FCC PART 15.247

TEST REPORT

For

SZ DJI TECHNOLOGY CO., LTD

14th floor, West Wing, Skyworth Semiconductor Design Building NO.18 Gaoxin South 4th Ave, Nanshan, Shenzhen, Guangdong, China

FCC ID: SS3-G1S1612

Report Type:	Product Name:
Original Report	DJI Goggles

Test Engineer:	*Lorin Bian*
Report Number:	RDG161228002B
Report Date:	2017-01-17
Reviewed By:	Henry Ding EMC Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Chengdu) 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***SZ DJI TECHNOLOGY CO., LTD***'s product, model number: ***G1S (FCC ID: SS3-G1S1612)*** (the "EUT") in this report was a ***DJI Goggles***, which was measured approximately: 31.78 cm (L) x 15.56 cm (W) x 17.7 cm(H), rated input voltage: DC3.8V Lithium Ion Polymer Rechargeable battery or DC5V～12V charging from adapter.

Adapter Information:
MODEL: QC18-US
INPUT: 100-240V~, 50/60Hz, 0.5A
OUTPUT: DC 5V, 3A/DC 9V, 2A/DC 12V, 1.5A

**All measurement and test data in this report was gathered from final production sample, serial number: 161228002 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2017-01-04, and EUT conformed to test requirement.*

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.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: SS3-G1S1612.

Test Methodology

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

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ±3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ±4.7 dB;
200M~1GHz: ±6.0 dB;
1G~6GHz: ±5.13dB;
6G~25GHz: ±5.47dB;

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China.

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in Engineering Mode, which was provided by the manufacturer.

The device employed 1.4MHz and 10MHz modes, employed 4 antennas, the system configure 1T2R depending on better performance by the system automatically recognizes.

For 1.4MHz mode, 38 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2403.5	20	2441.5
2	2405.5	…	…
…	…	…	…
…	…		
…	…	37	2475.5
19	2439.5	38	2477.5

For 10MHz mode, 2channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2409.5	2	2466.5

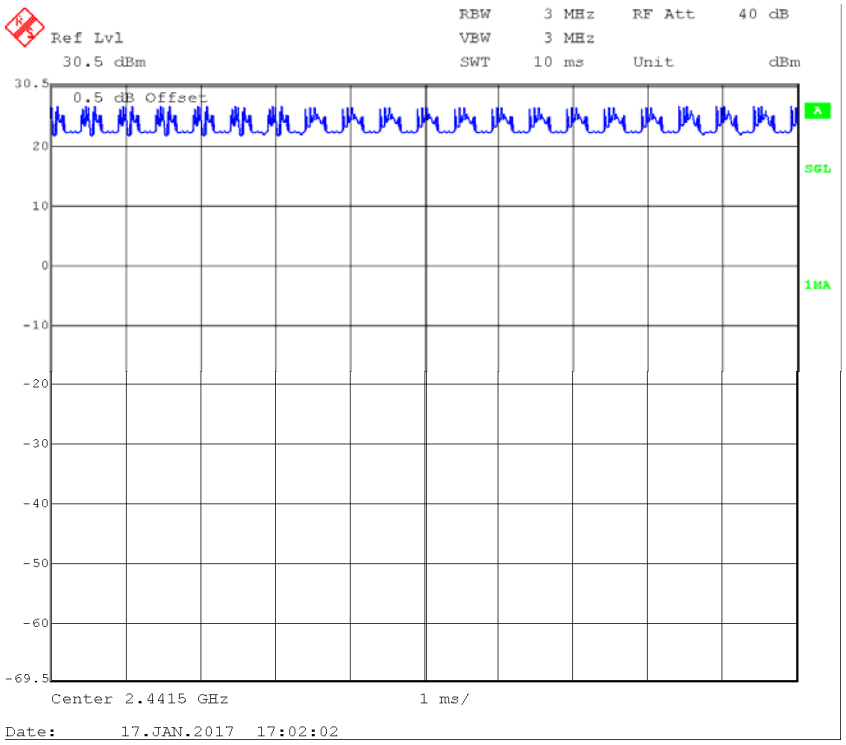
EUT Exercise Software

The software “DJI-RF Certification” was used for testing, which was provided by manufacturer. The maximum power with maximum duty cycle was configured by system default setting.

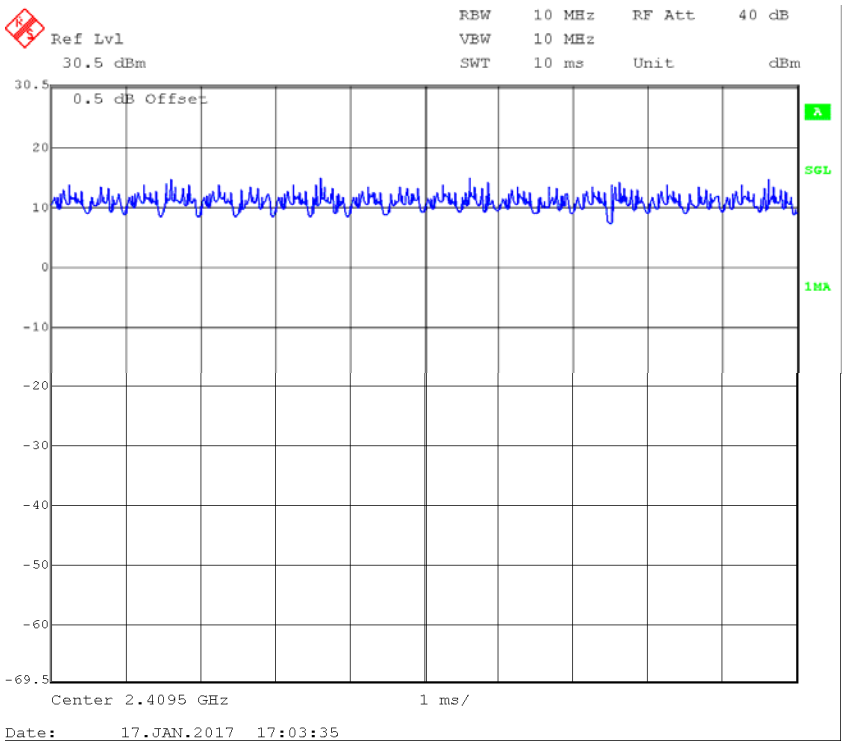
The software configured maximum duty cycle as below:

Mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
1.4MHz	10	10	100
10MHz	10	10	100

1.4MHz


RBW 3 MHz
RF Att 40 dB
Ref Lvl
VBW 3 MHz
30.5 dBm
SWT 10 ms
Unit dBm
0.5 dB Offset
SGL
1MA
Center 2.4415 GHz
1 ms/
Date: 17.JAN.2017 17:02:02

10MHz


RBW 10 MHz
RF Att 40 dB
Ref Lvl
VBW 10 MHz
30.5 dBm
SWT 10 ms
Unit dBm
0.5 dB Offset
SGL
1MA
Center 2.4095 GHz
1 ms/
Date: 17.JAN.2017 17:03:35

Equipment Modifications

No modification was made to the EUT.

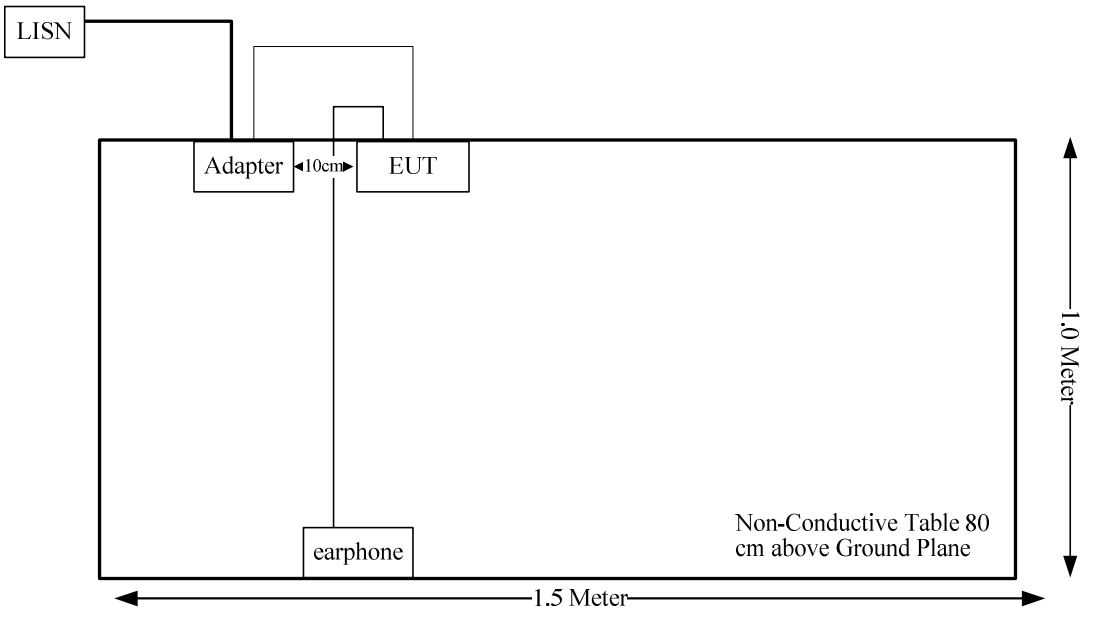
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Huawei	Earphone	N/A	N/A

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	Yes	No	1.25	USB Port of adapter	EUT
Earphone Cable	no	No	1.2	Audio Port of EUT	Earphone

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1310 & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§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 Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Conducted Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

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

Test Result

Compliant, please refer to the SAR report: RDG161228002-20A.

FCC §15.203 - ANTENNA REQUIREMENT

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.
c. 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 has 4 internal antennas arrangement, and the antennas gain in the below information list, fulfill the requirement of the item. Please refer to the internal photos.

Antenna Chain	Antenna Type	Connector Type	Antenna gain
0	FPC	IPEX	3.62dBi
1	FPC	IPEX	4.27dBi
2	FPC	IPEX	5.77dBi
3	FPC	IPEX	5.89dBi

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

Measurement Uncertainty

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

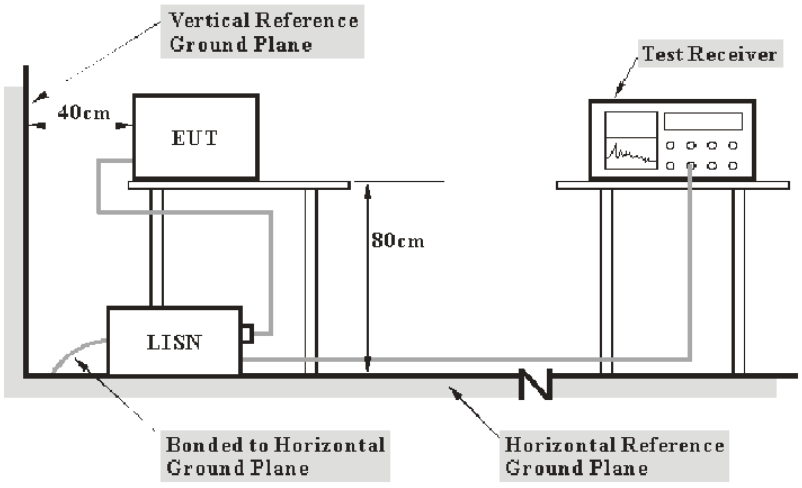
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of 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. (Chengdu) is ±3.17 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

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

EUT Setup



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

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 V/60 Hz AC 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 first LISN.

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

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$
$C_f = A_C + VDF$

Herein,
V_C (cord. Reading): corrected voltage amplitude
V_R: reading voltage amplitude
A_c: attenuation caused by cable loss
VDF: voltage division factor of AMN
C_f: Correction Factor

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2016-12-02	2017-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.06	2016-12-02	2017-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	357.8810.52	2016-10-31	2017-10-30
N/A	Conducted Cable	NO.5	N/A	2016-11-10	2017-11-09
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

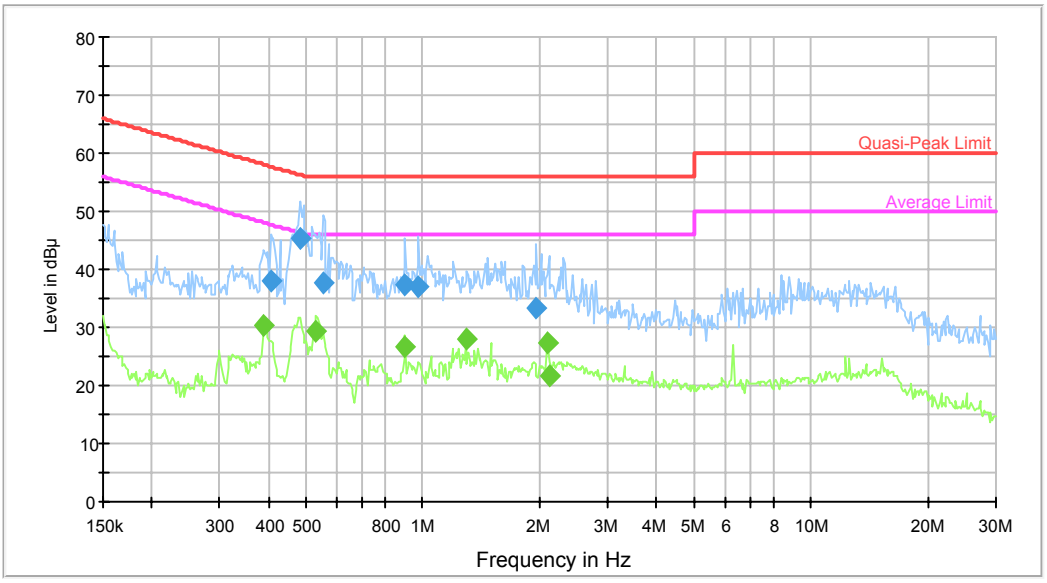
Temperature:	24.9 °C
Relative Humidity:	50 %
ATM Pressure:	101 kPa

The testing was performed by Lorin Bian on 2017-01-06.

Test Result: Compliance, please refer to the below data and plots.

Test Mode: Transmitting

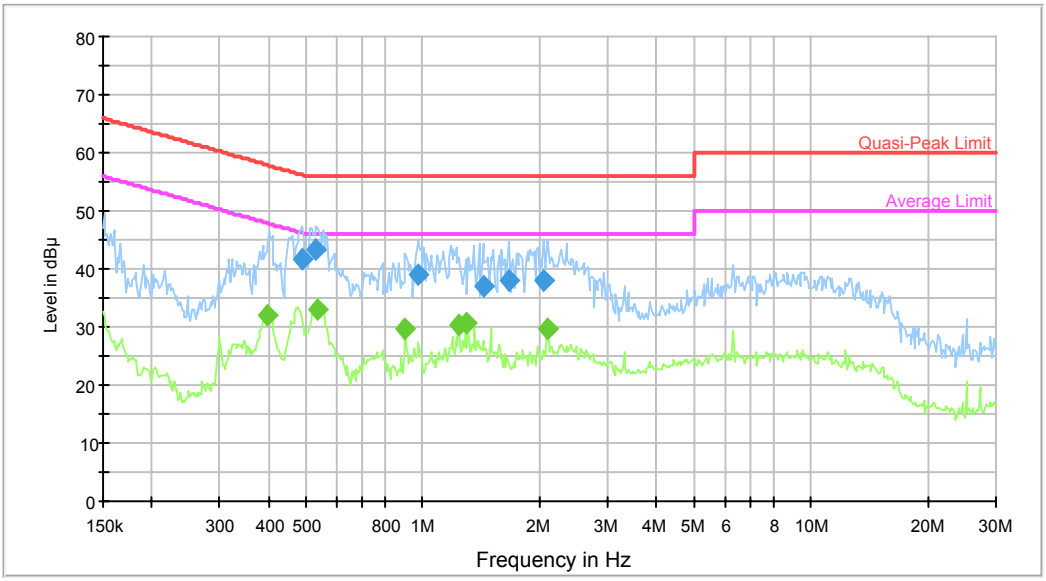
AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.406123	37.9	9.000	L1	19.8	19.8	57.7	Compliance
0.483938	45.5	9.000	L1	19.7	10.8	56.3	Compliance
0.554139	37.8	9.000	L1	19.7	18.2	56.0	Compliance
0.900972	37.2	9.000	L1	19.7	18.8	56.0	Compliance
0.975701	37.0	9.000	L1	19.7	19.0	56.0	Compliance
1.967177	33.3	9.000	L1	19.8	22.7	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.390261	30.4	9.000	L1	19.8	17.7	48.1	Compliance
0.532496	29.3	9.000	L1	19.7	16.7	46.0	Compliance
0.900972	26.6	9.000	L1	19.7	19.4	46.0	Compliance
1.289541	27.9	9.000	L1	19.7	18.1	46.0	Compliance
2.096658	27.3	9.000	L1	19.8	18.7	46.0	Compliance
2.130339	21.8	9.000	L1	19.8	24.2	46.0	Compliance

AC120V, 60Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.487810	41.5	9.000	N	19.6	14.7	56.2	Compliance
0.532496	43.5	9.000	N	19.6	12.5	56.0	Compliance
0.975701	39.0	9.000	N	19.7	17.0	56.0	Compliance
1.430284	37.1	9.000	N	19.7	18.9	56.0	Compliance
1.664073	37.9	9.000	N	19.7	18.1	56.0	Compliance
2.047133	38.0	9.000	N	19.7	18.0	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.399703	32.1	9.000	N	19.6	15.8	47.9	Compliance
0.536756	33.0	9.000	N	19.6	13.0	46.0	Compliance
0.900972	29.7	9.000	N	19.7	16.3	46.0	Compliance
1.239175	30.4	9.000	N	19.6	15.6	46.0	Compliance
1.289541	30.6	9.000	N	19.6	15.4	46.0	Compliance
2.096658	29.8	9.000	N	19.7	16.2	46.0	Compliance

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

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

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

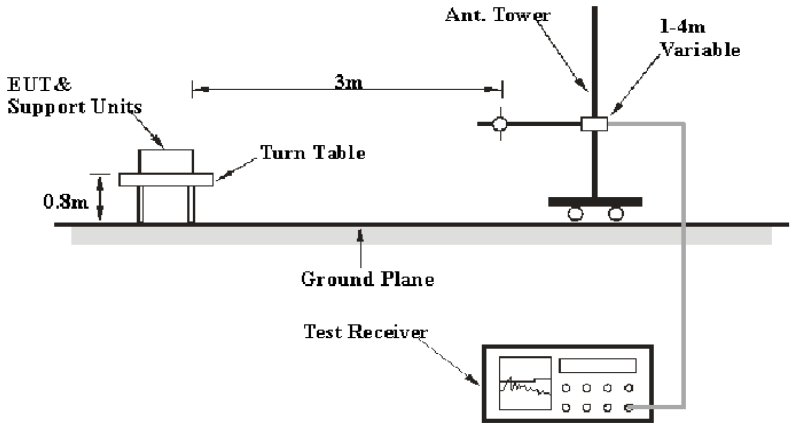
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Chengdu) is:
30M~200MHz: ±4.7 dB;
200M~1GHz: ±6.0 dB;
1G~6GHz: ±5.13dB;
6G~25GHz: ±5.47 dB;

Table 2 – Values of U_{cispr}

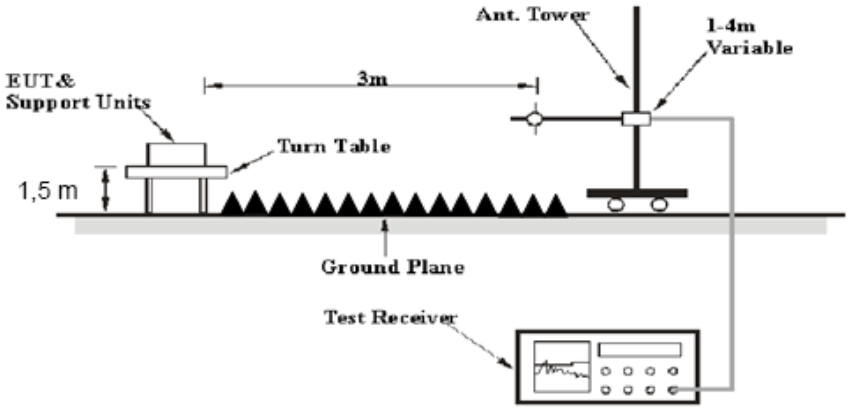
Measurement		U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC)	(30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR)	(1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR)	(6 GHz to 18 GHz)	5.5 dB

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

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

30MHz-1000MHz:

Detector	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 25GHz:

Detector	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

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:

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-05-20	2017-05-19
HP	Amplifier	8449B	3008A00277	2016-12-02	2017-12-01
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2016-11-10	2017-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2016-11-10	2017-11-09
WEINSCHEL ENGINEERING	Attenuator	1A10dB	AA4135	2016-11-10	2017-11-09

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24~24.2 °C
Relative Humidity:	46~50 %
ATM Pressure:	100.9~101 kPa

The testing was performed by Lorin Bian from 2017-01-06 to 2017-01-10.

Test Result: Compliance, please Refer to the following data

Test Mode: Transmitting (Chain 0 was the worst)

30MHz-25GHz:
1.4M Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2403.5 MHz									
2403.5	88.94	PK	H	23.53	3.00	0.00	115.47	N/A	N/A
2403.5	78.62	AV	H	23.53	3.00	0.00	105.15	N/A	N/A
2403.5	100.13	PK	V	23.53	3.00	0.00	126.66	N/A	N/A
2403.5	89.1	AV	V	23.53	3.00	0.00	115.63	N/A	N/A
2390	26.31	PK	V	23.57	3.00	0.00	52.88	74.00	21.12
2390	14.02	AV	V	23.57	3.00	0.00	40.59	54.00	13.41
4807	34.99	PK	V	30.78	5.12	26.87	44.02	74.00	29.98
4807	24.21	AV	V	30.78	5.12	26.87	33.24	54.00	20.76
7210.5	32.89	PK	V	34.72	6.17	26.35	47.43	74.00	26.57
7210.5	22.54	AV	V	34.72	6.17	26.35	37.08	54.00	16.92
9614	35.84	PK	V	37.07	7.82	26.18	54.55	74.00	19.45
9614	24.06	AV	V	37.07	7.82	26.18	42.77	54.00	11.23
1356	34.74	PK	V	23.73	2.47	26.47	34.47	74.00	39.53
1356	23.52	AV	V	23.73	2.47	26.47	23.25	54.00	30.75
107.6	43.89	QP	H	12.78	0.53	28.21	28.99	43.50	14.51
191.99	42.23	QP	H	12.22	0.88	27.80	27.53	43.50	15.97
Middle Channel: 2441.5 MHz									
2441.5	88.76	PK	H	23.40	3.00	0.00	115.16	N/A	N/A
2441.5	78.43	AV	H	23.40	3.00	0.00	104.83	N/A	N/A
2441.5	99.31	PK	V	23.40	3.00	0.00	125.71	N/A	N/A
2441.5	89.38	AV	V	23.40	3.00	0.00	115.78	N/A	N/A
4883	35.12	PK	V	31.03	5.09	26.87	44.37	74.00	29.63
4883	24.43	AV	V	31.03	5.09	26.87	33.68	54.00	20.32
7324.5	32.81	PK	V	34.95	6.22	26.40	47.58	74.00	26.42
7324.5	22.6	AV	V	34.95	6.22	26.40	37.37	54.00	16.63
9766	35.67	PK	V	37.16	7.71	26.27	54.27	74.00	19.73
9766	23.41	AV	V	37.16	7.71	26.27	42.01	54.00	11.99
1462	34.82	PK	V	24.00	2.62	26.37	35.07	74.00	38.93
1462	23.76	AV	V	24.00	2.62	26.37	24.01	54.00	29.99
2243	32.79	PK	V	24.07	3.02	26.85	33.03	74.00	40.97
2243	21.34	AV	V	24.07	3.02	26.85	21.58	54.00	32.42
107.6	43.58	QP	H	12.78	0.53	28.21	28.68	43.50	14.82
191.99	42.96	QP	H	12.22	0.88	27.80	28.26	43.50	15.24
High Channel: 2477.5 MHz									
2477.5	87.87	PK	H	23.28	2.99	0.00	114.14	N/A	N/A
2477.5	77.49	AV	H	23.28	2.99	0.00	103.76	N/A	N/A
2477.5	98.84	PK	V	23.28	2.99	0.00	125.11	N/A	N/A
2477.5	88.25	AV	V	23.28	2.99	0.00	114.52	N/A	N/A
2483.5	25.13	PK	V	23.26	2.99	0.00	51.38	74.00	22.62
2483.5	13.64	AV	V	23.26	2.99	0.00	39.89	54.00	14.11
4955	35.2	PK	V	31.26	5.05	26.88	44.63	74.00	29.37
4955	24.57	AV	V	31.26	5.05	26.88	34.00	54.00	20.00
7432.5	33.12	PK	V	35.17	6.27	26.45	48.11	74.00	25.89
7432.5	22.58	AV	V	35.17	6.27	26.45	37.57	54.00	16.43
9910	35.76	PK	V	37.25	7.60	26.36	54.25	74.00	19.75
9910	24.23	AV	V	37.25	7.60	26.36	42.72	54.00	11.28
1630	34.43	PK	V	24.31	2.77	26.46	35.05	74.00	38.95
1630	23.65	AV	V	24.31	2.77	26.46	24.27	54.00	29.73
107.6	43.47	QP	H	12.78	0.53	28.21	28.57	43.50	14.93
191.99	43.18	QP	H	12.22	0.88	27.80	28.48	43.50	15.02

10M Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2409.5 MHz									
2409.5	65.33	PK	H	23.51	3.00	0.00	91.84	N/A	N/A
2409.5	52.79	AV	H	23.51	3.00	0.00	79.30	N/A	N/A
2409.5	71.25	PK	V	23.51	3.00	0.00	97.76	N/A	N/A
2409.5	58.63	AV	V	23.51	3.00	0.00	85.14	N/A	N/A
2390	24.45	PK	V	23.57	3.00	0.00	51.02	74.00	22.98
2390	13.57	AV	V	23.57	3.00	0.00	40.14	54.00	13.86
4819	33.65	PK	V	30.82	5.12	26.87	42.72	74.00	31.28
4819	21.34	AV	V	30.82	5.12	26.87	30.41	54.00	23.59
7228.5	32.47	PK	V	34.76	6.18	26.36	47.05	74.00	26.95
7228.5	20.73	AV	V	34.76	6.18	26.36	35.31	54.00	18.69
1556	33.62	PK	V	24.19	2.71	26.38	34.14	74.00	39.86
1556	21.96	AV	V	24.19	2.71	26.38	22.48	54.00	31.52
107.6	44.57	QP	H	12.78	0.53	28.21	29.67	43.50	13.83
191.99	43.29	QP	H	12.22	0.88	27.80	28.59	43.50	14.91
High Channel: 2466.5 MHz									
2466.5	65.12	PK	H	23.31	2.99	0.00	91.42	N/A	N/A
2466.5	52.98	AV	H	23.31	2.99	0.00	79.28	N/A	N/A
2466.5	70.43	PK	V	23.31	2.99	0.00	96.73	N/A	N/A
2466.5	58.71	AV	V	23.31	2.99	0.00	85.01	N/A	N/A
2483.5	25.16	PK	V	23.26	2.99	0.00	51.41	74.00	22.59
2483.5	13.64	AV	V	23.26	2.99	0.00	39.89	54.00	14.11
4933	34.11	PK	V	31.19	5.06	26.88	43.48	74.00	30.52
4933	20.96	AV	V	31.19	5.06	26.88	30.33	54.00	23.67
7399.5	32.81	PK	V	35.10	6.25	26.44	47.72	74.00	26.28
7399.5	20.49	AV	V	35.10	6.25	26.44	35.40	54.00	18.60
1623	33.84	PK	V	24.30	2.76	26.45	34.45	74.00	39.55
1623	22.27	AV	V	24.30	2.76	26.45	22.88	54.00	31.12
107.6	43.96	QP	H	12.78	0.53	28.21	29.06	43.50	14.44
191.99	43.57	QP	H	12.22	0.88	27.80	28.87	43.50	14.63

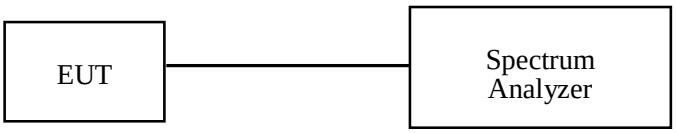
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.8~26.9 °C
Relative Humidity:	39~42 %
ATM Pressure:	101.1~101.6 kPa

The testing was performed by Lorin Bian from 2017-01-05 to 2017-01-17.

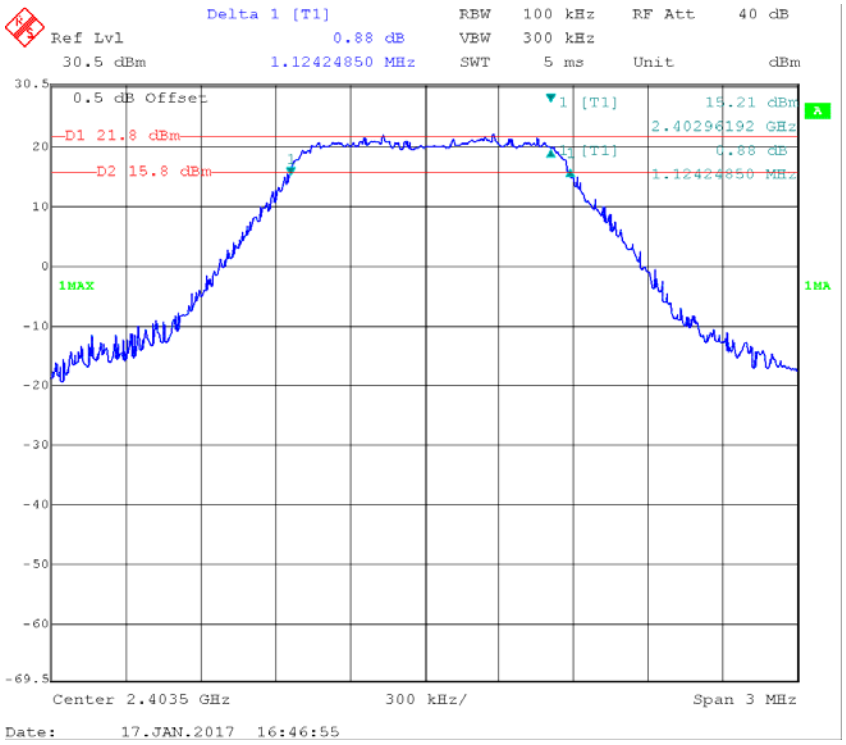
Test Result: Compliance.

Please refer to the following tables and plots.

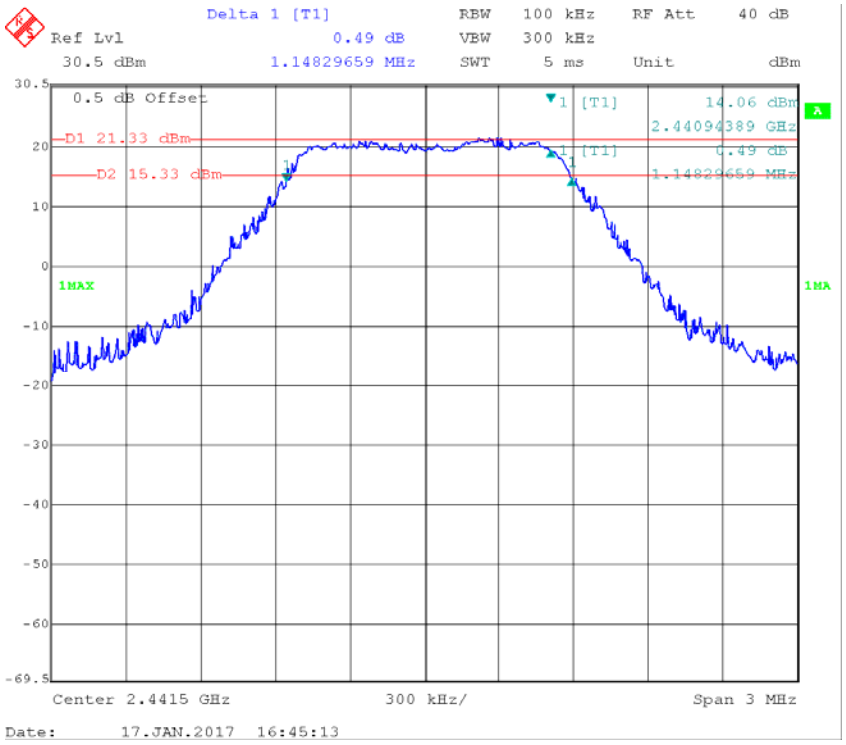
Test Mode: Transmitting (Test performed at Chain 0)

Test mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
1.4M	Low	2403.5	1.124	≥0.5
	Middle	2441.5	1.148	≥0.5
	High	2477.5	1.124	≥0.5
10M	Low	2409.5	8.98	≥0.5
	High	2466.5	8.98	≥0.5

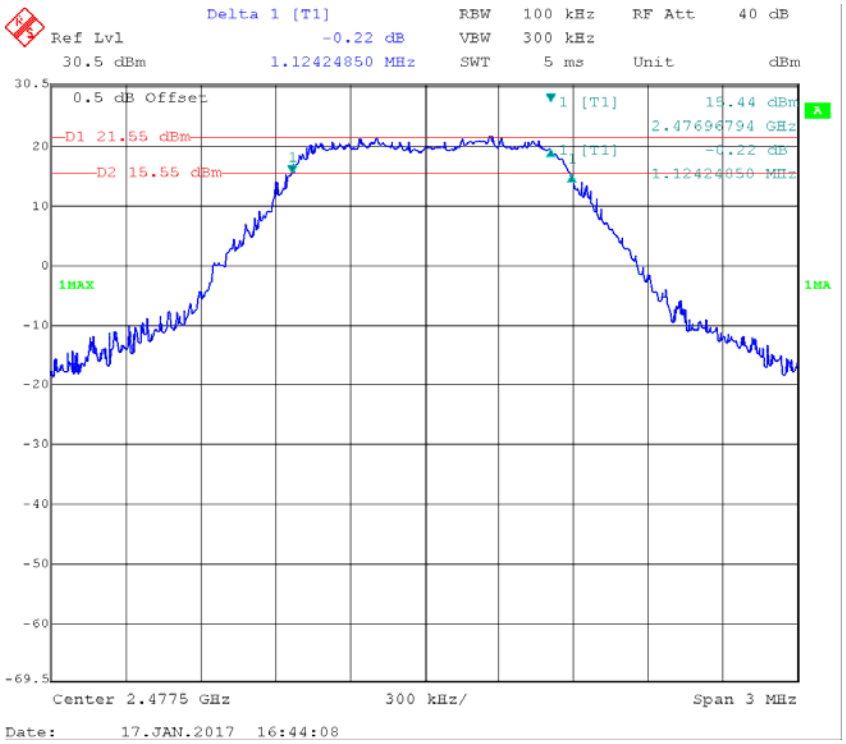
1.4M Low Channel



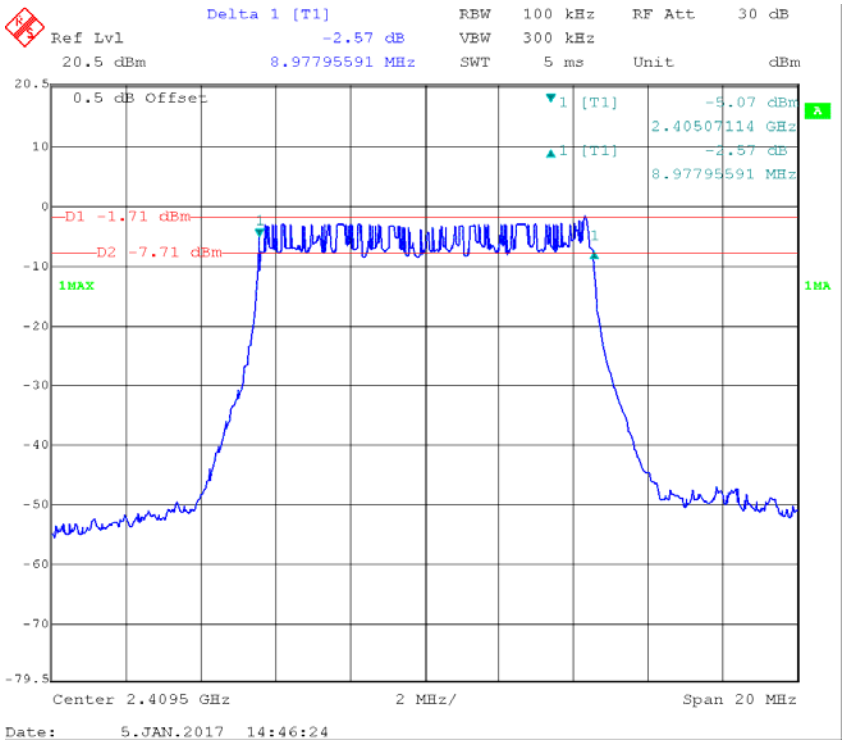
1.4M Middle Channel



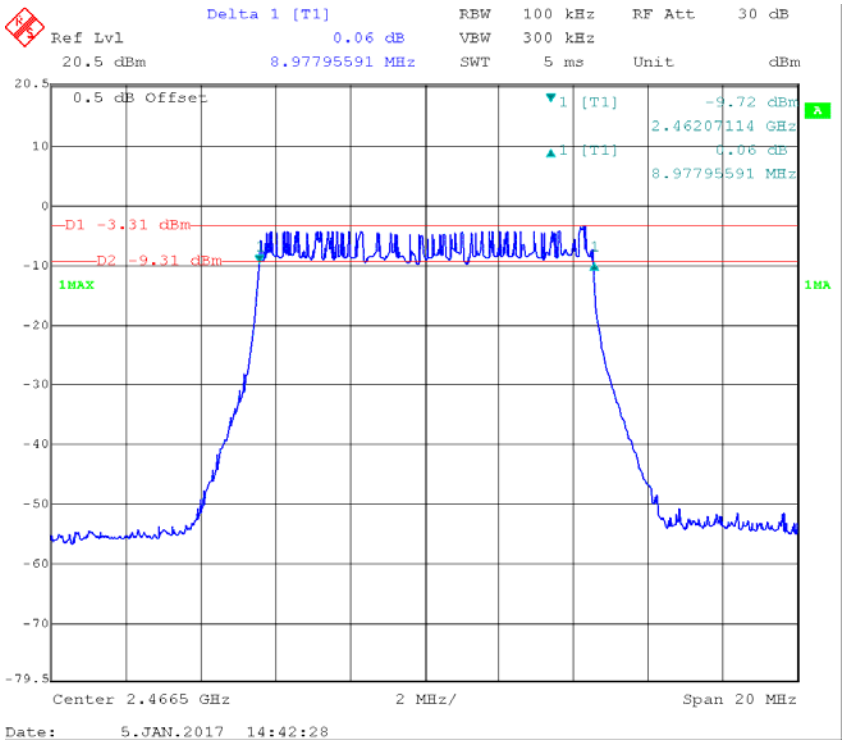
1.4M High Channel



10M Low Channel



10M High Channel



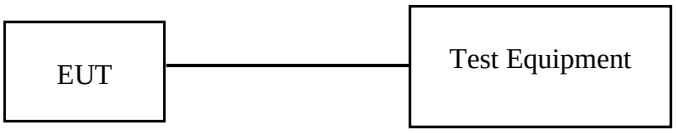
FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER

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. 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 Test Equipment.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54170074	2017-01-03	2018-01-03
Agilent	P-Series Power Meter	N1912A	MY5000798	2017-01-03	2018-01-03
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26.9 °C
Relative Humidity:	42 %
ATM Pressure:	101.1 kPa

The testing was performed by Lorin Bian on 2017-01-05.

Test Mode: Transmitting

Test Mode	Frequency (MHz)	Maximum conducted RMS Output Power (dBm)				Limits (dBm)
		Chain 0	Chain 1	Chain 2	Chain 3	
1.4M	2403.5	20.62	19.63	18.84	18.52	30
	2441.5	20.37	19.47	18.83	18.47	30
	2477.5	20.66	19.51	18.29	18.57	30

Test Mode	Frequency (MHz)	Maximum Conducted Peak Output Power (dBm)				Maximum conducted RMS Output Power (dBm)				Limits (dBm)
		Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
10M	2409.5	16.1	16.3	15.89	15.62	4.03	3.02	2.32	2.12	30
	2466.5	15.34	14.31	12.98	13.25	1.94	0.79	-0.04	0.02	30

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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

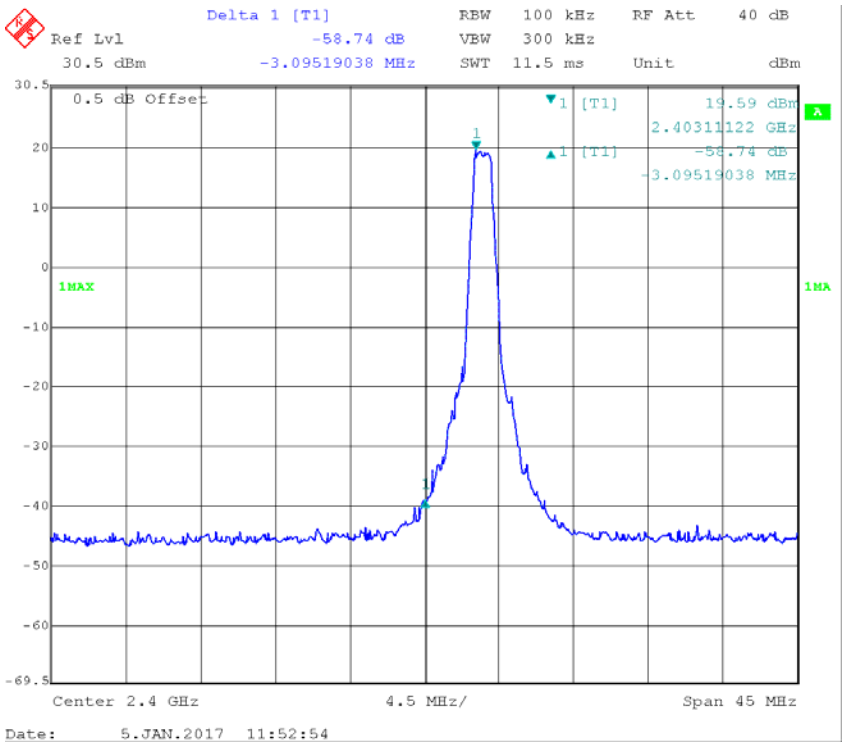
Temperature:	26.9 °C
Relative Humidity:	42 %
ATM Pressure:	101.1 kPa

** The testing was performed by Lorin Bian on 2017-01-05.*

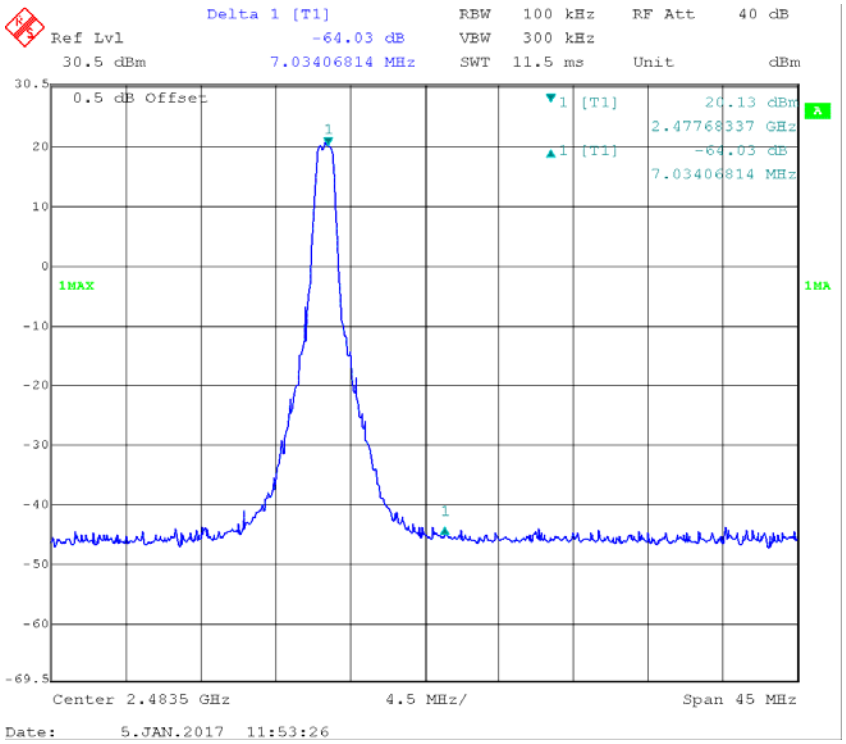
Test mode: Transmitting

Test Result: Compliant. Any 100 kHz bandwidth emission outside the frequency band was 30dBc or more, please refer to the below plots

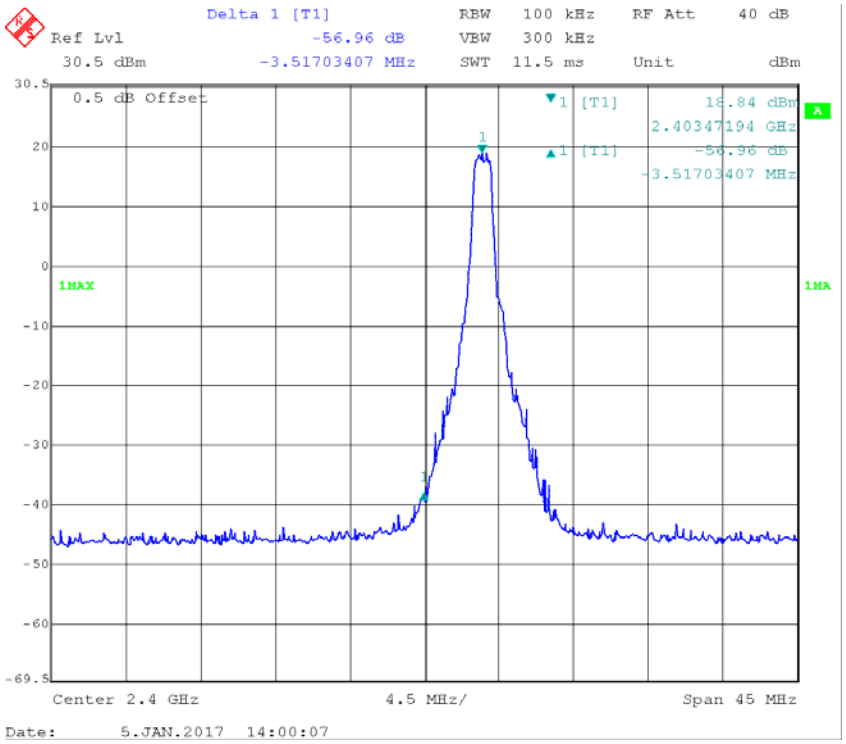
Chain 0-1.4M Band Edge, Left Side



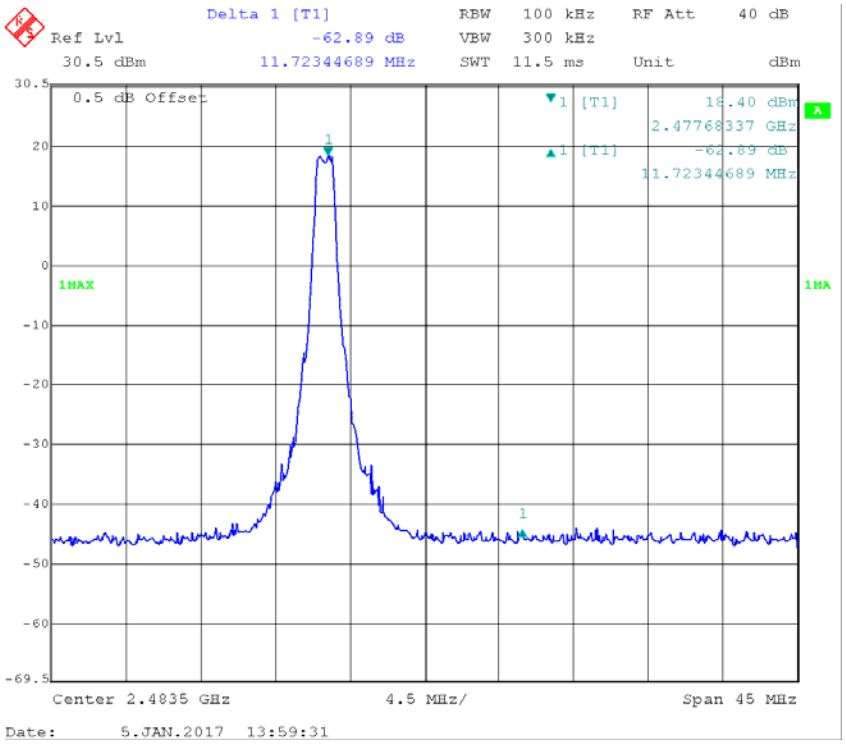
Chain 0-1.4M Band Edge, Right Side



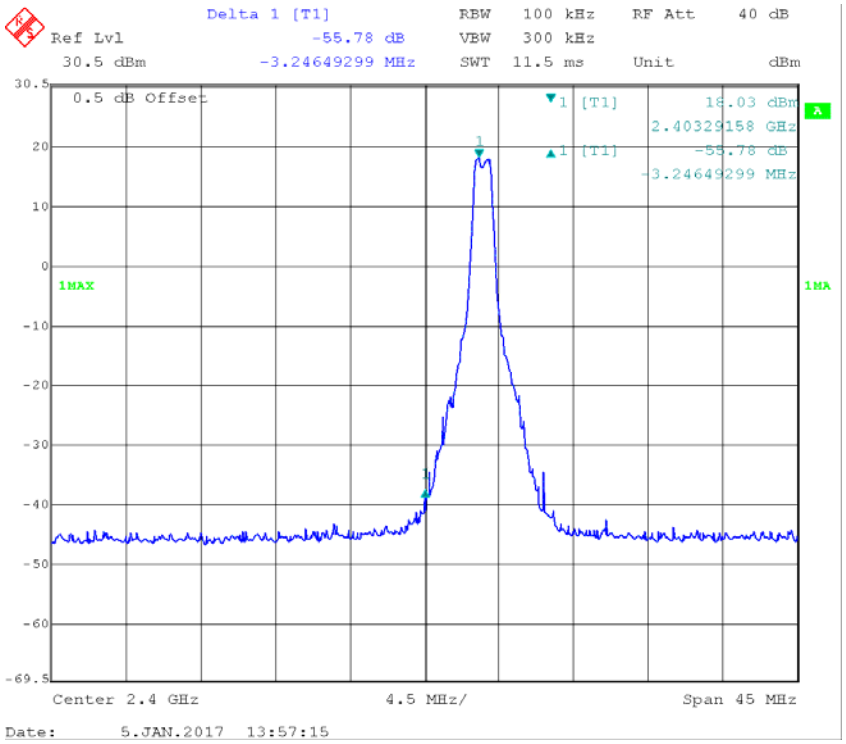
Chain 1-1.4M Band Edge, Left Side



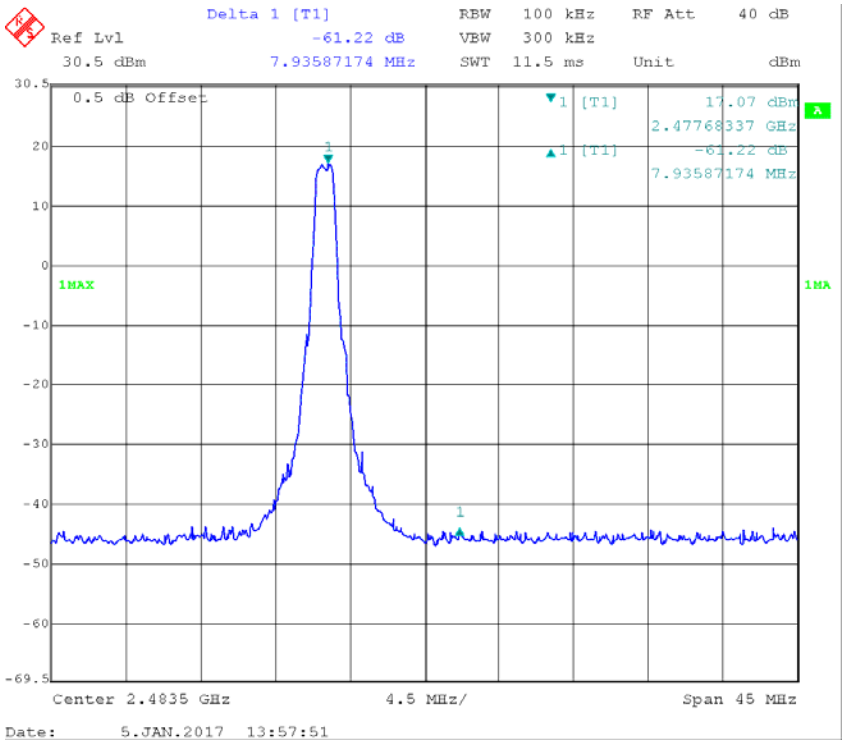
Chain 1-1.4M Band Edge, Right Side



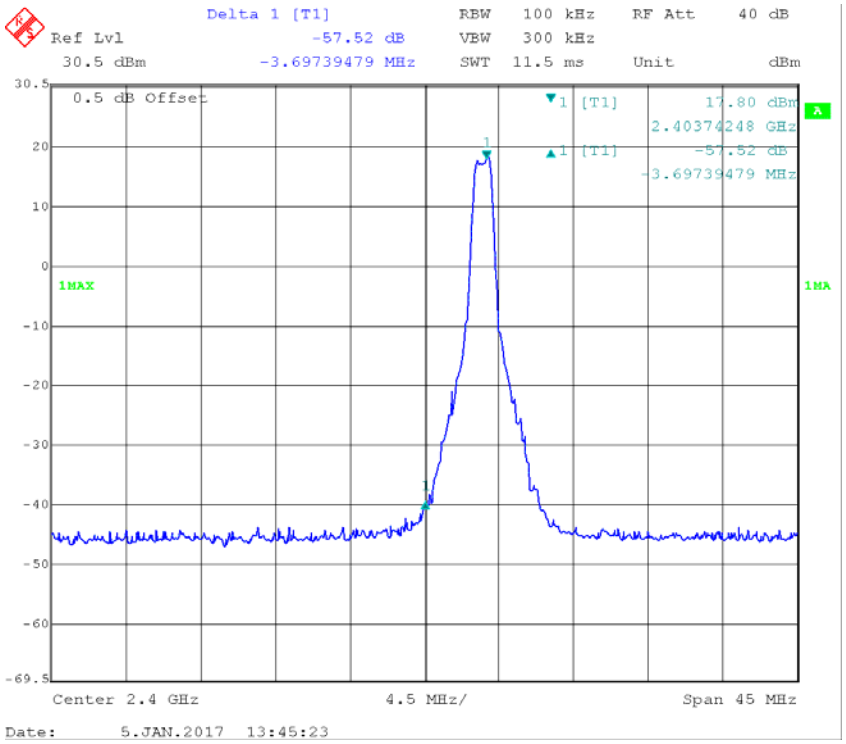
Chain 2-1.4M Band Edge, Left Side



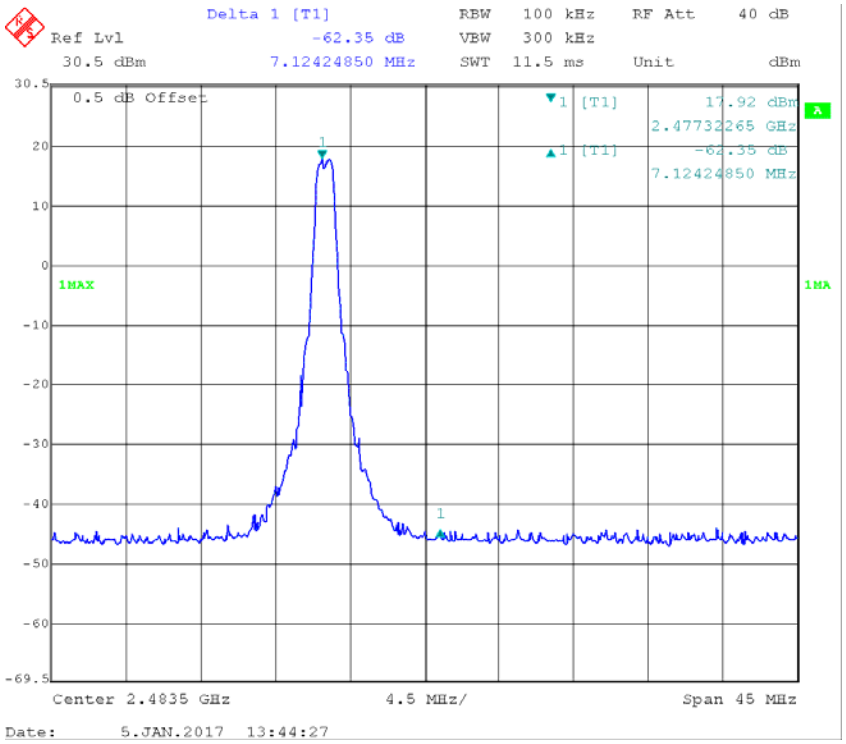
Chain 2-1.4M Band Edge, Right Side



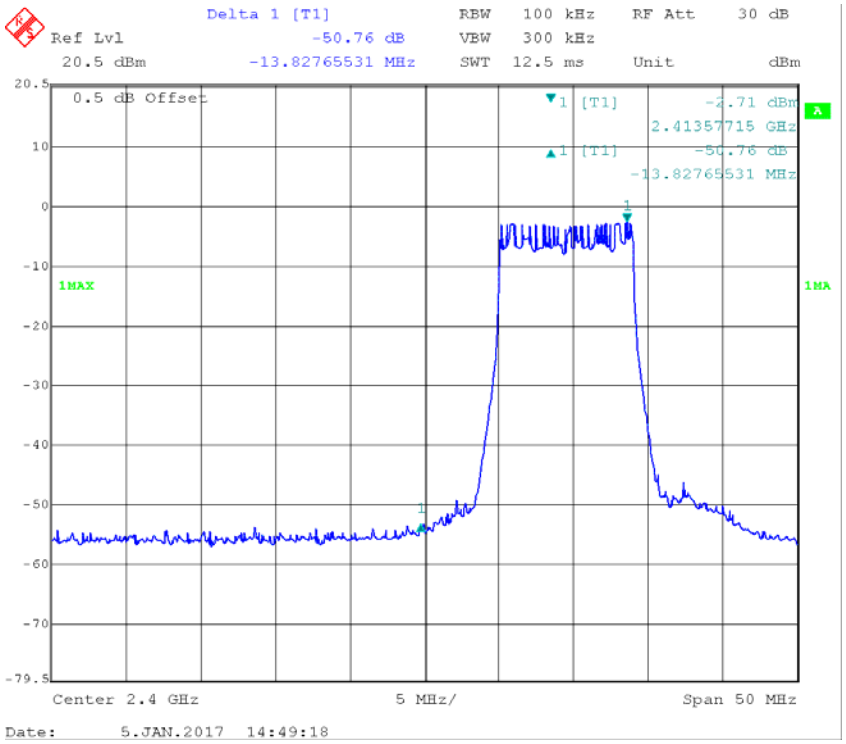
Chain 3-1.4M Band Edge, Left Side



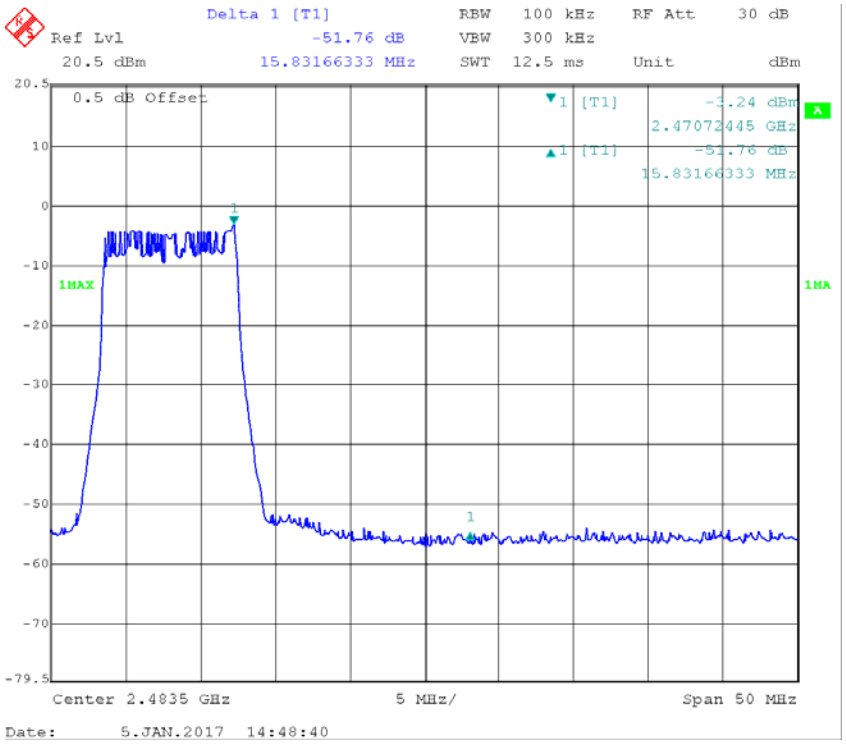
Chain 3-1.4M Band Edge, Right Side



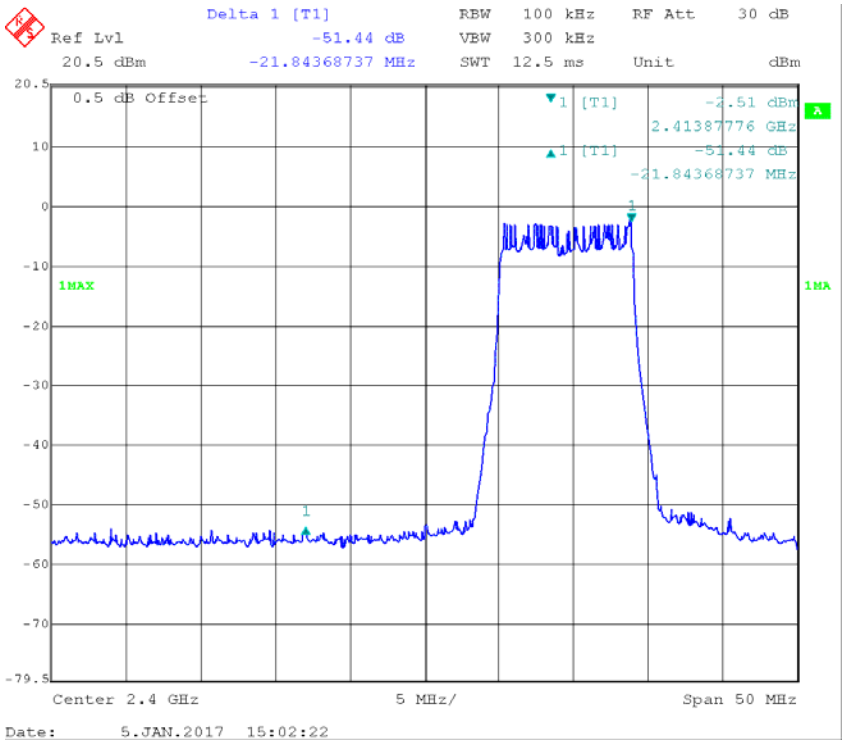
Chain 0-10M Band Edge, Left Side



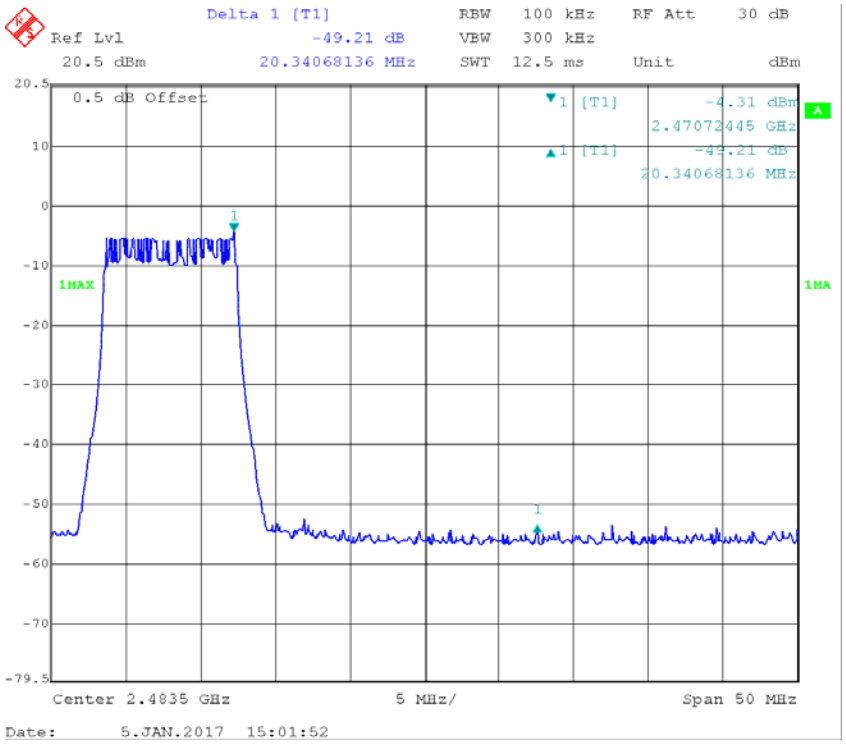
Chain 0-10M Band Edge, Right Side



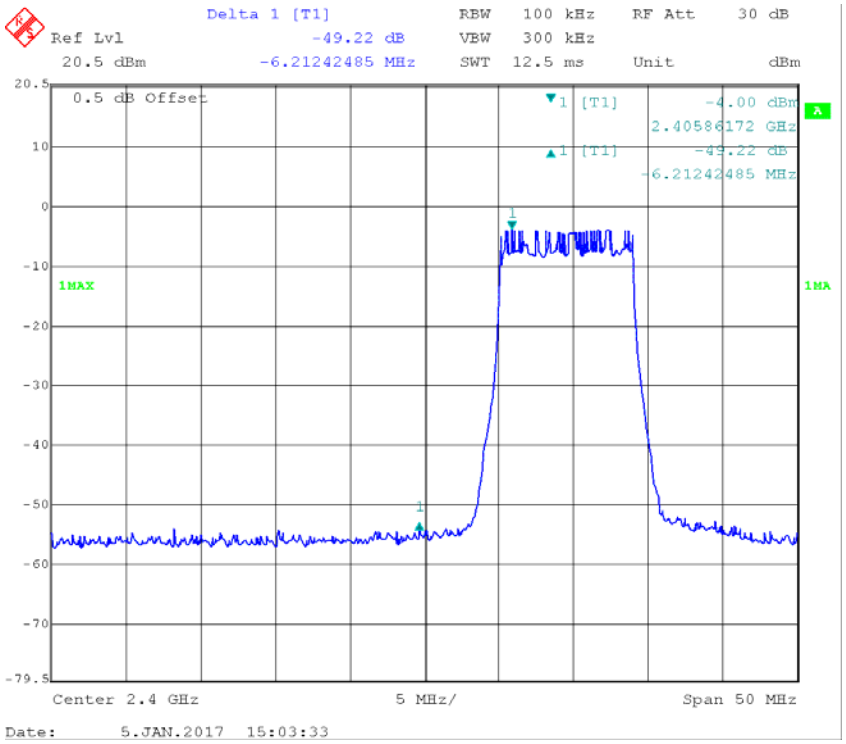
Chain 1-10M Band Edge, Left Side



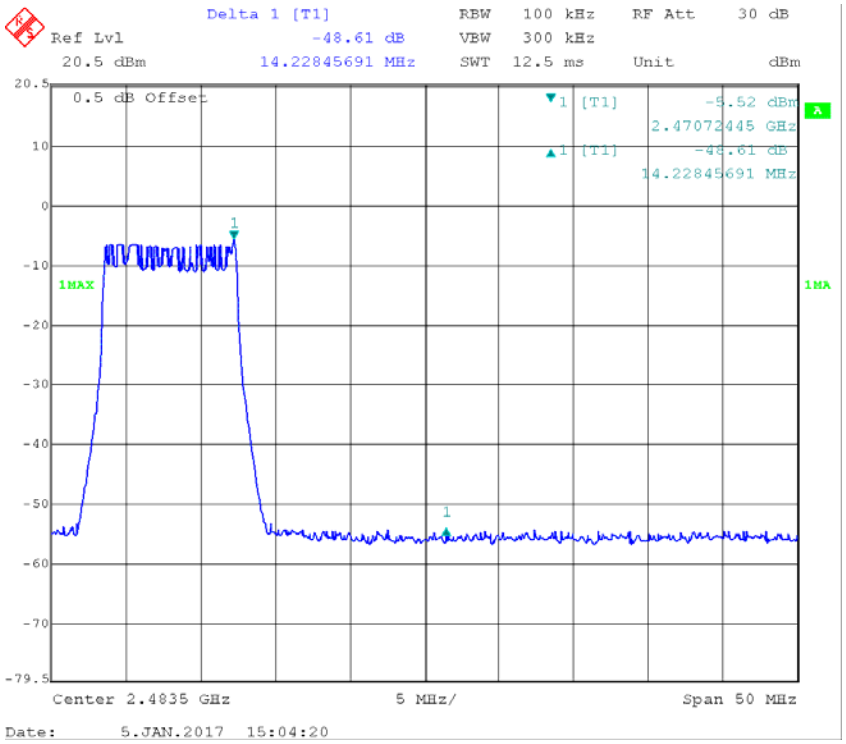
Chain 1-10M Band Edge, Right Side



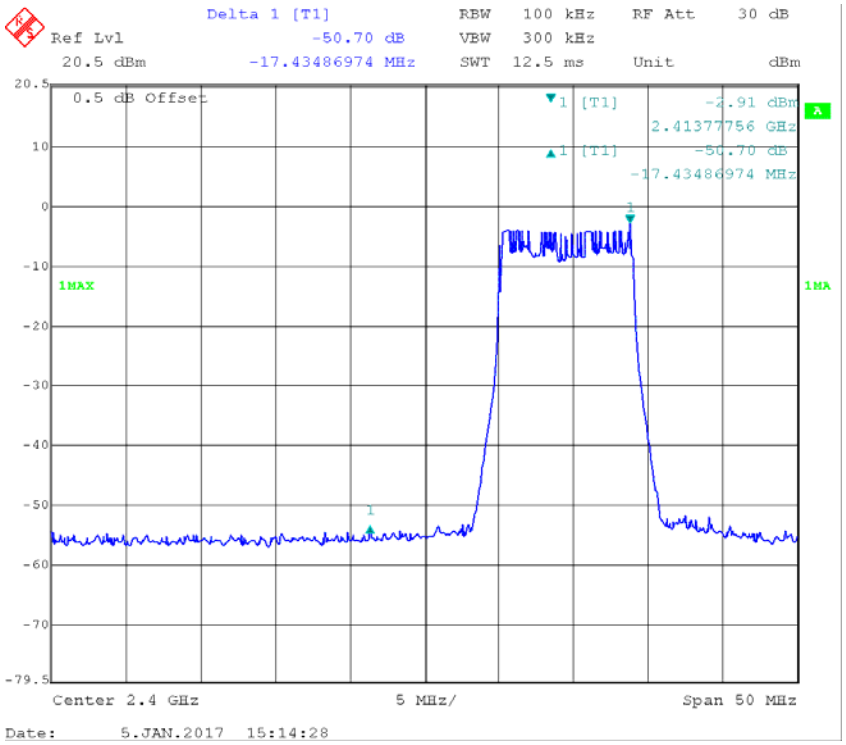
Chain 2-10M Band Edge, Left Side



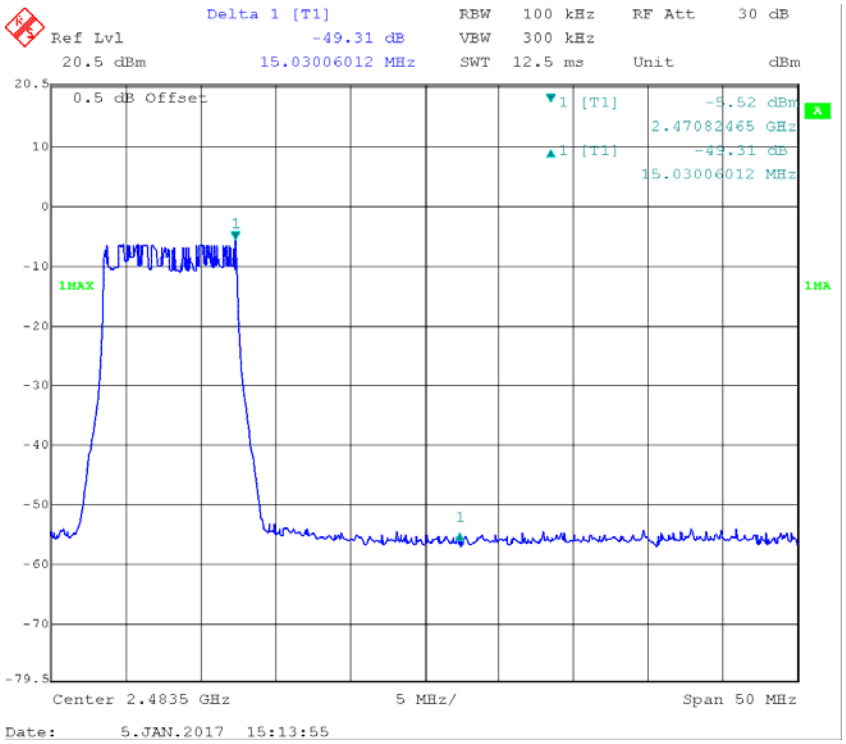
Chain 2-10M Band Edge, Right Side



Chain 3-10M Band Edge, Left Side



Chain 3-10M Band Edge, Right Side



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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.8~26.9 °C
Relative Humidity:	39~42 %
ATM Pressure:	101.1~101.6 kPa

** The testing was performed by Lorin Bian from 2017-01-05 to 2017-01-17.*

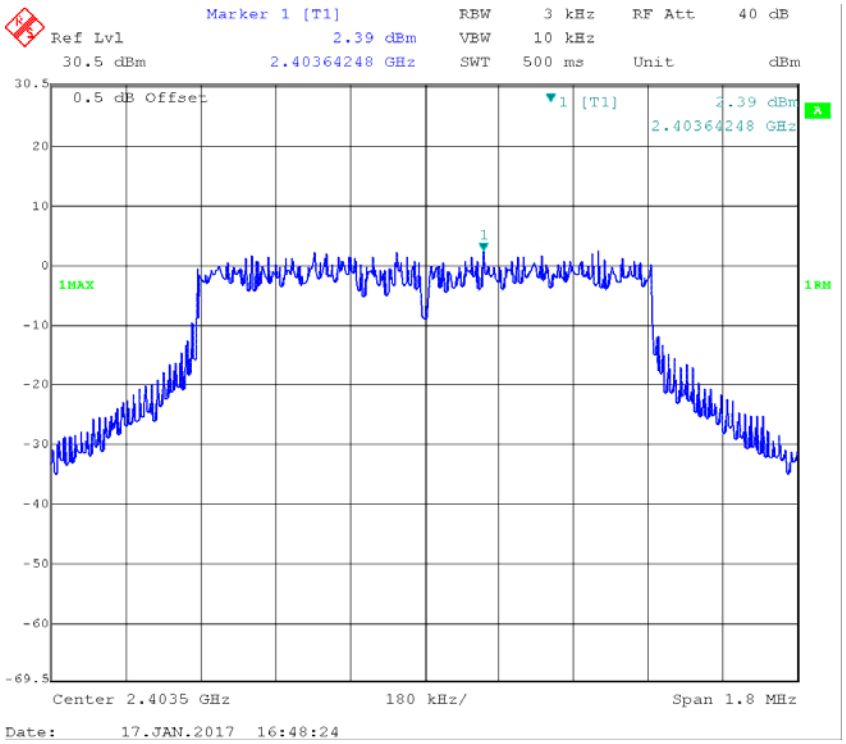
Test Result: Compliance

Test Mode: Transmitting

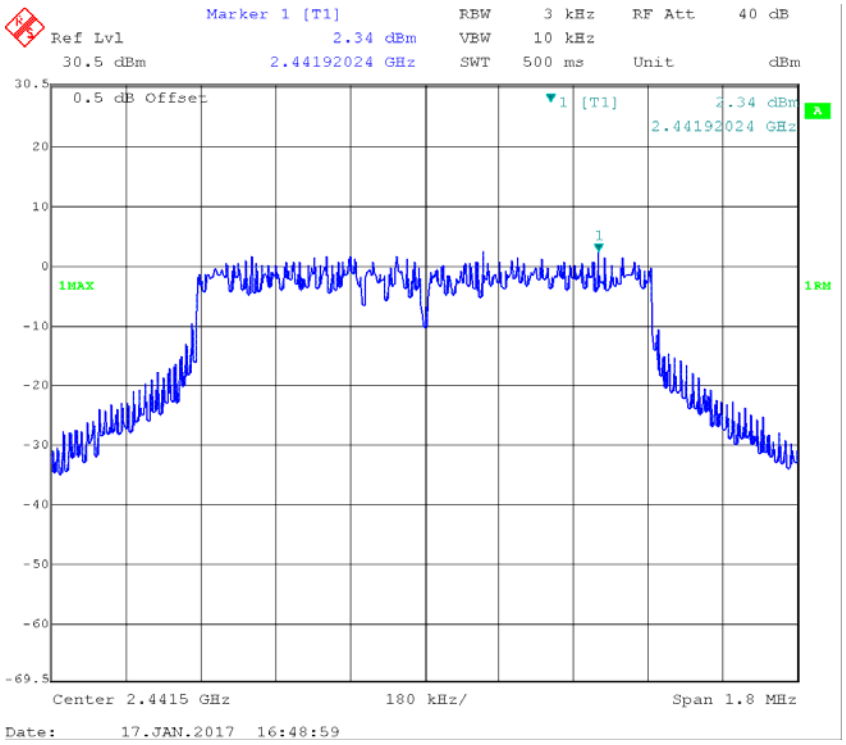
Please refer to the following plots

Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)				Limits dBm/3kHz	Result
			Chain 0	Chain 1	Chain 2	Chain 3		
1.4M	Low	2403.5	2.39	1.37	0.32	0.19	8	Pass
	Middle	2441.5	2.34	1.63	0.33	-0.08	8	Pass
	High	2477.5	2.37	1.86	-0.29	-0.03	8	Pass
10M	Low	2409.5	-21.97	-22.17	-22.74	-23.12	8	Pass
	High	2466.5	-23.2	-24.44	-25.47	-25.39	8	Pass

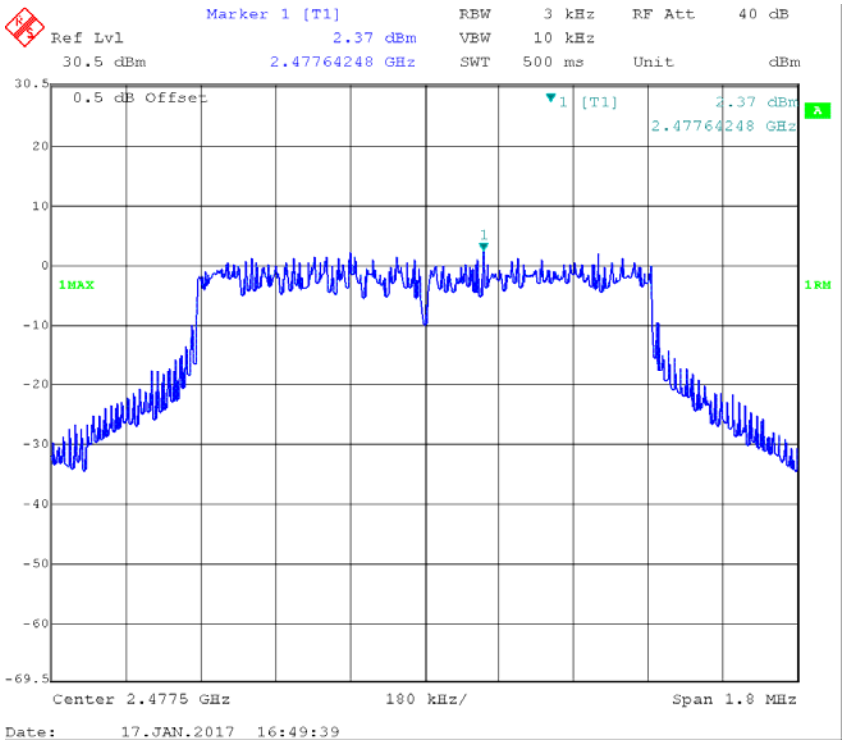
Chain 0-Power Spectral Density,1.4M Low Channel



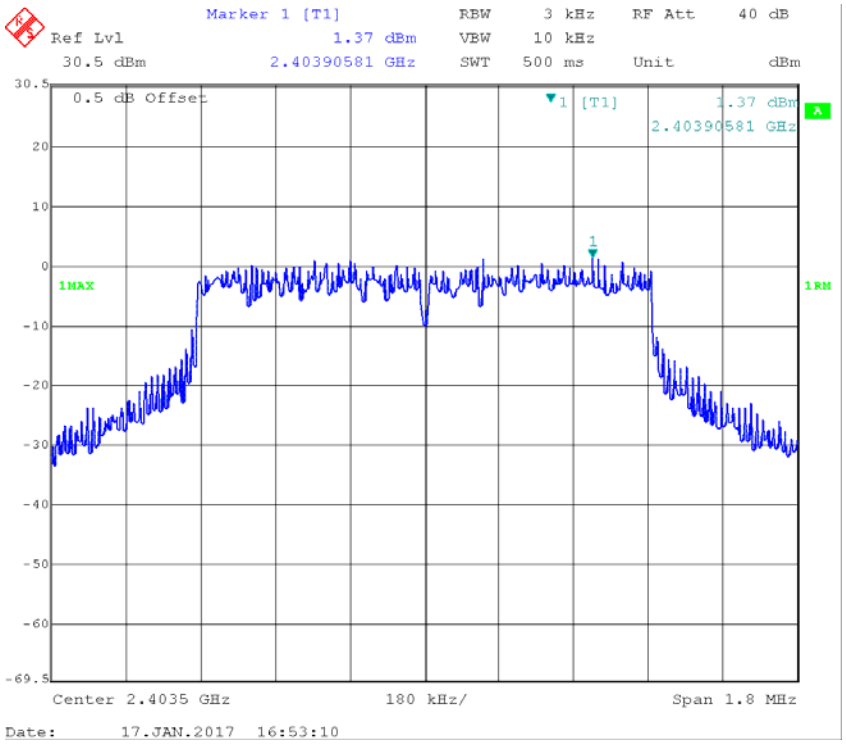
Chain 0-Power Spectral Density, 1.4M Middle Channel



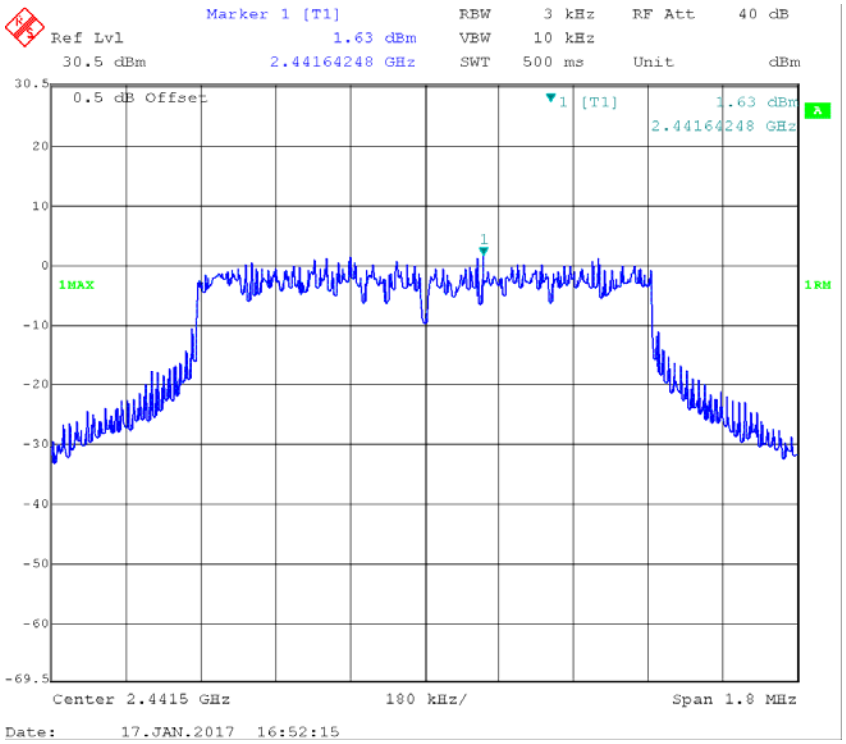
Chain 0-Power Spectral Density, 1.4M High Channel



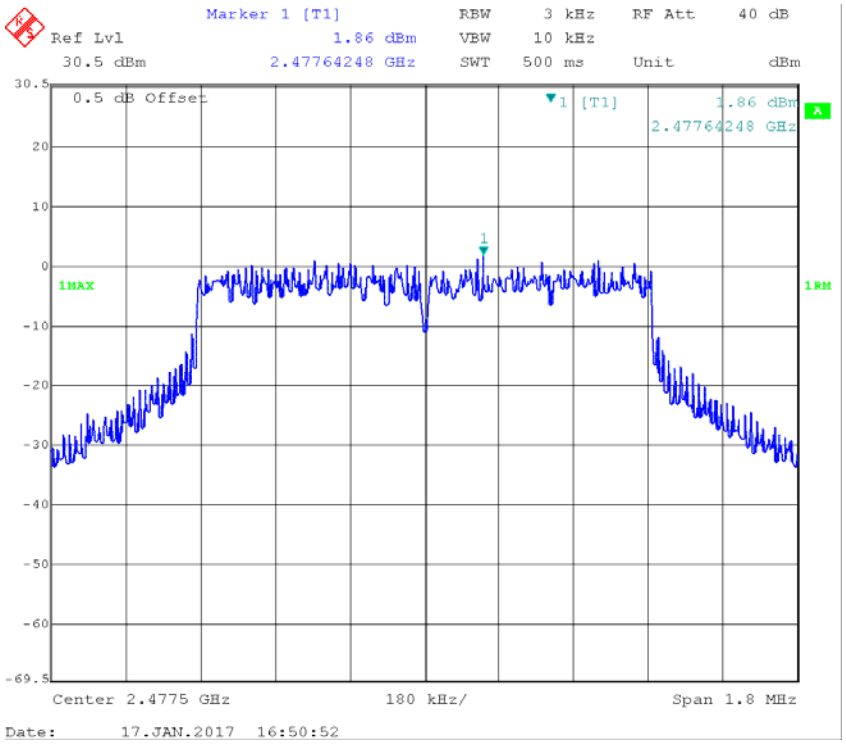
Chain 1-Power Spectral Density, 1.4M Low Channel



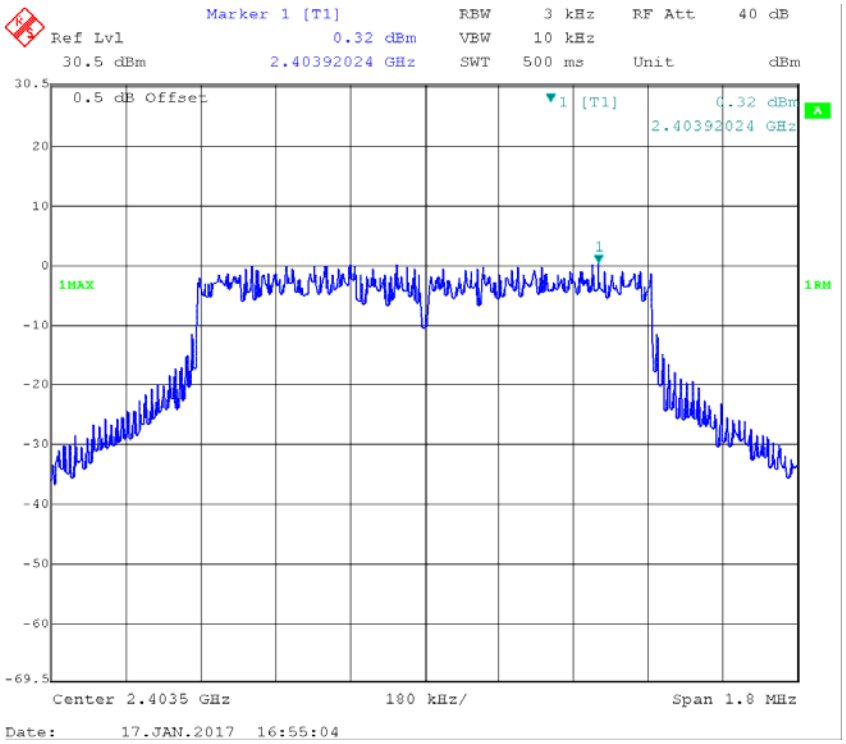
Chain 1-Power Spectral Density, 1.4M Middle Channel



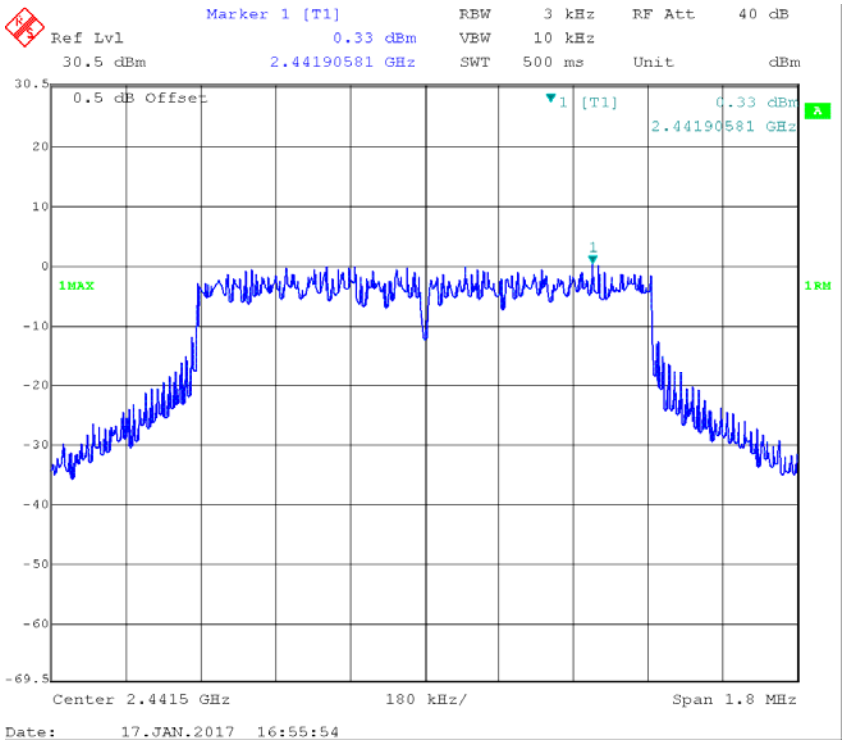
Chain 1-Power Spectral Density, 1.4M High Channel



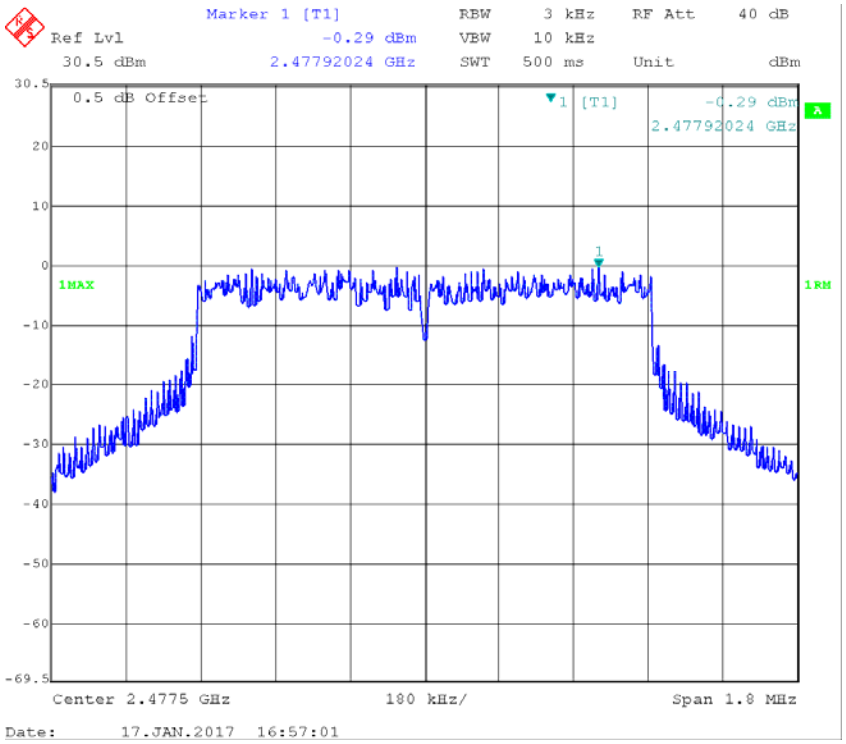
Chain 2-Power Spectral Density, 1.4M Low Channel



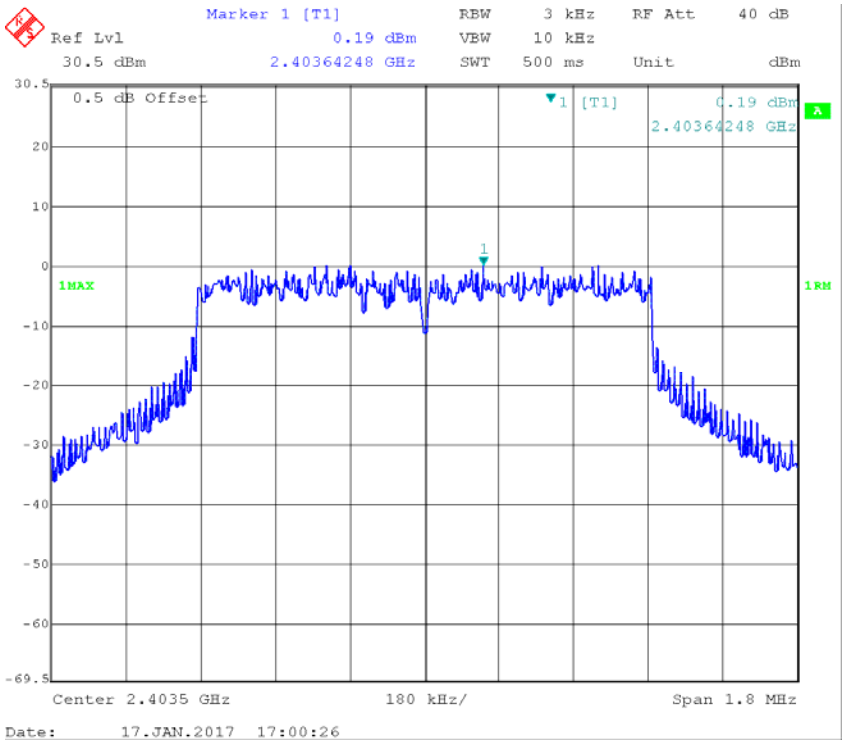
Chain 2-Power Spectral Density, 1.4M Middle Channel



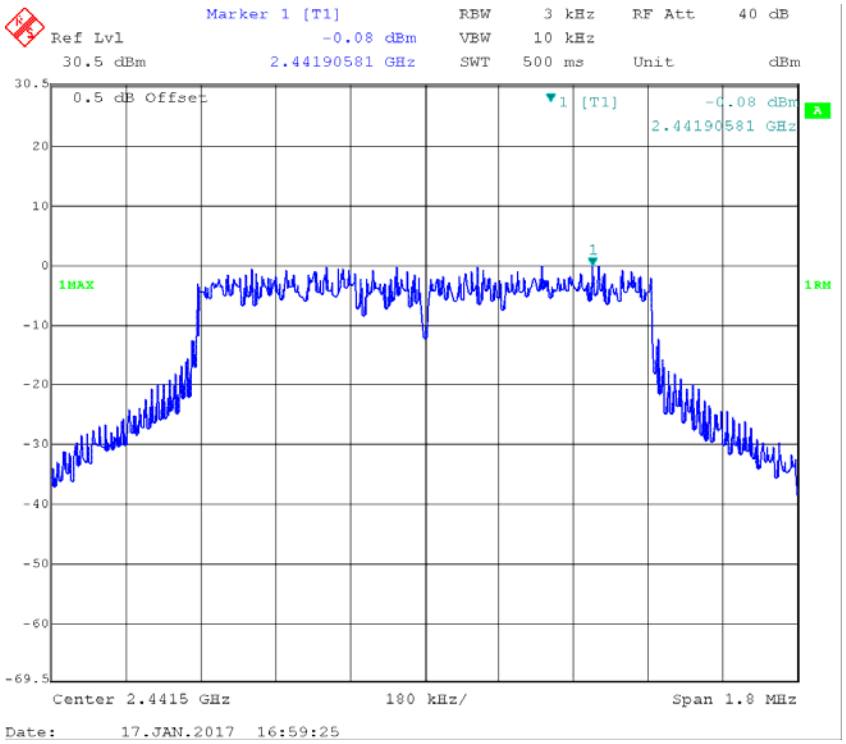
Chain 2-Power Spectral Density, 1.4M High Channel



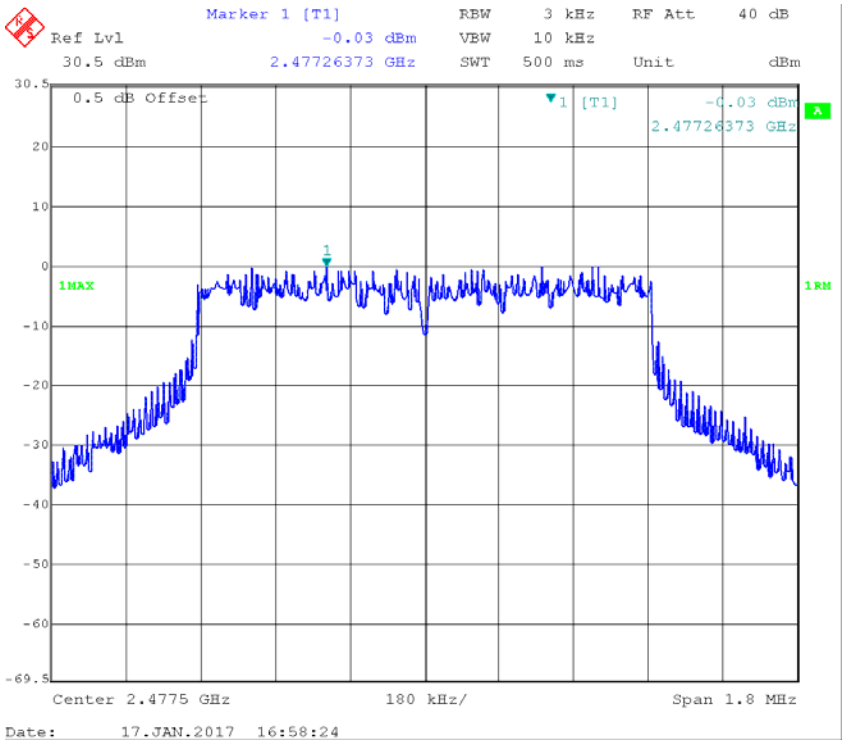
Chain 3-Power Spectral Density, 1.4M Low Channel



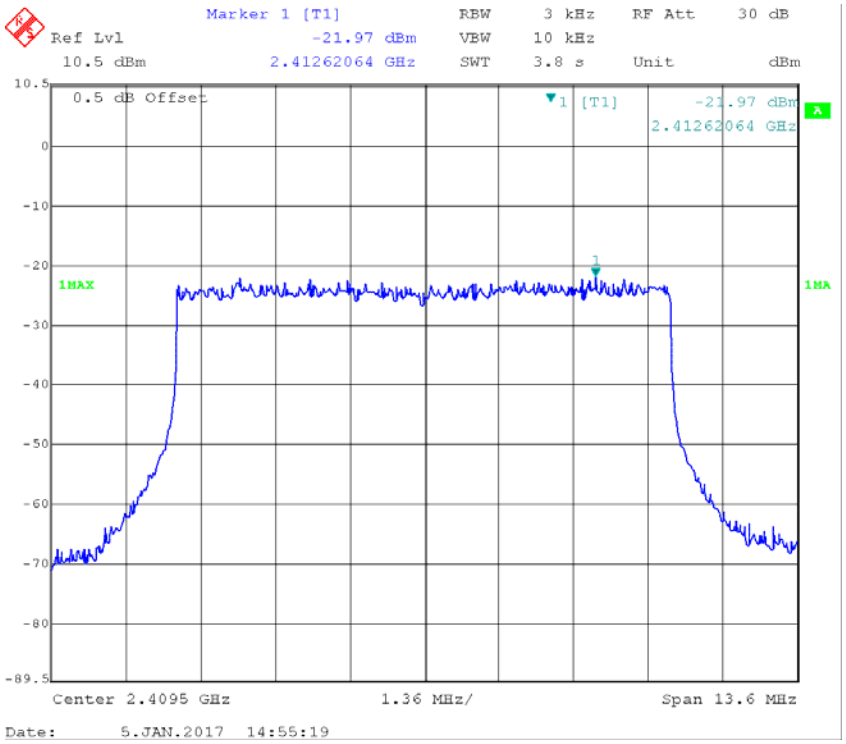
Chain 3-Power Spectral Density, 1.4M Middle Channel



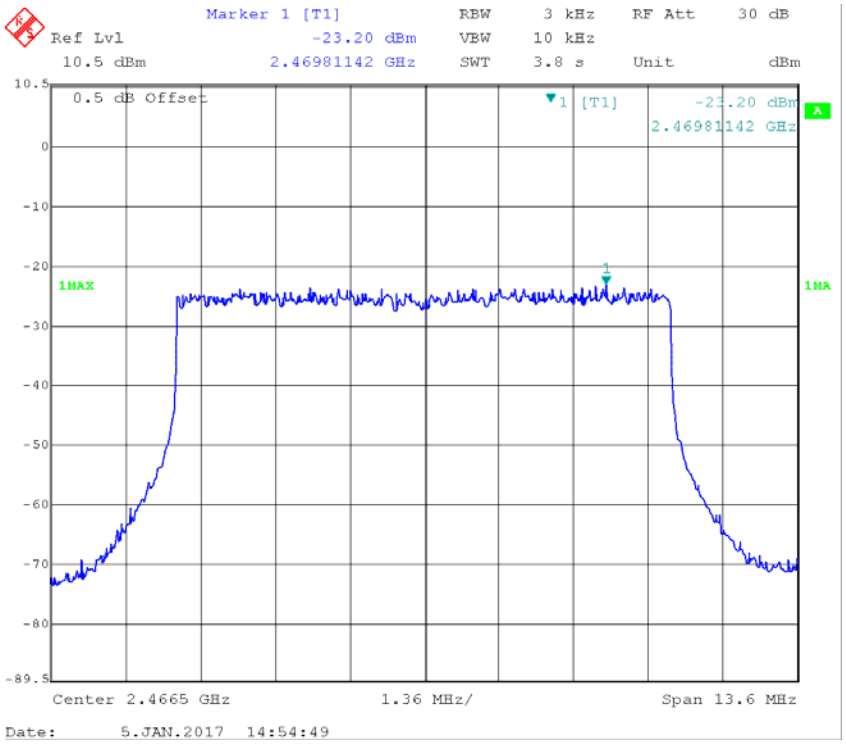
Chain 3-Power Spectral Density, 1.4M High Channel



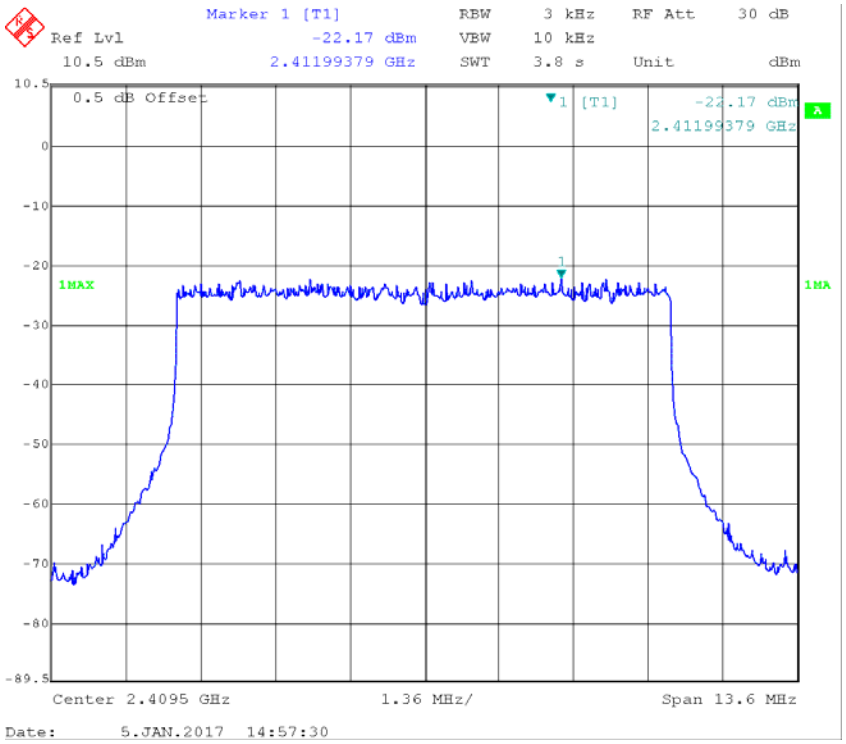
Chain 0-Power Spectral Density, 10M Low Channel



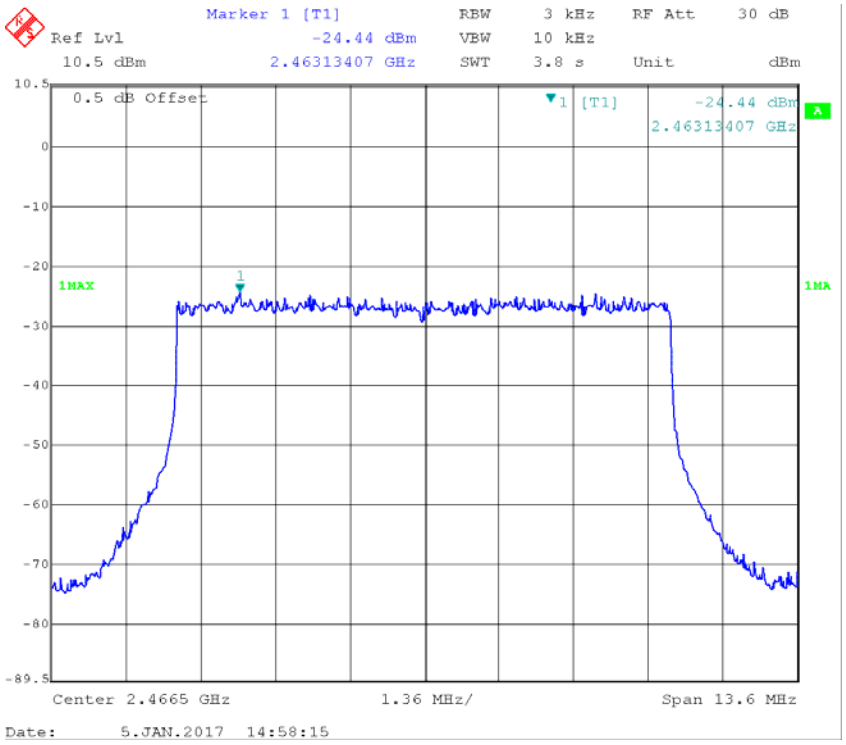
Chain 0-Power Spectral Density, 10M High Channel



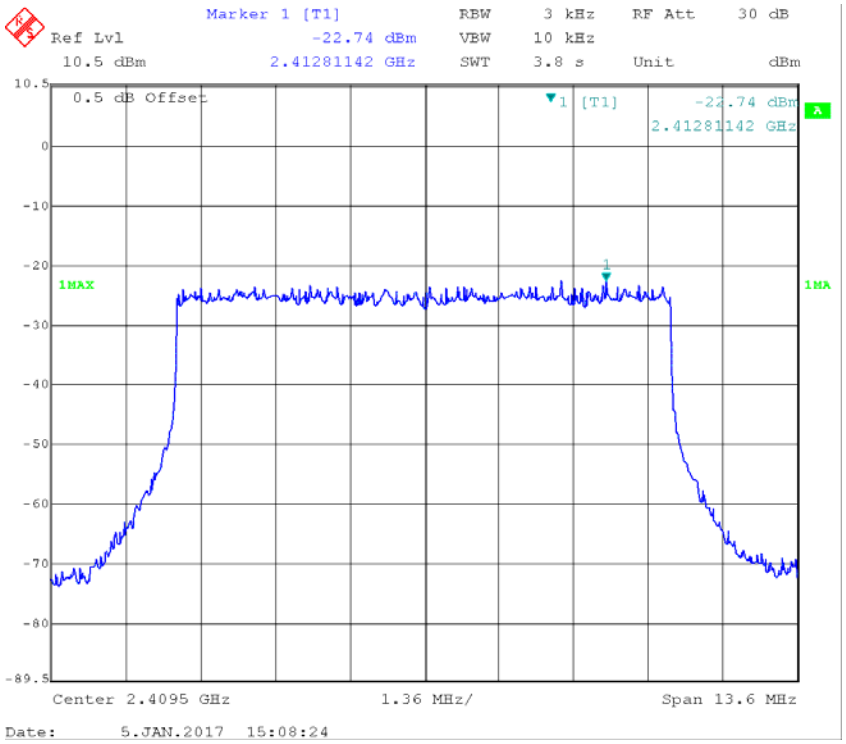
Chain 1-Power Spectral Density, 10M Low Channel



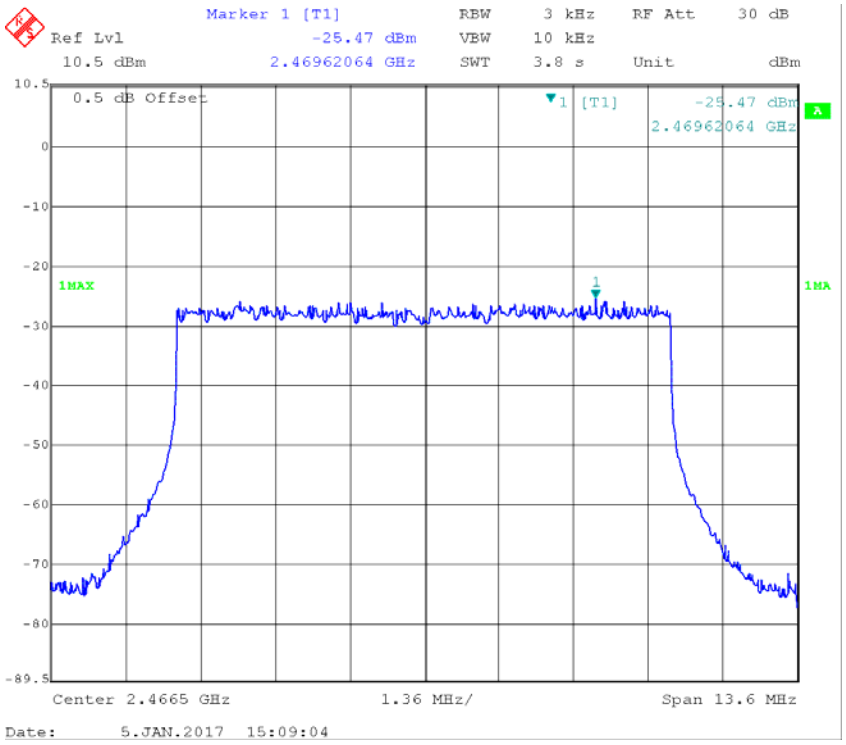
Chain 1-Power Spectral Density, 10M High Channel



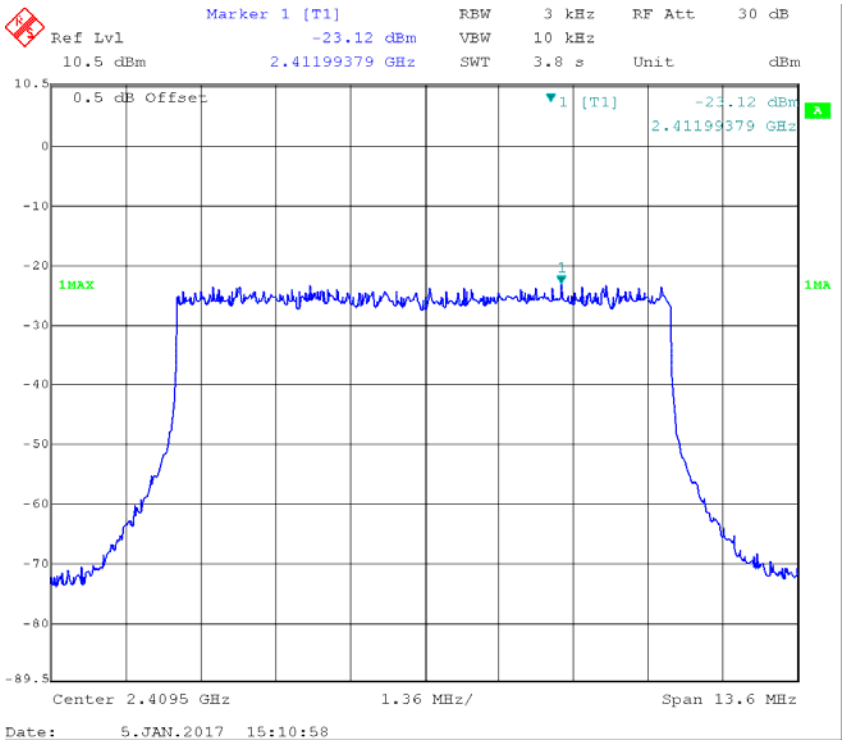
Chain 2-Power Spectral Density, 10M Low Channel



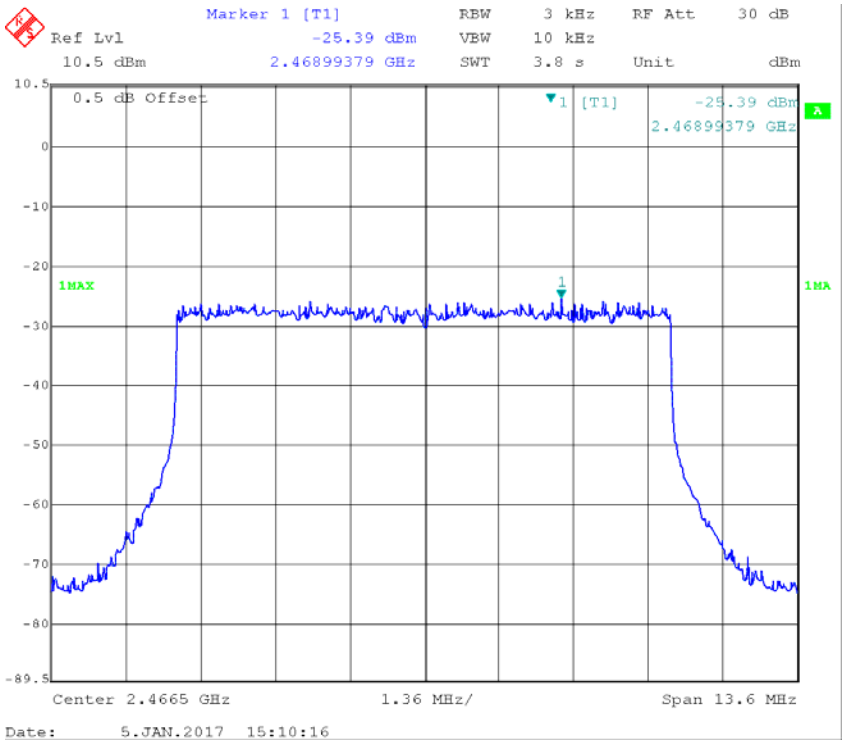
Chain 2-Power Spectral Density, 10M high Channel



Chain 3-Power Spectral Density, 10M Low Channel



Chain 3-Power Spectral Density, 10M High Channel



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