

FCC PART 15.247

TEST REPORT

For

Shenzhen Rapoo Technology Co., Ltd.

22, Jinxiu Road East, Pingshan District, Shenzhen, China

FCC ID: PP2A800

Report Type: Original Report	Product Type: Bluetooth Stereo Speaker
Test Engineer: Allen Qiao	<i>Allen Qiao</i>
Report Number: R2DG140228002-00A	
Report Date: 2014-05-15	
Reviewed By: Sula Huang RF Engineer	<i>Sula Huang</i>
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). This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
EQUIPMENT MODIFICATIONS	5
SUPPORT EQUIPMENT LIST AND DETAILS	5
EXTERNAL CABLE.....	5
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
FCC §15.247 (i) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE).....	8
APPLICABLE STANDARD	8
FCC §15.203 - ANTENNA REQUIREMENT.....	9
APPLICABLE STANDARD	9
ANTENNA CONNECTOR CONSTRUCTION	9
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS	10
APPLICABLE STANDARD	10
MEASUREMENT UNCERTAINTY.....	10
EUT SETUP.....	10
EMI TEST RECEIVER SETUP.....	11
TEST PROCEDURE	11
CORRECTED AMPLITUDE & MARGIN CALCULATION	11
TEST EQUIPMENT LIST AND DETAILS.....	12
TEST RESULTS SUMMARY	12
TEST DATA	12
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS.....	15
APPLICABLE STANDARD	15
MEASUREMENT UNCERTAINTY.....	15
EUT SETUP	15
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	16
TEST PROCEDURE	16
TEST EQUIPMENT LIST AND DETAILS.....	17
CORRECTED AMPLITUDE & MARGIN CALCULATION	17
TEST RESULTS SUMMARY	17
TEST DATA	17
FCC §15.247(a) (1) - CHANNEL SEPARATION TEST	26
APPLICABLE STANDARD	26
TEST EQUIPMENT LIST AND DETAILS.....	26
TEST PROCEDURE	26
TEST DATA	26
FCC §15.247(a) (1) – 20 dB BANDWIDTH TESTING.....	32

APPLICABLE STANDARD	32
TEST PROCEDURE	32
TEST EQUIPMENT LIST AND DETAILS.....	32
TEST DATA	32
FCC §15.247(a) (1) (iii) - QUANTITY OF HOPPING CHANNEL TEST	38
APPLICABLE STANDARD	38
TEST PROCEDURE	38
TEST EQUIPMENT LIST AND DETAILS.....	38
TEST DATA	38
FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME).....	42
APPLICABLE STANDARD	42
TEST PROCEDURE	42
TEST EQUIPMENT LIST AND DETAILS.....	42
TEST DATA	42
FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT	58
APPLICABLE STANDARD	58
TEST PROCEDURE	58
TEST EQUIPMENT LIST AND DETAILS.....	58
TEST DATA	58
FCC §15.247(d) - BAND EDGES TESTING	64
APPLICABLE STANDARD	64
TEST PROCEDURE	64
TEST EQUIPMENT LIST AND DETAILS.....	64
TEST DATA	64

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Rapoo Technology Co., Ltd.*'s product, model number: *A800 (FCC ID: PP2A800)* (the "EUT") in this report was a *Bluetooth Stereo Speaker*, which was measured approximately: 43.0 cm (L) x 10.5 cm (W) x 12.0 cm (H), rated input voltage: DC 7.4 V from rechargeable Li-ion battery or DC12.0V from adapter.

Adapter information: Rapoo
Model: F18W-120200SPAU
Input: AC 100-240V 50/60Hz 0.6A
Output: DC12V, 2A

All measurement and test data in this report was gathered from production sample serial number: 140228002 (Assigned by BACL, Dongguan). The EUT was received on 2014-03-03.

Objective

This report is prepared on behalf of *Shenzhen Rapoo Technology Co., Ltd.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules

The tests were performed in order to determine the Bluetooth BDR and EDR mode of EUT compliance 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 15C DTS submissions with FCC ID: *PP2A800* for Bluetooth LE mode.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

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 Communications 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 C63.4-2003.

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 was controlled by the software.

EUT Exercise Software

The software “CSR Blue suite 2.5.0” was used for testing, which was provided by manufacturer. The worst condition (maximum power) was setting by the software as following table:

Test Software Version		CSR Blue suite 2.5.0		
Test Frequency		2402MHz	2441MHz	2480MHz
Power Level Setting	GFSK	50	50	50
	$\pi/4$ DQPSK	50	50	50
	8DPSK	50	50	50

Equipment Modifications

No modification was made to the EUT.

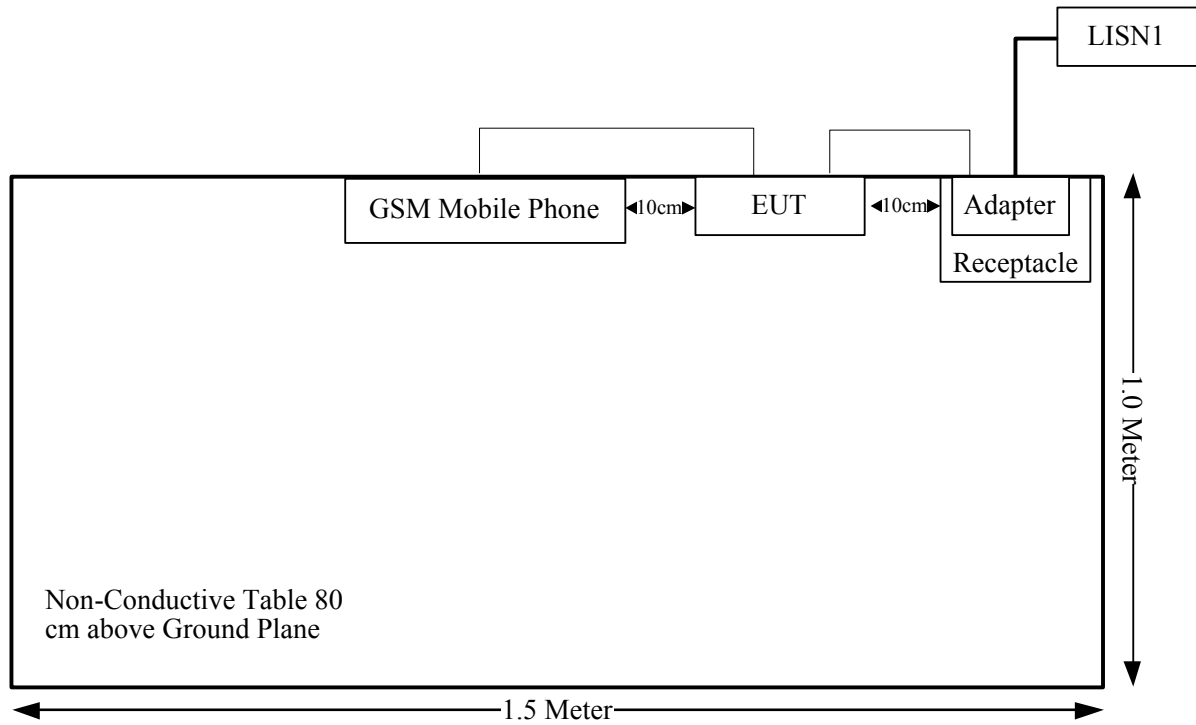
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Karbon	GSM mobile phone	K21	/

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
DC cable	No	No	1.5	Adapter	EUT
Audio In Cable	No	No	1.5	Earphone port of GSM mobile phone	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	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) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247(i) and subpart §1.1310, 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.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

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

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

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

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
GFSK	2441	-1.21	0.76	-0.19	0.96	20	0.0001	1.0
$\pi/4$ -DQPSK	2441	-1.21	0.76	-1.86	0.65	20	0.0001	1.0
8-DPSK	2441	-1.21	0.76	-1.39	0.73	20	0.0001	1.0

Result: The device meet 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 one integral antenna arrangement, which was permanently attached and the antenna gain is -1.21 dBi, fulfill the requirement of this section. Please refer to the EUT 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_{cispr} 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_{cispr} of Table 1, then:

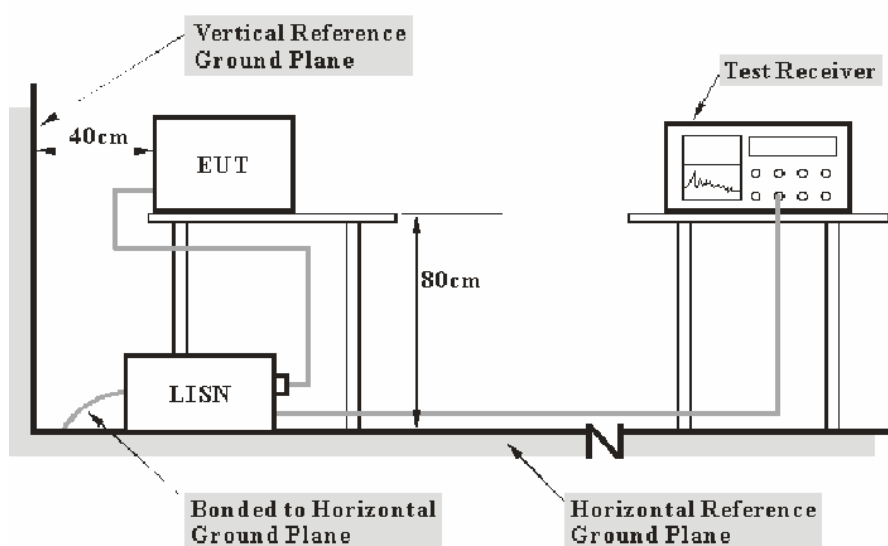
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

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 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 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 C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

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

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

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the main 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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF : voltage division factor of AMN or ISN

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2013-11-20	2014-11-19
R&S	Two-line V-network	ENV216	3560.6550.12	2014-01-22	2015-01-21
R&S	L.I.S.N	ESH3-Z5	100113	N/A	N/A
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

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:

13.60 dB at 1.310256 MHz in the **Line** conducted mode

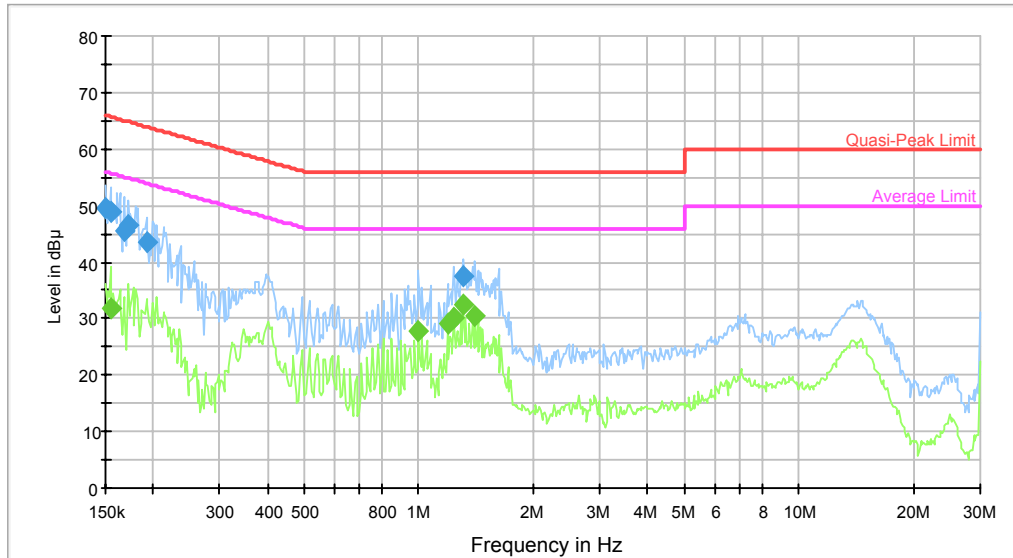
Test Data**Environmental Conditions**

Temperature:	25.6 °C
Relative Humidity:	64 %
ATM Pressure:	100.8 kPa

The testing was performed by Allen Qiao on 2014-04-14.

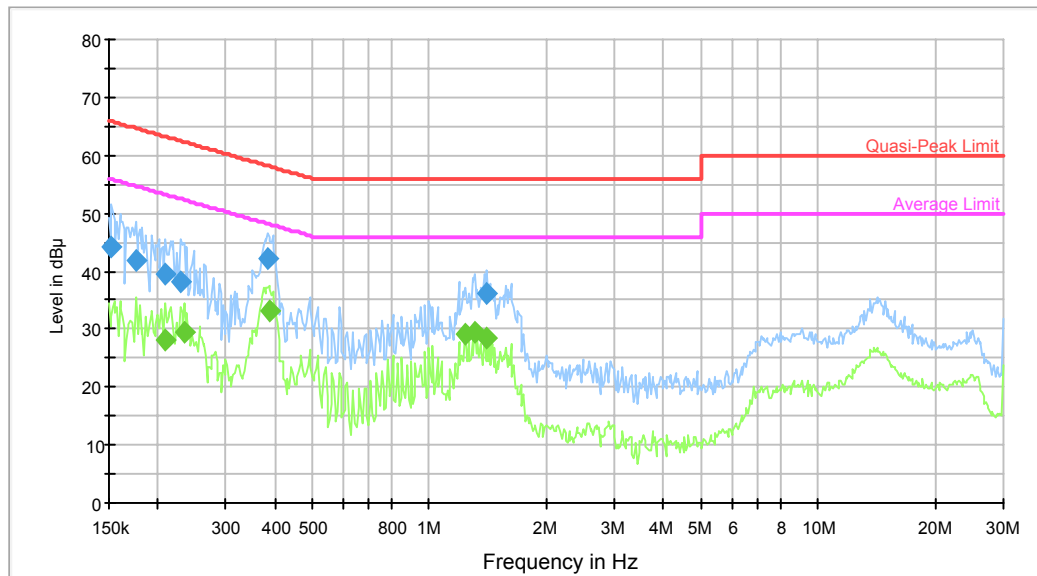
Test Mode: Charging&Transmitting

AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	49.7	9.000	L1	9.5	16.3	66.0	Compliance
0.154858	48.8	9.000	L1	9.6	16.9	65.7	Compliance
0.167702	45.6	9.000	L1	9.8	19.4	65.1	Compliance
0.171759	46.5	9.000	L1	9.8	18.4	64.9	Compliance
0.192030	43.7	9.000	L1	10.1	20.3	63.9	Compliance
1.310256	37.6	9.000	L1	9.7	18.4	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.154858	31.9	9.000	L1	9.6	23.8	55.7	Compliance
0.999305	27.7	9.000	L1	9.7	18.3	46.0	Compliance
1.190776	29.1	9.000	L1	9.7	16.9	46.0	Compliance
1.239175	30.2	9.000	L1	9.7	15.8	46.0	Compliance
1.310256	32.4	9.000	L1	9.7	13.6	46.0	Compliance
1.407671	30.5	9.000	L1	9.7	15.5	46.0	Compliance

AC120 V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.152410	44.3	9.000	N	9.8	21.6	65.9	Compliance
0.175915	41.7	9.000	N	10.3	23.0	64.7	Compliance
0.209621	39.4	9.000	N	10.8	23.8	63.2	Compliance
0.228823	38.3	9.000	N	10.7	24.2	62.5	Compliance
0.384091	42.2	9.000	N	10.3	16.0	58.2	Compliance
1.407671	36.2	9.000	N	9.8	19.8	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.209621	28.2	9.000	N	10.8	25.0	53.2	Compliance
0.234359	29.3	9.000	N	10.7	23.0	52.3	Compliance
0.387164	33.2	9.000	N	10.3	14.9	48.1	Compliance
1.239175	29.2	9.000	N	9.8	16.8	46.0	Compliance
1.310256	29.3	9.000	N	9.8	16.7	46.0	Compliance
1.407671	28.5	9.000	N	9.8	17.5	46.0	Compliance

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

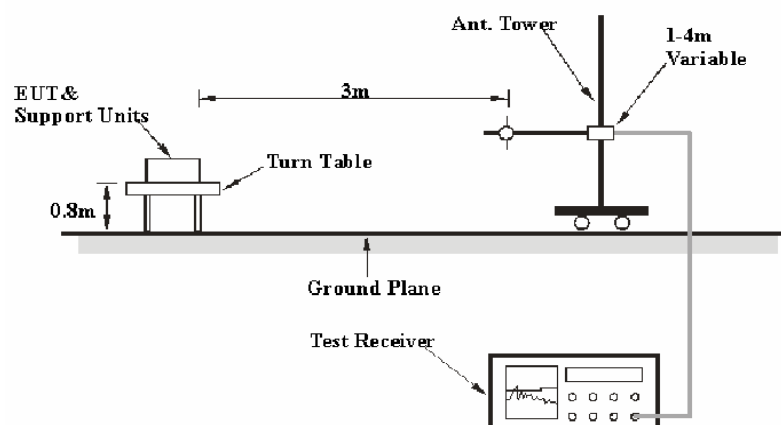
6G~18GHz: 5.23 dB

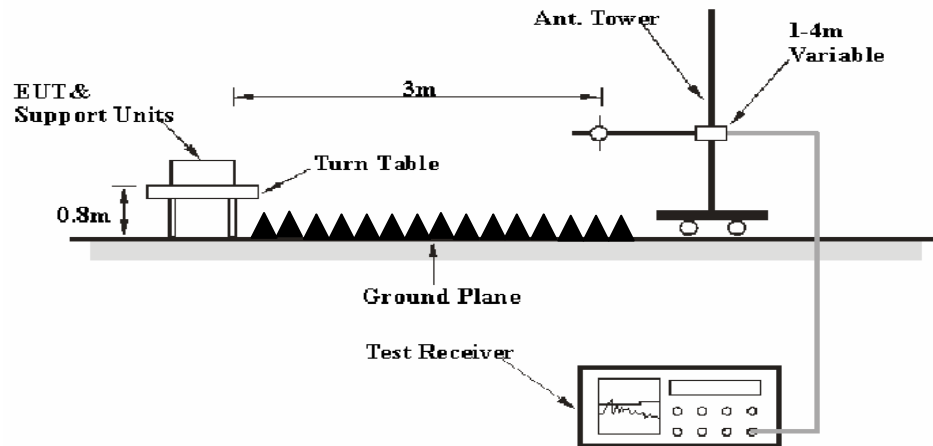
Table 1 – Values of U_{cisp}

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

Below 1GHz:



Above 1GHz:

The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The 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:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	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
R&S	EMI Test Receiver	ESCI	100224	2013-05-06	2014-05-05
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-05
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-18
R&S	Spectrum Analyzer	FSP 38	100478	2013-06-16	2014-06-15
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2013-06-16	2014-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2013-09-06	2014-09-05

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

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:

6.89 dB at 7440 MHz in the Vertical polarization of BDR Mode (GFSK)

Test Data**Environmental Conditions**

Temperature:	22.6 °C
Relative Humidity:	70 %
ATM Pressure:	101.0 kPa

The testing was performed by Allen Qiao on 2014-04-10.

Mode: Transmitting

BDR Mode (GFSK):

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	FCC 15.247	
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBµV/m)	Margin (dB)
Low Channel: 2402 MHz									
2402	89.12	PK	H	25.65	4.42	27.32	91.87	N/A	N/A
2402	75.42	AV	H	25.65	4.42	27.32	78.17	N/A	N/A
2402	93.23	PK	V	25.65	4.42	27.32	95.98	N/A	N/A
2402	79.21	AV	V	25.65	4.42	27.32	81.96	N/A	N/A
4804	51.37	PK	V	30.59	5.98	27.41	60.53	74.00	13.47
4804	27.08	AV	V	30.59	5.98	27.41	36.24	54.00	17.76
7206	35.15	PK	V	34.09	7.45	25.91	50.78	74.00	23.22
7206	23.31	AV	V	34.09	7.45	25.91	38.94	54.00	15.06
2390	51.77	PK	V	25.61	4.39	27.32	54.45	74.00	19.55
2390	32.53	AV	V	25.61	4.39	27.32	35.21	54.00	18.79
1600	43.40	PK	V	23.8	3.23	27.81	42.62	74.00	31.38
1600	24.69	AV	V	23.8	3.23	27.81	23.91	54.00	30.09
7300	39.06	PK	V	34.32	7.5	25.89	54.99	74.00	19.01
7300	26.23	AV	V	34.32	7.5	25.89	42.16	54.00	11.84
257.95	40.19	QP	H	12.49	1.93	21.49	33.12	46.00	12.88
405.39	34.57	QP	V	16.37	2.44	21.78	31.60	46.00	14.40
Middle Channel: 2441 MHz									
2441	89.34	PK	H	25.75	4.40	27.34	92.15	N/A	N/A
2441	75.83	AV	H	25.75	4.40	27.34	78.64	N/A	N/A
2441	93.87	PK	V	25.75	4.40	27.34	96.68	N/A	N/A
2441	79.51	AV	V	25.75	4.40	27.34	82.32	N/A	N/A
4882	50.42	PK	V	30.79	6.08	27.42	59.87	74.00	14.13
4882	31.63	AV	V	30.79	6.08	27.42	41.08	54.00	12.92
7323	41.92	PK	V	34.38	7.51	25.88	57.93	74.00	16.07
7323	30.15	AV	V	34.38	7.51	25.88	46.16	54.00	7.84
1600	51.27	PK	V	23.8	3.23	27.81	50.49	74.00	23.51
1600	28.37	AV	V	23.8	3.23	27.81	27.59	54.00	26.41
7600	38.62	PK	V	34.88	7.59	26.41	54.68	74.00	19.32
7600	22.08	AV	V	34.88	7.59	26.41	38.14	54.00	15.86
257.95	40.97	QP	H	12.49	1.93	21.49	33.90	46.00	12.10
405.39	34.84	QP	V	16.37	2.44	21.78	31.87	46.00	14.13
High Channel: 2480 MHz									
2480	89.27	PK	H	25.85	4.48	27.36	92.24	N/A	N/A
2480	76.59	AV	H	25.85	4.48	27.36	79.56	N/A	N/A
2480	93.66	PK	V	25.85	4.48	27.36	96.63	N/A	N/A
2480	79.62	AV	V	25.85	4.48	27.36	82.59	N/A	N/A
4960	50.87	PK	V	31.00	5.90	27.43	60.34	74.00	13.66
4960	31.07	AV	V	31.00	5.90	27.43	40.54	54.00	13.46
7440	41.28	PK	V	34.66	7.58	25.97	57.55	74.00	16.45
7440	30.84	AV	V	34.66	7.58	25.97	47.11	54.00	6.89
2483.5	50.41	PK	V	25.86	4.49	27.36	53.40	74.00	20.60
2483.5	30.64	AV	V	25.86	4.49	27.36	33.63	54.00	20.37
1600	49.95	PK	V	23.80	3.23	27.81	49.17	74.00	24.83
1600	24.92	AV	V	23.80	3.23	27.81	24.14	54.00	29.86
7600	40.47	PK	V	34.88	7.59	26.41	56.53	74.00	17.47
7600	25.86	AV	V	34.88	7.59	26.41	41.92	54.00	12.08
257.95	41.12	QP	H	12.49	1.93	21.49	34.05	46.00	17.07
405.39	34.07	QP	V	16.37	2.44	21.78	31.10	46.00	14.90

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

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402 MHz									
2402	88.62	PK	H	25.65	4.42	27.32	91.37	N/A	N/A
2402	74.43	AV	H	25.65	4.42	27.32	77.18	N/A	N/A
2402	92.19	PK	V	25.65	4.42	27.32	94.94	N/A	N/A
2402	78.72	AV	V	25.65	4.42	27.32	81.47	N/A	N/A
4804	51.56	PK	V	30.59	5.98	27.41	60.72	74.00	13.28
4804	27.89	AV	V	30.59	5.98	27.41	37.05	54.00	16.95
7206	35.02	PK	V	34.09	7.45	25.91	50.65	74.00	23.35
7206	21.18	AV	V	34.09	7.45	25.91	36.81	54.00	17.19
2390	45.99	PK	V	25.61	4.39	27.32	48.67	74.00	25.33
2390	28.29	AV	V	25.61	4.39	27.32	30.97	54.00	23.03
1594	51.34	PK	V	23.79	3.23	27.79	50.57	74.00	23.43
1594	22.37	AV	V	23.79	3.23	27.79	21.60	54.00	32.40
7309	31.43	PK	V	34.34	7.51	25.88	47.40	74.00	26.60
7309	18.31	AV	V	34.34	7.51	25.88	34.28	54.00	19.72
257.95	40.94	QP	H	12.49	1.93	21.49	33.87	46.00	12.13
405.39	34.82	QP	V	16.37	2.44	21.78	31.85	46.00	14.15
Middle Channel: 2441 MHz									
2441	88.31	PK	H	25.75	4.4	27.34	91.12	N/A	N/A
2441	74.39	AV	H	25.75	4.4	27.34	77.20	N/A	N/A
2441	92.27	PK	V	25.75	4.4	27.34	95.08	N/A	N/A
2441	77.82	AV	V	25.75	4.4	27.34	80.63	N/A	N/A
4882	50.93	PK	V	30.79	6.08	27.42	60.38	74.00	13.62
4882	32.05	AV	V	30.79	6.08	27.42	41.50	54.00	12.5
7323	41.28	PK	V	34.38	7.51	25.88	57.29	74.00	16.71
7323	28.37	AV	V	34.38	7.51	25.88	44.38	54.00	9.62
1595	50.46	PK	V	23.79	3.23	27.79	49.69	74.00	24.31
1595	26.31	AV	V	23.79	3.23	27.79	25.54	54.00	28.46
7268.5	31.26	PK	V	34.24	7.48	25.89	47.09	74.00	26.91
7268.5	20.96	AV	V	34.24	7.48	25.89	36.79	54.00	17.21
257.95	40.72	QP	H	12.49	1.93	21.49	33.65	46.00	12.35
405.39	35.35	QP	V	16.37	2.44	21.78	32.38	46.00	13.62
High Channel: 2480 MHz									
2480	88.79	PK	H	25.85	4.48	27.36	91.76	N/A	N/A
2480	73.64	AV	H	25.85	4.48	27.36	76.61	N/A	N/A
2480	92.47	PK	V	25.85	4.48	27.36	95.44	N/A	N/A
2480	78.72	AV	V	25.85	4.48	27.36	81.69	N/A	N/A
4960	51.56	PK	V	31.0	5.9	27.43	61.03	74.00	12.97
4960	27.89	AV	V	31.0	5.9	27.43	37.36	54.00	16.64
7440	35.02	PK	V	34.66	7.58	25.97	51.29	74.00	22.71
7440	21.18	AV	V	34.66	7.58	25.97	37.45	54.00	16.55
2483.5	46.39	PK	V	25.86	4.49	27.36	49.38	74.00	24.62
2483.5	31.27	AV	V	25.86	4.49	27.36	34.26	54.00	19.74
1593.5	53.14	PK	V	23.79	3.23	27.78	52.38	74.00	21.62
1593.5	26.07	AV	V	23.79	3.23	27.78	25.31	54.00	28.69
7300	41.56	PK	V	34.32	7.5	25.89	57.49	74.00	16.51
7300	27.37	AV	V	34.32	7.5	25.89	43.3	54.00	10.70
257.95	40.54	QP	H	12.49	1.93	21.49	33.47	46.00	12.53
405.39	35.43	QP	V	16.37	2.44	21.78	32.46	46.00	13.54

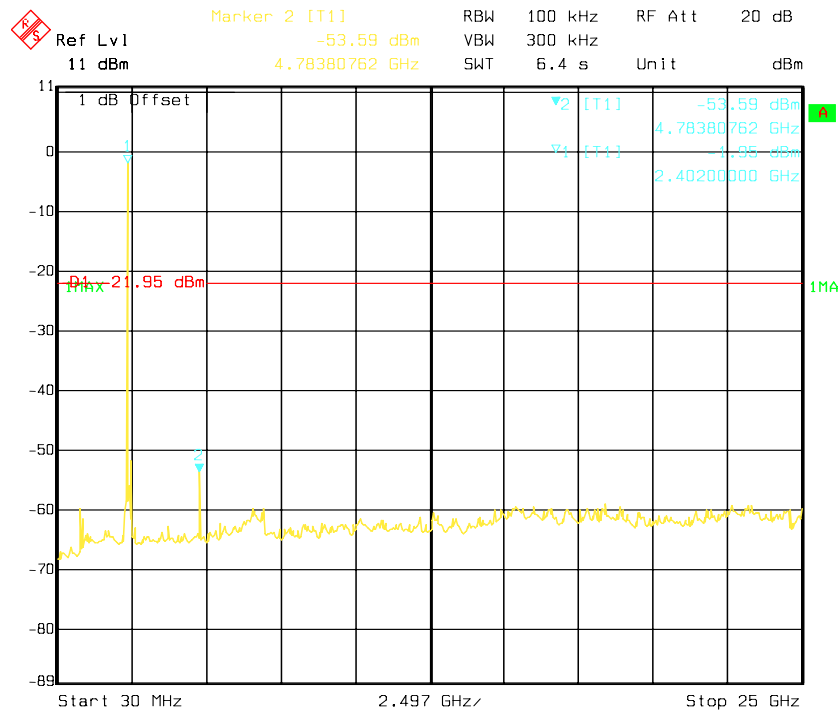
EDR Mode (8-DPSK):

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402 MHz									
2402	88.23	PK	H	25.65	4.42	27.32	90.98	N/A	N/A
2402	75.22	AV	H	25.65	4.42	27.32	77.97	N/A	N/A
2402	92.84	PK	V	25.65	4.42	27.32	95.59	N/A	N/A
2402	78.53	AV	V	25.65	4.42	27.32	81.28	N/A	N/A
4804	50.03	PK	V	30.59	5.98	27.41	59.19	74.00	14.81
4804	31.39	AV	V	30.59	5.98	27.41	40.55	54.00	13.45
7206	36.23	PK	V	34.09	7.45	25.91	51.86	74.00	22.14
7206	21.36	AV	V	34.09	7.45	25.91	36.99	54.00	17.01
2390	48.61	PK	V	25.61	4.39	27.32	51.29	74.00	22.71
2390	30.27	AV	V	25.61	4.39	27.32	32.95	54.00	21.05
1595.7	52.19	PK	V	23.79	3.23	27.79	51.42	74.00	22.58
1595.7	22.44	AV	V	23.79	3.23	27.79	21.67	54.00	32.33
7600	30.36	PK	V	34.88	7.59	26.41	46.42	74.00	27.58
7600	20.37	AV	V	34.88	7.59	26.41	36.43	54.00	17.57
257.95	40.77	QP	H	12.49	1.93	21.49	33.17	46.00	12.83
405.39	34.55	QP	V	16.37	2.44	21.78	32.01	46.00	13.99
Middle Channel: 2441 MHz									
2441	88.42	PK	H	25.75	4.4	27.34	91.23	N/A	N/A
2441	75.31	AV	H	25.75	4.4	27.34	78.12	N/A	N/A
2441	92.83	PK	V	25.75	4.4	27.34	95.64	N/A	N/A
2441	78.74	AV	V	25.75	4.4	27.34	81.55	N/A	N/A
4882	51.85	PK	V	30.79	6.08	27.42	61.30	74.00	12.70
4882	32.97	AV	V	30.79	6.08	27.42	42.42	54.00	11.58
7323	42.16	PK	V	34.38	7.51	25.88	58.17	74.00	15.83
7323	29.67	AV	V	34.38	7.51	25.88	45.68	54.00	8.32
1600	45.96	PK	V	23.80	3.23	27.81	45.18	74.00	28.82
1600	27.23	AV	V	23.80	3.23	27.81	26.45	54.00	27.55
7600	37.21	PK	V	34.88	7.59	26.41	53.27	74.00	20.73
7600	21.85	AV	V	34.88	7.59	26.41	37.91	54.00	16.09
257.95	40.93	QP	H	12.49	1.93	21.49	33.86	46.00	12.14
405.39	35.40	QP	V	16.37	2.44	21.78	32.43	46.00	13.57
High Channel: 2480 MHz									
2480	88.37	PK	H	25.85	4.48	27.36	91.34	N/A	N/A
2480	74.49	AV	H	25.85	4.48	27.36	77.46	N/A	N/A
2480	91.83	PK	V	25.85	4.48	27.36	94.80	N/A	N/A
2480	77.91	AV	V	25.85	4.48	27.36	80.88	N/A	N/A
4960	50.58	PK	V	31.00	5.90	27.43	60.05	74.00	13.95
4960	28.21	AV	V	31.00	5.90	27.43	37.68	54.00	16.32
7440	37.96	PK	V	34.66	7.58	25.97	54.23	74.00	19.77
7440	24.36	AV	V	34.66	7.58	25.97	40.63	54.00	13.37
2483.5	51.06	PK	V	25.86	4.49	27.36	54.05	74.00	19.95
2483.5	31.68	AV	V	25.86	4.49	27.36	34.67	54.00	19.33
1600	50.94	PK	V	23.80	3.23	27.81	50.16	74.00	23.84
1600	24.63	AV	V	23.80	3.23	27.81	23.85	54.00	30.15
7300	41.58	PK	V	34.32	7.50	25.89	57.51	74.00	16.49
7300	27.33	AV	V	34.32	7.50	25.89	43.26	54.00	10.74
257.95	40.2	QP	H	12.49	1.93	21.49	33.13	46.00	12.87
405.39	35.19	QP	V	16.37	2.44	21.78	32.22	46.00	13.78

Conducted Spurious Emissions at Antenna Port

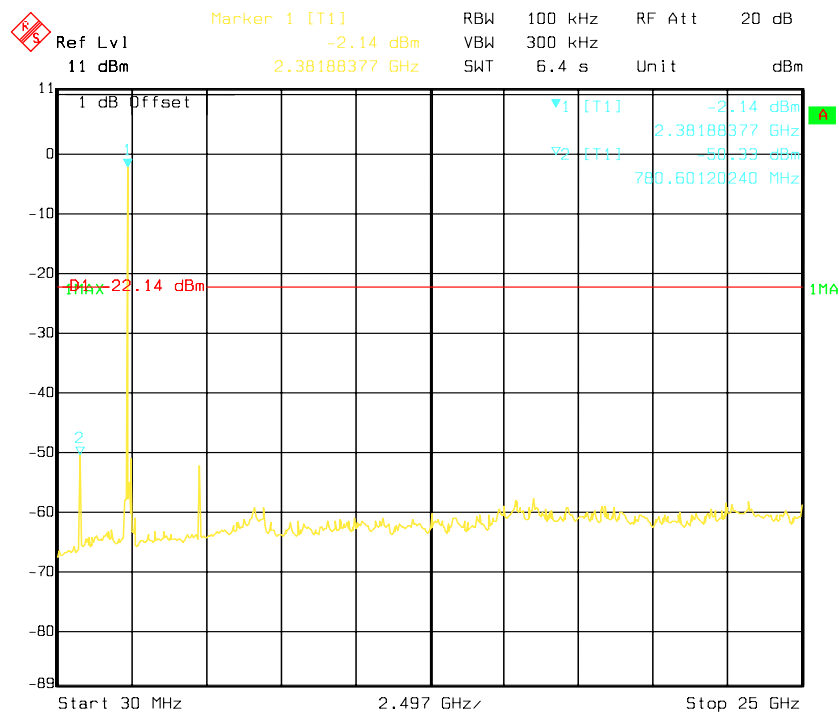
BDR Mode (GFSK):

Low Channel



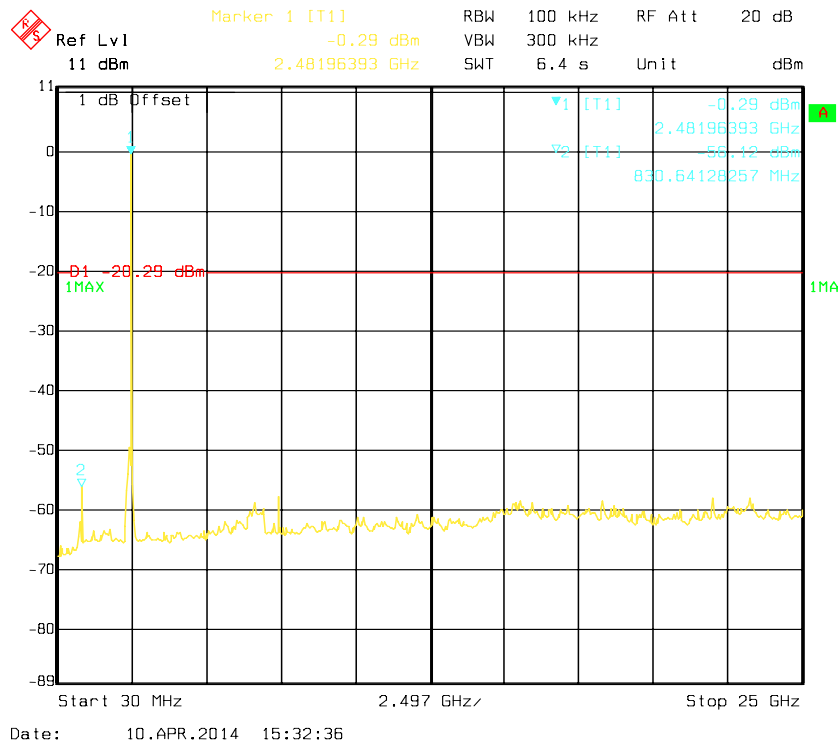
Date: 10.APR.2014 15:28:55

Middle Channel



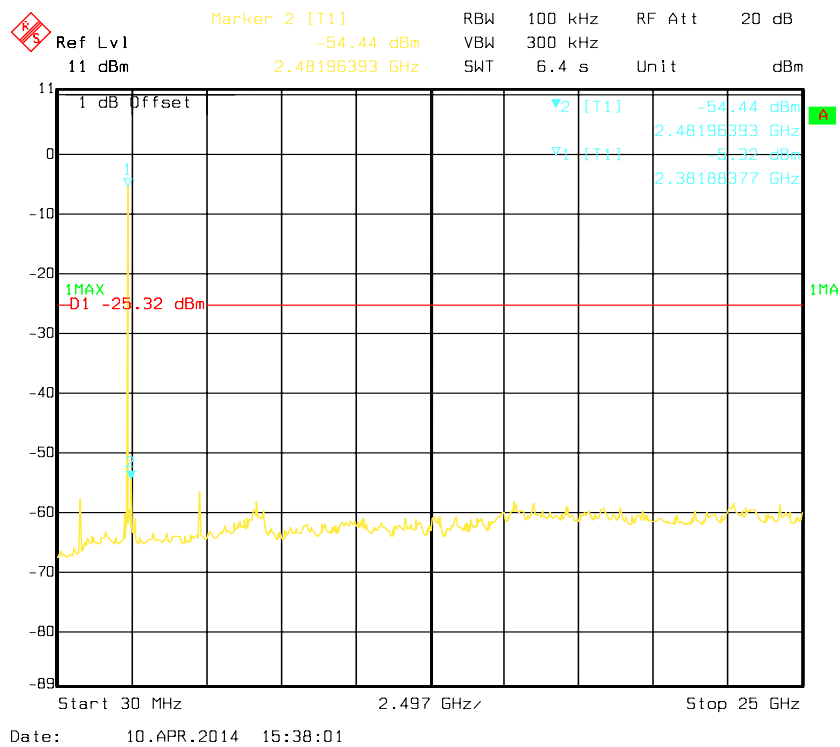
Date: 10.APR.2014 15:30:47

High Channel

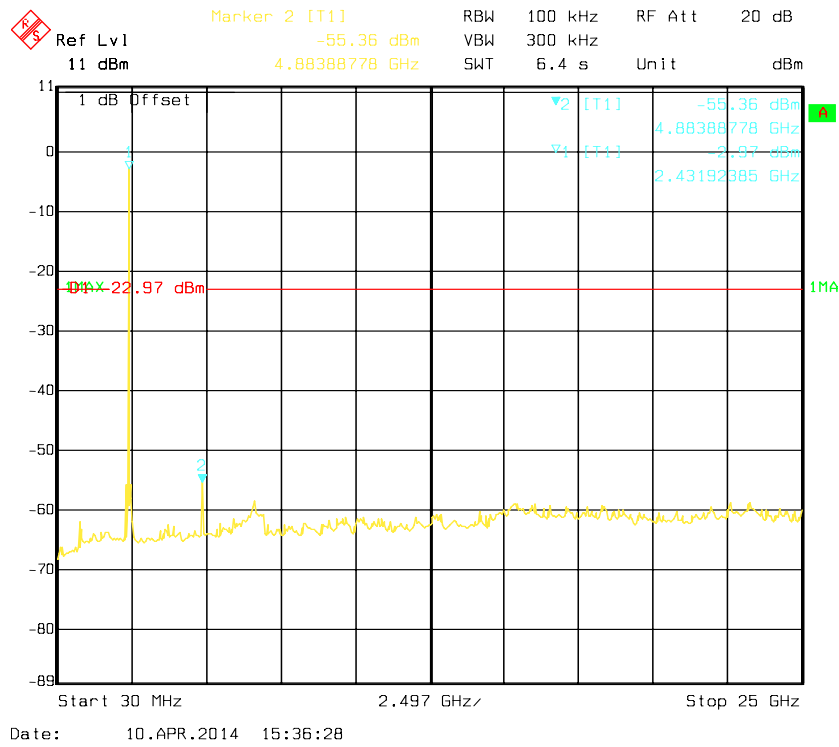


EDR Mode ($\pi/4$ -DQPSK):

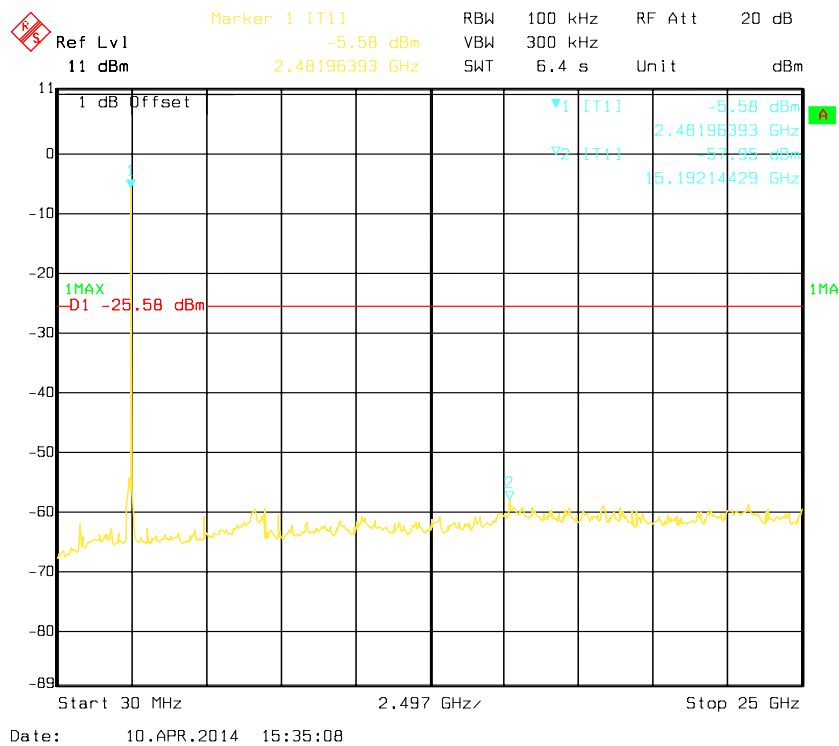
Low Channel



Middle Channel

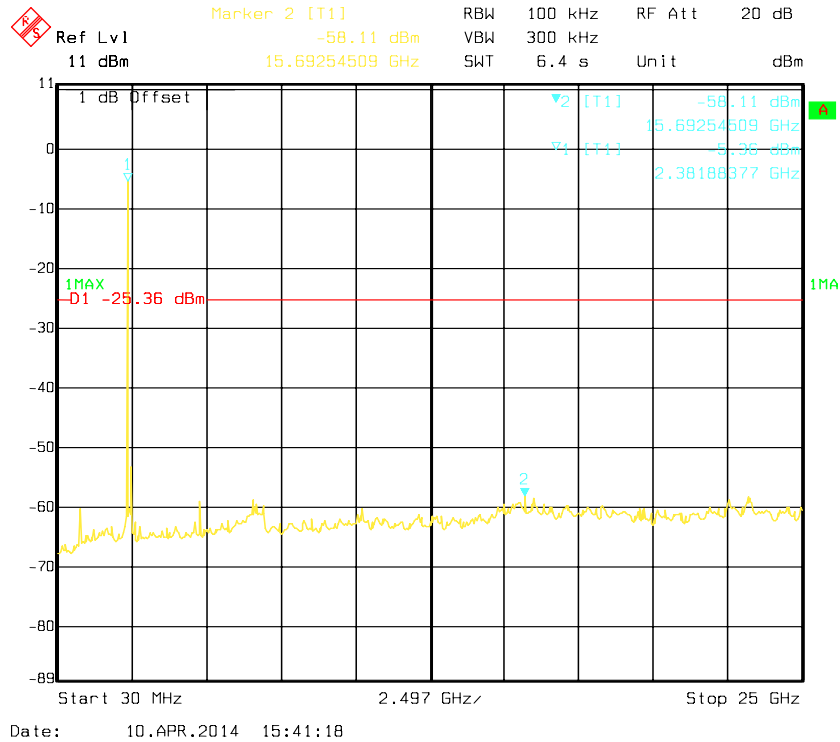


High Channel

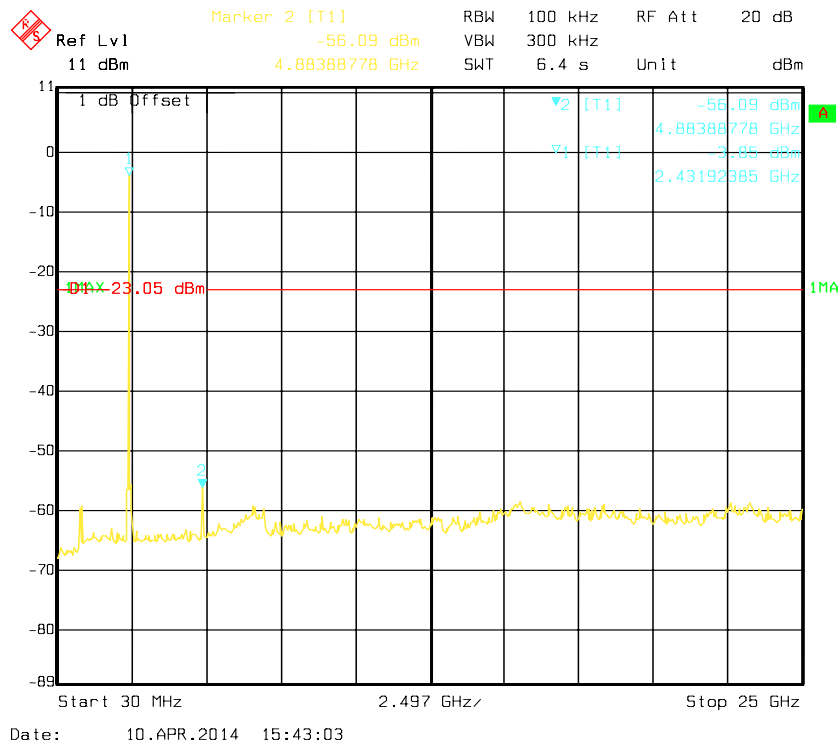


EDR Mode (8-DPSK):

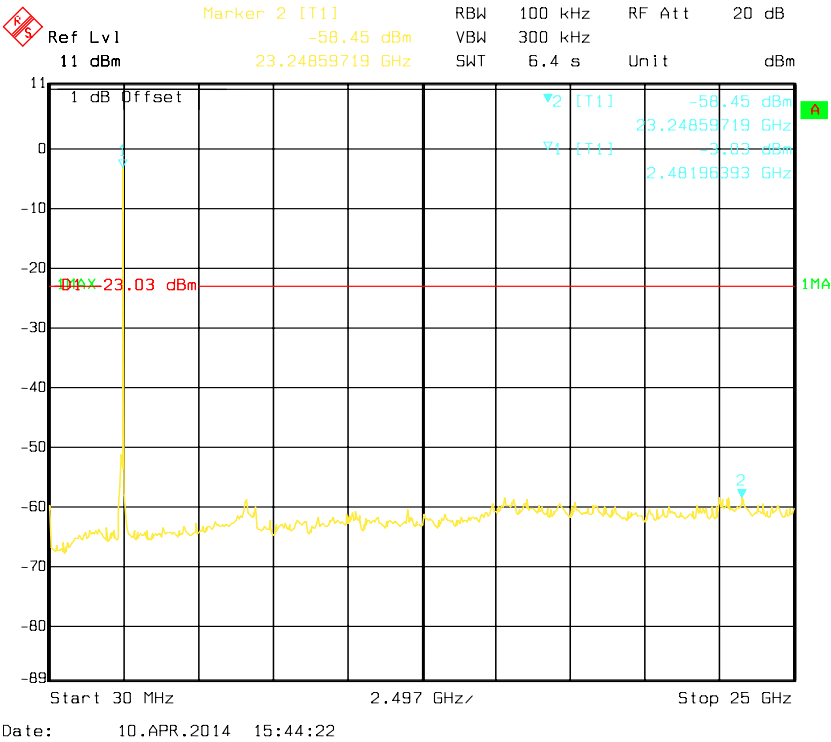
Low Channel



Middle Channel



High Channel



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
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

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

Test Data**Environmental Conditions**

Temperature:	24.4 °C
Relative Humidity:	67 %
ATM Pressure:	101 kPa

* The testing was performed by Allen Qiao on 2014-04-10.

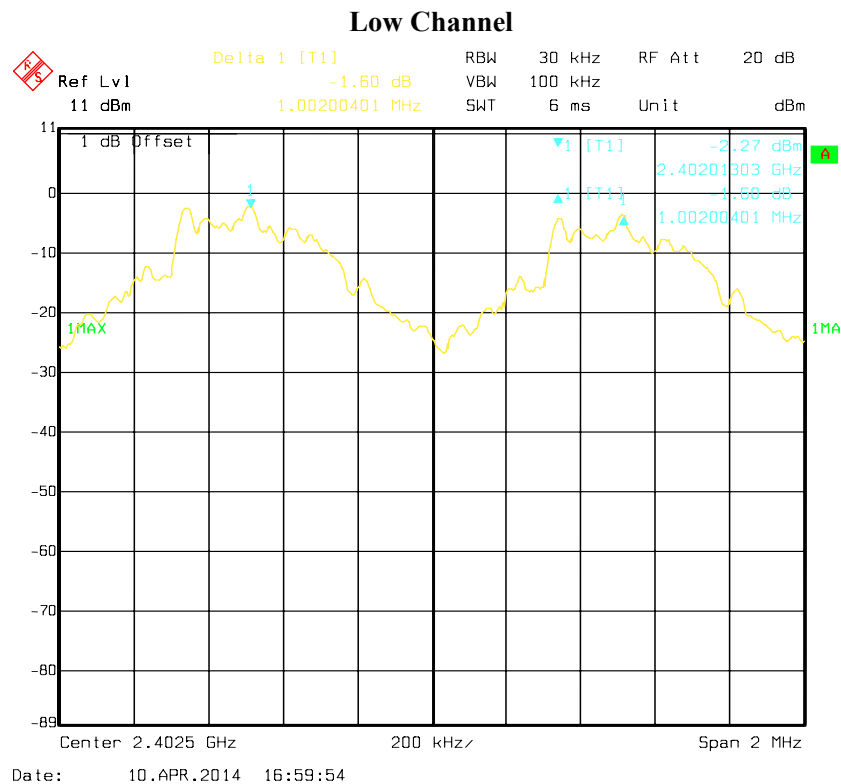
Test Result: Compliance.

Please refer to following tables and plots

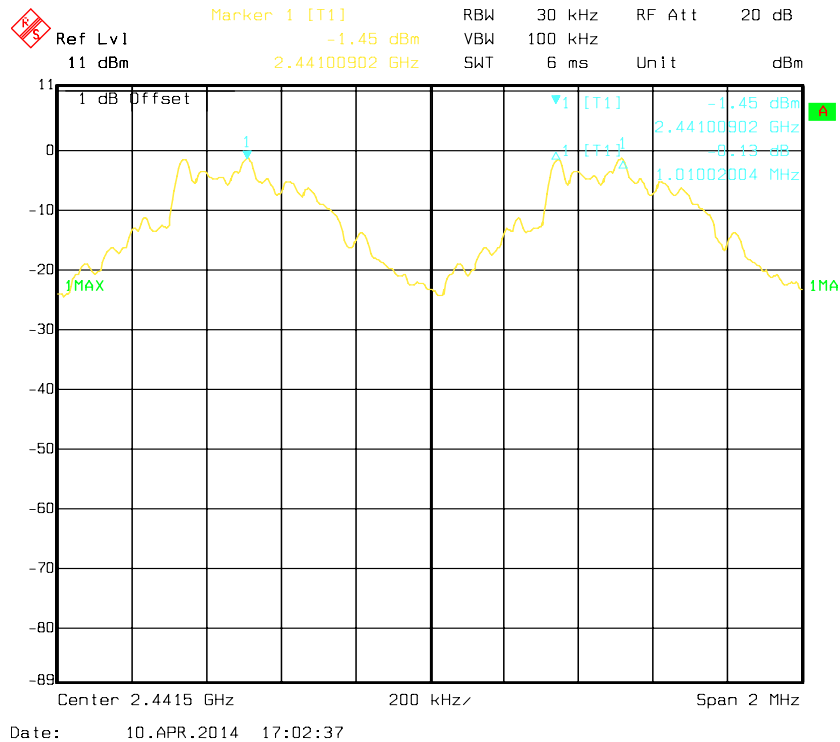
Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
BDR Mode (GFSK)	Low	2402	1.002	0.62	Pass
	Adjacent	2403			
	Middle	2441	1.010	0.60	Pass
	Adjacent	2440			
	High	2480	1.002	0.59	Pass
	Adjacent	2479			
EDR Mode ($\pi/4$ -DQPSK):	Low	2402	1.002	0.83	Pass
	Adjacent	2403			
	Middle	2441	1.002	0.81	Pass
	Adjacent	2440			
	High	2480	1.006	0.81	Pass
	Adjacent	2479			
EDR Mode (8-DPSK):	Low	2402	1.002	0.81	Pass
	Adjacent	2403			
	Middle	2441	1.002	0.82	Pass
	Adjacent	2440			
	High	2480	1.002	0.82	Pass
	Adjacent	2479			

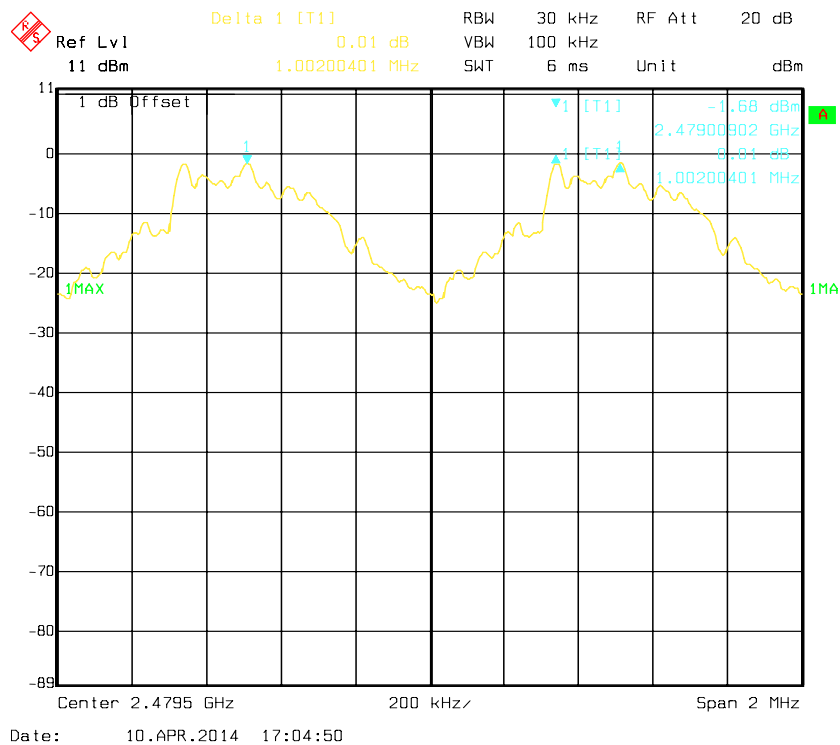
BDR Mode (GFSK):



Middle Channel

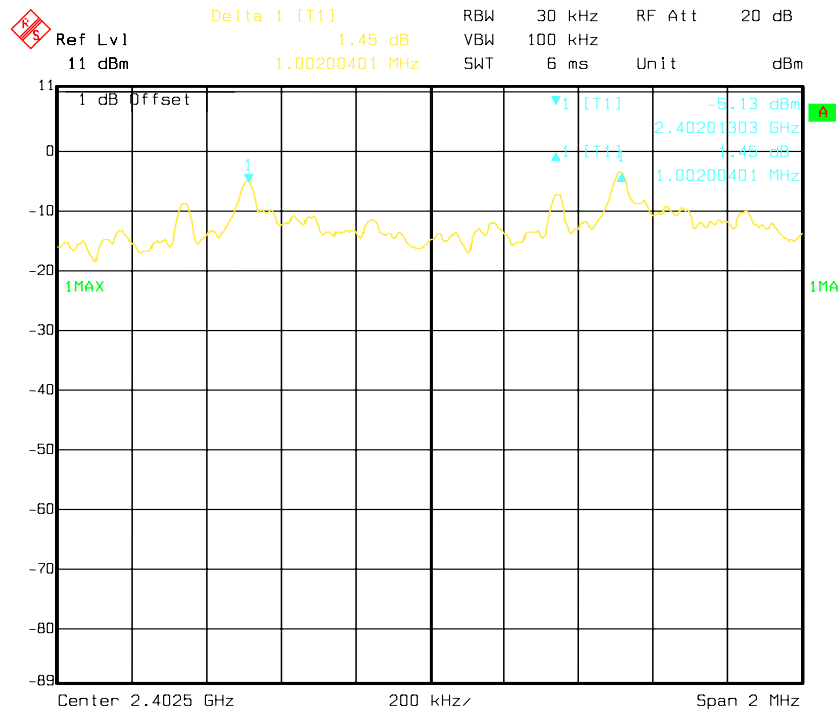


High Channel



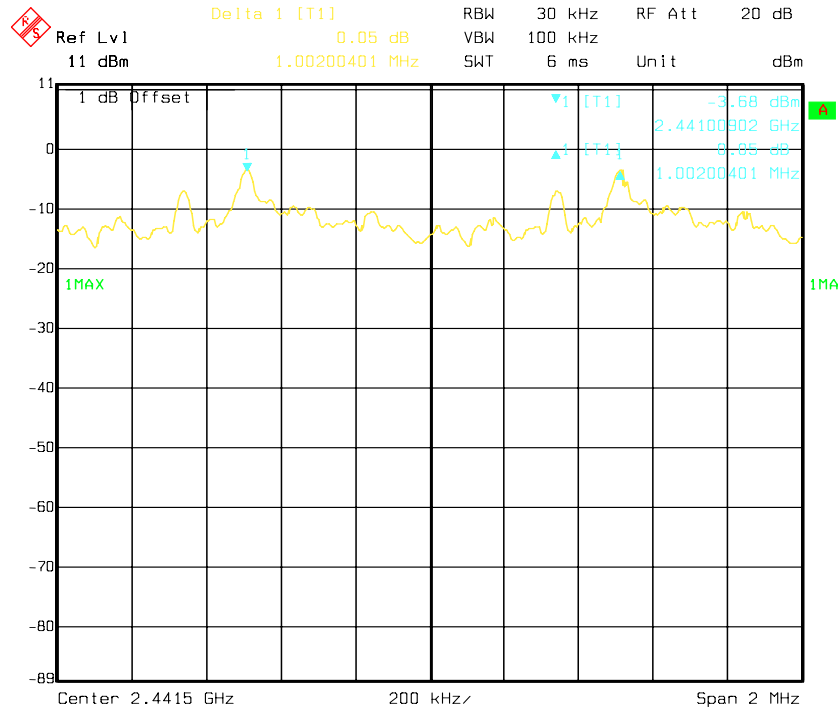
EDR Mode ($\pi/4$ -DQPSK):

Low Channel



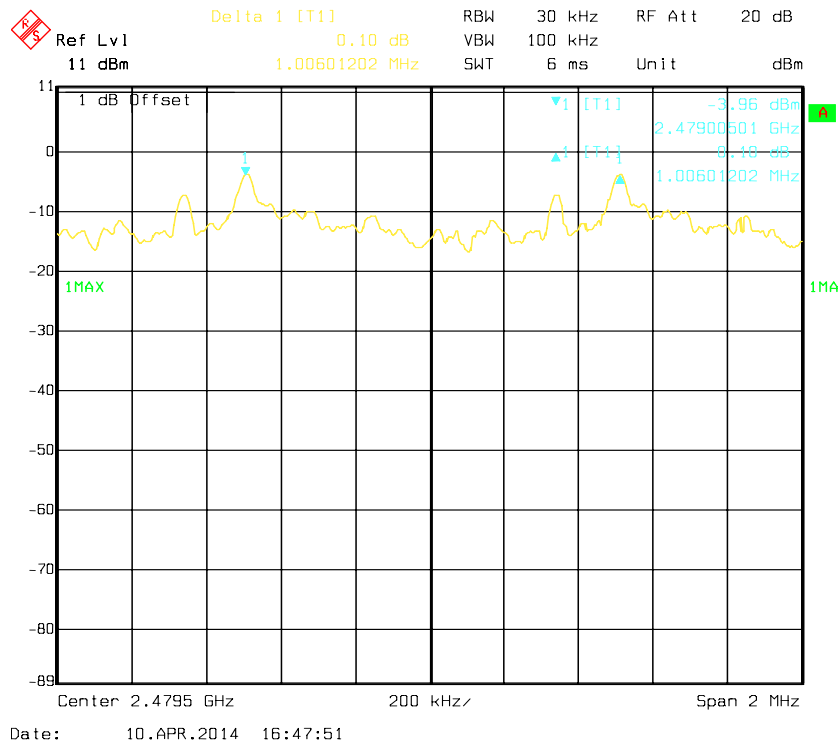
Date: 10.APR.2014 17:08:20

Middle Channel



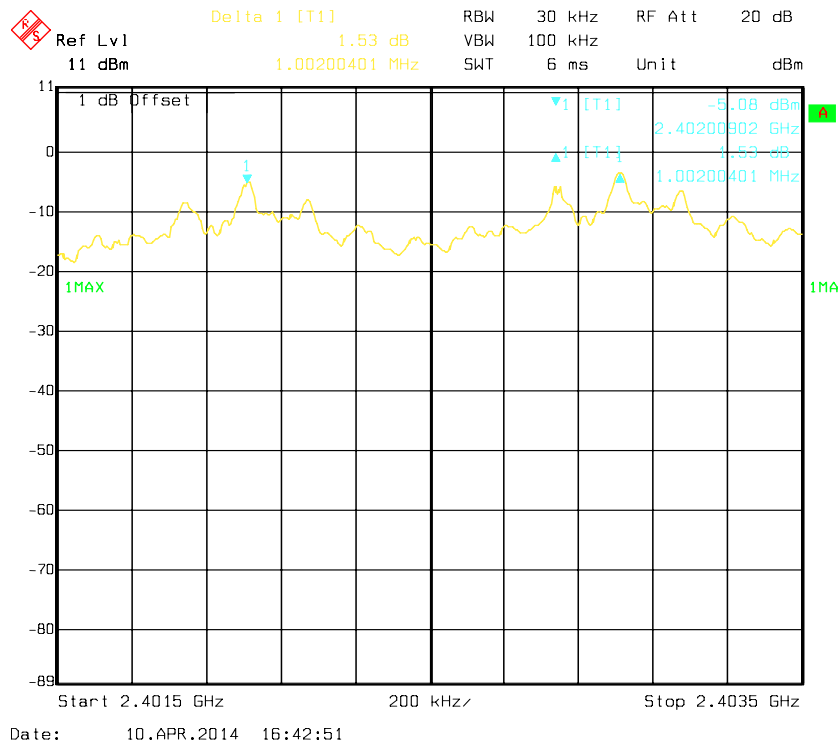
Date: 10.APR.2014 16:48:33

High Channel

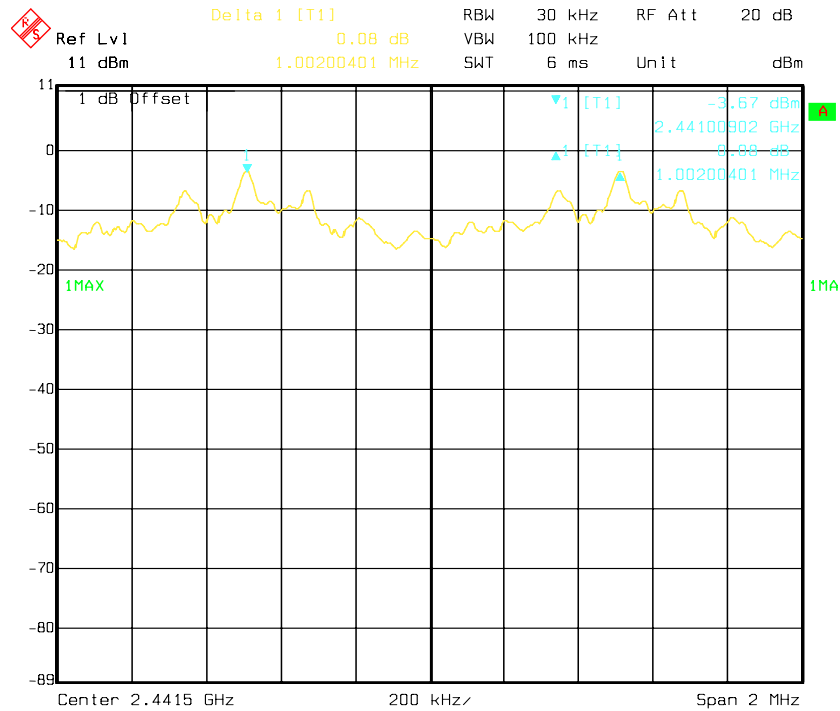


EDR Mode (8-DPSK):

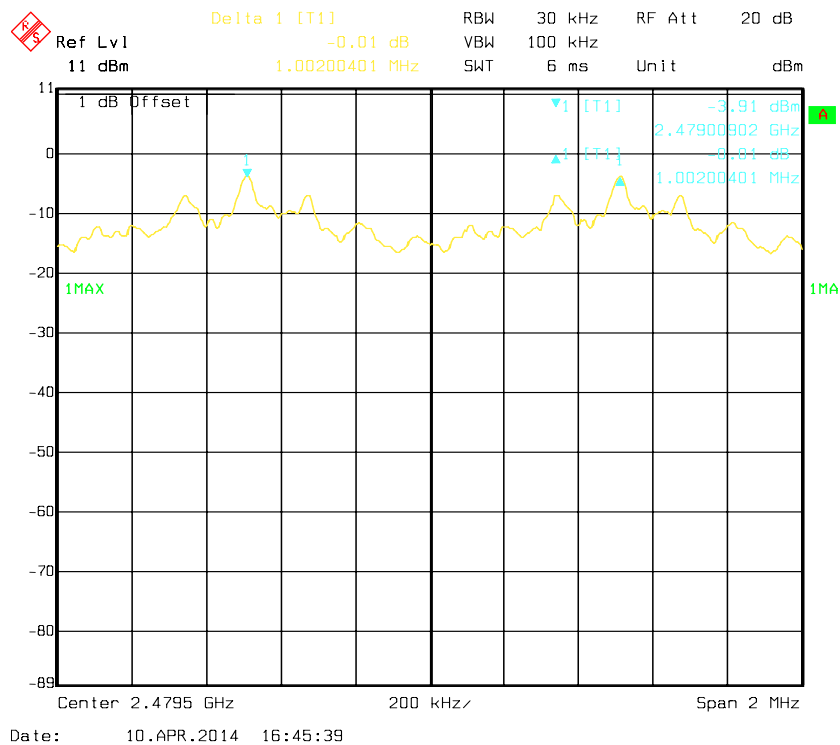
Low Channel



Middle Channel



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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	24.4 °C
Relative Humidity:	67 %
ATM Pressure:	101 kPa

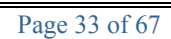
* The testing was performed by Allen Qiao on 2014-04-10.

Test Result: Compliance.

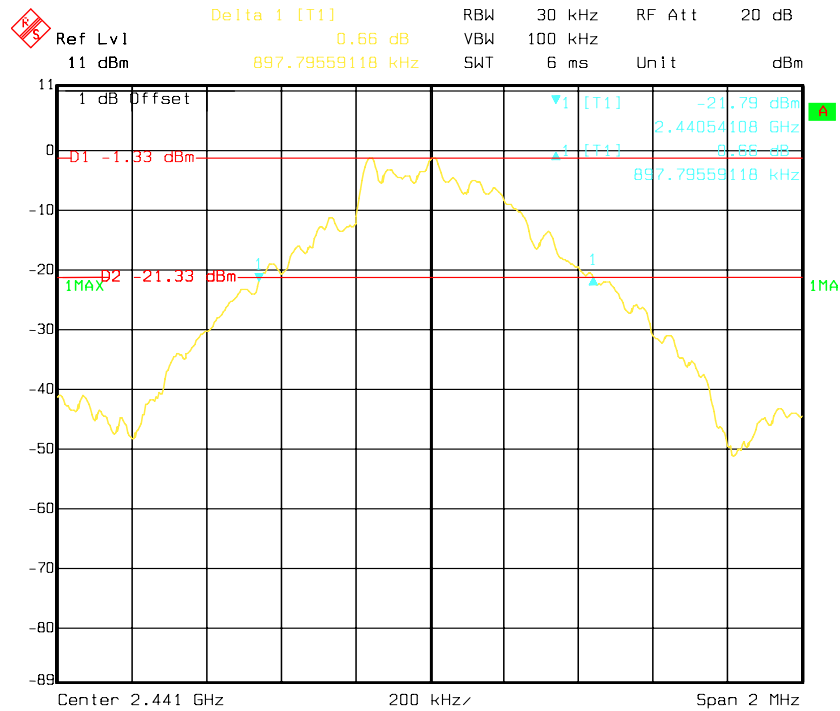
Please refer to following tables and plots

Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
BDR Mode (GFSK)	Low	2402	0.934
	Middle	2441	0.898
	High	2480	0.886
EDR Mode ($\pi/4$ -DQPSK):	Low	2402	1.251
	Middle	2441	1.218
	High	2480	1.218
EDR Mode (8-DPSK):	Low	2402	1.214
	Middle	2441	1.228
	High	2480	1.232

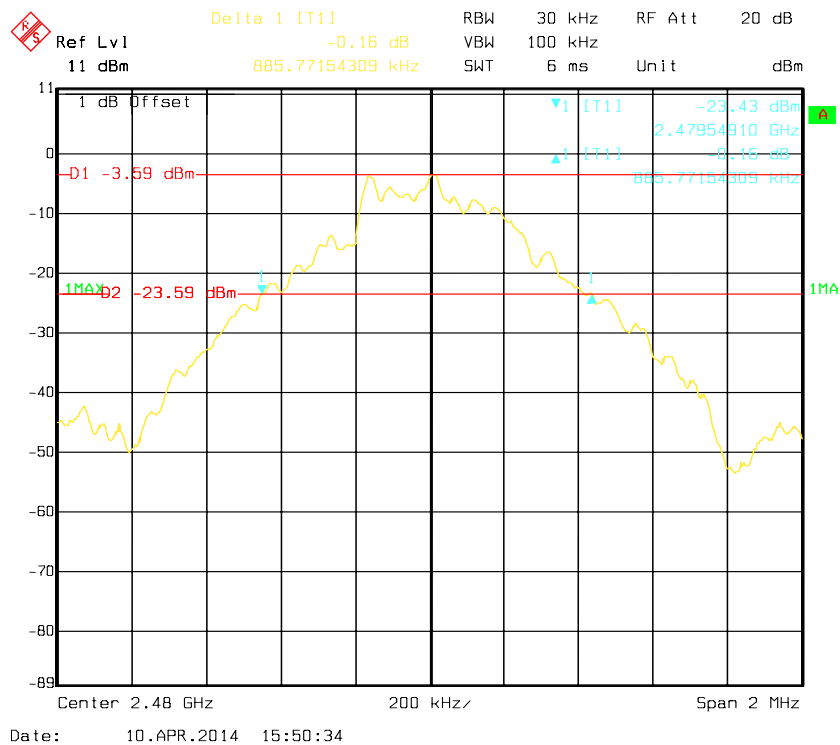
BDR Mode (GFSK):



Middle Channel

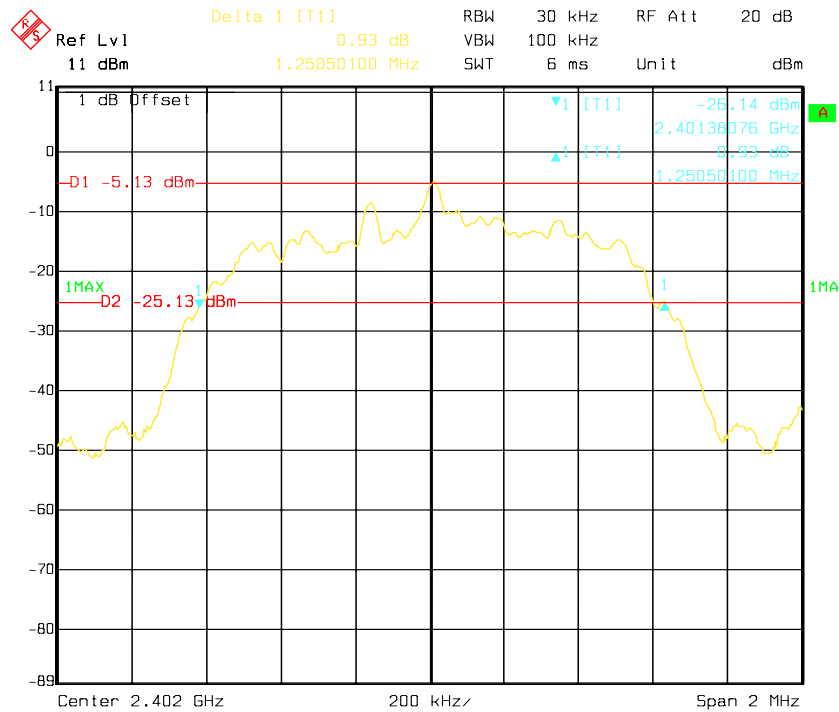


High Channel



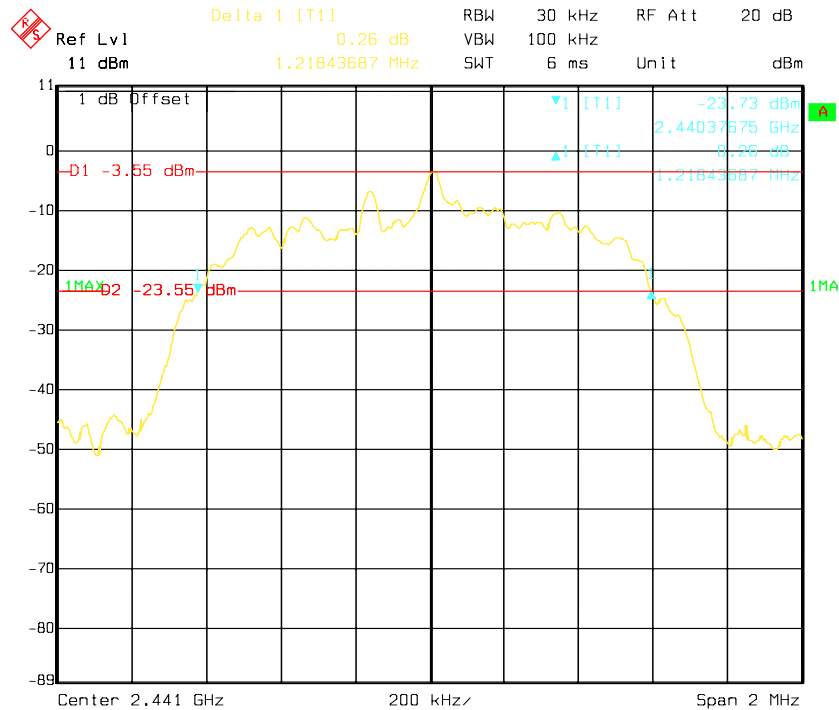
EDR Mode ($\pi/4$ -DQPSK):

Low Channel



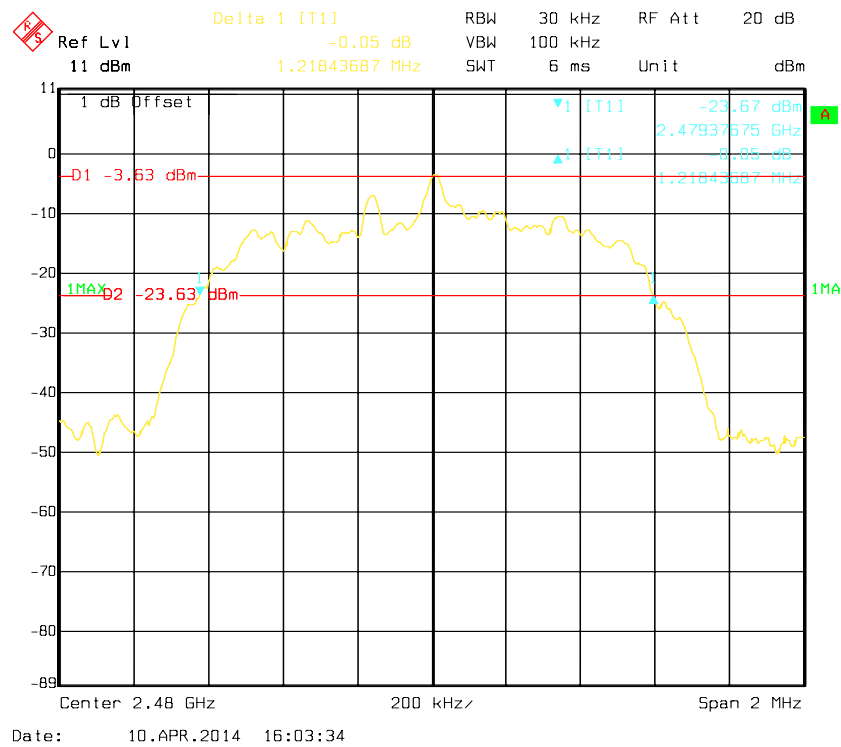
Date: 10.APR.2014 16:07:36

Middle Channel



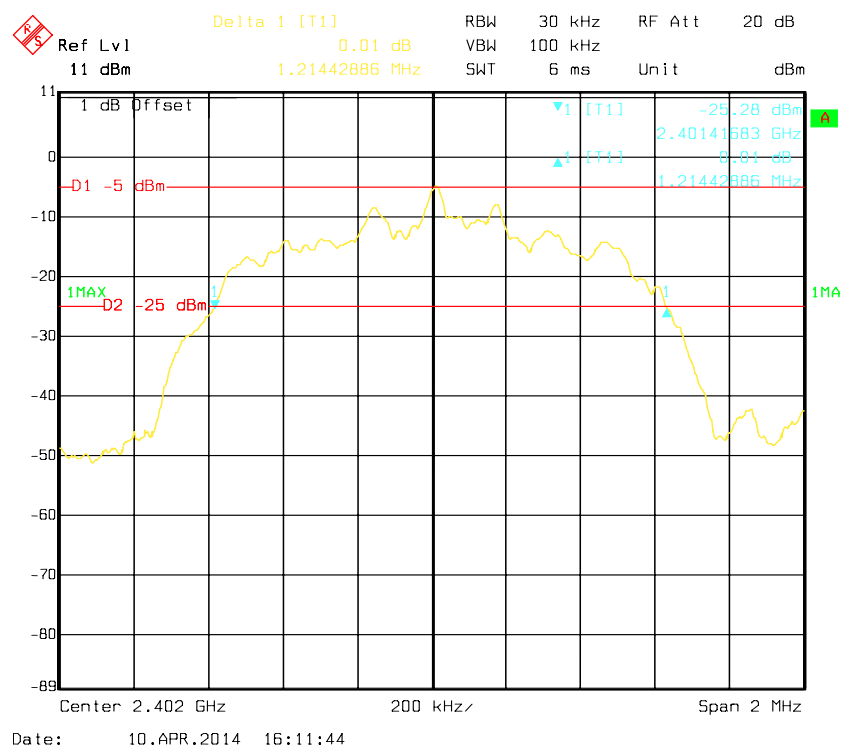
Date: 10.APR.2014 16:04:54

High Channel

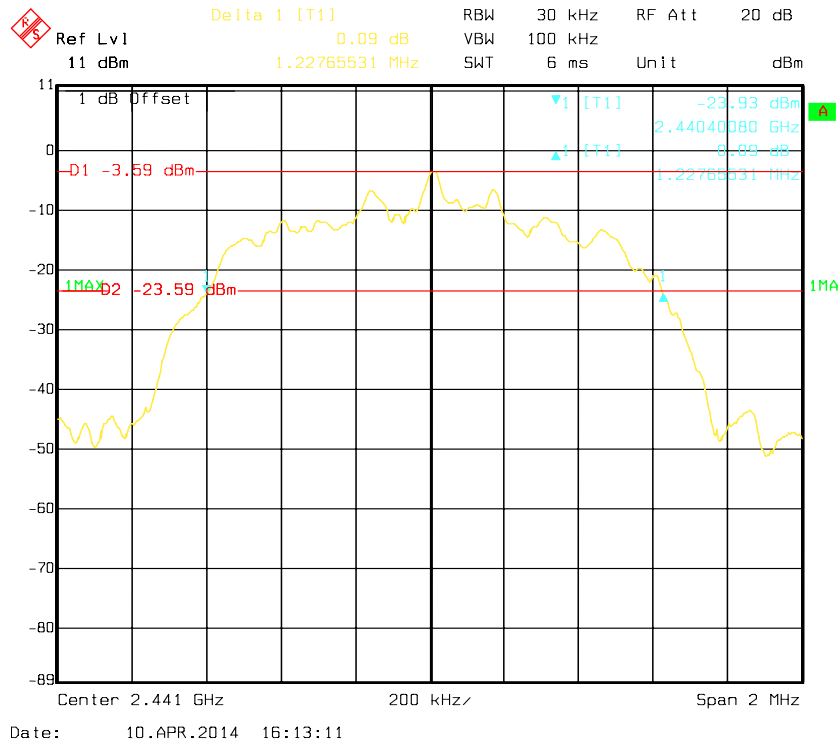


EDR Mode (8-DPSK):

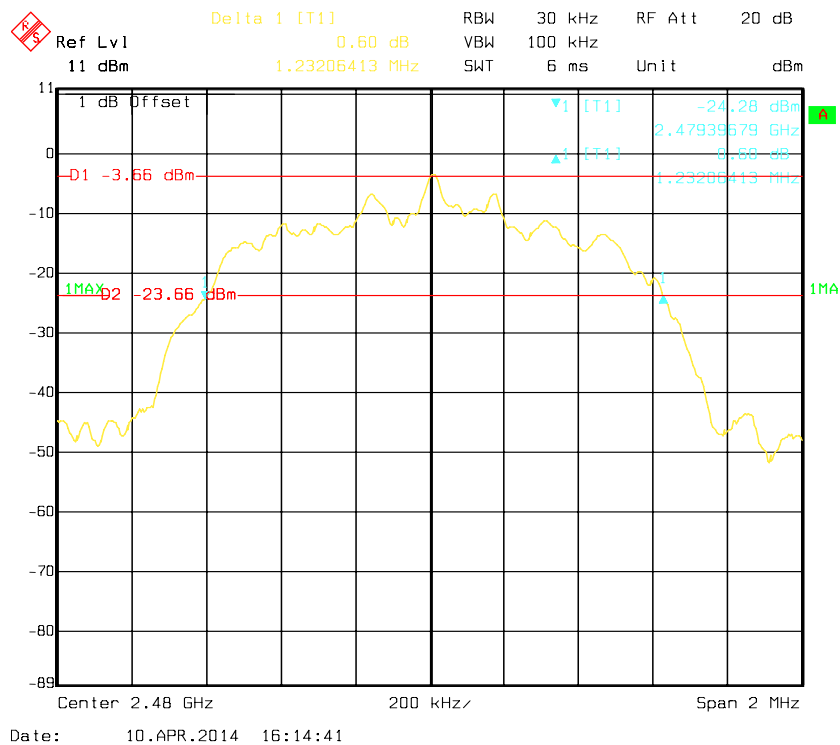
Low Channel



Middle Channel



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
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	24.4 °C
Relative Humidity:	67 %
ATM Pressure:	101 kPa

* The testing was performed by Allen Qiao on 2014-04-10.

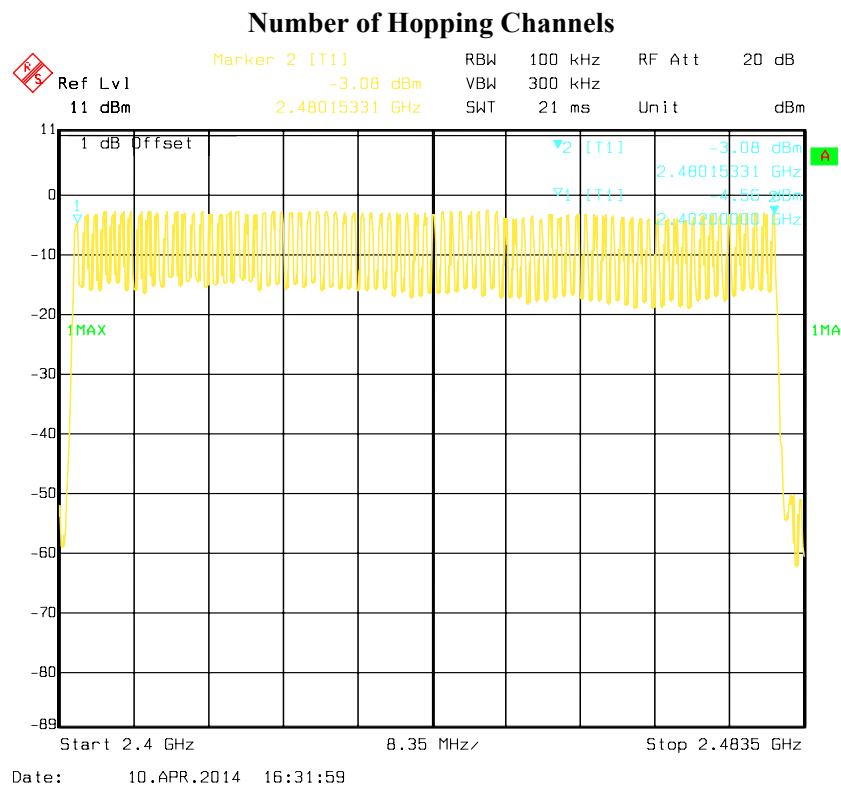
Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

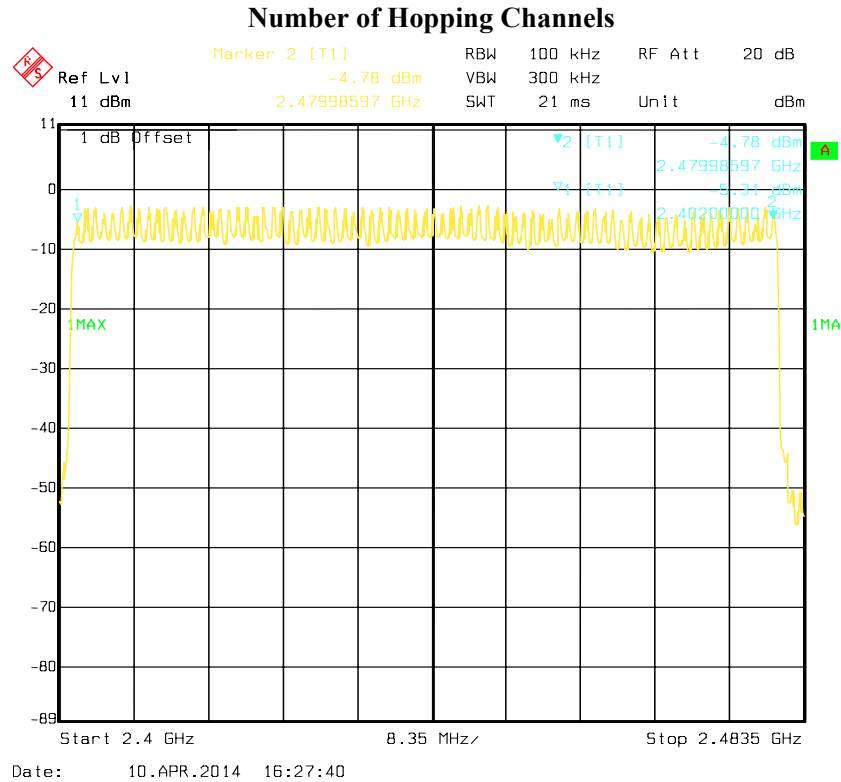
BDR Mode (GFSK):

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	≥15



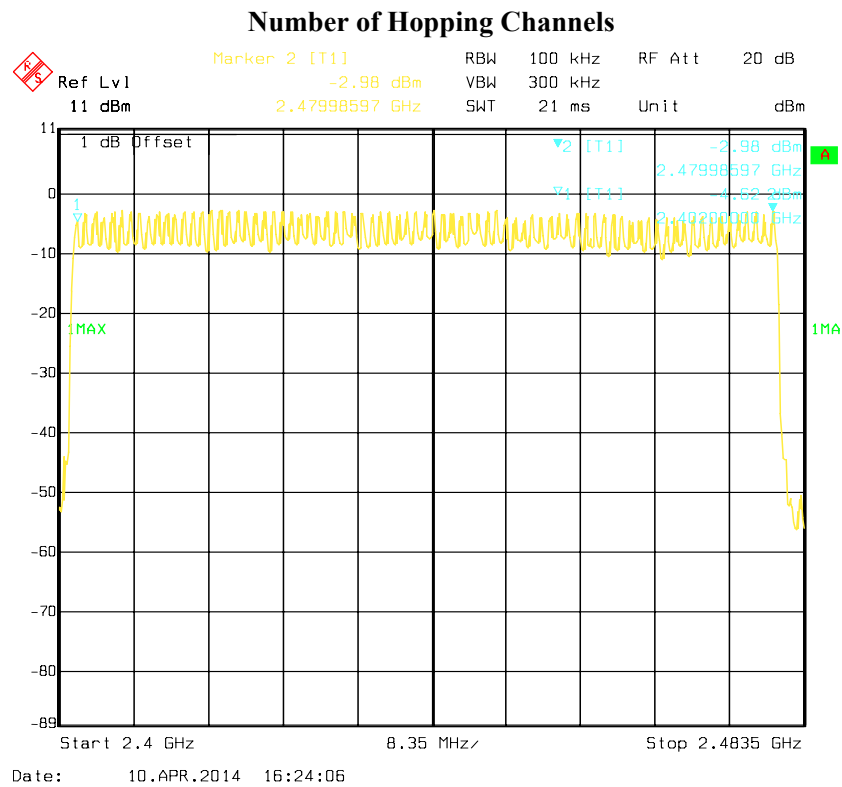
EDR Mode ($\pi/4$ -DQPSK):

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	≥ 15



EDR Mode (8-DPSK):

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	≥ 15



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
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	24.4 °C
Relative Humidity:	67 %
ATM Pressure:	101 kPa

* The testing was performed by Allen Qiao on 2014-04-10.

Test Result: Compliance.

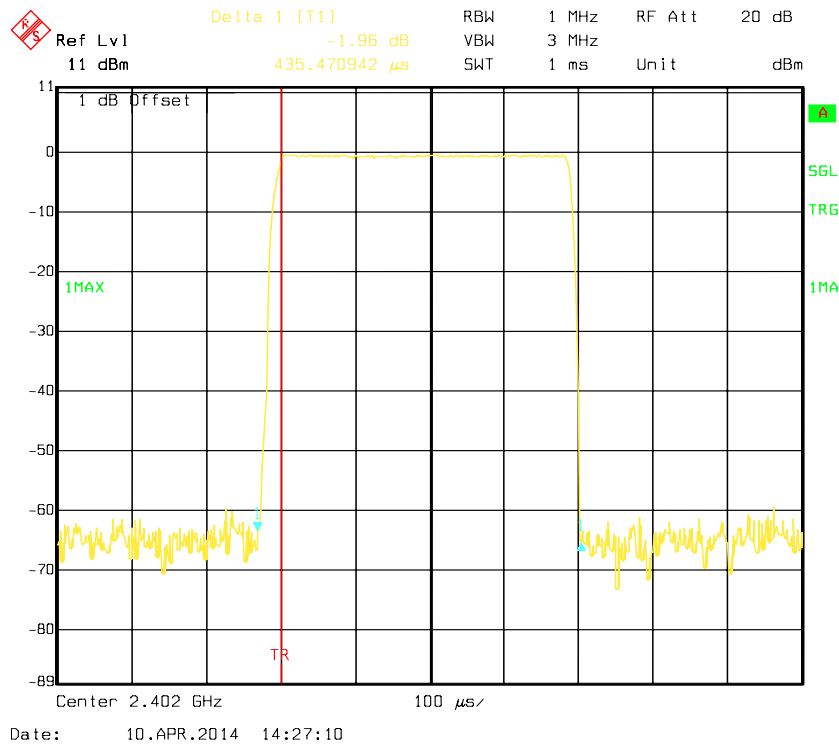
Please refer to following tables and plots

Test Mode: Transmitting

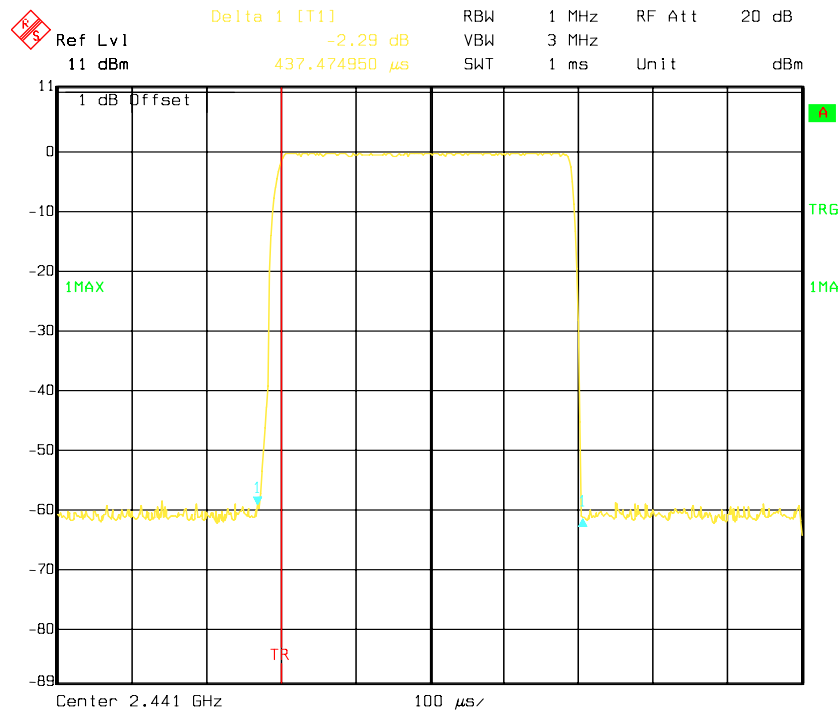
BDR Mode (GFSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.435	0.139	0.4	Pass
	Middle	0.437	0.140	0.4	Pass
	High	0.435	0.139	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH3	Low	1.701	0.272	0.4	Pass
	Middle	1.701	0.272	0.4	Pass
	High	1.701	0.272	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH5	Low	2.964	0.316	0.4	Pass
	Middle	2.974	0.317	0.4	Pass
	High	2.974	0.317	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

DH1: Low Channel

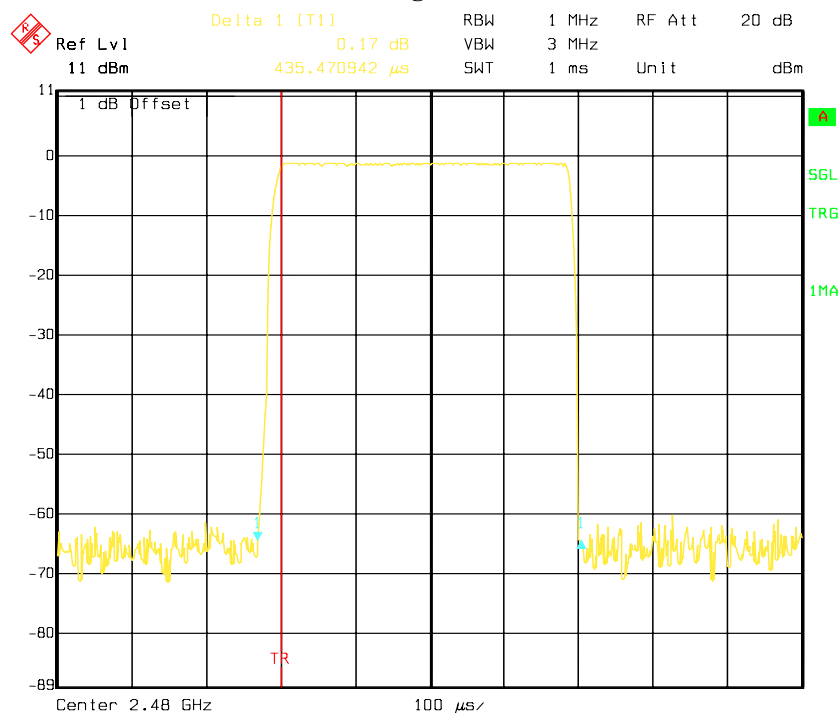


DH1: Middle Channel



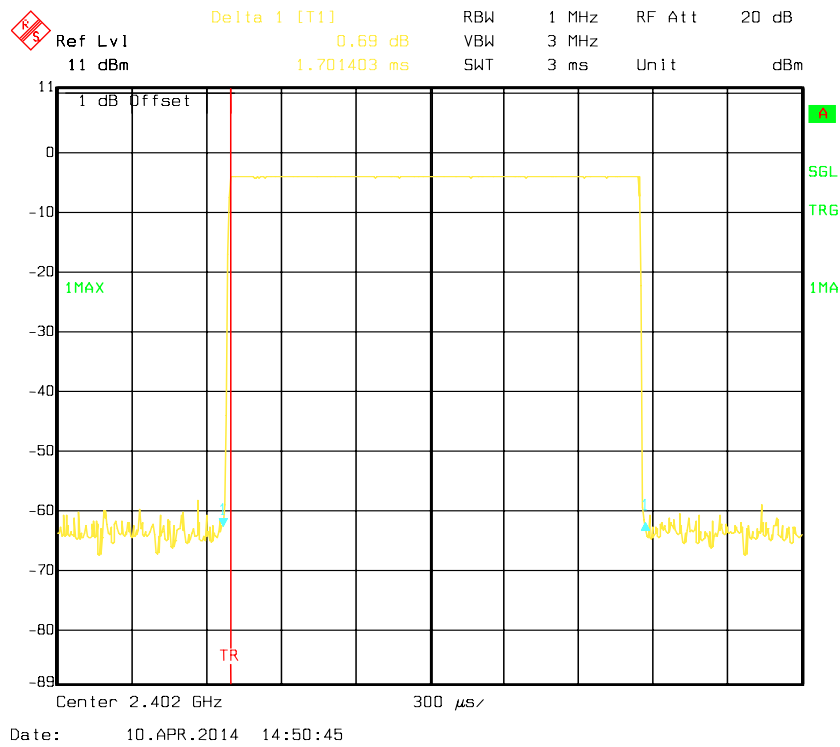
Date: 10.APR.2014 14:25:16

DH1: High Channel

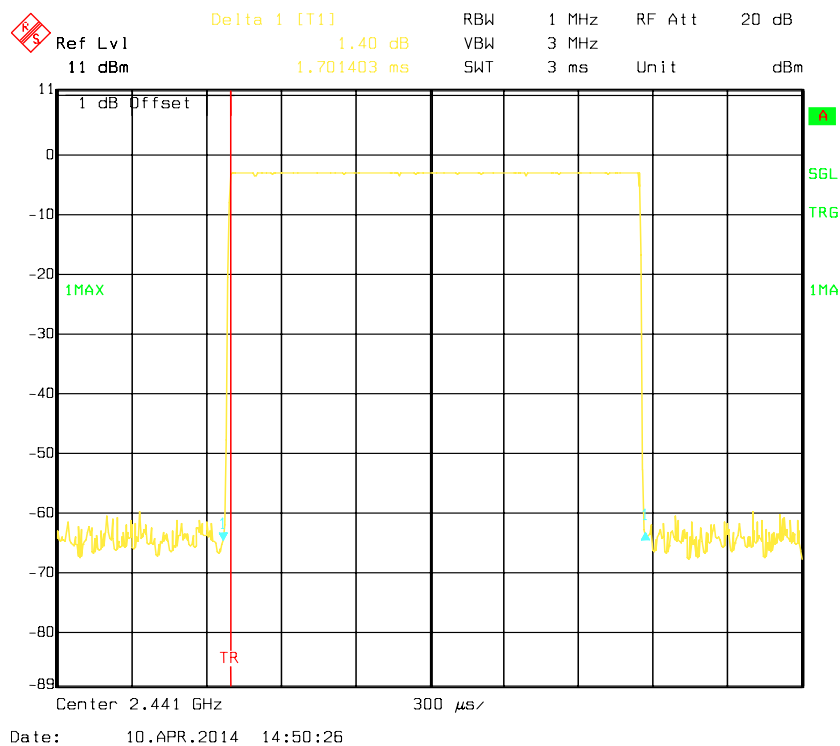


Date: 10.APR.2014 14:29:10

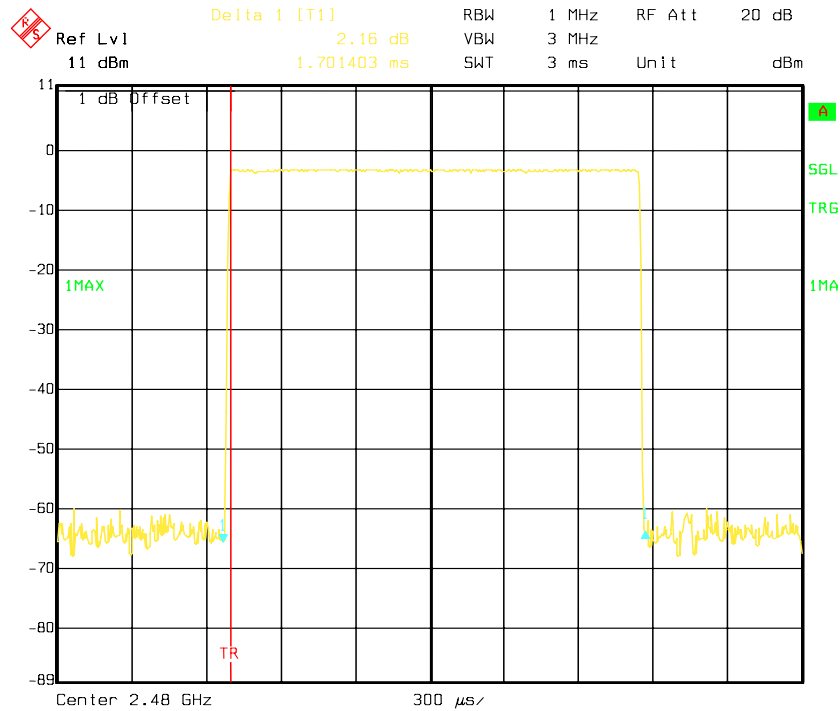
DH3: Low Channel



DH3: Middle Channel

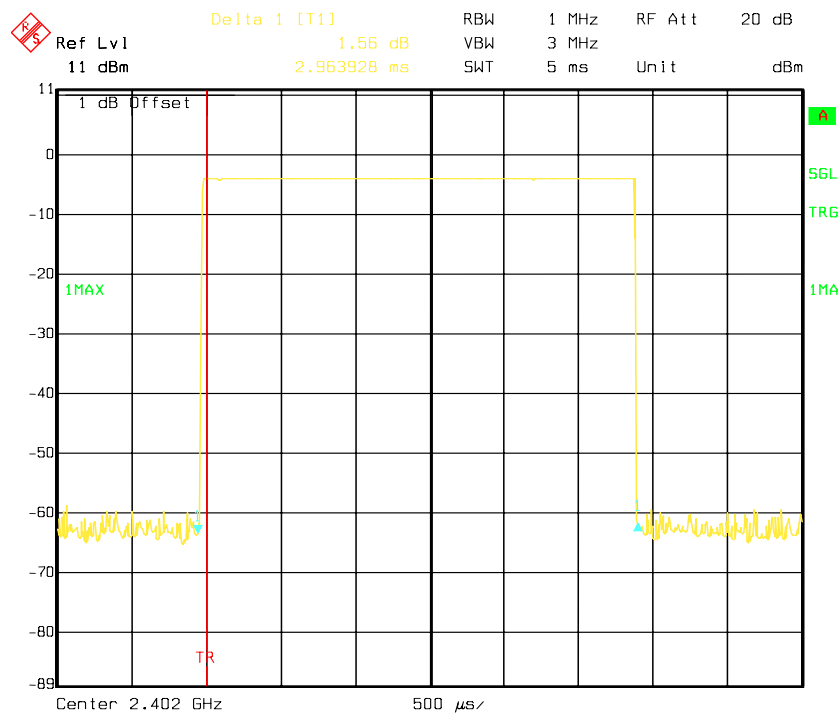


DH3: High Channel



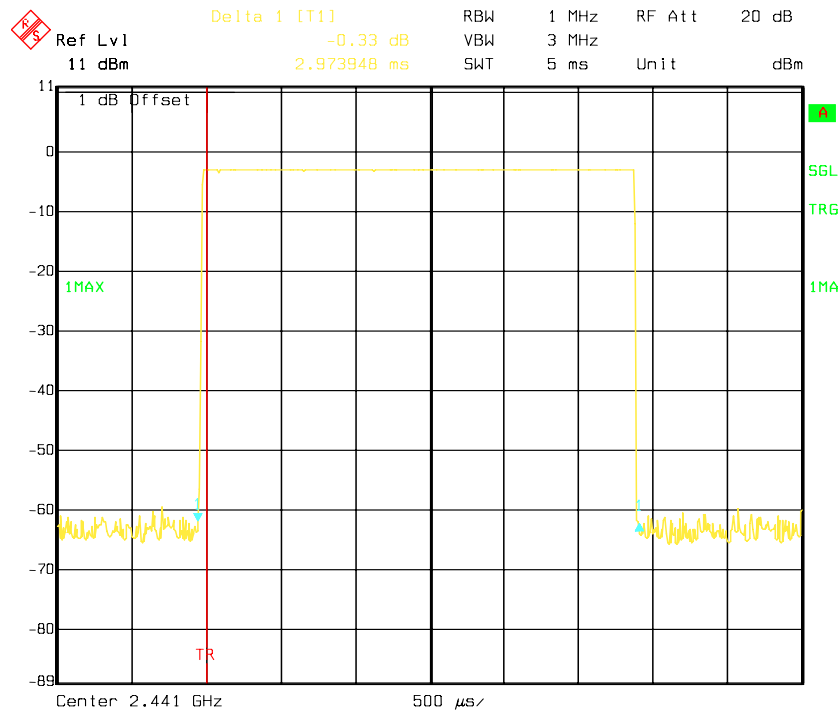
Date: 10.APR.2014 14:50:07

DH5: Low Channel

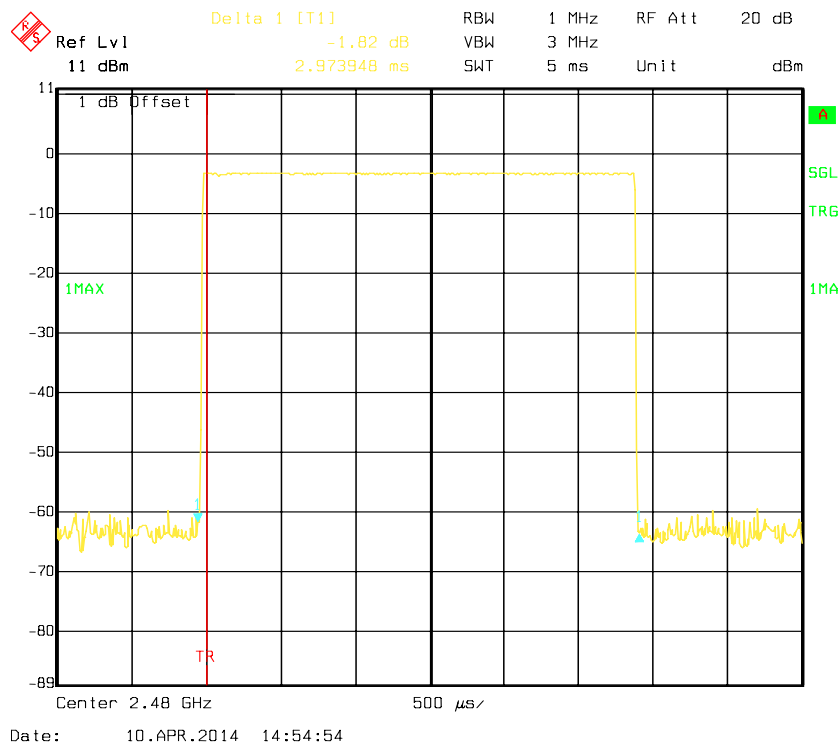


Date: 10.APR.2014 14:53:50

DH5: Middle Channel



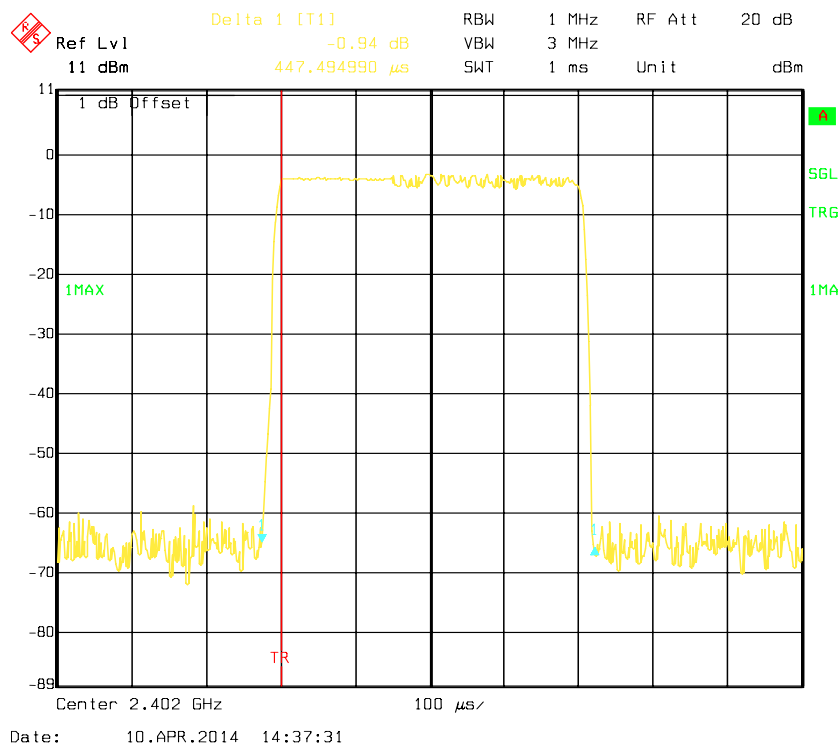
DH5: High Channel



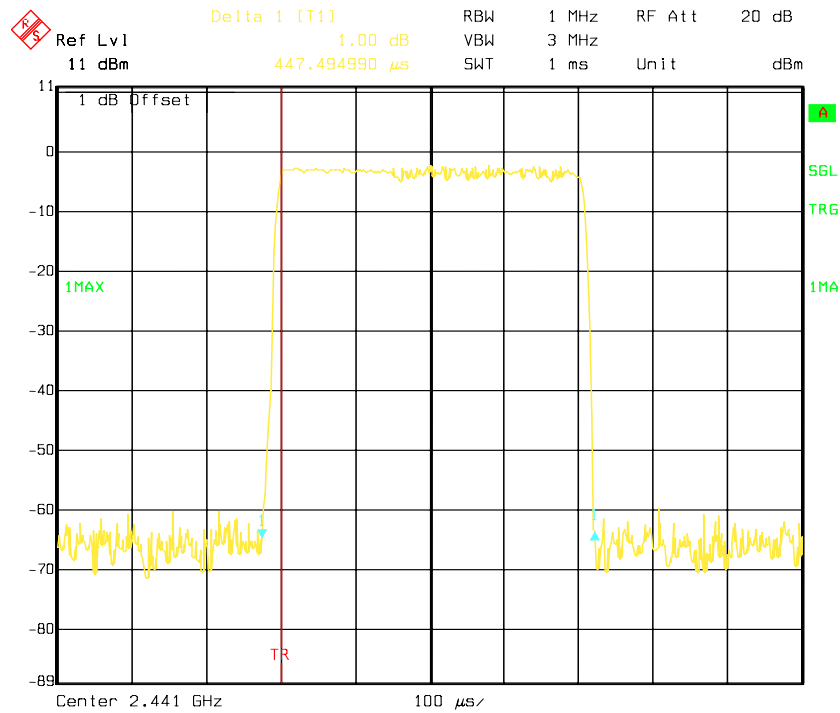
EDR Mode ($\pi/4$ -DQPSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.447	0.143	0.4	Pass
	Middle	0.447	0.143	0.4	Pass
	High	0.447	0.143	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH3	Low	1.707	0.273	0.4	Pass
	Middle	1.707	0.273	0.4	Pass
	High	1.707	0.273	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH5	Low	2.974	0.317	0.4	Pass
	Middle	2.974	0.317	0.4	Pass
	High	2.974	0.317	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

DH1: Low Channel

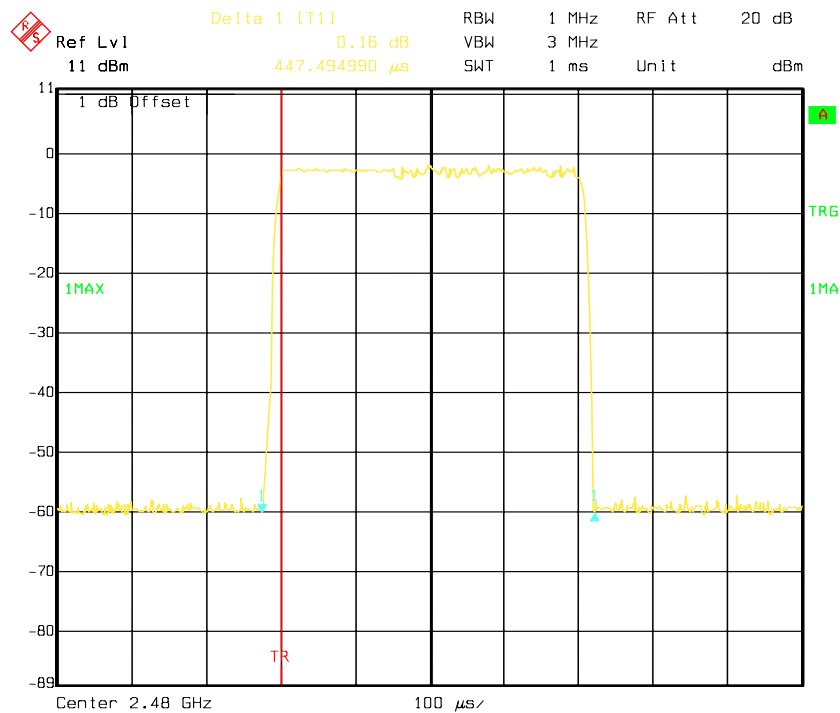


DH1: Middle Channel



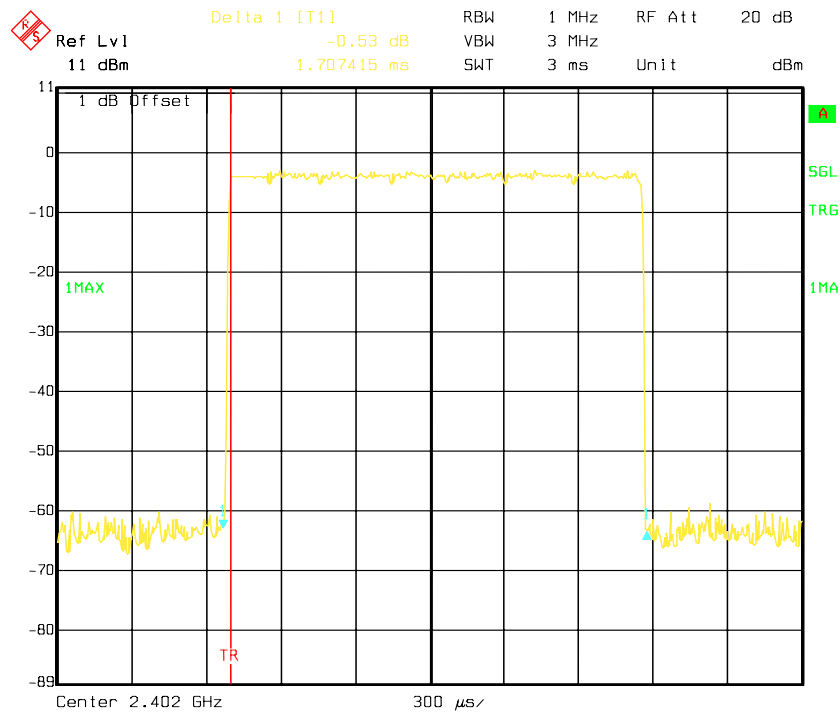
Date: 10.APR.2014 14:36:14

DH1: High Channel



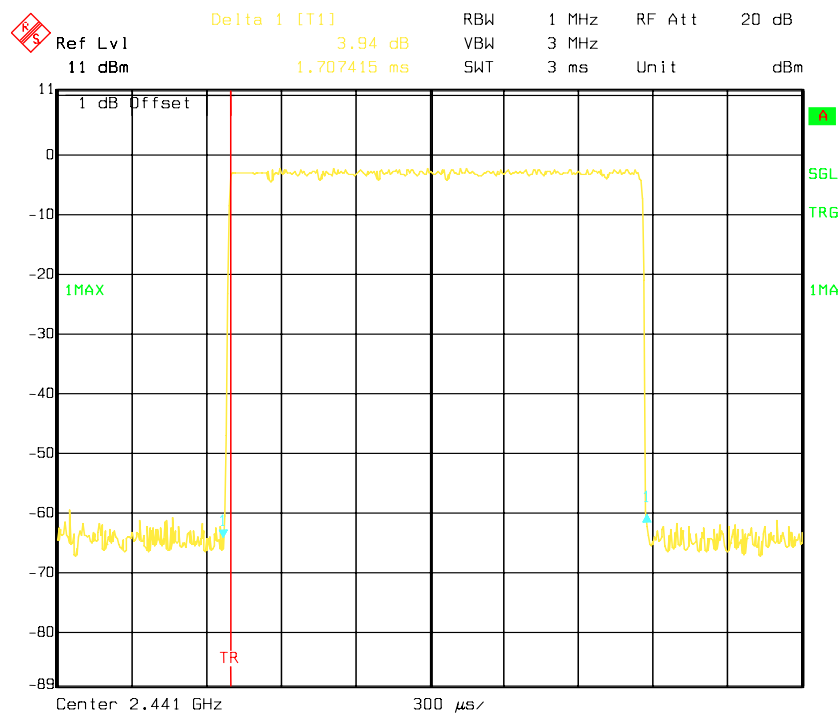
Date: 10.APR.2014 14:35:47

DH3: Low Channel



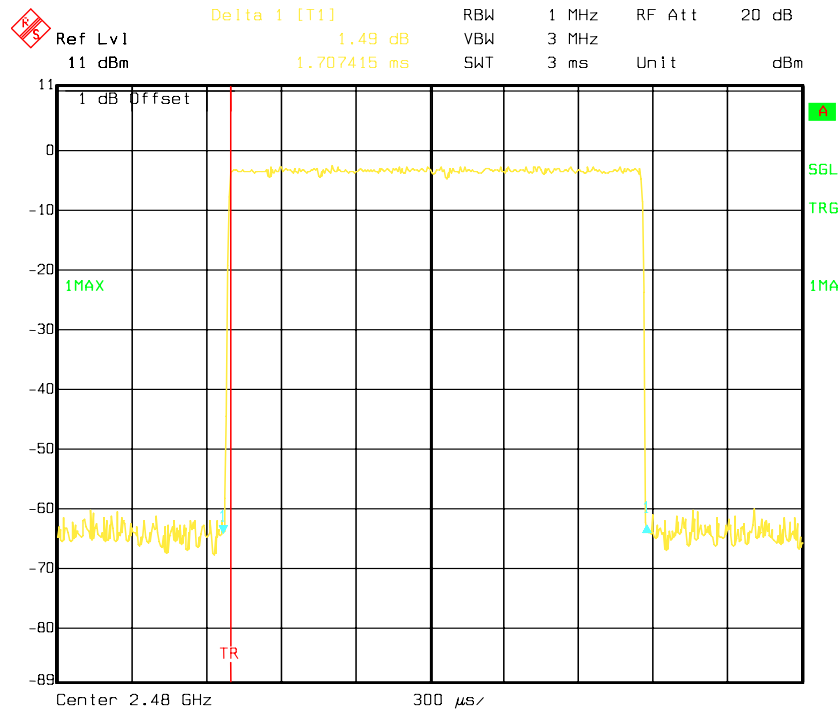
Date: 10.APR.2014 14:47:17

DH3: Middle Channel



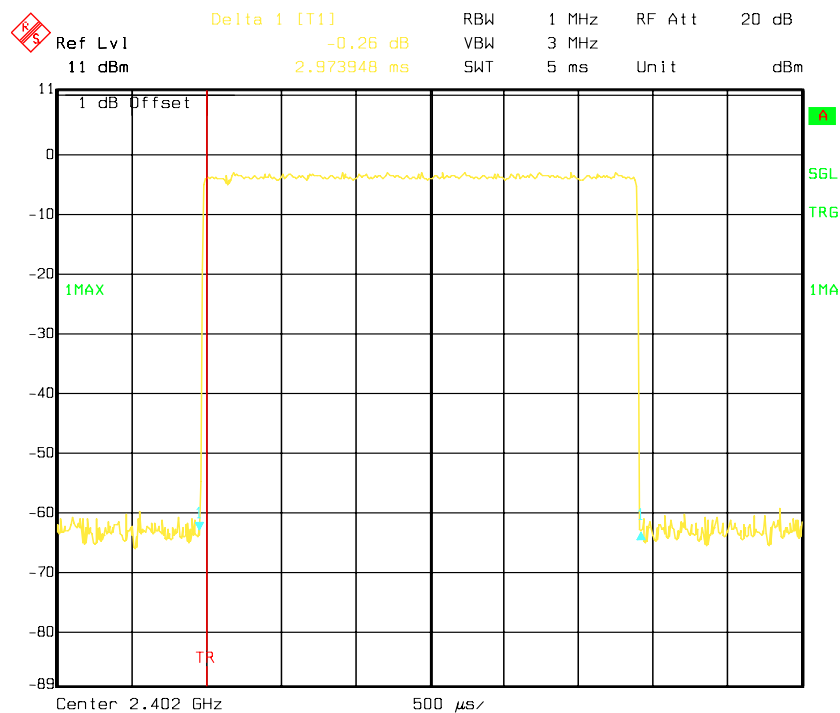
Date: 10.APR.2014 14:47:41

DH3: High Channel



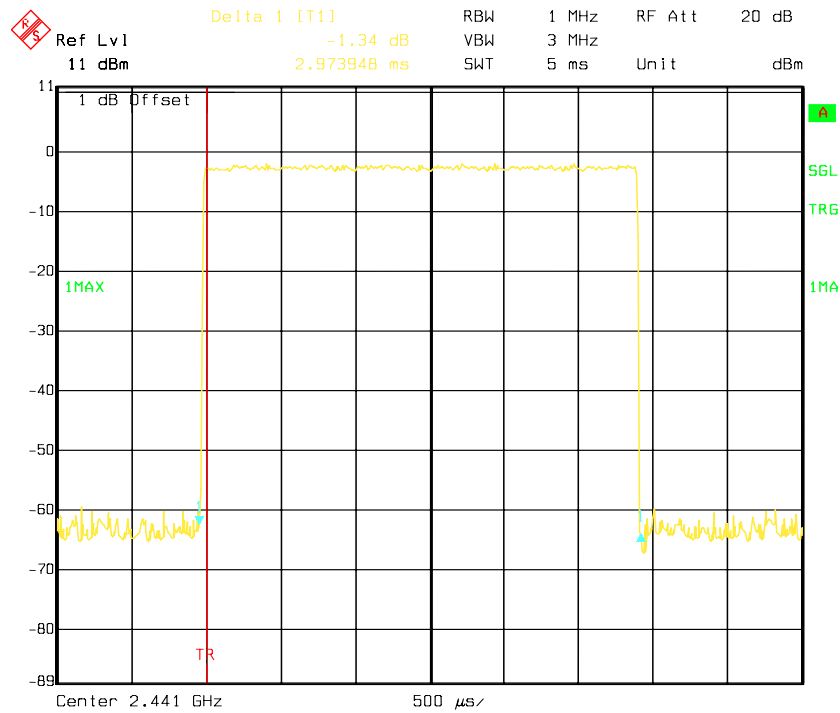
Date: 10.APR.2014 14:48:33

DH5: Low Channel



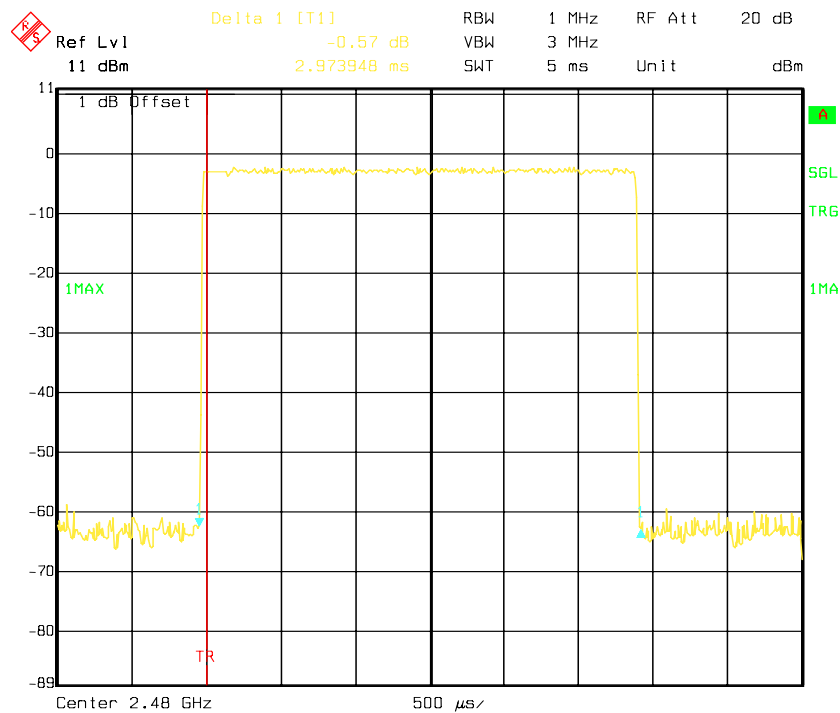
Date: 10.APR.2014 14:58:44

DH5: Middle Channel



Date: 10.APR.2014 14:58:29

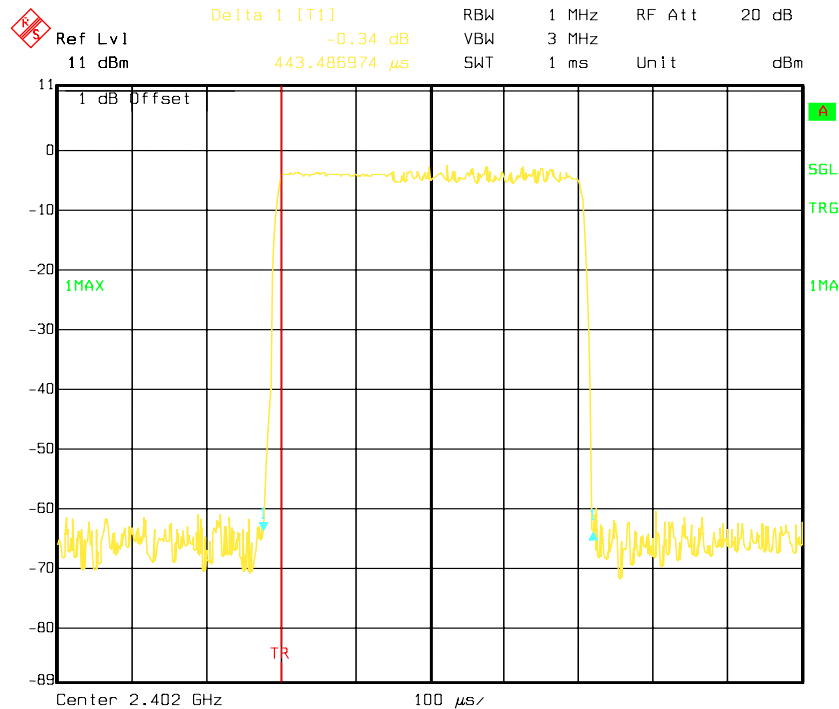
DH5: High Channel



Date: 10.APR.2014 14:59:03

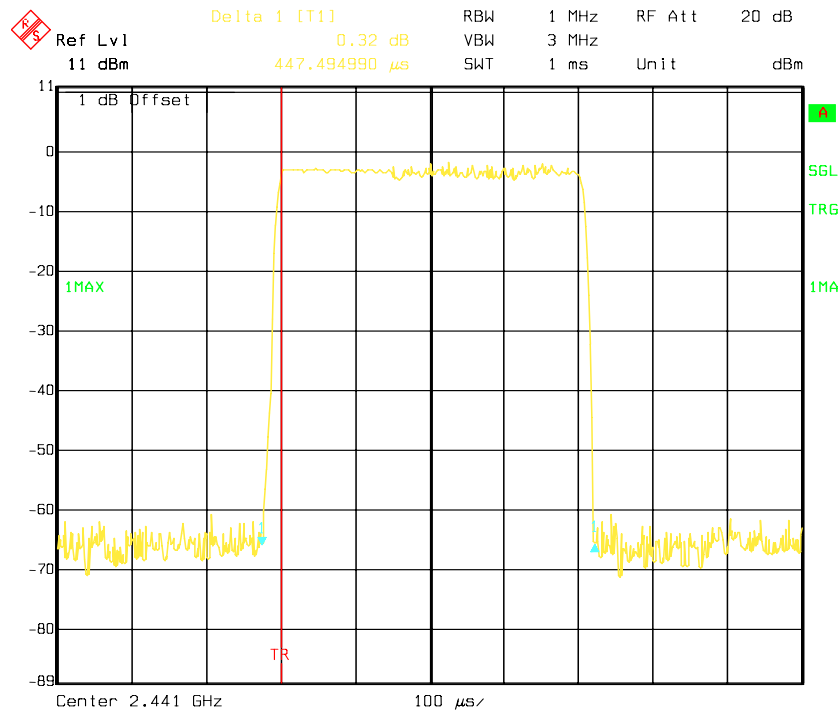
EDR Mode (8-DPSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.443	0.142	0.4	Pass
	Middle	0.447	0.143	0.4	Pass
	High	0.447	0.143	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH3	Low	1.701	0.272	0.4	Pass
	Middle	1.701	0.272	0.4	Pass
	High	1.701	0.272	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH5	Low	2.984	0.318	0.4	Pass
	Middle	2.984	0.318	0.4	Pass
	High	2.984	0.318	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

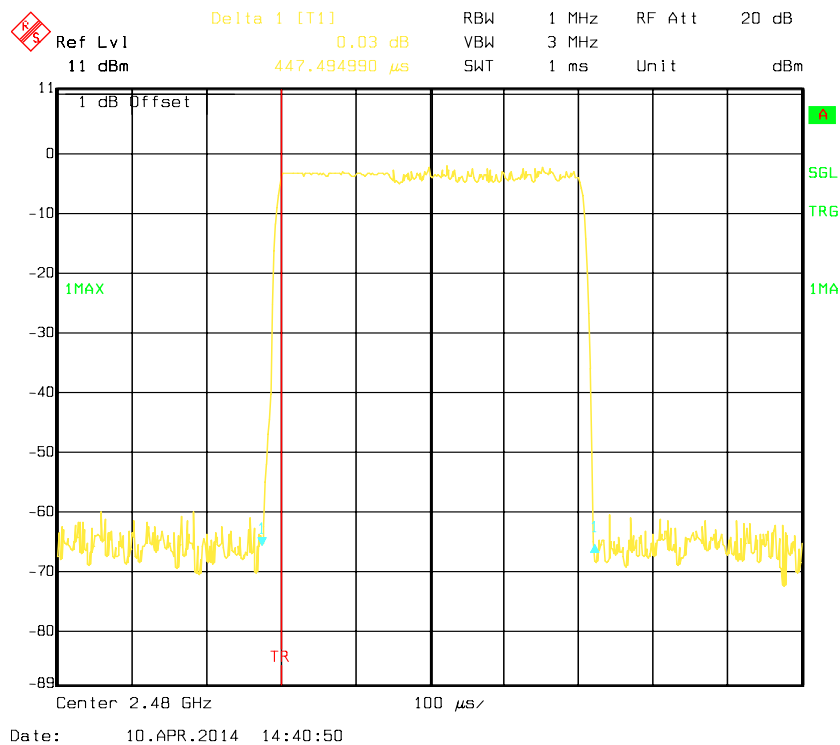
DH1: Low Channel

Date: 10.APR.2014 14:39:23

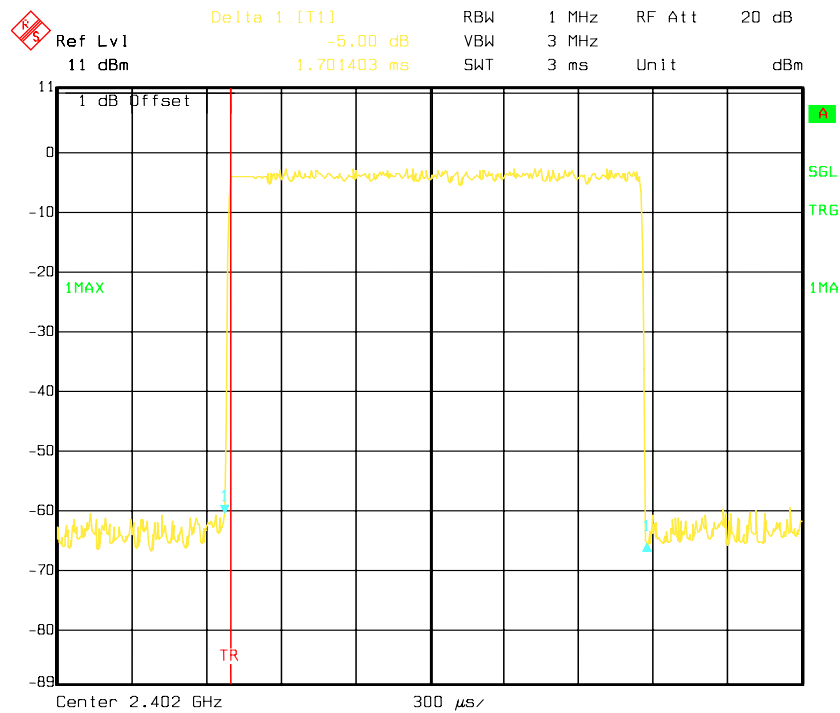
DH1: Middle Channel



DH1: High Channel

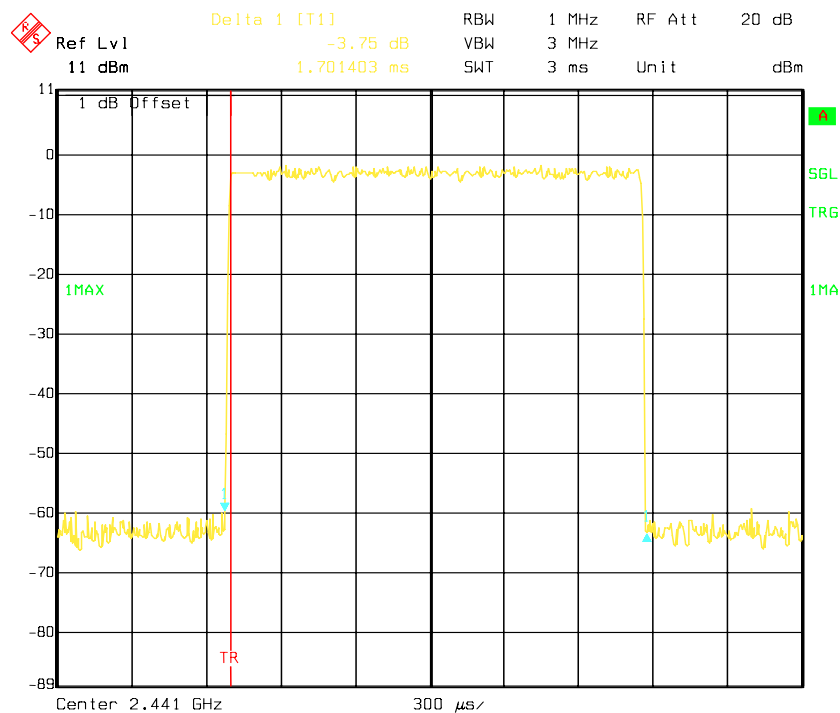


DH3: Low Channel



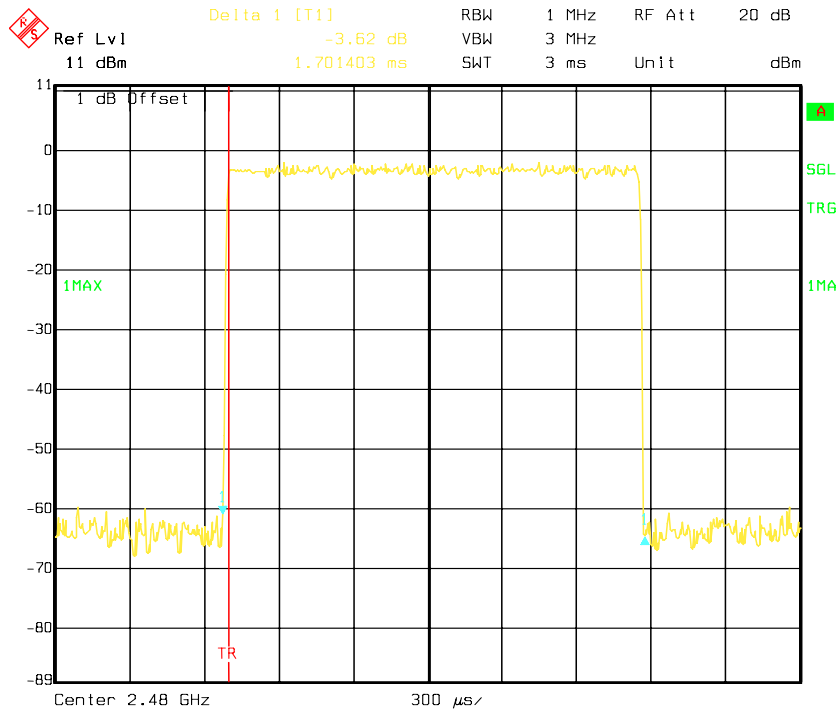
Date: 10.APR.2014 14:45:55

DH3: Middle Channel



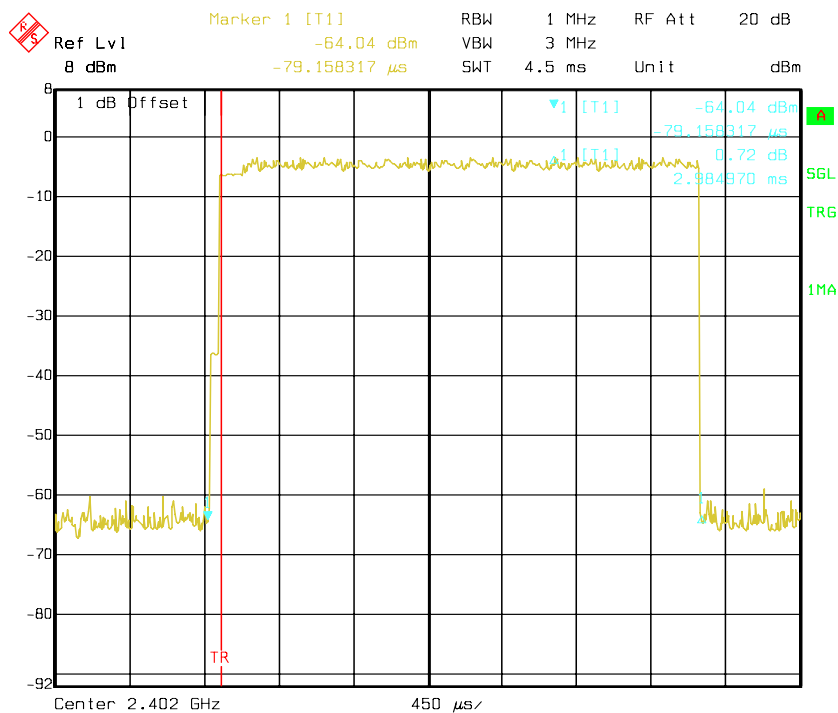
Date: 10.APR.2014 14:45:28

DH3: High Channel



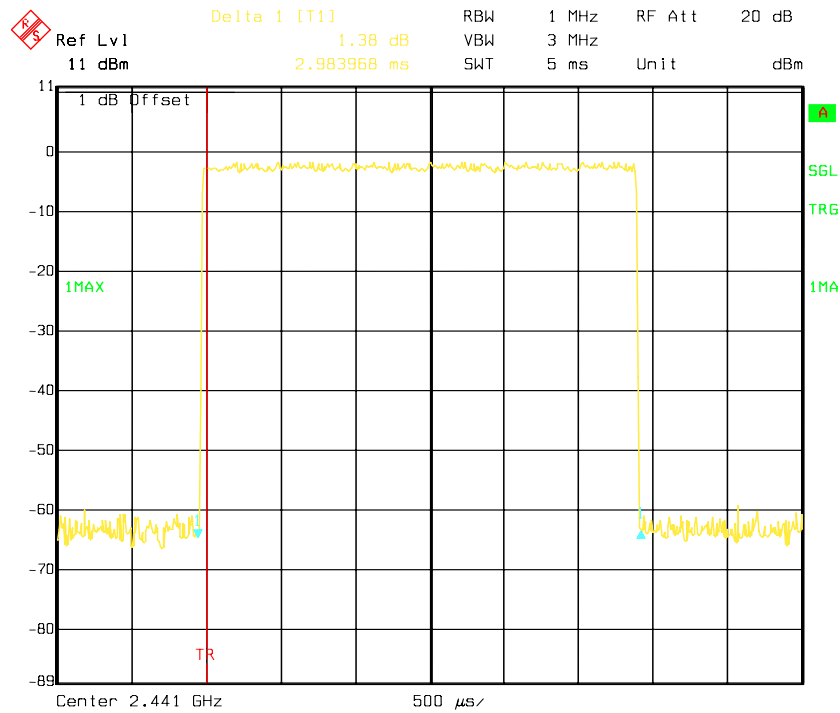
Date: 10.APR.2014 14:44:09

DH5: Low Channel



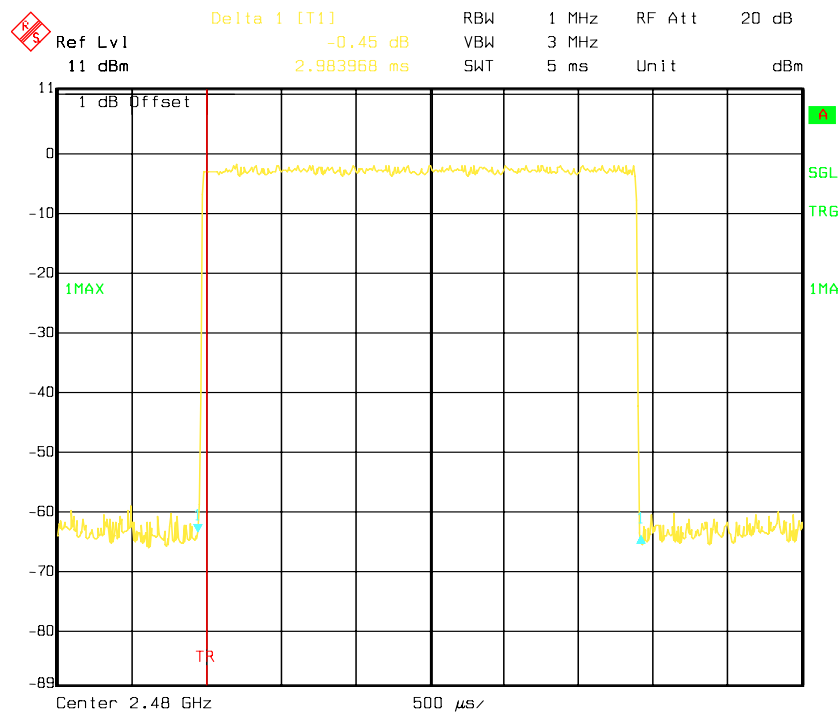
Date: 10.APR.2014 11:26:10

DH5: Middle Channel



Date: 10.APR.2014 15:01:25

DH5: High Channel



Date: 10.APR.2014 15:00:33

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 test equipment.
3. Add a correction factor to the display.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

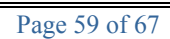
Temperature:	24.4 °C
Relative Humidity:	67 %
ATM Pressure:	101 kPa

* The testing was performed by Allen Qiao on 2014-04-10.

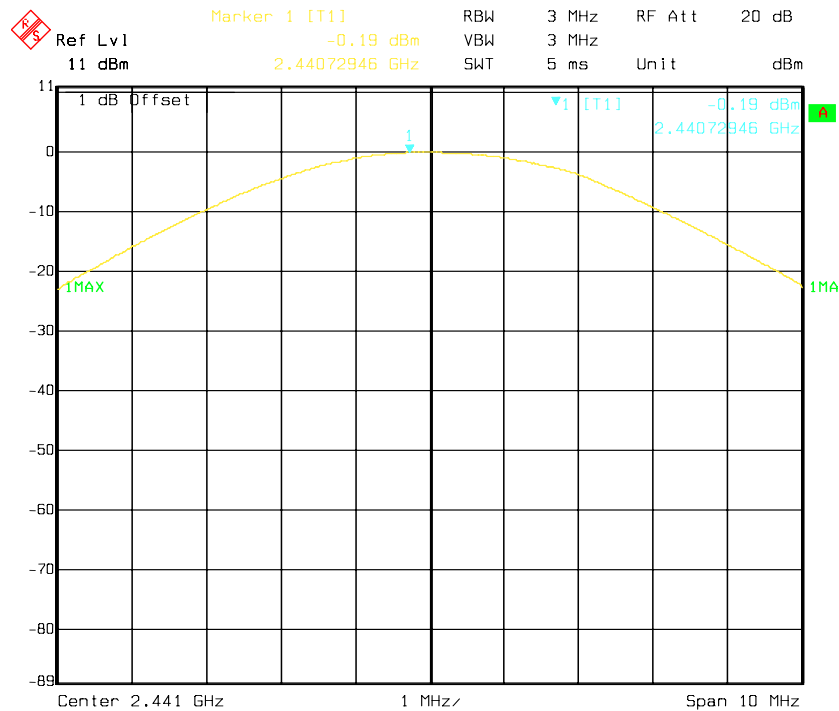
Test Result: Compliance.

Mode	Channel	Frequency (MHz)	Output power (dBm)	Limit (dBm)
BDR Mode (GFSK)	Low	2402	-0.83	30
	Middle	2441	-0.19	30
	High	2480	-0.31	30
EDR Mode ($\pi/4$ -DQPSK)	Low	2402	-3.09	30
	Middle	2441	-1.86	30
	High	2480	-2.04	30
EDR Mode (8-DPSK)	Low	2402	-2.53	30
	Middle	2441	-1.39	30
	High	2480	-1.57	30

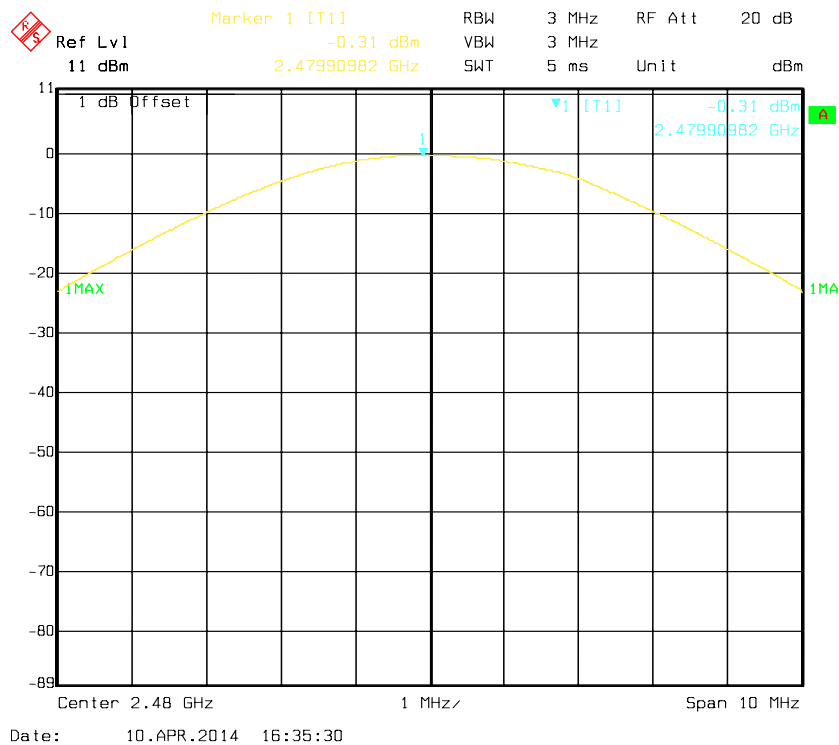
BDR Mode (GFSK):



Output Power, Middle Channel

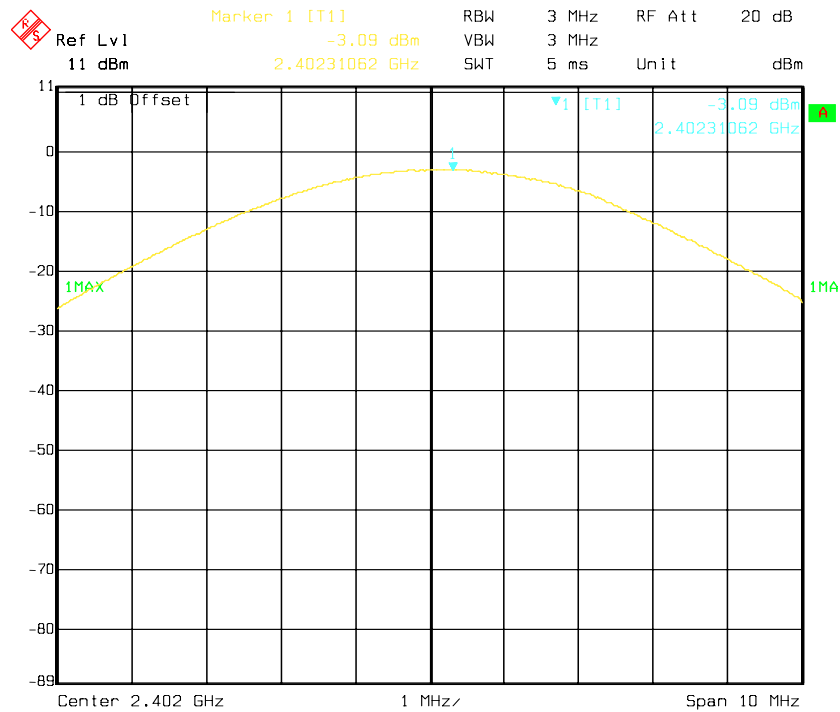


Output Power, High Channel

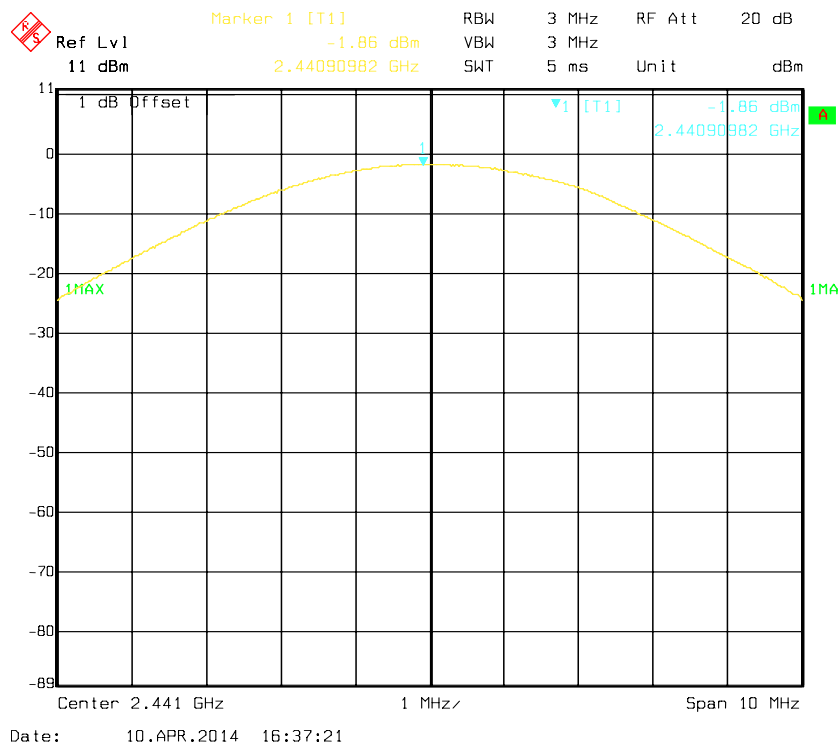


EDR Mode ($\pi/4$ -DQPSK):

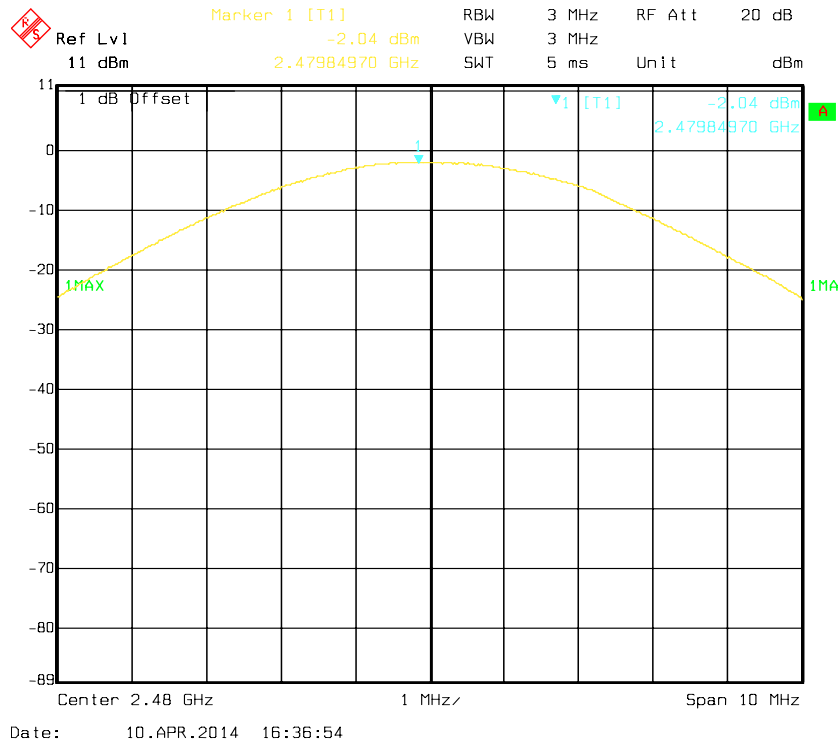
Output Power, Low Channel



Output Power, Middle Channel

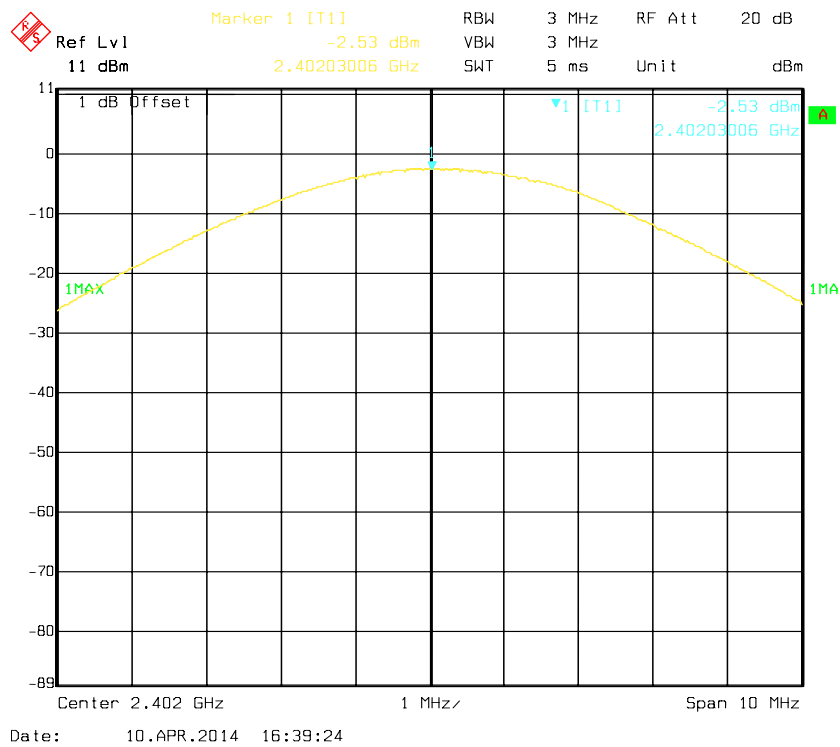


Output Power, High Channel

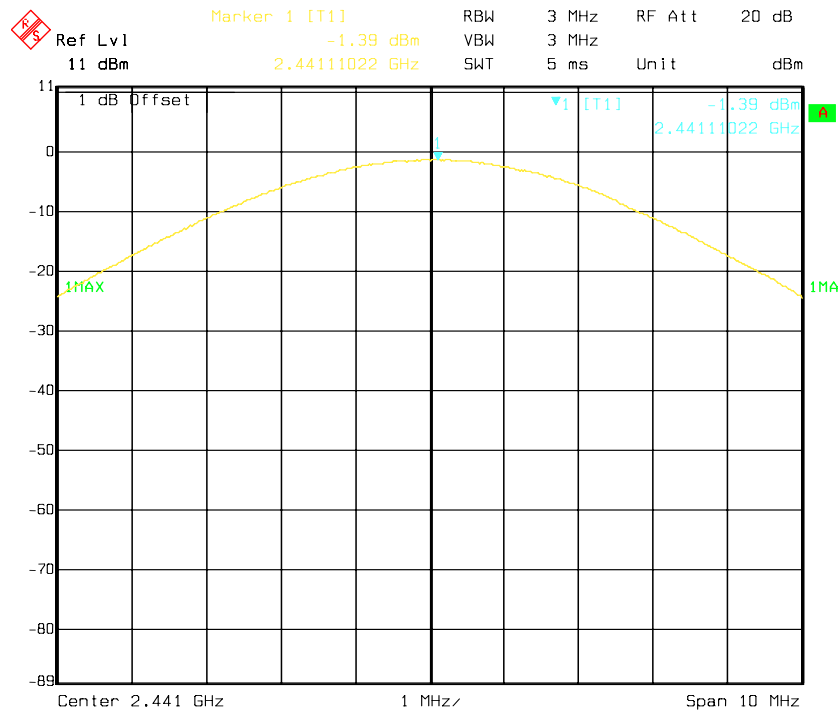


EDR Mode (8-DPSK):

Output Power, Low Channel

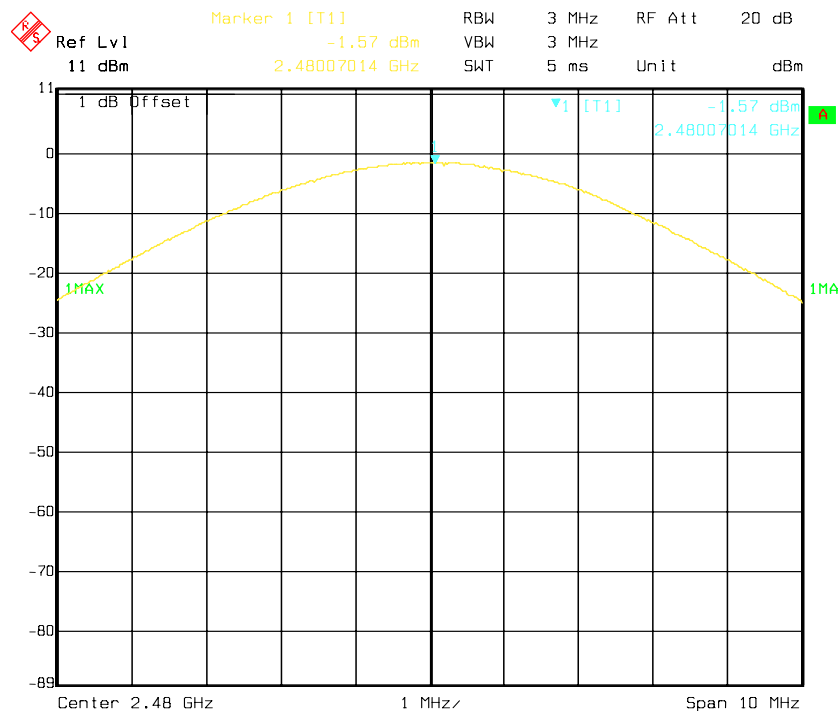


Output Power, Middle Channel



Date: 10.APR.2014 16:39:53

Output Power, High Channel



Date: 10.APR.2014 16:40:17

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
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

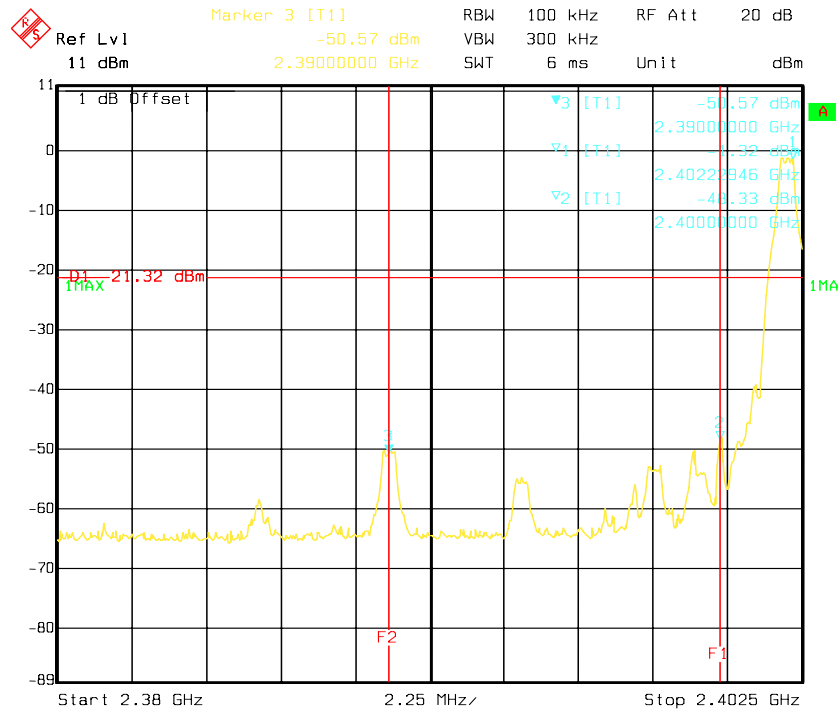
* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

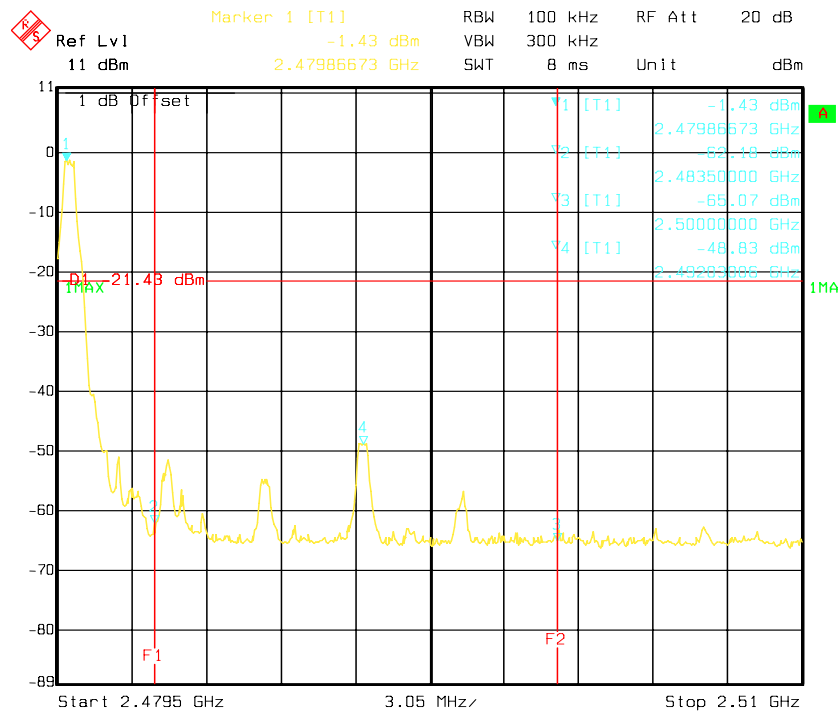
Environmental Conditions

Temperature:	24.4 °C
Relative Humidity:	67 %
ATM Pressure:	101 kPa

* The testing was performed by Allen Qiao on 2014-04-10.

Test Result: Compliance*BDR Mode (GFSK):***Band Edge, Left Side**

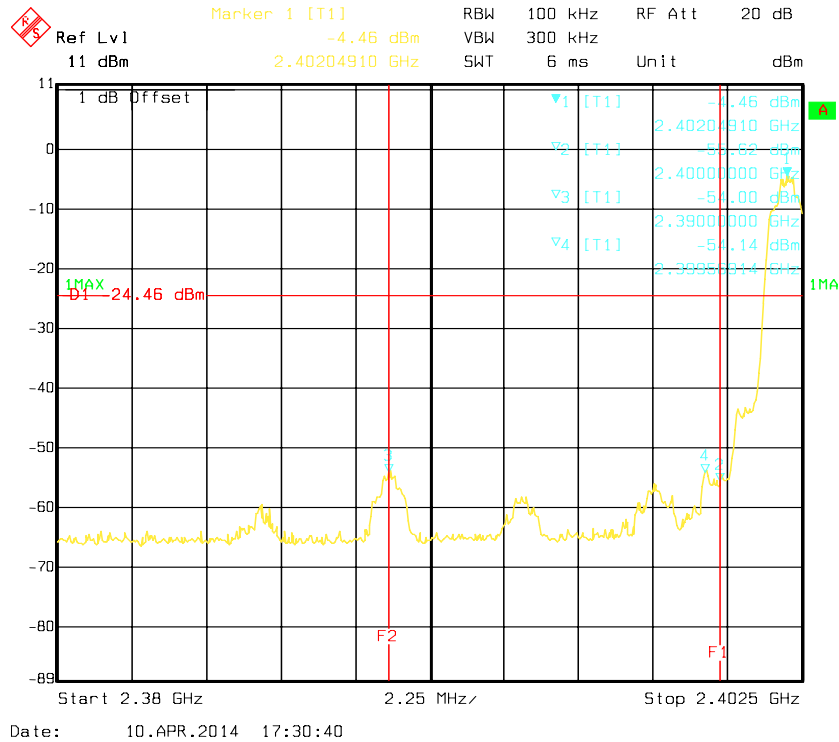
Date: 10.APR.2014 17:21:37

Band Edge, Right Side

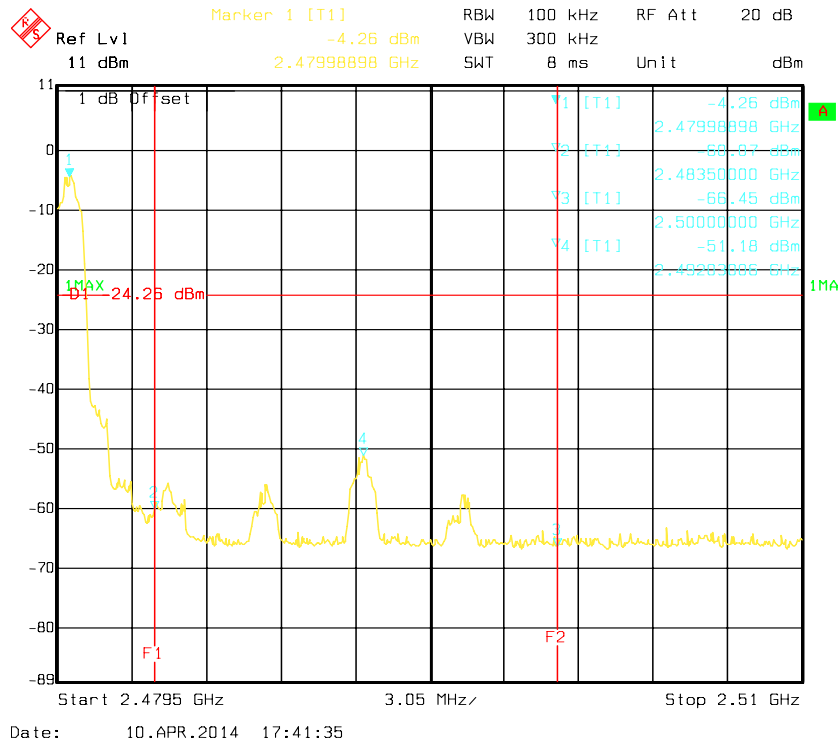
Date: 10.APR.2014 17:53:51

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

Band Edge, Left Side

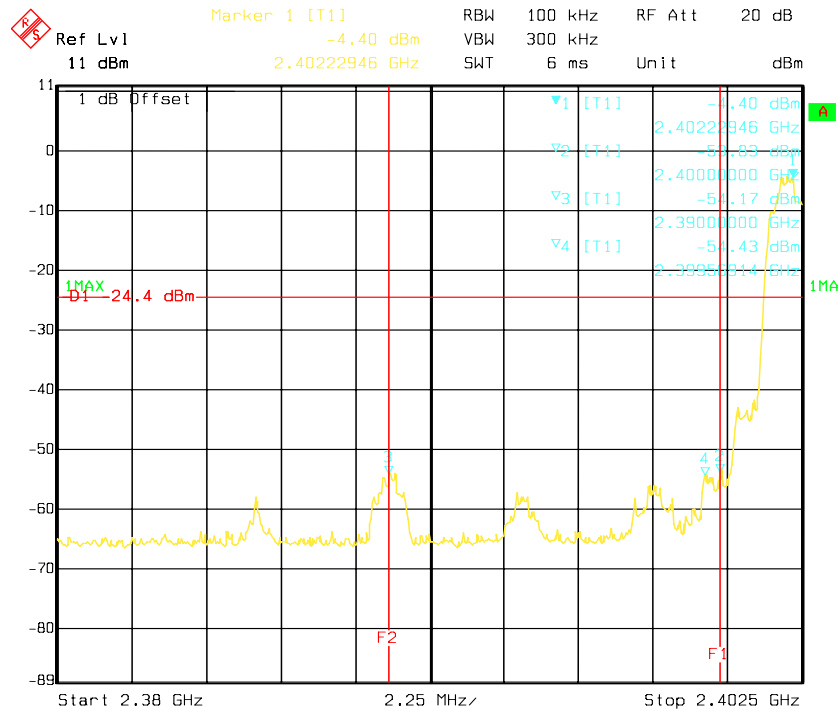


Band Edge, Right Side



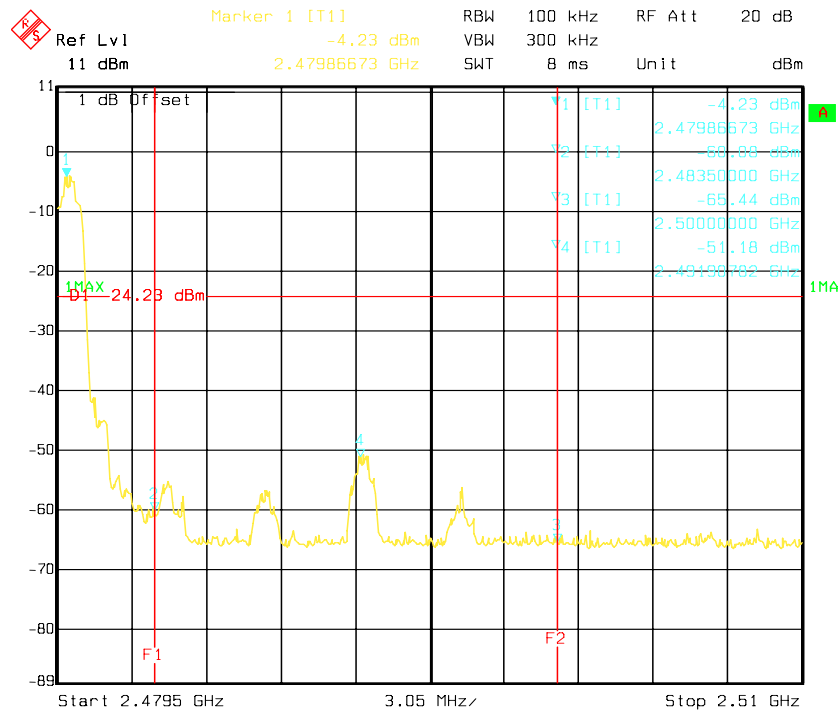
EDR Mode (8-DPSK):

Band Edge, Left Side



Date: 10.APR.2014 17:32:27

Band Edge, Right Side



Date: 10.APR.2014 17:40:05

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