FCC PART 15.247
RSS-GEN, ISSUE 4, NOVEMBER 2014
RSS-247, ISSUE 2, FEBRUARY 2017

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-G1P1709
IC: 11805A-G1P1709

Report Type:	**Product Name:**
Original Report	DJI Goggles Racing Edition

Report Number:	RDG170929005-00B
Report Date:	2017-10-10
Reviewed By:	Jerry Zhang EMC Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *SZ DJI TECHNOLOGY CO., LTD*'s product, model number: *G1P* ***(FCC ID: SS3- G1P1709, IC: 11805A-G1P1709)*** (the "EUT") in this report was a *DJI Goggles Racing Edition, the* DJI Goggles Body was measured approximately: 195mm (L) x 155 mm (W) x 110 mm (H); headband (folded) was measured approximately: 255 mm (L) x 205 mm (W) x 92 mm (H), rated input voltage: DC3.8V Lithium lon 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

The measurement and test data in this report was gathered from production sample serial number: 170929005 (Assigned by BACL, Dongguan). The EUT was received on 2017-09-29.

Objective

This report is prepared on behalf of ***SZ DJI TECHNOLOGY CO., LTD*** in accordance with Part 2, Subpart J, Part 15, Subparts A, and C of the Federal Communications Commission's rules and RSS-247, Issue 2, February 2017, RSS-Gen Issue 4, November 2014 of the Innovation, Science and Economic Development Canada.

The tests were performed in order to determine the compliance of the EUT with FCC Rules Part 15-Subpart C, section 15.203, 15.205, 15.209, 15.247 rules and RSS-247, Issue 2, February 2017, RSS-Gen Issue 4, November 2014 of the Innovation, Science and Economic Development Canada.

Related Submittal(s)/Grant(s)

FCC submissions with Part 15B JBP, FCC ID: SS3- G1P1709.
FCC submissions with Part 15E NII, FCC ID: SS3- G1P1709.
ISEDC submissions with LE-LAN, IC: 11805A-G1P1709.
Part of system submissions with FCC ID: SS3-OAS11709, IC: 11805A-OAS11709.

Test Methodology

All measurements detailed in this Test Report were performed in accordance with ANSI C63.10-2013 "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices", and RSS-247, Issue 2, February 2017, RSS-Gen Issue 4, November 2014 of the Innovation, Science and Economic Development Canada.

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

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

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 Industry Area, Tangxia, Dongguan, Guangdong, China

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO/IEC 17025 by CNAS(Lab code: L5662). And accredited to ISO/IEC 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

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.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in testing mode, which was provided by 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, 1 channel was provided to testing:

Channel	Frequency (MHz)
1	2409.5

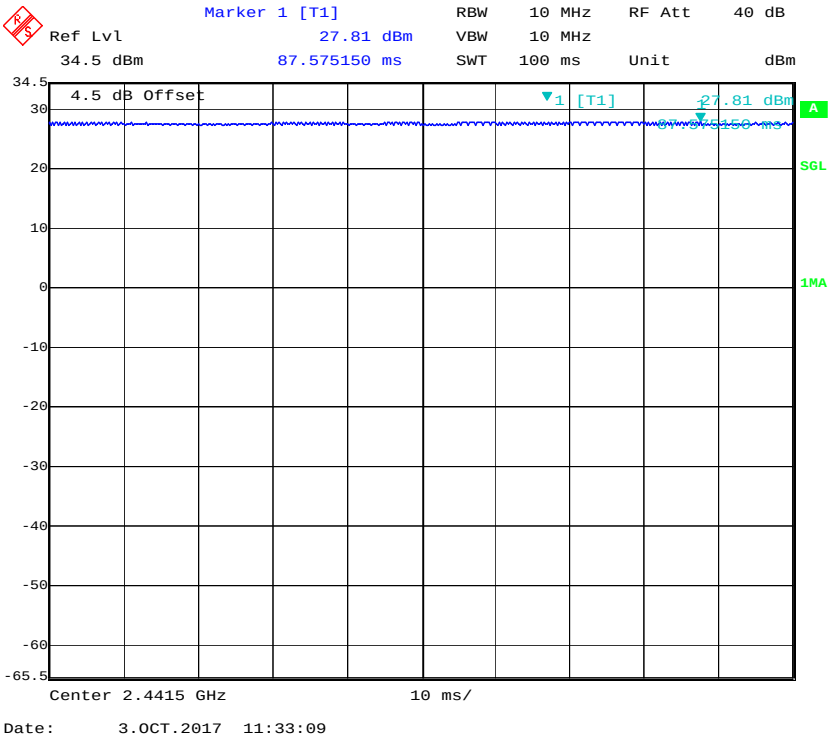
EUT Exercise Software

The software “DjiSdrConsole_V1.2.7.36” was used for testing, which was provided by manufacturer. The maximum power with maximum duty cycle was configured by system default setting.

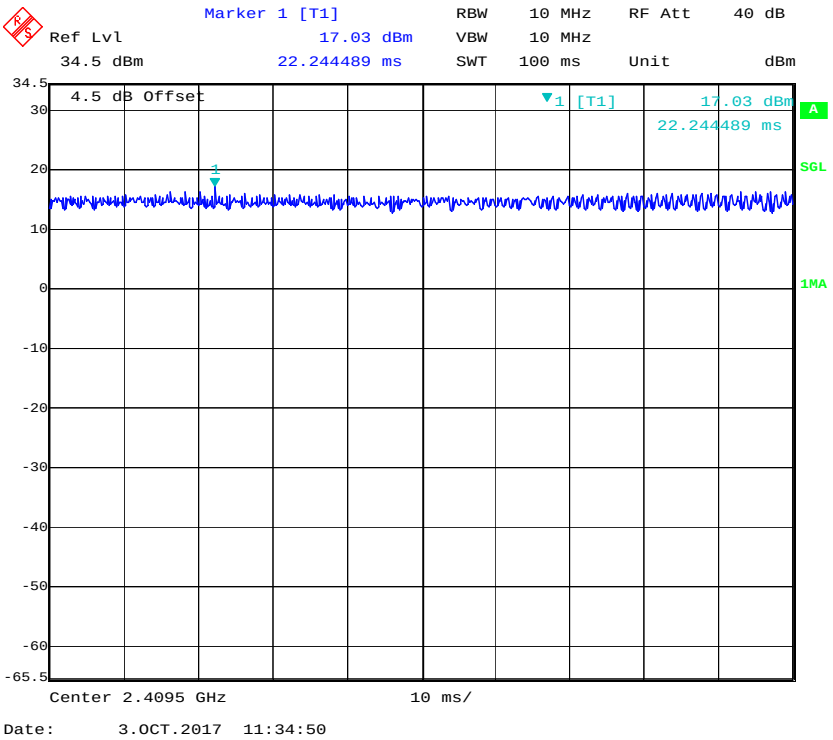
The duty cycle as below:

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

1.4MHz


Marker 1 [T1]
RBW 10 MHz
RF Att 40 dB
Ref Lvl
27.81 dBm
VBW 10 MHz
34.5 dBm
87.575150 ms
SWT 100 ms
Unit dBm
4.5 dB Offset
1 [T1]
27.81 dBm
87.575150 ms
A
SGL
1MA
34.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-65.5
Center 2.4415 GHz
10 ms/
Date: 3.OCT.2017 11:33:09

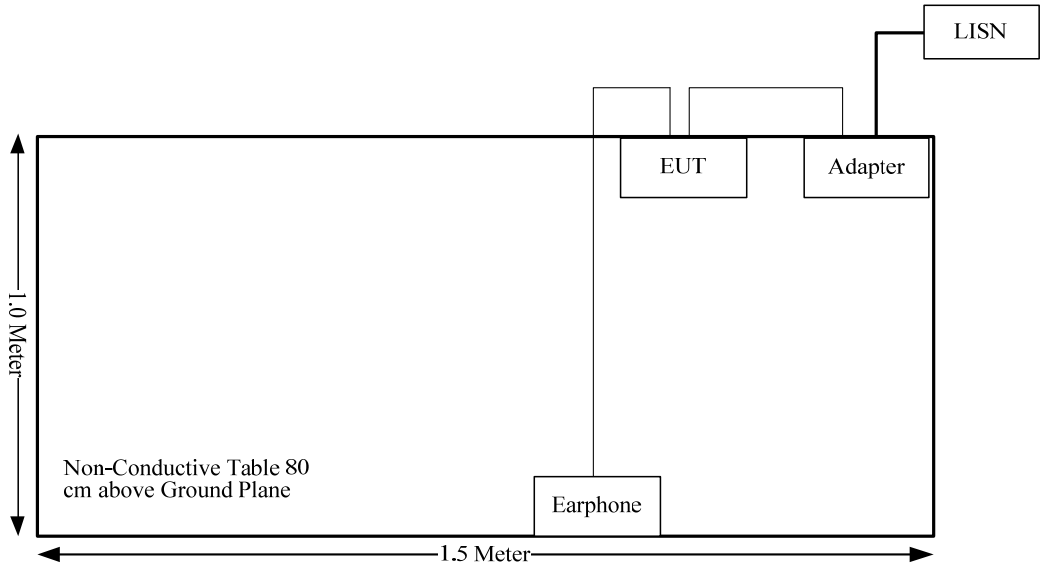
10MHz


Marker 1 [T1]
RBW 10 MHz
RF Att 40 dB
Ref Lvl
17.03 dBm
VBW 10 MHz
34.5 dBm
22.244489 ms
SWT 100 ms
Unit dBm
4.5 dB Offset
1 [T1]
17.03 dBm
22.244489 ms
A
SGL
1MA
34.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-65.5
Center 2.4095 GHz
10 ms/
Date: 3.OCT.2017 11:34:50

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

Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093 RSS-102 §4	RF Exposure	Compliance
FCC§15.203 RSS-GEN§8.3	Antenna Requirement	Compliance
§15.207 (a) RSS-Gen §8.8	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d) RSS-247 §5.5 RSS-Gen §8.10	Spurious Emissions	Compliance
§15.247 (a)(2) RSS-247 §5.2 a)	6 dB Emission Bandwidth And 99% Occupied Bandwidth	Compliance
§15.247(b)(3) RSS-247 §5.4 d)	Maximum conducted output power	Compliance
§15.247(d) RSS-247 §5.5	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247 (e) RSS-247 §5.2 b)	Power Spectral Density	Compliance

FCC §15.247 (i) & §1.1310 & §2.1093, RSS-102 §4- RF EXPOSURE

Applicable Standard

According to§15.247(i),§1.1310 and §2.1093.

According to RSS-102 §4 Table 3, SAR limits for device used by the general public

Body Region	Average SAR (W/Kg)	Averaging Time (minutes)	Mass Average (g)
Whole Body	0.08	6	Whole Body
Localized Head, Neck and Trunk	1.6	6	1
Localized Limbs	4	6	10

Test Result

Compliant, please refer to the SAR report: RDG170929005-20A for FCC and RDG170929005-20B for Canada ISEDC.

FCC §15.203 ,RSS-GEN§8.3- 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.
Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

According to RSS-Gen §8.3, The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.
Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level.9 When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

This radio transmitter (identify the device by certification number or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi).

Antenna Information And 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

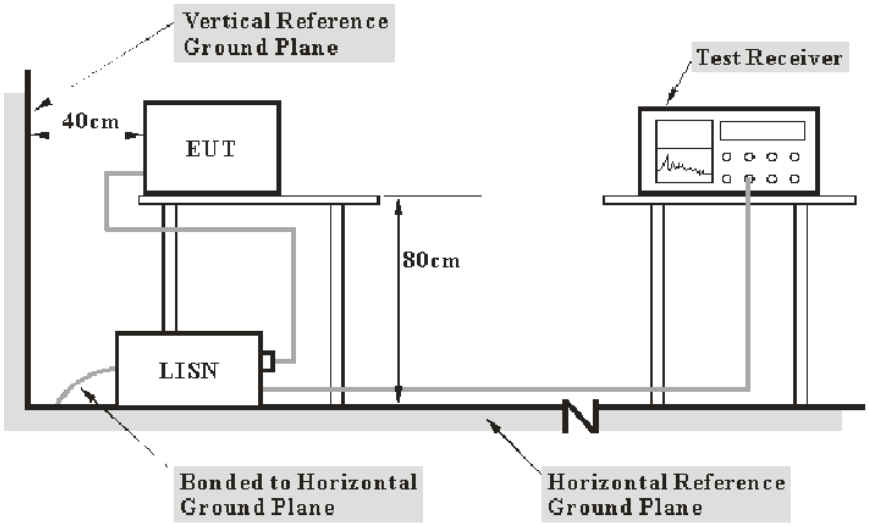
Result: Compliance.

FCC §15.207 (a)& RSS-GEN §8.8– AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207(a)

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 15.207and RSS-247/RSS-Gen limits.

The spacing between the peripherals was 10 cm.

The EUT was connected to the main LISN with 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 limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2016-12-08	2017-12-08
R&S	Two-line V-network	ENV 216	3560.6550.12	2016-12-08	2017-12-08
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
Unknown	Coaxial Cable	2m	Con-1	2017-09-05	2018-09-05

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

Test Data

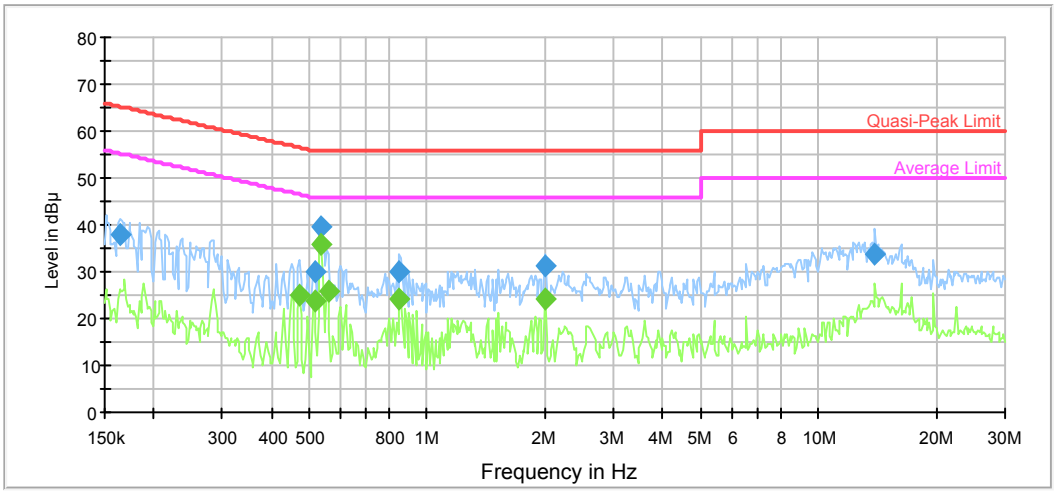
Environmental Conditions

Temperature:	27.1 °C
Relative Humidity:	46 %
ATM Pressure:	100.6 kPa

The testing was performed by Gaochao Gong on 2017-09-29.

Test Mode: Transmitting

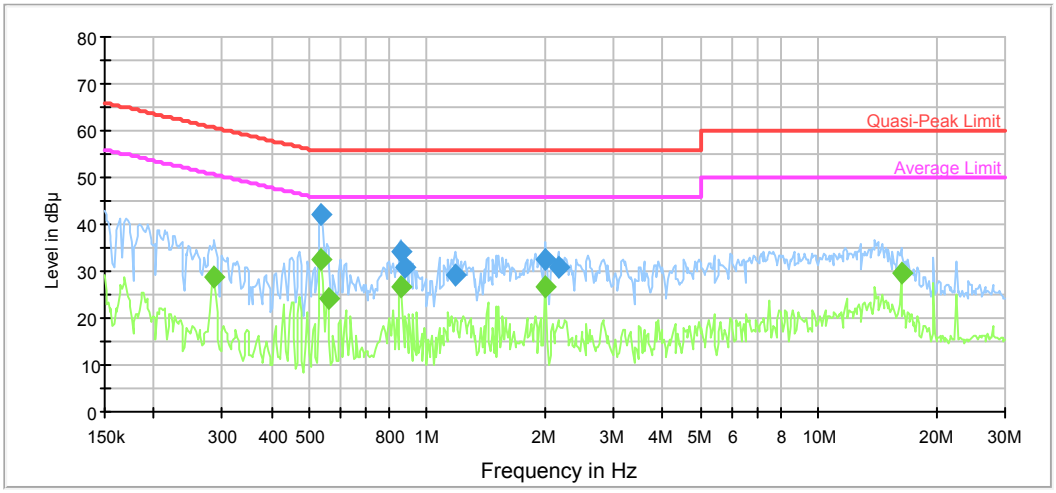
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.163741	37.8	9.000	L1	11.0	27.5	65.3	Compliance
0.515791	30.0	9.000	L1	9.9	26.0	56.0	Compliance
0.536756	39.5	9.000	L1	9.9	16.5	56.0	Compliance
0.852094	29.9	9.000	L1	9.8	26.1	56.0	Compliance
1.998778	31.1	9.000	L1	9.7	24.9	56.0	Compliance
13.968003	33.7	9.000	L1	9.9	26.3	60.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.472507	25.0	9.000	L1	9.9	21.5	46.5	Compliance
0.515791	24.0	9.000	L1	9.9	22.0	46.0	Compliance
0.536756	35.8	9.000	L1	9.9	10.2	46.0	Compliance
0.558572	25.9	9.000	L1	9.9	20.1	46.0	Compliance
0.852094	24.2	9.000	L1	9.8	21.8	46.0	Compliance
1.998778	24.1	9.000	L1	9.7	21.9	46.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.536756	42.0	9.000	N	9.9	14.0	56.0	Compliance
0.858911	34.1	9.000	N	9.8	21.9	56.0	Compliance
0.879690	30.8	9.000	N	9.8	25.2	56.0	Compliance
1.181325	29.1	9.000	N	9.8	26.9	56.0	Compliance
1.998778	32.7	9.000	N	9.7	23.3	56.0	Compliance
2.164561	30.7	9.000	N	9.8	25.3	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.283749	28.8	9.000	N	10.2	21.9	50.7	Compliance
0.536756	32.7	9.000	N	9.9	13.3	46.0	Compliance
0.558572	24.2	9.000	N	9.9	21.8	46.0	Compliance
0.858911	26.6	9.000	N	9.8	19.4	46.0	Compliance
1.998778	26.9	9.000	N	9.7	19.1	46.0	Compliance
16.251162	29.6	9.000	N	10.0	20.4	50.0	Compliance

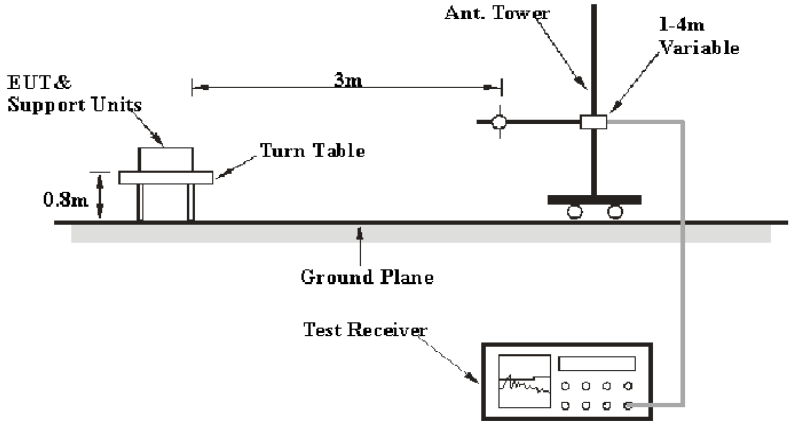
FCC §15.209, §15.205 , §15.247(d) & RSS-247 §5.5&RSS-GEN§8.10- SPURIOUS EMISSIONS

Applicable Standard

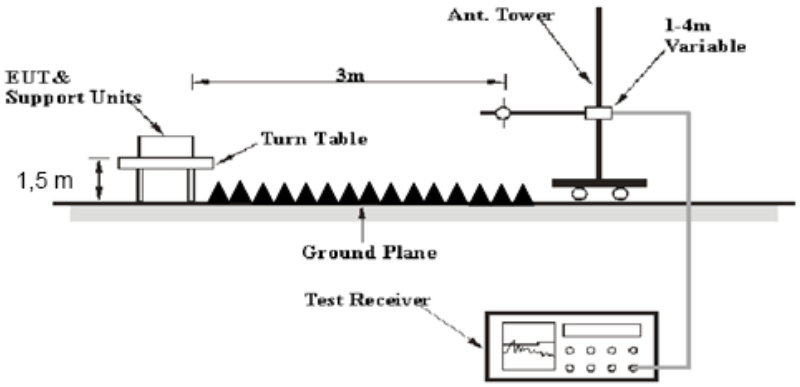
FCC §15.247 (d); §15.209; §15.205; and RSS-247 §5.5, RSS-GEN §8.10

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 and RSS-247 §5.5, RSS-Gen §8.10 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:

30-1000MHz:

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

1GHz- 25GHz:

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

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 Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

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

Margin = Limit –Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2014-11-06	2017-11-05
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
unknown	Coaxial Cable	4m	C0400/01	2017-09-05	2018-09-05
unknown	Coaxial Cable	0.75m	C0075/01	2017-09-05	2018-09-05
unknown	Coaxial Cable	10m	C1000/01	2017-09-05	2018-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2016-12-08	2017-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2017-09-05	2018-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-06-16	2020-06-15
unknown	Coaxial Cable	8m	C0800/01	2017-09-05	2018-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

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

Test Data

Environmental Conditions

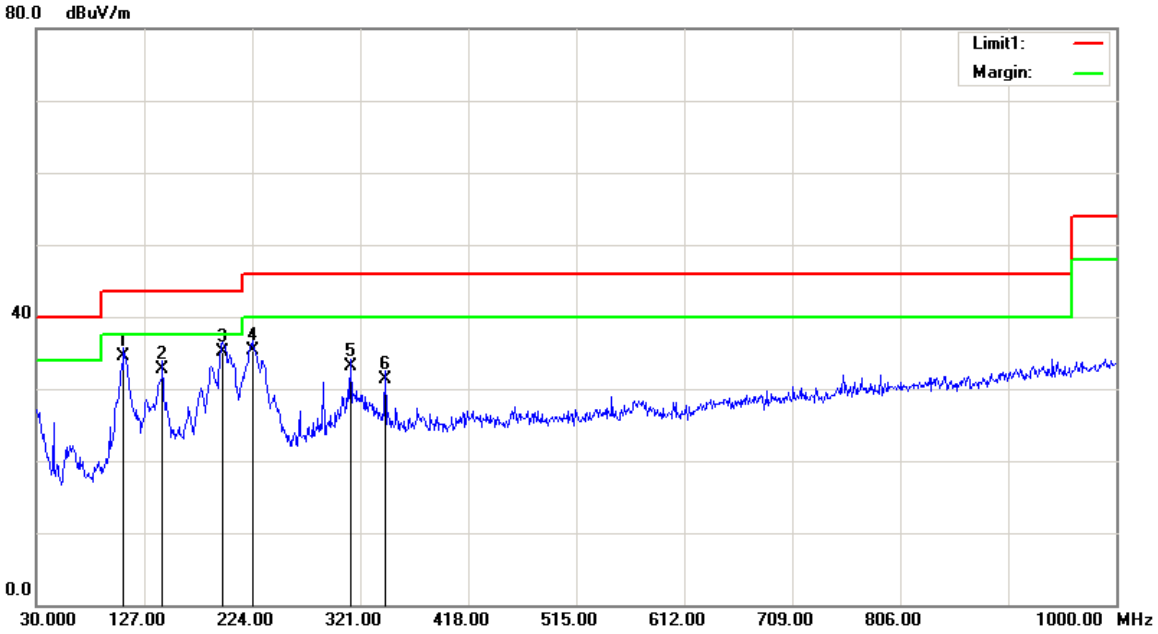
Temperature:	27.1 °C
Relative Humidity:	34 %
ATM Pressure:	100.5 kPa

The testing was performed by Steven Zuo on 2017-10-03.

Test Mode: Transmitting(Chain 0 was the worst)

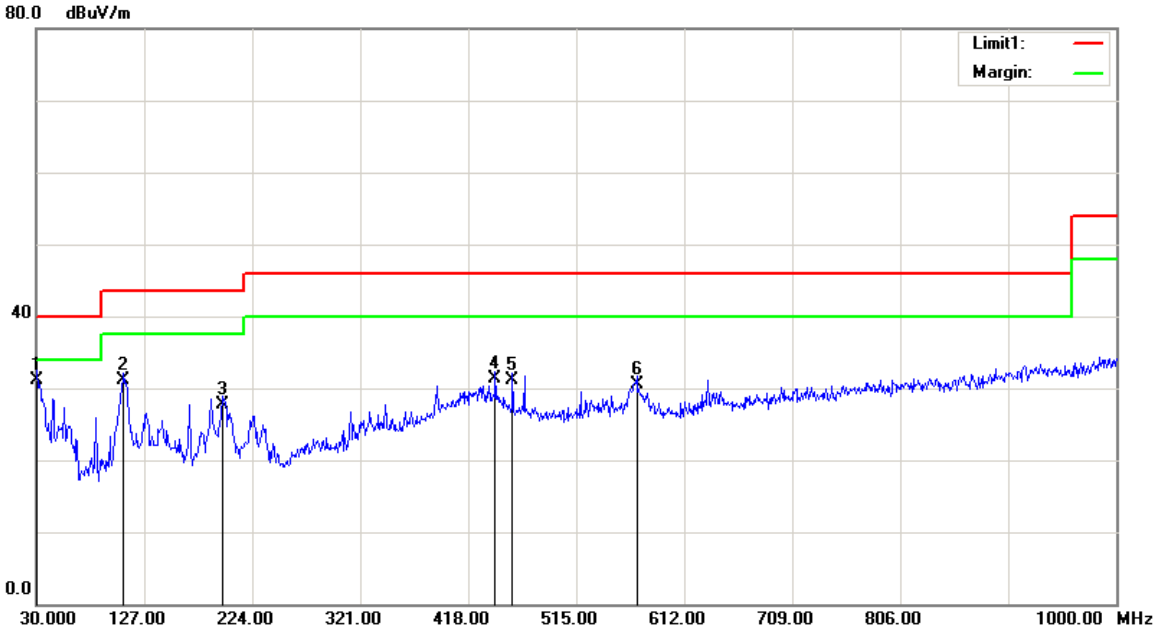
1) 30MHz-1GHz(1.4MHz Middle Channel was the worst):

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
108.5700	40.88	QP	-6.38	34.50	43.50	9.00
143.4900	39.16	QP	-6.36	32.80	43.50	10.70
197.8100	41.84	QP	-6.64	35.20	43.50	8.30
224.0000	42.20	QP	-6.80	35.40	46.00	10.60
312.2700	37.65	QP	-4.45	33.20	46.00	12.80
343.3100	34.71	QP	-3.41	31.30	46.00	14.70

Vertical:



Frequency (MHz)	Receiver Reading (dBuV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.9700	30.85	QP	0.35	31.20	40.00	8.80
108.5700	37.48	QP	-6.38	31.10	43.50	12.40
196.8400	34.49	QP	-6.79	27.70	43.50	15.80
442.2500	32.90	QP	-1.60	31.30	46.00	14.70
457.7700	32.35	QP	-1.15	31.20	46.00	14.80
569.3200	30.20	QP	0.40	30.60	46.00	15.40

2) 1-25GHz:

1.4MHz

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2403.5 MHz									
2403.50	86.59	PK	H	28.11	1.80	0.00	116.5	N/A	N/A
2403.50	78.34	AV	H	28.11	1.80	0.00	108.25	N/A	N/A
2403.50	94.39	PK	V	28.11	1.80	0.00	124.3	N/A	N/A
2403.50	86.24	AV	V	28.11	1.80	0.00	116.15	N/A	N/A
2390.00	26.53	PK	V	28.08	1.80	0.00	56.41	74.00	17.59
2390.00	13.82	AV	V	28.08	1.80	0.00	43.7	54.00	10.3
4807.00	54.86	PK	V	32.91	3.17	37.20	53.74	74.00	20.26
4807.00	45.79	AV	V	32.91	3.17	37.20	44.67	54.00	9.33
7210.50	50.75	PK	V	35.75	4.81	37.24	54.07	74.00	19.93
7210.50	41.36	AV	V	35.75	4.81	37.24	44.68	54.00	9.32
5965.00	45.72	PK	V	34.29	3.82	37.29	46.54	74.00	27.46
5965.00	31.64	AV	V	34.29	3.82	37.29	32.46	54.00	21.54
Middle Channel: 2441.5 MHz									
2441.50	86.88	PK	H	28.18	1.82	0.00	116.88	N/A	N/A
2441.50	78.25	AV	H	28.18	1.82	0.00	108.25	N/A	N/A
2441.50	94.16	PK	V	28.18	1.82	0.00	124.16	N/A	N/A
2441.50	86.35	AV	V	28.18	1.82	0.00	116.35	N/A	N/A
4883.00	56.67	PK	V	33.07	3.28	37.21	55.81	74.00	18.19
4883.00	46.89	AV	V	33.07	3.28	37.21	46.03	54.00	7.97
7324.50	54.34	PK	V	36.04	4.62	37.38	57.62	74.00	16.38
7324.50	45.61	AV	V	36.04	4.62	37.38	48.89	54.00	5.11
5899.00	46.38	PK	V	34.26	3.79	37.22	47.21	74.00	26.79
5899.00	32.27	AV	V	34.26	3.79	37.22	33.1	54.00	20.9
6125.00	45.69	PK	V	34.28	4.06	37.27	46.76	74.00	27.24
6125.00	31.84	AV	V	34.28	4.06	37.27	32.91	54.00	21.09
High Channel: 2477.5 MHz									
2477.50	87.53	PK	H	28.26	1.84	0.00	117.63	N/A	N/A
2477.50	78.91	AV	H	28.26	1.84	0.00	109.01	N/A	N/A
2477.50	94.78	PK	V	28.26	1.84	0.00	124.88	N/A	N/A
2477.50	86.54	AV	V	28.26	1.84	0.00	116.64	N/A	N/A
2483.50	31.92	PK	V	28.27	1.84	0.00	62.03	74.00	11.97
2483.50	15.63	AV	V	28.27	1.84	0.00	45.74	54.00	8.26
4955.00	56.72	PK	V	33.21	3.23	37.24	55.92	74.00	18.08
4955.00	46.95	AV	V	33.21	3.23	37.24	46.15	54.00	7.85
7432.50	53.68	PK	V	36.32	4.43	37.51	56.92	74.00	17.08
7432.50	44.73	AV	V	36.32	4.43	37.51	47.97	54.00	6.03
5985.00	45.75	PK	V	34.29	3.82	37.31	46.55	74.00	27.45
5985.00	32.16	AV	V	34.29	3.82	37.31	32.96	54.00	21.04

10MHz

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Measurement (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Channel: 2409.5 MHz									
2409.50	67.26	PK	H	28.12	1.80	0.00	97.18	N/A	N/A
2409.50	59.48	AV	H	28.12	1.80	0.00	89.4	N/A	N/A
2409.50	74.35	PK	V	28.12	1.80	0.00	104.27	N/A	N/A
2409.50	66.54	AV	V	28.12	1.80	0.00	96.46	N/A	N/A
2390.00	25.16	PK	V	28.08	1.80	0.00	55.04	74.00	18.96
2390.00	13.62	AV	V	28.08	1.80	0.00	43.5	54.00	10.5
4819.00	47.43	PK	V	32.94	3.19	37.20	46.36	74.00	27.64
4819.00	32.68	AV	V	32.94	3.19	37.20	31.61	54.00	22.39
7228.50	46.59	PK	V	35.79	4.78	37.26	49.9	74.00	24.1
7228.50	32.34	AV	V	35.79	4.78	37.26	35.65	54.00	18.35
5965.00	45.86	PK	V	34.29	3.82	37.29	46.68	74.00	27.32
5965.00	31.57	AV	V	34.29	3.82	37.29	32.39	54.00	21.61

FCC §15.247(a) (2)& RSS-247 §5.2 a) &RSS-247 §5.2 a) &RSS-GEN§6.6 –6 dB EMISSION BANDWIDTH AND 99% OCCUPIED BANDWIDTH

Applicable Standard

According to FCC §15.247(a) (2)

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 kH

According to RSS-247 §5.2 a)

The minimum 6 dB bandwidth shall be 500 kHz.

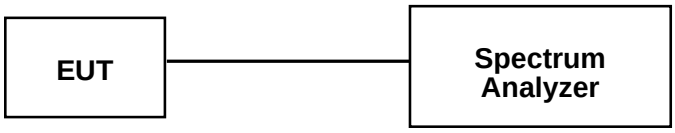
According to RSS-Gen §6.6

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

Test Procedure

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3×RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
h) Measure the 99% bandwidth use OBW test function.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSIQ	831929/005	2017-8-31	2018-8-31
Unknown	RF Attenuator	3dB	3dB-1	Each Time	/
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/

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

Test Data

Environmental Conditions

Temperature:	27.8 °C
Relative Humidity:	47 %
ATM Pressure:	100.8 kPa

The testing was performed by Sun Zhong on 2017-10-02.

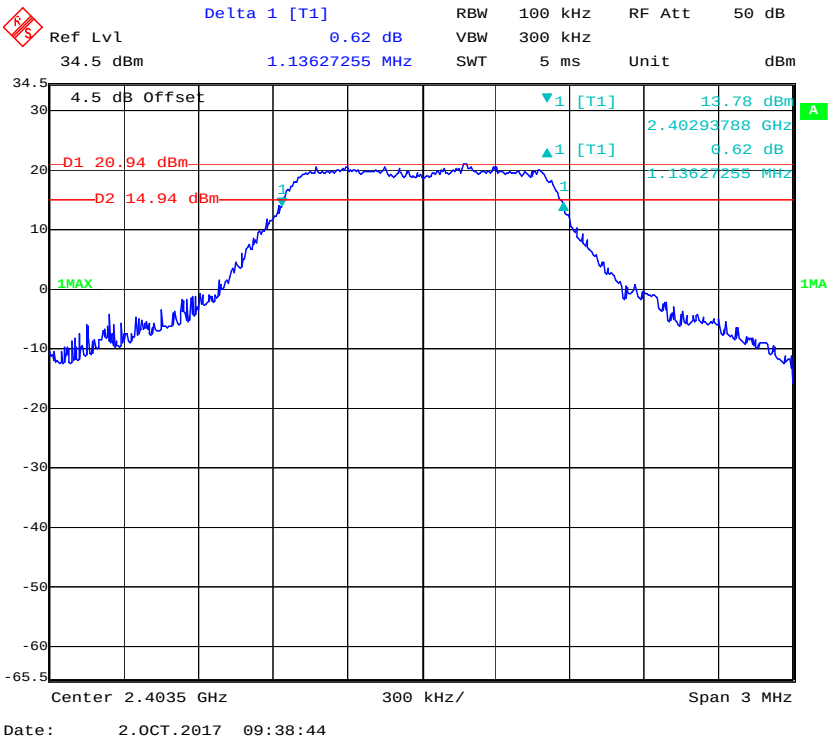
Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table and plots.

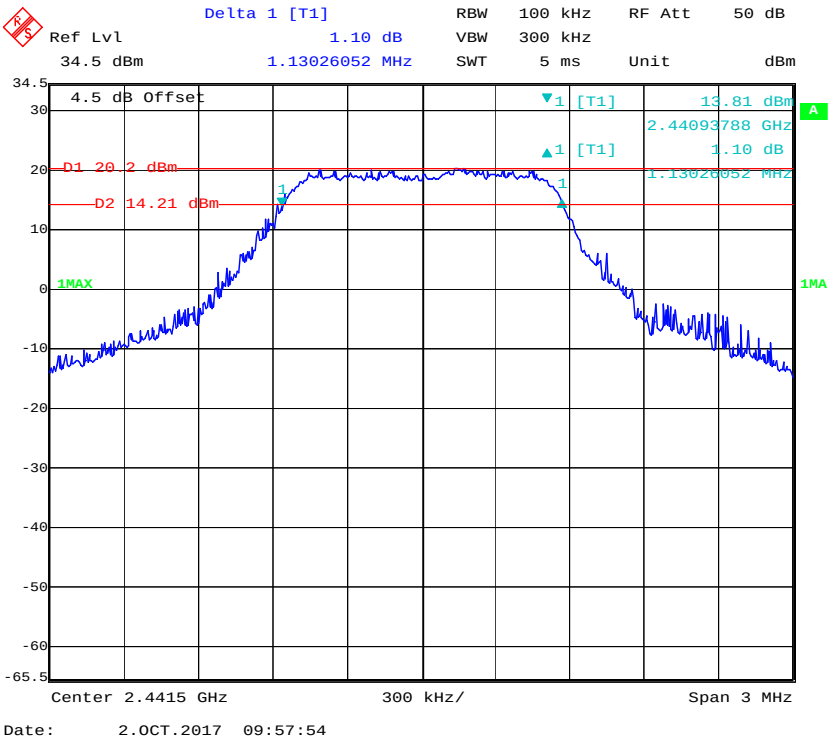
Mode	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	99% Occupied bandwidth (MHz)	Limit (MHz)
1.4MHz	2403.5	1.136	1.178	≥0.5
	2441.5	1.130	1.166	≥0.5
	2477.5	1.142	1.184	≥0.5
10MHz	2409.5	9.018	8.939	≥0.5

6dB Bandwidth:
1.4MHz:

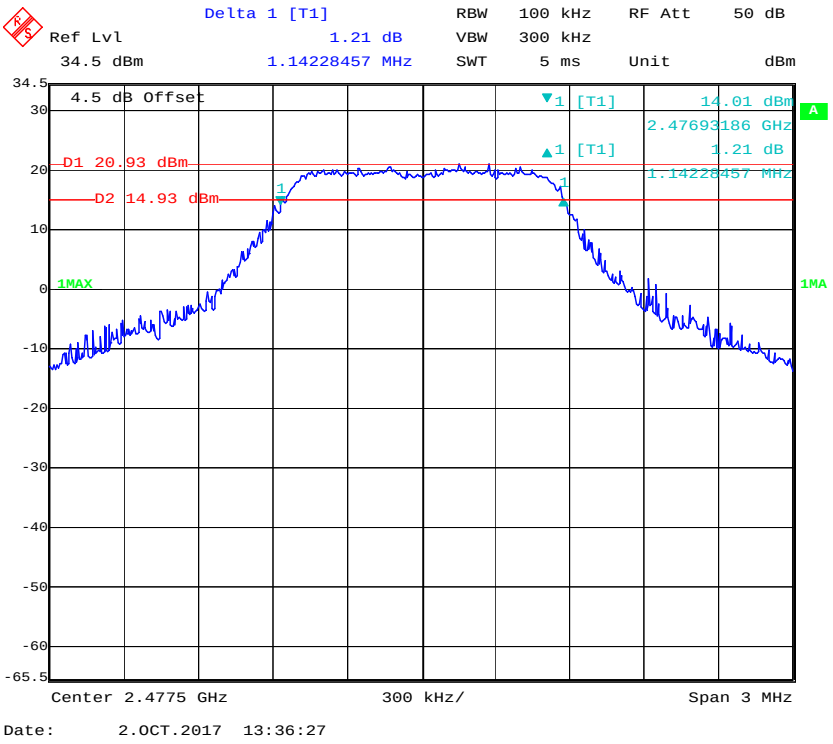
Low Channel



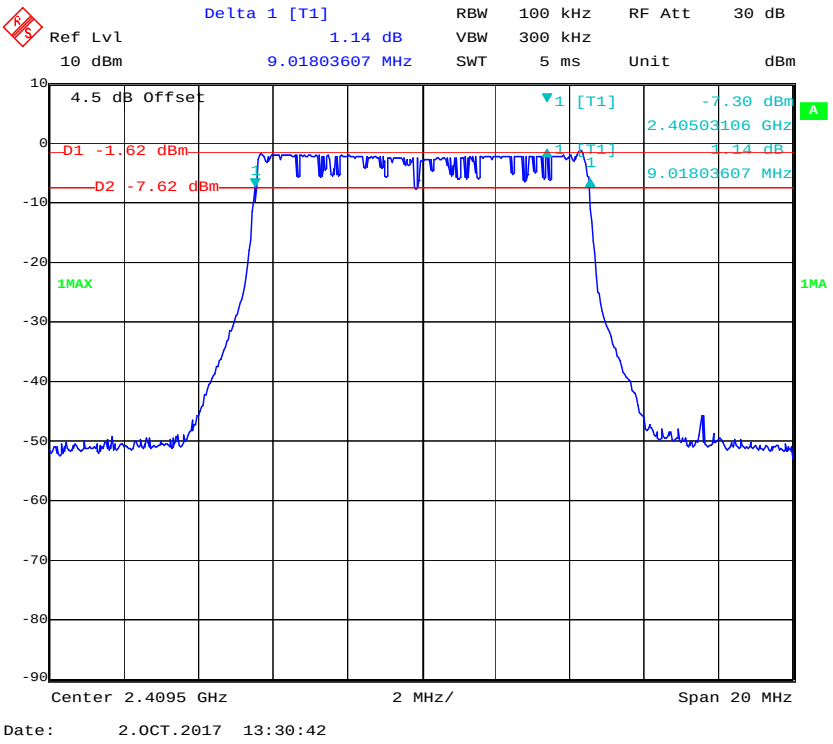
Middle Channel



High Channel

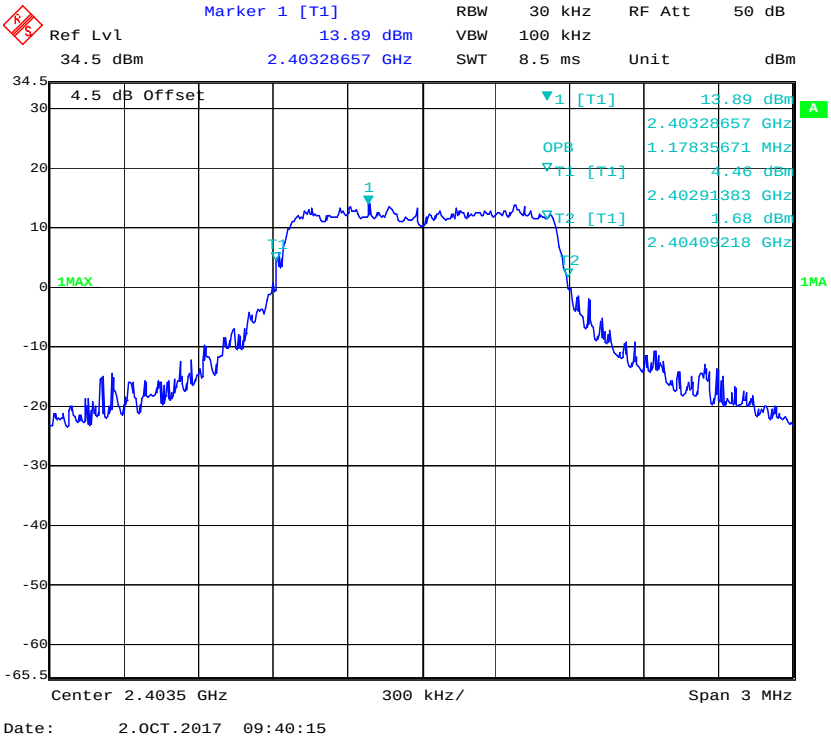


10MHz:

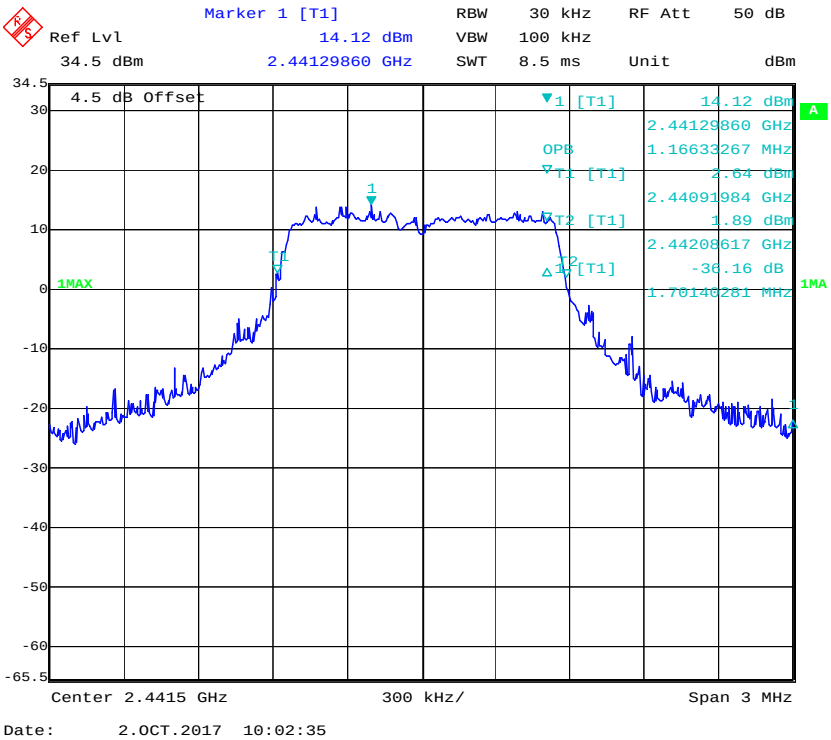


99% Occupied Bandwidth:
1.4MHz

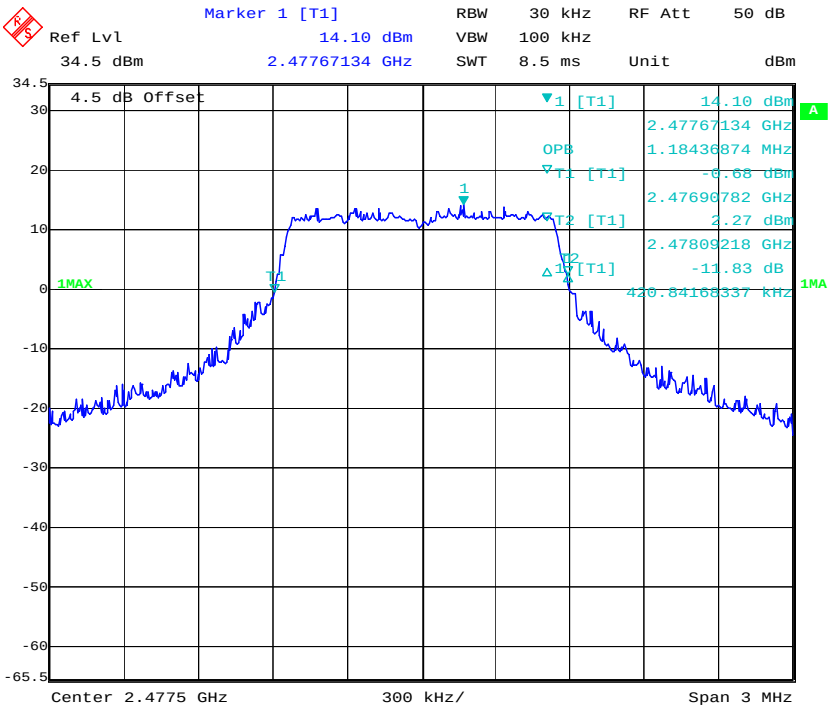
Low Channel



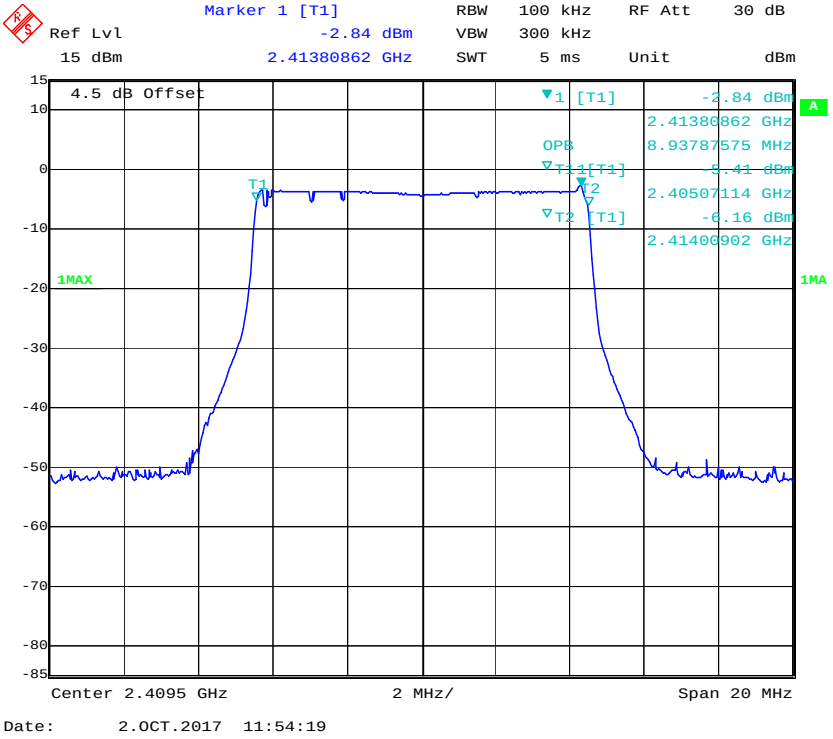
Middle Channel



High Channel



10MHz:



FCC §15.247(b) (3)&RSS-247 §5.4 d) - 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.

According to RSS-247§5.4 d) For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. Except as provided in Section 5.4(e), the e.i.r.p. shall not exceed 4 W.
As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signalling 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 transmitting at a reduced power level. If multiple modes of operation are implemented, 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 test equipment.
3. Add a correction factor to the display.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54210016	2016-11-03	2017-11-03
Agilent	Wideband Power Sensor	N1921A	MY54170013	2016-11-03	2017-11-03
Unknown	RF Attenuator	3dB	3dB-1	Each Time	/
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/

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

Test Data

Environmental Conditions

Temperature:	27.8 °C
Relative Humidity:	47 %
ATM Pressure:	100.8 kPa

The testing was performed by Sun Zhong on 2017-10-02.

Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table.

Mode	Frequency (MHz)	Max Peak Conducted Output Power (dBm)				Limit (dBm)
		Chain 0	Chain 1	Chain 2	Chain 3	
1.4MHz	2403.5	27.52	27.09	26.89	27.01	30
	2441.5	27.33	27.11	27.07	27.17	30
	2477.5	27.38	27.1	27.05	27.06	30
10MHz	2409.5	17.58	18.64	16.8	16.45	30

Mode	Frequency (MHz)	Max Average Conducted Output Power (dBm)				Limit (dBm)
		Chain 0	Chain 1	Chain 2	Chain 3	
1.4MHz	2403.5	21.07	20.5	19.74	19.88	30
	2441.5	20.94	20.72	19.64	20.18	30
	2477.5	20.9	20.67	19.46	19.78	30
10MHz	2409.5	3.95	4.3	3.02	3.01	30

FCC§15.247(d)&RSS-247 §5.5 – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

Applicable Standard

According to FCC§15.247(d):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)).

According to RSS-247 §5.5:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

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	FSIQ	831929/005	2017-8-31	2018-8-31
Unknown	RF Attenuator	3dB	3dB-1	Each Time	/
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/

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

Test Data

Environmental Conditions

Temperature:	27.8 °C
Relative Humidity:	47 %
ATM Pressure:	100.8 kPa

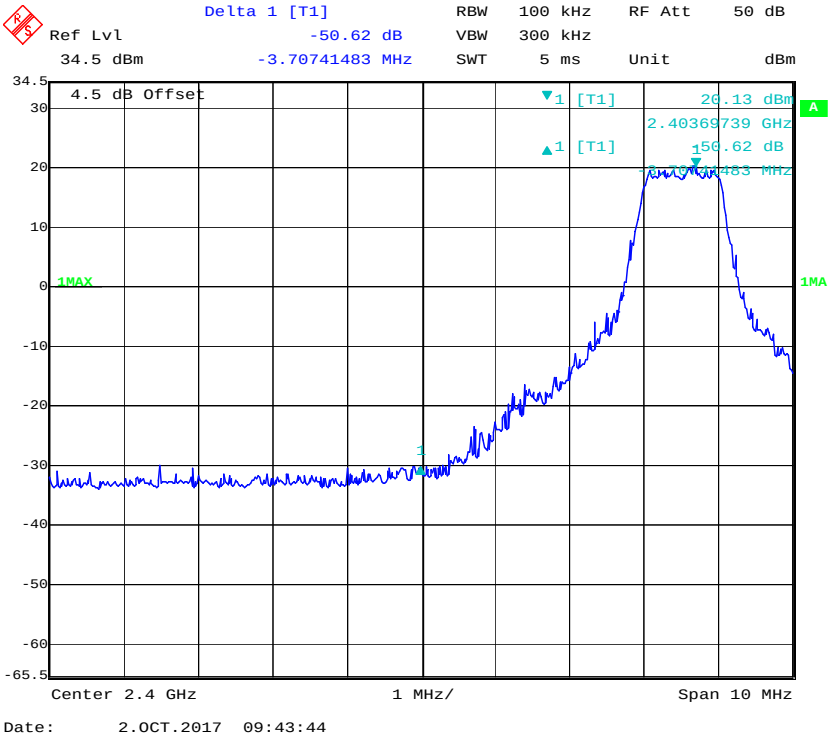
The testing was performed by Sun Zhong on 2017-10-02.

Test mode: Transmitting

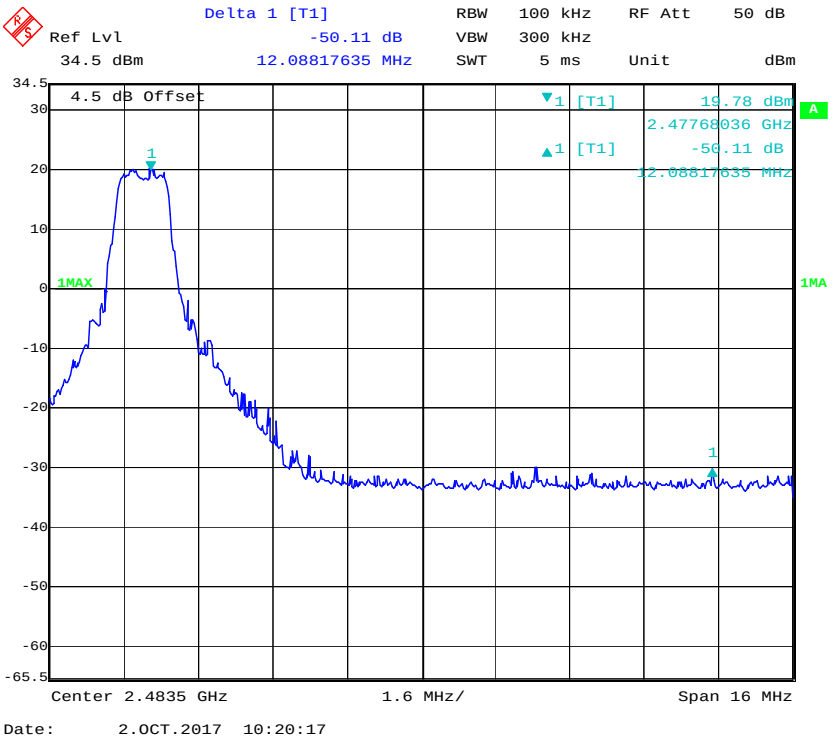
Test Result: Compliant. All emissions out of the operation band were under fundamental more than 20dBc, please refer to following plots.

1.4MHz
Chain 0:

Band Edge, Left Side

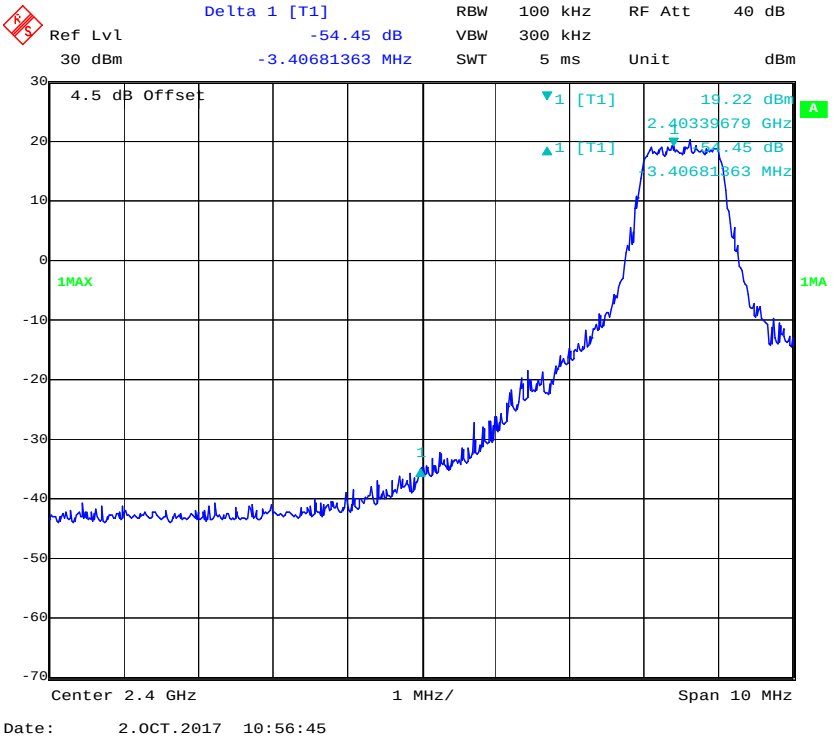


Band Edge, Right Side

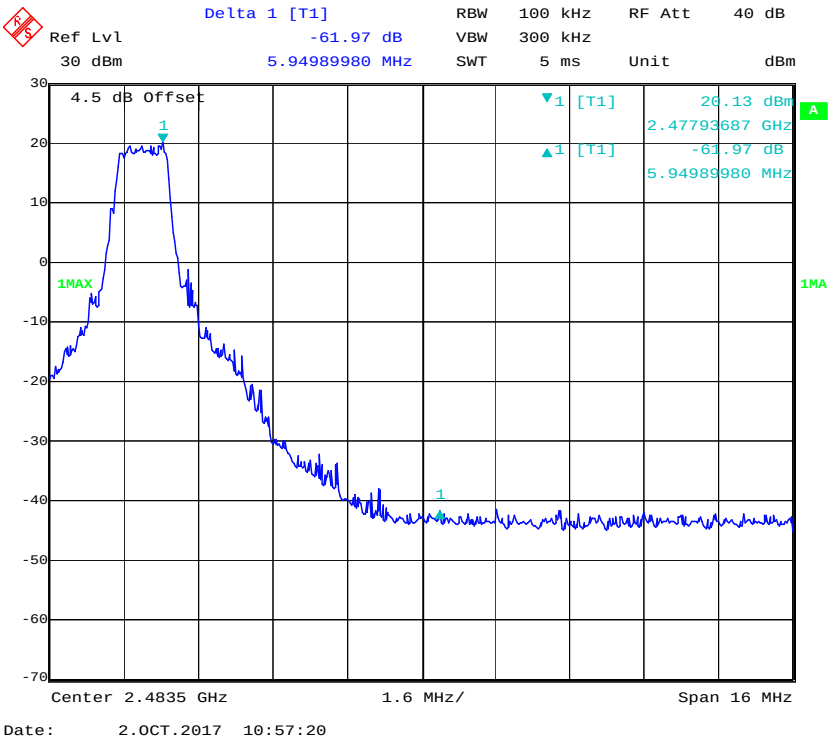


Chain1:

Band Edge, Left Side

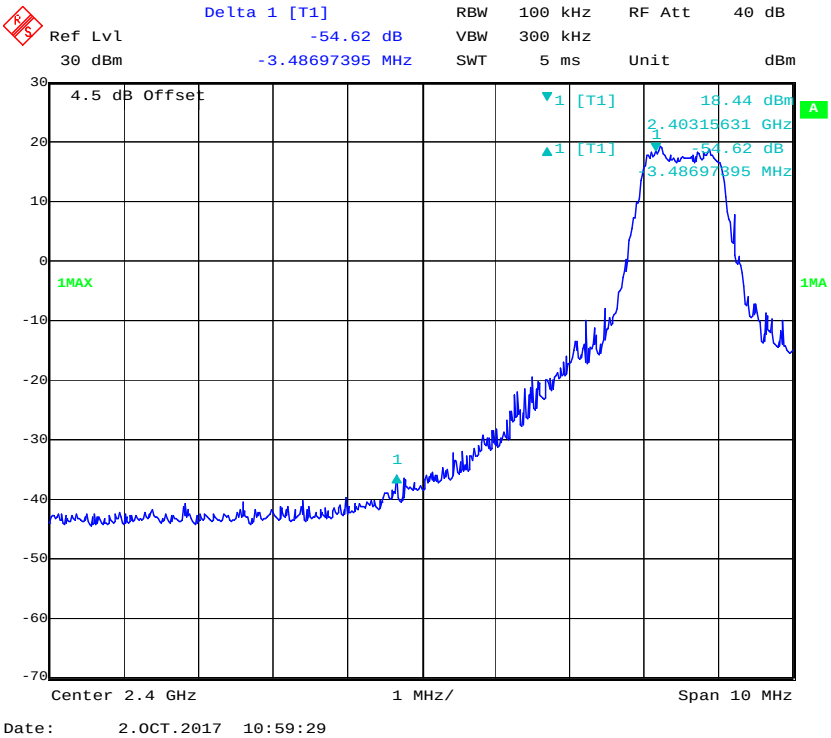


Band Edge, Right Side



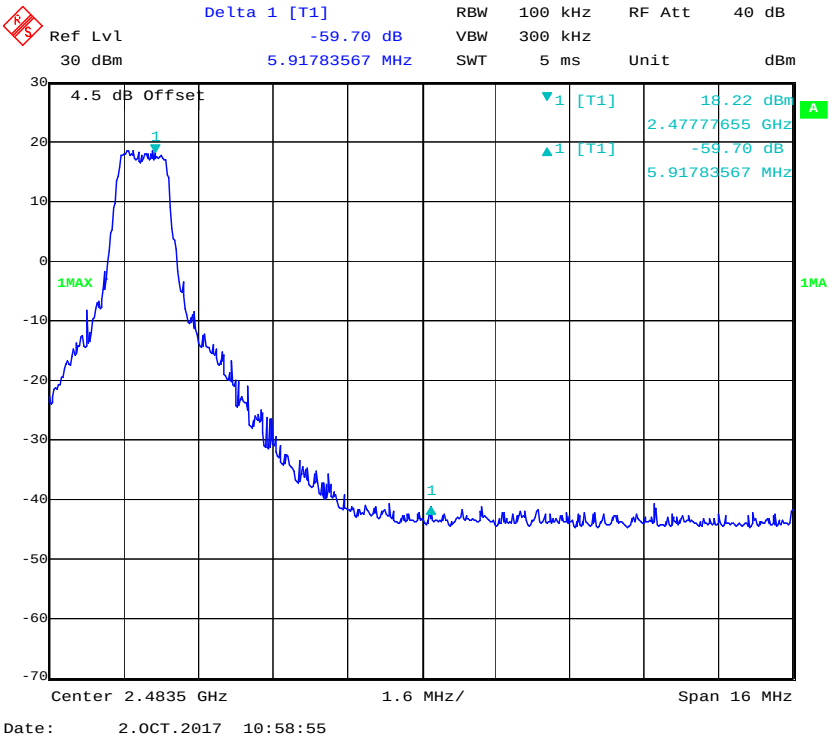
Chain2:

Band Edge, Left Side



Date: 2.OCT.2017 10:59:29

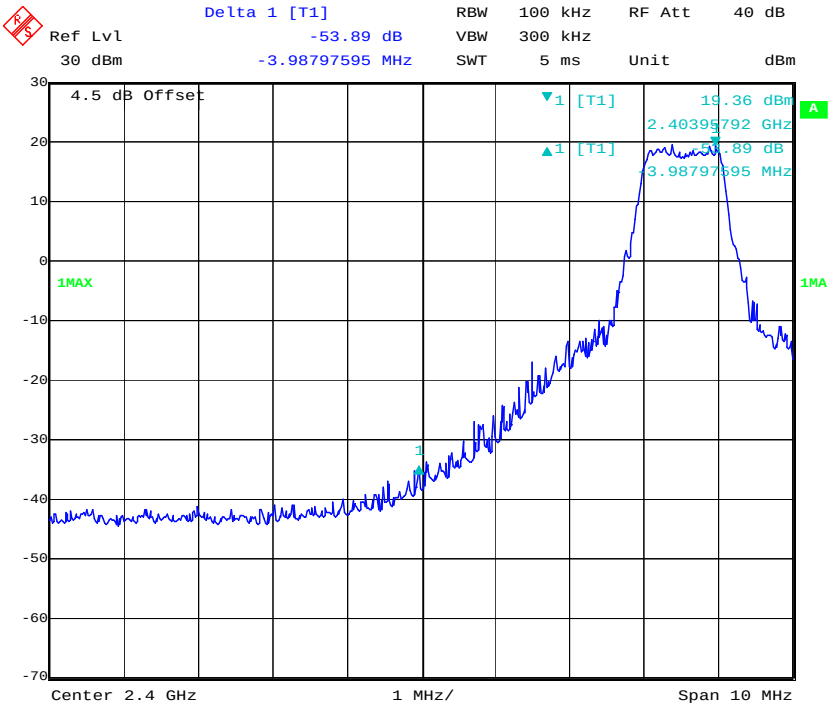
Band Edge, Right Side



Date: 2.OCT.2017 10:58:55

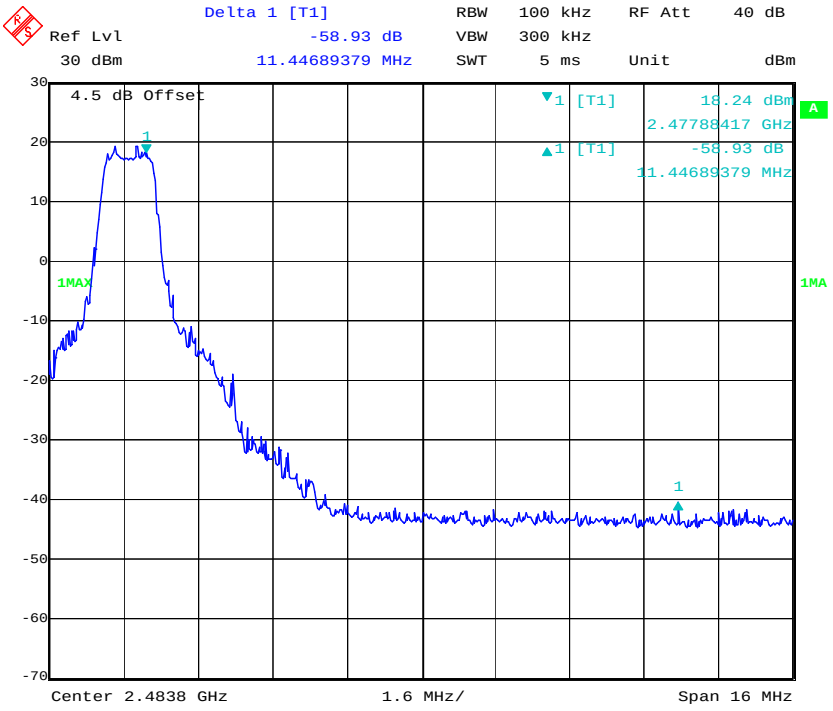
Chain3:

Band Edge, Left Side



Date: 2.OCT.2017 11:33:25

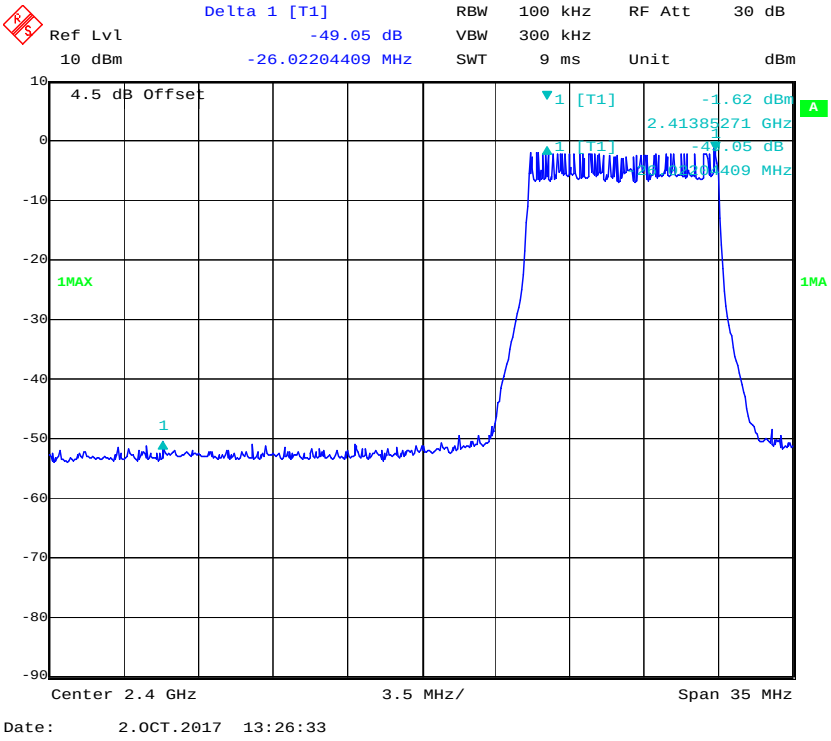
Band Edge, Right Side



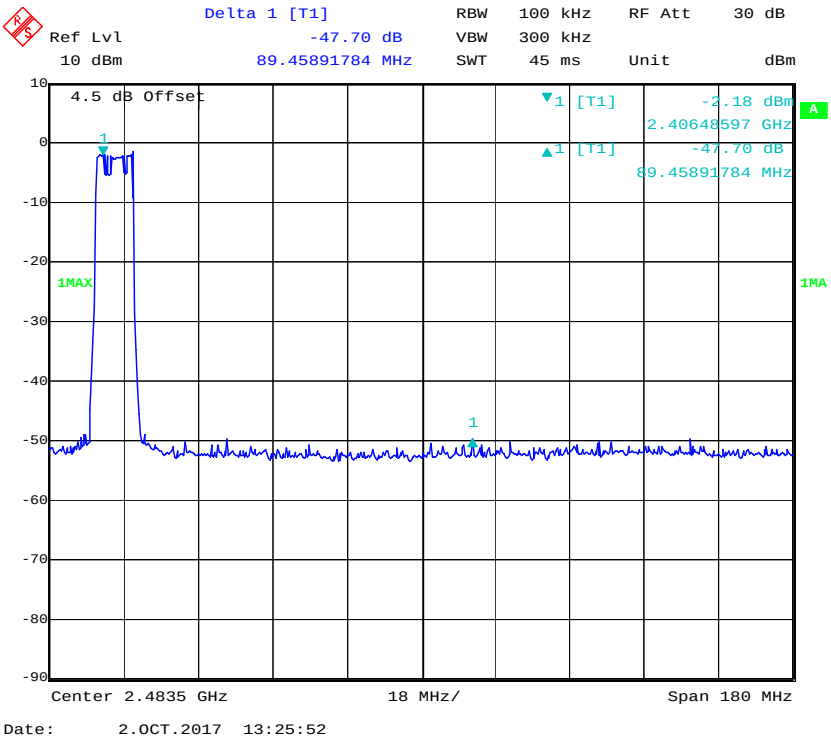
Date: 2.OCT.2017 11:32:49

10MHz
Chain0:

Band Edge, Left Side

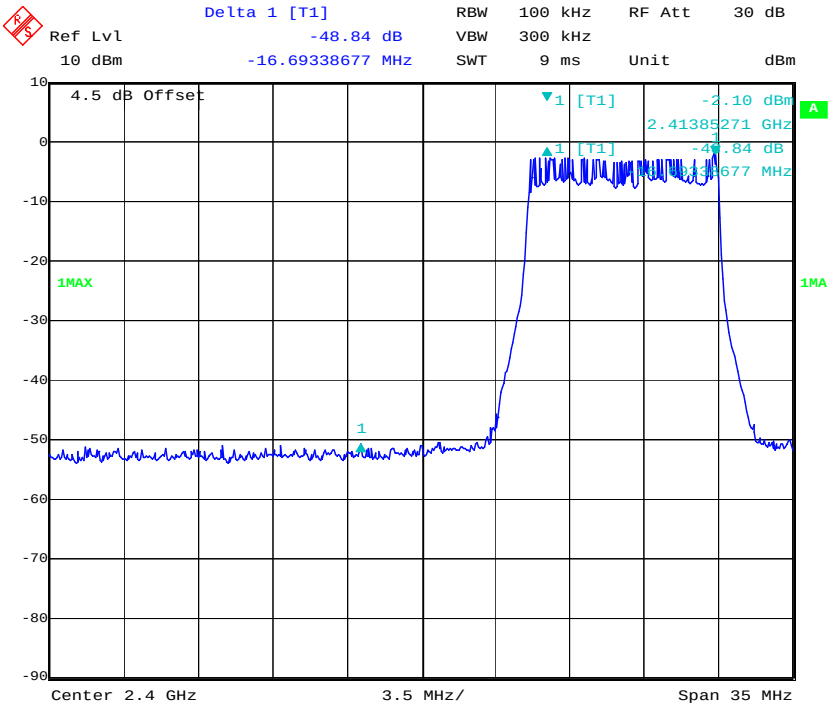


Band Edge, Right Side



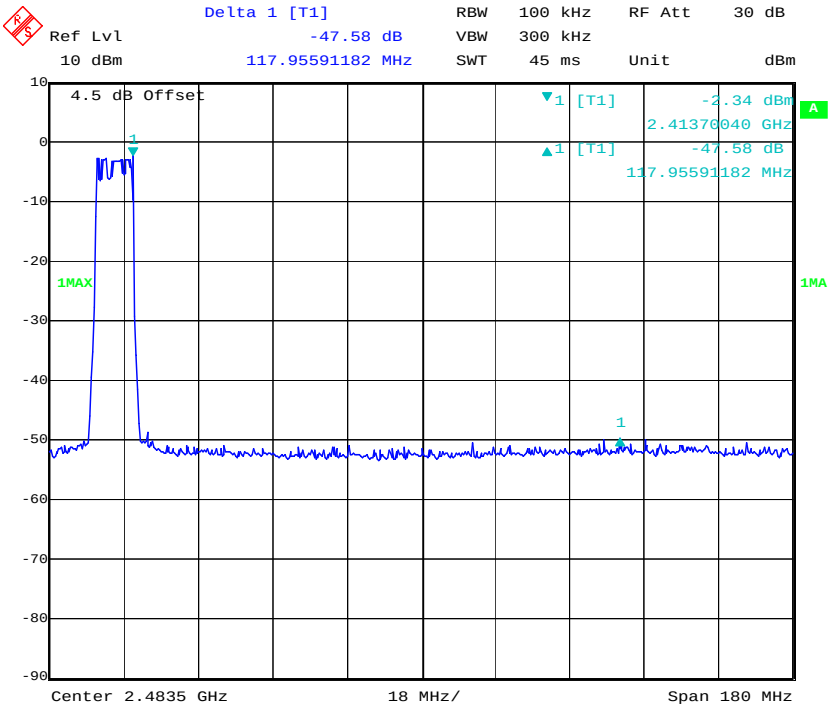
Chain1:

Band Edge, Left Side



Date: 2.OCT.2017 13:22:36

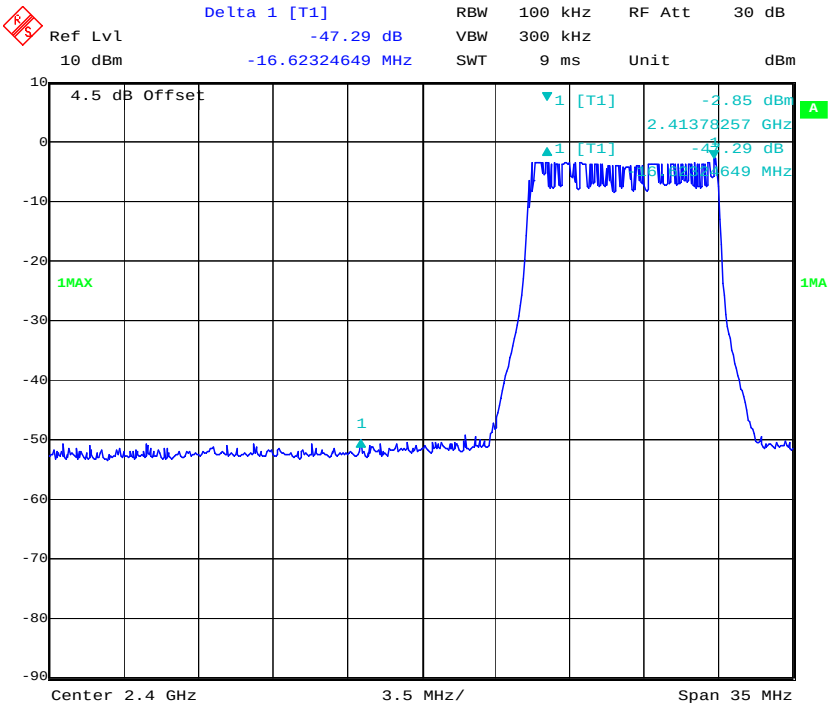
Band Edge, Right Side



Date: 2.OCT.2017 13:23:21

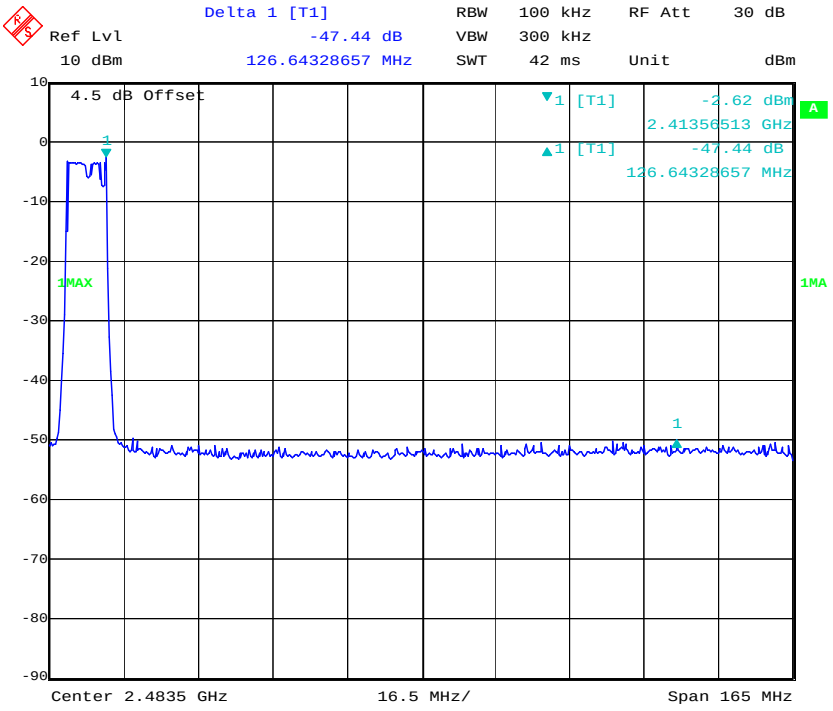
Chain2:

Band Edge, Left Side



Date: 2.OCT.2017 12:56:03

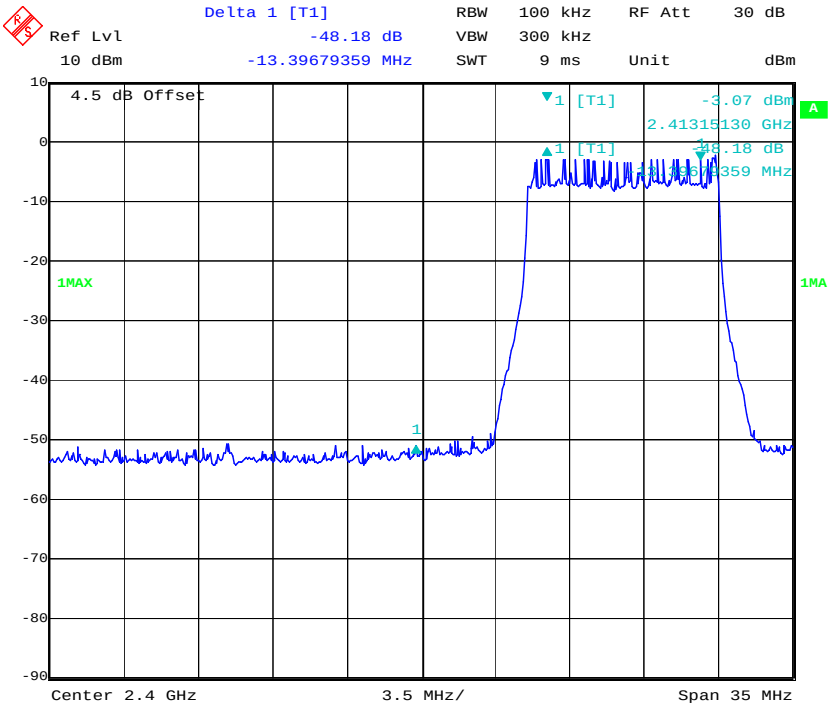
Band Edge, Right Side



Date: 2.OCT.2017 12:58:15

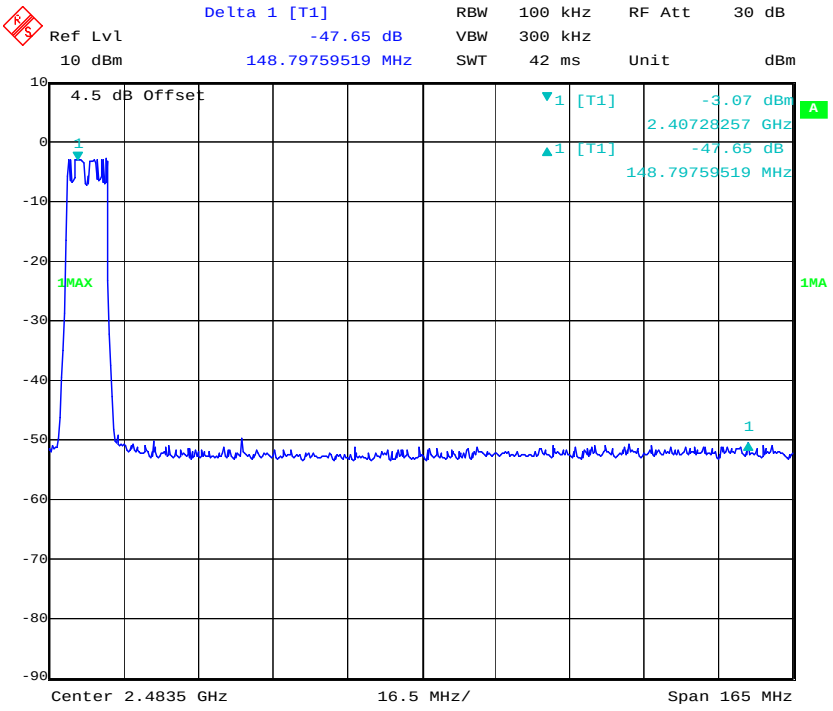
Chain3:

Band Edge, Left Side



Date: 2.OCT.2017 13:02:30

Band Edge, Right Side



Date: 2.OCT.2017 13:01:58

FCC §15.247(e) &RSS-247 §5.2 b)- POWER SPECTRAL DENSITY

Applicable Standard

According to FCC§15.247(e):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.

According to RSS-247 §5.2 b):

b) The transmitter power spectral density conducted from the transmitter 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 section 5.4(d), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

Test Procedure

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ 3×RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSIQ	831929/005	2017-8-31	2018-8-31
Unknown	RF Attenuator	3dB	3dB-1	Each Time	/
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/

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

Test Data

Environmental Conditions

Temperature:	27.8 °C
Relative Humidity:	47 %
ATM Pressure:	100.8 kPa

The testing was performed by Sun Zhong on 2017-10-02.

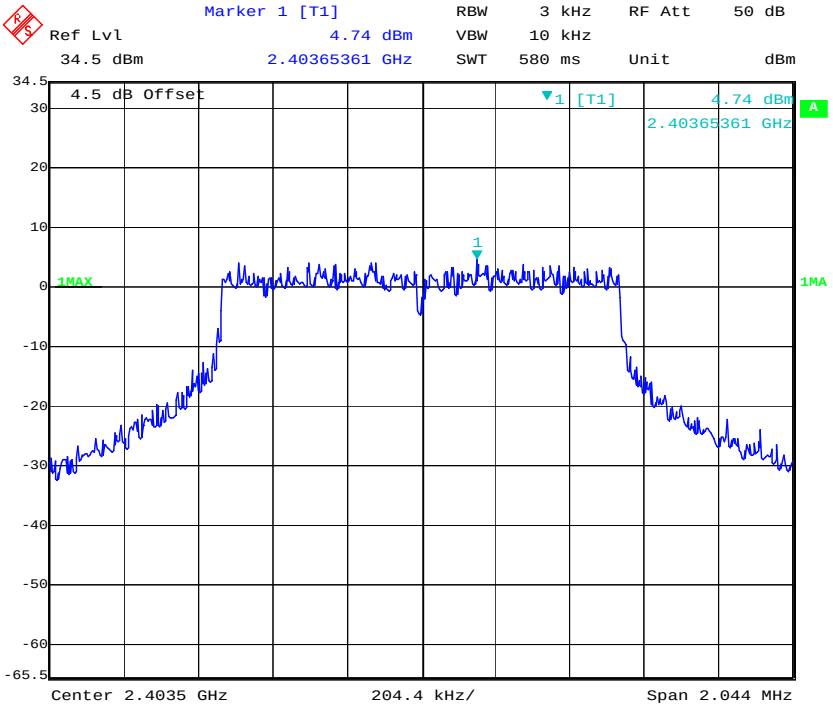
Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table and plots

Mode	Frequency (MHz)	PSD (dBm/3kHz)				Limit (dBm/3kHz)
		Chain 0	Chain 1	Chain 2	Chain 3	
1.4MHz	2403.5	4.74	3.93	3.28	4.46	≤8
	2441.5	3.81	4.22	2.85	4.04	≤8
	2477.5	4.02	4.33	2.86	2.93	≤8
10MHz	2409.5	-21.68	-22.17	-22.97	-21.79	≤8

1.4MHz
Chain0:

Power Spectral Density, Low Channel



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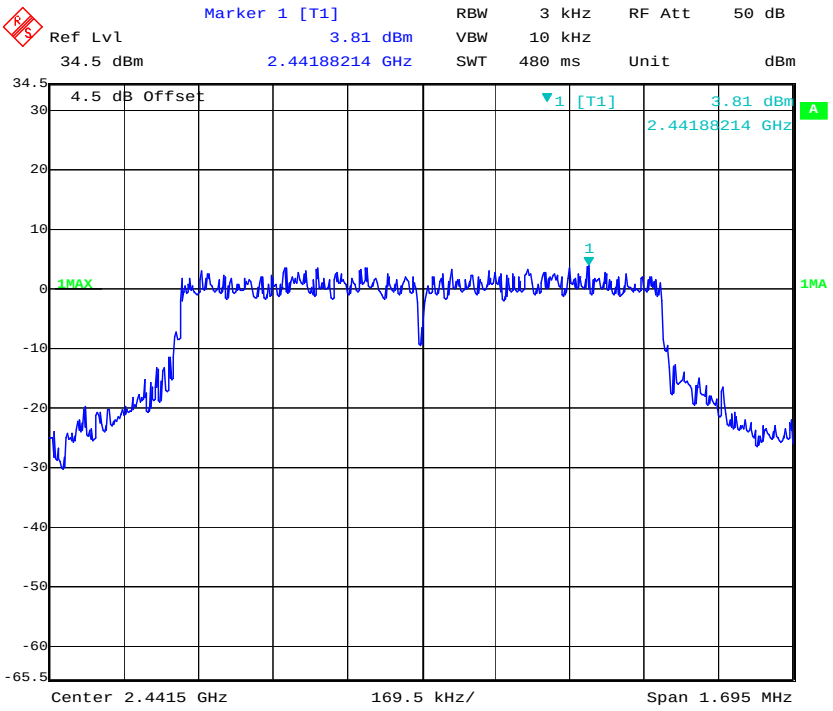
Power Spectral Density, Middle Channel



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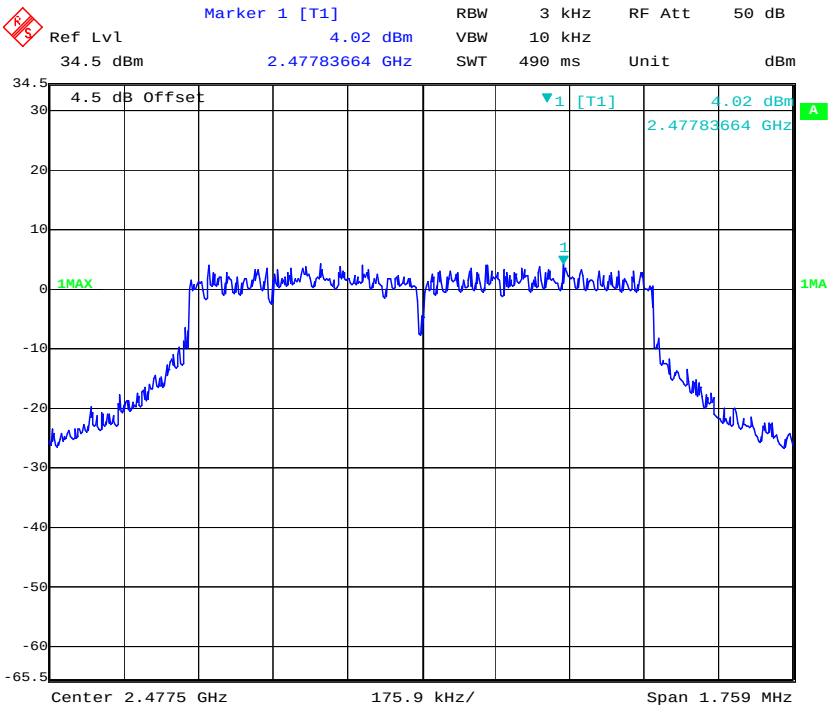
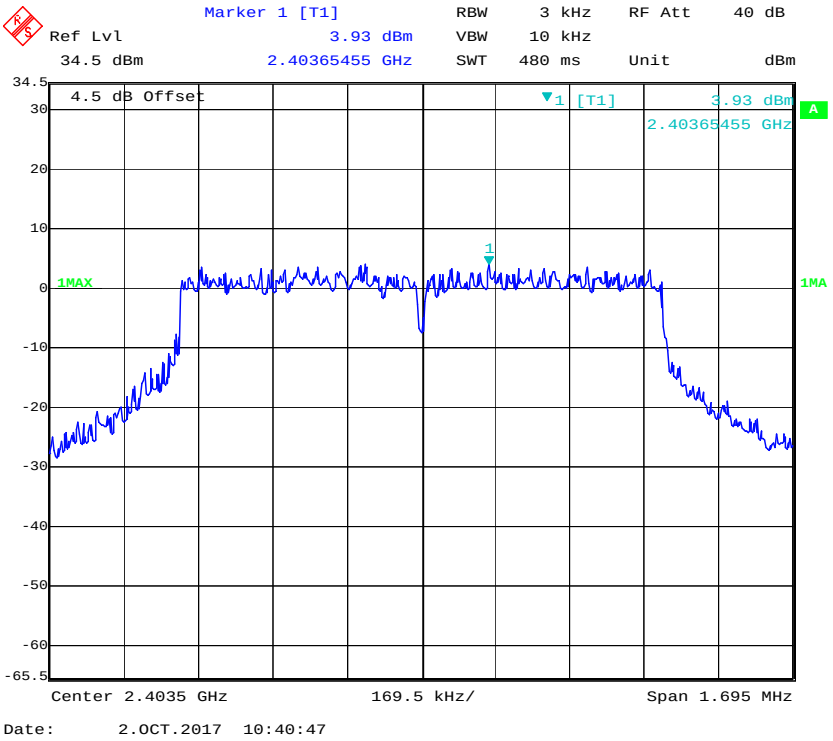
Power Spectral Density, High Channel

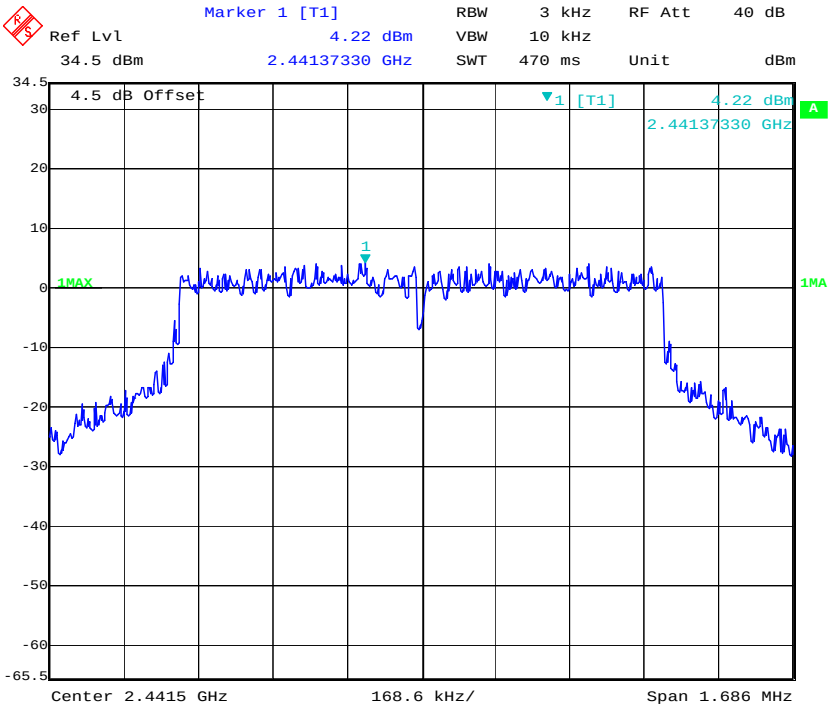


Chain1:

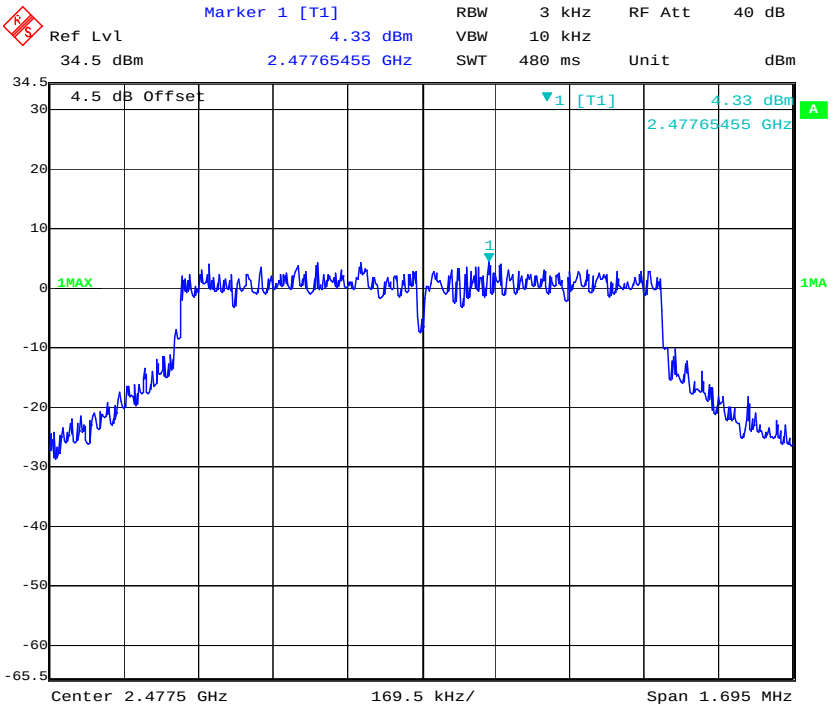
Power Spectral Density, Low Channel



Power Spectral Density, Middle Channel

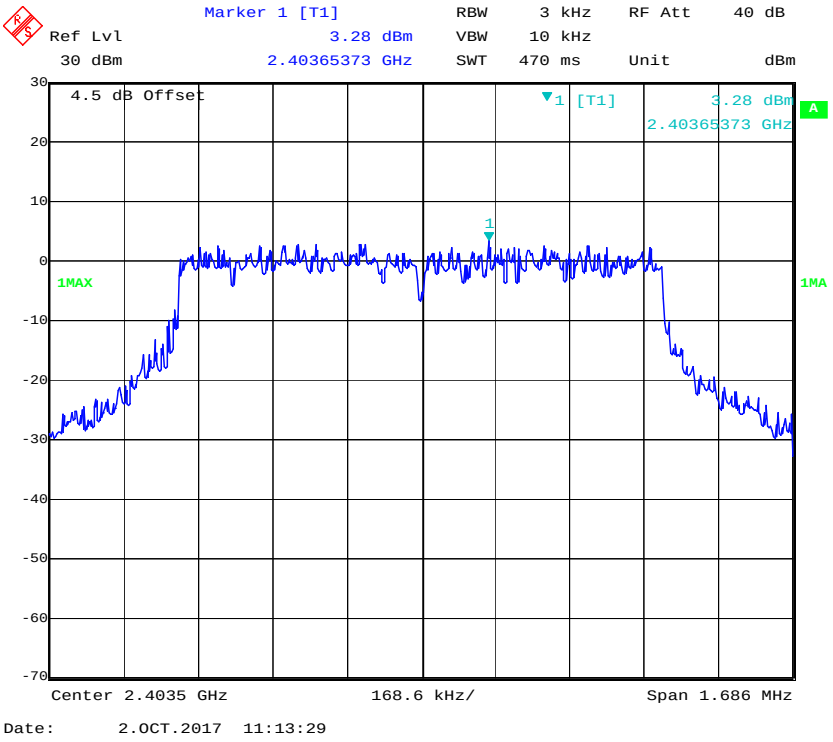


Power Spectral Density, High Channel



Chain2:

Power Spectral Density, Low Channel



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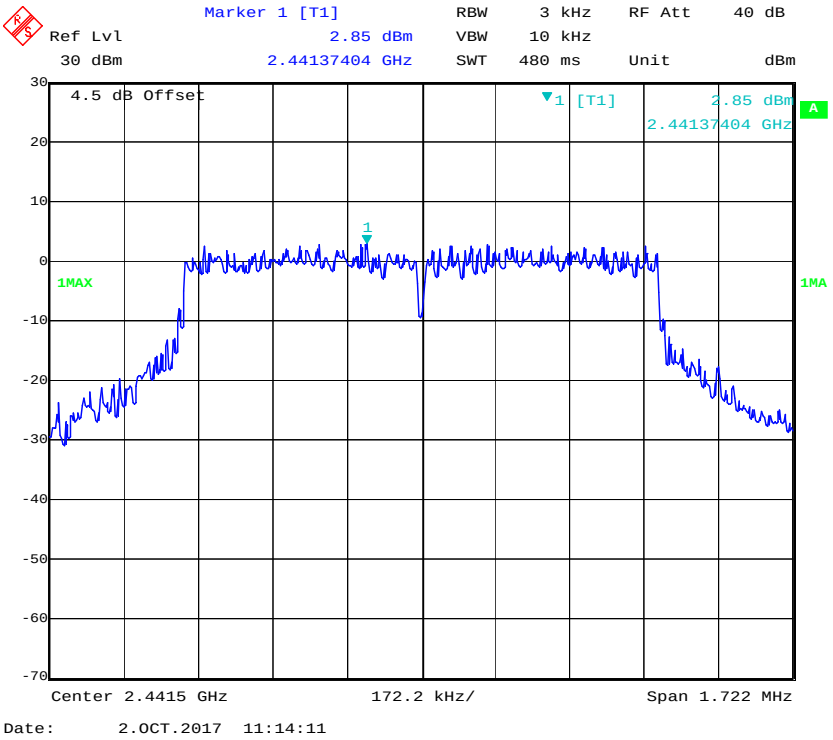
Power Spectral Density, Middle Channel



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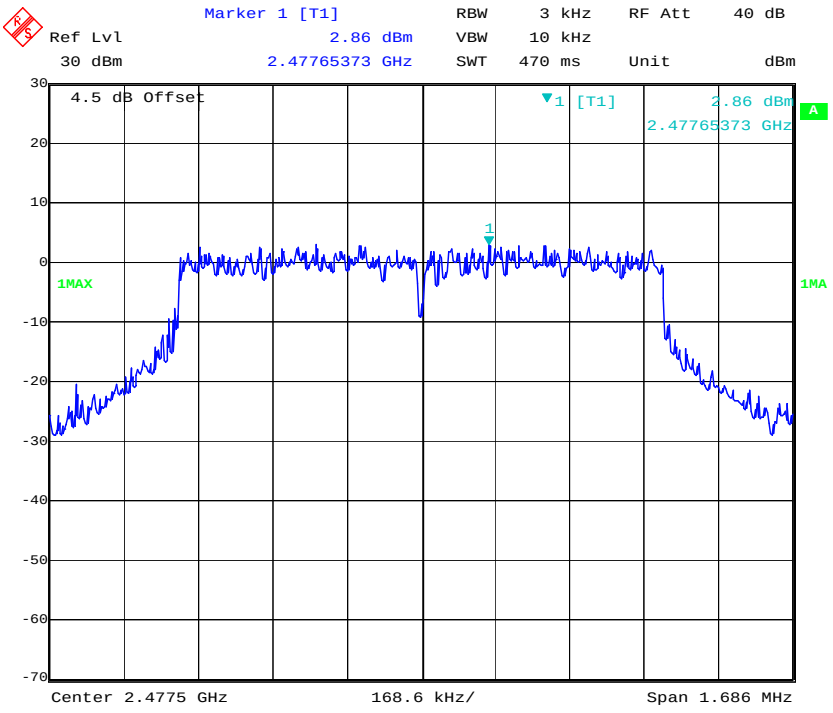
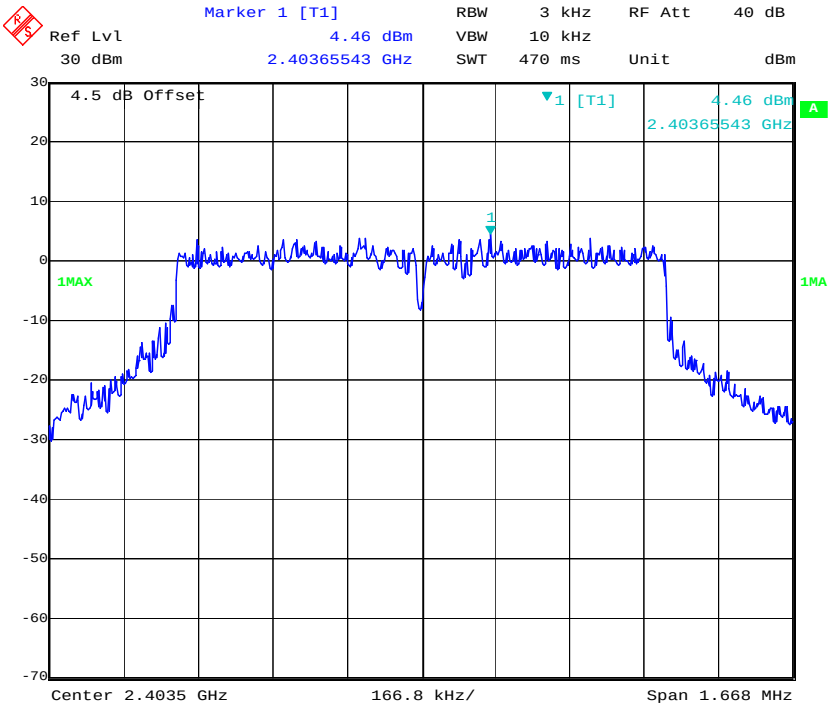
Power Spectral Density, High Channel

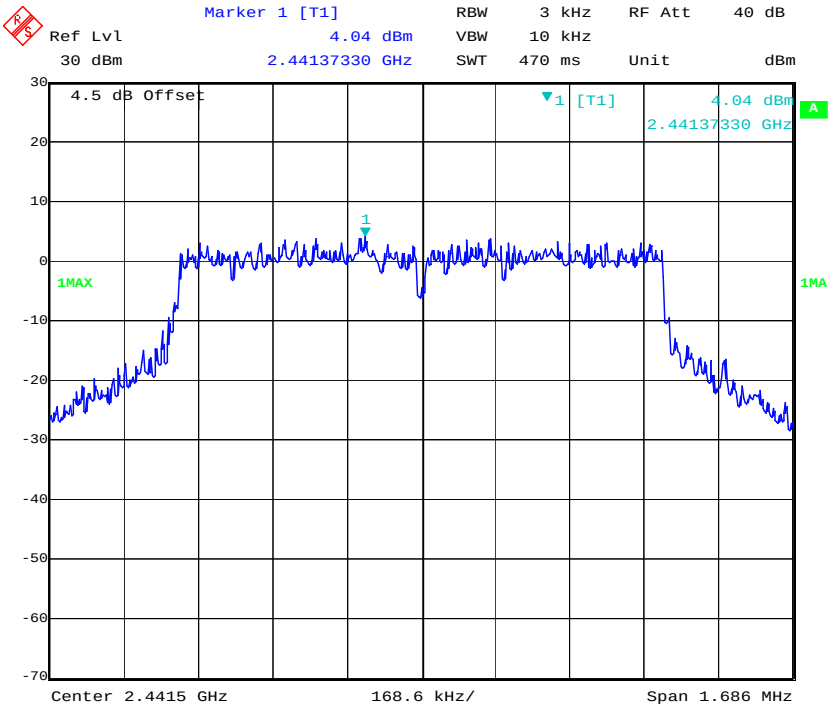


Chain3:

Power Spectral Density, Low Channel



Power Spectral Density, Middle Channel



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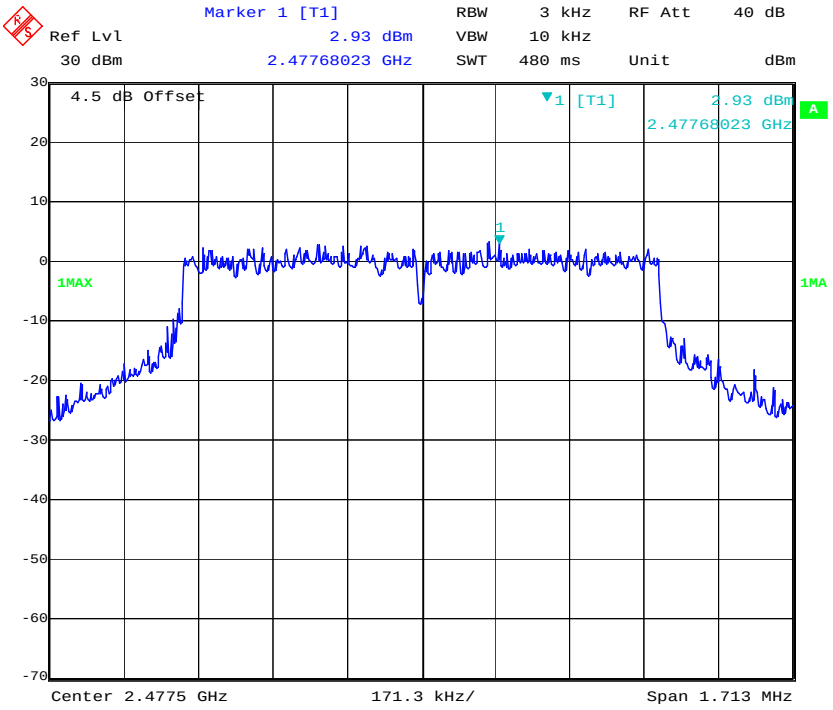
Power Spectral Density, High Channel



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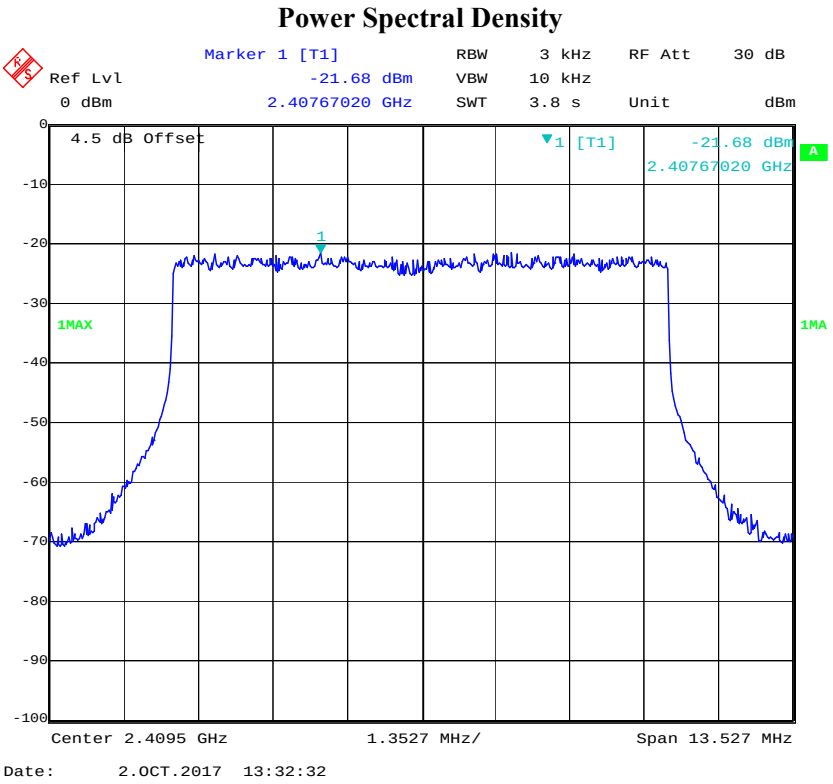
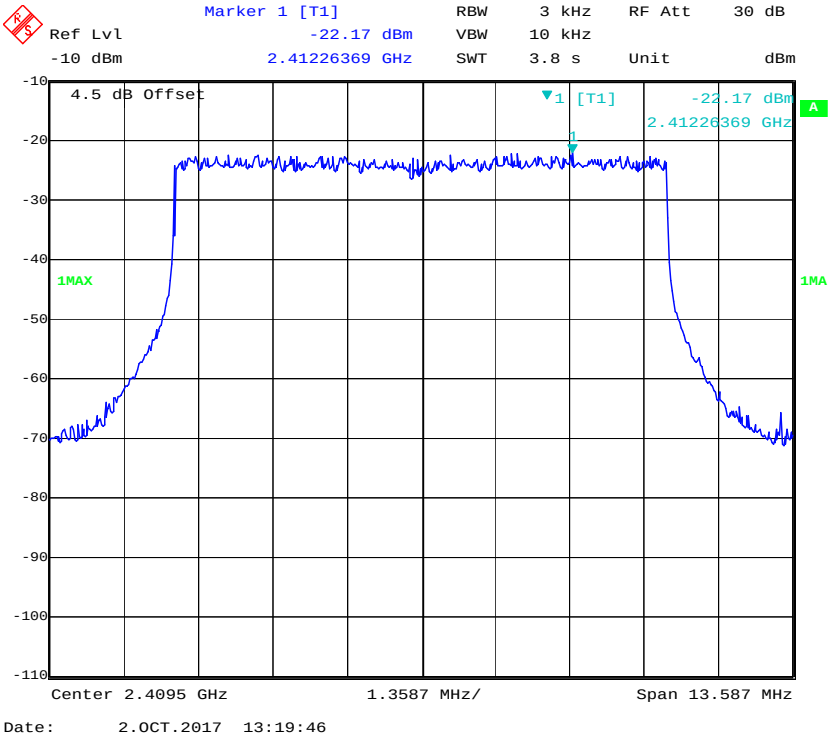
10MHz
Chain0:

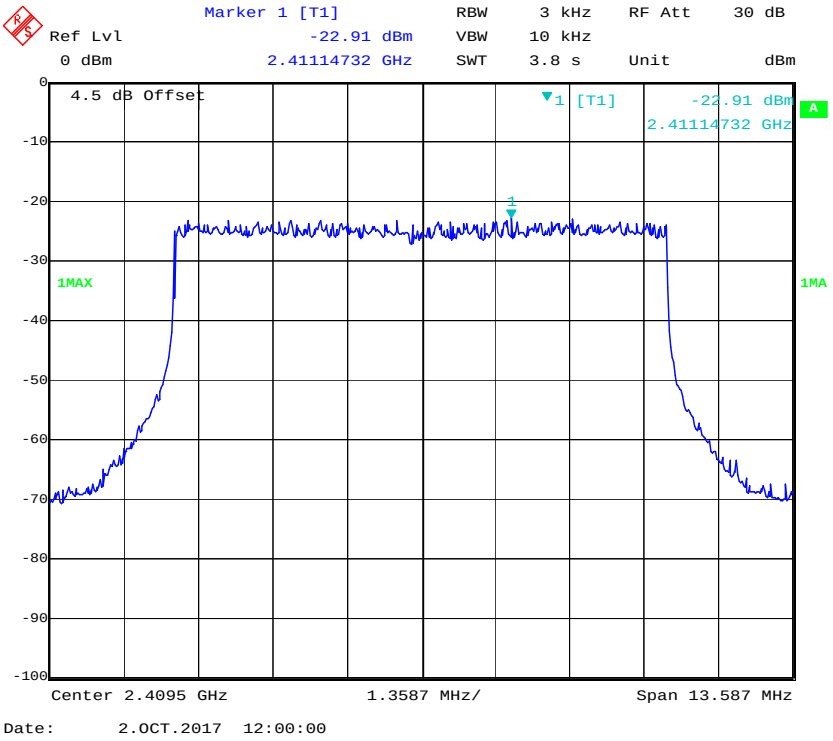


Chain1:



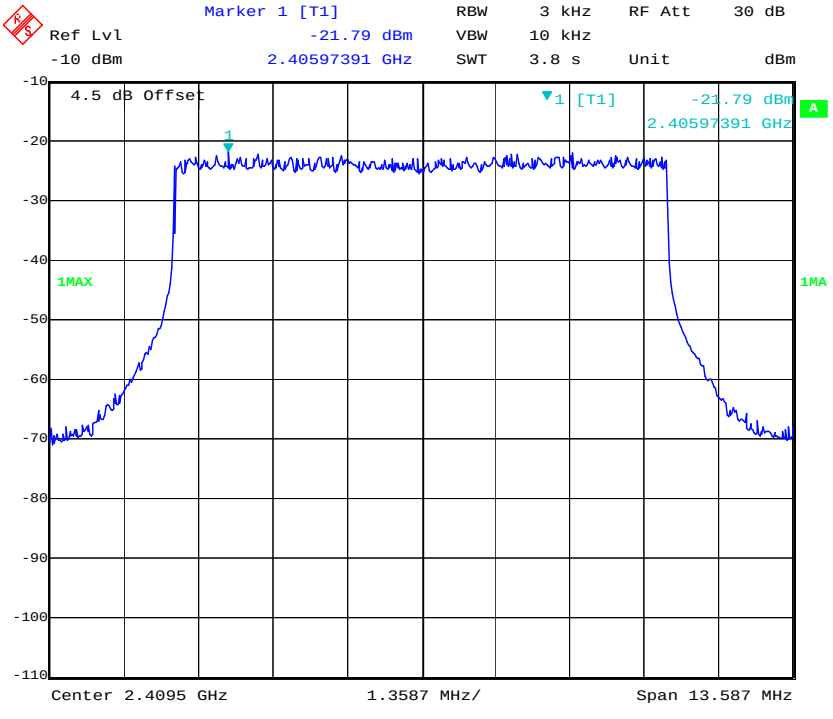
Chain2:

Power Spectral Density



Chain3:

Power Spectral Density



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