

## 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**

|                                        |                                                                                                                                                                                                                                                       |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report | <b>Product Type:</b><br>AGRAS T16                                                                                                                                                                                                                     |
| <b>Report Number:</b> RDG190510002-00C |                                                                                                                                                                                                                                                       |
| <b>Report Date:</b> 2019-06-14         |                                                                                                                                                                                                                                                       |
| <b>Reviewed By:</b>                    | Allen Qiao<br>RF Supervisor                                                                                                                                                                                                                           |
| <b>Test Laboratory:</b>                | Bay Area Compliance Laboratories Corp. (Dongguan)<br>No.69 Pulongcun, Puxinhu Industry Area,<br>Tangxia, Dongguan, Guangdong, China<br>Tel: +86-769-86858888<br>Fax: +86-769-86858891<br><a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a> |

**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan). This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA\* or any agency of the Federal Government. \* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk “\*”.

## **TABLE OF CONTENTS**

|                                                                                              |           |
|----------------------------------------------------------------------------------------------|-----------|
| <b>GENERAL INFORMATION.....</b>                                                              | <b>3</b>  |
| PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....                                     | 3         |
| OBJECTIVE .....                                                                              | 3         |
| RELATED SUBMITTAL(S)/GRANT(S).....                                                           | 3         |
| TEST METHODOLOGY .....                                                                       | 3         |
| MEASUREMENT UNCERTAINTY .....                                                                | 4         |
| TEST FACILITY .....                                                                          | 4         |
| <b>SYSTEM TEST CONFIGURATION.....</b>                                                        | <b>5</b>  |
| DESCRIPTION OF TEST CONFIGURATION .....                                                      | 5         |
| EQUIPMENT MODIFICATIONS .....                                                                | 5         |
| EUT EXERCISE SOFTWARE .....                                                                  | 5         |
| LOCAL SUPPORT EQUIPMENT LIST AND DETAILS .....                                               | 7         |
| SUPPORT CABLE LIST AND DETAILS .....                                                         | 7         |
| BLOCK DIAGRAM OF TEST SETUP .....                                                            | 7         |
| <b>SUMMARY OF TEST RESULTS .....</b>                                                         | <b>8</b>  |
| <b>FCC §15.407 (f) &amp; §1.1310 &amp; §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE) .....</b> | <b>9</b>  |
| APPLICABLE STANDARD .....                                                                    | 9         |
| <b>FCC §15.203&amp; RSS-GEN CLAUSE 6.8 - ANTENNA REQUIREMENT .....</b>                       | <b>10</b> |
| APPLICABLE STANDARD .....                                                                    | 10        |
| ANTENNA INFORMATION AND CONNECTOR CONSTRUCTION.....                                          | 10        |
| <b>FCC §15.209, §15.205 , §15.407(b) –UNWANTED EMISSION .....</b>                            | <b>11</b> |
| APPLICABLE STANDARD .....                                                                    | 11        |
| EUT SETUP .....                                                                              | 12        |
| EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP .....                                            | 13        |
| TEST PROCEDURE .....                                                                         | 13        |
| CORRECTED AMPLITUDE & MARGIN CALCULATION .....                                               | 14        |
| TEST EQUIPMENT LIST AND DETAILS.....                                                         | 15        |
| TEST DATA .....                                                                              | 15        |
| <b>FCC §15.407(a)(e)–EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH.....</b>                      | <b>25</b> |
| APPLICABLE STANDARD .....                                                                    | 25        |
| TEST EQUIPMENT LIST AND DETAILS.....                                                         | 25        |
| TEST PROCEDURE .....                                                                         | 25        |
| TEST DATA .....                                                                              | 25        |
| <b>FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER.....</b>                                   | <b>33</b> |
| APPLICABLE STANDARD .....                                                                    | 33        |
| TEST EQUIPMENT LIST AND DETAILS.....                                                         | 34        |
| TEST PROCEDURE .....                                                                         | 34        |
| TEST DATA .....                                                                              | 35        |
| <b>FCC §15.407(a) - POWER SPECTRAL DENSITY .....</b>                                         | <b>36</b> |
| APPLICABLE STANDARD .....                                                                    | 36        |
| TEST PROCEDURE .....                                                                         | 37        |
| TEST EQUIPMENT LIST AND DETAILS.....                                                         | 37        |
| TEST DATA .....                                                                              | 38        |

## GENERAL INFORMATION

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

|                                  |                                                 |
|----------------------------------|-------------------------------------------------|
| <b>EUT Name:</b>                 | AGRAS T16                                       |
| <b>EUT Model:</b>                | 3WWDZ-15A                                       |
| <b>Operation Frequency:</b>      | 1.4M: 5728.5~5846.5MHz<br>10M: 5730.5~5844.5MHz |
| <b>Output Power (Conducted):</b> | 1.4M: 22.70dBm<br>10M: 22.67dBm                 |
| <b>Modulation Type:</b>          | OFDM                                            |
| <b>FCC ID:</b>                   | SS3-T161906                                     |
| <b>Rated Input Voltage:</b>      | 51.8Vdc from Battery                            |
| <b>External Dimension:</b>       | 1795mm(L)* 1510mm(W)* 732mm(H)                  |
| <b>Serial Number:</b>            | 190510002                                       |
| <b>EUT Received Date:</b>        | 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<br>200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical<br>1G~6GHz: 4.45 dB, 6G~40GHz: 5.23 dB |
| Unwanted Emissions,conducted      | ±1.5 dB                                                                                                                                                    |
| Temperature                       | ±1 °C                                                                                                                                                      |
| 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.

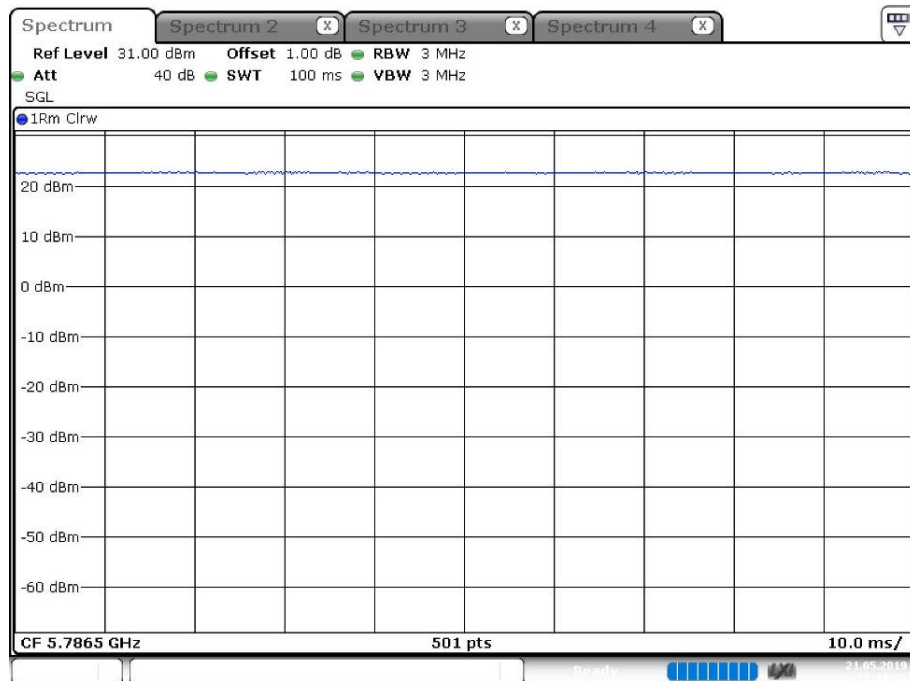
### EUT Exercise Software

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 bandwidths.

The duty cycle as below:

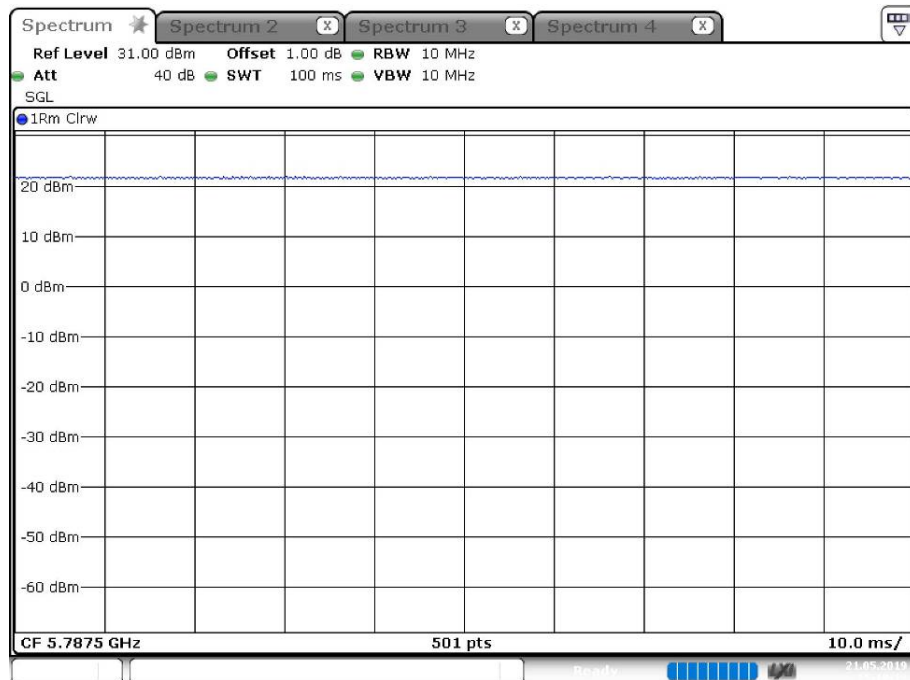
| Mode | T <sub>on</sub> (ms) | T <sub>on+off</sub> (ms) | Duty Cycle(x) (%) |
|------|----------------------|--------------------------|-------------------|
| 1.4M | 100                  | 100                      | 100               |
| 10M  | 100                  | 100                      | 100               |

## 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

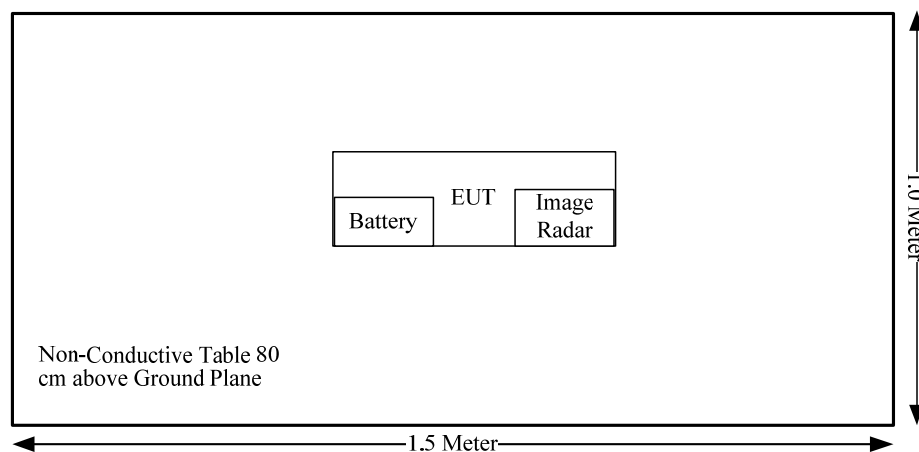
| Manufacturer | Description                      | Model              | Serial Number |
|--------------|----------------------------------|--------------------|---------------|
| DJI          | Battery                          | AB2-17500mAh-51.8V | /             |
| DJI          | High-Precision DBF 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 Permissible 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 <sup>2</sup> ) | Averaging Time (minutes) |
| 0.3–1.34                                                | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34–30                                                 | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30–300                                                  | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300–1500                                                | /                             | /                             | f/1500                              | 30                       |
| 1500–100,000                                            | /                             | /                             | 1.0                                 | 30                       |

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

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

### 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<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

### Calculated Data:

| Frequency Band | Antenna Gain |           | Max. Target Power including Tolerance |        | Evaluation Distance (cm) | Power Density (W/m <sup>2</sup> ) | MPE Limit (W/m <sup>2</sup> ) |
|----------------|--------------|-----------|---------------------------------------|--------|--------------------------|-----------------------------------|-------------------------------|
|                | (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  $\geq 20$  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.

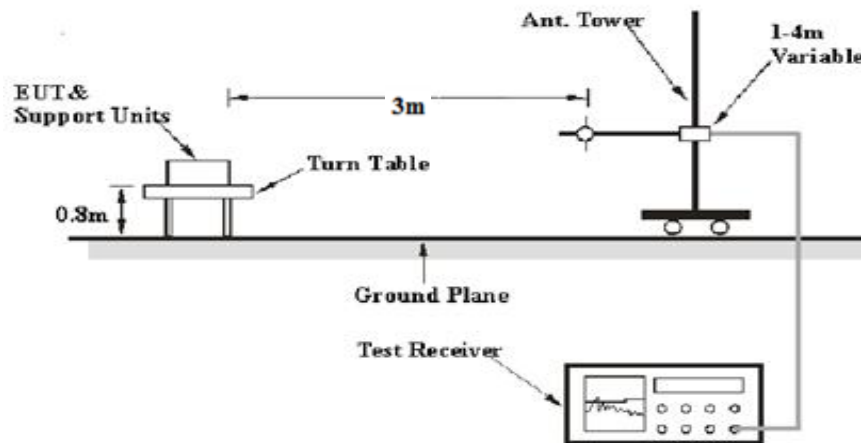
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(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.

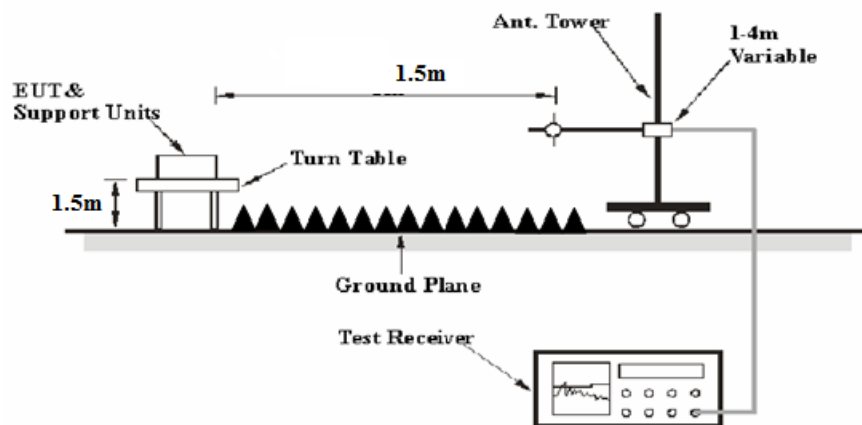
(7) The provisions of §15.205 apply to intentional radiators operating under this section.

## EUT Setup

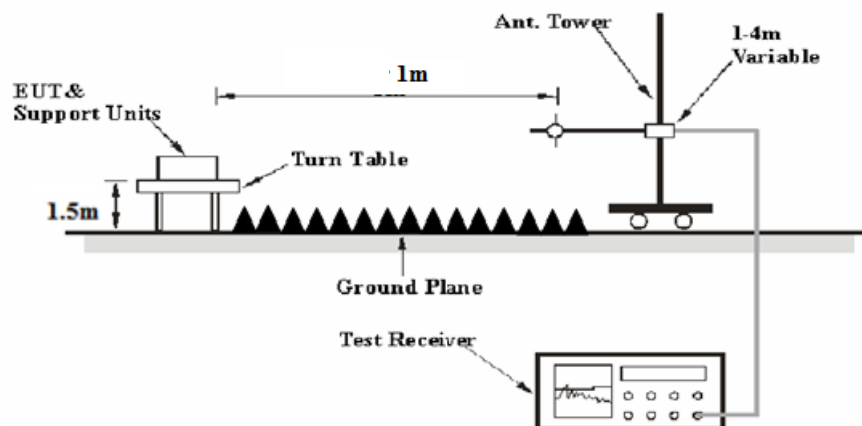
Below 1 GHz:



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:  $E [dB\mu V/m] = EIRP[dBm] + 95.2$ , 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 =  $20 \log (\text{specific distance } [3m]/\text{test distance } [1.5m])$  dB= 6.02 dB

or

Distance extrapolation factor =  $20 \log (\text{specific distance } [3m]/\text{test distance } [1m])$  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:

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

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

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

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

$$= \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain} - \text{Distance extrapolation factor}$$

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:

$$\text{Margin} = \text{Limit} - \text{Extrapolation result}$$

**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 Technologies | Horn Antenna      | ARH-4223-02                 | 1007726-01<br>1304 | 2016-11-18       | 2019-11-18           |
| Ducommun Technologies | Horn Antenna      | ARH-2823-02                 | 1007726-01<br>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-<br>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-<br>0899-003 | 0899003            | 2019-05-06       | 2020-05-06           |
| Mini Circuits         | High Pass Filter  | VHF-6010+                   | 31118              | 2018-06-16       | 2019-06-16           |

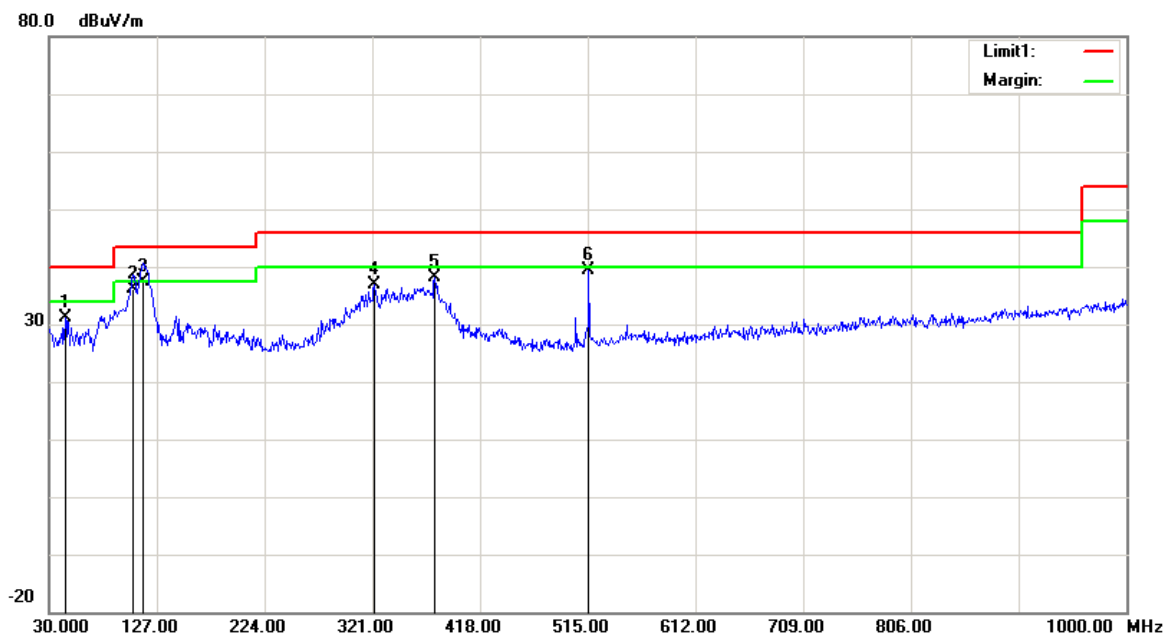
\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data****Environmental Conditions**

|                           |                 |
|---------------------------|-----------------|
| <b>Temperature:</b>       | 24.2~25.1 °C    |
| <b>Relative Humidity:</b> | 53~57 %         |
| <b>ATM Pressure:</b>      | 100.6~101.2 kPa |

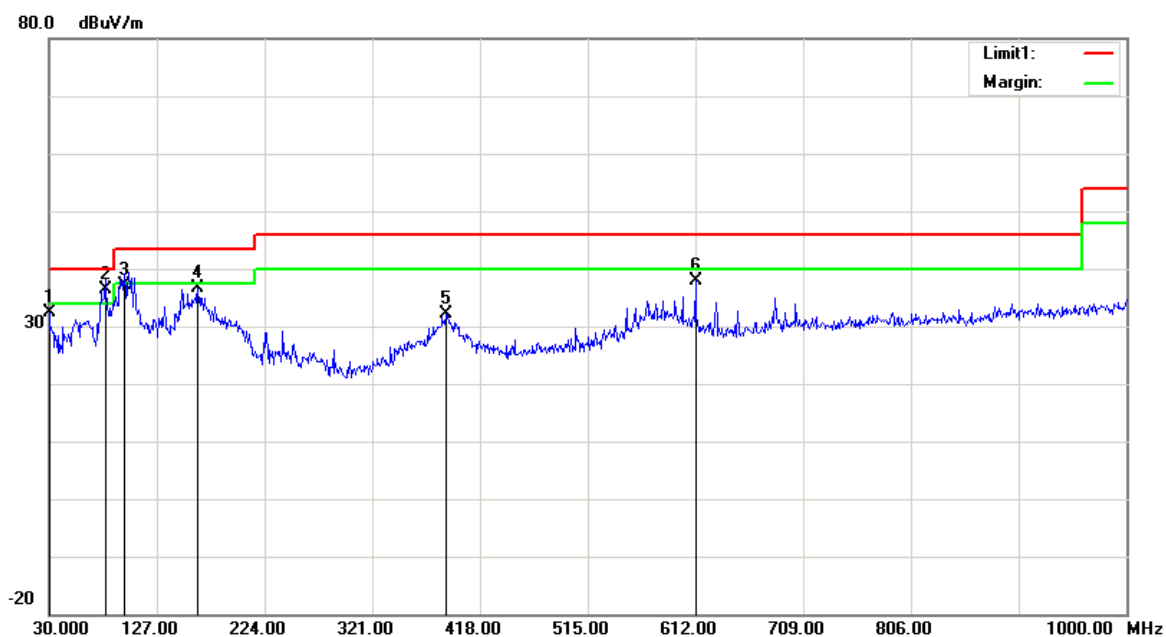
\* The testing was performed by Tyler Pan and Neil Liao from 2019-05-26 to 2019-05-30.

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 (dB $\mu$ V) | Detector | Correction Factor (dB/m) | Cord. Amp. (dB $\mu$ V/m) | Limit (dB $\mu$ V/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<br>(MHz)         | Receiver          |          | Rx Antenna     |                  | Cable<br>loss<br>(dB) | Amplifier<br>Gain<br>(dB) | Corrected<br>Amplitude<br>(dBμV/m) | Extrapolation<br>result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|----------------------------|-------------------|----------|----------------|------------------|-----------------------|---------------------------|------------------------------------|-------------------------------------|-------------------|----------------|
|                            | Reading<br>(dBμV) | Detector | Polar<br>(H/V) | Factor<br>(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<br>(MHz)         | Receiver          |          | Rx Antenna     |                  | Cable<br>loss<br>(dB) | Amplifier<br>Gain<br>(dB) | Corrected<br>Amplitude<br>(dBμV/m) | Extrapolation<br>result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|----------------------------|-------------------|----------|----------------|------------------|-----------------------|---------------------------|------------------------------------|-------------------------------------|-------------------|----------------|
|                            | Reading<br>(dBμV) | Detector | Polar<br>(H/V) | Factor<br>(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          |

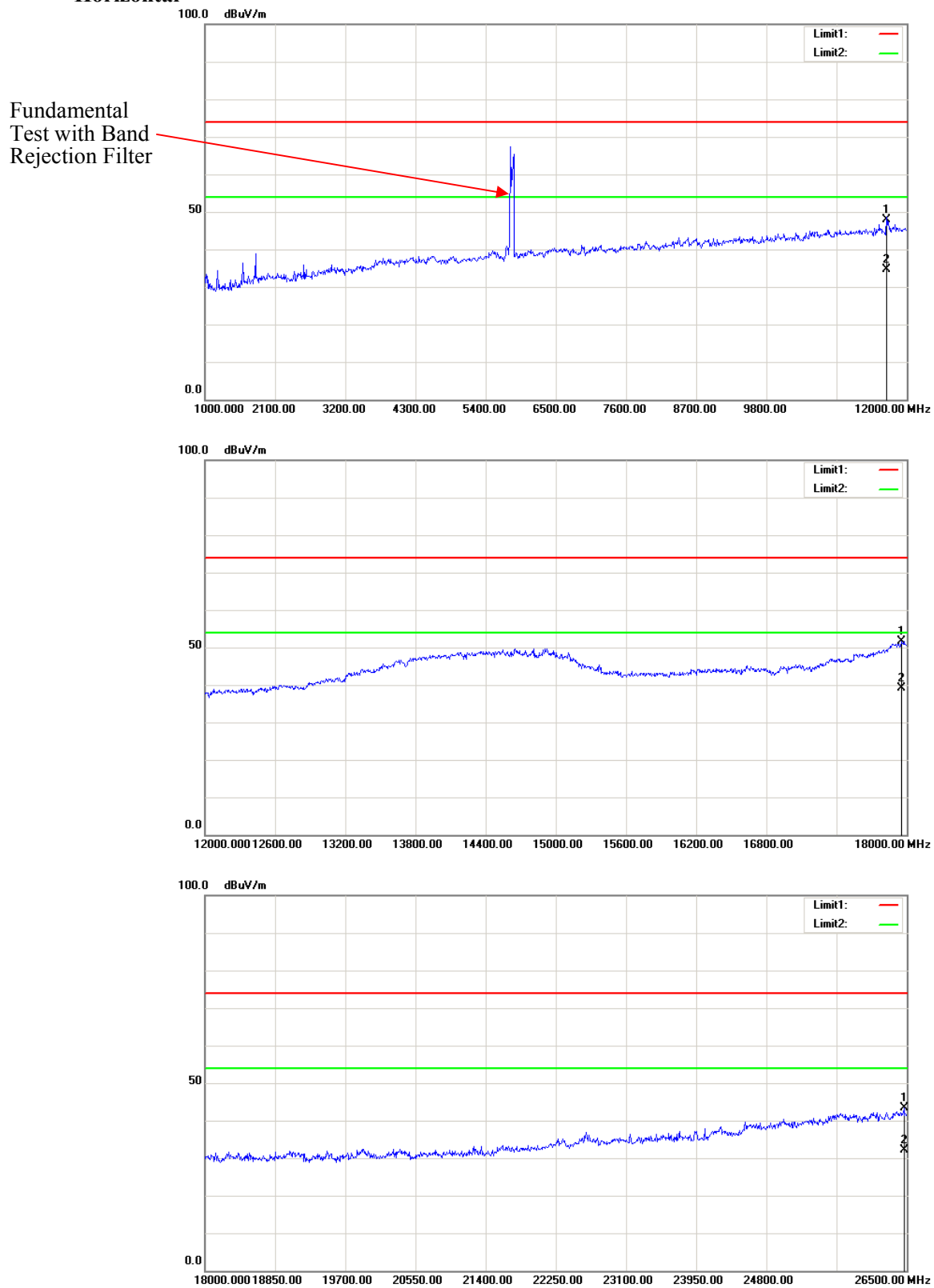
**10MHz Mode:****Chain 0:**

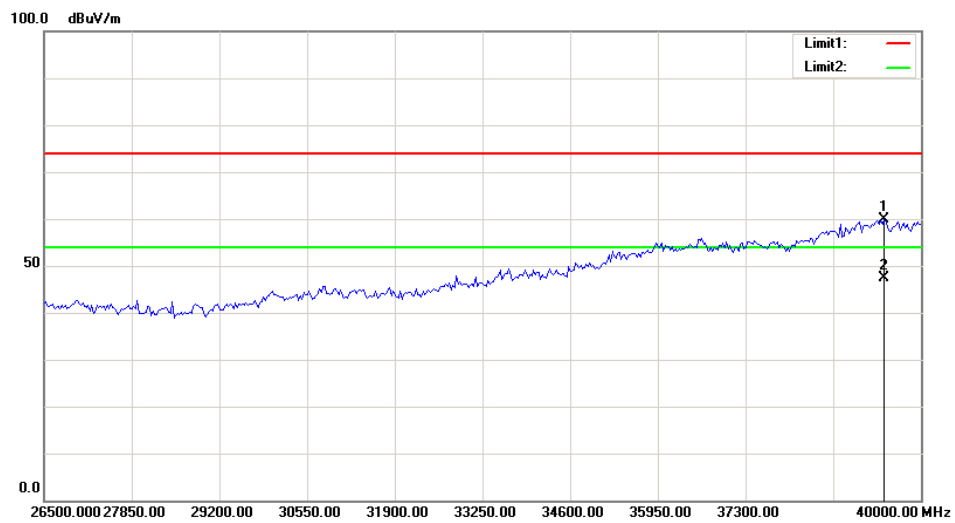
| Frequency<br>(MHz)         | Receiver          |          | Rx Antenna     |                  | Cable<br>loss<br>(dB) | Amplifier<br>Gain<br>(dB) | Corrected<br>Amplitude<br>(dBμV/m) | Extrapolation<br>result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|----------------------------|-------------------|----------|----------------|------------------|-----------------------|---------------------------|------------------------------------|-------------------------------------|-------------------|----------------|
|                            | Reading<br>(dBμV) | Detector | Polar<br>(H/V) | Factor<br>(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:**

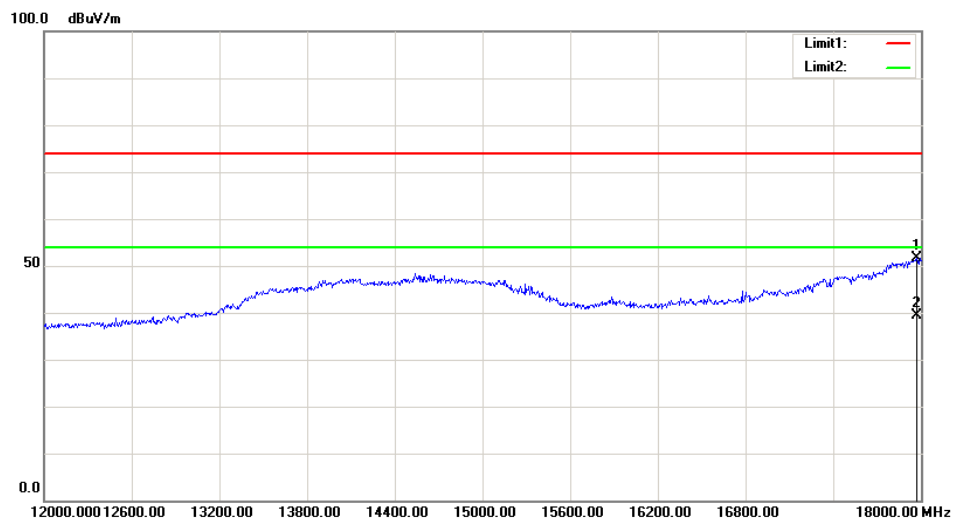
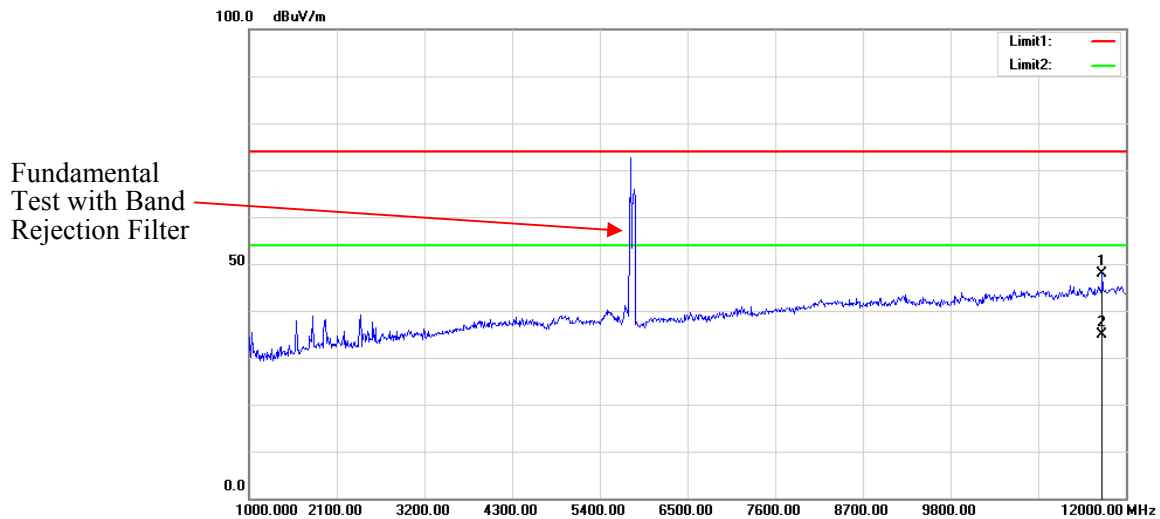
| Frequency<br>(MHz)         | Receiver          |          | Rx Antenna     |                  | Cable<br>loss<br>(dB) | Amplifier<br>Gain<br>(dB) | Corrected<br>Amplitude<br>(dBμV/m) | Extrapolation<br>result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|----------------------------|-------------------|----------|----------------|------------------|-----------------------|---------------------------|------------------------------------|-------------------------------------|-------------------|----------------|
|                            | Reading<br>(dBμV) | Detector | Polar<br>(H/V) | Factor<br>(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          |

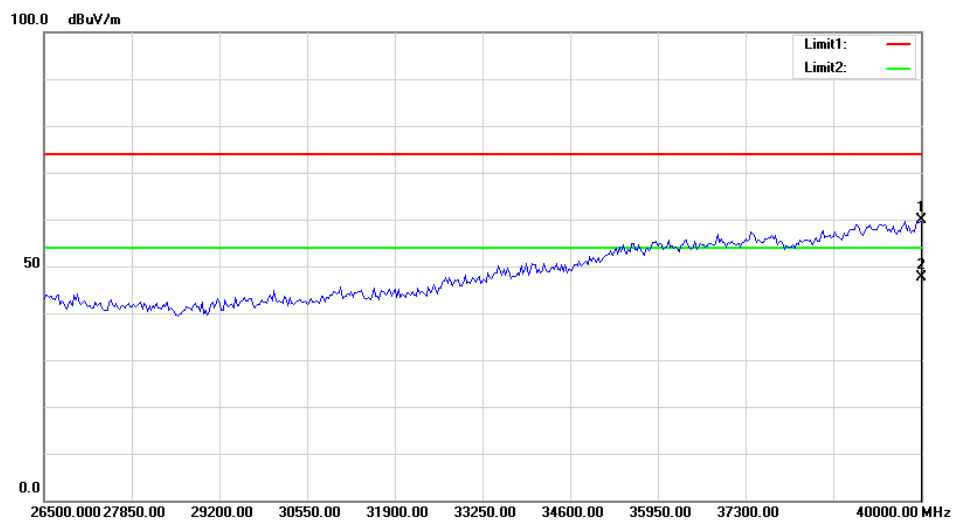
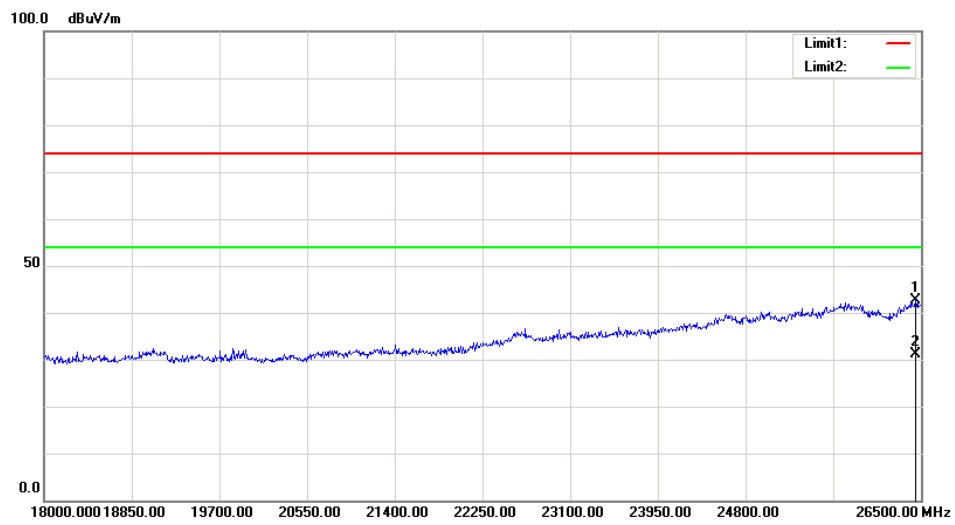
**Test Plots** (1.4M Mode Chain 0 High channel was the worst)  
**Horizontal**





### Vertical







**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**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 28.6 °C   |
| <b>Relative Humidity:</b> | 51 %      |
| <b>ATM Pressure:</b>      | 100.7 kPa |

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

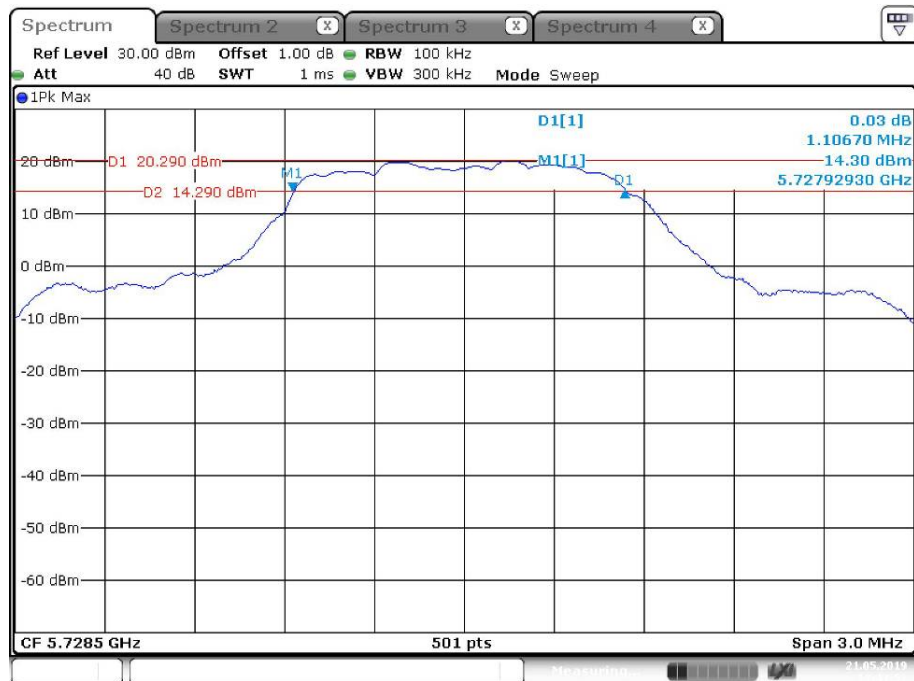
**Test Result:** Pass. Please refer to the following tables and plots.

Test mode: Transmitting

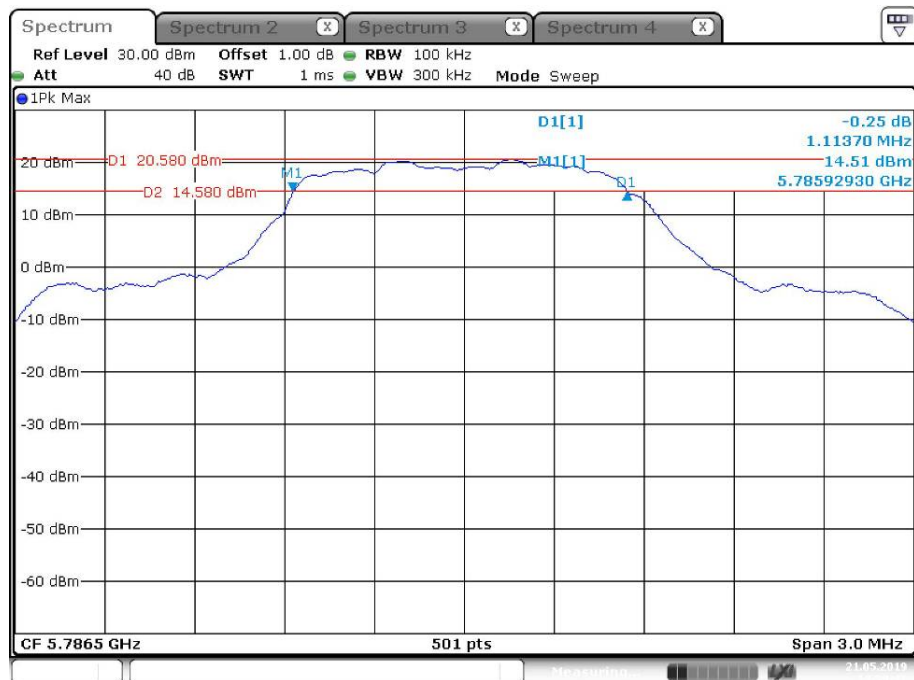
Test only performed at chain 0

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

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

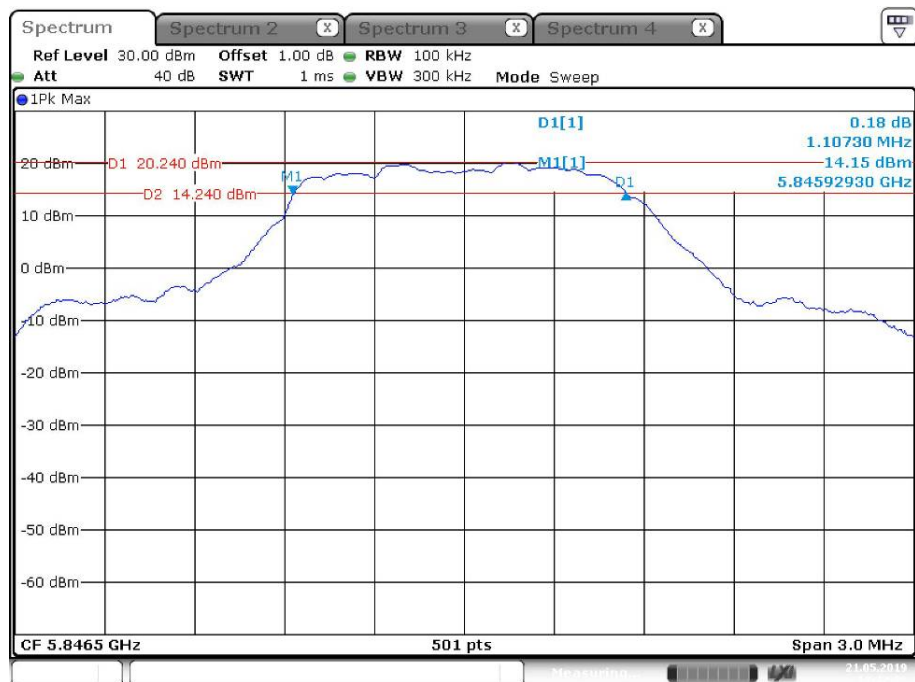
**6dB Minimum Emission Bandwidth:****1.4M Low Channel**

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

**1.4M Middle Channel**

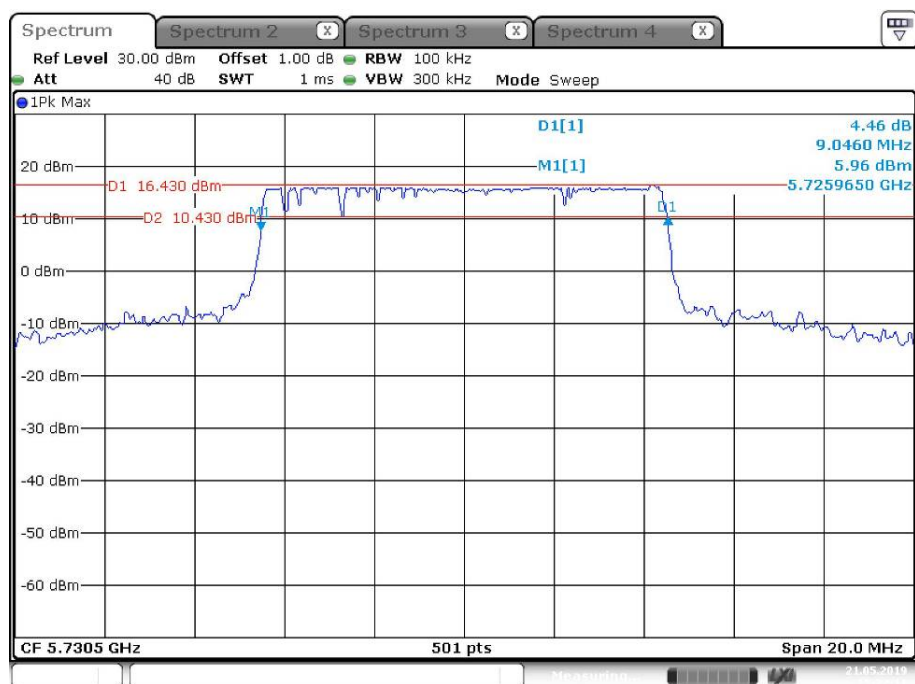
Date: 21.MAY.2019 14:39:48

## 1.4M High Channel



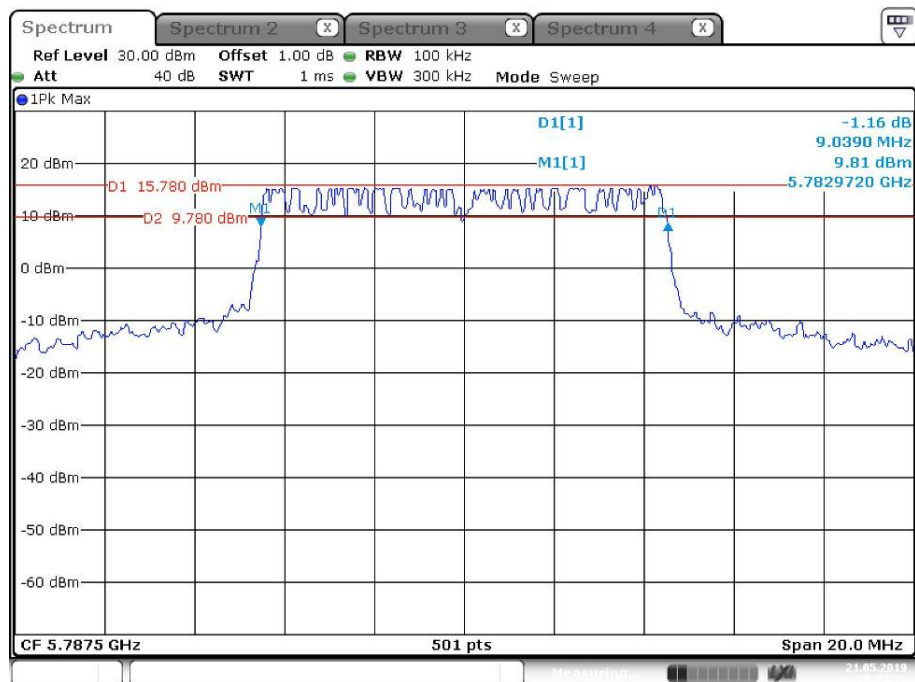
Date: 21.MAY.2019 14:42:32

## 10M Low Channel



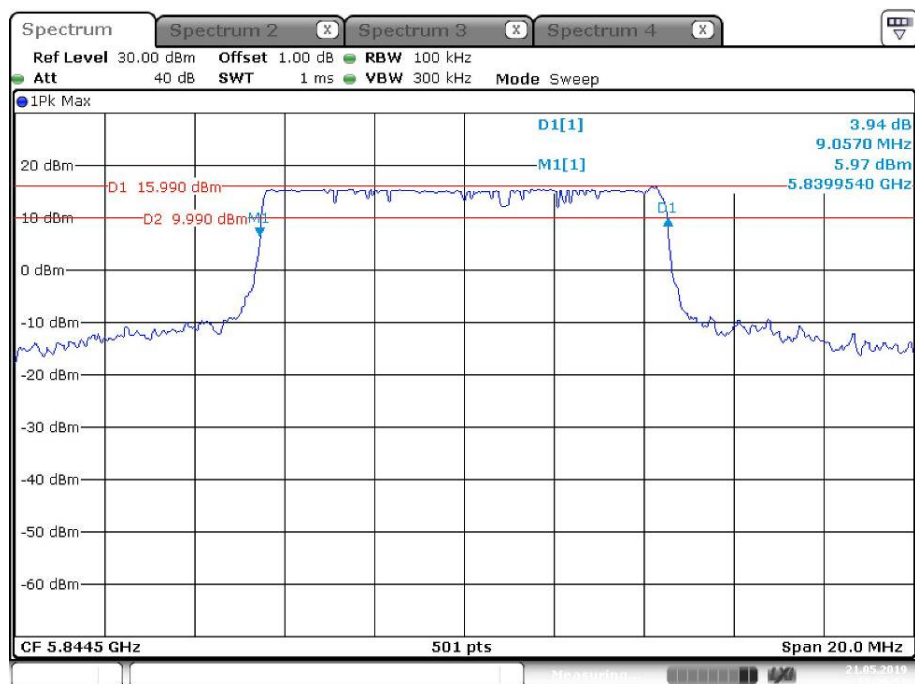
Date: 21.MAY.2019 15:22:11

## 10M Middle Channel

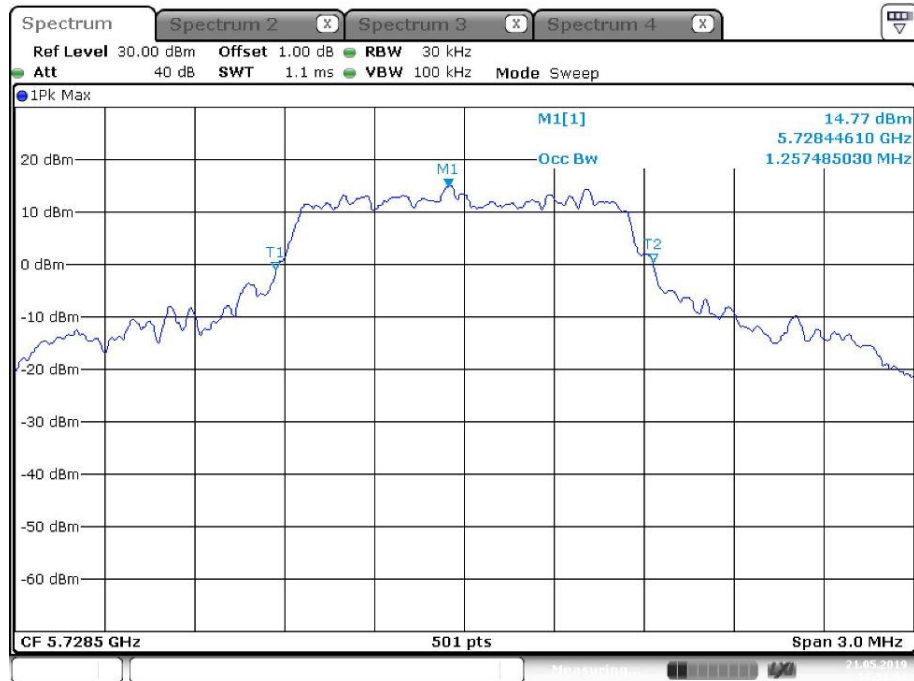


Date: 21.MAY.2019 13:24:24

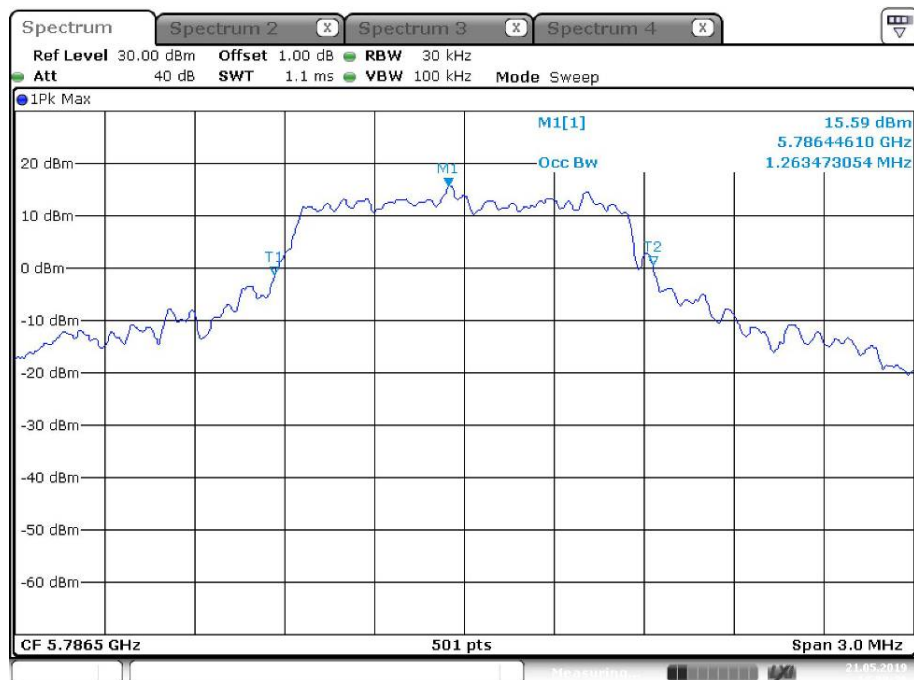
## 10M High Channel



Date: 21.MAY.2019 13:26:52

**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

**Spectrum**

**Spectrum 2** **Spectrum 3** **Spectrum 4**

**Ref Level** 30.00 dBm **Offset** 1.00 dB **RBW** 30 kHz  
**Att** 40 dB **SWT** 1.1 ms **VBW** 100 kHz **Mode** Sweep

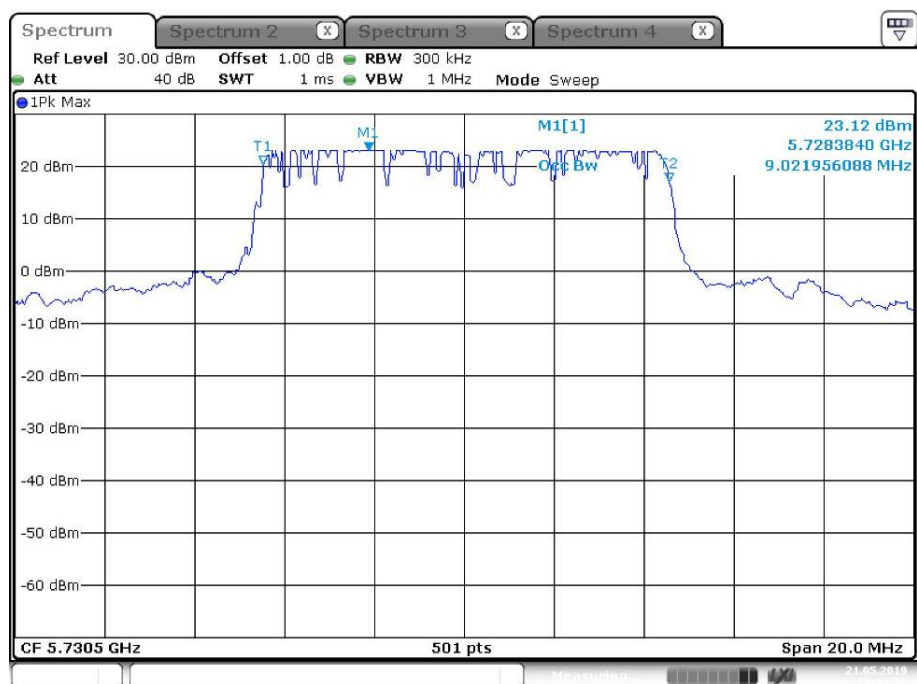
**1Pk Max**

**M1[1]** 15.60 dBm  
 5.84645210 GHz  
 1.227544910 MHz

**T1** **T2** **Occ Bw**

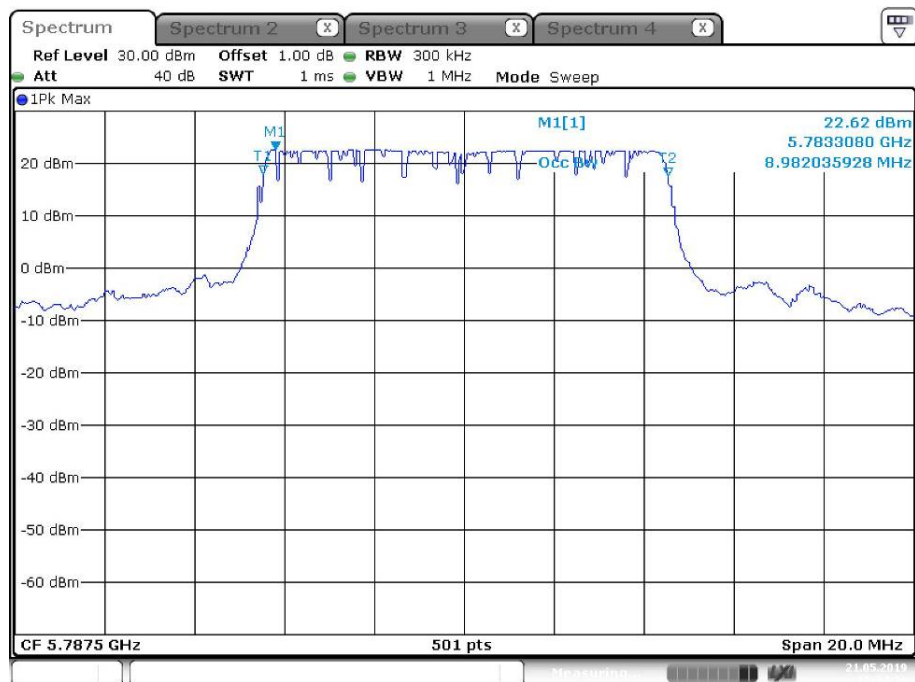
**CF 5.8465 GHz** **501 pts** **Span 3.0 MHz**

## 10M Low Channel

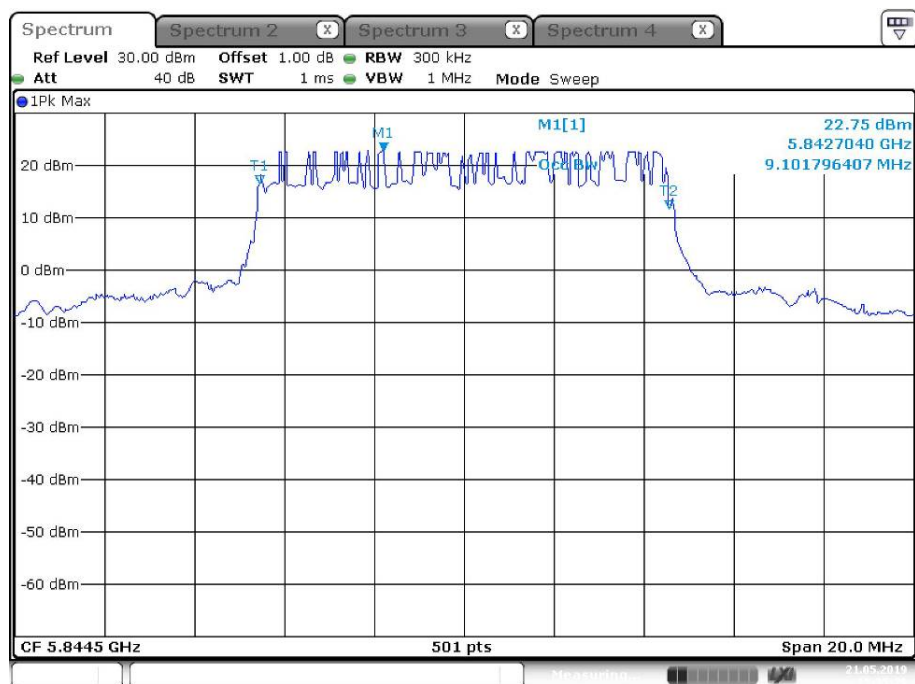


Page 31 of 44

### 10M Middle Channel



### 10M High Channel





---

**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  $11 \text{ dBm} + 10 \log B$ , 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**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 28.6 °C   |
| <b>Relative Humidity:</b> | 51 %      |
| <b>ATM Pressure:</b>      | 100.7 kPa |

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

Test Mode: Transmitting

| Mode   | Frequency<br>(MHz) | Conducted Average<br>Output Power<br>(dBm) |         | Limit<br>(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  $11 + 10 \log B$  dBm, 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**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 28.6 °C   |
| <b>Relative Humidity:</b> | 51 %      |
| <b>ATM Pressure:</b>      | 100.7 kPa |

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

**Test Result: Compliance.**

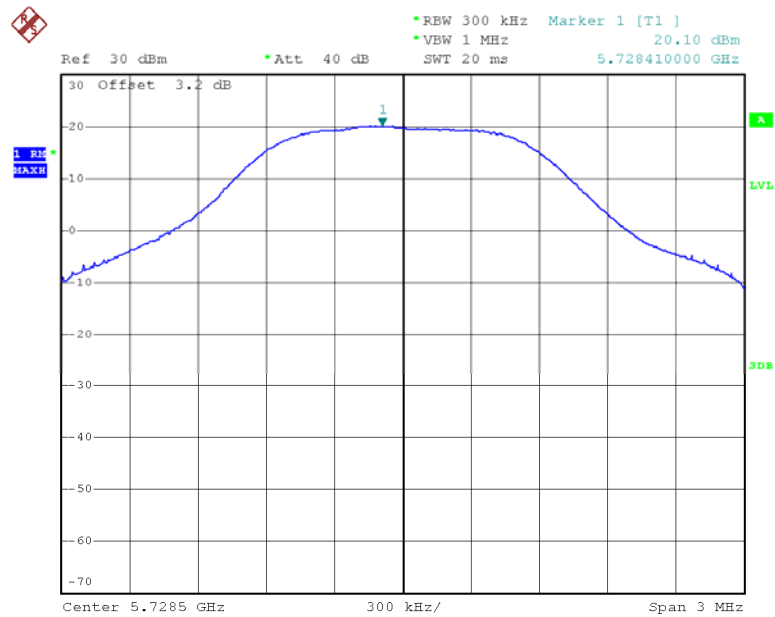
Test Mode: Transmitting

| 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  $10\log(500\text{kHz}/\text{RBW})$  to the offset of the plots, whereas  $\text{RBW} (< 500 \text{ KHz})$  is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

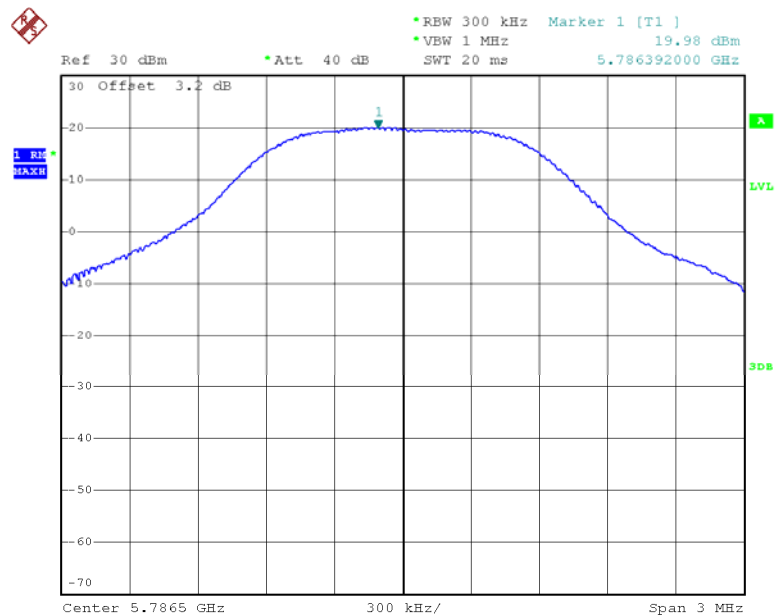
**Chain0:**

**1.4M Low Channel**



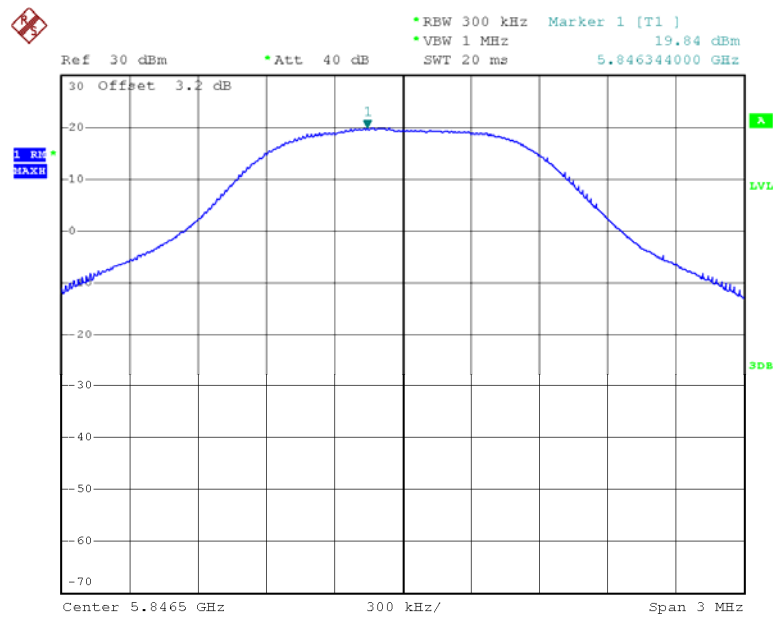
Date: 21.MAY.2019 17:00:07

**1.4M Middle Channel**



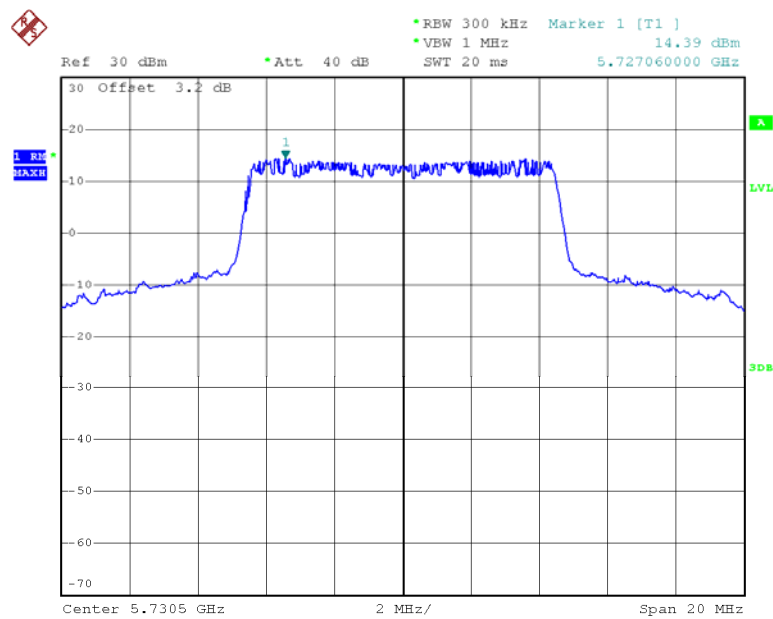
Date: 21.MAY.2019 17:03:27

### 1.4M High Channel



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

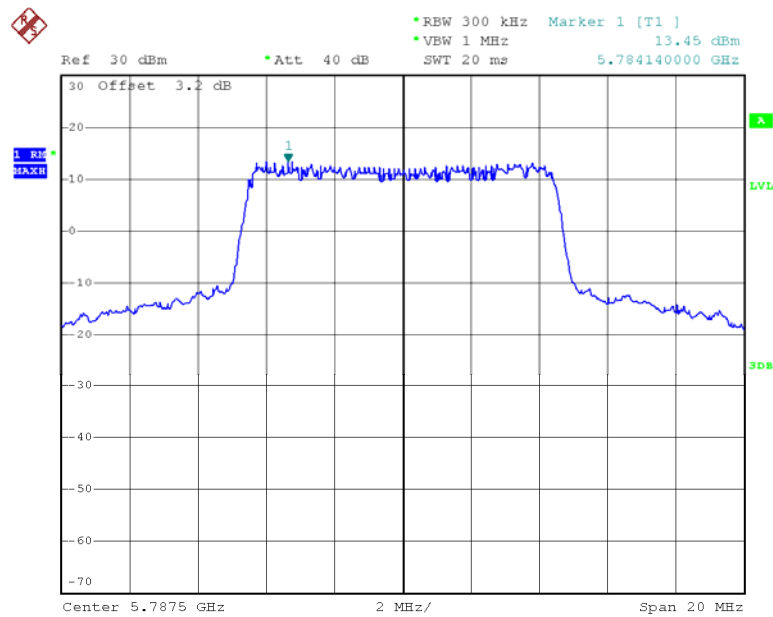
### 10M Low Channel



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

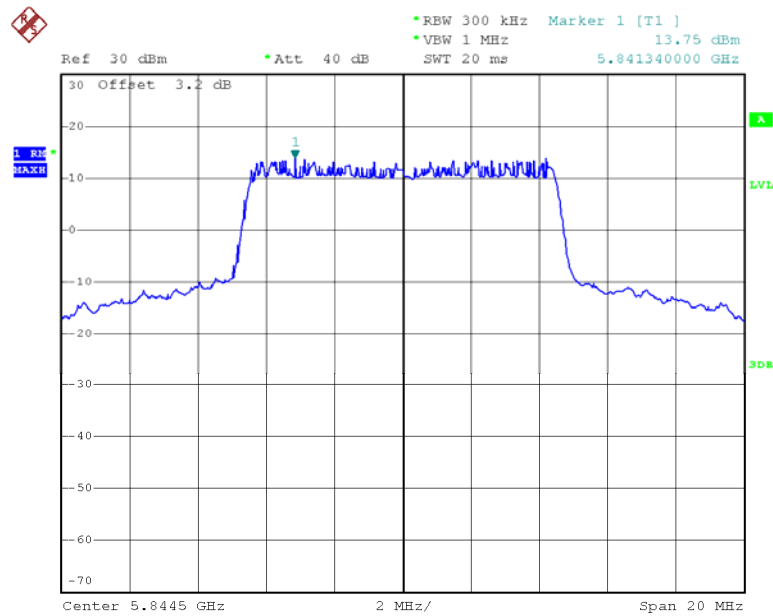


### 10M Middle Channel



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

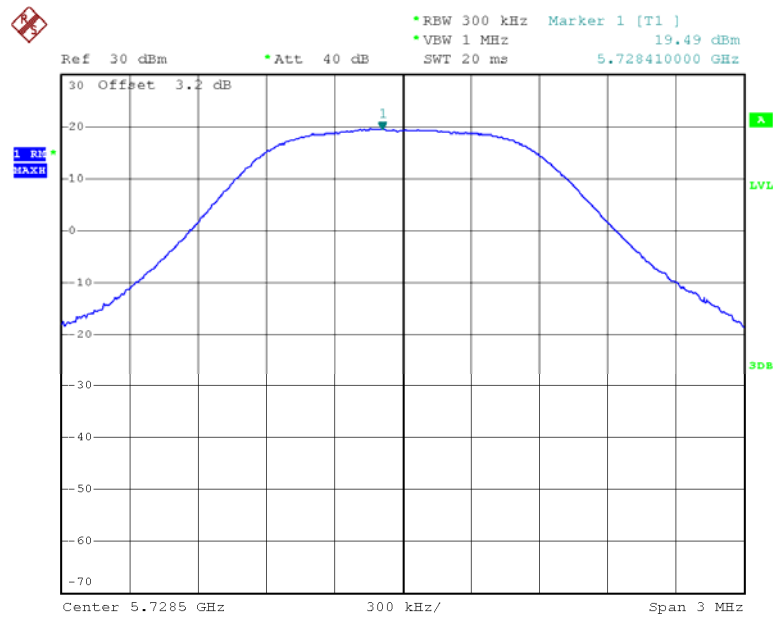
### 10M High Channel



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

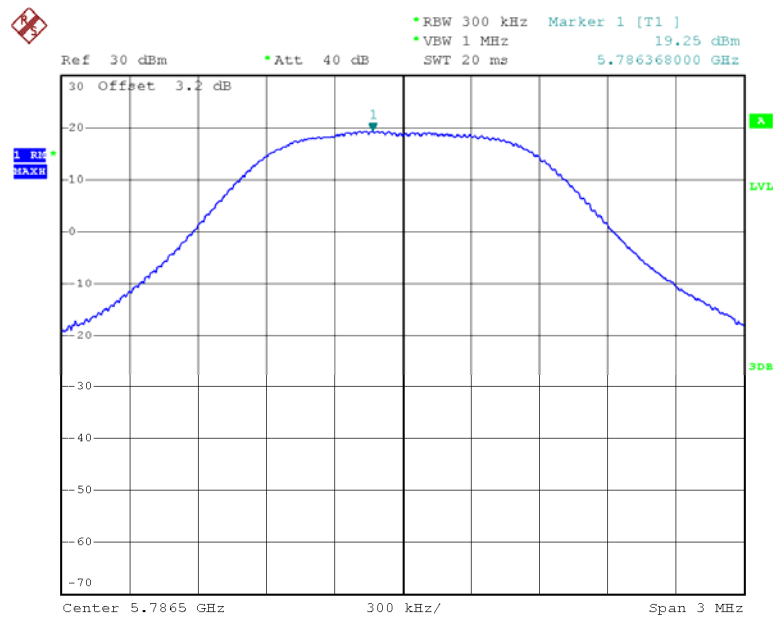
**Chain1:**

**1.4M Low Channel**



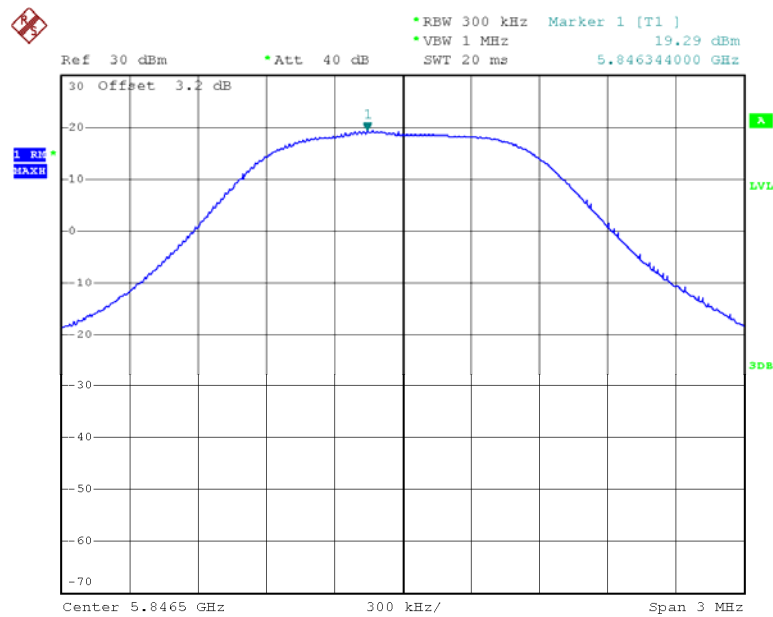
Date: 21.MAY.2019 17:07:03

**1.4M Middle Channel**



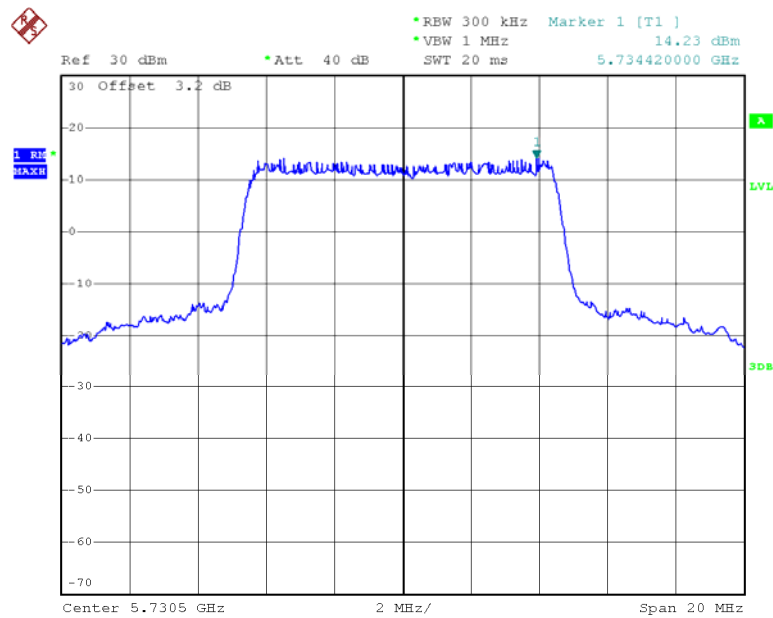
Date: 21.MAY.2019 17:07:51

### 1.4M High Channel



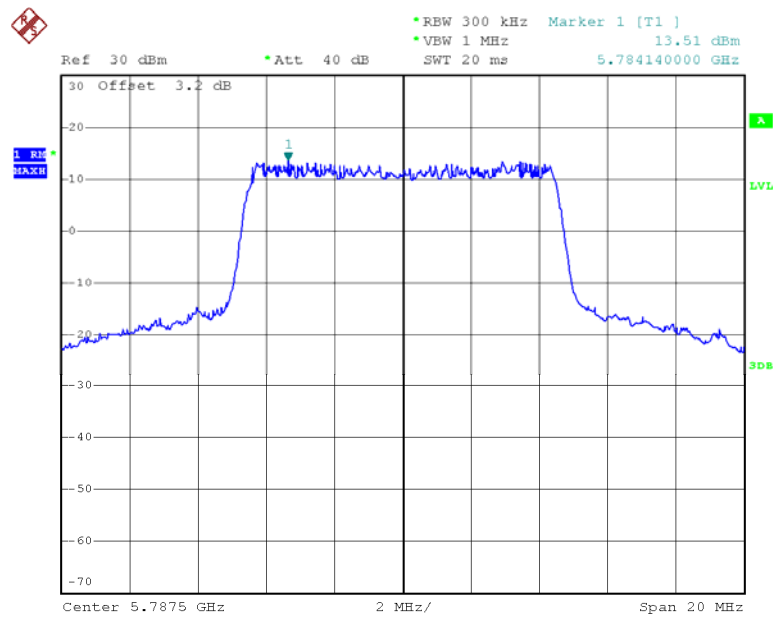
Date: 21.MAY.2019 17:09:36

### 10M Low Channel



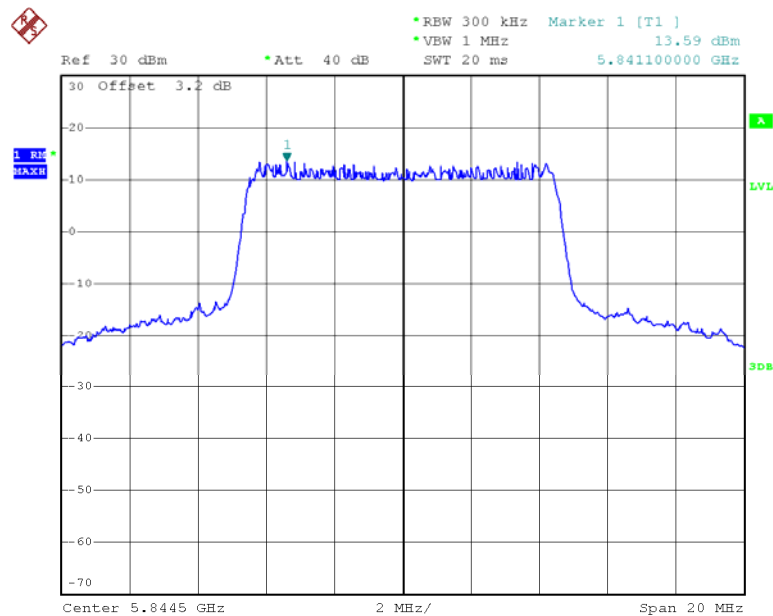
Date: 21.MAY.2019 17:19:13

### 10M Middle Channel



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

### 10M High Channel



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

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