

FCC PART 15.247

TEST REPORT

For

YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.

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FCC ID: T2C-BT40

Report Type: Original Report	Product Type: Yealink Bluetooth® USB Dongle BT40
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Report Number: R2DG130410002-00A	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD.'s product, model number: BT40 (FCC ID: T2C-BT40) or ("EUT") in this report is a Yealink Bluetooth® USB Dongle BT40, which was measured approximately: 1.9 cm (L) x 0.7 cm (W) x 0.3 cm (H), rated input voltage: DC 5V from System.

All measurement and test data in this report was gathered from production sample serial number: 130410002 (Assigned by BACL, Dongguan). The EUT was received on 2013-04-11.

Objective

This report is prepared on behalf of YEALINK (XIAMEN) NETWORK TECHNOLOGY CO., LTD. in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine the 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 15C DTS submissions with FCC ID: T2C-BT40 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 Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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).



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.

EUT Exercise Software

The software “Bluetest 3” was used in test, which was provided by manufacturer.

Equipment Modifications

No modification was made to the EUT tested.

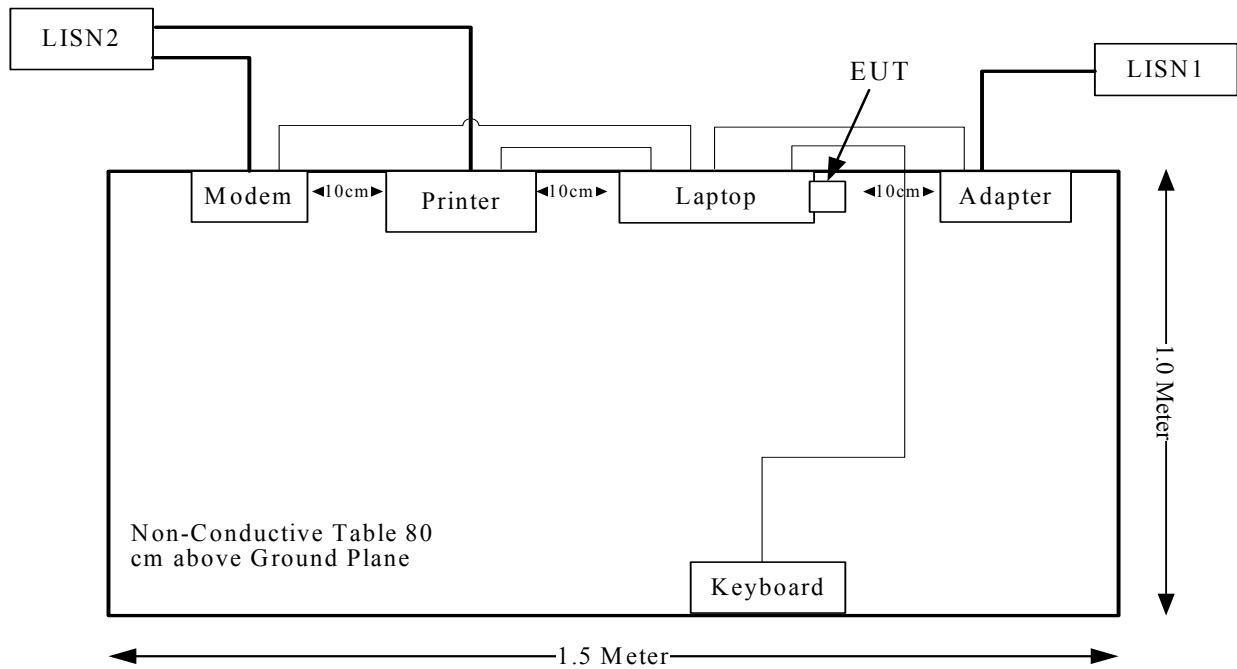
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
HP	Printer	C3941A	JPTVOB2337
SAST	Modem	AEM-2100	0293
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Laptop	PP11L	N/A

External Cable

Cable Description	Length (m)	From Port	To
Shielded Detachable Printer Cable	1.2	Parallel Port of Laptop	Printer
Shielded Detachable Serial Cable	1.2	Serial Port of Laptop	Modem
Shielded Detachable Keyboard Cable	1.5	Keyboard Port of Laptop	Keyboard

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	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) & §2.1093 - RF EXPOSURE

Applicable Standard

According to §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that 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 $f=2450$ MHz, the output power is less 10mW at distance of 5mm.

Measurement Result

Peak conducted output power= 0.95 dBm

Antenna gain = 0 dBi

SAR exclusion threshold 10 mW (10 dBm) > 0.95 dBm

So the 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 a printed antenna permanently soldering on the printed circuit boards, which complied with §15.203, the maximum gain is 0 dBi, please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207

Measurement Uncertainty

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

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

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

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

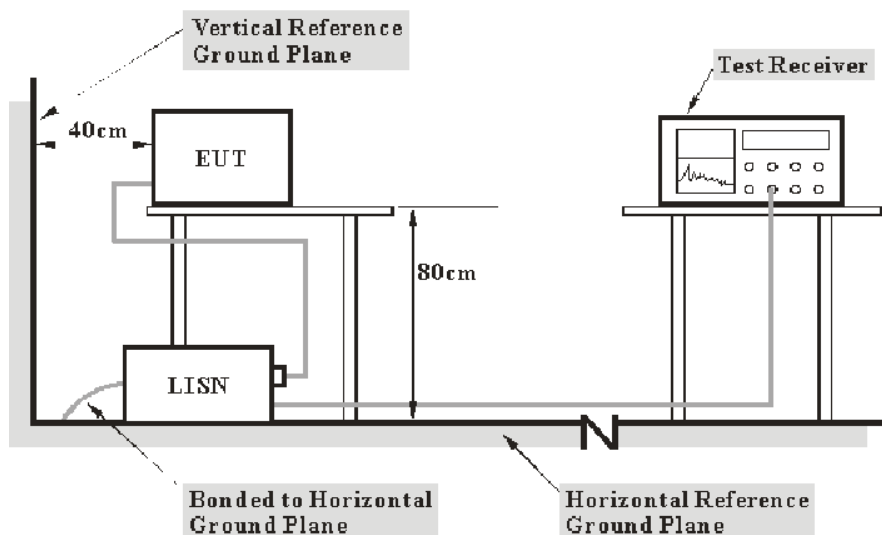
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
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:

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

Test Procedure

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI TEST RECIEVER	ESCS 30	830245/006	2013-1-10	2014-1-9
R&S	L.I.S.N	ESH3-Z5	843331/015	2012-9-17	2013-9-16
R&S	L.I.S.N	ESH3-Z5	100113	2012-11-29	2013-11-28
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).

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

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 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:

10.66 dB at 0.310 MHz in the Line conducted mode.

Test Data

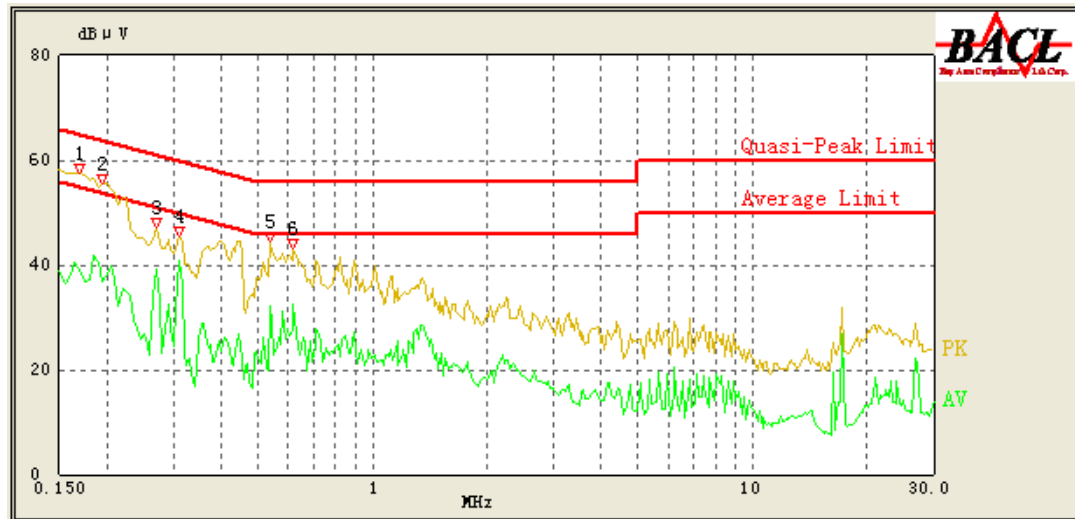
Environmental Conditions

Temperature:	26.4° C
Relative Humidity:	67 %
ATM Pressure:	100 kPa

The testing was performed by Ares Liu on 2013-04-19.

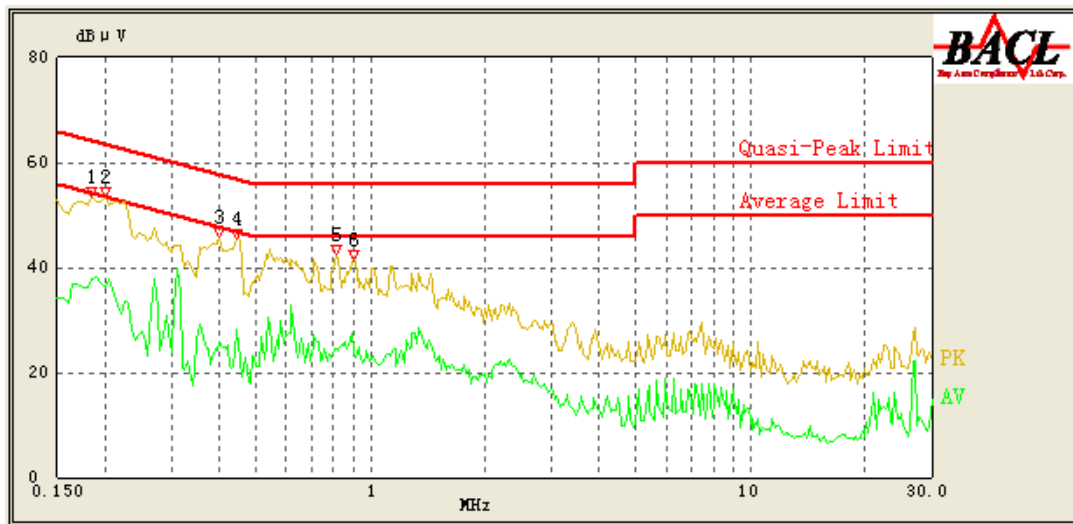
Test Mode: Transmitting

AC 120V/60 Hz, Line



Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.170	53.04	0.43	65.43	12.39	QP
0.170	39.19	0.43	55.43	16.24	AV
0.195	51.93	0.41	64.71	12.78	QP
0.195	36.82	0.41	54.71	17.89	AV
0.270	42.88	0.36	62.57	19.69	QP
0.270	39.27	0.36	52.57	13.30	AV
0.310	42.44	0.34	61.43	18.99	QP
0.310	40.77	0.34	51.43	10.66	AV
0.540	41.31	0.31	56.00	14.69	QP
0.540	32.33	0.31	46.00	13.67	AV
0.620	37.79	0.32	56.00	18.21	QP
0.620	32.58	0.32	46.00	13.42	AV

AC 120V/60 Hz, Neutral



Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.185	48.29	0.25	65.00	16.71	QP
0.185	37.70	0.25	55.00	17.30	AV
0.200	48.52	0.25	64.57	16.05	QP
0.200	36.18	0.25	54.57	18.39	AV
0.400	41.19	0.22	58.86	17.67	QP
0.400	25.81	0.22	48.86	23.05	AV
0.445	41.35	0.22	57.57	16.22	QP
0.445	28.04	0.22	47.57	19.53	AV
0.815	37.51	0.22	56.00	18.49	QP
0.810	24.60	0.22	46.00	21.40	AV
0.900	36.80	0.23	56.00	19.20	QP
0.900	24.28	0.23	46.00	21.72	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_{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

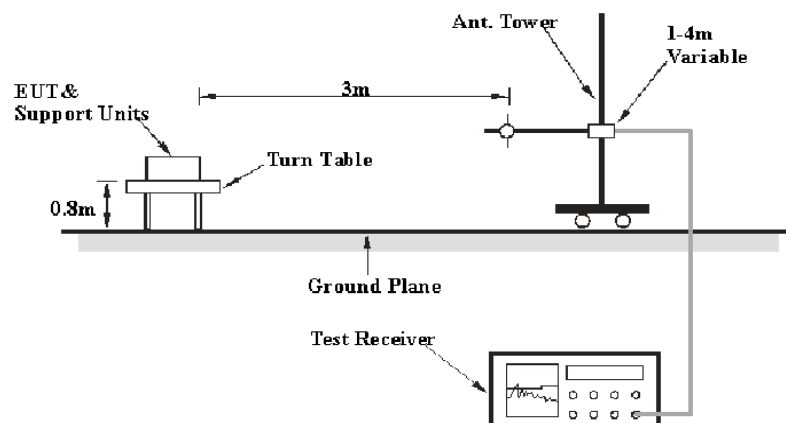
6G~18GHz: 5.23 dB

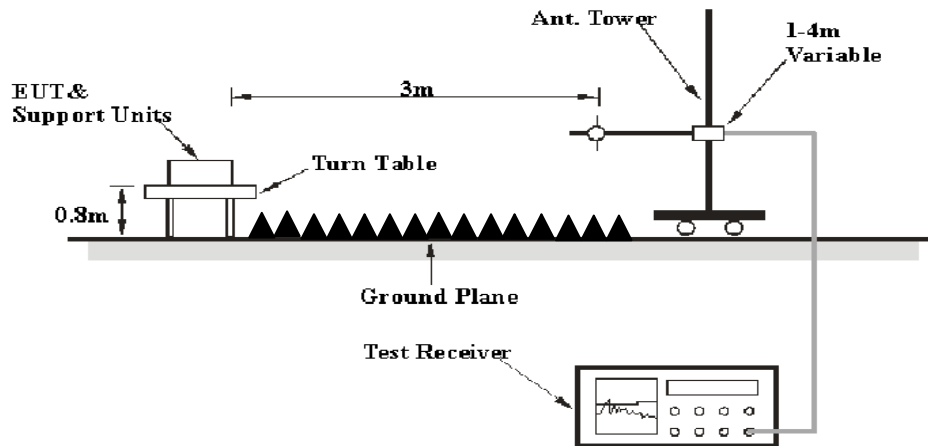
Table 1 – Values of U_{cisp}

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

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

Test Procedure

For the radiated emissions test, the adapter was connected to the first AC floor outlet. 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	2012-5-14	2013-5-13
Sunol Sciences	Antenna	JB3	A060611-1	2012-9-6	2015-9-5
HP	HP AMPLIFIER	8447E	2434A02181	N/A	N/A
R&S	Spectrum analyzer	FSEM 30	849016/001	2012-9-4	2013-9-3
ETS LINDGREN	horn antenna	3115	000 527 35	2012-9-6	2015-9-5
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	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:

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

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:

10.18 dB at 2483.5 MHz in the Vertical polarization of EDR Mode (8-DPSK)

Test Data

Environmental Conditions

Temperature:	22.7 °C
Relative Humidity:	67 %
ATM Pressure:	100kPa

*The testing was performed by Ares Liu on 2013-04-18.

Test 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	61.76	PK	H	25.65	3.90	0.00	91.31	N/A	N/A
2402	49.26	AV	H	25.65	3.90	0.00	78.81	N/A	N/A
2402	63.89	PK	V	25.65	3.90	0.00	93.44	N/A	N/A
2402	49.95	AV	V	25.65	3.90	0.00	79.50	N/A	N/A
2390	27.7	PK	V	25.61	3.84	0.00	57.15	74.00	16.85
2390	14.13	AV	V	25.61	3.84	0.00	43.58	54.00	10.42
4804	38.79	PK	H	30.59	4.67	27.26	46.79	74.00	27.21
4804	23.04	AV	H	30.59	4.67	27.26	31.04	54.00	22.96
7206	32.9	PK	H	34.09	6.50	26.30	47.19	74.00	26.81
7206	19.66	AV	H	34.09	6.50	26.30	33.95	54.00	20.05
9608	32.49	PK	H	35.96	8.75	26.22	50.98	74.00	23.02
9608	18.12	AV	H	35.96	8.75	26.22	36.61	54.00	17.39
2925	31.47	PK	H	27.01	6.11	27.44	37.15	74.00	36.85
2925	18.33	AV	H	27.01	6.11	27.44	24.01	54.00	29.99
282.58	29.53	QP	H	15.80	2.37	21.73	25.97	46.00	20.03
Middle Channel: 2441 MHz									
2441	61.82	PK	H	25.75	3.99	0.00	91.56	N/A	N/A
2441	49.27	AV	H	25.75	3.99	0.00	79.01	N/A	N/A
2441	63.9	PK	V	25.75	3.99	0.00	93.64	N/A	N/A
2441	50.04	AV	V	25.75	3.99	0.00	79.78	N/A	N/A
4882	38.74	PK	H	30.79	4.75	27.26	47.02	74.00	26.98
4882	23.26	AV	H	30.79	4.75	27.26	31.54	54.00	22.46
7323	32.52	PK	H	34.38	6.72	26.53	47.09	74.00	26.91
7323	19.44	AV	H	34.38	6.72	26.53	34.01	54.00	19.99
9764	32.69	PK	H	36.33	8.58	25.62	51.98	74.00	22.02
9764	18.14	AV	H	36.33	8.58	25.62	37.43	54.00	16.57
2925	31.61	PK	H	27.01	6.11	27.44	37.29	74.00	36.71
2925	18.52	AV	H	27.01	6.11	27.44	24.20	54.00	29.80
3261	32.78	PK	H	27.94	5.10	27.47	38.35	74.00	35.65
3261	18.62	AV	H	27.94	5.10	27.47	24.19	54.00	29.81
281.95	30.17	QP	H	15.79	2.36	21.72	26.60	46.00	19.40
High Channel: 2480 MHz									
2480	61.76	PK	H	25.85	3.82	0.00	91.43	N/A	N/A
2480	49.35	AV	H	25.85	3.82	0.00	79.02	N/A	N/A
2480	63.95	PK	V	25.85	3.82	0.00	93.62	N/A	N/A
2480	50.03	AV	V	25.85	3.82	0.00	79.70	N/A	N/A
2483.5	27.75	PK	V	25.86	3.80	0.00	57.41	74.00	16.59
2483.5	14.14	AV	V	25.86	3.80	0.00	43.80	54.00	10.20
4960	38.56	PK	H	31.00	4.70	27.27	46.99	74.00	27.01
4960	23.24	AV	H	31.00	4.70	27.27	31.67	54.00	22.33
7440	32.56	PK	H	34.66	6.95	26.56	47.61	74.00	26.39
7440	19.64	AV	H	34.66	6.95	26.56	34.69	54.00	19.31
9920	33.15	PK	H	36.71	8.41	25.50	52.77	74.00	21.23
9920	18.13	AV	H	36.71	8.41	25.50	37.75	54.00	16.25
2925	32.21	PK	H	27.01	6.11	27.44	37.89	74.00	36.11
2925	18.55	AV	H	27.01	6.11	27.44	24.23	54.00	29.77
282.04	29.62	QP	H	15.79	2.36	21.73	26.04	46.00	19.96

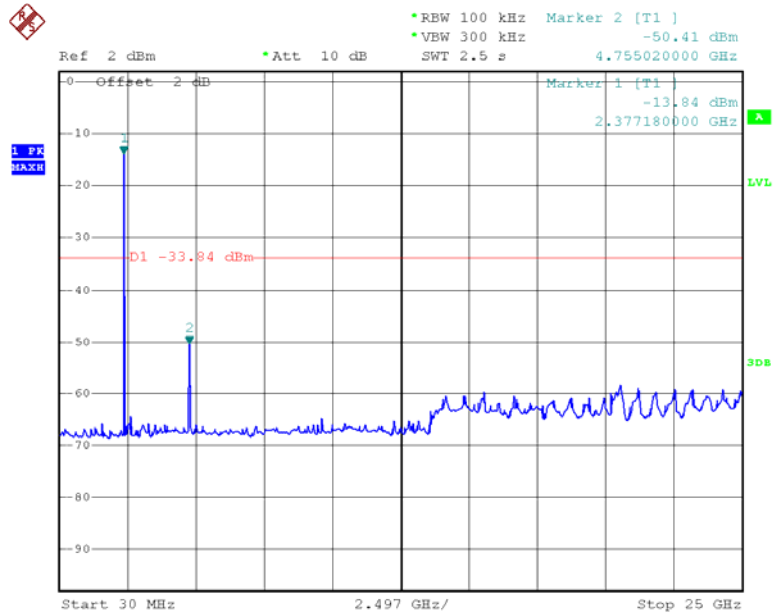
EDR Mode ($\pi/4$ -DQPSK):

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	62.48	PK	H	25.65	3.90	0.00	92.03	N/A	N/A
2402	49.42	AV	H	25.65	3.90	0.00	78.97	N/A	N/A
2402	64.53	PK	V	25.65	3.90	0.00	94.08	N/A	N/A
2402	50.17	AV	V	25.65	3.90	0.00	79.72	N/A	N/A
2390	27.93	PK	V	25.61	3.84	0.00	57.38	74.00	16.62
2390	14.12	AV	V	25.61	3.84	0.00	43.57	54.00	10.43
4804	34.63	PK	V	30.59	4.67	27.26	42.63	74.00	31.37
4804	20.32	AV	V	30.59	4.67	27.26	28.32	54.00	25.68
7206	32.53	PK	V	34.09	6.50	26.30	46.82	74.00	27.18
7206	18.85	AV	V	34.09	6.50	26.30	33.14	54.00	20.86
9608	31.27	PK	V	35.96	8.75	26.22	49.76	74.00	24.24
9608	18.02	AV	V	35.96	8.75	26.22	36.51	54.00	17.49
2925	32.85	PK	V	27.01	6.11	27.44	38.53	74.00	35.47
2925	18.76	AV	V	27.01	6.11	27.44	24.44	54.00	29.56
282.58	28.95	QP	H	15.80	2.37	21.73	25.39	46.00	20.61
Middle Channel: 2441 MHz									
2441	62.51	PK	H	25.75	3.99	0.00	92.25	N/A	N/A
2441	49.42	AV	H	25.75	3.99	0.00	79.16	N/A	N/A
2441	64.54	PK	V	25.75	3.99	0.00	94.28	N/A	N/A
2441	50.25	AV	V	25.75	3.99	0.00	79.99	N/A	N/A
4882	34.23	PK	V	30.79	4.75	27.26	42.51	74.00	31.49
4882	20.27	AV	V	30.79	4.75	27.26	28.55	54.00	25.45
7323	31.62	PK	V	34.38	6.72	26.53	46.19	74.00	27.81
7323	18.17	AV	V	34.38	6.72	26.53	32.74	54.00	21.26
9764	30.7	PK	V	36.33	8.58	25.62	49.99	74.00	24.01
9764	18.12	AV	V	36.33	8.58	25.62	37.41	54.00	16.59
2925	31.62	PK	V	27.01	6.11	27.44	37.30	74.00	36.70
2925	18.54	AV	V	27.01	6.11	27.44	24.22	54.00	29.78
3261	32.57	PK	V	27.94	5.10	27.47	38.14	74.00	35.86
3261	18.39	AV	V	27.94	5.10	27.47	23.96	54.00	30.04
281.95	29.14	QP	H	15.79	2.36	21.72	25.57	46.00	20.43
High Channel: 2480 MHz									
2480	62.56	PK	H	25.85	3.82	0.00	92.23	N/A	N/A
2480	49.46	AV	H	25.85	3.82	0.00	79.13	N/A	N/A
2480	64.55	PK	V	25.85	3.82	0.00	94.22	N/A	N/A
2480	50.25	AV	V	25.85	3.82	0.00	79.92	N/A	N/A
2483.5	27.98	PK	V	25.86	3.80	0.00	57.64	74.00	16.36
2483.5	14.12	AV	V	25.86	3.80	0.00	43.78	54.00	10.22
4960	34.11	PK	V	31.00	4.70	27.27	42.54	74.00	31.46
4960	20.19	AV	V	31.00	4.70	27.27	28.62	54.00	25.38
7440	32.29	PK	V	34.66	6.95	26.56	47.34	74.00	26.66
7440	18.48	AV	V	34.66	6.95	26.56	33.53	54.00	20.47
9920	31.76	PK	V	36.71	8.41	25.50	51.38	74.00	22.62
9920	18.07	AV	V	36.71	8.41	25.50	37.69	54.00	16.31
2925	31.59	PK	V	27.01	6.11	27.44	37.27	74.00	36.73
2925	18.78	AV	V	27.01	6.11	27.44	24.46	54.00	29.54
282.04	30.28	QP	H	15.79	2.36	21.73	26.70	46.00	19.30

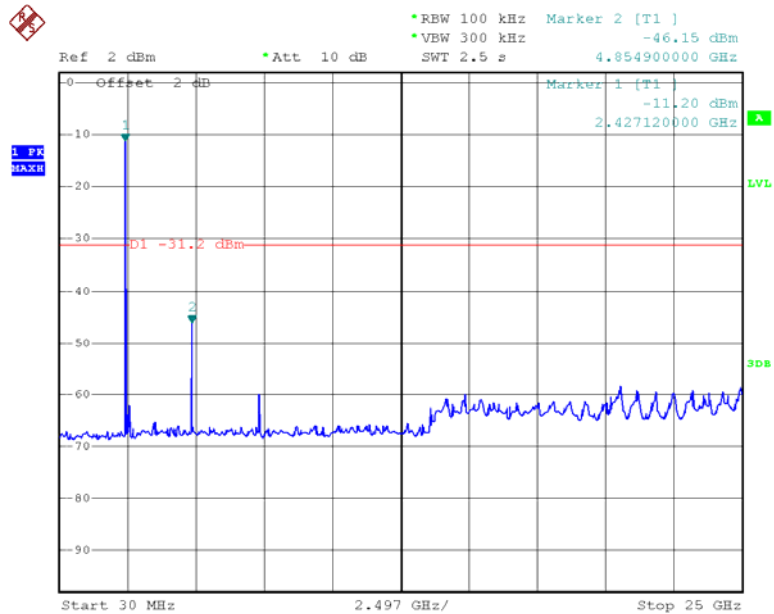
EDR Mode (8-DPSK):

EDR mode (to ETSY).

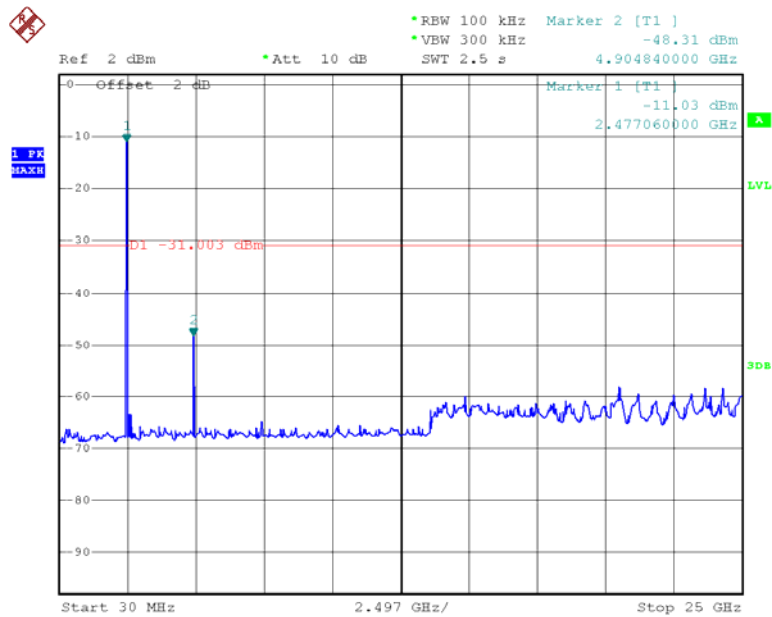
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	FCC 15.247	
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBµV/m)	Margin (dB)
Low Channel: 2402 MHz									
2402	62.69	PK	H	25.65	3.90	0.00	92.24	N/A	N/A
2402	49.41	AV	H	25.65	3.90	0.00	78.96	N/A	N/A
2402	64.97	PK	V	25.65	3.90	0.00	94.52	N/A	N/A
2402	50.18	AV	V	25.65	3.90	0.00	79.73	N/A	N/A
2390	27.9	PK	V	25.61	3.84	0.00	57.35	74.00	16.65
2390	14.11	AV	V	25.61	3.84	0.00	43.56	54.00	10.44
4804	35.05	PK	V	30.59	4.67	27.26	43.05	74.00	30.95
4804	20.34	AV	V	30.59	4.67	27.26	28.34	54.00	25.66
7206	32.36	PK	V	34.09	6.50	26.30	46.65	74.00	27.35
7206	18.54	AV	V	34.09	6.50	26.30	32.83	54.00	21.17
9608	31.66	PK	V	35.96	8.75	26.22	50.15	74.00	23.85
9608	18.16	AV	V	35.96	8.75	26.22	36.65	54.00	17.35
2925	31.86	PK	V	27.01	6.11	27.44	37.54	74.00	36.46
2925	18.52	AV	V	27.01	6.11	27.44	24.20	54.00	29.80
282.58	29.67	QP	H	15.80	2.37	21.73	26.11	46.00	19.89
Middle Channel: 2441 MHz									
2441	62.78	PK	H	25.75	3.99	0.00	92.52	N/A	N/A
2441	49.43	AV	H	25.75	3.99	0.00	79.17	N/A	N/A
2441	65.06	PK	V	25.75	3.99	0.00	94.80	N/A	N/A
2441	50.22	AV	V	25.75	3.99	0.00	79.96	N/A	N/A
4882	35.15	PK	V	30.79	4.75	27.26	43.43	74.00	30.57
4882	20.37	AV	V	30.79	4.75	27.26	28.65	54.00	25.35
7323	31.39	PK	V	34.38	6.72	26.53	45.96	74.00	28.04
7323	18.25	AV	V	34.38	6.72	26.53	32.82	54.00	21.18
9764	30.74	PK	V	36.33	8.58	25.62	50.03	74.00	23.97
9764	18.16	AV	V	36.33	8.58	25.62	37.45	54.00	16.55
2925	32.24	PK	V	27.01	6.11	27.44	37.92	74.00	36.08
2925	18.68	AV	V	27.01	6.11	27.44	24.36	54.00	29.64
3261	31.74	PK	V	27.94	5.10	27.47	37.31	74.00	36.69
3261	18.24	AV	V	27.94	5.10	27.47	23.81	54.00	30.19
281.95	30.36	QP	H	15.79	2.36	21.72	26.79	46.00	19.21
High Channel: 2480 MHz									
2480	62.75	PK	H	25.85	3.82	0.00	92.42	N/A	N/A
2480	49.42	AV	H	25.85	3.82	0.00	79.09	N/A	N/A
2480	64.97	PK	V	25.85	3.82	0.00	94.64	N/A	N/A
2480	50.22	AV	V	25.85	3.82	0.00	79.89	N/A	N/A
2483.5	27.91	PK	V	25.86	3.80	0.00	57.57	74.00	16.43
2483.5	14.16	AV	V	25.86	3.80	0.00	43.82	54.00	10.18
4960	35.04	PK	V	31.00	4.70	27.27	43.47	74.00	30.53
4960	20.47	AV	V	31.00	4.70	27.27	28.90	54.00	25.10
7440	31.64	PK	V	34.66	6.95	26.56	46.69	74.00	27.31
7440	18.36	AV	V	34.66	6.95	26.56	33.41	54.00	20.59
9920	30.49	PK	V	36.71	8.41	25.50	50.11	74.00	23.89
9920	18.24	AV	V	36.71	8.41	25.50	37.86	54.00	16.14
2925	32.47	PK	V	27.01	6.11	27.44	38.15	74.00	35.85
2925	18.83	AV	V	27.01	6.11	27.44	24.51	54.00	29.49
282.04	30.41	QP	H	15.79	2.36	21.73	26.83	46.00	19.17

Conducted Spurious Emissions at Antenna Port**BDR Mode (GFSK):****Low Channel**

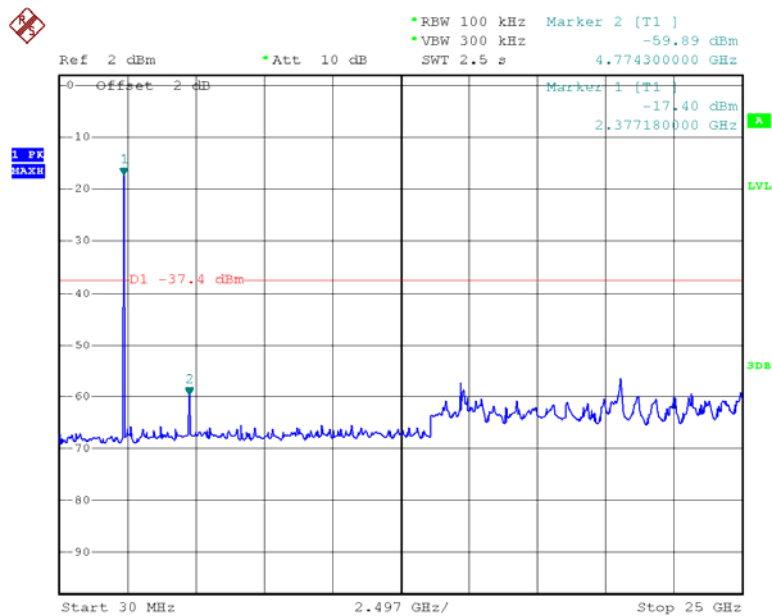
Date: 18.APR.2013 17:14:33

Middle Channel

Date: 18.APR.2013 17:15:30

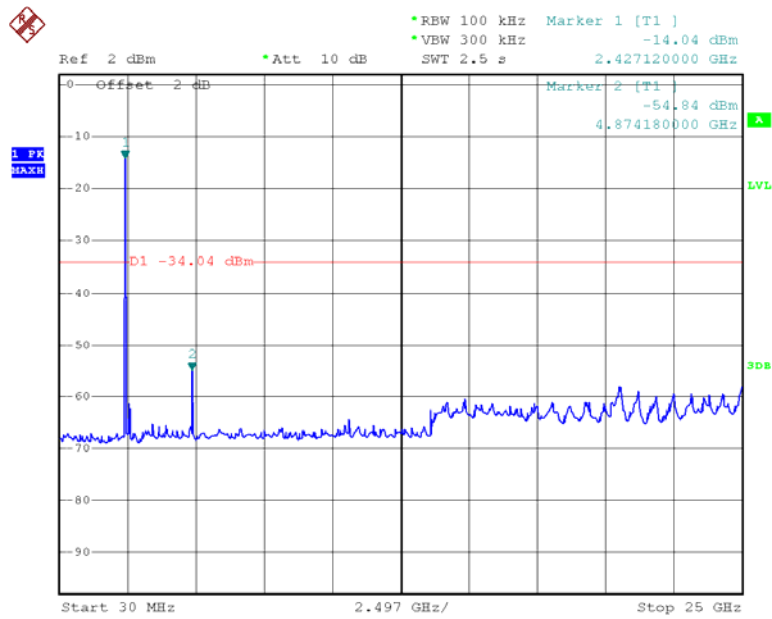
High Channel

Date: 18.APR.2013 17:13:45

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

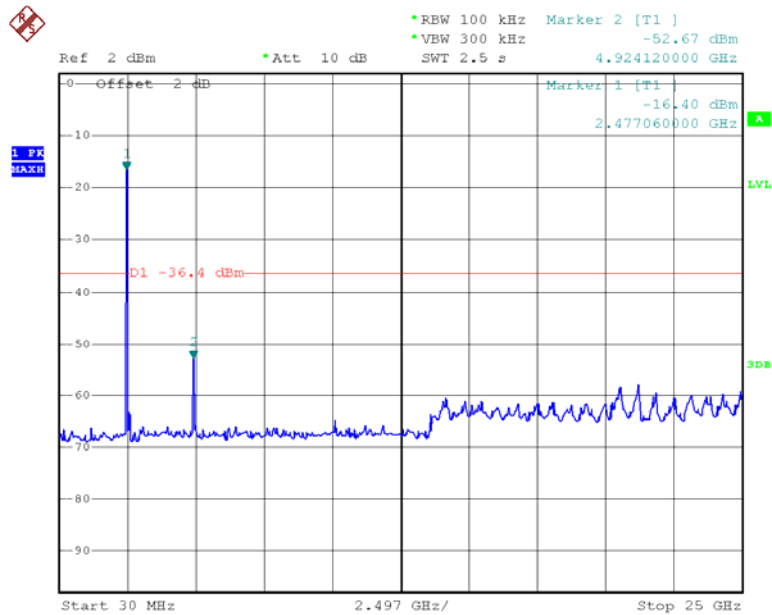
Date: 18.APR.2013 17:17:09

Middle Channel

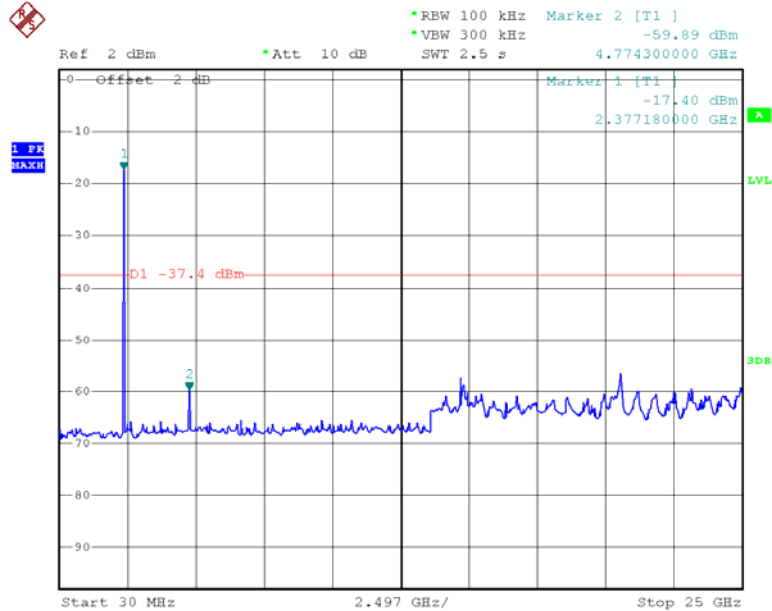


Date: 18.APR.2013 17:16:23

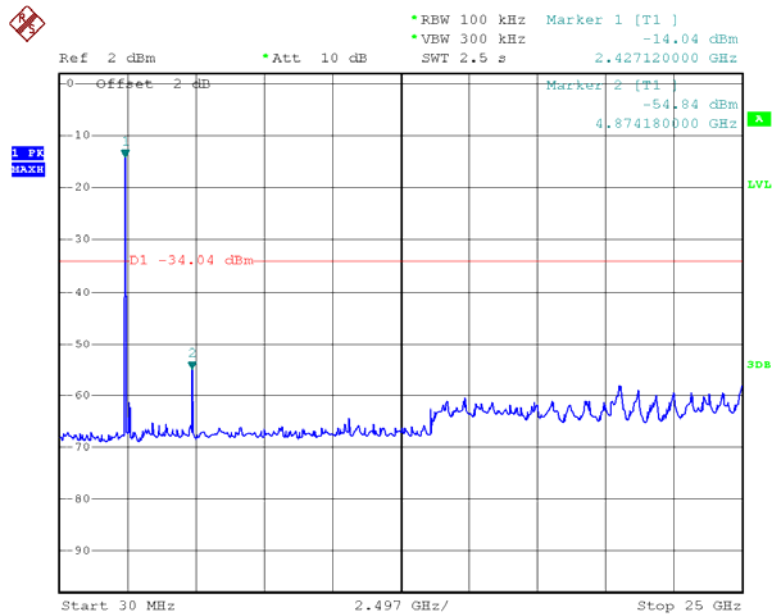
High Channel



Date: 18.APR.2013 17:17:49

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

Date: 18.APR.2013 17:17:09

Middle Channel

Date: 18.APR.2013 17:16:23

The screenshot displays a spectrum analyzer interface. The main plot shows a signal spectrum with a prominent peak at 2.477 GHz. The y-axis represents power in dBm, ranging from -90 to 0. The x-axis represents frequency in GHz, ranging from 2.475 to 2.479. A red horizontal line indicates a level of -36.4 dBm. A green vertical line marks the peak at 2.477 GHz. The signal is identified as 'D1'.

Parameters and settings visible on the screen include:

- Ref 2 dBm
- Att 10 dB
- RBW 100 kHz
- VBW 300 kHz
- SWT 2.5 s
- Marker 2 [T1]
- Marker 1 [T1]
- Marker 2: -52.67 dBm
- Marker 1: -16.40 dBm
- Frequency: 2.477060000 GHz
- Start 30 MHz
- Stop 25 GHz
- 2.497 GHz/

FCC Part 15.247

FCC §15.247(a) (1) - CHANNEL SEPARATION TEST**Applicable Standard**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.50 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

Test Equipment List and Details

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

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

Test Procedure

1. Set the EUT in transmitting mode, spectrum Bandwidth was set at 100 kHz, maxhold the channel.
2. Set the adjacent channel of the EUT maxhold another trace
3. Measure the channel separation.

Test Data**Environmental Conditions**

Temperature:	26.8 °C
Relative Humidity:	67 %
ATM Pressure:	100kPa

**The testing was performed by Ares Liu on 2013-04-18.*

Test Result: Compliance.

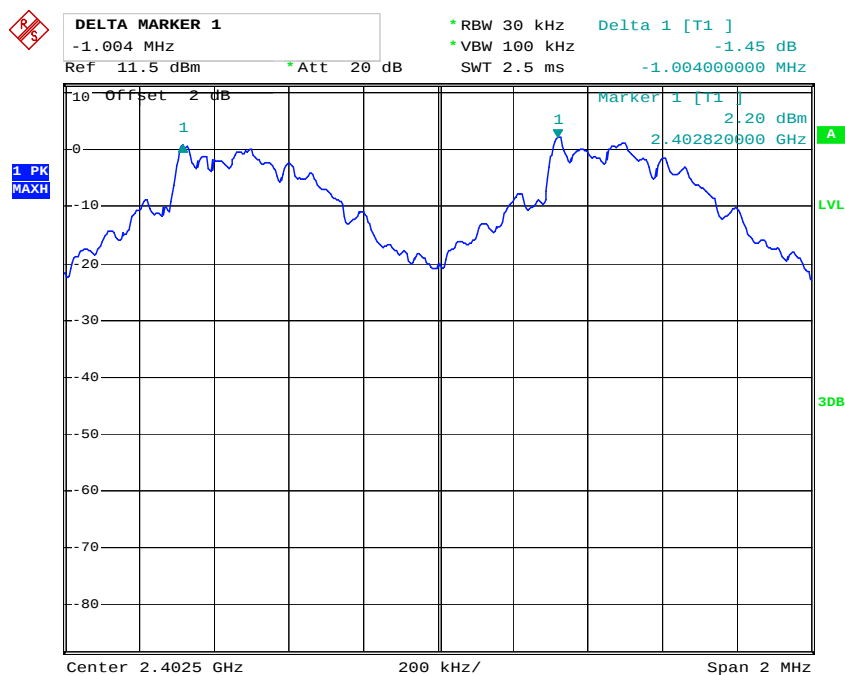
Please refer to following tables and plots

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
BDR Mode (GFSK)	Low	2402	1.004	0.63	Pass
	Adjacent	2403			
	Middle	2441	1.004	0.63	Pass
	Adjacent	2442			
	High	2480	1.000	0.62	Pass
	Adjacent	2479			
EDR Mode ($\pi/4$ -DQPSK)	Low	2402	1.000	0.85	Pass
	Adjacent	2403			
	Middle	2441	1.004	0.84	Pass
	Adjacent	2442			
	High	2480	1.004	0.84	Pass
	Adjacent	2479			
EDR Mode (8-DPSK)	Low	2402	1.000	0.82	Pass
	Adjacent	2403			
	Middle	2441	1.000	0.83	Pass
	Adjacent	2442			
	High	2480	1.000	0.83	Pass
	Adjacent	2479			

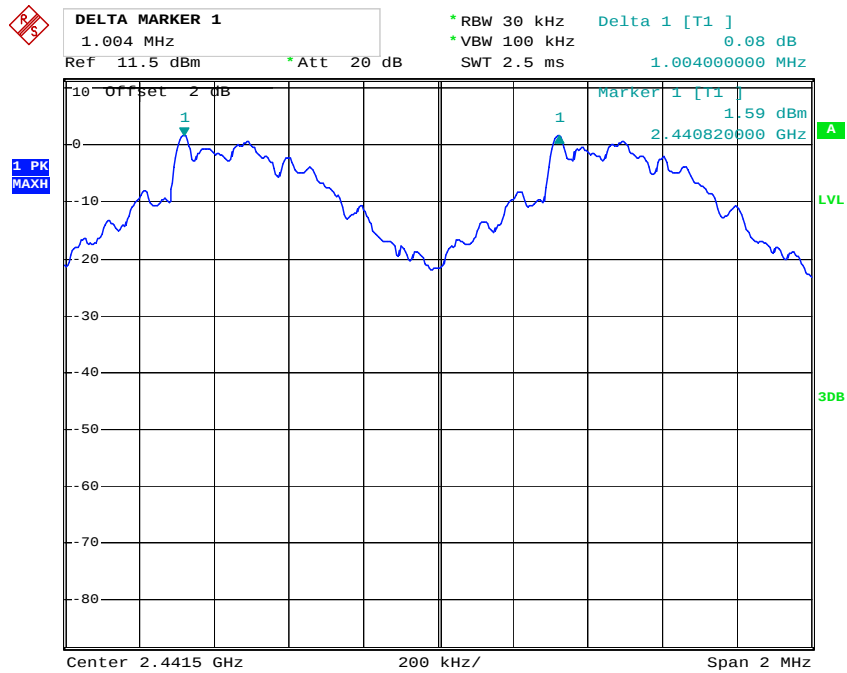
BDR Mode (GFSK):

Low Channel



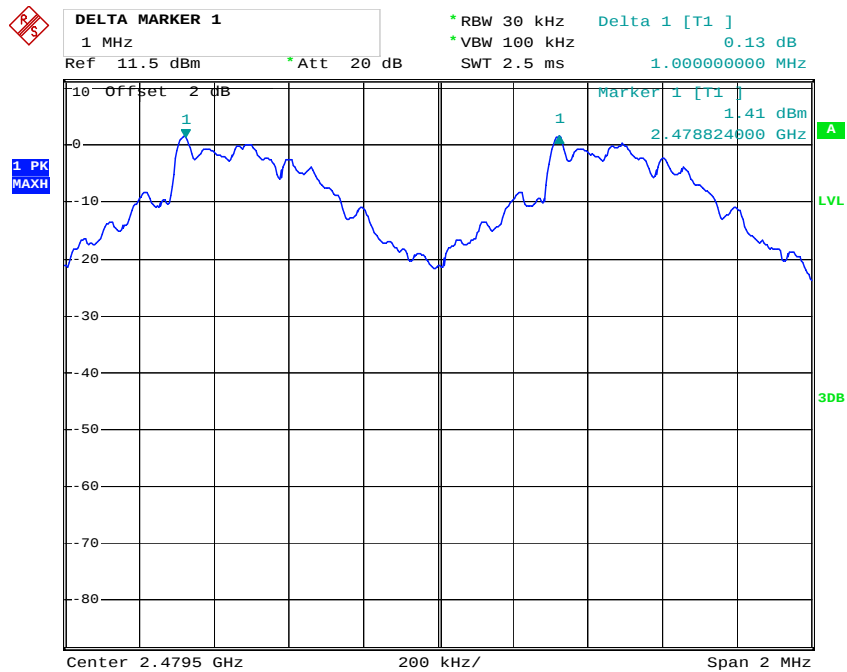
Date: 18.APR.2013 14:48:35

Middle Channel



Date: 18.APR.2013 14:49:26

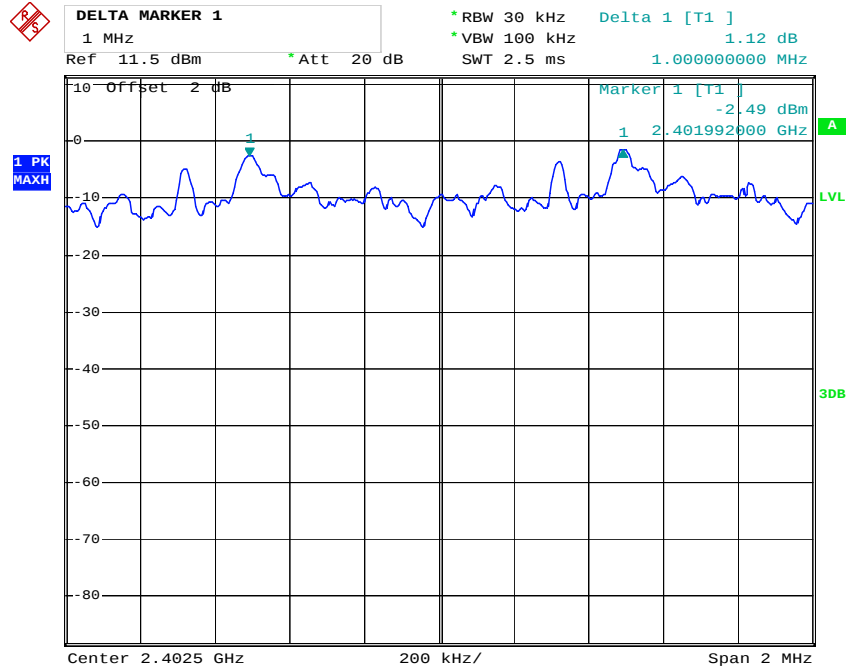
High Channel



Date: 18.APR.2013 14:50:26

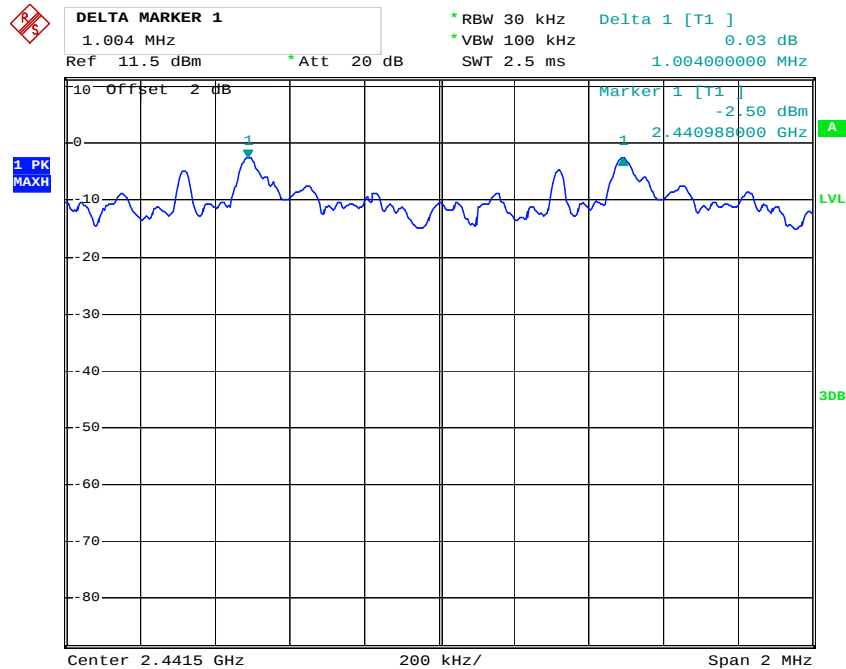
EDR Mode ($\pi/4$ -DQPSK):

Low Channel



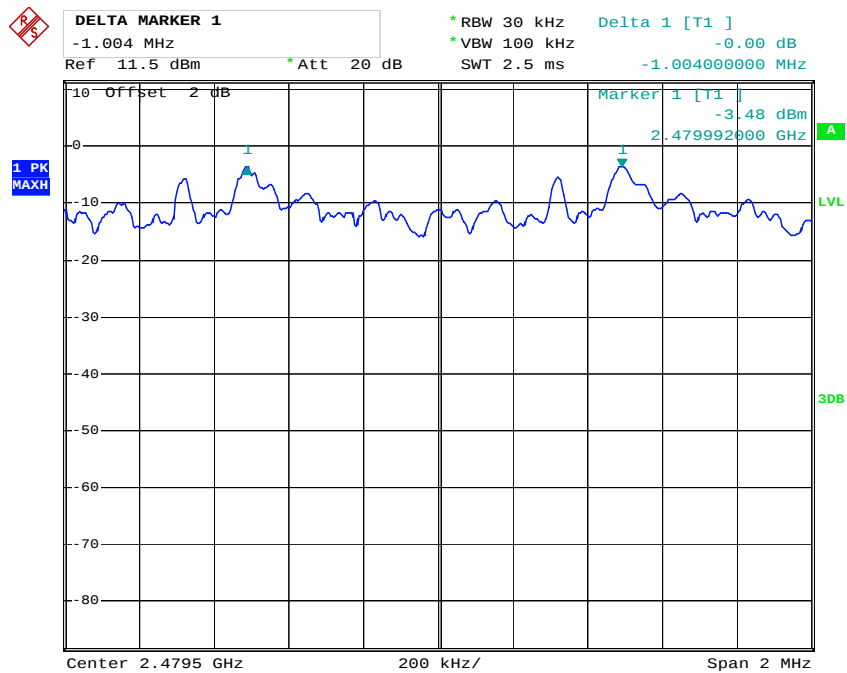
Date: 18.APR.2013 14:52:59

Middle Channel



Date: 18.APR.2013 14:51:57

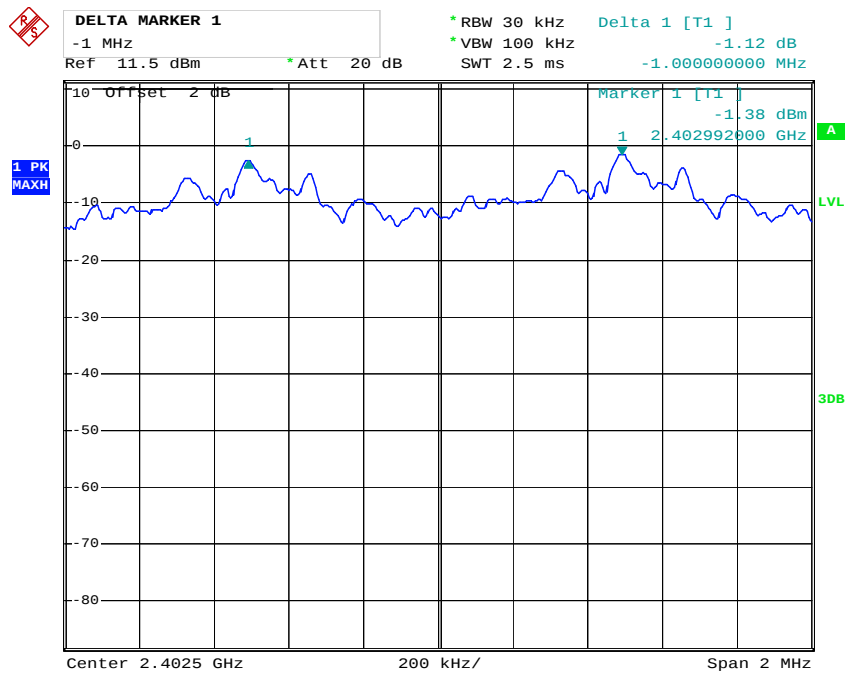
High Channel



Date: 18.APR.2013 14:51:13

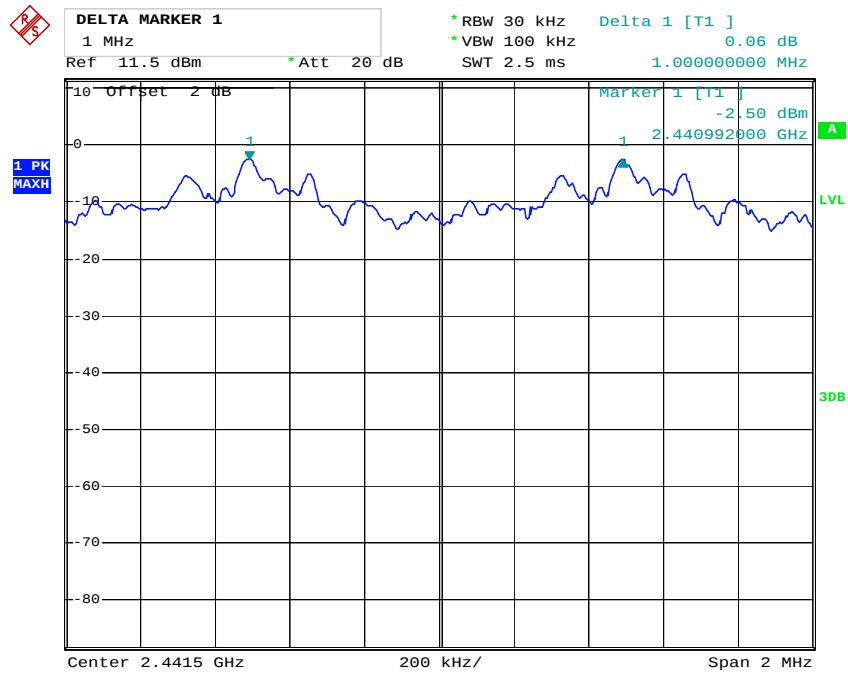
EDR Mode (8-DPSK):

Low Channel



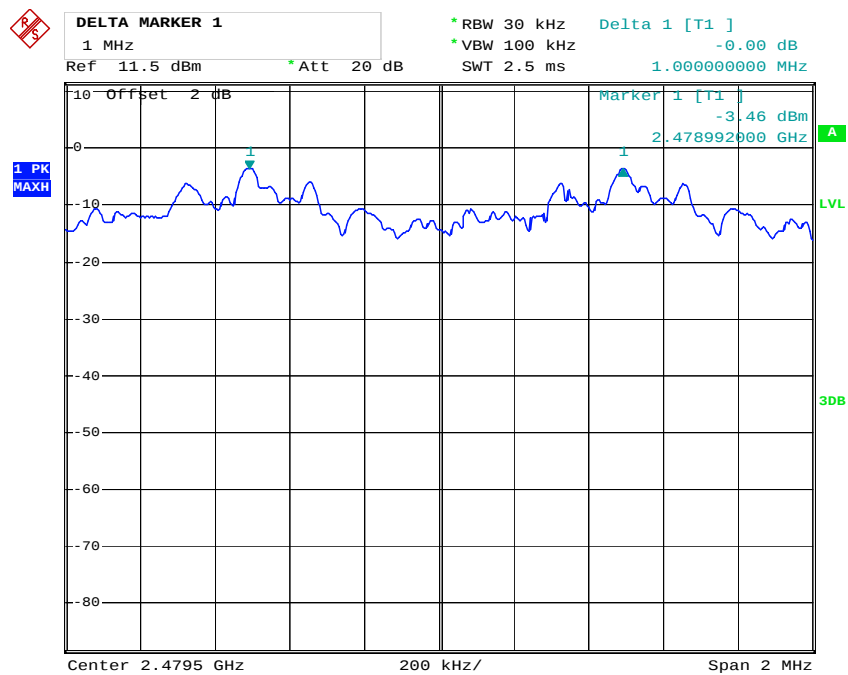
Date: 18.APR.2013 14:54:24

Middle Channel



Date: 18.APR.2013 14:55:40

High Channel



Date: 18.APR.2013 14:56:45

FCC §15.247(a) (1) – 20 dB BANDWIDTH TESTING**Applicable Standard**

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

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

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

Test Data**Environmental Conditions**

Temperature:	26.8 °C
Relative Humidity:	67 %
ATM Pressure:	100kPa

**The testing was performed by Ares Liu on 2013-04-18.*

Test Result: Compliance.

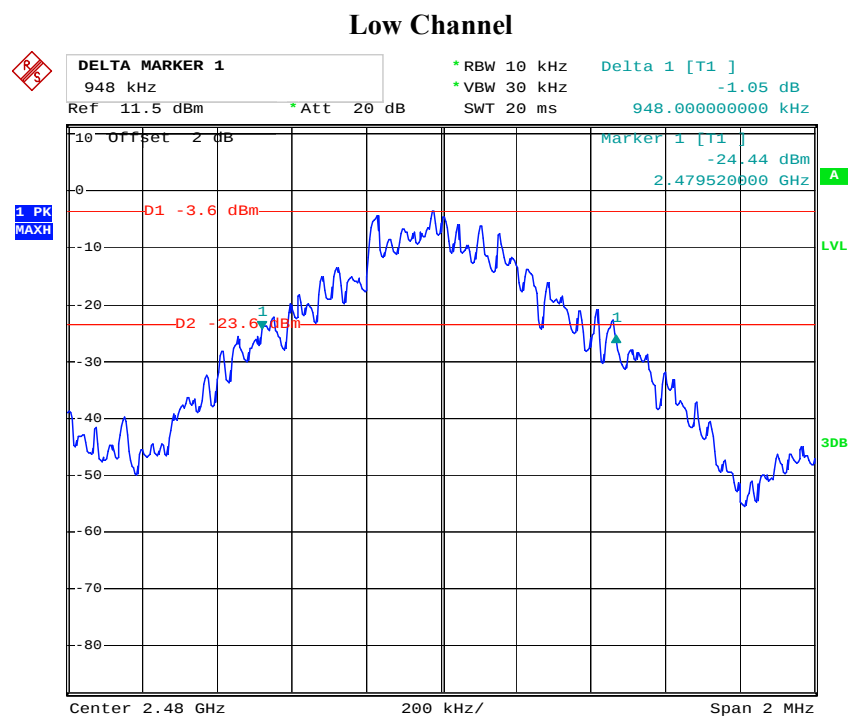
Please refer to following tables and plots

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
BDR Mode (GFSK)	Low	2402	0.948
	Middle	2441	0.948
	High	2480	0.928
EDR Mode ($\pi/4$ -DQPSK)	Low	2402	1.272
	Middle	2441	1.264
	High	2480	1.264
EDR Mode (8-DPSK)	Low	2402	1.232
	Middle	2441	1.244
	High	2480	1.252

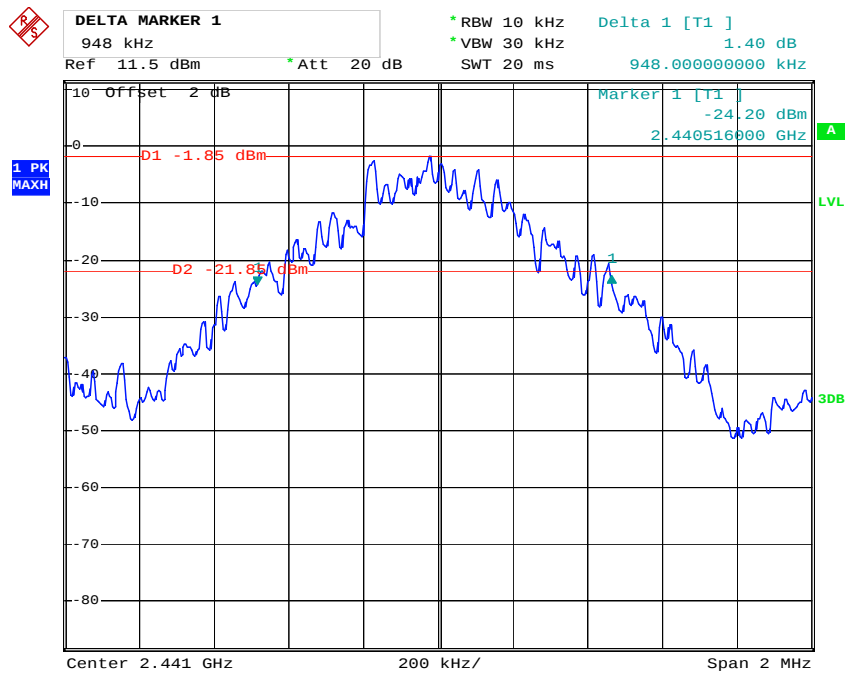
Please refer to the following plots.

BDR Mode (GFSK):



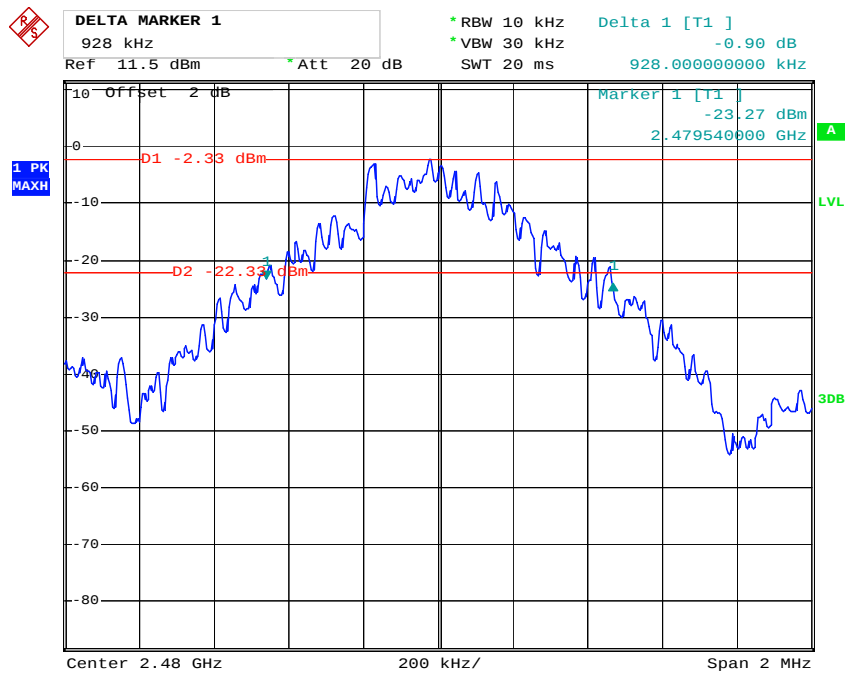
Date: 18.APR.2013 14:38:29

Middle Channel



Date: 18.APR.2013 14:39:19

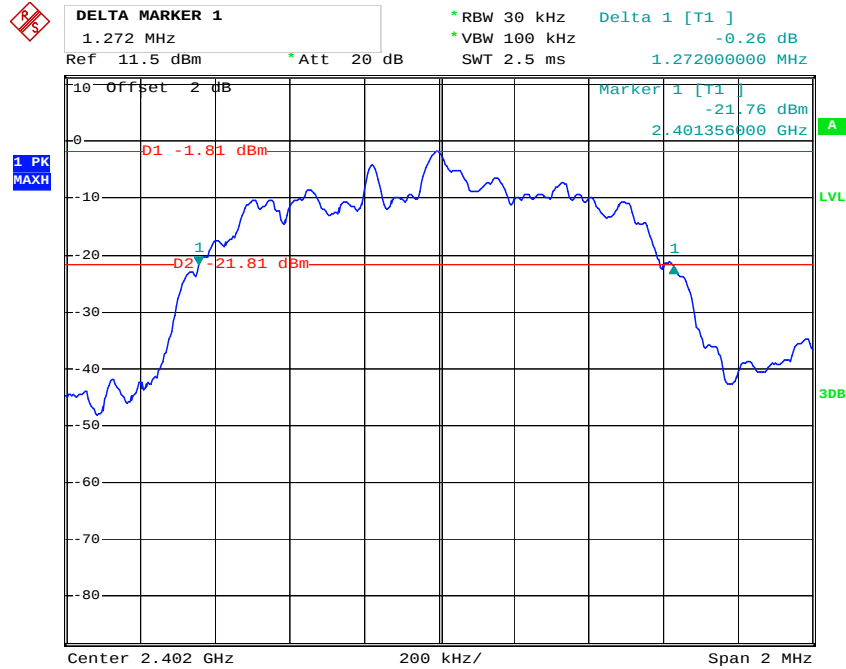
High Channel



Date: 18.APR.2013 14:40:17

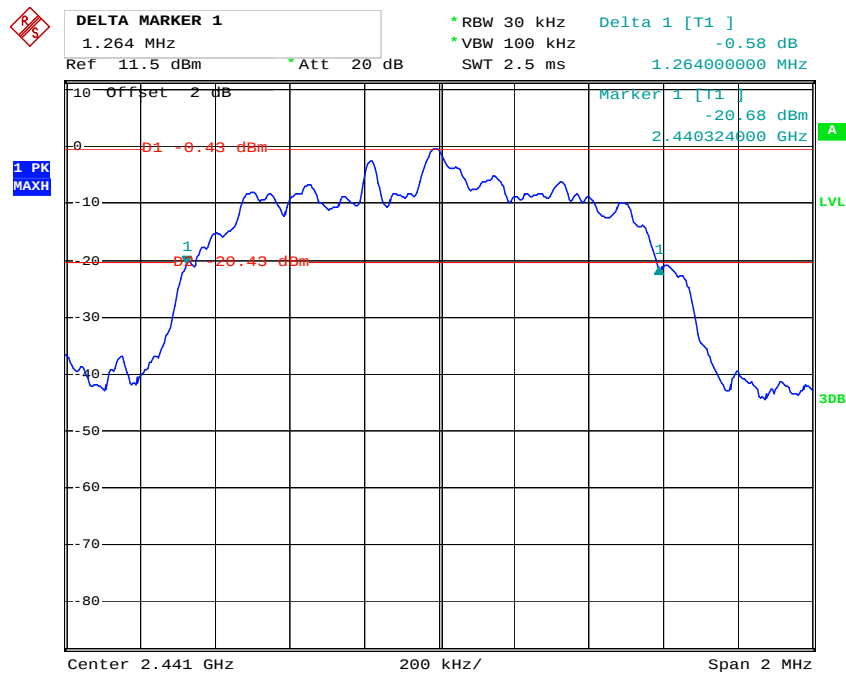
EDR Mode ($\pi/4$ -DQPSK):

Low Channel



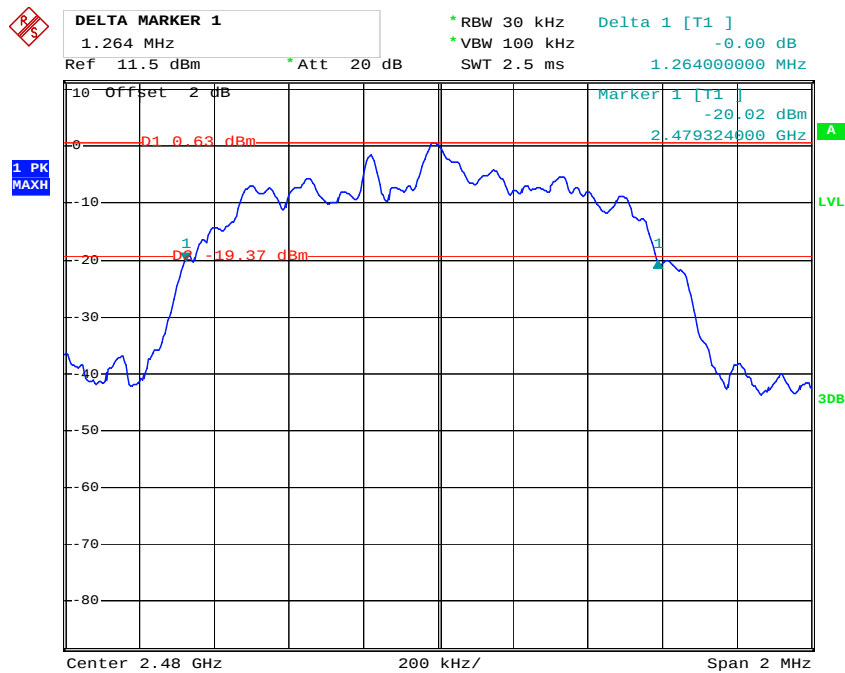
Date: 18.APR.2013 14:34:31

Middle Channel



Date: 18.APR.2013 14:36:30

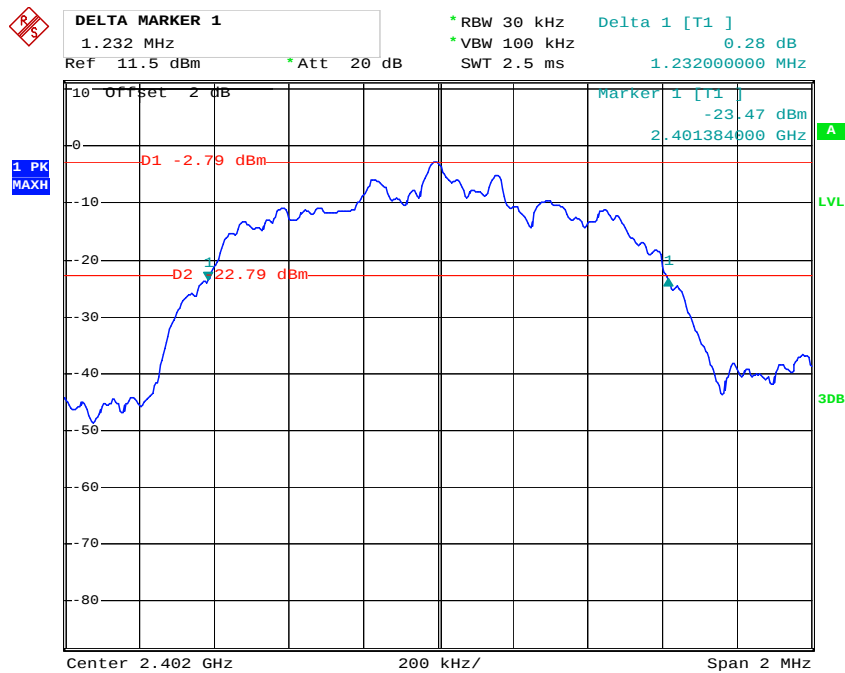
High Channel



Date: 18.APR.2013 14:37:27

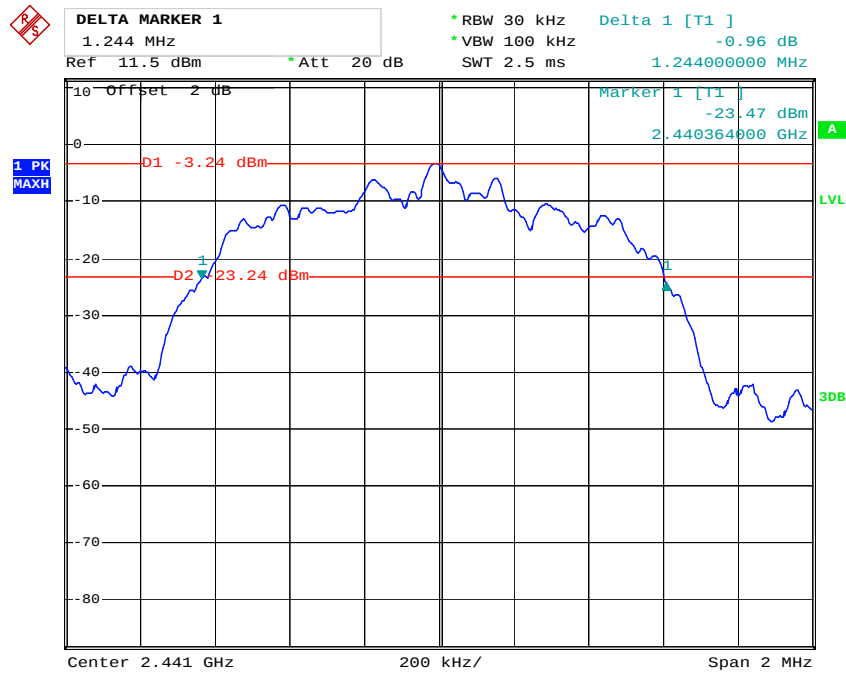
EDR Mode (8-DPSK):

Low Channel



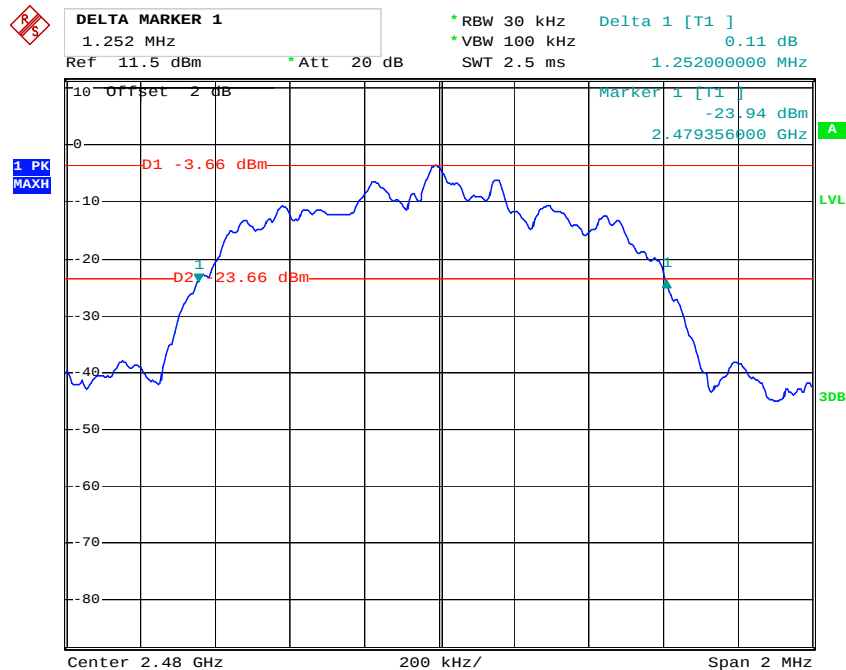
Date: 18.APR.2013 13:49:24

Middle Channel



Date: 18.APR.2013 13:48:20

High Channel



Date: 18.APR.2013 13:46:55

FCC §15.247(a) (1) (iii) - QUANTITY OF HOPPING CHANNEL TEST**Applicable Standard**

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

Test Procedure

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Set the EUT in hopping mode from first channel to last.
3. By using the Max-Hold function record the Quantity of the channel.

Test Equipment List and Details

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

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

Test Data**Environmental Conditions**

Temperature:	26.8 °C
Relative Humidity:	67 %
ATM Pressure:	100kPa

**The testing was performed by Ares Liu on 2013-04-18.*

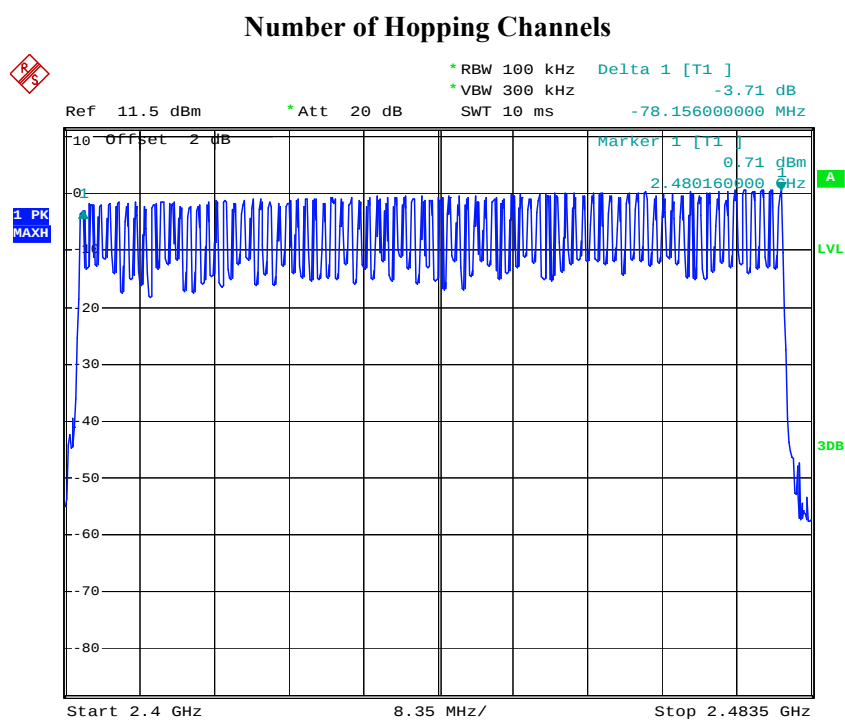
Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

Mode	Frequency Range (MHz)	Number of Hopping Channel	Limit
BDR Mode (GFSK)	2400-2483.5	79	≥ 15
EDR Mode ($\pi/4$ -DQPSK)	2400-2483.5	79	≥ 15
EDR Mode (8-DPSK)	2400-2483.5	79	≥ 15

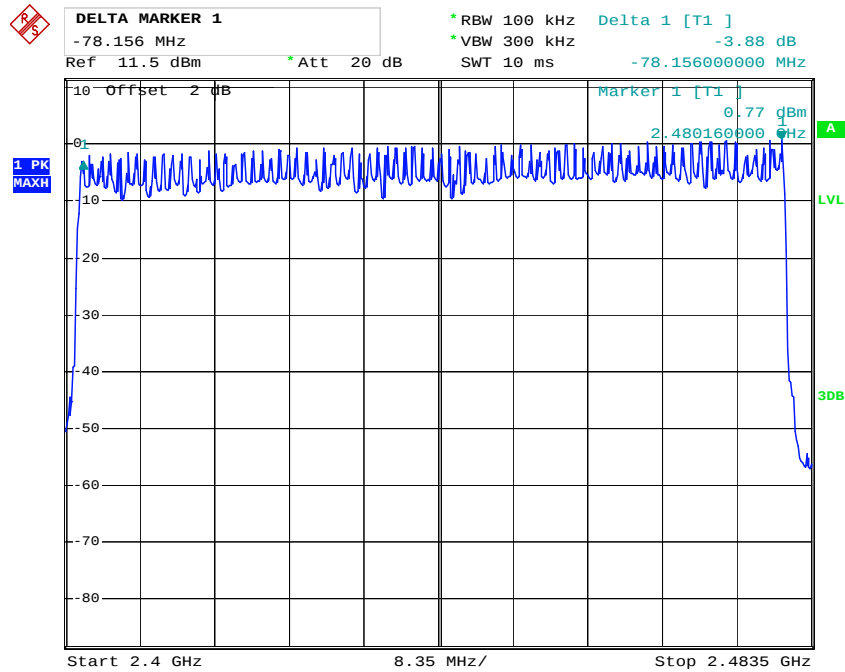
BDR Mode (GFSK):



Date: 18.APR.2013 15:12:25

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

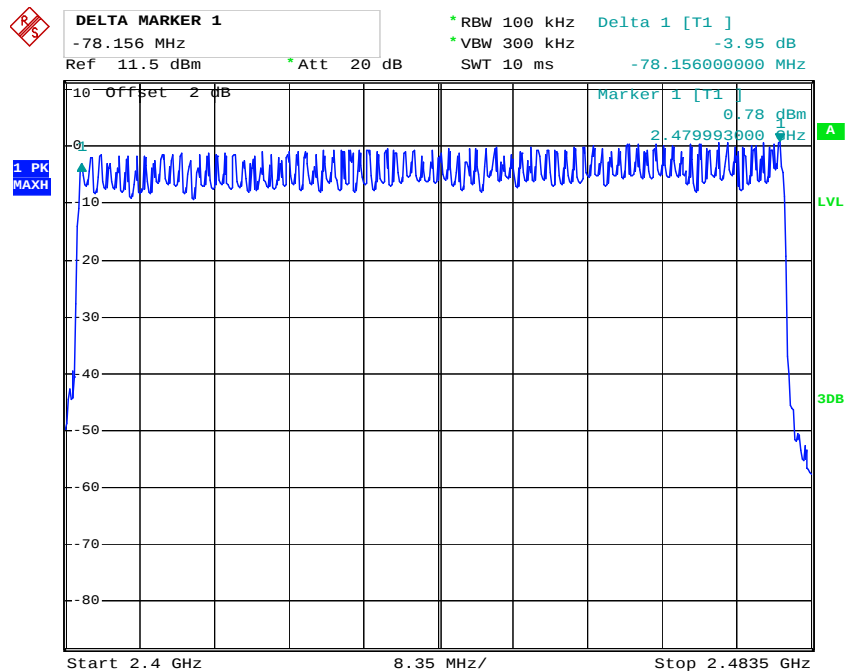
Number of Hopping Channels



Date: 18.APR.2013 15:09:40

EDR Mode (8-DPSK):

Number of Hopping Channels



Date: 18.APR.2013 15:07:22

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
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

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

Test Data**Environmental Conditions**

Temperature:	26.8 °C
Relative Humidity:	67 %
ATM Pressure:	100kPa

**The testing was performed by Ares Liu on 2013-04-18.*

Test Result: Compliance.

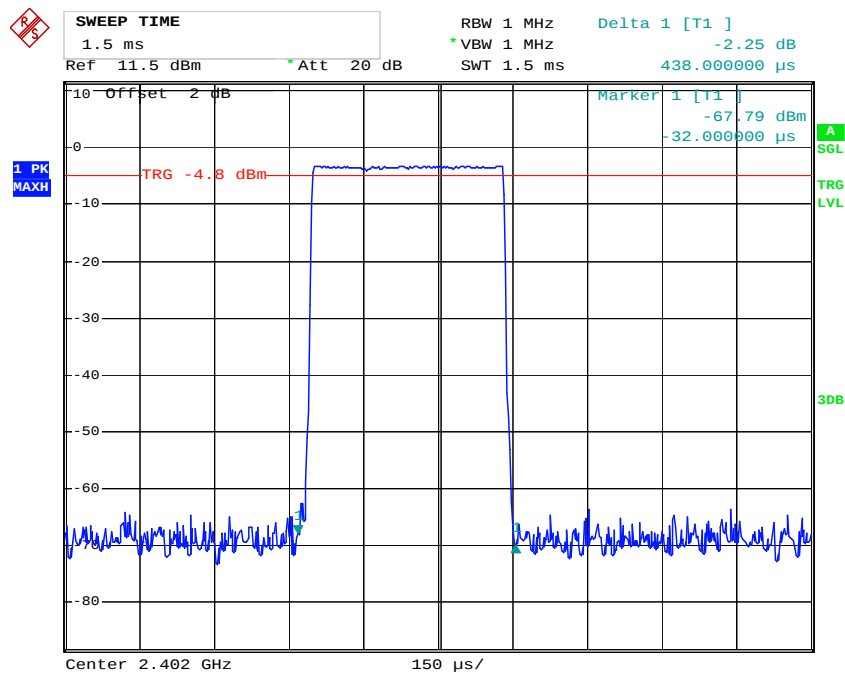
Please refer to following tables and plots

Test Mode: Transmitting

BDR Mode (GFSK):

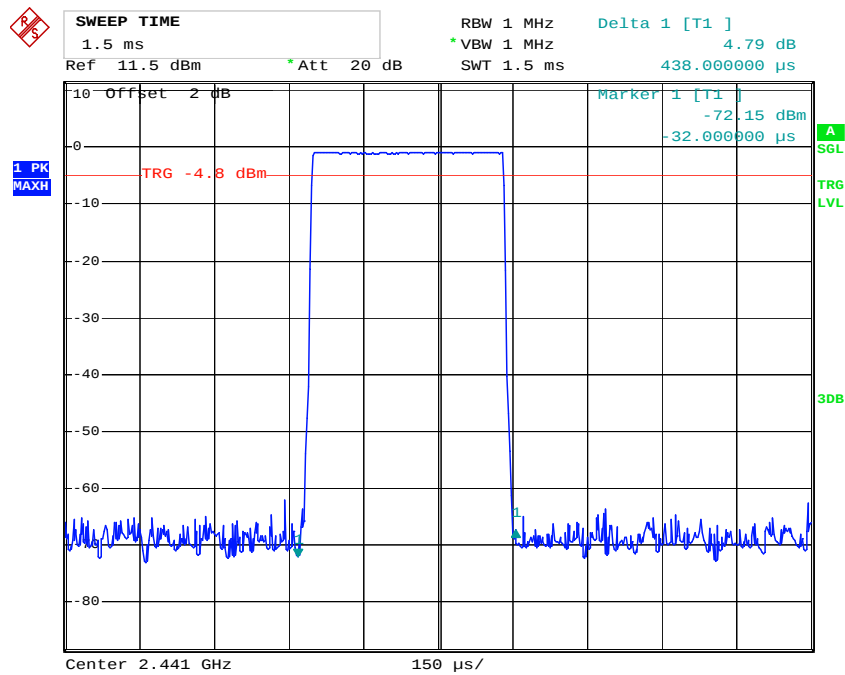
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH 1	Low	0.438	0.140	0.4	Pass
	Middle	0.438	0.140	0.4	Pass
	High	0.438	0.140	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH 3	Low	1.708	0.273	0.4	Pass
	Middle	1.708	0.273	0.4	Pass
	High	1.708	0.273	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH 5	Low	2.948	0.314	0.4	Pass
	Middle	2.948	0.314	0.4	Pass
	High	2.948	0.314	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

DH1: Low Channel



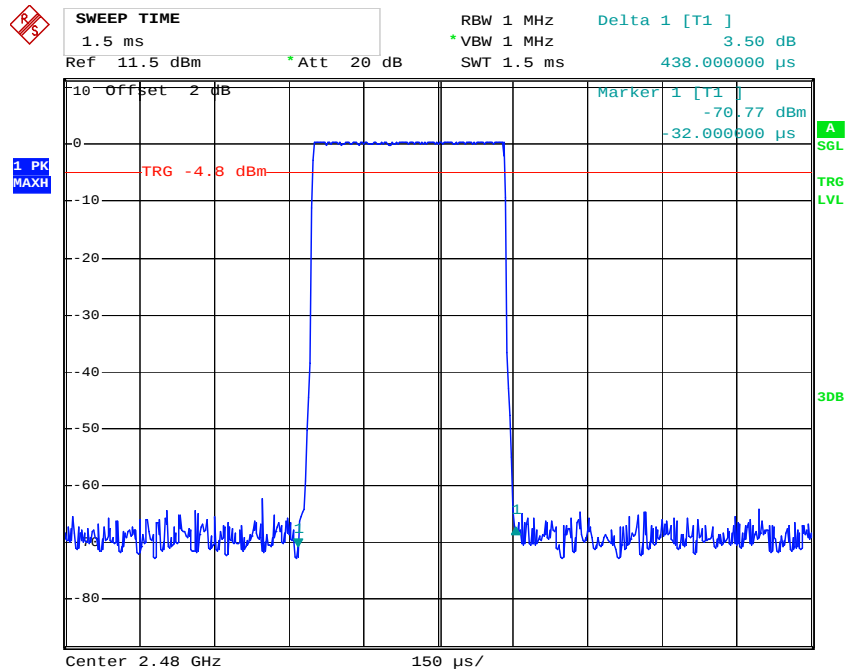
Date: 18.APR.2013 15:14:23

DH1: Middle Channel



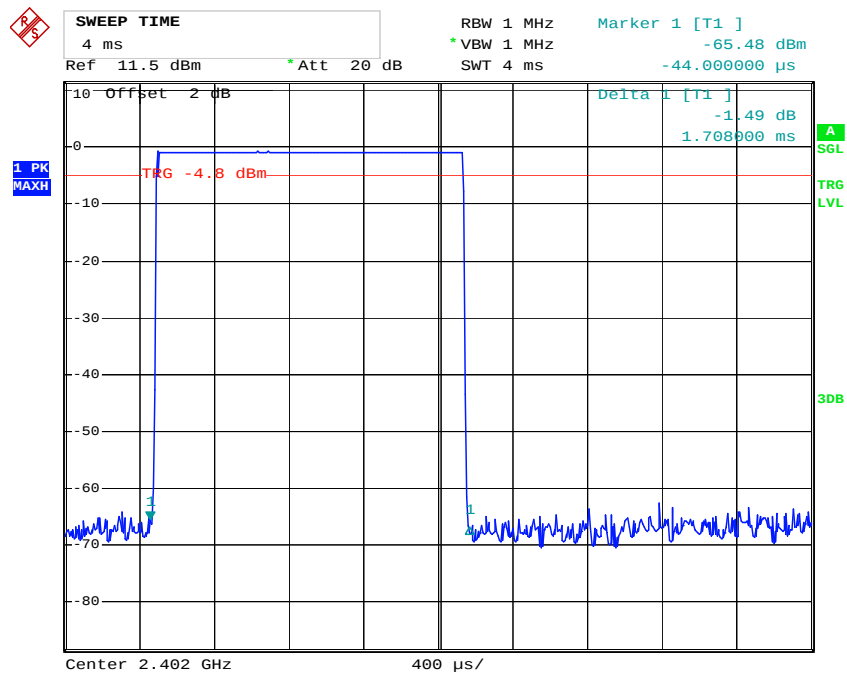
Date: 18.APR.2013 15:14:41

DH1: High Channel



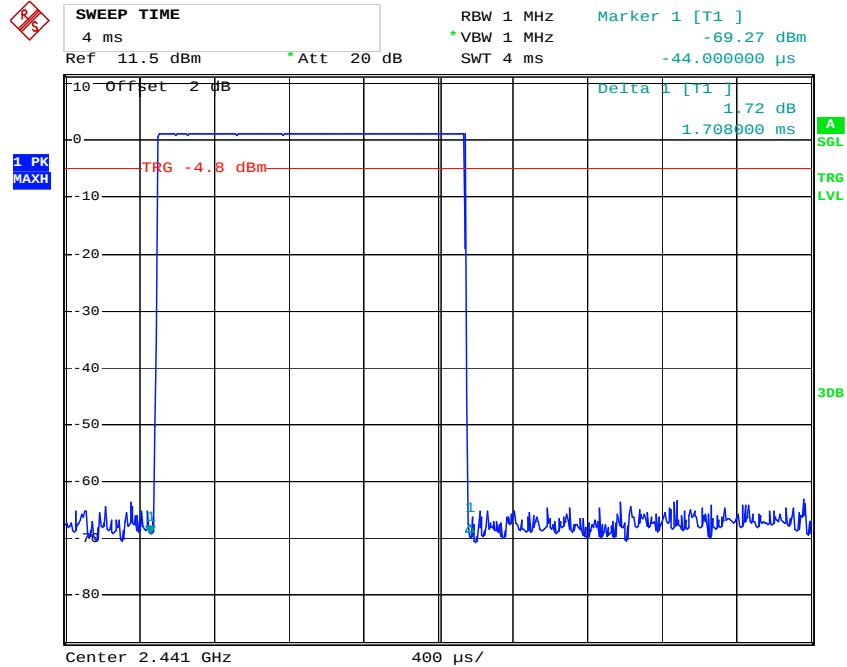
Date: 18.APR.2013 15:15:08

DH3: Low Channel



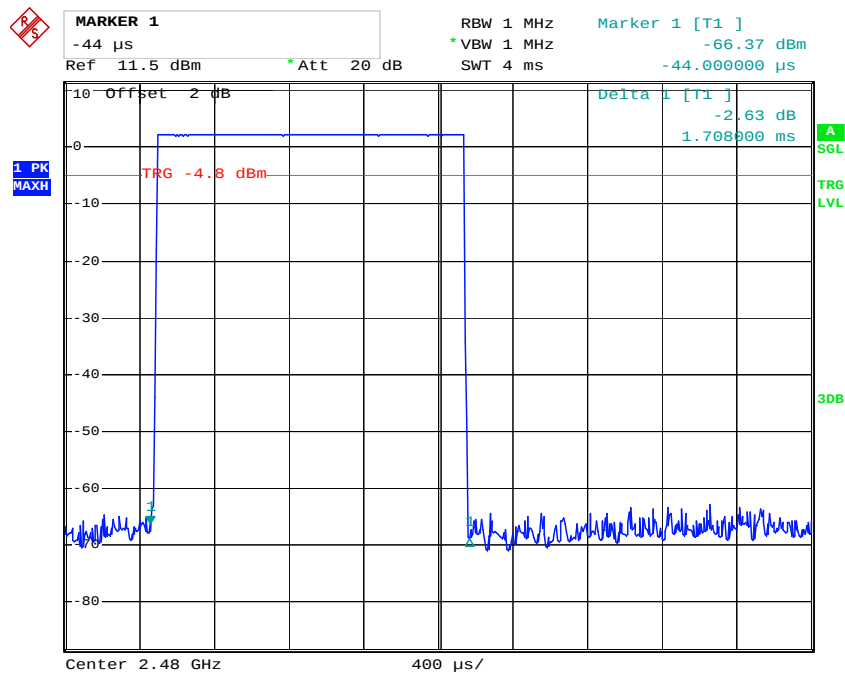
Date: 18.APR.2013 15:20:57

DH3: Middle Channel



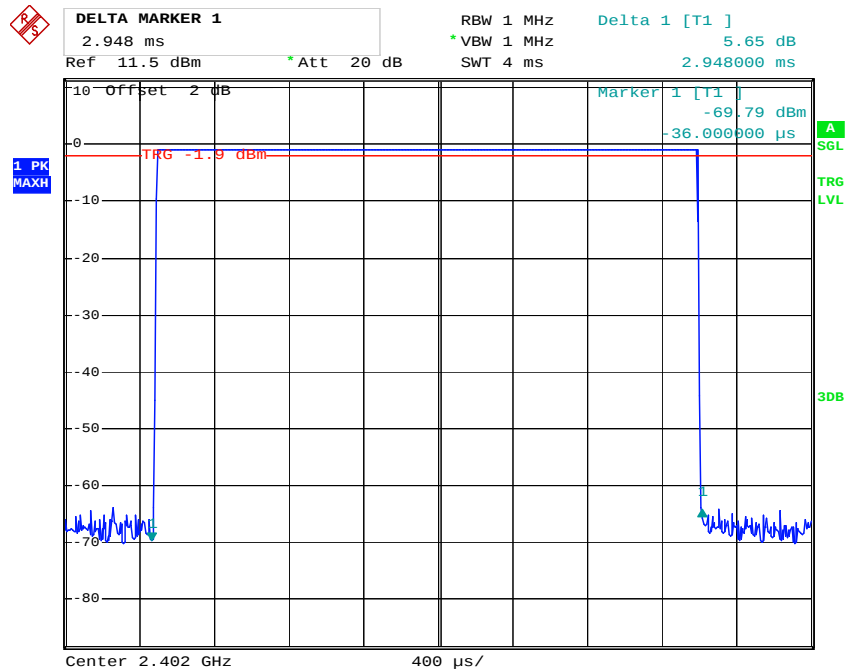
Date: 18.APR.2013 15:20:31

DH3: High Channel



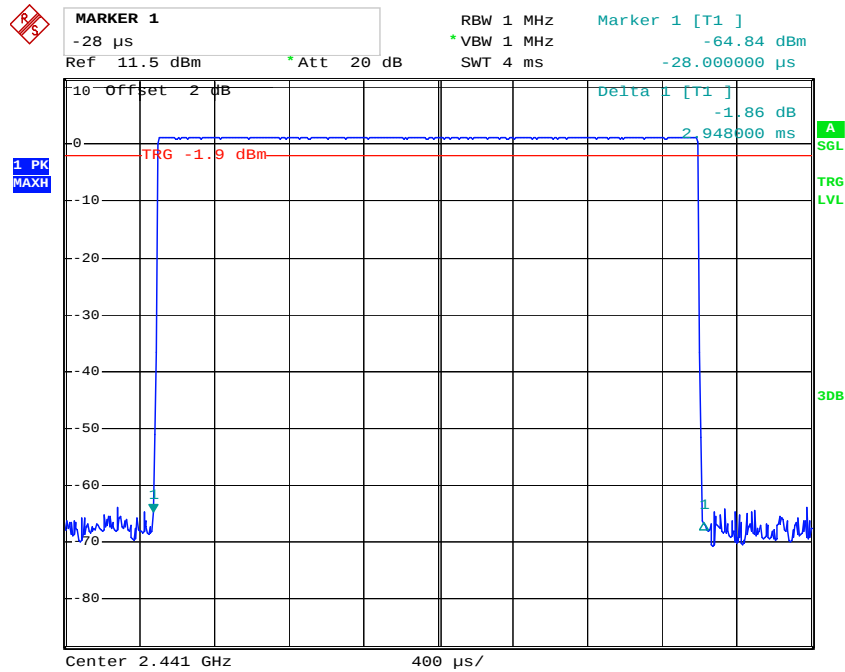
Date: 18.APR.2013 15:20:09

DH5: Low Channel



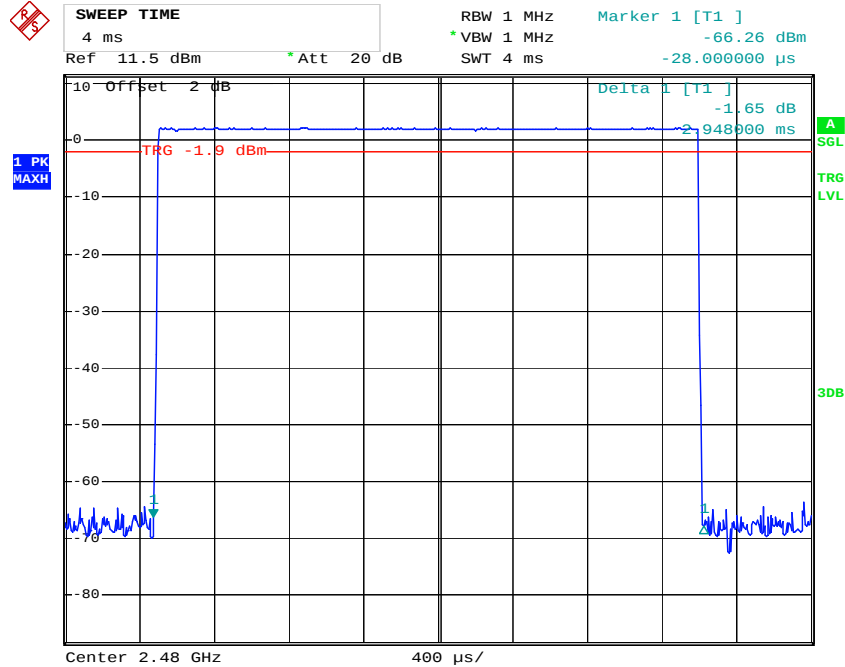
Date: 18.APR.2013 15:28:28

DH5: Middle Channel



Date: 18.APR.2013 15:30:01

DH5: High Channel

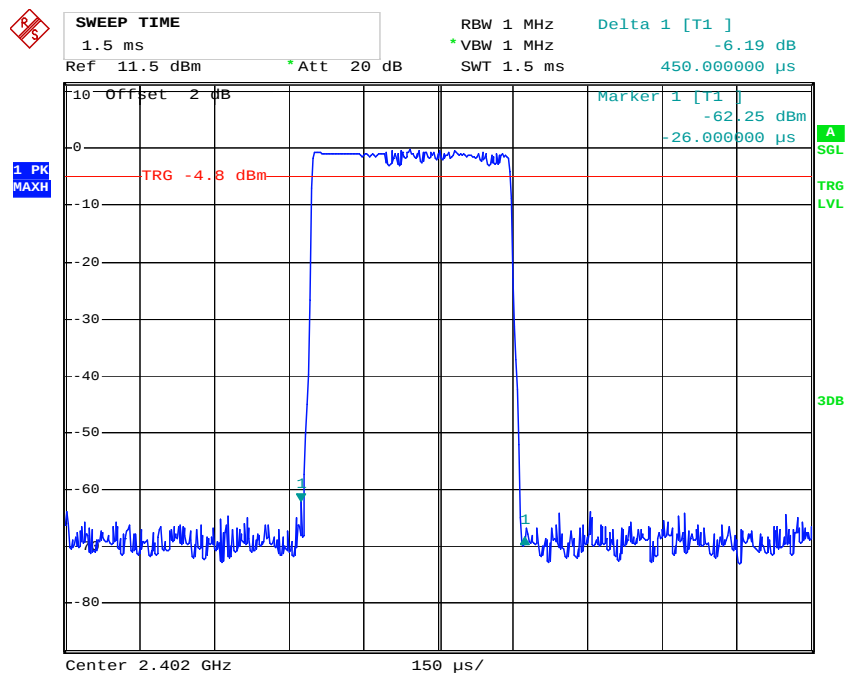


Date: 18.APR.2013 15:30:32

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

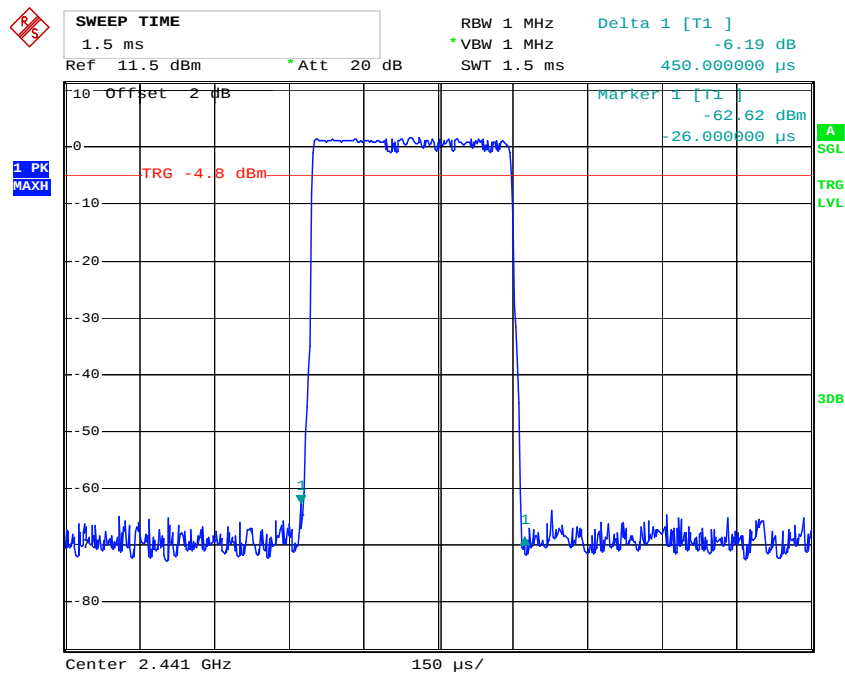
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH 1	Low	0.450	0.144	0.4	Pass
	Middle	0.450	0.144	0.4	Pass
	High	0.450	0.144	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH 3	Low	1.708	0.273	0.4	Pass
	Middle	1.708	0.273	0.4	Pass
	High	1.716	0.275	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH 5	Low	2.956	0.315	0.4	Pass
	Middle	2.956	0.315	0.4	Pass
	High	2.956	0.315	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

DH1: Low Channel



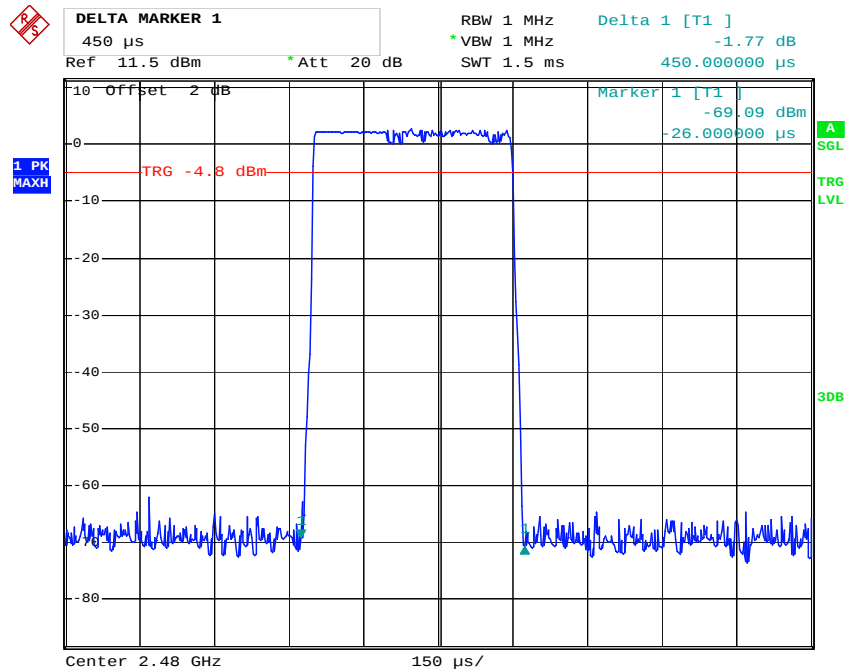
Date: 18.APR.2013 15:17:14

DH1: Middle Channel



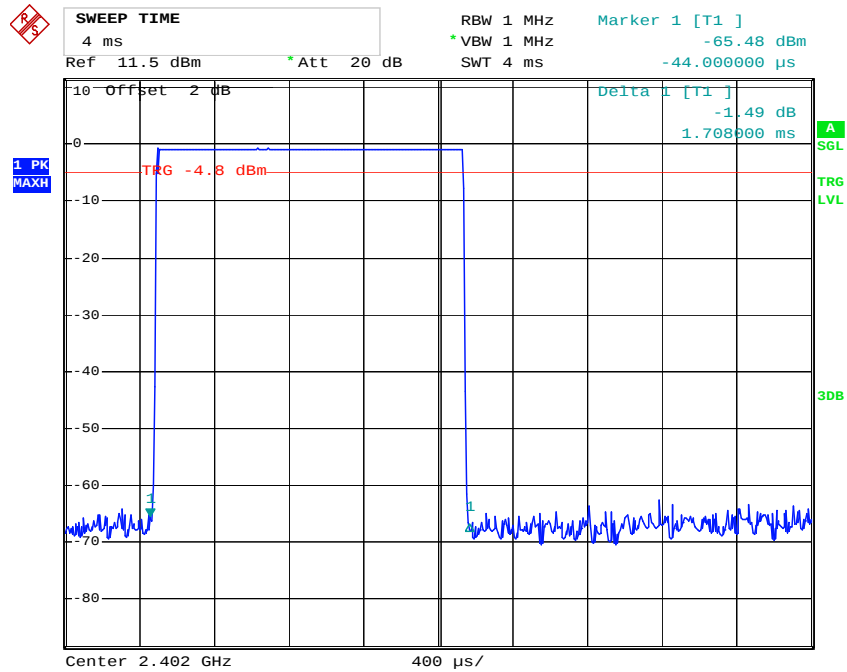
Date: 18.APR.2013 15:16:35

DH1: High Channel



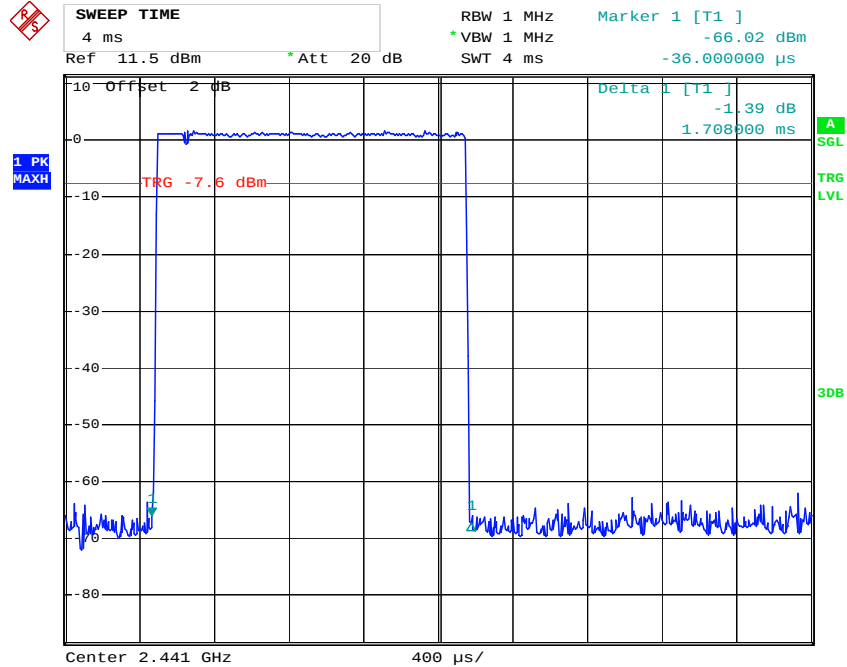
Date: 18.APR.2013 15:16:06

DH3: Low Channel



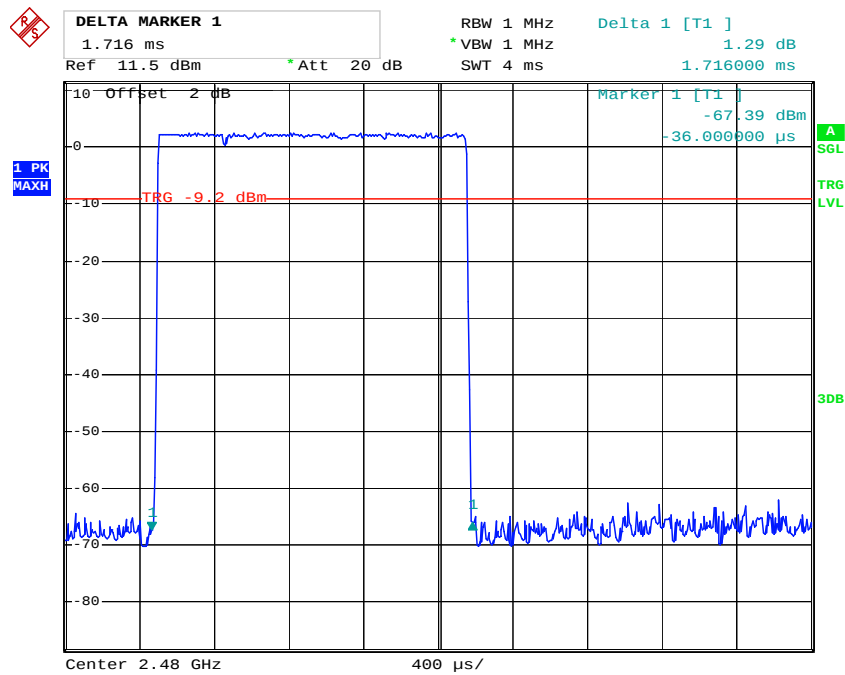
Date: 18.APR.2013 15:20:57

DH3: Middle Channel



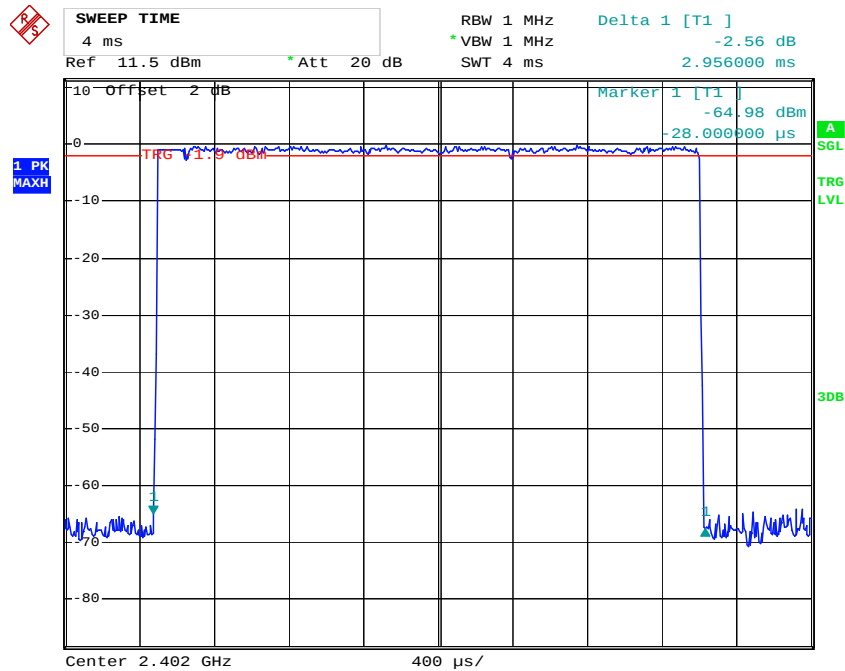
Date: 18.APR.2013 15:24:46

DH3: High Channel



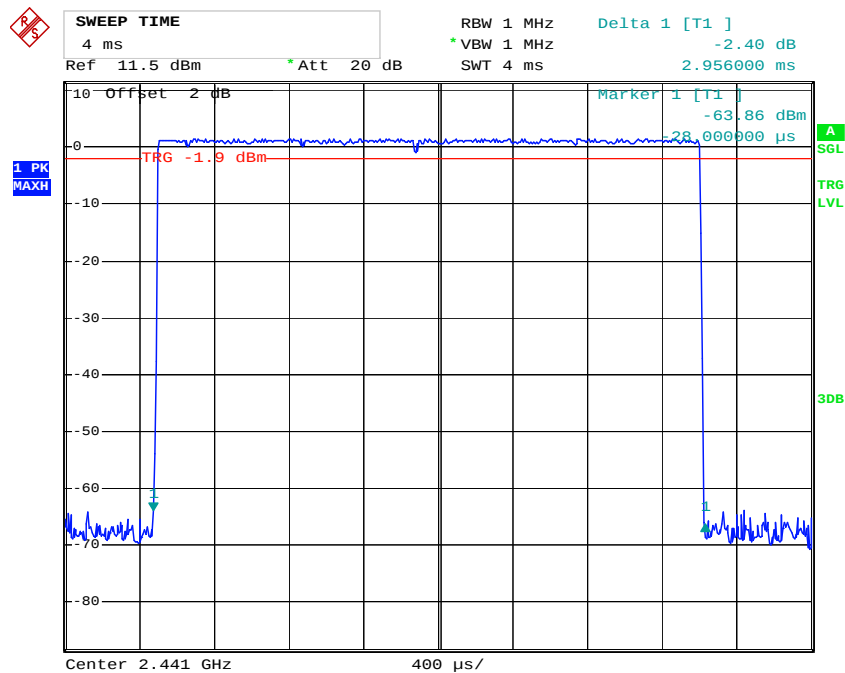
Date: 18.APR.2013 15:25:31

DH5: Low Channel



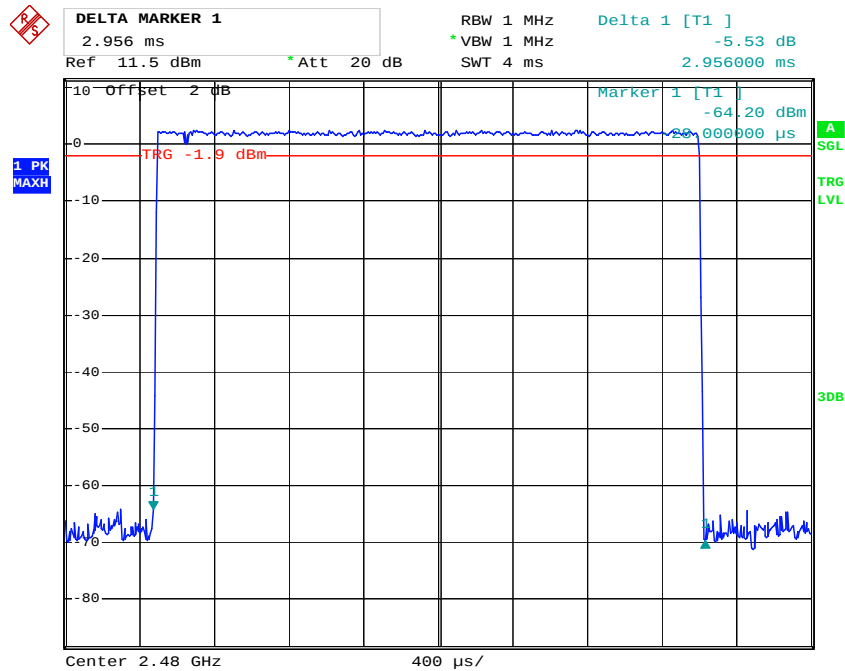
Date: 18.APR.2013 15:32:15

DH5: Middle Channel



Date: 18.APR.2013 15:31:32

DH5: High Channel

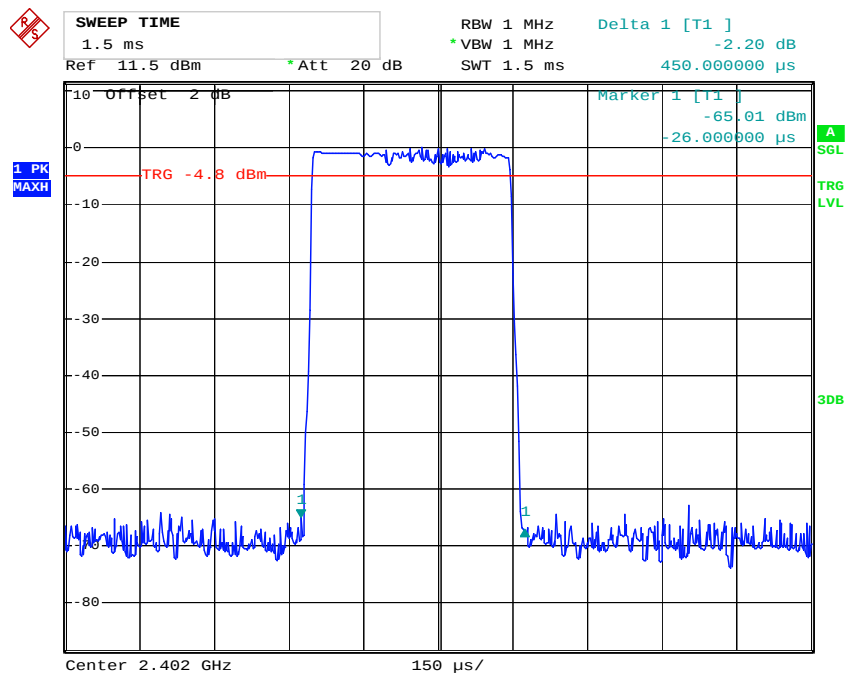


Date: 18.APR.2013 15:31:09

EDR Mode (8-DPSK):

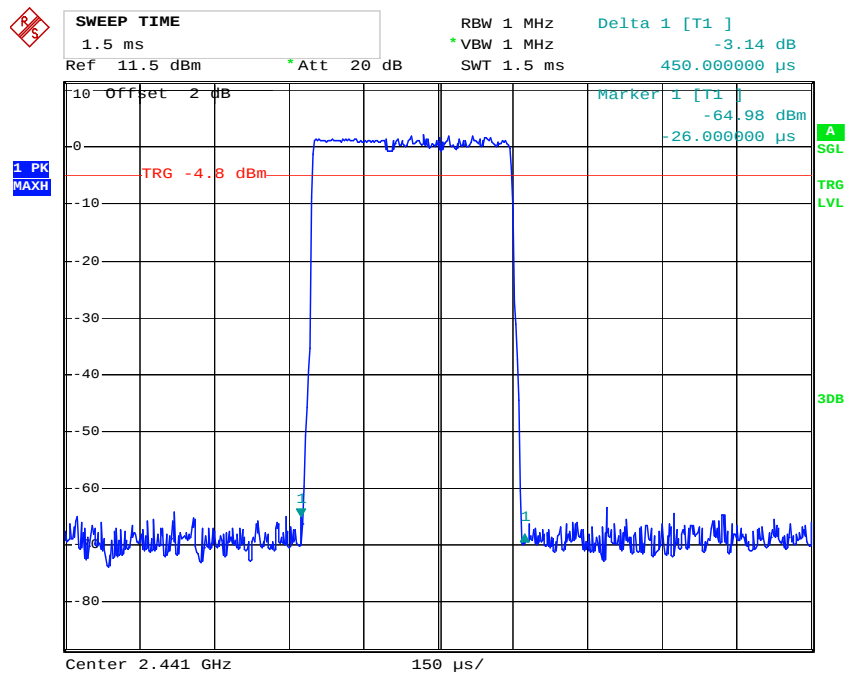
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH 1	Low	0.450	0.144	0.4	Pass
	Middle	0.450	0.144	0.4	Pass
	High	0.450	0.144	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH 3	Low	1.716	0.275	0.4	Pass
	Middle	1.716	0.275	0.4	Pass
	High	1.716	0.275	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH 5	Low	2.956	0.315	0.4	Pass
	Middle	2.956	0.315	0.4	Pass
	High	2.956	0.315	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

DH1: Low Channel



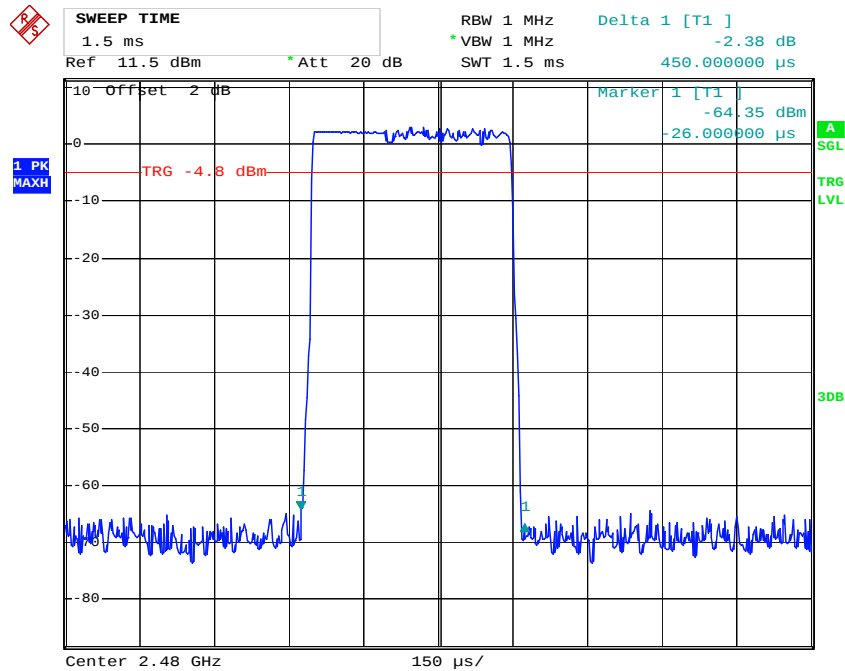
Date: 18.APR.2013 15:17:57

DH1: Middle Channel



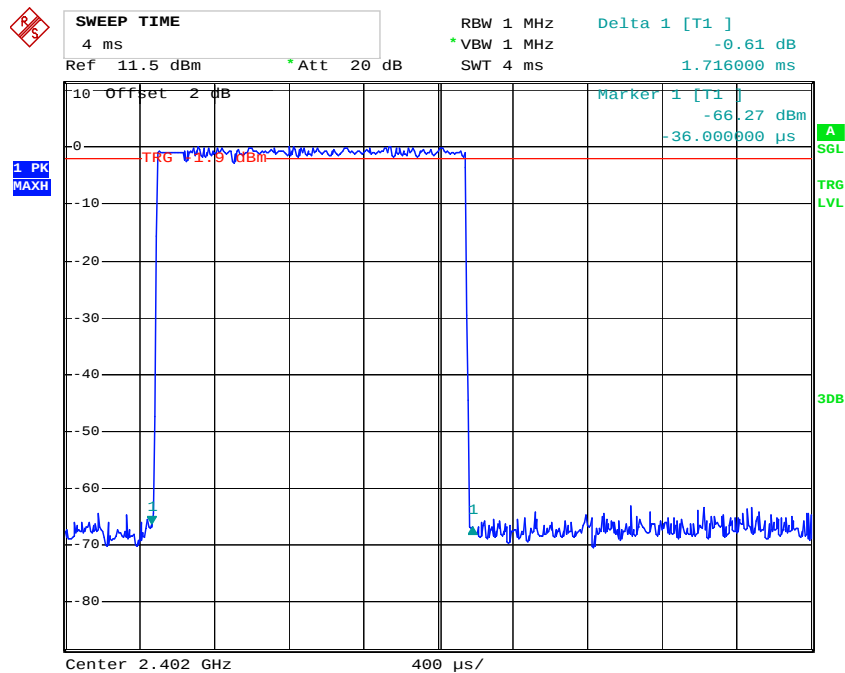
Date: 18.APR.2013 15:18:17

DH1: High Channel



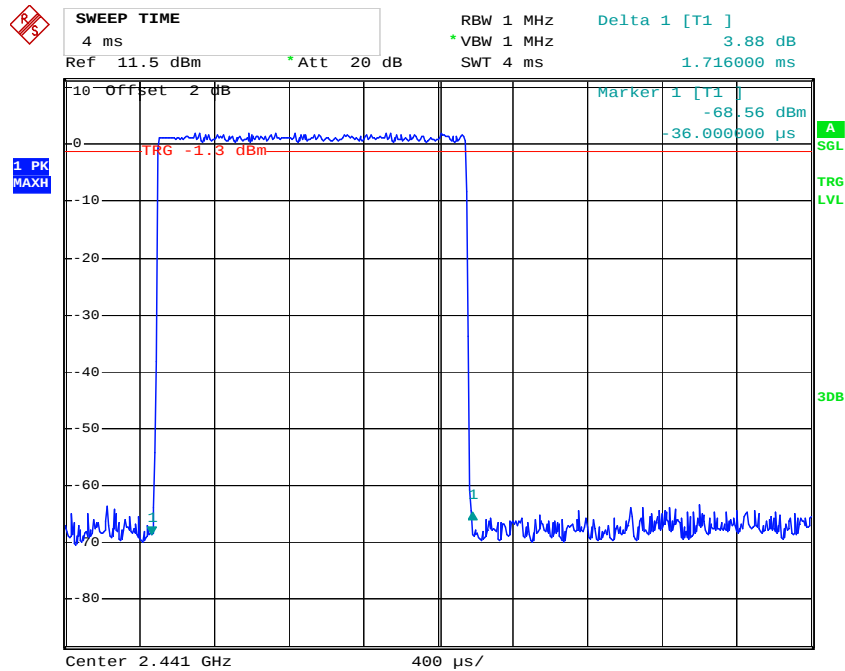
Date: 18.APR.2013 15:18:38

DH3: Low Channel



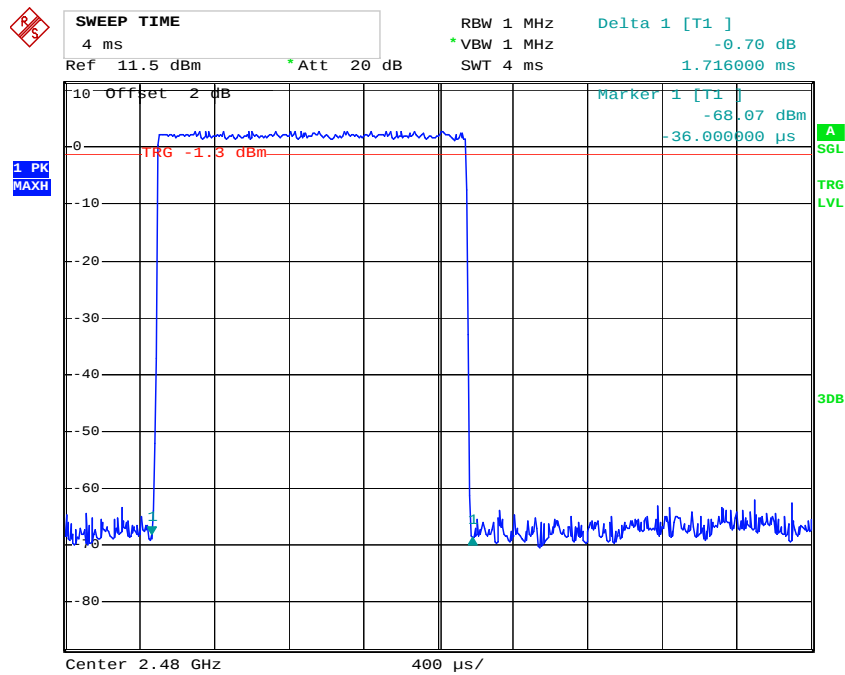
Date: 18.APR.2013 15:27:27

DH3: Middle Channel



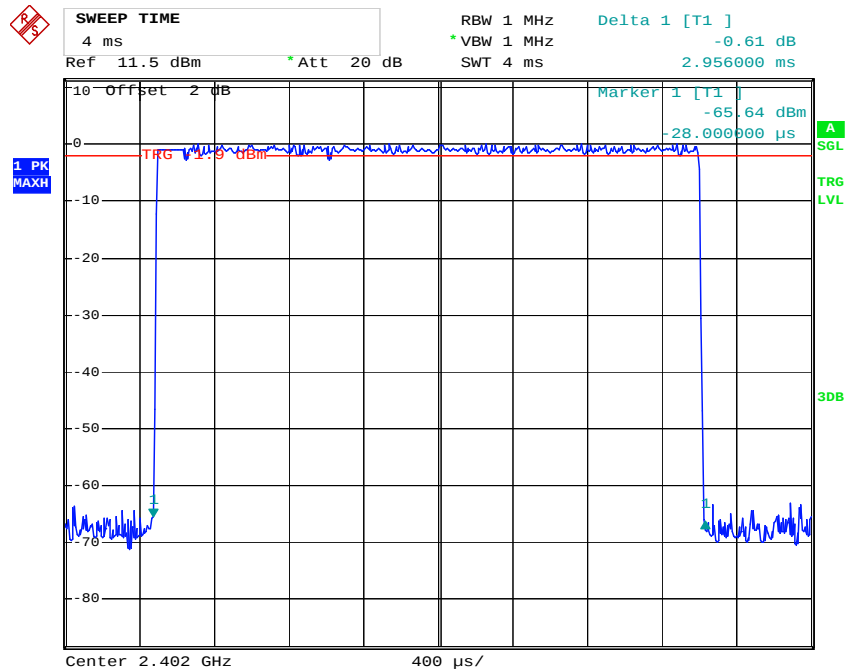
Date: 18.APR.2013 15:27:06

DH3: High Channel



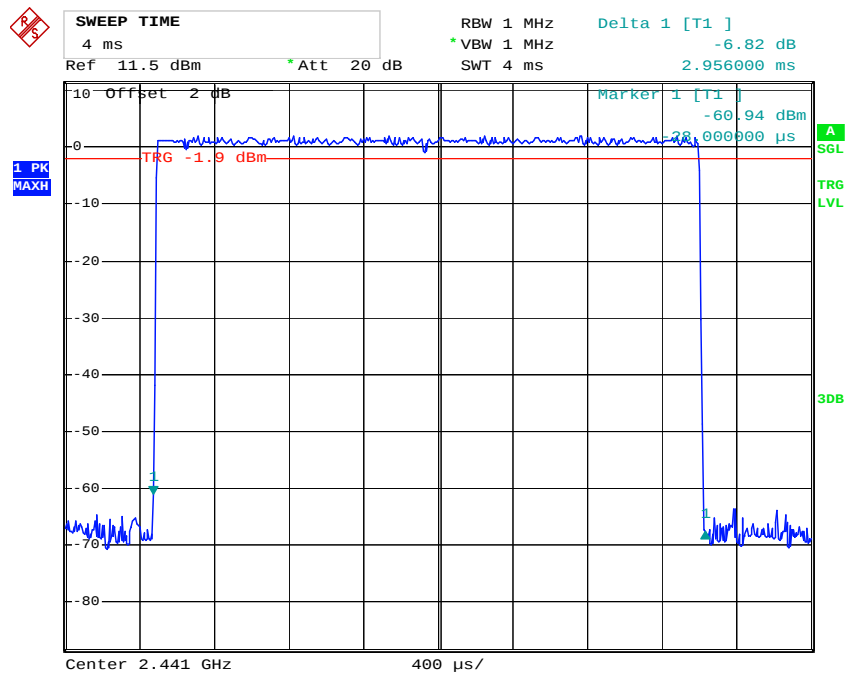
Date: 18.APR.2013 15:26:38

DH5: Low Channel



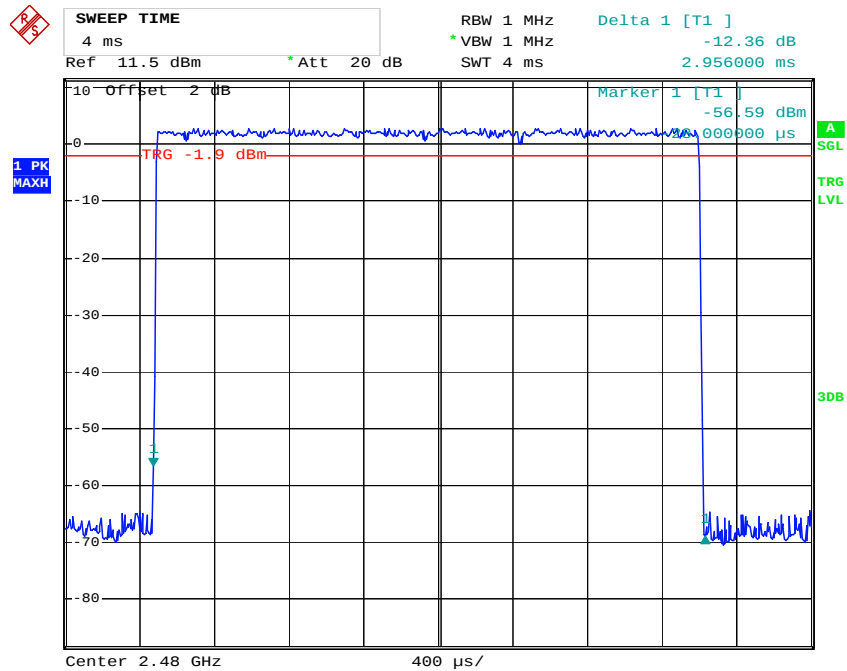
Date: 18.APR.2013 15:32:45

DH5: Middle Channel



Date: 18.APR.2013 15:33:04

DH5: High Channel



Date: 18.APR.2013 15:33:23

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

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

Test Procedure

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

Test Equipment List and Details

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

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

Test Data**Environmental Conditions**

Temperature:	26.8 °C
Relative Humidity:	67 %
ATM Pressure:	100kPa

**The testing was performed by Ares Liu on 2013-04-18.*

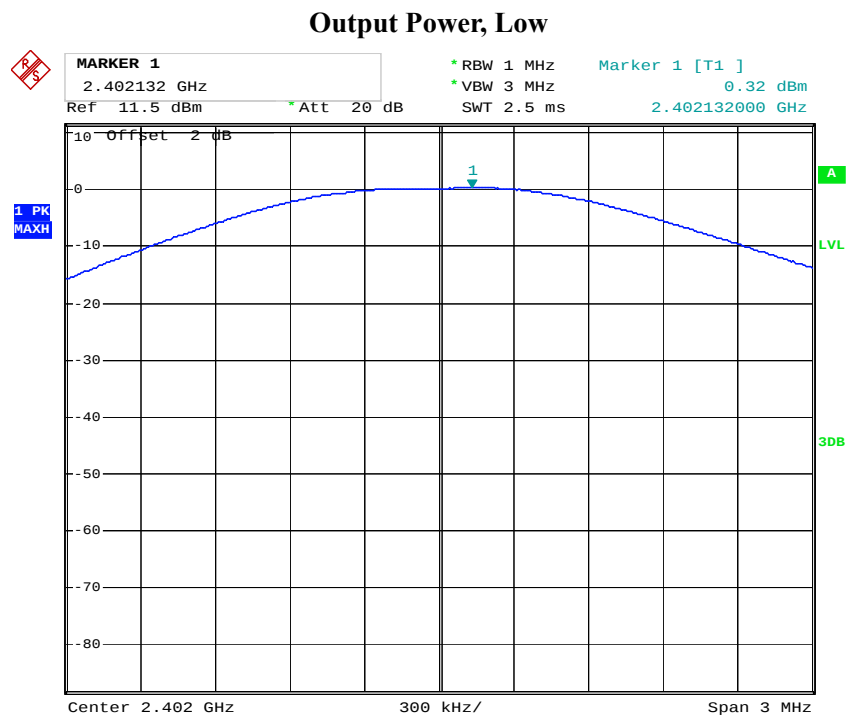
Test Result: Compliance.

Test Mode: Transmitting

Model	Channel	Frequency (MHz)	Output power (dBm)	Limit (dBm)
BDR Mode (GFSK)	Low	2402	0.32	30
	Middle	2441	0.94	30
	High	2480	0.95	30
EDR Mode ($\pi/4$ -DQPSK)	Low	2402	0.51	30
	Middle	2441	0.02	30
	High	2480	0.09	30
EDR Mode (8-DPSK)	Low	2402	0.57	30
	Middle	2441	0.36	30
	High	2480	0.63	30

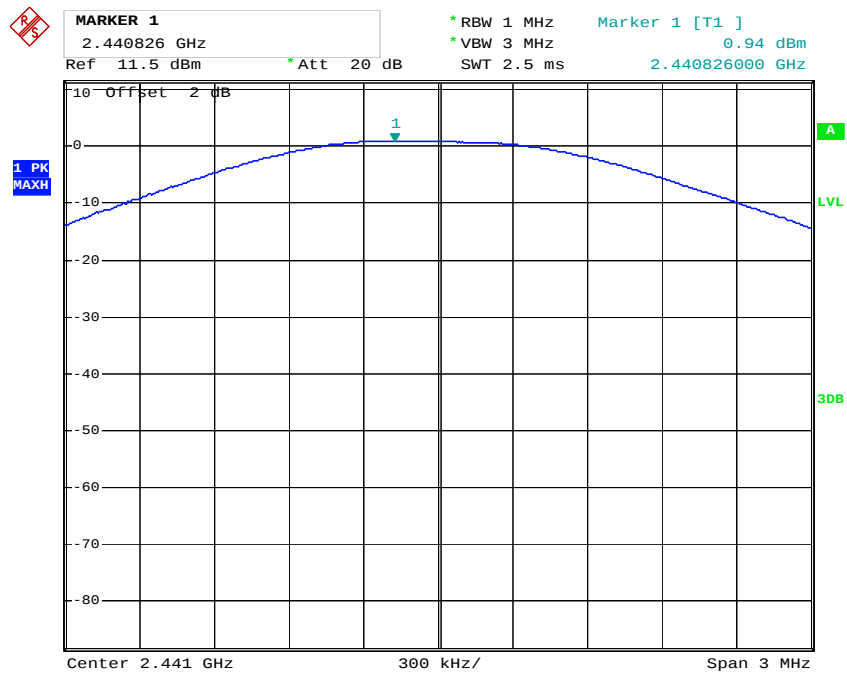
Note: The data above was tested in conducted mode.

BDR Mode (GFSK):



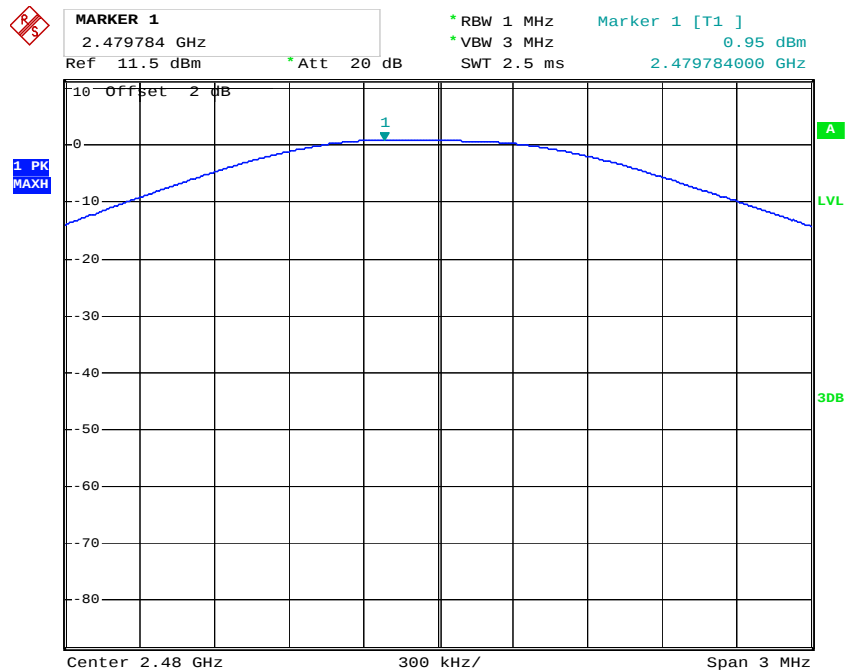
Date: 18.APR.2013 13:38:38

Output Power, Middle



Date: 18.APR.2013 13:40:27

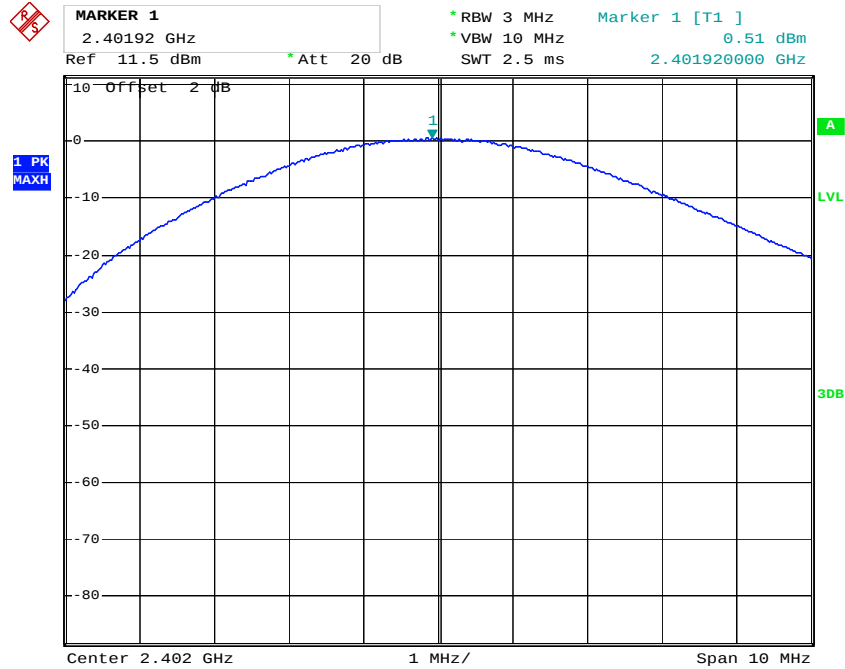
Output Power, High



Date: 18.APR.2013 13:41:15

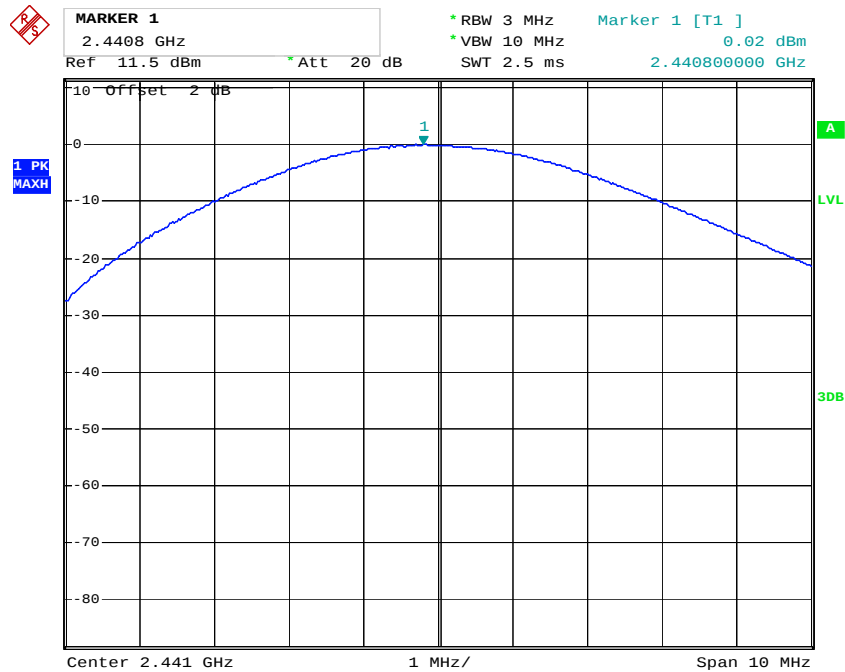
EDR Mode ($\pi/4$ -DQPSK):

Output Power, Low



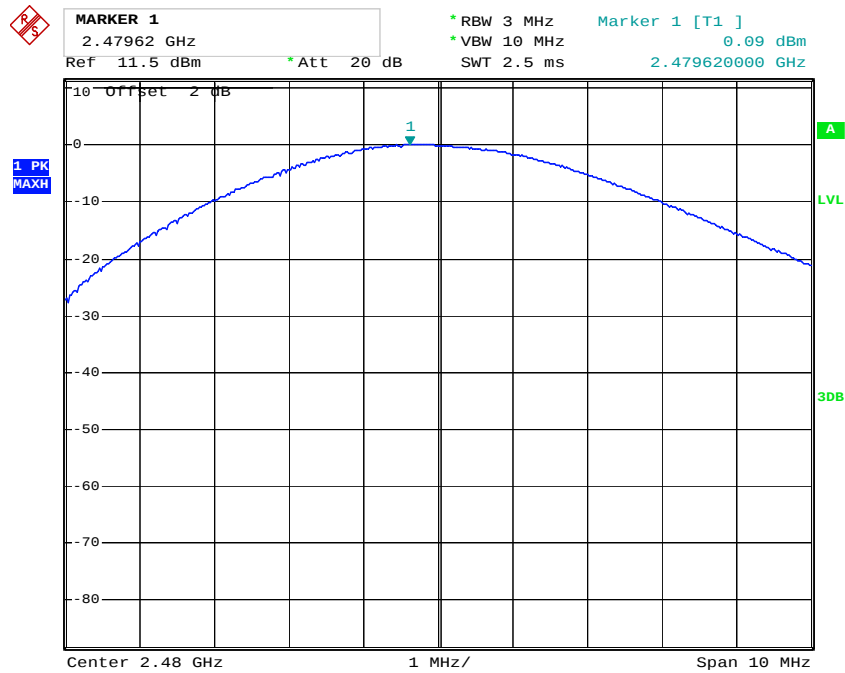
Date: 18.APR.2013 14:35:29

Output Power, Middle



Date: 18.APR.2013 13:43:10

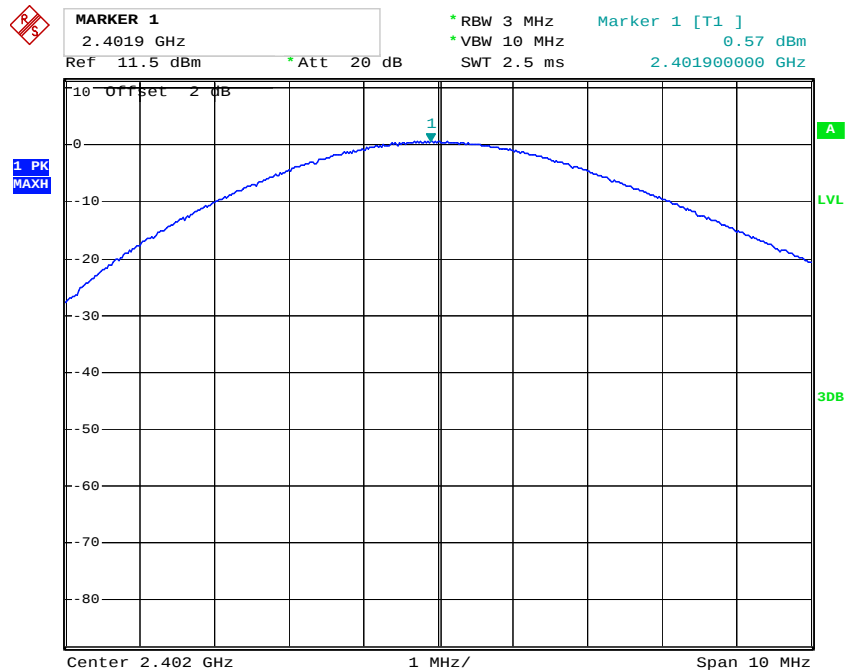
Output Power, High



Date: 18.APR.2013 13:42:28

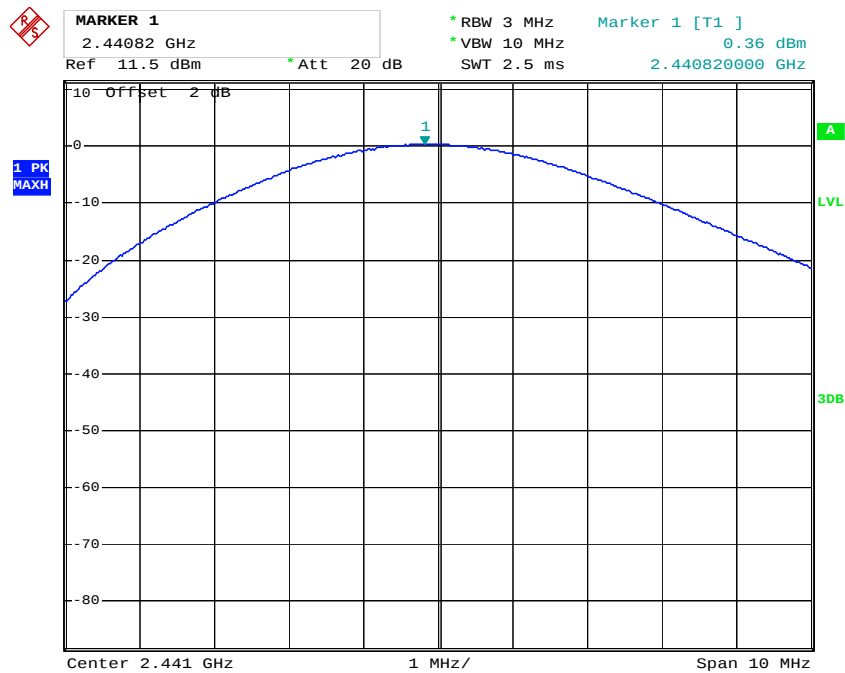
EDR Mode (8-DPSK):

Output Power, Low



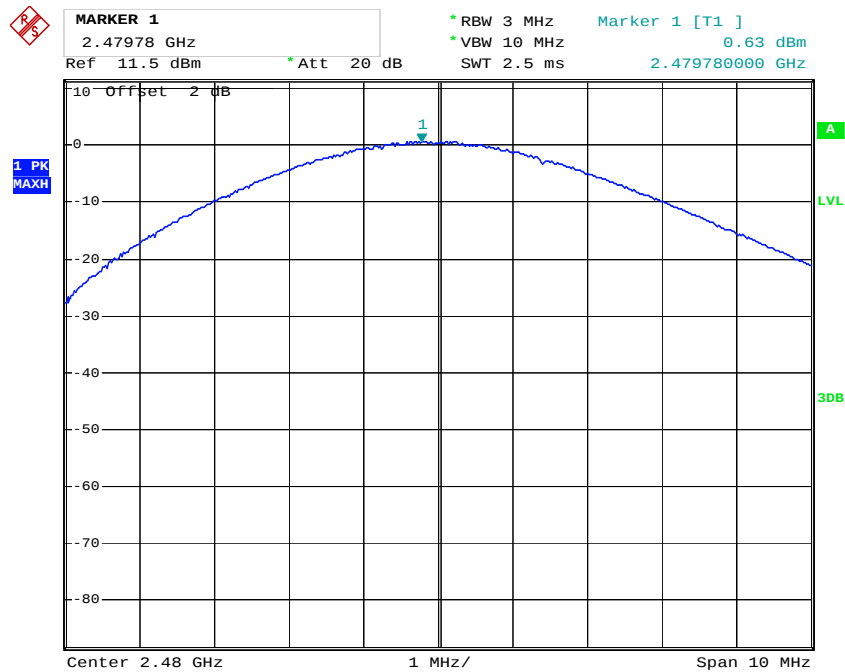
Date: 18.APR.2013 13:44:30

Output Power, Middle



Date: 18.APR.2013 13:45:15

Output Power, High



Date: 18.APR.2013 13:45:51

FCC §15.247(d) - BAND EDGES TESTING

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

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

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

Test Data

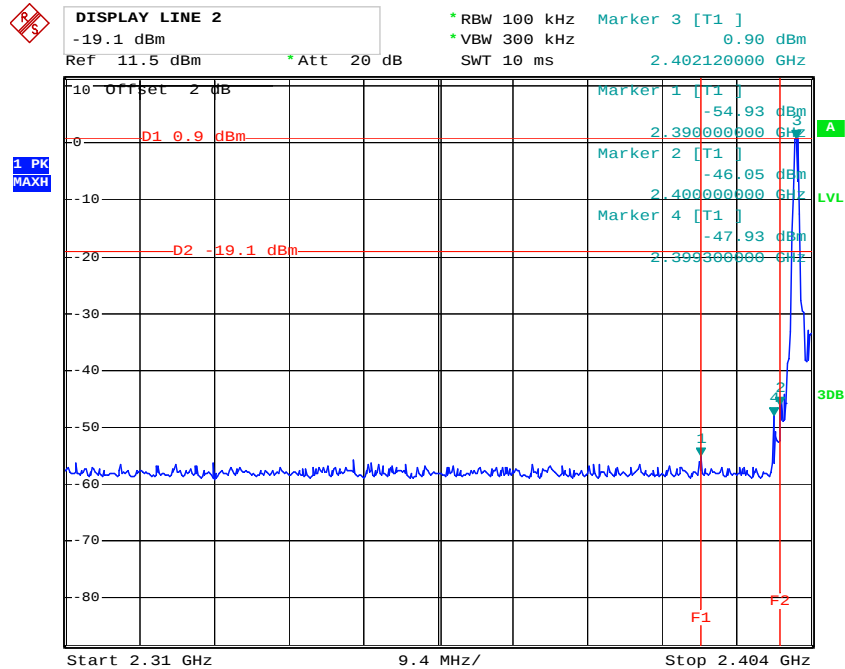
Environmental Conditions

Temperature:	26.8 °C
Relative Humidity:	67 %
ATM Pressure:	100kPa

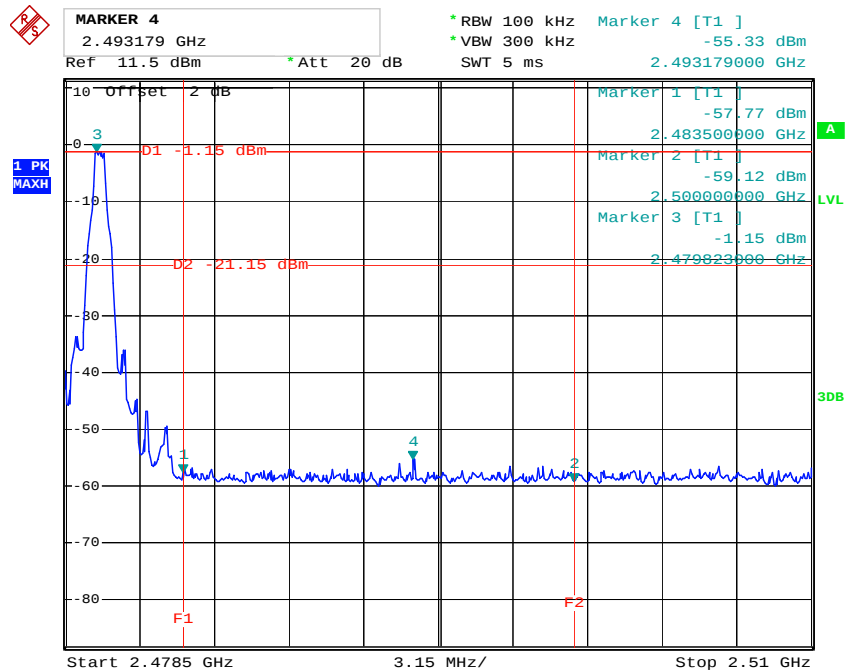
*The testing was performed by Ares Liu on 2013-04-18.

Test Result: Compliance

BDR Mode (GFSK):

Band Edge, Left Side

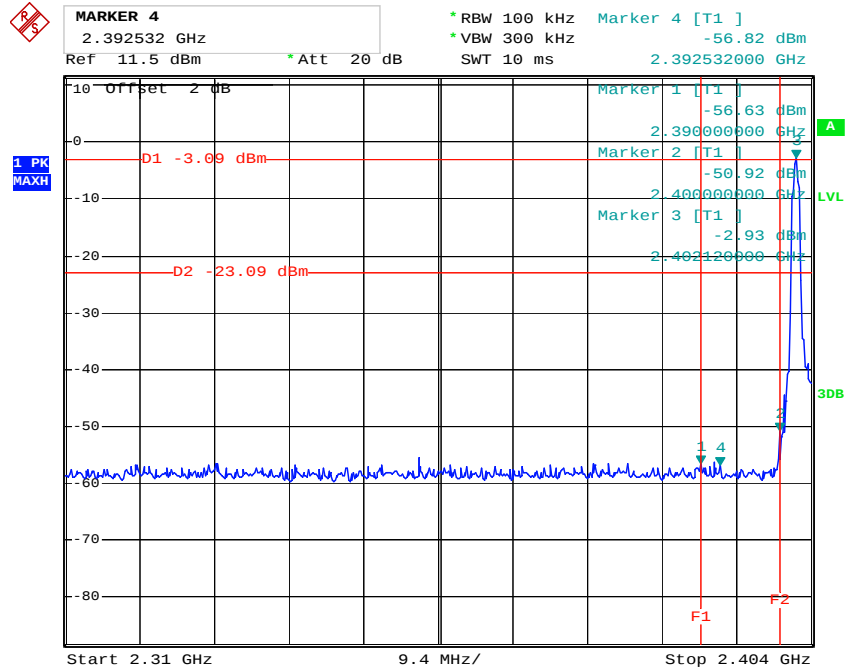
Date: 18.APR.2013 15:01:55

Band Edge, Right Side

Date: 18.APR.2013 15:00:24

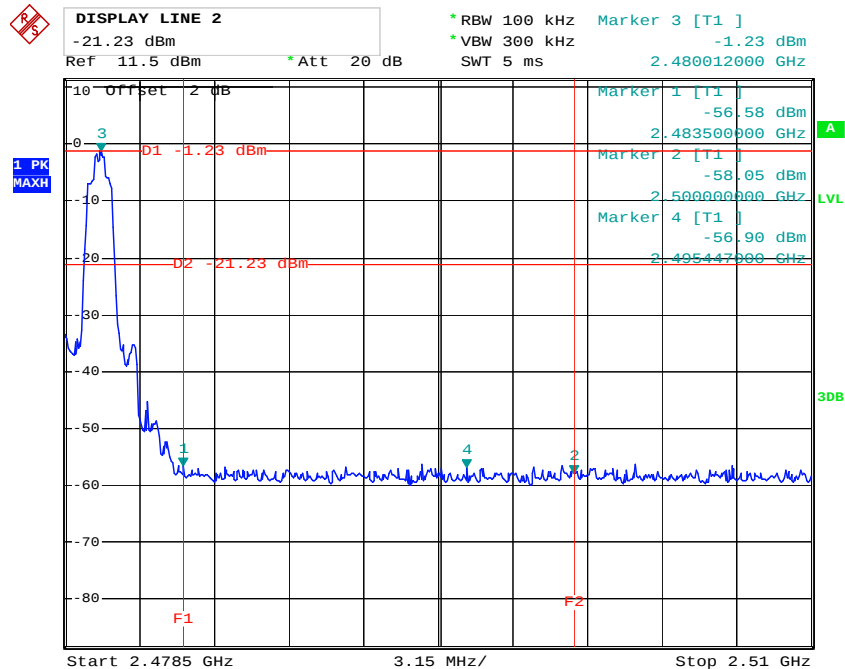
EDR Mode ($\pi/4$ -DQPSK):

Band Edge, Left Side



Date: 18.APR.2013 15:02:43

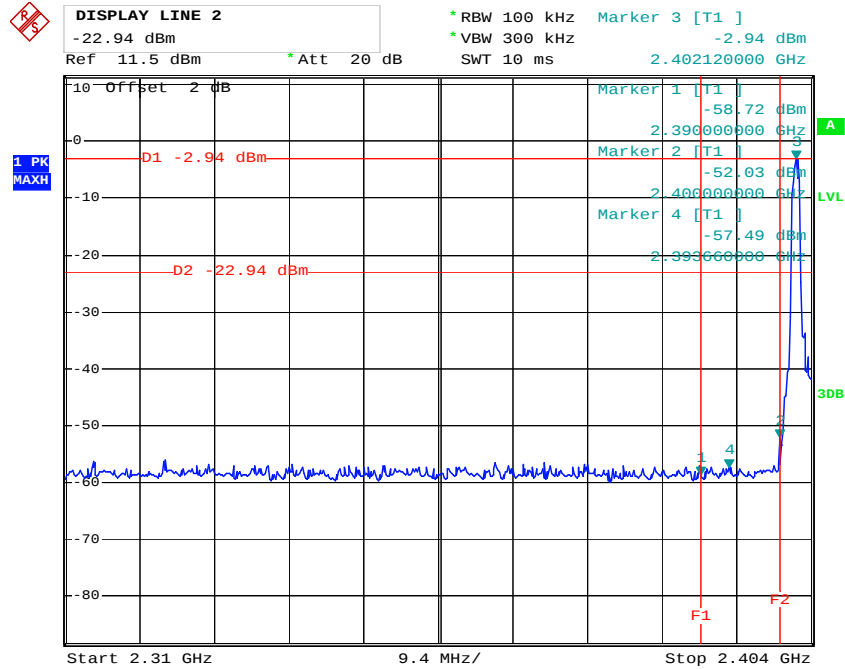
Band Edge, Right Side



Date: 18.APR.2013 14:59:38

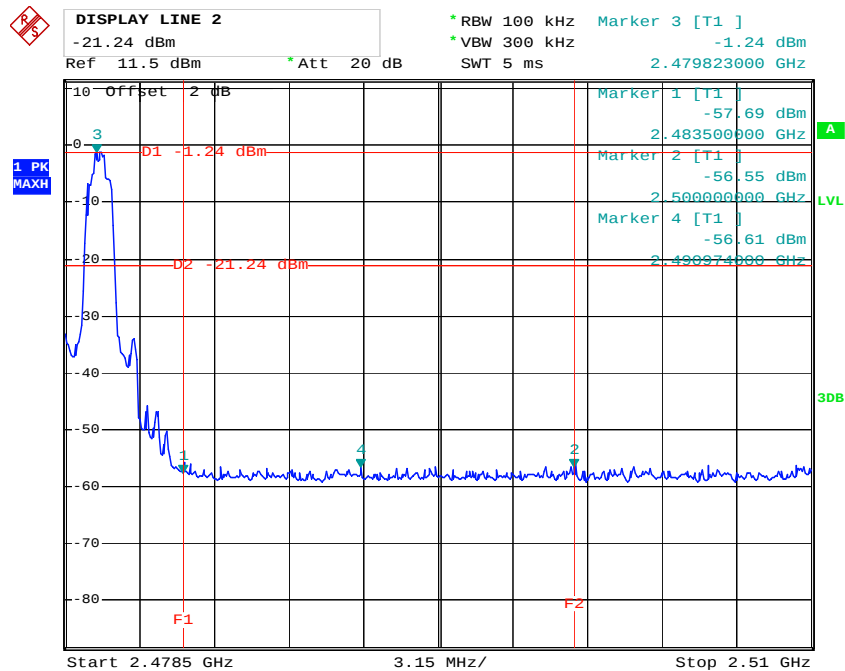
EDR Mode (8-DPSK):

Band Edge, Left Side



Date: 18.APR.2013 15:03:23

Band Edge, Right Side



Date: 18.APR.2013 14:58:37

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