

FCC PART 15.247

TEST REPORT

For

MAXWEST INTERNATIONAL LIMITED

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FCC ID: 2AEN3RANGER

Report Type: Original Report	Product Type: Mobile Phone
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Report Number: RDG160816002-00B	
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *MAXWEST INTERNATIONAL LIMITED*'s product, model number: *RANGER* (FCC ID: *2AEN3RANGER*) (the "EUT") in this report was a *Mobile Phone*, which was measured approximately: 13.0 cm (L) x 5.6 cm (W) x 1.9cm (H), rated input voltage: DC3.7V rechargeable Li-ion battery or DC5V charging from adapter.

Adapter Information:
AC/DC ADAPTOR
INPUT: AC100-240V
OUTPUT: DC5.0V, 500mA

All measurement and test data in this report was gathered from production sample serial number: 160816002 (Assigned by BACL, Dongguan). The EUT was received on 2016-08-16.

Objective

This report is prepared on behalf of *MAXWEST INTERNATIONAL LIMITED*.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 JBP submissions with FCC ID: 2AEN3RANGER.
FCC Part 22H, 24E PCE submissions with FCC ID: 2AEN3RANGER.

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 engineering mode configured the maximum power as default setting.

Equipment Modifications

No modification was made to the EUT.

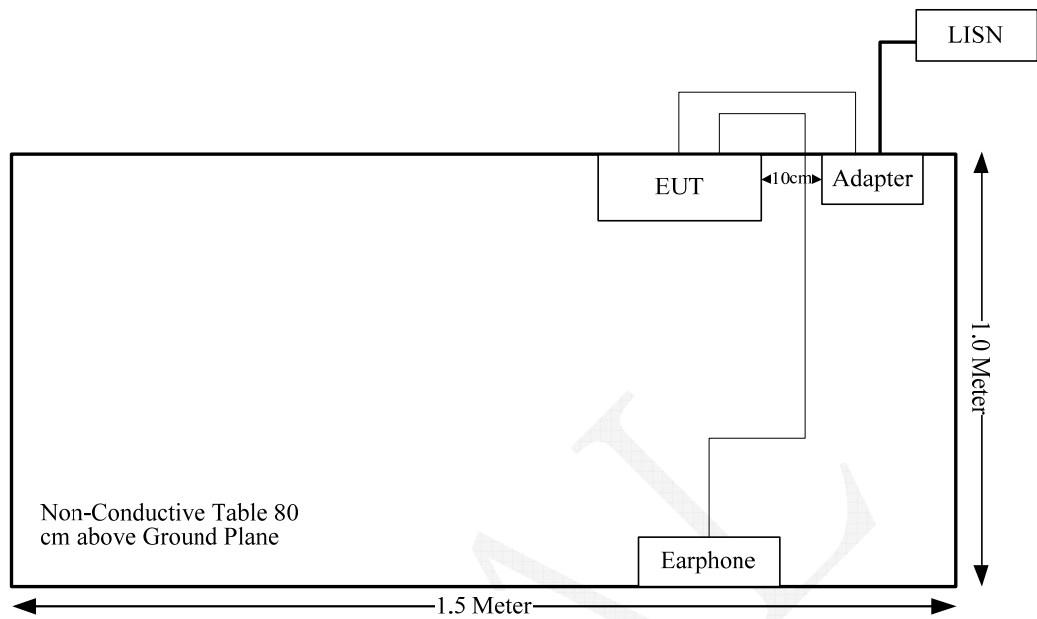
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (cm)	From Port	To
USB Cabel	Yes	No	82.5	Adapter	EUT
Earphone	No	No	98.5	Audio Port of EUT	Earphone

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:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$
 ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f(\text{GHz})$ 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 tune-up power is 3.0dBm (2.0 mW).

$[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})][\sqrt{f(\text{GHz})}]$
 $= 2.0/5 \cdot (\sqrt{2.480}) = 0.6 < 3.0$

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 bluetooth and the antenna gain is 0.5 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 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:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	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

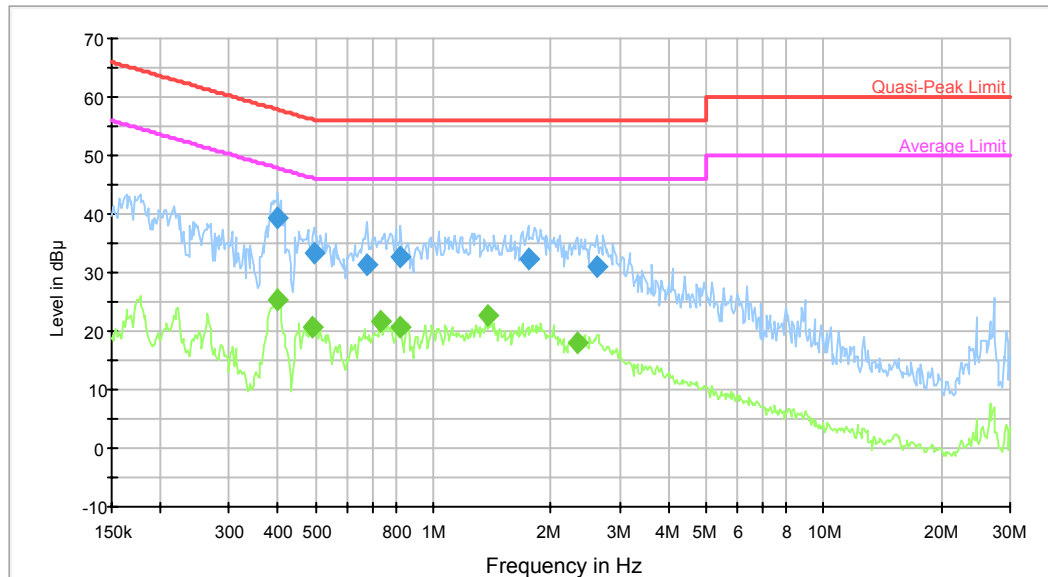
Test Data**Environmental Conditions**

Temperature:	26.8 °C
Relative Humidity:	45 %
ATM Pressure:	99.7 kPa

The testing was performed by Allen Qiao on 2016-09-01.

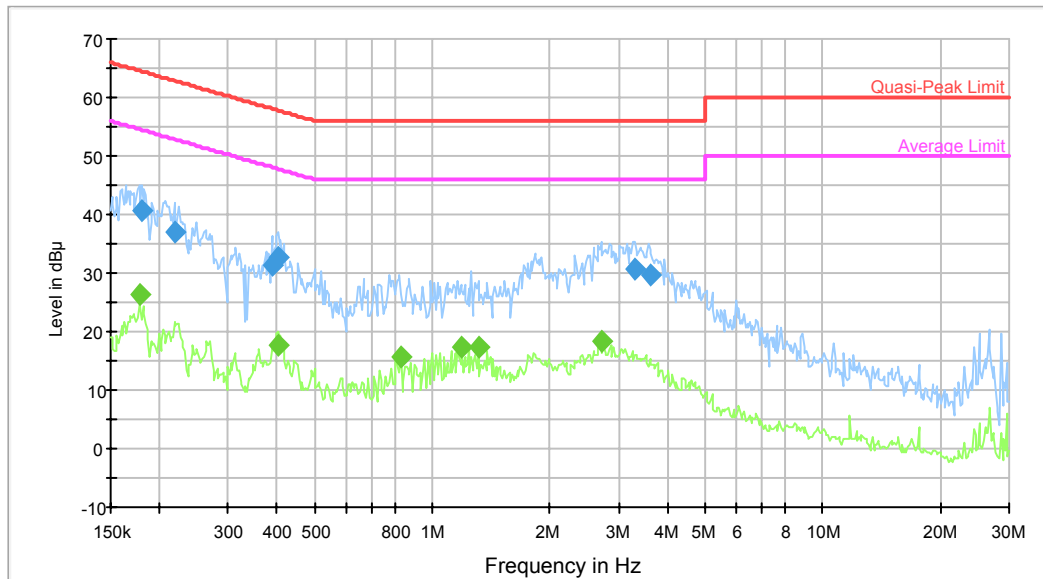
Test Mode: Transmitting

AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.399703	39.3	9.000	L1	9.7	18.6	57.9	Compliance
0.495646	33.3	9.000	L1	9.7	22.8	56.1	Compliance
0.676289	31.4	9.000	L1	9.7	24.6	56.0	Compliance
0.825364	32.6	9.000	L1	9.7	23.4	56.0	Compliance
1.745563	32.4	9.000	L1	9.7	23.6	56.0	Compliance
2.620732	30.9	9.000	L1	9.7	25.1	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.399703	25.2	9.000	L1	9.7	22.7	47.9	Compliance
0.487810	20.7	9.000	L1	9.7	25.5	46.2	Compliance
0.732382	21.7	9.000	L1	9.7	24.3	46.0	Compliance
0.818813	20.7	9.000	L1	9.7	25.3	46.0	Compliance
1.385415	22.8	9.000	L1	9.7	23.2	46.0	Compliance
2.344095	18.1	9.000	L1	9.7	27.9	46.0	Compliance

AC120 V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.180171	40.7	9.000	N	9.6	23.8	64.5	Compliance
0.218141	37.0	9.000	N	9.6	25.9	62.9	Compliance
0.387164	31.4	9.000	N	9.6	26.7	58.1	Compliance
0.402900	32.8	9.000	N	9.6	25.0	57.8	Compliance
3.302007	30.5	9.000	N	9.7	25.5	56.0	Compliance
3.604490	29.8	9.000	N	9.7	26.2	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.177322	26.4	9.000	N	9.6	28.2	54.6	Compliance
0.402900	17.7	9.000	N	9.6	30.1	47.8	Compliance
0.831967	15.7	9.000	N	9.6	30.3	46.0	Compliance
1.190776	17.5	9.000	N	9.7	28.5	46.0	Compliance
1.310256	17.3	9.000	N	9.7	28.7	46.0	Compliance
2.705607	18.3	9.000	N	9.7	27.7	46.0	Compliance

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

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

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

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

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

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

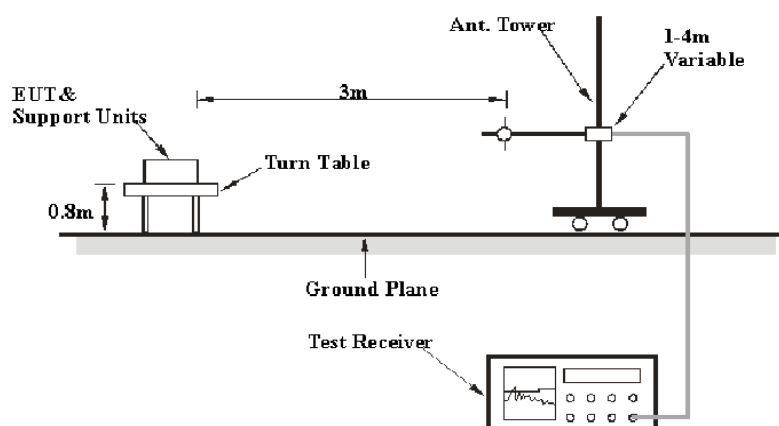
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is: 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB.

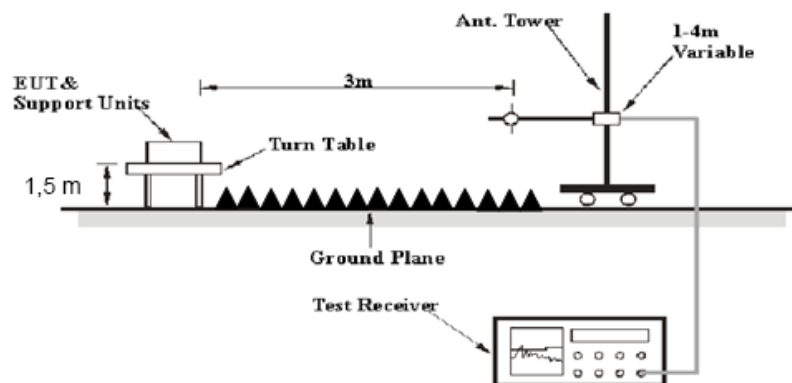
Table 1 – Values of U_{cisp}

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 C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

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	2016-08-03	2017-08-02
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 Technologies	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:

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

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.

Test Data**Environmental Conditions**

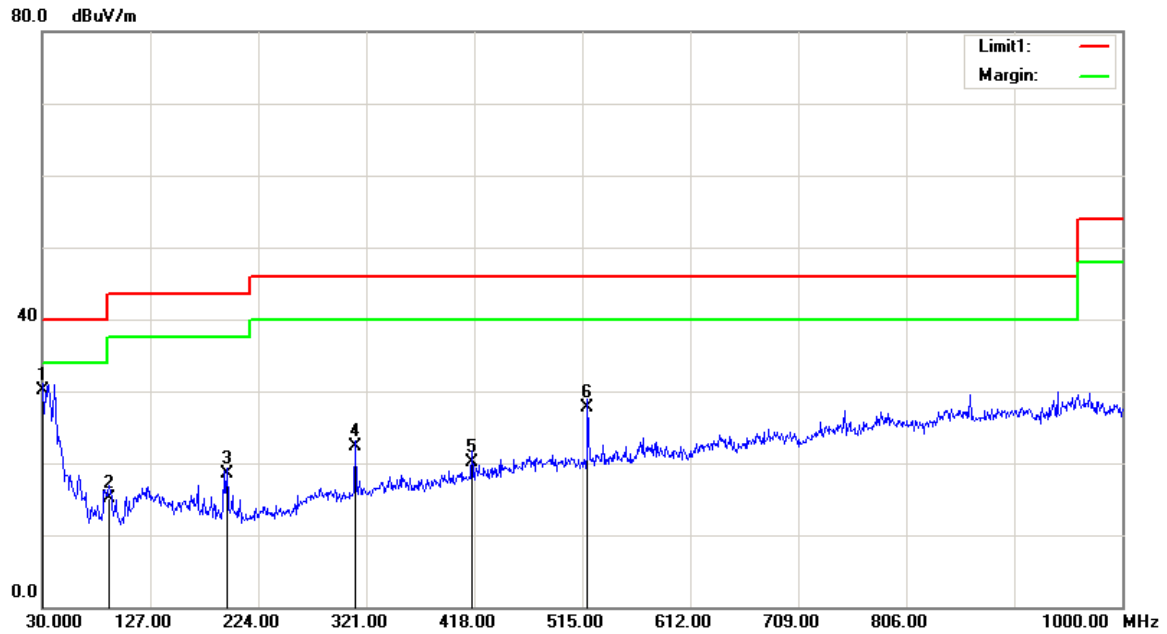
Temperature:	27 °C
Relative Humidity:	64 %
ATM Pressure:	99.7 kPa

The testing was performed by Allen Qiao on 2016-08-22.

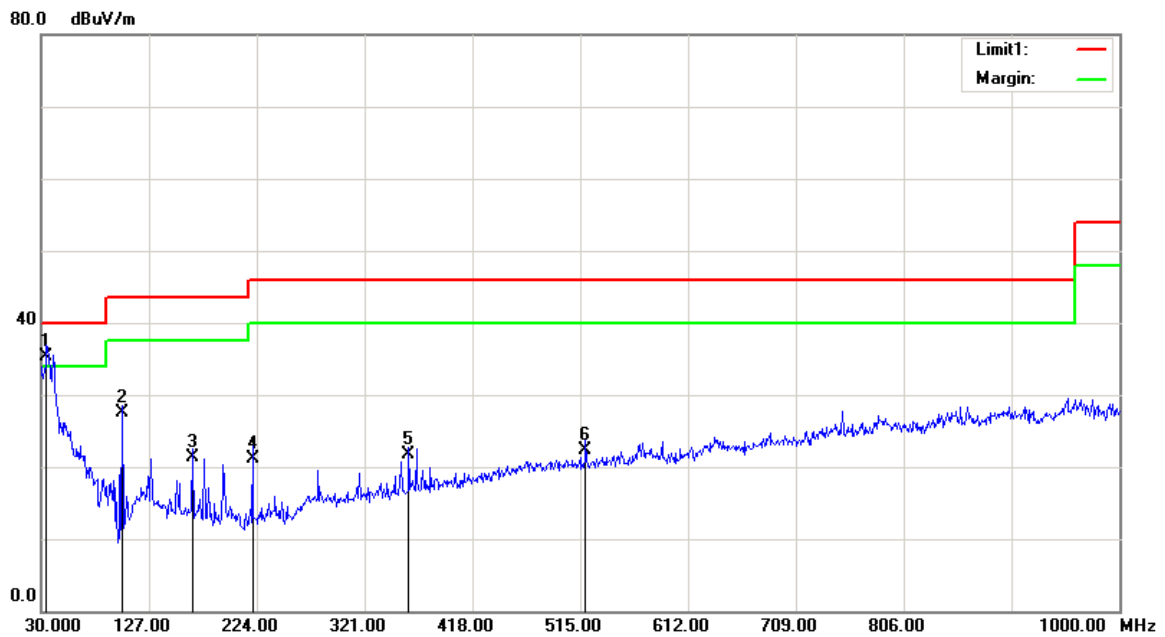
Test mode: Transmitting (8-DPSK middle channel is the worst case)

30 MHz- 1 GHz:

Horizontal:



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.0000	29.25	QP	0.95	30.20	40.00	9.80
90.1400	27.14	QP	-11.94	15.20	43.50	28.30
195.8700	26.43	QP	-7.83	18.60	43.50	24.90
311.3000	27.98	QP	-5.58	22.40	46.00	23.60
416.0600	23.41	QP	-3.31	20.10	46.00	25.90
519.8500	29.54	QP	-1.74	27.80	46.00	18.20

Vertical:

Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
34.8500	38.03	QP	-2.63	35.40	40.00	4.60
102.7500	36.44	QP	-8.84	27.60	43.50	15.90
165.8000	28.87	QP	-7.57	21.30	43.50	22.20
220.1200	29.77	QP	-8.67	21.10	46.00	24.90
360.7700	26.34	QP	-4.54	21.80	46.00	24.20
519.8500	24.14	QP	-1.74	22.40	46.00	23.60

1- 25 GHz:*BDR Mode (GFSK):*

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
(MHz)	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402 MHz									
2402	71.74	PK	H	25.65	3.66	0.00	101.05	N/A	N/A
2402	60.58	AV	H	25.65	3.66	0.00	89.89	N/A	N/A
2402	62.23	PK	V	25.65	3.66	0.00	91.54	N/A	N/A
2402	52.27	AV	V	25.65	3.66	0.00	81.58	N/A	N/A
2390	25.53	PK	H	25.61	3.63	0.00	54.77	74.00	19.23
2390	12.9	AV	H	25.61	3.63	0.00	42.14	54.00	11.86
4804	40.34	PK	H	30.59	5.06	27.41	48.58	74.00	25.42
4804	29.45	AV	H	30.59	5.06	27.41	37.69	54.00	16.31
7206	37.83	PK	H	34.09	6.61	25.91	52.62	74.00	21.38
7206	25.14	AV	H	34.09	6.61	25.91	39.93	54.00	14.07
3198	33.17	PK	H	27.83	6.12	27.37	39.75	74.00	34.25
3198	20.57	AV	H	27.83	6.12	27.37	27.15	54.00	26.85
Middle Channel: 2441 MHz									
2441	71.04	PK	H	25.75	3.76	0.00	100.55	N/A	N/A
2441	60.56	AV	H	25.75	3.76	0.00	90.07	N/A	N/A
2441	63.76	PK	V	25.75	3.76	0.00	93.27	N/A	N/A
2441	53.65	AV	V	25.75	3.76	0.00	83.16	N/A	N/A
4882	40.23	PK	H	30.79	5.19	27.42	48.79	74.00	25.21
4882	29.32	AV	H	30.79	5.19	27.42	37.88	54.00	16.12
7323	37.76	PK	H	34.38	6.75	25.88	53.01	74.00	20.99
7323	25.04	AV	H	34.38	6.75	25.88	40.29	54.00	13.71
3131	33.09	PK	H	27.62	6.93	27.43	40.21	74.00	33.79
3131	20.44	AV	H	27.62	6.93	27.43	27.56	54.00	26.44
3540	33.63	PK	H	28.89	4.50	27.25	39.77	74.00	34.23
3540	21.21	AV	H	28.89	4.50	27.25	27.35	54.00	26.65
High Channel: 2480 MHz									
2480	70.19	PK	H	25.85	3.68	0.00	99.72	N/A	N/A
2480	60.21	AV	H	25.85	3.68	0.00	89.74	N/A	N/A
2480	65.2	PK	V	25.85	3.68	0.00	94.73	N/A	N/A
2480	54.99	AV	V	25.85	3.68	0.00	84.52	N/A	N/A
2483.5	43.71	PK	H	25.86	3.67	0.00	73.24	74.00	0.76
2483.5	22.23	AV	H	25.86	3.67	0.00	51.76	54.00	2.24
4960	38.12	PK	H	31.00	5.34	27.43	47.03	74.00	26.97
4960	29.27	AV	H	31.00	5.34	27.43	38.18	54.00	15.82
7440	37.57	PK	H	34.66	6.89	25.97	53.15	74.00	20.85
7440	24.91	AV	H	34.66	6.89	25.97	40.49	54.00	13.51
3303	32.98	PK	H	28.17	5.12	27.28	38.99	74.00	35.01
3303	20.36	AV	H	28.17	5.12	27.28	26.37	54.00	27.63

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

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
(MHz)	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402 MHz									
2402	71.37	PK	H	25.65	3.66	0.00	100.68	N/A	N/A
2402	61.16	AV	H	25.65	3.66	0.00	90.47	N/A	N/A
2402	62.27	PK	V	25.65	3.66	0.00	91.58	N/A	N/A
2402	52.31	AV	V	25.65	3.66	0.00	81.62	N/A	N/A
2390	26.27	PK	H	25.61	3.63	0.00	55.51	74.00	18.49
2390	13.01	AV	H	25.61	3.63	0.00	42.25	54.00	11.75
4804	38.45	PK	H	30.59	5.06	27.41	46.69	74.00	27.31
4804	26.01	AV	H	30.59	5.06	27.41	34.25	54.00	19.75
7206	34.69	PK	H	34.09	6.61	25.91	49.48	74.00	24.52
7206	23.33	AV	H	34.09	6.61	25.91	38.12	54.00	15.88
3198	32.05	PK	H	27.83	6.12	27.37	38.63	74.00	35.37
3198	20.11	AV	H	27.83	6.12	27.37	26.69	54.00	27.31
Middle Channel: 2441 MHz									
2441	70.98	PK	H	25.75	3.76	0.00	100.49	N/A	N/A
2441	60.46	AV	H	25.75	3.76	0.00	89.97	N/A	N/A
2441	64.17	PK	V	25.75	3.76	0.00	93.68	N/A	N/A
2441	53.1	AV	V	25.75	3.76	0.00	82.61	N/A	N/A
4882	38.28	PK	H	30.79	5.19	27.42	46.84	74.00	27.16
4882	25.89	AV	H	30.79	5.19	27.42	34.45	54.00	19.55
7323	35.56	PK	H	34.38	6.75	25.88	50.81	74.00	23.19
7323	24.22	AV	H	34.38	6.75	25.88	39.47	54.00	14.53
3105	31.88	PK	H	27.54	6.85	27.45	38.82	74.00	35.18
3105	19.96	AV	H	27.54	6.85	27.45	26.90	54.00	27.10
3750	34.13	PK	H	29.35	4.54	27.35	40.67	74.00	33.33
3750	21.07	AV	H	29.35	4.54	27.35	27.61	54.00	26.39
High Channel: 2480 MHz									
2480	70.54	PK	H	25.85	3.68	0.00	100.07	N/A	N/A
2480	59.54	AV	H	25.85	3.68	0.00	89.07	N/A	N/A
2480	65.77	PK	V	25.85	3.68	0.00	95.30	N/A	N/A
2480	53.68	AV	V	25.85	3.68	0.00	83.21	N/A	N/A
2483.5	43.87	PK	H	25.86	3.67	0.00	73.40	74.00	0.60
2483.5	22.76	AV	H	25.86	3.67	0.00	52.29	54.00	1.71
4960	36.43	PK	H	31.00	5.34	27.43	45.34	74.00	28.66
4960	24.01	AV	H	31.00	5.34	27.43	32.92	54.00	21.08
7440	34.25	PK	H	34.66	6.89	25.97	49.83	74.00	24.17
7440	22.65	AV	H	34.66	6.89	25.97	38.23	54.00	15.77
3303	33.57	PK	H	28.17	5.12	27.28	39.58	74.00	34.42
3303	21.54	AV	H	28.17	5.12	27.28	27.55	54.00	26.45

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	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402 MHz									
2402	71.56	PK	H	25.65	3.66	0.00	100.87	N/A	N/A
2402	61.18	AV	H	25.65	3.66	0.00	90.49	N/A	N/A
2402	62.35	PK	V	25.65	3.66	0.00	91.66	N/A	N/A
2402	52.44	AV	V	25.65	3.66	0.00	81.75	N/A	N/A
2390	27.08	PK	H	25.61	3.63	0.00	56.32	74.00	17.68
2390	12.91	AV	H	25.61	3.63	0.00	42.15	54.00	11.85
4804	39.88	PK	H	30.59	5.06	27.41	48.12	74.00	25.88
4804	27.86	AV	H	30.59	5.06	27.41	36.10	54.00	17.90
7206	32.99	PK	H	34.09	6.61	25.91	47.78	74.00	26.22
7206	22.76	AV	H	34.09	6.61	25.91	37.55	54.00	16.45
3250	32.47	PK	H	28.00	6.31	27.33	39.45	74.00	34.55
3250	20.45	AV	H	28.00	6.31	27.33	27.43	54.00	26.57
Middle Channel: 2441 MHz									
2441	71.36	PK	H	25.75	3.76	0.00	100.87	N/A	N/A
2441	60.46	AV	H	25.75	3.76	0.00	89.97	N/A	N/A
2441	64.47	PK	V	25.75	3.76	0.00	93.98	N/A	N/A
2441	53.18	AV	V	25.75	3.76	0.00	82.69	N/A	N/A
4882	39.64	PK	H	30.79	5.19	27.42	48.20	74.00	25.80
4882	27.66	AV	H	30.79	5.19	27.42	36.22	54.00	17.78
7323	32.78	PK	H	34.38	6.75	25.88	48.03	74.00	25.97
7323	22.54	AV	H	34.38	6.75	25.88	37.79	54.00	16.21
3156	32.28	PK	H	27.70	6.87	27.41	39.44	74.00	34.56
3156	20.27	AV	H	27.70	6.87	27.41	27.43	54.00	26.57
3824	35.83	PK	H	29.51	4.64	27.36	42.62	74.00	31.38
3824	24.05	AV	H	29.51	4.64	27.36	30.84	54.00	23.16
High Channel: 2480 MHz									
2480	71.03	PK	H	25.85	3.68	0.00	100.56	N/A	N/A
2480	59.51	AV	H	25.85	3.68	0.00	89.04	N/A	N/A
2480	66.31	PK	V	25.85	3.68	0.00	95.84	N/A	N/A
2480	53.82	AV	V	25.85	3.68	0.00	83.35	N/A	N/A
2483.5	43.85	PK	H	25.86	3.67	0.00	73.38	74.00	0.62
2483.5	22.73	AV	H	25.86	3.67	0.00	52.26	54.00	1.74
4960	38.37	PK	H	31.00	5.34	27.43	47.28	74.00	26.72
4960	25.95	AV	H	31.00	5.34	27.43	34.86	54.00	19.14
7440	34.64	PK	H	34.66	6.89	25.97	50.22	74.00	23.78
7440	23.26	AV	H	34.66	6.89	25.97	38.84	54.00	15.16
3325	31.97	PK	H	28.24	4.97	27.26	37.92	74.00	36.08
3325	20.07	AV	H	28.24	4.97	27.26	26.02	54.00	27.98

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

Applicable Standard

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
NARDA	Attenuator	769-6	2754	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:	28.4°C
Relative Humidity:	46 %
ATM Pressure:	99.7 kPa

The testing was performed by Allen Qiao on 2016-08-22.

Test Result: Compliance.

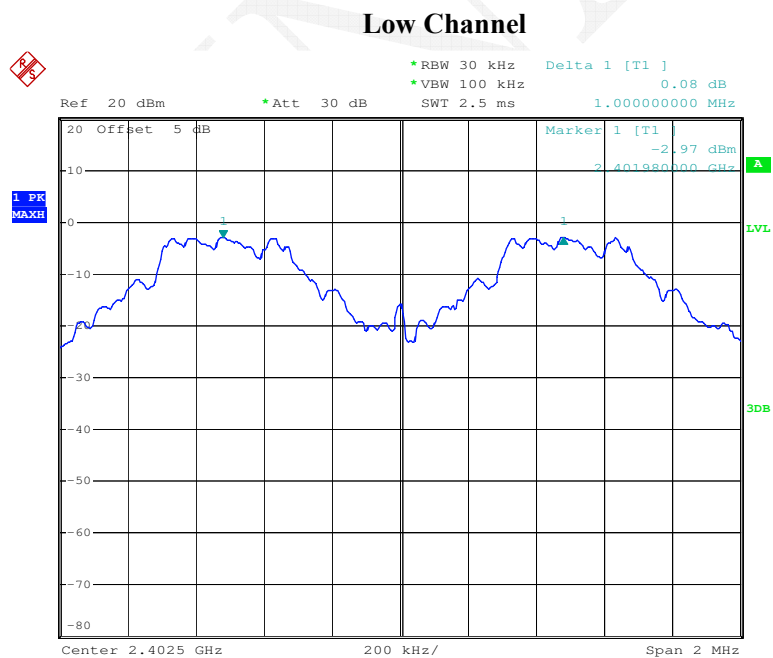
Please refer to following tables and plots

Test Mode: Transmitting

Mode	Channel	Frequency	Channel Separation	Limit	Result
		MHz	MHz	MHz	
BDR (GFSK)	Low	2402	1.000	0.63	Compliance
		2403			
	Middle	2441	1.000	0.65	
		2442			
	High	2479	1.004	0.64	
		2480			
EDR ($\pi/4$ -DQPSK)	Low	2402	0.996	0.85	Compliance
		2403			
	Middle	2441	1.004	0.91	
		2442			
	High	2479	1.000	0.91	
		2480			
EDR (8DPSK)	Low	2402	1.004	0.87	Compliance
		2403			
	Middle	2441	1.004	0.90	
		2442			
	High	2479	1.000	0.87	
		2480			

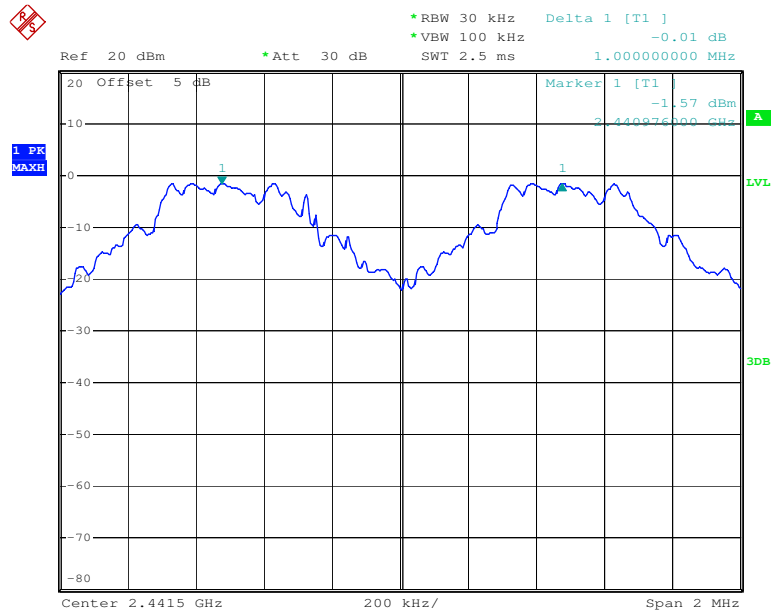
Note: Limit = $(2/3) \times 20\text{dB bandwidth}$

BDR Mode (GFSK):



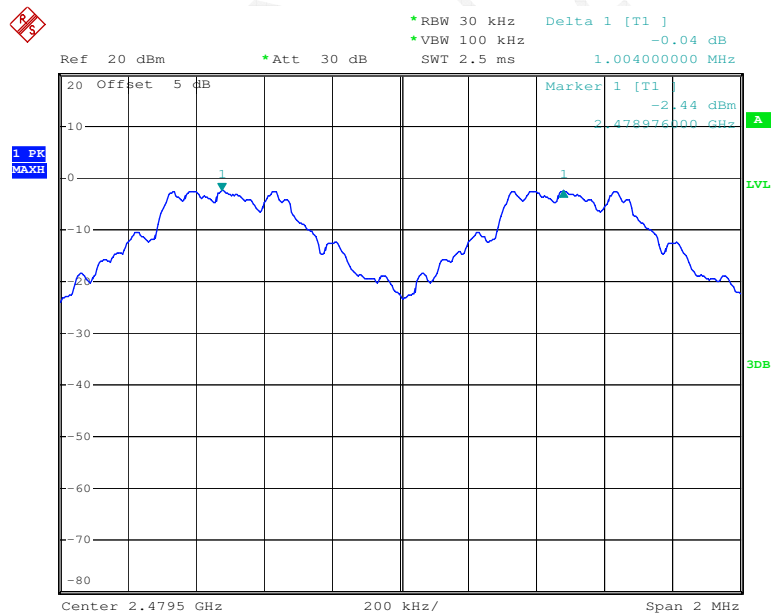
Date: 22.AUG.2016 16:13:04

Middle Channel



Date: 22.AUG.2016 16:16:06

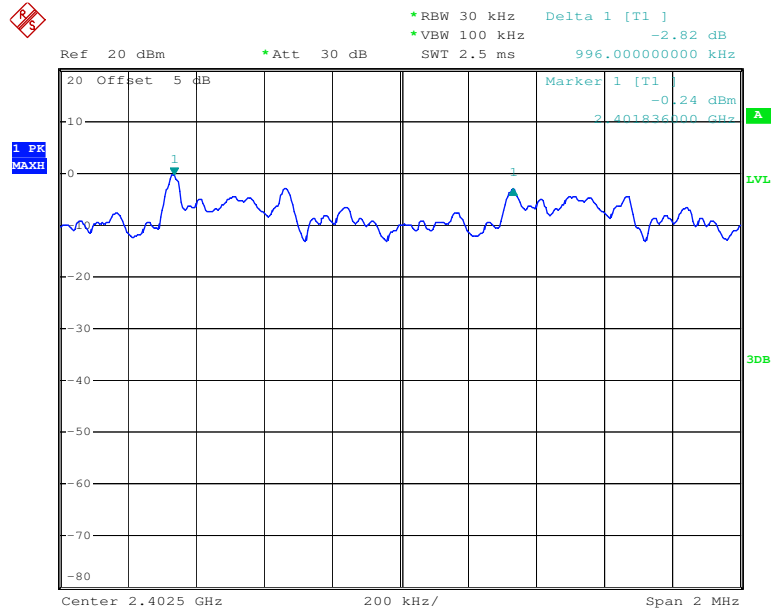
High Channel



Date: 22.AUG.2016 16:18:56

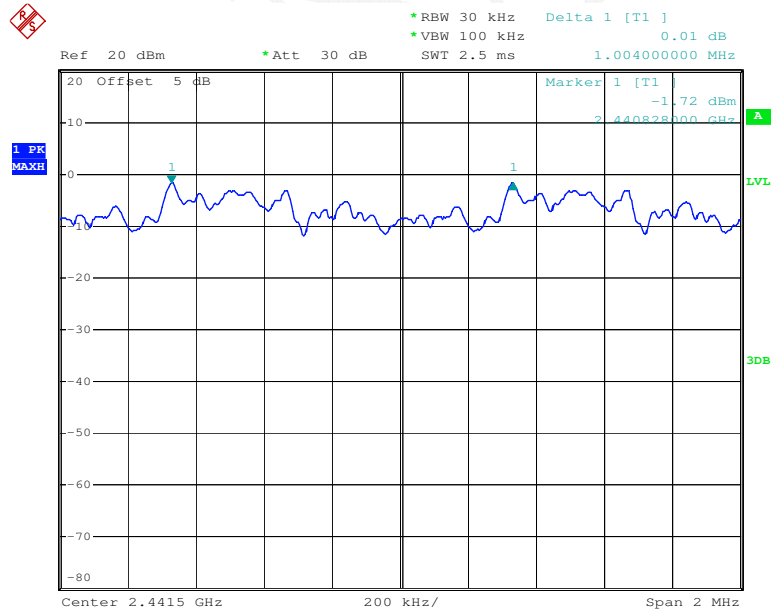
EDR Mode ($\pi/4$ -DQPSK):

Low Channel



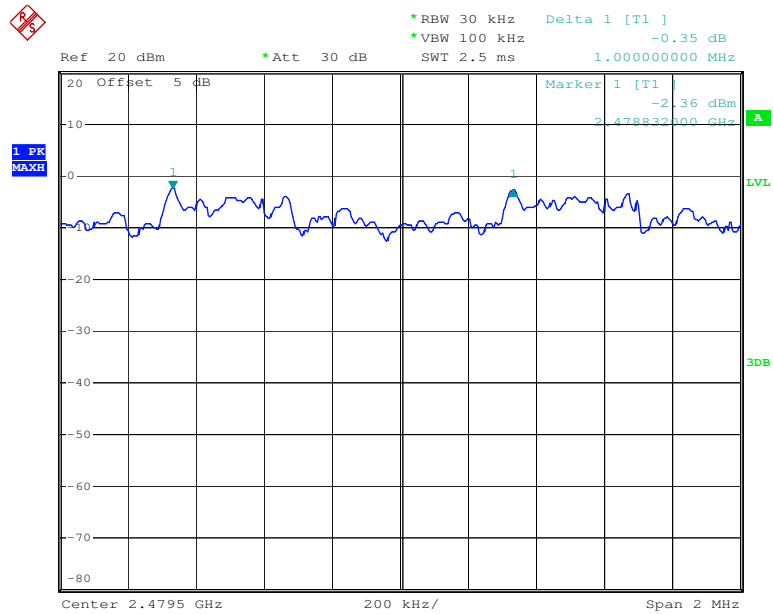
Date: 22.AUG.2016 16:20:55

Middle Channel



Date: 22.AUG.2016 16:22:30

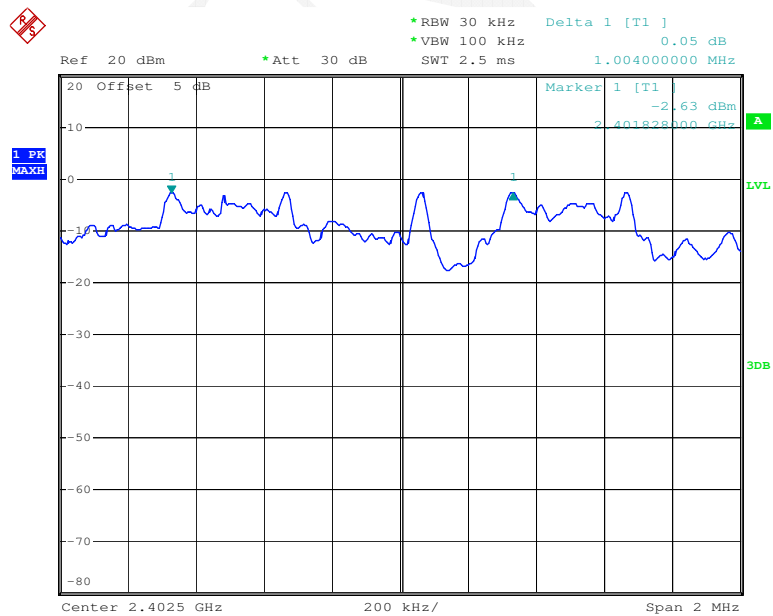
High Channel



Date: 22.AUG.2016 16:26:31

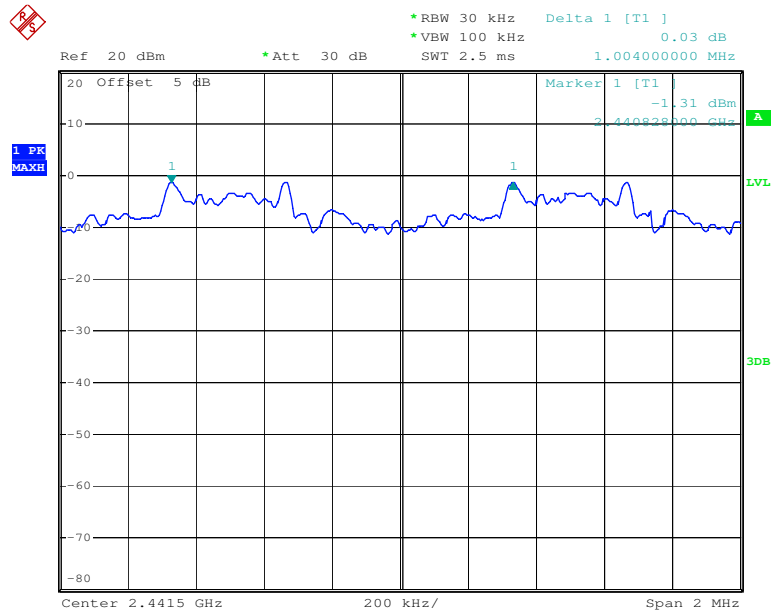
EDR Mode (8-DPSK):

Low Channel



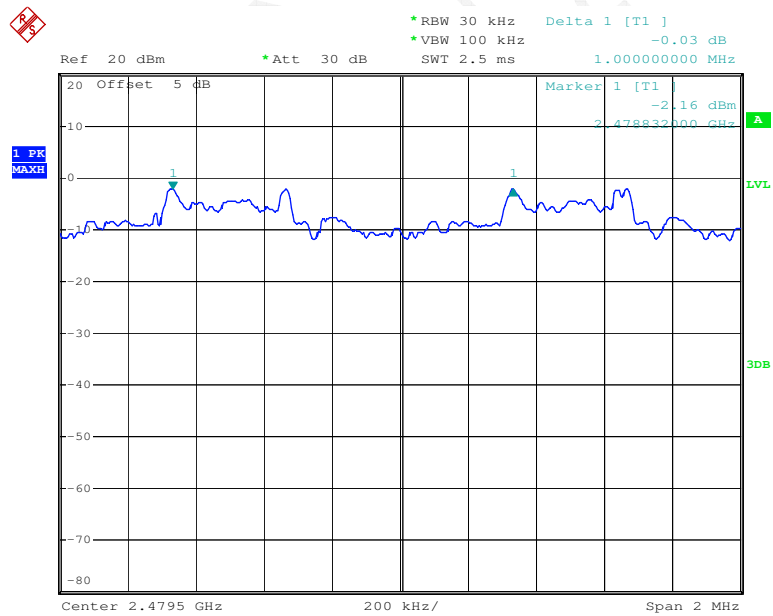
Date: 22.AUG.2016 16:31:52

Middle Channel



Date: 22.AUG.2016 16:34:30

High Channel



Date: 22.AUG.2016 16:36:22

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
NARDA	Attenuator	769-6	2754	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:	28.4°C
Relative Humidity:	46 %
ATM Pressure:	99.7 kPa

The testing was performed by Allen Qiao on 2016-08-22.

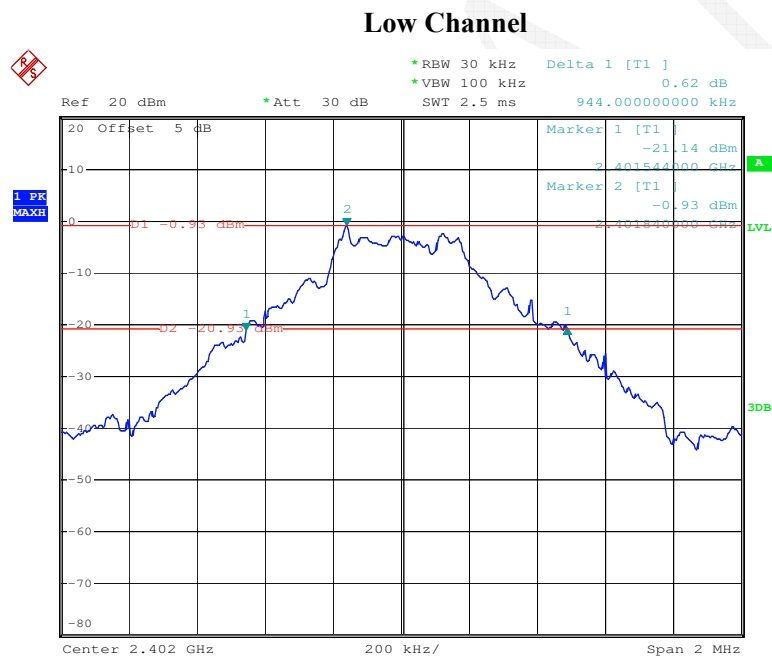
Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

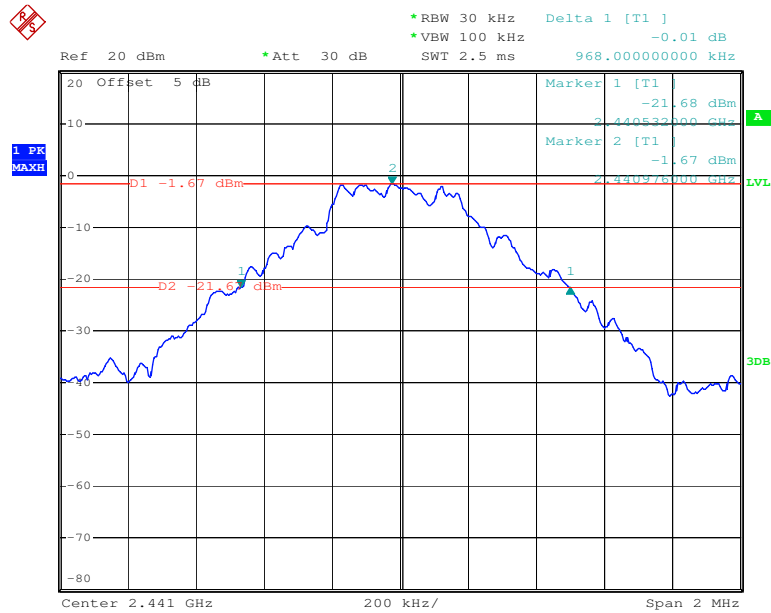
Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
BDR Mode (GFSK)	Low	2402	0.94
	Middle	2441	0.97
	High	2480	0.96
EDR Mode ($\pi/4$ -DQPSK):	Low	2402	1.28
	Middle	2441	1.37
	High	2480	1.36
EDR Mode (8-DPSK):	Low	2402	1.3
	Middle	2441	1.35
	High	2480	1.31

BDR Mode (GFSK):



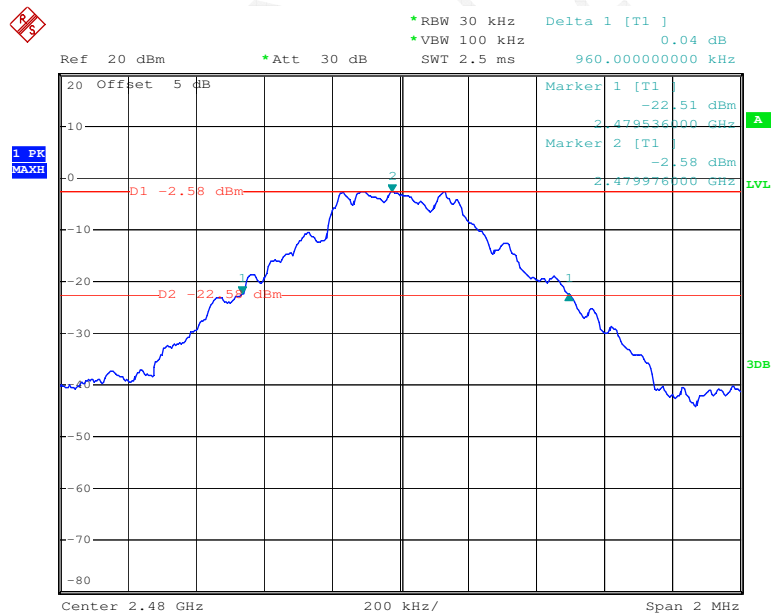
Date: 22.AUG.2016 16:08:27

Middle Channel



Date: 22.AUG.2016 15:54:38

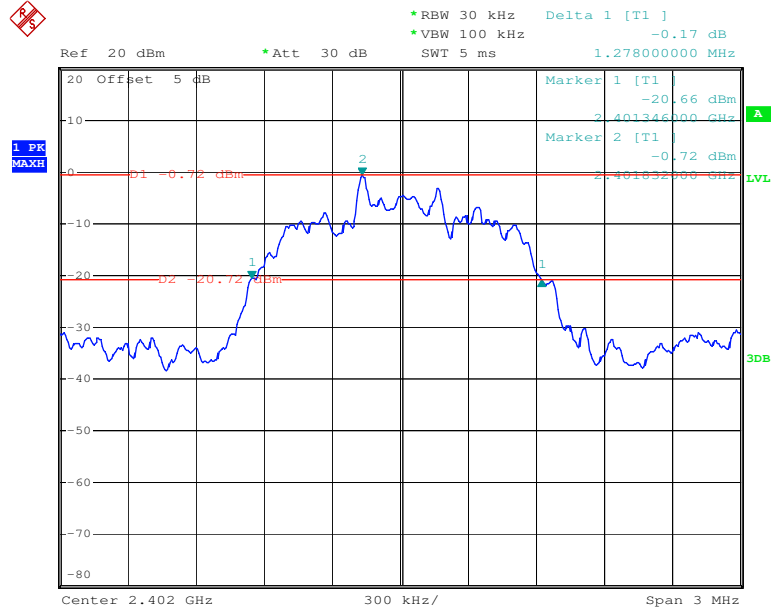
High Channel



Date: 22.AUG.2016 15:55:57

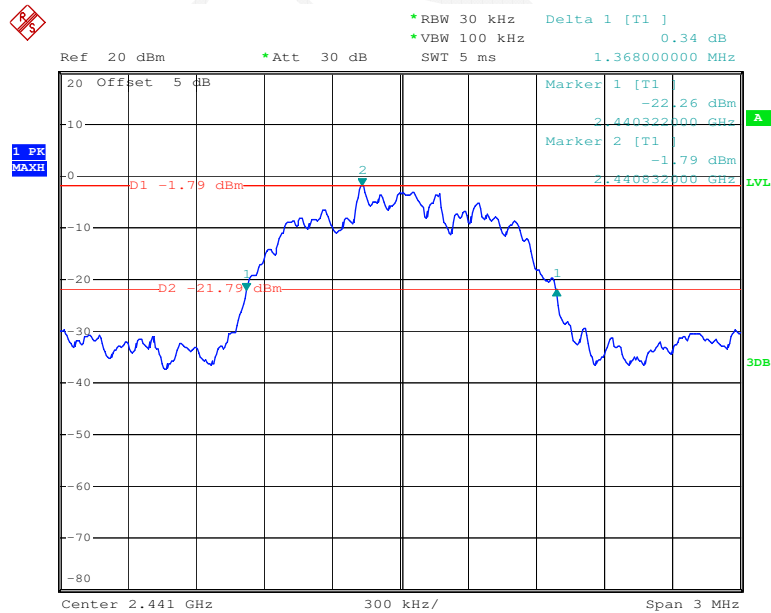
EDR Mode ($\pi/4$ -DQPSK):

Low Channel



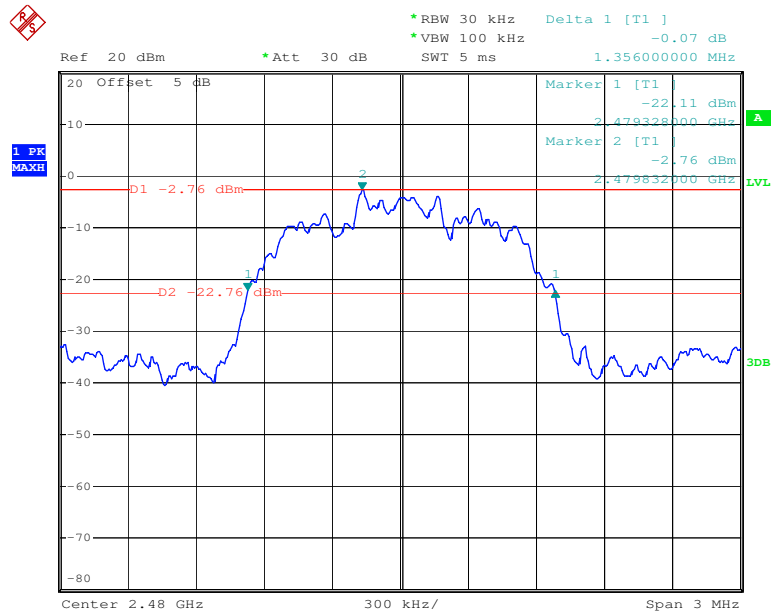
Date: 22.AUG.2016 15:58:17

Middle Channel



Date: 22.AUG.2016 15:59:57

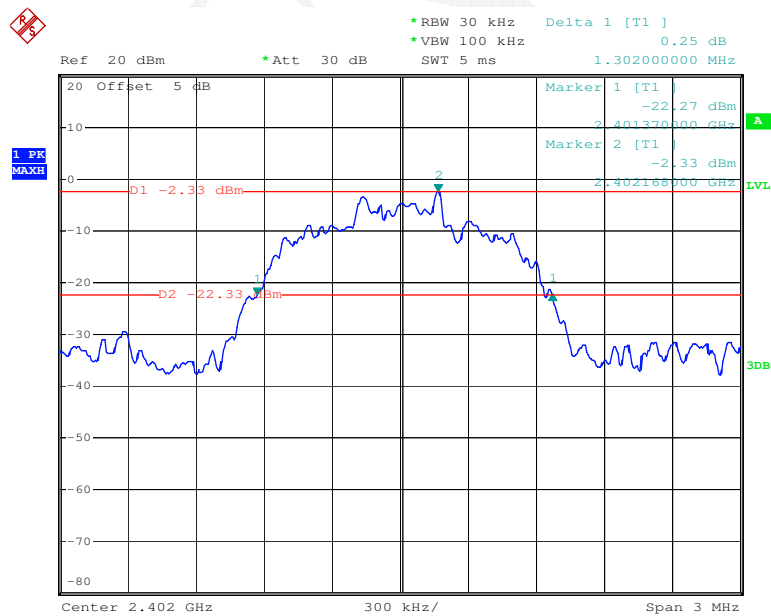
High Channel



Date: 22.AUG.2016 16:01:34

EDR Mode (8-DPSK):

Low Channel



Date: 22.AUG.2016 16:03:41

Ref 20 dBm *Att 30 dB *RBW 30 kHz Delta 1 [T1] -0.36 dB
SWT 5 ms 1.350000000 MHz

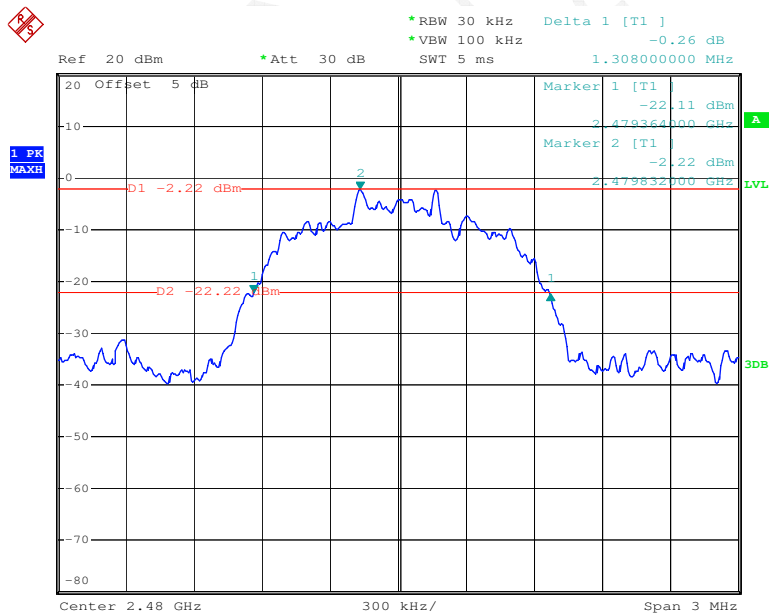
20 Offset 5 dB

Marker 1 [T1] -21.29 dBm
Marker 2 [T1] -1.38 dBm

1 PK MAXH

Center 2.441 GHz 300 kHz/ Span 3 MHz

High Channel



Page 34 of 64

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
NARDA	Attenuator	769-6	2754	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:	28.4 °C
Relative Humidity:	46 %
ATM Pressure:	99.7 kPa

The testing was performed by Allen Qiao on 2016-08-22.

Test Result: Compliance.

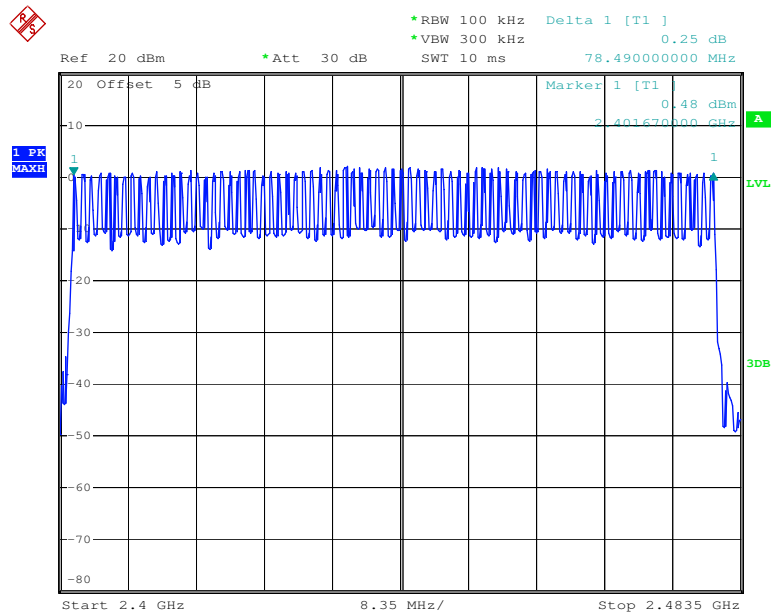
Please refer to following tables and plots

Test Mode: Transmitting

BDR Mode (GFSK):

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

Number of Hopping Channels

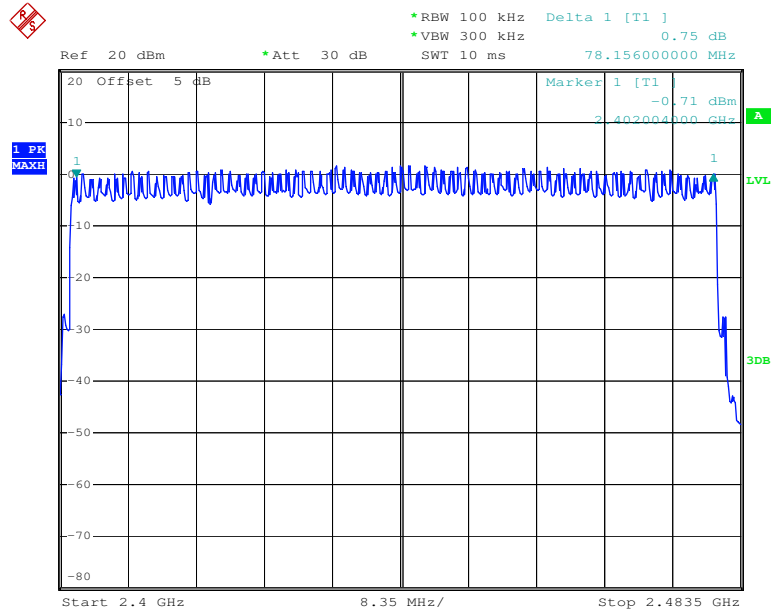


Date: 22.AUG.2016 16:41:07

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

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

Number of Hopping Channels

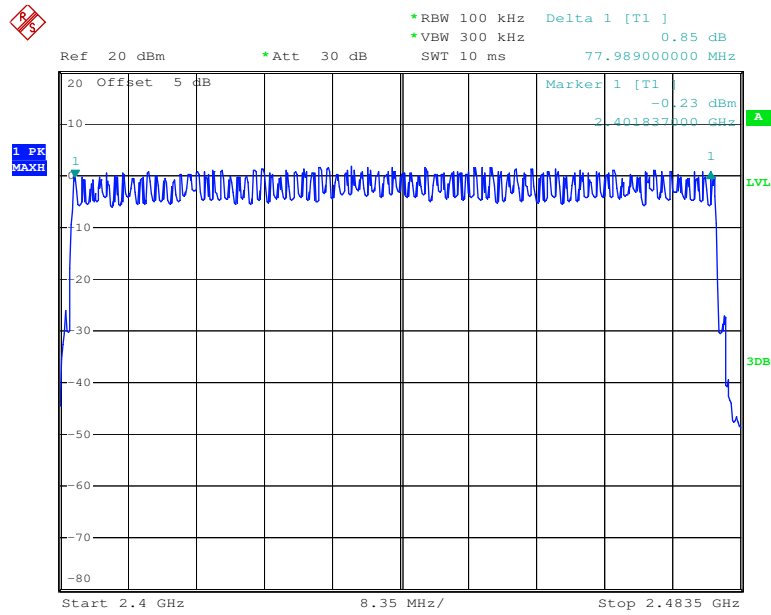


Date: 22.AUG.2016 16:54:20

EDR Mode (8-DPSK):

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

Number of Hopping Channels



Date: 22.AUG.2016 17:00:21

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

Applicable Standard

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

Test Procedure

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

Dwell Time= time slot length * hope rate/ number of hopping channels * 31.6s
Hop rate=1600/s

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
NARDA	Attenuator	769-6	2754	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:	28.4 °C
Relative Humidity:	46 %
ATM Pressure:	99.7 bkPa

The testing was performed by Allen Qiao on 2016-08-22.

Test Result: Compliance.

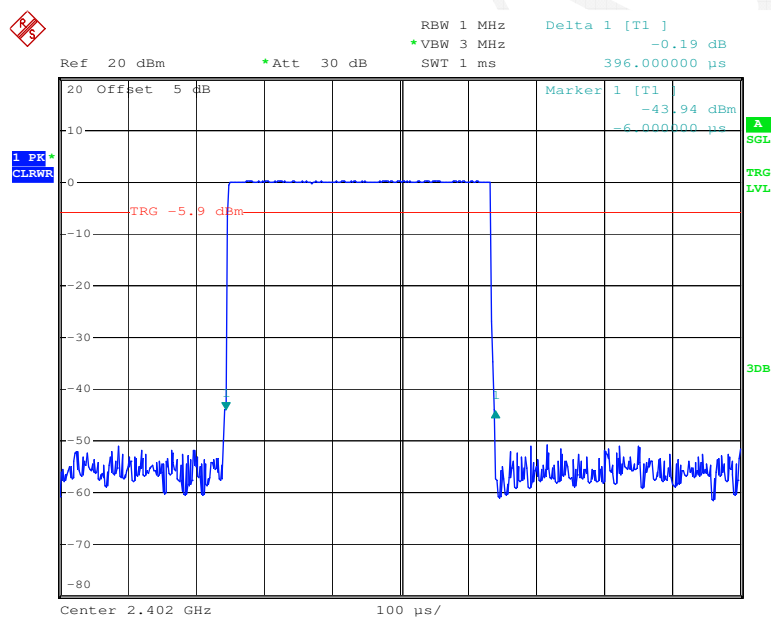
Please refer to following tables and plots

Test Mode: Transmitting

BDR Mode (GFSK):

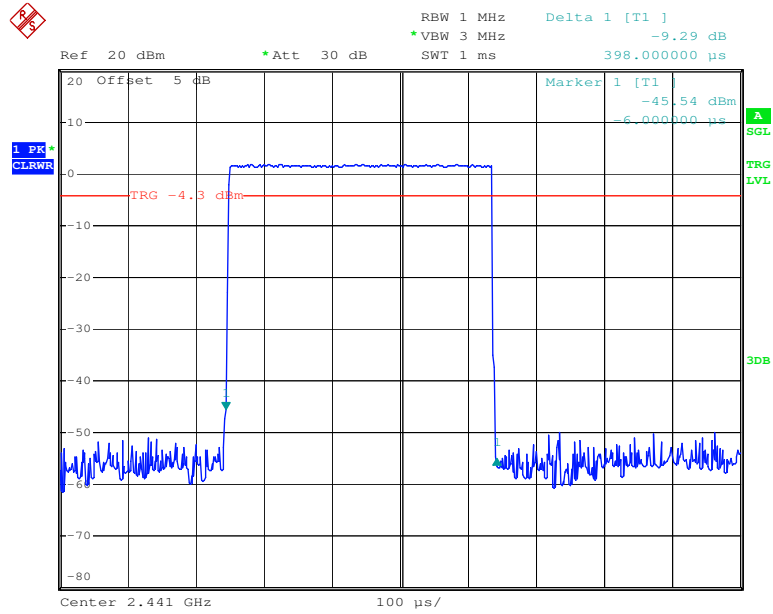
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.396	0.127	0.4	Compliance
	Middle	0.398	0.127	0.4	Compliance
	High	0.396	0.127	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/2/79) × 31.6 s				
DH3	Low	1.668	0.267	0.4	Compliance
	Middle	1.668	0.267	0.4	Compliance
	High	1.662	0.266	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/4/79) × 31.6 s				
DH5	Low	2.920	0.311	0.4	Compliance
	Middle	2.920	0.311	0.4	Compliance
	High	2.920	0.311	0.4	Compliance
	Note: Dwell time=Pulse time (ms) × (1600/6/79) × 31.6 s				

DH1: Low Channel



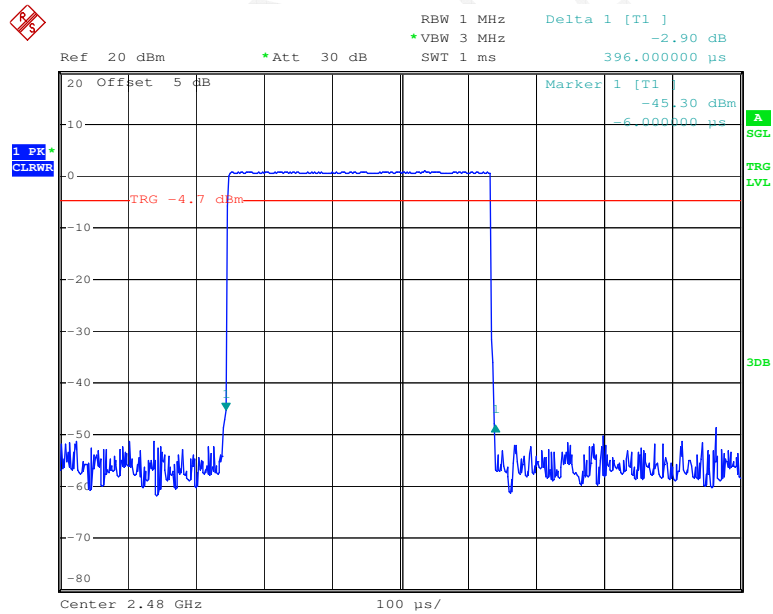
Date: 22.AUG.2016 17:14:42

DH1: Middle Channel



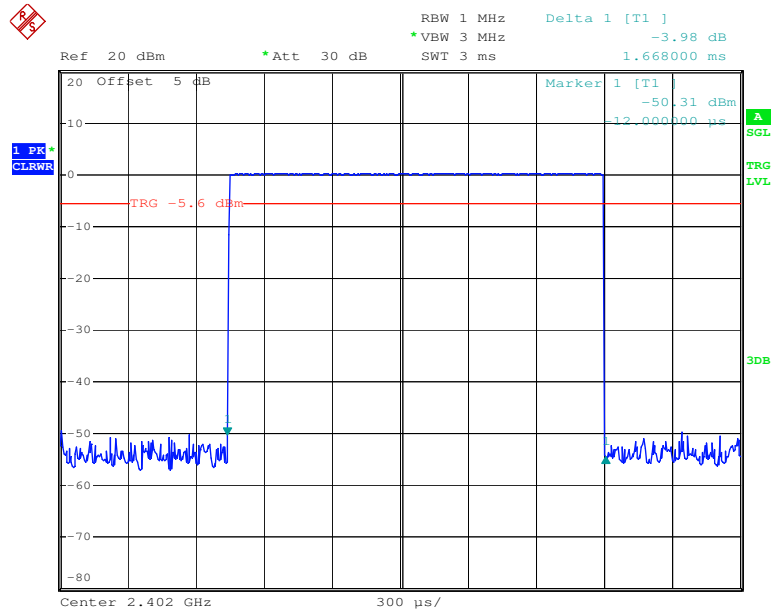
Date: 22.AUG.2016 17:14:51

DH1: High Channel



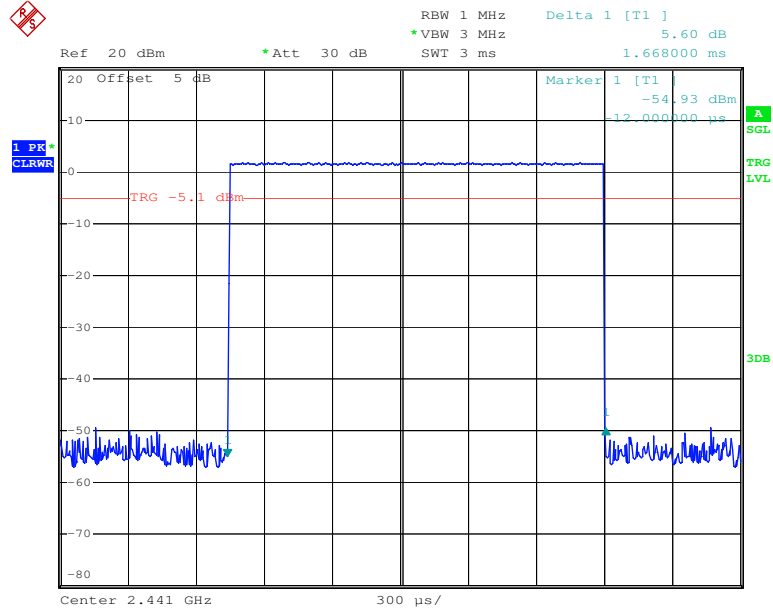
Date: 22.AUG.2016 17:15:03

DH3: Low Channel



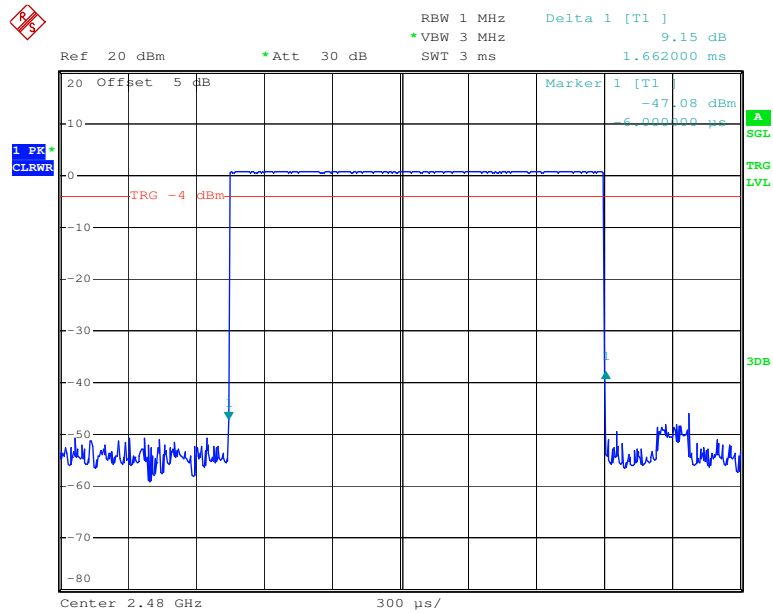
Date: 22.AUG.2016 17:15:54

DH3: Middle Channel



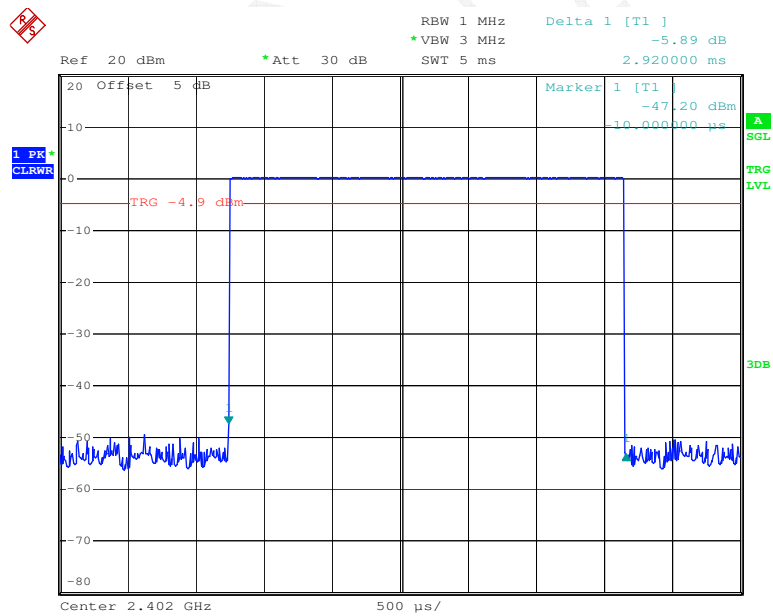
Date: 22.AUG.2016 17:16:02

DH3: High Channel



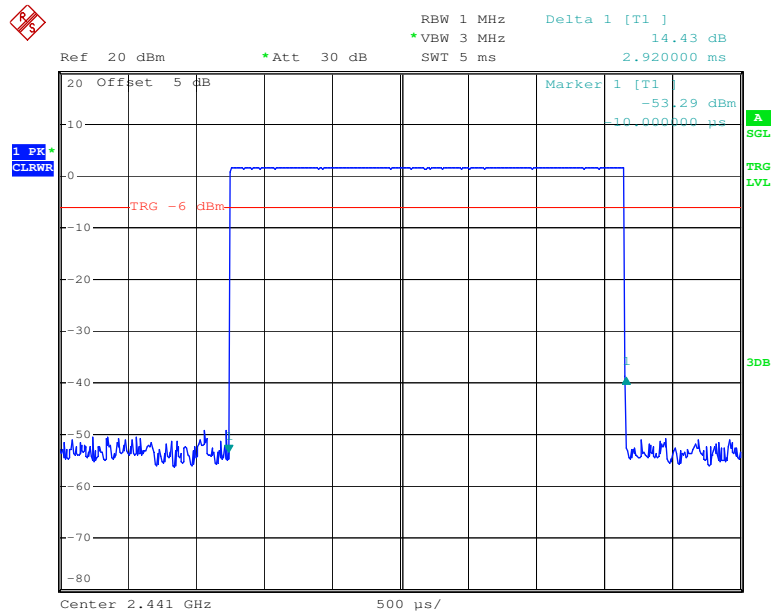
Date: 22.AUG.2016 17:16:11

DH5: Low Channel



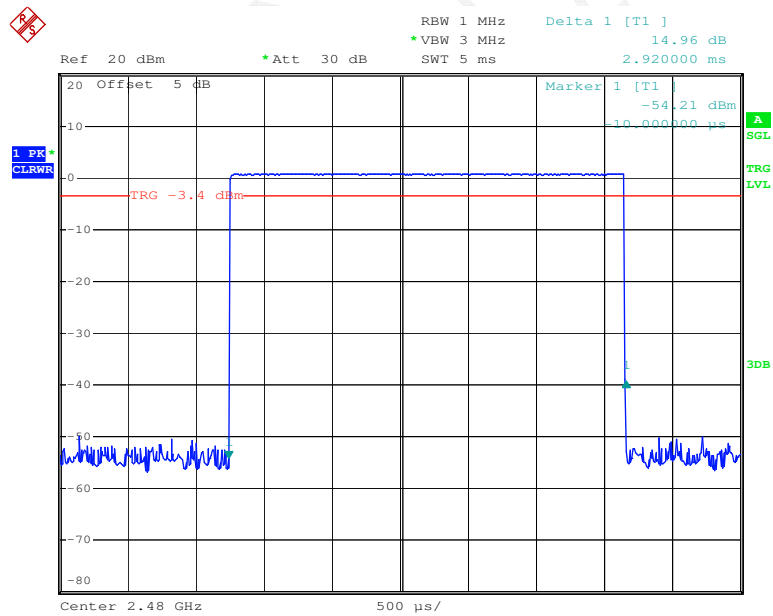
Date: 22.AUG.2016 17:17:16

DH5: Middle Channel



Date: 22.AUG.2016 17:20:47

DH5: High Channel

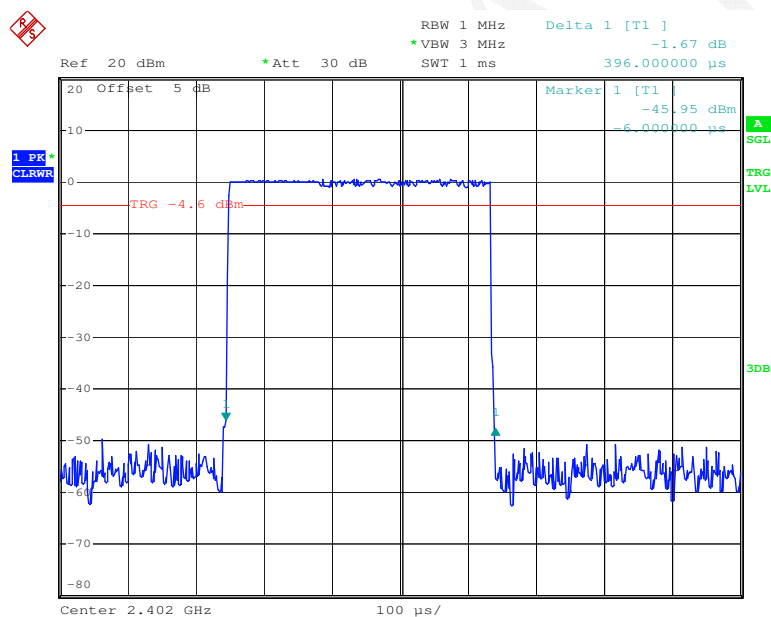


Date: 22.AUG.2016 17:17:34

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

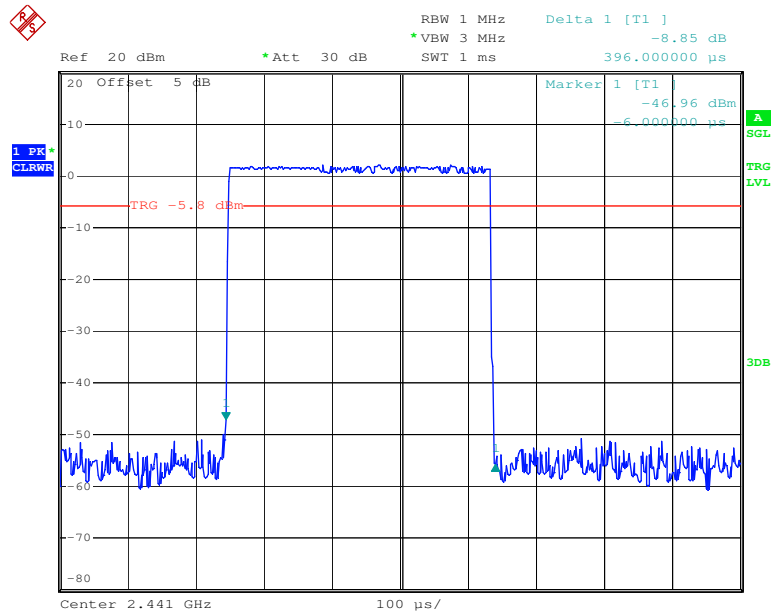
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
2DH1	Low	0.396	0.127	0.4	Compliance
	Middle	0.396	0.127	0.4	Compliance
	High	0.396	0.127	0.4	Compliance
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
2DH3	Low	1.662	0.266	0.4	Compliance
	Middle	1.662	0.265	0.4	Compliance
	High	1.662	0.266	0.4	Compliance
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
2DH5	Low	2.920	0.311	0.4	Compliance
	Middle	2.920	0.311	0.4	Compliance
	High	2.920	0.311	0.4	Compliance
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

2DH1: Low Channel



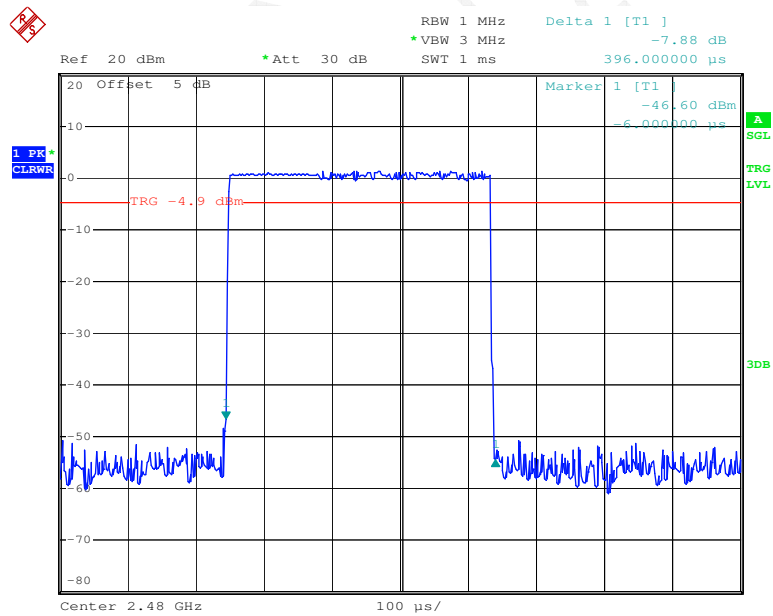
Date: 22.AUG.2016 17:05:46

2DH1: Middle Channel



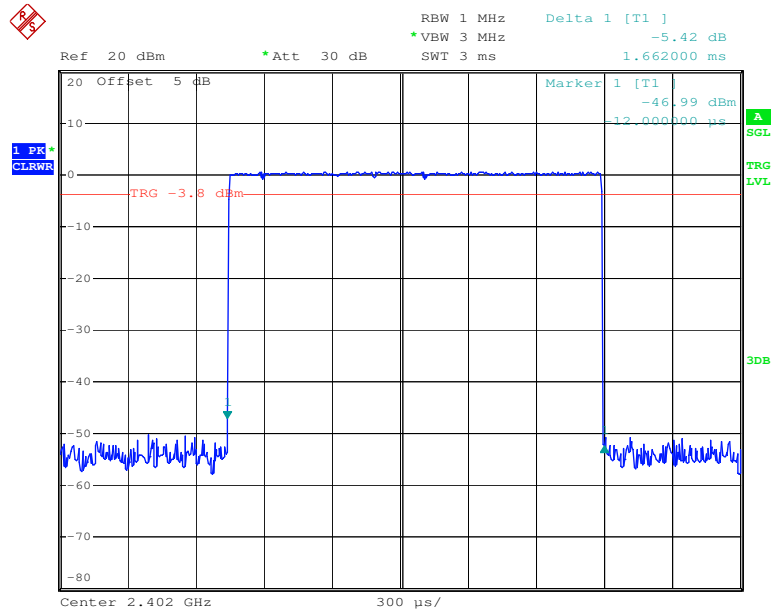
Date: 22.AUG.2016 17:06:01

2DH1: High Channel



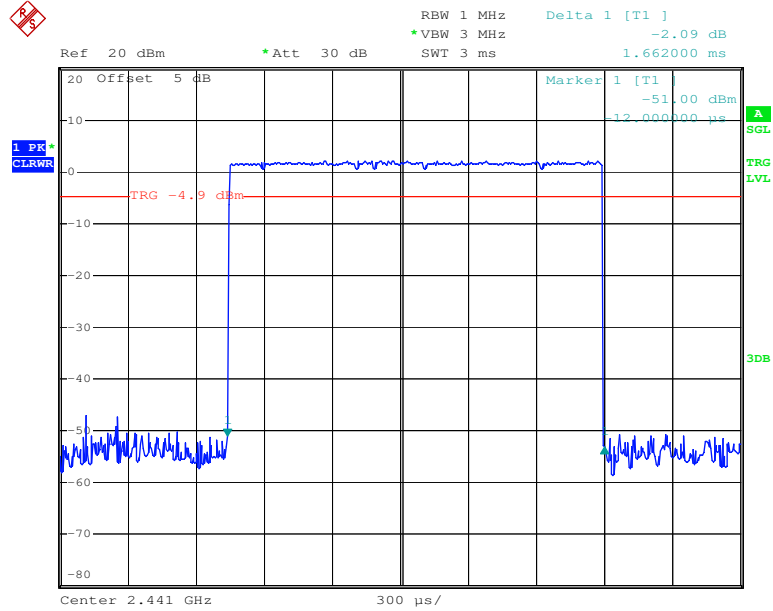
Date: 22.AUG.2016 17:06:13

2DH3: Low Channel



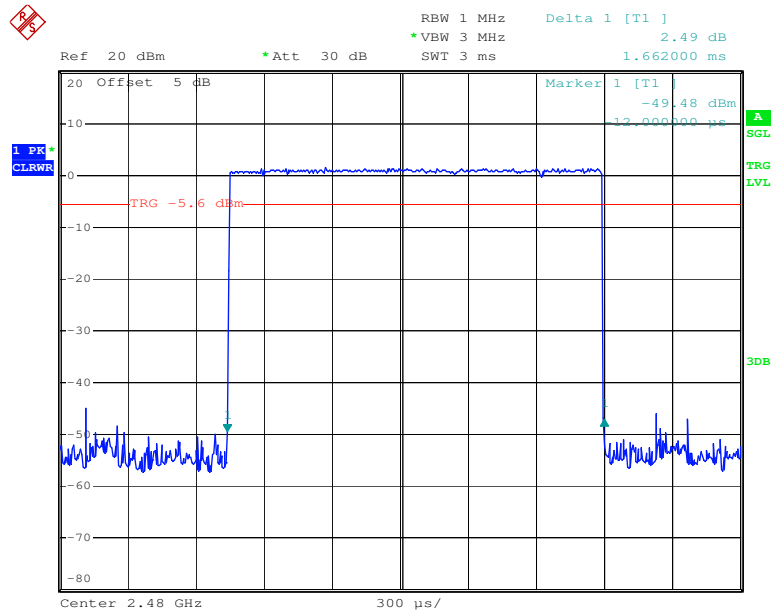
Date: 22.AUG.2016 17:10:15

2DH3: Middle Channel



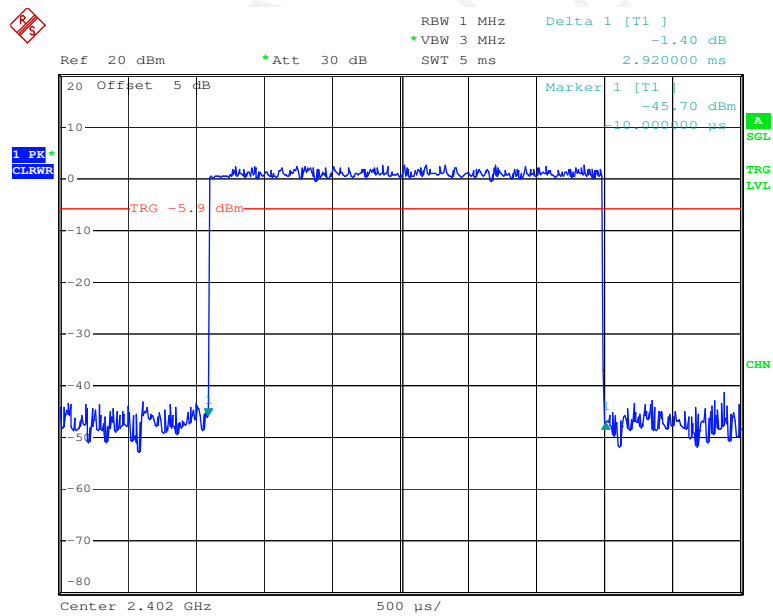
Date: 22.AUG.2016 17:10:46

2DH3: High Channel



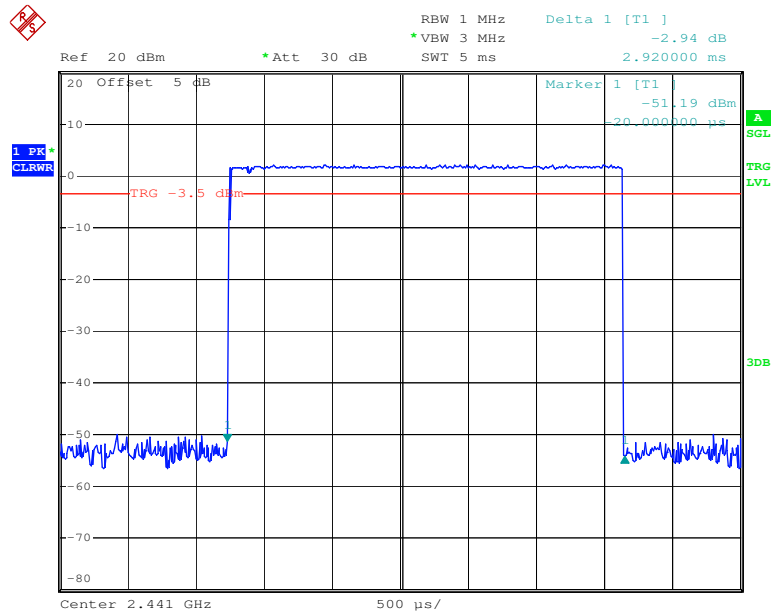
Date: 22.AUG.2016 17:10:54

2DH5: Low Channel



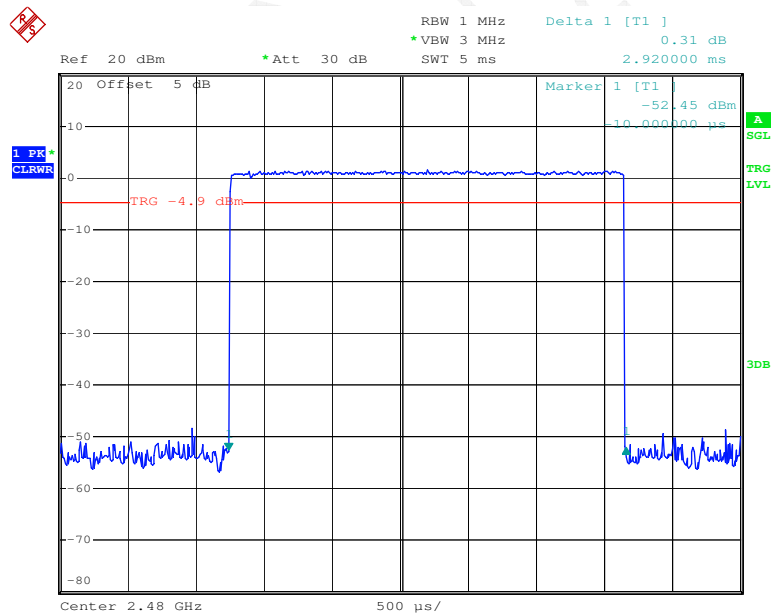
Date: 22.AUG.2016 17:32:14

2DH5: Middle Channel



Date: 22.AUG.2016 17:12:42

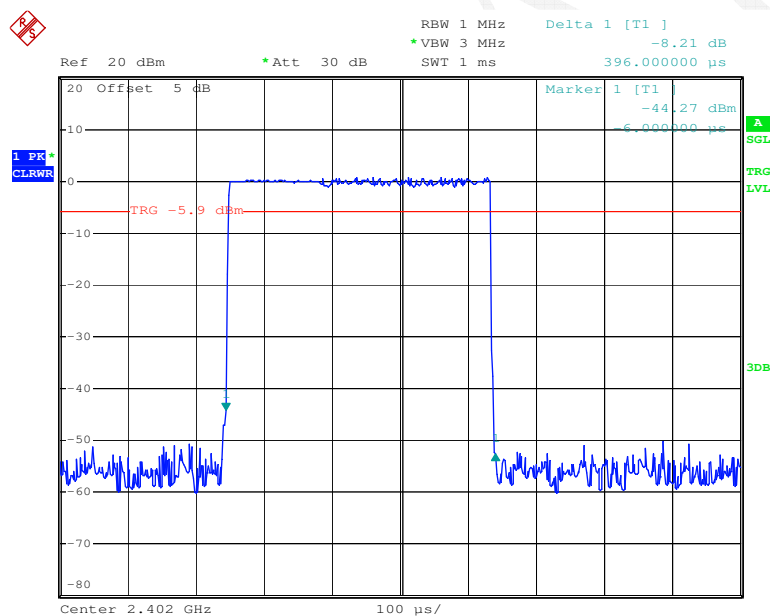
2DH5: High Channel



Date: 22.AUG.2016 17:13:05

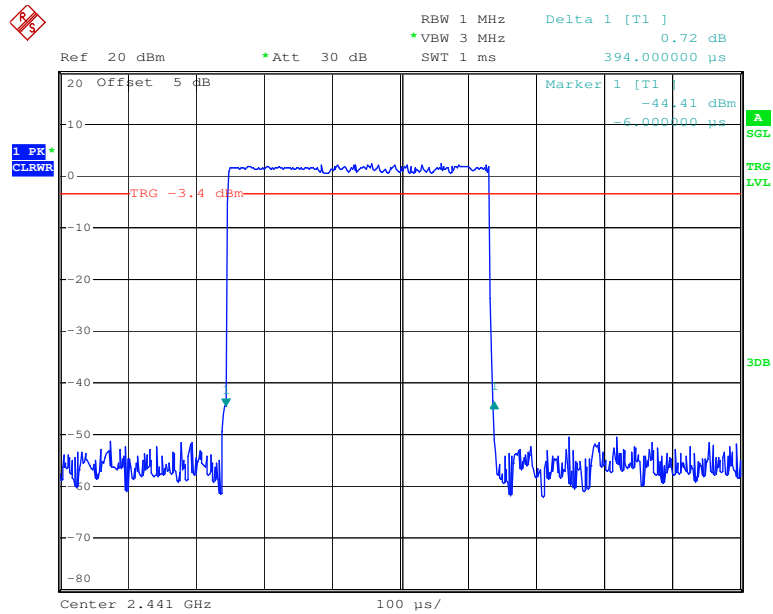
EDR Mode (8-DPSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
3DH1	Low	0.396	0.127	0.4	Compliance
	Middle	0.394	0.126	0.4	Compliance
	High	0.394	0.126	0.4	Compliance
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
3DH3	Low	1.662	0.266	0.4	Compliance
	Middle	1.656	0.265	0.4	Compliance
	High	1.656	0.265	0.4	Compliance
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
3DH5	Low	2.920	0.310	0.4	Compliance
	Middle	2.920	0.311	0.4	Compliance
	High	2.920	0.311	0.4	Compliance
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

3DH1: Low Channel

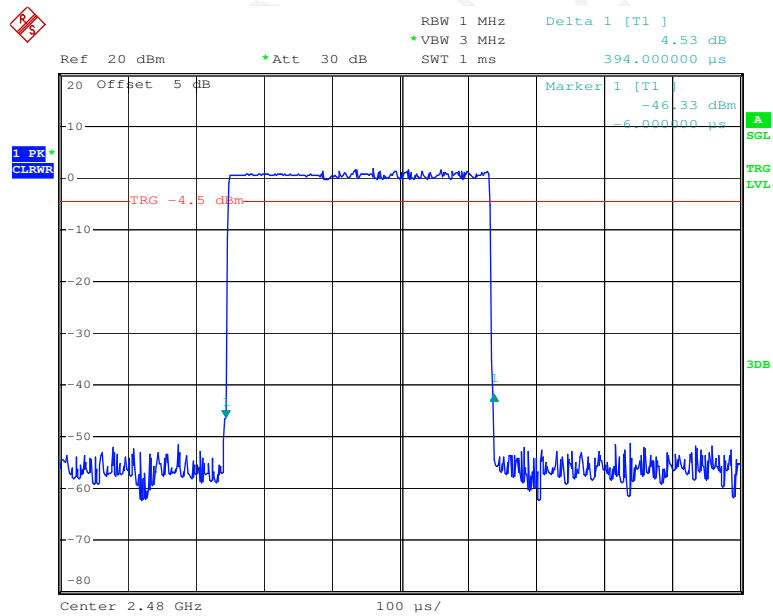
Date: 22.AUG.2016 17:01:05

3DH1: Middle Channel



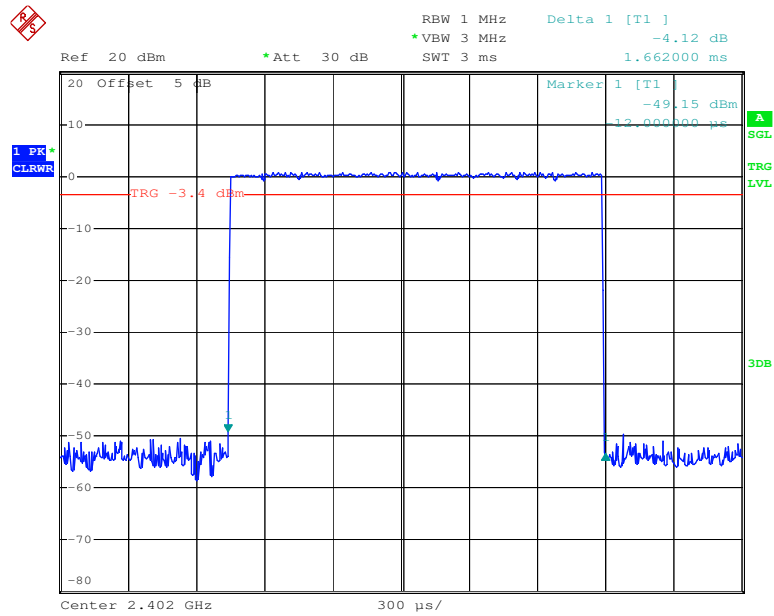
Date: 22.AUG.2016 17:01:17

3DH1: High Channel



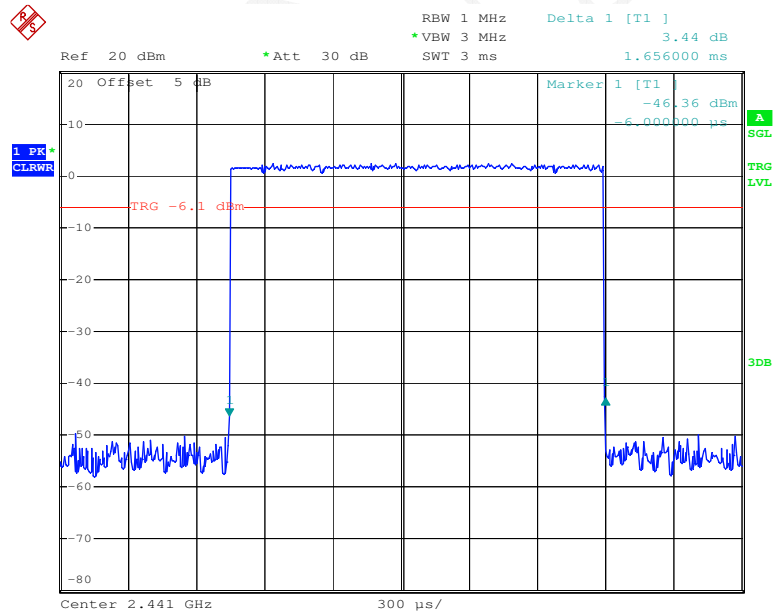
Date: 22.AUG.2016 17:01:28

3DH3: Low Channel



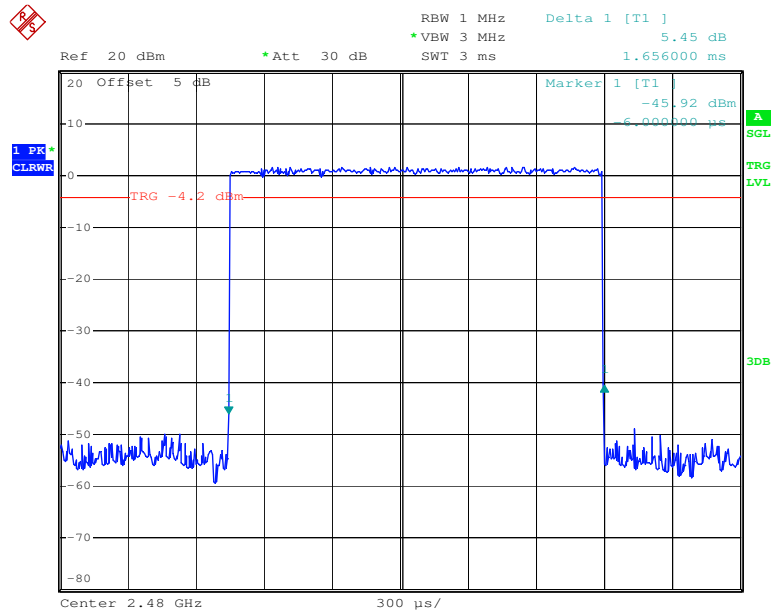
Date: 22.AUG.2016 17:02:20

3DH3: Middle Channel



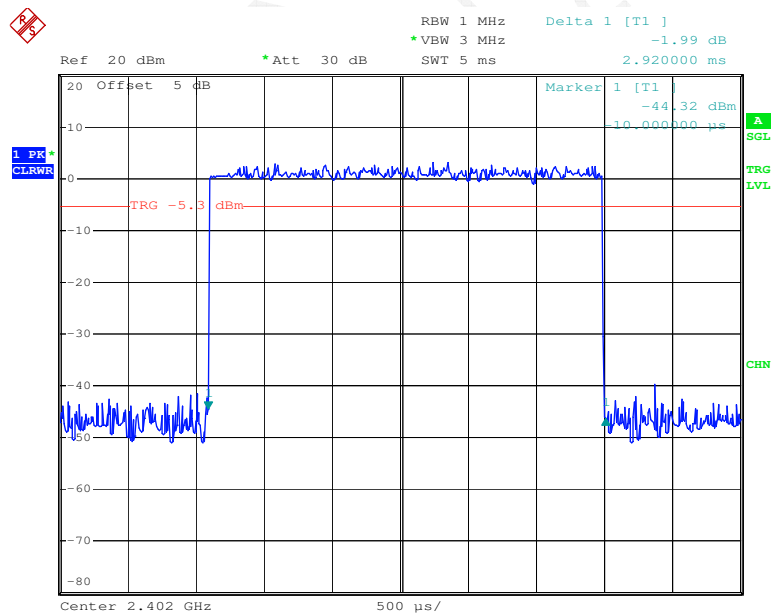
Date: 22.AUG.2016 17:02:29

3DH3: High Channel



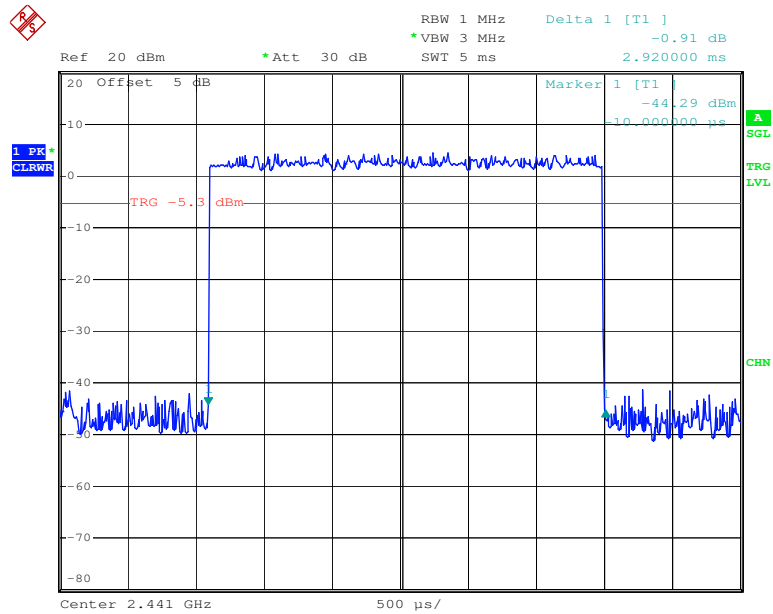
Date: 22.AUG.2016 17:02:37

3DH5: Low Channel



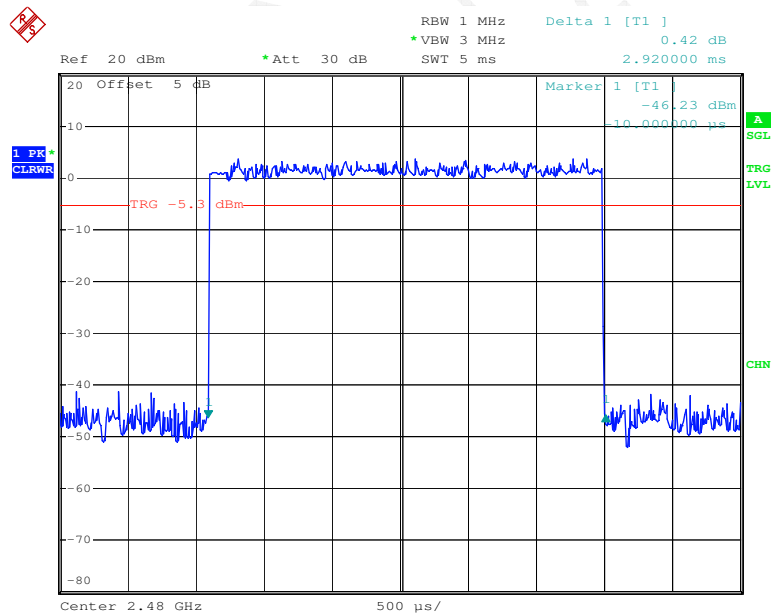
Date: 22.AUG.2016 17:29:54

3DH5: Middle Channel



Date: 22.AUG.2016 17:30:24

3DH5: High Channel



Date: 22.AUG.2016 17:30:37

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
NARDA	Attenuator	769-6	2754	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:	28.4 °C
Relative Humidity:	46 %
ATM Pressure:	99.7 kPa

The testing was performed by Allen Qiao on 2016-08-22.

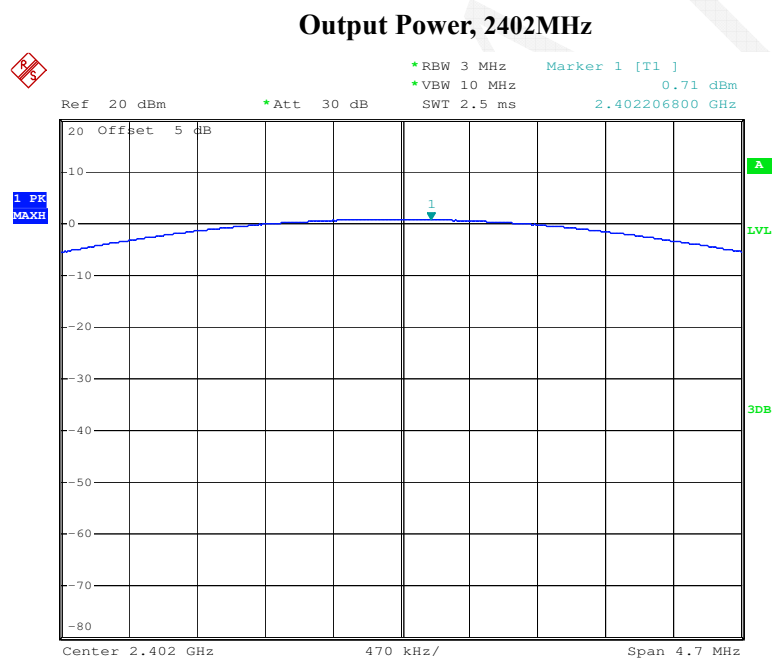
Test Result: Compliance.

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Output power (dBm)	Limit (dBm)
BDR Mode (GFSK)	Low	2402	0.71	30
	Middle	2441	2.05	30
	High	2480	1.17	30
EDR Mode ($\pi/4$ -DQPSK)	Low	2402	1.29	30
	Middle	2441	2.73	30
	High	2480	2.15	30
EDR Mode (8-DPSK)	Low	2402	1.41	30
	Middle	2441	2.88	30
	High	2480	2.27	30

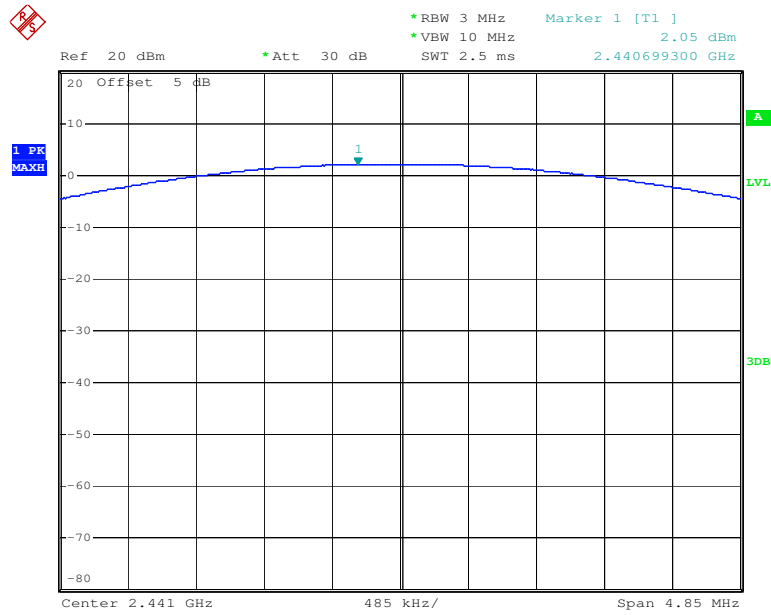
Note: The data above was tested in conducted mode.

BDR Mode (GFSK):



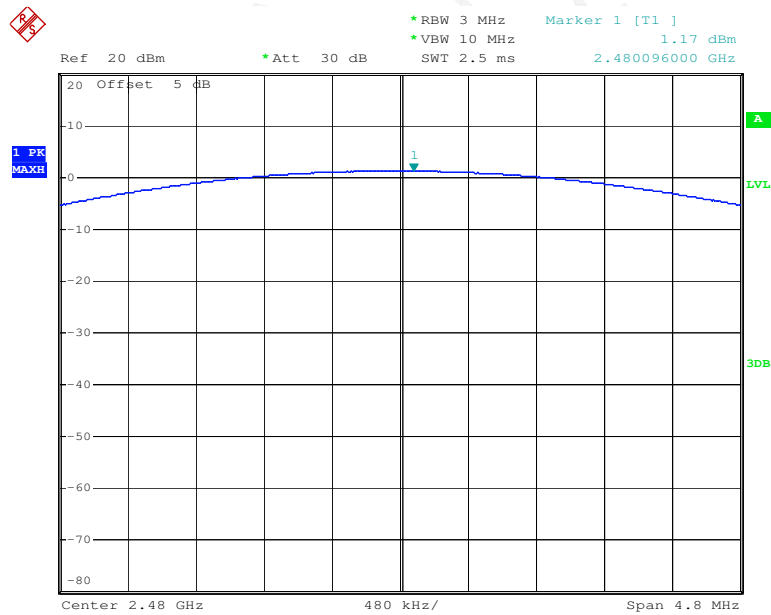
Date: 22.AUG.2016 16:08:54

Output Power, 2441MHz



Date: 22.AUG.2016 15:55:05

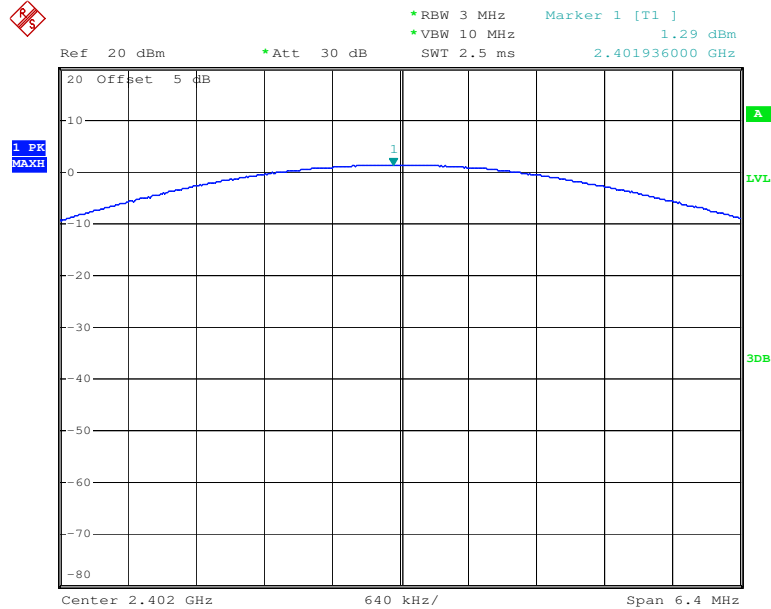
Output Power, 2480MHz



Date: 22.AUG.2016 15:56:23

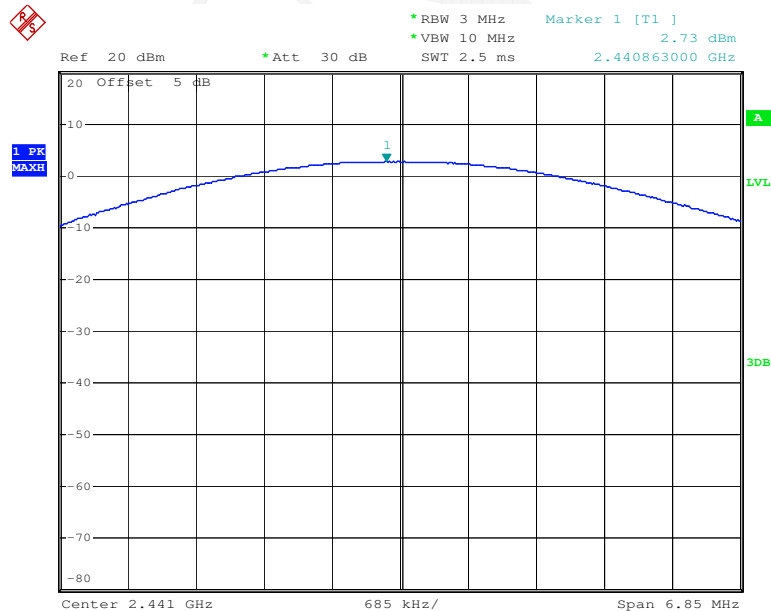
EDR Mode ($\pi/4$ -DQPSK):

Output Power, 2402MHz



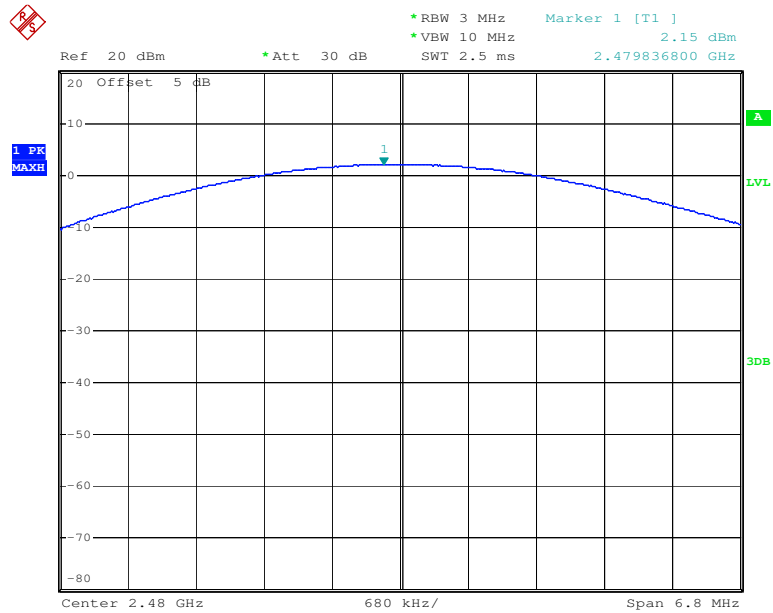
Date: 22.AUG.2016 15:58:45

Output Power, 2441MHz



Date: 22.AUG.2016 16:00:25

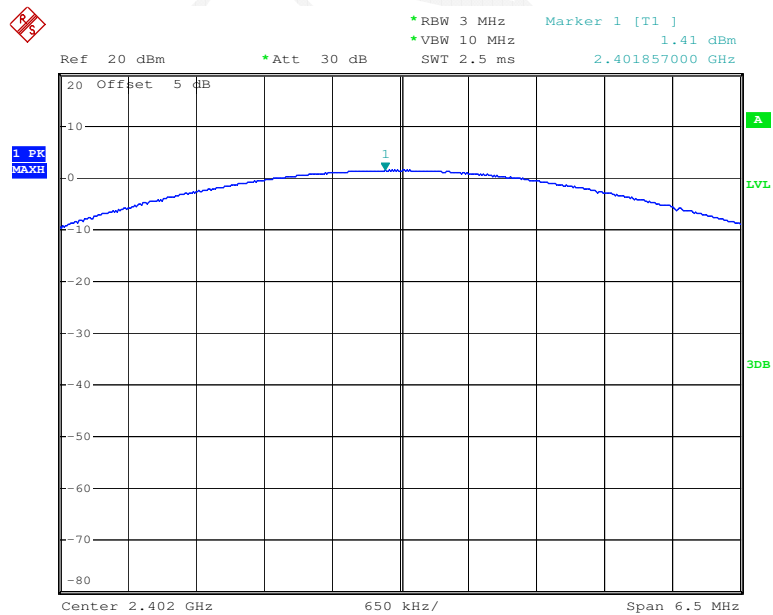
Output Power, 2480MHz



Date: 22.AUG.2016 16:02:01

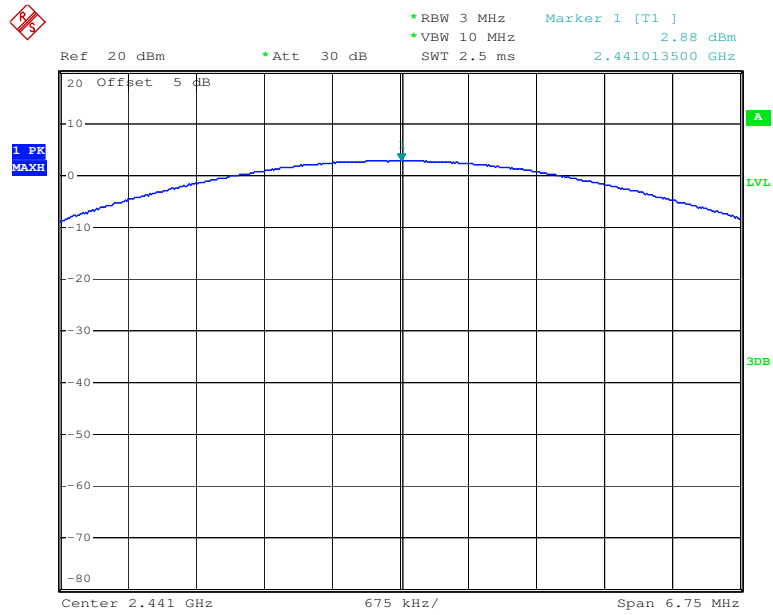
EDR Mode (8-DPSK):

Output Power, 2402MHz



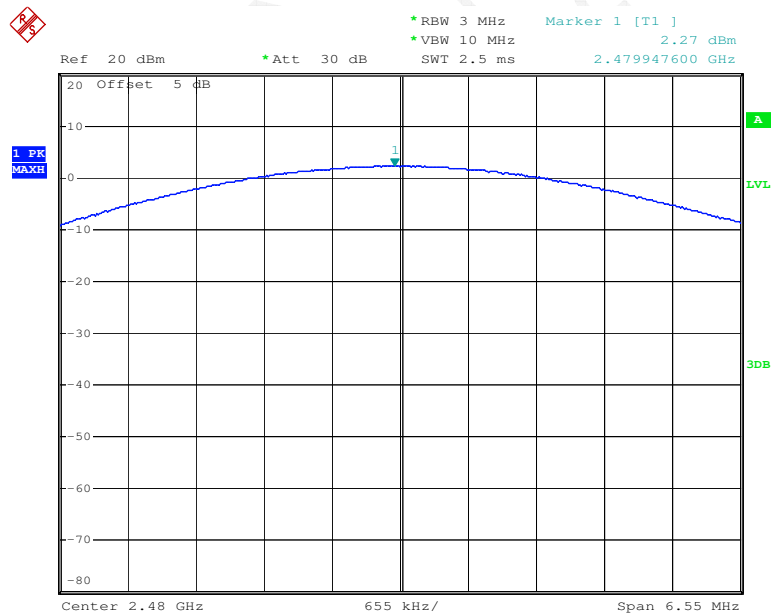
Date: 22.AUG.2016 16:04:08

Output Power, 2441MHz



Date: 22.AUG.2016 16:05:41

Output Power, 2480MHz



Date: 22.AUG.2016 16:07:03

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
NARDA	Attenuator	769-6	2754	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06

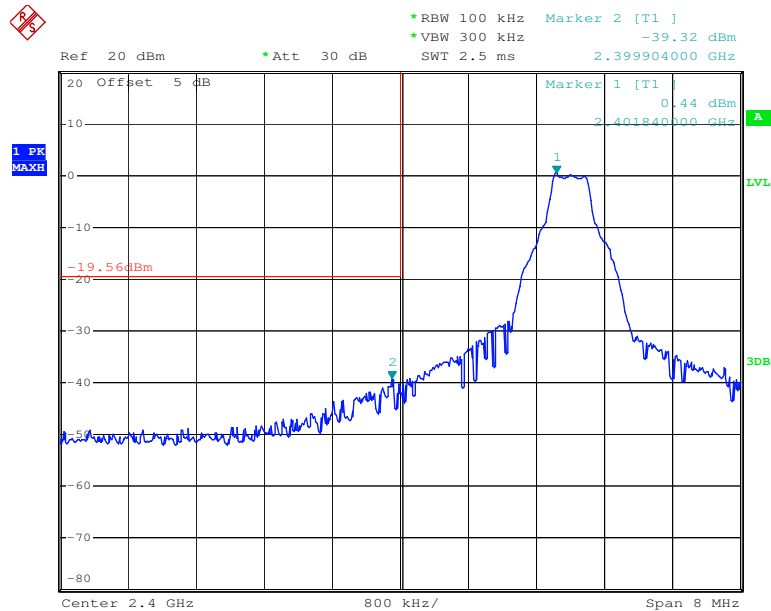
* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

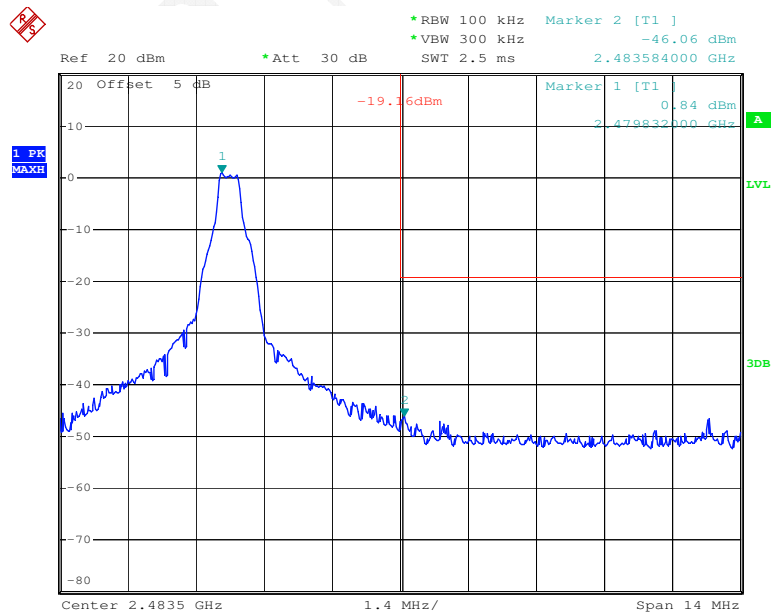
Environmental Conditions

Temperature:	28.4 °C
Relative Humidity:	46 %
ATM Pressure:	99.7 kPa

The testing was performed by Allen Qiao on 2016-08-22.

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

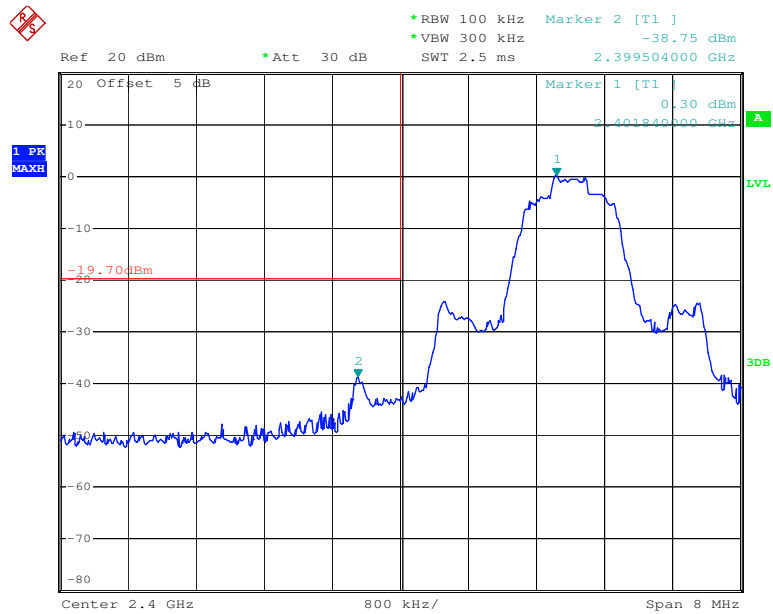
Date: 22.AUG.2016 16:09:13

Band Edge, Right Side

Date: 22.AUG.2016 15:56:41

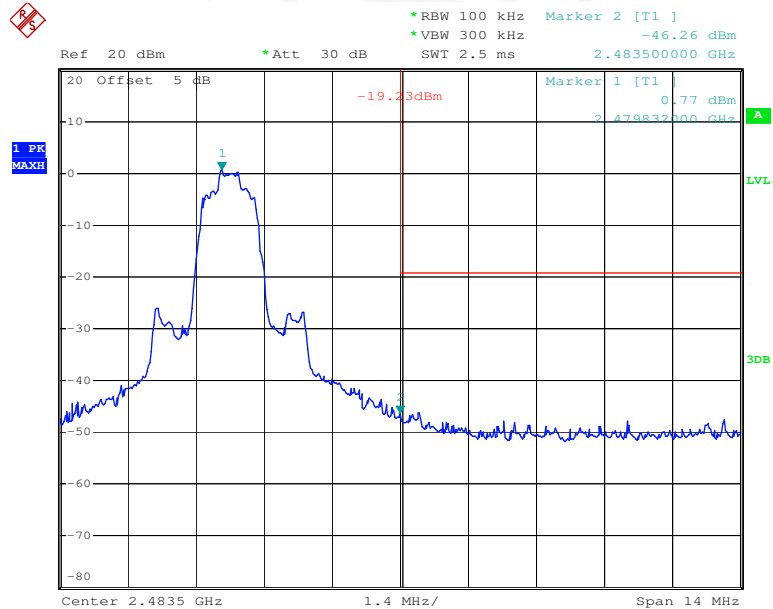
EDR Mode ($\pi/4$ -DQPSK):

Band Edge, Left Side



Date: 22.AUG.2016 15:59:03

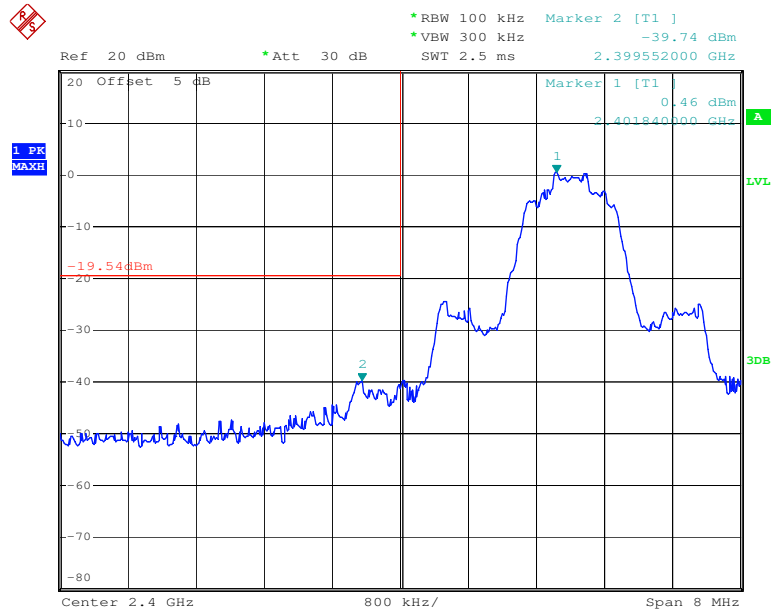
Band Edge, Right Side



Date: 22.AUG.2016 16:02:32

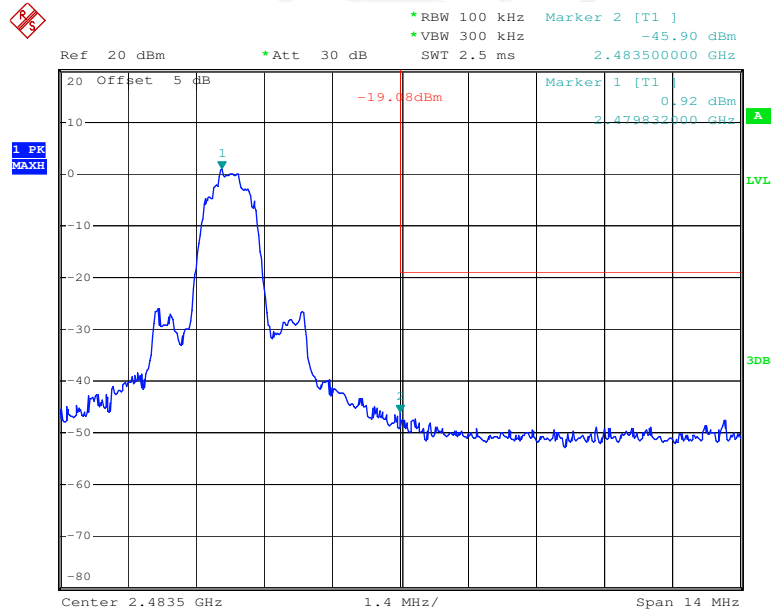
EDR Mode (8-DPSK):

Band Edge, Left Side



Date: 22.AUG.2016 16:04:25

Band Edge, Right Side



Date: 22.AUG.2016 16:07:21

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