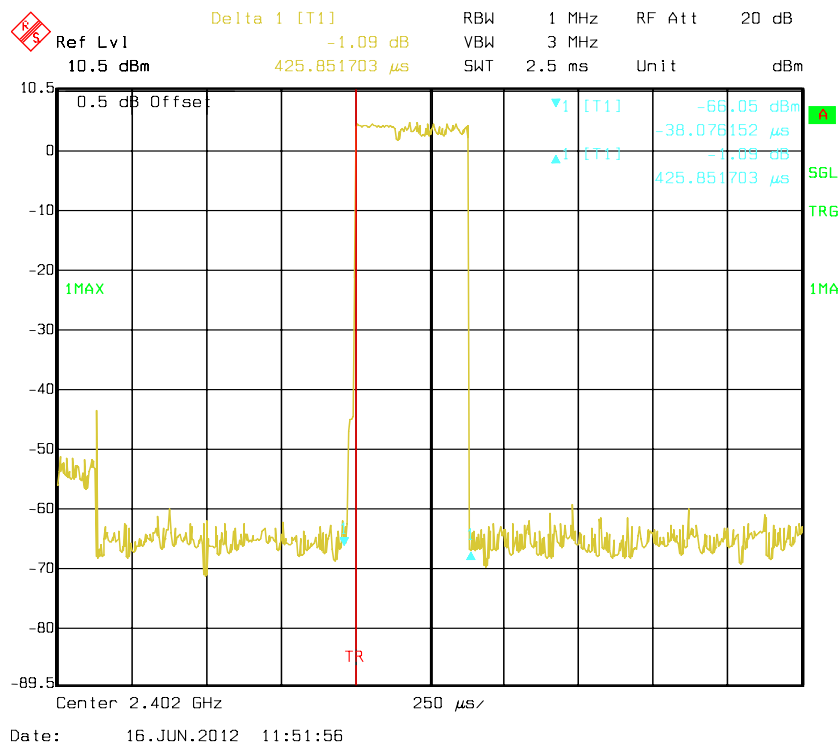
EDR ($\pi/4$ -DQPSK) - Middle Channel



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



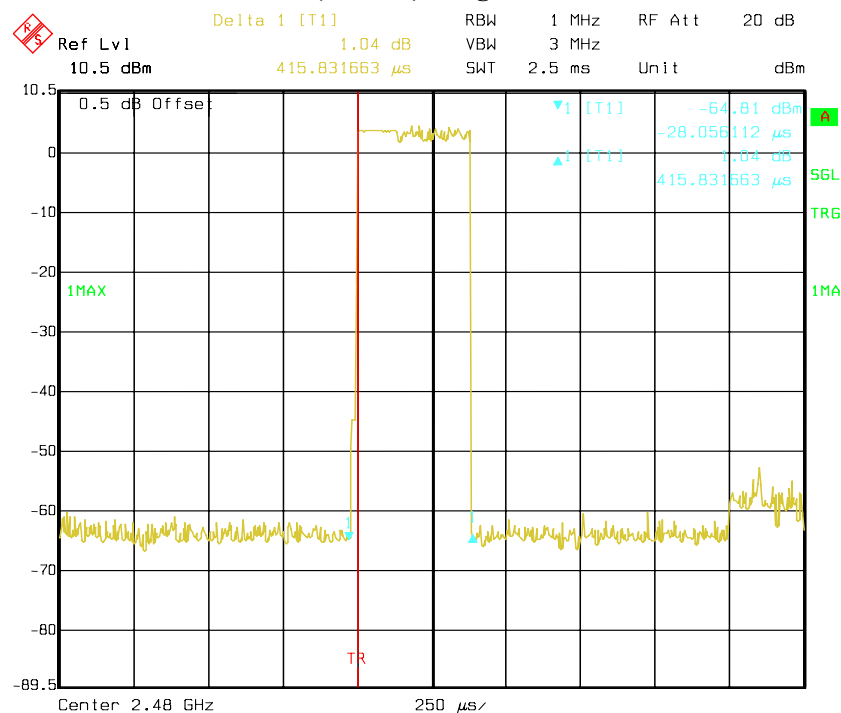
EDR (8DPSK) - Low Channel



Delta 1 [T1] 0.37 dB
 Ref Lvl 10.5 dBm
 RBW 1 MHz
 RF Att 20 dB
 VBW 3 MHz
 Unit dBm
 415.831663 μ s
 SWT 2.5 ms

0.5 dB Offset
 1MAX
 -63.54 dBm
 -28.056112 μ s
 0.37 dB
 415.831663 μ s
 TR
 Center 2.441 GHz
 250 μ s

EDR (8DPSK) - High Channel

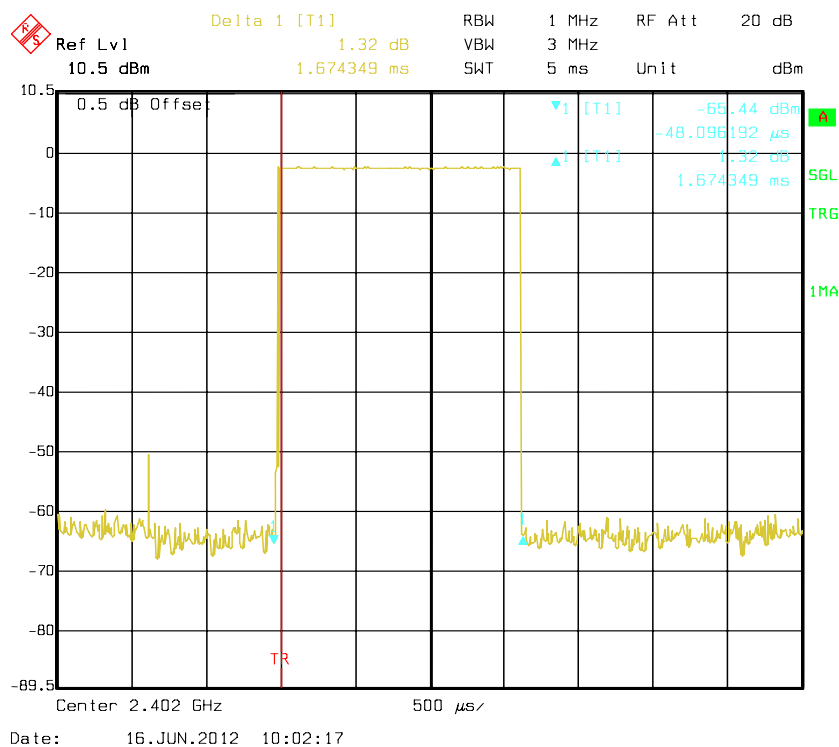


Page 45 of 66

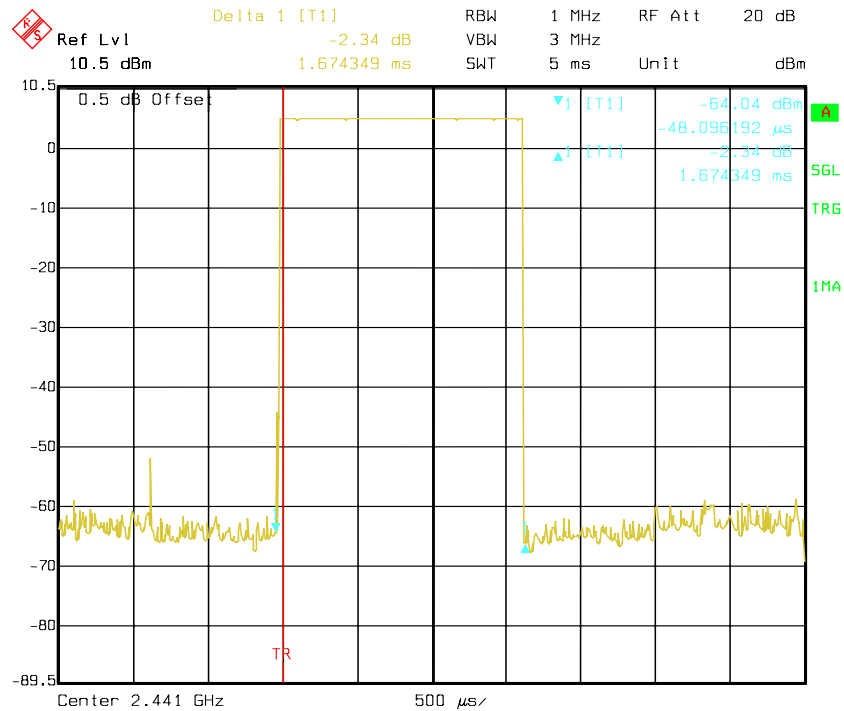
DH3:

Test Mode: Transmitting

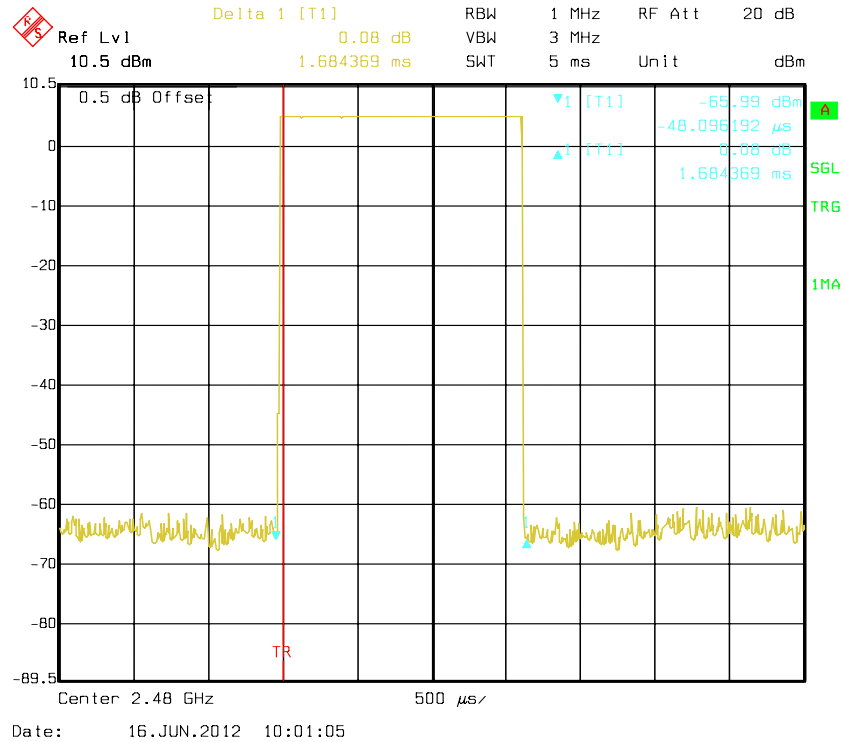
| | Channel | Pulse Width (ms) | Dwell Time (s) | Limit (s) | Result |
|----------------------------|---|------------------|----------------|-----------|--------|
| BDR Mode (GFSK) | Low | 1.674 | 0.268 | 0.4 | Pass |
| | Middle | 1.674 | 0.268 | 0.4 | Pass |
| | High | 1.684 | 0.269 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/4/79)*31.6S | | | | |
| EDR Mode ($\pi/4$ -DQPSK) | Low | 1.679 | 0.269 | 0.4 | Pass |
| | Middle | 1.679 | 0.269 | 0.4 | Pass |
| | High | 1.679 | 0.269 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/4/79)*31.6S | | | | |
| EDR Mode (8DPSK) | Low | 1.684 | 0.269 | 0.4 | Pass |
| | Middle | 1.674 | 0.268 | 0.4 | Pass |
| | High | 1.684 | 0.269 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/4/79)*31.6S | | | | |

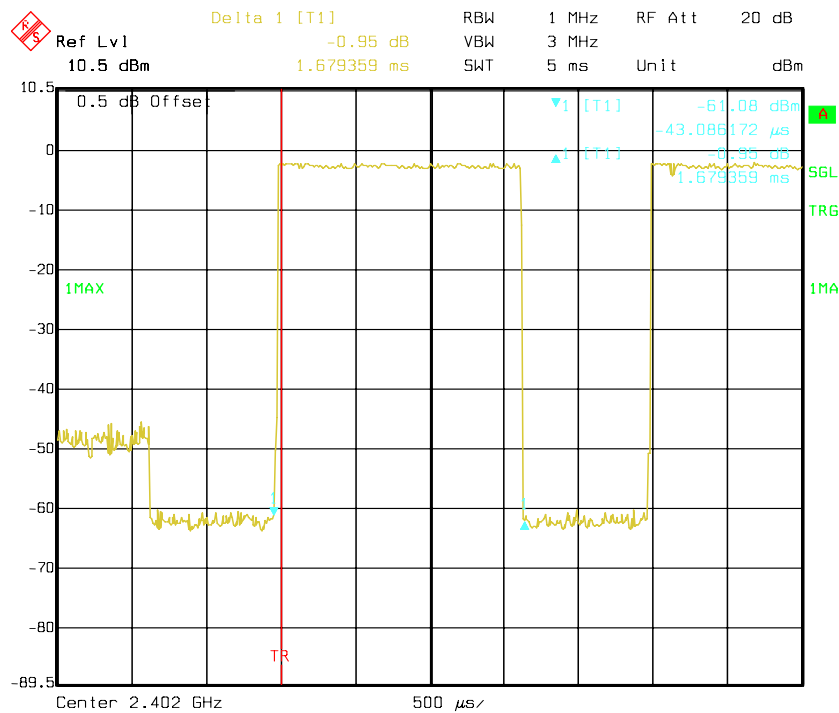
BDR - Low Channel

BDR - Middle Channel

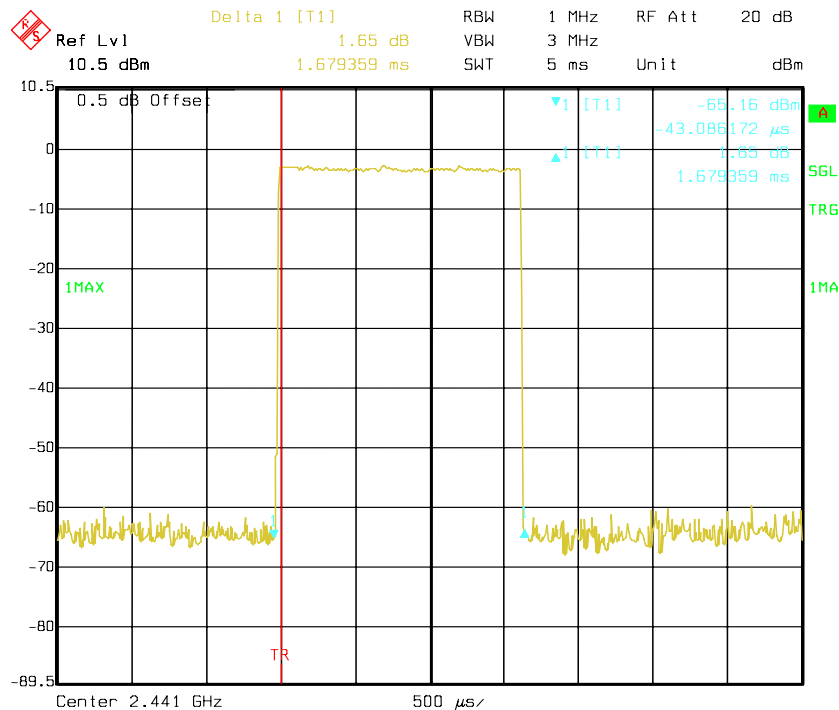


BDR - High Channel



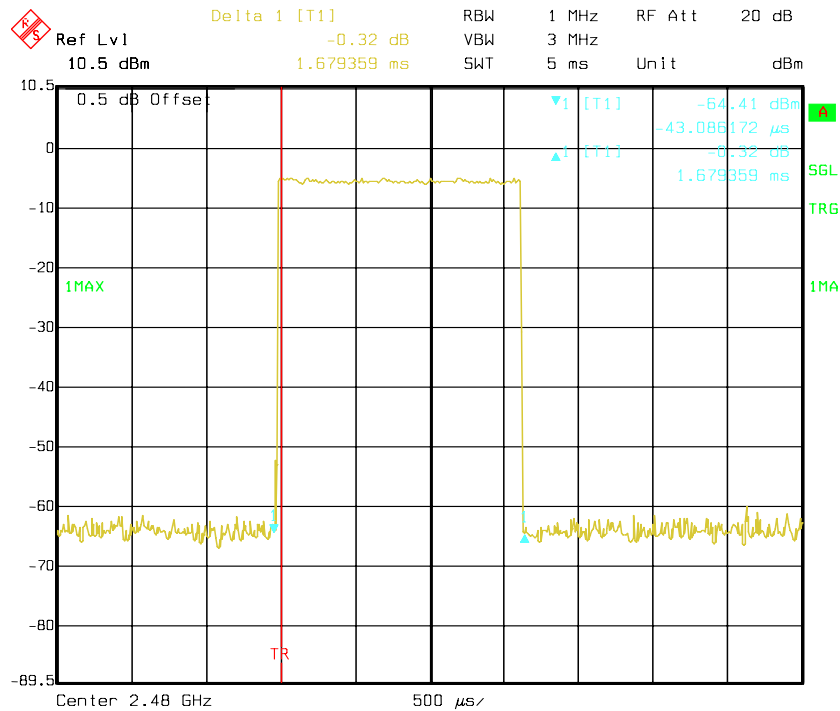
EDR ($\pi/4$ -DQPSK) - Low Channel

Date: 16.JUN.2012 10:51:50

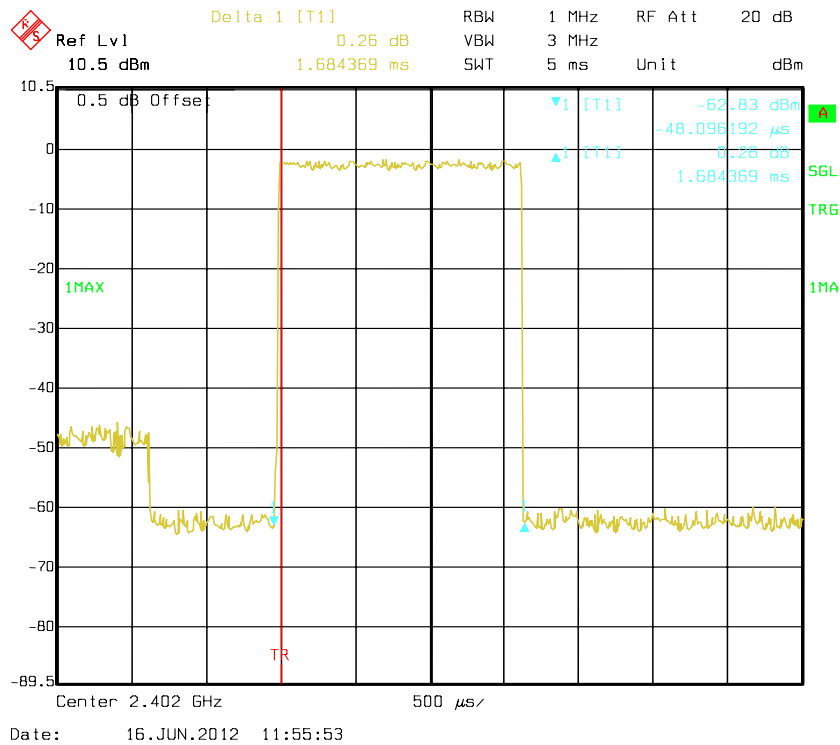
EDR ($\pi/4$ -DQPSK) - Middle Channel

Date: 16.JUN.2012 10:51:31

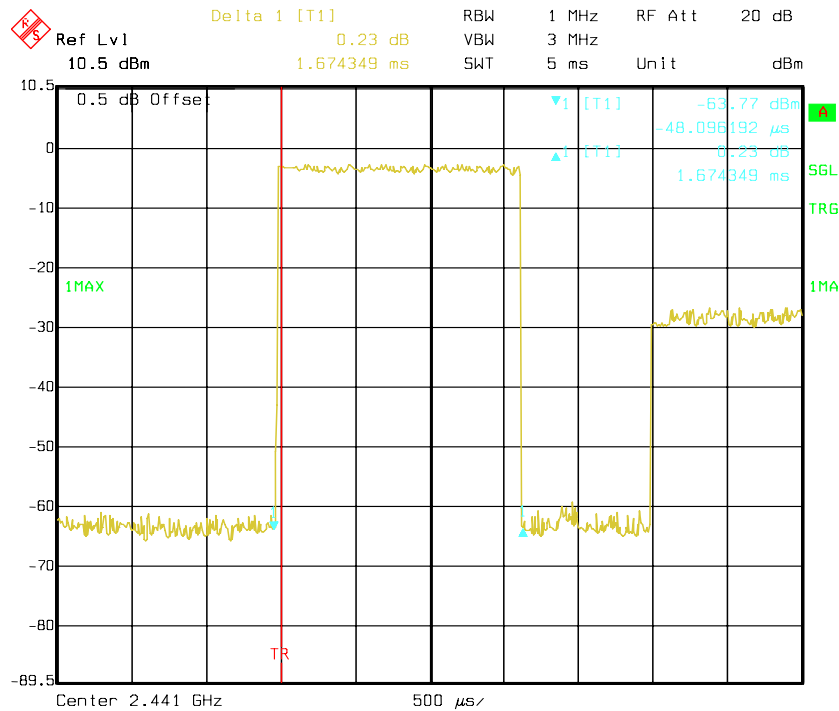
EDR ($\pi/4$ -DQPSK) - High Channel



EDR (8DPSK) - Low Channel

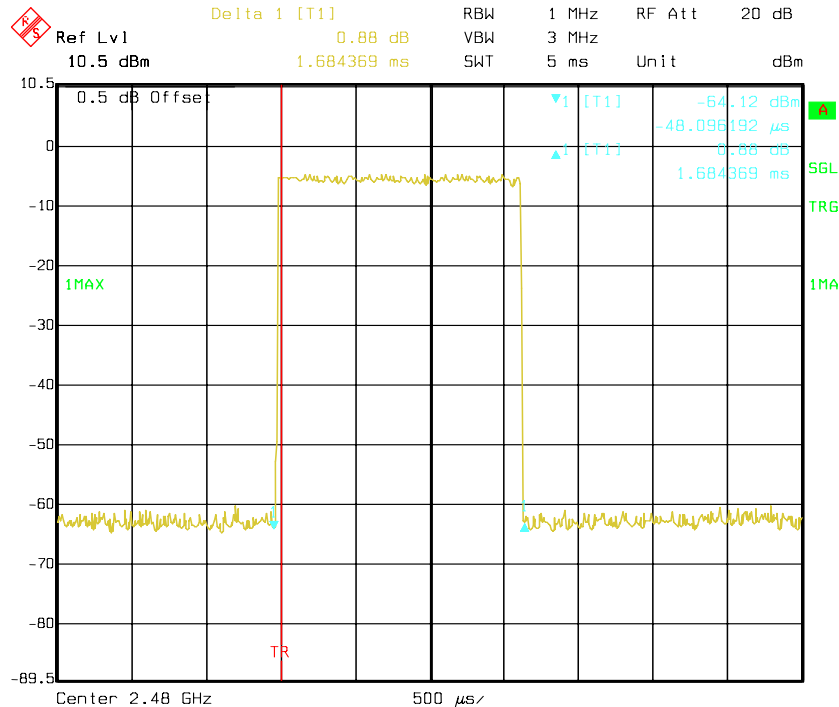


EDR (8DPSK) - Middle Channel



Date: 16.JUN.2012 11:55:18

EDR (8DPSK) - High Channel

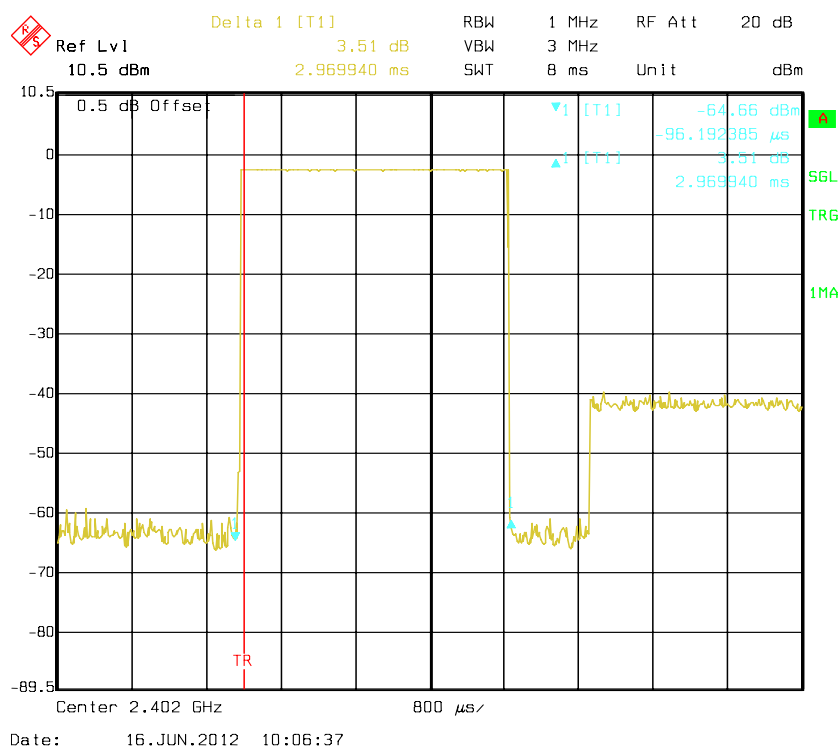


Date: 16.JUN.2012 11:54:35

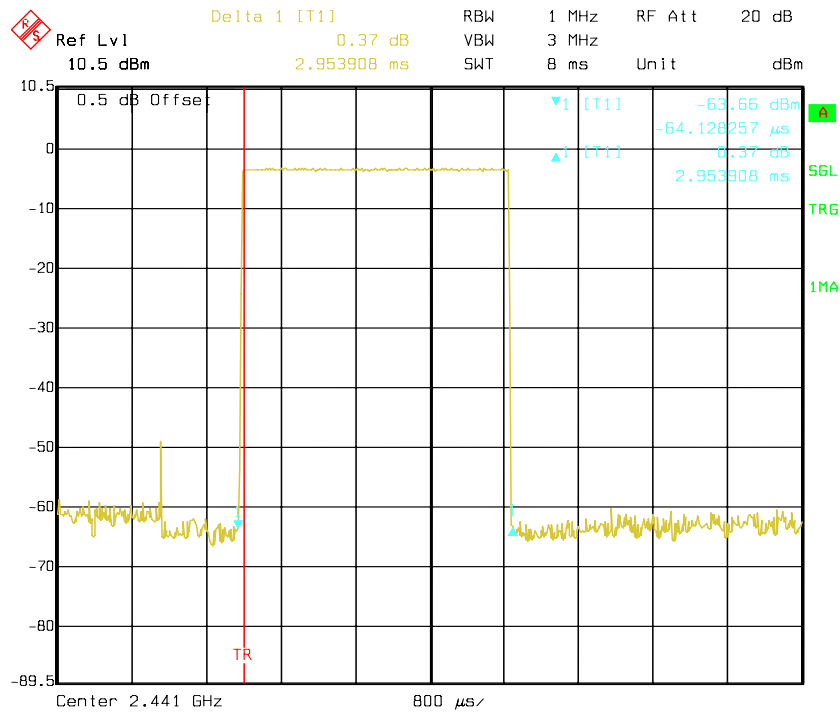
DH5:

Test Mode: Transmitting

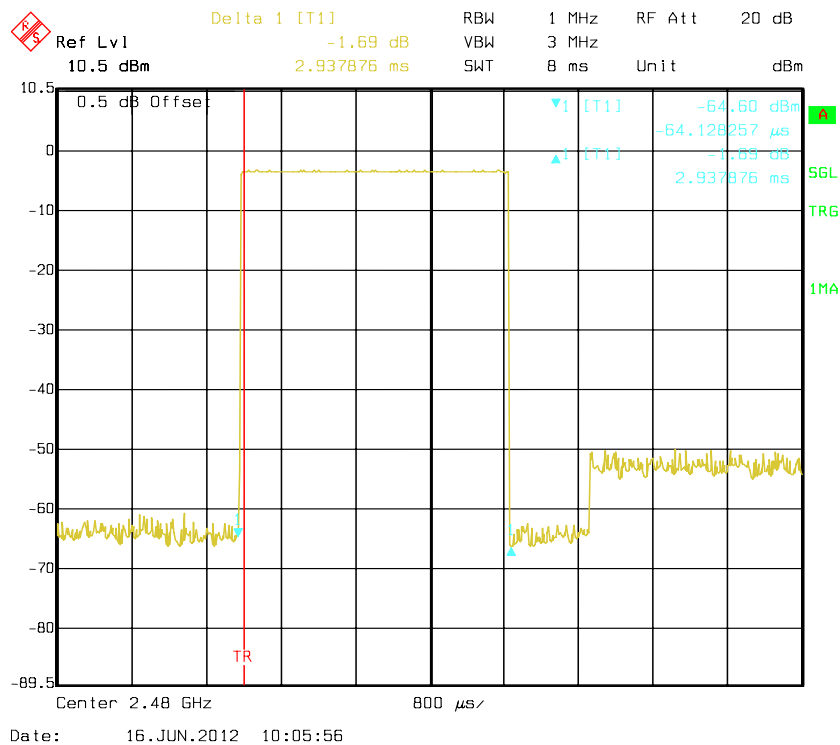
| | Channel | Pulse Width (ms) | Dwell Time (s) | Limit (s) | Result |
|----------------------------|---|------------------|----------------|-----------|--------|
| BDR Mode (GFSK) | Low | 2.970 | 0.317 | 0.4 | Pass |
| | Middle | 2.954 | 0.315 | 0.4 | Pass |
| | High | 2.938 | 0.313 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/6/79)*31.6S | | | | |
| EDR Mode ($\pi/4$ -DQPSK) | Low | 2.965 | 0.316 | 0.4 | Pass |
| | Middle | 2.965 | 0.316 | 0.4 | Pass |
| | High | 2.949 | 0.315 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/6/79)*31.6S | | | | |
| EDR Mode (8DPSK) | Low | 2.970 | 0.317 | 0.4 | Pass |
| | Middle | 2.954 | 0.315 | 0.4 | Pass |
| | High | 2.938 | 0.313 | 0.4 | Pass |
| | Note: Dwell time = Pulse time*(1600/6/79)*31.6S | | | | |

BDR - Low Channel

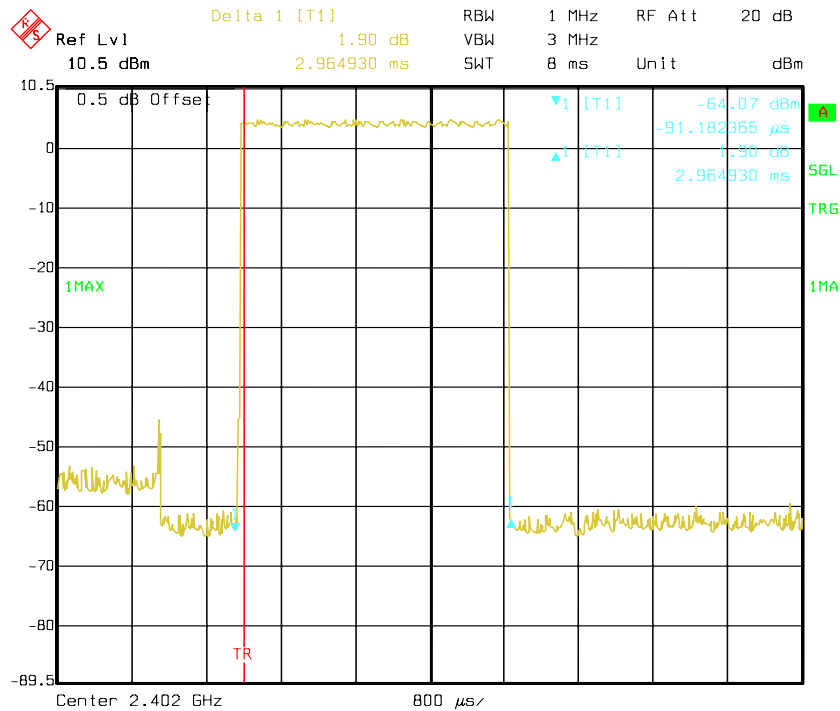
BDR - Middle Channel



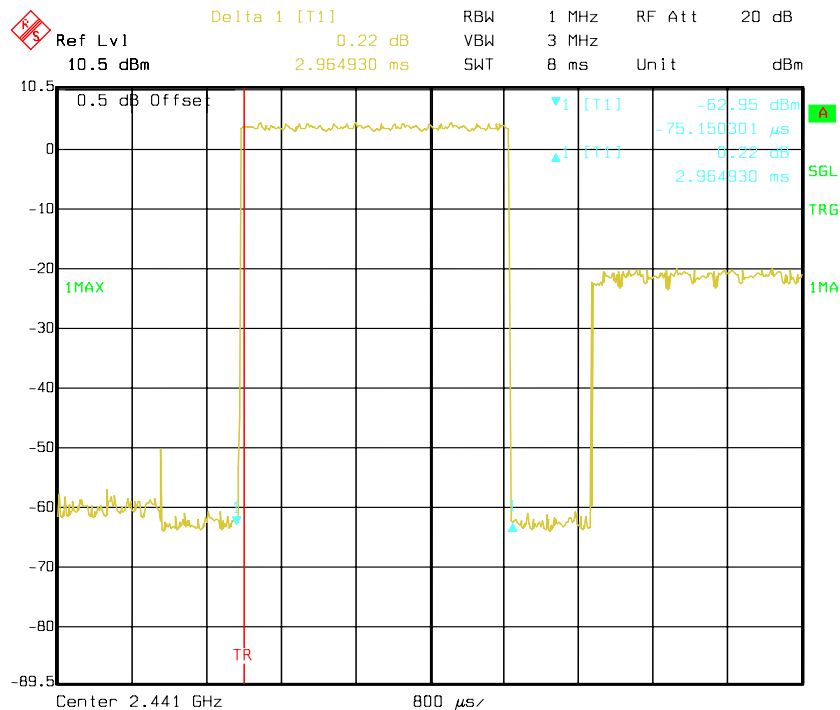
BDR - High Channel



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



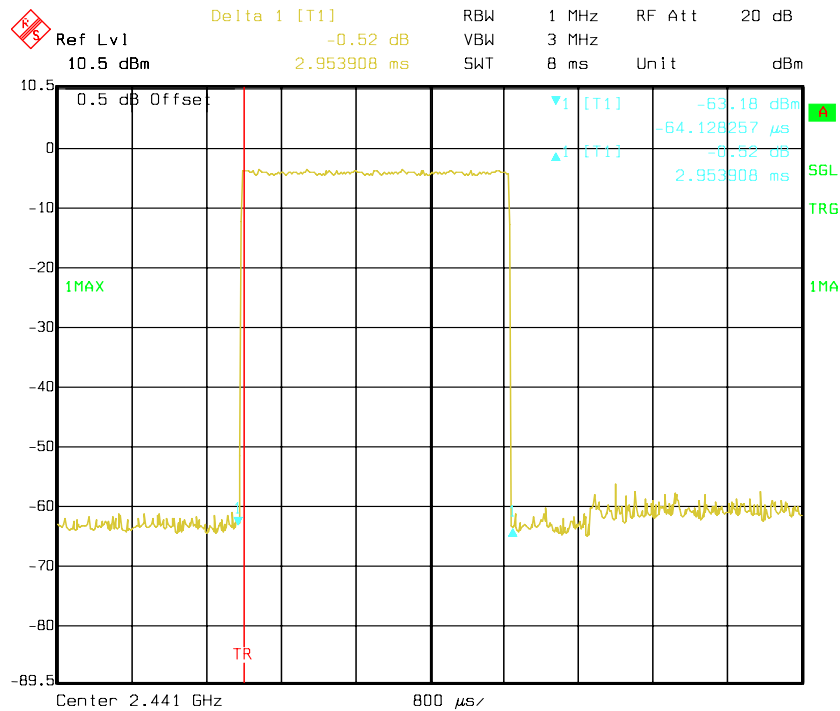
EDR ($\pi/4$ -DQPSK) - Middle Channel



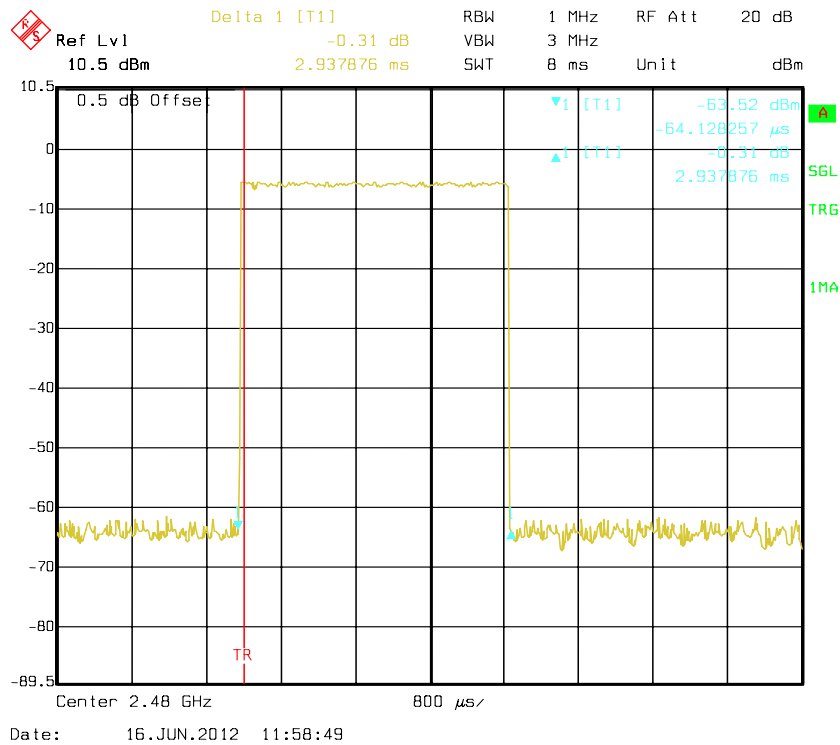
Date: 16.JUN.2012 10:55:32

Date: 16.JUN.2012 11:57:41

EDR (8DPSK) - Middle Channel



EDR (8DPSK) - High Channel



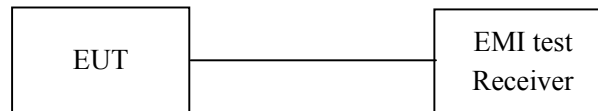
FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

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 S.A

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|-------------------|-------|---------------|------------------|----------------------|
| Rohde & Schwarz | Spectrum Analyzer | FSEM | DE31388 | 2012-03-15 | 2013-03-14 |

Test Data

Environmental Conditions

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

* The testing was performed by Allen Qiao on 2012-06-16.

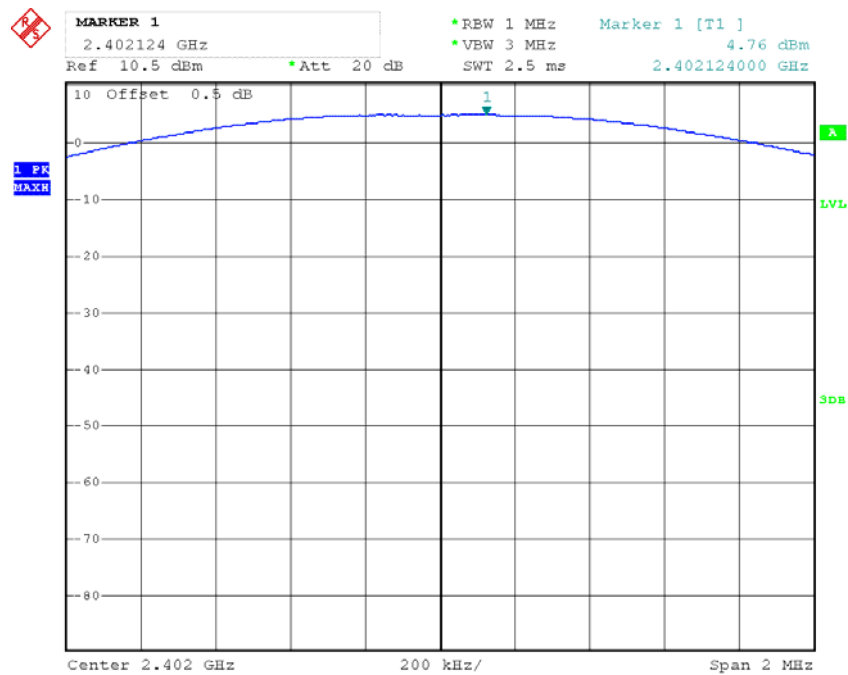
Test Result: Compliance.

Test Mode: Transmitting

| | Channel | Frequency (MHz) | Output power (dBm) | Limit (dBm) |
|----------------------------|---------|-----------------|--------------------|-------------|
| BDR Mode (GFSK) | Low | 2402 | 4.76 | 30 |
| | Middle | 2441 | 5.38 | 30 |
| | High | 2480 | 4.55 | 30 |
| EDR Mode ($\pi/4$ -DQPSK) | Low | 2402 | 4.56 | 30 |
| | Middle | 2441 | 5.07 | 30 |
| | High | 2480 | 4.66 | 30 |
| EDR Mode (8DPSK) | Low | 2402 | 4.89 | 30 |
| | Middle | 2441 | 5.38 | 30 |
| | High | 2480 | 4.96 | 30 |

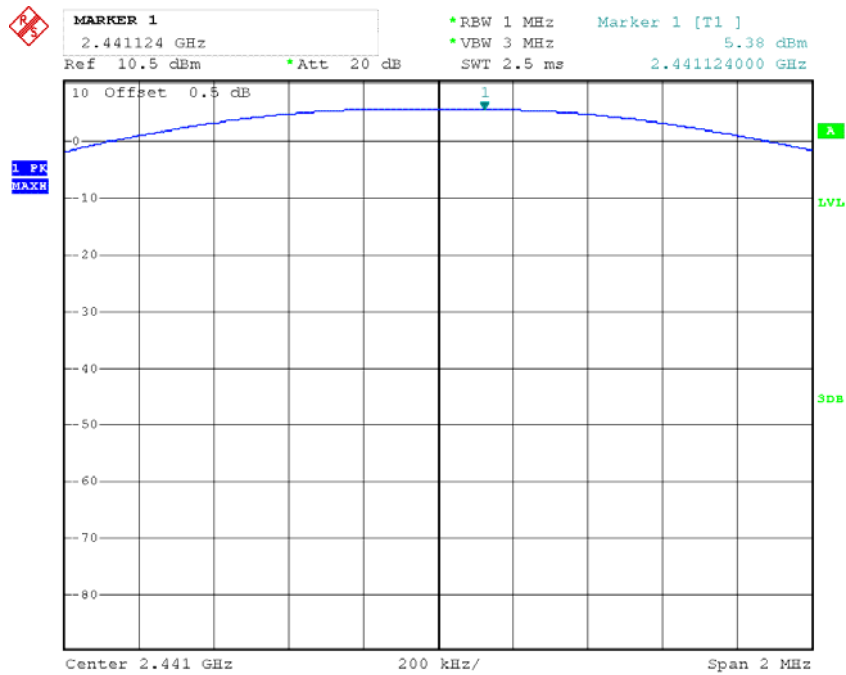
Note: The data above was tested in conducted mode.

BDR: Output Power, Low



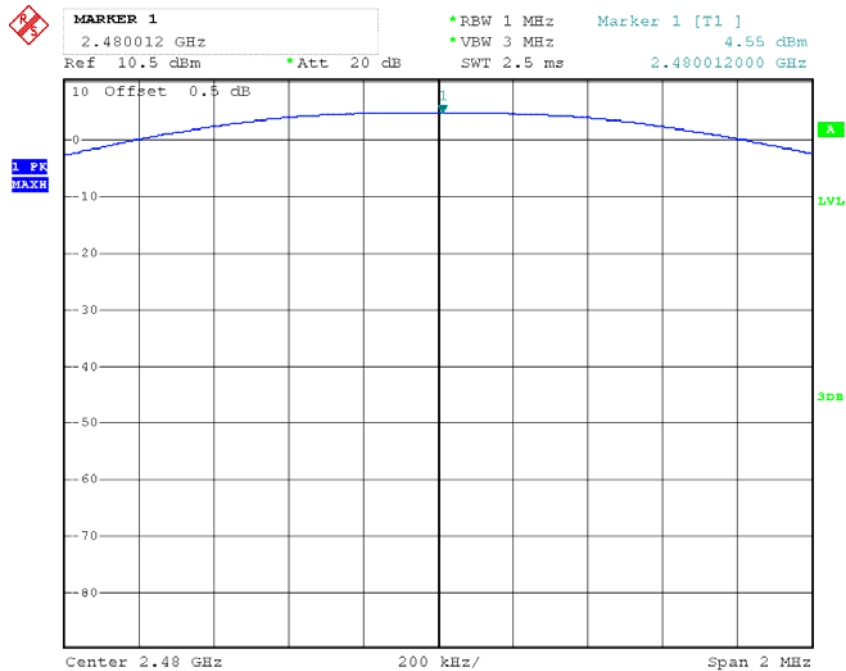
Date: 16.JUN.2012 10:37:44

BDR: Output Power, Middle



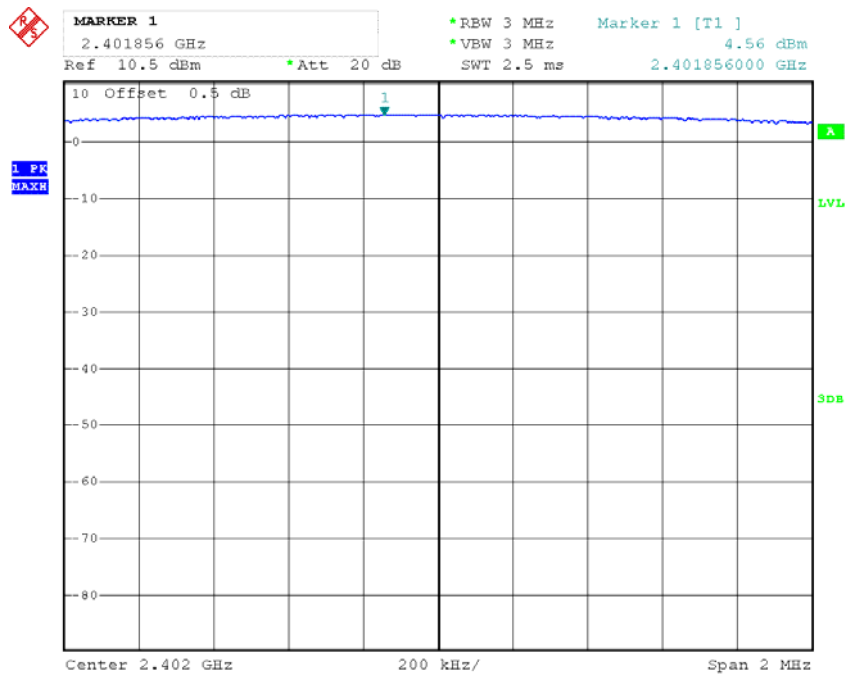
Date: 16.JUN.2012 10:39:21

BDR: Output Power, High



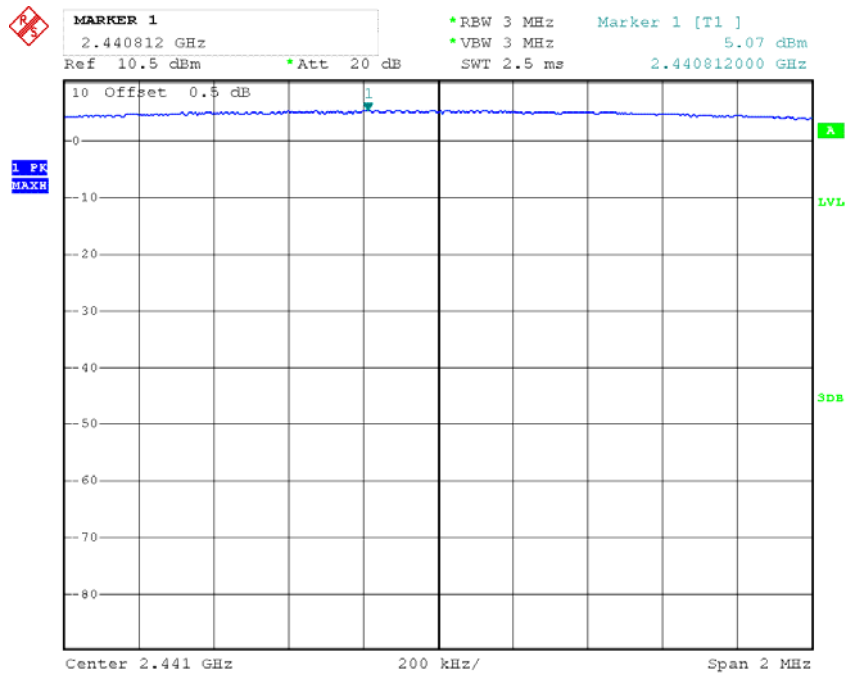
Date: 16.JUN.2012 10:41:19

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



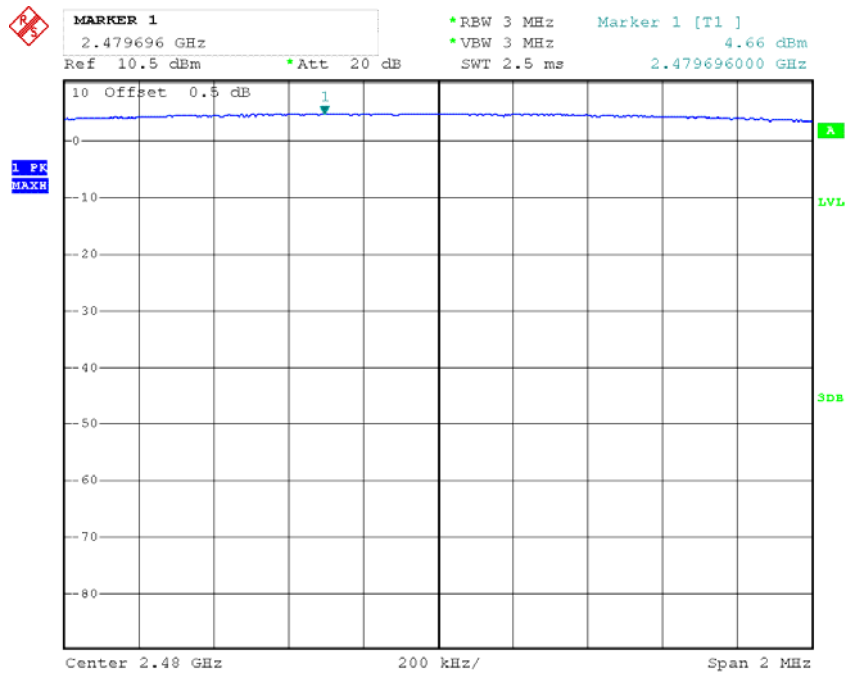
Date: 16.JUN.2012 10:43:52

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



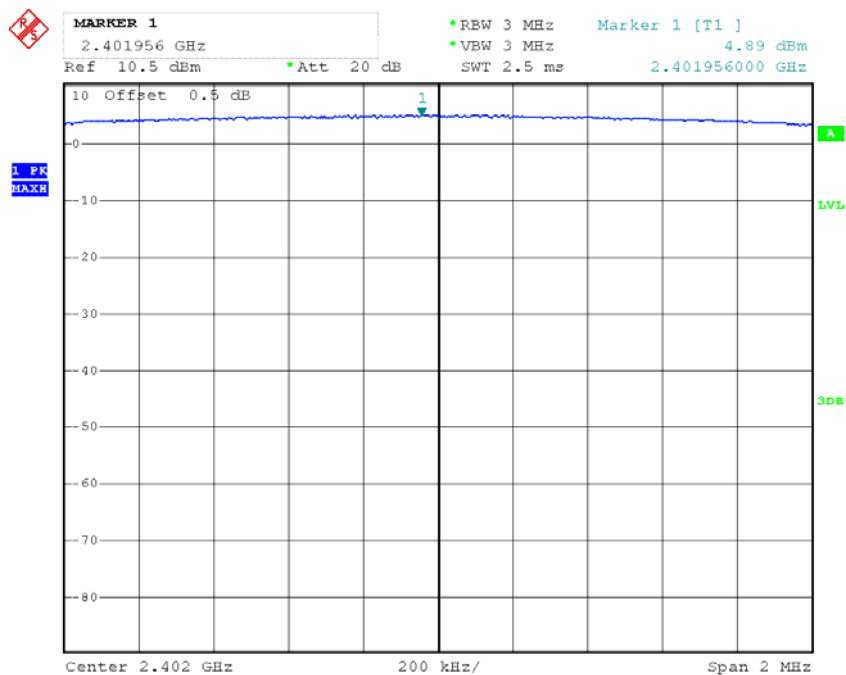
Date: 16.JUN.2012 10:45:00

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



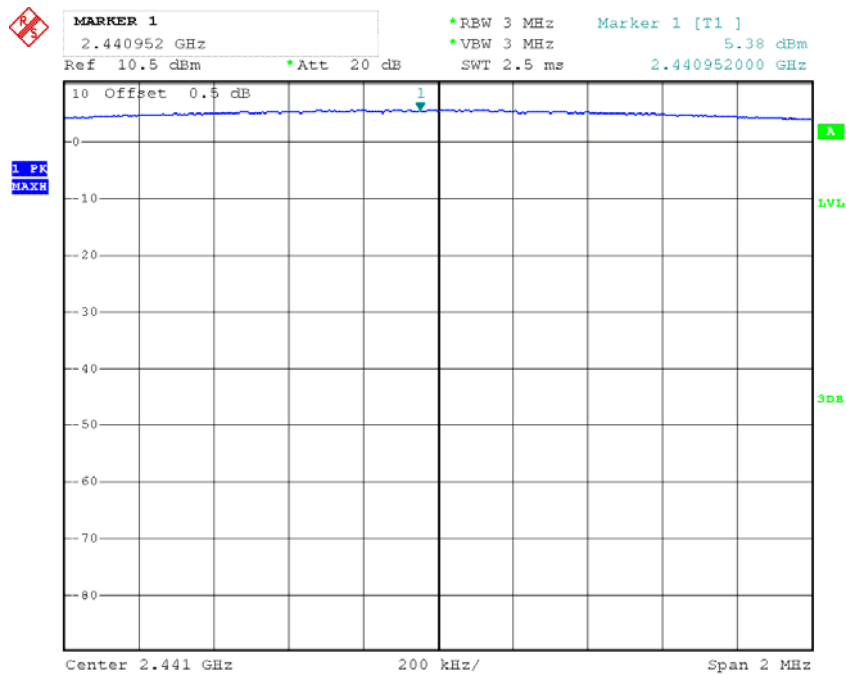
Date: 29.JUN.2012 10:46:16

EDR (8DPSK): Output Power, Low



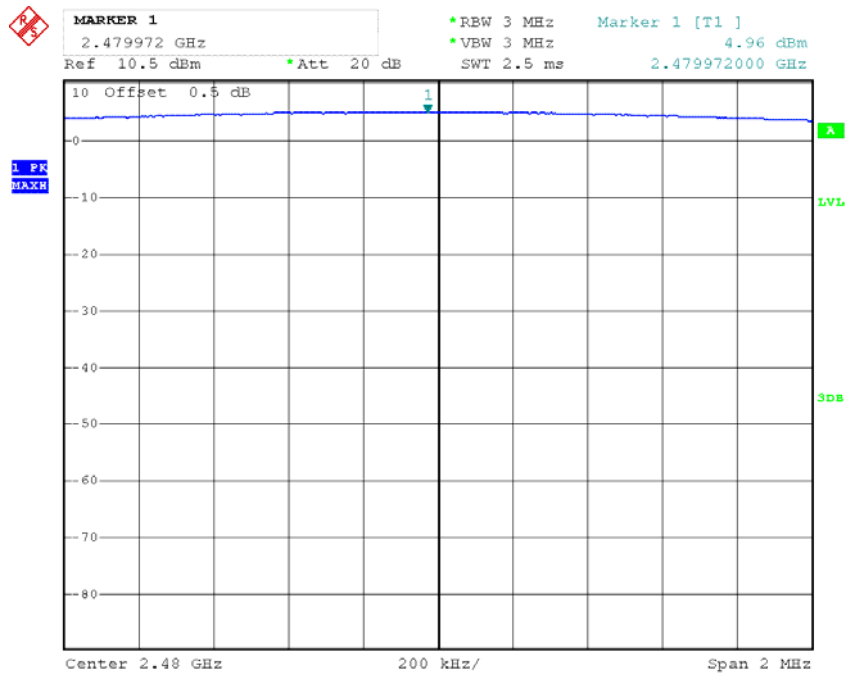
Date: 16.JUN.2012 10:50:37

EDR (8DPSK): Output Power, Middle



Date: 16.JUN.2012 10:49:36

EDR (8DPSK): Output Power, High



Date: 16.JUN.2012 10:47:21

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 both RBW and VBW 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 | Spectrum Analyzer | FSEM | DE31388 | 2012-03-15 | 2013-03-14 |

Test Data**Environmental Conditions**

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

**The testing was performed by Allen Qiao on 2012-06-16.*

Test Result: Compliance

Ref Lvl 10.5 dBm

Marker 4 [T1] -62.59 dBm

RBW 100 kHz

VBW 300 kHz

SWT 23.5 ms

RF Att 20 dB

Unit dBm

0.5 dB Offset

D1 -1.3 dBm

D2 -21.17 dBm

1MAX

1MA

Start 2.31 GHz

9.4 MHz

Stop 2.404 GHz

Date: 16 JUN 2012 09:19:15

Ref Lvl 10.5 dBm

Marker 4 [T1] 2.48531062 GHz -57.28 dBm

RBW 100 kHz RF Att 20 dB

VBW 300 kHz

SWT 8 ms Unit dBm

0.5 dB Offset

D1 5.4 dBm

D2 -14.6 dBm

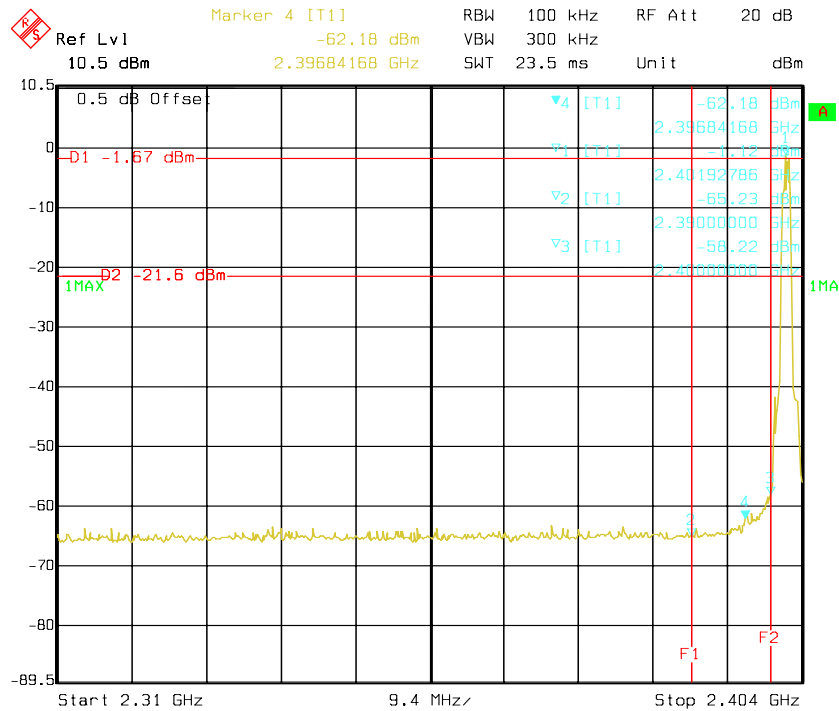
1MAX

1MA

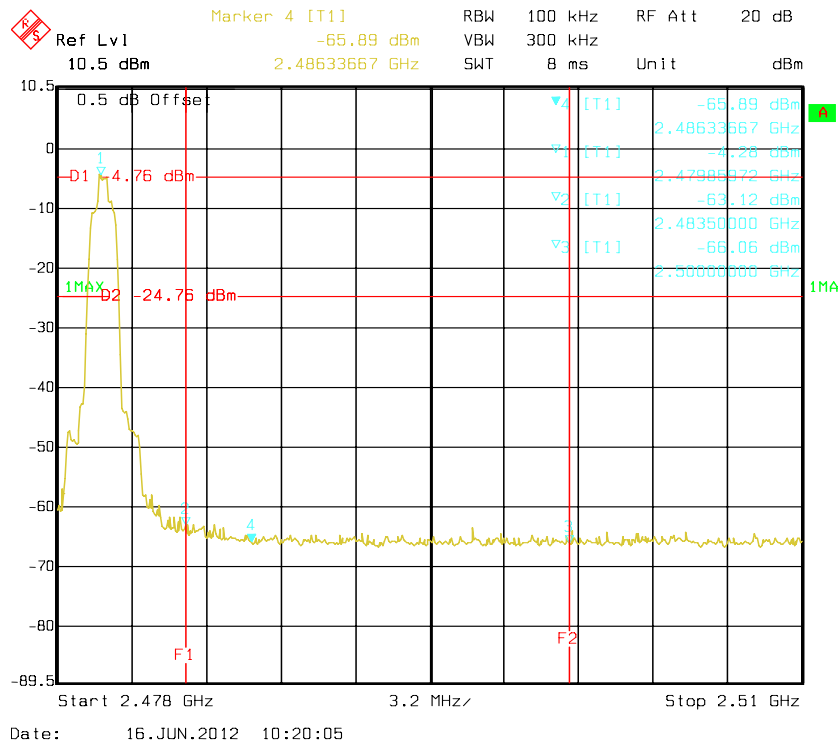
Start 2.478 GHz 3.2 MHz/ Stop 2.51 GHz

Date: 16 JUN 2012 09:36:35

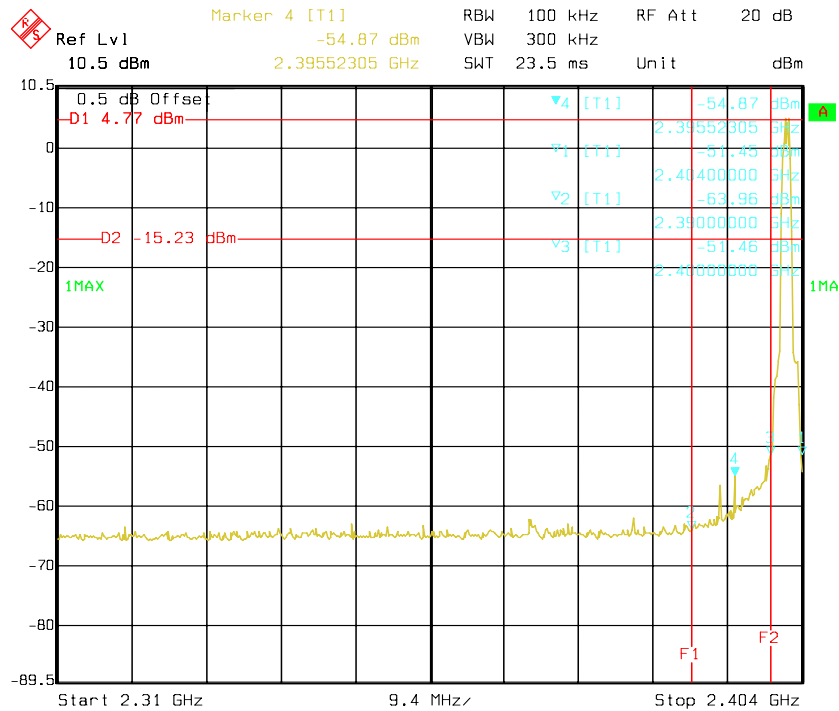
EDR ($\pi/4$ -DQPSK) : Band Edge, Left Side



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

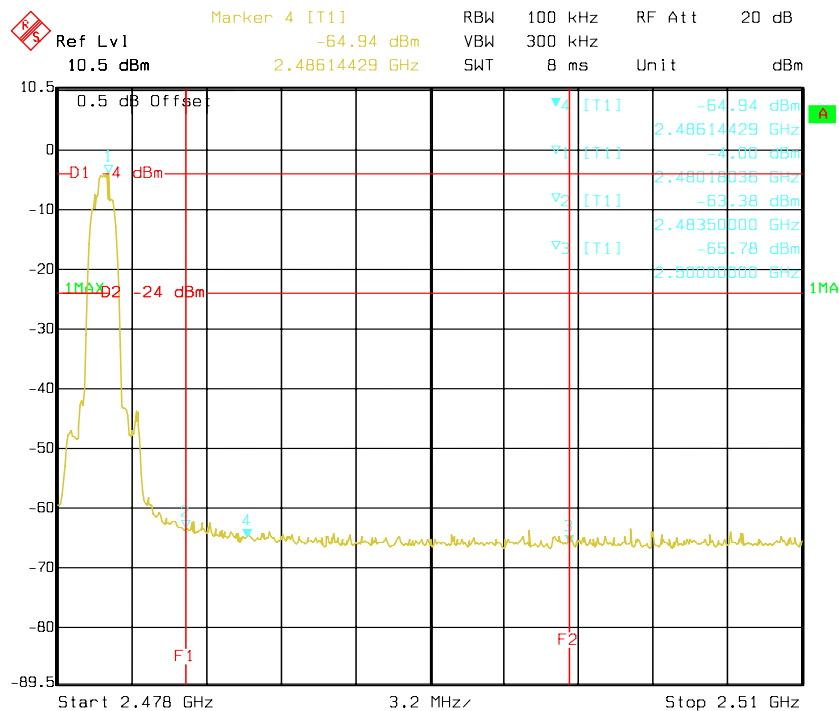


EDR (8DPSK): Band Edge, Left Side



Date: 16.JUN.2012 11:10:05

EDR (8DPSK): Band Edge, Right Side



Date: 16.JUN.2012 11:06:22

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