



# FCC PART 15.247

## TEST REPORT

For

### SZ DJI TECHNOLOGY CO., LTD

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Shenzhen, Guangdong, China

**FCC ID: SS3-RE7001402**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Range Extender
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<b>Report Number:</b>	R2DG140221002-00B
<b>Report Date:</b>	2014-03-10
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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *SZ DJI TECHNOLOGY CO., LTD*'s product, model number: *RE700 (FCC ID: SS3-RE7001402)* (the "EUT") in this report was a *Range Extender*, which was measured approximately: 9.0 cm (L) x 6.0 cm (W) x 6.0 cm (H), rated input voltage: DC 3.7 V from lithium battery or DC 5V form system.

\* All measurement and test data in this report was gathered from production sample serial number: 140221002 (Assigned by BACL Dongguan). The EUT was received on 2014-02-26.

### Objective

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

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

### 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 support 802.11n ht20, and configured for testing in an engineering mode, which was provided by manufacturer. For 802.11n ht 20, 11 channels are provided:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

And it was tested with Channel 1, 6 and 11.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all date rates bandwidths, and modulations.

### EUT Exercise Software

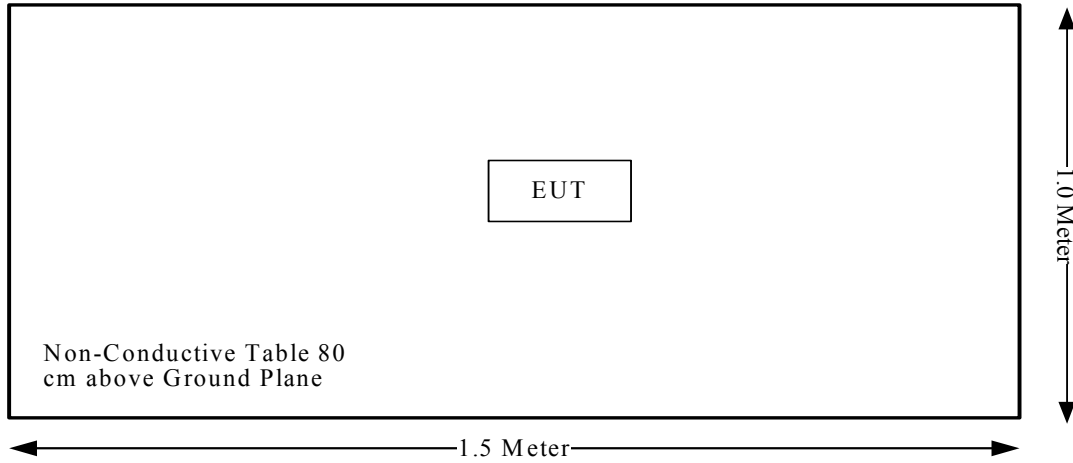
The test software: ‘Atheros Radio Test 2’ was used in test, which was provided by manufacturer, and the test configured as following table:

Test Software Version	Atheros Radio Test 2		
Test Frequency	2412MHz	2437MHz	2462MHz
Data Rate	MCS0	MCS0	MCS0
Power Level Setting	40	40	41

### Equipment Modifications

No modification was made to the EUT.

**Block Diagram of Test Setup**



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Not Applicable
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

Not Applicable: the EUT was powered by battery when the EUT operating at normal function.

**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>(B) Limits for General Population/Uncontrolled Exposure</b>				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f <sup>2</sup> )	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/cm<sup>2</sup>);

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:**

Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
	(dBi)	(numeric)	(dBm)	(mW)			
2462	2	1.58	18.47	70.31	20.00	0.02218	1.0

**Result:** The device meet FCC MPE at 20 cm distance



## **FCC §15.203 - ANTENNA REQUIREMENT**

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### **Applicable Standard**

According to § 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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

### **Antenna Connector Construction**

The EUT have two internal antenna, which was Conformance with this requirement, and the maximum gain is 2dBi, please refer to the internal photos.

**Result:** Compliance.

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

**Applicable Standard**

FCC §15.247 (d); §15.209; §15.205;

**Measurement Uncertainty**

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

If  $U_{lab}$  is less than or equal to  $U_{cispr}$  of Table 2, 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 2, then:

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

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

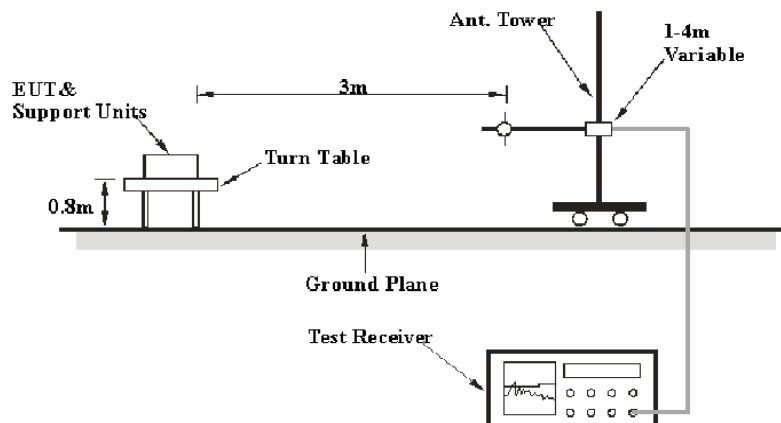
- 30M~200MHz: 5.0 dB
- 200M~1GHz: 6.2 dB
- 1G~6GHz: 4.45 dB
- 6G~18GHz: 5.23 dB

Table 2 – Values of  $U_{cispr}$

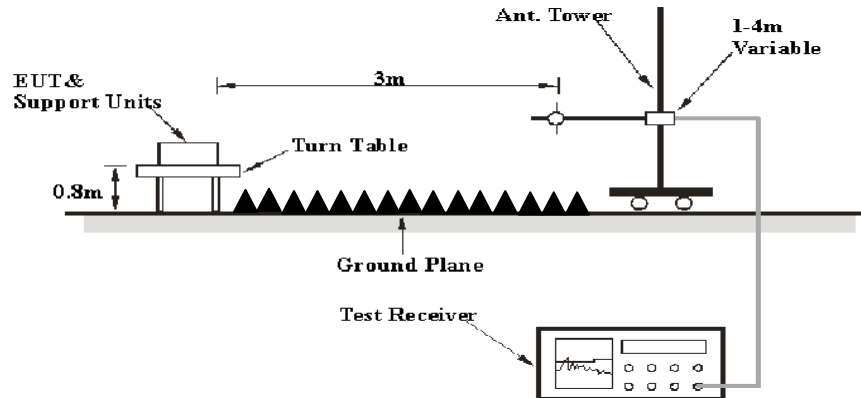
Measurement	$U_{cispr}$
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

**EUT Setup**

**Below 1GHz:**



**Above 1GHz:**



The radiated emission tests were performed in the 3 meters chamber 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.

**EMI Test Receiver & Spectrum Analyzer Setup**

The system was investigated from 30 MHz to 25 GHz.

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

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

**Test Procedure**

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

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

## Corrected Amplitude & Margin Calculation

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

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

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 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).

## Test Results Summary

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

**5.08 dB at 215.88 MHz in the Vertical polarization**

## Test Data

### Environmental Conditions

Temperature:	20.1 °C
Relative Humidity:	68 %
ATM Pressure:	101.2 kPa

*The testing was performed by Allen Qiao on 2014-03-08.*

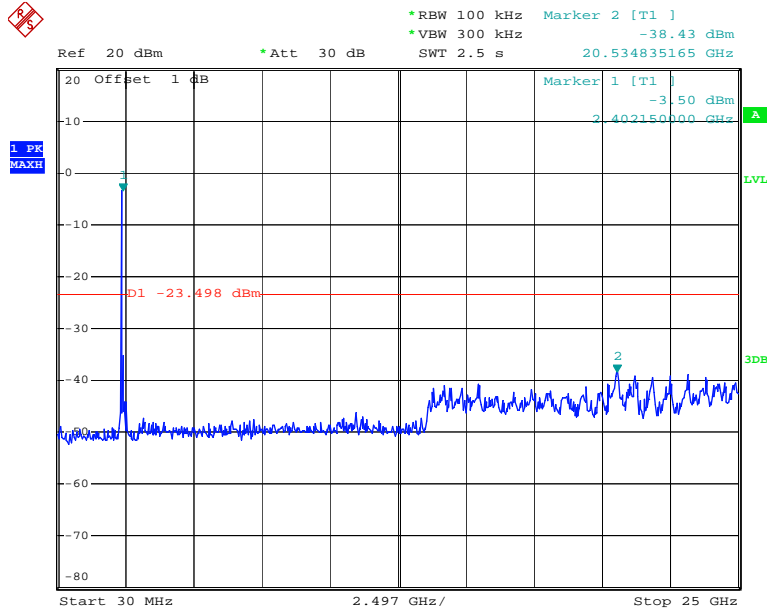
Mode: Transmitting

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	FCC 15.247	
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	68.27	PK	H	25.67	4.42	0.00	98.36	N/A	N/A
2412	52.44	AV	H	25.67	4.42	0.00	82.53	N/A	N/A
2412	72.13	PK	V	25.67	4.42	0.00	102.22	N/A	N/A
2412	56.49	AV	V	25.67	4.42	0.00	86.58	N/A	N/A
2390	31.79	PK	V	25.61	4.39	0.00	61.79	74.00	12.21
2390	16.91	AV	V	25.61	4.39	0.00	46.91	54.00	7.09
4824	32.71	PK	V	30.64	6.03	27.26	42.12	74.00	31.88
4824	18.1	AV	V	30.64	6.03	27.26	27.51	54.00	26.49
7236	31.83	PK	H	34.17	7.47	26.36	47.11	74.00	26.89
7236	18.32	AV	H	34.17	7.47	26.36	33.60	54.00	20.40
9648	32.48	PK	H	36.06	8.81	26.06	51.29	74.00	22.71
9648	18.21	AV	H	36.06	8.81	26.06	37.02	54.00	16.98
3215.91	38.59	PK	V	27.89	6.51	27.48	45.51	74.00	28.49
3215.91	33.61	AV	V	27.89	6.51	27.48	40.53	54.00	13.47
215.88	46.7	QP	V	11.41	1.78	21.47	38.42	43.50	5.08*
Middle Channel: 2437 MHz									
2437	67.74	PK	H	25.74	4.41	0.00	97.89	N/A	N/A
2437	52.03	AV	H	25.74	4.41	0.00	82.18	N/A	N/A
2437	71.19	PK	V	25.74	4.41	0.00	101.34	N/A	N/A
2437	55.72	AV	V	25.74	4.41	0.00	85.87	N/A	N/A
4874	32.53	PK	V	30.77	6.09	27.26	42.13	74.00	31.87
4874	18.29	AV	V	30.77	6.09	27.26	27.89	54.00	26.11
7311	33.25	PK	H	34.35	7.51	26.51	48.60	74.00	25.40
7311	18.11	AV	H	34.35	7.51	26.51	33.46	54.00	20.54
9748	33.16	PK	H	36.30	8.83	25.68	52.61	74.00	21.39
9748	18.01	AV	H	36.30	8.83	25.68	37.46	54.00	16.54
2924.54	36.26	PK	V	27.00	6.69	27.43	42.52	74.00	31.48
2924.54	20.08	AV	V	27.00	6.69	27.43	26.34	54.00	27.66
3249.89	39.47	PK	V	28.00	6.32	27.45	46.34	74.00	27.66
3249.89	34.53	AV	V	28.00	6.32	27.45	41.40	54.00	12.60
215.93	46.3	QP	V	11.41	1.78	21.47	38.02	43.50	5.48*
High Channel: 2462 MHz									
2462	68.69	PK	H	25.80	4.43	0.00	98.92	N/A	N/A
2462	52.67	AV	H	25.80	4.43	0.00	82.90	N/A	N/A
2462	70.77	PK	V	25.80	4.43	0.00	101.00	N/A	N/A
2462	54.49	AV	V	25.80	4.43	0.00	84.72	N/A	N/A
2483.5	29.11	PK	V	25.86	4.49	0.00	59.46	74.00	14.54
2483.5	15.57	AV	V	25.86	4.49	0.00	45.92	54.00	8.08
4924	32.46	PK	V	30.90	5.97	27.27	42.06	74.00	31.94
4924	18.12	AV	V	30.90	5.97	27.27	27.72	54.00	26.28
7386	33.45	PK	H	34.53	7.55	26.66	48.87	74.00	25.13
7386	18.26	AV	H	34.53	7.55	26.66	33.68	54.00	20.32
9848	33.32	PK	H	36.54	8.85	25.49	53.22	74.00	20.78
9848	18.08	AV	H	36.54	8.85	25.49	37.98	54.00	16.02
3282.72	41.31	PK	V	28.10	5.93	27.41	47.93	74.00	26.07
3282.72	36.46	AV	V	28.10	5.93	27.41	43.08	54.00	10.92
215.79	46.1	QP	V	11.40	1.78	21.47	37.81	43.50	5.69*

\*Within measurement uncertainty!

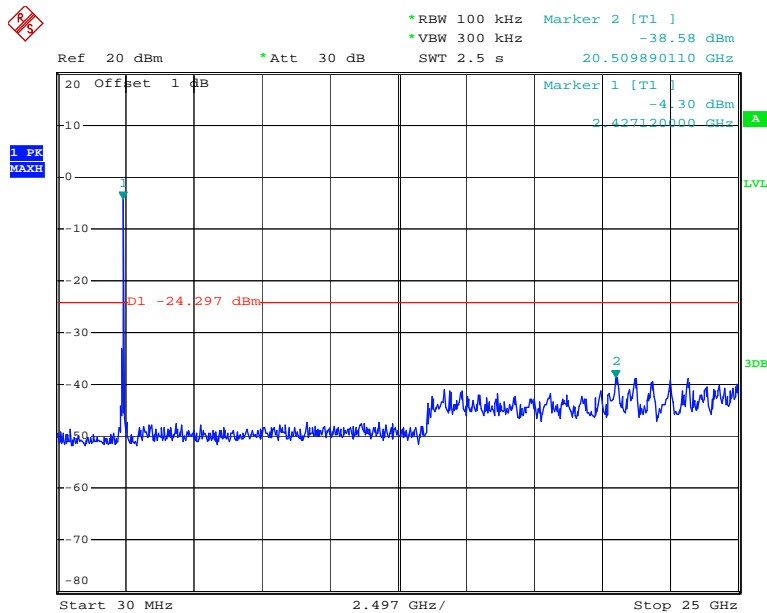
### Conducted Spurious Emissions at Antenna Port

#### Chain 0: Low Channel



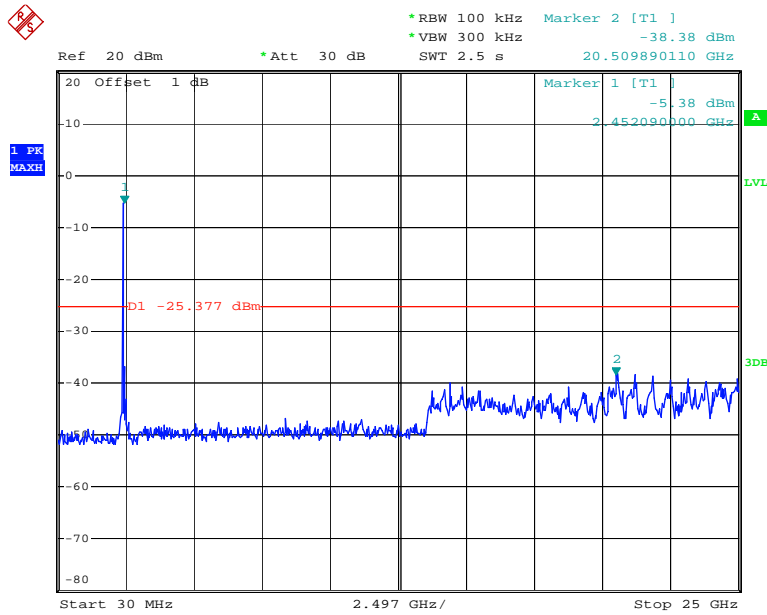
Date: 8.MAR.2014 13:33:45

#### Chain 0: Middle Channel



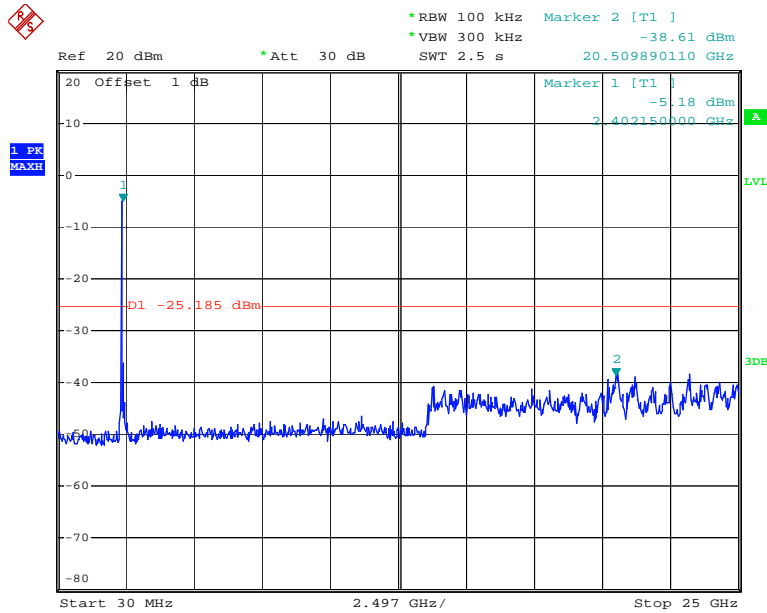
Date: 8.MAR.2014 13:35:41

### Chain 0: High Channel



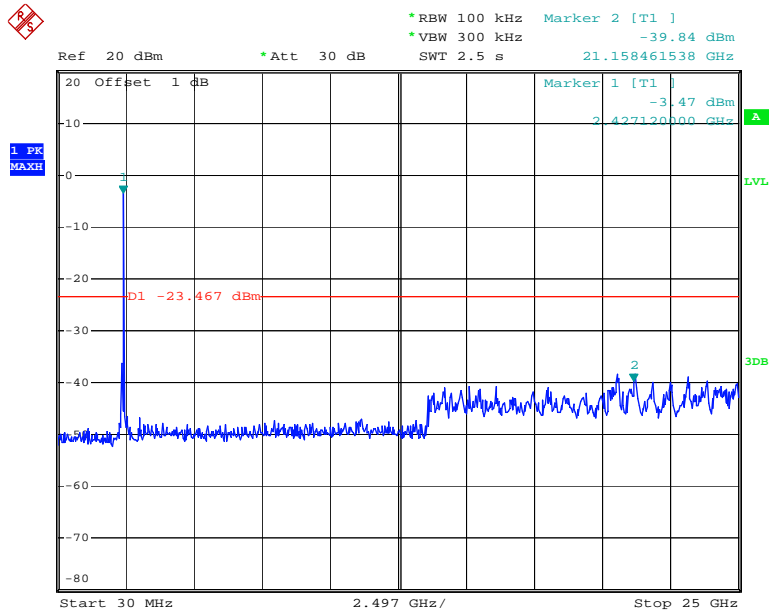
Date: 8.MAR.2014 13:37:35

### Chain 1: Low Channel



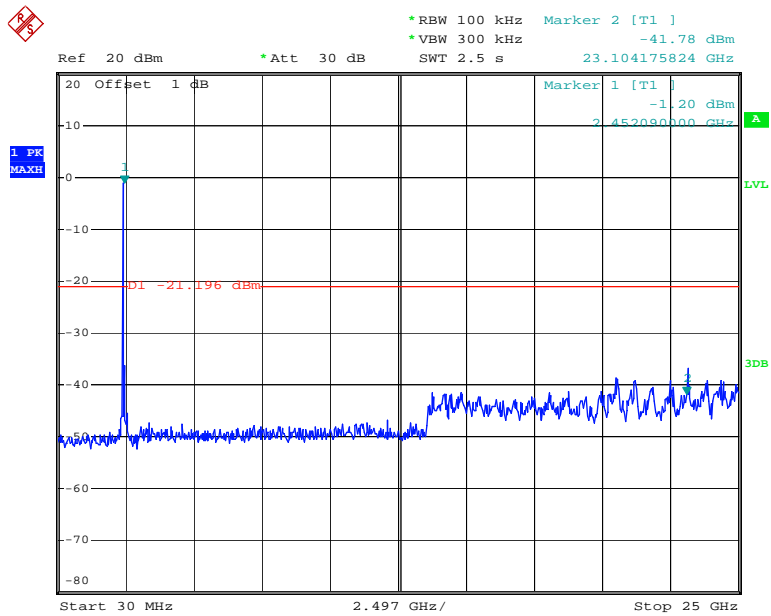
Date: 8.MAR.2014 13:29:32

### Chain 1: Middle Channel



Date: 8.MAR.2014 13:26:01

### Chain 1: High Channel



Date: 8.MAR.2014 13:23:59



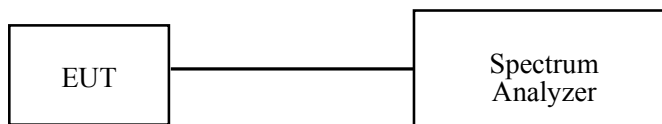
## FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

### Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 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 without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. 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 6 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

<b>Temperature:</b>	23.5 °C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	101.2 kPa

*The testing was performed by Allen Qiao on 2014-03-08*

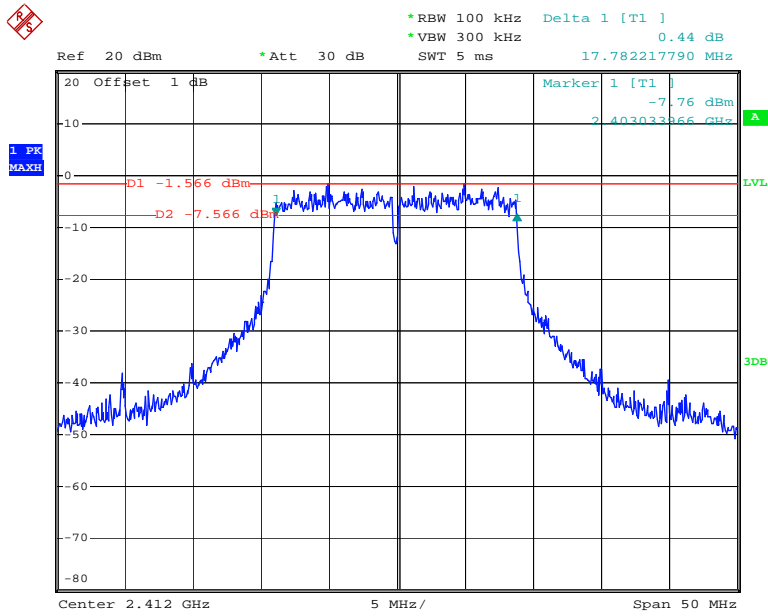
**Test Result:** Pass.

Please refer to the following tables and plots.

*Test Mode: Transmitting*

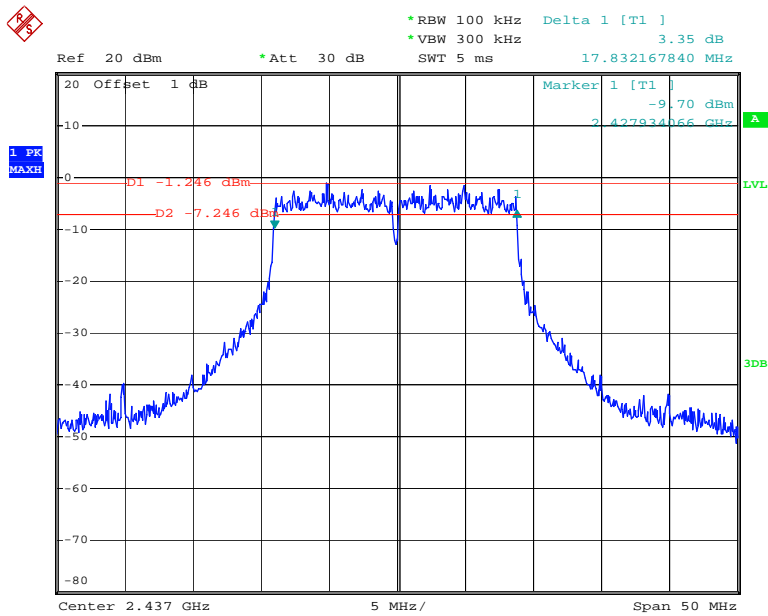
Channel	Frequency	6 dB Bandwidth (MHz)		Limit
	(MHz)	Chain 0	Chain 1	(kHz)
Low	2412	17.78	17.83	>500
Middle	2437	17.83	17.83	>500
High	2462	17.78	17.83	>500

### Chain 0: Low Channel



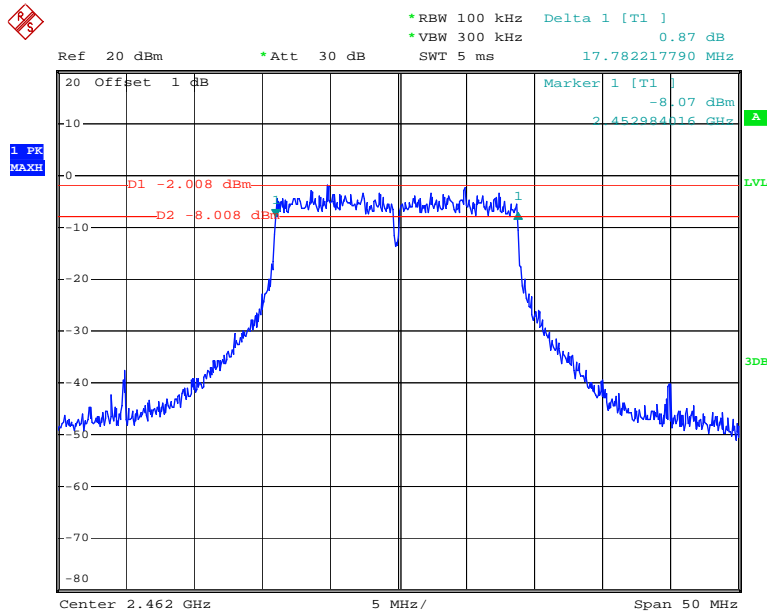
Date: 8.MAR.2014 13:32:29

### Chain 0: Middle Channel



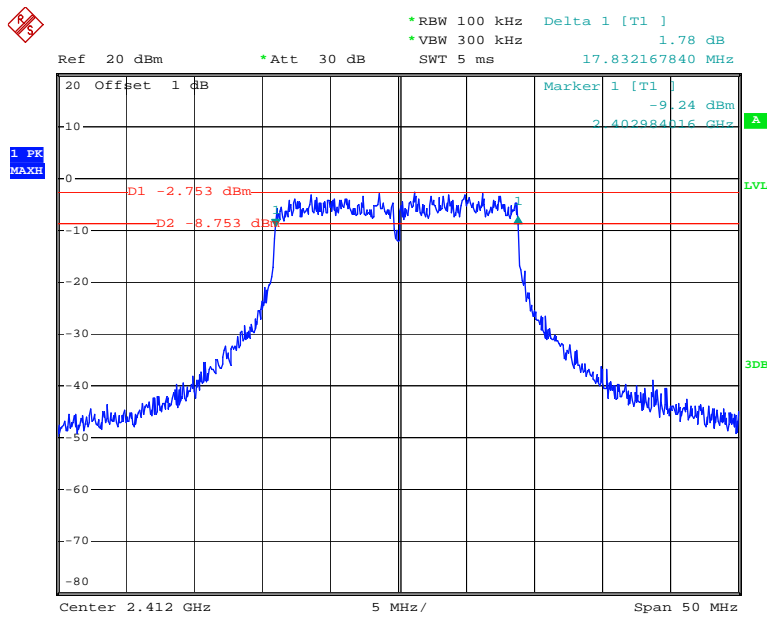
Date: 8.MAR.2014 13:34:36

### Chain 0: High Channel



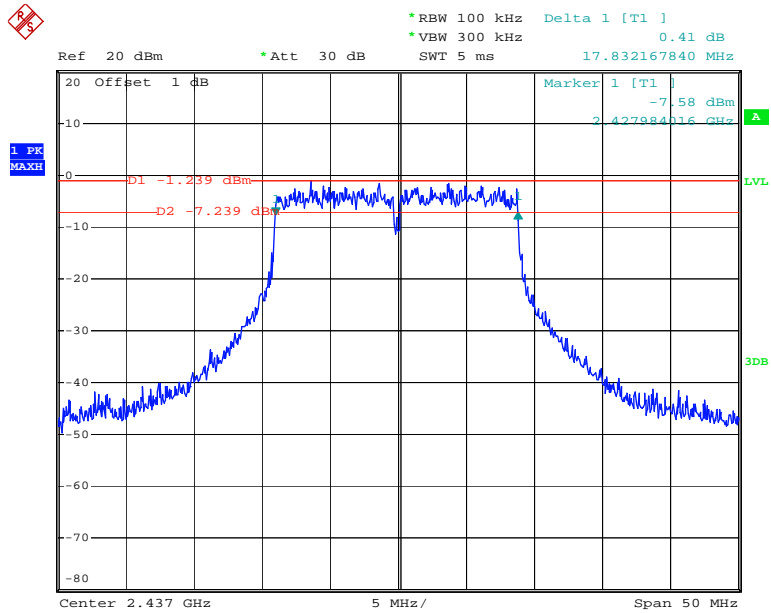
Date: 8.MAR.2014 13:36:15

### Chain 1: Low Channel



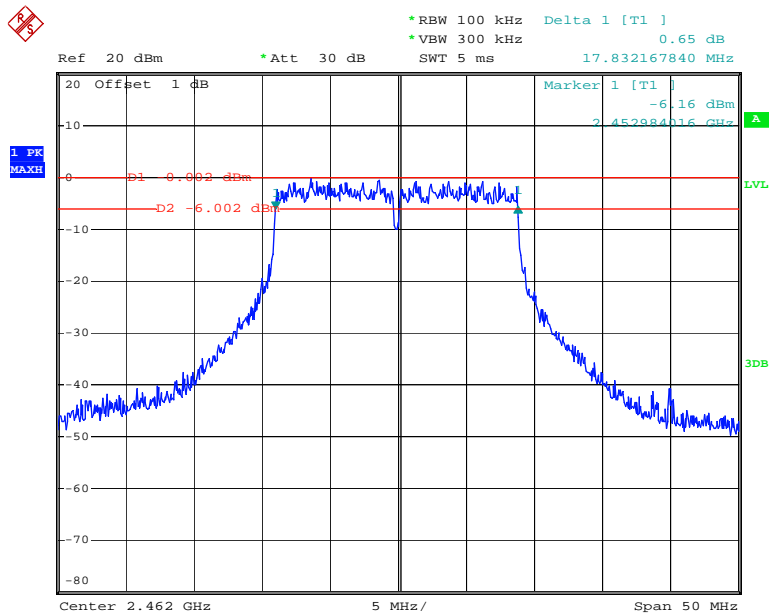
Date: 8.MAR.2014 13:27:58

### Chain 1: Middle Channel



Date: 8.MAR.2014 13:25:06

### Chain1: High Channel



Date: 8.MAR.2014 13:22:28

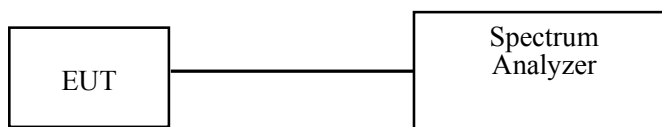
## FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

### Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

### Test Procedure

1. According to KDB 558074 D01 DTS Meas Guidance v03r01, place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a spectrum Analyzer.
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**

<b>Temperature:</b>	23.5 °C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	101.2 kPa

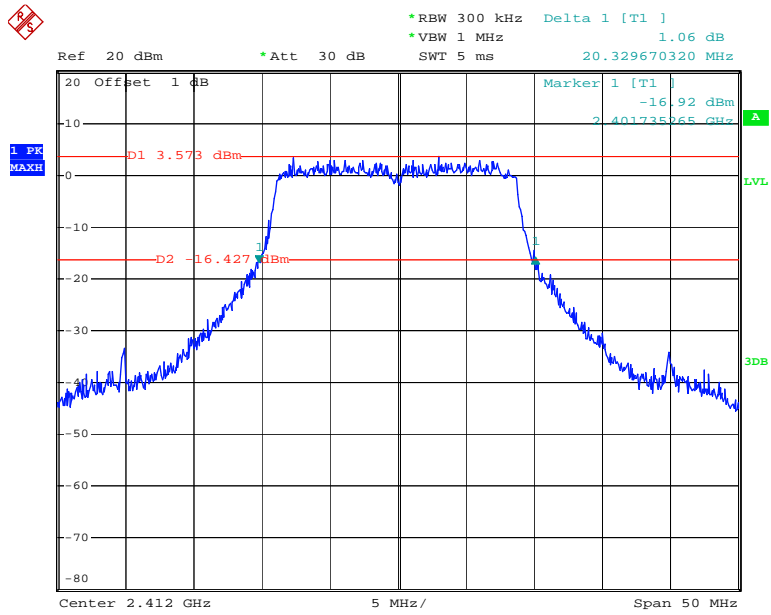
*The testing was performed by Allen Qiao on 2014-03-08*

*Test Mode: Transmitting*

Channel	Frequency	Conducted Output Power (dBm)			Limit	Result
	(MHz)	Chain 0	Chain 1	Total	(dBm)	
Low	2412	15.11	15.12	18.13	30	PASS
Middle	2437	15.19	15.33	18.27	30	PASS
High	2462	15.19	15.72	18.47	30	PASS

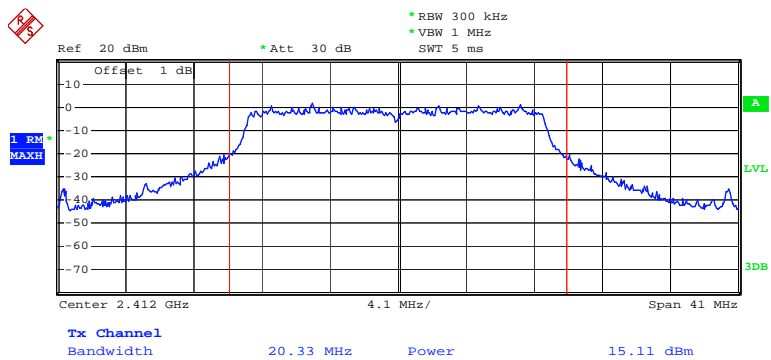
Please refer to the following plots

**Chain 0: OBW, Low Channel**



Date: 8.MAR.2014 13:32:43

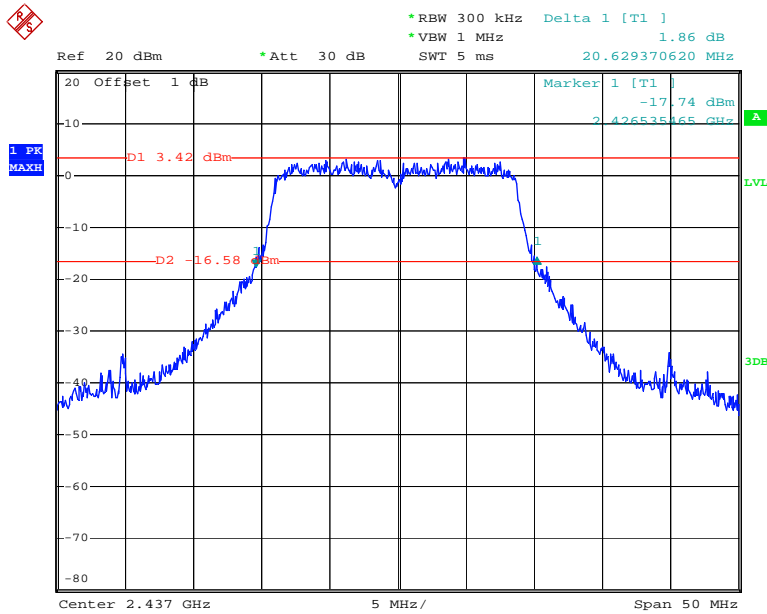
**Chain 0: RF Output Power, Low Channel**



Date: 8.MAR.2014 13:33:03

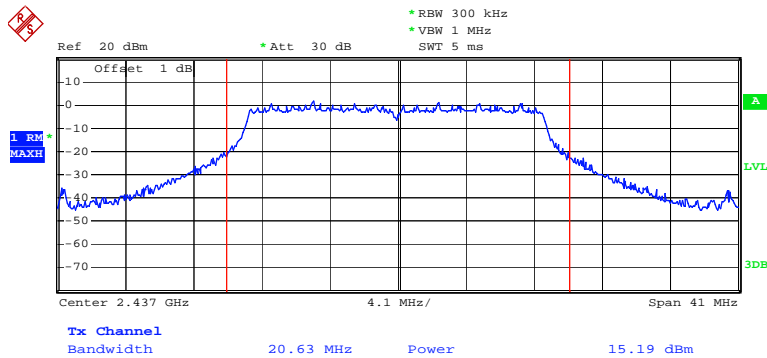


**Chain 0: OBW, Middle Channel**



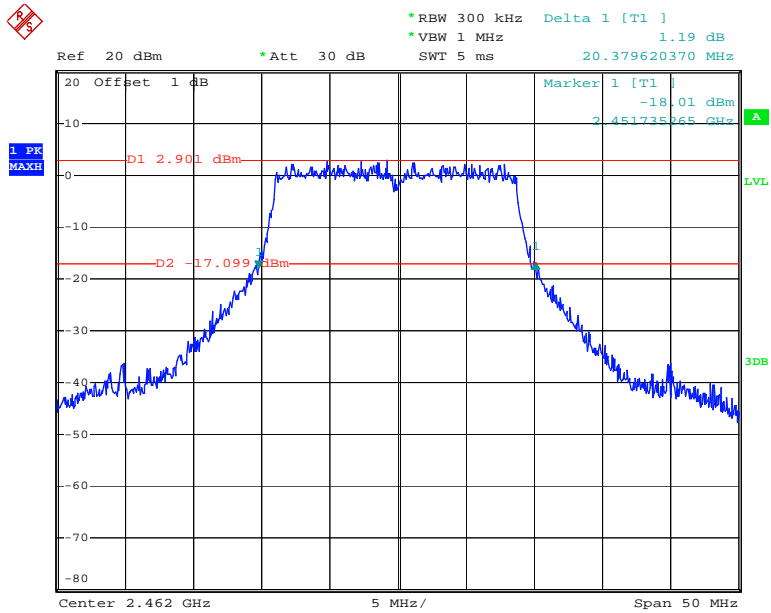
Date: 8.MAR.2014 13:34:50

**Chain0: RF Output Power, Middle Channel**



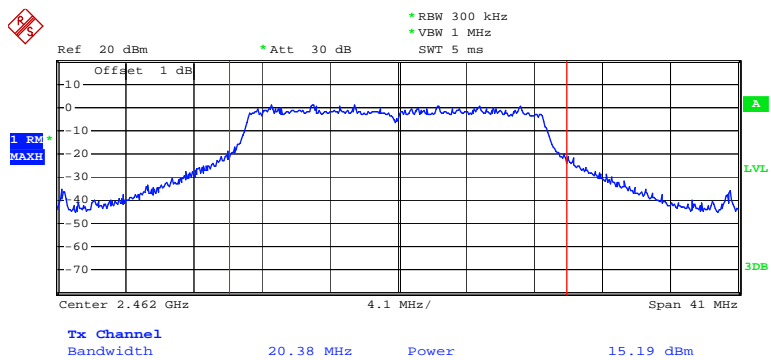
Date: 8.MAR.2014 13:35:14

**Chain 0: OBW, High Channel**



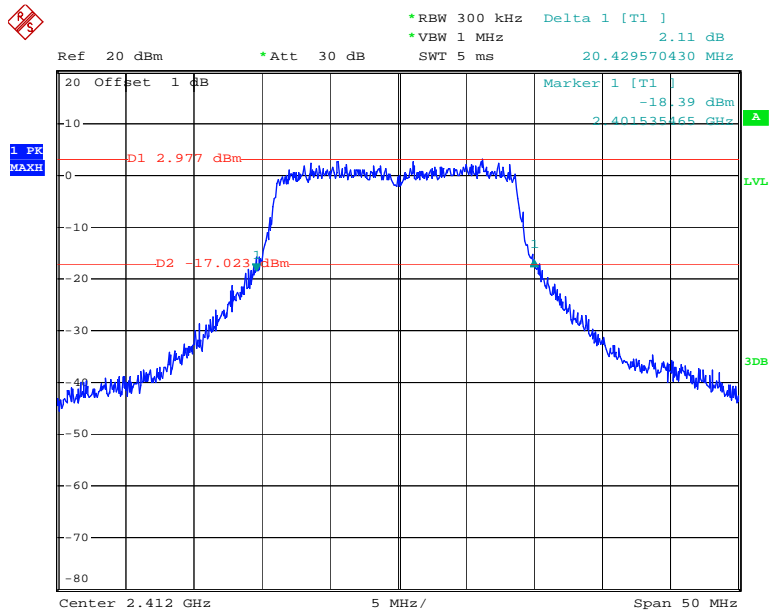
Date: 8.MAR.2014 13:36:29

**Chain 0:RF Output Power, High Channel**



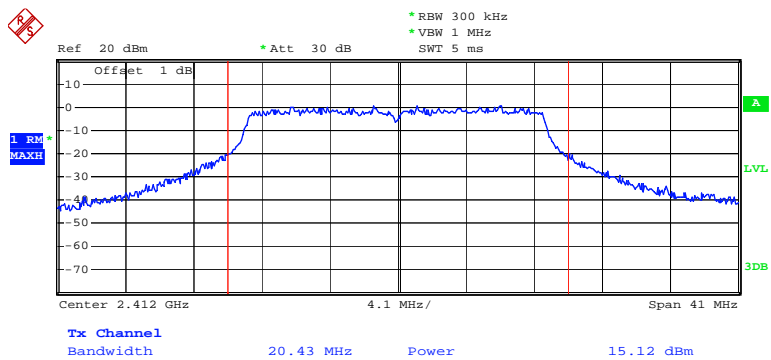
Date: 8.MAR.2014 13:36:58

**Chain 1:OBW, Low Channel**



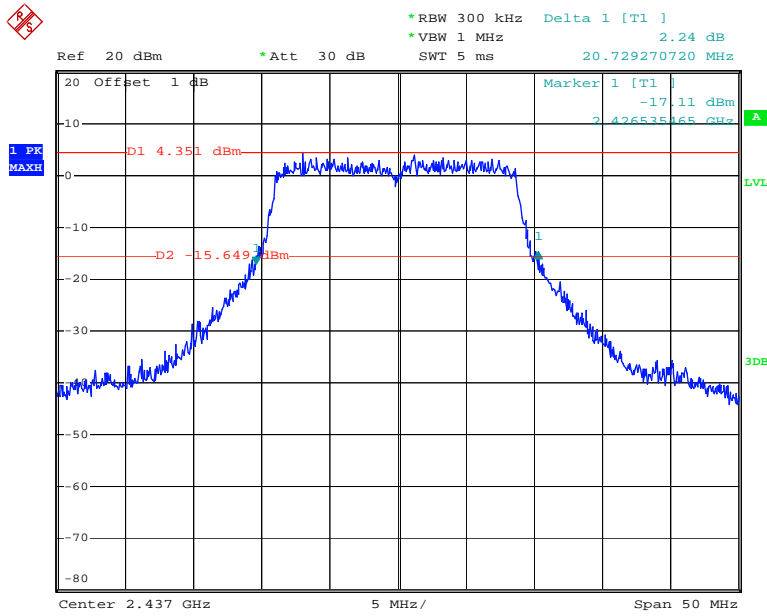
Date: 8.MAR.2014 13:28:12

**Chain 1: RF Output Power, Low Channel**



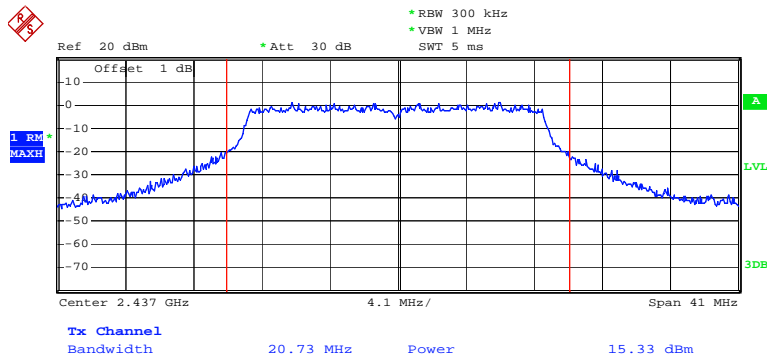
Date: 8.MAR.2014 13:29:05

**Chain 1:OBW, Middle Channel**



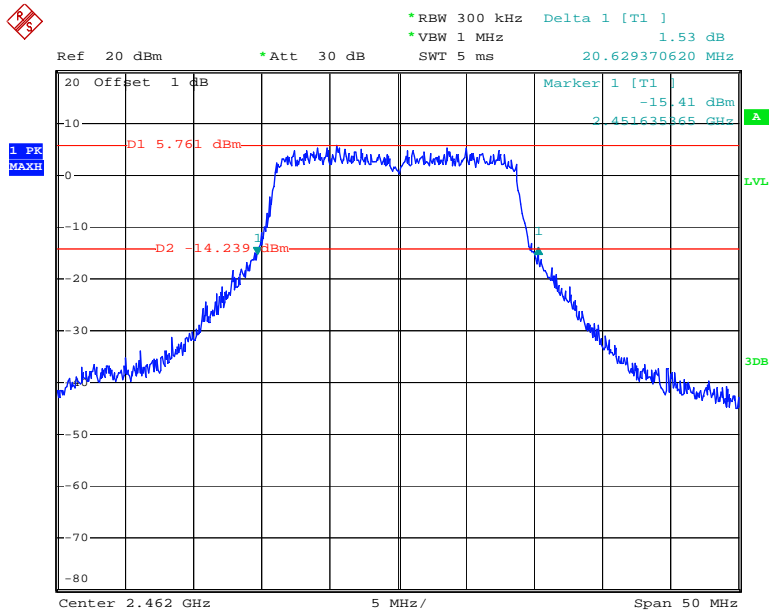
Date: 8.MAR.2014 13:25:20

**Chain 1:RF Output Power, Middle Channel**



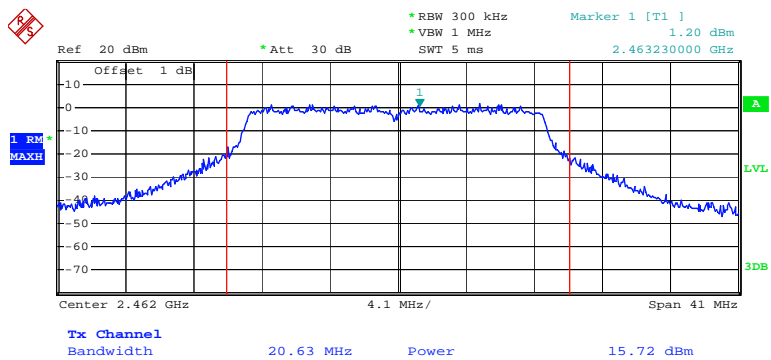
Date: 8.MAR.2014 13:25:34

### Chain 1:OBW, High Channel



Date: 8.MAR.2014 13:22:41

### Chain 1:RF Output Power, High Channel



Date: 8.MAR.2014 13:23:32

## **FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE**

### **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. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 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**

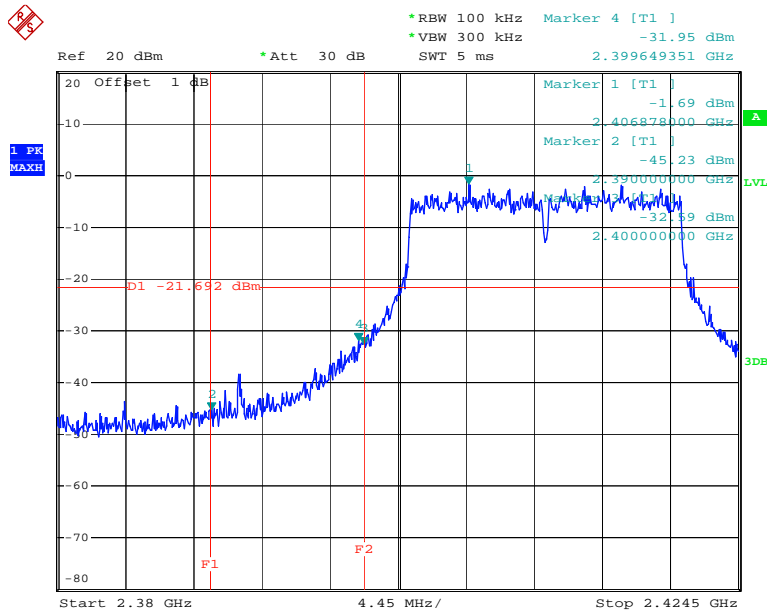
<b>Temperature:</b>	23.5 °C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	101.2 kPa

*The testing was performed by Allen Qiao on 2014-03-08*

#### **Test Result: Compliance**

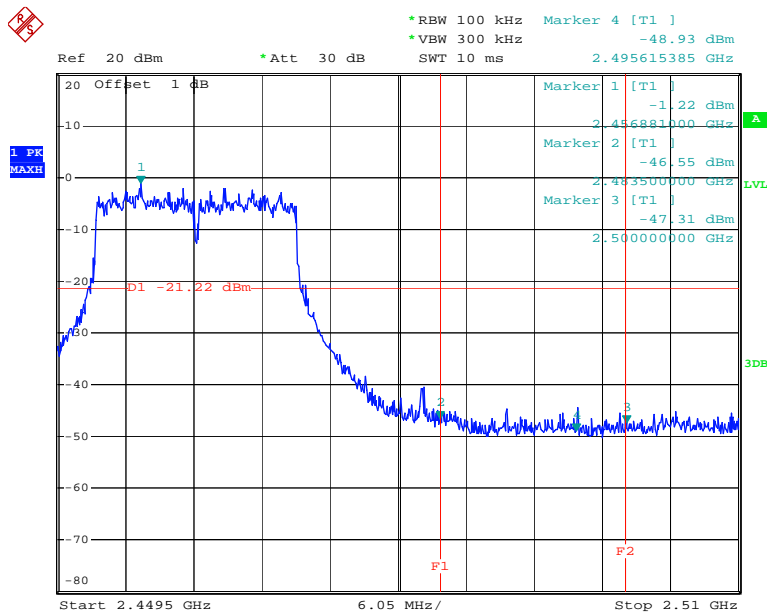
Please refer to following table and plots.

**Chain0: Band Edge, Left Side**



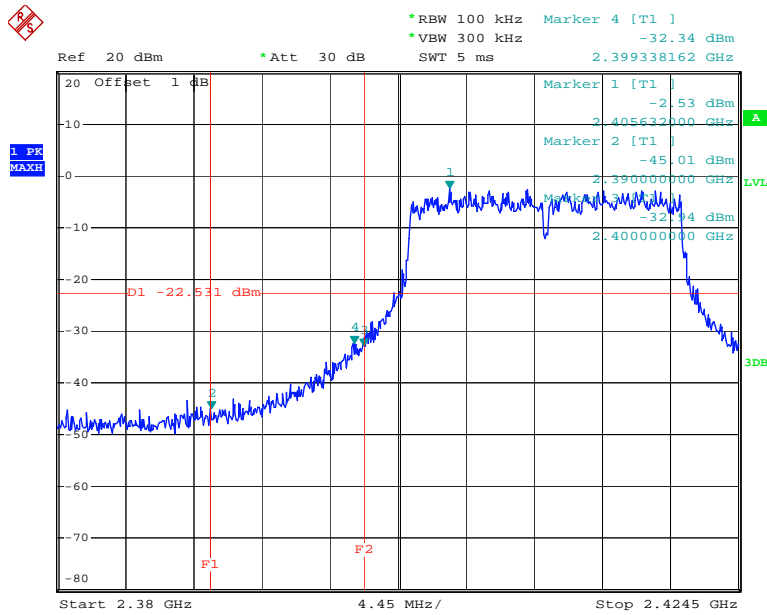
Date: 8.MAR.2014 13:33:57

**Chain0:Band Edge, Right Side**



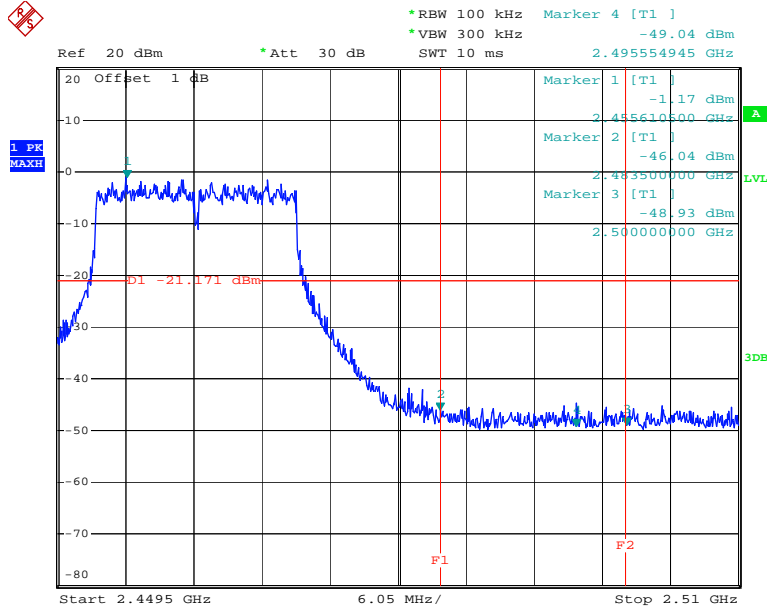
Date: 8.MAR.2014 13:37:47

**Chain1: Band Edge, Left Side**



Date: 8.MAR.2014 13:29:44

**Chain1:Band Edge, Right Side**



Date: 8.MAR.2014 13:24:11



## FCC §15.247(e) - POWER SPECTRAL DENSITY

### Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

### 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 was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
4. Use the peak marker function to determine the maximum amplitude level.

### 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:	23.5 °C
Relative Humidity:	53 %
ATM Pressure:	101.2 kPa

*The testing was performed by Allen Qiao on 2014-03-08*

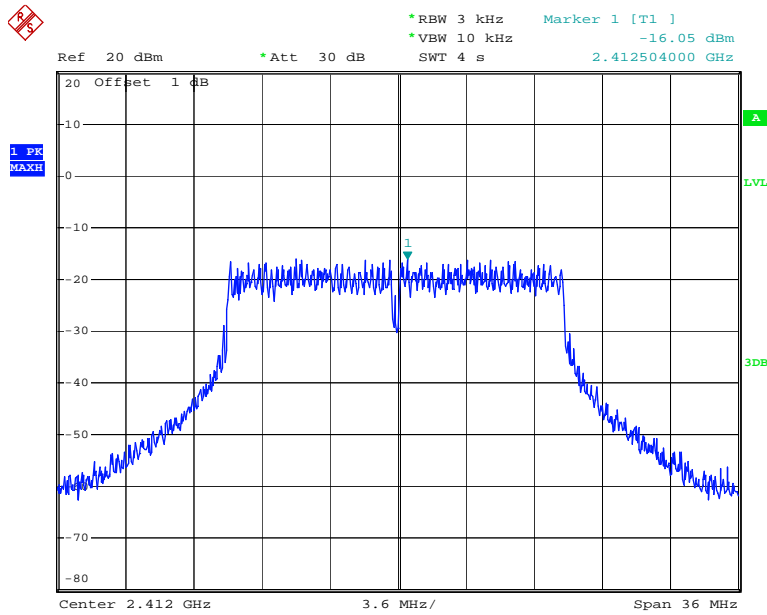
*Test Mode: Transmitting*

**Test Result:** Pass

Channel	PSD (dBm/3kHz)			Limit (dBm/3kHz)	Result
	Chain0	Chain1	Total		
Low	-16.05	-16.85	-13.42	8	PASS
Middle	-15.43	-15.13	-12.27	8	PASS
High	-16.18	-15.31	-12.71	8	PASS

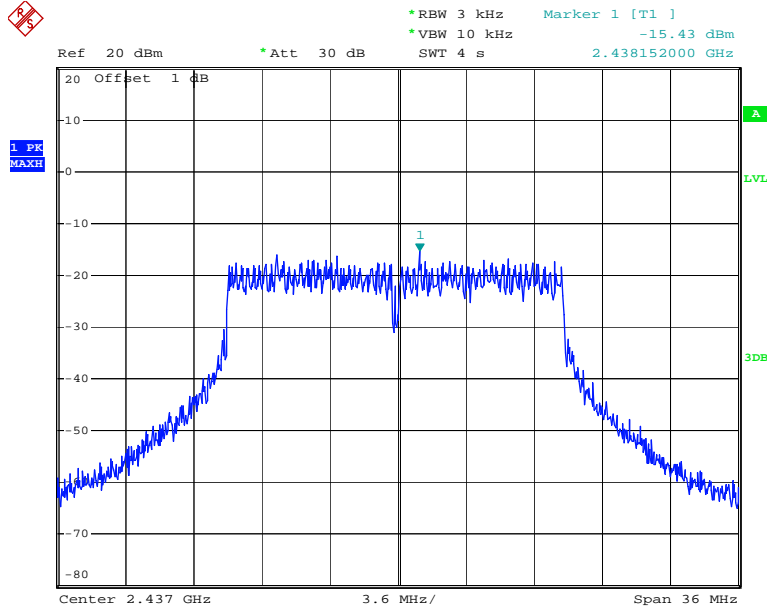
Please refer to the following plots

### Chain 0: Power Spectral Density, Low Channel



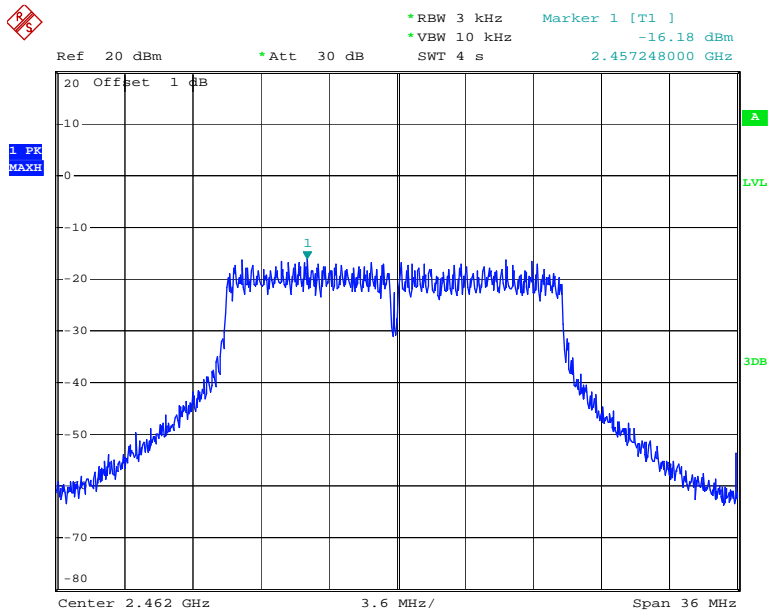
Date: 8.MAR.2014 13:33:32

### Chain 0: Power Spectral Density, Middle Channel



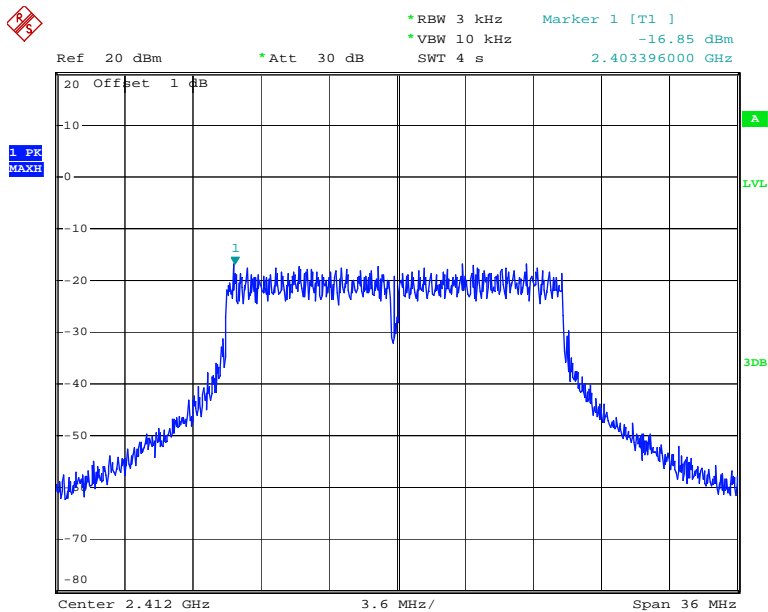
Date: 8.MAR.2014 13:35:28

### Chain0: Power Spectral Density, High Channel



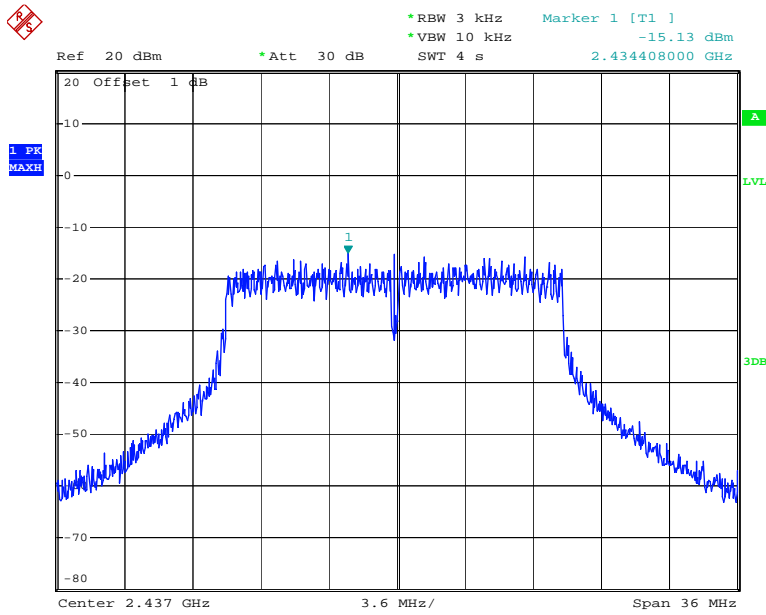
Date: 8.MAR.2014 13:37:22

### Chain1: Power Spectral Density, Low Channel



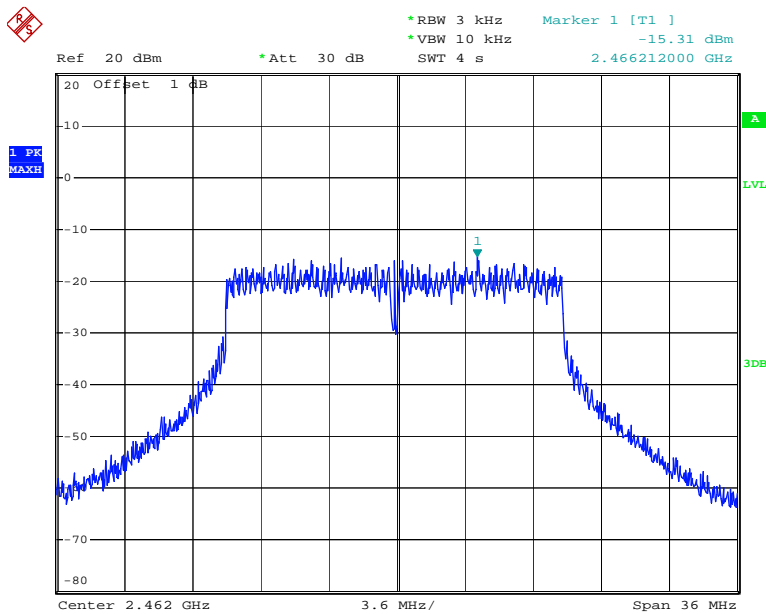
Date: 8.MAR.2014 13:29:19

### Chain1: Power Spectral Density, Middle Channel



Date: 8.MAR.2014 13:25:48

### Chain1: Power Spectral Density, High Channel



Date: 8.MAR.2014 13:23:46

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