

FCC PART 15.247 TEST REPORT

For

Airsound Technologies Limited

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FCC ID: 2AA8C-M10-01

Report Type: Original Report	Product Type: Compact Spatial Soundbar with Bluetooth and Wireless Subwoofer
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Airsound Technologies Limited* 's product, model number: *M10 (FCC ID: 2AA8C-M10-01)* (the "EUT") in this report was a *Compact Spatial Soundbar with Bluetooth and Wireless Subwoofer*, M10 was measured approximately: 50.0 cm (L) x 9.9 cm (W) x 8.8 cm (H), M9 was measured approximately: 30.0 cm (L) x 9.6 cm (W) x 9.7 cm (H), M12 was measured approximately: 60.0 cm (L) x 9.6 cm (W) x 9.7 cm (H), rated input voltage: DC 22V from adapter.

#1 Adapter Information:

Model: KSAS0652200250M2

Input: AC 100-240V 50/60Hz 1.2A

Output: DC 22V, 2.5A

#2 Adapter Information:

Model: SKF2200250Y1BA

Input: AC 100-240V 50/60Hz 1.3A

Output: DC 22V, 2.5A

Note: The series product, model M9, M10, M12 are electrically identical, the difference between them are the model name, enclosure shape and dimension, we selected M10 for fully testing, the details was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 140314005 (Assigned by BACL.Dongguan). The EUT was received on 2014-03-18.*

Objective

This report is prepared on behalf of *Airsound Technologies 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 15C DXT submissions with FCC ID: *2AA8C-M10-01*.

Test Methodology

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

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

Test Facility

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

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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

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



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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

EUT Exercise Software

The software “CSR BlueSuite 2.50” was used for testing, which was provided by manufacturer. The worst condition (maximum power) was setting by the software as following table:

Test Software Version	CSR BlueSuite 2.50		
Test Frequency	2402MHz	2441MHz	2480MHz
GFSK	63	63	63
$\pi/4$ -DPSK	100	100	100
8-DPSK	100	100	100

Equipment Modifications

No modification was made to the EUT.

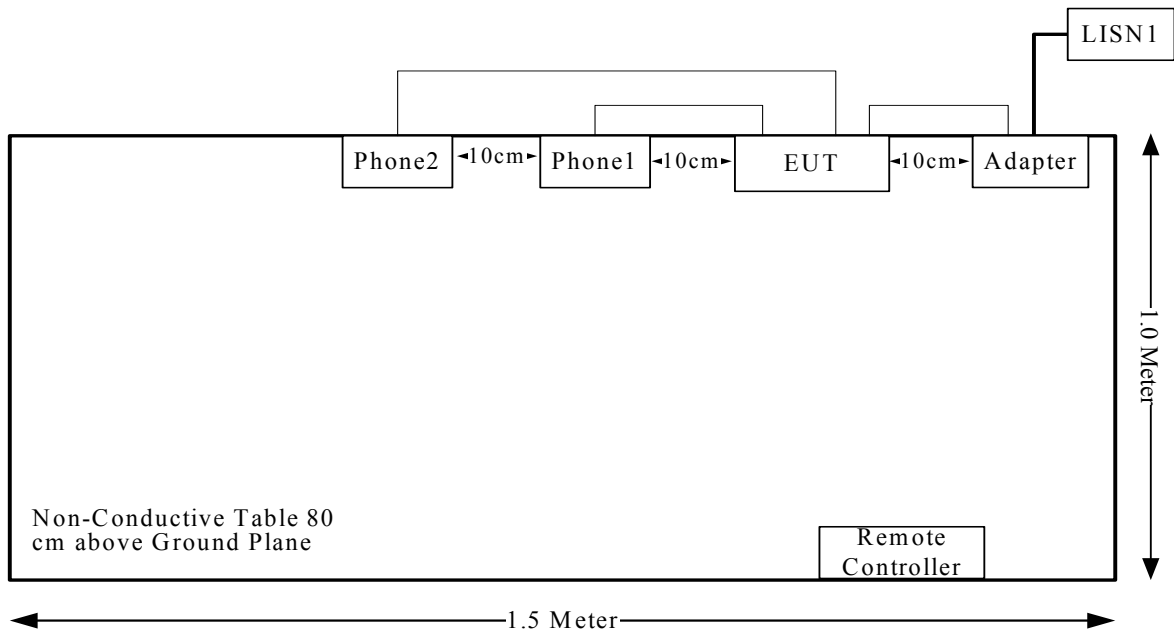
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
HUAWEI	Phone1	C8813D	-
SUMSANG	Phone2	I9220	-

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Audio in line	No	No	1.5	Audio port of phone	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Radiated Emissions	Compliance
§15.247 (a)(1)	20 dB Bandwidth	Compliance
§15.247(a)(1)	Channel Separation Test	Compliance
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance
§15.247(b)(1)	Peak Output Power Measurement	Compliance
§15.247(d)	Band Edges	Compliance

FCC §15.247 (i) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

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

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

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

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

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

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

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
GFSK	2402	-0.54	0.88	4.27	2.673	20.00	0.000468	1.0
$\pi/4$ -DQPSK	2480	-0.54	0.88	2.87	1.936	20.00	0.000339	1.0
8DPSK	2402	-0.54	0.88	3.03	2.009	20.00	0.000352	1.0

Result: The device meet FCC MPE at 20 cm distance

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

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

Antenna Connector Construction

The EUT has one integral antenna arrangement for bluetooth which was permanently attached and the antenna gain is -0.54 dBi, fulfill the requirement of this section. Please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

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

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

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

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

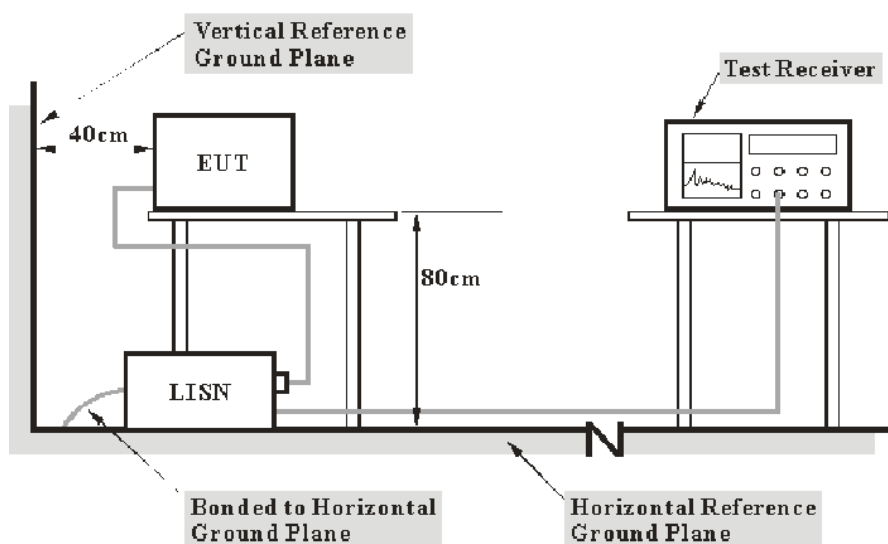
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

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

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

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

The equation for margin calculation is as follows:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2013-11-20	2014-11-19
R&S	Two-line V-network	ENV216	3560.6550.12	2014-01-22	2015-01-21
R&S	L.I.S.N	ESH3-Z5	100113	N/A	N/A
BACL	Test Software	BACL-EMC	V1.0-2010	N/A	N/A

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

5.04 dB at 0.385 MHz in the **Neutral** conducted mode for adapter: KSAS0652200250M2

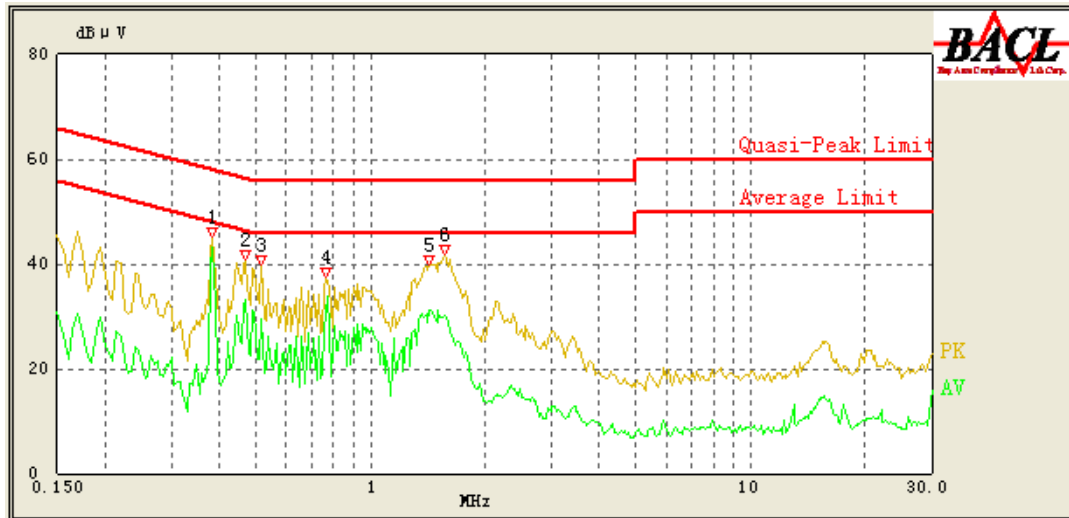
Test Data**Environmental Conditions**

Temperature:	21.5 °C
Relative Humidity:	40 %
ATM Pressure:	101.7 kPa

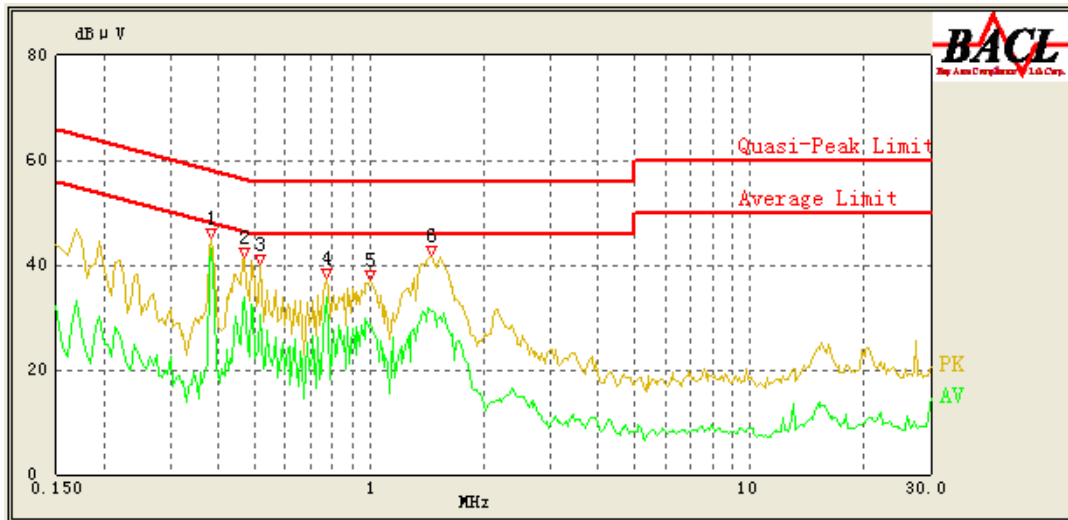
The testing was performed by Ares Liu on 2014-03-21.

Test Mode: Transmitting (Adapter: KSAS0652200250M2)

AC120 V, 60 Hz, Line:



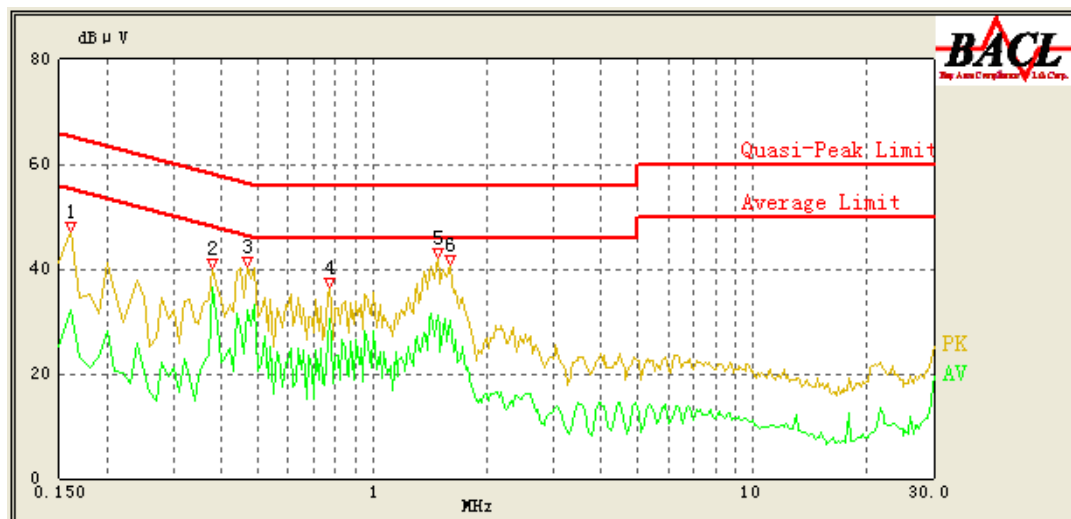
Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.385	44.54	10.05	58.17	13.63	QP
0.385	43.02	10.05	48.17	5.15	AV
0.470	38.20	9.97	56.51	18.31	QP
0.470	33.09	9.97	46.51	13.42	AV
0.515	35.98	9.94	56.00	20.02	QP
0.515	29.61	9.94	46.00	16.39	AV
0.765	35.29	9.80	56.00	20.71	QP
0.770	33.79	9.80	46.00	12.21	AV
1.430	37.09	9.72	56.00	18.91	QP
1.430	31.16	9.72	46.00	14.84	AV
1.575	38.07	9.72	56.00	17.93	QP
1.575	30.16	9.72	46.00	15.84	AV

AC120 V, 60 Hz, Neutral:

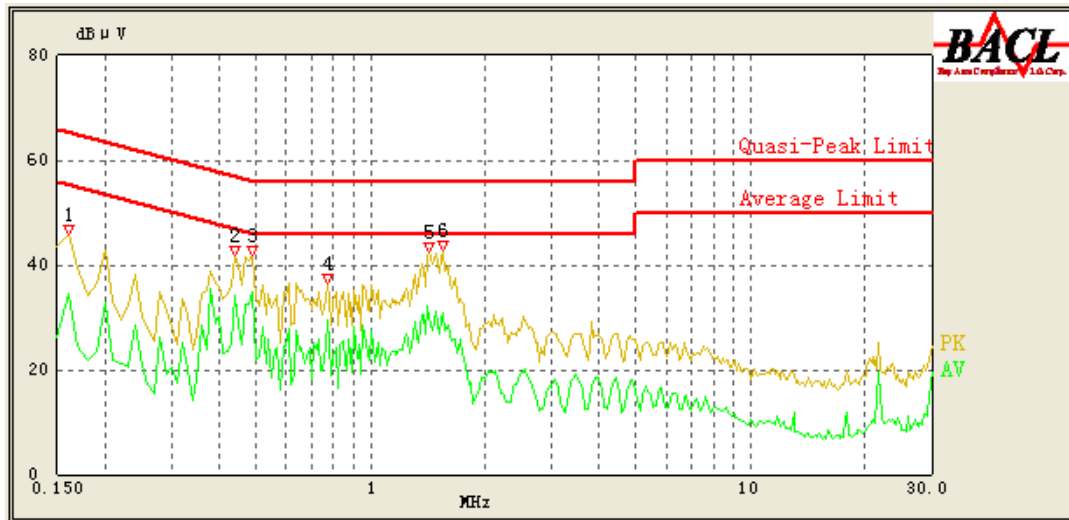
Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.385	44.85	10.28	58.17	13.32	QP
0.385	43.13	10.28	48.17	5.04	AV
0.470	39.02	10.03	56.51	17.49	QP
0.470	33.68	10.03	46.51	12.83	AV
0.515	37.46	9.94	56.00	18.54	QP
0.515	30.52	9.94	46.00	15.48	AV
0.770	35.46	9.82	56.00	20.54	QP
0.770	33.85	9.82	46.00	12.15	AV
1.000	34.28	9.82	56.00	21.72	QP
1.000	28.79	9.82	46.00	17.21	AV
1.455	37.61	9.77	56.00	18.39	QP
1.455	31.21	9.77	46.00	14.79	AV

Test Mode: Transmitting (Adapter: SKF2200250Y1BA)

AC120 V, 60 Hz, Line:



Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.160	44.69	9.65	65.46	20.77	QP
0.160	32.22	9.65	55.46	23.24	AV
0.380	37.63	10.05	58.28	20.65	QP
0.380	36.36	10.05	48.28	11.92	AV
0.470	38.71	9.97	56.51	17.80	QP
0.470	32.26	9.97	46.51	14.25	AV
0.770	34.11	9.80	56.00	21.89	QP
0.770	30.65	9.80	46.00	15.35	AV
1.480	37.71	9.72	56.00	18.29	QP
1.480	31.10	9.72	46.00	14.90	AV
1.600	36.95	9.72	56.00	19.05	QP
1.600	30.24	9.72	46.00	15.76	AV

AC120 V, 60 Hz, Neutral:

Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.160	44.67	9.93	65.46	20.79	QP
0.160	34.56	9.93	55.46	20.90	AV
0.440	37.00	10.12	57.06	20.06	QP
0.440	34.10	10.12	47.06	12.96	AV
0.490	38.31	9.98	56.17	17.86	QP
0.490	34.68	9.98	46.17	11.49	AV
0.770	34.39	9.82	56.00	21.61	QP
0.770	29.64	9.82	46.00	16.36	AV
1.430	38.65	9.78	56.00	17.35	QP
1.430	30.32	9.78	46.00	15.68	AV
1.550	37.98	9.77	56.00	18.02	QP
1.550	30.85	9.77	46.00	15.15	AV

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

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

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

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

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

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

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

1G~6GHz: 4.45 dB

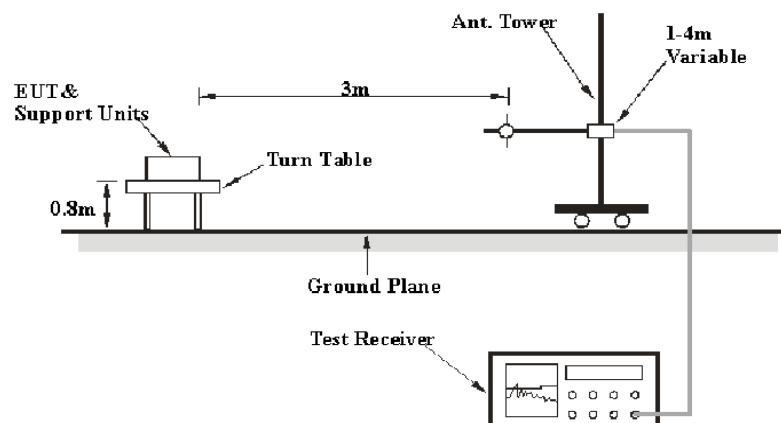
6G~18GHz: 5.23 dB

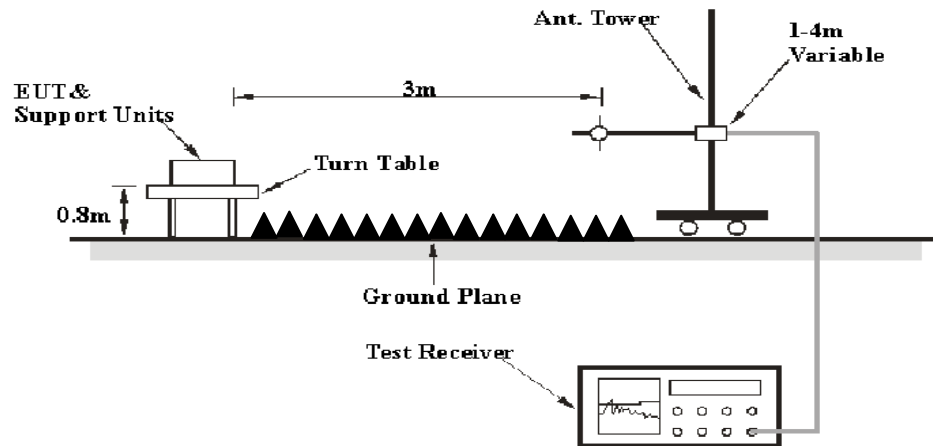
Table 1 – Values of U_{cisp}

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

EUT Setup

Below 1GHz:



Above 1GHz:

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

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

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

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

Test Procedure

For the radiated emissions test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz - 1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2013-05-06	2014-05-05
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-05
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-18
R&S	Spectrum Analyzer	FSP 38	100478	2013-06-16	2014-06-15
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2013-06-16	2014-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2013-09-06	2014-09-05

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

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

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

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

Test Results Summary

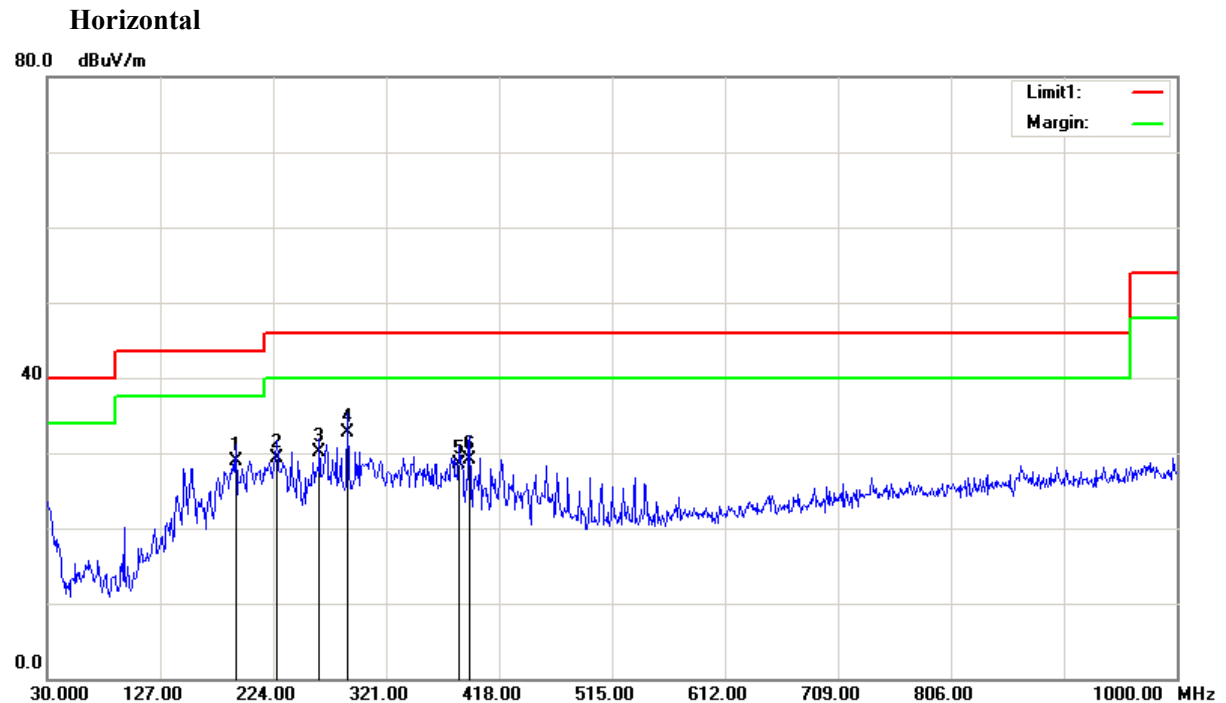
According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, and section 15.205, 15.209 and 15.247, with the worst margin reading of:

6.60 dB at 36.7900 MHz in the Vertical polarization for Adapter: SKF2200250Y1BA

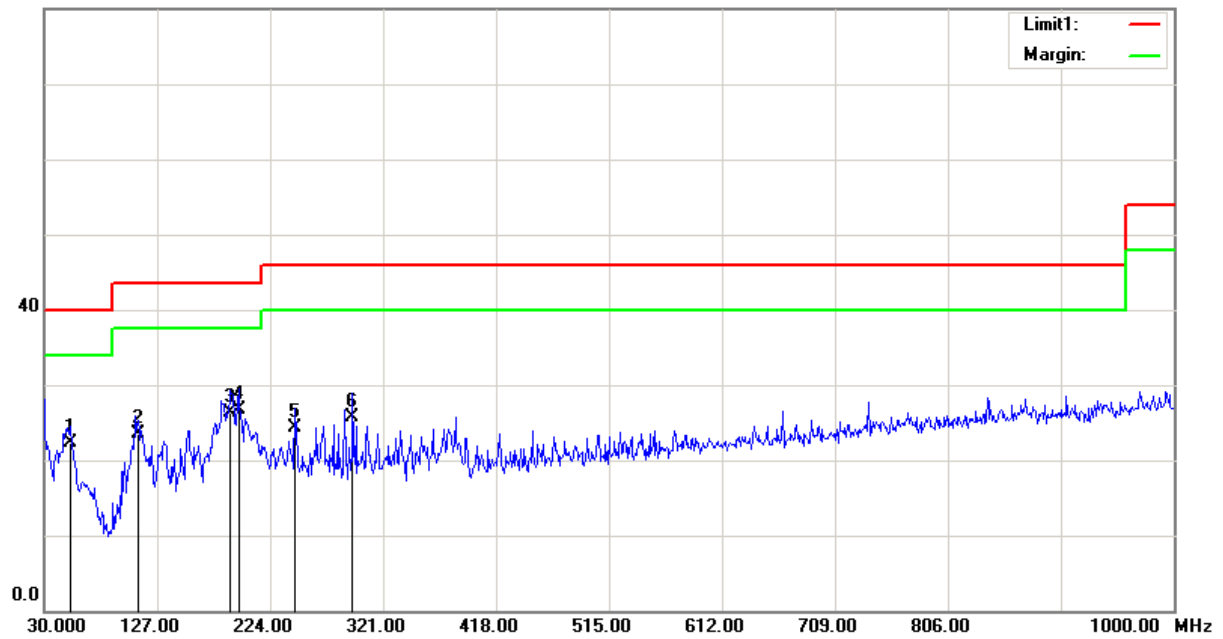
Test Data**Environmental Conditions**

Temperature:	22.6 °C
Relative Humidity:	70 %
ATM Pressure:	100.8 kPa

* The testing was performed by Ares Liu on 2014-03-19.

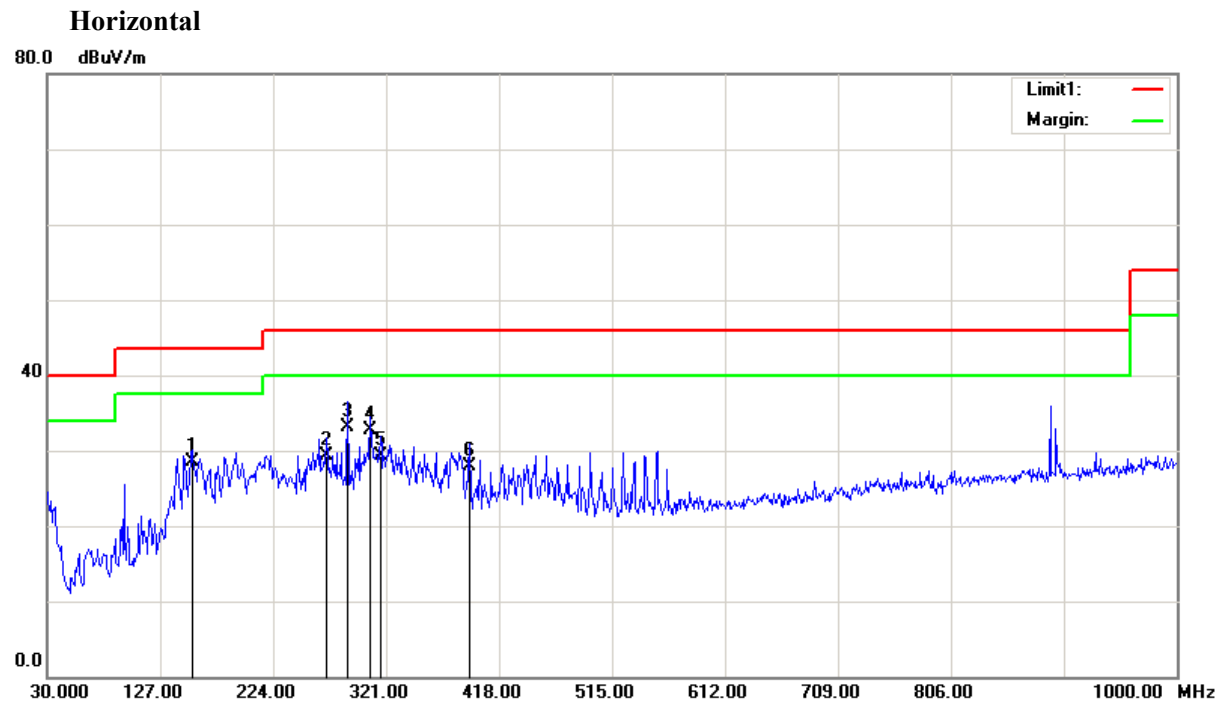
1) Below 1GHz*Mode: Transmitting (Adapter: KSAS0652200250M2)*

Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
191.9900	37.13	QP	-8.23	28.90	43.50	14.60
226.9100	37.32	QP	-8.02	29.30	46.00	16.70
263.7700	36.44	QP	-6.34	30.10	46.00	15.90
288.0200	38.40	QP	-5.70	32.70	46.00	13.30
383.0800	32.33	QP	-3.73	28.60	46.00	17.40
392.7800	32.71	QP	-3.61	29.10	46.00	16.90

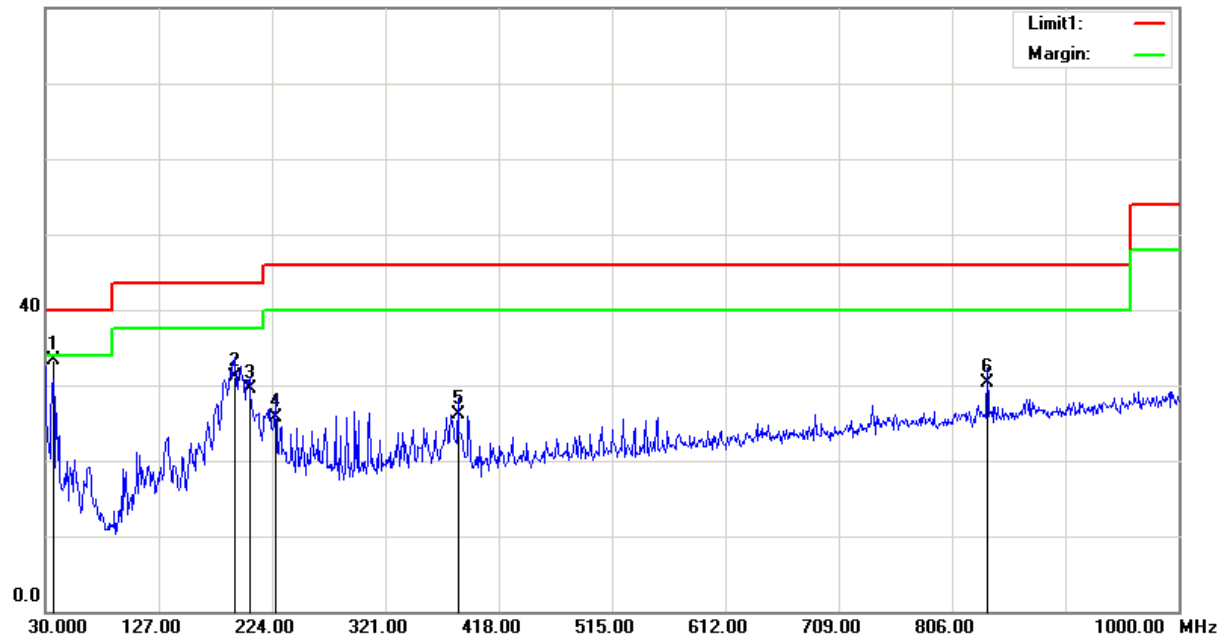
Vertical80.0 dB μ V/m

Frequency (MHz)	Receiver Reading (dB μ V)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
52.3100	34.73	QP	-12.43	22.30	40.00	17.70
110.5100	30.69	QP	-7.09	23.60	43.50	19.90
190.0500	34.72	QP	-8.42	26.30	43.50	17.20
196.8400	34.25	QP	-7.55	26.70	43.50	16.80
245.3400	31.85	QP	-7.55	24.30	46.00	21.70
294.8100	31.42	QP	-5.62	25.80	46.00	20.20

Mode: Transmitting (Adapter: SKF2200250Y1BA)



Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
154.1600	35.85	QP	-7.25	28.60	43.50	14.90
269.5900	35.50	QP	-6.10	29.40	46.00	16.60
288.0200	38.80	QP	-5.70	33.10	46.00	12.90
307.4200	38.16	QP	-5.46	32.70	46.00	13.30
316.1500	34.49	QP	-5.19	29.30	46.00	16.70
392.7800	31.51	QP	-3.61	27.90	46.00	18.10

Vertical80.0 dB μ V/m

Frequency (MHz)	Receiver Reading (dB μ V)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
36.7900	37.19	QP	-3.79	33.40	40.00	6.60
191.9900	39.33	QP	-8.23	31.10	43.50	12.40
204.6000	37.50	QP	-8.00	29.50	43.50	14.00
226.9100	33.82	QP	-8.02	25.80	46.00	20.20
383.0800	29.83	QP	-3.73	26.10	46.00	19.90
836.0700	27.06	QP	3.34	30.40	46.00	15.60

2) Above 1GHz:*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/m)				Limit (dBµV/m)	Margin (dB)
Low Channel: 2402(MHz)									
2402	93.85	PK	H	25.65	4.42	27.32	96.60	N/A	N/A
2402	47.99	AV	H	25.65	4.42	27.32	50.74	N/A	N/A
2402	93.57	PK	V	25.65	4.42	27.32	96.32	N/A	N/A
2402	48.96	AV	V	25.65	4.42	27.32	51.71	N/A	N/A
4804	46.08	PK	V	30.59	5.98	27.41	55.24	74.00	18.76
4804	29.54	AV	V	30.59	5.98	27.41	38.70	54.00	15.30
7206	35.06	PK	V	34.09	7.45	25.91	50.69	74.00	23.31
7206	22.71	AV	V	34.09	7.45	25.91	38.34	54.00	15.66
2390	37.3	PK	V	25.61	4.39	27.32	39.98	74.00	34.02
2390	23.47	AV	V	25.61	4.39	27.32	26.15	54.00	27.85
2489	35.13	PK	H	25.87	4.50	27.36	38.14	74.00	35.86
2489	21.01	AV	H	25.87	4.50	27.36	24.02	54.00	29.98
1948.3	35.74	PK	H	24.50	3.78	27.49	36.53	74.00	37.47
1948.3	23.36	AV	H	24.50	3.78	27.49	24.15	54.00	29.85
Middle Channel: 2441(MHz)									
2441	93.79	PK	H	25.75	4.40	27.34	96.60	N/A	N/A
2441	49.06	AV	H	25.75	4.40	27.34	51.87	N/A	N/A
2441	93.62	PK	V	25.75	4.40	27.34	96.43	N/A	N/A
2441	48.74	AV	V	25.75	4.40	27.34	51.55	N/A	N/A
4842	38.47	PK	H	30.69	6.07	27.42	47.81	74.00	26.19
4842	24.63	AV	H	30.69	6.07	27.42	33.97	54.00	20.03
7323	34.25	PK	H	34.38	7.51	25.88	50.26	74.00	23.74
7323	22.98	AV	H	34.38	7.51	25.88	38.99	54.00	15.01
2389	34.99	PK	H	25.61	4.39	27.32	37.67	74.00	36.33
2389	24.021	AV	H	25.61	4.39	27.32	26.70	54.00	27.30
2483.5	36.93	PK	H	25.86	4.49	27.36	39.92	74.00	34.08
2483.5	23.75	AV	H	25.86	4.49	27.36	26.74	54.00	27.26
1948.4	35.69	PK	H	24.50	3.78	27.49	36.48	74.00	37.52
1948.4	22.88	AV	H	24.50	3.78	27.49	23.67	54.00	30.33
High Channel: 2480(MHz)									
2480	92.14	PK	H	25.85	4.48	27.36	95.11	N/A	N/A
2480	47.86	AV	H	25.85	4.48	27.36	50.83	N/A	N/A
2480	92.03	PK	V	25.85	4.48	27.36	95.00	N/A	N/A
2480	47.2	AV	V	25.85	4.48	27.36	50.17	N/A	N/A
4960	39.41	PK	H	31.00	5.90	27.43	48.88	74.00	25.12
4960	23.77	AV	H	31.00	5.90	27.43	33.24	54.00	20.76
7440	35.45	PK	H	34.66	7.58	25.97	51.72	74.00	22.28
7440	21.74	AV	H	34.66	7.58	25.97	38.01	54.00	15.99
2390	35.01	PK	H	25.61	4.39	27.32	37.69	74.00	36.31
2390	20.13	AV	H	25.61	4.39	27.32	22.81	54.00	31.19
2483.5	51.04	PK	H	25.86	4.49	27.36	54.03	74.00	19.97
2483.5	31.87	AV	H	25.86	4.49	27.36	34.86	54.00	19.14
1948.5	36.11	PK	H	24.50	3.78	27.49	36.90	74.00	37.10
1948.5	23.23	AV	H	24.50	3.78	27.49	24.02	54.00	29.98

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 (PK/QP/AV)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402(MHz)									
2402	89.92	PK	H	25.65	4.42	27.32	92.67	N/A	N/A
2402	44.52	AV	H	25.65	4.42	27.32	47.27	N/A	N/A
2402	89.90	PK	V	25.65	4.42	27.32	92.65	N/A	N/A
2402	46.18	AV	V	25.65	4.42	27.32	48.93	N/A	N/A
4804	45.31	PK	H	30.59	5.98	27.41	54.47	74.00	19.53
4804	29.17	AV	H	30.59	5.98	27.41	38.33	54.00	15.67
7206	33.89	PK	V	34.09	7.45	25.91	49.52	74.00	24.48
7206	21.57	AV	V	34.09	7.45	25.91	37.20	54.00	16.80
2390	36.21	PK	H	25.61	4.39	27.32	38.89	74.00	35.11
2390	21.23	AV	H	25.61	4.39	27.32	23.91	54.00	30.09
2486	33.21	PK	H	25.86	4.49	27.36	36.20	74.00	37.80
2486	22.09	AV	H	25.86	4.49	27.36	25.08	54.00	28.92
1947.9	34.46	PK	H	24.50	3.78	27.49	35.25	74.00	38.75
1947.9	22.04	AV	H	24.50	3.78	27.49	22.83	54.00	31.17
Middle Channel: 2441(MHz)									
2441	90.1	PK	H	25.75	4.40	27.34	92.91	N/A	N/A
2441	45.7	AV	H	25.75	4.40	27.34	48.51	N/A	N/A
2441	90.01	PK	V	25.75	4.40	27.34	92.82	N/A	N/A
2441	43.65	AV	V	25.75	4.40	27.34	46.46	N/A	N/A
4842	37.55	PK	H	30.69	6.07	27.42	46.89	74.00	27.11
4842	23.22	AV	H	30.69	6.07	27.42	32.56	54.00	21.44
7323	34.23	PK	V	34.38	7.51	25.88	50.24	74.00	23.76
7323	22.74	AV	V	34.38	7.51	25.88	38.75	54.00	15.25
2385	34.52	PK	V	25.60	4.38	27.32	37.18	74.00	36.82
2385	22.34	AV	V	25.60	4.38	27.32	25.00	54.00	29.00
2483.5	36.06	PK	H	25.86	4.49	27.36	39.05	74.00	34.95
2483.5	22.17	AV	H	25.86	4.49	27.36	25.16	54.00	28.84
1948.9	34.25	PK	H	24.50	3.79	27.49	35.05	74.00	38.95
1948.9	22.35	AV	H	24.50	3.79	27.49	23.15	54.00	30.85
High Channel: 2480(MHz)									
2480	90.11	PK	H	25.85	4.48	27.36	93.08	N/A	N/A
2480	45.21	AV	H	25.85	4.48	27.36	48.18	N/A	N/A
2480	90.05	PK	V	25.85	4.48	27.36	93.02	N/A	N/A
2480	44.92	AV	V	25.85	4.48	27.36	47.89	N/A	N/A
4960	38.04	PK	H	31.00	5.90	27.43	47.51	74.00	26.49
4960	22.86	AV	H	31.00	5.90	27.43	32.33	54.00	21.67
7440	34.17	PK	H	34.66	7.58	25.97	50.44	74.00	23.56
7440	21.65	AV	H	34.66	7.58	25.97	37.92	54.00	16.08
2390	34.36	PK	V	25.61	4.39	27.32	37.04	74.00	36.96
2390	19.98	AV	V	25.61	4.39	27.32	22.66	54.00	31.34
2483.5	50.74	PK	H	25.86	4.49	27.36	53.73	74.00	20.27
2483.5	30.23	AV	H	25.86	4.49	27.36	33.22	54.00	20.78
1948.2	35.12	PK	H	24.50	3.78	27.49	35.91	74.00	38.09
1948.2	22.74	AV	H	24.50	3.78	27.49	23.53	54.00	30.47

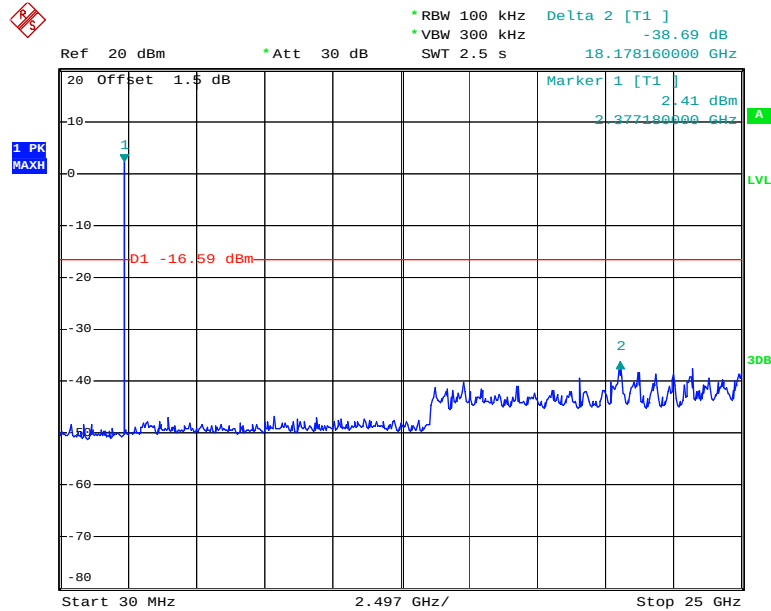
EDR Mode (8-DPSK):

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/m)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2402(MHz)									
2402	89.25	PK	V	25.65	4.42	27.32	92.00	N/A	N/A
2402	45.23	AV	V	25.65	4.42	27.32	47.98	N/A	N/A
2402	90.66	PK	H	25.65	4.42	27.32	93.41	N/A	N/A
2402	45.12	AV	H	25.65	4.42	27.32	47.87	N/A	N/A
4804	44.33	PK	H	30.59	5.98	27.41	53.49	74.00	20.51
4804	27.85	AV	H	30.59	5.98	27.41	37.01	54.00	16.99
7206	33.32	PK	V	34.09	7.45	25.91	48.95	74.00	25.05
7206	22.21	AV	V	34.09	7.45	25.91	37.84	54.00	16.16
2390	35.36	PK	H	25.61	4.39	27.32	38.04	74.00	35.96
2390	21.74	AV	H	25.61	4.39	27.32	24.42	54.00	29.58
2495	34.43	PK	H	25.89	4.52	27.37	37.47	74.00	36.53
2495	22.06	AV	V	25.89	4.52	27.37	25.10	54.00	28.90
1947.3	34.65	PK	H	24.49	3.78	27.49	35.43	74.00	38.57
1947.6	21.04	AV	H	24.50	3.78	27.49	21.83	54.00	32.17
Middle Channel: 2441(MHz)									
2441	90.36	PK	H	25.75	4.40	27.34	93.17	N/A	N/A
2441	45.06	AV	H	25.75	4.40	27.34	47.87	N/A	N/A
2441	90.01	PK	V	25.75	4.40	27.34	92.82	N/A	N/A
2441	44.64	AV	V	25.75	4.40	27.34	47.45	N/A	N/A
4842	35.74	PK	H	30.69	6.07	27.42	45.08	74.00	28.92
4842	23.02	AV	H	30.69	6.07	27.42	32.36	54.00	21.64
7323	34.11	PK	V	34.38	7.51	25.88	50.12	74.00	23.88
7323	22.14	AV	V	34.38	7.51	25.88	38.15	54.00	15.85
2386	34.63	PK	V	25.60	4.38	27.32	37.29	74.00	36.71
2386	22.32	AV	V	25.60	4.38	27.32	24.98	54.00	29.02
2483.5	36.32	PK	H	25.86	4.49	27.36	39.31	74.00	34.69
2483.5	22.74	AV	H	25.86	4.49	27.36	25.73	54.00	28.27
1948.5	34.63	PK	H	24.50	3.78	27.49	35.42	74.00	38.58
1948.5	22.12	AV	H	24.50	3.78	27.49	22.91	54.00	31.09
High Channel: 2480(MHz)									
2480	90.13	PK	H	25.85	4.48	27.36	93.10	N/A	N/A
2480	45.03	AV	H	25.85	4.48	27.36	48.00	N/A	N/A
2480	90.19	PK	V	25.85	4.48	27.36	93.16	N/A	N/A
2480	44.74	AV	V	25.85	4.48	27.36	47.71	N/A	N/A
4960	36.89	PK	H	31.00	5.90	27.43	46.36	74.00	27.64
4960	22.32	AV	H	31.00	5.90	27.43	31.79	54.00	22.21
7440	34.89	PK	V	34.66	7.58	25.97	51.16	74.00	22.84
7440	22.17	AV	V	34.66	7.58	25.97	38.44	54.00	15.56
2390	34.08	PK	H	25.61	4.39	27.32	36.76	74.00	37.24
2390	20.32	AV	H	25.61	4.39	27.32	23.00	54.00	31.00
2483.5	49.45	PK	H	25.86	4.49	27.36	52.44	74.00	21.56
2483.5	28.36	AV	H	25.86	4.49	27.36	31.35	54.00	22.65
1948.2	32.89	PK	H	24.50	3.78	27.49	33.68	74.00	40.32
1948.2	21.56	AV	H	24.50	3.78	27.49	22.35	54.00	31.65

Conducted Spurious Emissions at Antenna Port

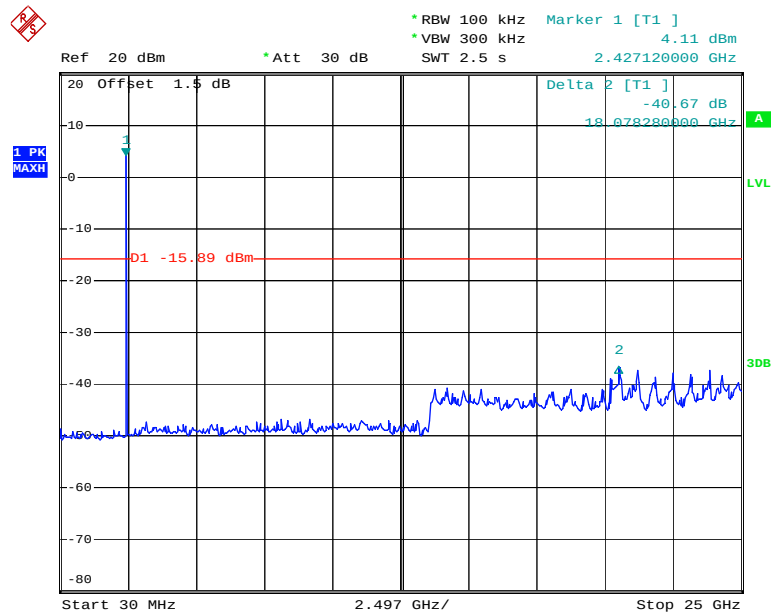
BDR Mode (GFSK):

Low Channel



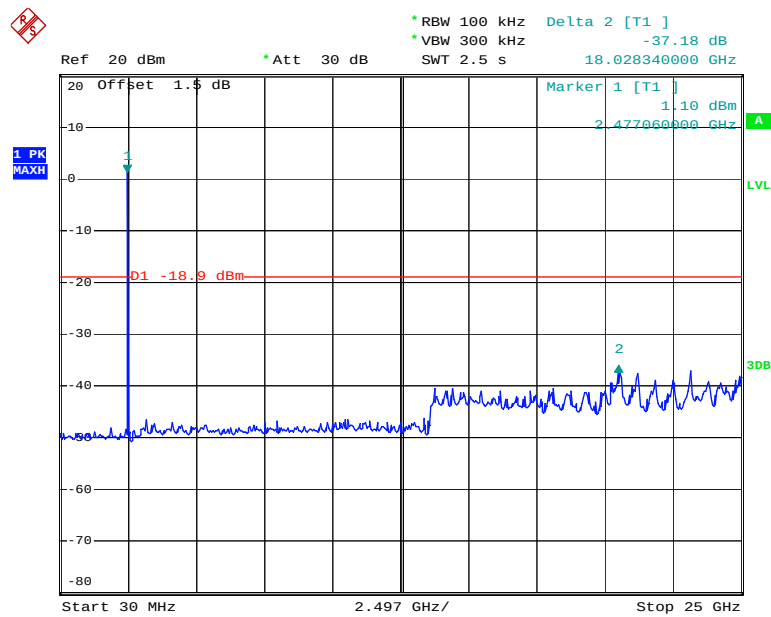
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Middle Channel



Date: 19.MAR.2014 19:02:04

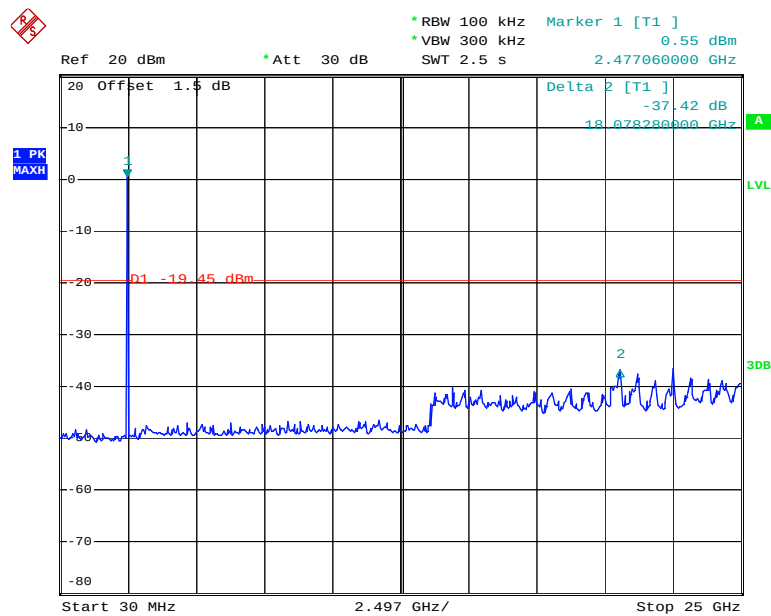
High Channel



Date: 19.MAR.2014 19:03:31

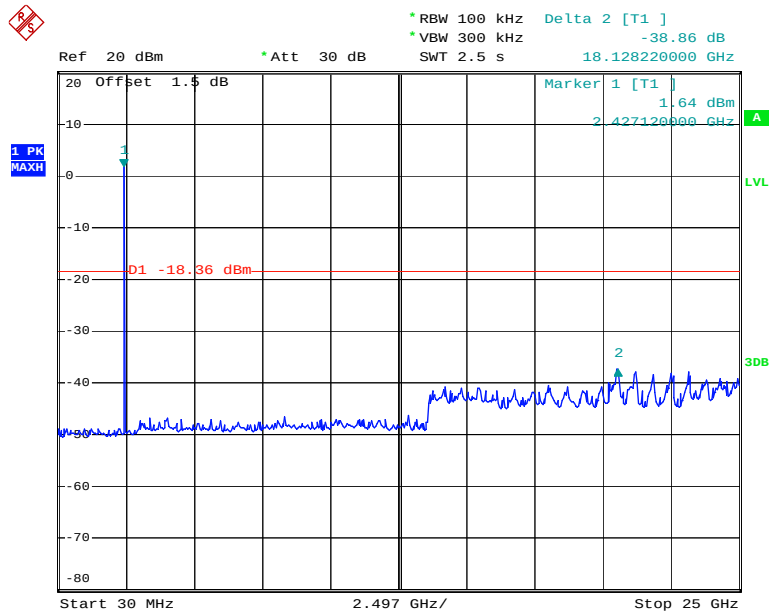
EDR Mode ($\pi/4$ -DQPSK):

Low Channel



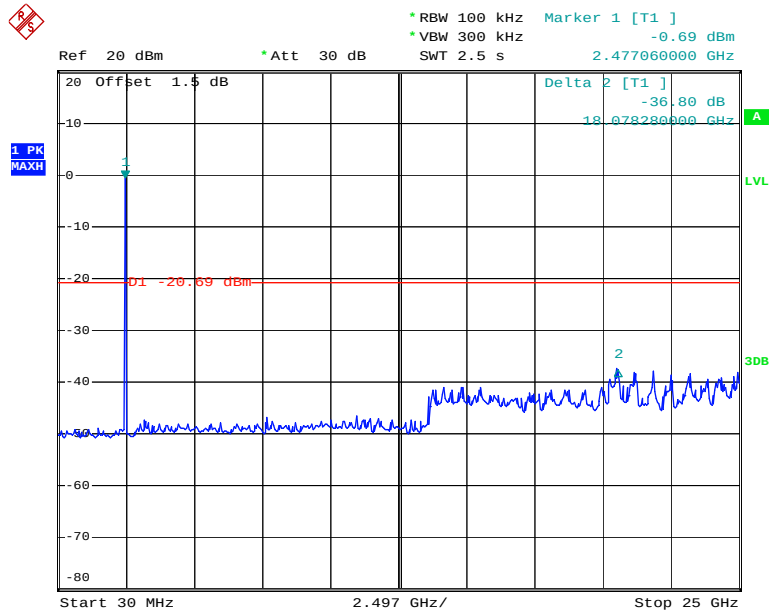
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Middle Channel



Date: 19.MAR.2014 19:06:50

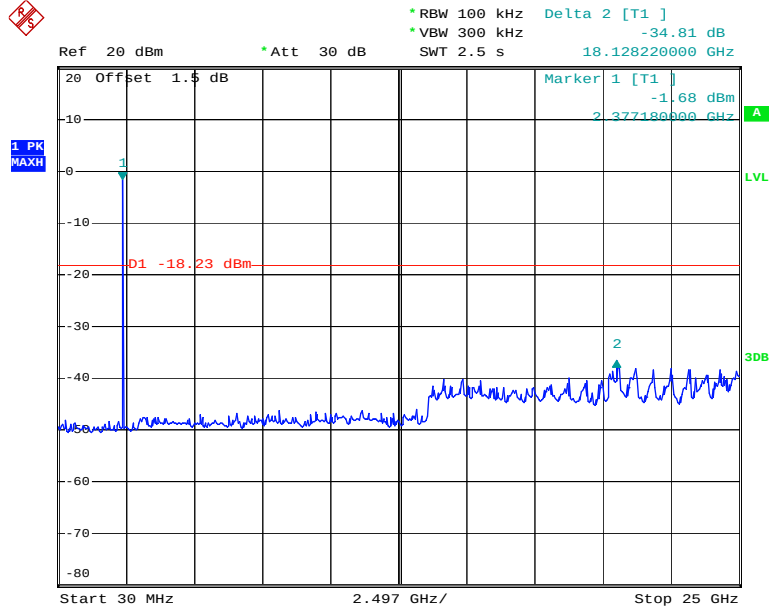
High Channel



Date: 19.MAR.2014 19:08:13

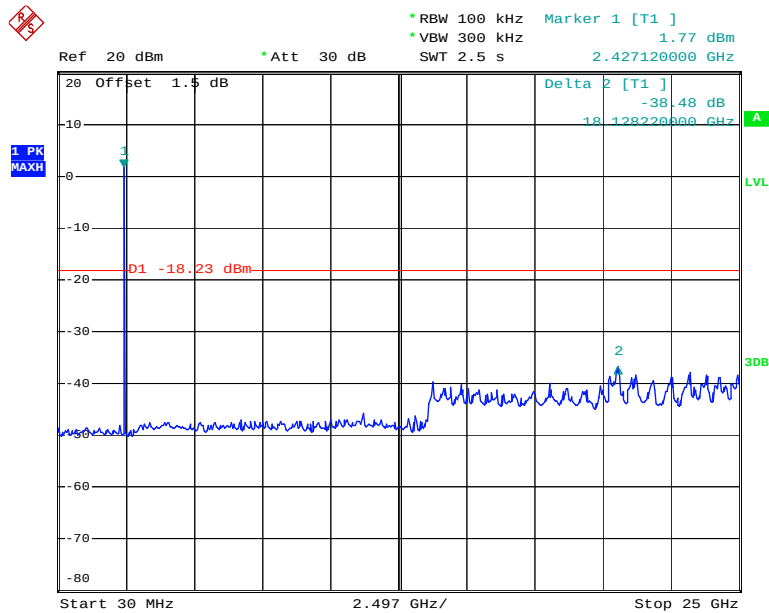
EDR Mode (8-DPSK):

Low Channel



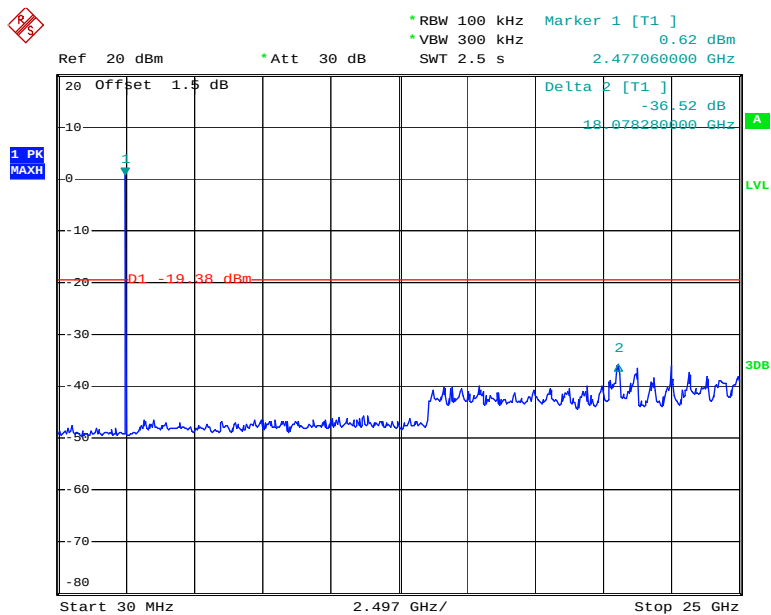
Date: 19.MAR.2014 19:41:50

Middle Channel



Date: 19.MAR.2014 19:40:14

High Channel



Date: 19.MAR.2014 19:38:09

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	2013-06-16	2014-06-15

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

Test Procedure

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

Test Data**Environmental Conditions**

Temperature:	23.7 °C
Relative Humidity:	68 %
ATM Pressure:	100.8 kPa

* The testing was performed by Ares Liu on 2014-03-19.

Test Result: Compliance.

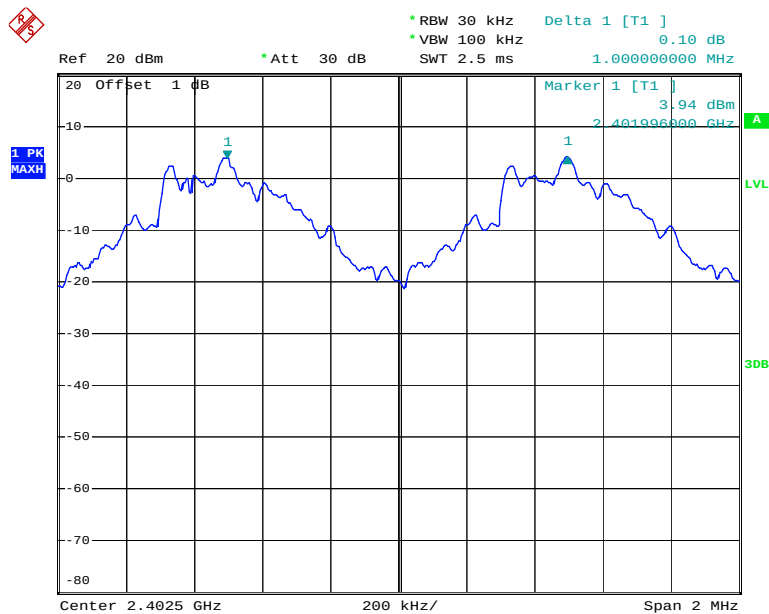
Please refer to following tables and plots

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
BDR Mode (GFSK)	Low	2402	1.000	0.560	Pass
	Adjacent	2403			
	Middle	2441	1.000	0.560	Pass
	Adjacent	2442			
	High	2480	1.004	0.560	Pass
	Adjacent	2479			
EDR Mode ($\pi/4$ -DQPSK):	Low	2402	1.000	0.811	Pass
	Adjacent	2403			
	Middle	2441	1.000	0.808	Pass
	Adjacent	2442			
	High	2480	1.000	0.805	Pass
	Adjacent	2479			
EDR Mode (8-DPSK):	Low	2402	1.000	0.803	Pass
	Adjacent	2403			
	Middle	2441	1.000	0.800	Pass
	Adjacent	2442			
	High	2480	1.000	0.816	Pass
	Adjacent	2479			

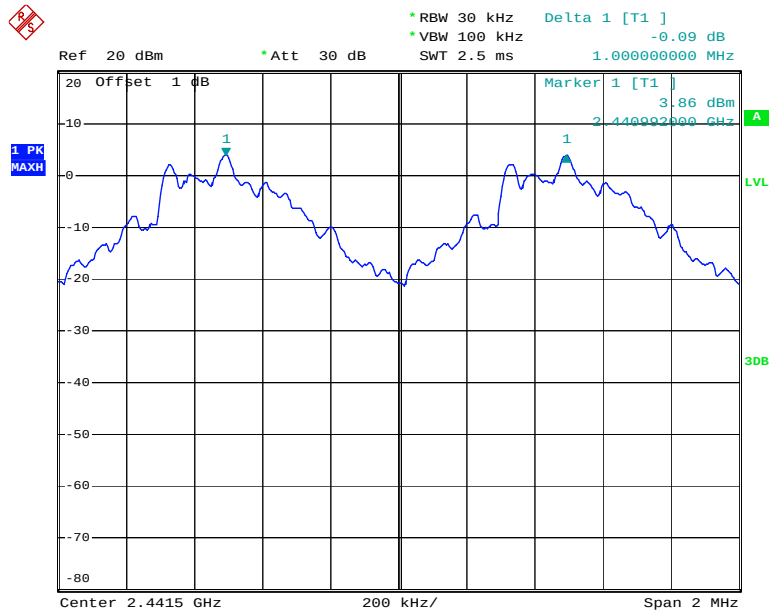
BDR Mode (GFSK):

Low Channel



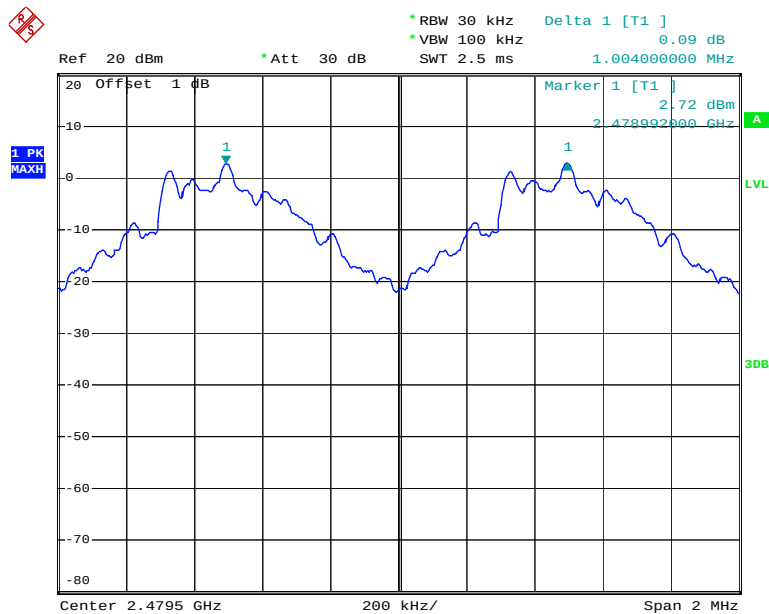
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Middle Channel



Date: 19.MAR.2014 16:41:43

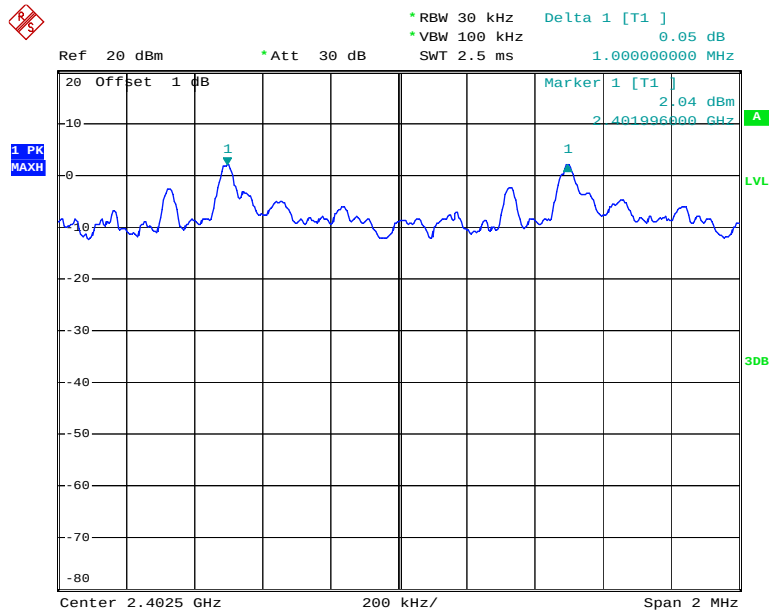
High Channel



Date: 19.MAR.2014 16:40:38

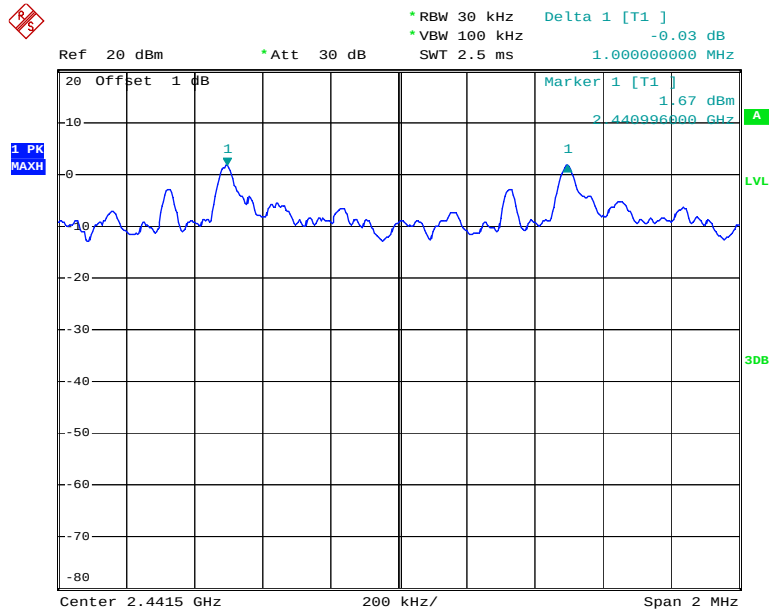
EDR Mode ($\pi/4$ -DQPSK):

Low Channel



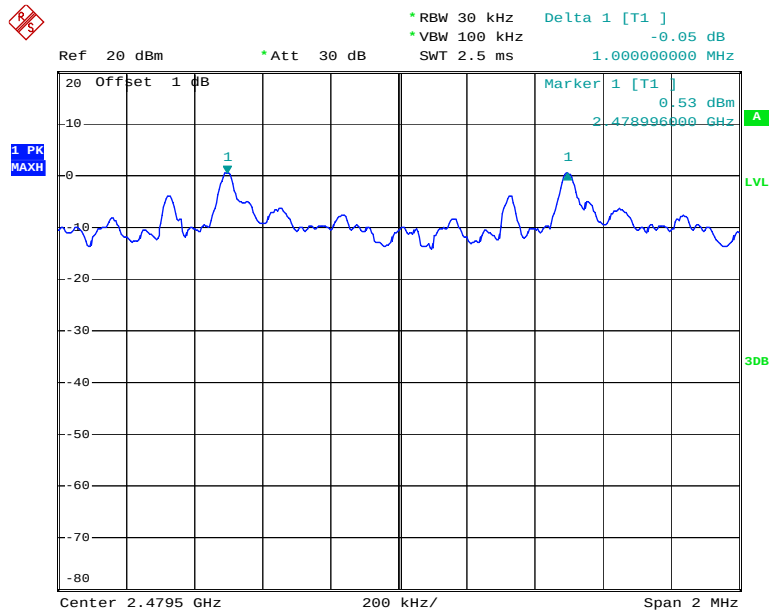
Date: 19.MAR.2014 16:44:25

Middle Channel



Date: 19.MAR.2014 16:45:09

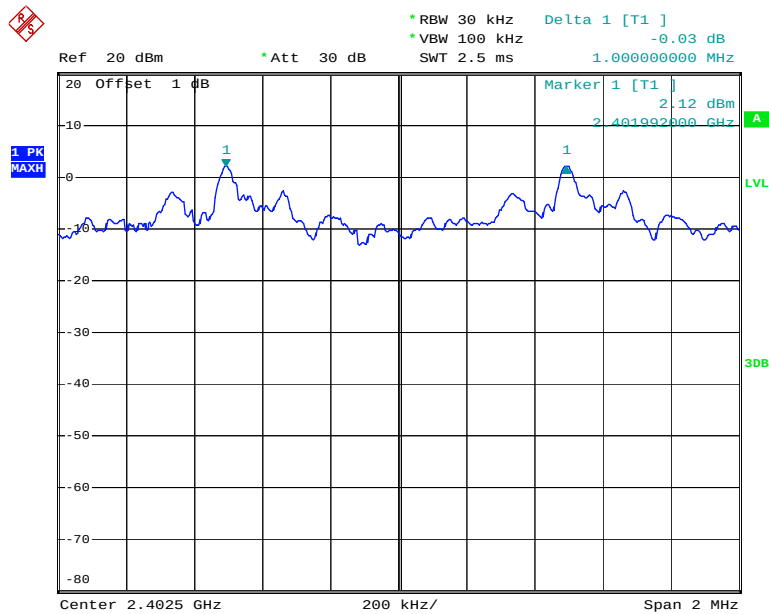
High Channel



Date: 19.MAR.2014 16:46:00

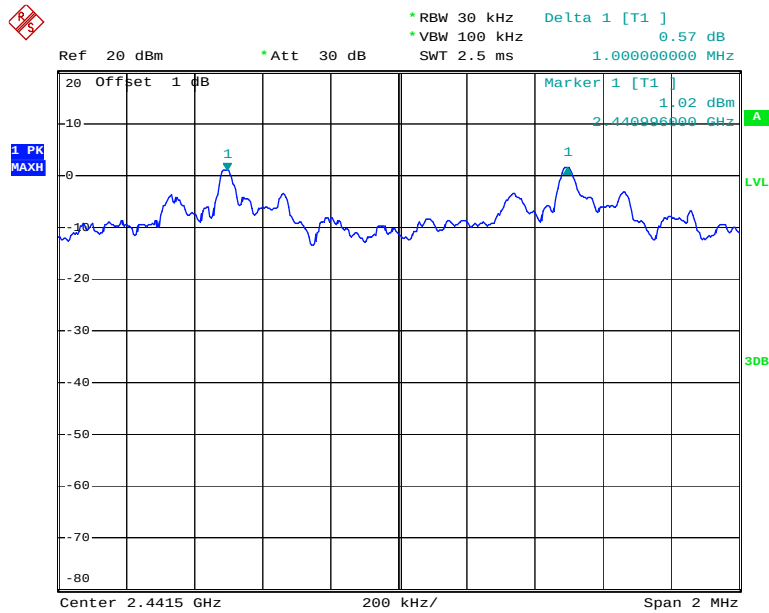
EDR Mode (8-DPSK):

Low Channel



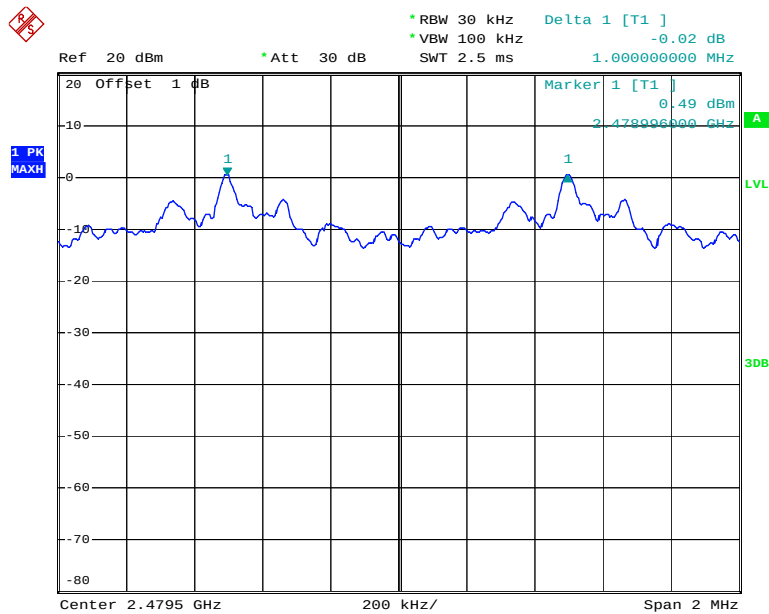
Date: 19.MAR.2014 16:49:02

Middle Channel



Date: 19.MAR.2014 16:47:48

High Channel



Date: 19.MAR.2014 16:46:48

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

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

Test Procedure

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2013-06-16	2014-06-15

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

Test Data**Environmental Conditions**

Temperature:	23.7 °C
Relative Humidity:	68 %
ATM Pressure:	100.8 kPa

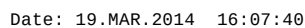
* The testing was performed by Ares Liu on 2014-03-19.

Test Result: Compliance.

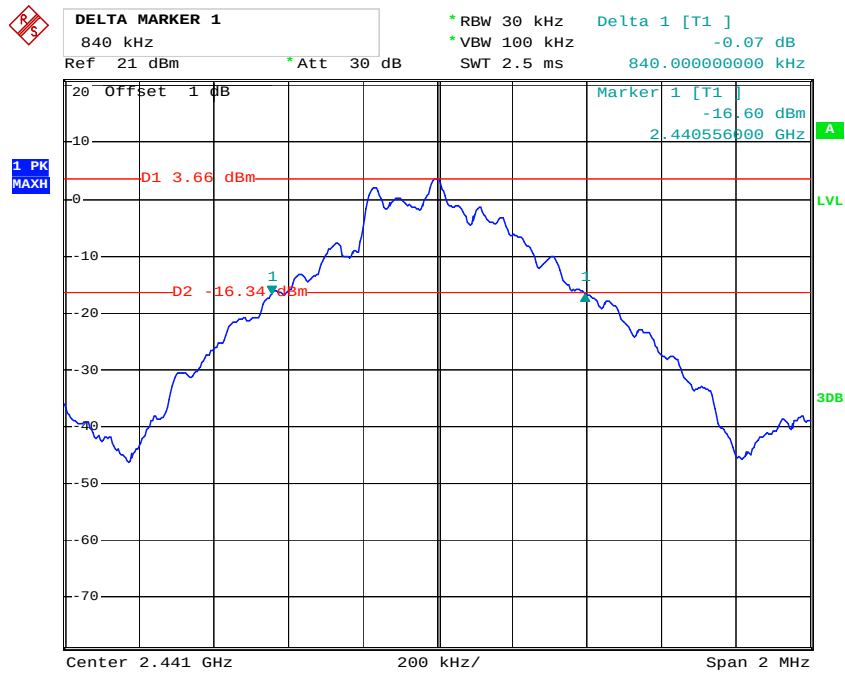
Please refer to following tables and plots

Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
BDR Mode (GFSK)	Low	2402	0.840
	Middle	2441	0.840
	High	2480	0.840
EDR Mode ($\pi/4$ -DQPSK):	Low	2402	1.216
	Middle	2441	1.212
	High	2480	1.208
EDR Mode (8-DPSK):	Low	2402	1.204
	Middle	2441	1.200
	High	2480	1.224

BDR Mode (GFSK):

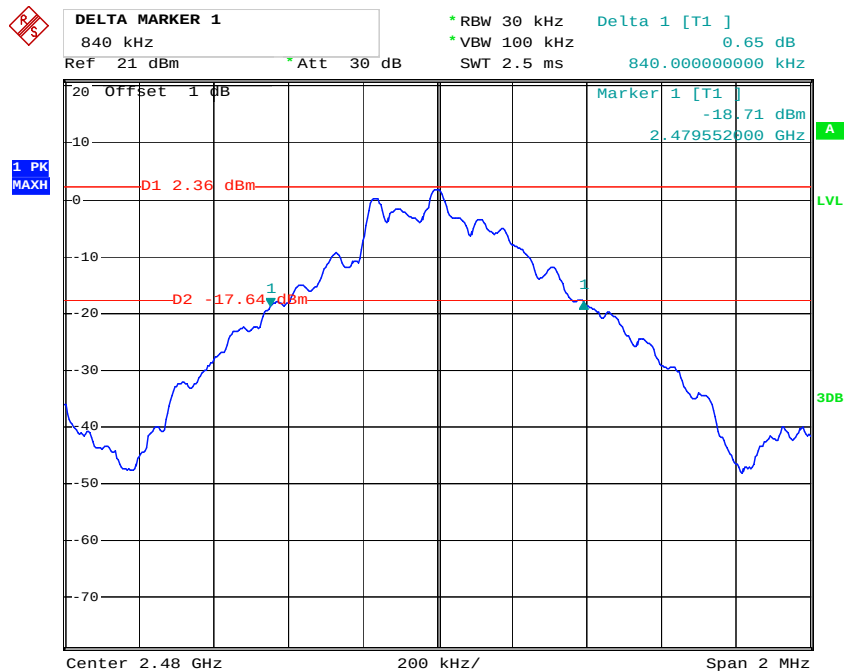


Middle Channel

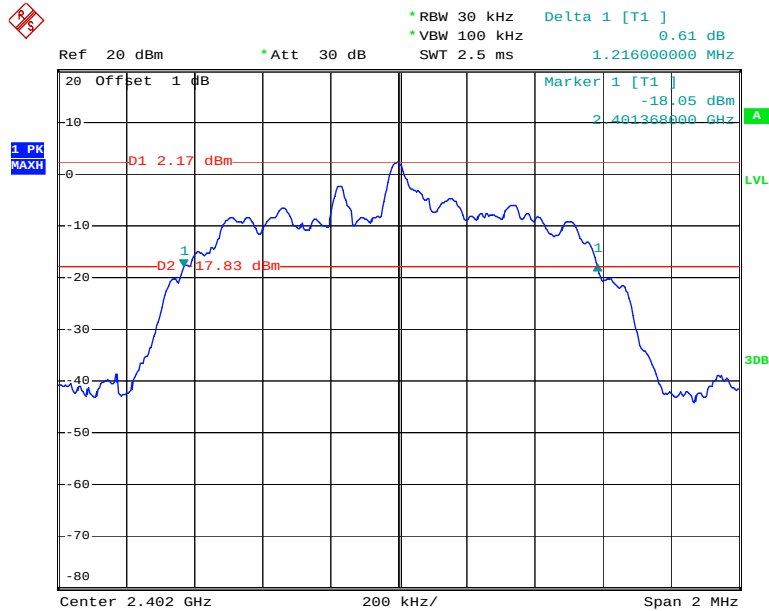


Date: 24.MAR.2014 20:48:17

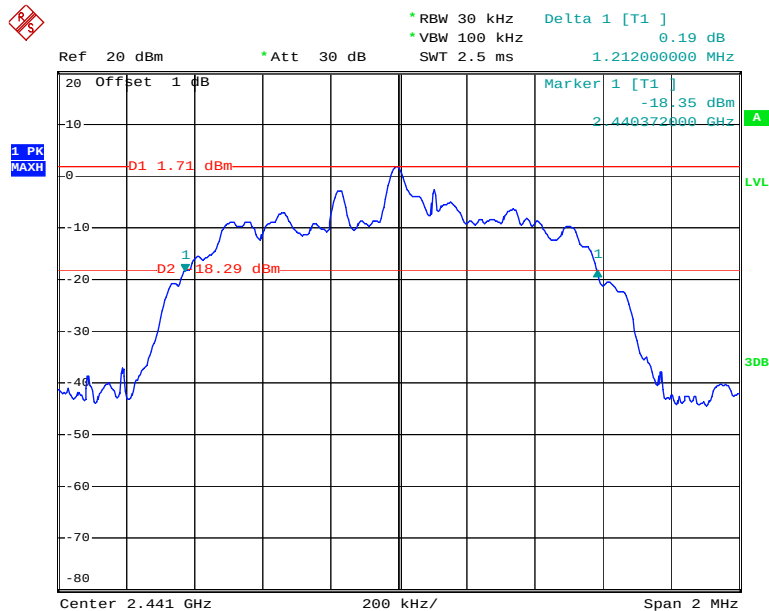
High Channel



Date: 24.MAR.2014 20:51:04

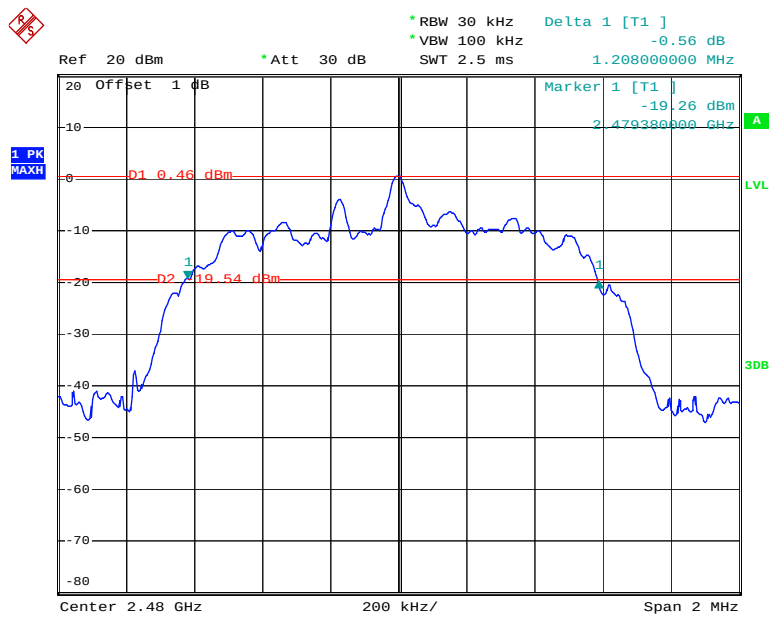
*EDR Mode ($\pi/4$ -DQPSK):***Low Channel**

Date: 19.MAR.2014 16:04:23

Middle Channel

Date: 19.MAR.2014 16:02:23

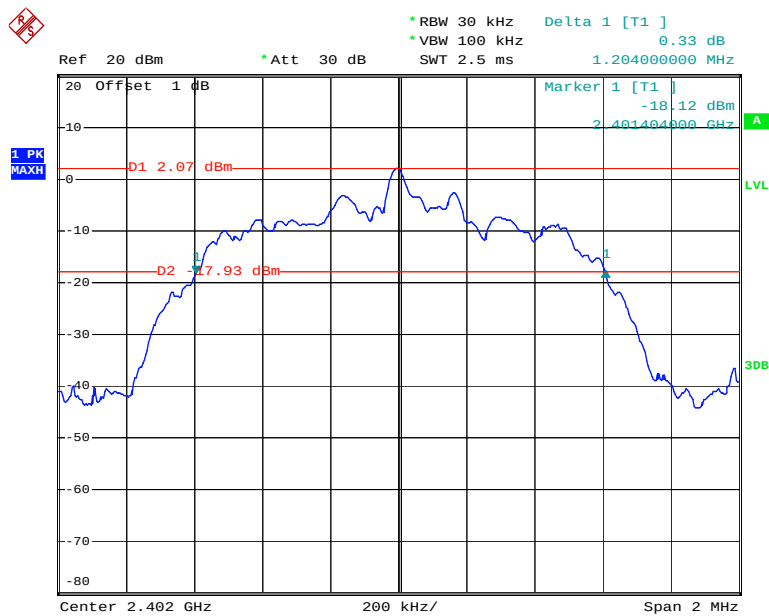
High Channel



Date: 19.MAR.2014 16:01:03

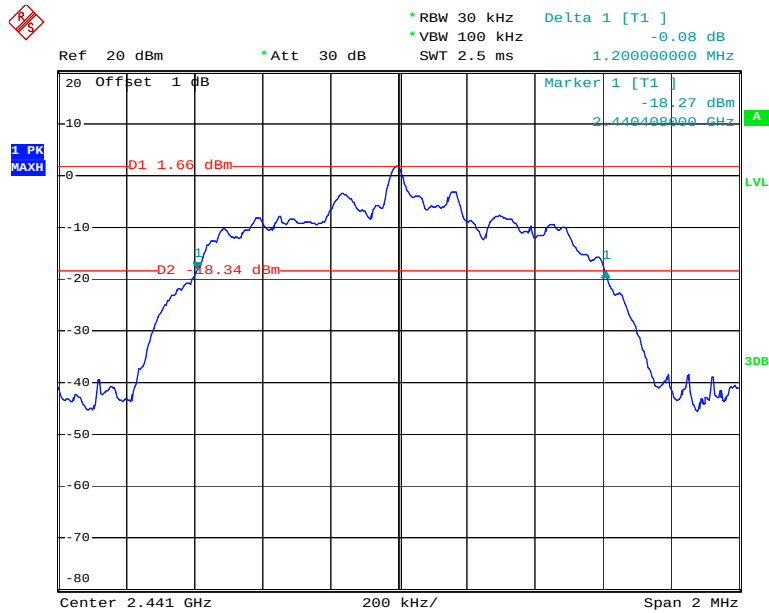
EDR Mode (8-DPSK):

Low Channel



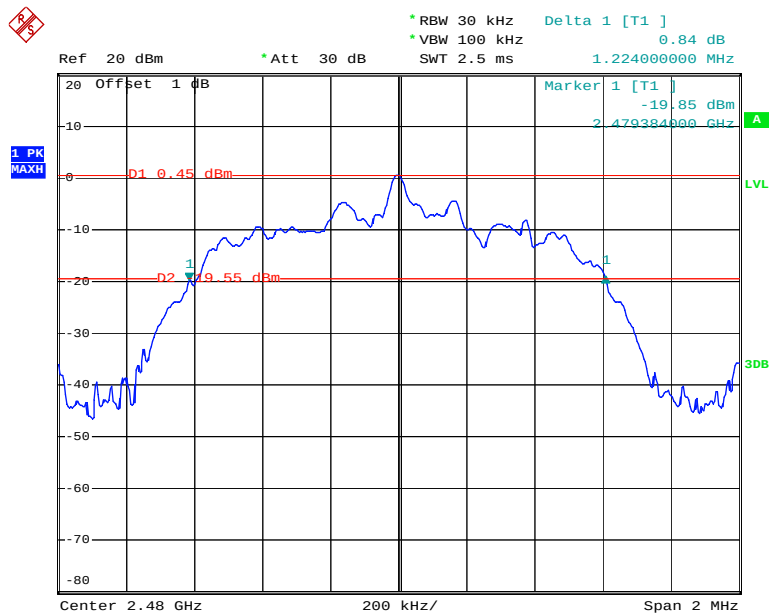
Date: 19.MAR.2014 15:55:12

Middle Channel



Date: 19.MAR.2014 15:57:26

High Channel



Date: 19.MAR.2014 15:59:24

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

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

Test Procedure

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2013-06-16	2014-06-15

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

Test Data**Environmental Conditions**

Temperature:	23.7 °C
Relative Humidity:	68 %
ATM Pressure:	100.8 kPa

* The testing was performed by Ares Liu on 2014-03-19.

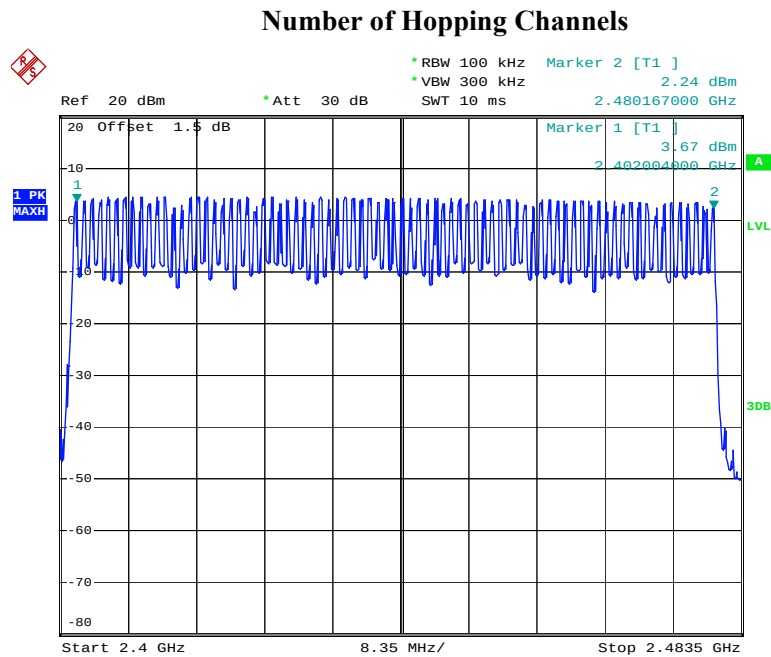
Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

BDR Mode (GFSK):

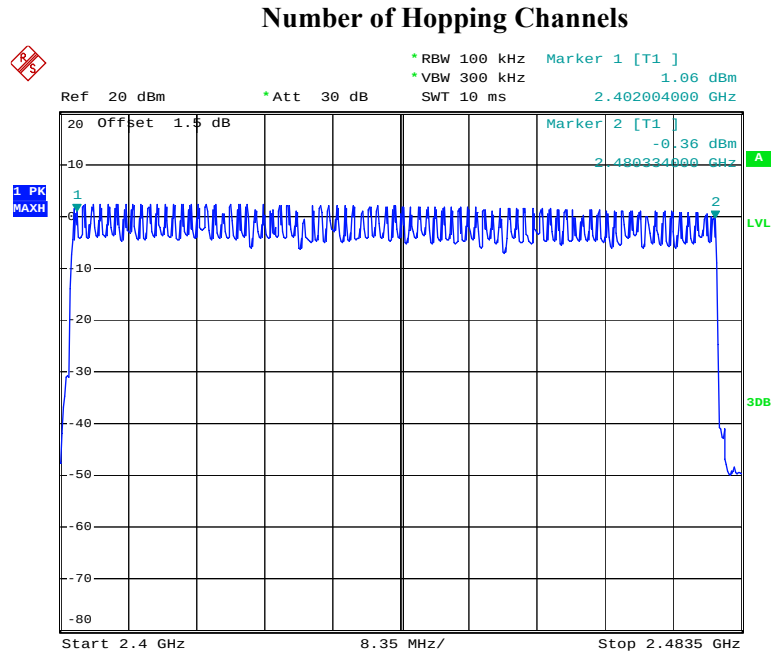
Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	≥15



Date: 19.MAR.2014 19:45:42

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

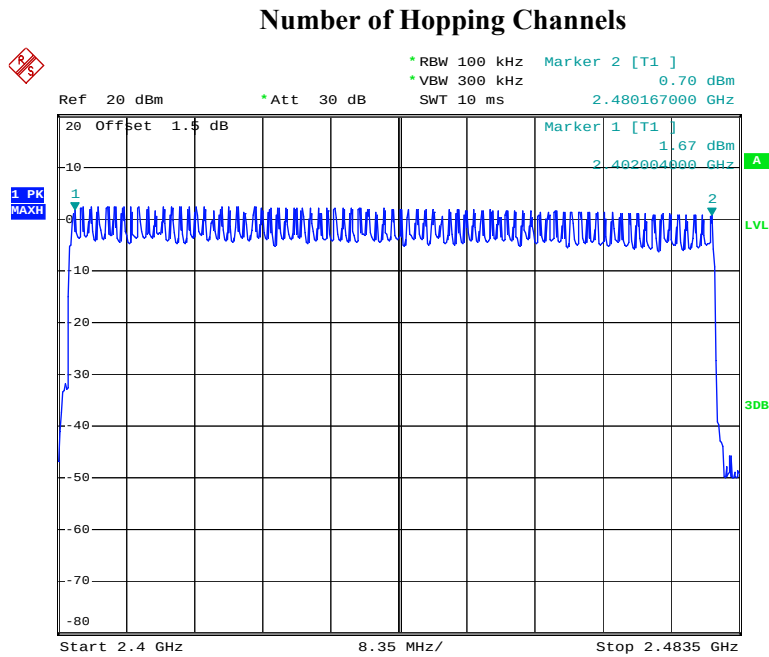
Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	≥ 15



Date: 19.MAR.2014 19:53:19

EDR Mode (8-DPSK):

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



Date: 19.MAR.2014 19:49:44

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	2013-06-16	2014-06-15

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

Test Data**Environmental Conditions**

Temperature:	22.6~26.1 °C
Relative Humidity:	48~68 %
ATM Pressure:	100.6~101.7 kPa

* The testing was performed by Ares Liu from 2014-03-19 to 2014-03-29.

Test Result: Compliance.

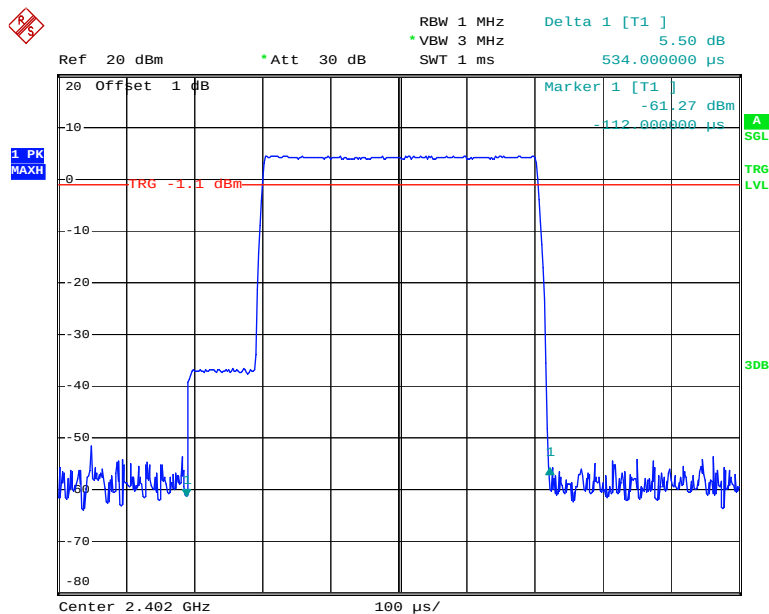
Please refer to following tables and plots

Test Mode: Transmitting

BDR Mode (GFSK):

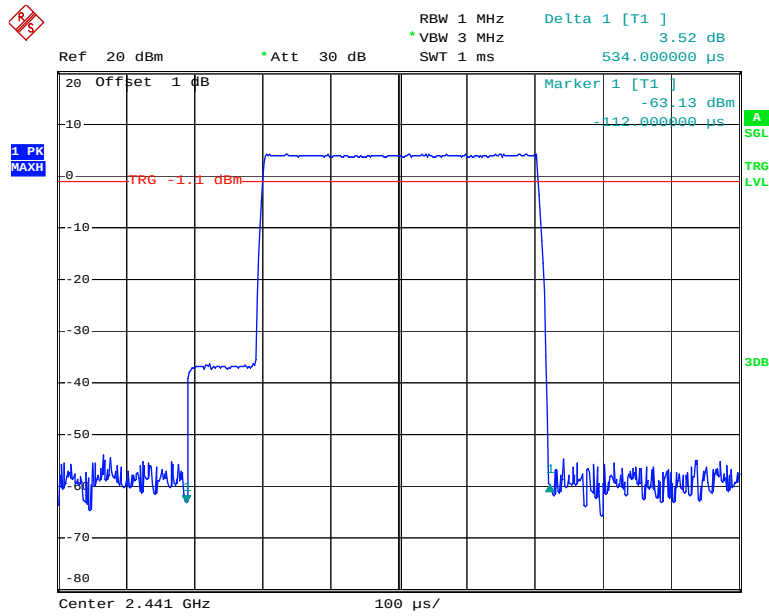
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.534	0.171	0.4	Pass
	Middle	0.534	0.171	0.4	Pass
	High	0.534	0.171	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH3	Low	1.808	0.289	0.4	Pass
	Middle	1.808	0.289	0.4	Pass
	High	1.808	0.289	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH5	Low	3.068	0.327	0.4	Pass
	Middle	3.060	0.327	0.4	Pass
	High	3.068	0.327	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

DH1: Low Channel



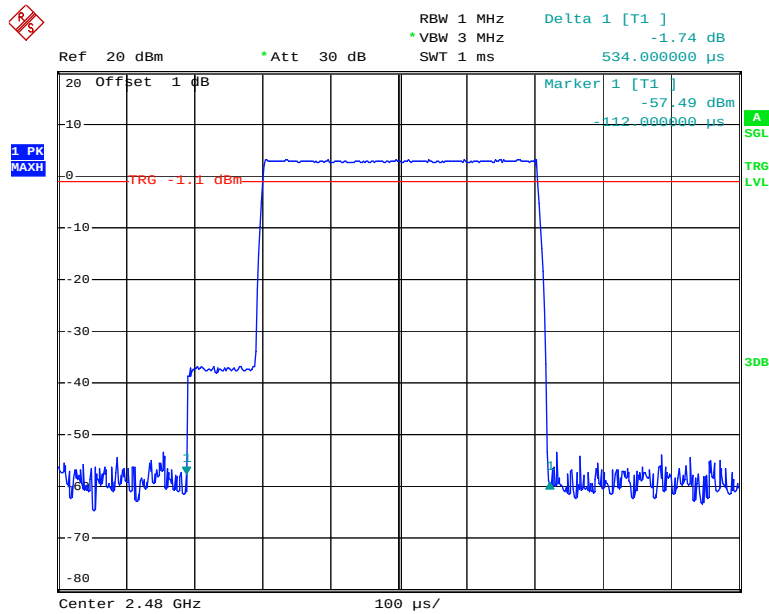
Date: 19.MAR.2014 16:56:58

DH1: Middle Channel



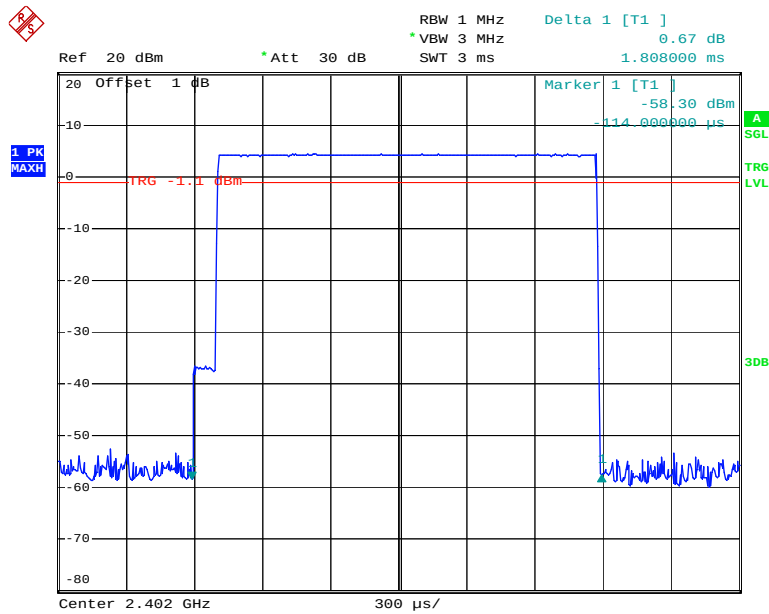
Date: 19.MAR.2014 16:57:55

DH1: High Channel



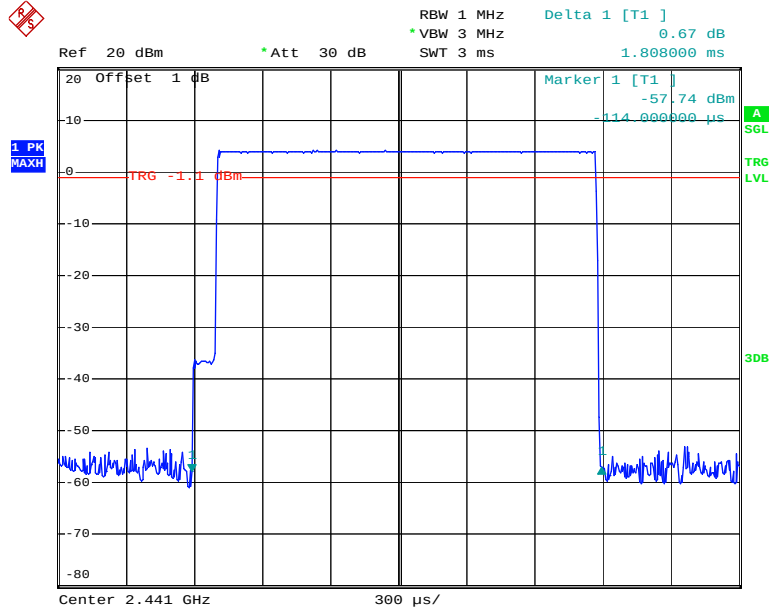
Date: 19.MAR.2014 16:58:36

DH3: Low Channel



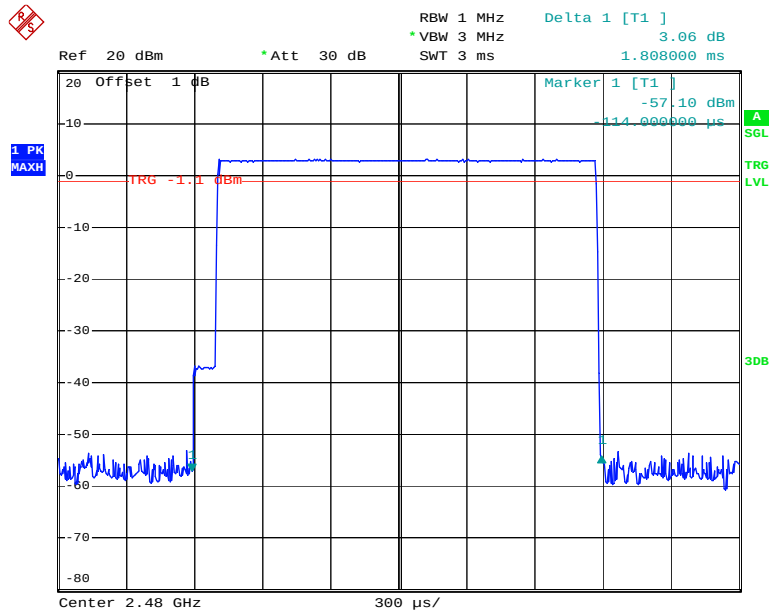
Date: 19.MAR.2014 17:01:25

DH3: Middle Channel



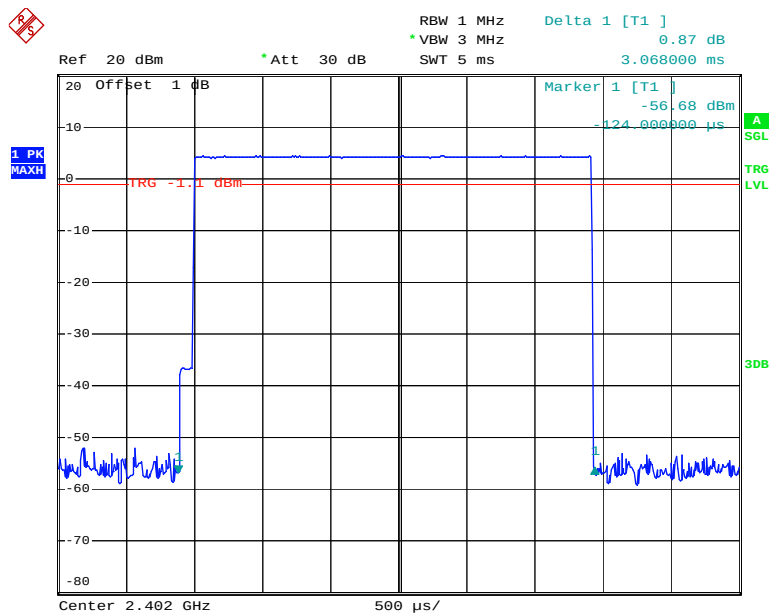
Date: 19.MAR.2014 17:01:01

DH3: High Channel



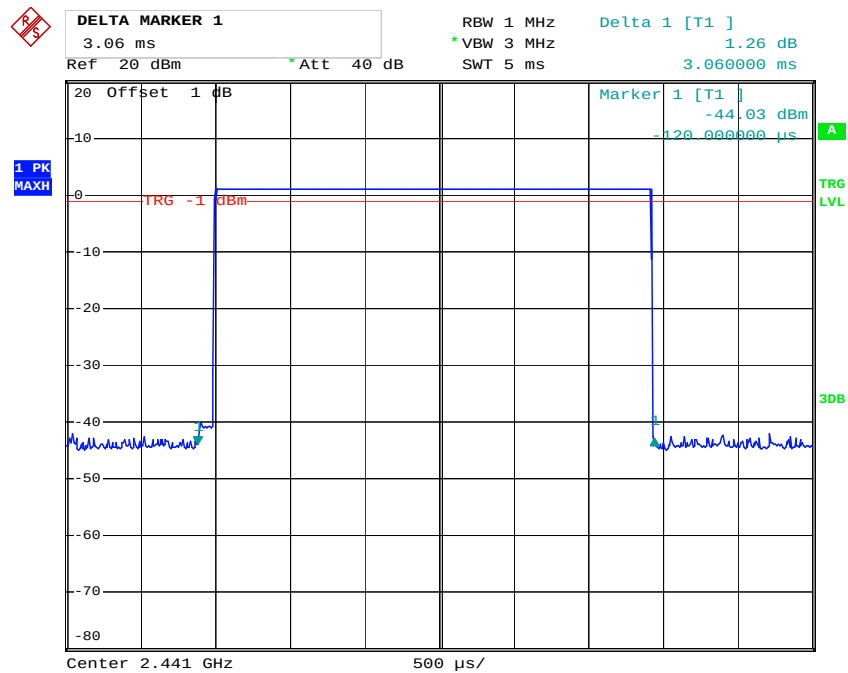
Date: 19.MAR.2014 17:00:38

DH5: Low Channel



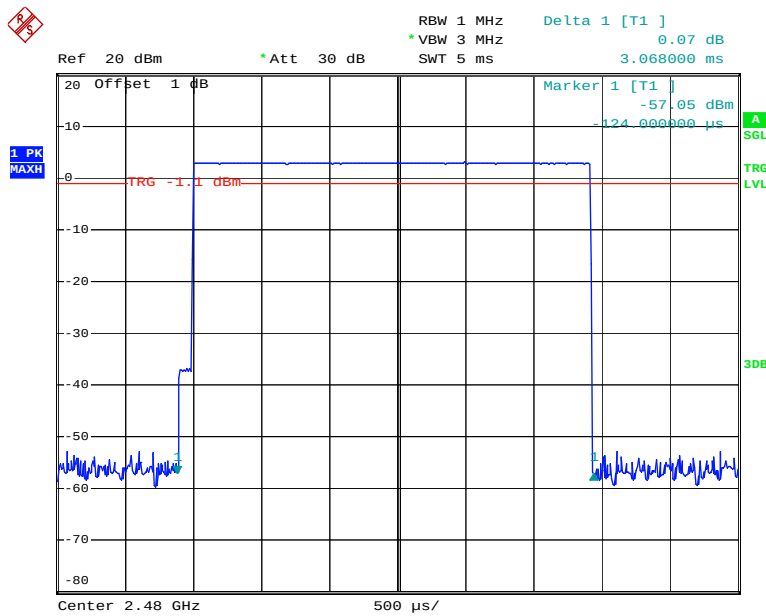
Date: 19.MAR.2014 17:06:23

DH5: Middle Channel



Date: 29.MAR.2014 14:13:17

DH5: High Channel

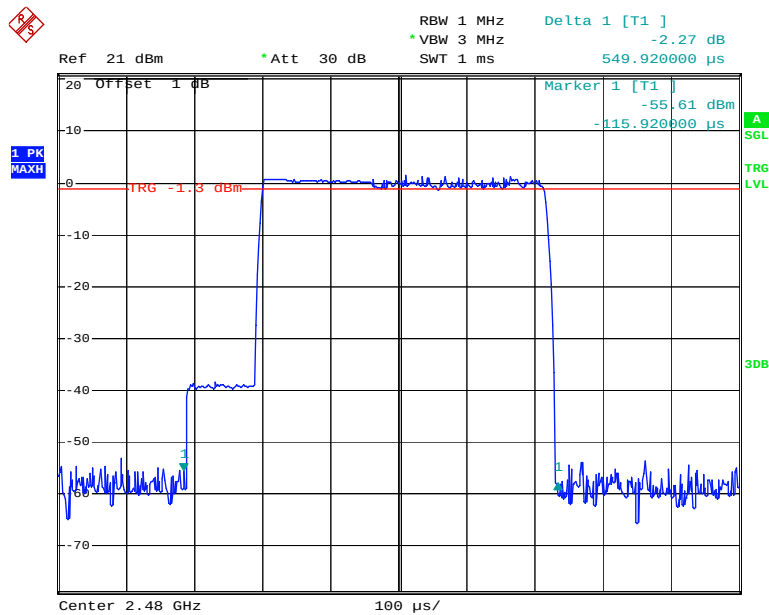


Date: 19.MAR.2014 17:07:11

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

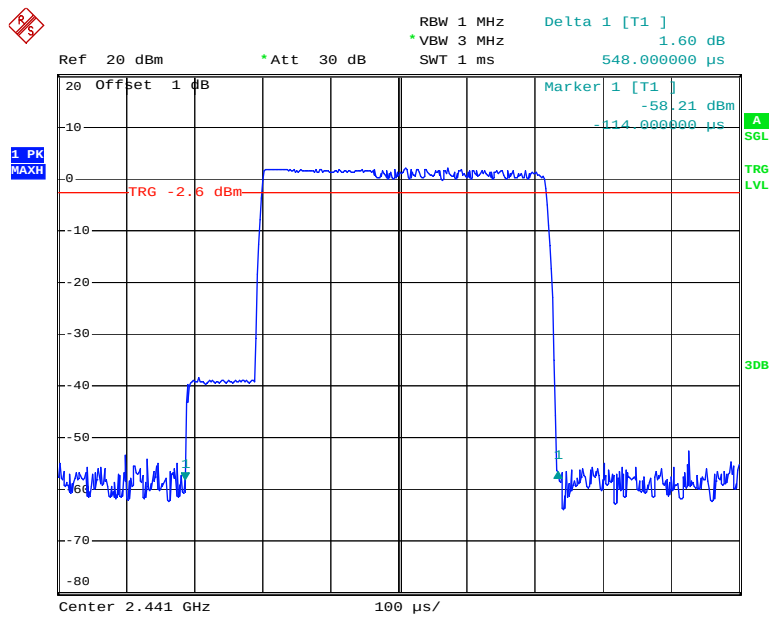
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.549	0.176	0.4	Pass
	Middle	0.548	0.175	0.4	Pass
	High	0.549	0.176	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH3	Low	1.810	0.290	0.4	Pass
	Middle	1.810	0.290	0.4	Pass
	High	1.810	0.290	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH5	Low	3.078	0.328	0.4	Pass
	Middle	3.078	0.328	0.4	Pass
	High	3.080	0.328	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

DH1: Low Channel



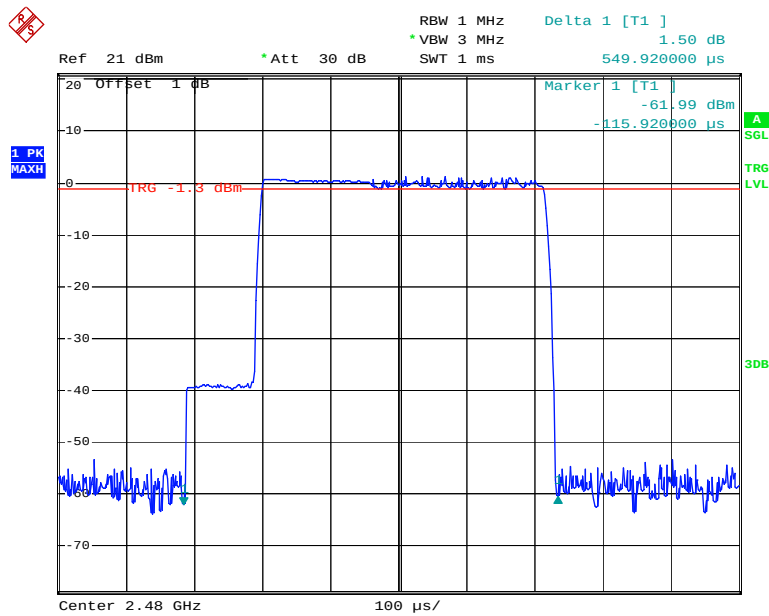
Date: 19.MAR.2014 17:53:50

DH1: Middle Channel



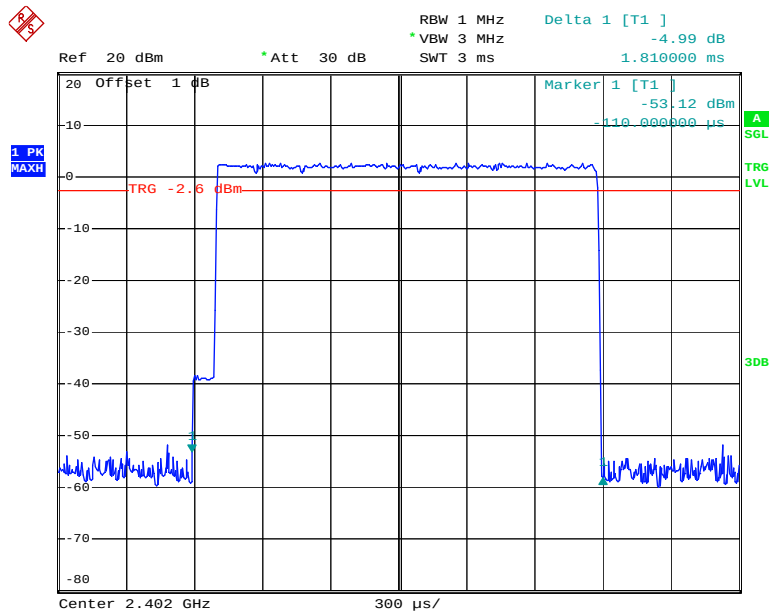
Date: 19.MAR.2014 17:27:49

DH1: High Channel



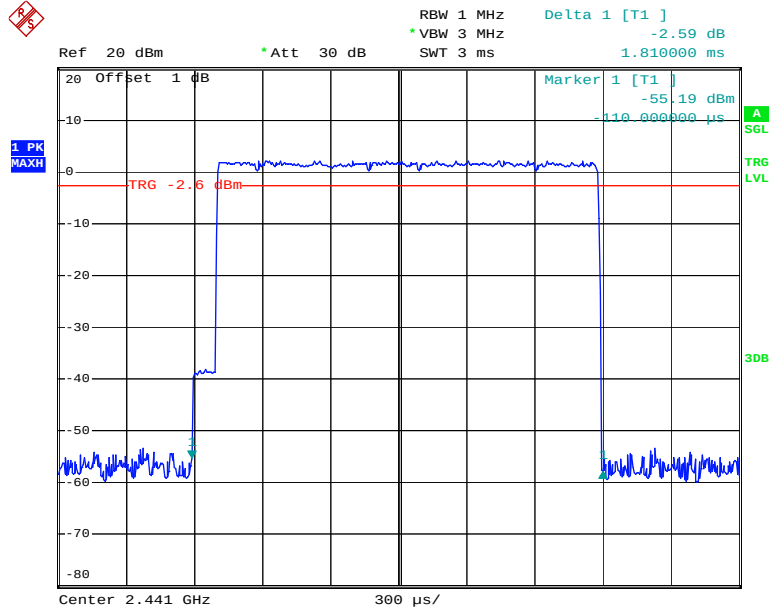
Date: 19.MAR.2014 17:53:20

DH3: Low Channel



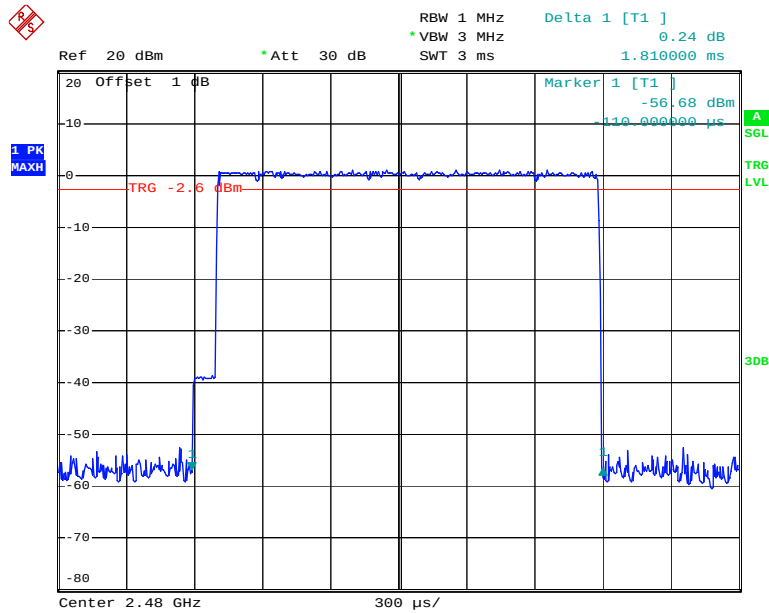
Date: 19.MAR.2014 17:17:44

DH3: Middle Channel



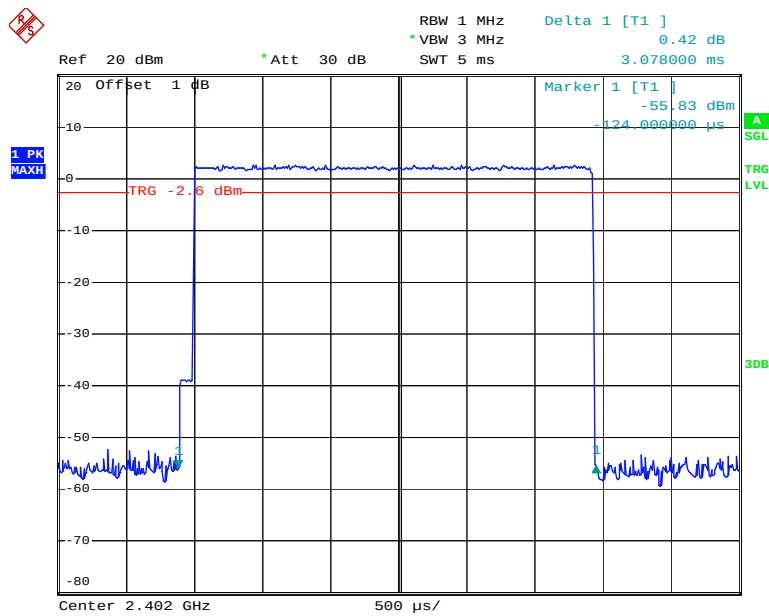
Date: 19.MAR.2014 17:18:16

DH3: High Channel



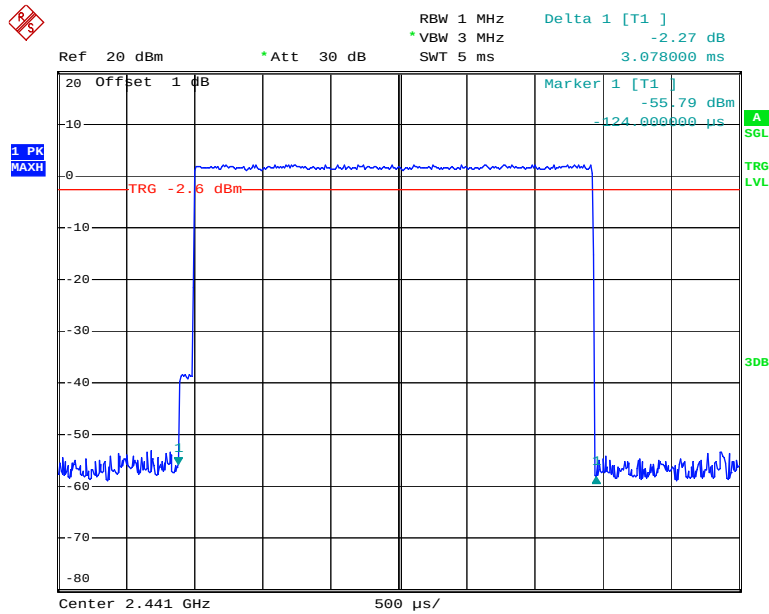
Date: 19.MAR.2014 17:18:41

DH5: Low Channel



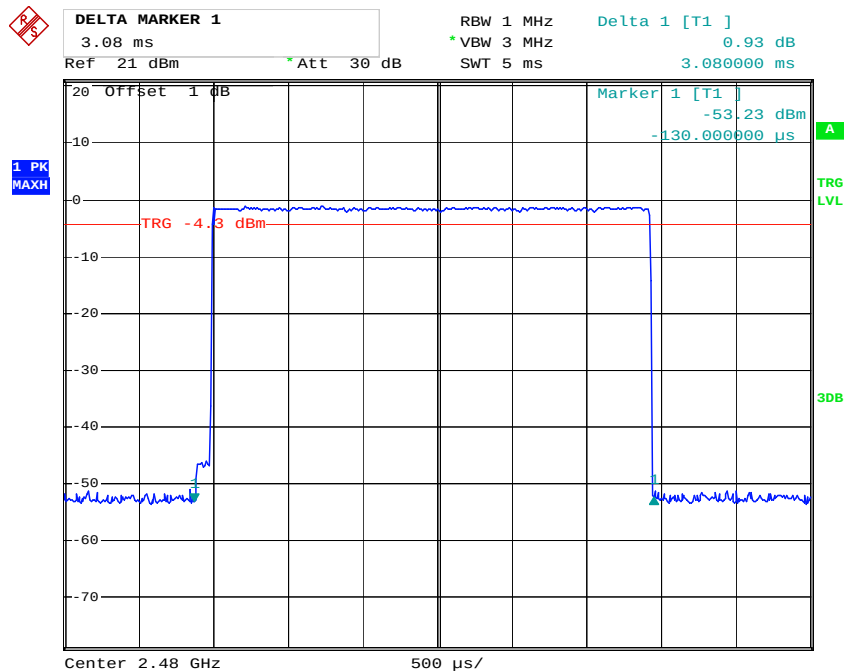
Date: 19.MAR.2014 17:10:50

DH5: Middle Channel



Date: 19.MAR.2014 17:09:46

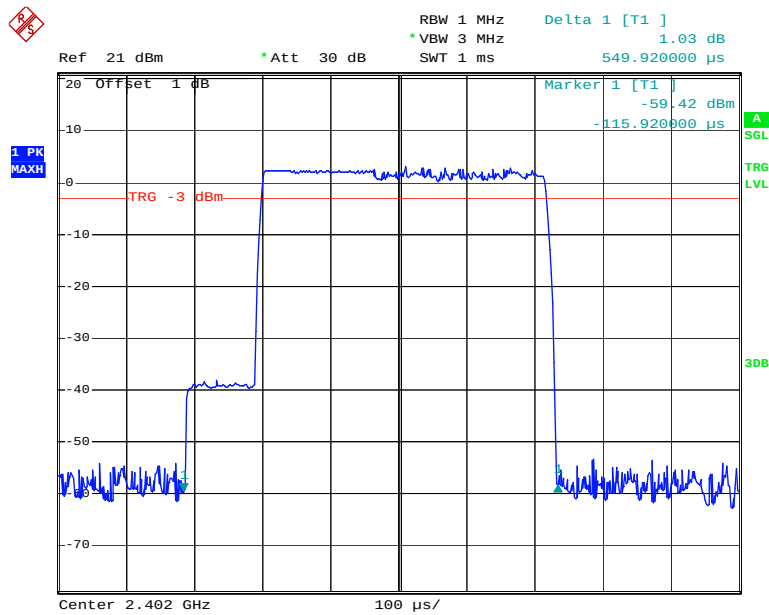
DH5: High Channel



Date: 29.MAR.2014 14:23:49

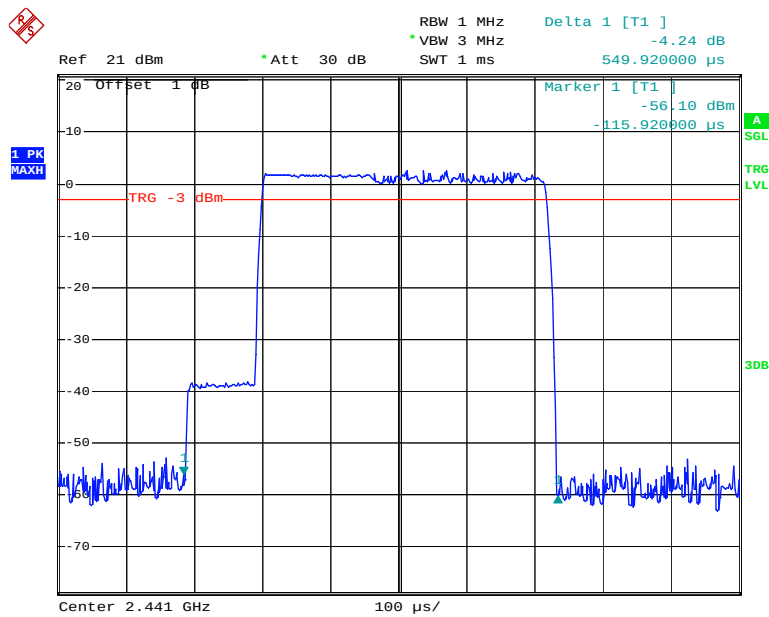
EDR Mode (8-DPSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result
DH1	Low	0.550	0.176	0.4	Pass
	Middle	0.550	0.176	0.4	Pass
	High	0.550	0.176	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s				
DH3	Low	1.810	0.290	0.4	Pass
	Middle	1.810	0.290	0.4	Pass
	High	1.810	0.290	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s				
DH5	Low	3.088	0.329	0.4	Pass
	Middle	3.088	0.329	0.4	Pass
	High	3.088	0.329	0.4	Pass
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s				

DH1: Low Channel

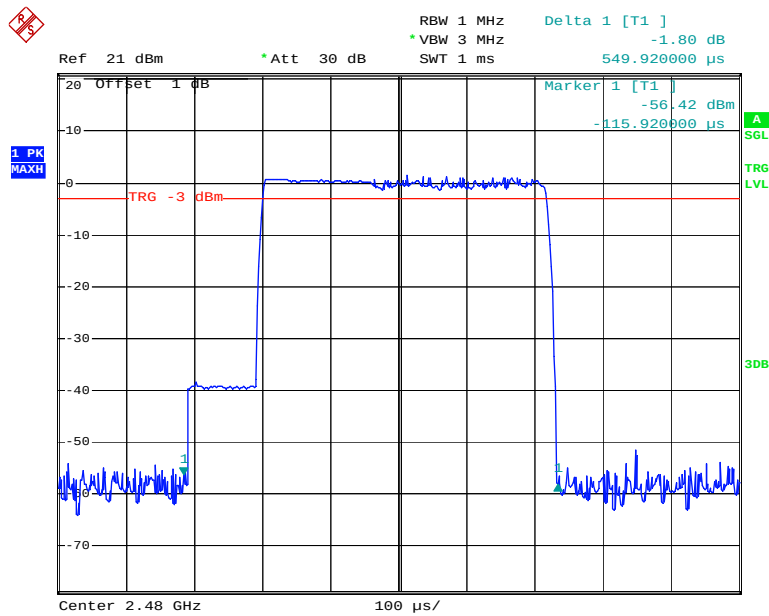
Date: 19.MAR.2014 17:47:43

DH1: Middle Channel



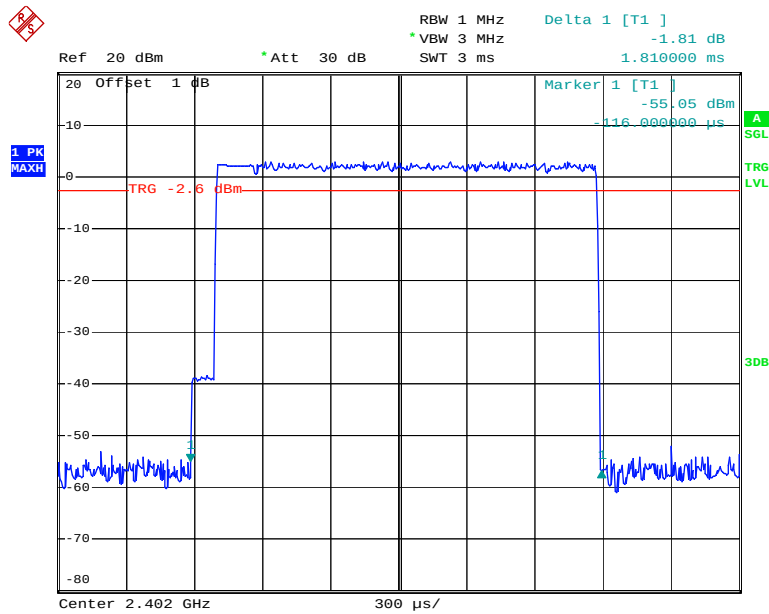
Date: 19.MAR.2014 17:48:04

DH1: High Channel



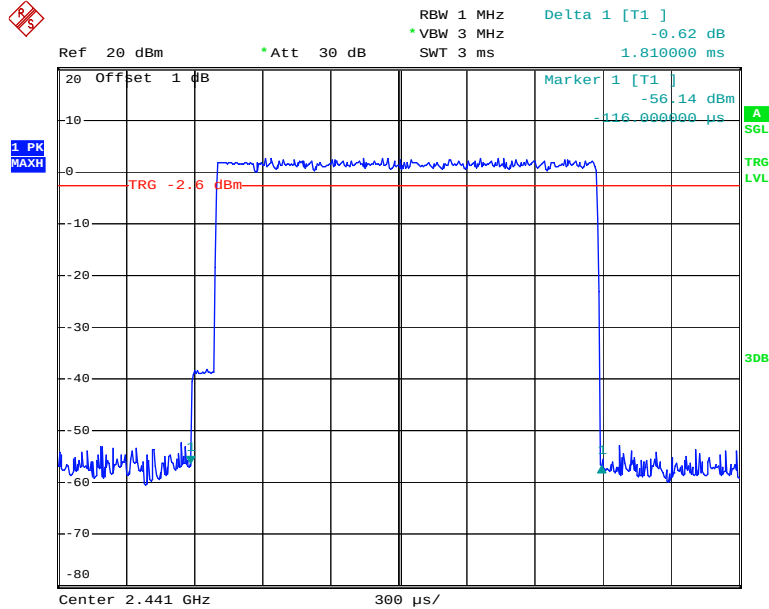
Date: 19.MAR.2014 17:47:32

DH3: Low Channel



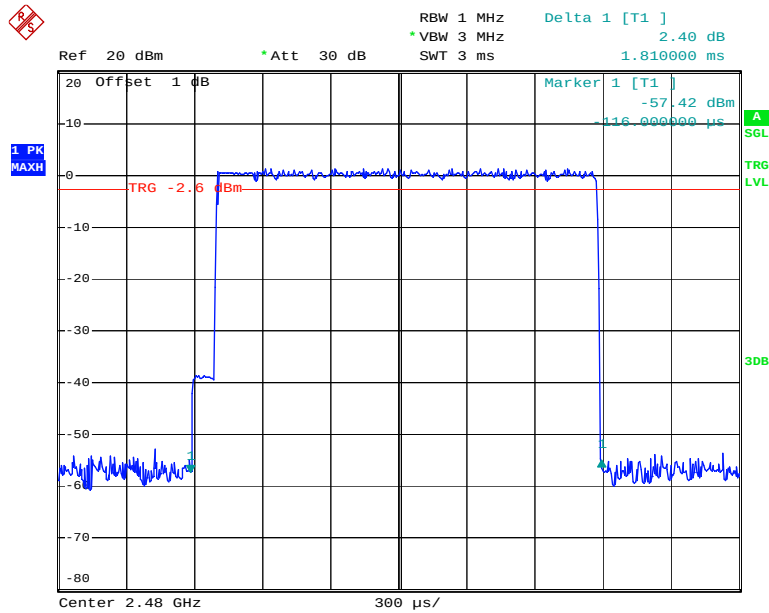
Date: 19.MAR.2014 17:16:36

DH3: Middle Channel



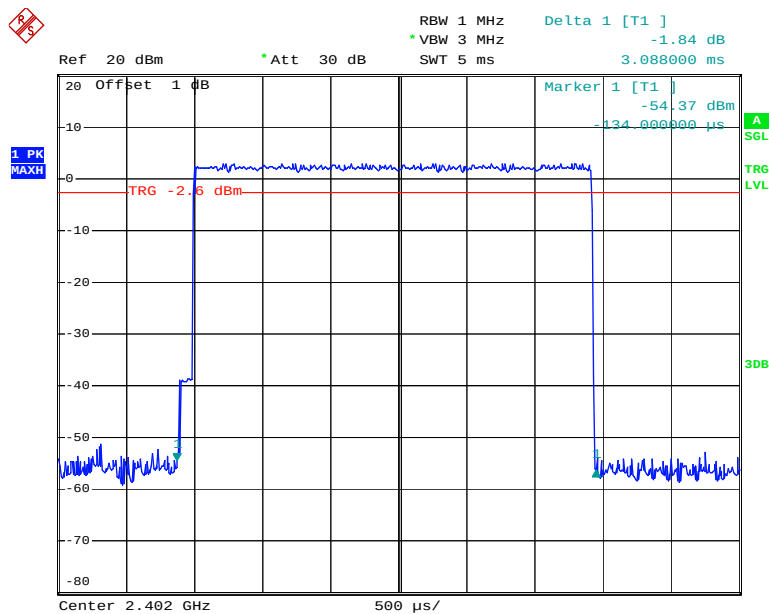
Date: 19.MAR.2014 17:16:07

DH3: High Channel



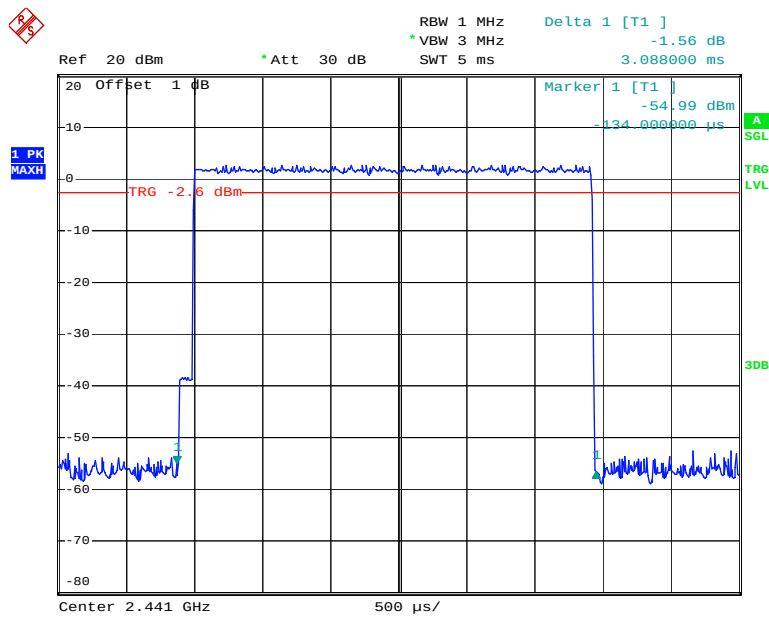
Date: 19.MAR.2014 17:15:43

DH5: Low Channel



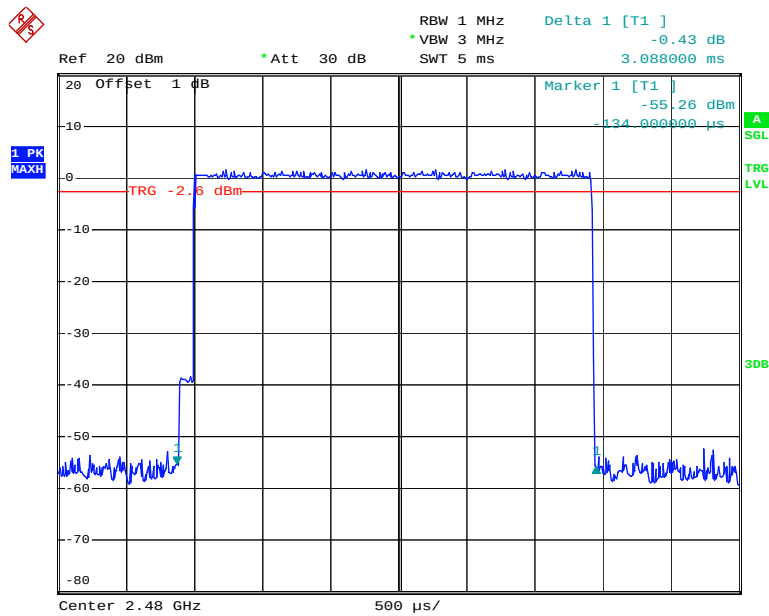
Date: 19.MAR.2014 17:12:14

DH5: Middle Channel



Date: 19.MAR.2014 17:12:55

DH5: High Channel



Date: 19.MAR.2014 17:13:13

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

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

Test Procedure

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2013-06-16	2014-06-15

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

Test Data**Environmental Conditions**

Temperature:	22.6~24.8 °C
Relative Humidity:	48~68 %
ATM Pressure:	100.8~101.7 kPa

* The testing was performed by Ares Liu from 2014-03-19 to 2014-03-24.

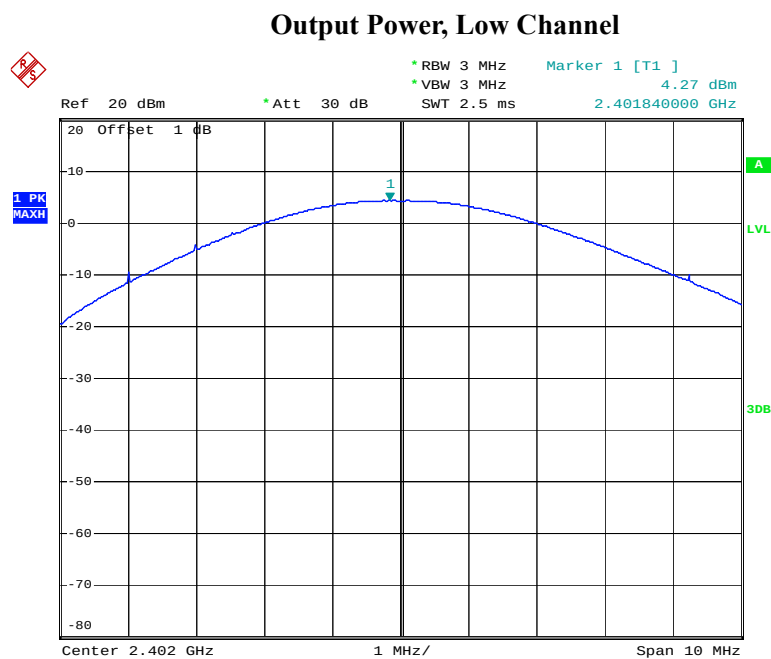
Test Result: Compliance.

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Output power (dBm)	Limit (dBm)
BDR Mode (GFSK)	Low	2402	4.27	30
	Middle	2441	3.94	30
	High	2480	2.90	30
EDR Mode ($\pi/4$ -DQPSK)	Low	2402	2.87	30
	Middle	2441	2.43	30
	High	2480	1.24	30
EDR Mode (8-DPSK)	Low	2402	3.03	30
	Middle	2441	2.62	30
	High	2480	1.69	30

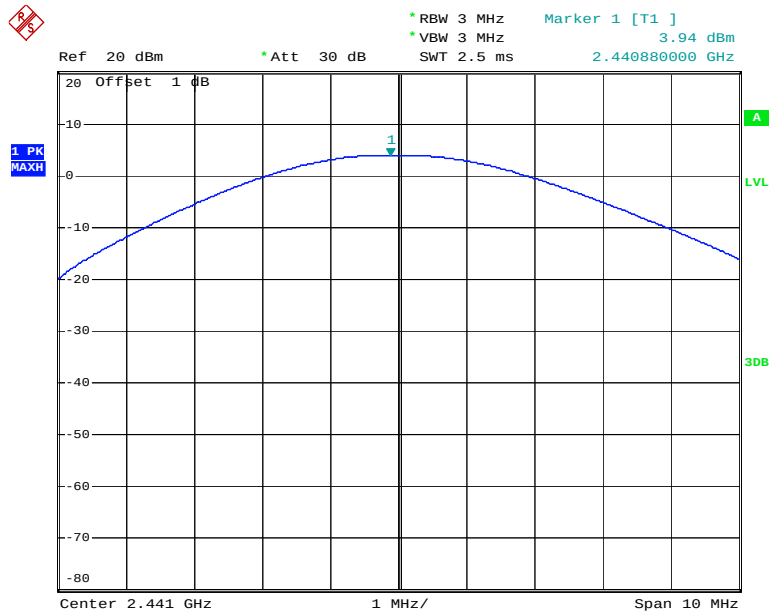
Note: The data above was tested in conducted mode.

BDR Mode (GFSK):



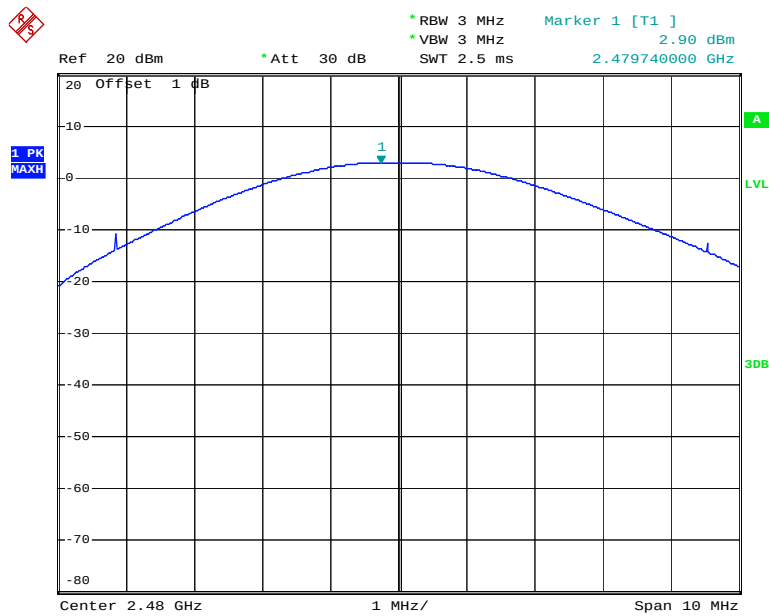
Date: 19.MAR.2014 15:41:56

Output Power, Middle Channel



Date: 19.MAR.2014 15:46:07

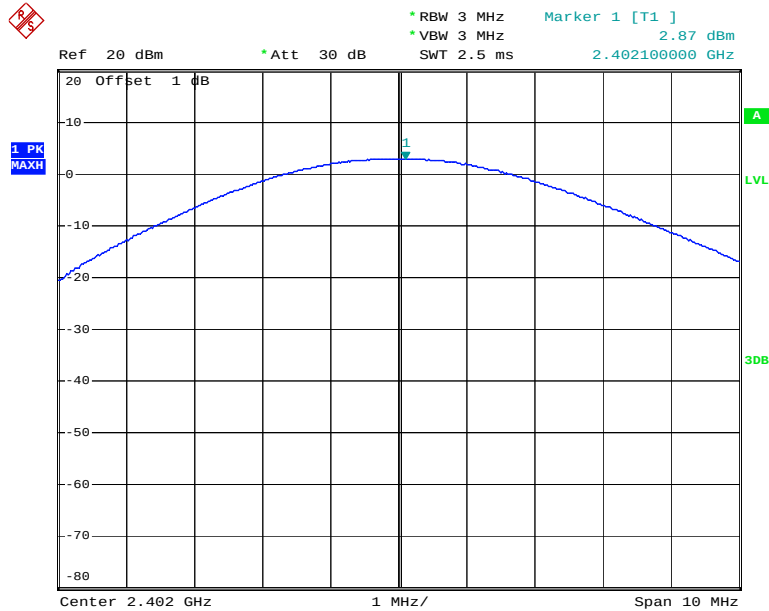
Output Power, High Channel



Date: 19.MAR.2014 15:46:37

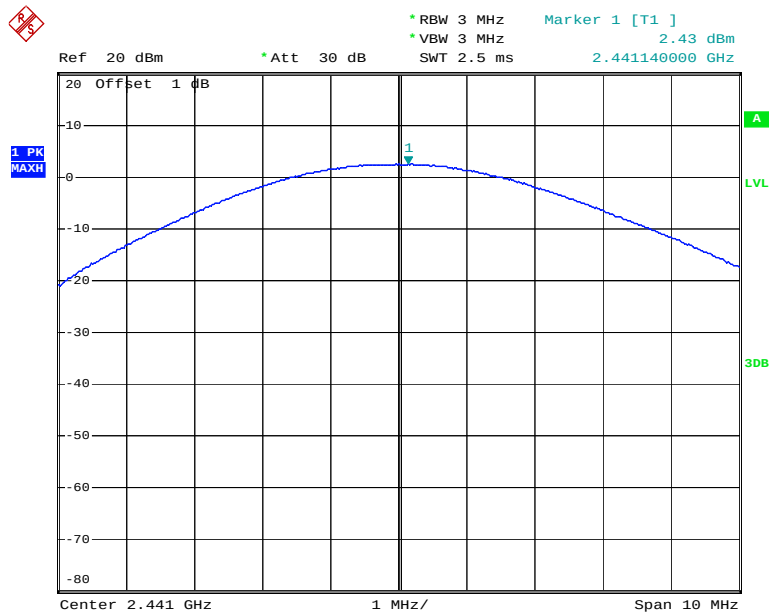
EDR Mode ($\pi/4$ -DQPSK):

Output Power, Low Channel



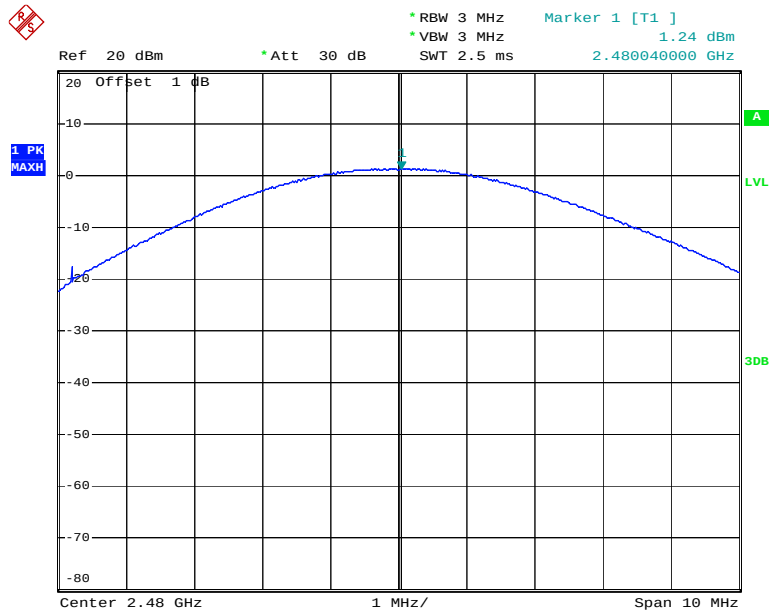
Date: 19.MAR.2014 15:50:16

Output Power, Middle Channel



Date: 19.MAR.2014 15:50:35

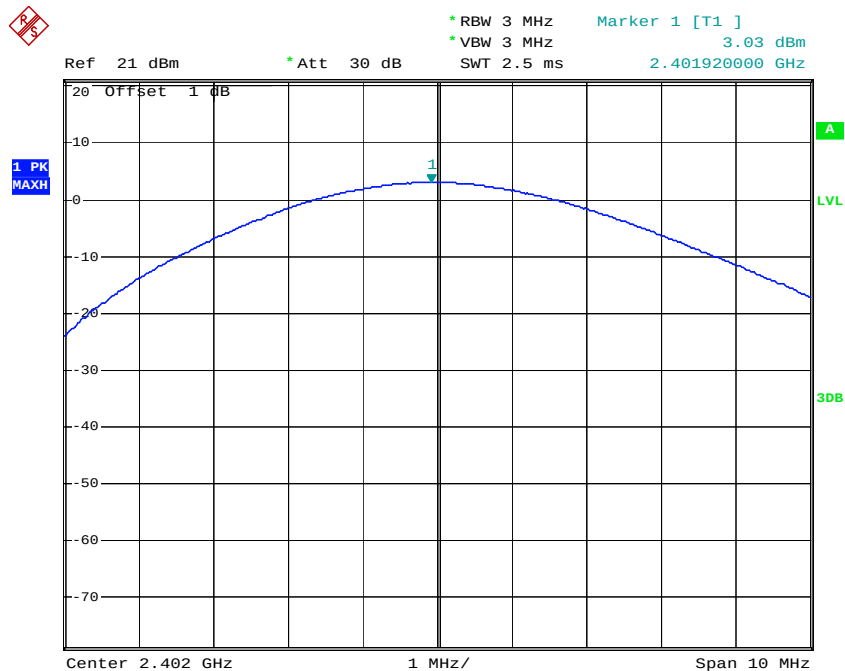
Output Power, High Channel



Date: 19.MAR.2014 15:50:56

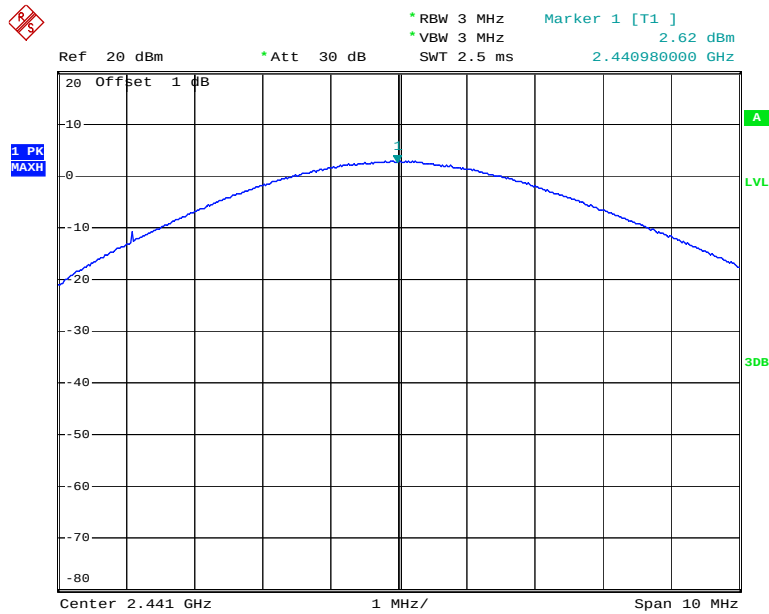
EDR Mode (8-DPSK):

Output Power, Low Channel



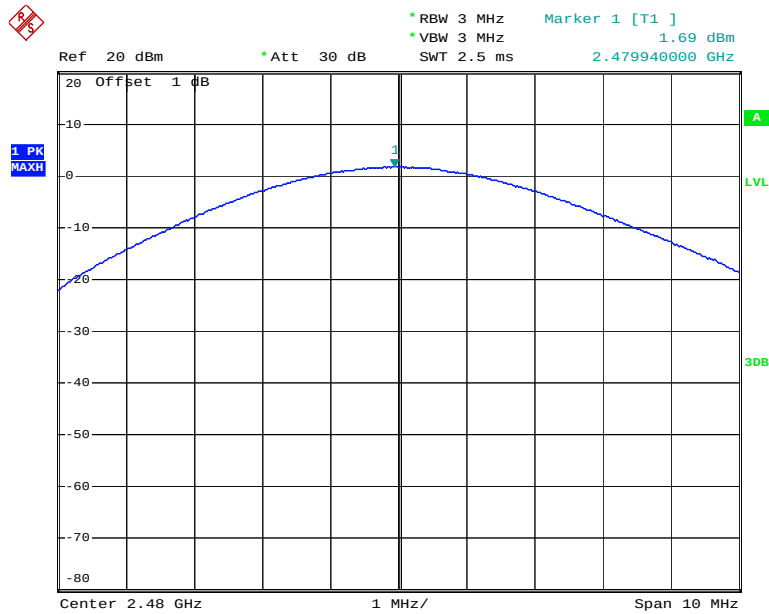
Date: 24.MAR.2014 20:41:47

Output Power, Middle Channel



Date: 19.MAR.2014 15:52:23

Output Power, High Channel



Date: 19.MAR.2014 15:51:56

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	2013-06-16	2014-06-15

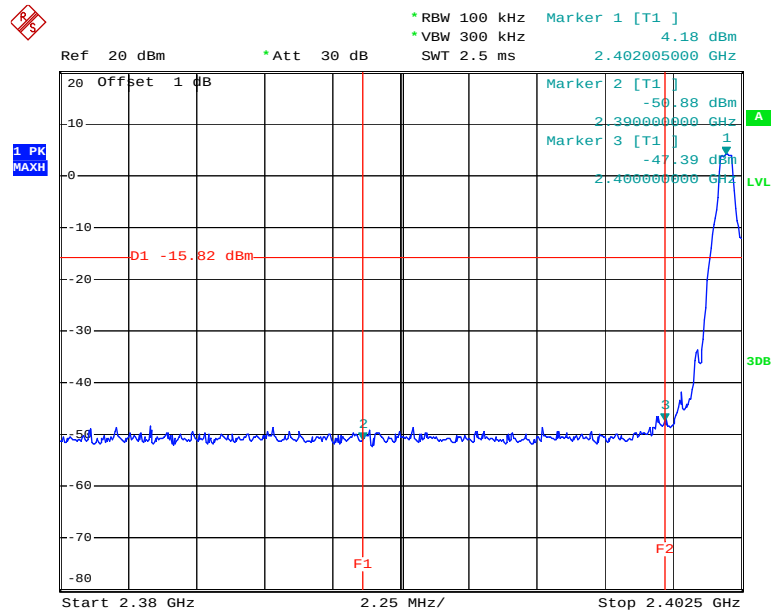
* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

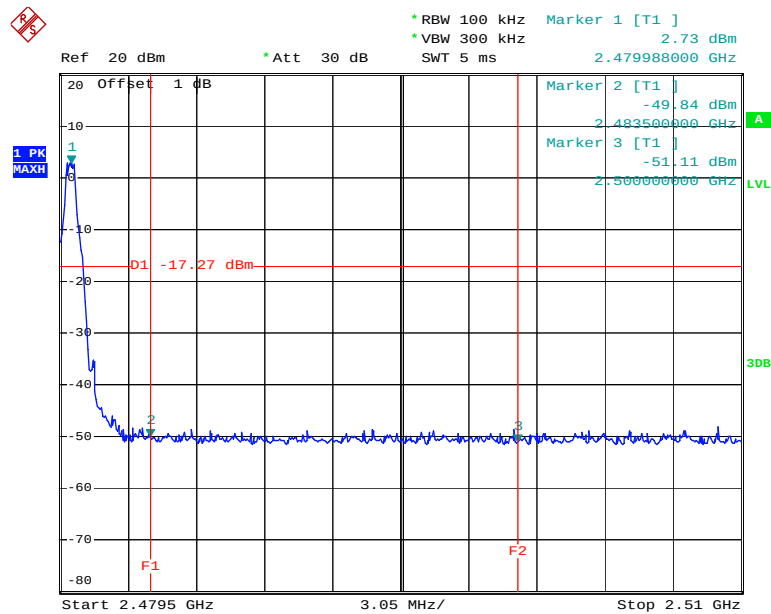
Environmental Conditions

Temperature:	23.7 °C
Relative Humidity:	68 %
ATM Pressure:	100.8 kPa

* The testing was performed by Ares Liu on 2014-03-19.

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

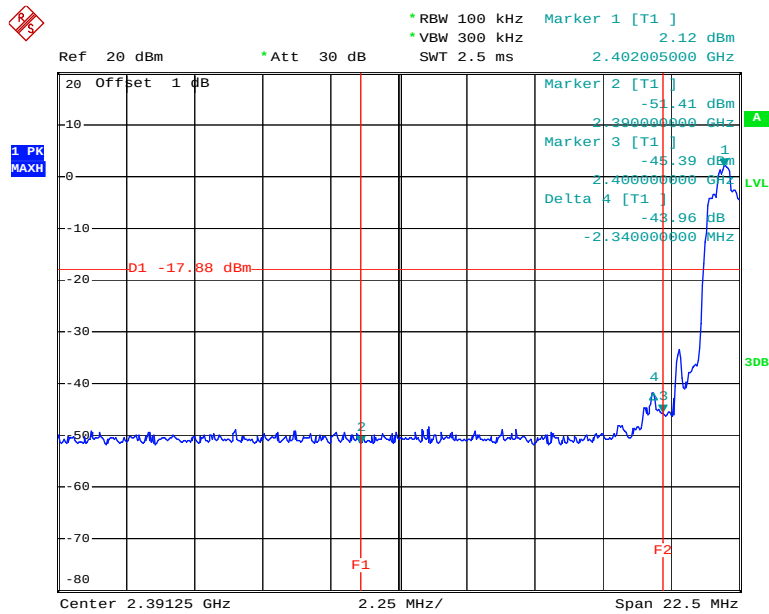
Date: 19.MAR.2014 16:29:26

Band Edge, Right Side

Date: 19.MAR.2014 16:36:42

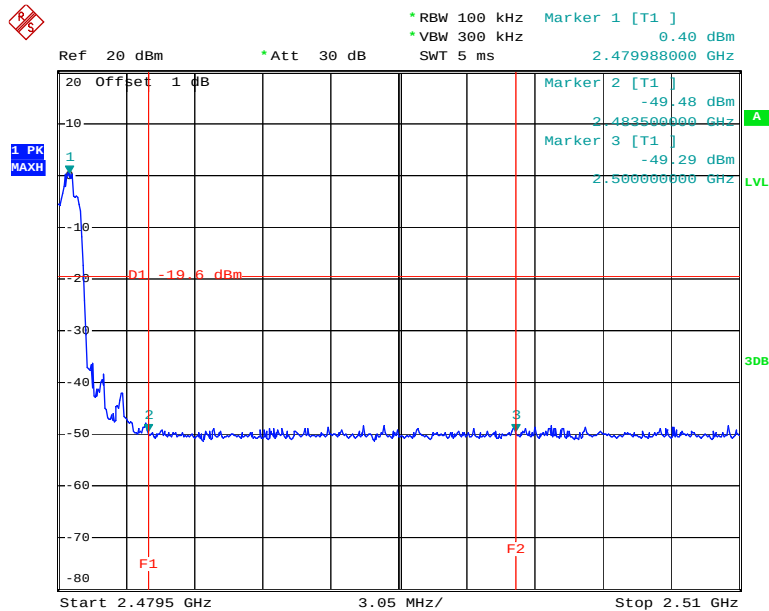
EDR Mode ($\pi/4$ -DQPSK):

Band Edge, Left Side



Date: 19.MAR.2014 16:30:30

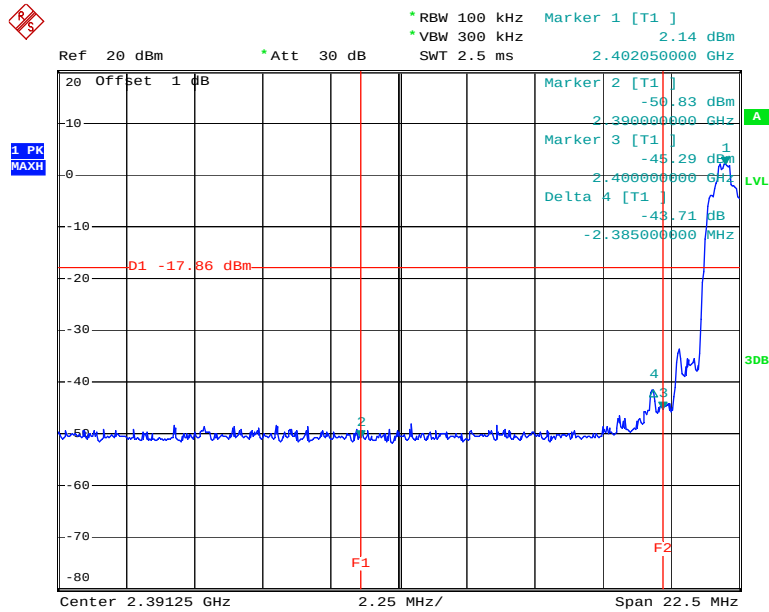
Band Edge, Right Side



Date: 19.MAR.2014 16:33:19

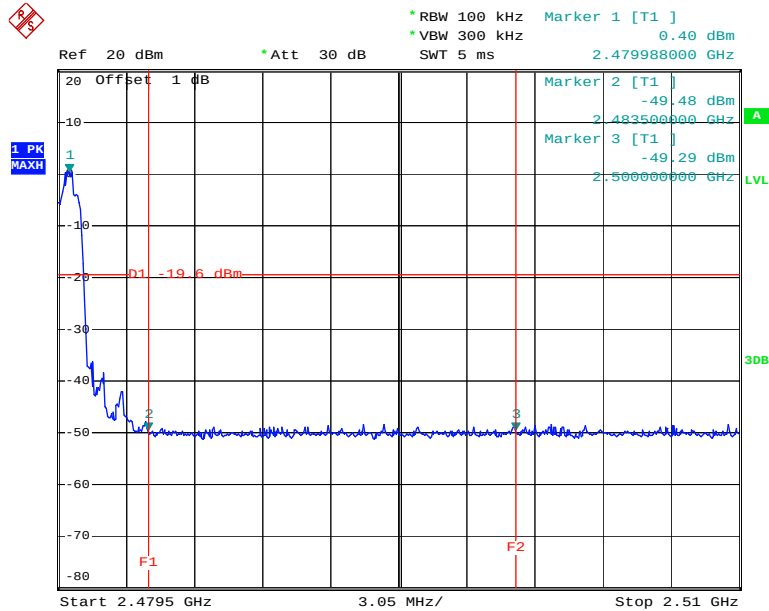
EDR Mode (8-DPSK):

Band Edge, Left Side



Date: 19.MAR.2014 16:31:42

Band Edge, Right Side



Date: 19.MAR.2014 16:33:19

DECLARATION OF SIMILARITY

airSOUND™ Technologies Limited

Date: 7th April, 2014

To: Bay Area Compliance Laboratories Corp. (Dongguan)
No.69 Pulong Village Puxinhu Industry Zone Tangxia,
Dongguan,
China

Dear Sir/Madam

DECLARATION OF SIMILARITY

We, airSOUND™ Technologies Limited, hereby declare that product: Spatial Soundbar with Bluetooth and Wireless Subwoofer, models: M9 and M12 are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as model name: M10 that was tested by BACL, the results of which are featured in BACL project: R2DG140314005, R2DG140314005-03.

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

M9, M10, and M12 are just different in the model name, enclosure shape and dimension.

Yours sincerely,



Matthew Kitchen

Title: R&D Program Manager

Date: 7th April, 2014

airSOUND™ Technologies Limited

Chapel House, West Mead Drive, Swindon, SN5 7UN, United Kingdom

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