LABCODE: 500069-0

FCC PART 15.247

TEST REPORT

For

Binatone Electronics International Ltd.

Floor 23A, 9 Des Voeux Road West, Sheung Wan, Hong Kong, China

FCC ID: VLJ-SM320

Report Type:	**Product Type:**
Original Report	GSM Mobile Phone

Test Engineer:	Ares Liu
Report Number:	R2DG130917002-00B
Report Date:	2013-10-31
Reviewed By:	Ivan Cao RF Leader
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. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, or any agency of the Federal Government.
* This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★" (Rev.2).
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 5
SYSTEM TEST CONFIGURATION **6**
DESCRIPTION OF TEST CONFIGURATION 6
EUT EXERCISE SOFTWARE 6
EQUIPMENT MODIFICATIONS 6
SUPPORT EQUIPMENT LIST AND DETAILS 6
EXTERNAL CABLE 6
BLOCK DIAGRAM OF TEST SETUP 6
SUMMARY OF TEST RESULTS **7**
FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE **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

DECLARATION OF SIMILARITY 68

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Binatone Electronics International Ltd.*'s product, model number: *SM320 (FCC ID: VLJ-SM320)* (the "EUT") in this report was a *GSM Mobile Phone,* which was measured approximately: 13.0 cm (L) x 5.5 cm (W) x1.5 cm (H), input voltage: DC 3.7V from lithium battery or DC 5.0V from adapter.

Adapter Information:
Model: A31-501000
Input: 100-240VAC, 50/60Hz, 0.2A
Output: DC 5.0V, 1000mA
Manufacturer: Shenzhen Aohai Technology Co.,Ltd

Note: The series product, model Voxtel-SM320, SM320 are electrically identical, the difference between them is just the model name, we selected The SM320 for fully testing, the details was explained in the attached declaration letter.

All measurement and test data in this report was gathered from production sample serial number: 130917002 (Assigned by BACL, Dongguan). The EUT was received on 2013-10-11.

Objective

This report is prepared on behalf of *Binatone Electronics International Ltd.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission rules

The tests were performed in order to determine the Bluetooth 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 22H&24E PCE submissions with FCC ID: *VLJ-SM320*.

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). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (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.

Additionally, Bay Area Compliance Laboratories Corp. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).

NVLAP®
LABCODE: 500069-0

The current scope of accreditations can be found at http://ts.nist.gov/standards/scopes/5000690.htm

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which was provided by manufacturer. The engineering mode was controlled by the Bluetooth Tester.

EUT Exercise Software

No software was used in the testing.

Equipment Modifications

No modification was made to the EUT.

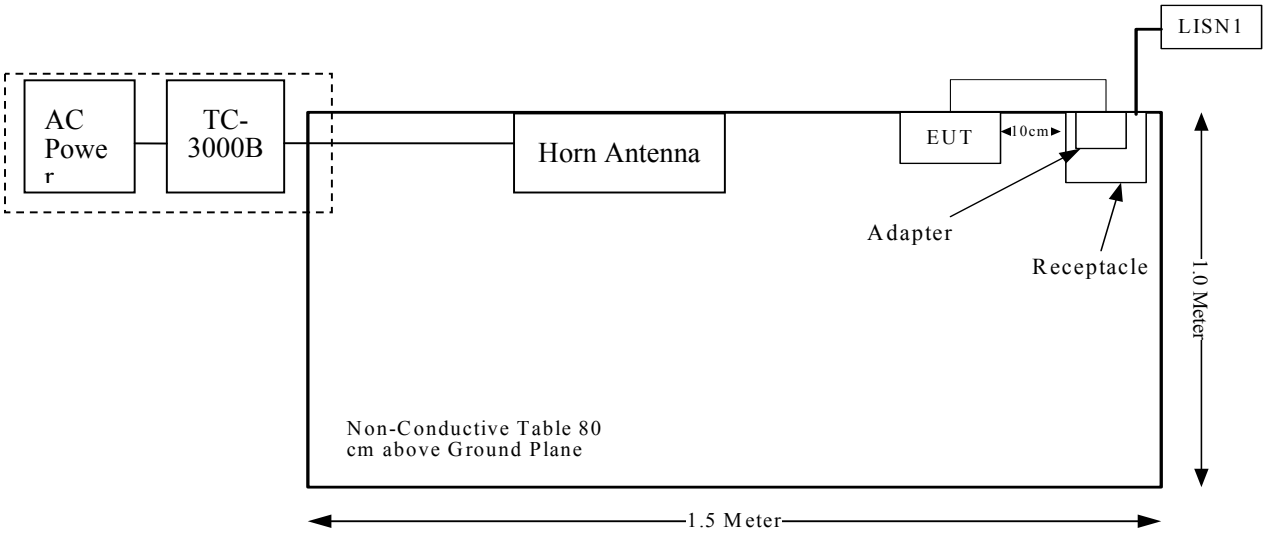
Support Equipment List and Details

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

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	yes	No	1.2	USB Port of Adapter	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	RF Exposure	Compliace
§15.203	Antenna Requirement	Compliance
§15.207 (a)	Conducted Emissions	Compliace
§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 & §2.1093- RF EXPOSURE

Applicable Standard

According to§15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 Mobile Portable RF Exposure V05 Appendix A, SAR can be exempted if the output power is less than the SAR exclusion threshold:

For f=2450MHz, the output power is less 10mW at distance of 5mm.

Measurement Result

Peak conducted output power= 5.39 dBm
SAR exclusion threshold 10 mW (10dBm) > 5.39 dBm

So the stand alone SAR evaluation is not necessary.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has an internal antenna, which was permanently attached to the EUT, and the maximum gain is -2.0dBi, 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:

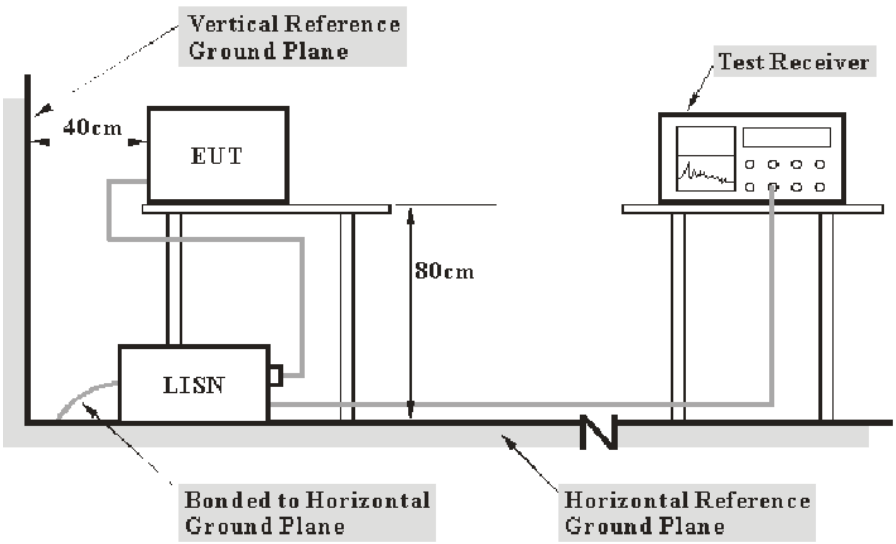
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of 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 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:

Margin = Limit – 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	2012-11-29	2013-11-28
R&S	Two-line V-network	ENV216	3560.6550.12	2013-2-18	2014-2-17
BACL	Test Software	BACL-EMC	V1.0-2010	N/A	N/A

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

12.26 dB at **0.420 MHz** in the **Neutral** conducted mode.

Test Data

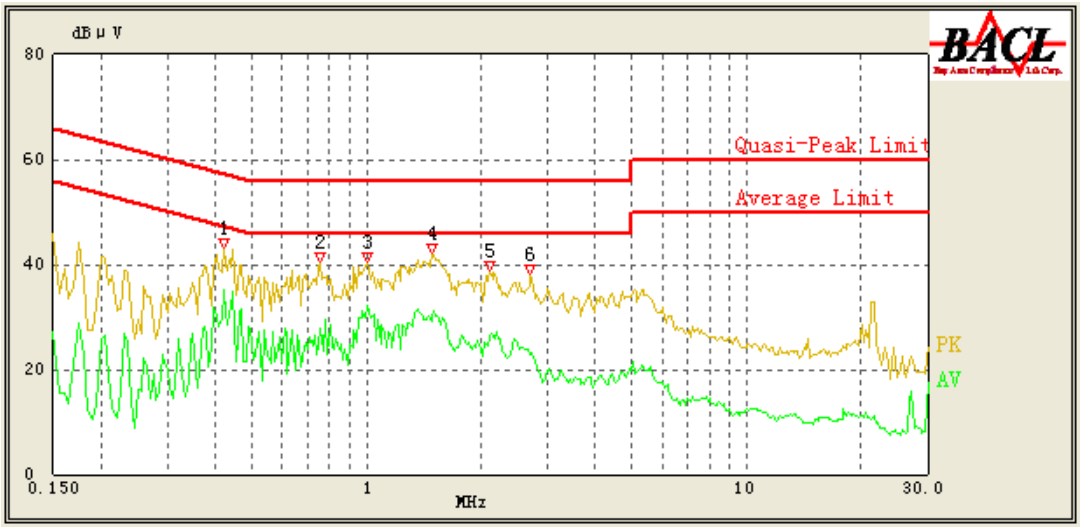
Environmental Conditions

Temperature:	25.8 °C
Relative Humidity:	44 %
ATM Pressure:	101.2 kPa

The testing was performed by Ares Liu on 2013-10-17.

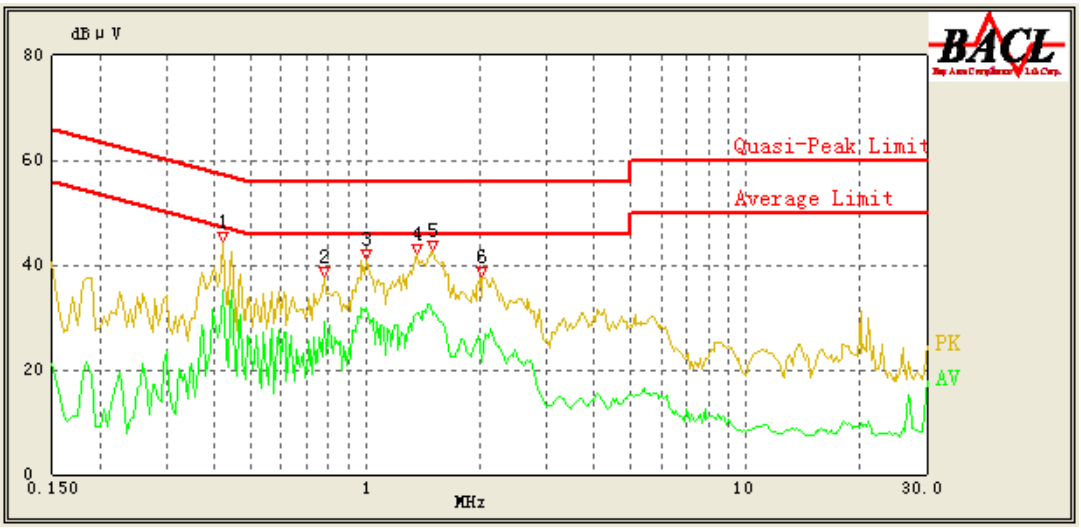
Test Mode: Transmitting

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
0.420	41.19	9.67	57.45	16.26	QP
0.420	35.18	9.67	47.45	12.27	AV
0.755	33.07	9.67	56.00	22.93	QP
0.755	28.00	9.67	46.00	18.00	AV
1.000	37.55	9.68	56.00	18.45	QP
1.000	32.14	9.68	46.00	13.86	AV
1.485	36.95	9.68	56.00	19.05	QP
1.495	30.05	9.68	46.00	15.95	AV
2.100	31.13	9.68	56.00	24.87	QP
2.105	26.28	9.68	46.00	19.72	AV
2.705	29.44	9.69	56.00	26.56	QP
2.705	22.97	9.69	46.00	23.03	AV

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
0.420	40.02	9.67	57.45	17.43	QP
0.420	35.19	9.67	47.45	12.26	AV
0.780	33.40	9.68	56.00	22.60	QP
0.780	29.12	9.68	46.00	16.88	AV
1.000	37.66	9.69	56.00	18.34	QP
1.000	31.87	9.69	46.00	14.13	AV
1.360	37.78	9.69	56.00	18.22	QP
1.360	30.93	9.69	46.00	15.07	AV
1.505	38.96	9.68	56.00	17.04	QP
1.505	31.21	9.68	46.00	14.79	AV
2.030	31.68	9.68	56.00	24.32	QP
2.055	26.93	9.68	46.00	19.07	AV

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_{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.

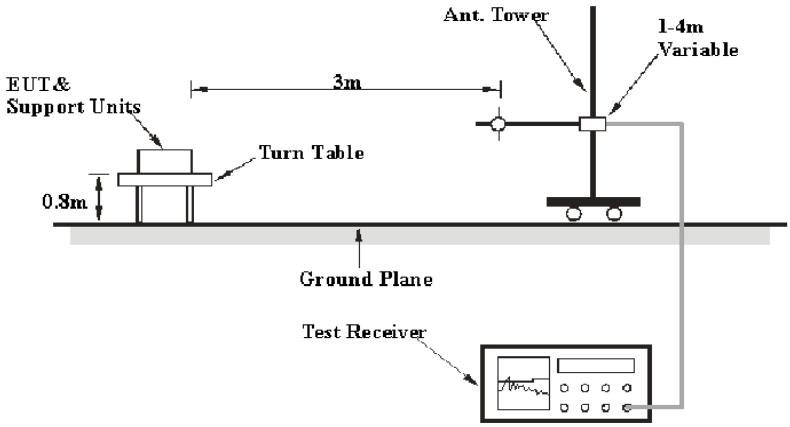
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:
30M~200MHz: 5.0 dB
200M~1GHz: 6.2 dB
1G~6GHz: 4.45 dB
6G~18GHz: 5.23 dB

Table 1 – Values of U_{cispr}

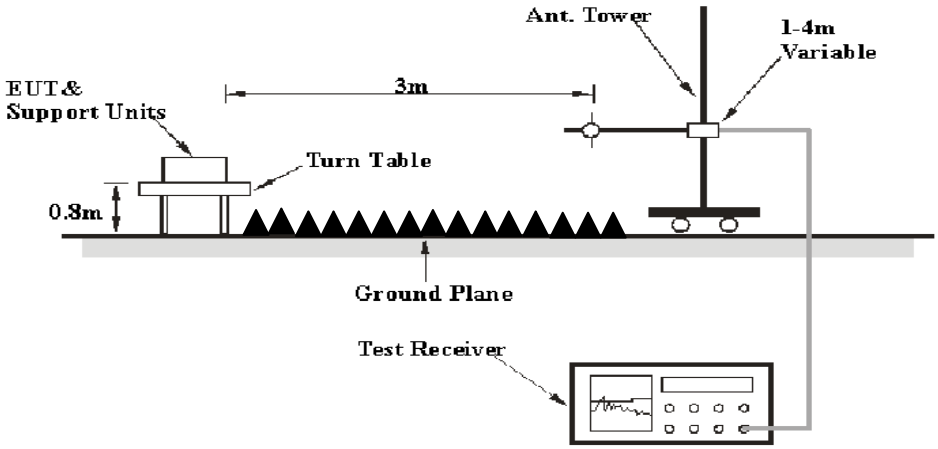
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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
30MHz – 1000 MHz	120 kHz	300 kHz	120kHz	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	2013-5-6	2014-5-5
Sunol Sciences	Antenna	JB3	A060611-1	2011-9-6	2014-9-5
HP	HP AMPLIFIER	8447E	2434A02181	N/A	N/A
R&S	Spectrum analyzer	FSEM	DE31388	2013-5-7	2014-5-6
ETS LINDGREN	horn antenna	3115	000 527 35	2012-9-6	2015-9-5
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	N/A	N/A
R&S	Spectrum Analyzer	FSP 38	100478	2013-6-16	2014-6-15
Ducommun Technolagies	horn antenna	ARH-4223-02	1007726-01 1304	2013-6-16	2014-6-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	N/A	N/A

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

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - 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:

Margin = Limit – 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:

2.89 dB at **7440 MHz** in the **Vertical** polarization of EDR Mode (π/4-DQPSK)

Test Data

Environmental Conditions

Temperature:	25.2 °C
Relative Humidity:	61 %
ATM Pressure:	100.8 kPa

The testing was performed by Ares Liu on 2013-10-15.

Mode: Transmitting

BDR Mode (GFSK):

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402(MHz)									
2402	64.83	PK	H	25.65	3.90	0.00	94.38	N/A	N/A
2402	52.29	AV	H	25.65	3.90	0.00	81.84	N/A	N/A
2402	62.81	PK	V	25.65	3.90	0.00	92.36	N/A	N/A
2402	51.17	AV	V	25.65	3.90	0.00	80.72	N/A	N/A
2390	27.69	PK	H	25.61	3.84	0.00	57.14	74.00	16.86
2390	14.33	AV	H	25.61	3.84	0.00	43.78	54.00	10.22
4804	37.13	PK	V	30.59	4.67	27.26	45.13	74.00	28.87
4804	20.88	AV	V	30.59	4.67	27.26	28.88	54.00	25.12
7206	56.06	PK	V	34.09	6.50	26.30	70.35	74.00	3.65*
7206	28.94	AV	V	34.09	6.50	26.30	43.23	54.00	10.77
9608	44.68	PK	V	35.96	8.75	26.22	63.17	74.00	10.83
9608	25.81	AV	V	35.96	8.75	26.22	44.30	54.00	9.70
1593.66	30.97	PK	V	23.79	3.16	26.90	31.02	74.00	42.98
1593.66	16.98	AV	V	23.79	3.16	26.90	17.03	54.00	36.97
325.1	32.16	QP	V	14.61	2.16	21.58	27.35	46.00	18.65
Middle Channel: 2441(MHz)									
2441	65.03	PK	H	25.75	3.99	0.00	94.77	N/A	N/A
2441	52.37	AV	H	25.75	3.99	0.00	82.11	N/A	N/A
2441	62.99	PK	V	25.75	3.99	0.00	92.73	N/A	N/A
2441	51.41	AV	V	25.75	3.99	0.00	81.15	N/A	N/A
4882	37.21	PK	V	30.79	4.75	27.26	45.49	74.00	28.51
4882	20.66	AV	V	30.79	4.75	27.26	28.94	54.00	25.06
7323	56.19	PK	V	34.38	6.72	26.53	70.76	74.00	3.24*
7323	28.84	AV	V	34.38	6.72	26.53	43.41	54.00	10.59
9764	44.64	PK	V	36.33	8.58	25.62	63.93	74.00	10.07
9764	25.73	AV	V	36.33	8.58	25.62	45.02	54.00	8.98
1593.6	30.93	PK	V	23.79	3.16	26.90	30.98	74.00	43.02
1593.6	16.91	AV	V	23.79	3.16	26.90	16.96	54.00	37.04
6200	39.72	PK	V	32.24	6.01	26.46	51.51	74.00	22.49
6200	22.28	AV	V	32.24	6.01	26.46	34.07	54.00	19.93
325.2	31.9	QP	V	14.61	2.16	21.58	27.09	46.00	18.91
High Channel: 2480(MHz)									
2480	65.21	PK	H	25.85	3.82	0.00	94.88	N/A	N/A
2480	53.19	AV	H	25.85	3.82	0.00	82.86	N/A	N/A
2480	63.76	PK	V	25.85	3.82	0.00	93.43	N/A	N/A
2480	52.06	AV	V	25.85	3.82	0.00	81.73	N/A	N/A
2483.5	29.7	PK	H	25.86	3.80	0.00	59.36	74.00	14.64
2483.5	14.52	AV	H	25.86	3.80	0.00	44.18	54.00	9.82
4960	37.41	PK	V	31.00	4.70	27.27	45.84	74.00	28.16
4960	20.65	AV	V	31.00	4.70	27.27	29.08	54.00	24.92
7440	55.97	PK	V	34.66	6.95	26.56	71.02	74.00	2.98*
7440	29.01	AV	V	34.66	6.95	26.56	44.06	54.00	9.94
9920	44.69	PK	V	36.71	8.41	25.50	64.31	74.00	9.69
9920	25.7	AV	V	36.71	8.41	25.50	45.32	54.00	8.68
1593.6	31.01	PK	V	23.79	3.16	26.90	31.06	74.00	42.94
1593.6	17.14	AV	V	23.79	3.16	26.90	17.19	54.00	36.81
325.2	32.1	QP	V	14.61	2.16	21.58	27.29	46.00	18.71

*Within measurement uncertainty!

EDR Mode (π/4-DQPSK):

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402(MHz)									
2402	64.71	PK	H	25.65	3.90	0.00	94.26	N/A	N/A
2402	52.00	AV	H	25.65	3.90	0.00	81.55	N/A	N/A
2402	62.73	PK	V	25.65	3.90	0.00	92.28	N/A	N/A
2402	51.05	AV	V	25.65	3.90	0.00	80.60	N/A	N/A
2390	27.49	PK	H	25.61	3.84	0.00	56.94	74.00	17.06
2390	14.2	AV	H	25.61	3.84	0.00	43.65	54.00	10.35
4804	37.1	PK	V	30.59	4.67	27.26	45.10	74.00	28.90
4804	20.9	AV	V	30.59	4.67	27.26	28.90	54.00	25.10
7206	56.1	PK	V	34.09	6.50	26.30	70.39	74.00	3.61*
7206	28.87	AV	V	34.09	6.50	26.30	43.16	54.00	10.84
9608	44.49	PK	V	35.96	8.75	26.22	62.98	74.00	11.02
9608	25.82	AV	V	35.96	8.75	26.22	44.31	54.00	9.69
1593.5	30.72	PK	V	23.79	3.16	26.90	30.77	74.00	43.23
1593.5	16.8	AV	V	23.79	3.16	26.90	16.85	54.00	37.15
325.3	32.31	QP	V	14.61	2.16	21.58	27.50	46.00	18.50
Middle Channel: 2441(MHz)									
2441	64.99	PK	H	25.75	3.99	0.00	94.73	N/A	N/A
2441	52.2	AV	H	25.75	3.99	0.00	81.94	N/A	N/A
2441	62.77	PK	V	25.75	3.99	0.00	92.51	N/A	N/A
2441	51.39	AV	V	25.75	3.99	0.00	81.13	N/A	N/A
4882	37.2	PK	V	30.79	4.75	27.26	45.48	74.00	28.52
4882	20.5	AV	V	30.79	4.75	27.26	28.78	54.00	25.22
7323	56.03	PK	V	34.38	6.72	26.53	70.60	74.00	3.40*
7323	28.91	AV	V	34.38	6.72	26.53	43.48	54.00	10.52
9764	44.89	PK	V	36.33	8.58	25.62	64.18	74.00	9.82
9764	25.62	AV	V	36.33	8.58	25.62	44.91	54.00	9.09
1593.6	30.84	PK	V	23.79	3.16	26.90	30.89	74.00	43.11
1593.6	17.16	AV	V	23.79	3.16	26.90	17.21	54.00	36.79
6200	39.66	PK	V	32.24	6.01	26.46	51.45	74.00	22.55
6200	22.08	AV	V	32.24	6.01	26.46	33.87	54.00	20.13
325.1	32.25	QP	V	14.61	2.16	21.58	27.44	46.00	18.56
High Channel: 2480(MHz)									
2480	65.11	PK	H	25.85	3.82	0.00	94.78	N/A	N/A
2480	53.1	AV	H	25.85	3.82	0.00	82.77	N/A	N/A
2480	63.5	PK	V	25.85	3.82	0.00	93.17	N/A	N/A
2480	51.9	AV	V	25.85	3.82	0.00	81.57	N/A	N/A
2483.5	29.53	PK	H	25.86	3.80	0.00	59.19	74.00	14.81
2483.5	14.27	AV	H	25.86	3.80	0.00	43.93	54.00	10.07
4960	37.27	PK	V	31.00	4.70	27.27	45.70	74.00	28.30
4960	20.81	AV	V	31.00	4.70	27.27	29.24	54.00	24.76
7440	56.06	PK	V	34.66	6.95	26.56	71.11	74.00	2.89*
7440	28.88	AV	V	34.66	6.95	26.56	43.93	54.00	10.07
9920	44.68	PK	V	36.71	8.41	25.50	64.30	74.00	9.70
9920	25.94	AV	V	36.71	8.41	25.50	45.56	54.00	8.44
1593.6	30.82	PK	V	23.79	3.16	26.90	30.87	74.00	43.13
1593.6	17.04	AV	V	23.79	3.16	26.90	17.09	54.00	36.91
325.2	32.06	QP	V	14.61	2.16	21.58	27.25	46.00	18.75

*Within measurement uncertainty!

EDR Mode (8-DPSK):

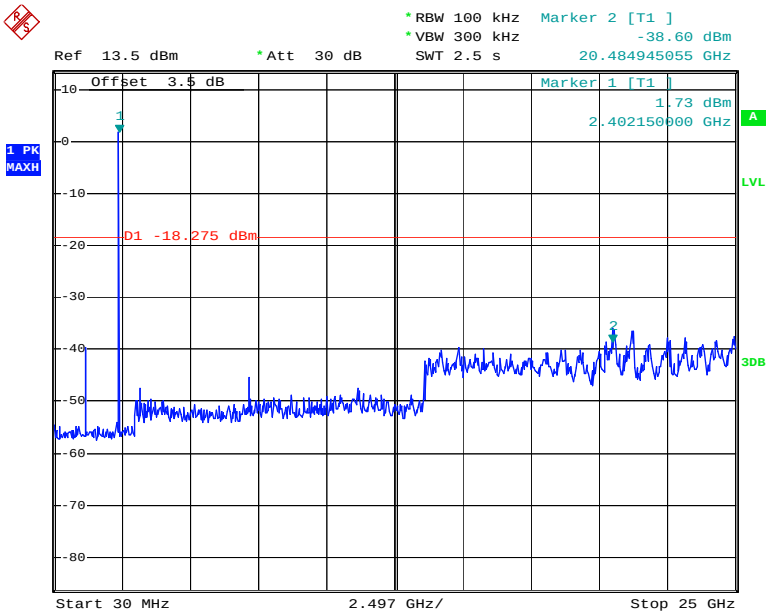
Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402(MHz)									
2402	64.59	PK	H	25.65	3.90	0.00	94.14	N/A	N/A
2402	52.01	AV	H	25.65	3.90	0.00	81.56	N/A	N/A
2402	62.75	PK	V	25.65	3.90	0.00	92.30	N/A	N/A
2402	50.94	AV	V	25.65	3.90	0.00	80.49	N/A	N/A
2390	27.52	PK	H	25.61	3.84	0.00	56.97	74.00	17.03
2390	14.12	AV	H	25.61	3.84	0.00	43.57	54.00	10.43
4804	36.93	PK	V	30.59	4.67	27.26	44.93	74.00	29.07
4804	20.91	AV	V	30.59	4.67	27.26	28.91	54.00	25.09
7206	56.22	PK	V	34.09	6.50	26.30	70.51	74.00	3.49*
7206	28.65	AV	V	34.09	6.50	26.30	42.94	54.00	11.06
9608	44.57	PK	V	35.96	8.75	26.22	63.06	74.00	10.94
9608	25.81	AV	V	35.96	8.75	26.22	44.30	54.00	9.70
1593.6	30.83	PK	V	23.79	3.16	26.90	30.88	74.00	43.12
1593.6	16.8	AV	V	23.79	3.16	26.90	16.85	54.00	37.15
325.3	32.18	QP	V	14.61	2.16	21.58	27.37	46.00	18.63
Middle Channel: 2441(MHz)									
2441	65.03	PK	H	25.75	3.99	0.00	94.77	N/A	N/A
2441	52.27	AV	H	25.75	3.99	0.00	82.01	N/A	N/A
2441	62.96	PK	V	25.75	3.99	0.00	92.70	N/A	N/A
2441	51.31	AV	V	25.75	3.99	0.00	81.05	N/A	N/A
4882	37.08	PK	V	30.79	4.75	27.26	45.36	74.00	28.64
4882	20.57	AV	V	30.79	4.75	27.26	28.85	54.00	25.15
7323	56.11	PK	V	34.38	6.72	26.53	70.68	74.00	3.32*
7323	29.09	AV	V	34.38	6.72	26.53	43.66	54.00	10.34
9764	44.92	PK	V	36.33	8.58	25.62	64.21	74.00	9.79
9764	25.72	AV	V	36.33	8.58	25.62	45.01	54.00	8.99
1593.5	30.79	PK	V	23.79	3.16	26.90	30.84	74.00	43.16
1593.5	17.01	AV	V	23.79	3.16	26.90	17.06	54.00	36.94
6200	39.47	PK	V	32.24	6.01	26.46	51.26	74.00	22.74
6200	22.06	AV	V	32.24	6.01	26.46	33.85	54.00	20.15
325.3	32.07	QP	V	14.61	2.16	21.58	27.26	46.00	18.74
High Channel: 2480(MHz)									
2480	65.04	PK	H	25.85	3.82	0.00	94.71	N/A	N/A
2480	52.92	AV	H	25.85	3.82	0.00	82.59	N/A	N/A
2480	63.49	PK	V	25.85	3.82	0.00	93.16	N/A	N/A
2480	51.92	AV	V	25.85	3.82	0.00	81.59	N/A	N/A
2483.5	29.63	PK	H	25.86	3.80	0.00	59.29	74.00	14.71
2483.5	14.34	AV	H	25.86	3.80	0.00	44.00	54.00	10.00
4960	37.23	PK	V	31.00	4.70	27.27	45.66	74.00	28.34
4960	20.93	AV	V	31.00	4.70	27.27	29.36	54.00	24.64
7440	56.02	PK	V	34.66	6.95	26.56	71.07	74.00	2.93*
7440	28.86	AV	V	34.66	6.95	26.56	43.91	54.00	10.09
9920	44.45	PK	V	36.71	8.41	25.50	64.07	74.00	9.93
9920	25.89	AV	V	36.71	8.41	25.50	45.51	54.00	8.49
1593.5	30.96	PK	V	23.79	3.16	26.90	31.01	74.00	42.99
1593.5	17.11	AV	V	23.79	3.16	26.90	17.16	54.00	36.84
325.3	32.25	QP	V	14.61	2.16	21.58	27.44	46.00	18.56

*Within measurement uncertainty!

Conducted Spurious Emissions at Antenna Port

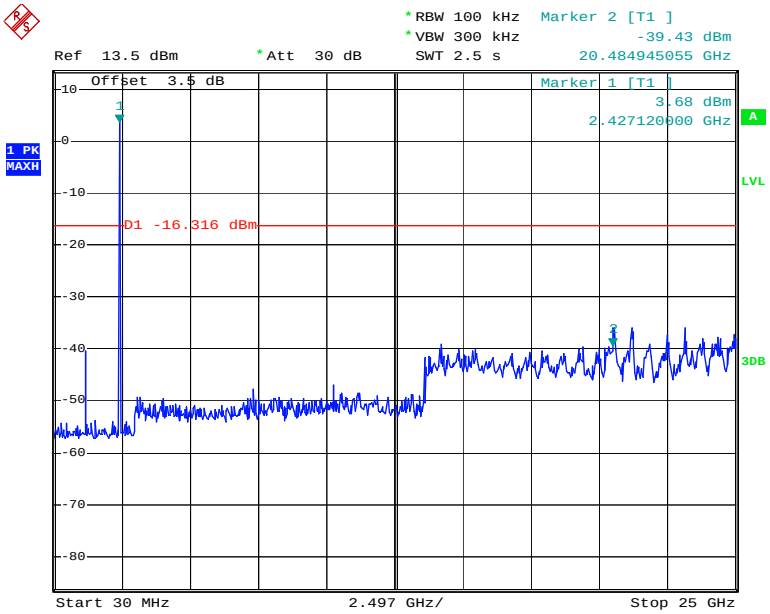
BDR Mode (GFSK):

Low Channel



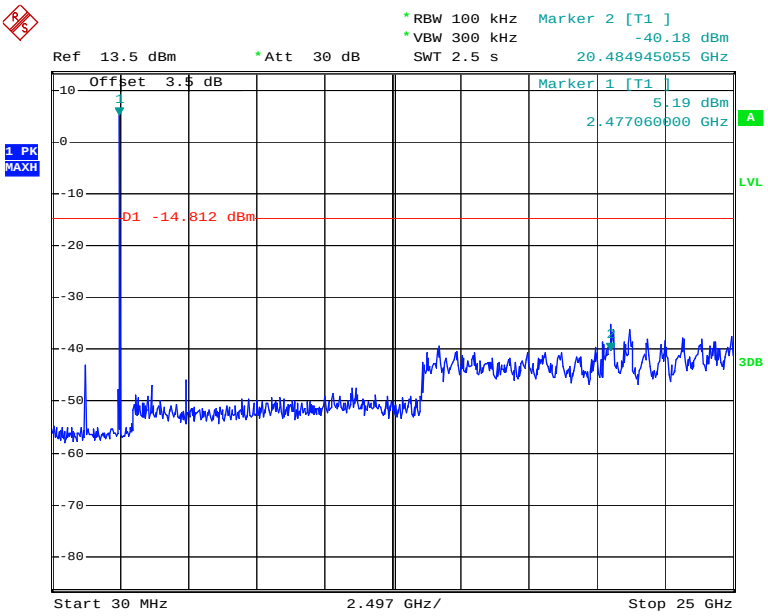
Date: 15.OCT.2013 14:44:58

Middle Channel



Date: 15.OCT.2013 14:45:15

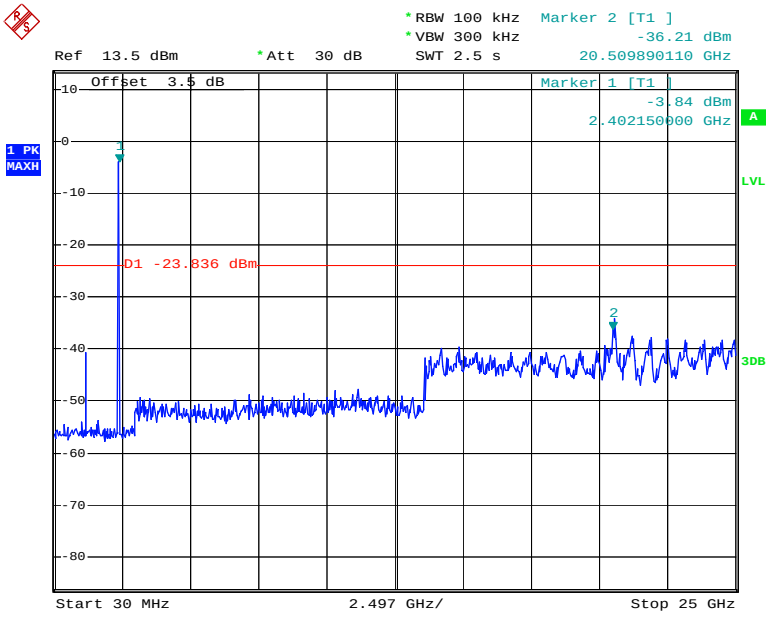
High Channel



Date: 15.OCT.2013 14:45:33

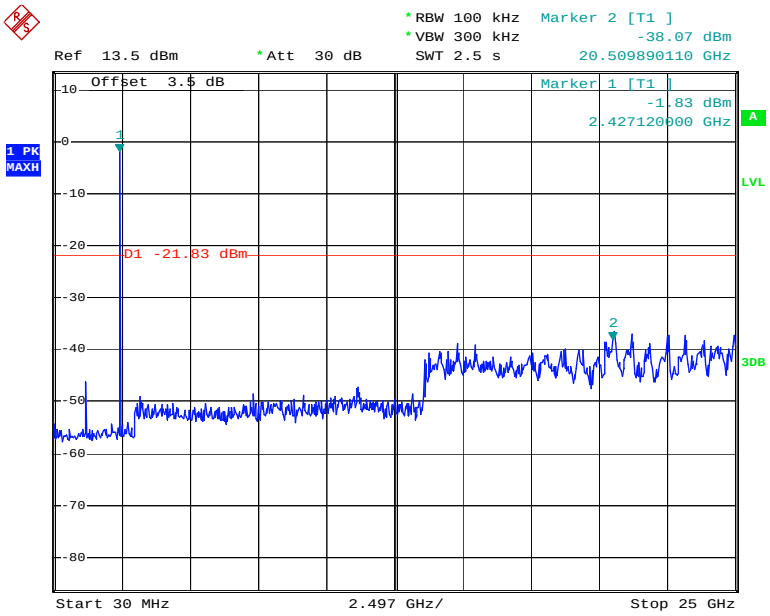
EDR Mode (π/4-DQPSK):

Low Channel



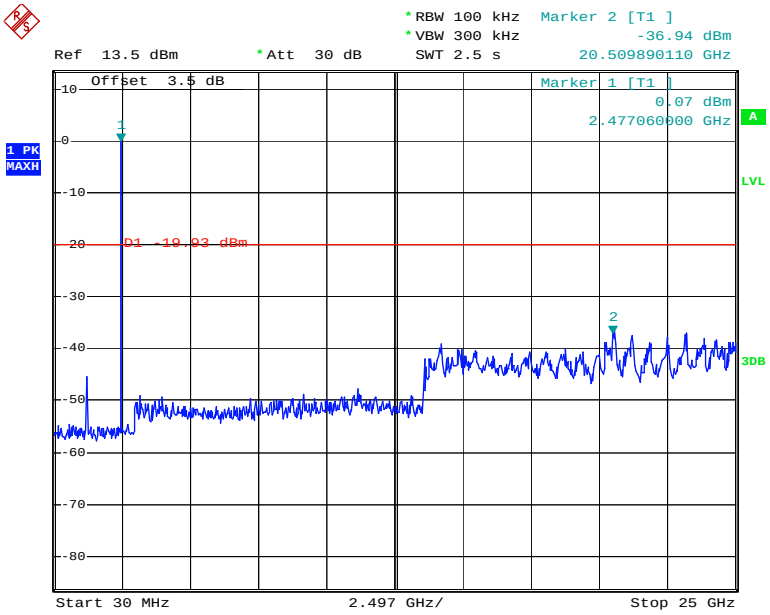
Date: 15.OCT.2013 14:45:51

Middle Channel



Date: 15.OCT.2013 14:46:08

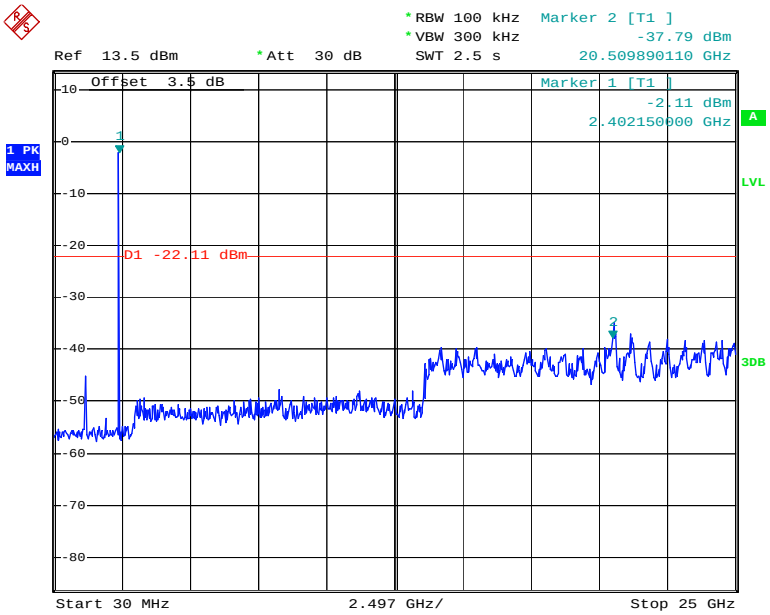
High Channel



Date: 15.OCT.2013 14:46:26

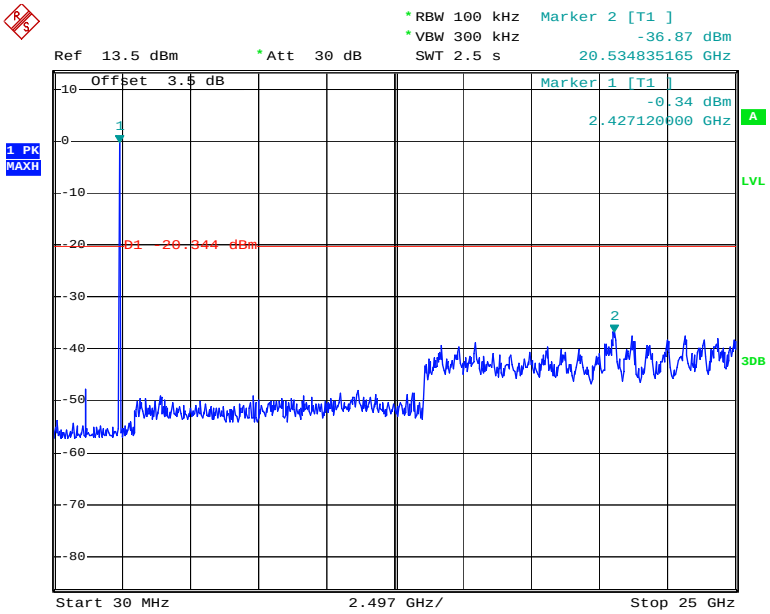
EDR Mode (8-DPSK):

Low Channel



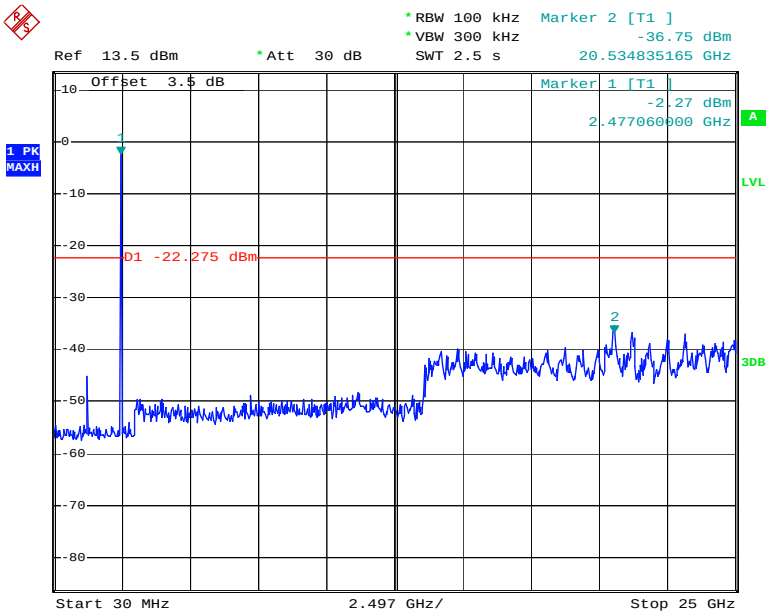
Date: 15.OCT.2013 14:46:44

Middle Channel



Date: 15.OCT.2013 14:47:01

High Channel



Date: 15.OCT.2013 14:47:19

FCC §15.247(a) (1) - CHANNEL SEPARATION TEST

Applicable Standard

Frequency hopping systems shall have hoping 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	FSP 38	100478	2013-6-16	2014-6-15

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, 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:	28.3 °C
Relative Humidity:	57 %
ATM Pressure:	100.8 kPa

** The testing was performed by Ares Liu on 2013-10-15.*

Test Result: Compliance.

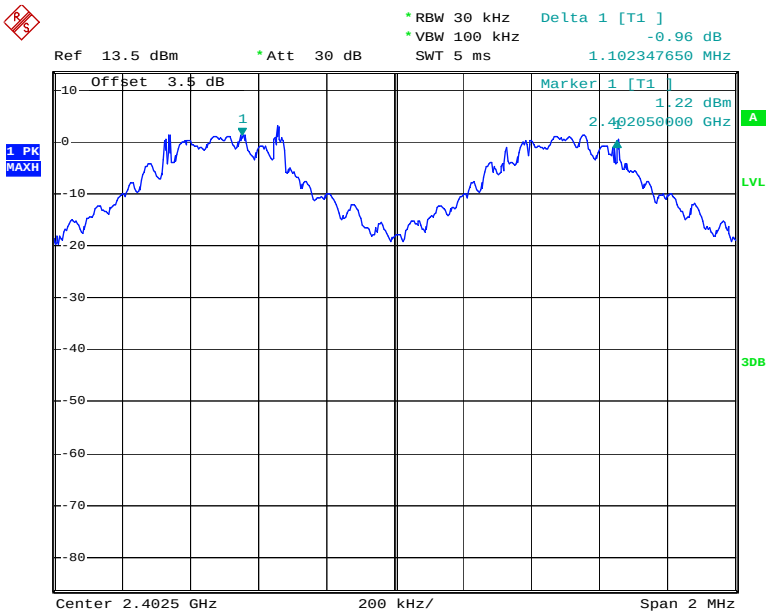
Please refer to following tables and plots

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
BDR Mode (GFSK)	Low	2402	1.102	0.62	Pass
	Adjacent	2403			
	Middle	2441	1.002	0.62	Pass
	Adjacent	2442			
	High	2480	1.000	0.62	Pass
	Adjacent	2479			
EDR Mode (π/4-DQPSK):	Low	2402	1.000	0.86	Pass
	Adjacent	2403			
	Middle	2441	1.009	0.86	Pass
	Adjacent	2442			
	High	2480	1.006	0.86	Pass
	Adjacent	2479			
EDR Mode (8-DPSK):	Low	2402	1.010	0.86	Pass
	Adjacent	2403			
	Middle	2441	1.004	0.86	Pass
	Adjacent	2442			
	High	2480	1.000	0.86	Pass
	Adjacent	2479			

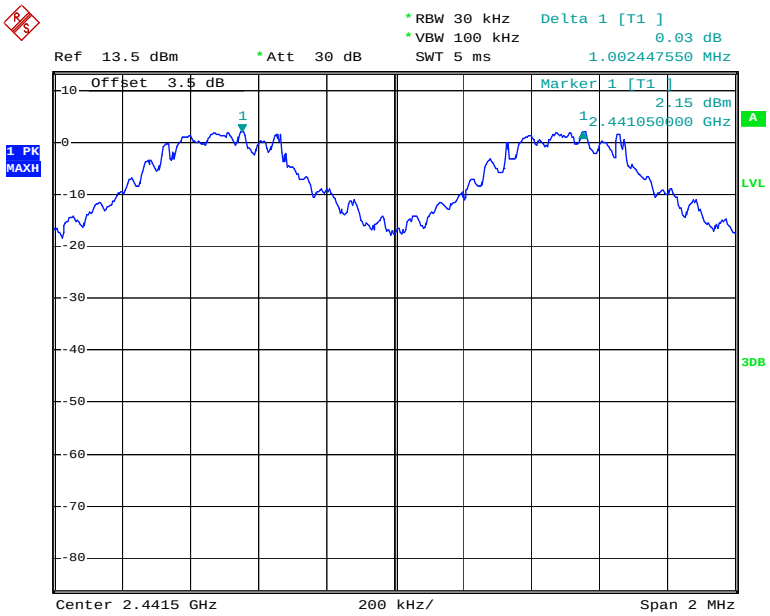
BDR Mode (GFSK):

Low Channel



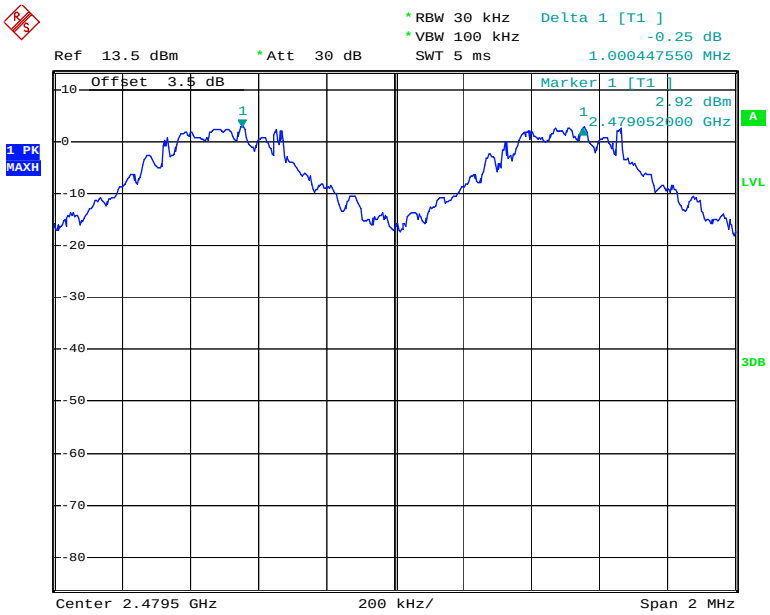
Date: 15.OCT.2013 14:30:30

Middle Channel



Date: 15.OCT.2013 14:30:48

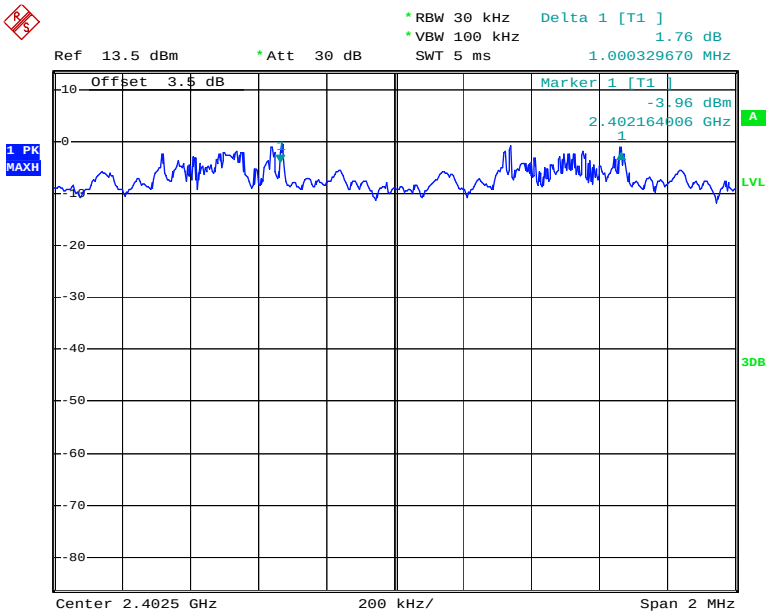
High Channel



Date: 15.OCT.2013 14:31:07

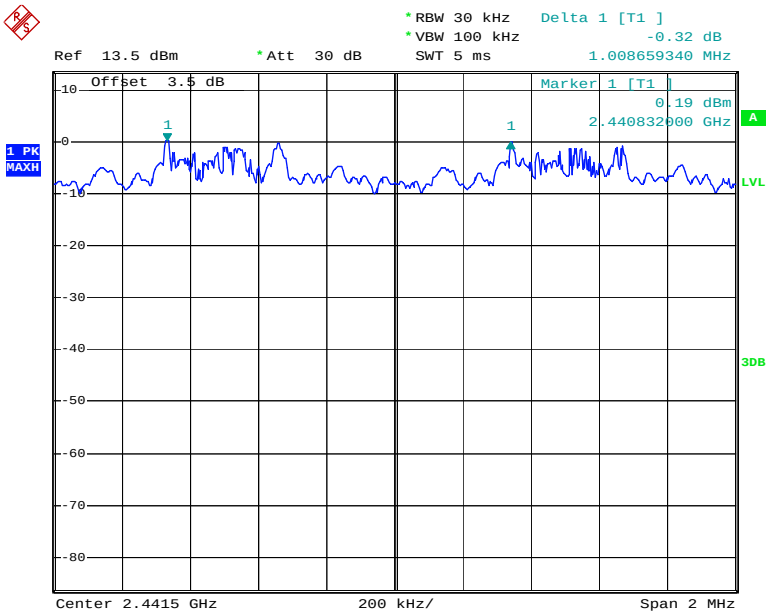
EDR Mode (π/4-DQPSK):

Low Channel



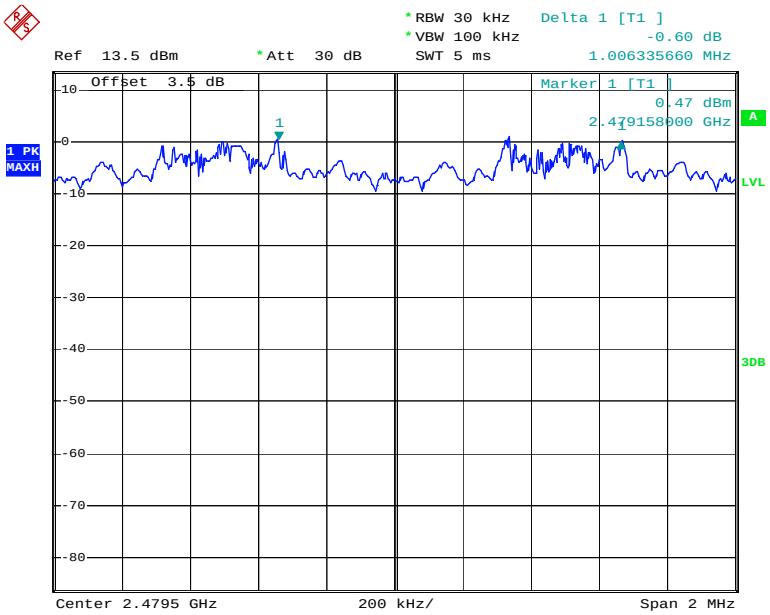
Date: 15.OCT.2013 14:31:25

Middle Channel



Date: 15.OCT.2013 14:31:44

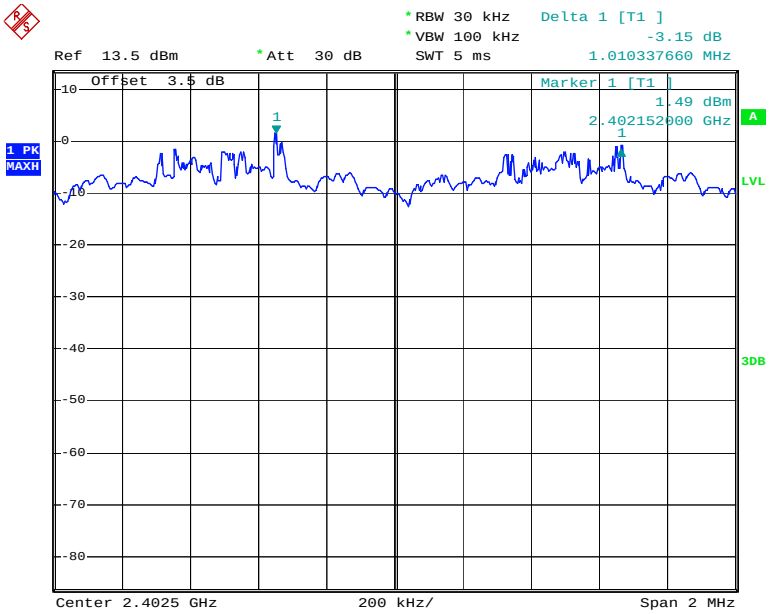
High Channel



Date: 15.OCT.2013 14:32:03

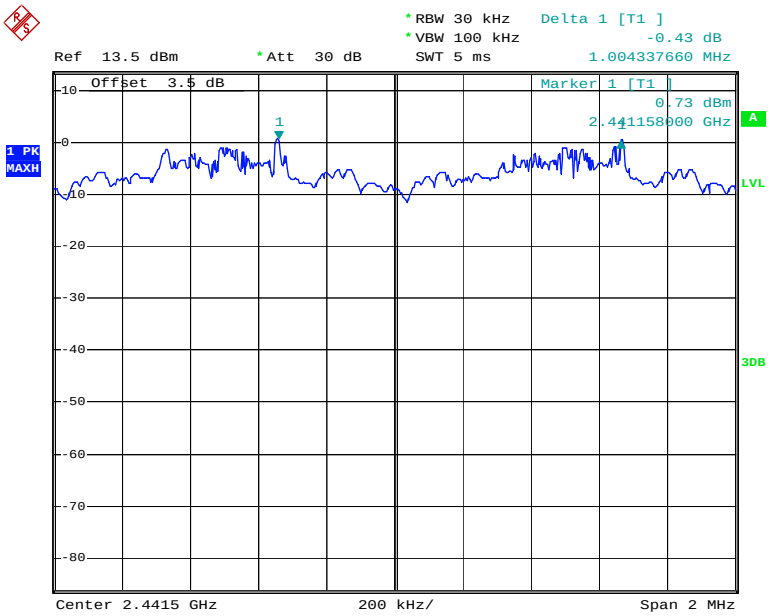
EDR Mode (8-DPSK):

Low Channel



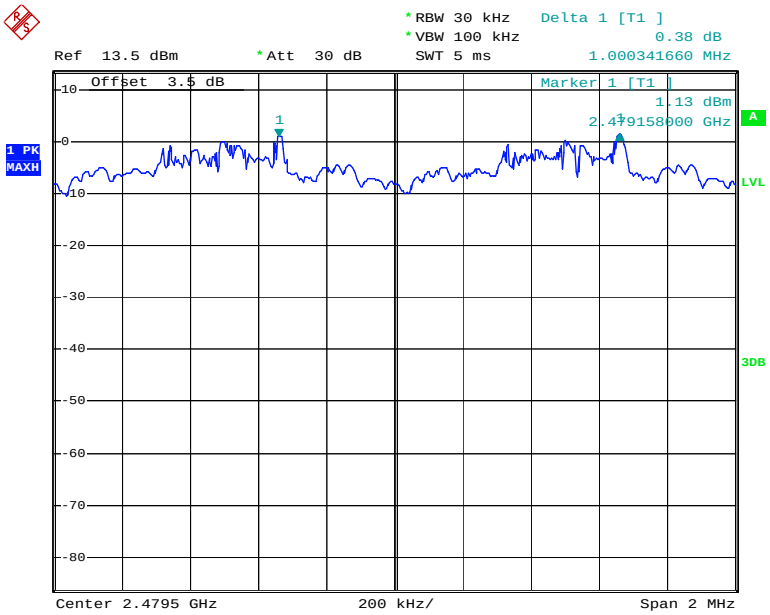
Date: 15.OCT.2013 14:32:21

Middle Channel



Date: 15.OCT.2013 14:32:40

High Channel



Date: 15.OCT.2013 14:32:58

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	FSP 38	100478	2013-6-16	2014-6-15

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

Test Data

Environmental Conditions

Temperature:	28.3 °C
Relative Humidity:	57 %
ATM Pressure:	100.8 kPa

** The testing was performed by Ares Liu on 2013-10-15.*

Test Result: Compliance.

Please refer to following tables and plots

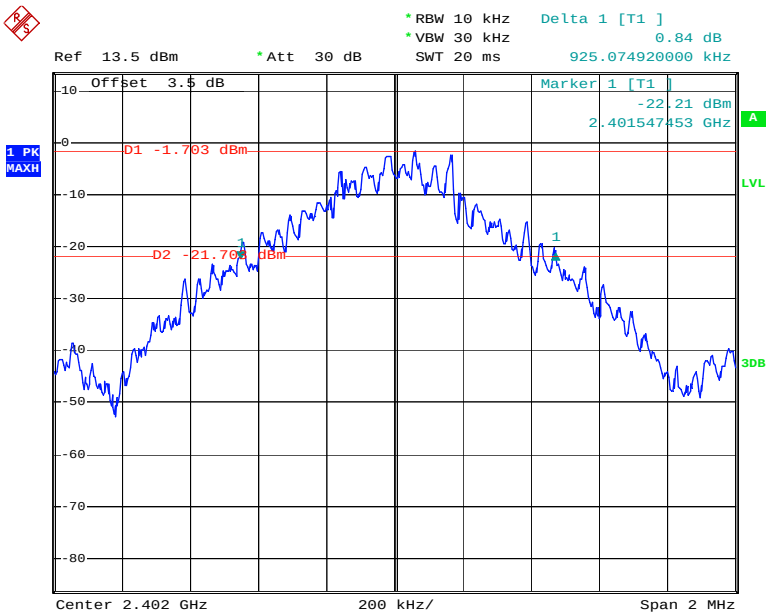
Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
BDR Mode (GFSK)	Low	2402	0.925
	Middle	2441	0.927
	High	2480	0.925
EDR Mode (π/4-DQPSK):	Low	2402	1.295
	Middle	2441	1.289
	High	2480	1.293
EDR Mode (8-DPSK):	Low	2402	1.287
	Middle	2441	1.297
	High	2480	1.297

Please refer to the following plots.

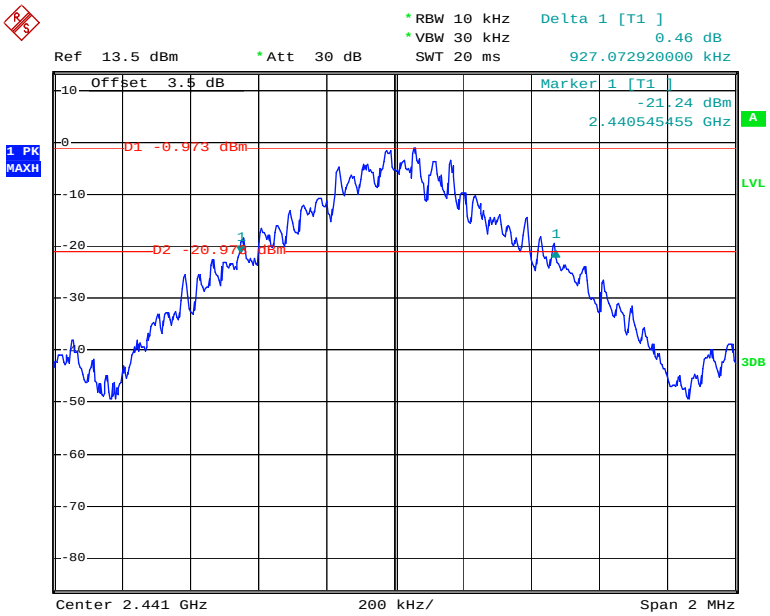
BDR Mode (GFSK):

Low Channel



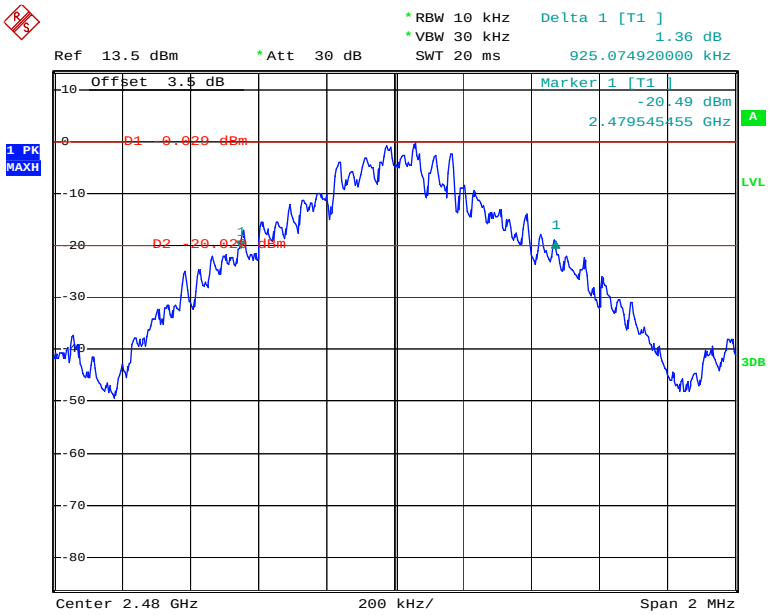
Date: 15.OCT.2013 14:27:22

Middle Channel



Date: 15.OCT.2013 14:27:42

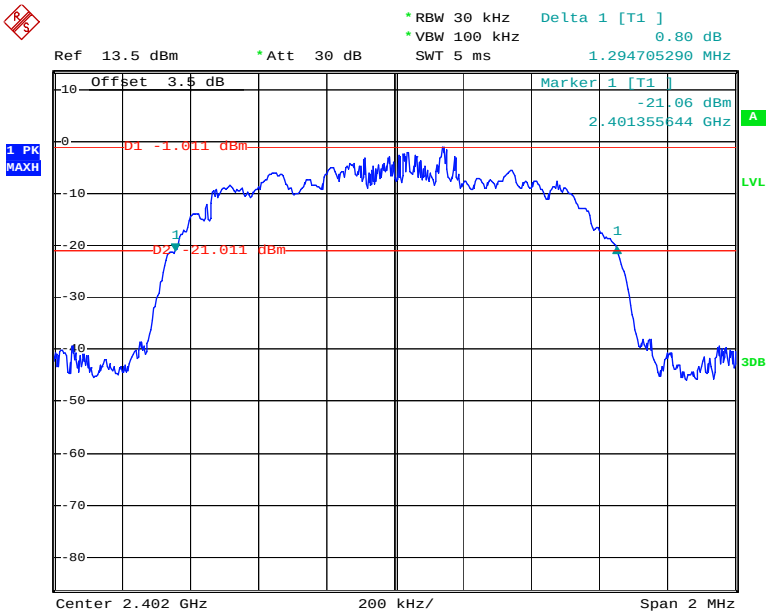
High Channel



Date: 15.OCT.2013 14:28:03

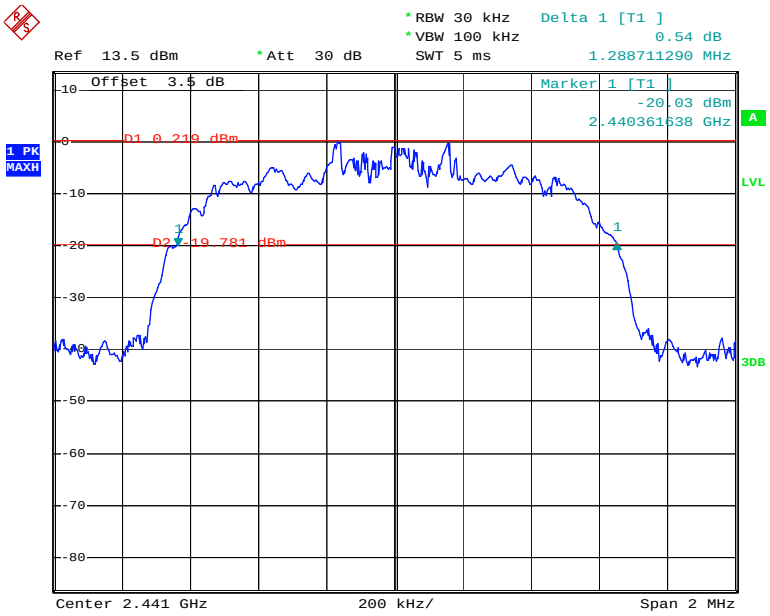
EDR Mode (π/4-DQPSK):

Low Channel



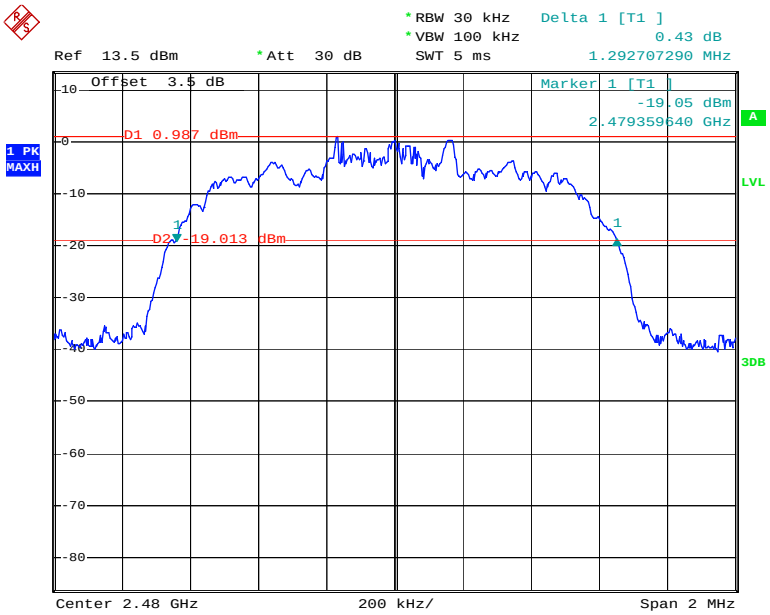
Date: 15.OCT.2013 14:28:23

Middle Channel



Date: 15.OCT.2013 14:28:43

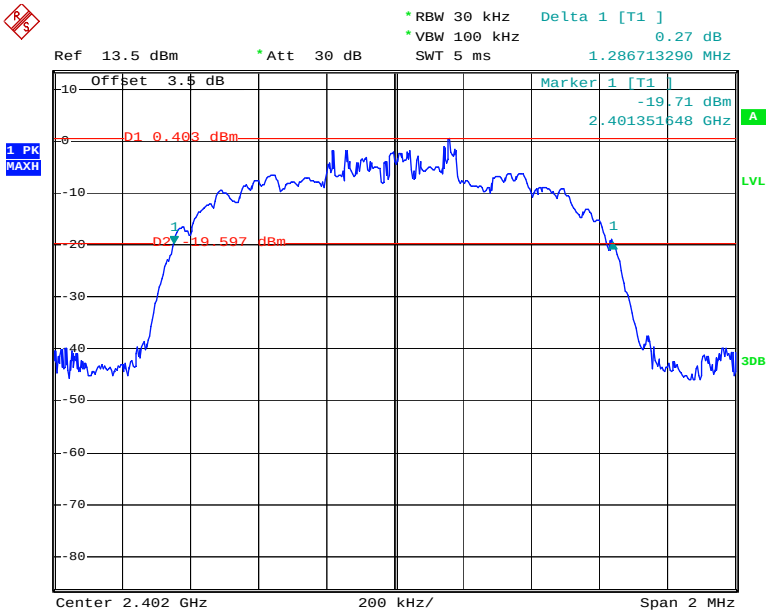
High Channel



Date: 15.OCT.2013 14:29:03

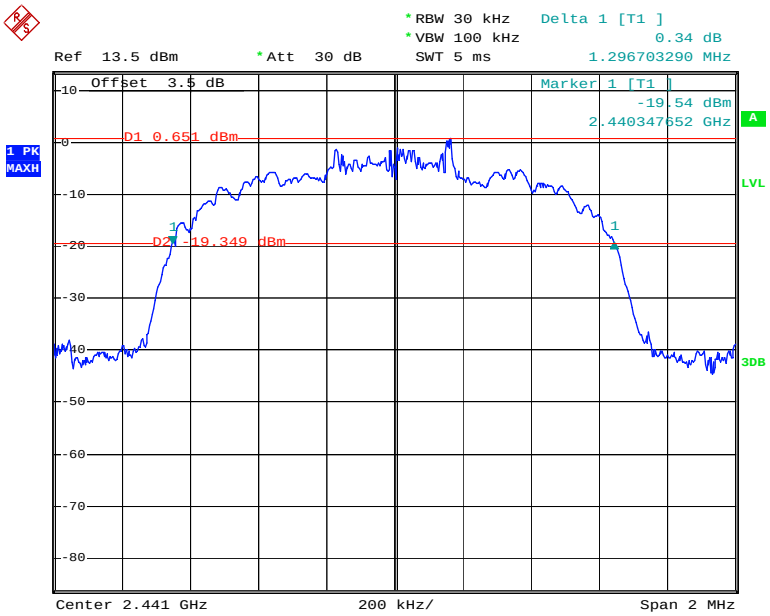
EDR Mode (8-DPSK):

Low Channel



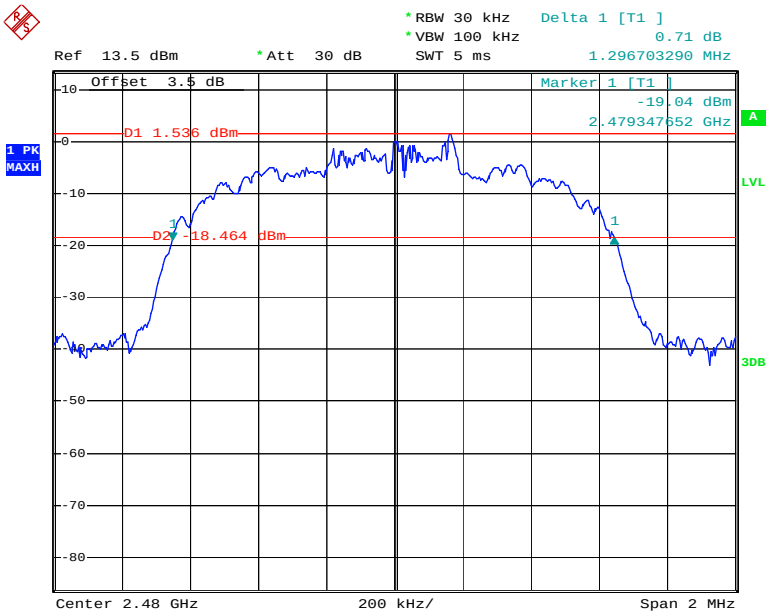
Date: 15.OCT.2013 14:29:23

Middle Channel



Date: 15.OCT.2013 14:29:44

High Channel



Date: 15.OCT.2013 14:30:04

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	FSP 38	100478	2013-6-16	2014-6-15

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

Test Data

Environmental Conditions

Temperature:	26.6 °C
Relative Humidity:	53 %
ATM Pressure:	101.2 kPa

** The testing was performed by Ares Liu on 2013-10-30.*

Test Result: Compliance.

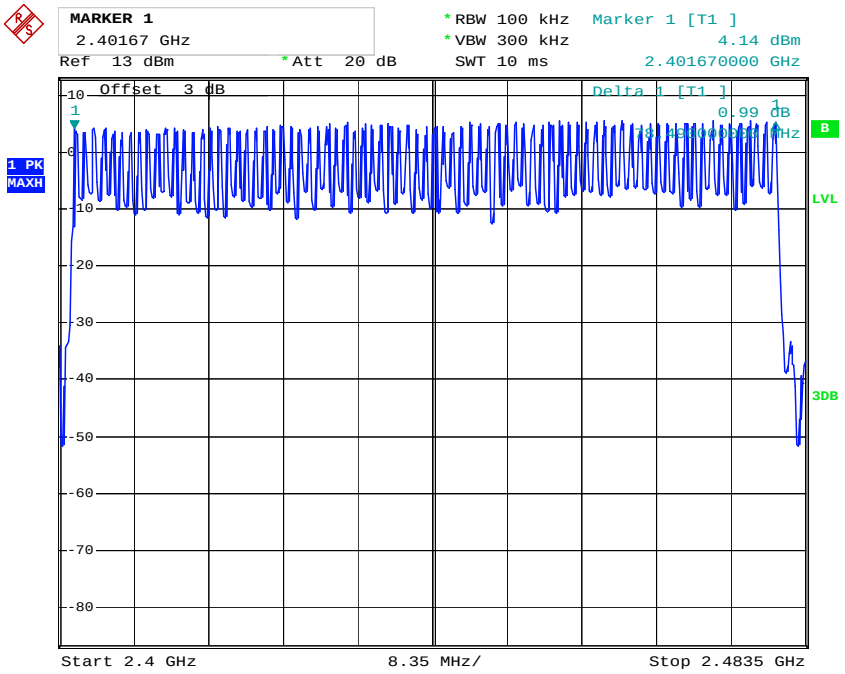
Please refer to following tables and plots

Test Mode: Transmitting

BDR Mode (GFSK):

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

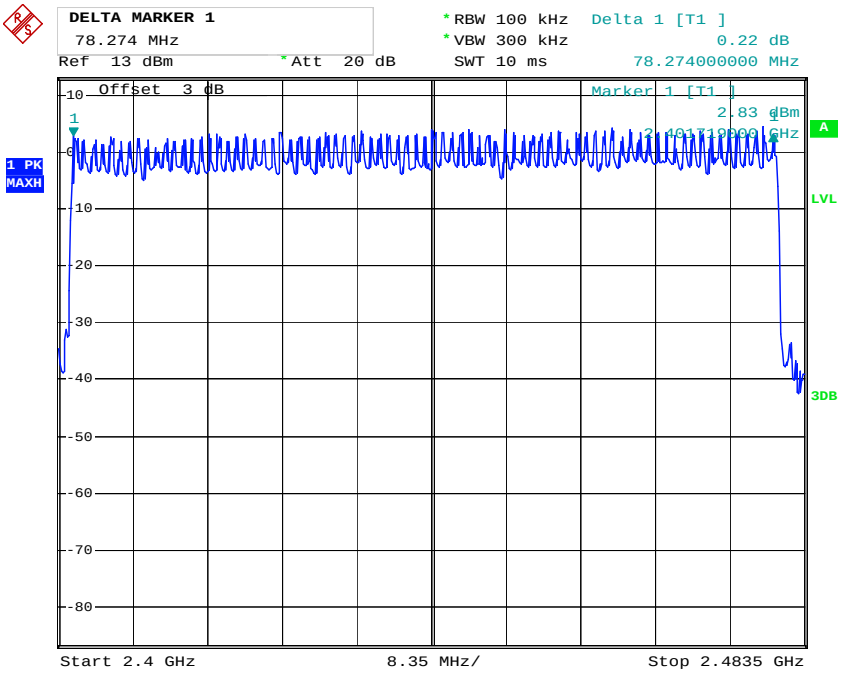
Number of Hopping Channels



EDR Mode (π/4-DQPSK):

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

Number of Hopping Channels

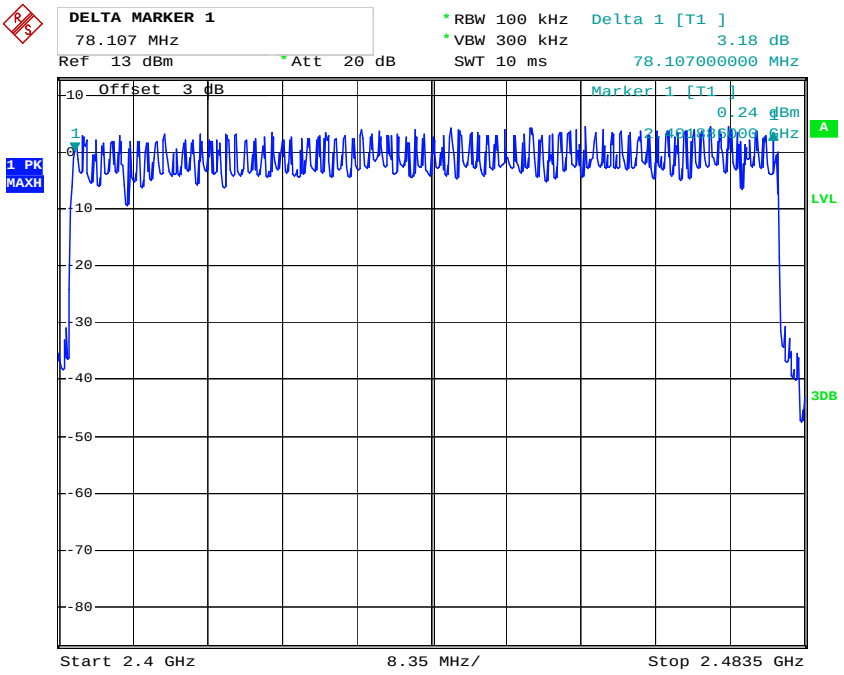


Date: 30.OCT.2013 13:50:05

EDR Mode (8-DPSK):

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

Number of Hopping Channels



Date: 30.OCT.2013 13:59:47

FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

Applicable Standard

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

The EUT was worked in channel hopping; Spectrum SPAN was set as 0. Sweep was set as 0.4 * channel no. (s), the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= 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	FSP 38	100478	2013-6-16	2014-6-15

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

Test Data

Environmental Conditions

Temperature:	26.6 °C
Relative Humidity:	53 %
ATM Pressure:	101.2 kPa

** The testing was performed by Ares Liu on 2013-10-30.*

Test Result: Compliance.

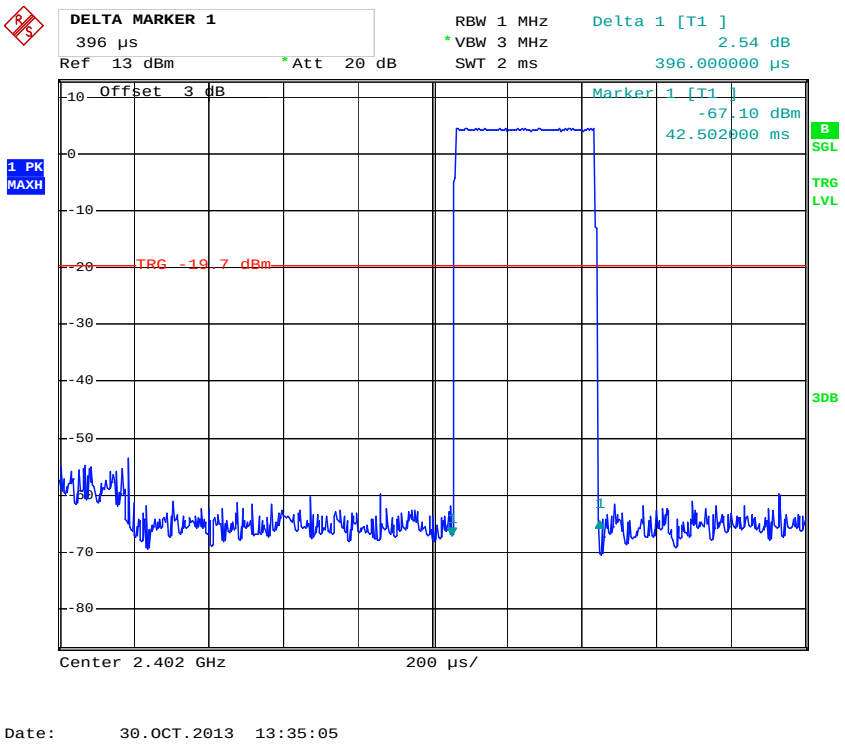
Please refer to following tables and plots

Test Mode: Transmitting

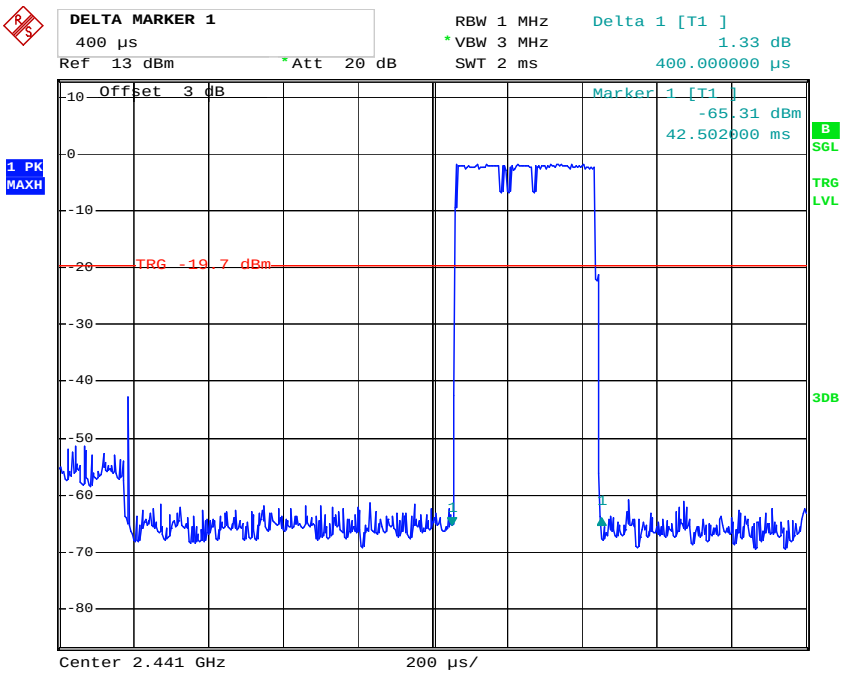
BDR Mode (GFSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.396	0.127	0.4	Pass
	Middle	0.400	0.128	0.4	Pass
	High	0.400	0.128	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s				
DH3	Low	1.670	0.267	0.4	Pass
	Middle	1.670	0.267	0.4	Pass
	High	1.670	0.267	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/4/79) ×31.6 s				
DH5	Low	2.920	0.311	0.4	Pass
	Middle	2.920	0.311	0.4	Pass
	High	2.940	0.314	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/6/79) ×31.6 s				

DH1: Low Channel

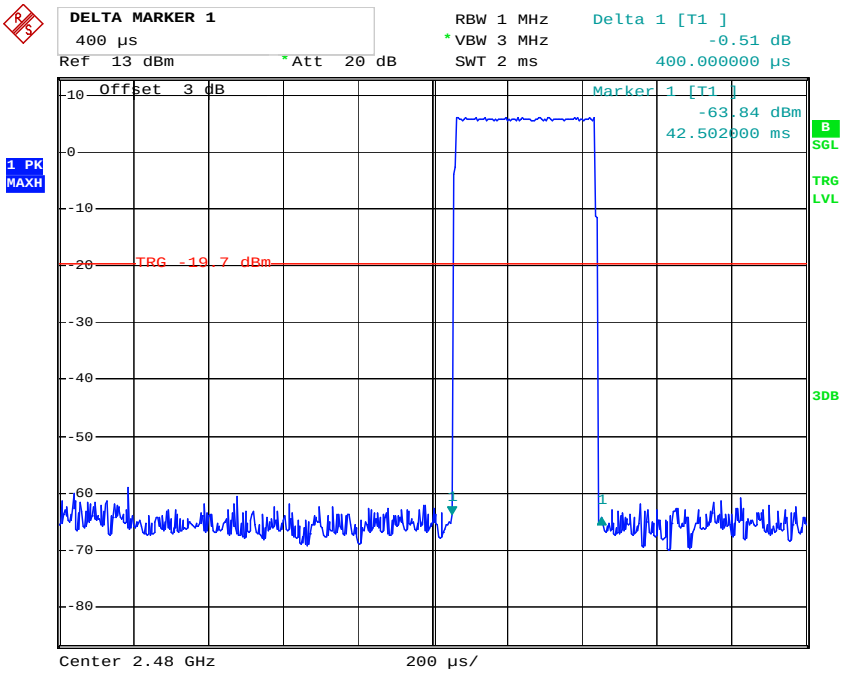


DH1: Middle Channel



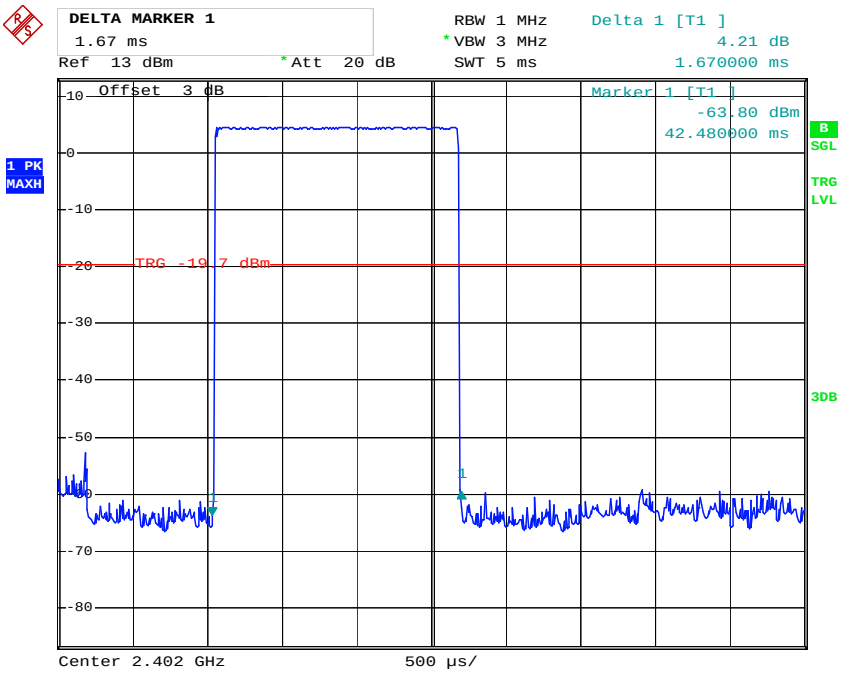
Date: 30.OCT.2013 13:35:47

DH1: High Channel



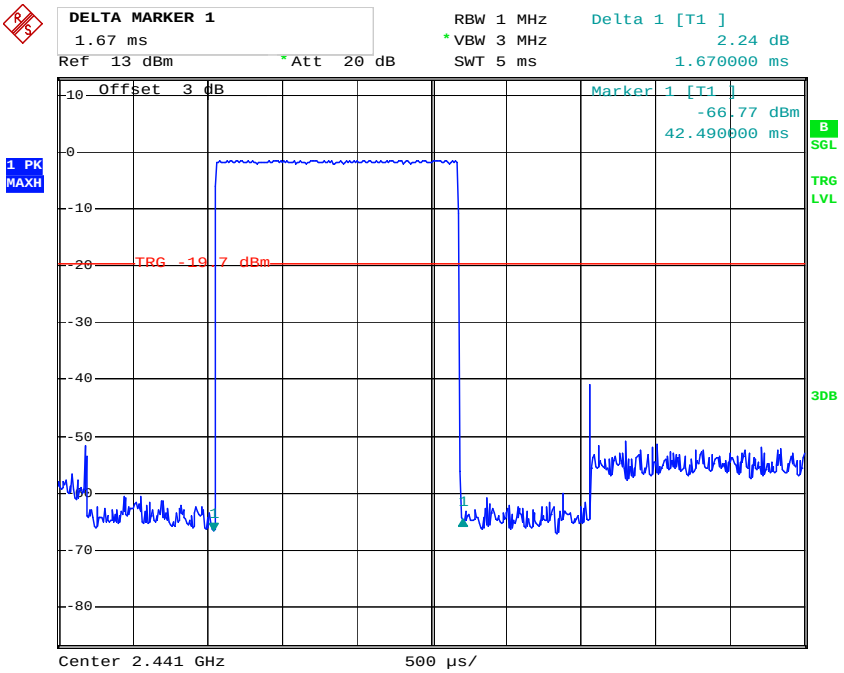
Date: 30.OCT.2013 13:36:14

DH3: Low Channel



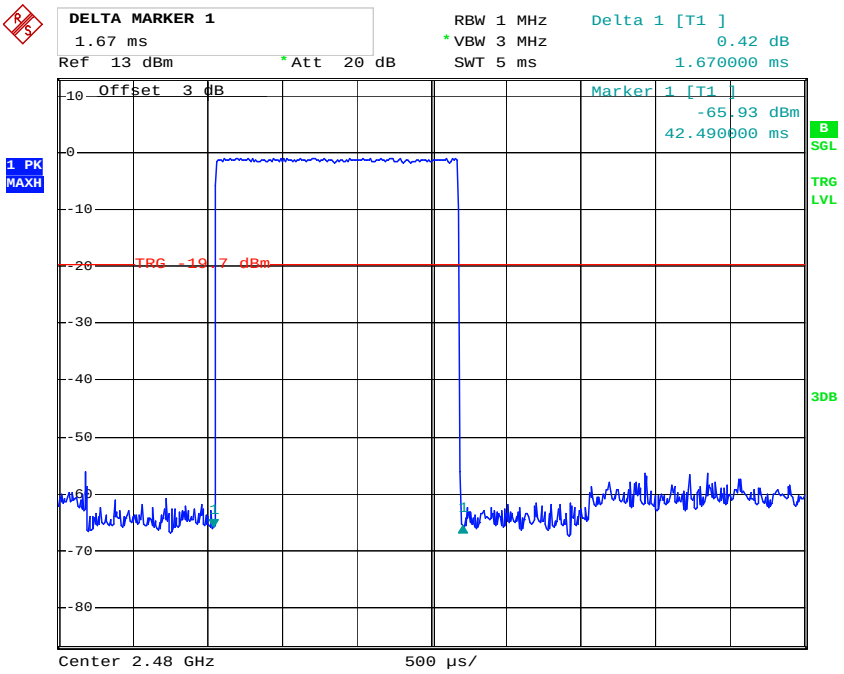
Date: 30.OCT.2013 13:37:42

DH3: Middle Channel



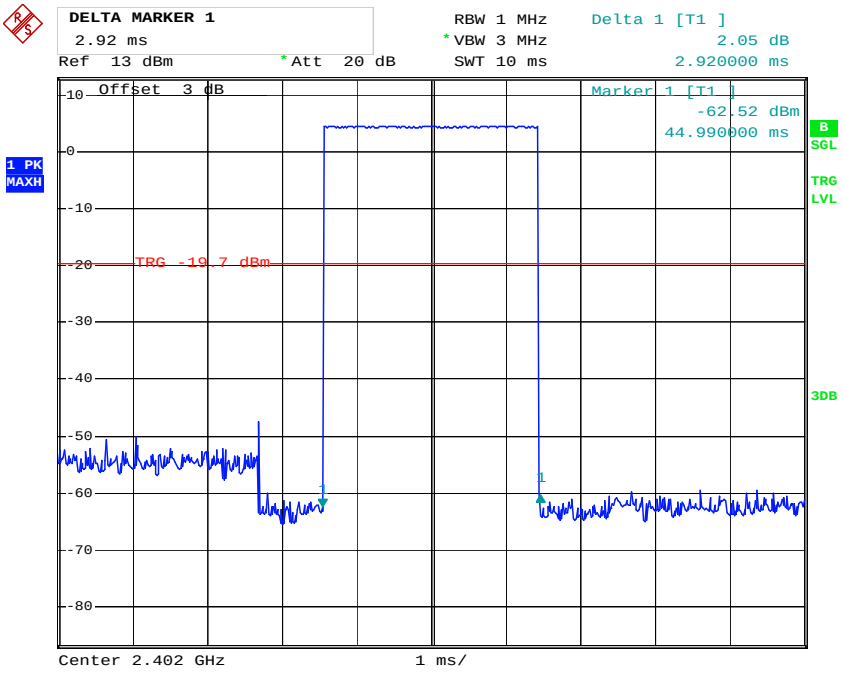
Date: 30.OCT.2013 13:38:25

DH3: High Channel



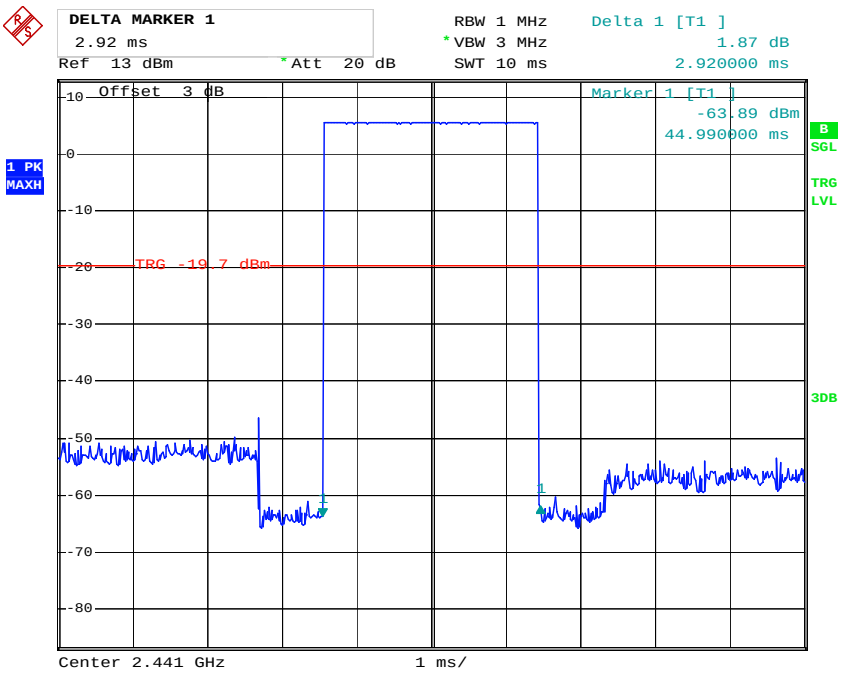
Date: 30.OCT.2013 13:38:52

DH5: Low Channel



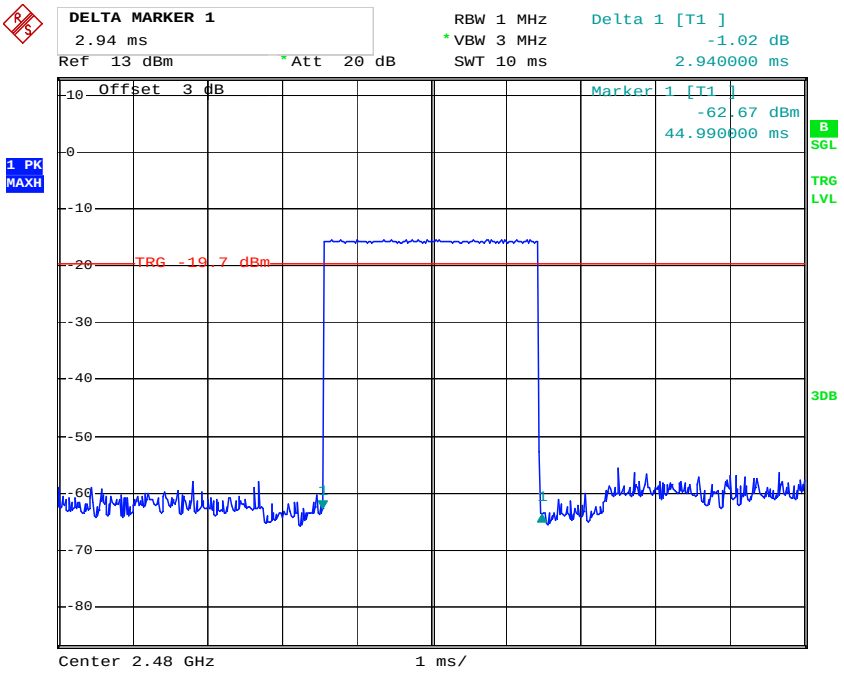
Date: 30.OCT.2013 13:41:00

DH5: Middle Channel



Date: 30.OCT.2013 13:41:27

DH5: High Channel

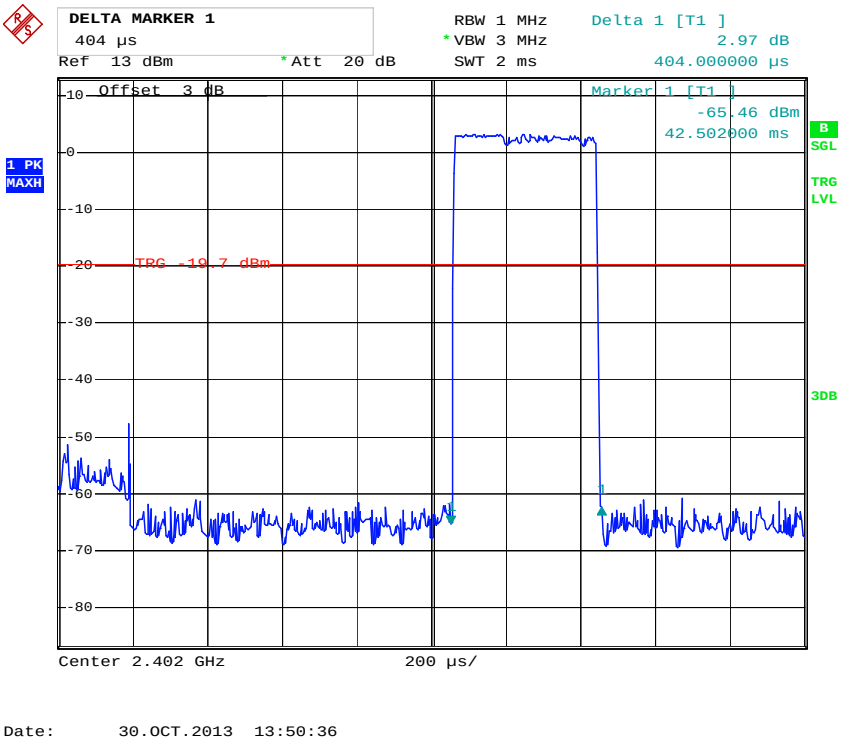


Date: 30.OCT.2013 13:41:59

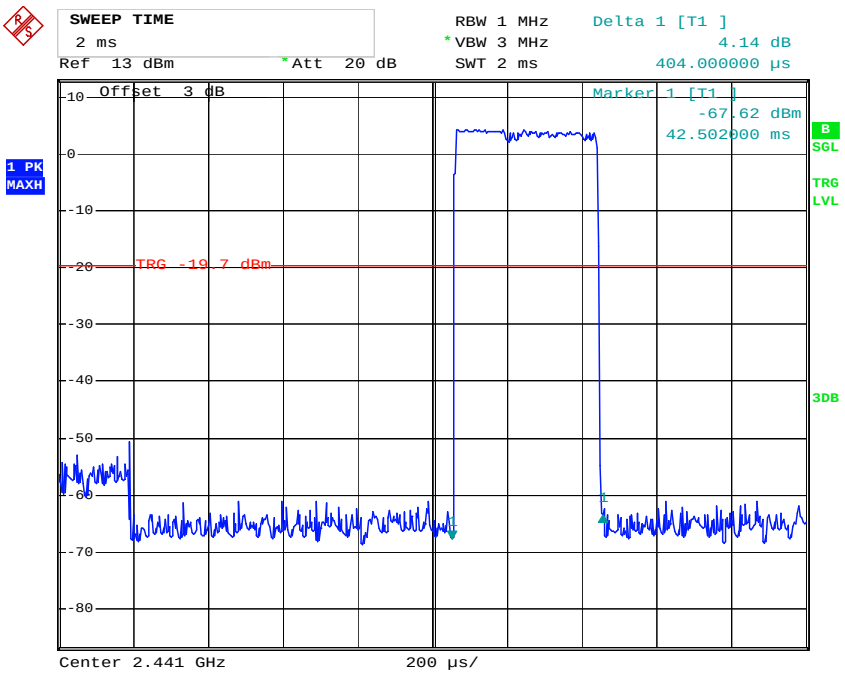
EDR Mode (π/4-DQPSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.404	0.129	0.4	Pass
	Middle	0.404	0.129	0.4	Pass
	High	0.404	0.129	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s				
DH3	Low	1.664	0.266	0.4	Pass
	Middle	1.664	0.266	0.4	Pass
	High	1.664	0.266	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/4/79) ×31.6 s				
DH5	Low	2.944	0.314	0.4	Pass
	Middle	2.944	0.314	0.4	Pass
	High	2.944	0.314	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/6/79) ×31.6 s				

DH1: Low Channel

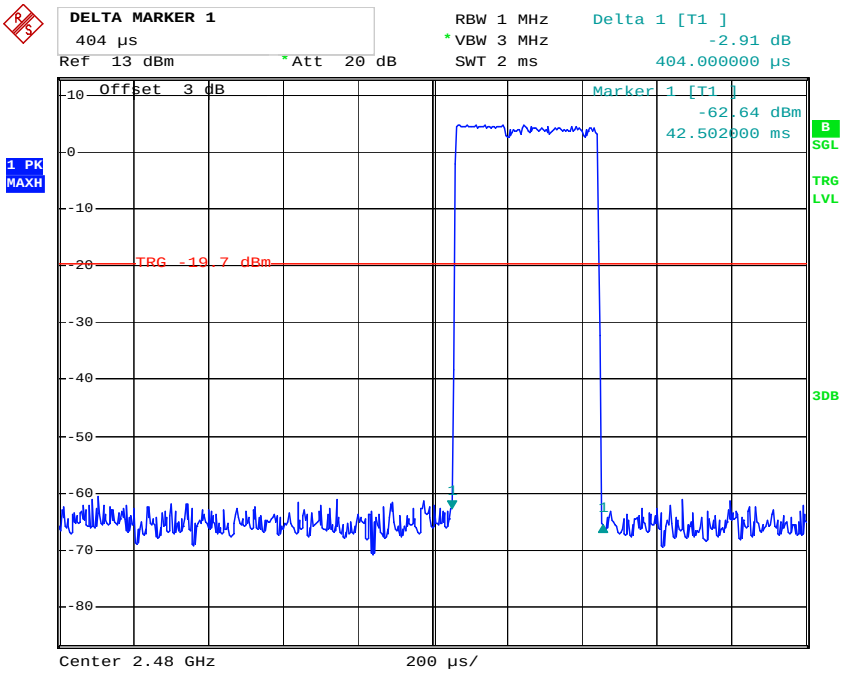


DH1: Middle Channel



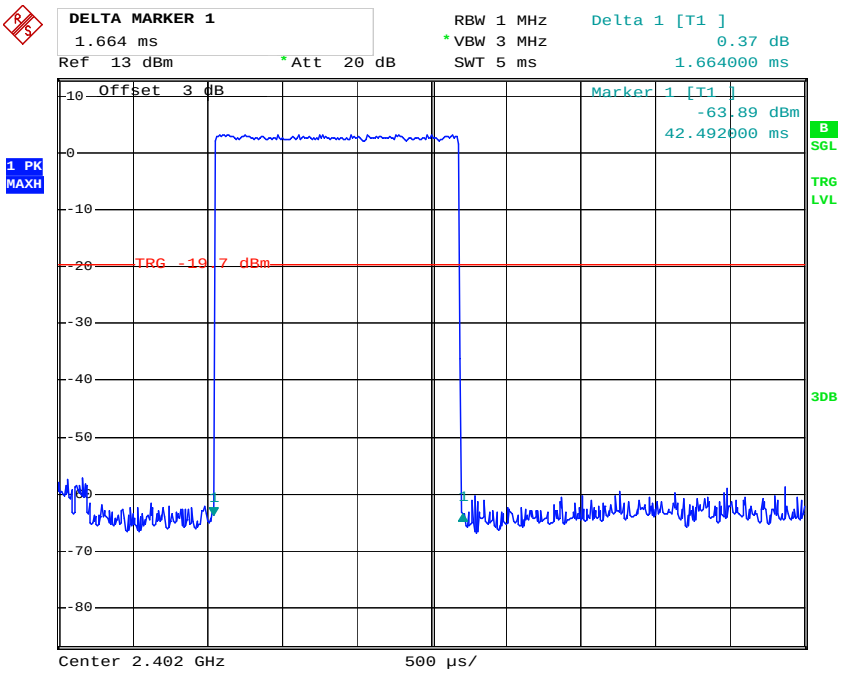
Date: 30.OCT.2013 13:50:48

DH1: High Channel



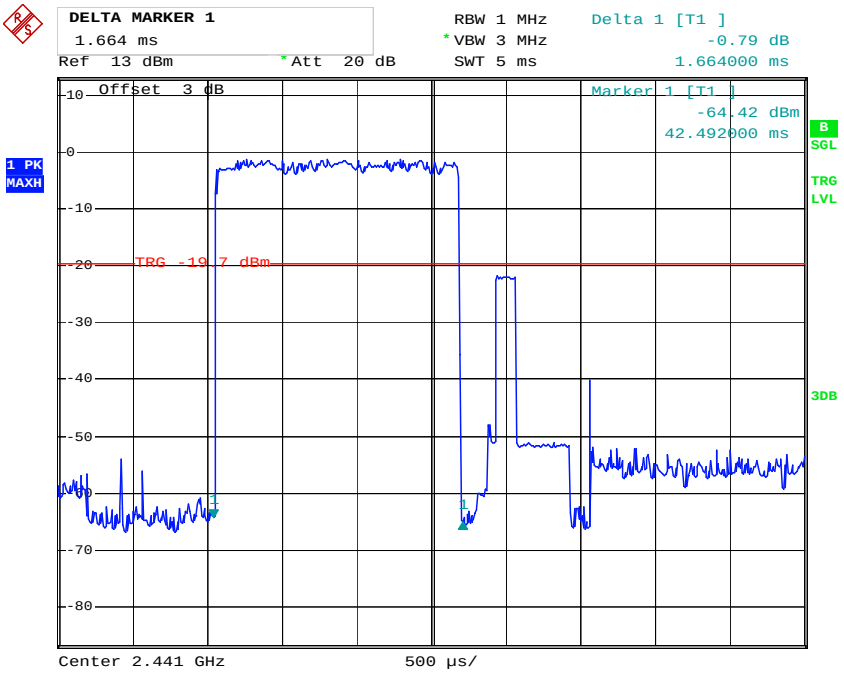
Date: 30.OCT.2013 13:51:07

DH3: Low Channel



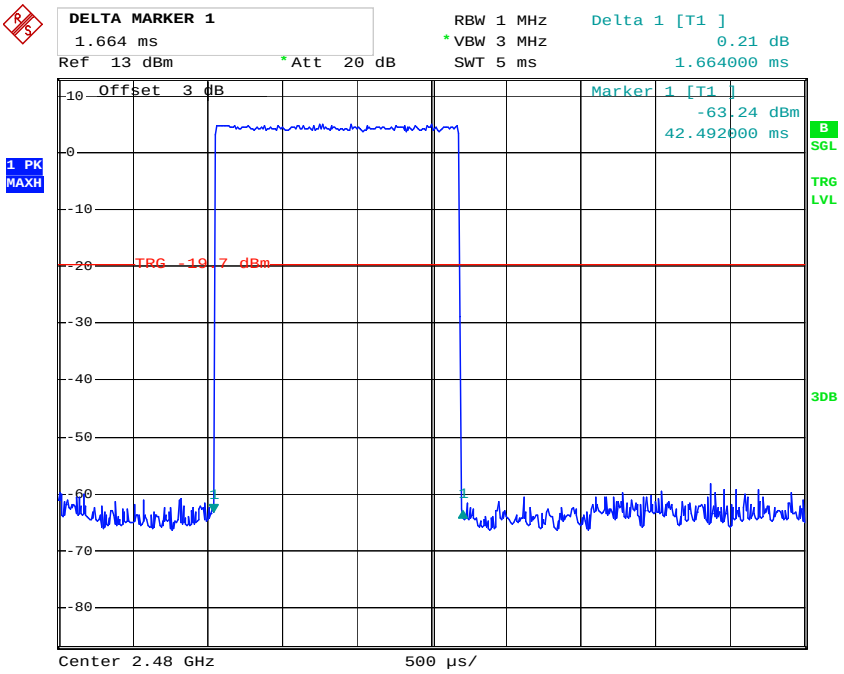
Date: 30.OCT.2013 13:52:55

DH3: Middle Channel



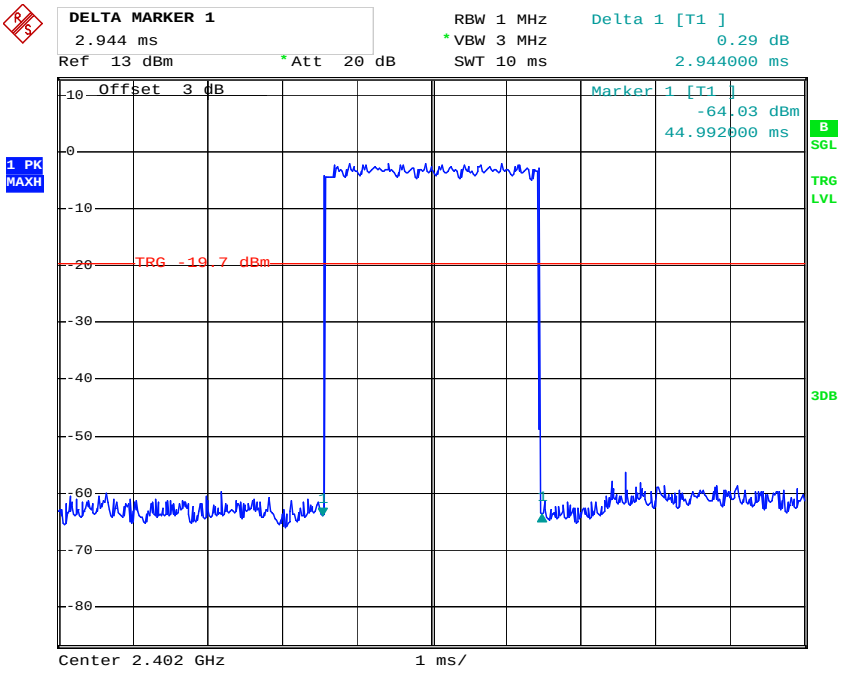
Date: 30.OCT.2013 13:54:05

DH3: High Channel



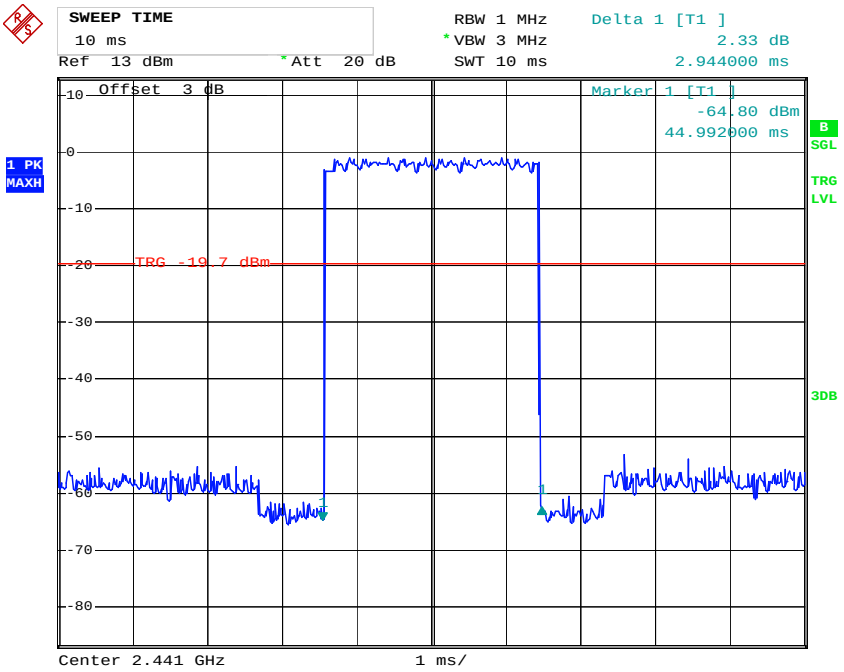
Date: 30.OCT.2013 13:54:35

DH5: Low Channel



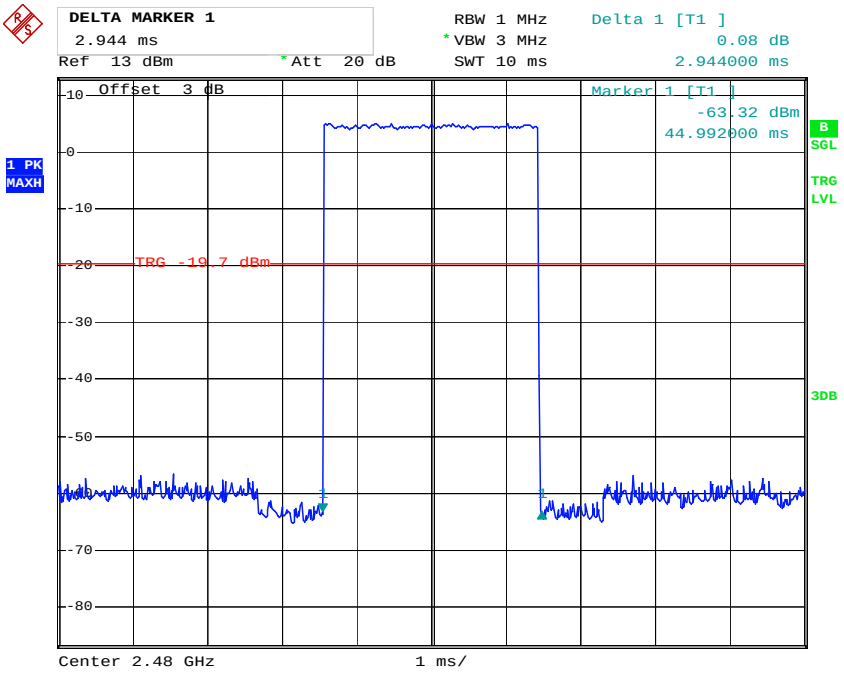
Date: 30.OCT.2013 13:56:10

DH5: Middle Channel



Date: 30.OCT.2013 13:56:37

DH5: High Channel

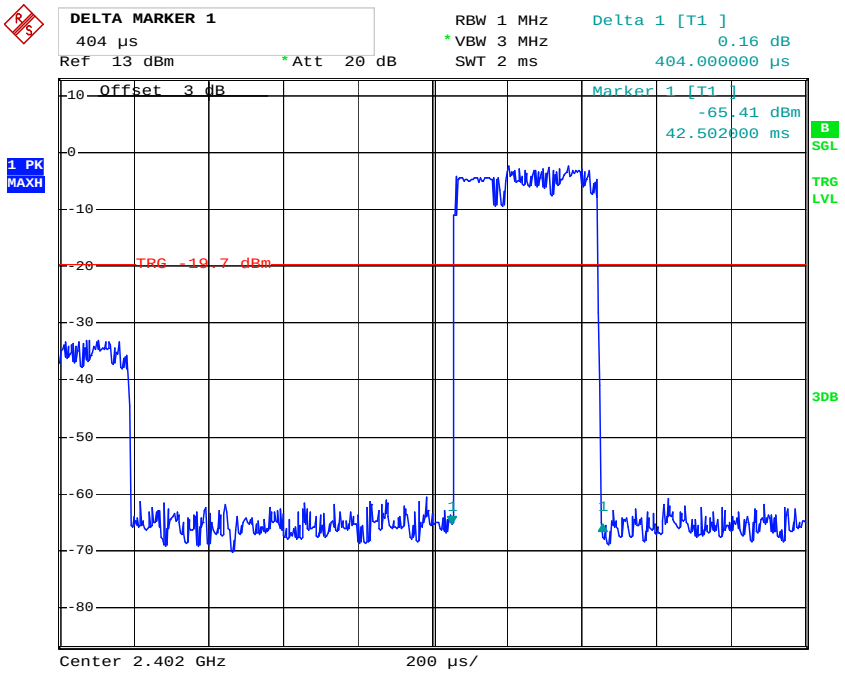


Date: 30.OCT.2013 13:56:48

EDR Mode (8-DPSK):

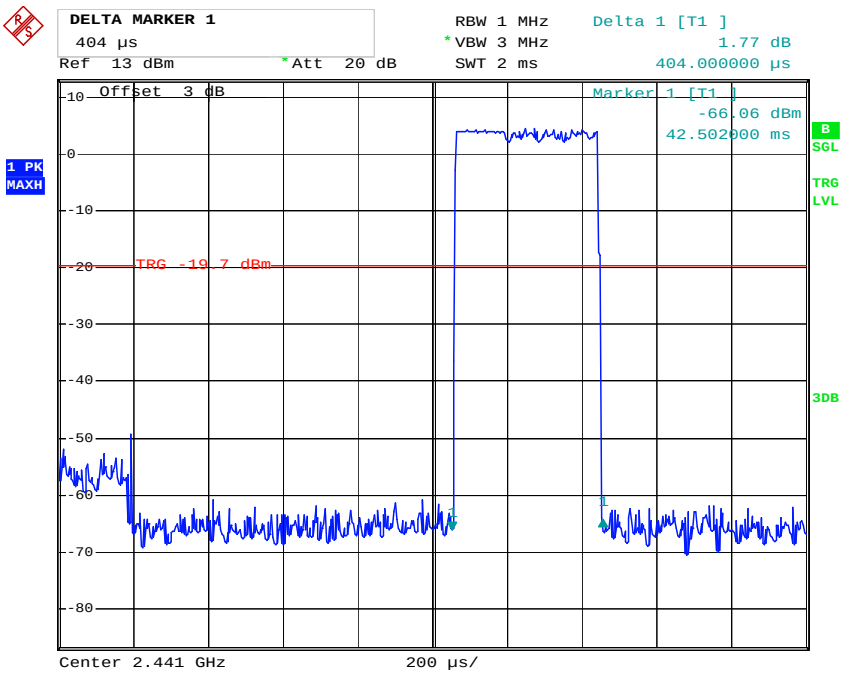
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.404	0.129	0.4	Pass
	Middle	0.404	0.129	0.4	Pass
	High	0.404	0.129	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s				
DH3	Low	1.664	0.266	0.4	Pass
	Middle	1.664	0.266	0.4	Pass
	High	1.664	0.266	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/4/79) ×31.6 s				
DH5	Low	2.944	0.314	0.4	Pass
	Middle	2.944	0.314	0.4	Pass
	High	2.944	0.314	0.4	Pass
	Note: Dwell time=Pulse time (ms) × (1600/6/79) ×31.6 s				

DH1: Low Channel



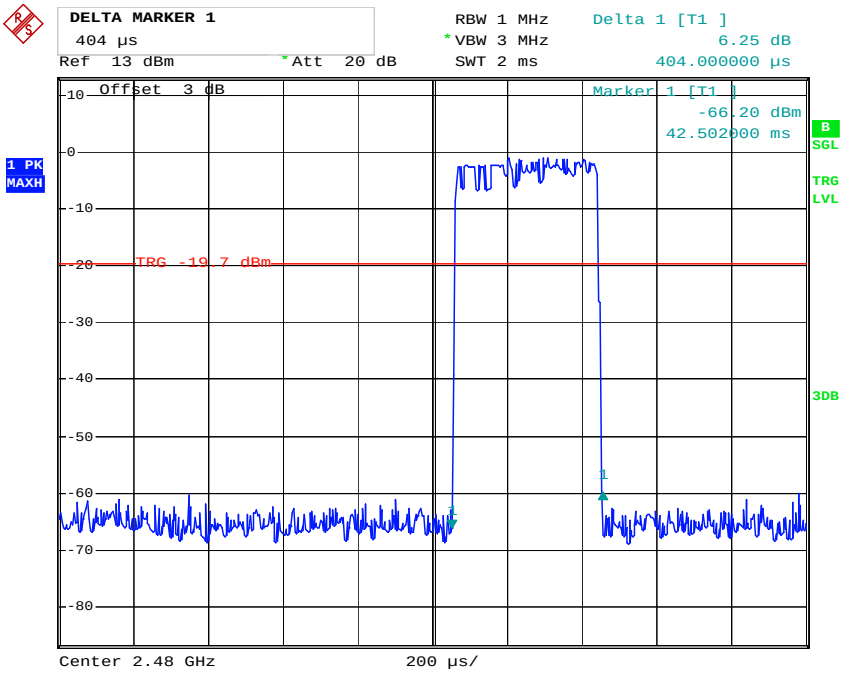
Date: 30.OCT.2013 14:00:30

DH1: Middle Channel



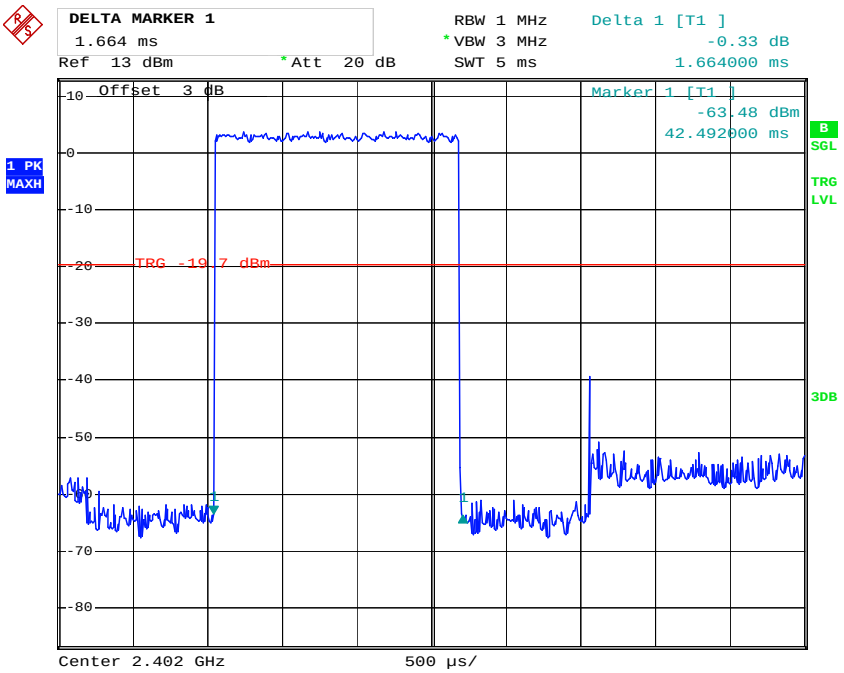
Date: 30.OCT.2013 14:00:48

DH1: High Channel



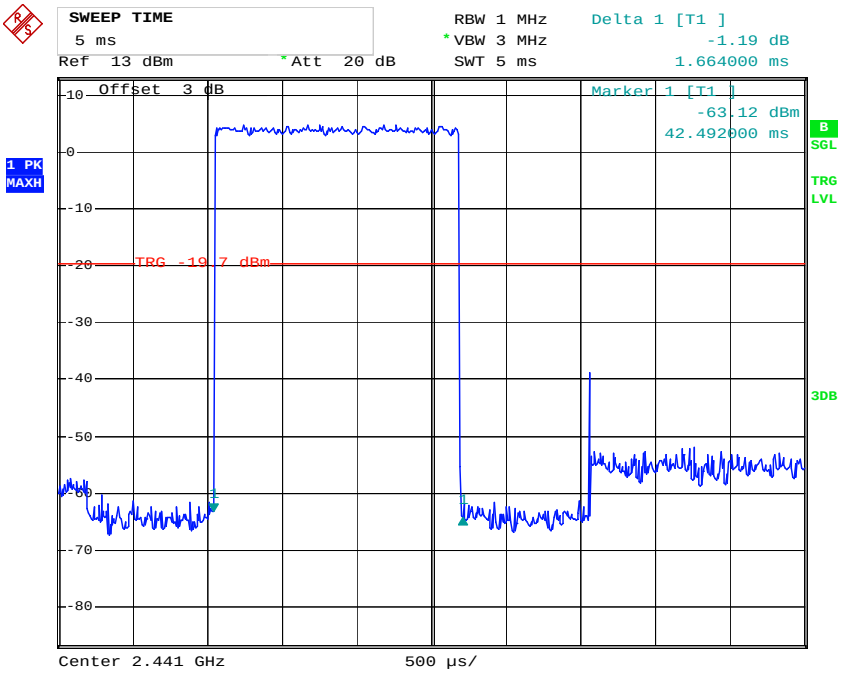
Date: 30.OCT.2013 14:01:10

DH3: Low Channel



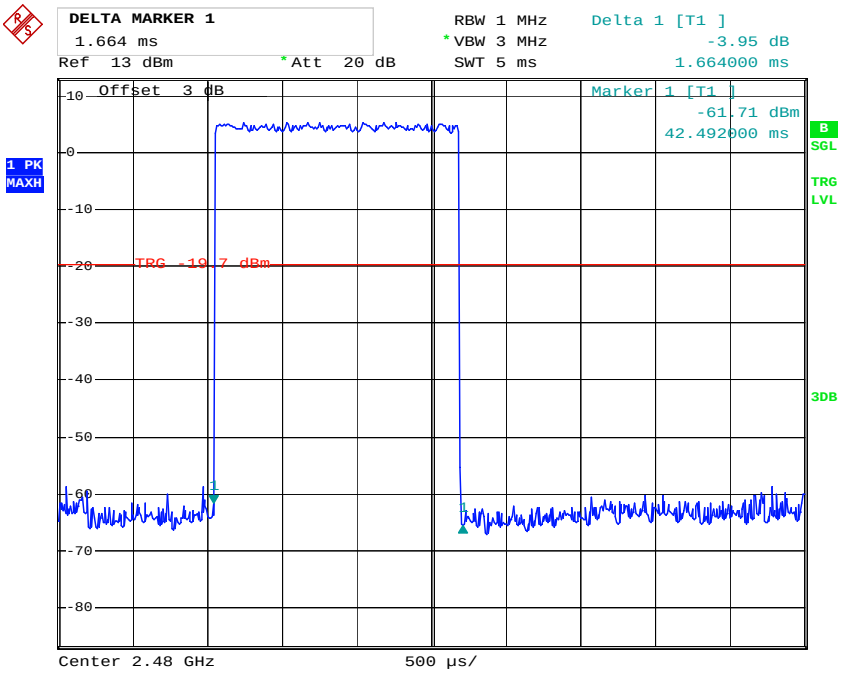
Date: 30.OCT.2013 14:03:19

DH3: Middle Channel



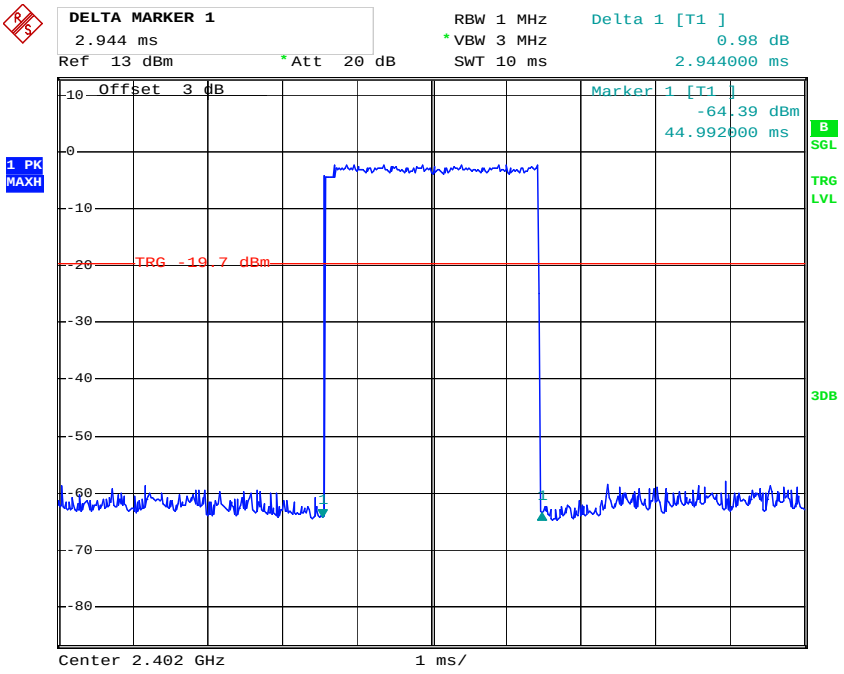
Date: 30.OCT.2013 14:03:29

DH3: High Channel



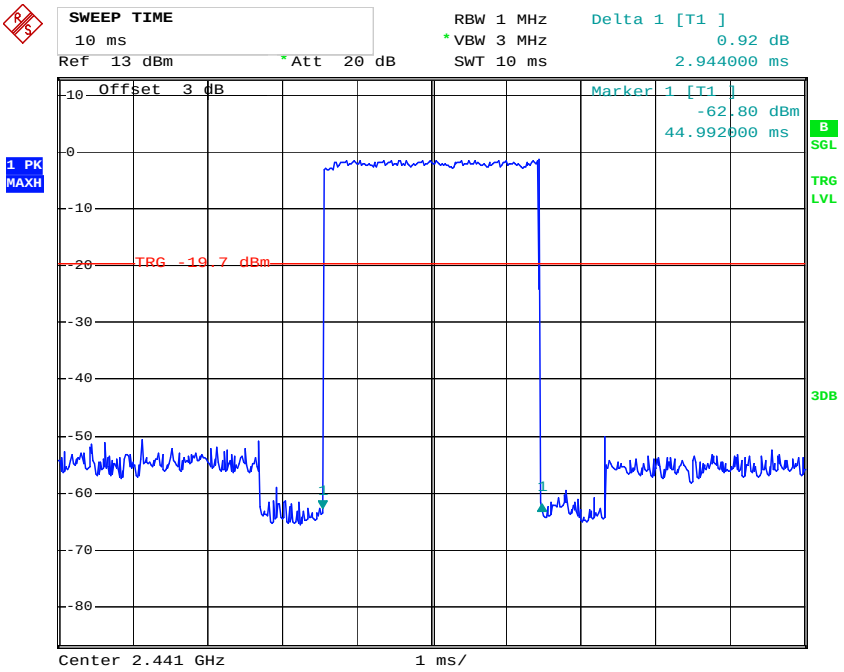
Date: 30.OCT.2013 14:03:38

DH5: Low Channel



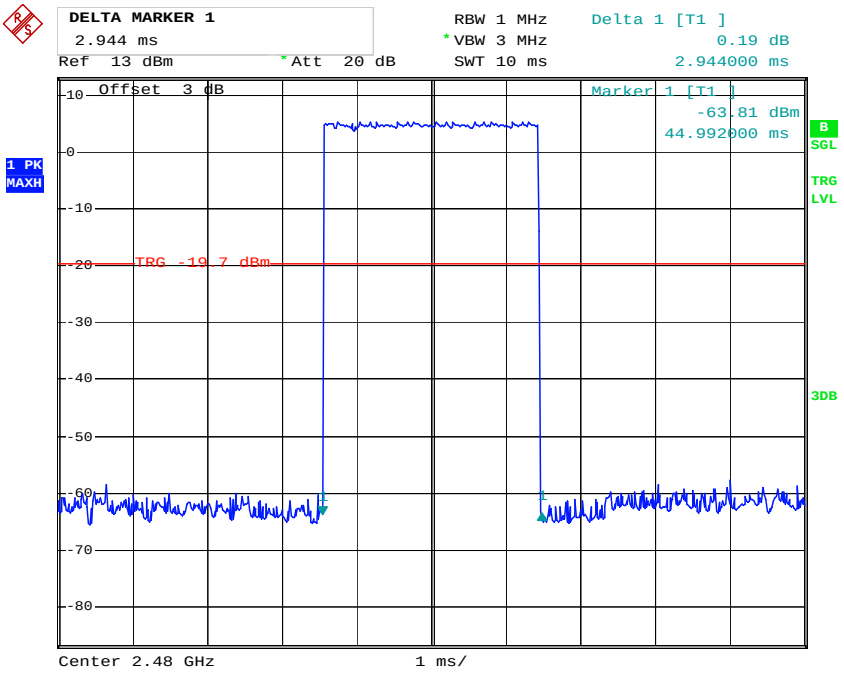
Date: 30.OCT.2013 14:06:26

DH5: Middle Channel



Date: 30.OCT.2013 14:06:55

DH5: High Channel



Date: 30.OCT.2013 14:07:20

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

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts

Test Procedure

1. Place the EUT on a bench and set in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI test receiver.
3. Add a correction factor to the display.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15

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

Test Data

Environmental Conditions

Temperature:	28.3 °C
Relative Humidity:	57 %
ATM Pressure:	100.8 kPa

** The testing was performed by Ares Liu on 2013-10-15.*

Test Result: Compliance.

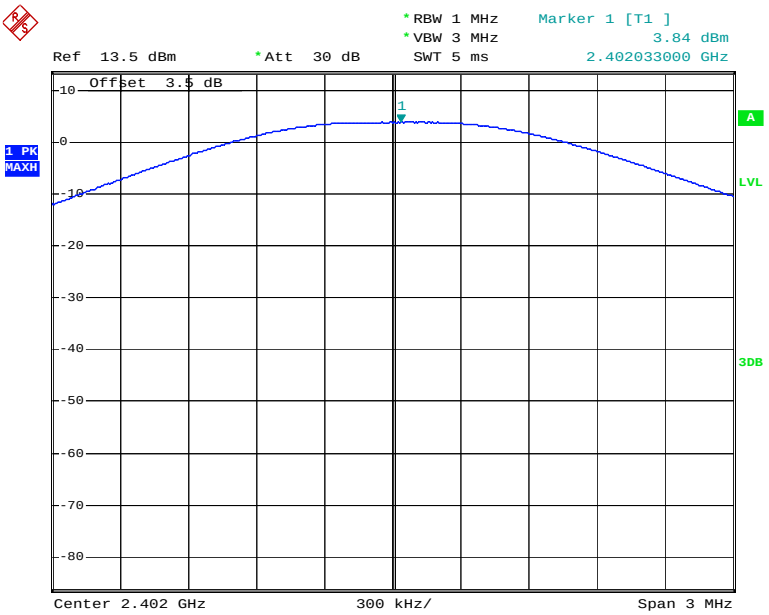
Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Output power (dBm)	Limit (dBm)
BDR Mode (GFSK)	Low	2402	3.84	30
	Middle	2441	4.66	30
	High	2480	5.39	30
EDR Mode (π/4-DQPSK)	Low	2402	3.44	30
	Middle	2441	4.32	30
	High	2480	5.08	30
EDR Mode (8-DPSK)	Low	2402	3.56	30
	Middle	2441	4.32	30
	High	2480	5.14	30

Note: The data above was tested in conducted mode.

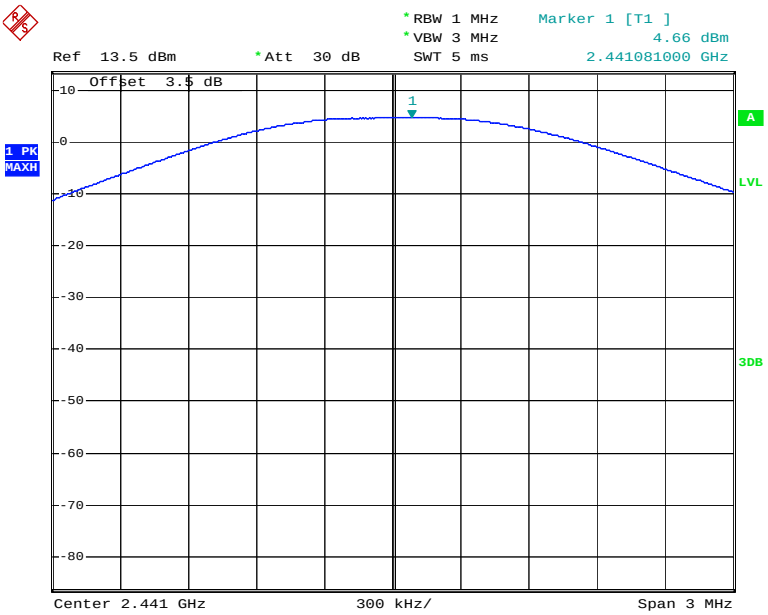
BDR Mode (GFSK):

Output Power, Low



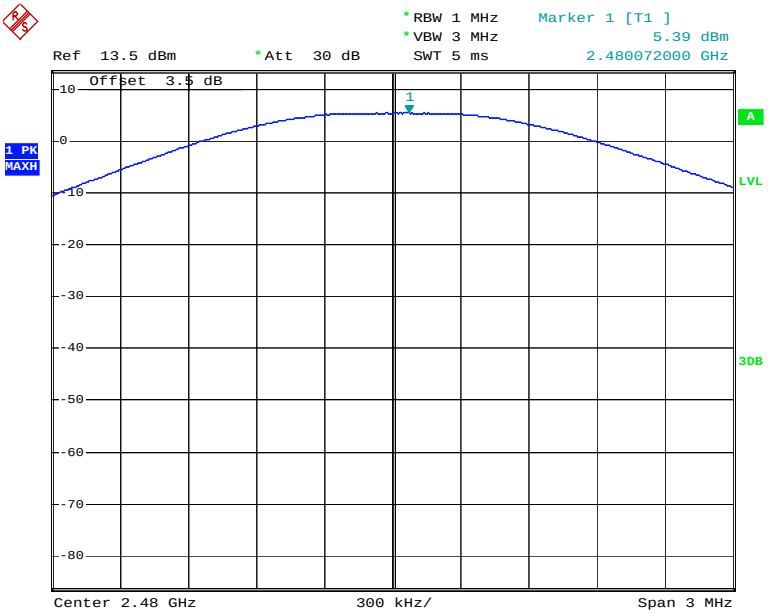
Date: 15.OCT.2013 14:25:51

Output Power, Middle



Date: 15.OCT.2013 14:26:01

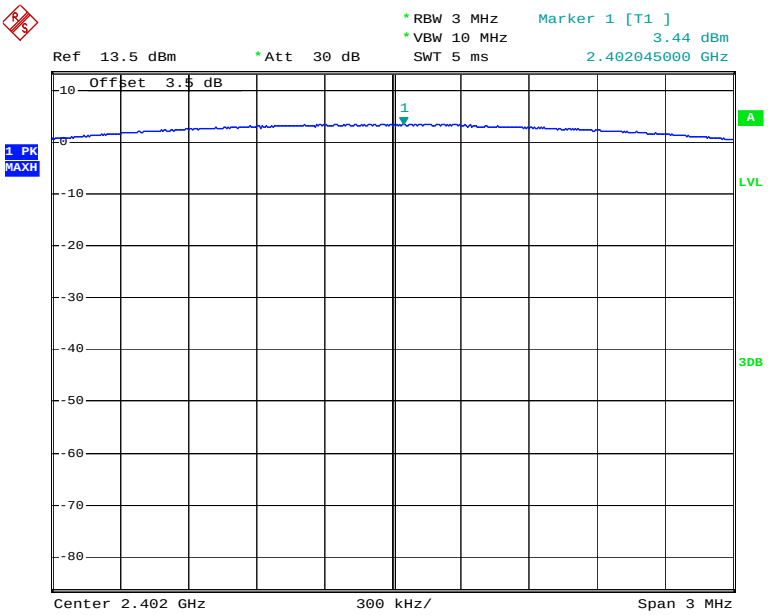
Output Power, High



Date: 15.OCT.2013 14:26:11

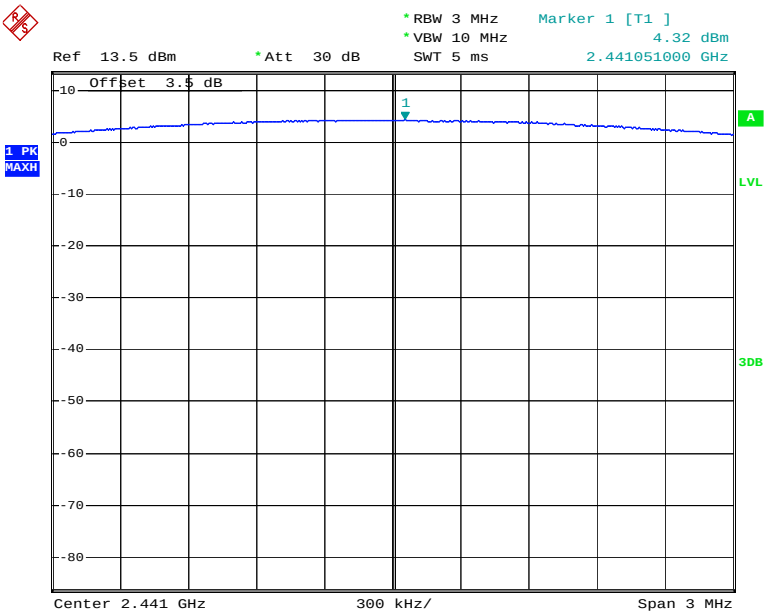
EDR Mode (π/4-DQPSK):

Output Power, Low



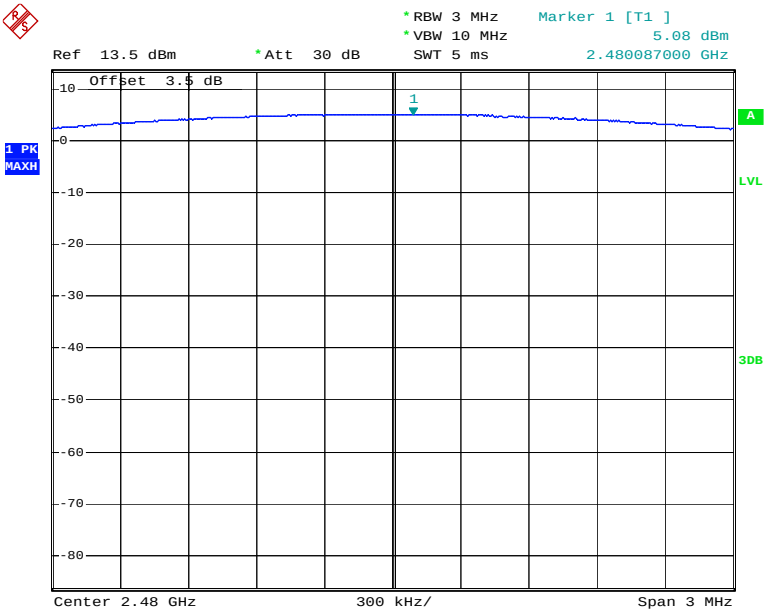
Date: 15.OCT.2013 14:26:21

Output Power, Middle



Date: 15.OCT.2013 14:26:30

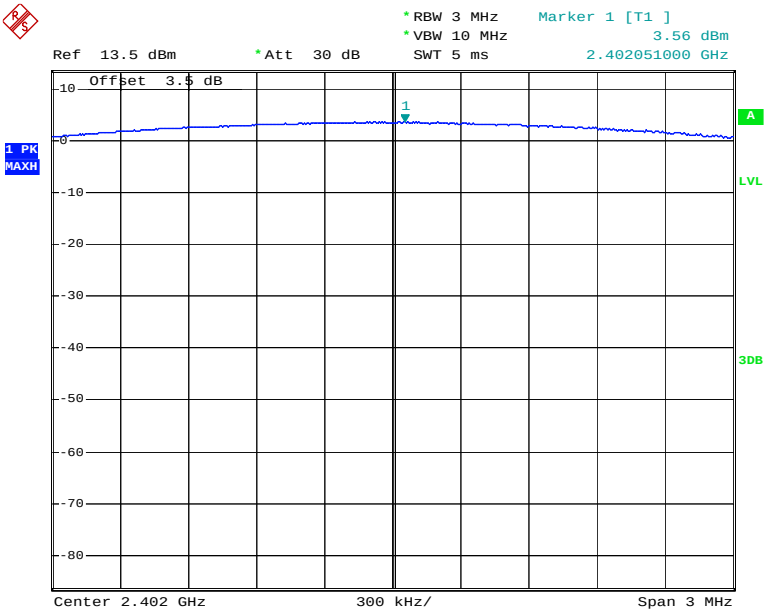
Output Power, High



Date: 15.OCT.2013 14:26:40

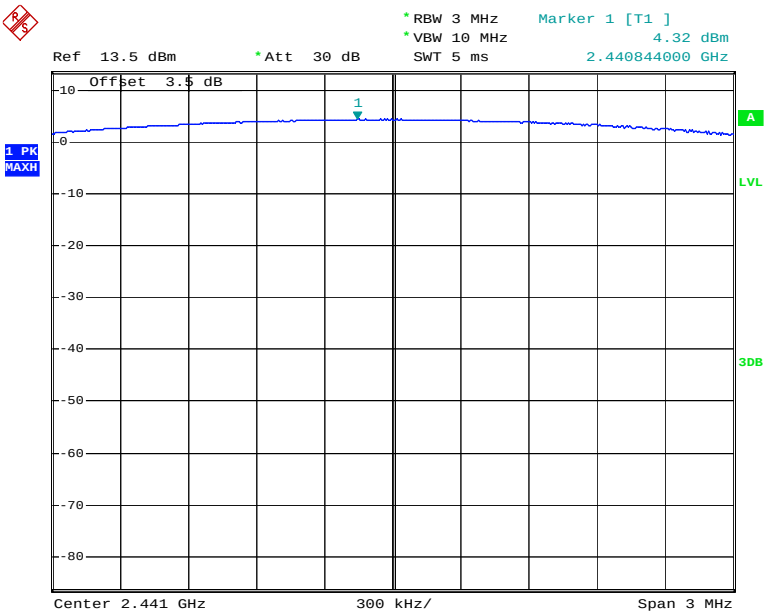
EDR Mode (8-DPSK):

Output Power, Low



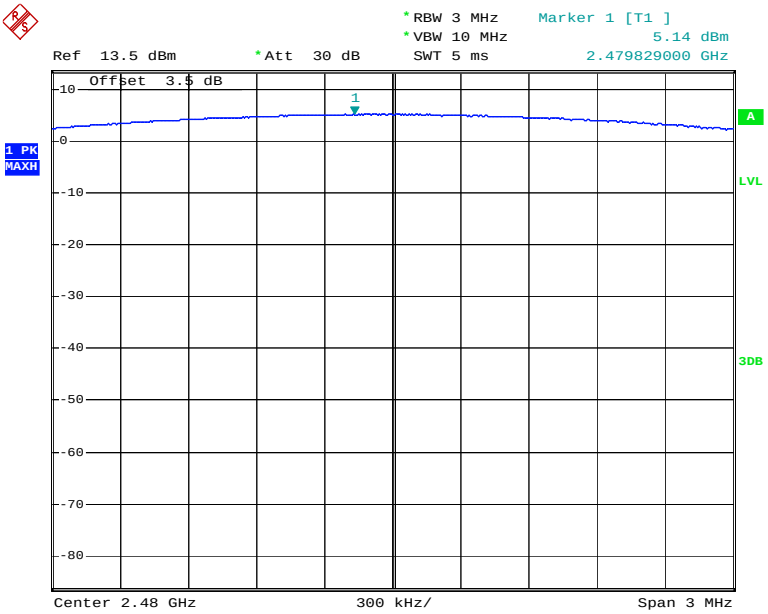
Date: 15.OCT.2013 14:26:50

Output Power, Middle



Date: 15.OCT.2013 14:27:00

Output Power, High



Date: 15.OCT.2013 14:27:10

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	ESPI	100337	2012-11-10	2013-11-9

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

Test Data

Environmental Conditions

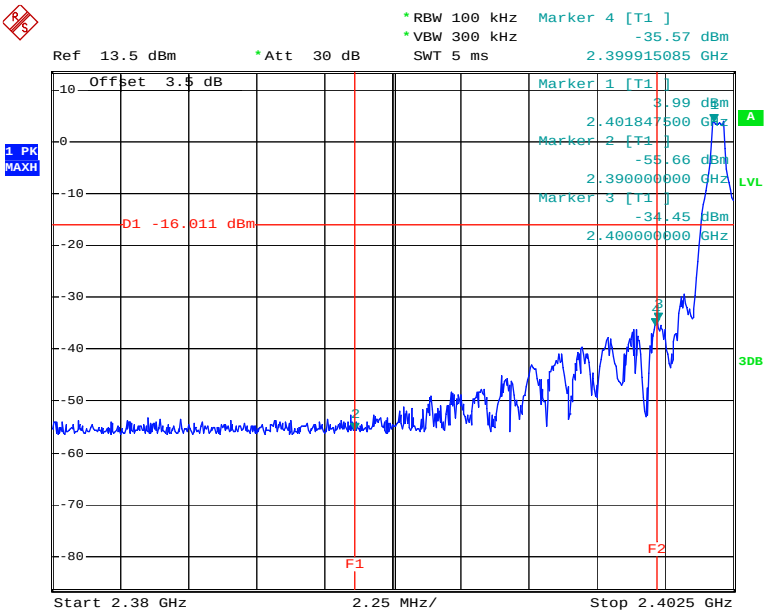
Temperature:	28.3 °C
Relative Humidity:	57 %
ATM Pressure:	100.8 kPa

** The testing was performed by Ares Liu on 2013-10-15.*

Test Result: Compliance

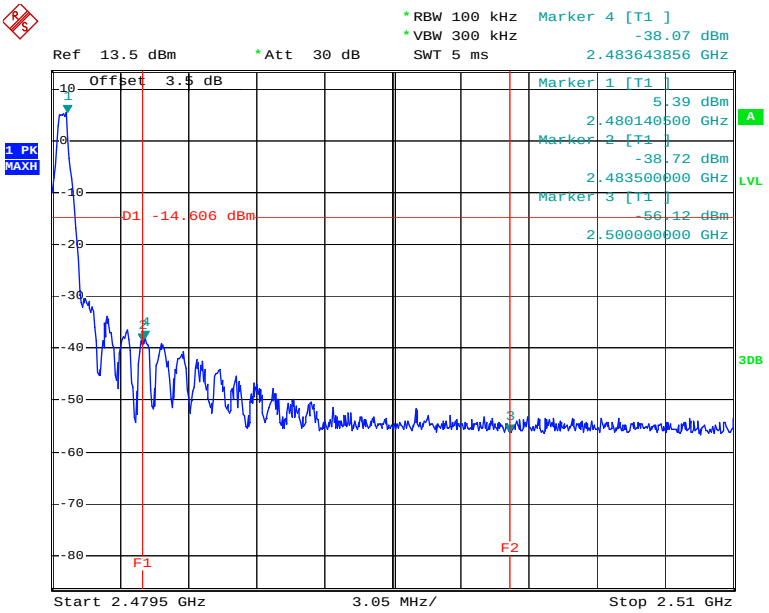
BDR Mode (GFSK):

Band Edge, Left Side



Date: 15.OCT.2013 14:51:08

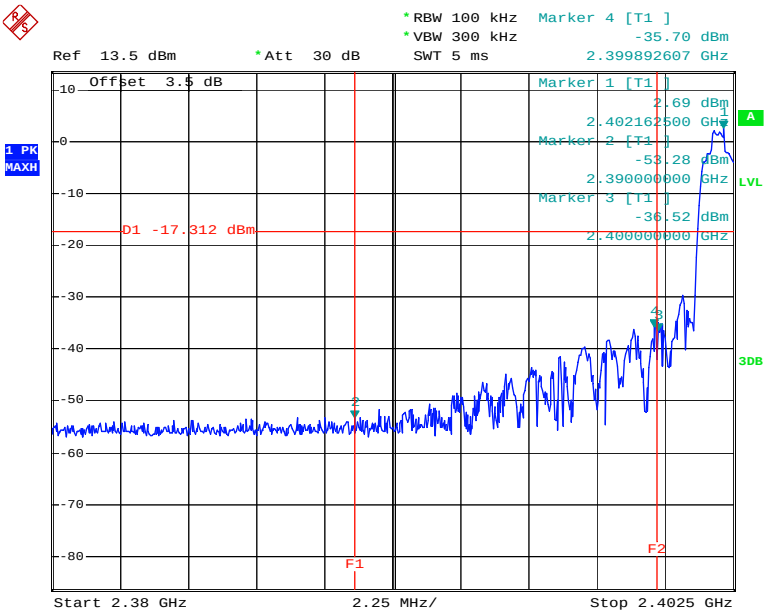
Band Edge, Right Side



Date: 15.OCT.2013 14:52:05

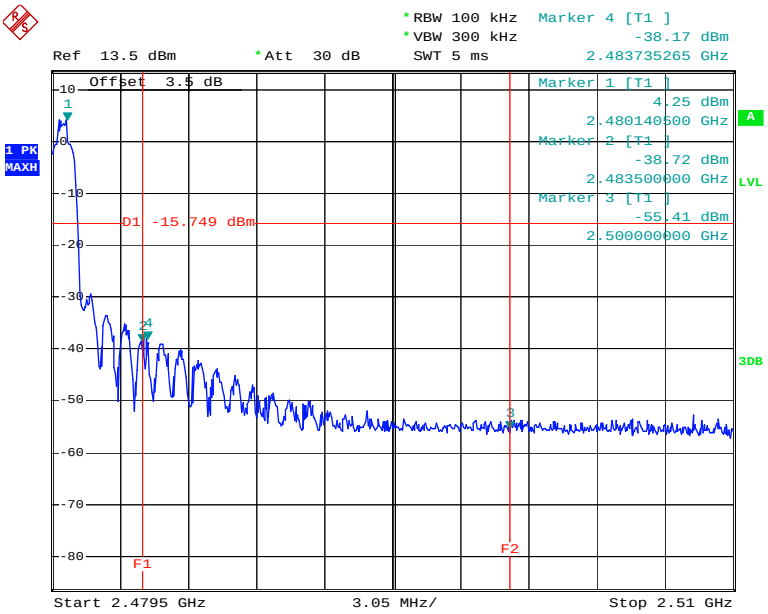
EDR Mode (π/4-DQPSK):

Band Edge, Left Side



Date: 15.OCT.2013 14:52:44

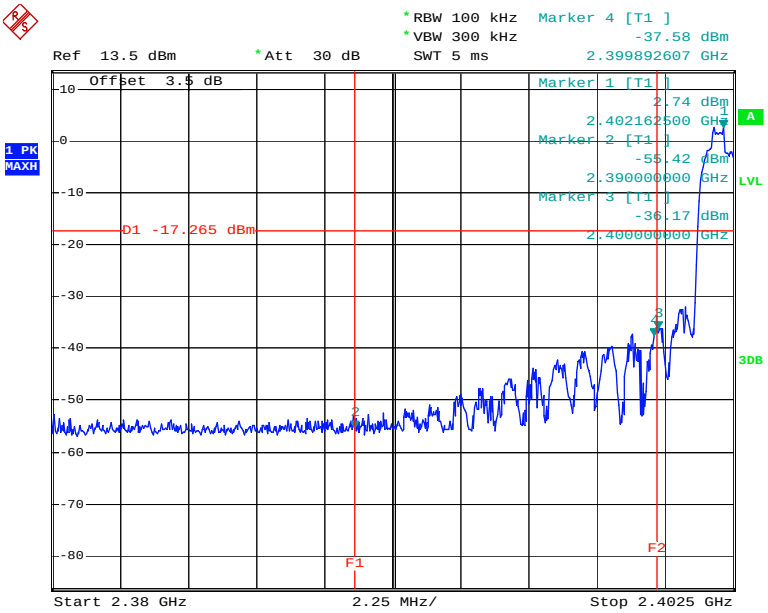
Band Edge, Right Side



Date: 15.OCT.2013 14:53:40

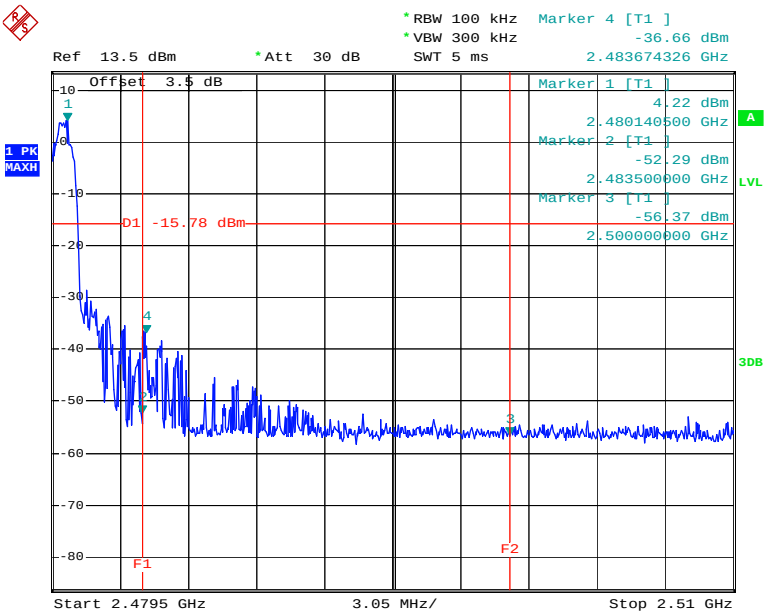
EDR Mode (8-DPSK):

Band Edge, Left Side



Date: 15.OCT.2013 14:54:25

Band Edge, Right Side



Date: 15.OCT.2013 14:54:42

DECLARATION OF SIMILARITY

Binatone Electronics International Ltd.
Add: Floor 23A, 9 Des Voeux Road West, Sheung Wan, Hong Kong, China
Tel: 00852-28027388 Fax: 00852-28028138

DECLARATION OF SIMILARITY

October 14, 2013

Dear Sir or Madam:

We, Binatone Electronics International Ltd., hereby declare that our product: GSM Mobile Phone, models: Voxtel-SM320 is electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as SM320. And they are tested by BACL, the results of which are featured in BACL project: R2DG130917002, R2DG130917003, R2DG130917003-03, R1DG130917002-20, R1DG130917003-20

A description of the differences between the tested model and those that are declared similar areas follows:

Models: Voxtel-SM320, SM320 the only difference is the model name.

Please contact me should there be need for any additional clarification or information.

Best Regards,

(Legally valid signature)

Patrick Cheung, Senior Product Manager

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