TESTING LABORATORY
CERTIFICATE #4820.01

FCC PART 15.407

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-T161906

Report Type:	**Product Type:**
Original Report	AGRAS T16

Report Number:	RDG190510002-00C
Report Date:	2019-06-14
Reviewed By:	Allen Qiao RF Supervisor
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

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	AGRAS T16
EUT Model:	3WWDZ-15A
Operation Frequency:	1.4M: 5728.5~5846.5MHz 10M: 5730.5~5844.5MHz
Output Power (Conducted):	1.4M: 22.70dBm 10M: 22.67dBm
Modulation Type:	OFDM
FCC ID:	SS3-T161906
Rated Input Voltage:	51.8Vdc from Battery
External Dimension:	1795mm(L)* 1510mm(W)* 732mm(H)
Serial Number:	190510002
EUT Received Date:	2019.05.10

Objective

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

The tests were performed in order to determine compliance with FCC Rules Part 15, Subpart E, section 15.203, 15.205, 15.209 and 15.407 rules.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: SS3-T161906.
Part of system grant with FCC ID: SS3-GL300N1801.

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 KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.

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~40GHz: 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.

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.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

The device employs 1.4MHz, 10 MHz modes. And the EUT has 2 antennas, the system configure 1T1R depending on better performance by the system automatically recognizes.

For 1.4MHz mode, 60 channels are employed:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5728.5	31	5788.5
2	5730.5	32	5790.5
3	5732.5	33	5792.5
…	…	…	…
28	5782.5	58	5842.5
29	5784.5	59	5844.5
30	5786.5	60	5846.5

Test was performed with Channel: 1, 30 and 60.

For 10MHz mode, 115 channels are are employed:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5730.5	59	5788.5
2	5731.5	…	…
…	…	…	…
…	…	114	5843.5
…	…	115	5844.5
58	5787.5	/	/

Test was performed with Channel: 1, 58 and 116

Equipment Modifications

No modification was made to the EUT tested.

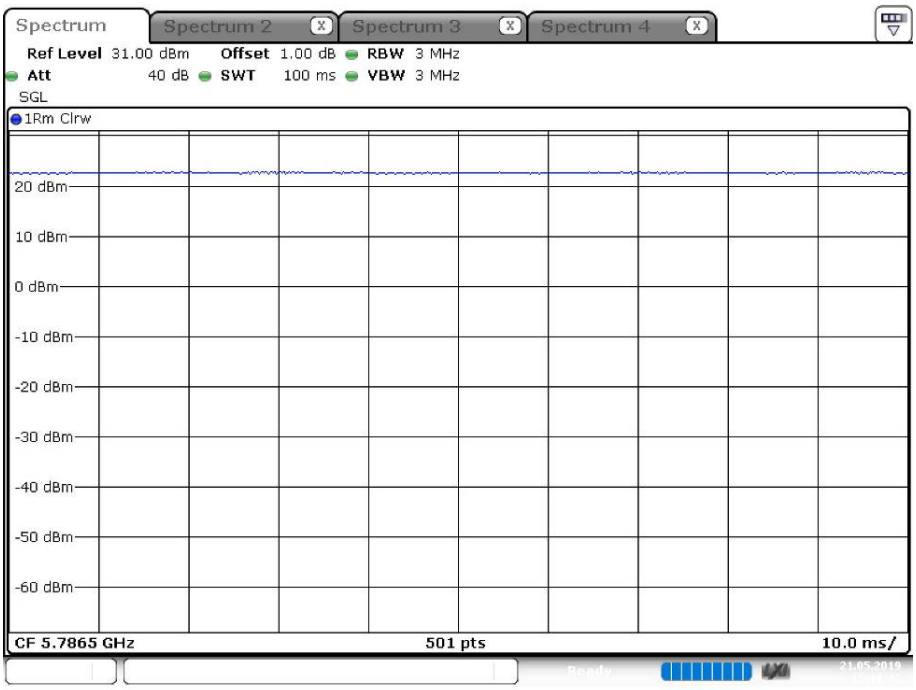
EUT Exercise Software

Test software: ' OCUSYNC-DjiSdrConsole_V1.3.5.54.exe ' was used in test for SDR mode. For 1.4MHz, 10MHz mode, the maximum power with maximum duty cycle was configured as default setting, the test software was used for change channels and bandwdiths.

The duty cycle as below:

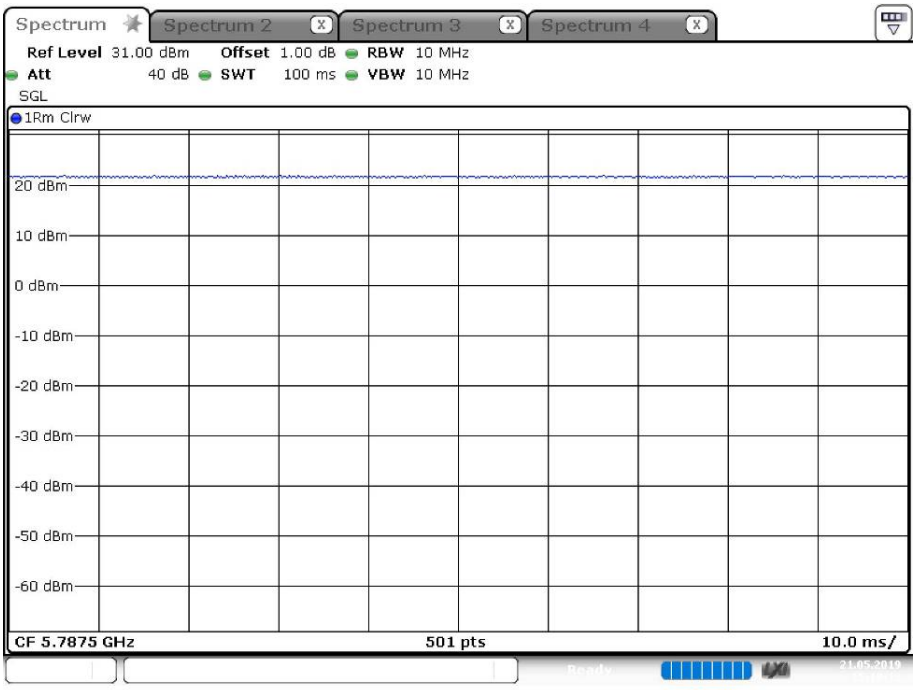
Mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle(x) (%)
1.4M	100	100	100
10M	100	100	100

1.4M mode



Date: 21.MAY.2019 15:11:42

10M mode



Date: 21.MAY.2019 15:18:12

Local Support Equipment List and Details

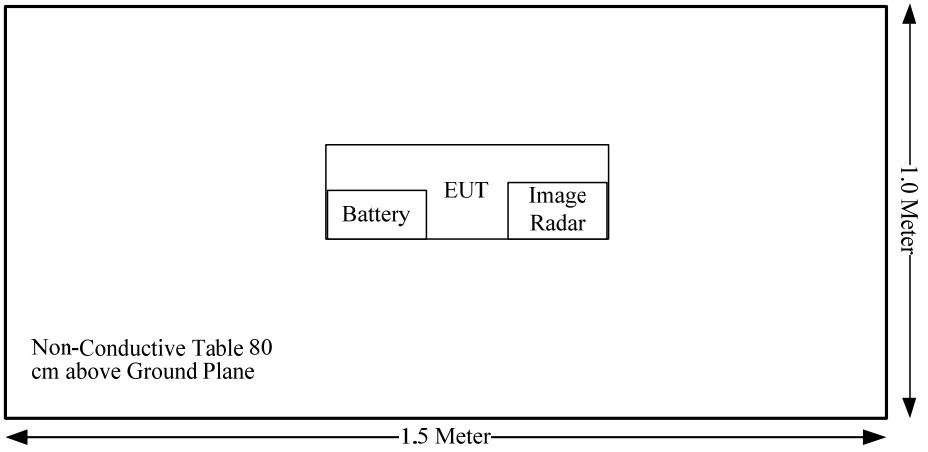
Manufacturer	Description	Model	Serial Number
DJI	Battery	AB2-17500mAh-51.8V	/
DJI	High-Precision DBF Imaging Radar	RD2418R	/

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
/	/	/	/	/	/

Block Diagram of Test Setup

Below 1GHz:



SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
§15.407 (f) & §1.1310 & §2.1091	Maximum Permissable Exposure (MPE)	Compliance
FCC§15.203,	Antenna Requirement	Compliance
FCC§15.407(b)(6)& §15.207(a)	Conducted Emissions	Not Applicable
FCC§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliance
FCC§15.407(b)	Out Of Band Emissions	Not Applicable
FCC§15.407(a) (e)	Emission Bandwidth	Compliance
FCC§15.407(a)	Conducted Transmitter Output Power	Compliance
FCC§15.407 (a)	Power Spectral Density	Compliance

Not Applicable: this device was powered by battery.

FCC §15.407 (f) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.407(f)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:

Frequency Band	**Antenna Gain**		**Max. Target Power including Tolerance**		**Evaluation Distance (cm)**	**Power Density (W/m^2)**	**MPE Limit (W/m^2)**
	(dBi)	**(numeric)**	**(dBm)**	**(mW)**			
2.4GHz Band	3	2	28	630.96	20.00	0.25	1.0
5.8GHz Band	3	2	23	199.53	20.00	0.08	1.0

Note: the Max. Target Power including Tolerance was declared by manufacturer.
The 2.4GHz band and 5.8GHz band can`t transmit simultaneously

Result: Compliance, The device meets MPE requirement for Devices Used by the General Public (Uncontrolled Environment) at distance ≥20 cm.

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.

Antenna Information And Connector Construction

The EUT has 2 external antennas attached to the unit and the antenna gain is 3dBi which fulfill the requirement of the item. Please refer to the internal photos.

Result: Compliance.

FCC §15.209, §15.205 , §15.407(b) –UNWANTED EMISSION

Applicable Standard

FCC §15.407; §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

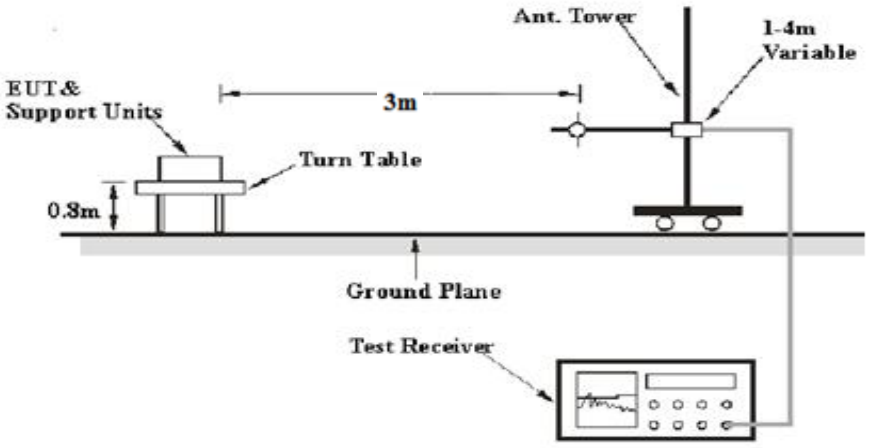
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

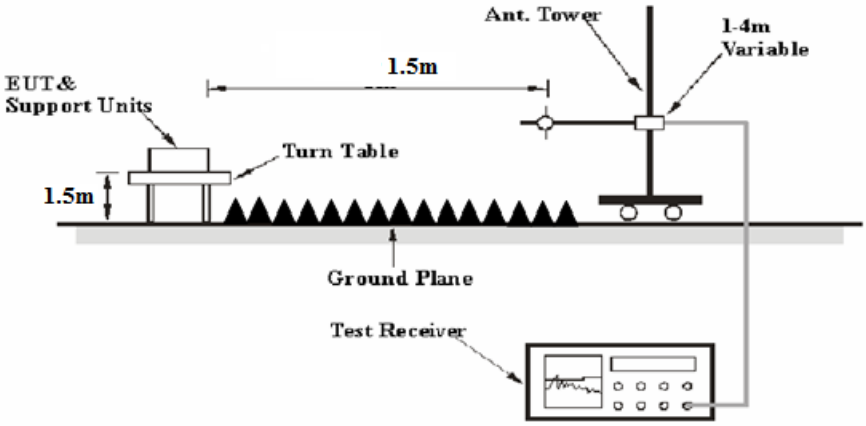
(7) The provisions of §15.205 apply to intentional radiators operating under this section.

EUT Setup

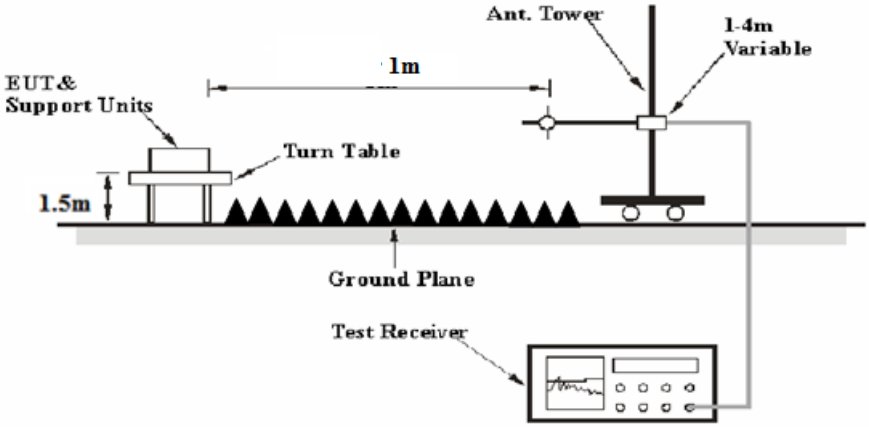
Below 1 GHz:



1-26.5 GHz:



26.5-40 GHz:



The radiated emission below 1GHz tests were performed in the 3 meters chamber test site A, above 1GHz tests were performed in the 3 meters chamber test site B, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.407.

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 40 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- 40GHz:

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

Note: T is minimum transmission duration

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

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

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as: E [dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

According to C63.10, the above 1G test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m or 1m
Distance extrapolation factor =20 log (specific distance [3m]/test distance [1.5m]) dB= 6.02 dB
or
Distance extrapolation factor =20 log (specific distance [3m]/test distance [1m]) dB= 9.54 dB

All emissions under the average limit and under the noise floor have not recorded in the report.

Corrected Amplitude & Margin Calculation

For the range 30MHz-1GHz, 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

For the range 1GHz-40GHz, Test performed at 1.5m or 1m, the Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading and the Distance extrapolation factor. The basic equation is as follows:

Extrapolation result
= Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain-Distance extrapolation factor

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-Extrapolation result

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2018-12-11	2019-12-11
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2019-05-06	2020-05-06
HP	Amplifier	8447D	2727A05902	2018-09-05	2019-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-01-04	2020-01-04
R&S	Spectrum Analyzer	FSP 38	100478	2018-12-08	2019-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2017-01-05	2020-01-04
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Ducommun Technolagies	Horn Antenna	ARH-2823-02	1007726-01 1302	2016-11-18	2019-11-18
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2018-06-27	2019-06-27
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2018-09-05	2019-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2018-06-27	2019-06-27
Sinoscite	Bandstop Filters	BSF5150-5850MN-0899-003	0899003	2019-05-06	2020-05-06
Mini Circuits	High Pass Filter	VHF-6010+	31118	2018-06-16	2019-06-16

*** 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

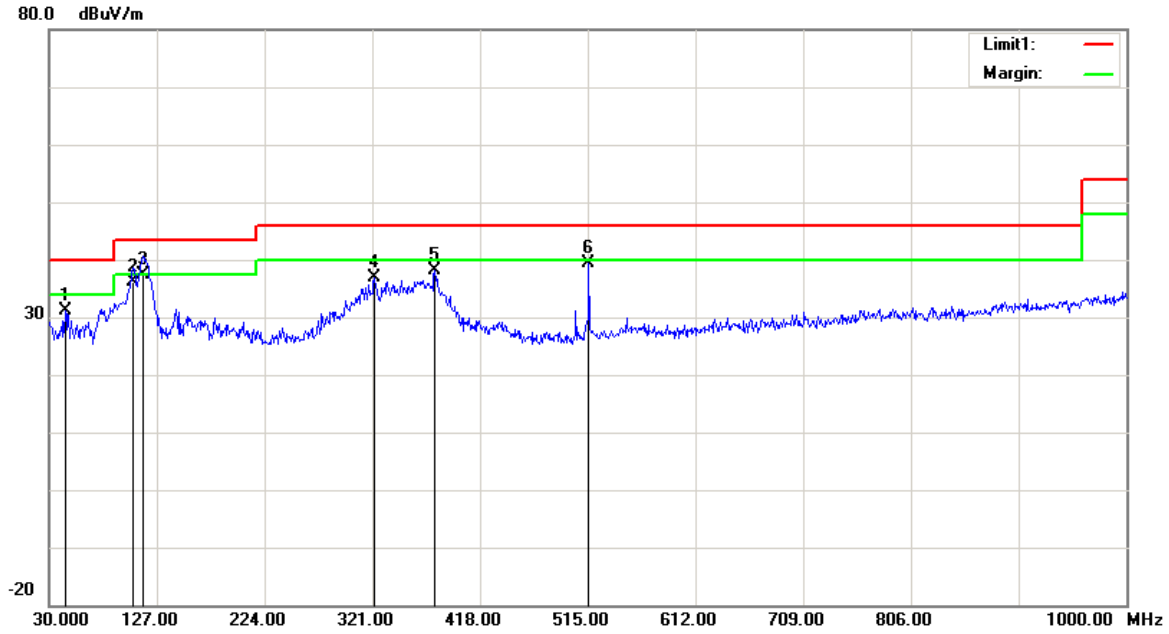
Temperature:	24.2~25..1 °C
Relative Humidity:	53~57 %
ATM Pressure:	100.6~101.2 kPa

** The testing was performed by Tyler Pan and Neil Liao from 2019-05-26 to 2019-05-30.*

Test Mode: Transmitting

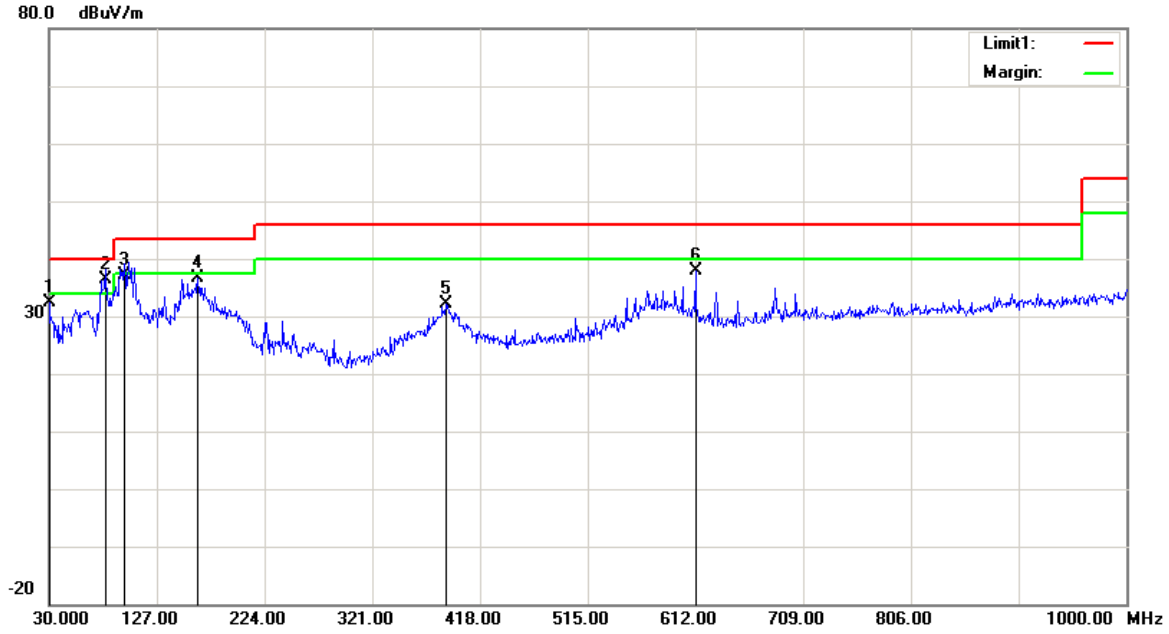
1) 30MHz-1GHz *(1.4M mode Chain 0 High channel was the worst)*

Horizontal



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
44.5500	40.20	peak	-8.96	31.24	40.00	8.76
105.6600	43.56	QP	-7.32	36.24	43.50	7.26
114.3900	42.67	QP	-5.37	37.30	43.50	6.20
322.9400	40.35	peak	-3.38	36.97	46.00	9.03
377.2600	40.78	peak	-2.65	38.13	46.00	7.87
515.9700	39.52	peak	-0.13	39.39	46.00	6.61

Vertical



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
30.0000	30.56	peak	1.72	32.28	40.00	7.72
80.4400	47.66	QP	-11.24	36.42	40.00	3.58
97.9000	46.60	QP	-9.51	37.09	43.50	6.41
163.8600	42.86	peak	-6.16	36.70	43.50	6.80
387.9300	34.41	peak	-2.36	32.05	46.00	13.95
612.0000	36.73	peak	1.18	37.91	46.00	8.09

2) 1GHz-40GHz:

1.4MHz Mode :
Chain 0:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)						
Low Channel: 5728.5 MHz										
5728.50	82.51	PK	H	34.19	3.69	0.00	120.39	114.37	N/A	N/A
5728.50	76.13	AV	H	34.19	3.69	0.00	114.01	107.99	N/A	N/A
5728.50	89.88	PK	V	34.19	3.69	0.00	127.76	121.74	N/A	N/A
5728.50	82.62	AV	V	34.19	3.69	0.00	120.50	114.48	N/A	N/A
5725.00	43.44	PK	V	34.19	3.69	0.00	81.32	75.3	122.20	46.90
5720.00	34.44	PK	V	34.19	3.69	0.00	72.32	66.3	110.80	44.50
5700.00	28.42	PK	V	34.18	3.68	0.00	66.28	60.26	105.20	44.94
5650.00	28.04	PK	V	34.16	3.63	0.00	65.83	59.81	68.20	8.39
11457.00	45.58	PK	V	38.96	6.59	37.33	53.80	47.78	74.00	26.22
11457.00	32.62	AV	V	38.96	6.59	37.33	40.84	34.82	54.00	19.18
17185.50	44.76	PK	V	41.28	8.77	38.64	56.17	50.15	68.20	18.05
Middle Channel: 5786.5 MHz										
5786.50	82.96	PK	H	34.21	3.71	0.00	120.88	114.86	N/A	N/A
5786.50	75.83	AV	H	34.21	3.71	0.00	113.75	107.73	N/A	N/A
5786.50	89.81	PK	V	34.21	3.71	0.00	127.73	121.71	N/A	N/A
5786.50	82.65	AV	V	34.21	3.71	0.00	120.57	114.55	N/A	N/A
11573.00	45.95	PK	V	39.00	6.61	37.44	54.12	48.1	74.00	25.90
11573.00	32.47	AV	V	39.00	6.61	37.44	40.64	34.62	54.00	19.38
17359.50	44.75	PK	V	42.29	8.81	38.52	57.33	51.31	68.20	16.89
High Channel: 5846.5 MHz										
5846.50	81.78	PK	H	34.24	3.75	0.00	119.77	113.75	N/A	N/A
5846.50	74.36	AV	H	34.24	3.75	0.00	112.35	106.33	N/A	N/A
5846.50	89.01	PK	V	34.24	3.75	0.00	127.00	120.98	N/A	N/A
5846.50	82.53	AV	V	34.24	3.75	0.00	120.52	114.5	N/A	N/A
5850.00	46.93	PK	V	34.24	3.75	0.00	84.92	78.9	122.20	43.30
5855.00	35.04	PK	V	34.24	3.75	0.00	73.03	67.01	110.80	43.79
5875.00	27.71	PK	V	34.25	3.77	0.00	65.73	59.71	105.20	45.49
5925.00	27.14	PK	V	34.27	3.80	0.00	65.21	59.19	68.20	9.01
11693.00	45.82	PK	V	39.00	6.65	37.58	53.89	47.87	74.00	26.13
11693.00	32.73	AV	V	39.00	6.65	37.58	40.80	34.78	54.00	19.22
17539.50	45.69	PK	V	43.34	8.85	38.38	59.50	53.48	68.20	14.72

Chain 1:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)						
Low Channel: 5728.5 MHz										
5728.50	80.10	PK	H	34.19	3.69	0.00	117.98	111.96	N/A	N/A
5728.50	73.43	AV	H	34.19	3.69	0.00	111.31	105.29	N/A	N/A
5728.50	88.58	PK	V	34.19	3.69	0.00	126.46	120.44	N/A	N/A
5728.50	82.37	AV	V	34.19	3.69	0.00	120.25	114.23	N/A	N/A
5725.00	39.61	PK	V	34.19	3.69	0.00	77.49	71.47	122.20	50.73
5720.00	33.28	PK	V	34.19	3.69	0.00	71.16	65.14	110.80	45.66
5700.00	27.69	PK	V	34.18	3.68	0.00	65.55	59.53	105.20	45.67
5650.00	27.33	PK	V	34.16	3.63	0.00	65.12	59.1	68.20	9.10
11457.00	45.86	PK	V	38.96	6.59	37.33	54.08	48.06	74.00	25.94
11457.00	32.73	AV	V	38.96	6.59	37.33	40.95	34.93	54.00	19.07
17185.50	45.17	PK	V	41.28	8.77	38.64	56.58	50.56	68.20	17.64
Middle Channel: 5786.5 MHz										
5786.50	78.66	PK	H	34.21	3.71	0.00	116.58	110.56	N/A	N/A
5786.50	71.97	AV	H	34.21	3.71	0.00	109.89	103.87	N/A	N/A
5786.50	88.08	PK	V	34.21	3.71	0.00	126.00	119.98	N/A	N/A
5786.50	81.65	AV	V	34.21	3.71	0.00	119.57	113.55	N/A	N/A
11573.00	45.55	PK	V	39.00	6.61	37.44	53.72	47.7	74.00	26.30
11573.00	32.73	AV	V	39.00	6.61	37.44	40.90	34.88	54.00	19.12
17359.50	45.31	PK	V	42.29	8.81	38.52	57.89	51.87	68.20	16.33
High Channel: 5846.5 MHz										
5846.50	80.25	PK	H	34.24	3.75	0.00	118.24	112.22	N/A	N/A
5846.50	70.71	AV	H	34.24	3.75	0.00	108.70	102.68	N/A	N/A
5846.50	89.23	PK	V	34.24	3.75	0.00	127.22	121.2	N/A	N/A
5846.50	82.69	AV	V	34.24	3.75	0.00	120.68	114.66	N/A	N/A
5850.00	40.75	PK	V	34.24	3.75	0.00	78.74	72.72	122.20	49.48
5855.00	33.17	PK	V	34.24	3.75	0.00	71.16	65.14	110.80	45.66
5875.00	27.38	PK	V	34.25	3.77	0.00	65.40	59.38	105.20	45.82
5925.00	27.17	PK	V	34.27	3.80	0.00	65.24	59.22	68.20	8.98
11693.00	45.74	PK	V	39.00	6.65	37.58	53.81	47.79	74.00	26.21
11693.00	32.60	AV	V	39.00	6.65	37.58	40.67	34.65	54.00	19.35
17539.50	45.33	PK	V	43.34	8.85	38.38	59.14	53.12	68.20	15.08

10MHz Mode:
Chain 0:

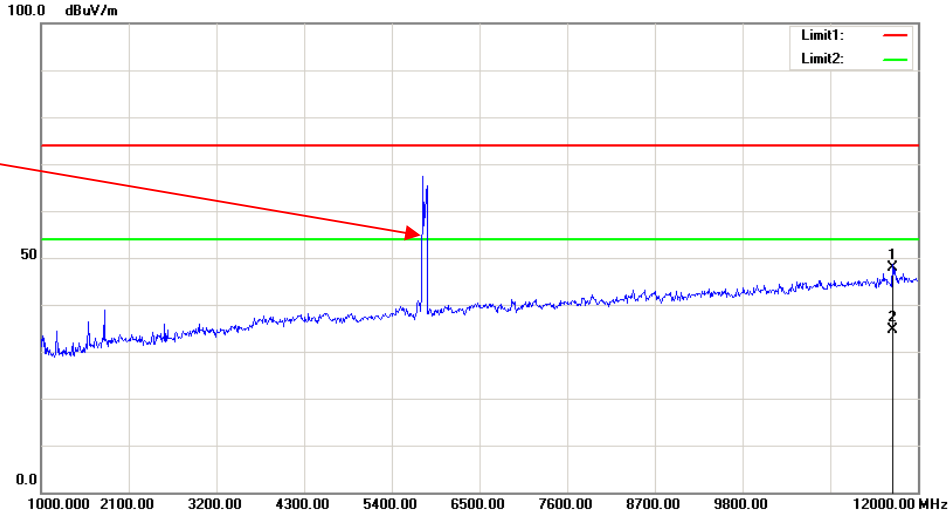
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Extrapolation result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB/m)						
Low Channel: 5730.5 MHz										
5730.50	79.88	PK	H	34.19	3.69	0.00	117.76	111.74	N/A	N/A
5730.50	68.56	AV	H	34.19	3.69	0.00	106.44	100.42	N/A	N/A
5730.50	87.10	PK	V	34.19	3.69	0.00	124.98	118.96	N/A	N/A
5730.50	76.42	AV	V	34.19	3.69	0.00	114.30	108.28	N/A	N/A
5725.00	70.69	PK	V	34.19	3.69	0.00	108.57	102.55	122.20	19.65
5720.00	64.41	PK	V	34.19	3.69	0.00	102.29	96.27	110.80	14.53
5700.00	31.59	PK	V	34.18	3.68	0.00	69.45	63.43	105.20	41.77
5650.00	27.07	PK	V	34.16	3.63	0.00	64.86	58.84	68.20	9.36
11461.00	45.63	PK	V	38.96	6.59	37.34	53.84	47.82	74.00	26.18
11461.00	32.75	AV	V	38.96	6.59	37.34	40.96	34.94	54.00	19.06
17191.50	45.93	PK	V	41.31	8.77	38.64	57.37	51.35	68.20	16.85
Middle Channel: 5787.5 MHz										
5787.50	81.09	PK	H	34.22	3.71	0.00	119.02	113	N/A	N/A
5787.50	70.43	AV	H	34.22	3.71	0.00	108.36	102.34	N/A	N/A
5787.50	87.83	PK	V	34.22	3.71	0.00	125.76	119.74	N/A	N/A
5787.50	76.23	AV	V	34.22	3.71	0.00	114.16	108.14	N/A	N/A
11575.00	46.19	PK	V	39.00	6.61	37.45	54.35	48.33	74.00	25.67
11575.00	32.44	AV	V	39.00	6.61	37.45	40.60	34.58	54.00	19.42
17362.50	45.76	PK	V	42.30	8.81	38.52	58.35	52.33	68.20	15.87
High Channel: 5844.5 MHz										
5844.50	80.54	PK	H	34.24	3.75	0.00	118.53	112.51	N/A	N/A
5844.50	69.10	AV	H	34.24	3.75	0.00	107.09	101.07	N/A	N/A
5844.50	86.10	PK	V	34.24	3.75	0.00	124.09	118.07	N/A	N/A
5844.50	75.36	AV	V	34.24	3.75	0.00	113.35	107.33	N/A	N/A
5850.00	67.55	PK	V	34.24	3.75	0.00	105.54	99.52	122.20	22.68
5855.00	62.26	PK	V	34.24	3.75	0.00	100.25	94.23	110.80	16.57
5875.00	38.20	PK	V	34.25	3.77	0.00	76.22	70.2	105.20	35.00
5925.00	27.32	PK	V	34.27	3.80	0.00	65.39	59.37	68.20	8.83
11689.00	46.44	PK	V	39.00	6.65	37.58	54.51	48.49	74.00	25.51
11689.00	32.71	AV	V	39.00	6.65	37.58	40.78	34.76	54.00	19.24
17533.50	45.72	PK	V	43.31	8.85	38.39	59.49	53.47	68.20	14.73

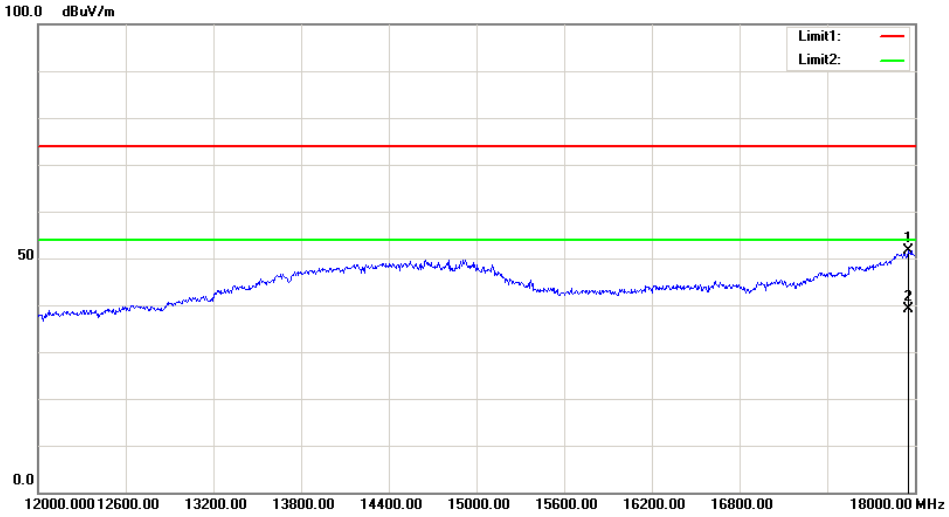
Chain 1:

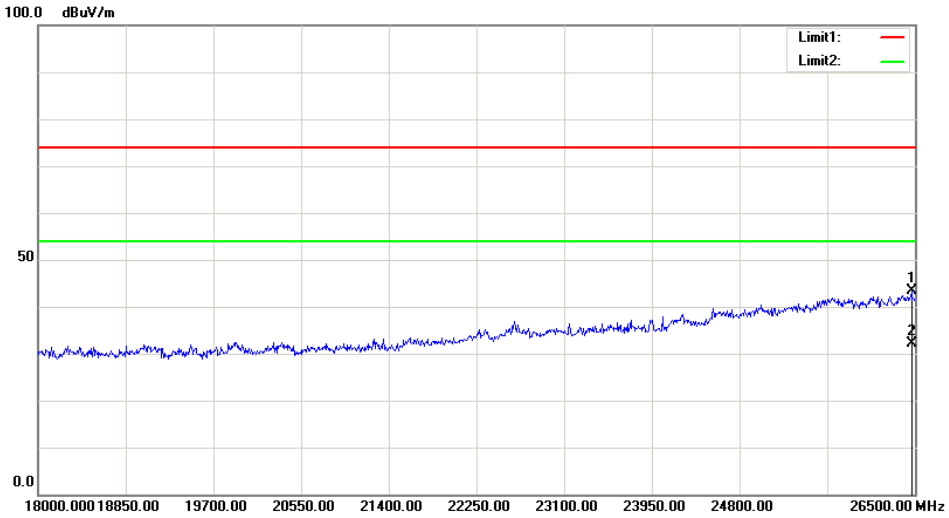
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)						
Low Channel: 5730.5 MHz										
5730.50	78.99	PK	H	34.19	3.69	0.00	116.87	110.85	N/A	N/A
5730.50	67.93	AV	H	34.19	3.69	0.00	105.81	99.79	N/A	N/A
5730.50	85.62	PK	V	34.19	3.69	0.00	123.50	117.48	N/A	N/A
5730.50	74.77	AV	V	34.19	3.69	0.00	112.65	106.63	N/A	N/A
5725.00	68.20	PK	V	34.19	3.69	0.00	106.08	100.06	122.20	22.14
5720.00	53.96	PK	V	34.19	3.69	0.00	91.84	85.82	110.80	24.98
5700.00	28.17	PK	V	34.18	3.68	0.00	66.03	60.01	105.20	45.19
5650.00	27.97	PK	V	34.16	3.63	0.00	65.76	59.74	68.20	8.46
11461.00	46.10	PK	V	38.96	6.59	37.34	54.31	48.29	74.00	25.71
11461.00	32.71	AV	V	38.96	6.59	37.34	40.92	34.9	54.00	19.10
17191.50	44.99	PK	V	41.31	8.77	38.64	56.43	50.41	68.20	17.79
Middle Channel: 5787.5 MHz										
5787.50	78.59	PK	H	34.22	3.71	0.00	116.52	110.5	N/A	N/A
5787.50	67.43	AV	H	34.22	3.71	0.00	105.36	99.34	N/A	N/A
5787.50	85.41	PK	V	34.22	3.71	0.00	123.34	117.32	N/A	N/A
5787.50	74.32	AV	V	34.22	3.71	0.00	112.25	106.23	N/A	N/A
11575.00	46.25	PK	V	39.00	6.61	37.45	54.41	48.39	74.00	25.61
11575.00	32.96	AV	V	39.00	6.61	37.45	41.12	35.1	54.00	18.90
17362.50	44.65	PK	V	42.30	8.81	38.52	57.24	51.22	68.20	16.98
High Channel: 5844.5 MHz										
5844.50	75.03	PK	H	34.24	3.75	0.00	113.02	107	N/A	N/A
5844.50	64.72	AV	H	34.24	3.75	0.00	102.71	96.69	N/A	N/A
5844.50	84.48	PK	V	34.24	3.75	0.00	122.47	116.45	N/A	N/A
5844.50	73.45	AV	V	34.24	3.75	0.00	111.44	105.42	N/A	N/A
5850.00	62.50	PK	V	34.24	3.75	0.00	100.49	94.47	122.20	27.73
5855.00	53.78	PK	V	34.24	3.75	0.00	91.77	85.75	110.80	25.05
5875.00	28.39	PK	V	34.25	3.77	0.00	66.41	60.39	105.20	44.81
5925.00	26.81	PK	V	34.27	3.80	0.00	64.88	58.86	68.20	9.34
11689.00	46.17	PK	V	39.00	6.65	37.58	54.24	48.22	74.00	25.78
11689.00	32.76	AV	V	39.00	6.65	37.58	40.83	34.81	54.00	19.19
17533.50	45.62	PK	V	43.31	8.85	38.39	59.39	53.37	68.20	14.83

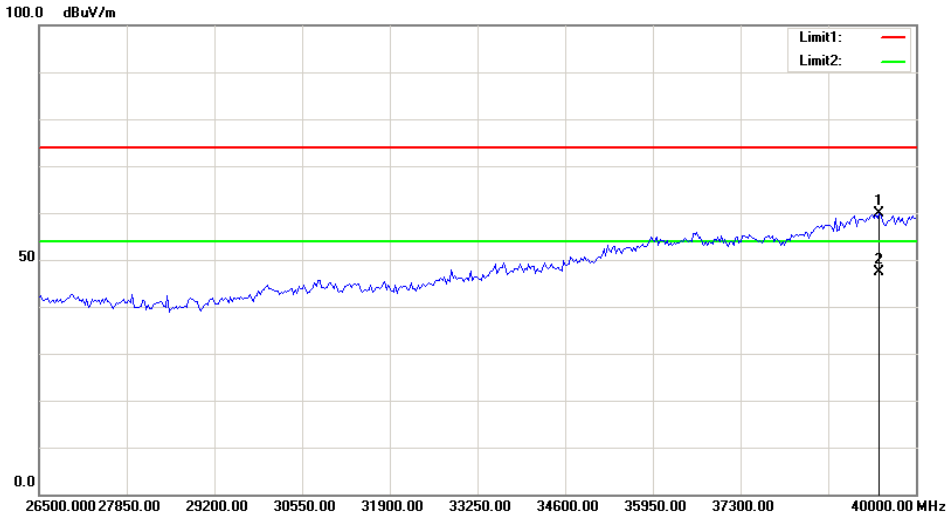
Test Plots *(1.4M Mode Chain 0 High channel was the worst)*
Horizontal

Fundamental Test with Band Rejection Filter



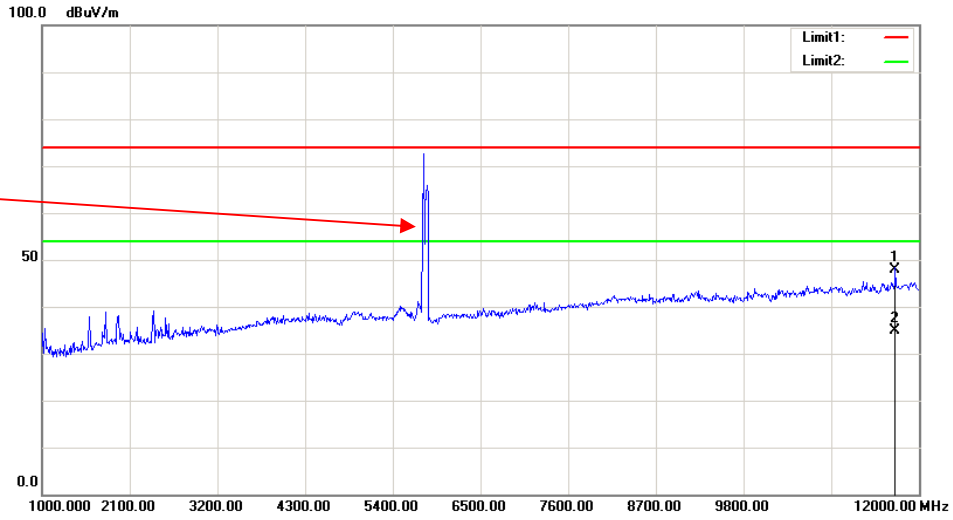


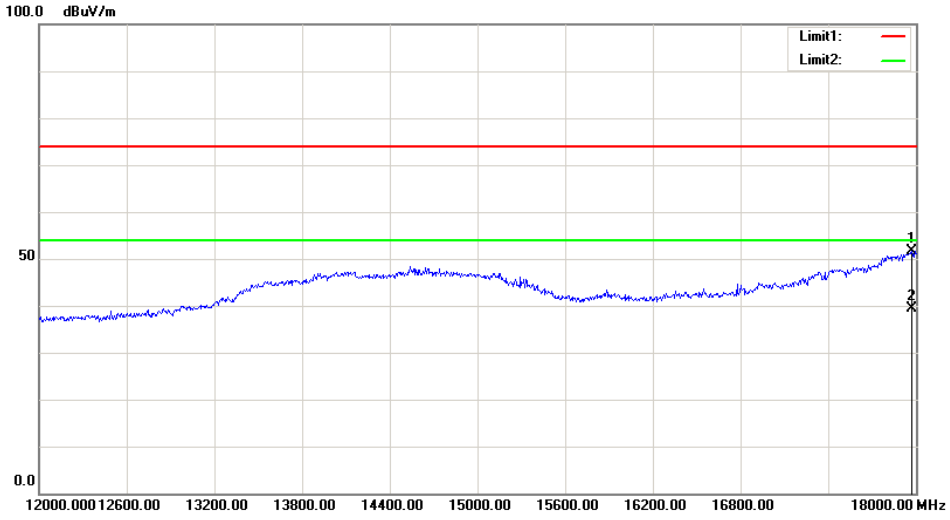


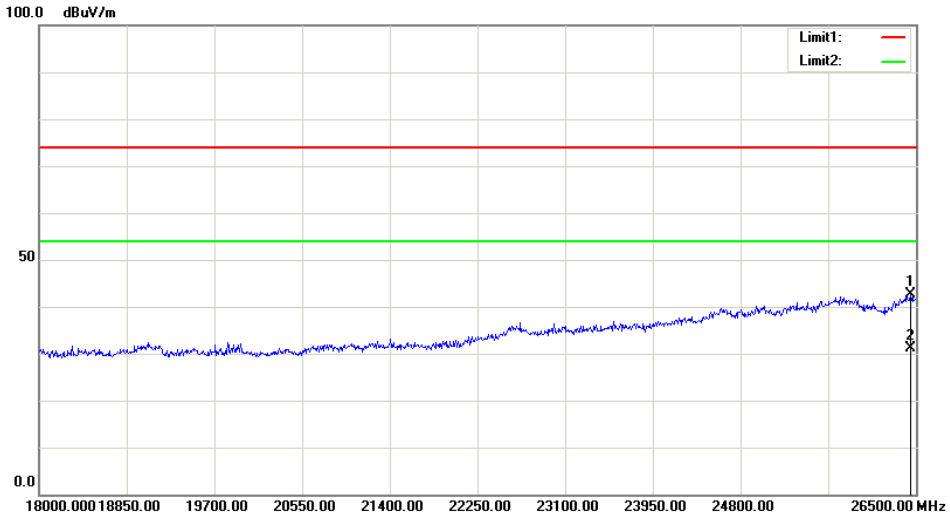


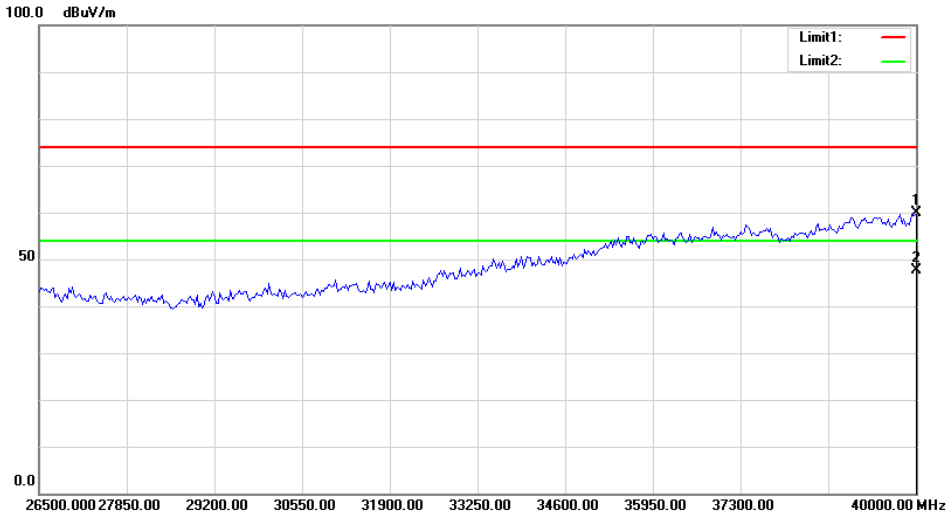
Vertical

Fundamental Test with Band Rejection Filter






100.0 dBuV/m
Limit1:
Limit2:
50
0.0
1
2
18000.000 18850.00 19700.00 20550.00 21400.00 22250.00 23100.00 23950.00 24800.00 26500.00 MHz


100.0 dBuV/m
Limit1:
Limit2:
50
0.0
1
2
26500.000 27850.00 29200.00 30550.00 31900.00 33250.00 34600.00 35950.00 37300.00 40000.00 MHz

FCC §15.407(a)(e)–EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH

Applicable Standard

15.407(a) (e), RSS-247 Clause 6.2 and RSS-Gen Clause 6.7

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2019-01-09	2020-01-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	2019-05-06	2020-05-06

*** 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 Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Test Data

Environmental Conditions

Temperature:	28.6 °C
Relative Humidity:	51 %
ATM Pressure:	100.7 kPa

** The testing was performed by Corrie He on 2019-05-21*

Test Result: Pass. Please refer to the following tables and plots.

Test mode: Transmitting

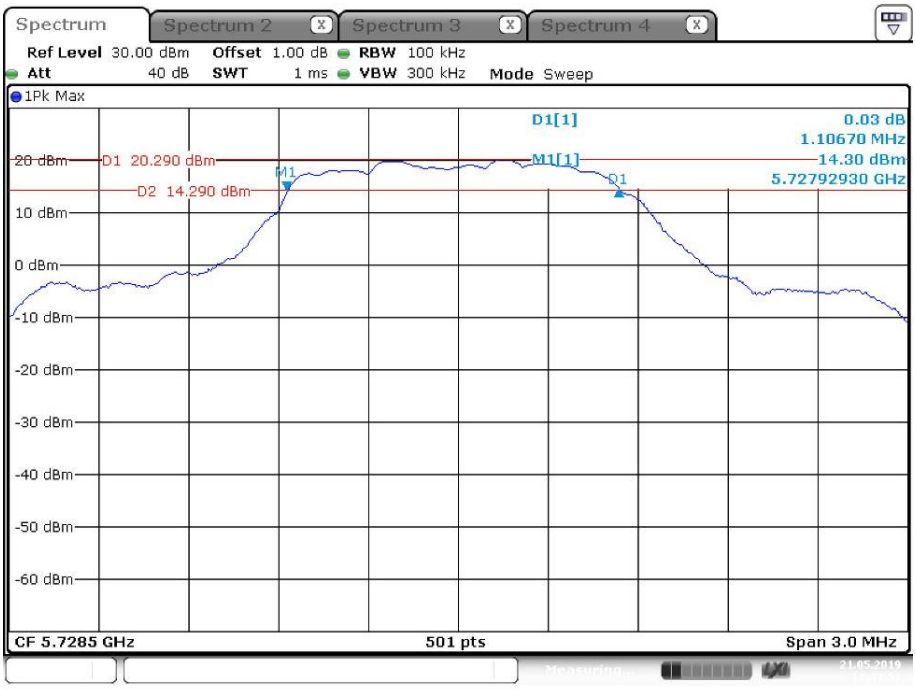
Test only performed at chain 0

Mode	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	6 dB Emission Bandwidth Limis (MHz)	99% Occupied Bandwidth (MHz)
1.4M	5728.5	1.107	≥0.5	1.257
	5786.5	1.114	≥0.5	1.263
	5846.5	1.107	≥0.5	1.228
10M	5730.5	9.046	≥0.5	9.022
	5787.5	9.039	≥0.5	8.982
	5844.5	9.057	≥0.5	9.102

Note: the 99% Occupied Bandwidth have not fall into the band 5470-5725MHz.

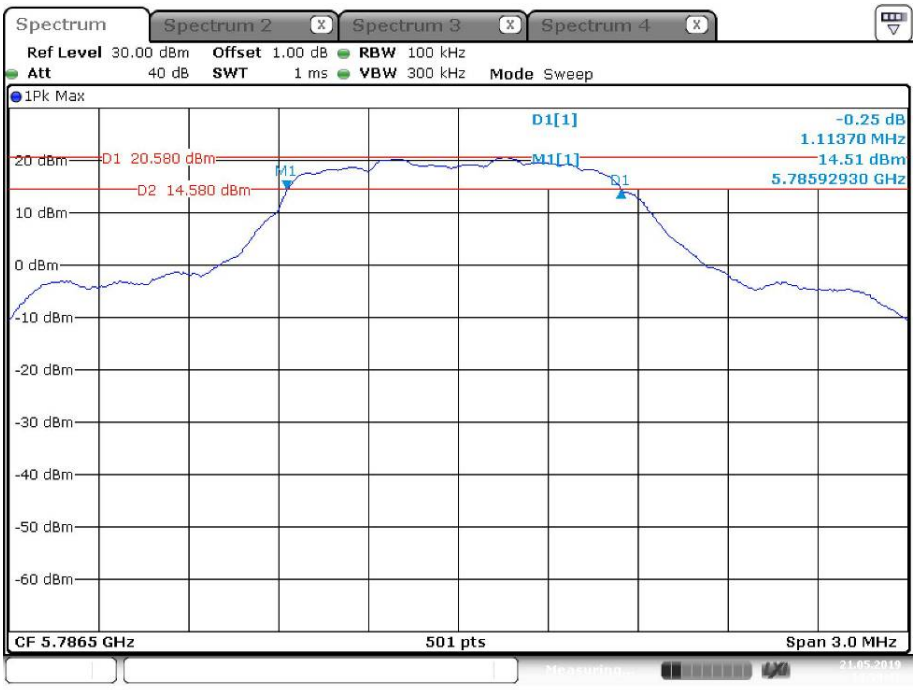
6dB Minimum Emission Bandwidth:

1.4M Low Channel



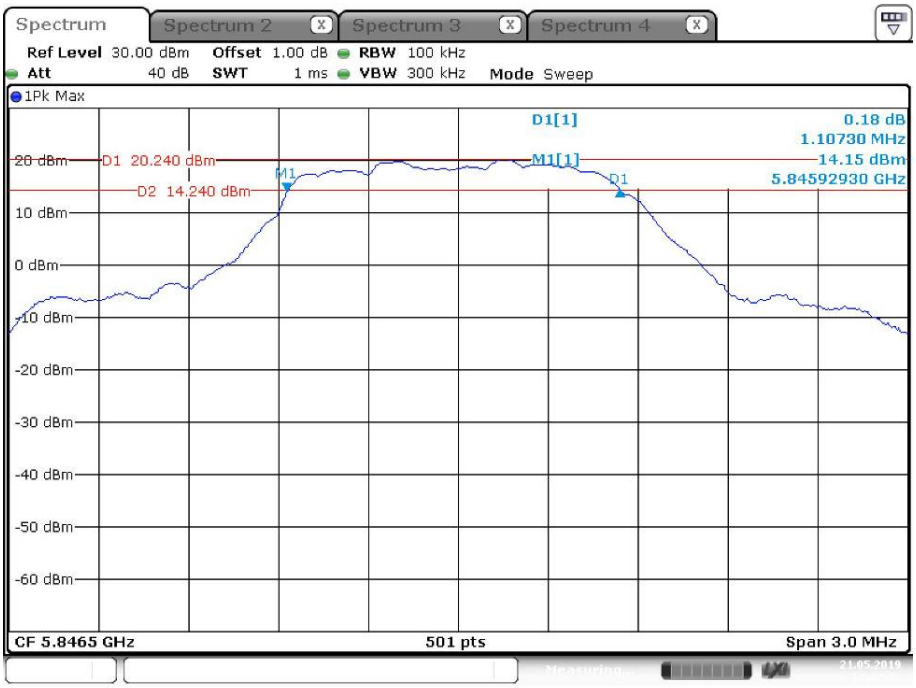
Date: 21.MAY.2019 14:43:52

1.4M Middle Channel



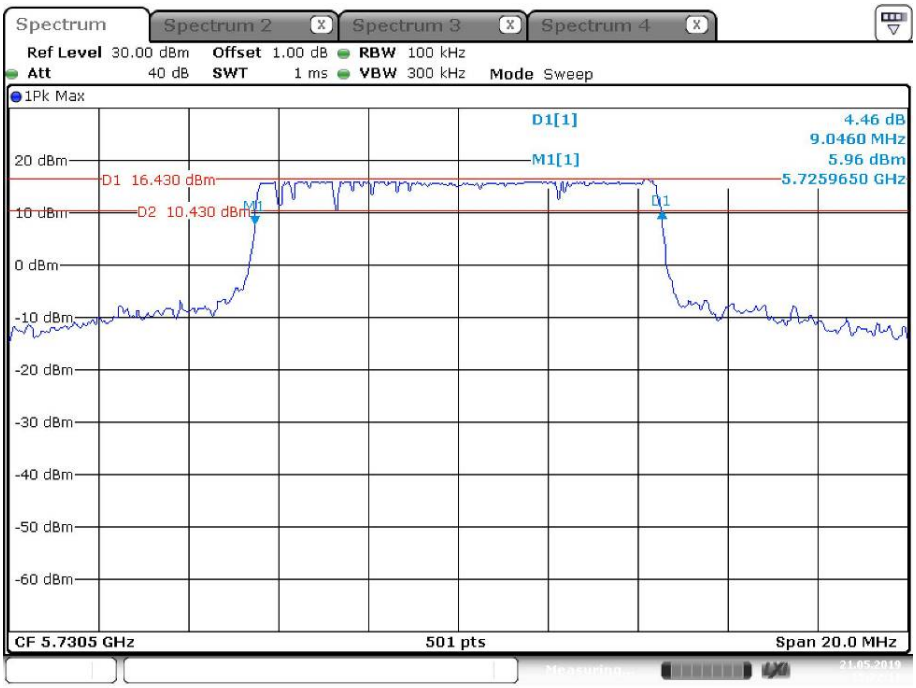
Date: 21.MAY.2019 14:39:48

1.4M High Channel



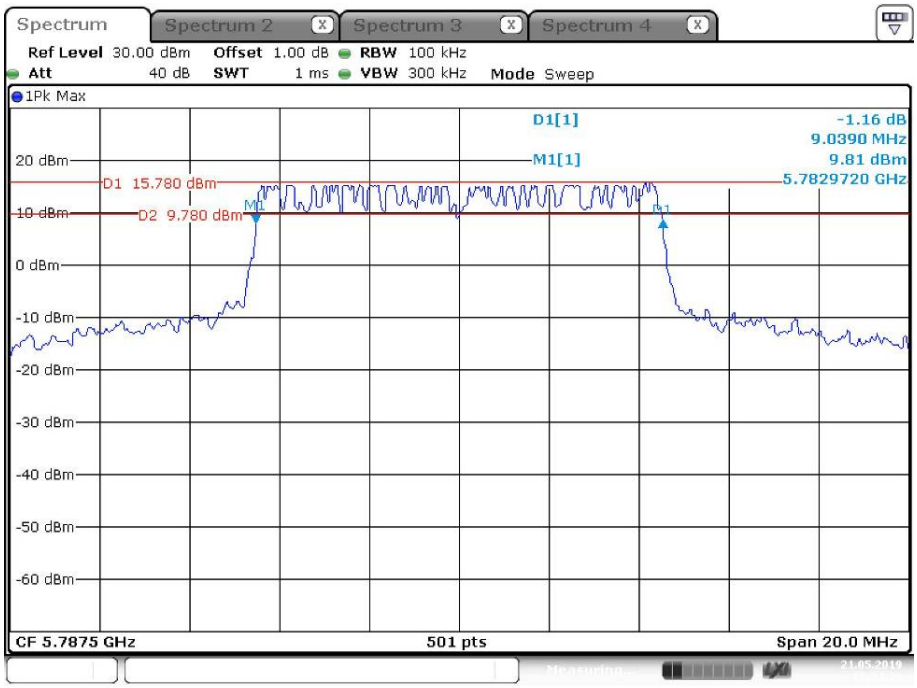
Date: 21.MAY.2019 14:42:32

10M Low Channel



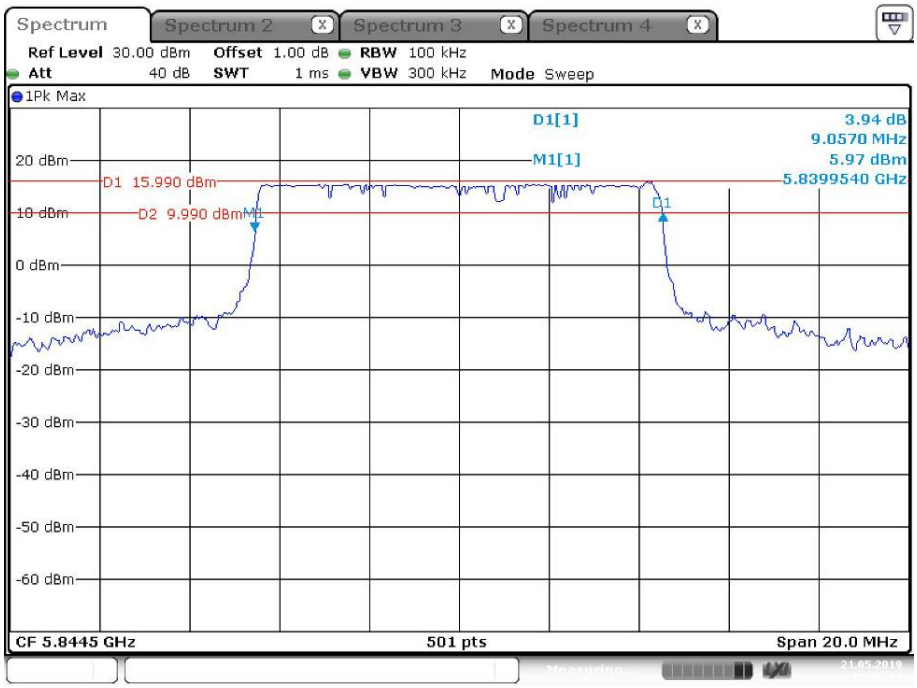
Date: 21.MAY.2019 15:22:11

10M Middle Channel



Date: 21.MAY.2019 15:24:24

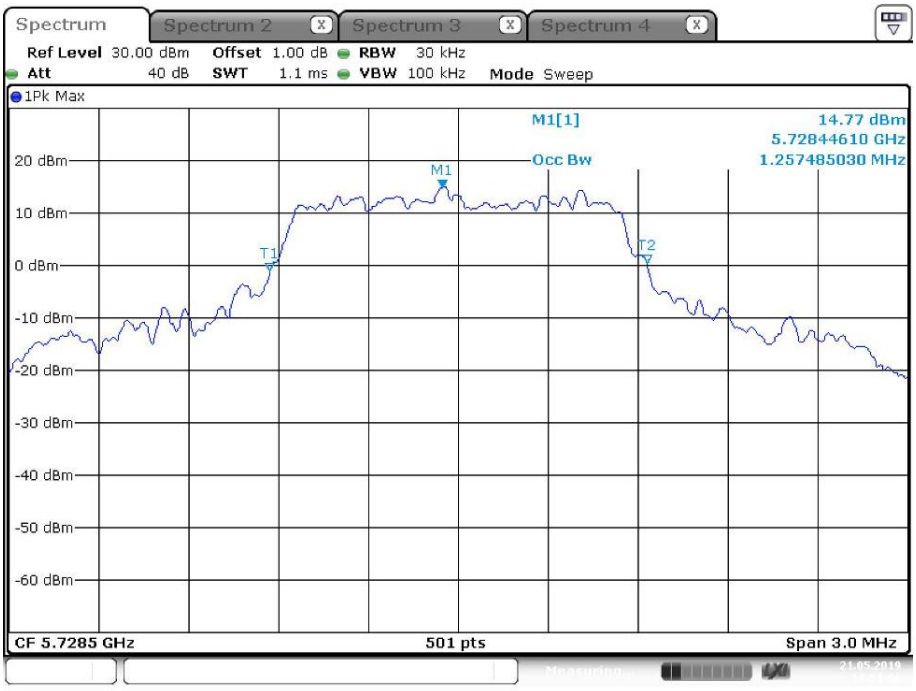
10M High Channel



Date: 21.MAY.2019 15:26:52

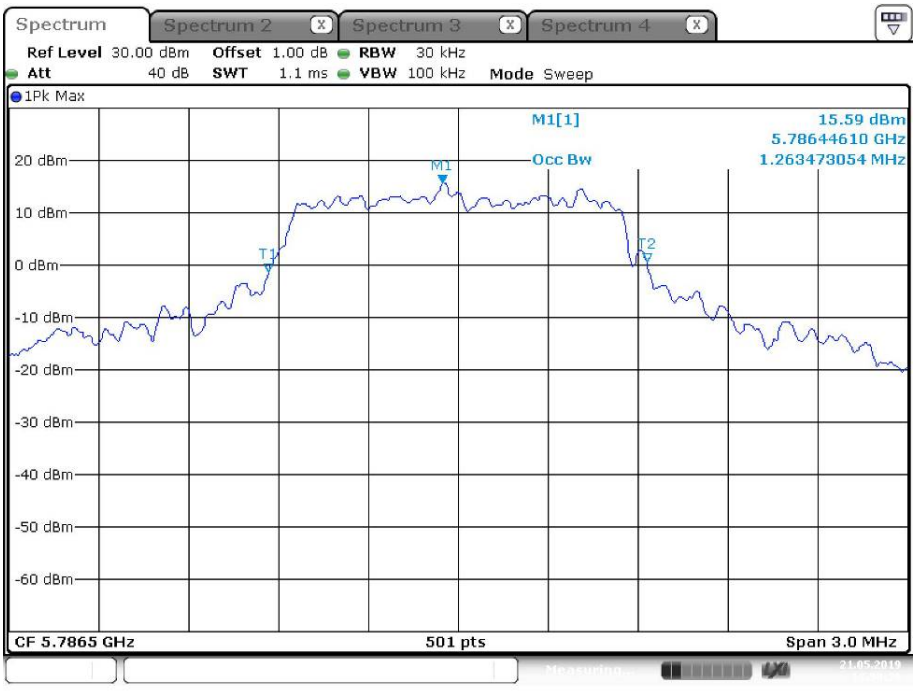
99% Occupied Bandwidth:

1.4M Low Channel



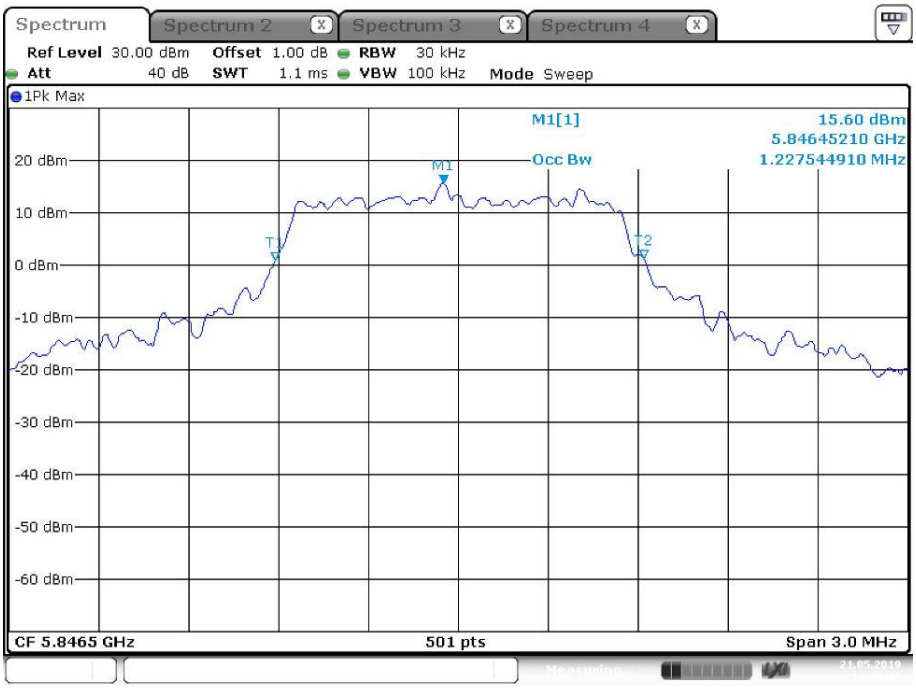
Date: 21.MAY.2019 14:51:07

1.4M Middle Channel



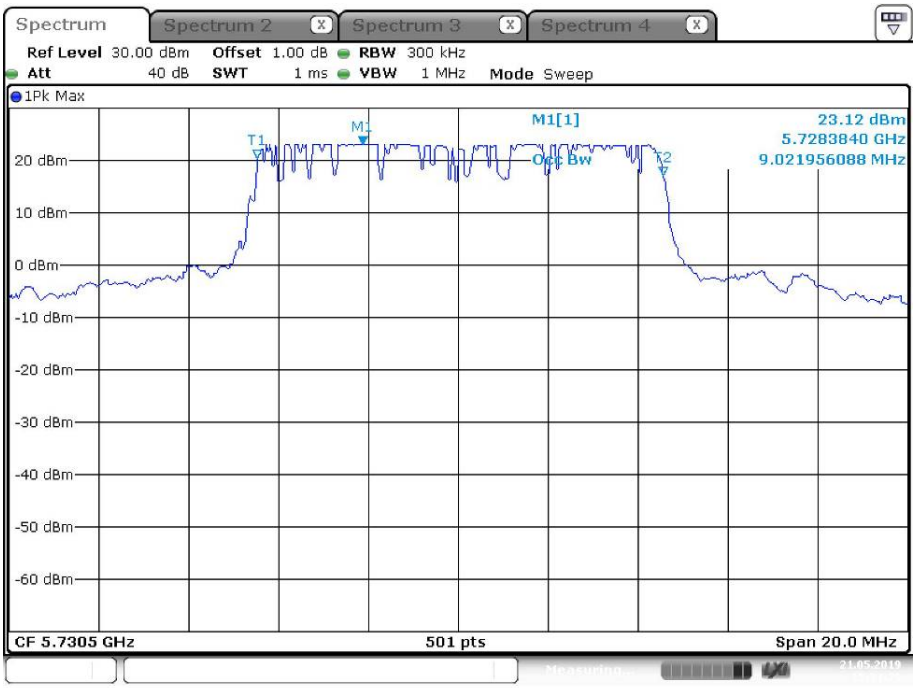
Date: 21.MAY.2019 14:50:20

1.4M High Channel



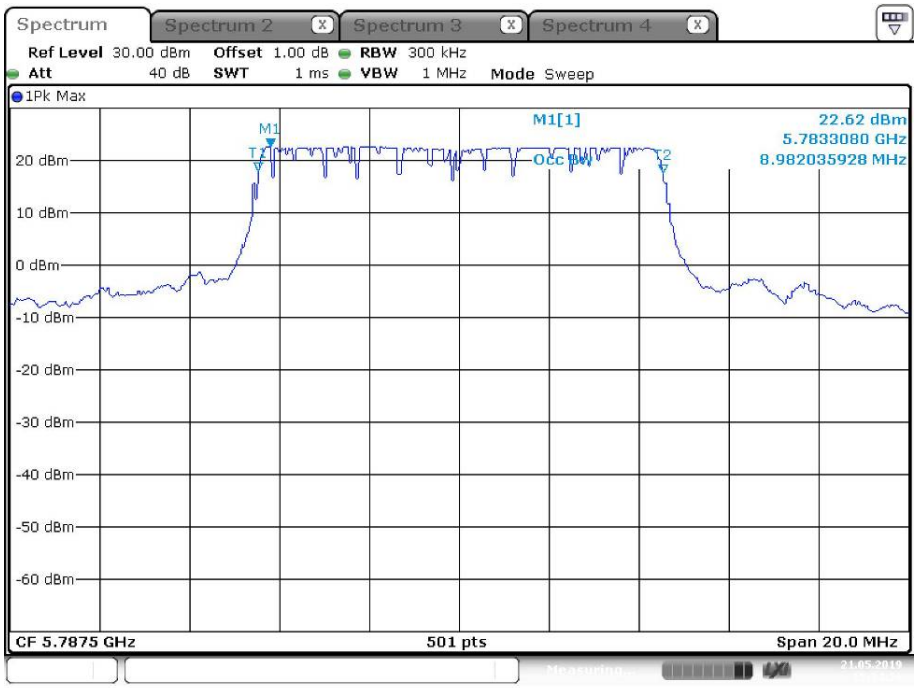
Date: 21.MAY.2019 14:49:50

10M Low Channel



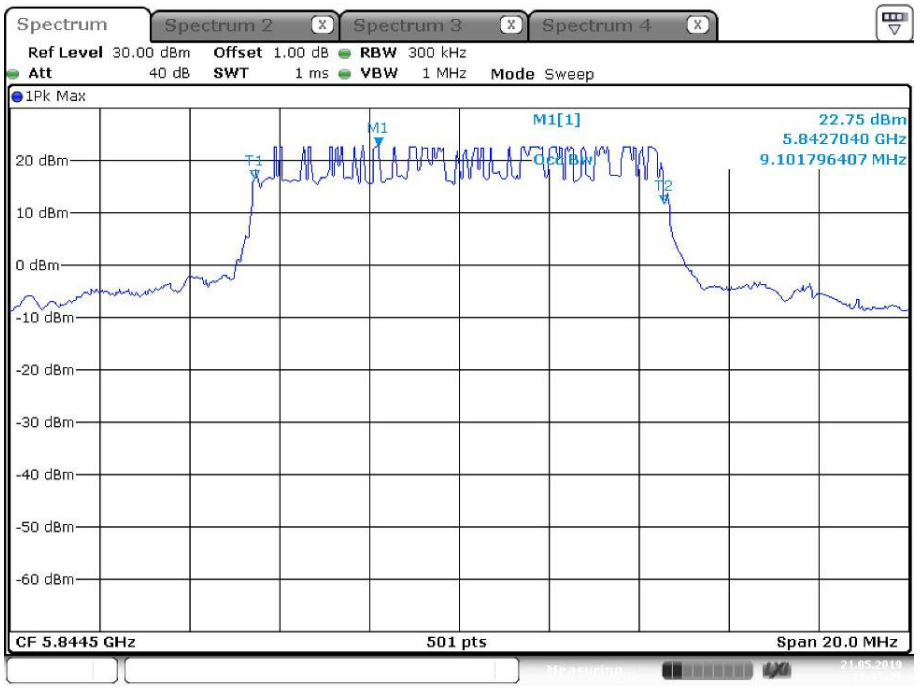
Date: 21.MAY.2019 15:33:28

10M Middle Channel



Date: 21.MAY.2019 15:34:27

10M High Channel



Date: 21.MAY.2019 15:35:29

FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §15.407(a)

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(4) The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2019-01-09	2020-01-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	2019-05-06	2020-05-06

*** 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 Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Test Data

Environmental Conditions

Temperature:	28.6 °C
Relative Humidity:	51 %
ATM Pressure:	100.7 kPa

** The testing was performed by Corrie He on 2019-05-21*

Test Mode: Transmitting

Mode	Frequency (MHz)	Conducted Average Output Power (dBm)		Limit (dBm)	Result
		Chain 0	Chain 1		
1.4MHz	5728.5	22.26	22.16	30	PASS
	5786.5	22.70	22.53	30	PASS
	5846.5	22.44	22.55	30	PASS
10MHz	5730.5	22.42	22.67	30	PASS
	5787.5	22.15	22.29	30	PASS
	5844.5	22.59	22.41	30	PASS

FCC §15.407(a) - POWER SPECTRAL DENSITY

Applicable Standard

According to FCC §15.407(a)

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output

power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2019-01-09	2020-01-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	2019-05-06	2020-05-06

*** 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:	28.6 °C
Relative Humidity:	51 %
ATM Pressure:	100.7 kPa

** The testing was performed by Corrie He on 2019-05-21*

Test Result:Compliance.

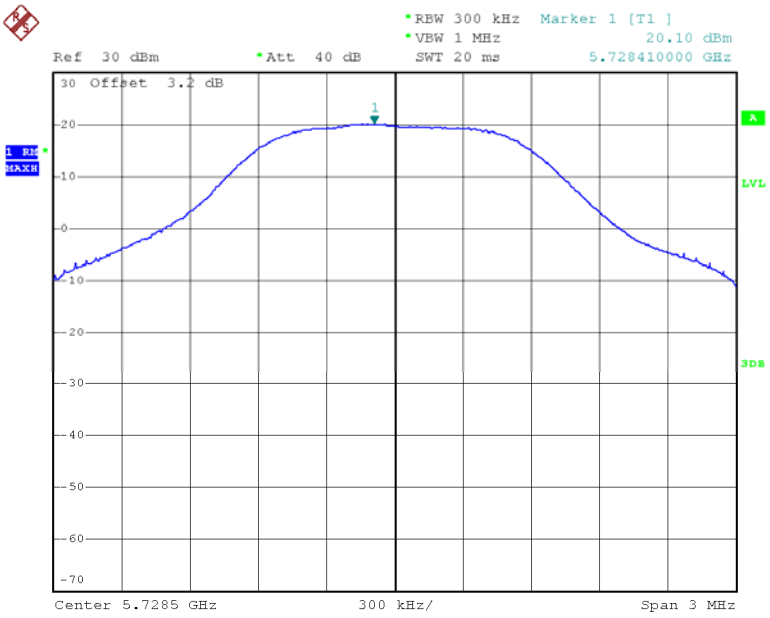
Test Mode: Transmitting

Mode	Frequency (MHz)	Power spectral density (dBm/500kHz)		Limit (dBm/500KHz)
		Chain 0	Chain 1	
1.4MHz	5728.5	20.10	19.49	30
	5786.5	19.98	19.25	30
	5846.5	19.84	19.29	30
10MHz	5730.5	14.39	14.23	30
	5787.5	13.45	13.51	30
	5844.5	13.75	13.59	30

Note: For 5.8GHz band, since measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log (500kHz/RBW) to the offset of the plots, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

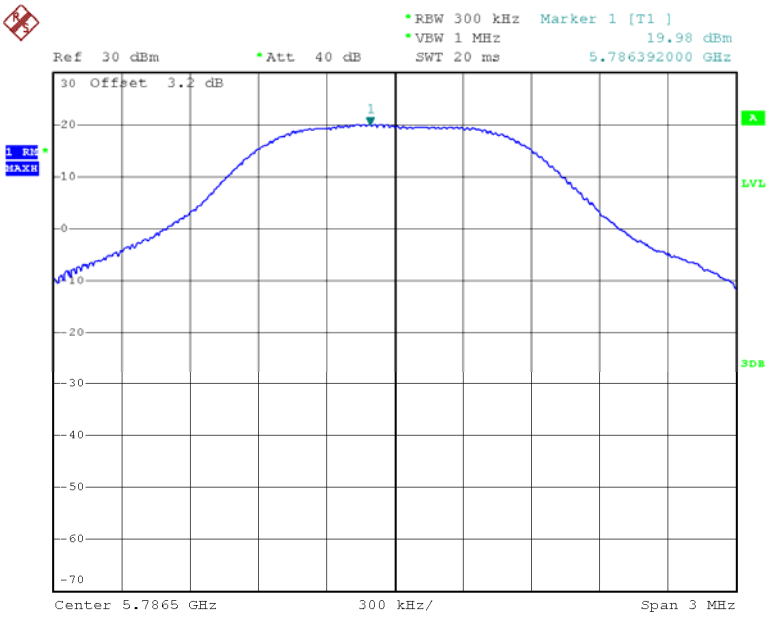
Chain0:

1.4M Low Channel



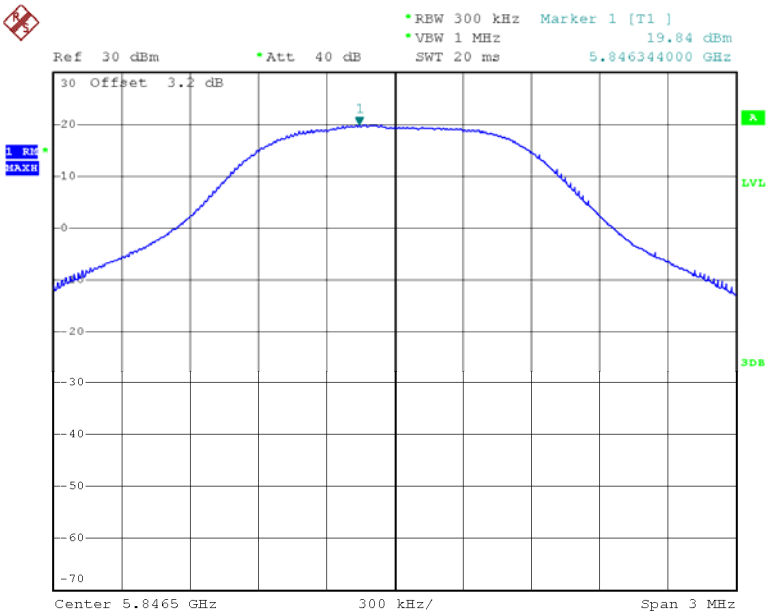
Date: 21.MAY.2019 17:00:07

1.4M Middle Channel



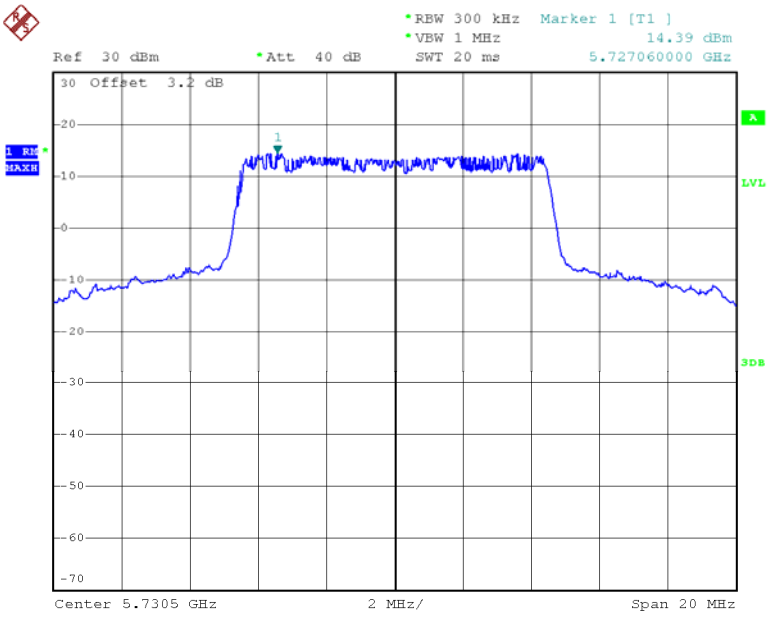
Date: 21.MAY.2019 17:03:27

1.4M High Channel



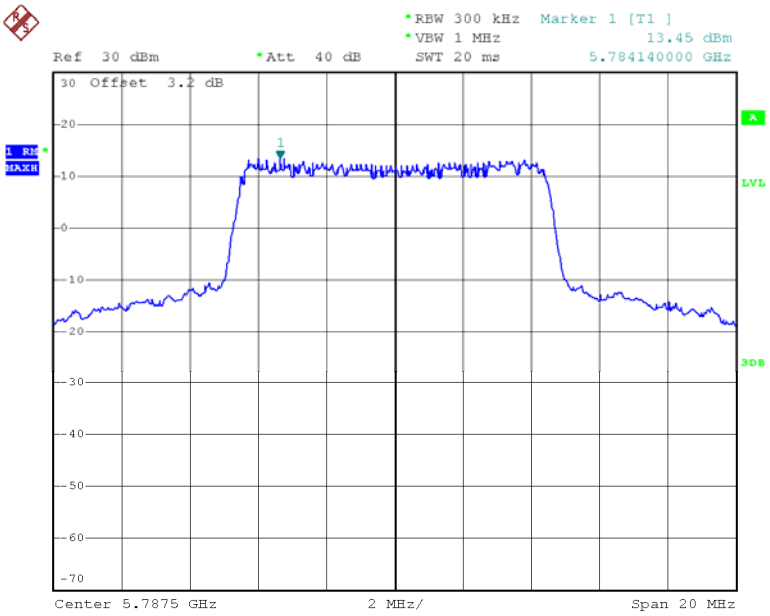
Date: 21.MAY.2019 17:04:18

10M Low Channel



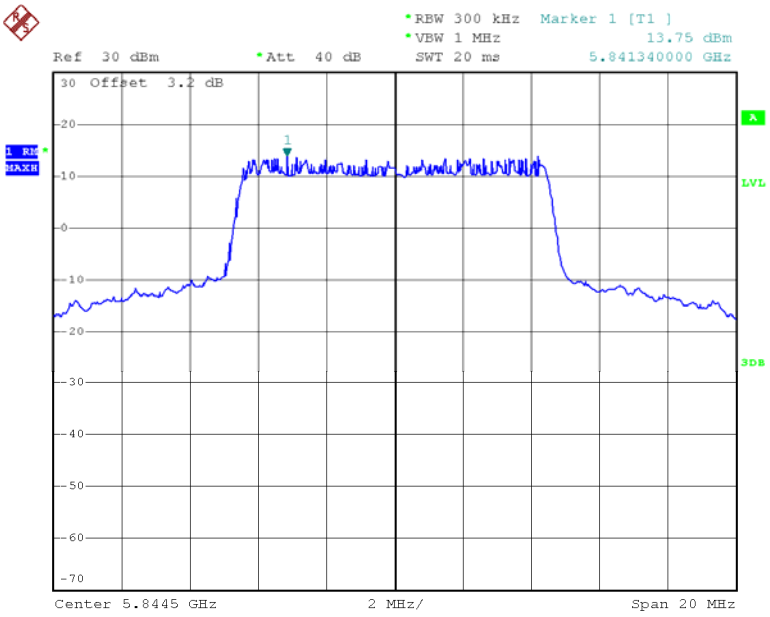
Date: 21.MAY.2019 17:12:15

10M Middle Channel



Date: 21.MAY.2019 17:16:04

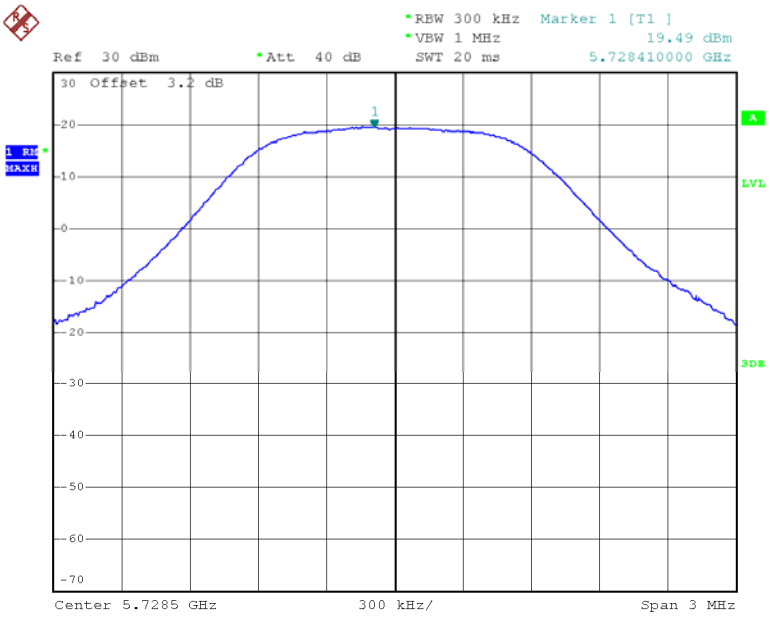
10M High Channel



Date: 21.MAY.2019 17:16:55

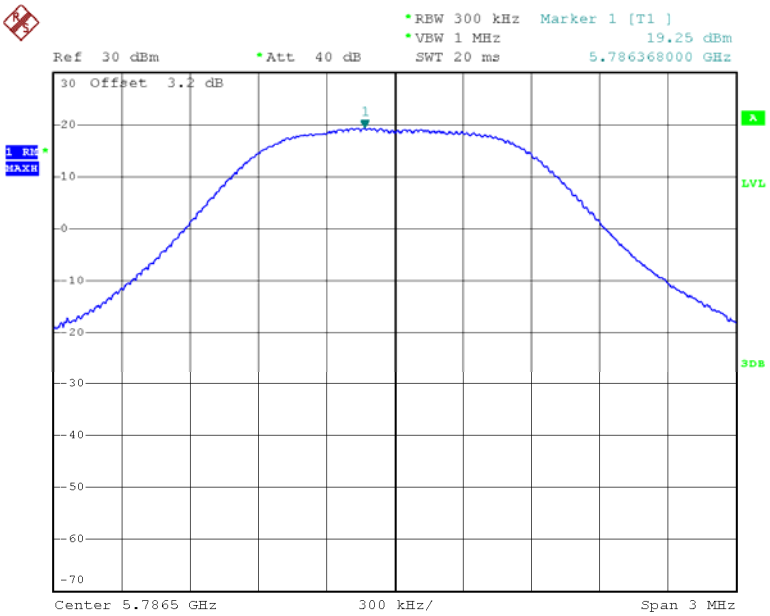
Chain1:

1.4M Low Channel



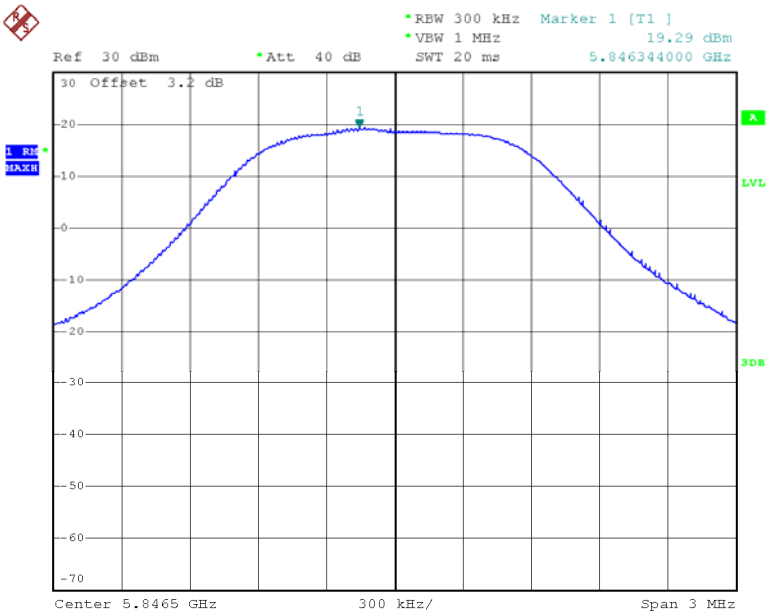
Date: 21.MAY.2019 17:07:03

1.4M Middle Channel



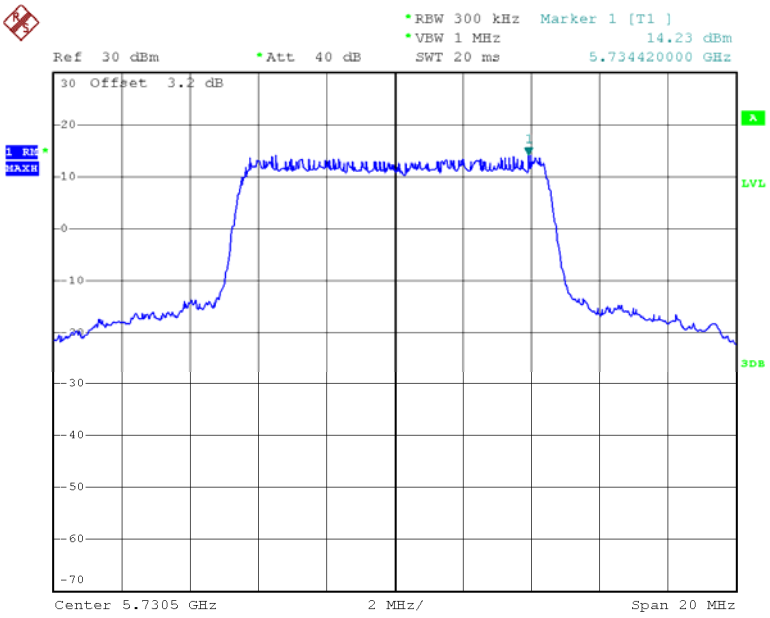
Date: 21.MAY.2019 17:07:51

1.4M High Channel



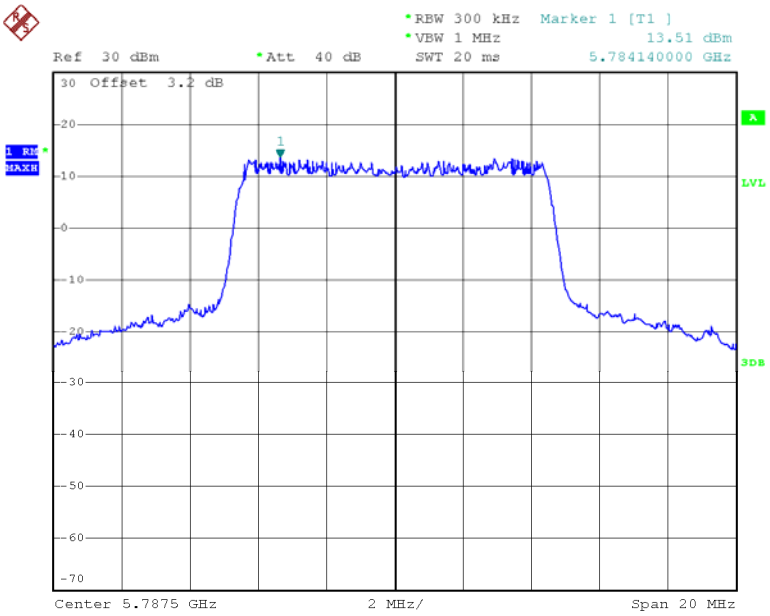
Date: 21.MAY.2019 17:09:36

10M Low Channel



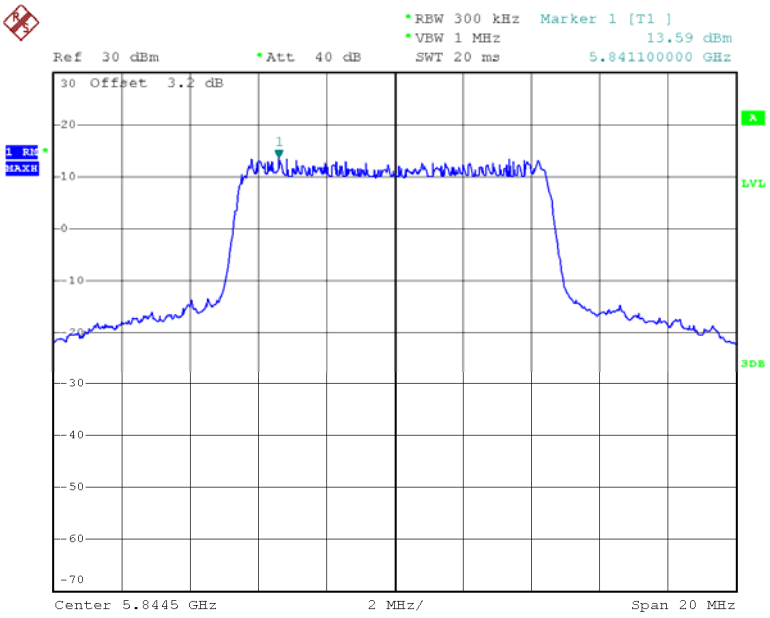
Date: 21.MAY.2019 17:19:13

10M Middle Channel



Date: 21.MAY.2019 17:20:25

10M High Channel



Date: 21.MAY.2019 17:23:18

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