FCC PART 15.247

RSS-GEN, ISSUE 5, AMENDMENT 1, MARCH 2019

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 District, Shenzhen, Guangdong, China

FCC ID: SS3-FD1W4K2006
IC: 11805A-FD1W4K2006

Report Type:	**Product Name:**
Original Report	DJI FPV Drone

Report Number:	RDG200725002-00A
Report Date:	2020-10-22
Reviewed By:	Ivan Cao Assistant 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)

Manufacturer:	SZ DJI TECHNOLOGY CO., LTD
Manufacturer address:	14th floor, West Wing, Skyworth Semiconductor Design Building NO.18 Gaoxin South 4th Ave, Nanshan District, Shenzhen, Guangdong, China
EUT Name:	DJI FPV Drone
EUT Model:	FD1W4K
Operation Frequency:	SDR 1.4M:2403.5-2469.5MHz SDR 1.4M-CA:2405.12-2471.12MHz SDR 10M:2407.5-2467.5MHz SDR 20M:2412.5-2462.5MHz SDR 40M:2422.5-2452.5MHz
Maximum Peak Output Power (Conducted):	SDR 1.4M: 20.70 dBm SDR 1.4M-CA: 20.83 dBm SDR 10M: 29.95 dBm SDR 20M: 29.92 dBm SDR 40M: 27.41 dBm
Modulation Type:	OFDM
Antenna Gain	2.5 dBi
Rated Input Voltage:	DC 22.2 V from Battery
Serial Number:	RDG200725002-RF-S2
EUT Received Date:	2020.08.11
EUT Received Status:	Good

Note: the model of device have two configuration, the two configurations are identical. the detailed information about the difference please refer to the declaration letter which was stated and guaranteed by the manufacturer. Per pretest emission, the worst is Configuration #1, which was full tested for this report.

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, RSS-247, Issue 2, February 2017, RSS-Gen Issue 5, Amendment 1, March 2019 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 and 15.247 rules, RSS-247, Issue 2, February 2017, RSS-Gen Issue 5, Amendment 1, March 2019 of the Innovation, Science and Economic Development Canada.

Related Submittal(s)/Grant(s)

FCC Part 15E NII submissions with FCC ID: SS3-FD1W4K2006
RSS-247 LE-LAN submissions with IC: 11805A-FD1W4K2006

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. And 558074 D01 15.247 Meas Guidance v05r02, RSS-247, Issue 2, February 2017, RSS-Gen Issue 5, Amendment 1, March 2019 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: 4.55 dB,200M~1GHz: 5.92 dB,1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 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)

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "△ ". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The device supports SDR 1.4MHz/1.4MHz-CA/10MHz/20MHz/40MHz modes. The EUT has 4 antennas, the system supports MIMO 2TX mode, the system configure 2T4R at Chain 0+1/Chain 0+3/Chain 1+2/Chain 2+3 depending on better performance by the system automatically recognizes.

For SDR 1.4MHz mode, the system employs 34 channels as below:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2403.5	18	2437.5
2	2405.5	…	…
…	…	…	…
…	…	…	…
…	…	33	2467.5
17	2435.5	34	2469.5

3 channels were tested: 2403.5MHz, 2435.5MHz and 2469.5MHz

For SDR 1.4MHz-CA mode, the system employs 34 channels as below:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
2405.12	2405.12	18	2439.12
2407.12	2407.12	…	…
…	…	…	…
…	…	…	…
…	…	33	2469.12
17	2437.12	34	2471.12

3 channels were tested: 2405.12MHz, 2437.12MHz and 2471.12MHz

For SDR 10M mode, 61 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2407.5	32	2438.5
2	2408.5	…	…
…	…	…	…
…	…	60	2466.5
30	2436.5	61	2467.5
31	2437.5	/	/

EUT was tested with 2407.5MHz, 2437.5MHz and 2467.5MHz.

For SDR 20M mode, 51 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412.5	27	2438.5
2	2413.5	…	…
…	…	…	…
…	…	50	2461.5
25	2436.5	51	2462.5
26	2437.5	/	/

EUT was tested with 2412.5MHz, 2437.5MHz and 2462.5MHz.

For SDR 40M mode, 31 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2422.5	17	2438.5
2	2423.5	…	…
…	…	…	…
…	…	30	2451.5
15	2436.5	31	2452.5
16	2437.5	/	/

EUT was tested with 2422.5MHz, 2437.5MHz and 2452.5MHz.

EUT Exercise Software

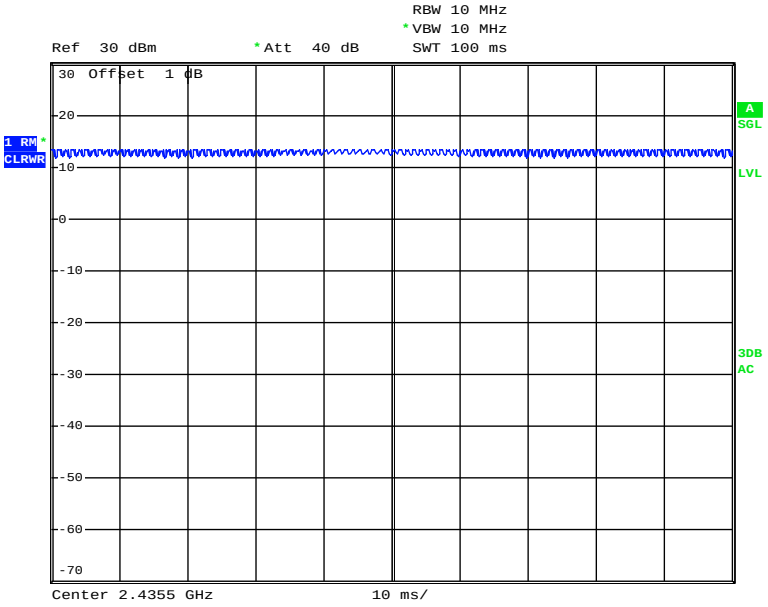
Software "DjiSdrConsole_V1.3.5.68.exe " was used during test, the maximum power was configured as below, which was provided by manufacturer:

Mode	Power level Setting
1.4M	6
1.4M-CA	6
10M	4
20M	6
40M	6

The maximum duty cycle as following table:

Test mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
1.4M	100	100	100
1.4-CA	100	100	100
10M	100	100	100
20M	100	100	100
40M	100	100	100

1.4M



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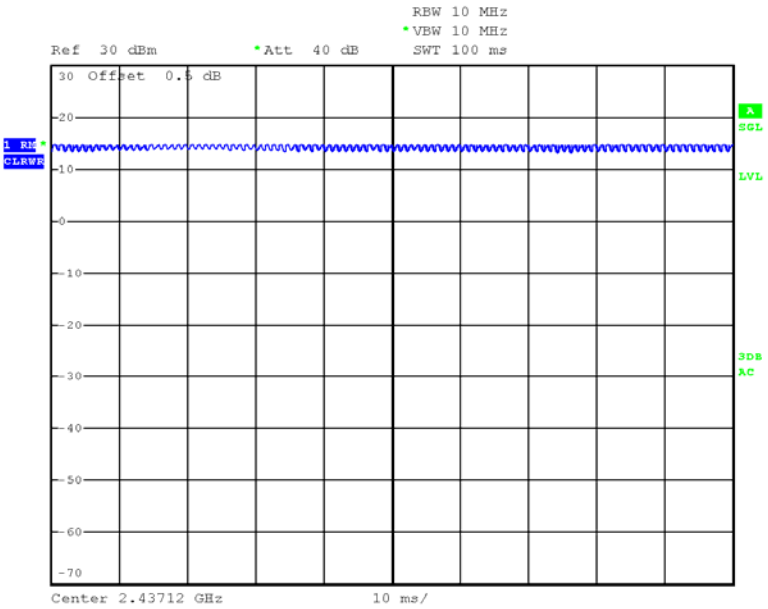
1.4M-CA



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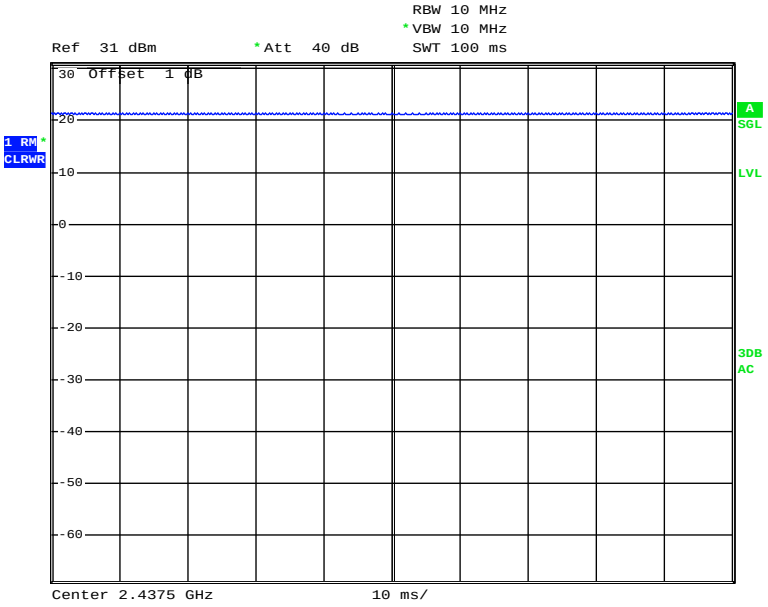
10M



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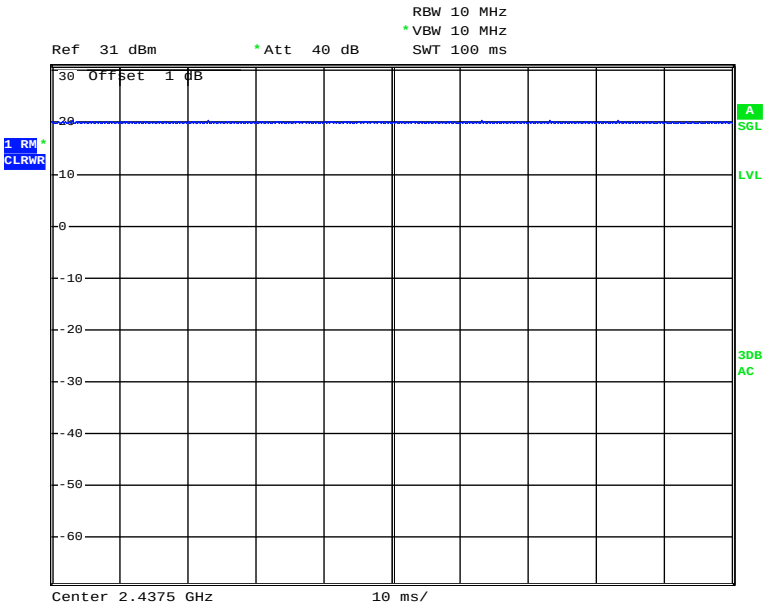
20M



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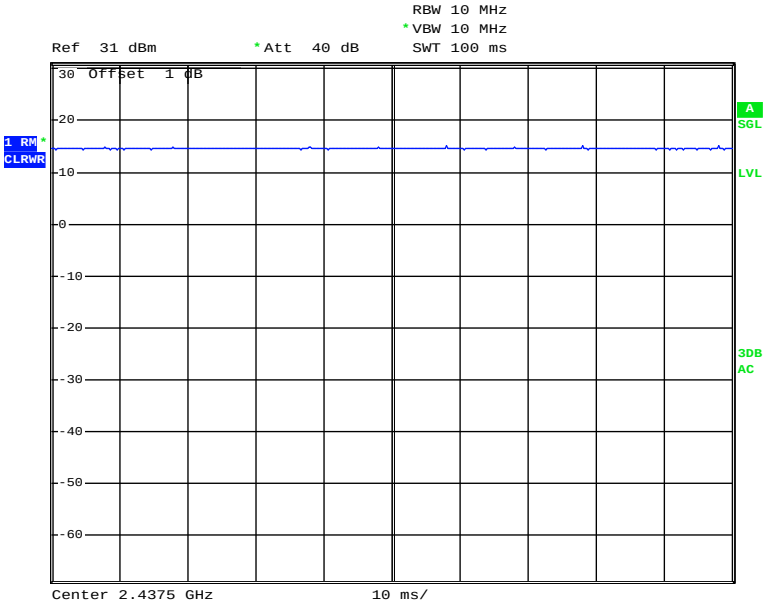
40M



Date: 1.SEP.2020 14:16:42

Equipment Modifications

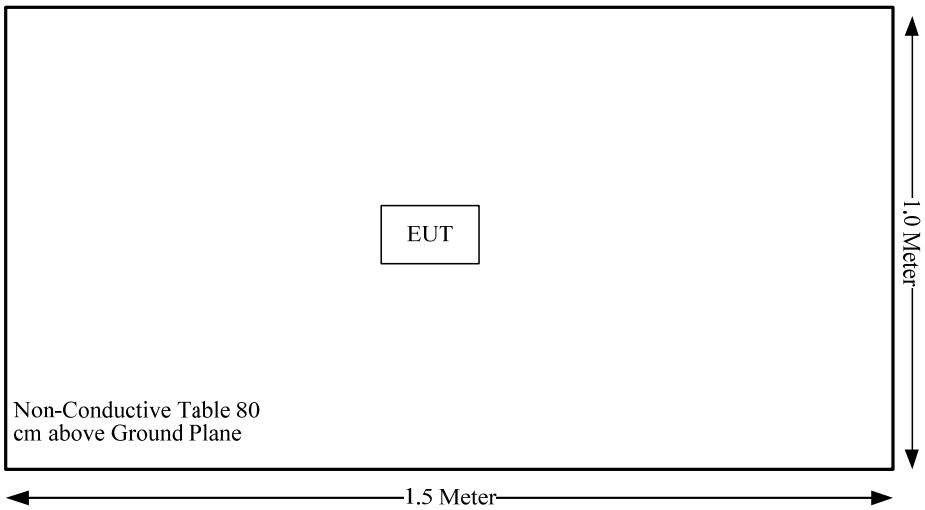
No modification was made to the EUT.

Support Equipment List and Details

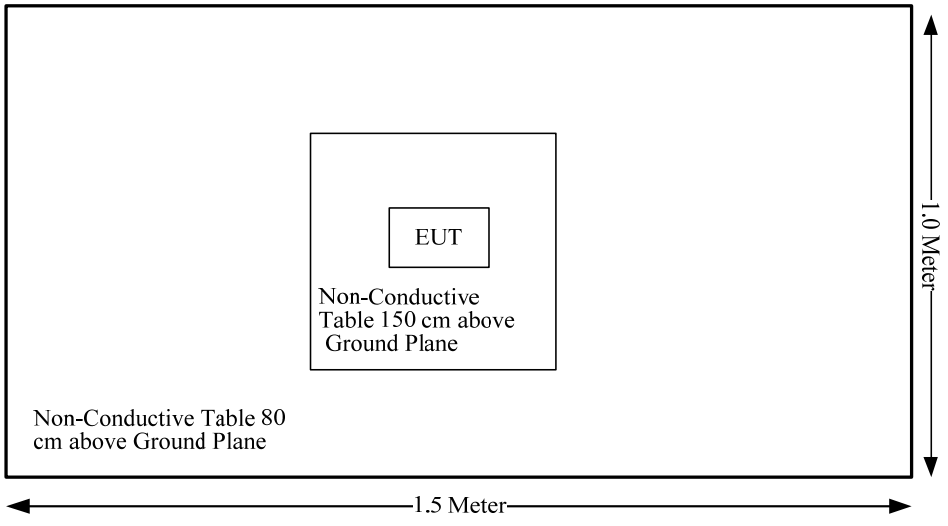
Manufacturer	Description	Model	Serial Number
SanDisk	Micro SD Card	UHS-I-128G	9292DVDSV0XZ

Block Diagram of Test Setup

Radiated Below 1GHz Test:



Radiated Above 1GHz Test:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliance
RSS-102 Clause 2.5.2	Exemption Limits For Routine Evaluation-RF Exposure Evaluation	Compliance
FCC §15.203, RSS-GEN Clause 6.8	Antenna Requirement	Compliance
FCC §15.207 (a); RSS-Gen Clause 8.8	AC Line Conducted Emissions	Not Applicable
FCC §15.205, §15.209, §15.247(d); RSS-247 Clause 5.5 RSS-Gen Clause 8.10	Spurious Emissions	Compliance
FCC §15.247 (a)(2); RSS-247 Clause 5.2 a) RSS-Gen Clause 6.7	6 dB Bandwidth and 99% Occupied Bandwidth	Compliance
FCC §15.247(b)(3); RSS-247 Clause 5.4 d)	Maximum Conducted Output Power	Compliance
FCC §15.247(d); RSS-247 Clause5.5	100 kHz Bandwidth of Frequency Band Edge	Compliance
FCC §15.247(e) RSS-247 Clause5.2 b)	Power Spectral Density	Compliance

Not Applicable: the device was powered by battery.

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

Applicable Standard

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

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

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

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

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

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Operation Mode	**Frequency (MHz)**	**Antenna Gain**		**Conducted output power including Tune-up Tolerance**		**Evaluation Distance (cm)**	**Power Density (mW/cm^2)**	**MPE Limit (mW/cm^2)**
		(dBi)	**(numeric)**	**(dBm)**	**(mW)**			
2.4 G SDR	2403.5-2471.12	2.5	1.78	30	1000.00	20.00	0.35	1.0
5.8 G SDR	5728.5-5848.12	3	2.00	29	794.33	20.00	0.32	1.0

Note: The SDR 2.4G and 5.8G can`t transmit simultaneously.

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

RSS-102 § 2.5.2 - EXEMPTION LIMITS FOR ROUTINE EVALUATION – RF EXPOSURE EVALUATION

Applicable Standard

According to RSS-102 § (2.5.2):

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain	Conducted output power including Tune-up Tolerance	EIRP		Exemption limits (mW)
		(dBi)	(dBm)	(dBm)	(mW)	
2.4 G SDR	2403.5-2471.12	2.5	30	32.5	1778.28	2678
5.8 G SDR	5728.5-5848.12	3	29	32	1584.89	4847

So the device is compliance exemption from Routine Evaluation Limits –RF exposure Evaluation.

Result: Compliance

FCC §15.203& RSS-GEN CLAUSE 6.8 - ANTENNA REQUIREMENT

Applicable Standard

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

According to RSS-Gen §6.8, The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.
For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).
When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer. The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.
For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Antenna Connector Construction

The EUT has 4 external antennas use a unique type of connector to attach to the EUT, fulfill the requirement of this section. Please refer to the EUT photos.

Antenna Chain	Antenna Type	input impedance (Ohm)	Antenna Gain /Frequency Range
0	FPC	50	2.5 dBi/2.4~2.5GHz 3.0 dBi/5.725~5.85GHz
1	FPC	50	1 dBi/2.4~2.5GHz 3.0 dBi/5.725~5.85GHz
2	FPC	50	1 dBi/2.4~2.5GHz 3.0 dBi/5.725~5.85GHz
3	FPC	50	2.5 dBi/2.4~2.5GHz 3.0 dBi/5.725~5.85GHz

Result: Compliance.

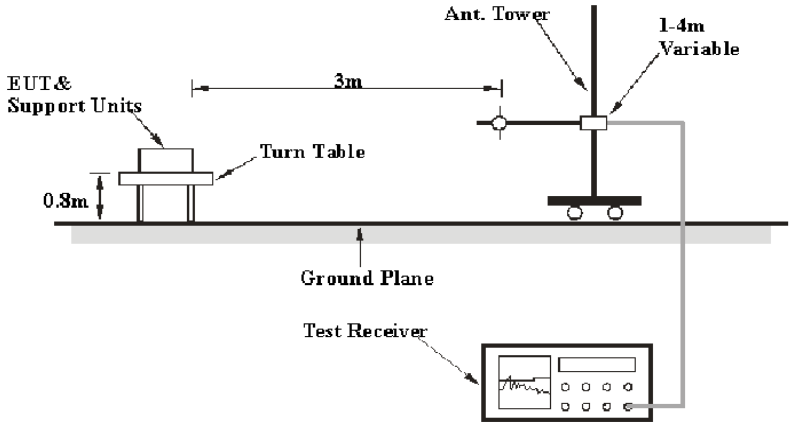
FCC §15.209, §15.205 & §15.247(d), RSS-247 CLAUSE 5.5, RSS-GEN CLAUSE 8.10 - SPURIOUS EMISSIONS

Applicable Standard

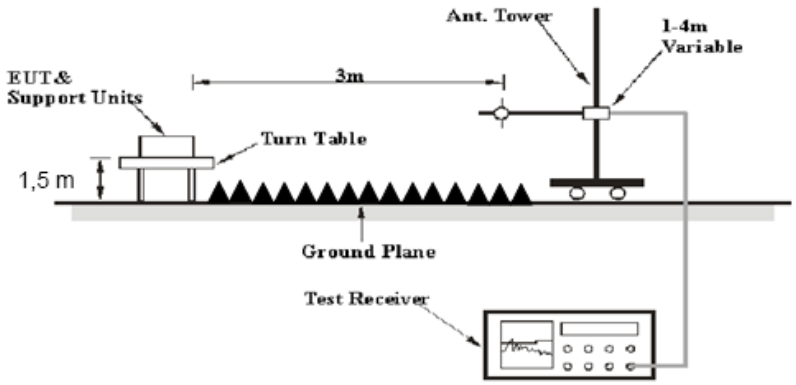
FCC §15.247 (d); §15.209; §15.205; RSS-247 §5.5, RSS-GEN §8.10.

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission Below 1GHz tests were performed in the 3 meters chamber A, above 1GHz tests were performed in the 3 meters chamber B, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, FCC 15.247 and RSS-247,RSS-Gen limits.

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:

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
AV	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

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
Radiation Below 1GHz					
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
R&S	EMI Test Receiver	ESR3	102453	2019-09-12	2020-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
HP	Amplifier	8447D	2727A05902	2019-09-05	2020-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Radiation Above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2017-12-06	2020-12-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2020-06-27	2021-06-27
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2020-06-27	2021-06-27
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2020-06-16	2021-06-16
Micro-tronics	High Pass Filter	HPM50111	S/N-G217	2020-06-16	2021-06-16

*** 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

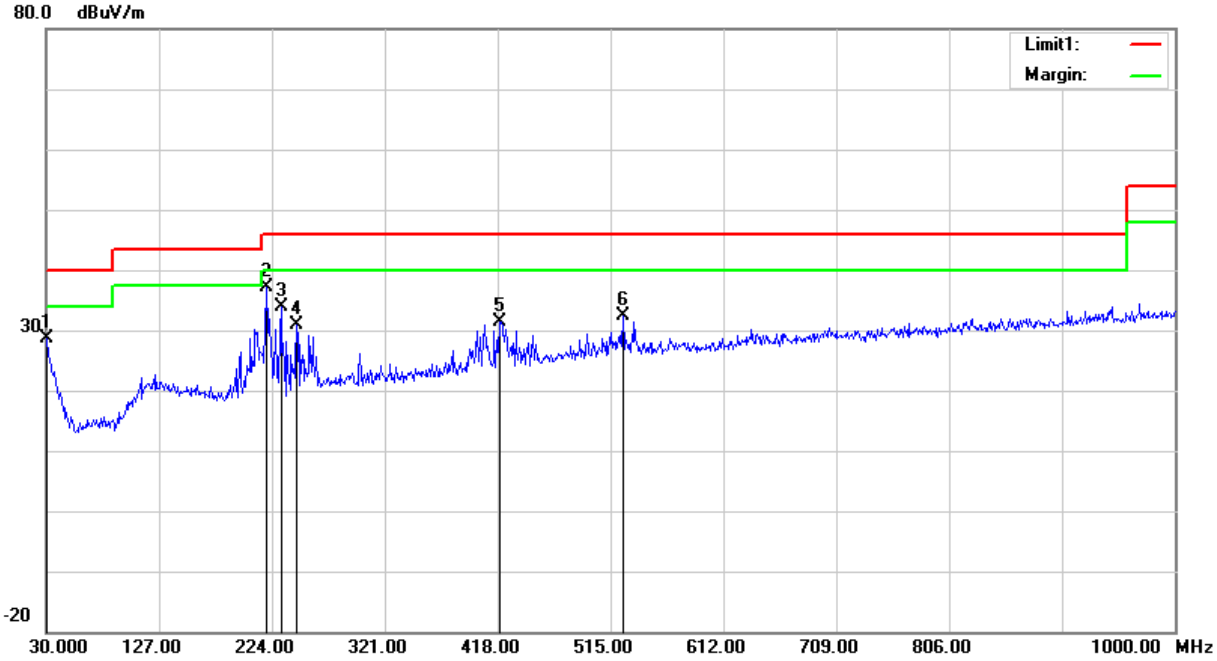
Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	28.3 °C	29°C
Relative Humidity:	46 %	45%
ATM Pressure:	100.6 kPa	101kPa
Tester:	Jalon Liu	Carlos Jia
Test Date:	2020-08-28	2020-09-02

Test Result: Compliance, please Refer to the following data

Test Mode: Transmitting

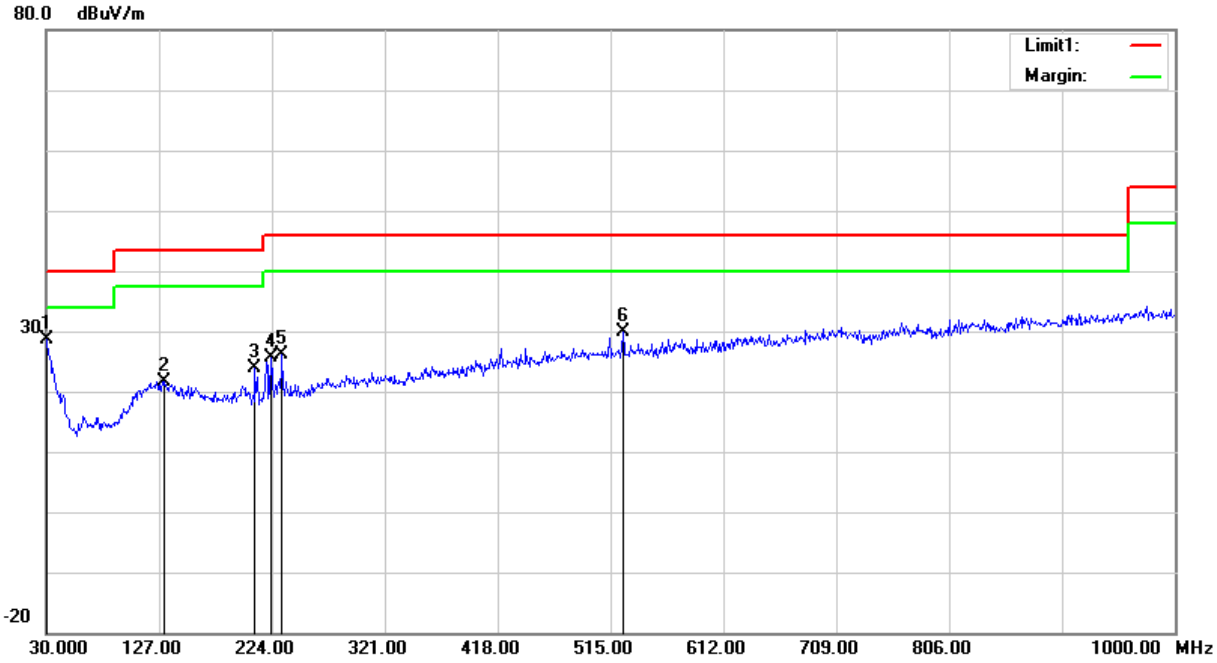
1) 30MHz-1GHz(1.4M Chain 1, Low Channel was the worst)

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.9700	27.98	peak	0.74	28.72	40.00	11.28
219.1500	44.10	peak	-6.96	37.14	46.00	8.86
231.7600	40.06	peak	-6.28	33.78	46.00	12.22
245.3400	36.87	peak	-5.91	30.96	46.00	15.04
419.9400	33.08	peak	-1.65	31.43	46.00	14.57
525.6700	32.36	peak	-0.06	32.30	46.00	13.70

Vertical:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.9700	27.88	peak	0.74	28.62	40.00	11.38
131.8500	26.70	peak	-5.07	21.63	43.50	21.87
209.4500	31.08	peak	-7.31	23.77	43.50	19.73
223.0300	32.51	peak	-6.77	25.74	46.00	20.26
232.7300	32.46	peak	-6.29	26.17	46.00	19.83
525.6700	29.90	peak	-0.06	29.84	46.00	16.16

2) 1-25GHz:
1.4M Mode, Chain 1&2 was the worst:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2403.5 MHz									
2403.50	76.20	PK	H	28.11	1.80	0.00	106.11	N/A	N/A
2403.50	65.87	AV	H	28.11	1.80	0.00	95.78	N/A	N/A
2403.50	90.28	PK	V	28.11	1.80	0.00	120.19	N/A	N/A
2403.50	79.96	AV	V	28.11	1.80	0.00	109.87	N/A	N/A
2390.00	26.55	PK	V	28.08	1.80	0.00	56.43	74.00	17.57
2390.00	13.47	AV	V	28.08	1.80	0.00	43.35	54.00	10.65
4807.00	37.13	PK	V	32.91	3.17	25.60	47.61	74.00	26.39
4807.00	24.05	AV	V	32.91	3.17	25.60	34.53	54.00	19.47
Middle Channel: 2435.5 MHz									
2435.50	77.35	PK	H	28.17	1.82	0.00	107.34	N/A	N/A
2435.50	66.78	AV	H	28.17	1.82	0.00	96.77	N/A	N/A
2435.50	91.16	PK	V	28.17	1.82	0.00	121.15	N/A	N/A
2435.50	80.64	AV	V	28.17	1.82	0.00	110.63	N/A	N/A
4871.00	39.22	PK	V	33.04	3.26	25.65	49.87	74.00	24.13
4871.00	26.17	AV	V	33.04	3.26	25.65	36.82	54.00	17.18
7306.50	35.46	PK	V	36.00	4.65	25.71	50.40	74.00	23.60
7306.50	22.29	AV	V	36.00	4.65	25.71	37.23	54.00	16.77
High Channel: 2469.5 MHz									
2469.50	75.24	PK	H	28.24	1.83	0.00	105.31	N/A	N/A
2469.50	64.79	AV	H	28.24	1.83	0.00	94.86	N/A	N/A
2469.50	89.21	PK	V	28.24	1.83	0.00	119.28	N/A	N/A
2469.50	78.85	AV	V	28.24	1.83	0.00	108.92	N/A	N/A
2483.50	26.88	PK	V	28.27	1.84	0.00	56.99	74.00	17.01
2483.50	13.97	AV	V	28.27	1.84	0.00	44.08	54.00	9.92
4939.00	41.13	PK	V	33.18	3.25	25.64	51.92	74.00	22.08
4939.00	28.35	AV	V	33.18	3.25	25.64	39.14	54.00	14.86
7408.50	35.60	PK	V	36.26	4.47	25.81	50.52	74.00	23.48
7408.50	22.45	AV	V	36.26	4.47	25.81	37.37	54.00	16.63

1.4M-CA Mode, Chain 0&3 was the worst:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2405.12 MHz									
2405.12	86.68	PK	H	28.11	1.80	0.00	116.59	N/A	N/A
2405.12	73.02	AV	H	28.11	1.80	0.00	102.93	N/A	N/A
2405.12	89.76	PK	V	28.11	1.80	0.00	119.67	N/A	N/A
2405.12	79.09	AV	V	28.11	1.80	0.00	109.00	N/A	N/A
2390.00	26.44	PK	V	28.08	1.80	0.00	56.32	74.00	17.68
2390.00	13.45	AV	V	28.08	1.80	0.00	43.33	54.00	10.67
4810.24	37.24	PK	V	32.92	3.17	25.61	47.72	74.00	26.28
4810.24	24.11	AV	V	32.92	3.17	25.61	34.59	54.00	19.41
7215.36	35.60	PK	V	35.76	4.81	25.61	50.56	74.00	23.44
7215.36	24.03	AV	V	35.76	4.81	25.61	38.99	54.00	15.01
Middle Channel: 2437.12 MHz									
2437.12	86.38	PK	H	28.17	1.82	0.00	116.37	N/A	N/A
2437.12	75.93	AV	H	28.17	1.82	0.00	105.92	N/A	N/A
2437.12	89.21	PK	V	28.17	1.82	0.00	119.20	N/A	N/A
2437.12	78.91	AV	V	28.17	1.82	0.00	108.90	N/A	N/A
4874.24	37.61	PK	V	33.05	3.26	25.65	48.27	74.00	25.73
4874.24	24.38	AV	V	33.05	3.26	25.65	35.04	54.00	18.96
7311.36	35.62	PK	V	36.01	4.64	25.71	50.56	74.00	23.44
7311.36	22.45	AV	V	36.01	4.64	25.71	37.39	54.00	16.61
High Channel: 2471.12 MHz									
2471.12	89.52	PK	H	28.24	1.84	0.00	119.60	N/A	N/A
2471.12	79.13	AV	H	28.24	1.84	0.00	109.21	N/A	N/A
2471.12	89.50	PK	V	28.24	1.84	0.00	119.58	N/A	N/A
2471.12	79.07	AV	V	28.24	1.84	0.00	109.15	N/A	N/A
2483.50	27.16	PK	V	28.27	1.84	0.00	57.27	74.00	16.73
2483.50	13.98	AV	V	28.27	1.84	0.00	44.09	54.00	9.91
4942.24	41.51	PK	V	33.18	3.25	25.64	52.30	74.00	21.70
4942.24	28.32	AV	V	33.18	3.25	25.64	39.11	54.00	14.89
7413.36	35.57	PK	V	36.27	4.46	25.82	50.48	74.00	23.52
7413.36	22.31	AV	V	36.27	4.46	25.82	37.22	54.00	16.78

10M Mode, Chain 0&3 was the worst:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2407.5 MHz									
2407.50	79.29	PK	H	28.12	1.80	0.00	109.21	N/A	N/A
2407.50	67.86	AV	H	28.12	1.80	0.00	97.78	N/A	N/A
2407.50	91.87	PK	V	28.12	1.80	0.00	121.79	N/A	N/A
2407.50	80.39	AV	V	28.12	1.80	0.00	110.31	N/A	N/A
2390.00	26.53	PK	V	28.08	1.80	0.00	56.41	74.00	17.59
2390.00	13.56	AV	V	28.08	1.80	0.00	43.44	54.00	10.56
4815.00	40.01	PK	V	32.93	3.18	25.61	50.51	74.00	23.49
4815.00	27.87	AV	V	32.93	3.18	25.61	38.37	54.00	15.63
Middle Channel: 2437.5 MHz									
2437.50	78.85	PK	H	28.18	1.82	0.00	108.85	N/A	N/A
2437.50	66.79	AV	H	28.18	1.82	0.00	96.79	N/A	N/A
2437.50	91.10	PK	V	28.18	1.82	0.00	121.10	N/A	N/A
2437.50	79.34	AV	V	28.18	1.82	0.00	109.34	N/A	N/A
4875.00	41.19	PK	V	33.05	3.27	25.65	51.86	74.00	22.14
4875.00	28.07	AV	V	33.05	3.27	25.65	38.74	54.00	15.26
7312.50	35.62	PK	V	36.01	4.64	25.72	50.55	74.00	23.45
7312.50	23.46	AV	V	36.01	4.64	25.72	38.39	54.00	15.61
High Channel: 2467.5 MHz									
2467.50	78.62	PK	H	28.24	1.83	0.00	108.69	N/A	N/A
2467.50	67.57	AV	H	28.24	1.83	0.00	97.64	N/A	N/A
2467.50	90.71	PK	V	28.24	1.83	0.00	120.78	N/A	N/A
2467.50	79.66	AV	V	28.24	1.83	0.00	109.73	N/A	N/A
2483.50	29.68	PK	V	28.27	1.84	0.00	59.79	74.00	14.21
2483.50	14.20	AV	V	28.27	1.84	0.00	44.31	54.00	9.69
4935.00	43.85	PK	V	33.17	3.26	25.65	54.63	74.00	19.37
4935.00	31.67	AV	V	33.17	3.26	25.65	42.45	54.00	11.55
7402.50	35.97	PK	V	36.25	4.48	25.81	50.89	74.00	23.11
7402.50	23.64	AV	V	36.25	4.48	25.81	38.56	54.00	15.44

20M Mode, Chain 0&3 was the worst:

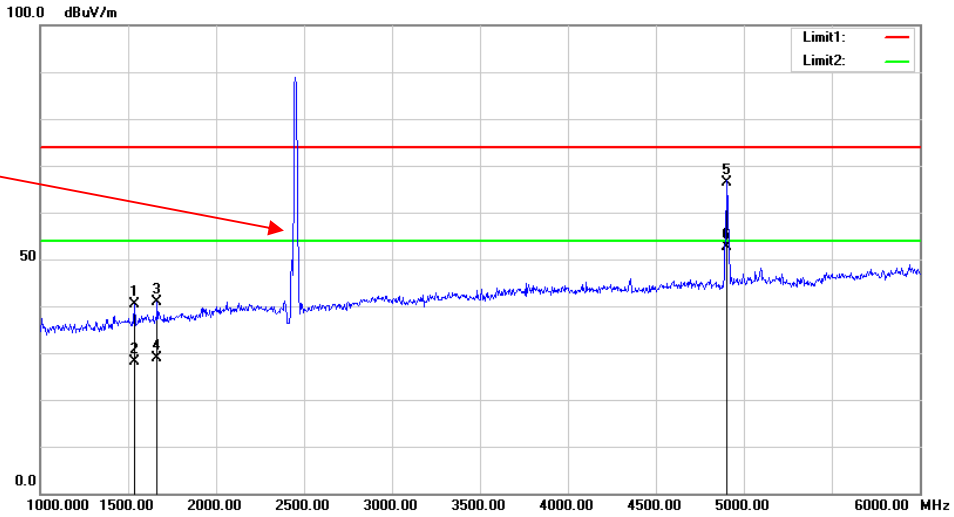
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412.5 MHz									
2412.50	81.39	PK	H	28.13	1.81	0.00	111.33	N/A	N/A
2412.50	68.85	AV	H	28.13	1.81	0.00	98.79	N/A	N/A
2412.50	94.06	PK	V	28.13	1.81	0.00	124.00	N/A	N/A
2412.50	81.97	AV	V	28.13	1.81	0.00	111.91	N/A	N/A
2390.00	27.17	PK	V	28.08	1.80	0.00	57.05	74.00	16.95
2390.00	13.55	AV	V	28.08	1.80	0.00	43.43	54.00	10.57
4825.00	44.22	PK	V	32.95	3.20	25.62	54.75	74.00	19.25
4825.00	32.19	AV	V	32.95	3.20	25.62	42.72	54.00	11.28
Middle Channel: 2437.5 MHz									
2437.50	78.76	PK	H	28.18	1.82	0.00	108.76	N/A	N/A
2437.50	66.58	AV	H	28.18	1.82	0.00	96.58	N/A	N/A
2437.50	91.11	PK	V	28.18	1.82	0.00	121.11	N/A	N/A
2437.50	79.18	AV	V	28.18	1.82	0.00	109.18	N/A	N/A
4875.00	42.24	PK	V	33.05	3.27	25.65	52.91	74.00	21.09
4875.00	30.16	AV	V	33.05	3.27	25.65	40.83	54.00	13.17
7312.50	35.32	PK	V	36.01	4.64	25.72	50.25	74.00	23.75
7312.50	23.19	AV	V	36.01	4.64	25.72	38.12	54.00	15.88
High Channel: 2462.5 MHz									
2462.50	80.57	PK	H	28.23	1.83	0.00	110.63	N/A	N/A
2462.50	68.43	AV	H	28.23	1.83	0.00	98.49	N/A	N/A
2462.50	93.44	PK	V	28.23	1.83	0.00	123.50	N/A	N/A
2462.50	81.24	AV	V	28.23	1.83	0.00	111.30	N/A	N/A
2483.50	27.70	PK	V	28.27	1.84	0.00	57.81	74.00	16.19
2483.50	14.44	AV	V	28.27	1.84	0.00	44.55	54.00	9.45
4925.00	47.51	PK	V	33.15	3.27	25.65	58.28	74.00	15.72
4925.00	35.46	AV	V	33.15	3.27	25.65	46.23	54.00	7.77
7387.50	36.46	PK	V	36.21	4.51	25.79	51.39	74.00	22.61
7387.50	24.37	AV	V	36.21	4.51	25.79	39.30	54.00	14.70

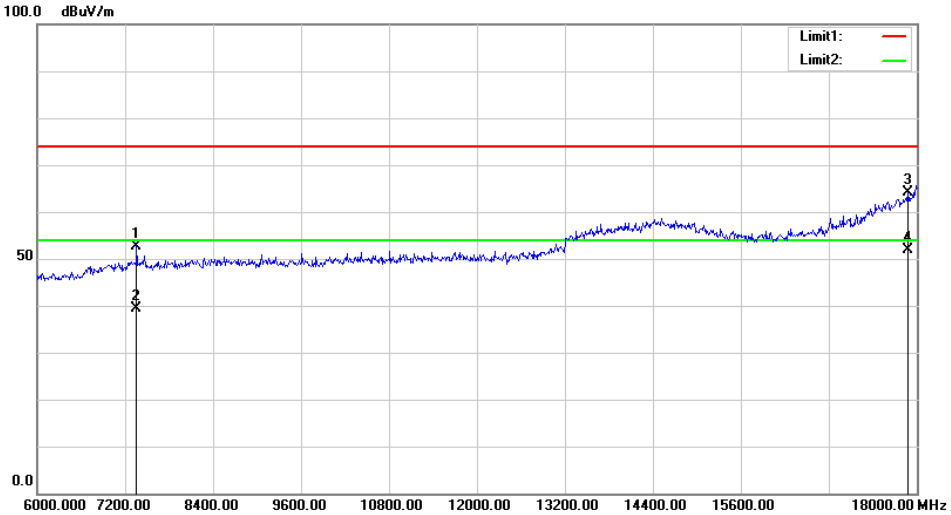
40M mode, Chain 1&2 was the worst:

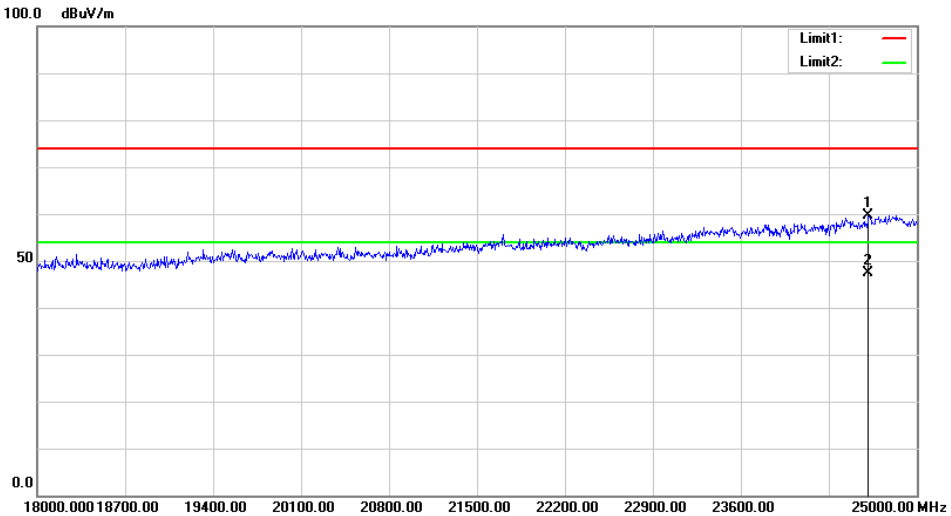
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2422.5 MHz									
2422.50	95.05	PK	H	28.15	1.81	0.00	125.01	N/A	N/A
2422.50	83.23	AV	H	28.15	1.81	0.00	113.19	N/A	N/A
2422.50	87.21	PK	V	28.15	1.81	0.00	117.17	N/A	N/A
2422.50	75.56	AV	V	28.15	1.81	0.00	105.52	N/A	N/A
2390.00	26.54	PK	H	28.08	1.80	0.00	56.42	74.00	17.58
2390.00	13.59	AV	H	28.08	1.80	0.00	43.47	54.00	10.53
4845.00	53.84	PK	H	32.99	3.22	25.63	64.42	74.00	9.58
4845.00	40.67	AV	H	32.99	3.22	25.63	51.25	54.00	2.75
7267.50	37.26	PK	H	35.90	4.71	25.67	52.20	74.00	21.80
7267.50	24.18	AV	H	35.90	4.71	25.67	39.12	54.00	14.88
Middle Channel: 2437.5 MHz									
2437.50	91.88	PK	H	28.18	1.82	0.00	121.88	N/A	N/A
2437.50	79.60	AV	H	28.18	1.82	0.00	109.60	N/A	N/A
2437.50	83.67	PK	V	28.18	1.82	0.00	113.67	N/A	N/A
2437.50	71.55	AV	V	28.18	1.82	0.00	101.55	N/A	N/A
4875.00	49.89	PK	H	33.05	3.27	25.65	60.56	74.00	13.44
4875.00	36.73	AV	H	33.05	3.27	25.65	47.40	54.00	6.60
7312.50	36.08	PK	H	36.01	4.64	25.72	51.01	74.00	22.99
7312.50	23.87	AV	H	36.01	4.64	25.72	38.80	54.00	15.20
High Channel: 2452.5 MHz									
2452.50	95.65	PK	H	28.21	1.83	0.00	125.69	N/A	N/A
2452.50	82.96	AV	H	28.21	1.83	0.00	113.00	N/A	N/A
2452.50	87.85	PK	V	28.21	1.83	0.00	117.89	N/A	N/A
2452.50	75.22	AV	V	28.21	1.83	0.00	105.26	N/A	N/A
2483.50	26.87	PK	H	28.27	1.84	0.00	56.98	74.00	17.02
2483.50	14.10	AV	H	28.27	1.84	0.00	44.21	54.00	9.79
4905.00	55.69	PK	H	33.11	3.29	25.67	66.42	74.00	7.58
4905.00	41.94	AV	H	33.11	3.29	25.67	52.67	54.00	1.33
7357.50	37.60	PK	H	36.13	4.56	25.76	52.53	74.00	21.47
7357.50	24.37	AV	H	36.13	4.56	25.76	39.30	54.00	14.70

Test plots(Worst 40M Chain 1&2 High Channel)
Horizontal:

Fundamental Test with Band Rejection Filter

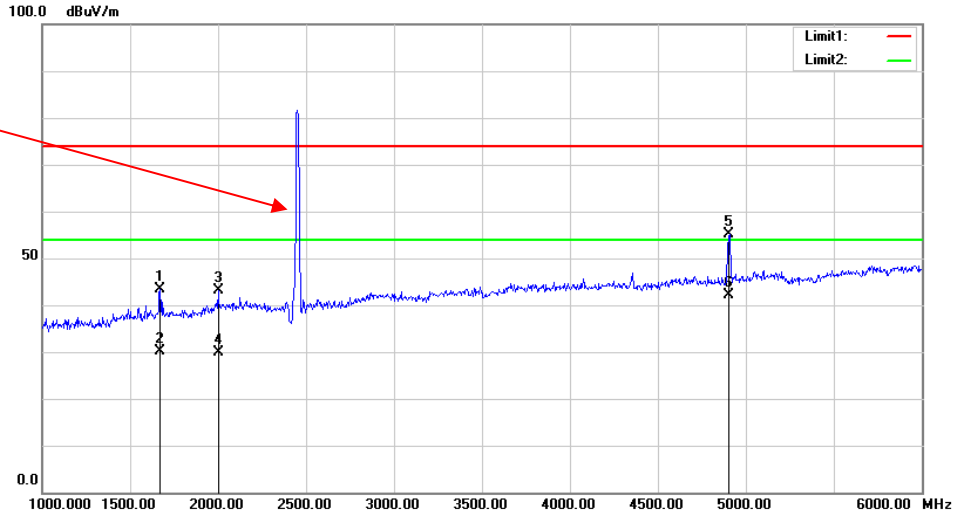


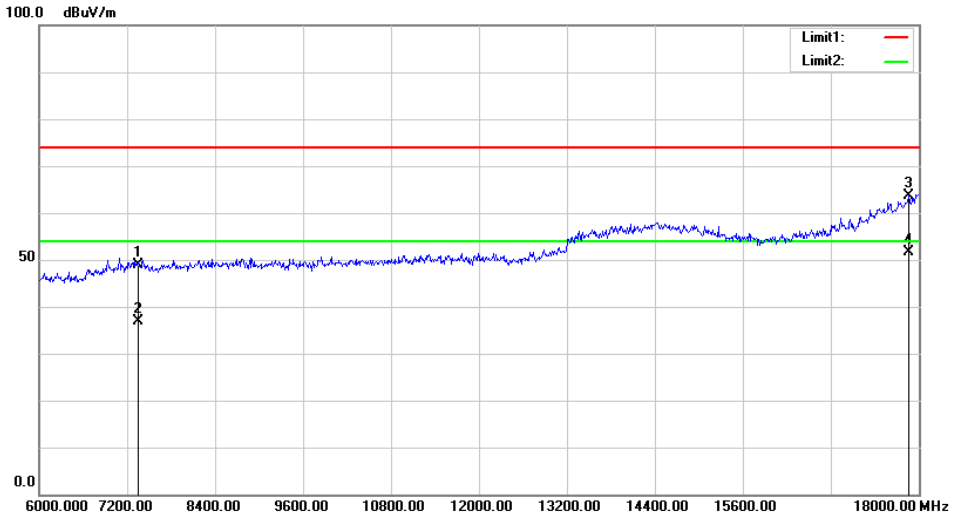


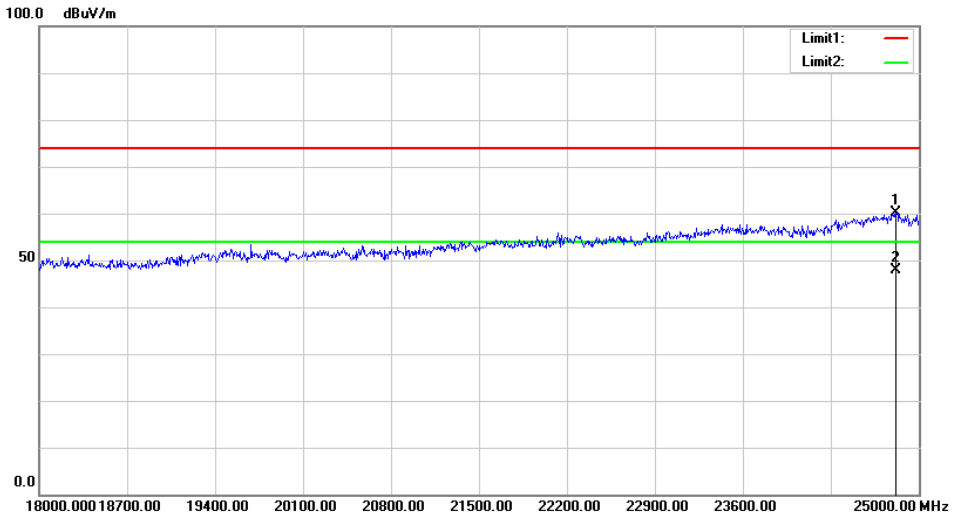


Vertical:

Fundamental Test with Band Rejection Filter







FCC §15.247(a) (2), RSS-247 CLAUSE 5.2 a) &RSS-GEN CLAUSE 6.7 – 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 kHz.

According to RSS-247 §5.2 a)

The minimum 6 dB bandwidth shall be 500 kHz.

According to RSS-Gen §6.7

The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the "x dB bandwidth" is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

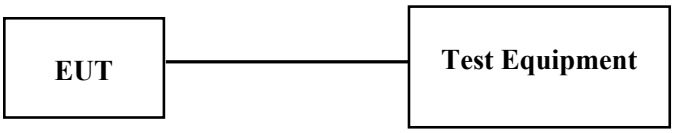
- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

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.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each time	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:	24.2～28.9 °C
Relative Humidity:	50～73 %
ATM Pressure:	100～101.1 kPa
Tester:	Rennes Guo
Test Date:	2020-08-19～2020-10-18

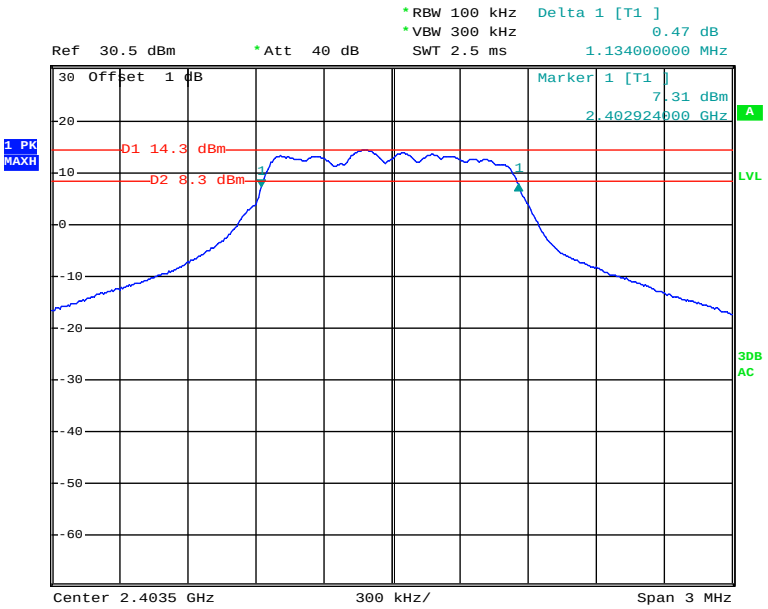
Test Mode: Transmitting

Test Result: Compliance. Test was only performed at Chain 0. please refer to the following table and plots.

Test mode	Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit (MHz)
1.4M	2403.5	1.134	1.158	≥0.5
	2435.5	1.128	1.158	≥0.5
	2469.5	1.128	1.164	≥0.5
1.4M-CA	2405.12	1.128	1.158	≥0.5
	2437.12	1.128	1.164	≥0.5
	2471.12	1.128	1.164	≥0.5
10M	2407.5	9.12	9.12	≥0.5
	2437.5	9.12	9.08	≥0.5
	2467.5	9.08	9.04	≥0.5
20M	2412.5	18.16	17.76	≥0.5
	2436.5	18.12	18.00	≥0.5
	2462.5	18.24	17.76	≥0.5
40M	2422.5	36.32	36.16	≥0.5
	2437.5	36.20	36.32	≥0.5
	2452.5	36.24	36.32	≥0.5

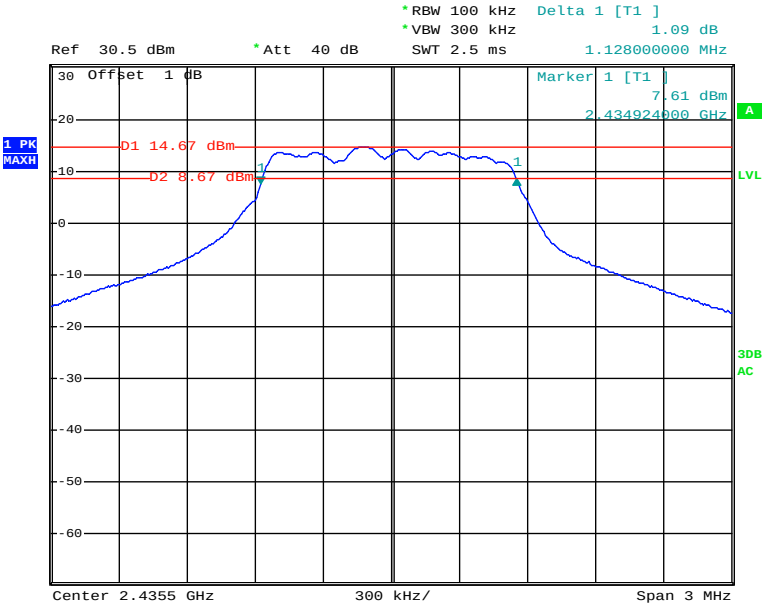
6dB Bandwidth:

1.4M Low Channel



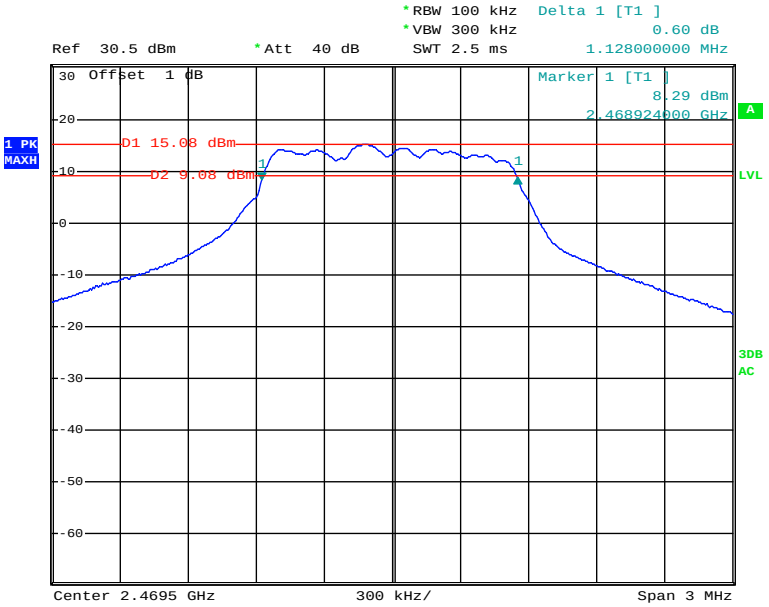
Date: 19.AUG.2020 16:06:19

1.4M Middle Channel



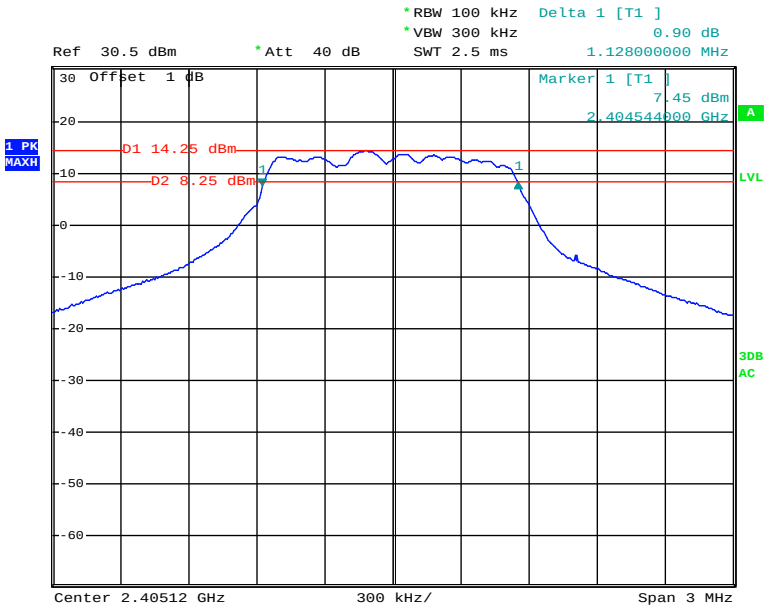
Date: 19.AUG.2020 16:07:39

1.4M High Channel



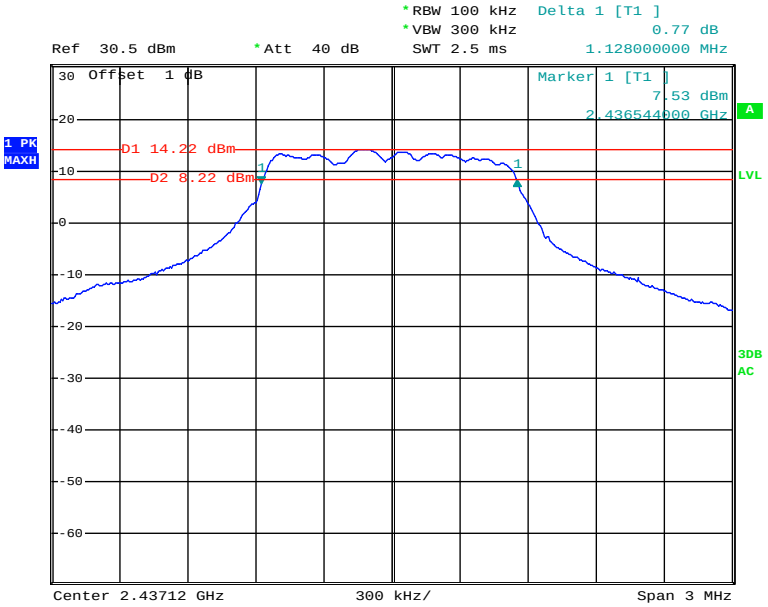
Date: 19.AUG.2020 16:09:00

1.4M-CA Low Channel



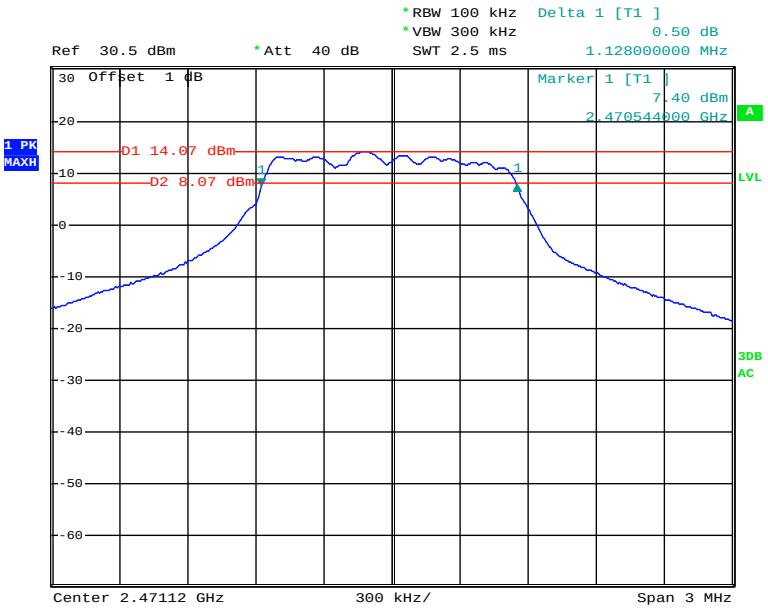
Date: 19.AUG.2020 17:10:16

1.4M-CA Middle Channel



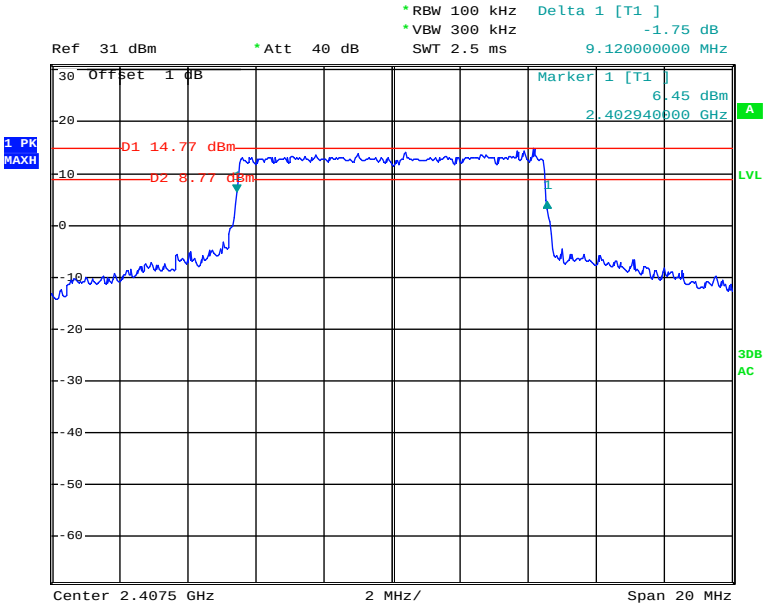
Date: 19.AUG.2020 17:11:47

1.4M-CA High Channel



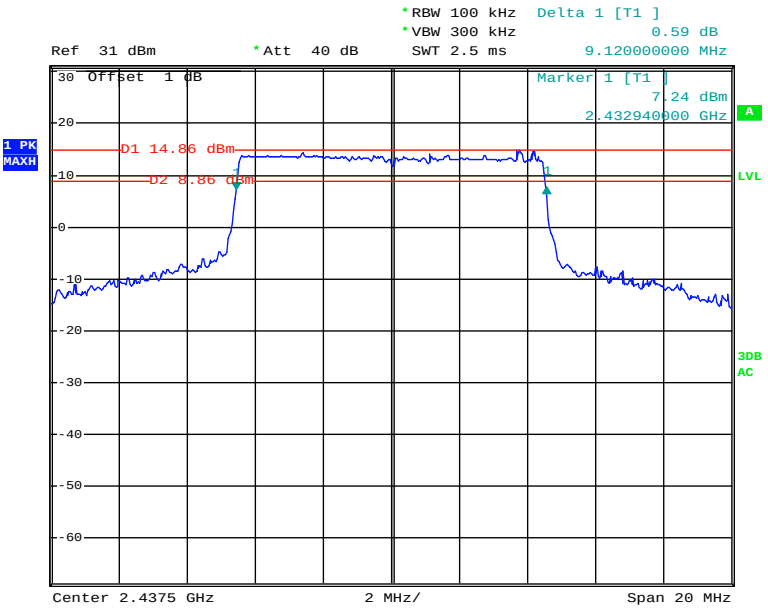
Date: 19.AUG.2020 17:13:03

10M Low Channel



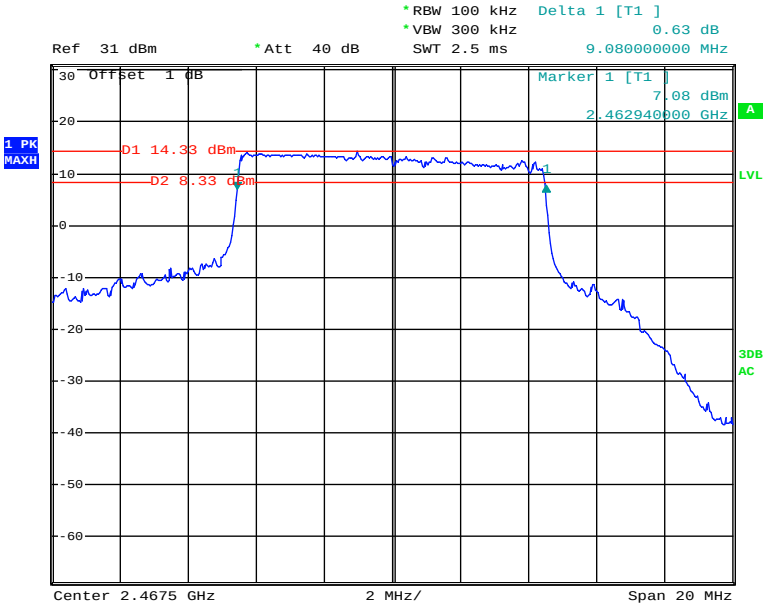
Date: 31.AUG.2020 14:13:26

10M Middle Channel



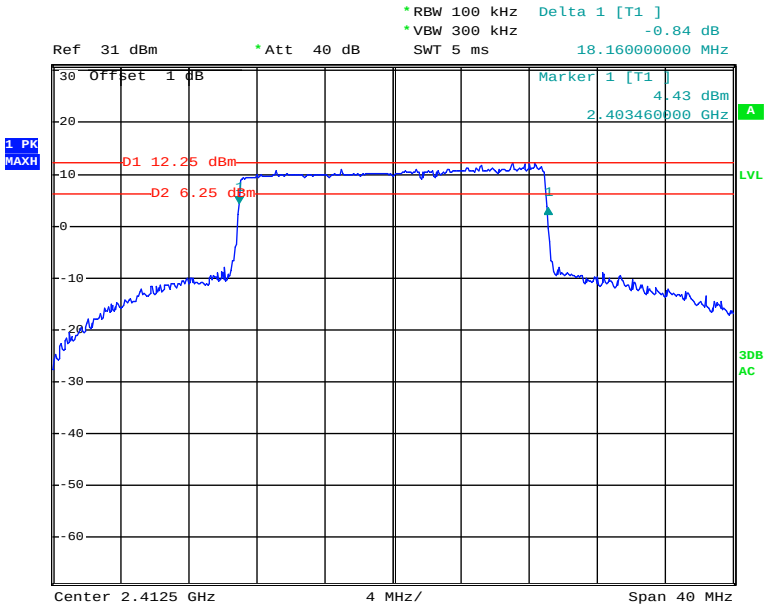
Date: 31.AUG.2020 14:15:21

10M High Channel



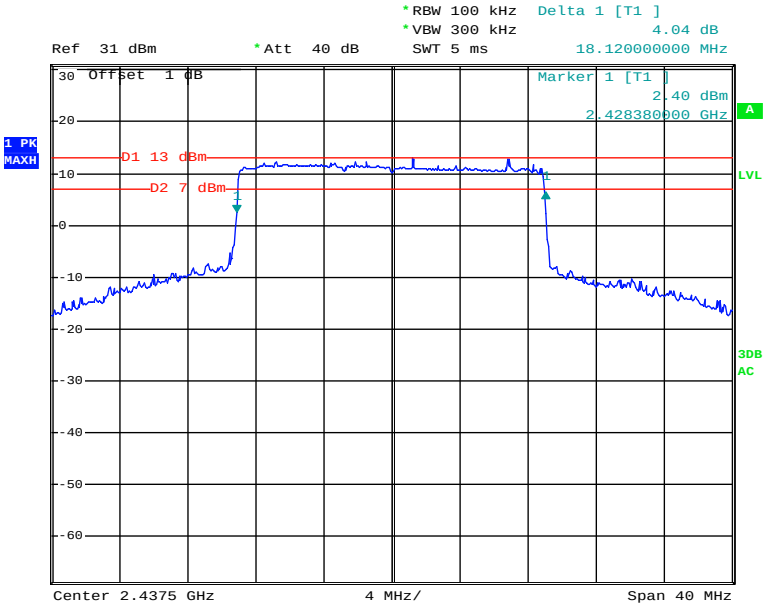
Date: 31.AUG.2020 14:18:04

20M Low Channel



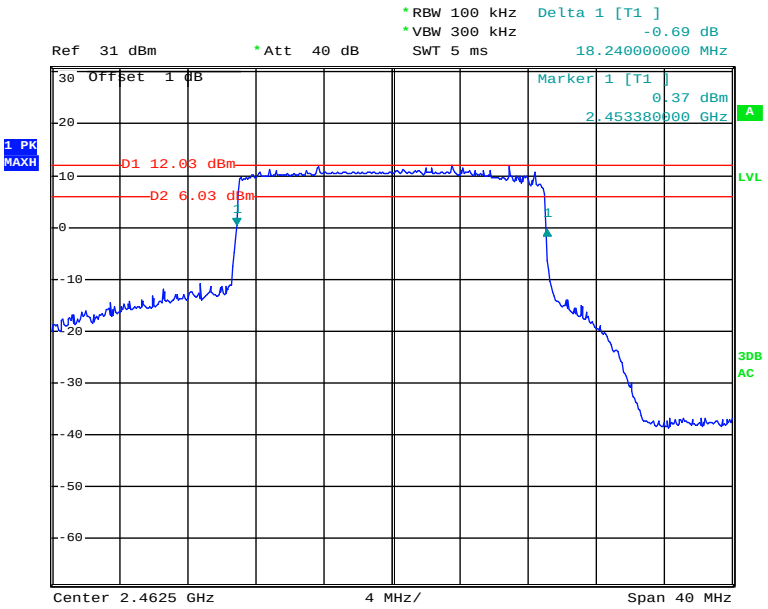
Date: 31.AUG.2020 14:44:27

20M Middle Channel



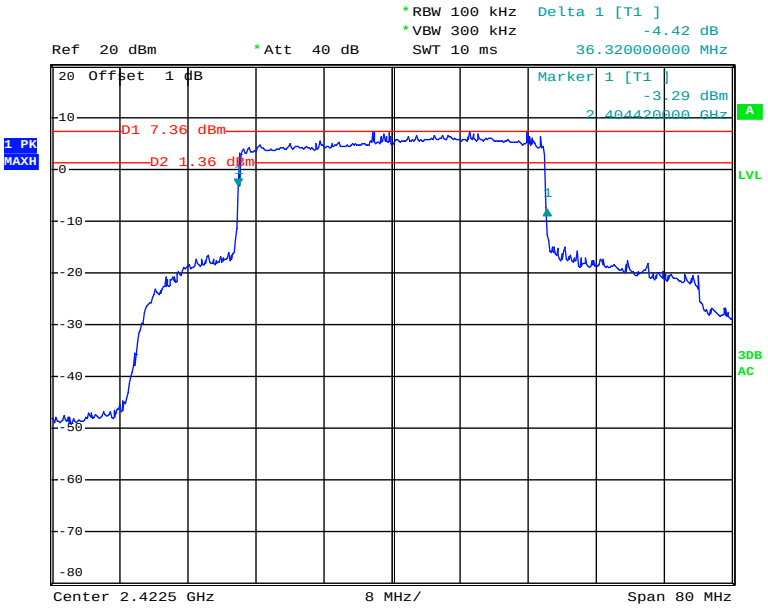
Date: 31.AUG.2020 14:47:22

20M High Channel



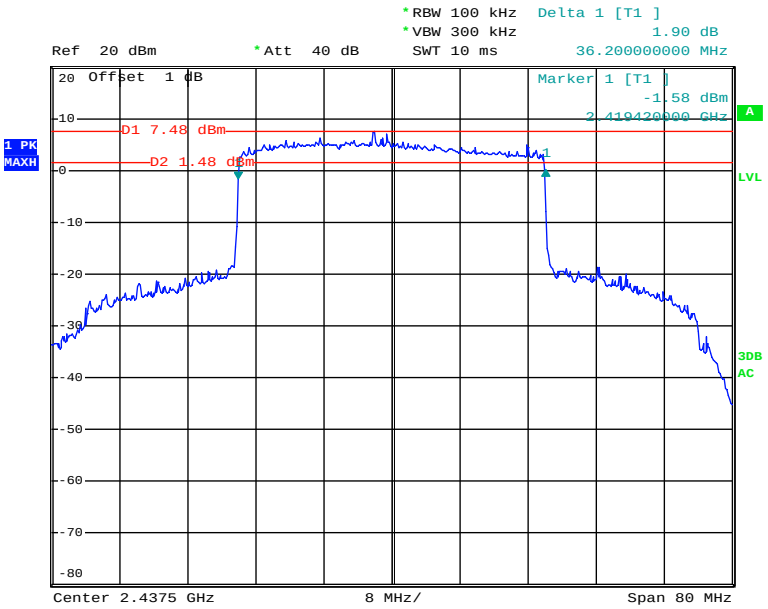
Date: 31.AUG.2020 14:49:36

40M Low Channel



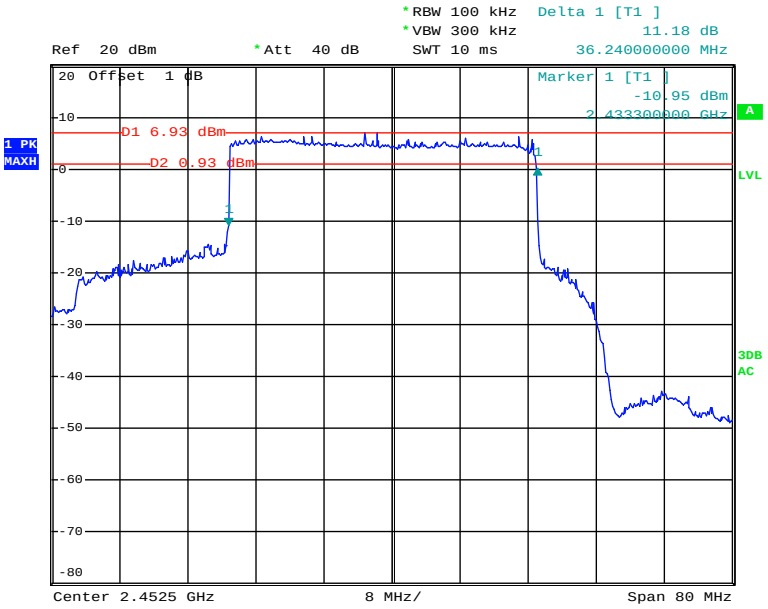
Date: 31.AUG.2020 15:20:24

40M Middle Channel



Date: 31.AUG.2020 15:22:04

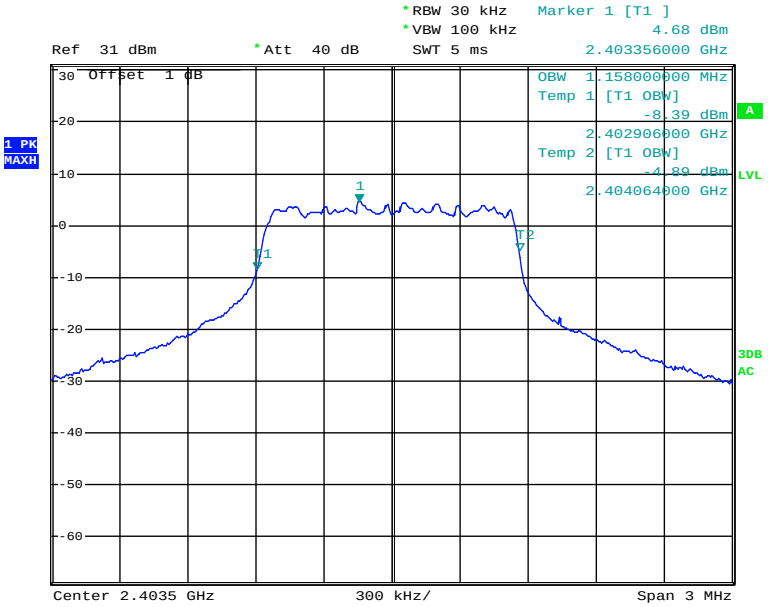
40M High Channel



Date: 31.AUG.2020 15:23:27

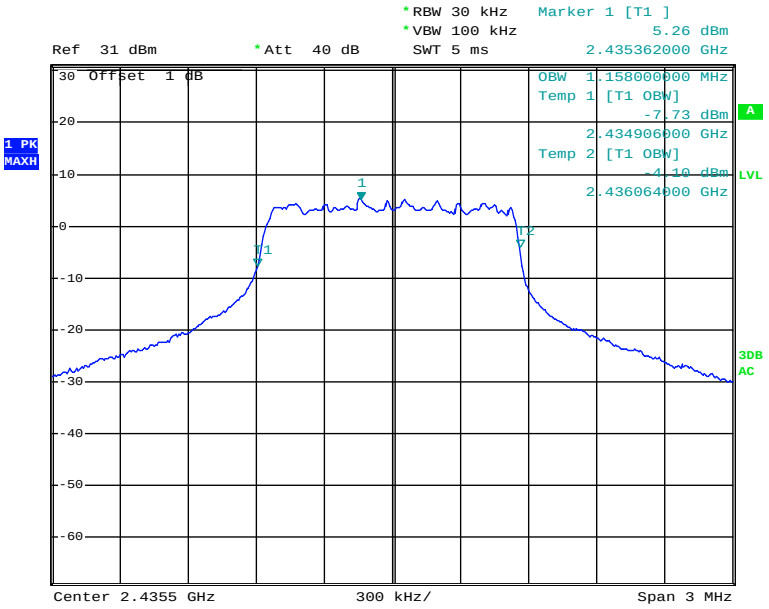
99% Occupied Bandwidth:

1.4M Low Channel



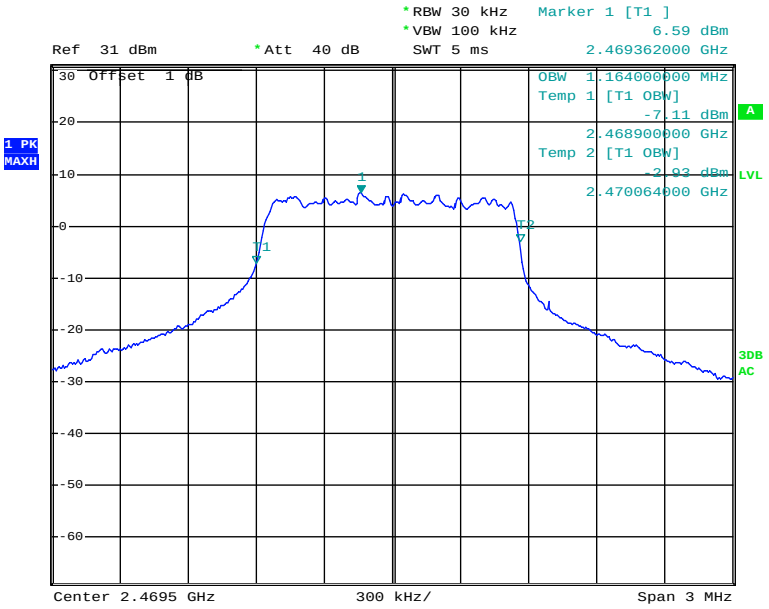
Date: 24.AUG.2020 15:27:36

1.4M Middle Channel



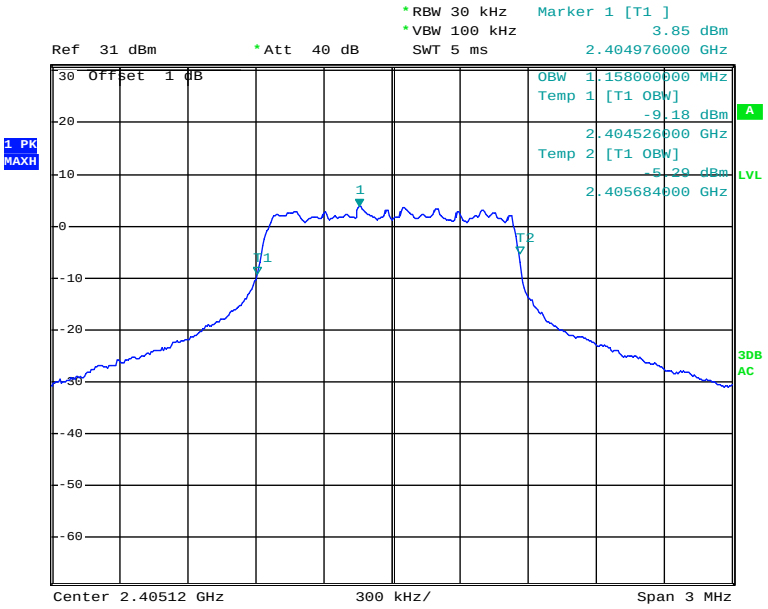
Date: 24.AUG.2020 15:28:15

1.4M High Channel



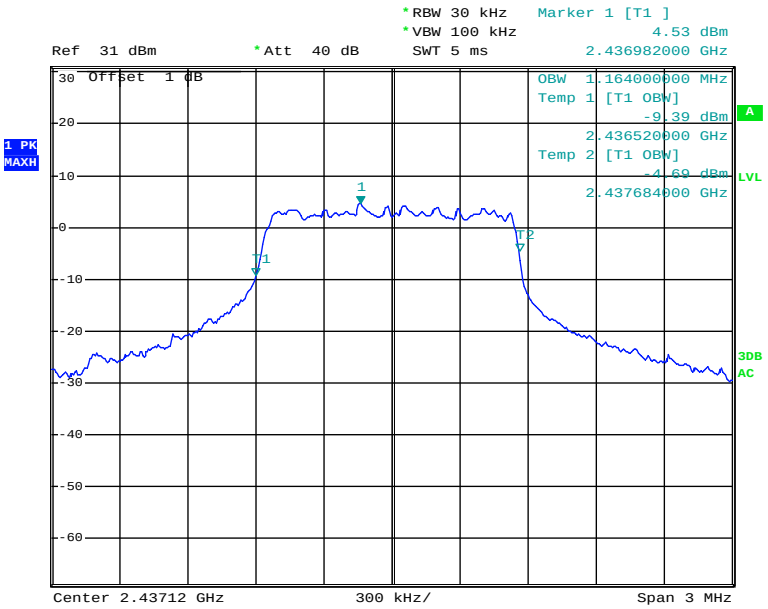
Date: 24.AUG.2020 15:28:57

1.4M-CA Low Channel



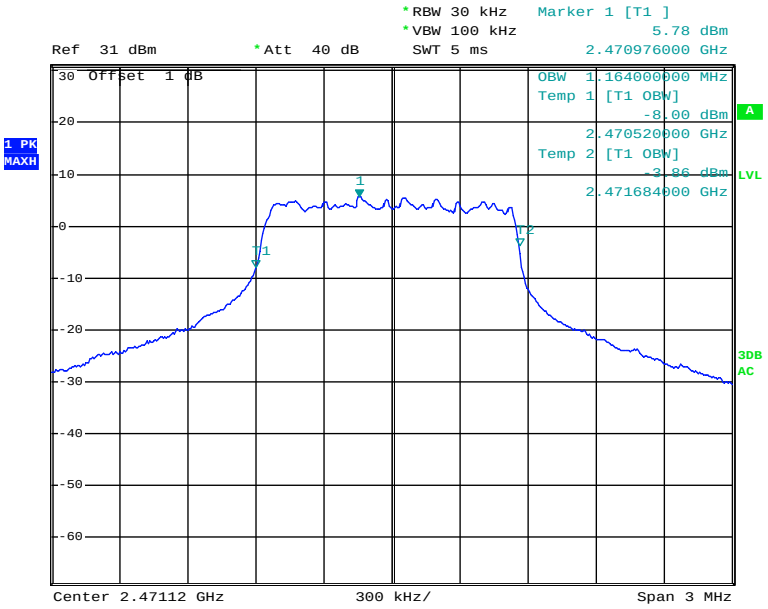
Date: 24.AUG.2020 16:12:17

1.4M-CA Middle Channel



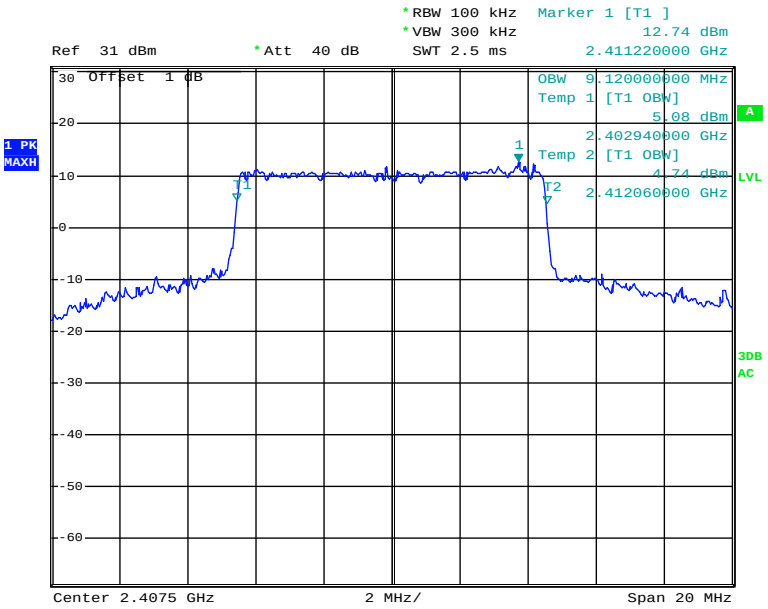
Date: 24.AUG.2020 16:13:04

1.4M-CA High Channel



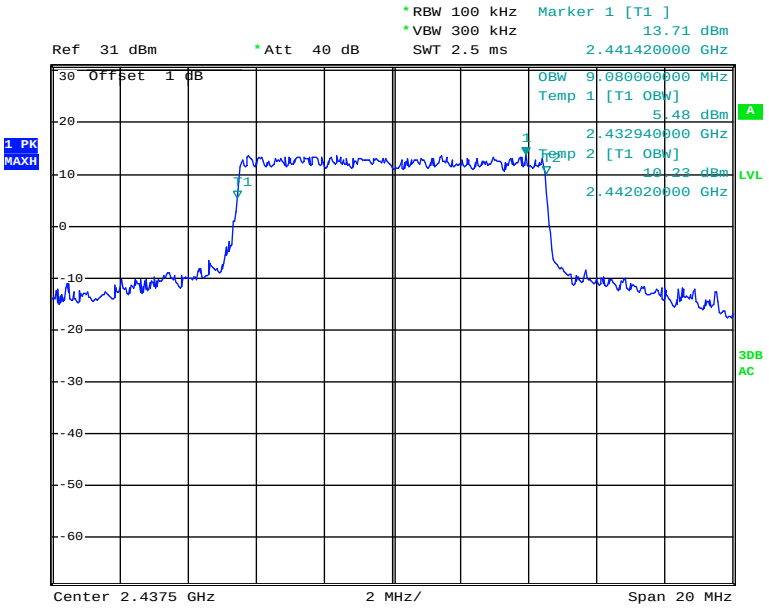
Date: 24.AUG.2020 16:14:10

10M Low Channel



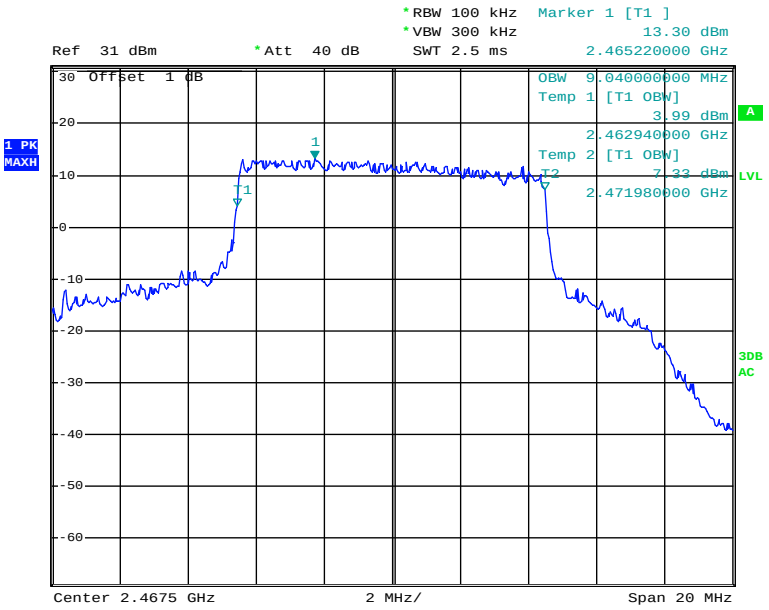
Date: 1.SEP.2020 15:38:00

10M Middle Channel



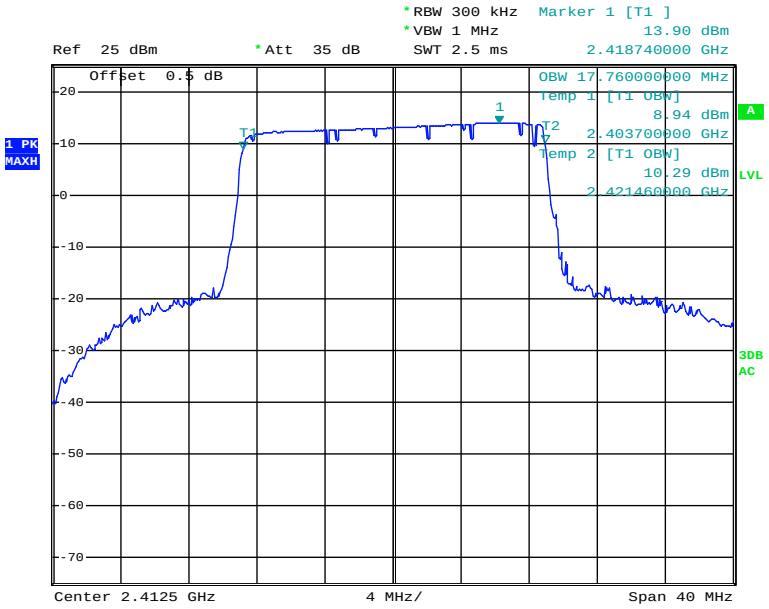
Date: 1.SEP.2020 14:42:43

10M High Channel



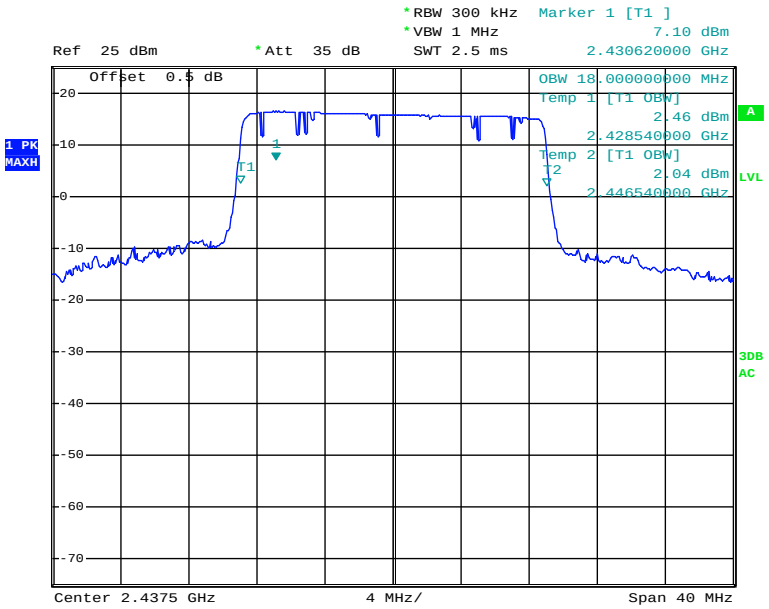
Date: 1.SEP.2020 14:43:37

20M Low Channel



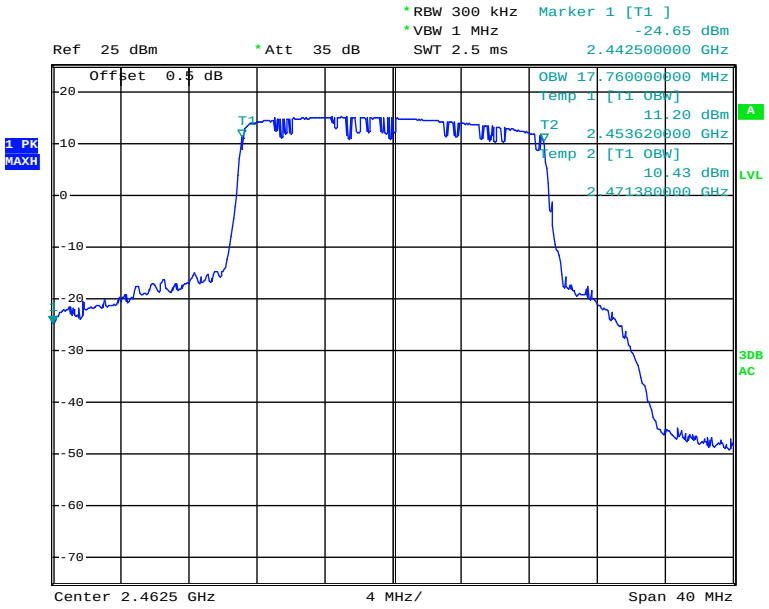
Date: 18.OCT.2020 14:33:53

20M Middle Channel



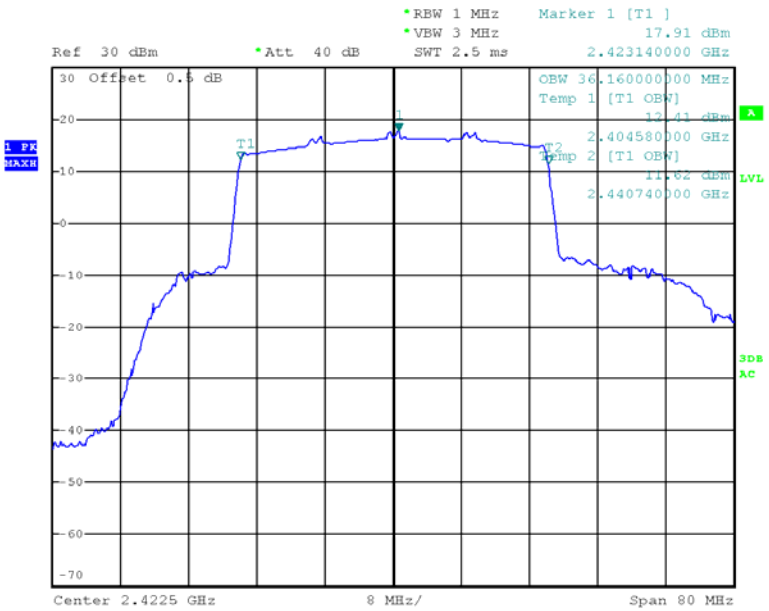
Date: 18.OCT.2020 14:36:34

20M High Channel



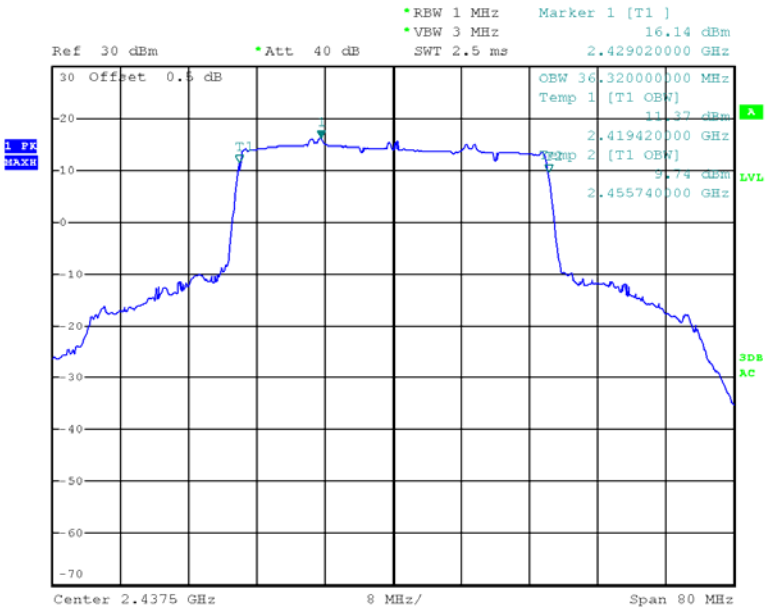
Date: 18.OCT.2020 14:39:23

40M Low Channel



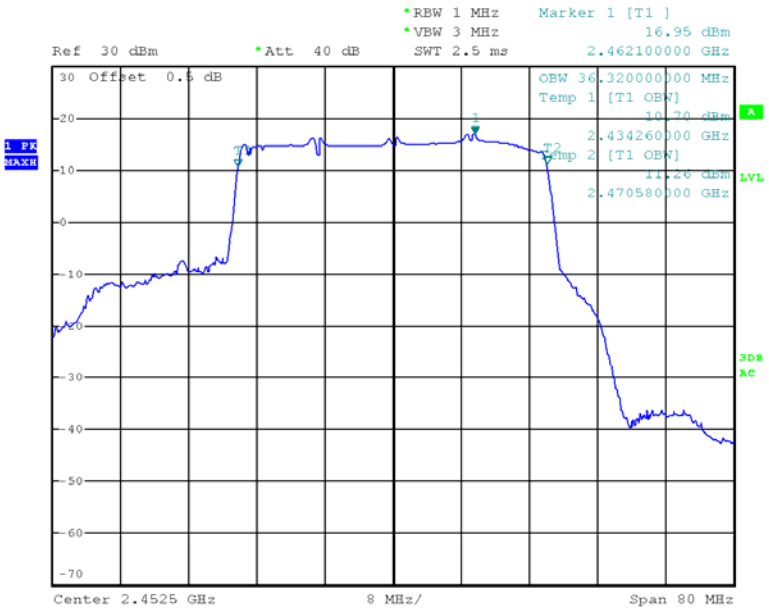
Date: 17.OCT.2020 20:50:50

40M Middle Channel



Date: 17.OCT.2020 21:03:24

40M High Channel



Date: 17.OCT.2020 21:07:28

FCC §15.247(b) (3) , RSS-247 CLAUSE 5.4 D - MAXIMUM PEAK CONDUCTED OUTPUT POWER

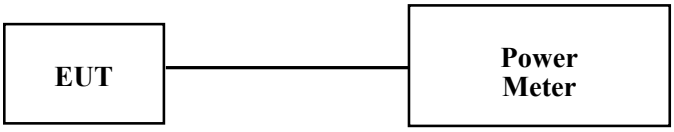
Applicable Standard

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.

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.
4. Set the power meter to test average output power, record the result as average power.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
Agilent	USB Wideband Power Sensor	U2021XA	MY5425009	2020-05-09	2021-05-09

**** 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:	26.9～27.2 °C
Relative Humidity:	63～73 %
ATM Pressure:	100～100.5 kPa
Tester:	Rennes Guo
Test Date:	2020-08-19～2020-09-01

Test Mode: Transmitting
Test Result: Compliance. Please refer to the following table.

Mode	Antenna combination form	Test Frequency (MHz)	Maximum Conducted Average Output Power (dBm)			Limit (dBm)
			Reading 1	Reading 2	Total	
1.4M	Chain 0 + Chain 1	2403.5	16.18	16.27	19.24	30
		2435.5	16.29	16.82	19.57	30
		2469.5	16.52	16.74	19.64	30
	Chain 0 + Chain 3	2403.5	16.53	16.35	19.45	30
		2435.5	16.29	16.47	19.39	30
		2469.5	16.72	16.28	19.52	30
	Chain 1 + Chain 2	2403.5	17.86	17.51	**20.7**	30
		2435.5	17.92	17.45	**20.7**	30
		2469.5	17.67	17.52	20.61	30
	Chain 2 + Chain 3	2403.5	16.18	16.65	19.43	30
		2435.5	16.21	17.16	19.72	30
		2469.5	16.27	16.79	19.55	30
1.4M-CA	Chain 0 + Chain 1	2405.12	16.20	16.89	19.57	30
		2437.12	16.41	16.84	19.64	30
		2471.12	16.25	16.33	19.3	30
	Chain 0 + Chain 3	2405.12	16.25	16.79	19.54	30
		2437.12	16.23	16.56	19.41	30
		2471.12	15.66	16.33	19.02	30
	Chain 1 + Chain 2	2405.12	18.14	17.48	**20.83**	30
		2437.12	17.91	17.39	20.67	30
		2471.12	17.04	17.32	20.19	30
	Chain 2 + Chain 3	2405.12	15.57	16.67	19.17	30
		2437.12	16.45	16.76	19.62	30
		2471.12	16.41	16.26	19.35	30

Mode	Antenna combination form	Test Frequency (MHz)	Maximum Conducted Average Output Power (dBm)			Limit (dBm)
			Reading 1	Reading 2	Total	
10M	Chain 0 + Chain 1	2407.5	25.47	25.58	28.54	30
		2437.5	26.21	26.48	29.36	30
		2467.5	25.47	25.42	28.46	30
	Chain 0 + Chain 3	2407.5	25.32	25.84	28.6	30
		2437.5	25.98	26.54	29.28	30
		2467.5	25.27	25.63	28.46	30
	Chain 1 + Chain 2	2407.5	27.04	26.83	**29.95**	30
		2437.5	26.83	26.77	29.81	30
		2467.5	26.58	26.81	29.71	30
	Chain 2 + Chain 3	2407.5	25.42	25.94	28.7	30
		2437.5	26.17	26.52	29.36	30
		2467.5	25.45	25.74	28.61	30
20M	Chain 0 + Chain 1	2412.5	25.81	25.87	28.85	30
		2437.5	26.17	26.45	29.32	30
		2462.5	25.29	25.95	28.64	30
	Chain 0 + Chain 3	2412.5	25.88	25.82	28.86	30
		2437.5	26.11	26.41	29.27	30
		2462.5	25.28	25.79	28.55	30
	Chain 1 + Chain 2	2412.5	26.61	27.07	29.86	30
		2437.5	26.68	26.84	29.77	30
		2462.5	26.93	26.89	**29.92**	30
	Chain 2 + Chain 3	2412.5	25.71	25.85	28.79	30
		2437.5	26.37	26.48	29.44	30
		2462.5	25.34	25.45	28.41	30
40M	Chain 0 + Chain 1	2422.5	22.91	22.58	25.76	30
		2437.5	22.46	22.79	25.64	30
		2452.5	22.81	22.48	25.66	30
	Chain 0 + Chain 3	2422.5	22.85	22.9	25.89	30
		2437.5	22.38	22.81	25.61	30
		2452.5	22.75	22.73	25.75	30
	Chain 1 + Chain 2	2422.5	24.31	24.48	**27.41**	30
		2437.5	24.37	24.12	27.26	30
		2452.5	24.25	24.54	27.41	30
	Chain 2 + Chain 3	2422.5	22.91	22.89	25.91	30
		2437.5	22.57	22.88	25.74	30
		2452.5	23.11	22.61	25.88	30

Note: The test performed at antenna port, the antenna gain is 2.5dBi, meet the EIRP limit of ISED.

FCC §15.247(d), RSS-247 CLAUSE 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 Clause 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	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each time	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

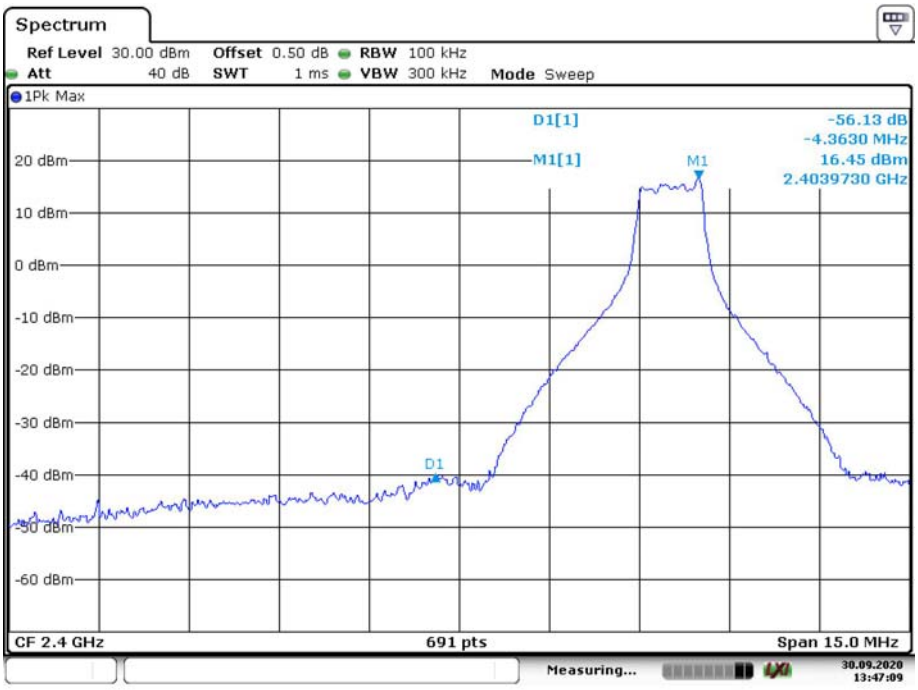
Environmental Conditions

Temperature:	27.2 °C
Relative Humidity:	73 %
ATM Pressure:	100.5 kPa
Tester:	*Rennes Guo*
Test Date:	*2020-09-30*

Test mode: Transmitting

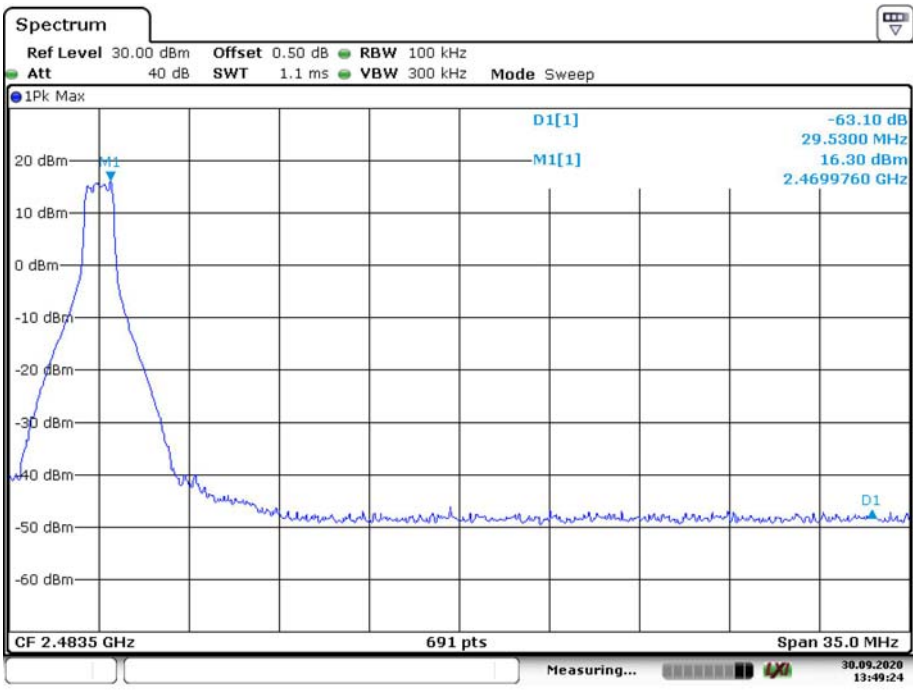
Test Result: Compliance. all emission outside the frequency band under more than 30 dB of the desired power. The worst is Chain 1+2, Please refer to following plots.

1.4M, Chain 1: Band Edge, Left Side



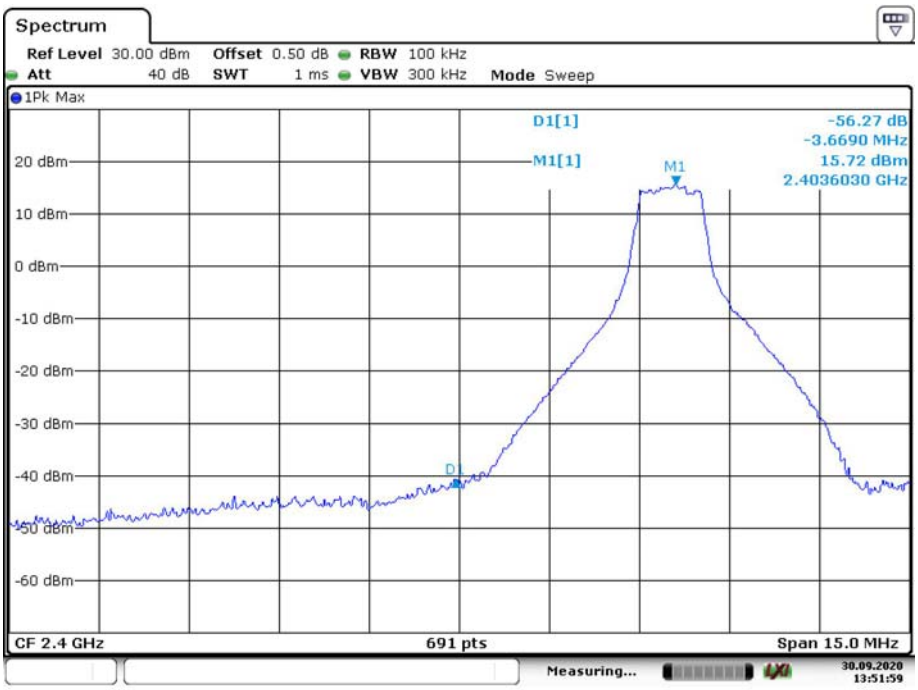
Date: 30.SEP.2020 13:47:10

1.4M, Chain 1:Band Edge, Right Side



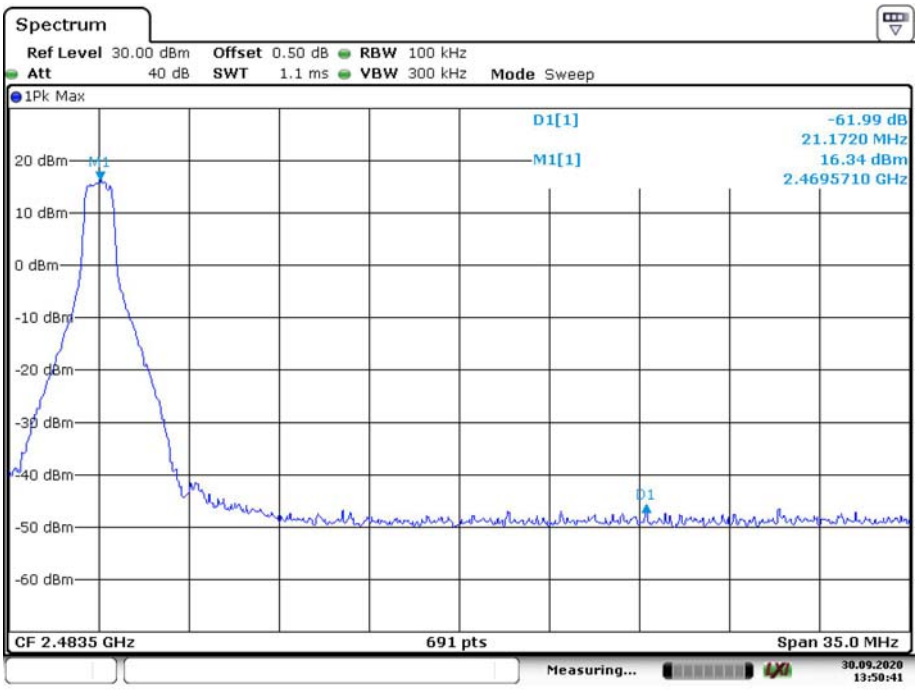
Date: 30.SEP.2020 13:49:25

1.4M, Chain 2:Band Edge, Left Side



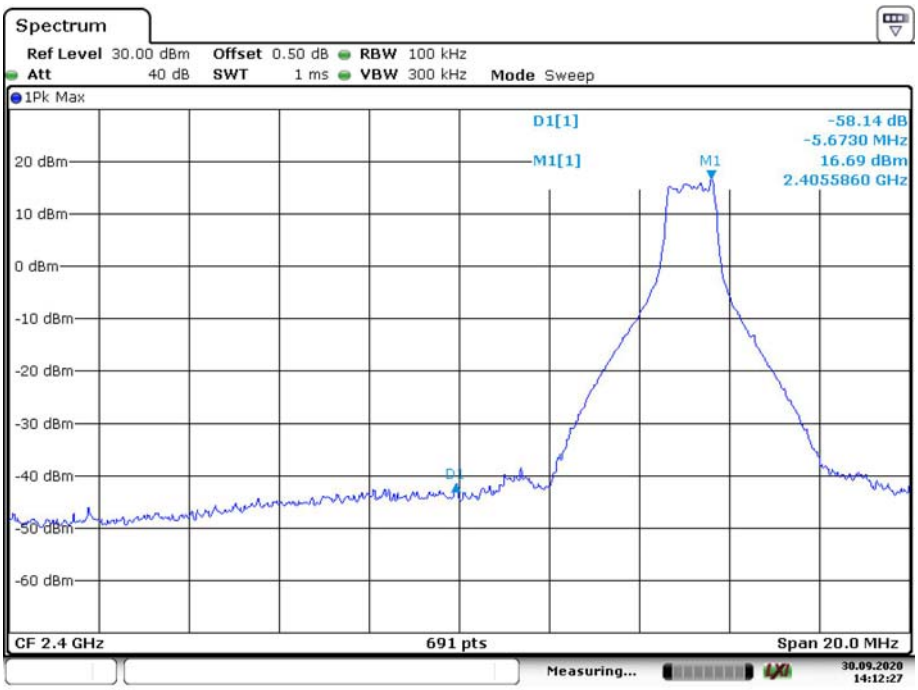
Date: 30.SEP.2020 13:52:00

1.4M, Chain 2: Band Edge, Right Side



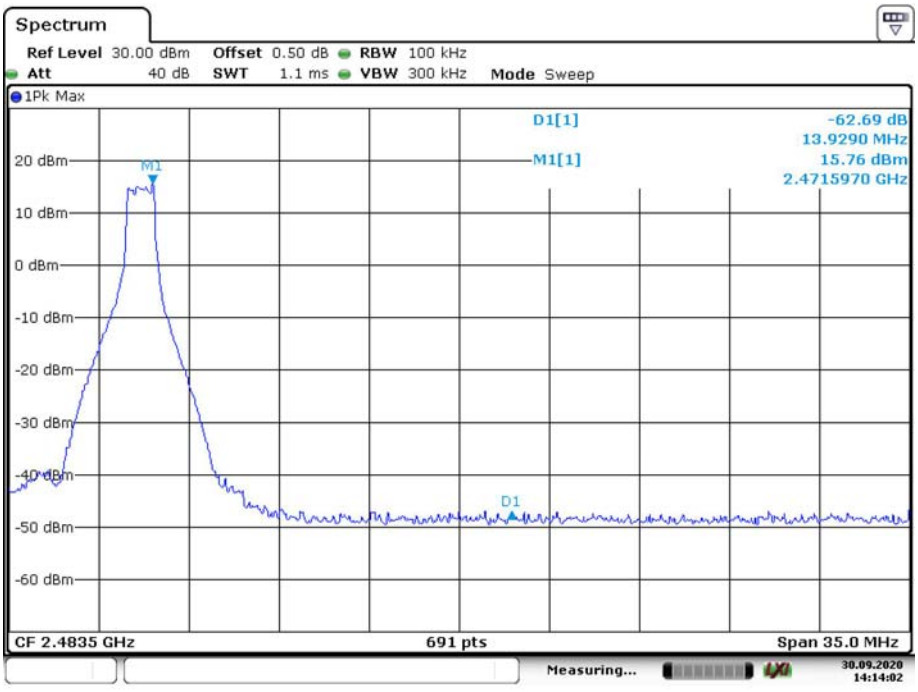
Date: 30.SEP.2020 13:50:42

1.4M-CA, Chain 1: Band Edge, Left Side



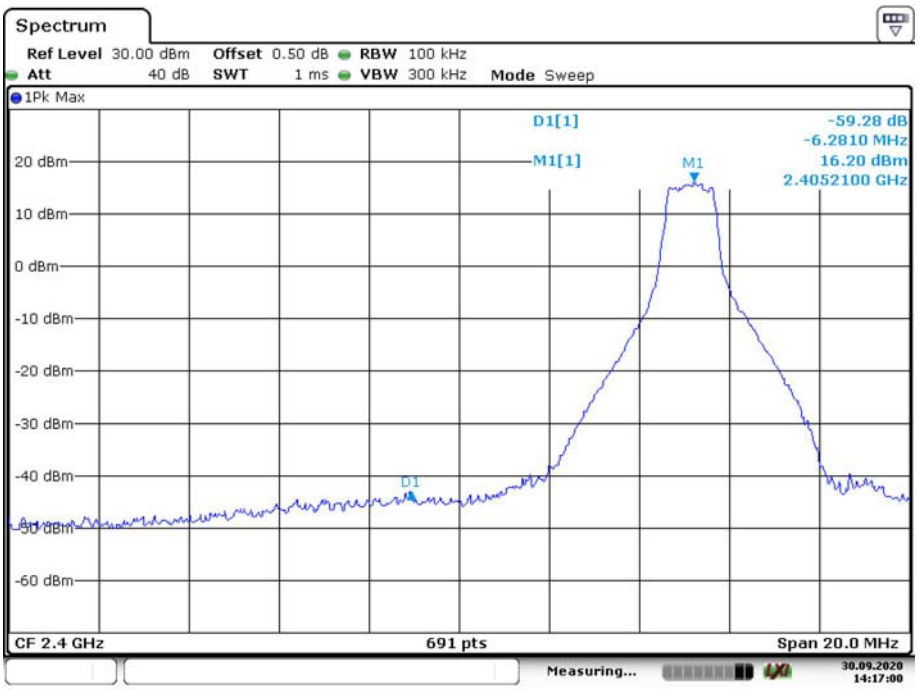
Date: 30.SEP.2020 14:12:27

1.4M-CA, Chain 1: Band Edge, Right Side



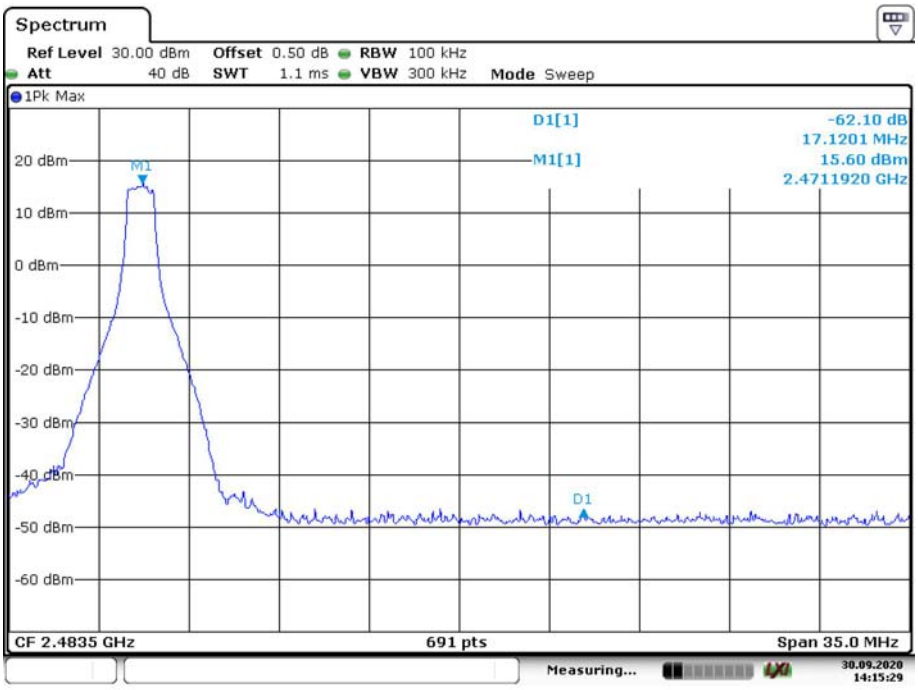
Date: 30.SEP.2020 14:14:03

1.4M-CA, Chain 2: Band Edge, Left Side



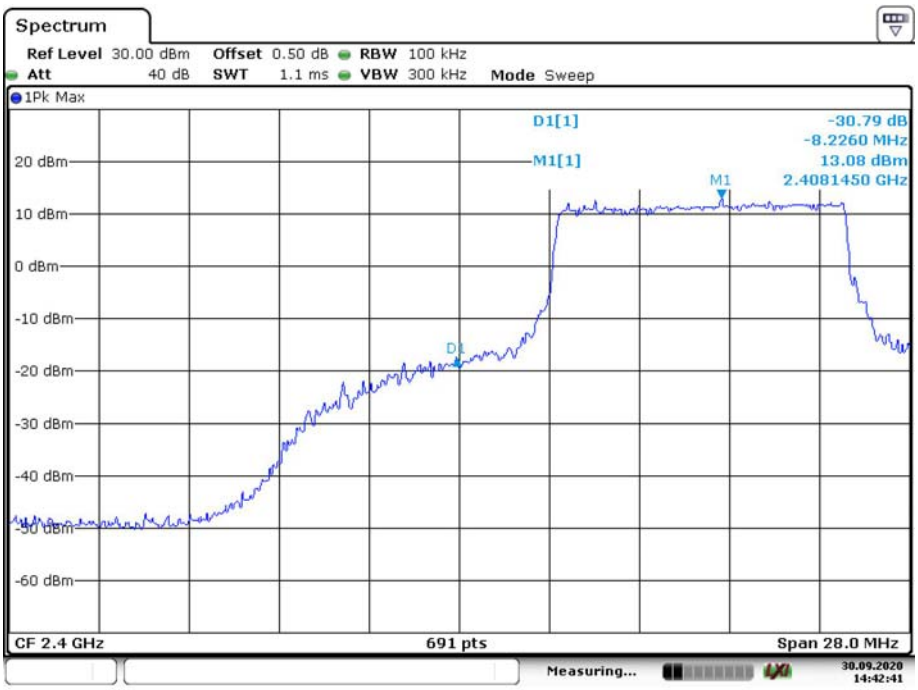
Date: 30.SEP.2020 14:17:00

1.4M-CA, Chain 2: Band Edge, Right Side



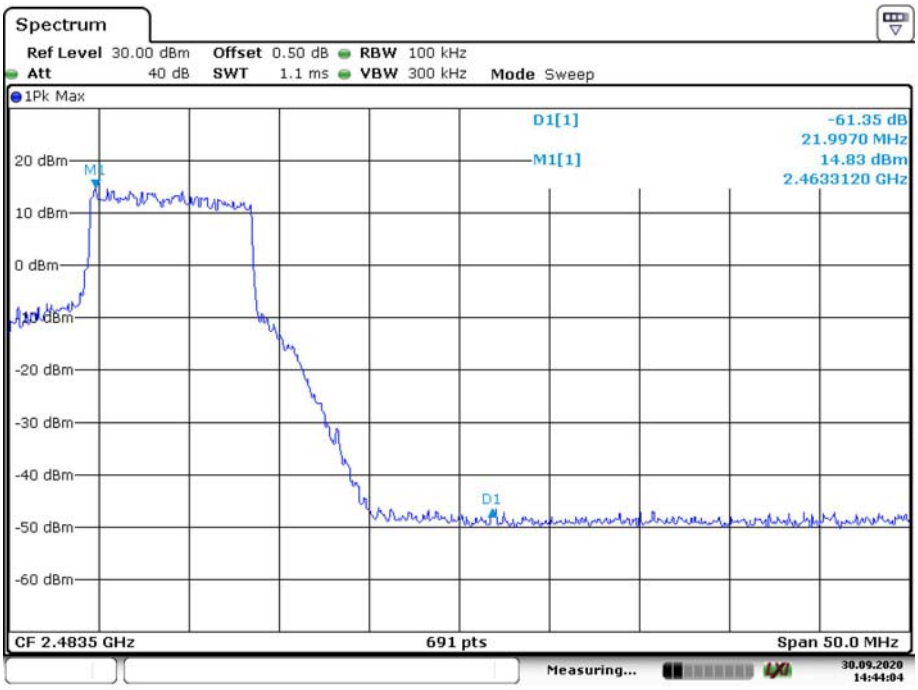
Date: 30.SEP.2020 14:15:30

10M, Chain 1: Band Edge, Left Side



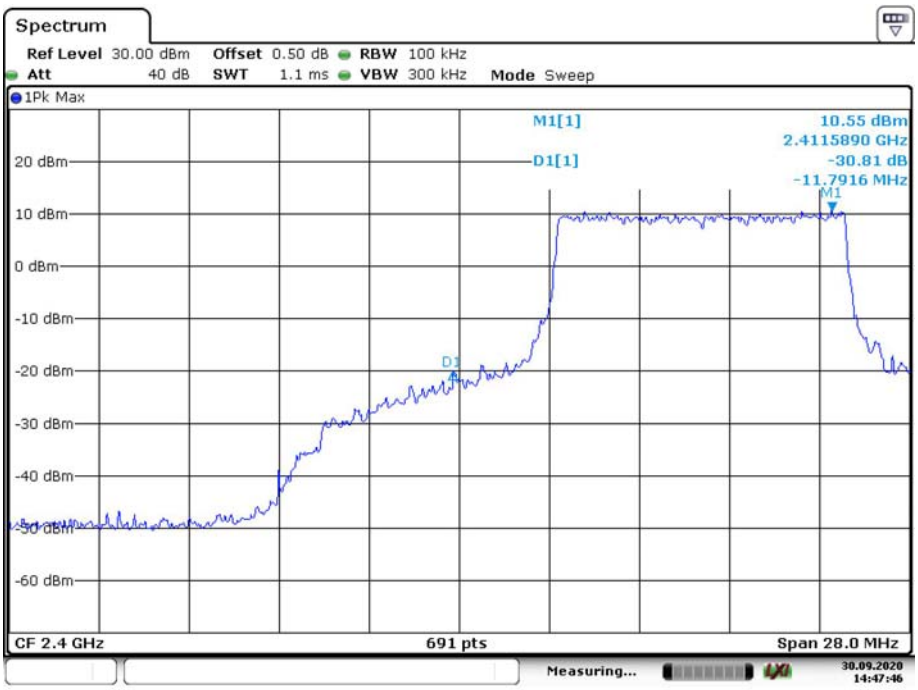
Date: 30.SEP.2020 14:42:42

10M, Chain 1: Band Edge, Right Side



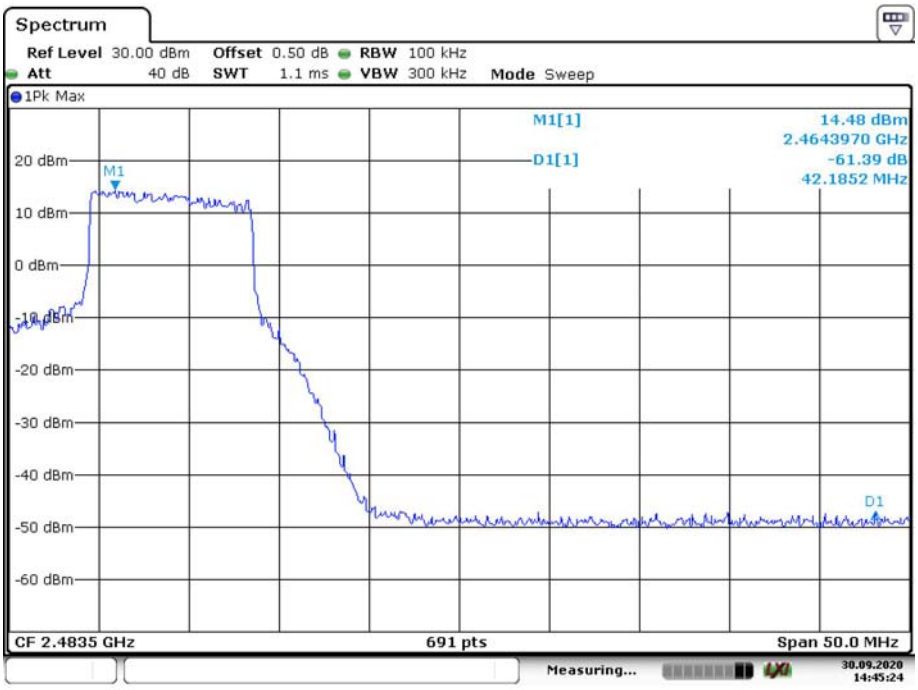
Date: 30.SEP.2020 14:44:04

10M, Chain 2: Band Edge, Left Side



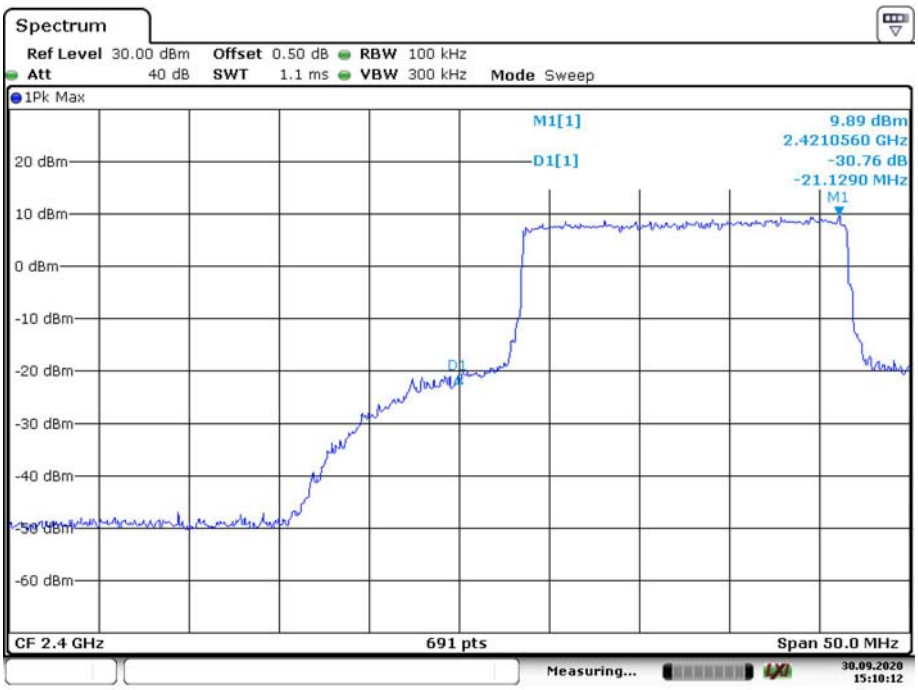
Date: 30.SEP.2020 14:47:47

10M, Chain 2: Band Edge, Right Side



Date: 30.SEP.2020 14:45:25

20M, Chain 1: Band Edge, Left Side

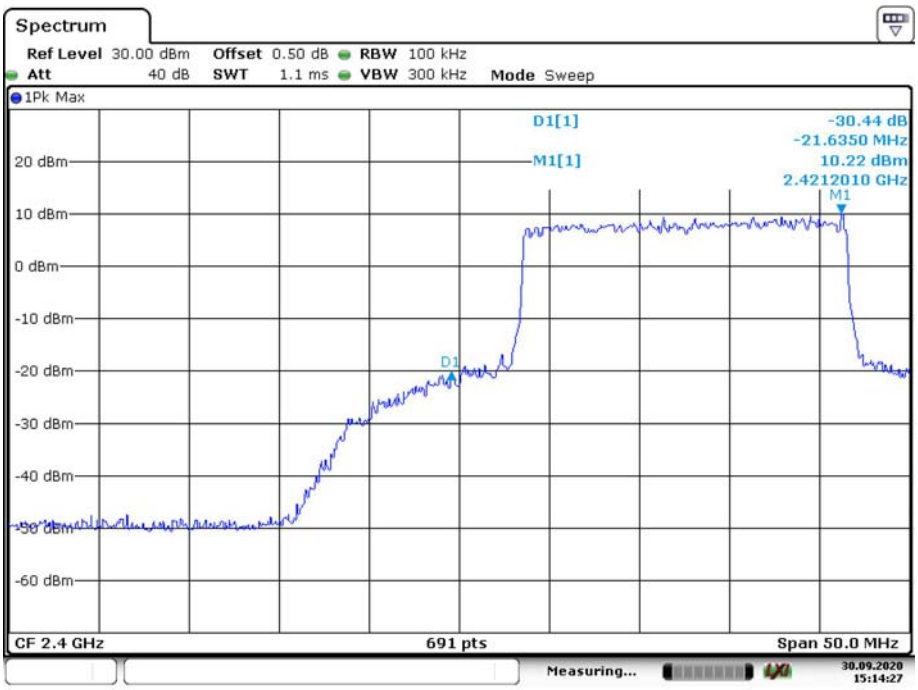


Date: 30.SEP.2020 15:10:13

20M, Chain 1: Band Edge, Right Side

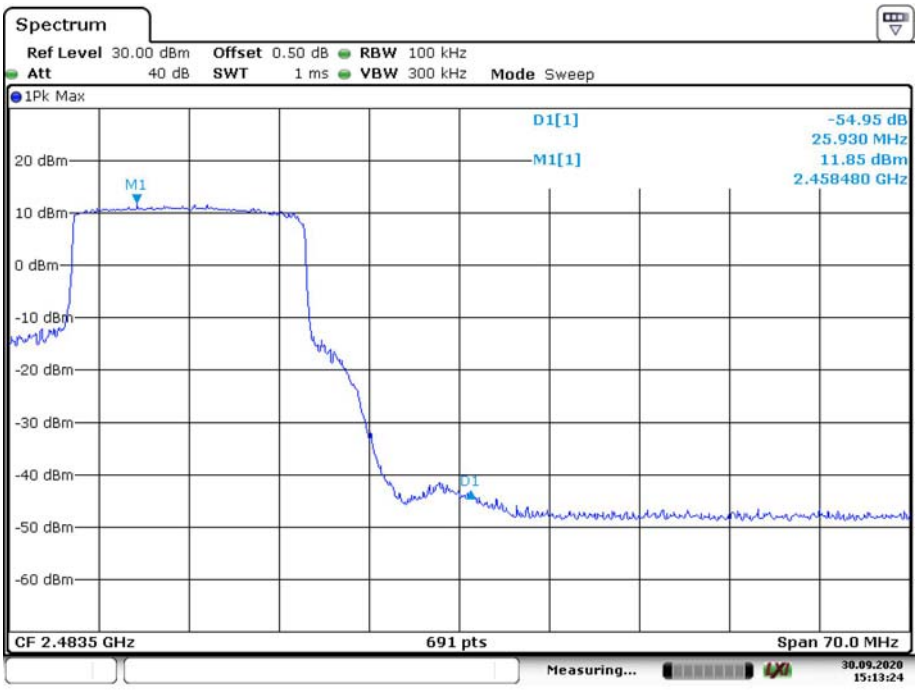
Date: 30.SEP.2020 15:11:49

20M, Chain 2: Band Edge, Left Side



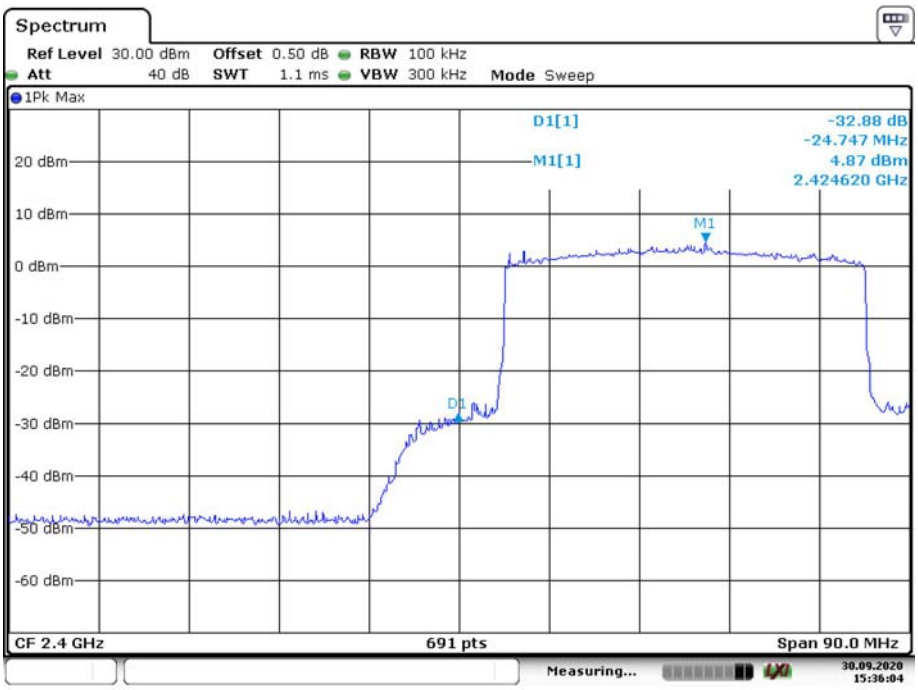
Date: 30.SEP.2020 15:14:28

20M, Chain 2: Band Edge, Right Side



Date: 30.SEP.2020 15:13:25

40M, Chain 1: Band Edge, Left Side

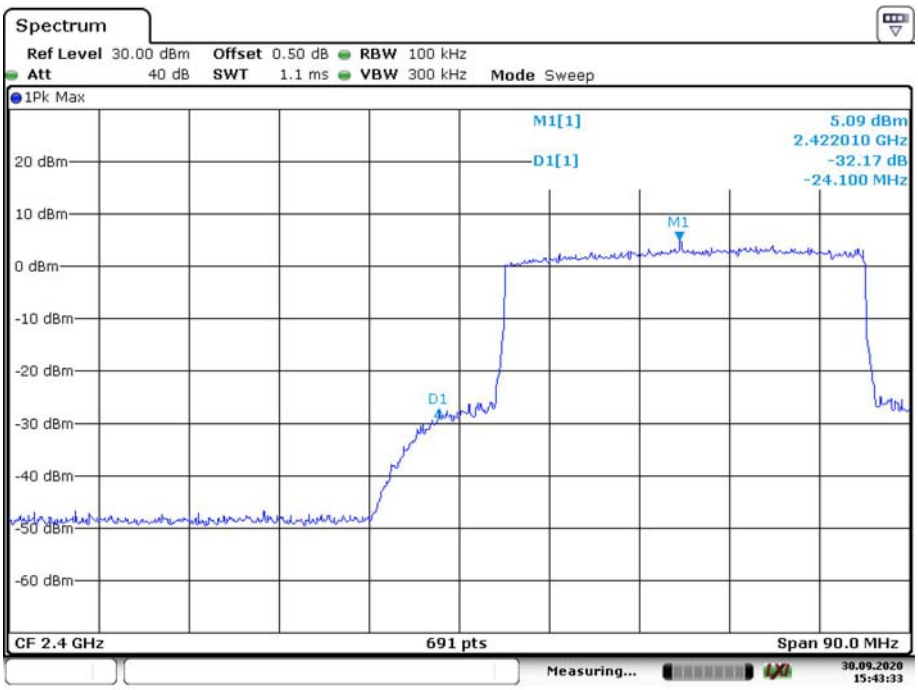


Date: 30.SEP.2020 15:36:04

40M, Chain 1: Band Edge, Right Side

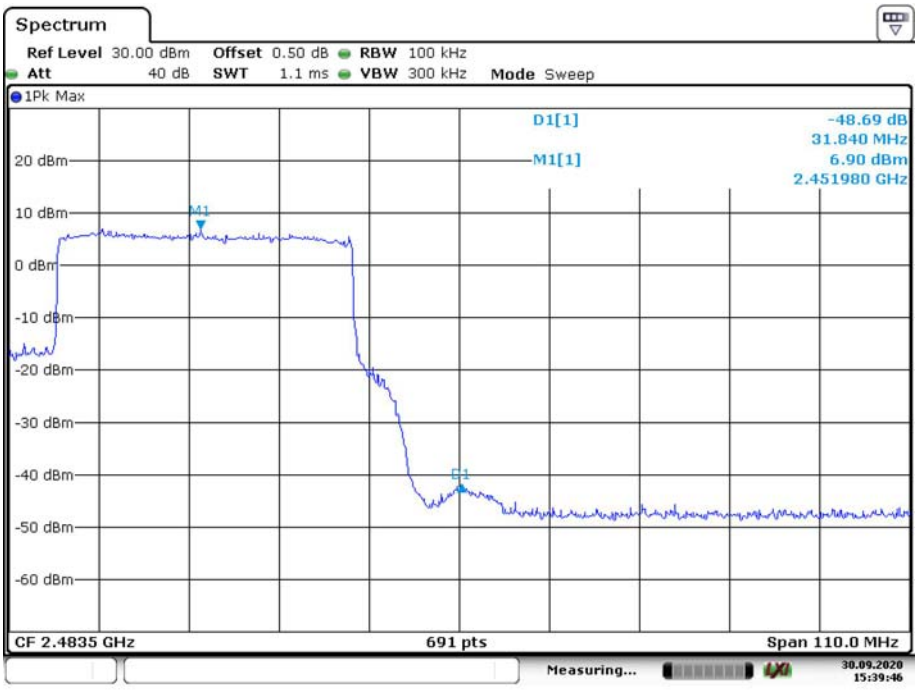
Date: 30.SEP.2020 15:37:50

40M, Chain 2: Band Edge, Left Side



Date: 30.SEP.2020 15:43:33

40M, Chain 2: Band Edge, Right Side



Date: 30.SEP.2020 15:39:46

FCC §15.247(e), RSS-247 CLAUSE 5.2 B - 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.

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

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
4. Use the peak marker function to determine the maximum amplitude level.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each time	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

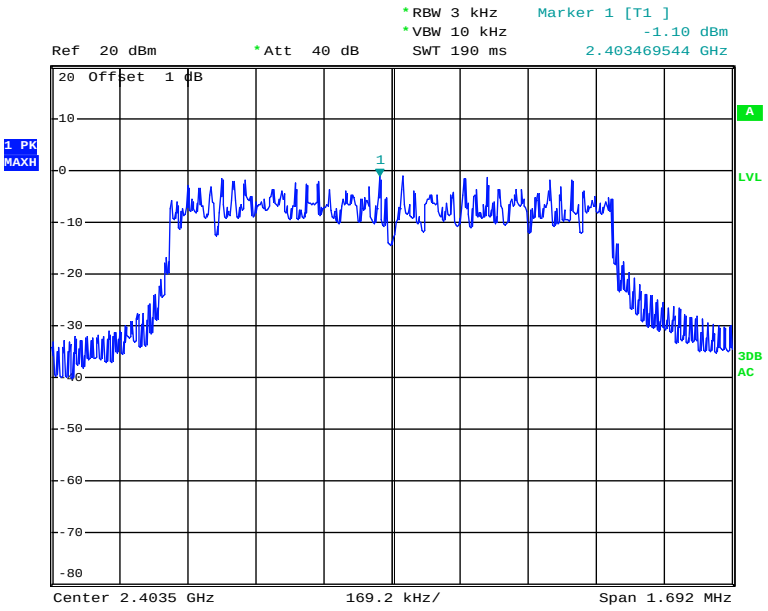
Temperature:	26.9～27.2 °C
Relative Humidity:	63～73 %
ATM Pressure:	100～100.5 kPa
Tester:	*Rennes Guo*
Test Date:	*2020-08-19～2020-09-01*

Test Result: Compliance, *test only performed at the maximum power chain(Chain 1+2) .Please refer to the following table and plots*

Test Mode: Transmitting

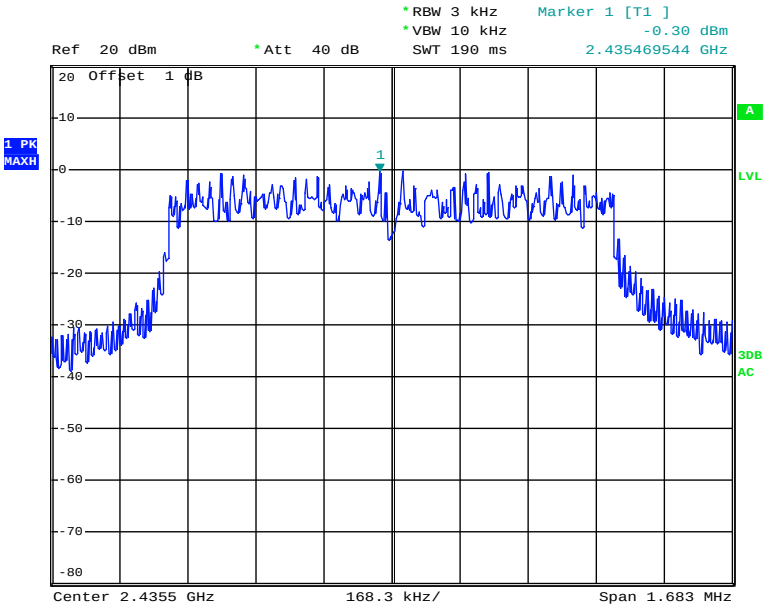
Mode	Frequency (MHz)	Power Spectral Density (dBm/3kHz)			Limit (dBm/3kHz)
		Chain 1	Chain 2	Total	
1.4M	2403.5	-1.10	1.09	3.14	≤8
	2435.5	-0.30	1.21	3.53	≤8
	2469.5	0.13	1.63	3.95	≤8
1.4M-CA	2405.12	-1.37	1.26	3.15	≤8
	2437.12	-1.06	1.25	3.26	≤8
	2471.12	-1.48	1.02	2.96	≤8
10M	2407.5	-8.93	-10.71	-6.72	≤8
	2437.5	-7.61	-10.01	-5.64	≤8
	2467.5	-8.89	-10.39	-6.57	≤8
20M	2412.5	-12.41	-14.33	-10.25	≤8
	2436.5	-11.58	-13.74	-9.52	≤8
	2462.5	-12.34	-14.31	-10.20	≤8
40M	2422.5	-18.95	-20.60	-16.69	≤8
	2437.5	-19.06	-20.20	-16.58	≤8
	2452.5	-18.26	-20.84	-16.35	≤8

Power Spectral Density, 1.4M Chain 1, Low Channel



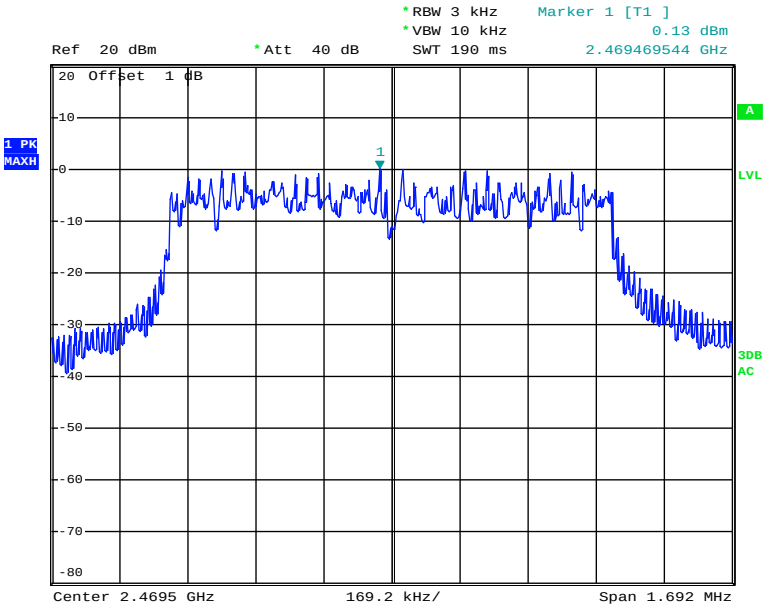
Date: 19.AUG.2020 17:53:20

Power Spectral Density, 1.4M Chain 1,Middle Channel



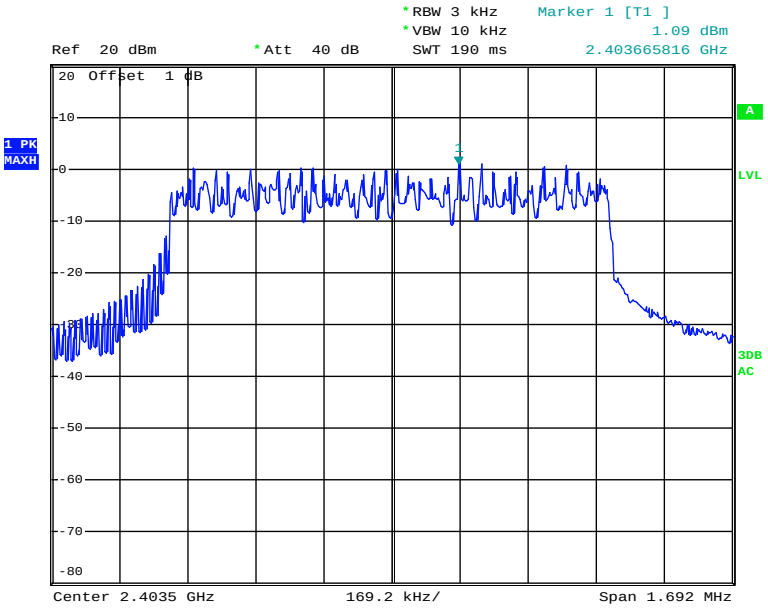
Date: 19.AUG.2020 17:54:44

Power Spectral Density, 1.4M Chain 1,High Channel



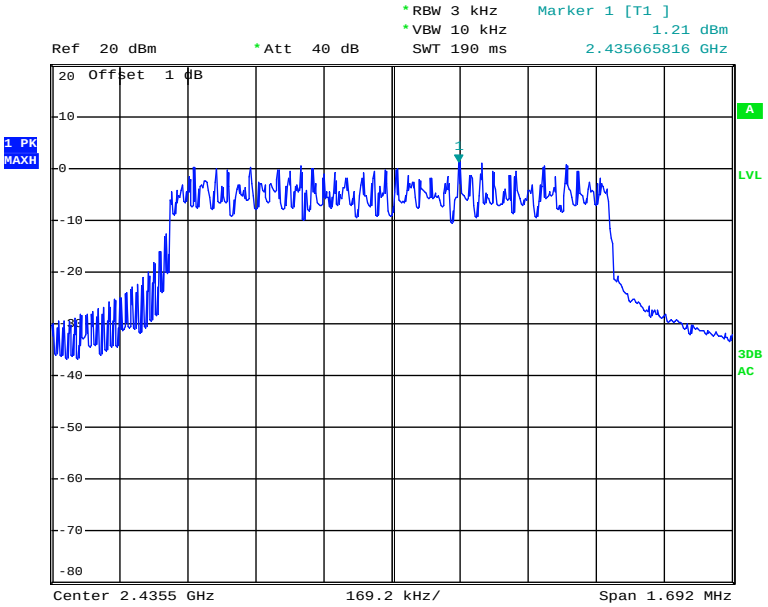
Date: 19.AUG.2020 17:55:36

Power Spectral Density, 1.4M Chain 2, Low Channel



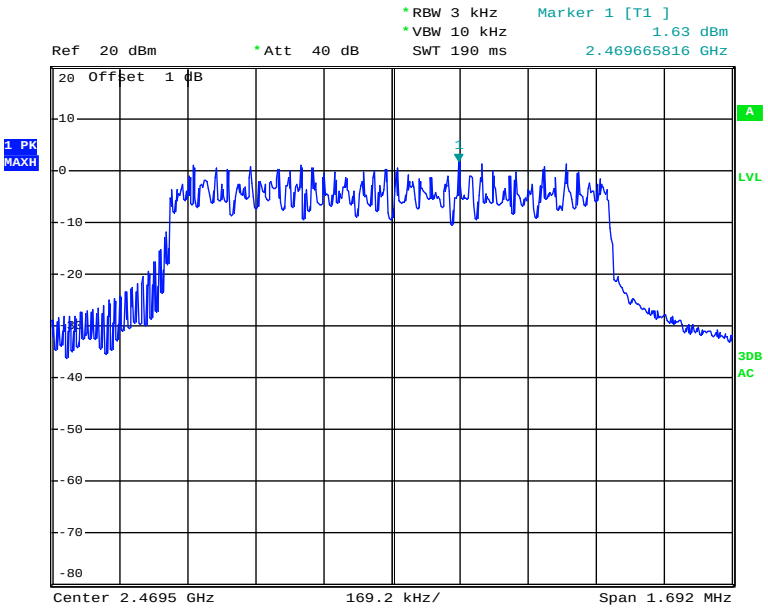
Date: 19.AUG.2020 17:57:28

Power Spectral Density, 1.4M Chain 1, Middle Channel



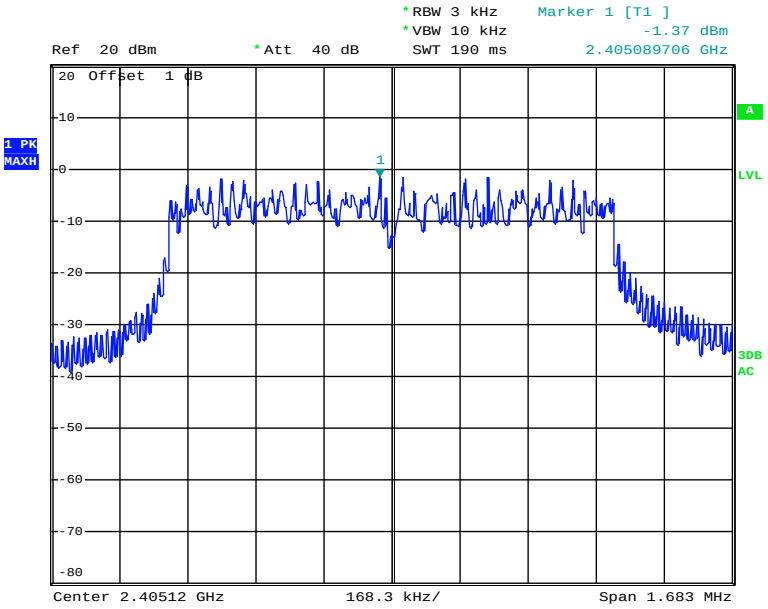
Date: 19.AUG.2020 17:59:39

Power Spectral Density, 1.4M Chain 1, High Channel



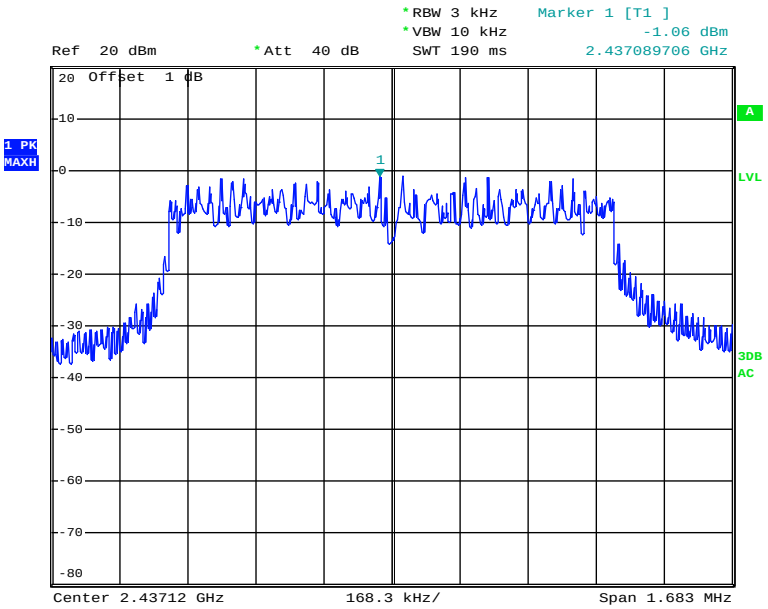
Date: 19.AUG.2020 18:01:04

Power Spectral Density, 1.4 M-CA, Chain 1, Low Channel



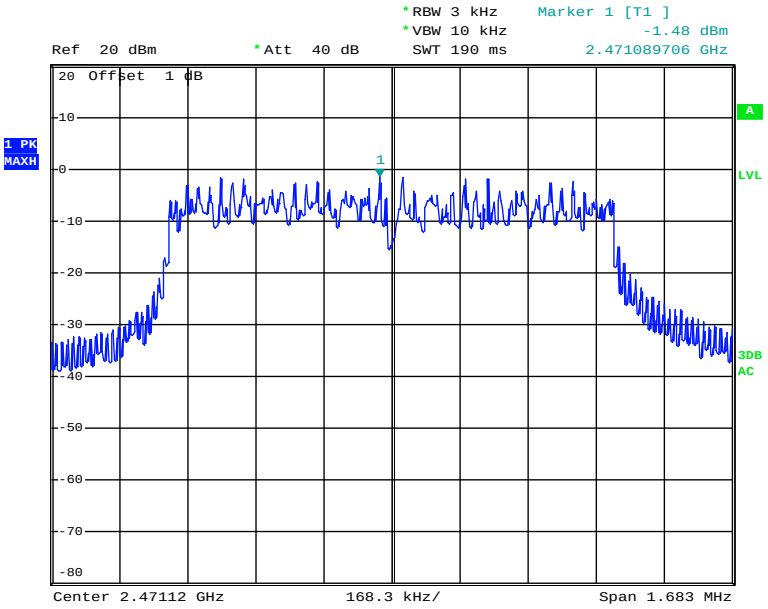
Date: 19.AUG.2020 18:30:22

Power Spectral Density, 1.4M-CA, Chain 1, Middle Channel



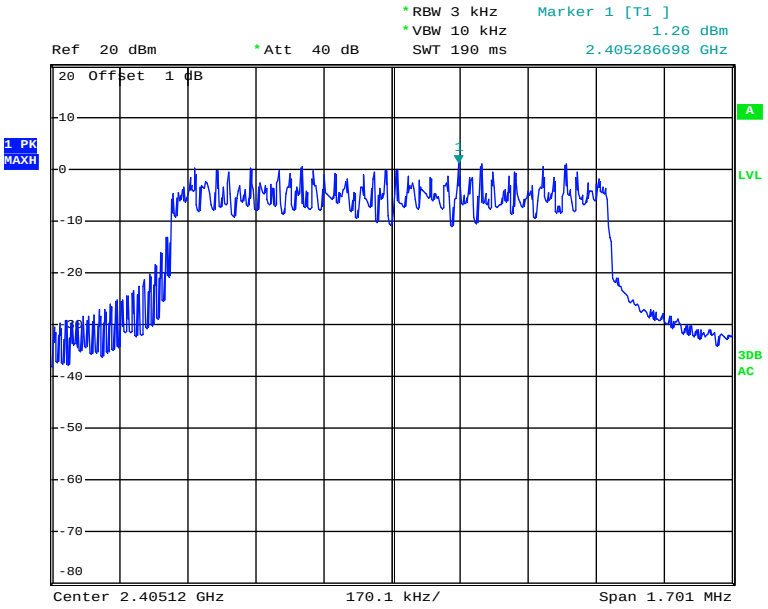
Date: 19.AUG.2020 18:31:23

Power Spectral Density, 1.4M-CA, Chain 1, High Channel



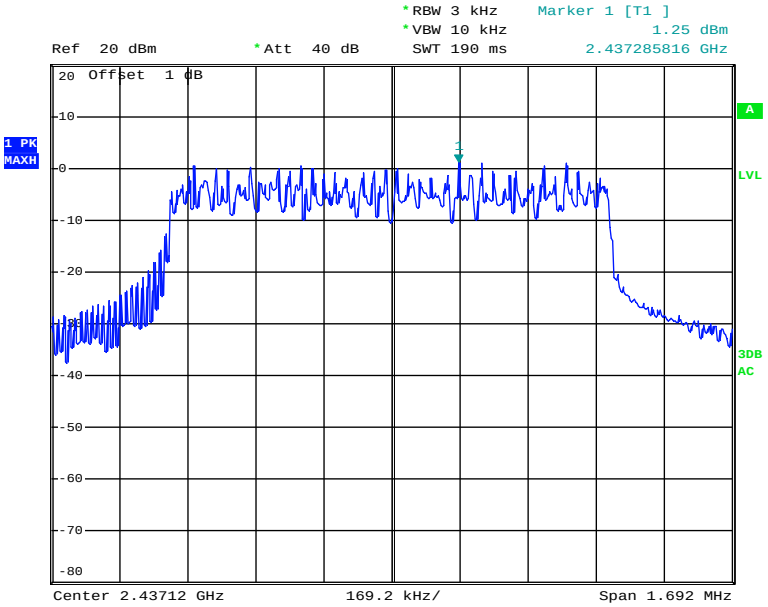
Date: 19.AUG.2020 18:32:18

Power Spectral Density, 1.4M-CA, Chain 2, Low Channel



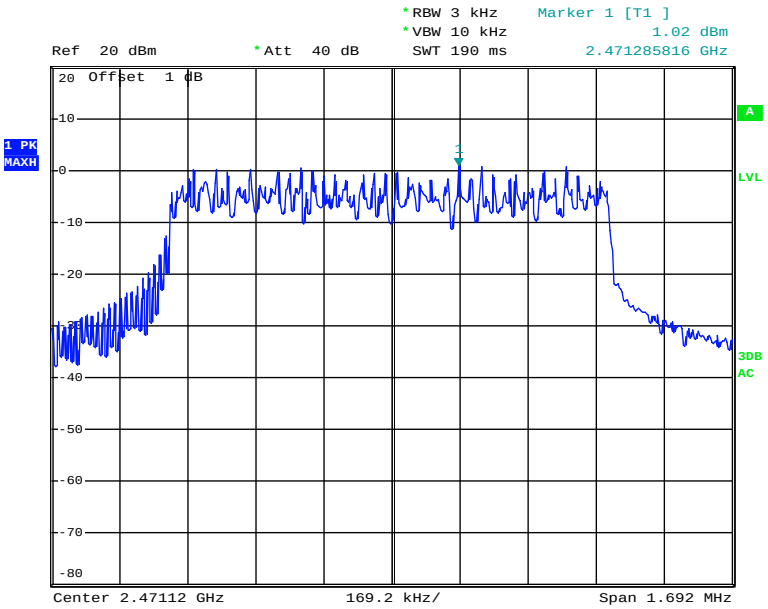
Date: 19.AUG.2020 18:34:03

Power Spectral Density, 1.4M-CA, Chain 2, Middle Channel



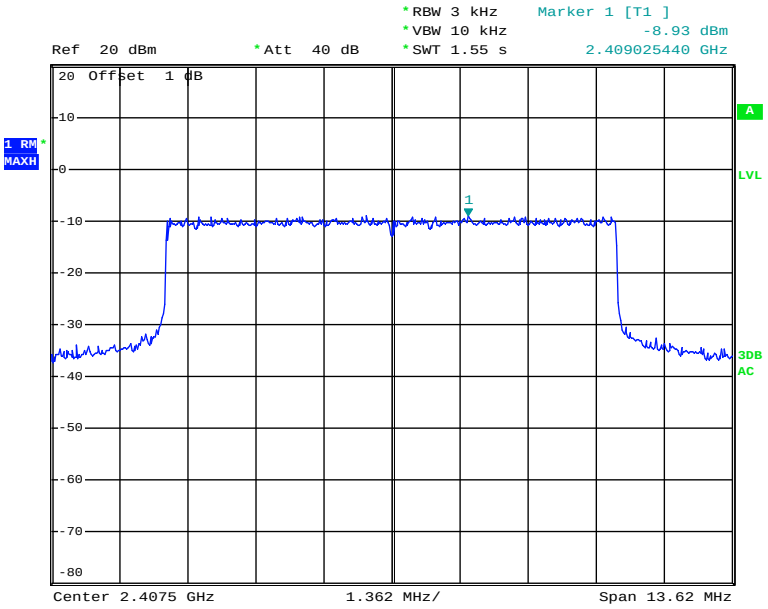
Date: 19.AUG.2020 18:34:57

Power Spectral Density, 1.4M-CA, Chain 1, High Channel



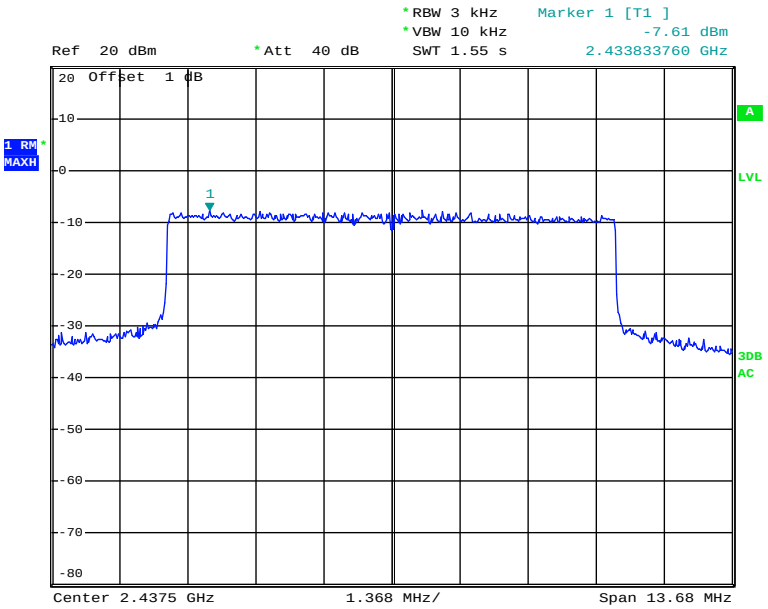
Date: 19.AUG.2020 18:35:57

Power Spectral Density, 10 M, Chain 1, Low Channel



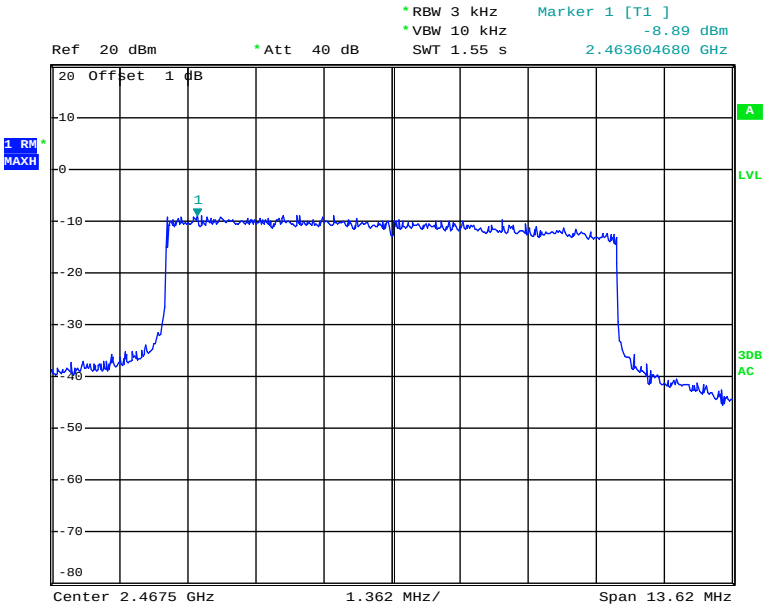
Date: 31.AUG.2020 15:34:58

Power Spectral Density, 10M, Chain 1, Middle Channel



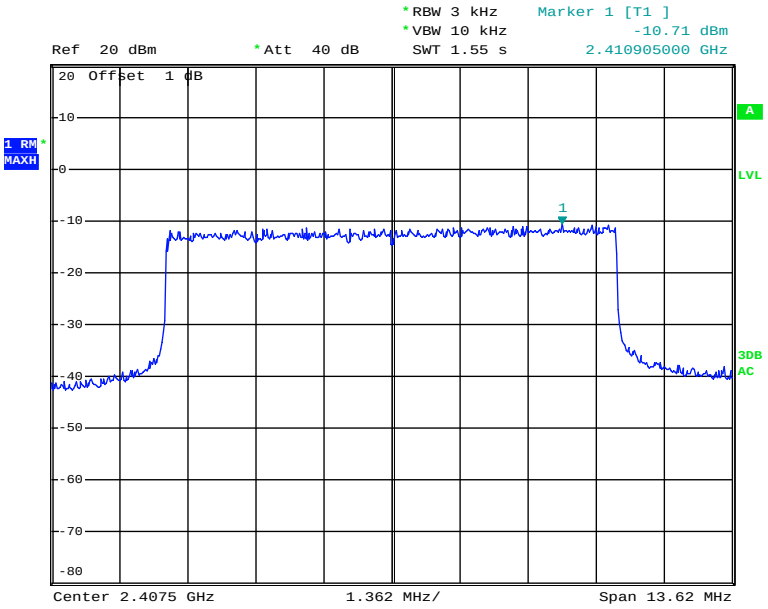
Date: 31.AUG.2020 15:37:36

Power Spectral Density, 10M, Chain 1, High Channel



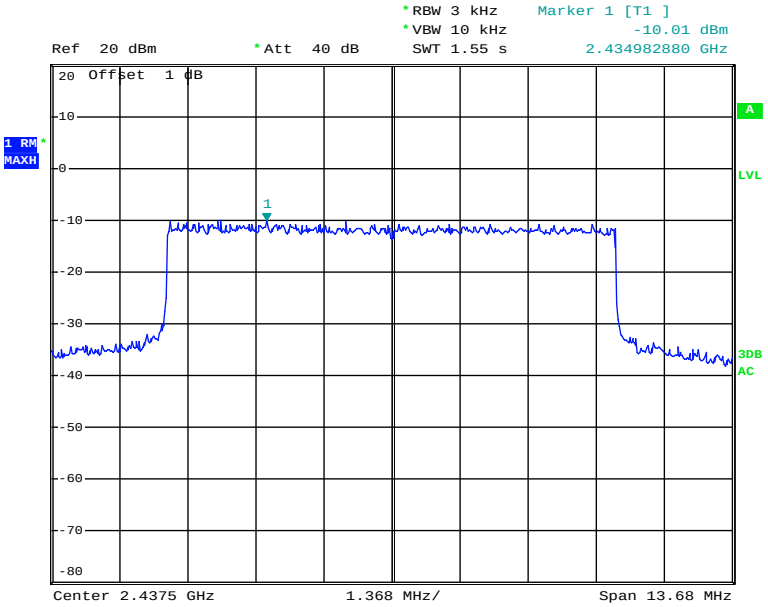
Date: 31.AUG.2020 15:39:14

Power Spectral Density, 10M, Chain 2, Low Channel



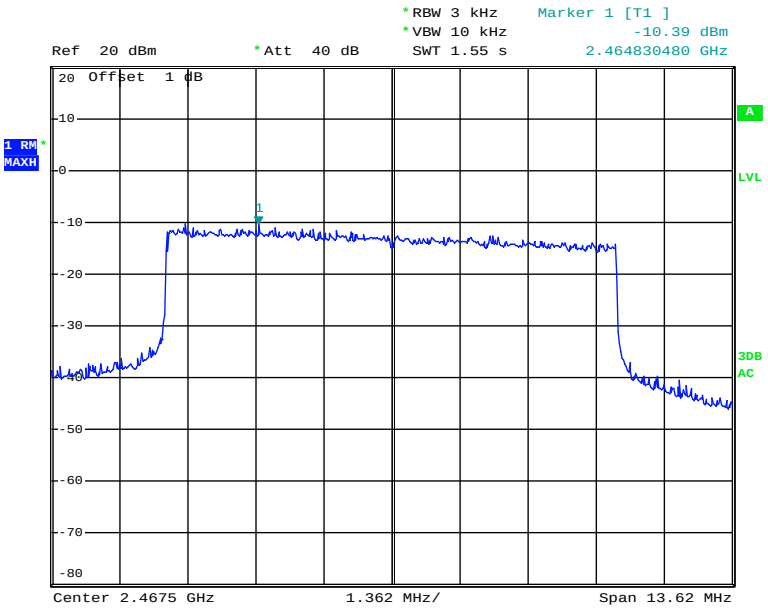
Date: 31.AUG.2020 15:41:01

Power Spectral Density, 10M, Chain 2, Middle Channel



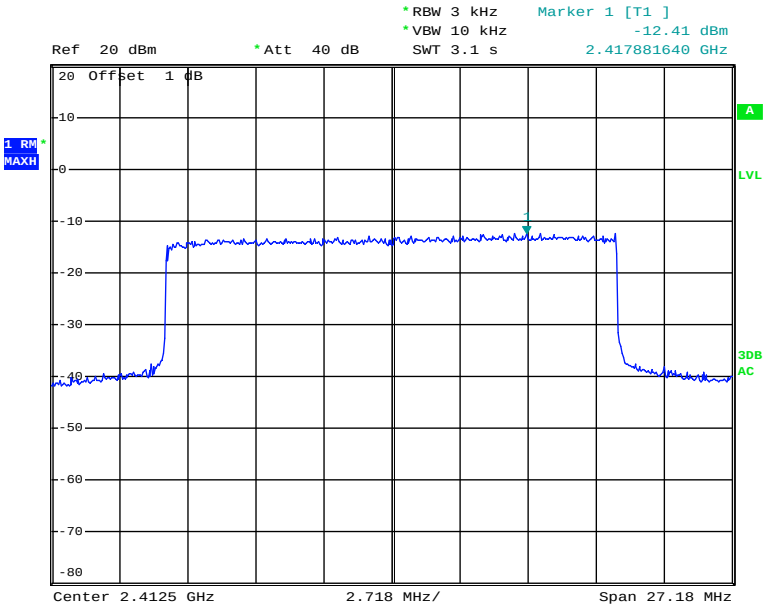
Date: 31.AUG.2020 15:42:33

Power Spectral Density, 10M, Chain 2, High Channel



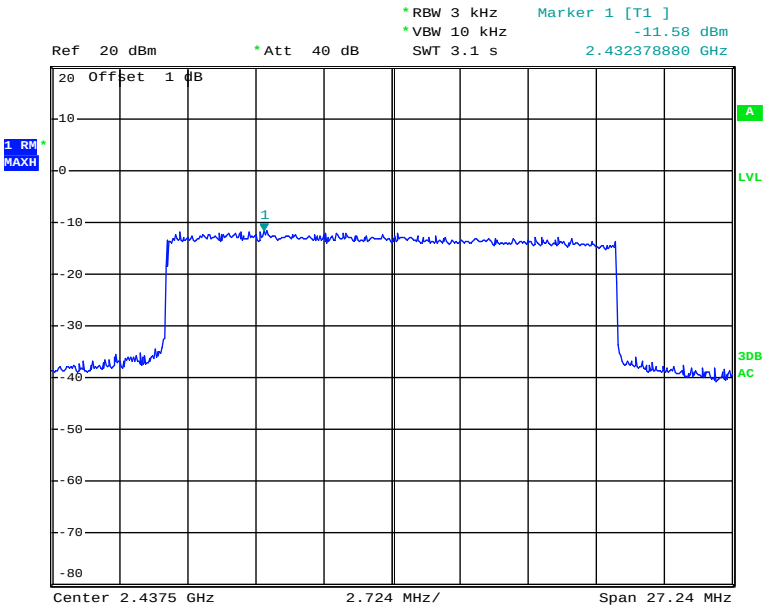
Date: 31.AUG.2020 15:44:19

Power Spectral Density, 20 M, Chain 1, Low Channel



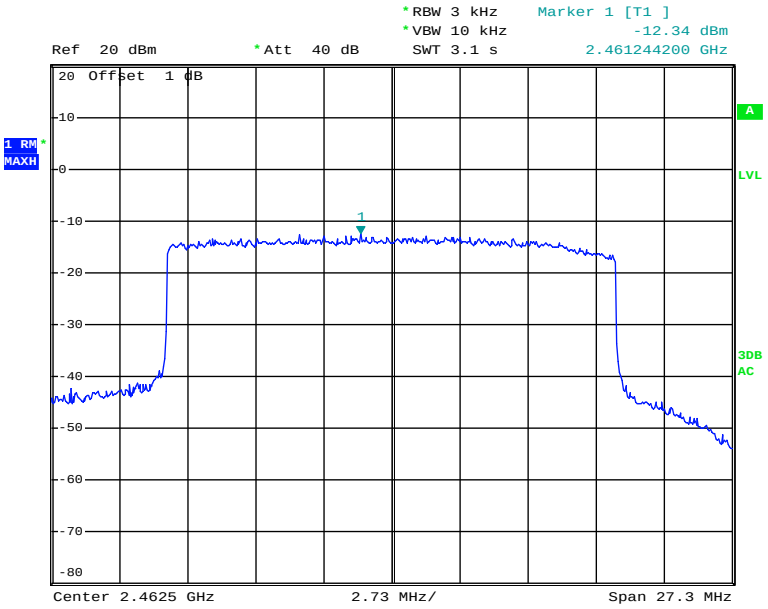
Date: 31.AUG.2020 16:31:34

Power Spectral Density, 20M, Chain 1, Middle Channel



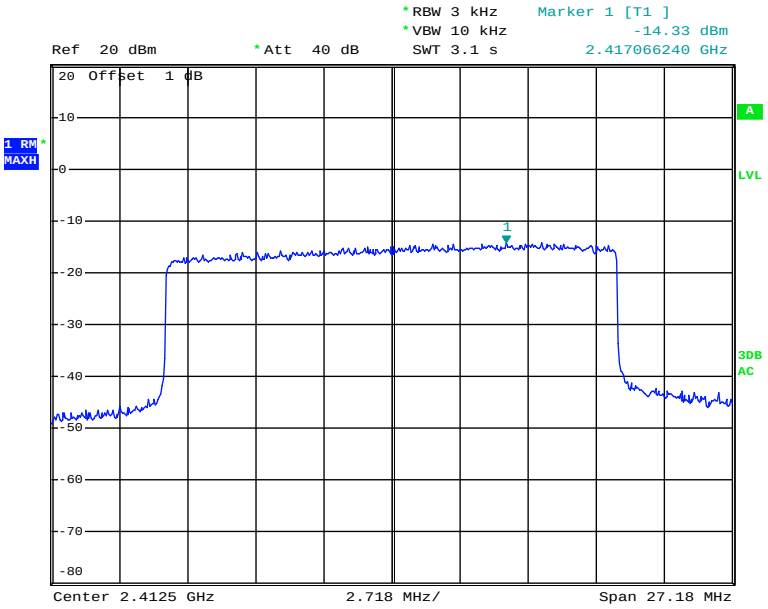
Date: 31.AUG.2020 16:33:05

Power Spectral Density, 20M, Chain 1, High Channel



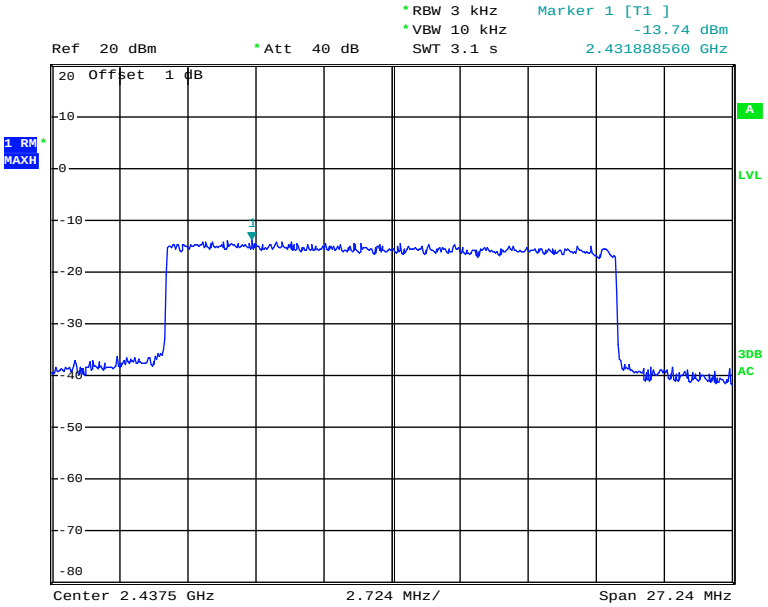
Date: 31.AUG.2020 16:34:24

Power Spectral Density, 20M, Chain 2, Low Channel



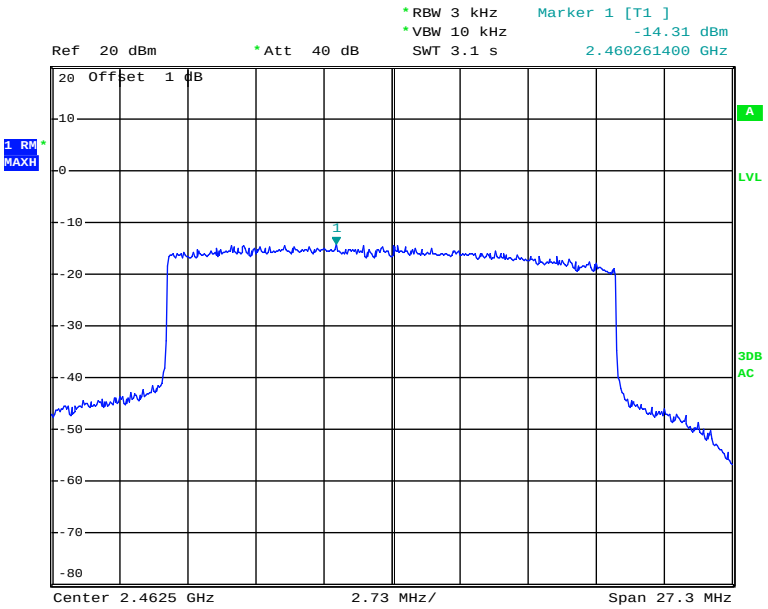
Date: 31.AUG.2020 16:36:18

Power Spectral Density, 20M, Chain 2, Middle Channel



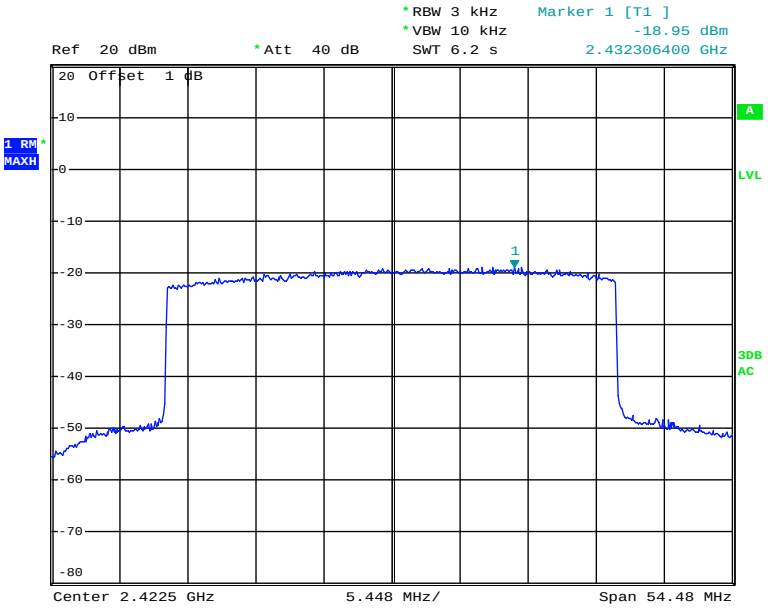
Date: 31.AUG.2020 16:37:21

Power Spectral Density, 20M, Chain 2, High Channel



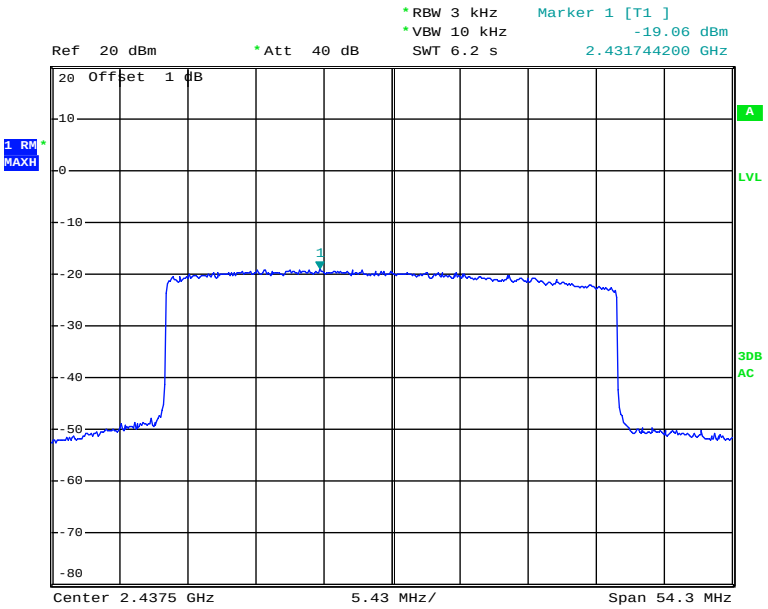
Date: 31.AUG.2020 16:38:23

Power Spectral Density, 40 M, Chain 1, Low Channel



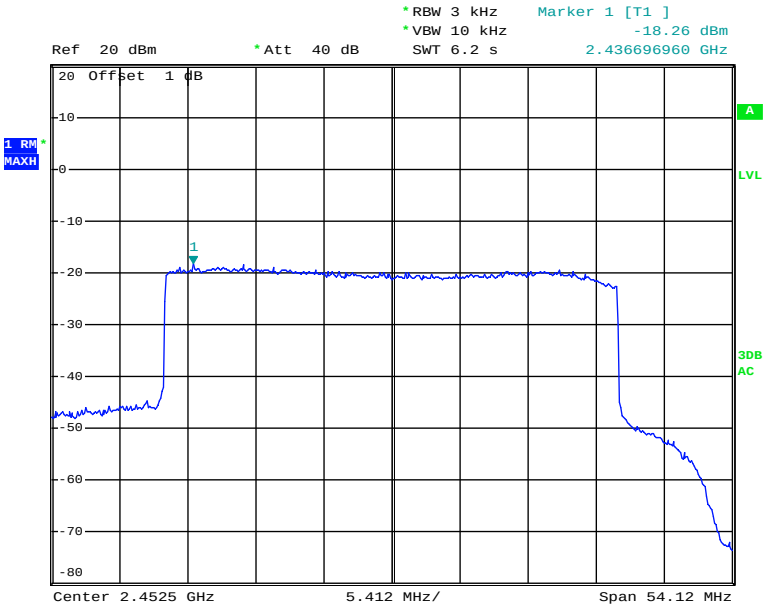
Date: 1.SEP.2020 09:20:00

Power Spectral Density, 40M, Chain 1, Middle Channel



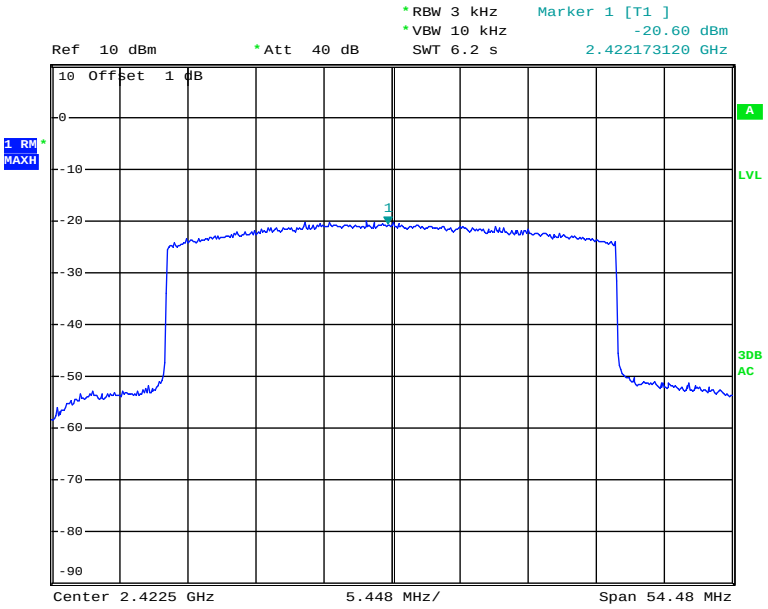
Date: 1.SEP.2020 09:16:50

Power Spectral Density, 40M, Chain 1, High Channel



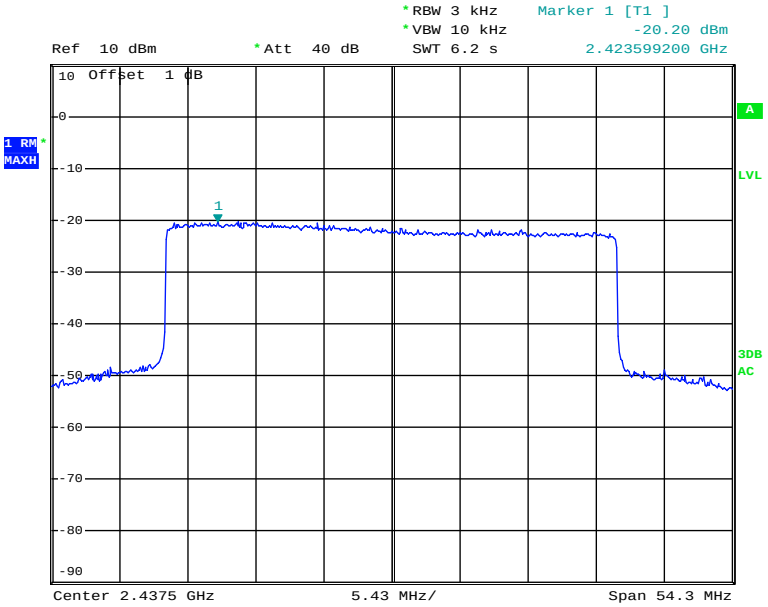
Date: 1.SEP.2020 09:18:39

Power Spectral Density, 40M, Chain 2, Low Channel



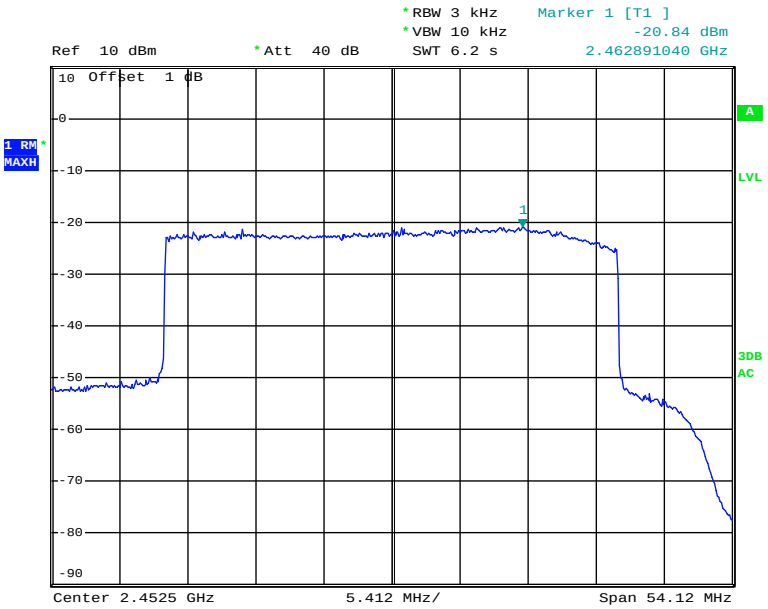
Date: 1.SEP.2020 09:21:53

Power Spectral Density, 40M, Chain 2, Middle Channel



Date: 1.SEP.2020 09:23:46

Power Spectral Density, 40M, Chain 2, High Channel



Date: 1.SEP.2020 09:25:36

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