FCC PART 15.247

TEST REPORT

For

CHUNGHSIN INTERNATIONAL ELECTRONICS CO.,LTD

618 GONGREN WEST ROAD,JIAOJIANG AREA TAIZHOU ZHEJIANG 318000 China

FCC ID: 2AI5MN1481Q

Report Type:	Product Type:
Original Report	Notebook

Test Engineer:	Rocky Xiao (Rocky Xiao)
Report Number:	RDG160622801-00A
Report Date:	2016-07-25
Reviewed By:	Dean Liu RF Engineer (Dean Liu)
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

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *CHUNGHSIN INTERNATIONAL ELECTRONICS CO.,LTD*'s product, model number: *MI1401 (FCC ID: 2AI5MN1481Q)* (the "EUT") in this report was a *Notebook ,* which was measured approximately: 35 cm (L) x 23.5 cm (W) x 2.0 cm (H), rated input voltage: DC 3.7V rechargeable Li-ion battery or DC5V charging from adapter.

Adapter #1 Information:
MODEL: BSYB050250U U
INPUT: 100-240V~, 50/60Hz, 0.4A
OUTPUT: DC 5.0V, 2.5A

Adapter#2 Information:
MODEL: JK050250-S04US
INPUT: 100-240V~, 50/60Hz, 0.5A
OUTPUT: DC 5.0V, 2500mA

All measurement and test data in this report was gathered from production sample serial number: 160622801 (Assigned by BACL, Dongguan). The EUT was received on 2016-06-28.

Objective

This report is prepared on behalf of *CHUNGHSIN INTERNATIONAL ELECTRONICS CO.,LTD.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules

The tests were performed in order to determine the Bluetooth BDR and EDR mode of EUT compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15B JBC submissions with FCC ID: 2AI5MN1481Q.
FCC Part 15C DTS submissions with FCC ID: 2AI5MN1481Q.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

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

Test Facility

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

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in engineering mode.

EUT Exercise Software

The software “MPTool and TRLBTAPP” were used for testing, which was provided by manufacturer. The worst condition (maximum power) was configured by the system default setinng.

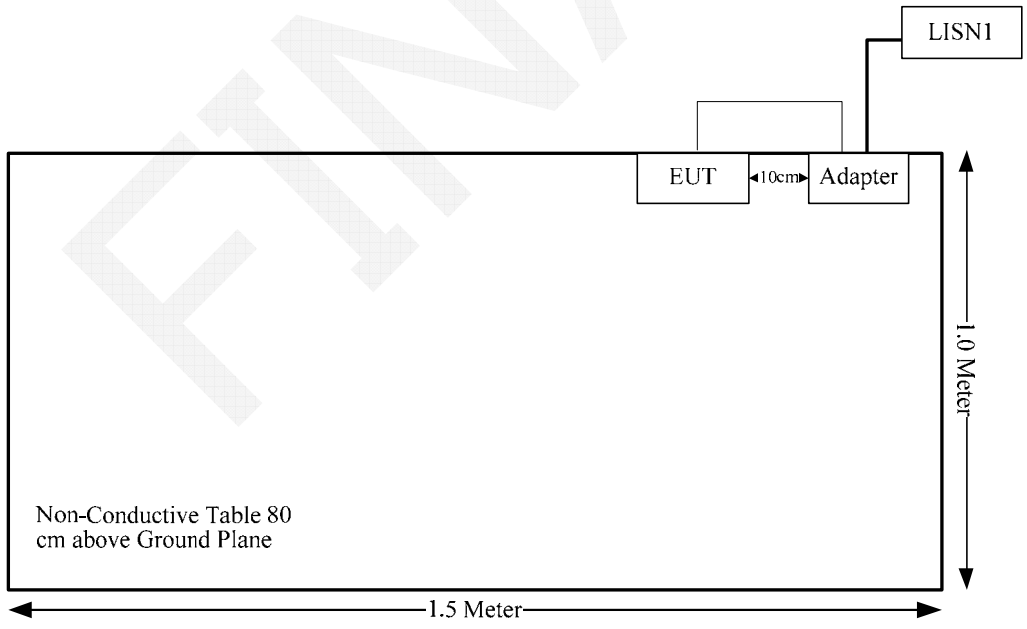
Equipment Modifications

No modification was made to the EUT.

External I/O Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
DC Cable	No	No	1.2	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	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious 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 KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

The max tune-up conducted power is 2.5dBm (1.78 mW).
[(max. power of channel, mW)/(min. test separation distance, mm)][√f(GHz)]
= 1.78/5*(√2.480) = 0.6< 3.0

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 one integral antenna arrangement for Wifi/BT, and the antenna gain is 2.0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

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

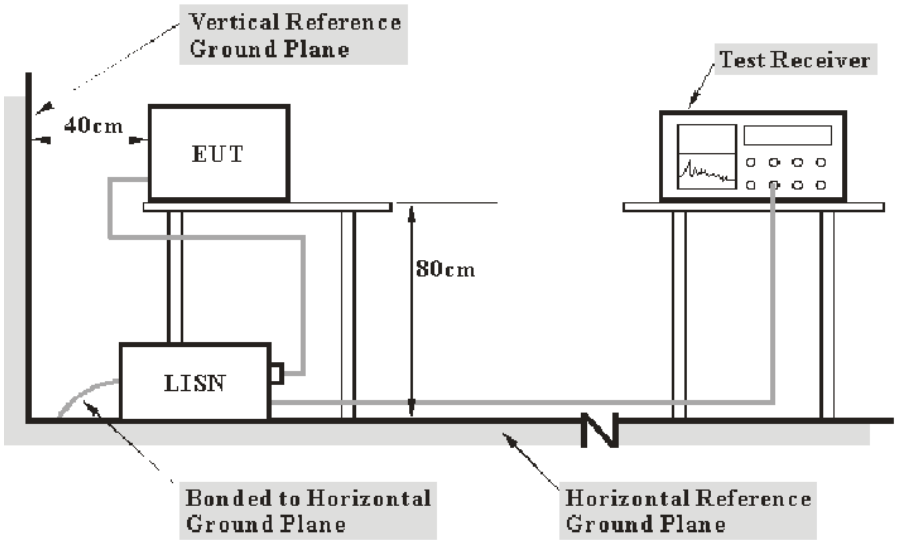
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
− compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
− non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of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

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 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 C63.10-2013 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 first 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	2015-10-20	2016-10-20
R&S	L.I.S.N	ESH2-Z5	892107/021	2016-07-16	2017-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2015-11-26	2016-11-25
N/A	Coaxial Cable	1.8m	N/A	2016-05-06	2017-05-06
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

Environmental Conditions

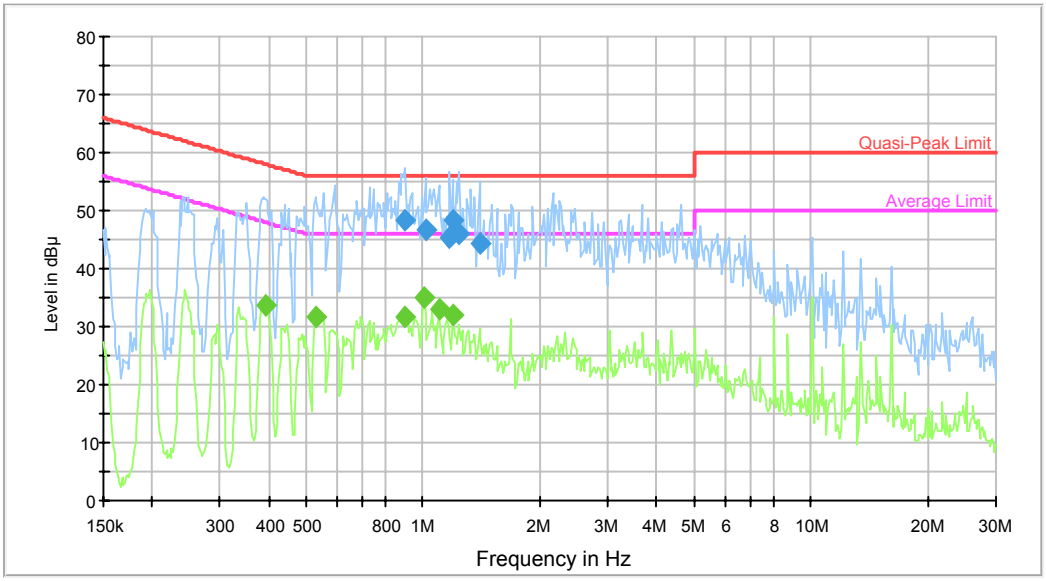
Temperature:	29.7 °C
Relative Humidity:	57 %
ATM Pressure:	100.5 kPa

The testing was performed by Rocky Xiao on 2016-07-21.

Test Mode: Transmitting

Adapter #1:

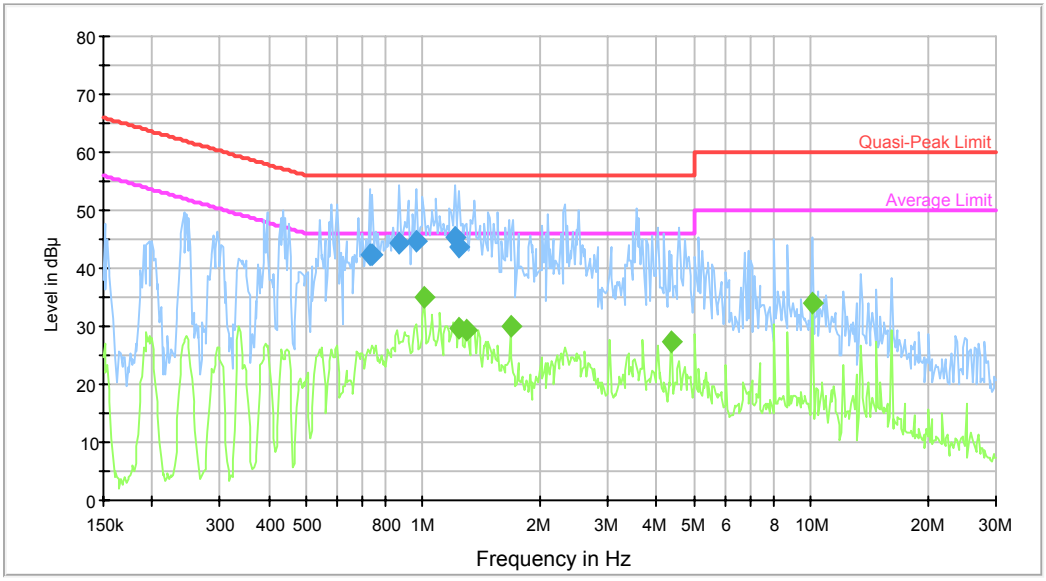
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.900972	48.3	9.000	L1	10.4	7.7	56.0	Compliance
1.015358	46.7	9.000	L1	10.4	9.3	56.0	Compliance
1.171949	45.3	9.000	L1	10.4	10.7	56.0	Compliance
1.190776	48.2	9.000	L1	10.4	7.8	56.0	Compliance
1.239175	46.0	9.000	L1	10.4	10.0	56.0	Compliance
1.396499	44.4	9.000	L1	10.4	11.6	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.393383	33.8	9.000	L1	10.2	14.2	48.0	Compliance
0.528270	31.7	9.000	L1	10.1	14.3	46.0	Compliance
0.893821	31.8	9.000	L1	10.4	14.2	46.0	Compliance
1.007300	35.1	9.000	L1	10.4	10.9	46.0	Compliance
1.099574	33.0	9.000	L1	10.4	13.0	46.0	Compliance
1.190776	32.1	9.000	L1	10.4	13.9	46.0	Compliance

AC120 V, 60 Hz, Neutral:

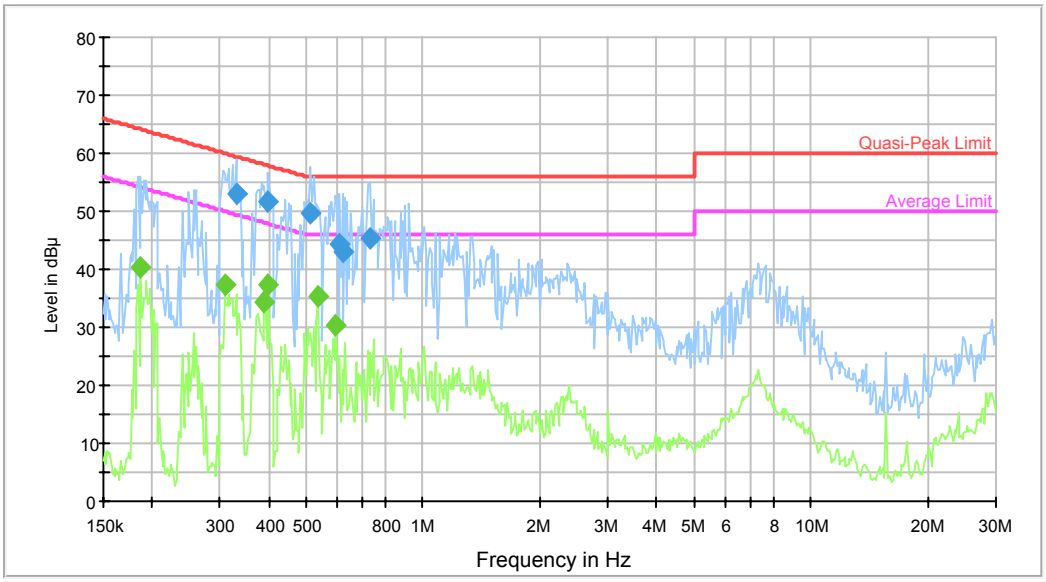


Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.726569	42.4	9.000	N	10.4	13.6	56.0	Compliance
0.738241	42.2	9.000	N	10.4	13.8	56.0	Compliance
0.865782	44.4	9.000	N	10.4	11.6	56.0	Compliance
0.960275	44.7	9.000	N	10.4	11.3	56.0	Compliance
1.209904	45.3	9.000	N	10.4	10.7	56.0	Compliance
1.239175	43.6	9.000	N	10.4	12.4	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
1.007300	35.0	9.000	N	10.4	11.0	46.0	Compliance
1.239175	29.8	9.000	N	10.4	16.2	46.0	Compliance
1.289541	29.2	9.000	N	10.4	16.8	46.0	Compliance
1.677385	30.1	9.000	N	10.4	15.9	46.0	Compliance
4.364119	27.5	9.000	N	10.7	18.5	46.0	Compliance
10.075173	34.1	9.000	N	10.5	15.9	50.0	Compliance

Adapter #2:

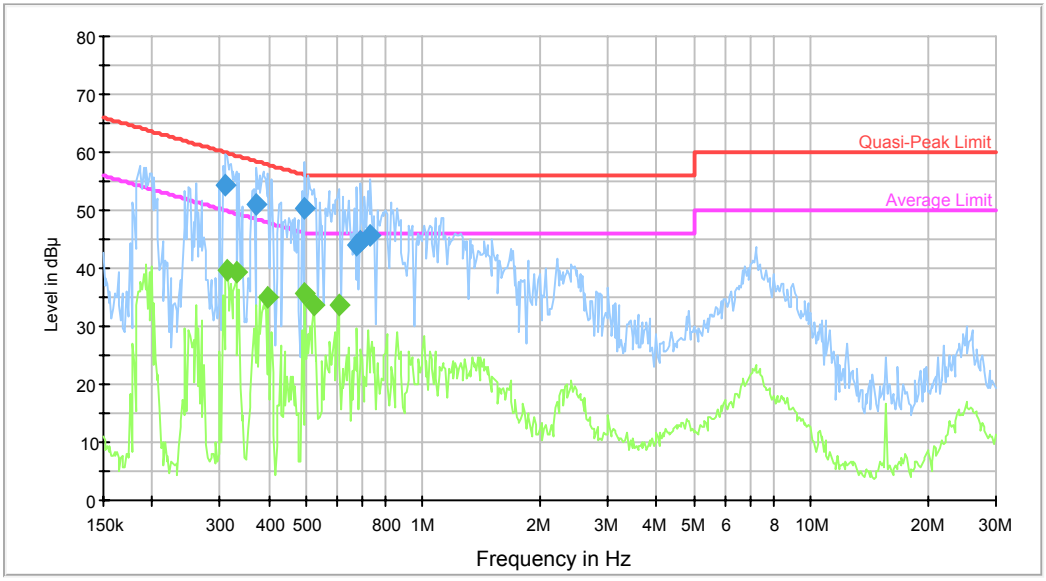
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.330129	53.0	9.000	L1	10.3	6.4	59.4	Compliance
0.399703	51.7	9.000	L1	10.2	6.2	57.9	Compliance
0.511698	49.8	9.000	L1	10.1	6.2	56.0	Compliance
0.609741	44.4	9.000	L1	10.3	11.6	56.0	Compliance
0.619536	43.0	9.000	L1	10.3	13.0	56.0	Compliance
0.726569	45.4	9.000	L1	10.4	10.6	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.187494	40.4	9.000	L1	10.2	13.7	54.1	Compliance
0.307284	37.4	9.000	L1	10.3	12.6	50.0	Compliance
0.390261	34.2	9.000	L1	10.2	13.9	48.1	Compliance
0.399703	37.4	9.000	L1	10.2	10.5	47.9	Compliance
0.536756	35.5	9.000	L1	10.1	10.5	46.0	Compliance
0.595338	30.5	9.000	L1	10.2	15.5	46.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.309742	54.5	9.000	N	10.3	5.5	60.0	Compliance
0.372042	50.9	9.000	N	10.2	7.6	58.5	Compliance
0.495646	50.2	9.000	N	10.1	5.9	56.1	Compliance
0.676289	44.1	9.000	N	10.4	11.9	56.0	Compliance
0.692650	44.6	9.000	N	10.4	11.4	56.0	Compliance
0.732382	45.6	9.000	N	10.4	10.4	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
	39.7	9.000	N	10.3	10.2	49.9	Compliance
0.330129	39.3	9.000	N	10.3	10.1	49.4	Compliance
0.399703	35.1	9.000	N	10.2	12.8	47.9	Compliance
0.495646	35.7	9.000	N	10.1	10.4	46.1	Compliance
0.524077	33.7	9.000	N	10.1	12.3	46.0	Compliance
0.604902	33.8	9.000	N	10.2	12.2	46.0	Compliance

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

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

If U_{lab} is less than or equal to U_{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.

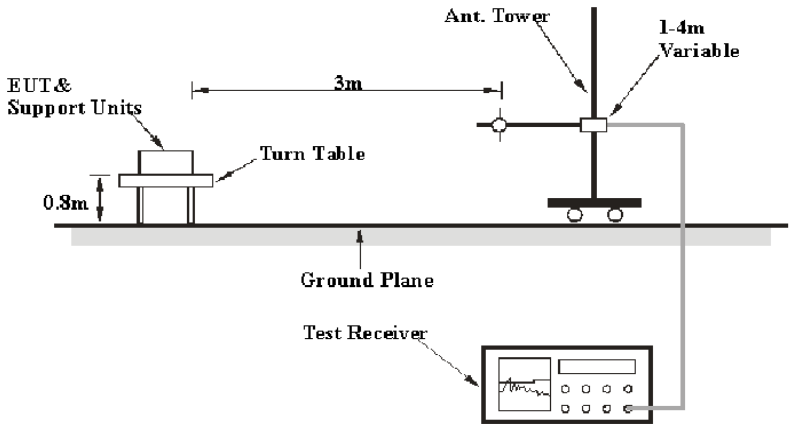
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:
30M~200MHz: 4.55 dB for Horizontal, 4.57 dB for Vertical; 200M~1GHz: 4.66 dB for Horizontal, 4.56 dB for Vertical; measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB.

Table 1 – Values of U_{cispr}

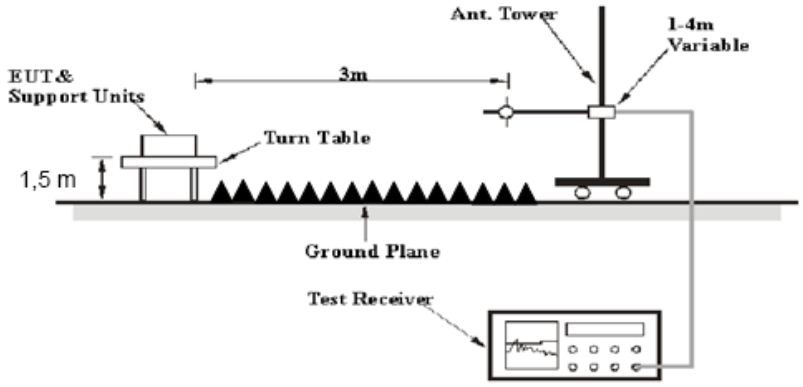
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 C63.10-2013. 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.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	AV

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	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2016-02-19	2017-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2015-09-06	2016-09-06
N/A	Coaxial Cable	14m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	8m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

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.

Test Data

Environmental Conditions

Temperature:	27.7 °C
Relative Humidity:	53 %
ATM Pressure:	100.2 kPa

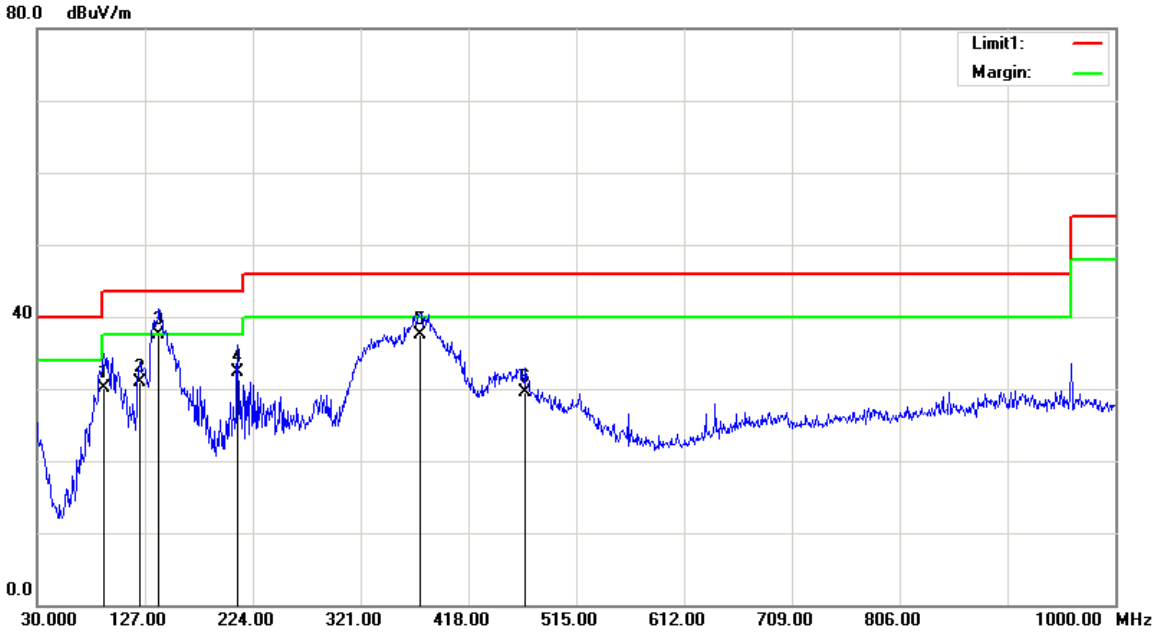
** The testing was performed by Rocky Xiao on 2016-07-22.*

Test Mode: Transmitting

1) Below 1GHz (BDR mode middle channel was the worst**):**

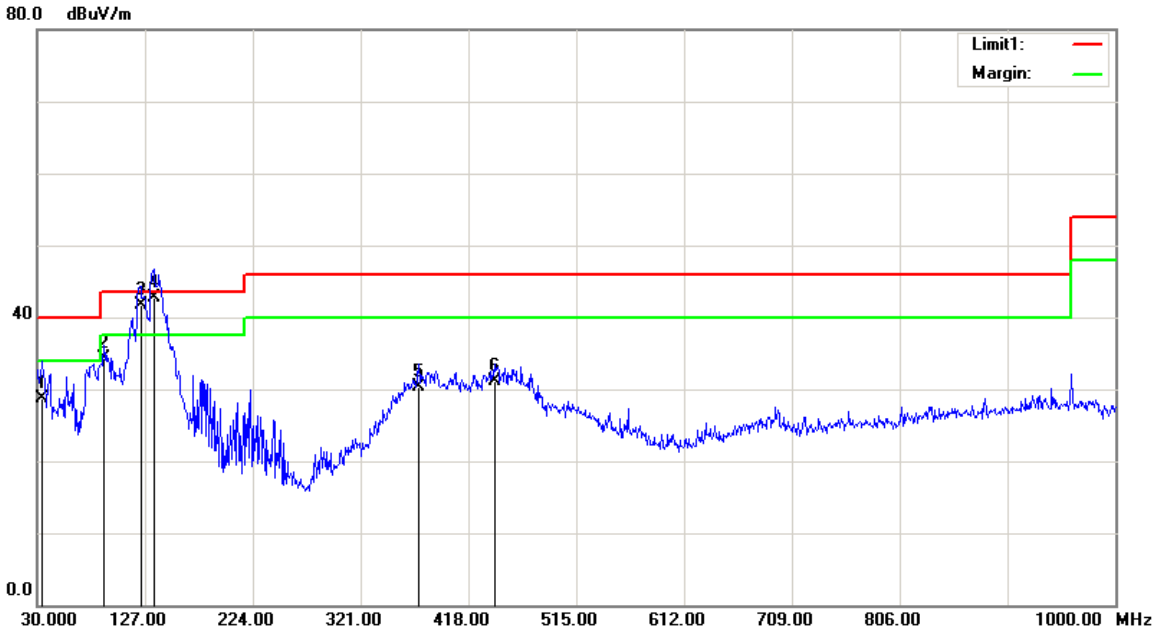
Adapter #1

Horizontal



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
90.1400	42.14	QP	-11.94	30.20	43.50	13.30
122.1500	36.51	QP	-5.51	31.00	43.50	12.50
139.6100	44.10	QP	-6.60	37.50	43.50	6.00
210.4200	41.31	QP	-9.01	32.30	43.50	11.20
374.3500	42.02	QP	-4.42	37.60	46.00	8.40
469.4100	31.35	QP	-1.75	29.60	46.00	16.40

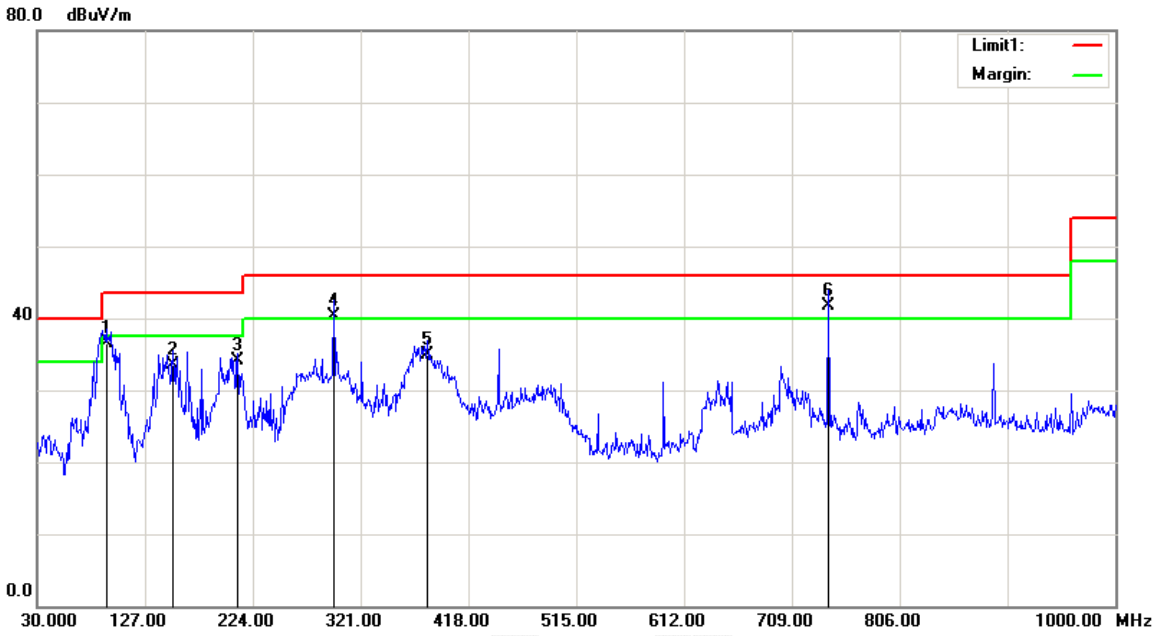
Vertical



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
34.8500	31.43	QP	-2.63	28.80	40.00	11.20
90.1400	46.24	QP	-11.94	34.30	43.50	9.20
123.1200	47.20	QP	-5.50	41.70	43.50	1.80
134.7600	48.85	QP	-6.05	42.40	43.50	1.10
373.3800	34.85	QP	-4.45	30.40	46.00	15.60
441.2800	33.94	QP	-2.74	31.20	46.00	14.80

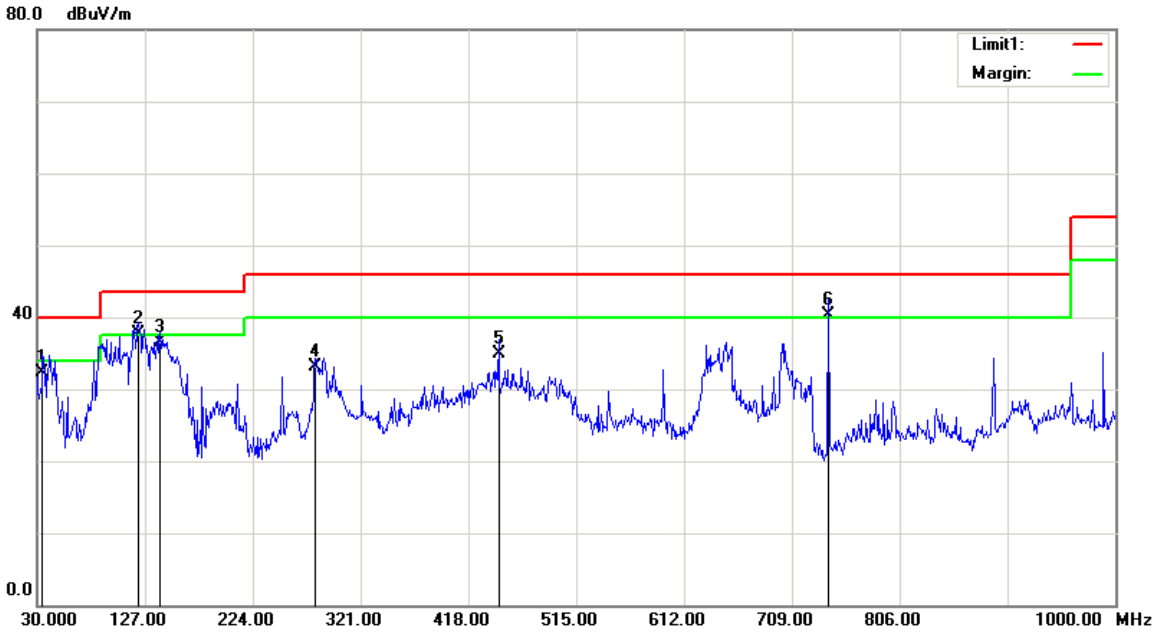
Adapter #2

Horizontal



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
92.0800	48.25	QP	-11.65	36.60	43.50	6.90
152.2200	40.62	QP	-7.12	33.50	43.50	10.00
210.4200	43.11	QP	-9.01	34.10	43.50	9.40
296.7500	46.12	QP	-5.82	40.30	46.00	5.70
381.1400	39.06	QP	-4.16	34.90	46.00	11.10
741.9800	39.47	QP	2.23	41.70	46.00	4.30

Vertical



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
34.8500	35.03	QP	-2.63	32.40	40.00	7.60
121.1800	43.40	QP	-5.60	37.80	43.50	5.70
140.5800	43.19	QP	-6.69	36.50	43.50	7.00
280.2600	39.06	QP	-5.96	33.10	46.00	12.90
445.1600	37.57	QP	-2.67	34.90	46.00	11.10
741.9800	38.07	QP	2.23	40.30	46.00	5.70

2) 1-25GHz

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	67.84	PK	H	25.65	3.66	0.00	97.15	N/A	N/A
2402	67.24	AV	H	25.65	3.66	0.00	96.55	N/A	N/A
2402	51.11	PK	V	25.65	3.66	0.00	80.42	N/A	N/A
2402	50.67	AV	V	25.65	3.66	0.00	79.98	N/A	N/A
2390	25.14	PK	H	25.61	3.63	0.00	54.38	74.00	19.62
2390	13.03	AV	H	25.61	3.63	0.00	42.27	54.00	11.73
4804	30.24	PK	H	30.59	5.06	27.41	38.48	74.00	35.52
4804	17.56	AV	H	30.59	5.06	27.41	25.80	54.00	28.20
7206	29.85	PK	H	34.09	6.61	25.91	44.64	74.00	29.36
7206	17.24	AV	H	34.09	6.61	25.91	32.03	54.00	21.97
3235	31.86	PK	H	27.95	6.24	27.34	38.71	74.00	35.29
3235	18.93	AV	H	27.95	6.24	27.34	25.78	54.00	28.22
Middle Channel: 2441 MHz									
2441	67.52	PK	H	25.75	3.76	0.00	97.03	N/A	N/A
2441	66.93	AV	H	25.75	3.76	0.00	96.44	N/A	N/A
2441	50.95	PK	V	25.75	3.76	0.00	80.46	N/A	N/A
2441	50.57	AV	V	25.75	3.76	0.00	80.08	N/A	N/A
4882	31.35	PK	H	30.79	5.19	27.42	39.91	74.00	34.09
4882	18.87	AV	H	30.79	5.19	27.42	27.43	54.00	26.57
7323	30.95	PK	H	34.38	6.75	25.88	46.20	74.00	27.80
7323	18.427	AV	H	34.38	6.75	25.88	33.68	54.00	20.32
3235	32.74	PK	H	27.95	6.24	27.34	39.59	74.00	34.41
3235	20.43	AV	H	27.95	6.24	27.34	27.28	54.00	26.72
4045	33.05	PK	H	29.89	4.62	27.17	40.39	74.00	33.61
4045	20.76	AV	H	29.89	4.62	27.17	28.10	54.00	25.90
High Channel: 2480 MHz									
2480	67.05	PK	H	25.85	3.68	0.00	96.58	N/A	N/A
2480	66.23	AV	H	25.85	3.68	0.00	95.76	N/A	N/A
2480	50.62	PK	V	25.85	3.68	0.00	80.15	N/A	N/A
2480	50.19	AV	V	25.85	3.68	0.00	79.72	N/A	N/A
2483.5	25.88	PK	H	25.86	3.67	0.00	55.41	74.00	18.59
2483.5	13.7	AV	H	25.86	3.67	0.00	43.23	54.00	10.77
4960	30.38	PK	H	31.00	5.34	27.43	39.29	74.00	34.71
4960	18.15	AV	H	31.00	5.34	27.43	27.06	54.00	26.94
7440	30.09	PK	H	34.66	6.89	25.97	45.67	74.00	28.33
7440	17.86	AV	H	34.66	6.89	25.97	33.44	54.00	20.56
3235	33.4	PK	H	27.95	6.24	27.34	40.25	74.00	33.75
3235	21.28	AV	H	27.95	6.24	27.34	28.13	54.00	25.87

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	68.51	PK	H	25.65	3.66	0.00	97.82	N/A	N/A
2402	64.97	AV	H	25.65	3.66	0.00	94.28	N/A	N/A
2402	52.02	PK	V	25.65	3.66	0.00	81.33	N/A	N/A
2402	48..37	AV	V	25.65	3.66	0.00	77.68	N/A	N/A
2390	24.37	PK	H	25.61	3.63	0.00	53.61	74.00	20.39
2390	12.98	AV	H	25.61	3.63	0.00	42.22	54.00	11.78
4804	30.38	PK	H	30.59	5.06	27.41	38.62	74.00	35.38
4804	18.15	AV	H	30.59	5.06	27.41	26.39	54.00	27.61
7206	29.84	PK	H	34.09	6.61	25.91	44.63	74.00	29.37
7206	17.26	AV	H	34.09	6.61	25.91	32.05	54.00	21.95
3235	32.32	PK	H	27.95	6.24	27.34	39.17	74.00	34.83
3235	20.07	AV	H	27.95	6.24	27.34	26.92	54.00	27.08
Middle Channel: 2441 MHz									
2441	68.38	PK	H	25.75	3.76	0.00	97.89	N/A	N/A
2441	64.69	AV	H	25.75	3.76	0.00	94.20	N/A	N/A
2441	51.81	PK	V	25.75	3.76	0.00	81.32	N/A	N/A
2441	48.17	AV	V	25.75	3.76	0.00	77.68	N/A	N/A
4882	30.81	PK	H	30.79	5.19	27.42	39.37	74.00	34.63
4882	18.44	AV	H	30.79	5.19	27.42	27.00	54.00	27.00
7323	30.52	PK	H	34.38	6.75	25.88	45.77	74.00	28.23
7323	17.98	AV	H	34.38	6.75	25.88	33.23	54.00	20.77
3235	32.61	PK	H	27.95	6.24	27.34	39.46	74.00	34.54
3235	20.35	AV	H	27.95	6.24	27.34	27.20	54.00	26.80
4045	32.16	PK	H	29.89	4.62	27.17	39.50	74.00	34.50
4045	19.86	AV	H	29.89	4.62	27.17	27.20	54.00	26.80
High Channel: 2480 MHz									
2480	68.07	PK	H	25.85	3.68	0.00	97.60	N/A	N/A
2480	64.29	AV	H	25.85	3.68	0.00	93.82	N/A	N/A
2480	51.46	PK	V	25.85	3.68	0.00	80.99	N/A	N/A
2480	47.68	AV	V	25.85	3.68	0.00	77.21	N/A	N/A
2483.5	26.31	PK	H	25.86	3.67	0.00	55.84	74.00	18.16
2483.5	14.05	AV	H	25.86	3.67	0.00	43.58	54.00	10.42
4960	30.41	PK	H	31.00	5.34	27.43	39.32	74.00	34.68
4960	18.07	AV	H	31.00	5.34	27.43	26.98	54.00	27.02
7440	30.05	PK	H	34.66	6.89	25.97	45.63	74.00	28.37
7440	17.65	AV	H	34.66	6.89	25.97	33.23	54.00	20.77
3235	32.83	PK	H	27.95	6.24	27.34	39.68	74.00	34.32
3235	20.12	AV	H	27.95	6.24	27.34	26.97	54.00	27.03

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	68.56	PK	H	25.65	3.66	0.00	97.87	N/A	N/A
2402	64.97	AV	H	25.65	3.66	0.00	94.28	N/A	N/A
2402	51.84	PK	V	25.65	3.66	0.00	81.15	N/A	N/A
2402	48.23	AV	V	25.65	3.66	0.00	77.54	N/A	N/A
2390	24.17	PK	H	25.61	3.63	0.00	53.41	74.00	20.59
2390	13.06	AV	H	25.61	3.63	0.00	42.30	54.00	11.70
4804	31.07	PK	H	30.59	5.06	27.41	39.31	74.00	34.69
4804	18.69	AV	H	30.59	5.06	27.41	26.93	54.00	27.07
7206	30.89	PK	H	34.09	6.61	25.91	45.68	74.00	28.32
7206	18.48	AV	H	34.09	6.61	25.91	33.27	54.00	20.73
3235	32.68	PK	H	27.95	6.24	27.34	39.53	74.00	34.47
3235	20.27	AV	H	27.95	6.24	27.34	27.12	54.00	26.88
Middle Channel: 2441 MHz									
2441	68.61	PK	H	25.75	3.76	0.00	98.12	N/A	N/A
2441	64.86	AV	H	25.75	3.76	0.00	94.37	N/A	N/A
2441	51.75	PK	V	25.75	3.76	0.00	81.26	N/A	N/A
2441	47.84	AV	V	25.75	3.76	0.00	77.35	N/A	N/A
4882	31.19	PK	H	30.79	5.19	27.42	39.75	74.00	34.25
4882	18.7	AV	H	30.79	5.19	27.42	27.26	54.00	26.74
7323	30.9	PK	H	34.38	6.75	25.88	46.15	74.00	27.85
7323	18.385	AV	H	34.38	6.75	25.88	33.64	54.00	20.37
3235	32.73	PK	H	27.95	6.24	27.34	39.58	74.00	34.42
3235	20.22	AV	H	27.95	6.24	27.34	27.07	54.00	26.93
4045	32.18	PK	H	29.89	4.62	27.17	39.52	74.00	34.48
4045	20.04	AV	H	29.89	4.62	27.17	27.38	54.00	26.62
High Channel: 2480 MHz									
2480	68.31	PK	H	25.85	3.68	0.00	97.84	N/A	N/A
2480	64.46	AV	H	25.85	3.68	0.00	93.99	N/A	N/A
2480	51.49	PK	V	25.85	3.68	0.00	81.02	N/A	N/A
2480	47.28	AV	V	25.85	3.68	0.00	76.81	N/A	N/A
2483.5	25.97	PK	H	25.86	3.67	0.00	55.50	74.00	18.50
2483.5	13.68	AV	H	25.86	3.67	0.00	43.21	54.00	10.79
4960	30.35	PK	H	31.00	5.34	27.43	39.26	74.00	34.74
4960	17.69	AV	H	31.00	5.34	27.43	26.60	54.00	27.40
7440	30.21	PK	H	34.66	6.89	25.97	45.79	74.00	28.21
7440	17.74	AV	H	34.66	6.89	25.97	33.32	54.00	20.68
3235	32.75	PK	H	27.95	6.24	27.34	39.60	74.00	34.40
3235	20.13	AV	H	27.95	6.24	27.34	26.98	54.00	27.02

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	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

Test Procedure

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

Test Data

Environmental Conditions

Temperature:	30.2 °C
Relative Humidity:	52 %
ATM Pressure:	100 kPa

** The testing was performed by Rocky Xiao on 2016-07-07.*

Test Result: Compliance.

Please refer to following tables and plots

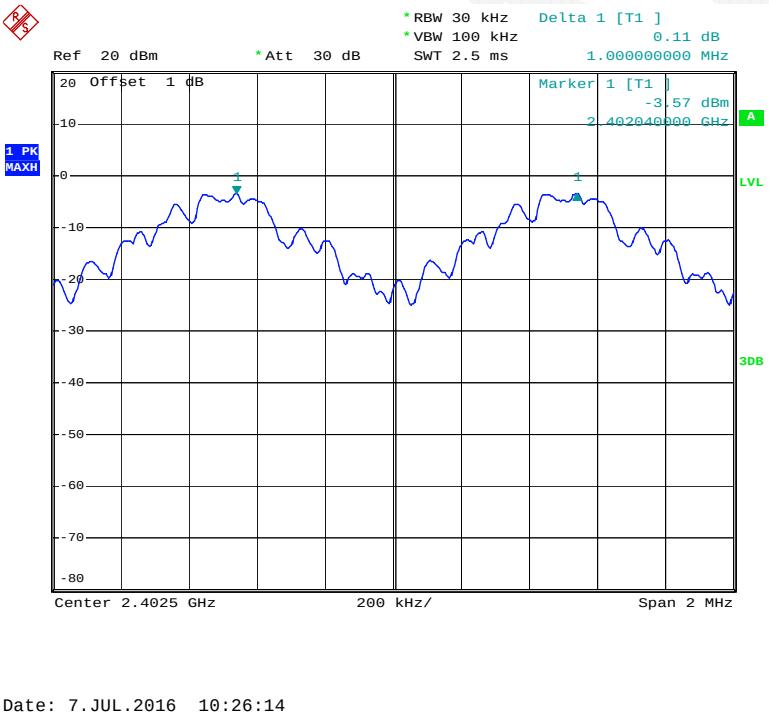
Test Mode: Transmitting

Mode	Channel	Frequency	Channel Separation	Limit
		MHz	MHz	MHz
BDR (GFSK)	Low	2402	1.000	0.693
	Middle	2441	1.004	0.693
	High	2480	1.004	0.693
EDR (π/4-DQPSK)	Low	2402	1.000	0.908
	Middle	2441	1.000	0.912
	High	2480	1.005	0.908
EDR (8DPSK)	Low	2402	1.000	0.868
	Middle	2441	1.000	0.868
	High	2480	1.005	0.868

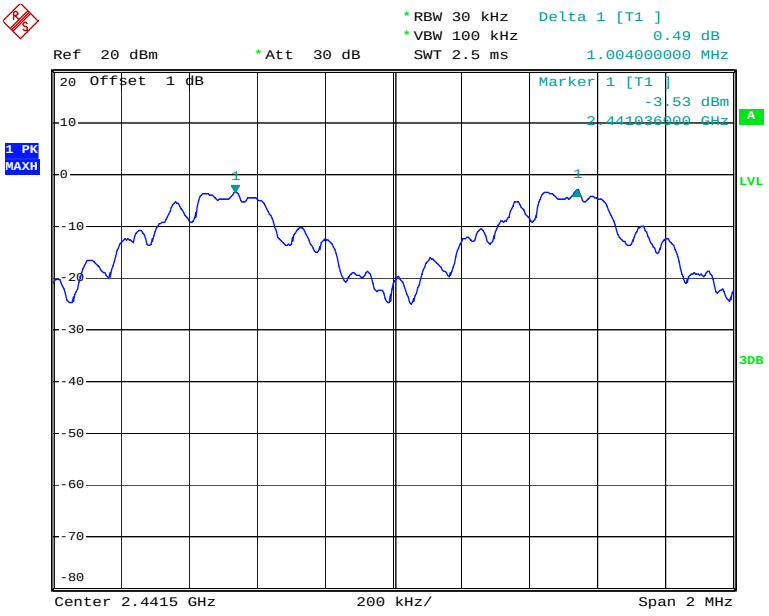
Note: Limit= (2/3)＊20dB bandwidth

BDR Mode (GFSK):

Low Channel

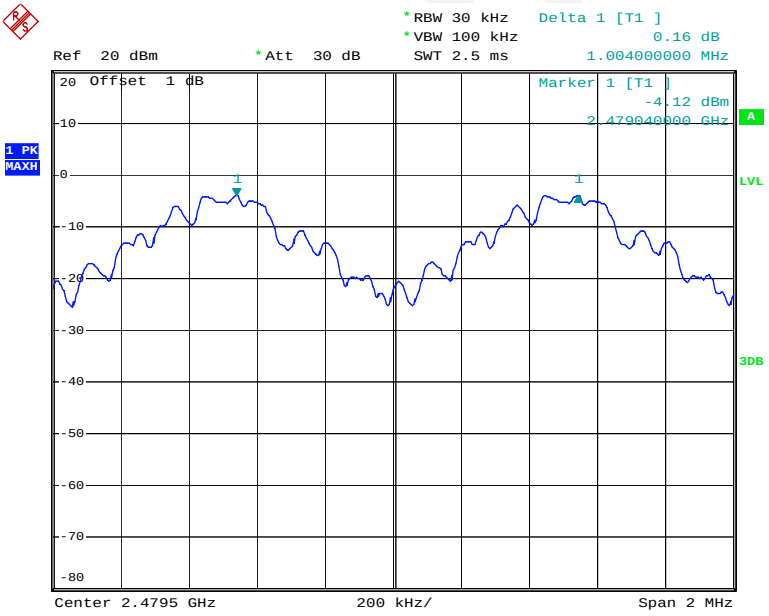


Middle Channel



Date: 7.JUL.2016 10:26:51

High Channel



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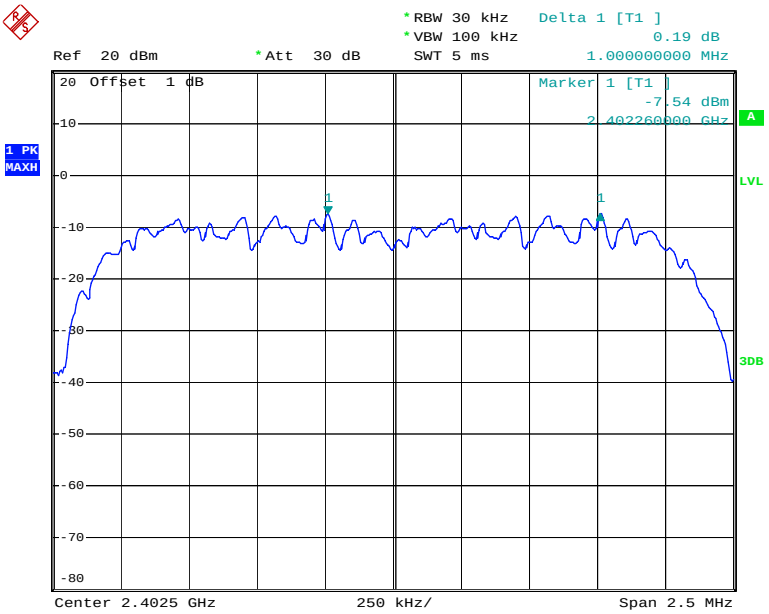
EDR Mode (π/4-DQPSK):

Low Channel



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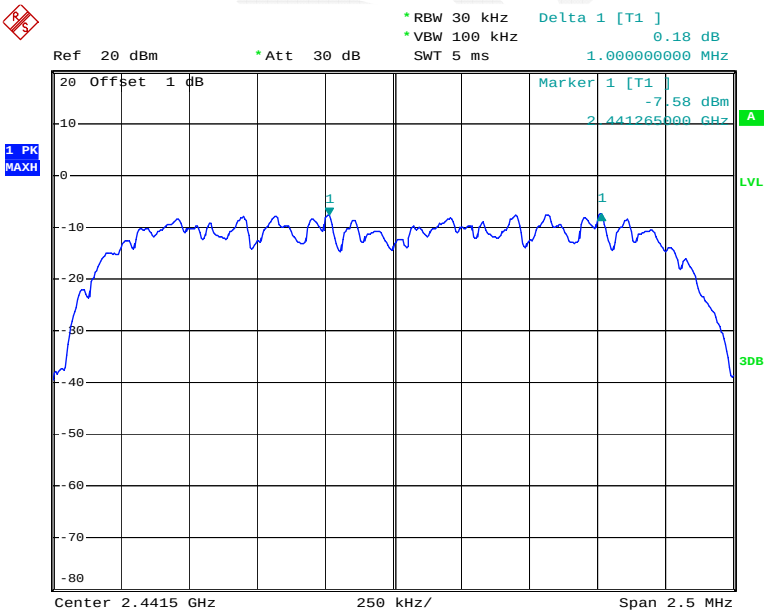
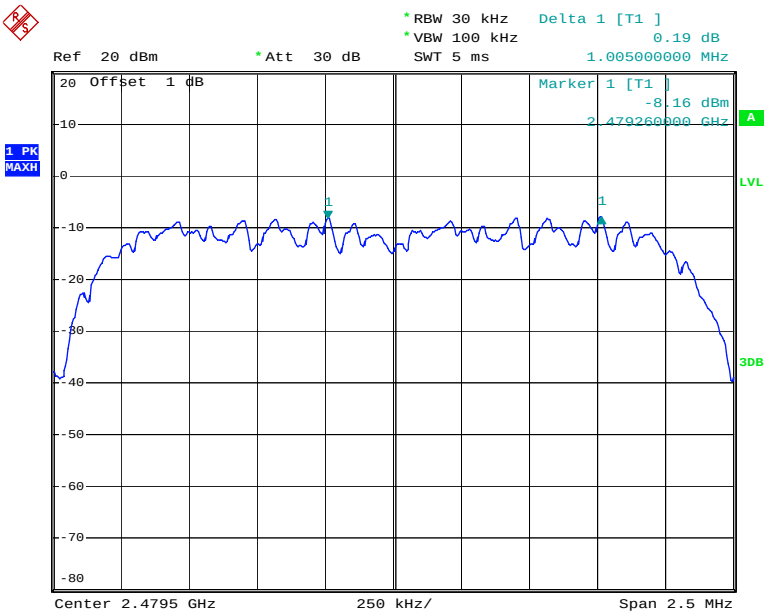
Middle Channel



Date: 7.JUL.2016 10:30:20

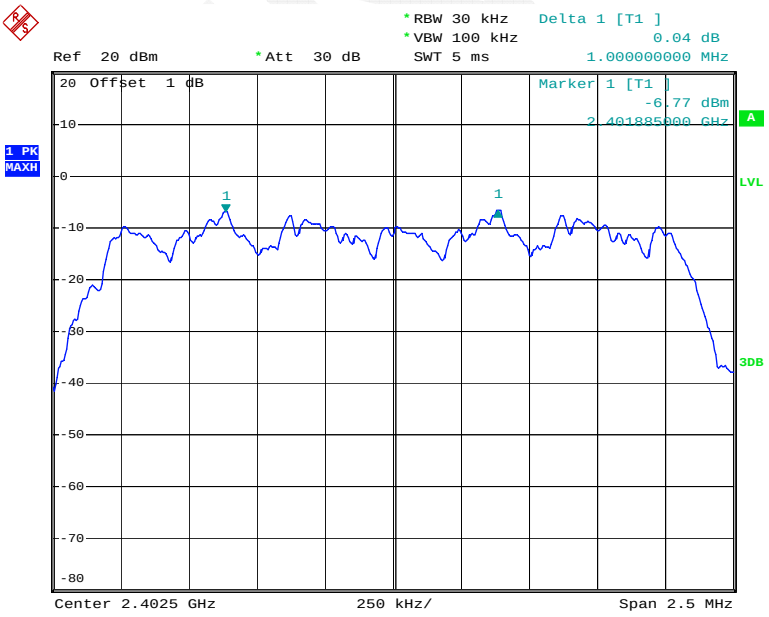
High Channel



Date: 7.JUL.2016 10:30:48

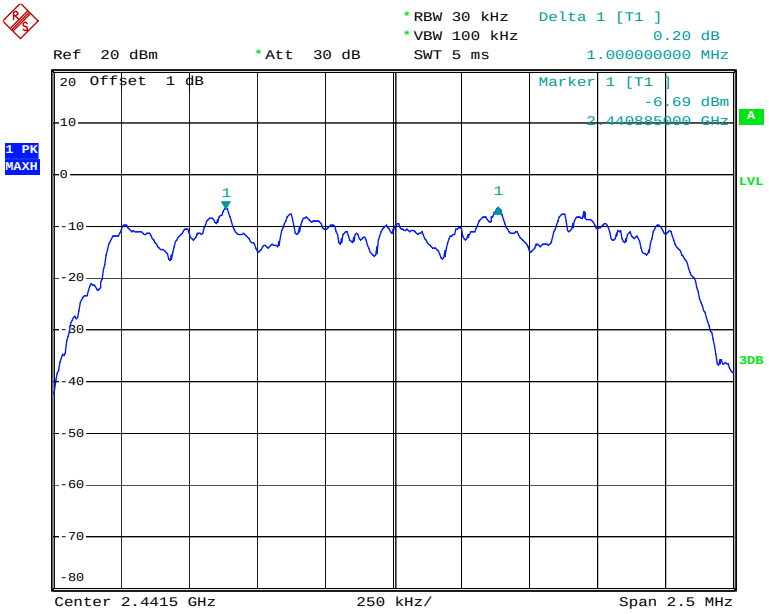
EDR Mode (8-DPSK):

Low Channel



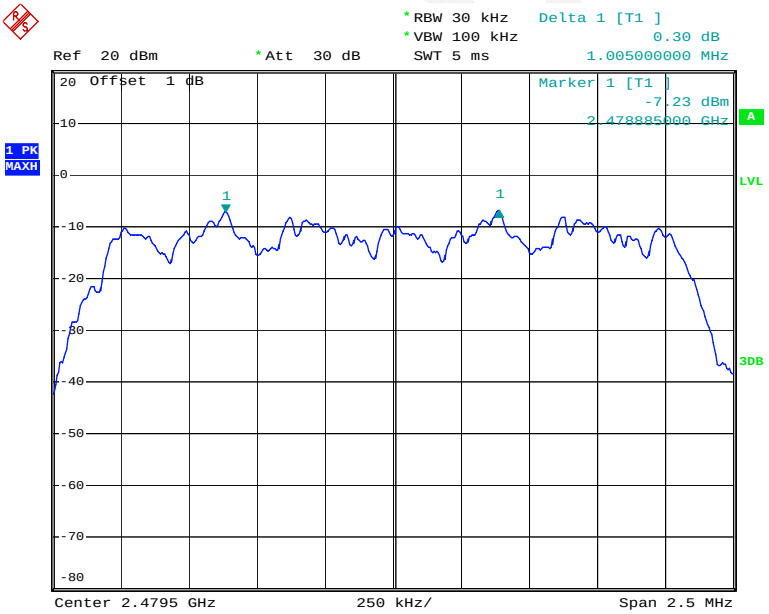
Date: 7.JUL.2016 10:31:31

Middle Channel



Date: 7.JUL.2016 10:32:02

High Channel



Date: 7.JUL.2016 10:32:43

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	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

Temperature:	30.2 °C
Relative Humidity:	52 %
ATM Pressure:	100 kPa

** The testing was performed by Rocky Xiao on 2016-07-07.*

Test Result: Compliance.

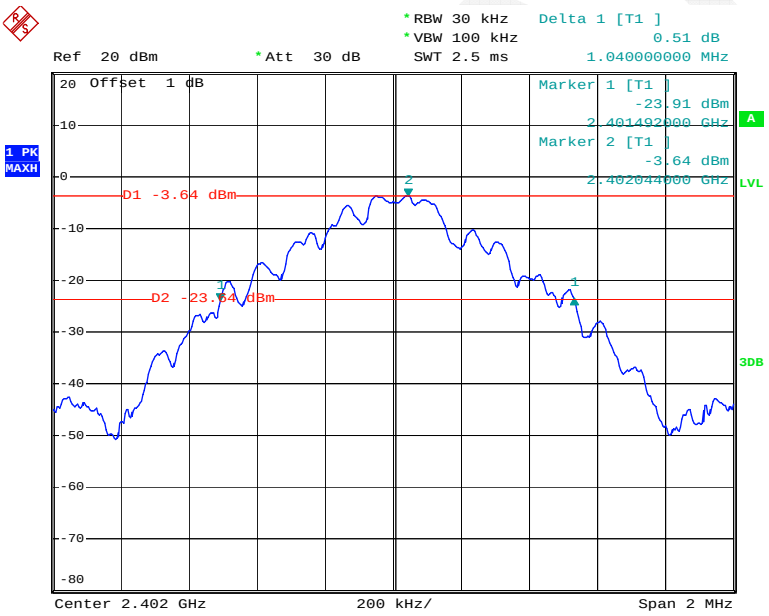
Please refer to following tables and plots

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
BDR Mode (GFSK)	Low	2402	1.040
	Middle	2441	1.040
	High	2480	1.040
EDR Mode (π/4-DQPSK)	Low	2402	1.362
	Middle	2441	1.368
	High	2480	1.362
EDR Mode (8-DPSK)	Low	2402	1.302
	Middle	2441	1.302
	High	2480	1.302

BDR Mode (GFSK):

Low Channel



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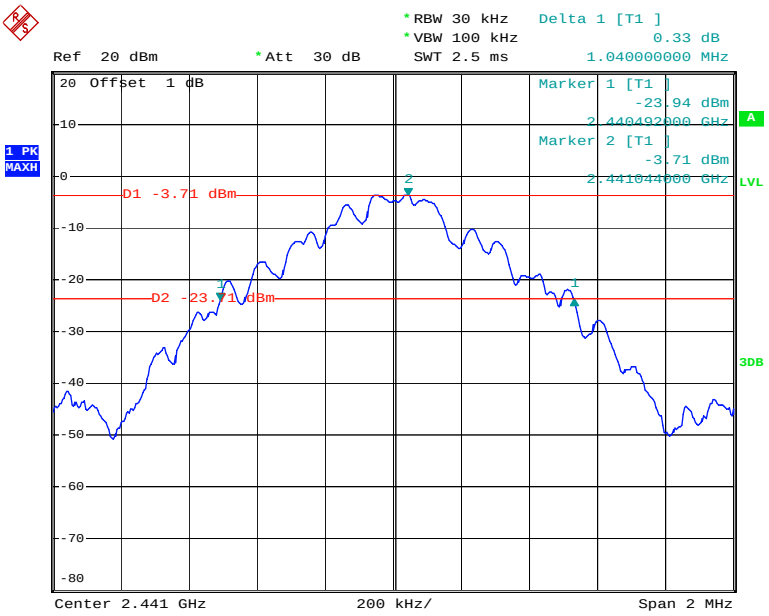
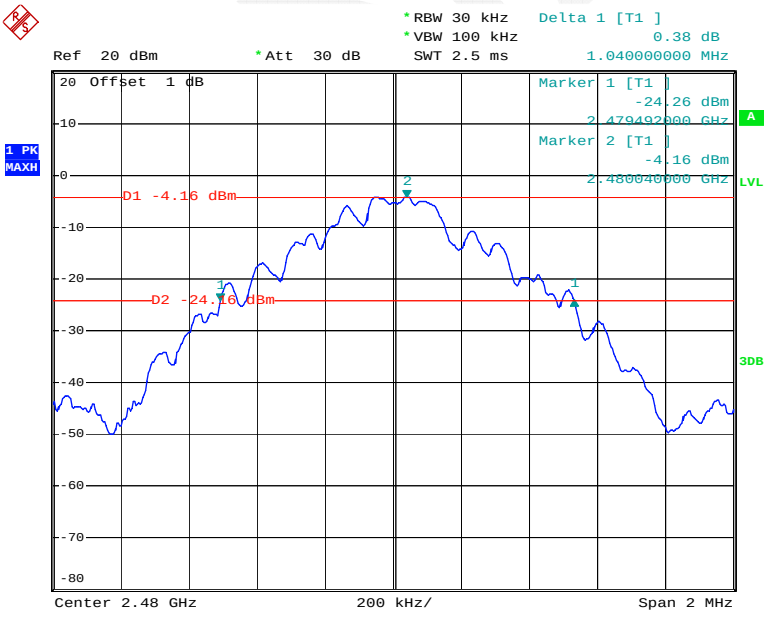
Middle Channel



Date: 7.JUL.2016 09:48:35

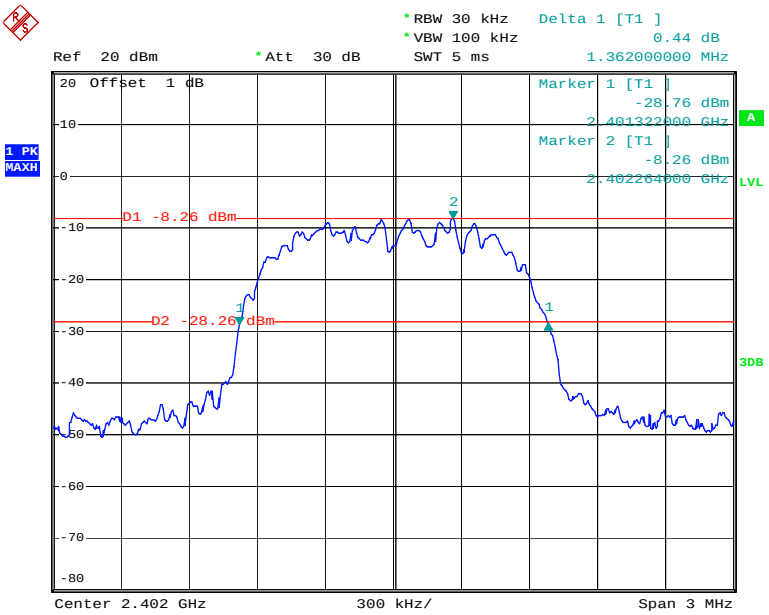
High Channel



Date: 7.JUL.2016 09:49:29

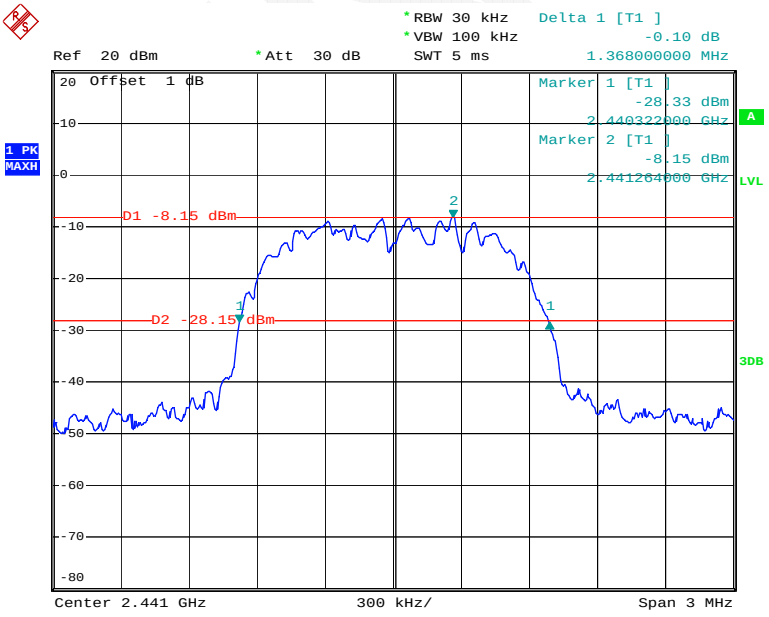
EDR Mode (π/4-DQPSK):

Low Channel



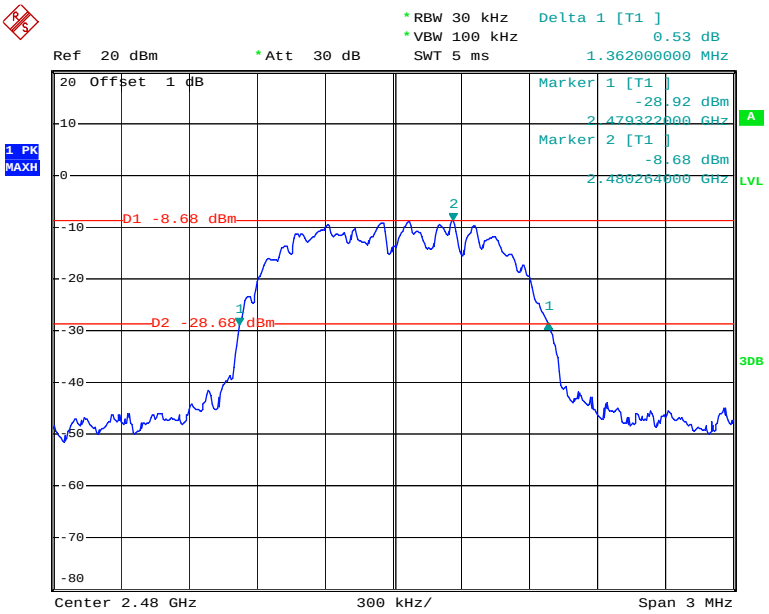
Date: 7.JUL.2016 10:00:31

Middle Channel



Date: 7.JUL.2016 10:01:50

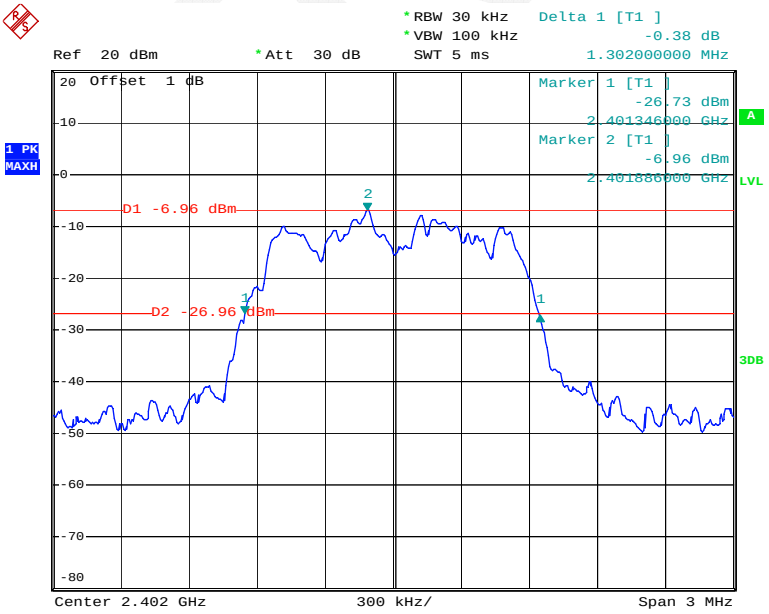
High Channel



Date: 7.JUL.2016 10:13:19

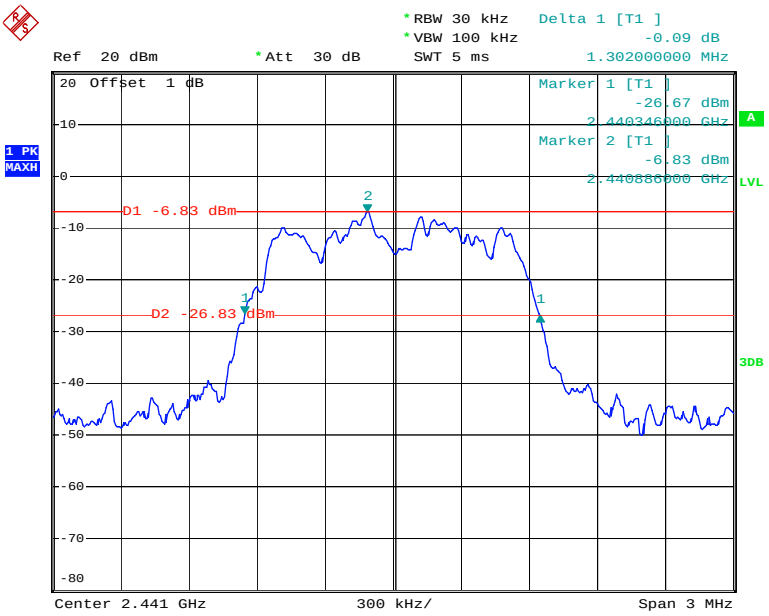
EDR Mode (8-DPSK):

Low Channel



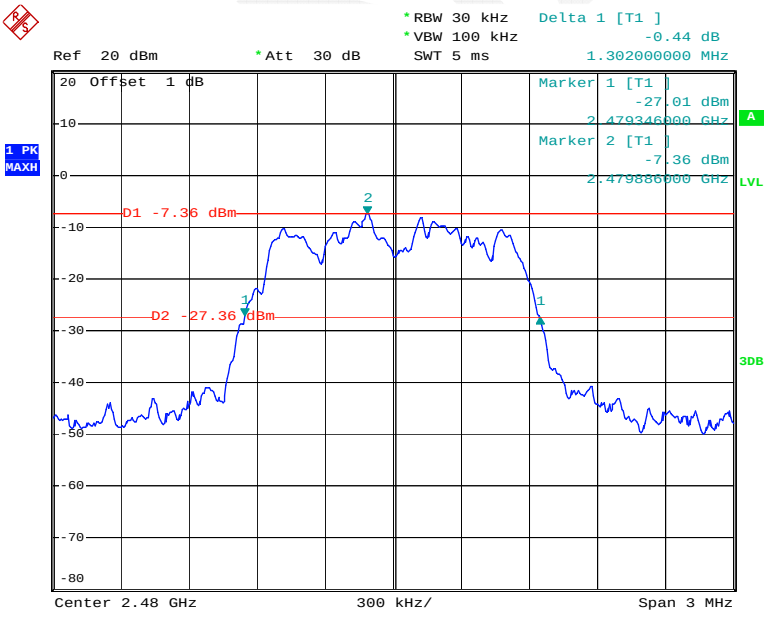
Date: 7.JUL.2016 09:55:12

Middle Channel



Date: 7.JUL.2016 09:56:33

High Channel



Date: 7.JUL.2016 09:57:26

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	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

Temperature:	30.2 °C
Relative Humidity:	52 %
ATM Pressure:	100 kPa

** The testing was performed by Rocky Xiao on 2016-07-07.*

Test Result: Compliance.

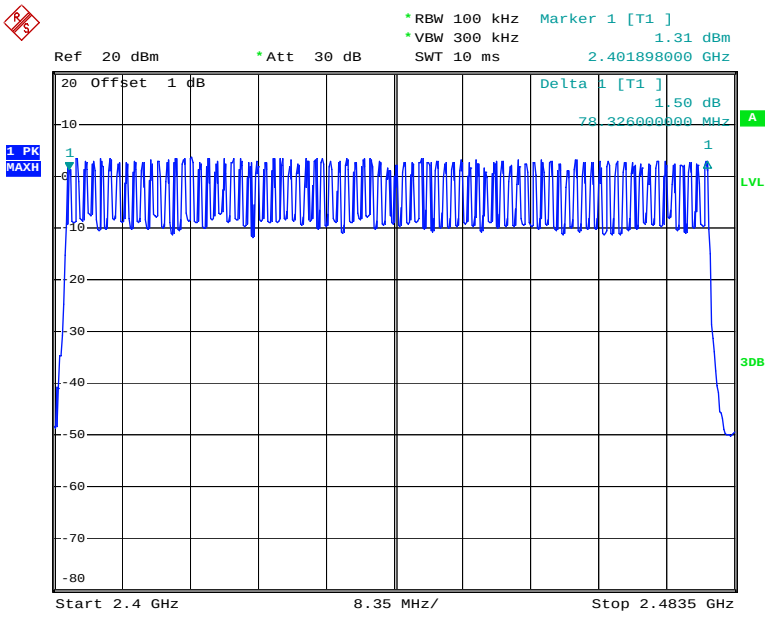
Please refer to following tables and plots

Test Mode: Transmitting

BDR Mode (GFSK):

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

Number of Hopping Channels

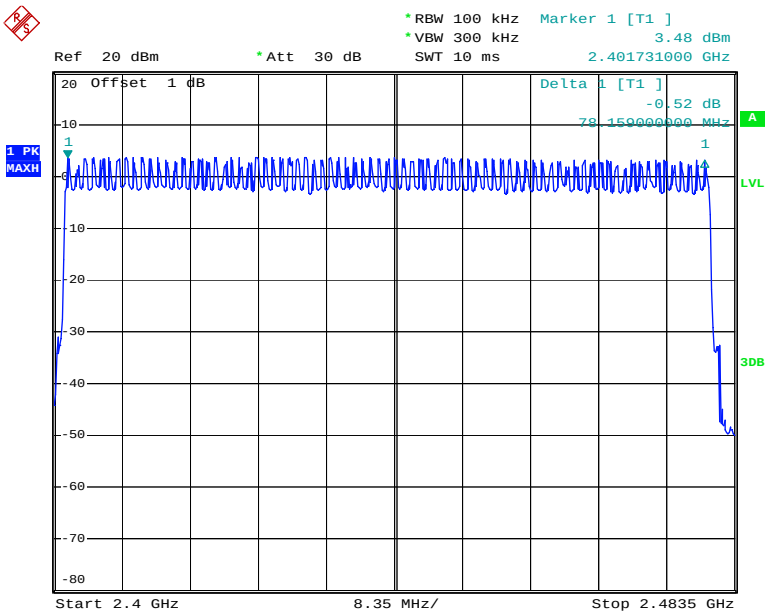


Date: 7.JUL.2016 10:36:30

EDR Mode (π/4-DQPSK):

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

Number of Hopping Channels

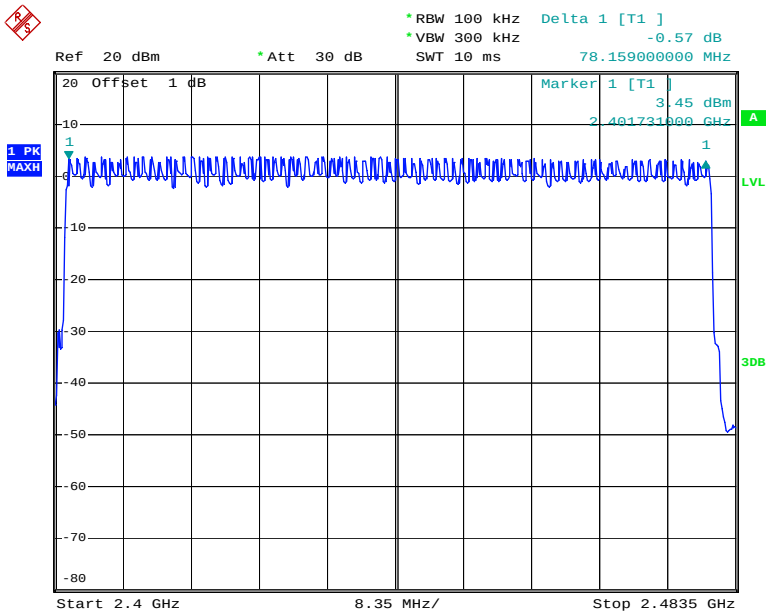


Date: 7.JUL.2016 10:43:18

EDR Mode (8-DPSK):

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

Number of Hopping Channels



Date: 7.JUL.2016 10:52:13

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	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

Temperature:	30.2°C
Relative Humidity:	52 %
ATM Pressure:	100 kPa

** The testing was performed by Rocky Xiao on 2016-07-07.*

Test Result: Compliance.

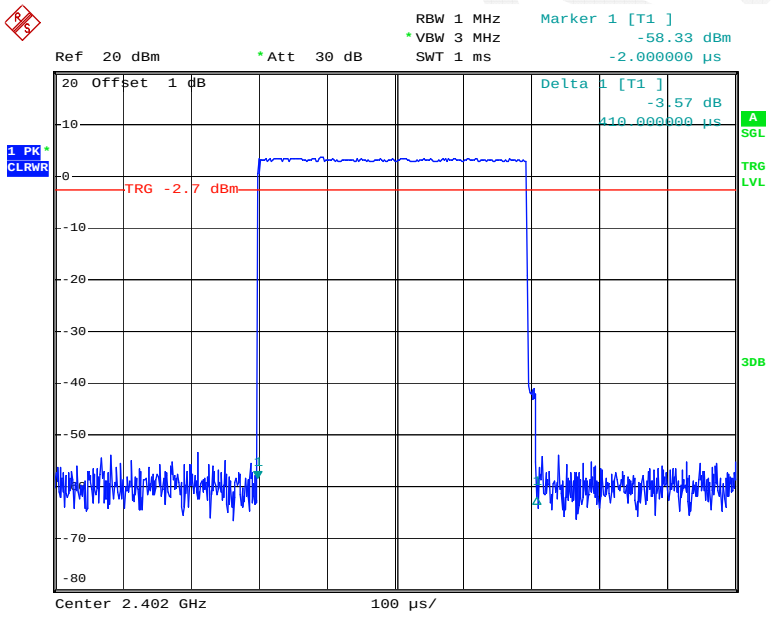
Please refer to following tables and plots

Test Mode: Transmitting

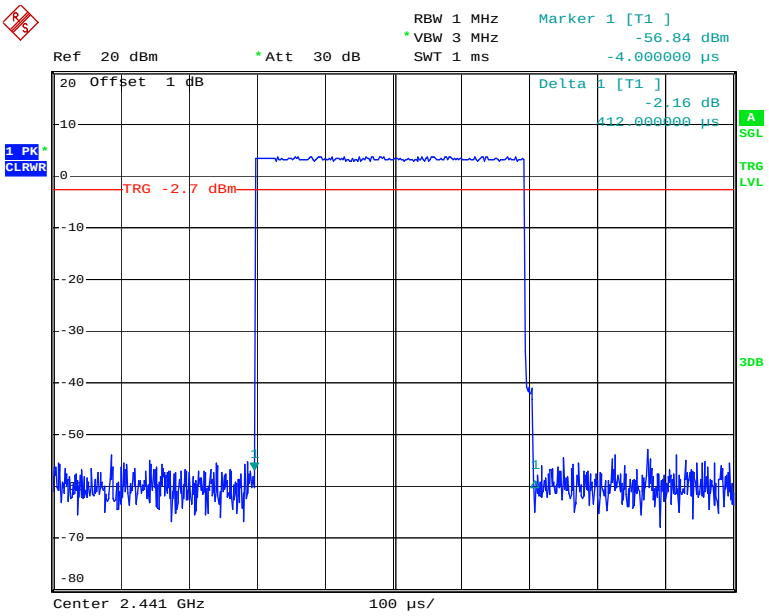
BDR Mode (GFSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.410	0.131	0.4	Compliance
	Middle	0.412	0.132	0.4	Compliance
	High	0.412	0.132	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s				
DH3	Low	1.676	0.268	0.4	Compliance
	Middle	1.676	0.268	0.4	Compliance
	High	1.676	0.268	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/4/79) ×31.6 s				
DH5	Low	2.938	0.313	0.4	Compliance
	Middle	2.938	0.313	0.4	Compliance
	High	2.938	0.313	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/6/79) ×31.6 s				

DH1: Low Channel

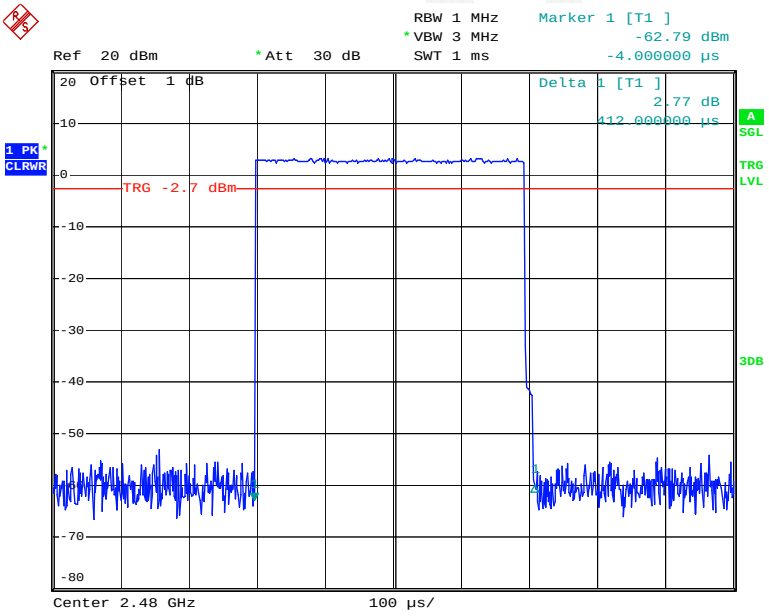


DH1: Middle Channel



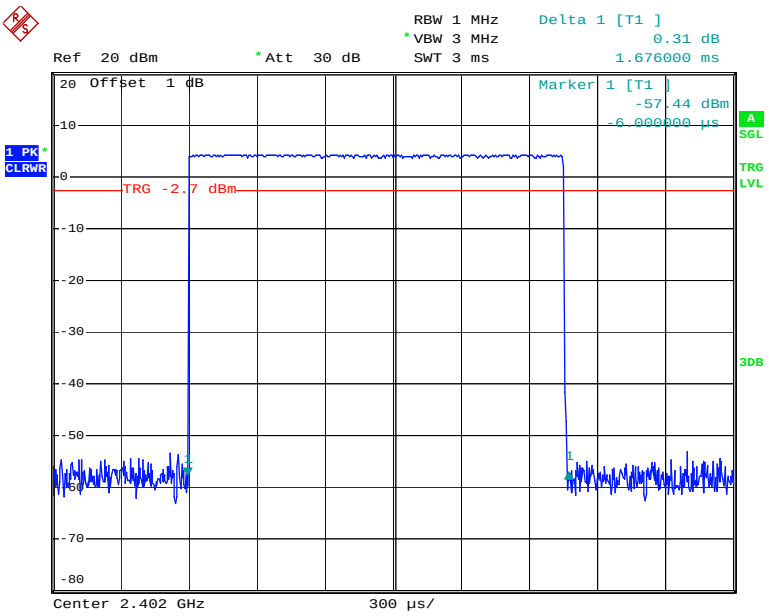
Date: 7.JUL.2016 10:55:16

DH1: High Channel



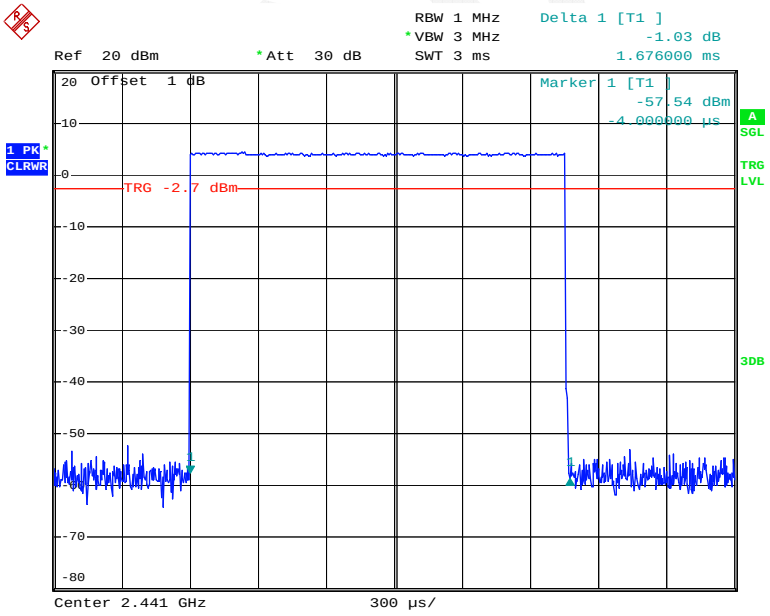
Date: 7.JUL.2016 10:55:22

DH3: Low Channel



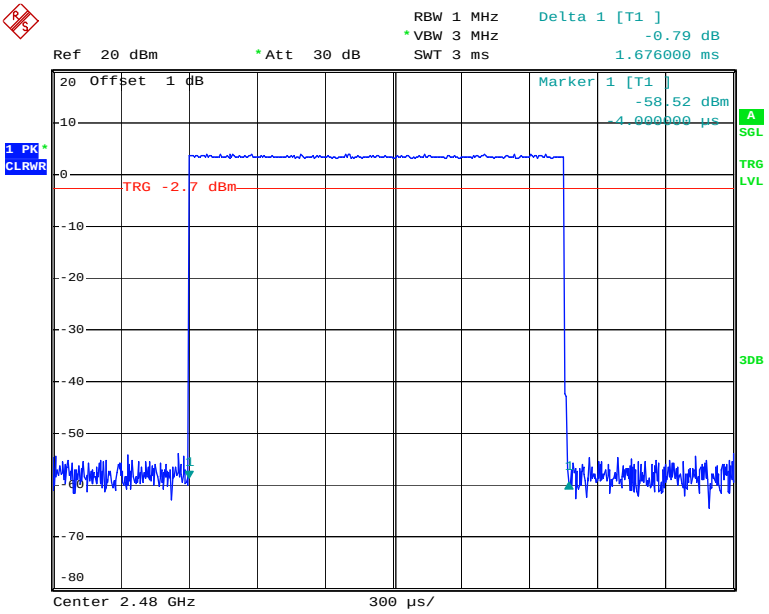
Date: 7.JUL.2016 11:07:24

DH3: Middle Channel



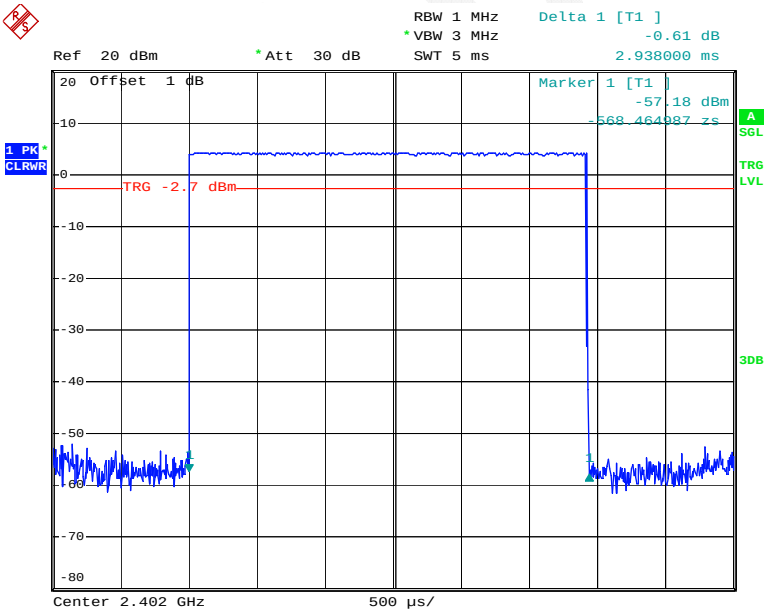
Date: 7.JUL.2016 10:58:23

DH3: High Channel



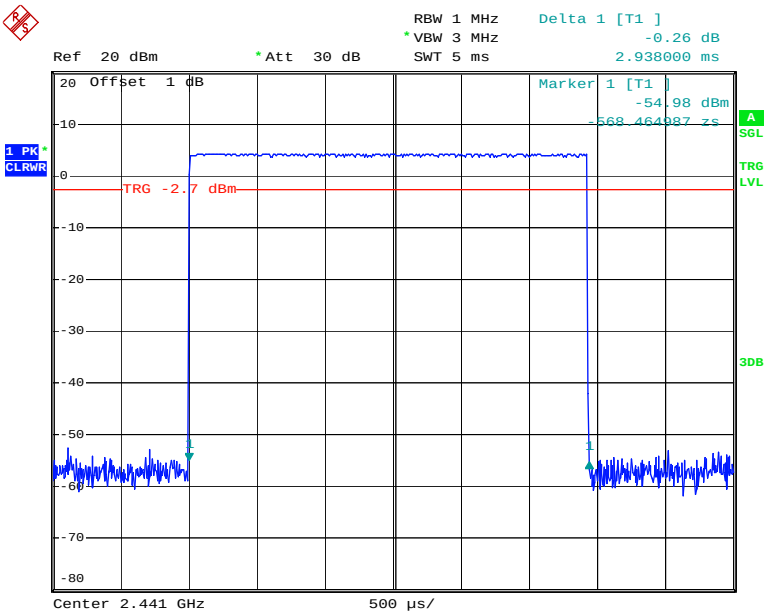
Date: 7.JUL.2016 10:58:28

DH5: Low Channel



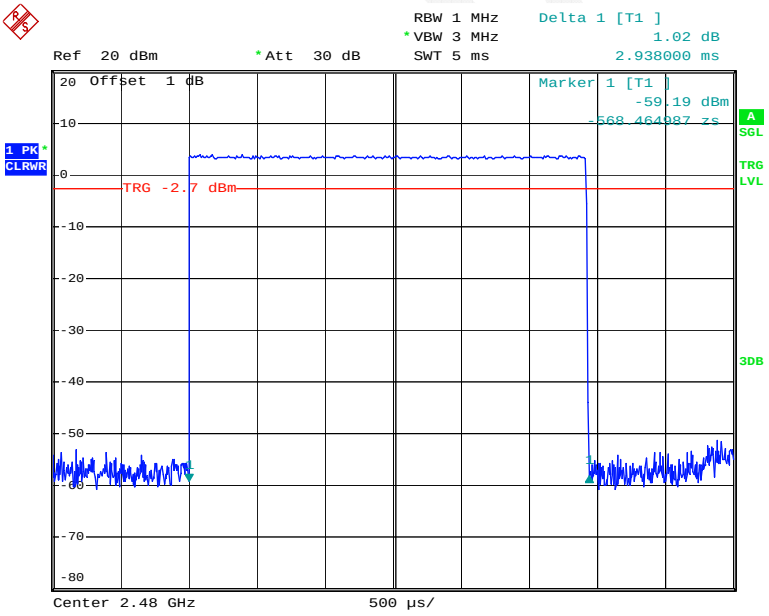
Date: 7.JUL.2016 11:00:16

DH5: Middle Channel



Date: 7.JUL.2016 11:00:22

DH5: High Channel

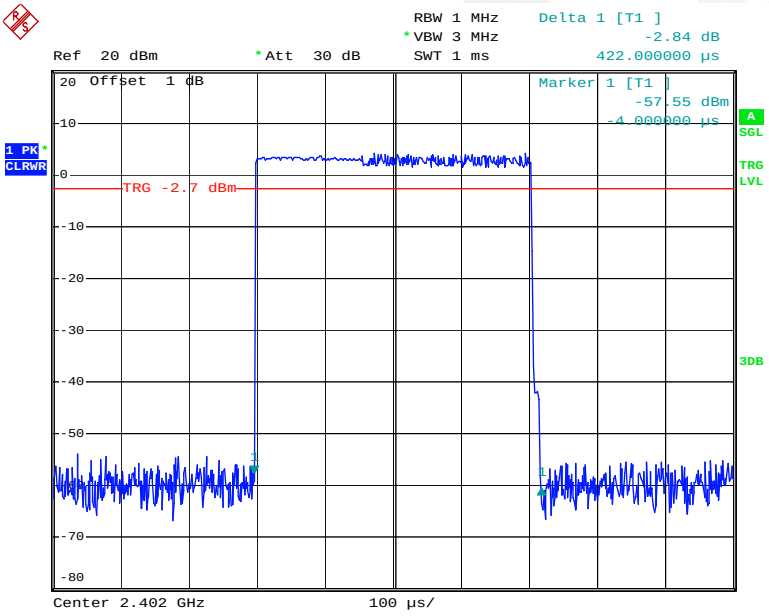


Date: 7.JUL.2016 11:00:33

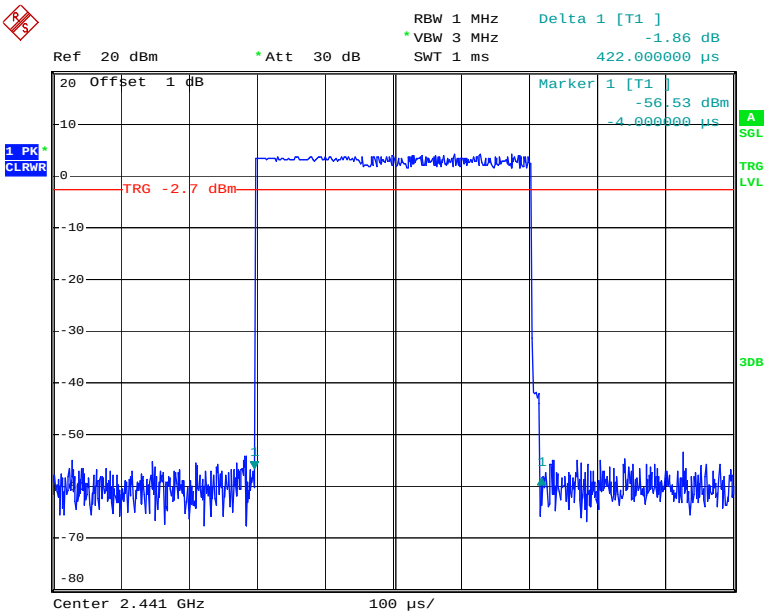
EDR Mode (π/4-DQPSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
2DH1	Low	0.422	0.135	0.4	Compliance
	Middle	0.422	0.135	0.4	Compliance
	High	0.422	0.135	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s				
2DH3	Low	1.682	0.269	0.4	Compliance
	Middle	1.682	0.269	0.4	Compliance
	High	1.682	0.269	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/4/79) ×31.6 s				
2DH5	Low	2.948	0.314	0.4	Compliance
	Middle	2.948	0.314	0.4	Compliance
	High	2.948	0.314	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/6/79) ×31.6 s				

2DH1: Low Channel

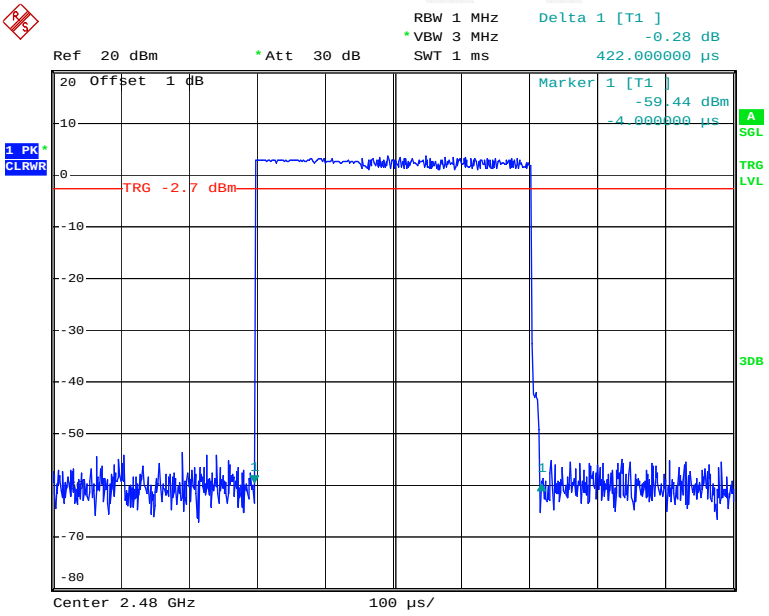


2DH1: Middle Channel



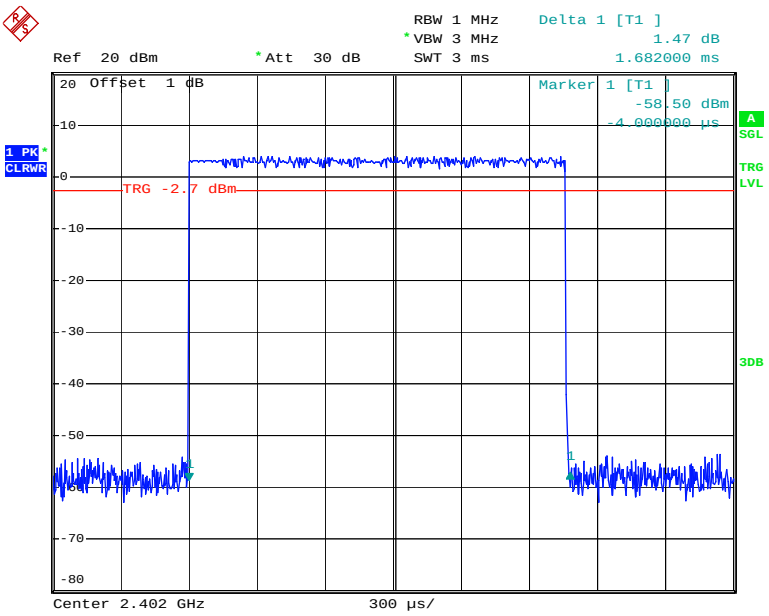
Date: 7.JUL.2016 10:56:49

2DH1: High Channel



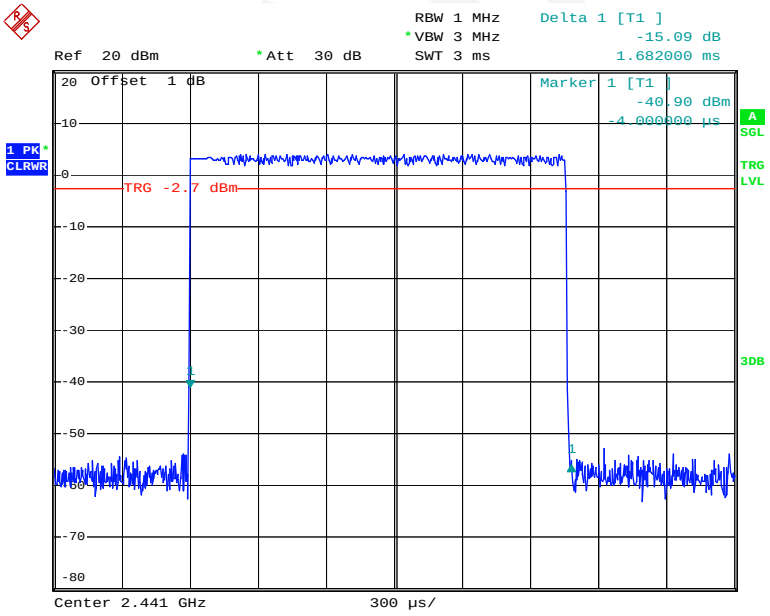
Date: 7.JUL.2016 10:56:55

2DH3: Low Channel



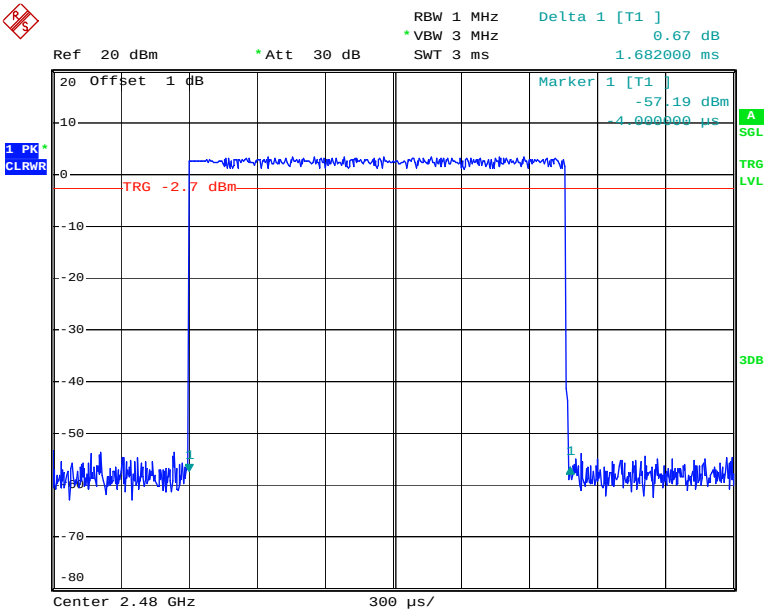
Date: 7.JUL.2016 10:58:53

2DH3: Middle Channel



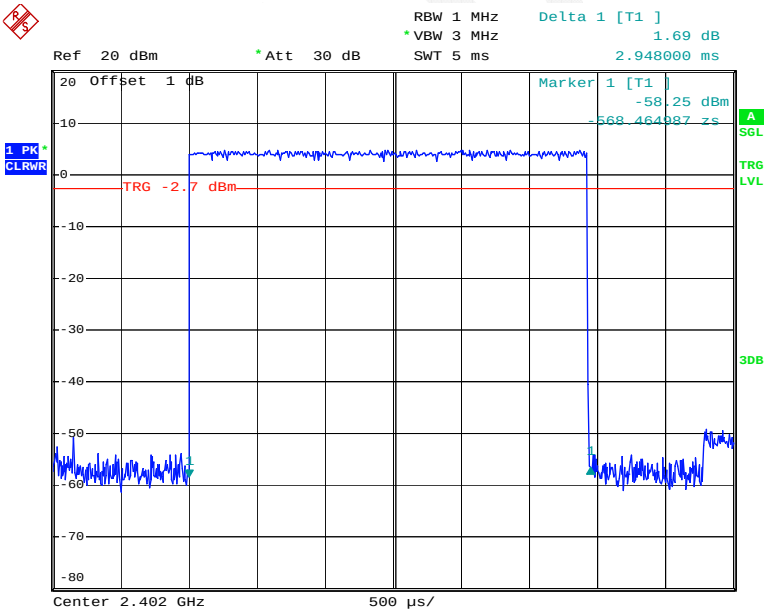
Date: 7.JUL.2016 10:58:58

2DH3: High Channel



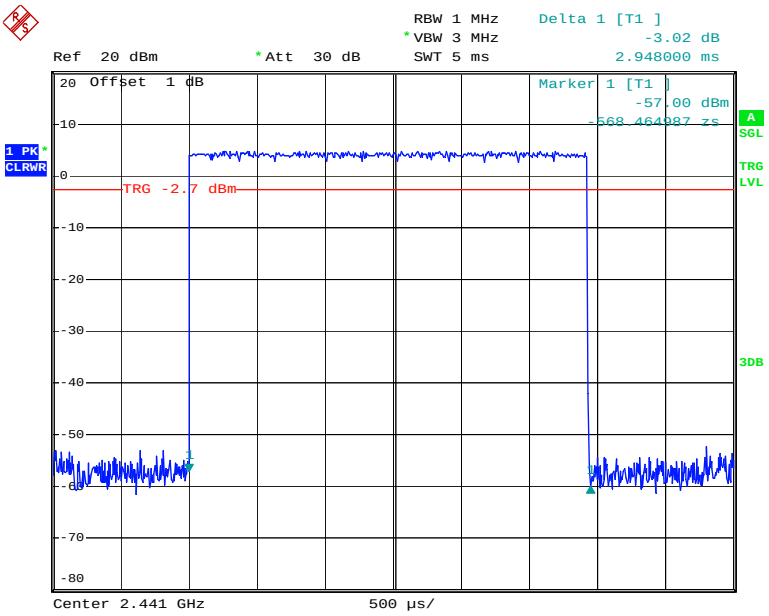
Date: 7.JUL.2016 10:59:03

2DH5: Low Channel



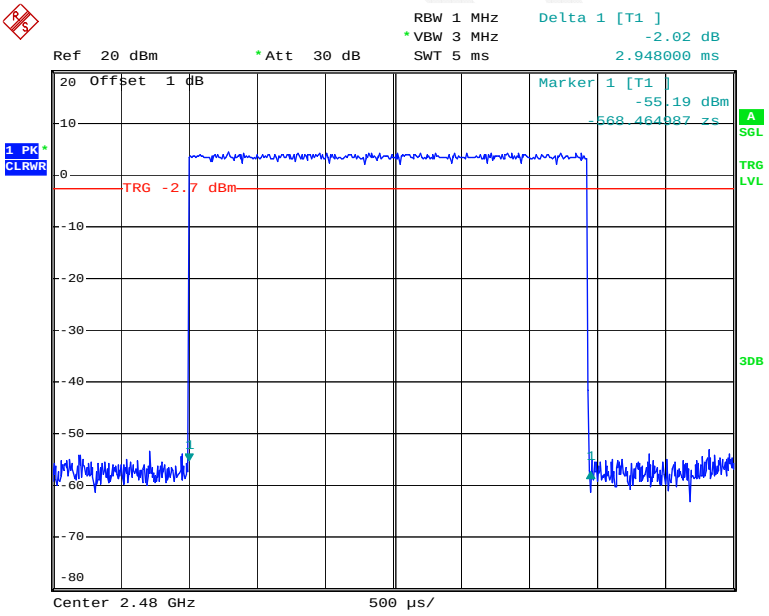
Date: 7.JUL.2016 11:00:52

2DH5: Middle Channel



Date: 7.JUL.2016 11:00:57

2DH5: High Channel

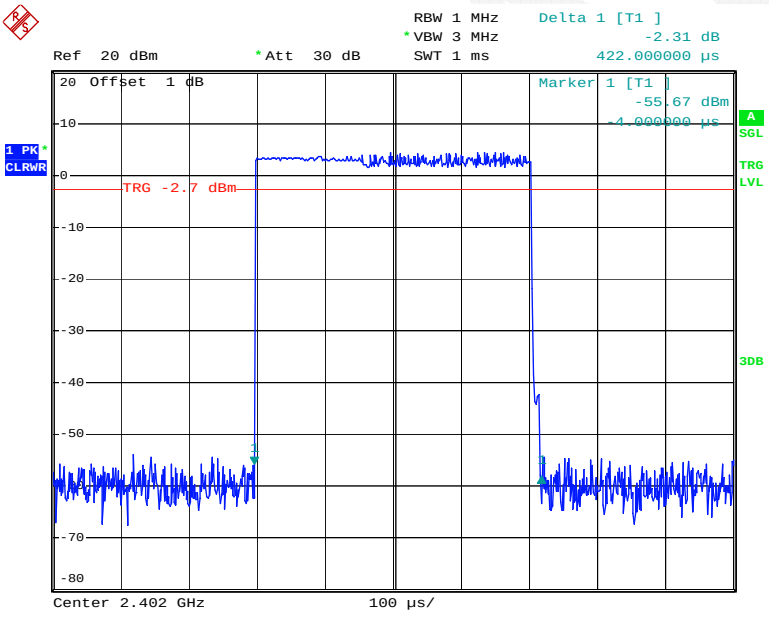


Date: 7.JUL.2016 11:01:05

EDR Mode (8-DPSK):

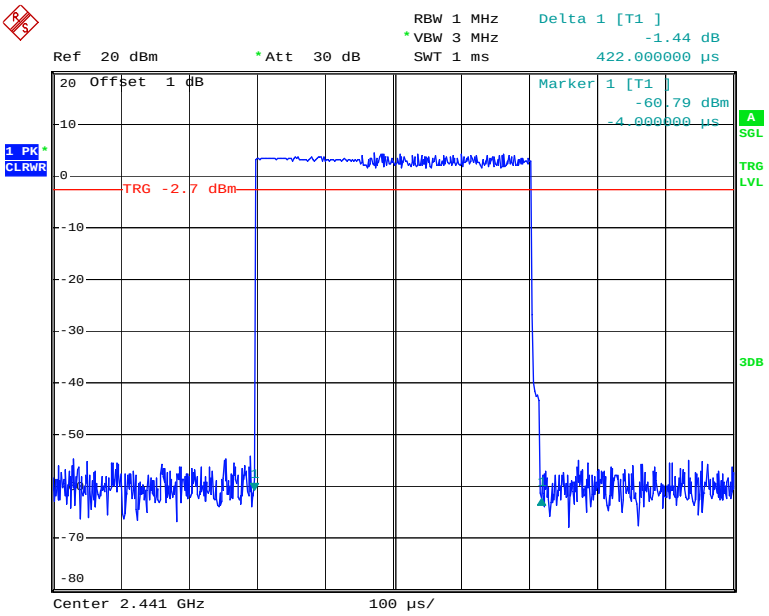
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
3DH1	Low	0.422	0.135	0.4	Compliance
	Middle	0.422	0.135	0.4	Compliance
	High	0.422	0.135	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s				
3DH3	Low	1.688	0.270	0.4	Compliance
	Middle	1.688	0.270	0.4	Compliance
	High	1.688	0.270	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/4/79) ×31.6 s				
3DH5	Low	2.948	0.314	0.4	Compliance
	Middle	2.948	0.314	0.4	Compliance
	High	2.948	0.314	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/6/79) ×31.6 s				

3DH1: Low Channel



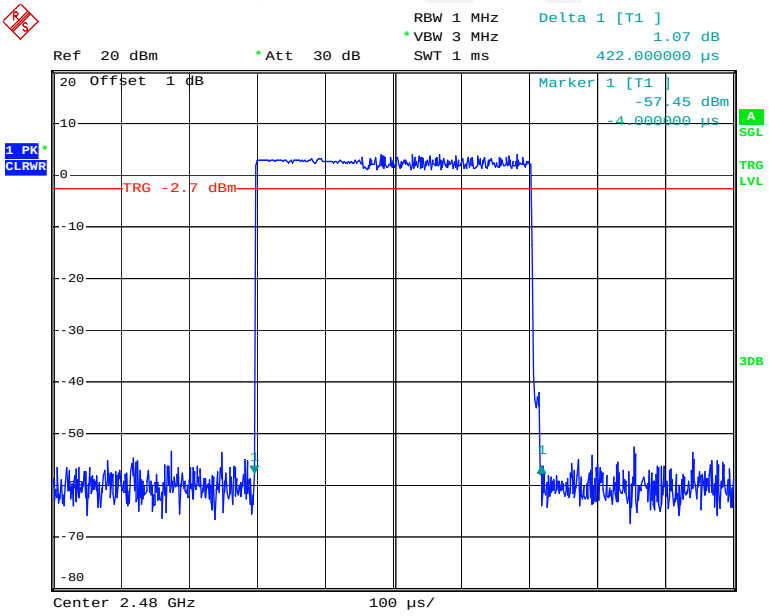
Date: 7.JUL.2016 10:57:11

3DH1: Middle Channel



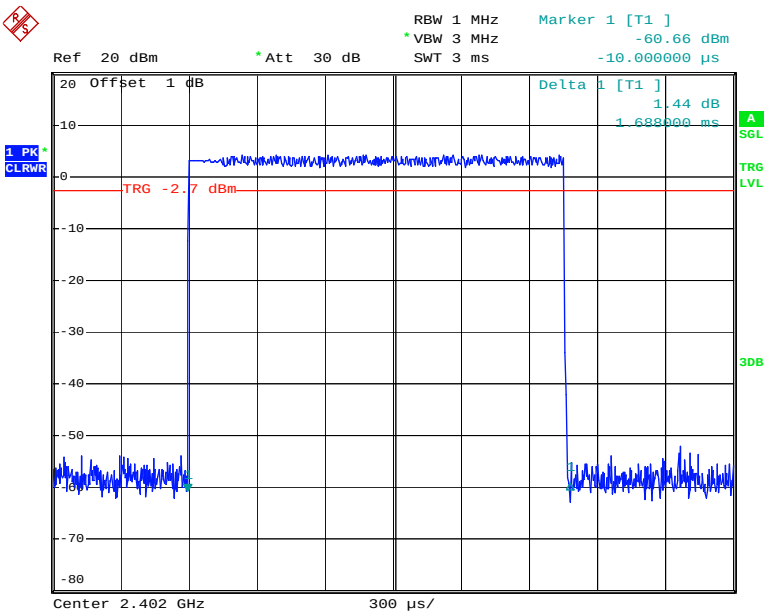
Date: 7.JUL.2016 10:57:17

3DH1: High Channel



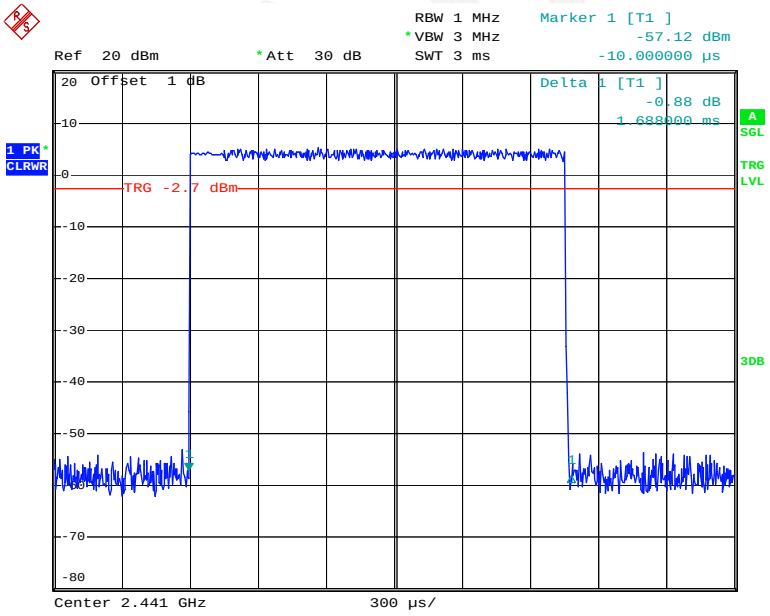
Date: 7.JUL.2016 10:57:23

3DH3: Low Channel



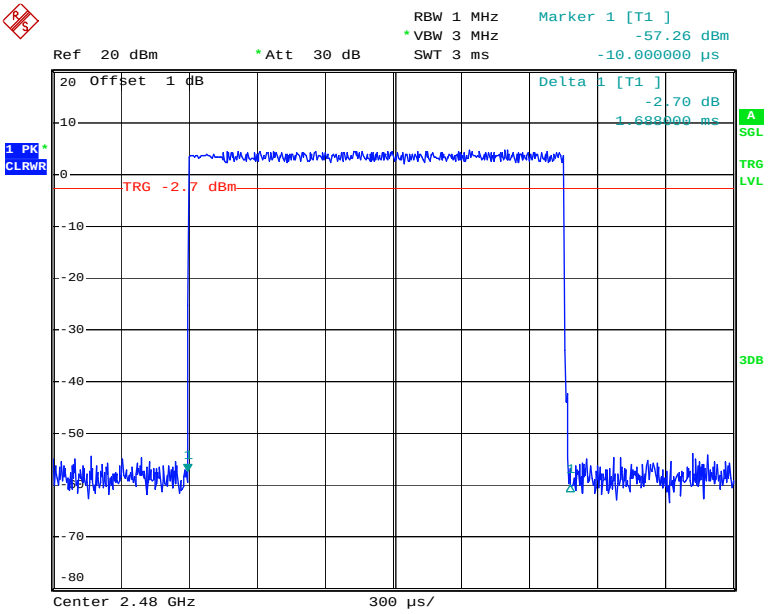
Date: 7.JUL.2016 10:59:25

3DH3: Middle Channel



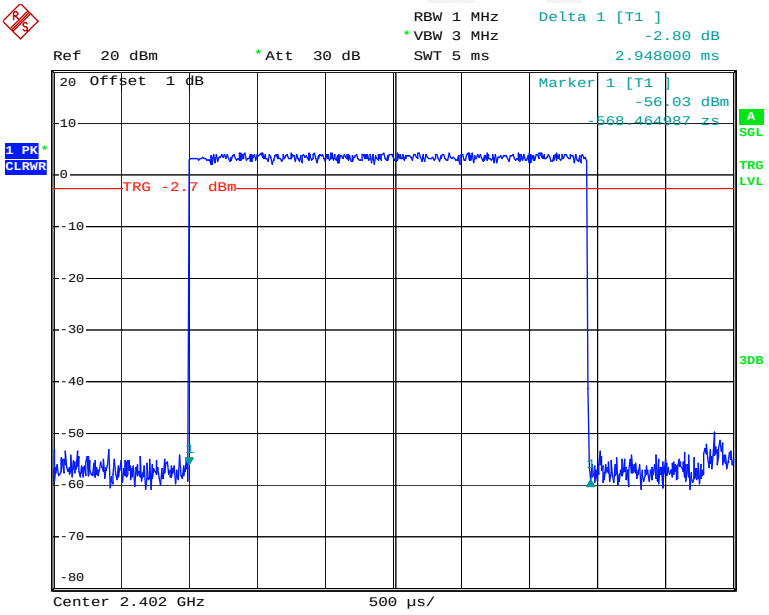
Date: 7.JUL.2016 10:59:30

3DH3: High Channel



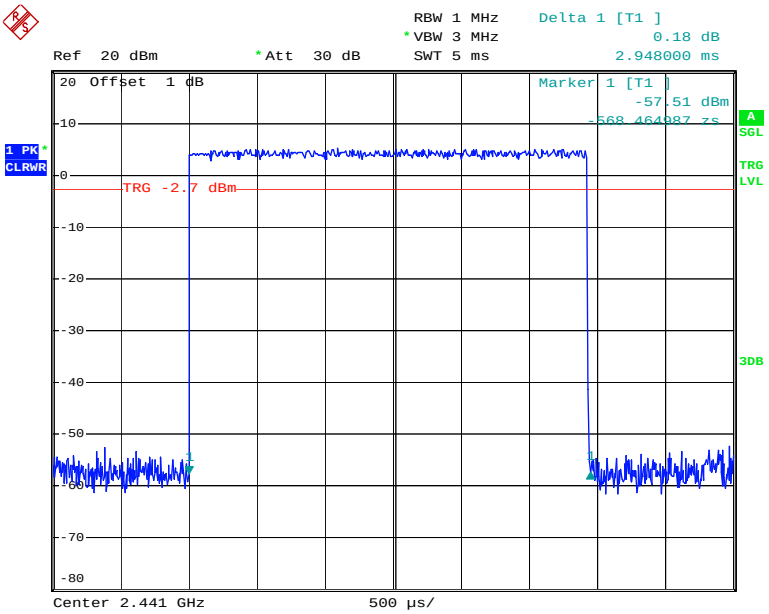
Date: 7.JUL.2016 10:59:38

3DH5: Low Channel



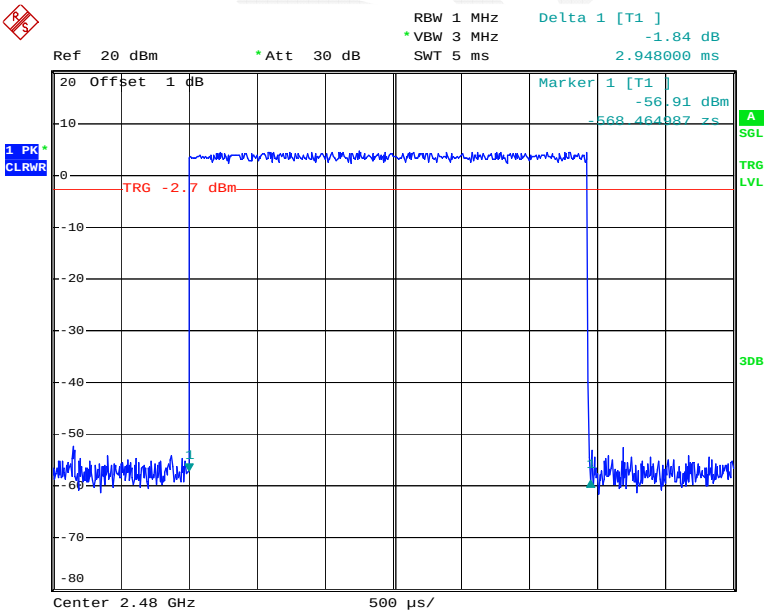
Date: 7.JUL.2016 11:04:18

3DH5: Middle Channel



Date: 7.JUL.2016 11:04:25

3DH5: High Channel



Date: 7.JUL.2016 11:04:30

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

Temperature:	30.2 °C
Relative Humidity:	52 %
ATM Pressure:	100 kPa

** The testing was performed by Rocky Xiao on 2016-07-07.*

Test Result: Compliance.

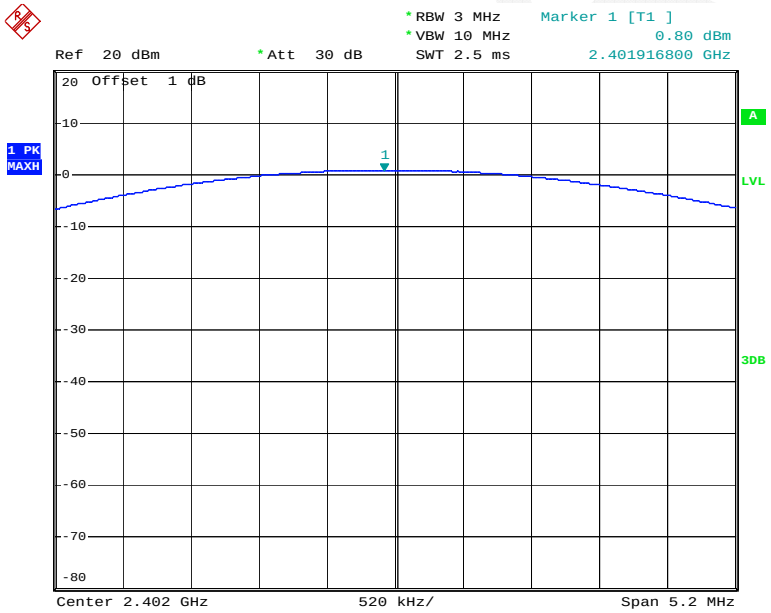
Test Mode: Transmitting

Mode	Frequency (MHz)	Peak Output power (dBm)	Limit (dBm)
BDR Mode (GFSK)	2402	0.80	30
	2441	0.92	30
	2480	0.47	30
EDR Mode (π/4-DQPSK)	2402	1.66	30
	2441	1.81	30
	2480	1.29	30
EDR Mode (8-DPSK)	2402	2.18	30
	2441	2.36	30
	2480	1.96	30

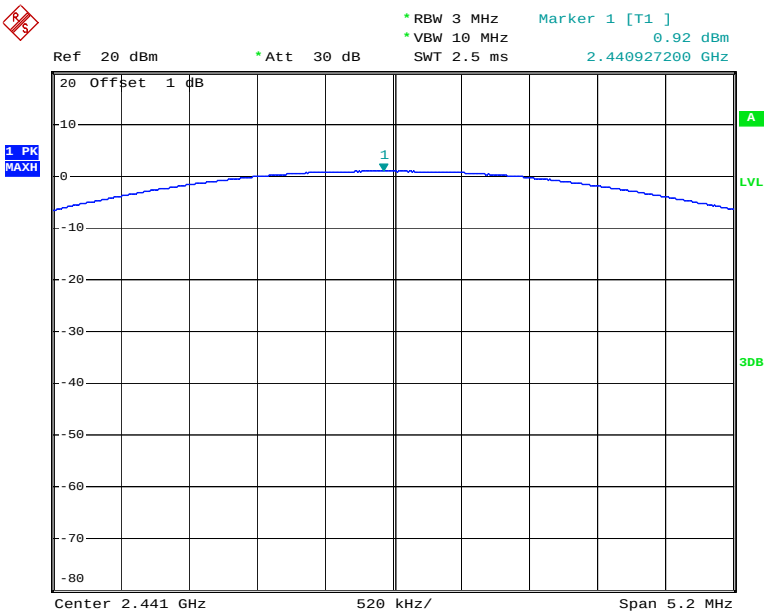
Note: The data above was tested in conducted mode.

BDR Mode (GFSK):

Output Power, 2402MHz

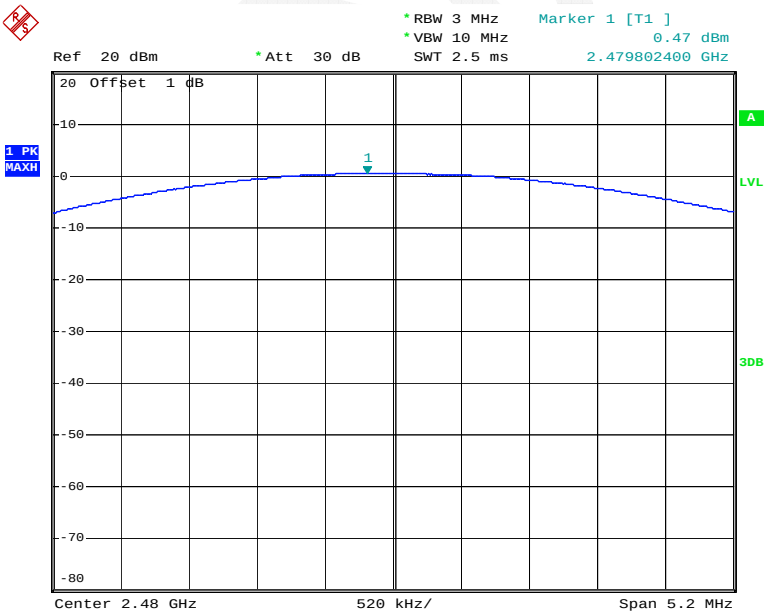


Output Power, 2441MHz



Date: 7.JUL.2016 09:49:00

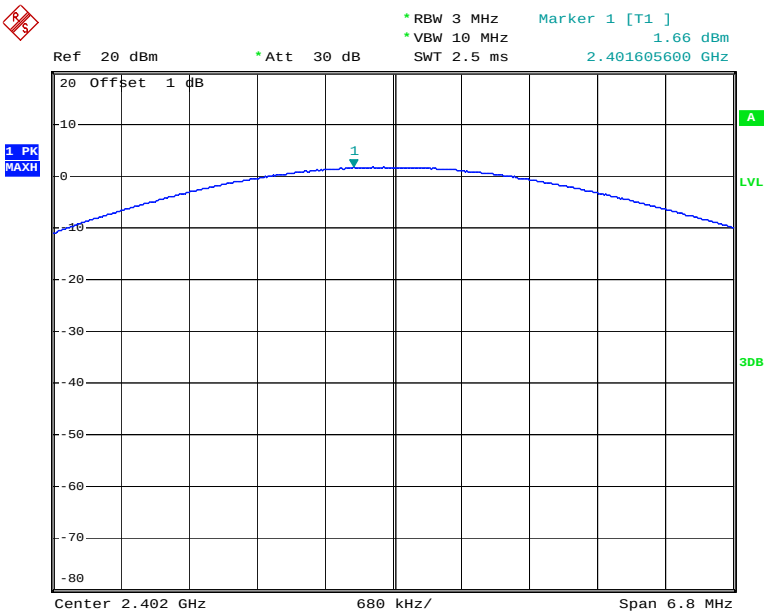
Output Power, 2480MHz



Date: 7.JUL.2016 09:49:56

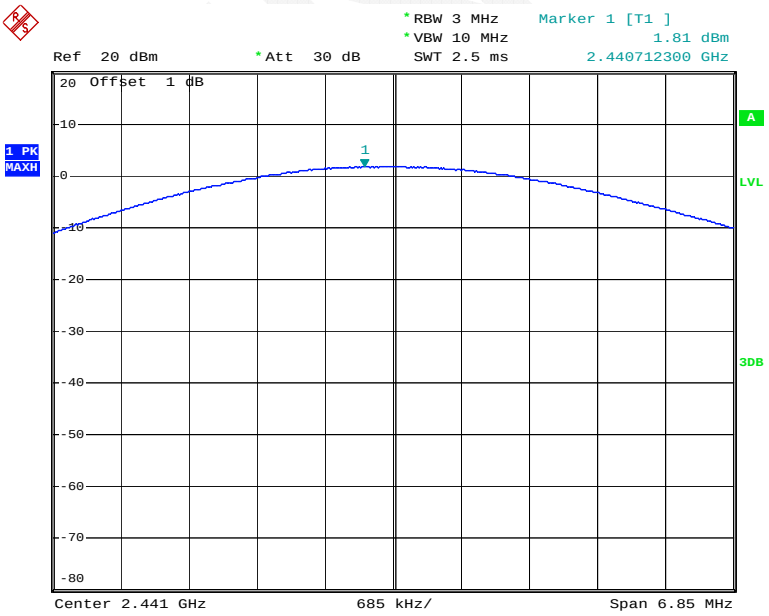
EDR Mode (π/4-DQPSK):

Output Power, 2402MHz



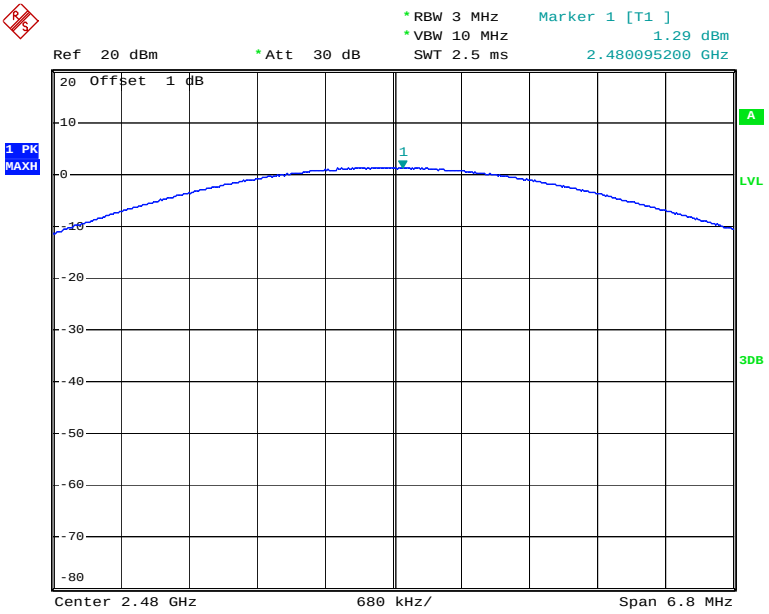
Date: 7.JUL.2016 10:00:58

Output Power, 2441MHz



Date: 7.JUL.2016 10:02:17

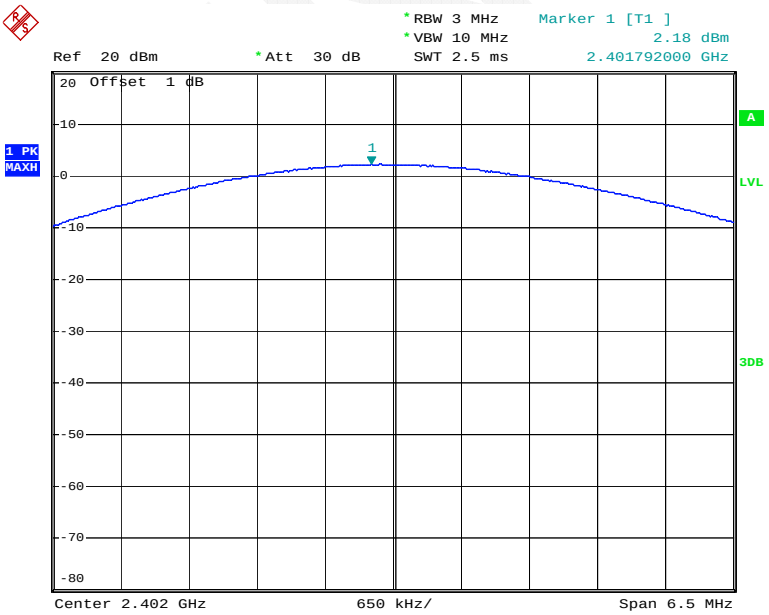
Output Power, 2480MHz



Date: 7.JUL.2016 10:13:45

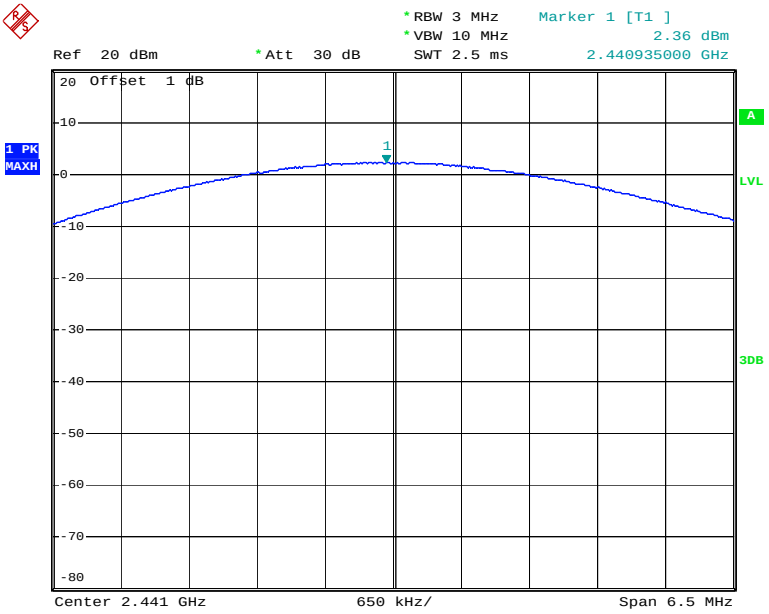
EDR Mode (8-DPSK):

Output Power, 2402MHz



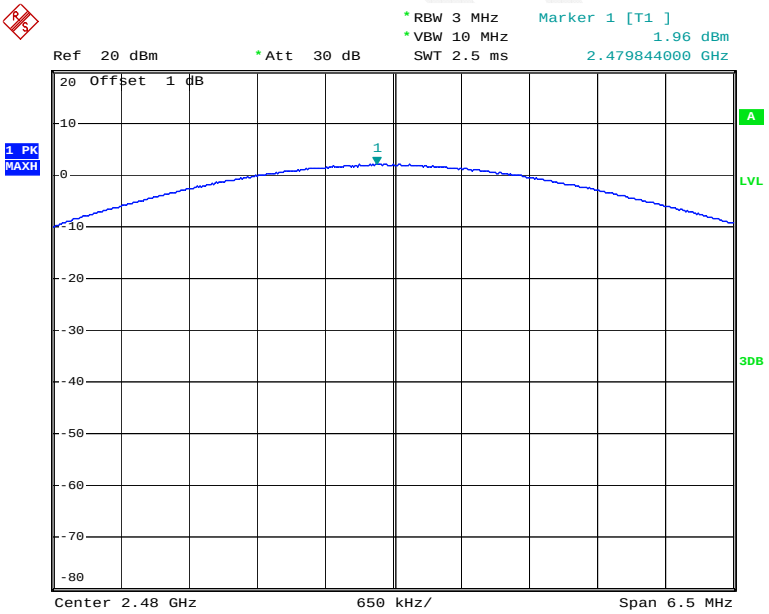
Date: 7.JUL.2016 09:55:40

Output Power, 2441MHz



Date: 7.JUL.2016 09:56:59

Output Power, 2480MHz



Date: 7.JUL.2016 09:57:53

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	FSP 38	100478	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

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

Test Data

Environmental Conditions

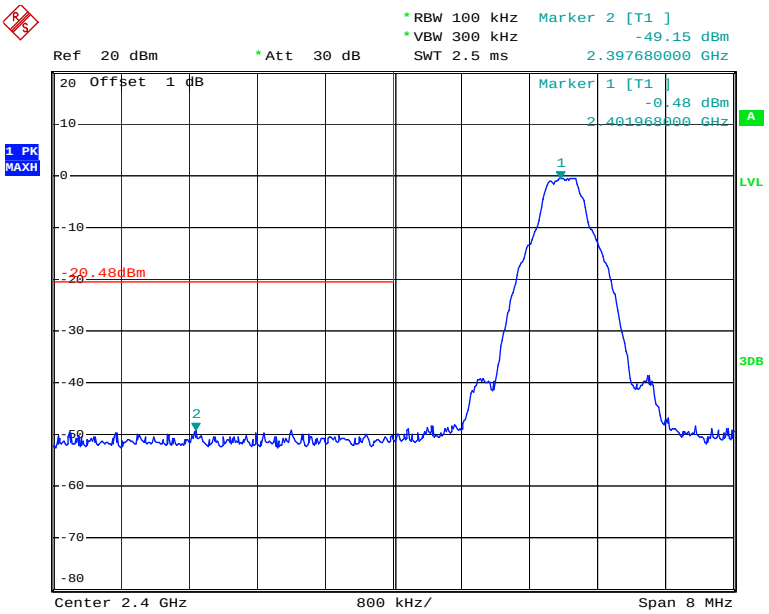
Temperature:	30.2 °C
Relative Humidity:	52 %
ATM Pressure:	100 kPa

** The testing was performed by Rocky Xiao on 2016-07-07.*

Test Result: Compliance

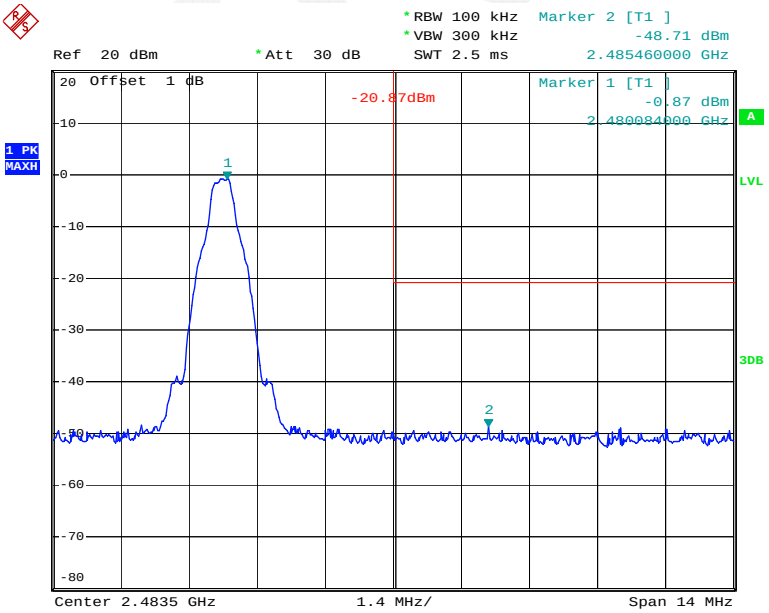
BDR Mode (GFSK):

Band Edge, Left Side



Date: 7.JUL.2016 09:47:57

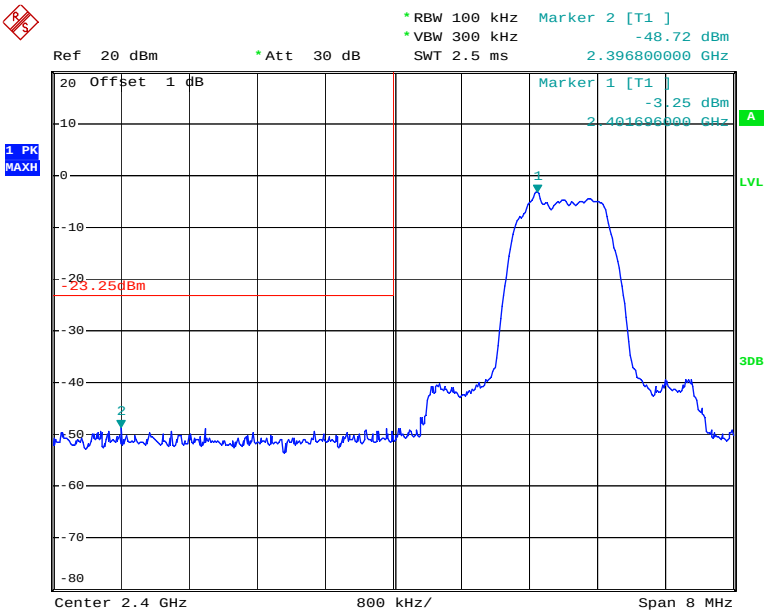
Band Edge, Right Side



Date: 7.JUL.2016 09:50:20

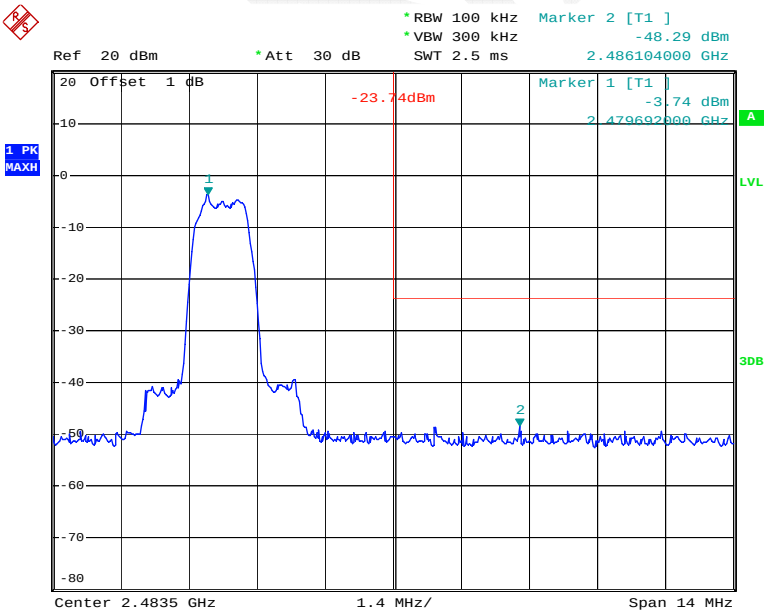
EDR Mode (π/4-DQPSK):

Band Edge, Left Side



Date: 7.JUL.2016 10:01:15

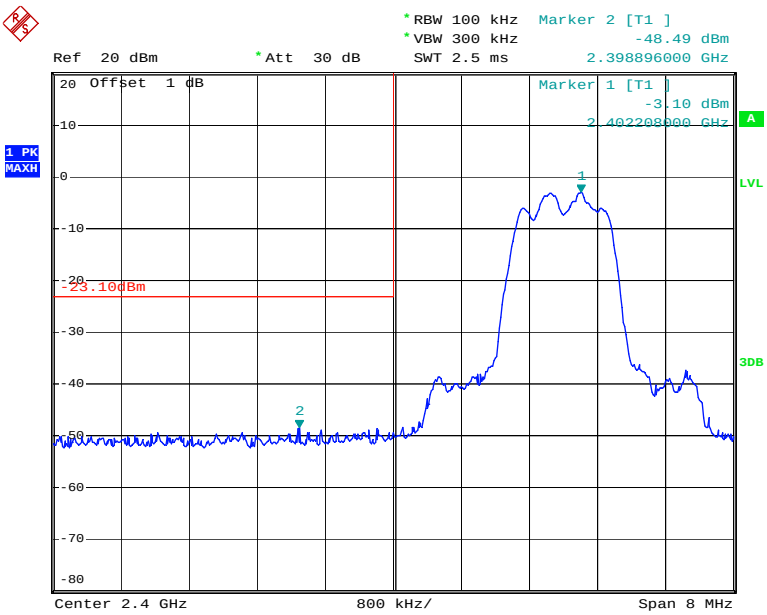
Band Edge, Right Side



Date: 7.JUL.2016 10:14:04

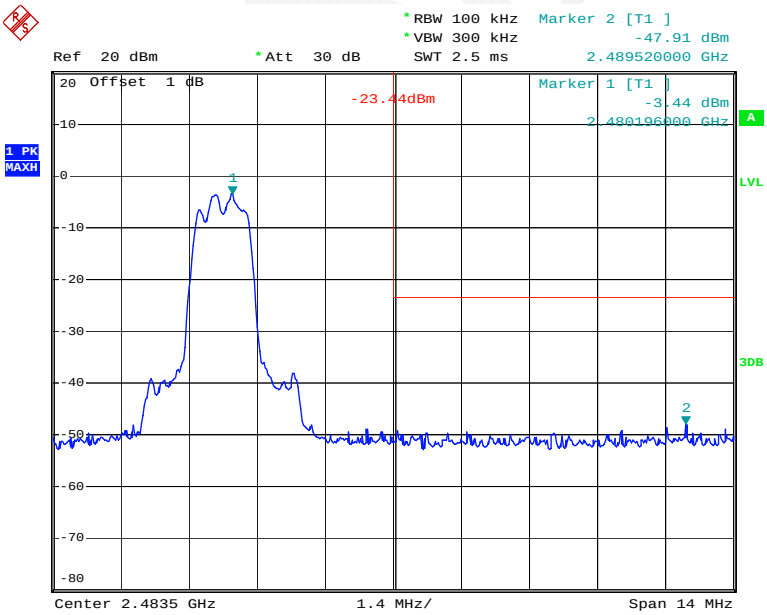
EDR Mode (8-DPSK):

Band Edge, Left Side



Date: 7.JUL.2016 09:56:03

Band Edge, Right Side



Date: 7.JUL.2016 09:58:10

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