

## TEST REPORT

**Applicant:** Shenzhen Juxingcheng Technology Co.,Ltd.

**Address:** 903, No.16, 7th Lane, Daguanakan Village, Bantian Street,  
Longgang, Shenzhen, China

**Product Name:** Car Stereo

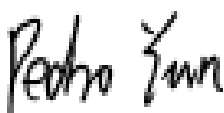
**FCC ID:** 2BOYC-A3733

**Standard(s):** 47 CFR Part 15, Subpart E (15.407)  
ANSI C63.10-2013  
KDB 789033 D02 General U-NII Test Procedures New Rules  
v02r01

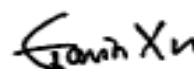
**Report Number:** 2402A111445E-RF-00A

**Report Date:** 2025/5/7

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).



**Reviewed By:** Pedro Yun  
Title: Project Engineer



**Approved By:** Gavin Xu  
Title: RF Supervisor

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**Bay Area Compliance Laboratories Corp. (Dongguan)**  
No.12, Pulong East 1<sup>st</sup> Road, Tangxia Town, Dongguan, Guangdong, China

Tel: +86-769-86858888

Fax: +86-769-86858891

[www.baclcorp.com.cn](http://www.baclcorp.com.cn)

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## CONTENTS

|                                                        |           |
|--------------------------------------------------------|-----------|
| <b>DOCUMENT REVISION HISTORY</b>                       | <b>4</b>  |
| <b>1. GENERAL INFORMATION</b>                          | <b>5</b>  |
| 1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) | 5         |
| 1.2 ACCESSORY INFORMATION                              | 5         |
| 1.3 ANTENNA INFORMATION DETAIL▲                        | 5         |
| 1.4 EQUIPMENT MODIFICATIONS                            | 5         |
| <b>2. SUMMARY OF TEST RESULTS</b>                      | <b>6</b>  |
| <b>3. DESCRIPTION OF TEST CONFIGURATION</b>            | <b>7</b>  |
| 3.1 OPERATION FREQUENCY DETAIL                         | 7         |
| 3.2 EUT OPERATION CONDITION                            | 7         |
| 3.3 SUPPORT EQUIPMENT LIST AND DETAILS                 | 7         |
| 3.4 SUPPORT CABLE LIST AND DETAILS                     | 8         |
| 3.5 BLOCK DIAGRAM OF TEST SETUP                        | 8         |
| 3.6 TEST FACILITY                                      | 9         |
| 3.7 MEASUREMENT UNCERTAINTY                            | 9         |
| <b>4. REQUIREMENTS AND TEST PROCEDURES</b>             | <b>10</b> |
| 4.1 AC LINE CONDUCTED EMISSIONS                        | 10        |
| 4.1.1 Applicable Standard                              | 10        |
| 4.1.2 EUT Setup                                        | 11        |
| 4.1.3 EMI Test Receiver Setup                          | 11        |
| 4.1.4 Test Procedure                                   | 12        |
| 4.1.5 Corrected Amplitude & Margin Calculation         | 12        |
| 4.1.6 Test Result                                      | 12        |
| 4.2 RADIATION SPURIOUS EMISSIONS                       | 13        |
| 4.2.1 Applicable Standard                              | 13        |
| 4.2.2 EUT Setup                                        | 14        |
| 4.2.3 EMI Test Receiver & Spectrum Analyzer Setup      | 16        |
| 4.2.4 Test Procedure                                   | 16        |
| 4.2.5 Corrected Result & Margin Calculation            | 17        |
| 4.2.6 Test Result                                      | 17        |
| 4.3 EMISSION BANDWIDTH                                 | 18        |
| 4.3.1 Applicable Standard                              | 18        |
| 4.3.2 EUT Setup                                        | 18        |
| 4.3.3 Test Procedure                                   | 18        |
| 4.3.4 Test Result                                      | 19        |
| 4.4 MAXIMUM CONDUCTED OUTPUT POWER                     | 20        |
| 4.4.1 Applicable Standard                              | 20        |
| 4.4.2 EUT Setup                                        | 20        |
| 4.4.3 Test Procedure                                   | 20        |
| 4.4.4 Test Result                                      | 20        |
| 4.5 MAXIMUM POWER SPECTRAL DENSITY                     | 21        |

|                                                 |           |
|-------------------------------------------------|-----------|
| 4.5.1 Applicable Standard .....                 | 21        |
| 4.5.2 EUT Setup .....                           | 21        |
| 4.5.3 Test Procedure .....                      | 22        |
| 4.5.4 Test Result .....                         | 22        |
| <b>4.6 DUTY CYCLE .....</b>                     | <b>23</b> |
| 4.6.1 EUT Setup .....                           | 23        |
| 4.6.2 Test Procedure .....                      | 23        |
| 4.6.3 Judgment .....                            | 23        |
| <b>4.7 ANTENNA REQUIREMENT .....</b>            | <b>24</b> |
| 4.7.1 Applicable Standard .....                 | 24        |
| 4.7.2 Judgment .....                            | 24        |
| <b>5. Test DATA AND RESULTS .....</b>           | <b>25</b> |
| <b>5.1 AC LINE CONDUCTED EMISSIONS .....</b>    | <b>25</b> |
| <b>5.2 RADIATION SPURIOUS EMISSIONS .....</b>   | <b>26</b> |
| <b>5.3 EMISSION BANDWIDTH .....</b>             | <b>44</b> |
| <b>5.4 99% OCCUPIED BANDWIDTH .....</b>         | <b>47</b> |
| <b>5.5 MAXIMUM CONDUCTED OUTPUT POWER .....</b> | <b>50</b> |
| <b>5.6 POWER SPECTRAL DENSITY .....</b>         | <b>51</b> |
| <b>5.7 DUTY CYCLE .....</b>                     | <b>54</b> |
| <b>EXHIBIT A - EUT PHOTOGRAPHS .....</b>        | <b>56</b> |
| <b>EXHIBIT B - TEST SETUP PHOTOGRAPHS .....</b> | <b>57</b> |

**DOCUMENT REVISION HISTORY**

| Revision Number | Report Number       | Description of Revision | Date of Revision |
|-----------------|---------------------|-------------------------|------------------|
| 1.0             | 2402A111445E-RF-00A | Original Report         | 2025/5/7         |

## 1. GENERAL INFORMATION

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

|                                                                                                                                                                       |                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>EUT Name:</b>                                                                                                                                                      | Car Stereo                                                                                       |
| <b>EUT Model:</b>                                                                                                                                                     | A3733                                                                                            |
| <b>Multiple Models:</b>                                                                                                                                               | A3610, A3664, A3663, A3570, A3346, A3790, A3238, A3547, A3587, A3446, A3529, A3692, A3461, A3467 |
| <b>Operation Frequency:</b>                                                                                                                                           | 5180-5240 MHz (802.11a/n ht20)<br>5190-5230 MHz (802.11n ht40)                                   |
| <b>Maximum Average Conducted Output Power:</b>                                                                                                                        | 16.99 dBm                                                                                        |
| <b>Modulation Type:</b>                                                                                                                                               | OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM                                                            |
| <b>Rated Input Voltage:</b>                                                                                                                                           | DC 9-16V (Typical: DC 12V)                                                                       |
| <b>Serial Number:</b>                                                                                                                                                 | 2WA8-1(for RF Conducted Test)<br>2WA8-2(for Radiated Spurious Emissions Test)                    |
| <b>EUT Received Date:</b>                                                                                                                                             | 2024/12/20                                                                                       |
| <b>EUT Received Status:</b>                                                                                                                                           | Good                                                                                             |
| Note: The multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer. |                                                                                                  |

### 1.2 Accessory Information

| Accessory Description | Manufacturer | Model | Parameters |
|-----------------------|--------------|-------|------------|
| /                     | /            | /     | /          |

### 1.3 Antenna Information Detail ▲

| Antenna Type                                                                                                                                                                                                                                                                                                                                                                            | Input Impedance (Ohm) | Frequency Range | Antenna Gain |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|--------------|
| PCB                                                                                                                                                                                                                                                                                                                                                                                     | 50                    | 5.15~5.25GHz    | 2.75dBi      |
| <b>The design of compliance with §15.203:</b><br><input checked="" type="checkbox"/> Unit uses a permanently attached antenna.<br><input type="checkbox"/> Unit uses a unique coupling to the intentional radiator.<br><input type="checkbox"/> Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit. |                       |                 |              |

### 1.4 Equipment Modifications

No modifications are made to the EUT during all test items.

## 2. SUMMARY OF TEST RESULTS

| Standard(s) Section                                                                                                                                                       | Test Items                     | Result         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------|
| §15.207(a)                                                                                                                                                                | AC line conducted emissions    | Not Applicable |
| FCC§15.205& §15.209<br>&§15.407(b)                                                                                                                                        | Radiated Spurious Emissions    | Compliant      |
| FCC§15.407(a) (e)                                                                                                                                                         | Emission Bandwidth             | Compliant      |
| FCC§15.407(a)                                                                                                                                                             | Maximum Conducted Output Power | Compliant      |
| FCC§15.407 (a)                                                                                                                                                            | Power Spectral Density         | Compliant      |
| §15.203                                                                                                                                                                   | Antenna Requirement            | Compliant      |
| Note 1: The device was powered by battery when operating.<br>Note 2: For Radiated Spurious Emissions 9kHz~1GHz and 18~40GHz, the maximum output power channel was tested. |                                |                |

### 3. DESCRIPTION OF TEST CONFIGURATION

#### 3.1 Operation Frequency Detail

**For 5 150-5250MHz Band:**

| 802.11a/n ht20 |                 | 802.11n ht40 |                 |
|----------------|-----------------|--------------|-----------------|
| Channel        | Frequency (MHz) | Channel      | Frequency (MHz) |
| 36             | <b>5180</b>     | 38           | <b>5190</b>     |
| 40             | <b>5200</b>     | 46           | <b>5230</b>     |
| 44             | 5220            |              |                 |
| 48             | <b>5240</b>     |              |                 |

Note: The above frequencies in bold were performed the test.

#### 3.2 EUT Operation Condition

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

The EUT configuration is below:

| <b>EUT Exercise Software:</b>                                                                                                 |               | MobaXterm.exe        |           |                     |
|-------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------|-----------|---------------------|
| The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲: |               |                      |           |                     |
| <b>5150-5250 MHz Band:</b>                                                                                                    |               |                      |           |                     |
| Test Modes                                                                                                                    | Test Channels | Test Frequency (MHz) | Data rate | Power Level Setting |
| 802.11a                                                                                                                       | Lowest        | 5180                 | 6Mbps     | Default             |
|                                                                                                                               | Middle        | 5200                 | 6Mbps     | Default             |
|                                                                                                                               | Highest       | 5240                 | 6Mbps     | Default             |
| 802.11n ht20                                                                                                                  | Lowest        | 5180                 | MCS0      | Default             |
|                                                                                                                               | Middle        | 5200                 | MCS0      | Default             |
|                                                                                                                               | Highest       | 5240                 | MCS0      | Default             |
| 802.11n ht40                                                                                                                  | Lowest        | 5190                 | MCS0      | Default             |
|                                                                                                                               | Highest       | 5230                 | MCS0      | Default             |

Note:

1. The system support 802.11a/n ht20/n ht40.
2. The above are the worst-case data rates, which are determined for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths, and modulations.

#### 3.3 Support Equipment List and Details

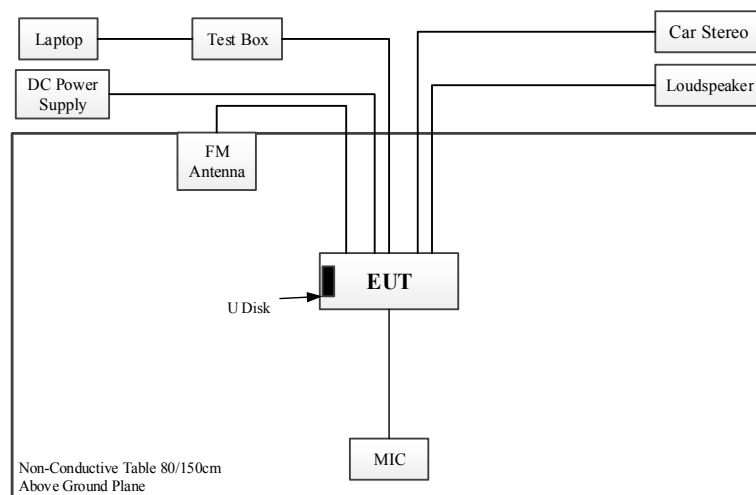
| Manufacturer     | Description     | Model     | Serial Number  |
|------------------|-----------------|-----------|----------------|
| DK               | DC power supply | DK-60V50A | T-08-EE140     |
| Unknown          | Test Box        | Unknown   | Unknown        |
| Lenovo           | Laptop          | G510      | EMZBPC21103006 |
| Kingston         | U-Disk          | 32G       | EMZBUD21103001 |
| Unknown          | FM Antenna      | Unknown   | Unknown        |
| Unknown          | Loudspeaker     | Unknown   | Unknown        |
| Shenzhen Cheyang | Car Stereo      | A3733     | Unknown        |
| Unknown          | MIC             | Unknown   | Unknown        |

### 3.4 Support Cable List and Details

| Cable Description      | Shielding Type | Ferrite Core | Length (m) | From Port | To              |
|------------------------|----------------|--------------|------------|-----------|-----------------|
| MIC Cable              | No             | No           | 1.2        | EUT       | MIC             |
| Detachable Power Cable | No             | No           | 2          | EUT       | DC Power Supply |
| USB Cable              | No             | No           | 1          | Laptop    | Test Box        |
| Detachable CAN Cable   | No             | No           | 2          | EUT       | Test Box        |
| Audio Cable            | No             | No           | 2          | EUT       | Car Stereo      |
| Audio Cable            | No             | No           | 2          | EUT       | Loudspeaker     |
| FM Antenna Cable       | No             | No           | 3          | EUT       | FM Antenna      |

### 3.5 Block Diagram of Test Setup

Spurious Emissions:



### 3.6 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, 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. : 829273, the FCC Designation No. : CN5044.

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

### 3.7 Measurement Uncertainty

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

| Parameter                         | Measurement Uncertainty                                                                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Occupied Channel Bandwidth        | ±5 %                                                                                                                                                  |
| RF output power, conducted        | ±0.61dB                                                                                                                                               |
| Power Spectral Density, conducted | ±0.61 dB                                                                                                                                              |
| Unwanted Emissions, radiated      | 9kHz~30MHz: 3.3dB, 30MHz~200MHz: 4.55 dB, 200MHz~1GHz: 5.92 dB, 1GHz~6GHz: 4.98 dB, 6GHz~18GHz: 5.89 dB, 18GHz~26.5GHz:5.47 dB, 26.5GHz~40GHz:5.63 dB |
| Unwanted Emissions, conducted     | ±2.47 dB                                                                                                                                              |
| Temperature                       | ±1 °C                                                                                                                                                 |
| Humidity                          | ±5%                                                                                                                                                   |
| DC and low frequency voltages     | ±0.4%                                                                                                                                                 |
| Duty Cycle                        | 1%                                                                                                                                                    |
| AC Power Lines Conducted Emission | 3.11 dB (150 kHz to 30 MHz)                                                                                                                           |

## 4. REQUIREMENTS AND TEST PROCEDURES

### 4.1 AC Line Conducted Emissions

#### 4.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency of emission (MHz) | Conducted limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | Quasi-peak                   | Average   |
| 0.15-0.5                    | 66 to 56*                    | 56 to 46* |
| 0.5-5                       | 56                           | 46        |
| 5-30                        | 60                           | 50        |

\*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

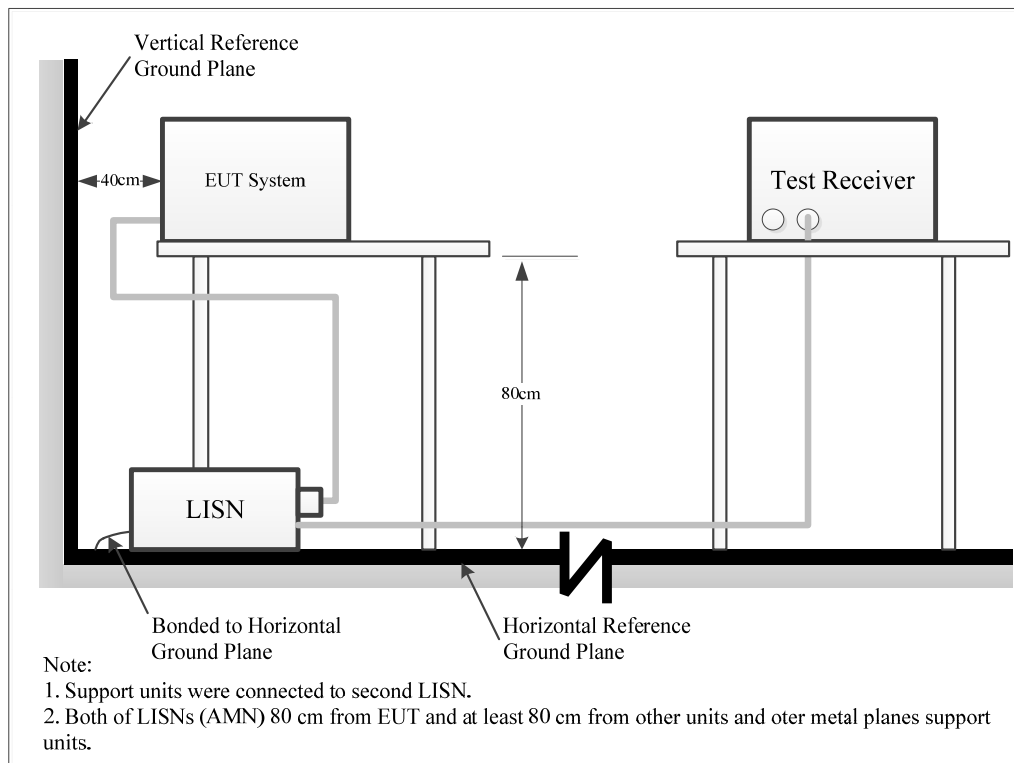
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000  $\mu$ V within the frequency band 535-1705 kHz, as measured using a 50  $\mu$ H/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

#### 4.1.2 EUT Setup



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

The spacing between the peripherals was 10 cm.

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

#### 4.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| Frequency Range  | IF B/W |
|------------------|--------|
| 150 kHz – 30 MHz | 9 kHz  |

#### 4.1.4 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

#### 4.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

#### 4.1.6 Test Result

Please refer to section 5.1.

## 4.2 Radiation Spurious Emissions

### 4.2.1 Applicable Standard

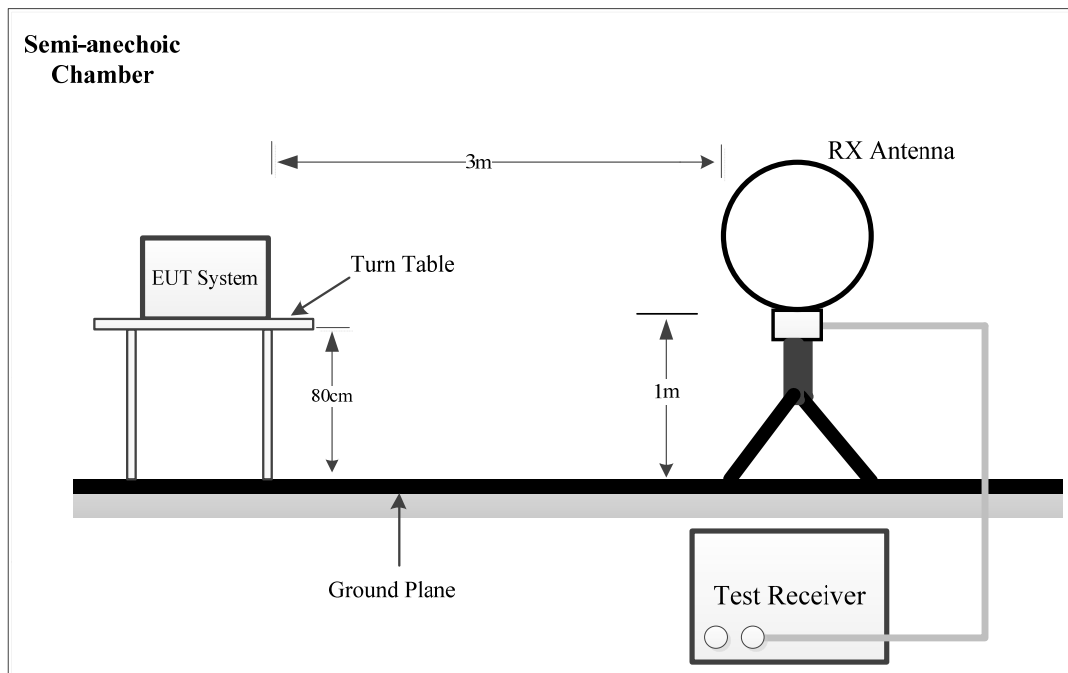
FCC §15.407 (b);

*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:

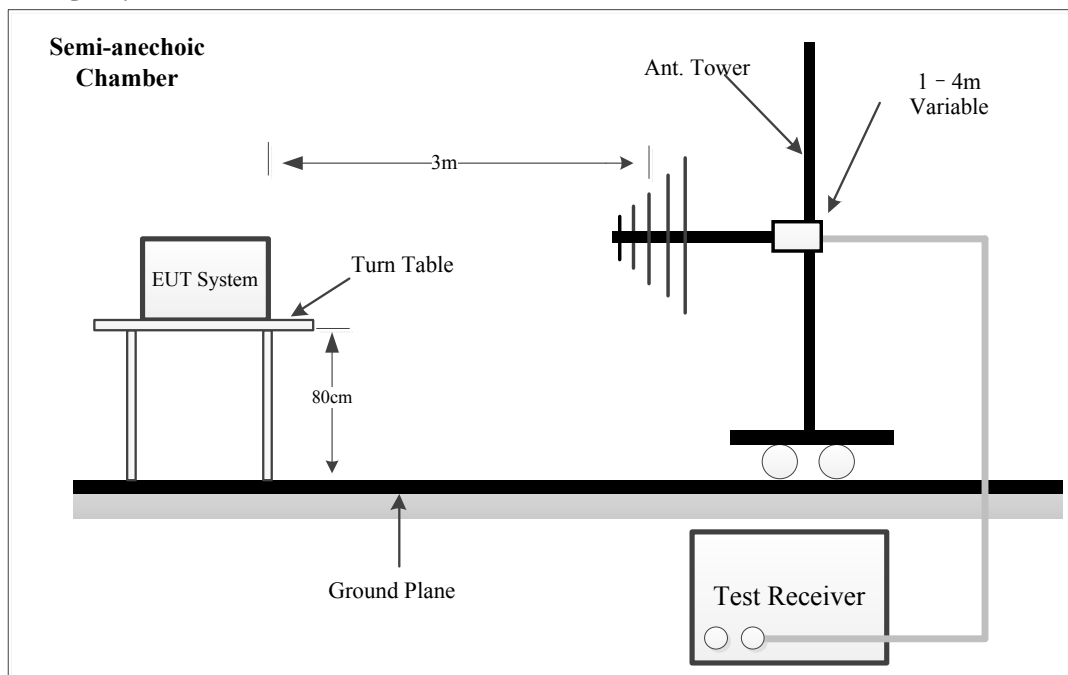
- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (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 solely in the 5.725-5.850 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.
- (8) 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.
- (9) 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.
- (10) The provisions of § 15.205 apply to intentional radiators operating under this section.
- (11) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.
- (c) The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

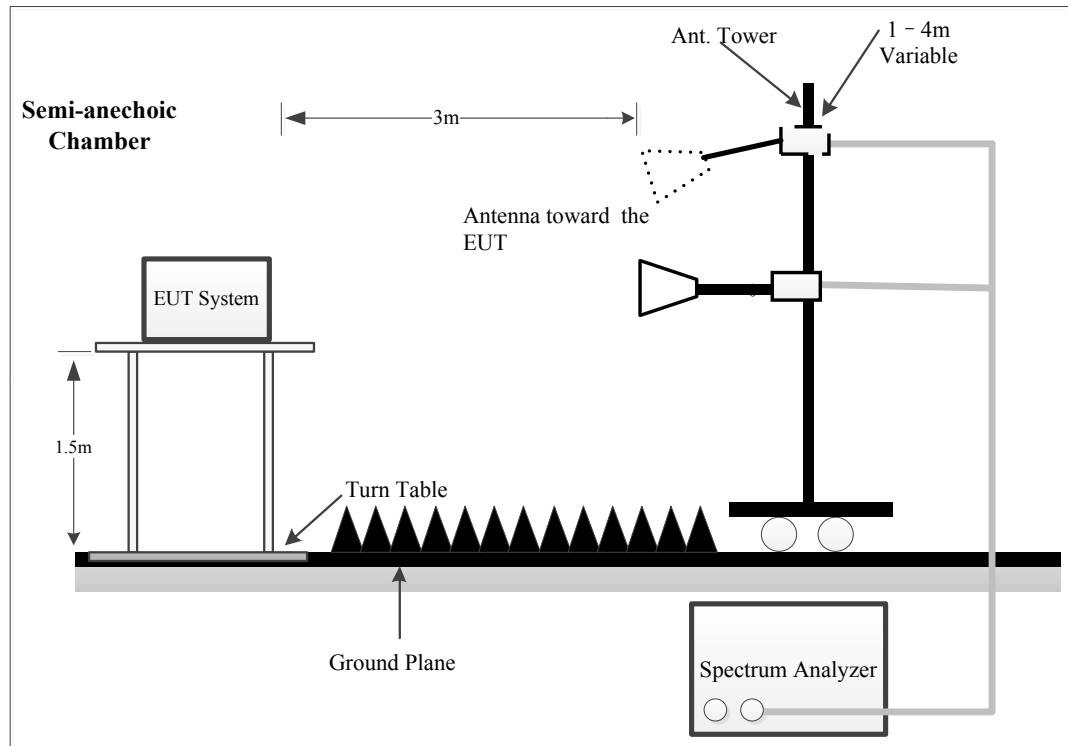
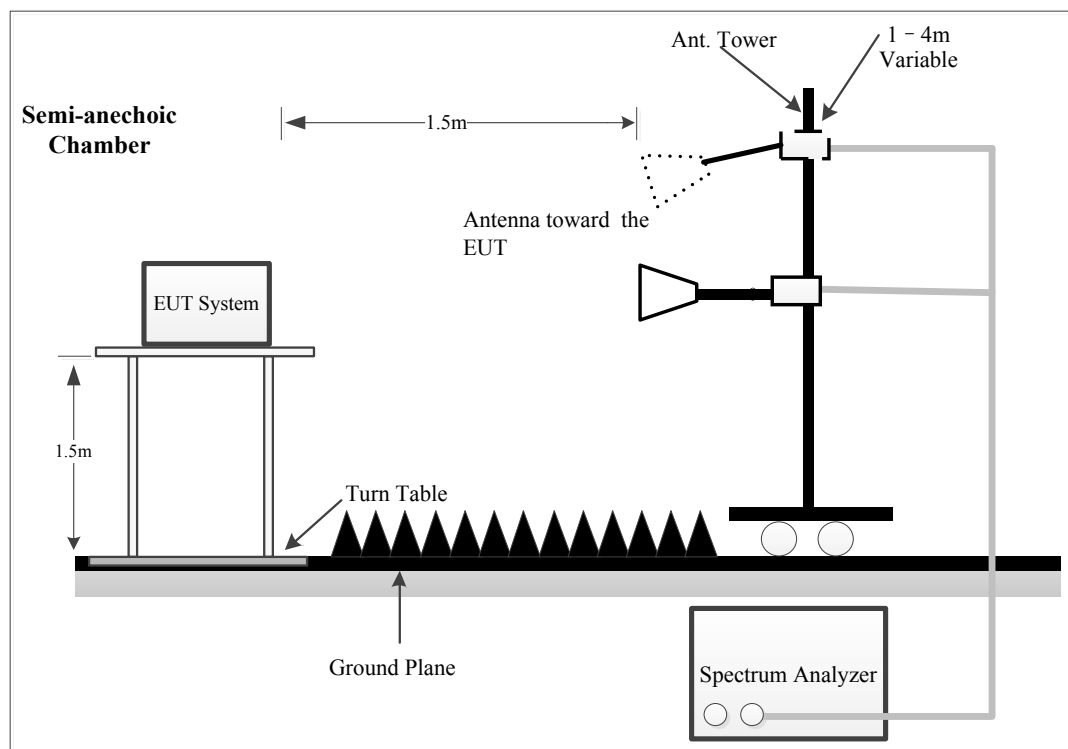
#### 4.2.2 EUT Setup

##### 9kHz~30MHz:



##### 30MHz~1GHz:



**1-26.5GHz:****26.5-40GHz:**

The radiated emission tests were performed in the semi-anechoic chamber, using the setup accordance with the ANSI C63.10-2013. The specification used was FCC 15.209, FCC 15.407 limits.

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

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

#### 4.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 40 GHz.

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

9kHz-1000MHz:

| Frequency Range  | Measurement | RBW     | Video B/W | IF B/W | Detector |
|------------------|-------------|---------|-----------|--------|----------|
| 9 kHz – 150 kHz  | QP/AV       | 300Hz   | 1 kHz     | 200 Hz | QP/AV    |
| 150 kHz – 30 MHz | QP/AV       | 10 kHz  | 30 kHz    | 9 kHz  | QP/AV    |
| 30MHz – 1000 MHz | PK          | 100 kHz | 300 kHz   | /      | PK       |
|                  | QP          | /       | /         | 120kHz | QP       |

1GHz- 40GHz:

Pre-scan:

| Measurement | Detector | Duty cycle | RBW  | Video B/W               |
|-------------|----------|------------|------|-------------------------|
| PK          | Peak     | Any        | 1MHz | 3 MHz                   |
| Ave.        | Peak     | >98%       | 1MHz | 5kHz                    |
|             |          | <98%       | 1MHz | 1/T, not less than 5kHz |

Final measurement for emission identified during the pre-scan:

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

Note: T is minimum transmission duration

#### 4.2.4 Test Procedure

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz -1 GHz, except 9-90 kHz, 110-490 kHz, employing an average detector, peak and Average detection modes for frequencies above 1 GHz.

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

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.

For Radiated 26.5-40GHz test, which was performed at 1.5 m distance, according to C63.10, the test result shall be extrapolated to the specified distance using an extrapolation Factor of 20dB/decade from 3m to 1.5m

Distance extrapolation Factor =  $20 \log (\text{specific distance } [3m]/\text{test distance } [1.5m])$  dB= 6.0 dB

#### 4.2.5 Corrected Result & Margin Calculation

The basic equation except 26.5-40GHz test is as follows:

Factor = Antenna Factor + Cable Loss- Amplifier Gain

For Radiated 26.5-40GHz test:

Factor = Antenna Factor + Cable Loss- Distance extrapolation Factor

Result = Reading + Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

#### 4.2.6 Test Result

Please refer to section 5.2.

### 4.3 Emission Bandwidth

#### 4.3.1 Applicable Standard

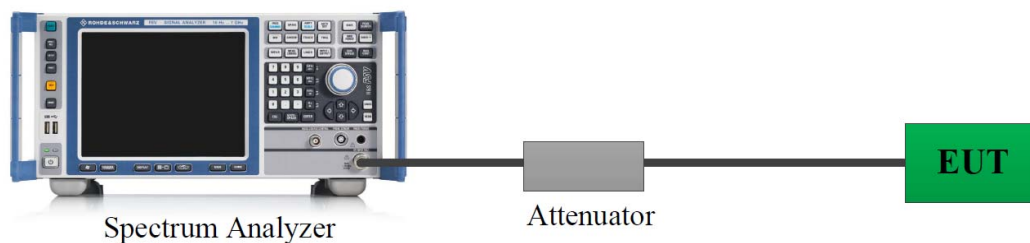
FCC §15.407 (a),(h)

(h)(2) Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating with any part of its 26 dB emission bandwidth in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems.

FCC §15.407 (e)

Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

#### 4.3.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

#### 4.3.3 Test Procedure

##### 26dB Emission Bandwidth:

According to ANSI C63.10-2013 Section 12.4.1

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = peak.
- Trace mode = max hold
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

##### 6 dB emission bandwidth:

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

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW)  $\geq 3$  RBW.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with

the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described in this section. For devices that use channel aggregation refer to III.A and III.C for determining emission bandwidth.

#### **99% Occupied Bandwidth:**

According to ANSI C63.10-2013 Section 12.4.2&6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than  $[10 \log (OBW/RBW)]$  below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

#### **4.3.4 Test Result**

Please refer to section 5.3 and section 5.4.

## 4.4 Maximum Conducted Output Power

### 4.4.1 Applicable Standard

#### FCC §15.407(a) (1)(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.

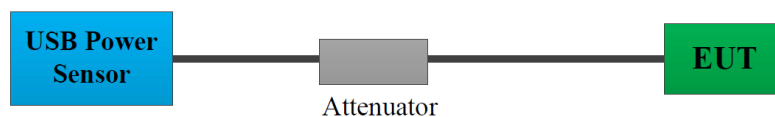
#### FCC §15.407(a) (2)

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.

#### FCC §15.407(a) (3)(i)

For the band 5.725-5.850 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.

### 4.4.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

### 4.4.3 Test Procedure

According to ANSI C63.10-2013 Section 12.3.3.1

Method PM-G is measurement using a gated RF average power meter.

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

### 4.4.4 Test Result

Please refer to section 5.5.

## 4.5 Maximum Power Spectral Density

### 4.5.1 Applicable Standard

#### FCC §15.407(a) (1)(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.

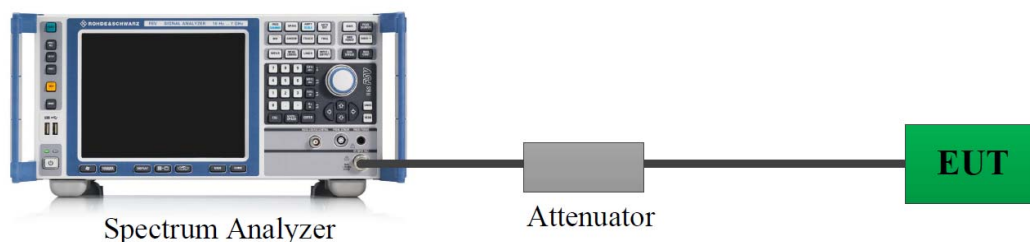
#### FCC §15.407(a) (2)

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.

#### FCC §15.407(a) (3)(i)

For the band 5.725-5.850 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.

### 4.5.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

#### 4.5.3 Test Procedure

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

**Duty cycle  $\geq 98\%$**

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 should be applied.

**Duty cycle  $< 98\%$ , duty cycle variations are less than  $\pm 2\%$**

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-2 should be applied.

**Duty cycle  $< 98\%$ , duty cycle variations exceed  $\pm 2\%$**

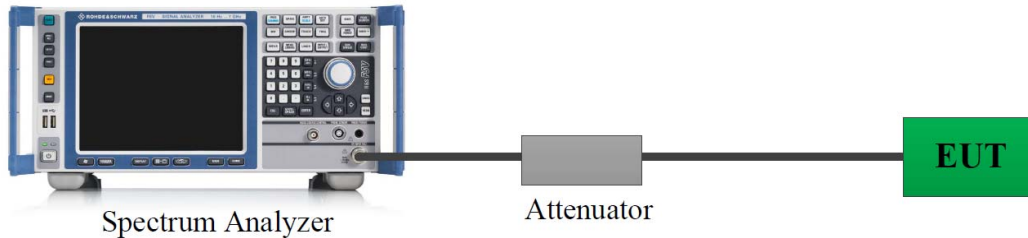
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-3 should be applied.

#### 4.5.4 Test Result

Please refer to section 5.6.

## 4.6 Duty Cycle

### 4.6.1 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, which was provided by manufacturer. The insert loss of this RF cable/attenuator was offset into the setting of test equipment.

### 4.6.2 Test Procedure

According to ANSI C63.10-2013 Section 12.2

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

- 1) Set the center frequency of the instrument to the center frequency of the transmission.
- 2) Set  $RBW \geq OBW$  if possible; otherwise, set RBW to the largest available value.
- 3) Set  $VBW \geq RBW$ . Set detector = peak or average.
- 4) The zero-span measurement method shall not be used unless both RBW and VBW are  $> 50/T$  and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if  $T \leq 16.7 \mu s$ .)

### 4.6.3 Judgment

Report Only. Please refer to section 5.7.

## **4.7 Antenna Requirement**

### **4.7.1 Applicable Standard**

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 use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### **4.7.2 Judgment**

**Compliant.** Please refer to the Antenna Information detail in Section 1.3.

## 5. Test DATA AND RESULTS

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### 5.1 AC Line Conducted Emissions

**Not Applicable**, the device was powered by battery when operating.

## 5.2 Radiation Spurious Emissions

### 1) 9kHz - 1GHz

|                |              |              |              |
|----------------|--------------|--------------|--------------|
| Serial Number: | 2WA8-2       | Test Date:   | 2025/3/29    |
| Test Site:     | Chamber10m   | Test Mode:   | Transmitting |
| Tester:        | Leesin Xiang | Test Result: | Pass         |

**Environmental Conditions:**

|                      |      |                           |    |                        |       |
|----------------------|------|---------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 23.8 | Relative Humidity:<br>(%) | 49 | ATM Pressure:<br>(kPa) | 101.3 |
|----------------------|------|---------------------------|----|------------------------|-------|

**Test Equipment List and Details:**

| Manufacturer   | Description          | Model     | Serial Number | Calibration Date | Calibration Due Date |
|----------------|----------------------|-----------|---------------|------------------|----------------------|
| EMCO           | Passive Loop Antenna | 6512      | 9706-1206     | 2023/10/25       | 2026/10/24           |
| Sunol Sciences | Hybrid Antenna       | JB3       | A060611-1     | 2023/9/6         | 2026/9/5             |
| Narda          | Coaxial Attenuator   | 779-6dB   | 04269         | 2023/9/6         | 2026/9/5             |
| Unknown        | Coaxial Cable        | C-NJNJ-50 | C-1000-01     | 2024/7/1         | 2025/6/30            |
| Unknown        | Coaxial Cable        | C-NJNJ-50 | C-0400-04     | 2024/7/1         | 2025/6/30            |
| Unknown        | Coaxial Cable        | C-NJNJ-50 | C-0530-01     | 2024/7/1         | 2025/6/30            |
| Sonoma         | Amplifier            | 310N      | 185914        | 2024/8/26        | 2025/8/25            |
| R&S            | EMI Test Receiver    | ESCI      | 100224        | 2024/8/26        | 2025/8/25            |
| Audix          | Test Software        | E3        | 191218 V9     | N/A              | N/A                  |

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

**Test Data:**

Please refer to the below table and plots.

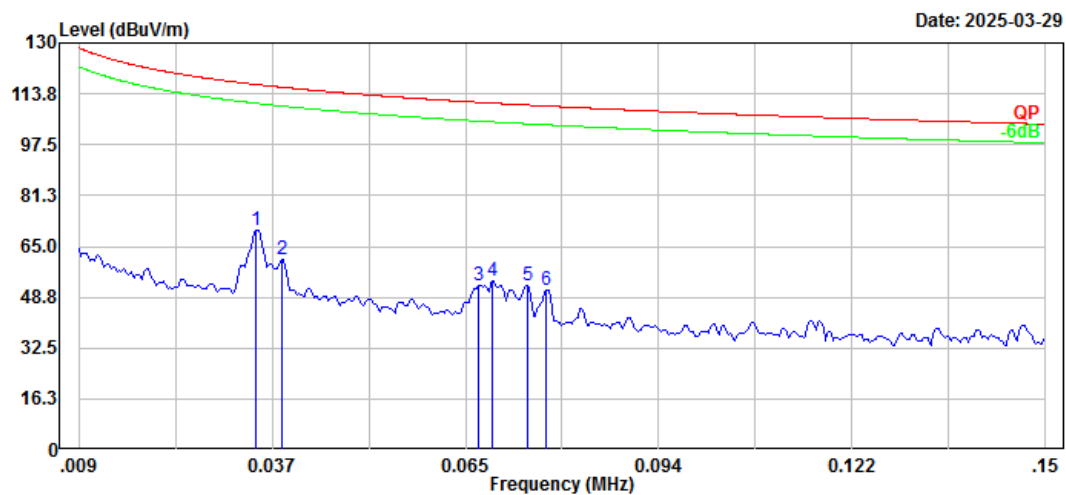
*Note: The maximum output power mode and channel: 802.11n ht40 highest channel (5230MHz) was tested.*

**9kHz~30MHz**

Three antenna orientations (parallel, perpendicular, and ground-parallel) were measured, the worst orientations were below:

Project No.: 2402A111445E-RF  
Polarization: Parallel  
Test Mode: Transmitting  
: RBW:300Hz VBW:1kHz

Serial No.: 2WA8-2  
Tester: Leesin Xiang

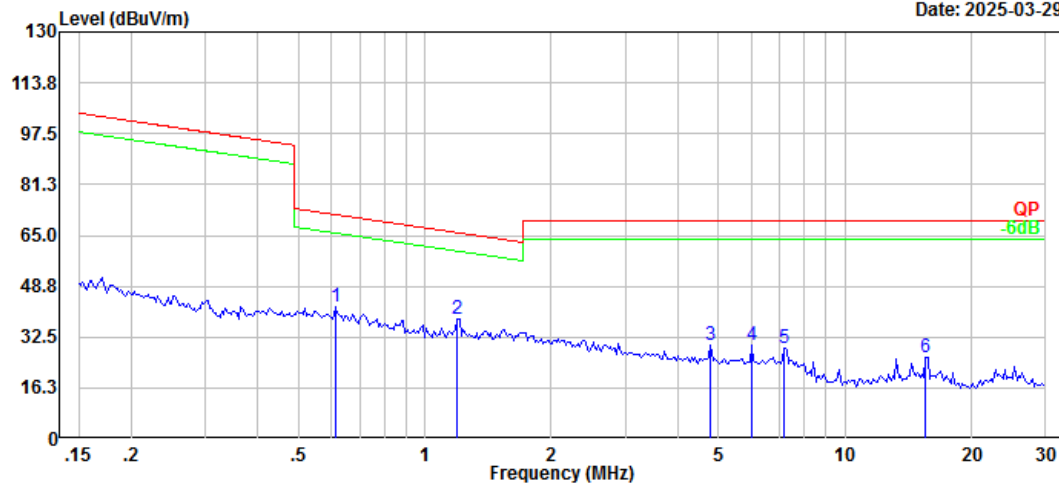


| No. | Frequency<br>(MHz) | Reading<br>(dBμV) | Factor<br>(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Measurement |
|-----|--------------------|-------------------|------------------|--------------------|-------------------|----------------|-------------|
| 1   | 0.035              | 23.35             | 46.67            | 70.02              | 116.74            | 46.72          | Peak        |
| 2   | 0.039              | 14.80             | 46.02            | 60.82              | 115.87            | 55.05          | Peak        |
| 3   | 0.067              | 11.50             | 41.06            | 52.56              | 111.03            | 58.47          | Peak        |
| 4   | 0.069              | 13.15             | 40.70            | 53.85              | 110.78            | 56.93          | Peak        |
| 5   | 0.074              | 12.78             | 39.85            | 52.63              | 110.17            | 57.54          | Peak        |
| 6   | 0.077              | 11.87             | 39.38            | 51.25              | 109.85            | 58.60          | Peak        |

Project No.: 2402A111445E-RF  
Polarization: Parallel  
Test Mode: Transmitting  
: RBW:10kHz VBW:30kHz

Serial No.: 2WA8-2  
Tester: Leesin Xiang

Date: 2025-03-29



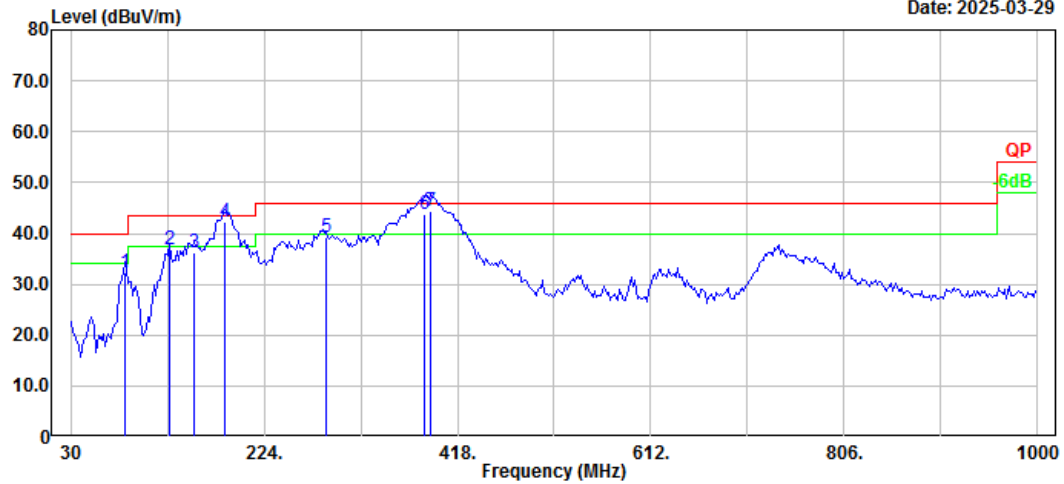
| No. | Frequency<br>(MHz) | Reading<br>(dBμV) | Factor<br>(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Measurement |
|-----|--------------------|-------------------|------------------|--------------------|-------------------|----------------|-------------|
| 1   | 0.614              | 19.96             | 22.32            | 42.28              | 71.80             | 29.52          | Peak        |
| 2   | 1.197              | 22.47             | 15.68            | 38.15              | 65.88             | 27.73          | Peak        |
| 3   | 4.797              | 23.18             | 6.81             | 29.99              | 69.54             | 39.55          | Peak        |
| 4   | 5.993              | 23.83             | 5.89             | 29.72              | 69.54             | 39.82          | Peak        |
| 5   | 7.175              | 23.63             | 5.42             | 29.05              | 69.54             | 40.49          | Peak        |
| 6   | 15.552             | 21.48             | 4.46             | 25.94              | 69.54             | 43.60          | Peak        |

## 30MHz-1GHz

Project No.: 2402A111445E-RF  
Polarization: Horizontal  
Test Mode: Transmitting  
: RBW:100kHz VBW:300kHz

Serial No.: 2WA8-2  
Tester: Leesin Xiang

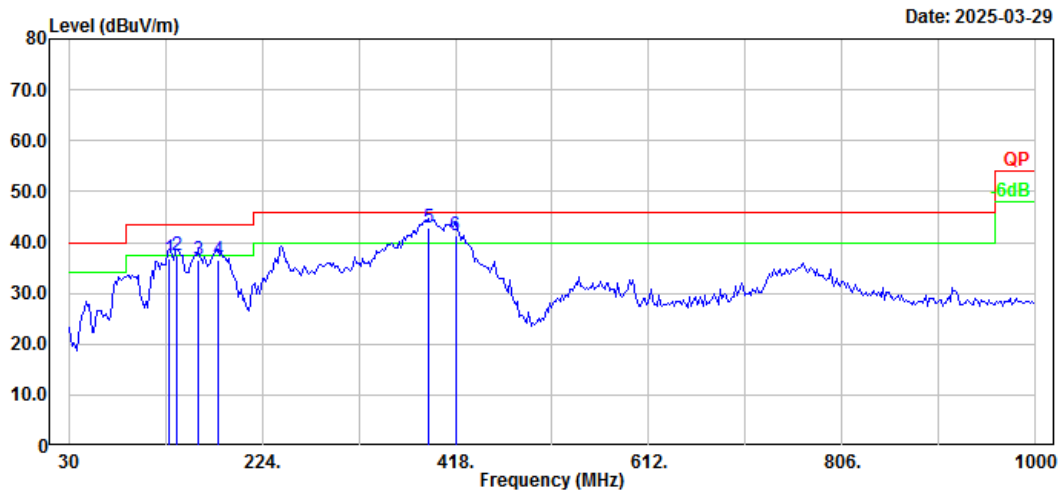
Date: 2025-03-29



| No. | Frequency<br>(MHz) | Reading<br>(dBμV) | Factor<br>(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Measurement |
|-----|--------------------|-------------------|------------------|--------------------|-------------------|----------------|-------------|
| 1   | 84.32              | 48.90             | -16.62           | 32.28              | 40.00             | 7.72           | QP          |
| 2   | 128.94             | 46.79             | -9.86            | 36.93              | 43.50             | 6.57           | QP          |
| 3   | 154.16             | 47.39             | -11.09           | 36.30              | 43.50             | 7.20           | QP          |
| 4   | 185.20             | 54.40             | -12.24           | 42.16              | 43.50             | 1.34           | QP          |
| 5   | 286.08             | 48.89             | -9.63            | 39.26              | 46.00             | 6.74           | QP          |
| 6   | 385.02             | 51.09             | -7.42            | 43.67              | 46.00             | 2.33           | QP          |
| 7   | 390.84             | 51.70             | -7.22            | 44.48              | 46.00             | 1.52           | QP          |

Project No.: 2402A111445E-RF  
Polarization: Vertical  
Test Mode: Transmitting  
: RBW:100kHz VBW:300kHz

Serial No.: 2WA8-2  
Tester: Leesin Xiang



| No.   | Frequency<br>(MHz) | Reading<br>(dBμV) | Factor<br>(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Measurement |
|-------|--------------------|-------------------|------------------|--------------------|-------------------|----------------|-------------|
| <hr/> |                    |                   |                  |                    |                   |                |             |
| 1     | 130.88             | 46.70             | -9.91            | 36.79              | 43.50             | 6.71           | QP          |
| 2     | 138.64             | 47.70             | -10.38           | 37.32              | 43.50             | 6.18           | QP          |
| 3     | 159.98             | 47.80             | -11.15           | 36.65              | 43.50             | 6.85           | QP          |
| 4     | 179.38             | 48.90             | -12.32           | 36.58              | 43.50             | 6.92           | QP          |
| 5     | 390.84             | 50.10             | -7.22            | 42.88              | 46.00             | 3.12           | QP          |
| 6     | 418.00             | 48.00             | -6.54            | 41.46              | 46.00             | 4.54           | QP          |

**2) 1-40GHz:**

|                |            |              |                    |
|----------------|------------|--------------|--------------------|
| Serial Number: | 2WA8-2     | Test Date:   | 2025/3/15~2025/4/2 |
| Test Site:     | Chamber B  | Test Mode:   | Transmitting       |
| Tester:        | Colin Yang | Test Result: | Pass               |

**Environmental Conditions:**

|                      |           |                              |       |                           |             |
|----------------------|-----------|------------------------------|-------|---------------------------|-------------|
| Temperature:<br>(°C) | 19.8-22.5 | Relative<br>Humidity:<br>(%) | 46-52 | ATM<br>Pressure:<br>(kPa) | 100.8-101.4 |
|----------------------|-----------|------------------------------|-------|---------------------------|-------------|

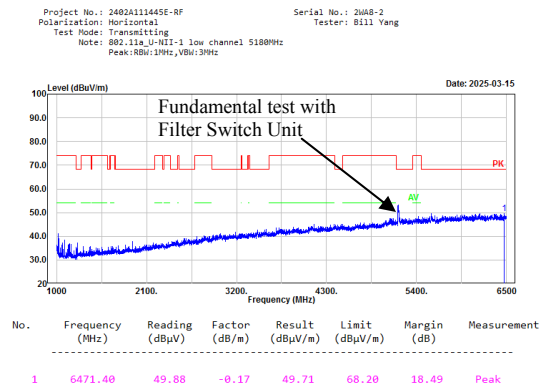
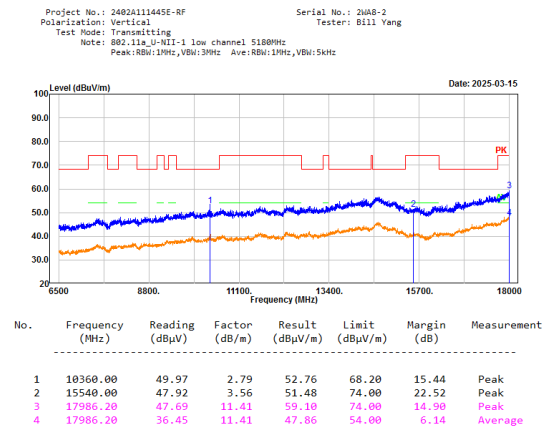
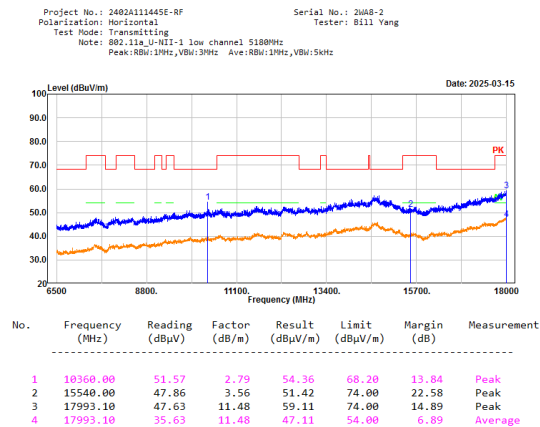
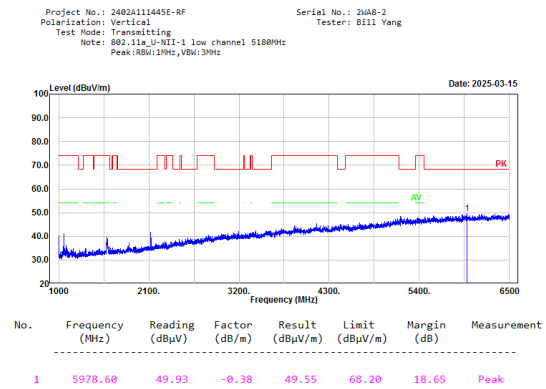
**Test Equipment List and Details:**

| Manufacturer          | Description                                            | Model                     | Serial Number     | Calibration Date | Calibration Due Date |
|-----------------------|--------------------------------------------------------|---------------------------|-------------------|------------------|----------------------|
| ETS-Lindgren          | Horn Antenna                                           | 3115                      | 000 527 35        | 2023/9/7         | 2026/9/6             |
| Xinhang Macrowave     | Coaxial Cable                                          | XH750A-N/J-SMA/J-10M      | 20231117004 #0001 | 2024/11/17       | 2025/11/16           |
| AH                    | Preamplifier                                           | PAM-0118P                 | 469               | 2024/4/15        | 2025/4/14            |
| Audix                 | Test Software                                          | E3                        | 191218 V9         | N/A              | N/A                  |
| R&S                   | Spectrum Analyzer                                      | FSV40                     | 101944            | 2024/9/6         | 2025/9/5             |
| Ducommun Technologies | Horn Antenna                                           | ARH-4223-02               | 1007726-02 1304   | 2023/2/22        | 2026/2/21            |
| Ducommun Technologies | Horn Antenna                                           | ARH-2823-02               | 1007726-01 1302   | 2023/2/22        | 2026/2/21            |
| Xinhang Macrowave     | Coaxial Cable                                          | XH360A-2.92/J-2.92/J-6M-A | 20231208001 #0001 | 2024/12/9        | 2025/12/8            |
| AH                    | Preamplifier                                           | PAM-1840VH                | 191               | 2024/9/5         | 2025/9/4             |
| Decentest             | Multiplex Switch Test Control Set & Filter Switch Unit | DT7220SCU & DT7220FCU     | DC79902 & DC79905 | 2024/8/27        | 2025/8/26            |

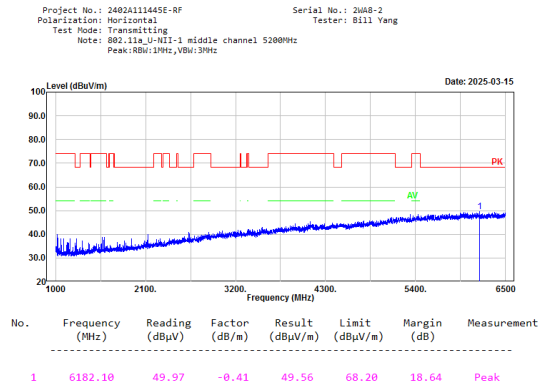
*\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

**Test Data:**

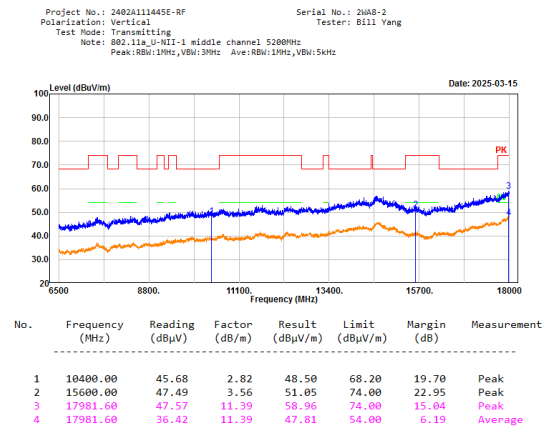
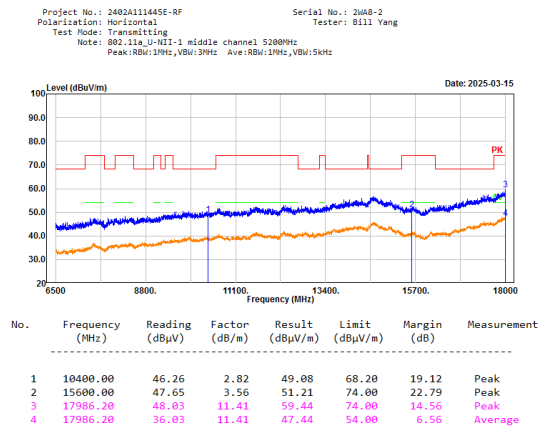
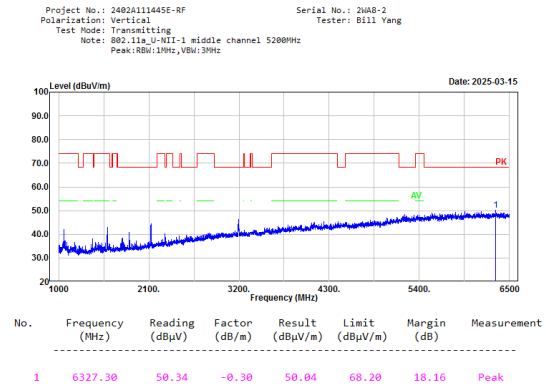
Please refer to the below table and plots.

**1-18GHz:  
5150-5250MHz:****802.11a, Low Channel, 5180MHz, Horizontal****802.11a, Low Channel, 5180MHz, Vertical**

## 802.11a, Middle Channel, 5200MHz, Horizontal



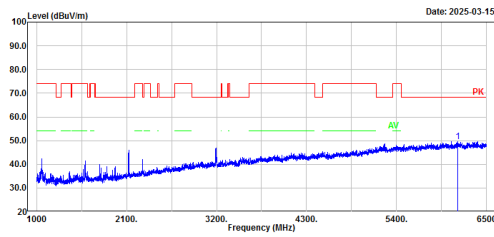
## 802.11a, Middle Channel, 5200MHz, Vertical



## 802.11a, High Channel, 5240MHz, Horizontal

Project No.: 2402A111445E-RF  
Polarization: Horizontal  
Test Mode: Transmitting  
Note: 802.11a U-NII-1 high channel 5240MHz  
Peak:RBW:1MHz,VBW:3MHz

Serial No.: 20A8-2  
Tester: Bill Yang

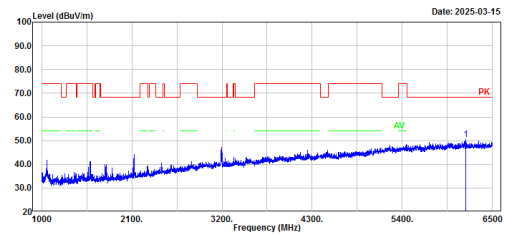


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|-------------|
| 1   | 6150.20         | 50.32          | -0.59         | 49.73           | 68.20          | 18.47       | Peak        |

## 802.11a, High Channel, 5240MHz, Vertical

Project No.: 2402A111445E-RF  
Polarization: Vertical  
Test Mode: Transmitting  
Note: 802.11a U-NII-1 high channel 5240MHz  
Peak:RBW:1MHz,VBW:3MHz

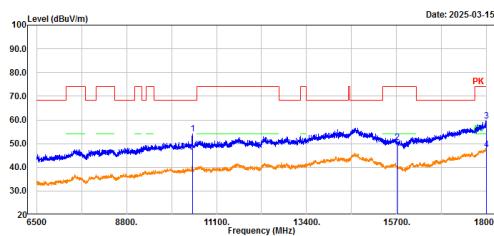
Serial No.: 20A8-2  
Tester: Bill Yang



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|-------------|
| 1   | 6173.30         | 50.77          | -0.41         | 50.36           | 68.20          | 17.84       | Peak        |

Project No.: 2402A111445E-RF  
Polarization: Horizontal  
Test Mode: Transmitting  
Note: 802.11a U-NII-1 high channel 5240MHz  
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

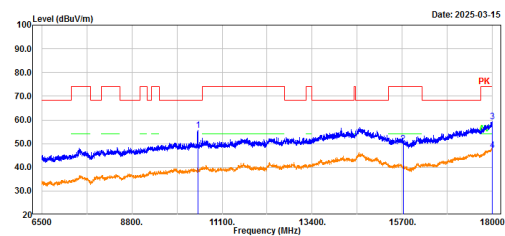
Serial No.: 20A8-2  
Tester: Bill Yang



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|-------------|
| 1   | 10480.00        | 51.27          | 2.93          | 54.20           | 68.20          | 14.00       | Peak        |
| 2   | 15720.00        | 47.21          | 3.43          | 50.64           | 74.00          | 23.36       | Peak        |
| 3   | 17993.10        | 48.10          | 11.48         | 59.58           | 74.00          | 14.42       | Peak        |
| 4   | 17993.10        | 36.10          | 11.48         | 47.58           | 54.00          | 6.42        | Average     |

Project No.: 2402A111445E-RF  
Polarization: Vertical  
Test Mode: Transmitting  
Note: 802.11a U-NII-1 high channel 5240MHz  
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Serial No.: 20A8-2  
Tester: Bill Yang

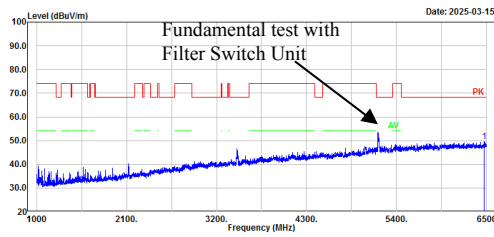


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|-------------|
| 1   | 10480.00        | 52.73          | 2.93          | 55.66           | 68.20          | 12.54       | Peak        |
| 2   | 15720.00        | 46.38          | 3.43          | 49.81           | 74.00          | 24.19       | Peak        |
| 3   | 17997.70        | 47.73          | 11.51         | 59.24           | 74.00          | 14.76       | Peak        |
| 4   | 17997.70        | 35.73          | 11.51         | 47.24           | 54.00          | 6.76        | Average     |

## 802.11n20, Low Channel, 5180MHz, Horizontal

Project No.: 2402A111445E-RF  
Polarization: Horizontal  
Test Mode: Transmitting  
Note: 802.11n20\_U-NII-1 low channel 5180MHz  
Peak:RBW:1MHz,VBW:3MHz

Serial No.: 20A8-2  
Tester: Bill Yang

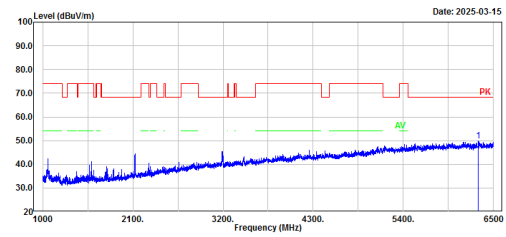


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|-------------|
| 1   | 6470.30         | 49.68          | -0.17         | 49.51           | 68.20          | 18.69       | Peak        |

## 802.11n20, Low Channel, 5180MHz, Vertical

Project No.: 2402A111445E-RF  
Polarization: Vertical  
Test Mode: Transmitting  
Note: 802.11n20\_U-NII-1 low channel 5180MHz  
Peak:RBW:1MHz,VBW:3MHz

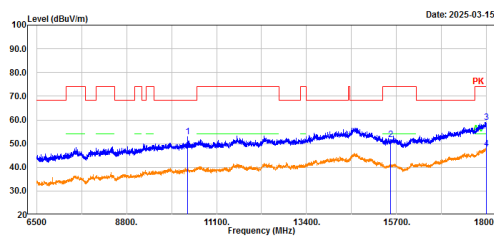
Serial No.: 20A8-2  
Tester: Bill Yang



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|-------------|
| 1   | 6316.30         | 50.12          | -0.36         | 49.76           | 68.20          | 18.44       | Peak        |

Project No.: 2402A111445E-RF  
Polarization: Horizontal  
Test Mode: Transmitting  
Note: 802.11n20\_U-NII-1 low channel 5180MHz  
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

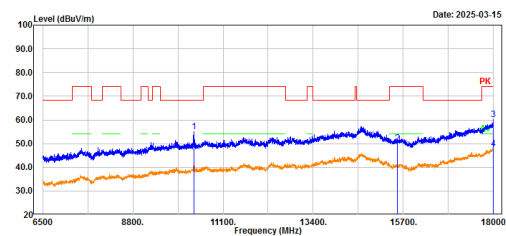
Serial No.: 20A8-2  
Tester: Bill Yang



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|-------------|
| 1   | 10360.00        | 49.97          | 2.79          | 52.76           | 68.20          | 15.44       | Peak        |
| 2   | 15540.00        | 48.21          | 3.56          | 51.77           | 74.00          | 22.23       | Peak        |
| 3   | 17998.00        | 47.56          | 11.51         | 59.07           | 74.00          | 14.93       | Peak        |
| 4   | 17998.00        | 36.33          | 11.51         | 47.84           | 54.00          | 6.16        | Average     |

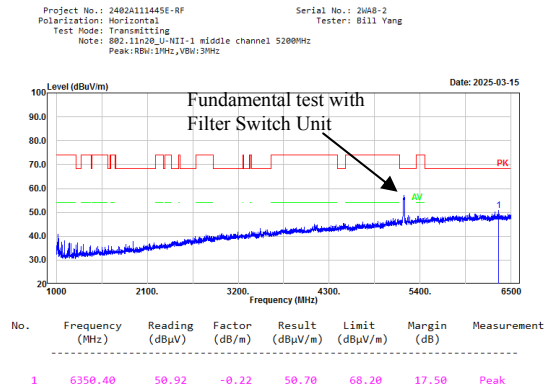
Project No.: 2402A111445E-RF  
Polarization: Vertical  
Test Mode: Transmitting  
Note: 802.11n20\_U-NII-1 low channel 5180MHz  
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz

Serial No.: 20A8-2  
Tester: Bill Yang

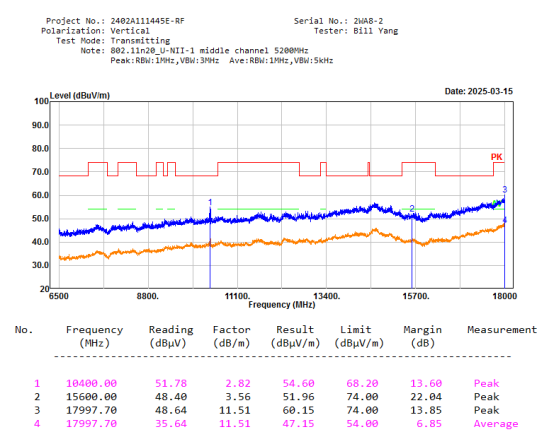
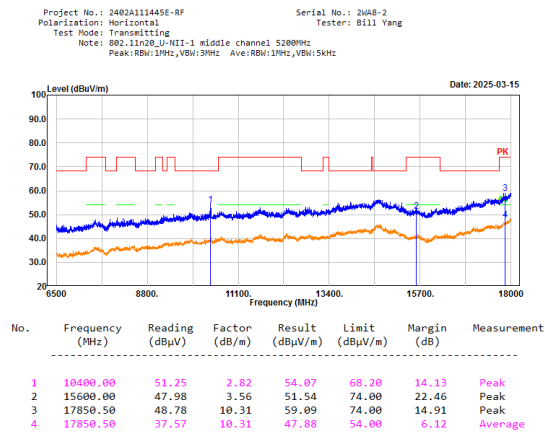
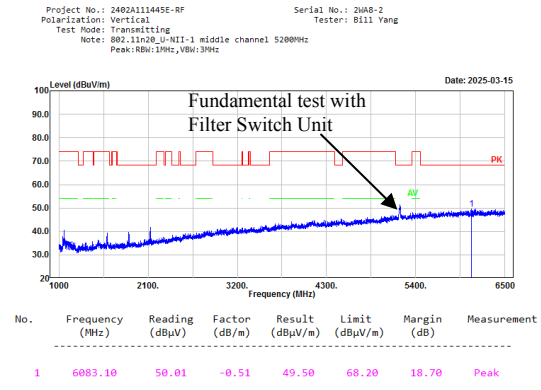


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement |
|-----|-----------------|----------------|---------------|-----------------|----------------|-------------|-------------|
| 1   | 10360.00        | 52.15          | 2.79          | 54.94           | 68.20          | 13.26       | Peak        |
| 2   | 15540.00        | 46.57          | 3.56          | 50.13           | 74.00          | 23.87       | Peak        |
| 3   | 17988.50        | 48.79          | 11.43         | 60.22           | 74.00          | 13.78       | Peak        |
| 4   | 17988.50        | 36.46          | 11.43         | 47.89           | 54.00          | 6.11        | Average     |

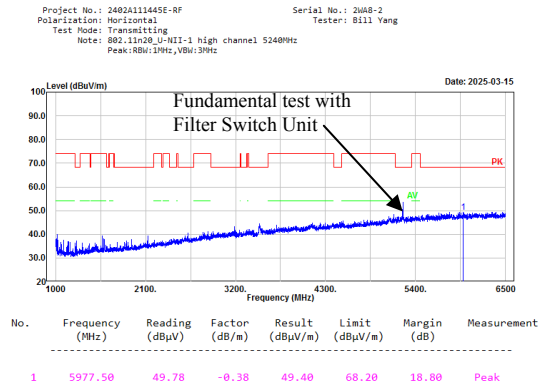
## 802.11n20, Middle Channel, 5200MHz, Horizontal



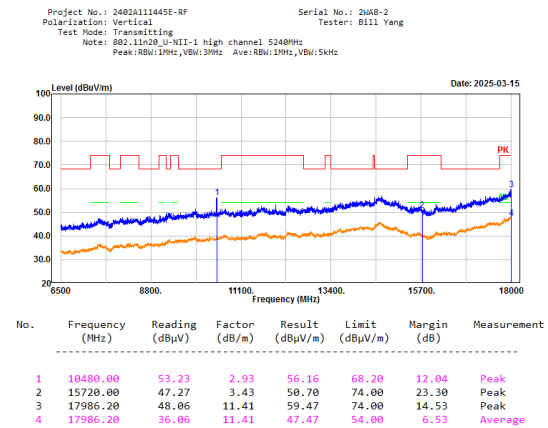
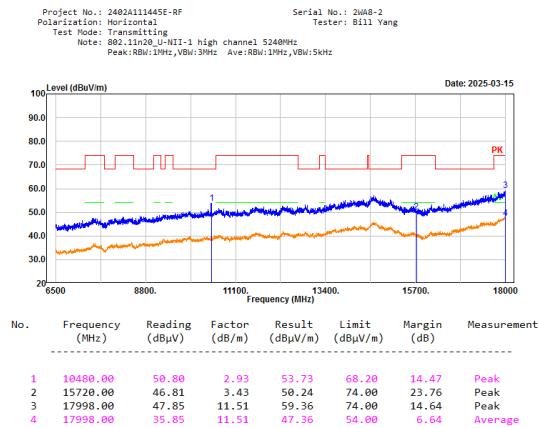
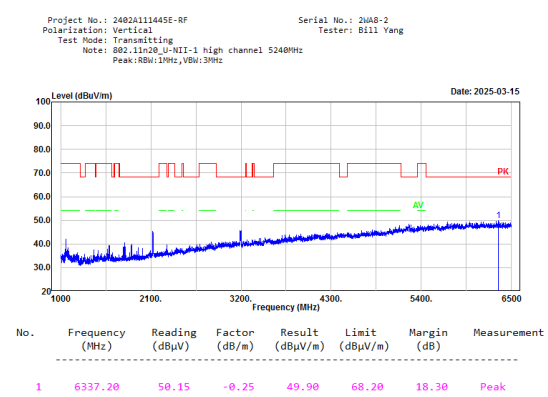
## 802.11n20, Middle Channel, 5200MHz, Vertical



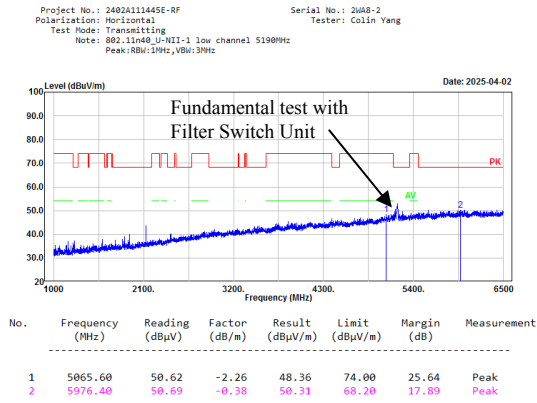
## 802.11n20, High Channel, 5240MHz, Horizontal



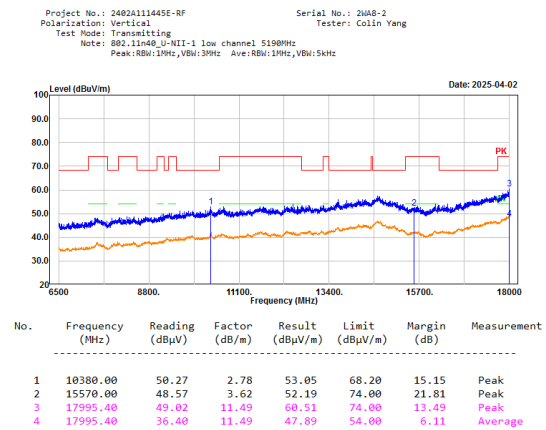
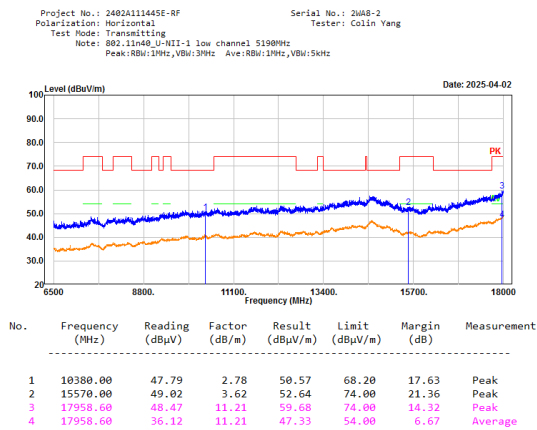
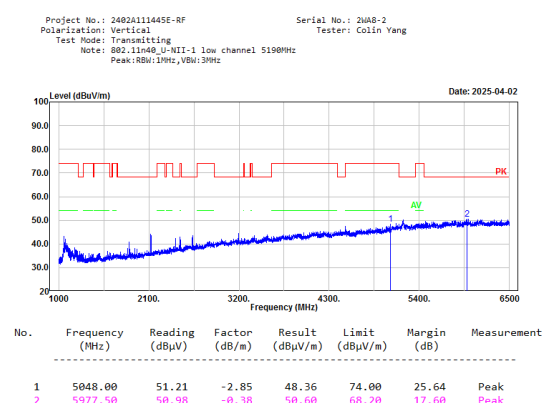
## 802.11n20, High Channel, 5240MHz, Vertical



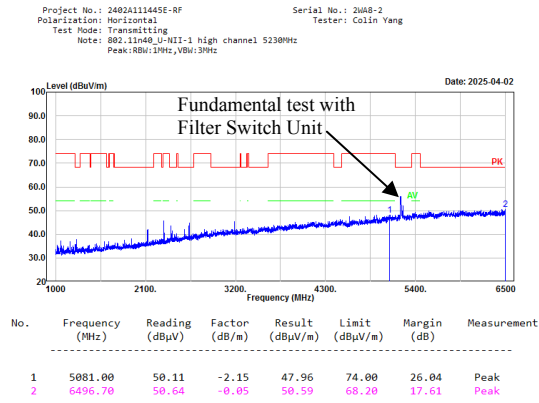
## 802.11n40, Low Channel, 5190MHz, Horizontal



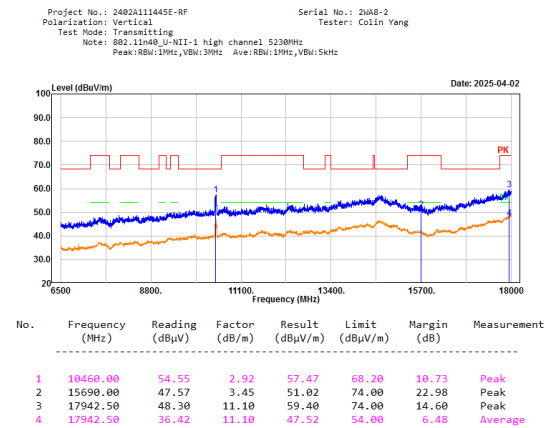
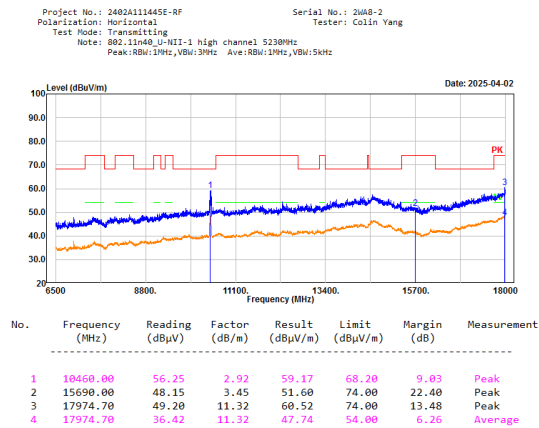
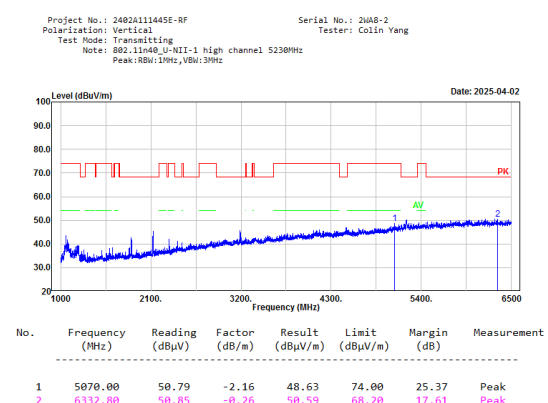
## 802.11n40, Low Channel, 5190MHz, Vertical



## 802.11n40, High Channel, 5230MHz, Horizontal

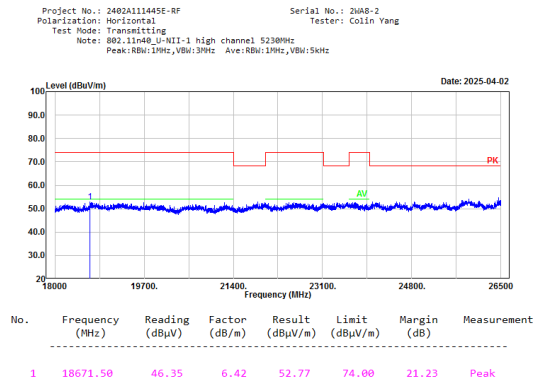
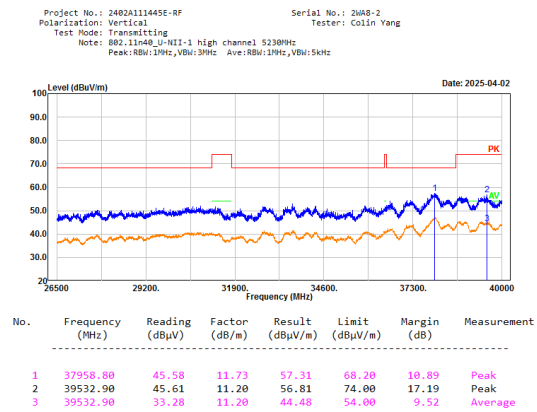
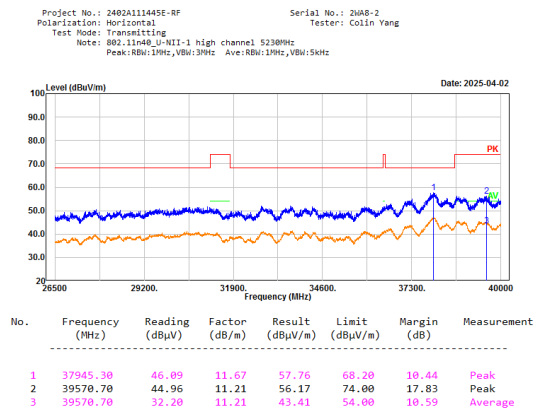
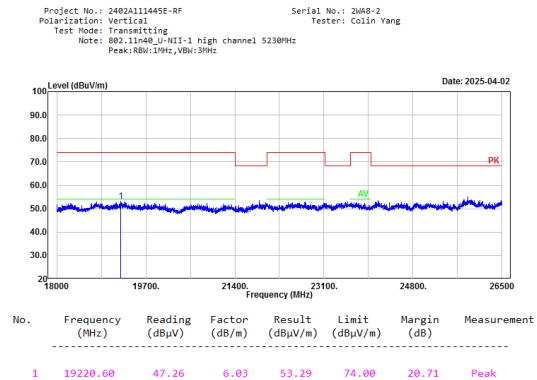


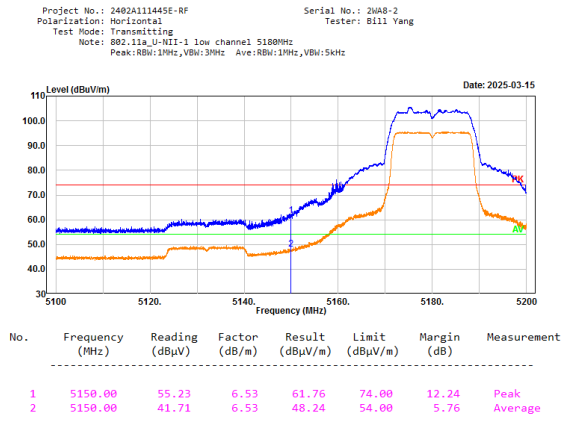
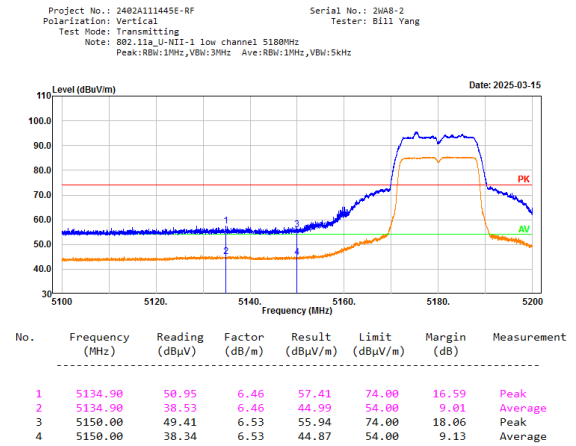
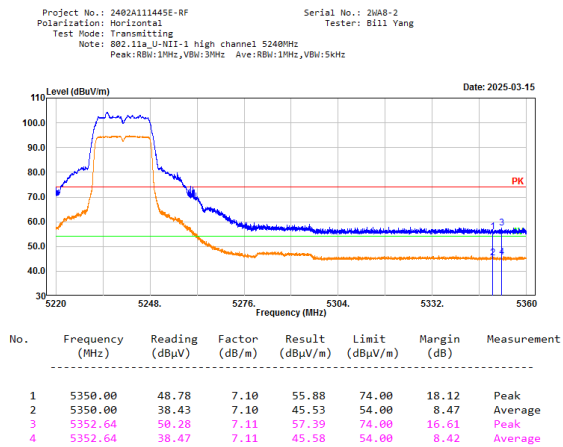
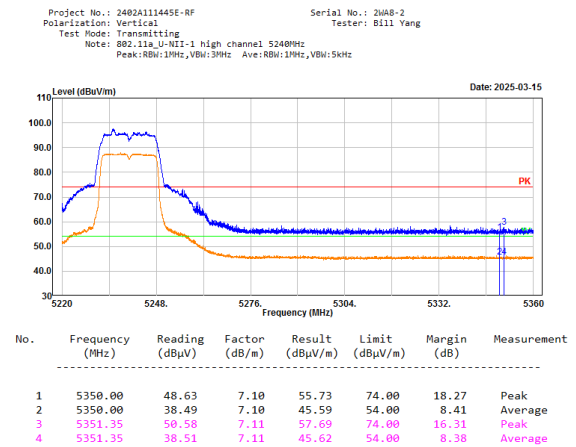
## 802.11n40, High Channel, 5230MHz, Vertical



**18-40GHz:**

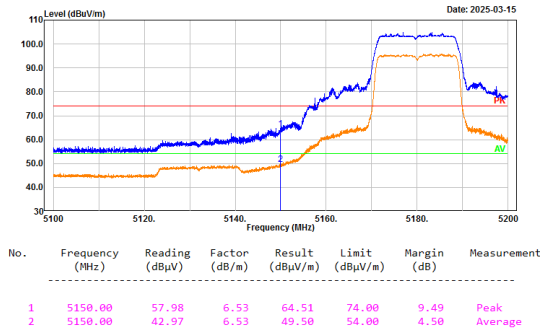
Note: No Emission was detected in the range 18-40GHz, the maximum output power mode and channel: 802.11n ht40 highest channel (5230MHz) was tested.

**802.11n40 mode 5230MHz, Horizontal****802.11n40 mode 5230MHz, Vertical**

**Bandedge:  
5150-5250MHz:****802.11a, 5180MHz, Bandedge, Horizontal****802.11a, 5180MHz, Bandedge, Vertical****802.11a, 5240MHz, Bandedge, Horizontal****802.11a, 5240MHz, Bandedge, Vertical**

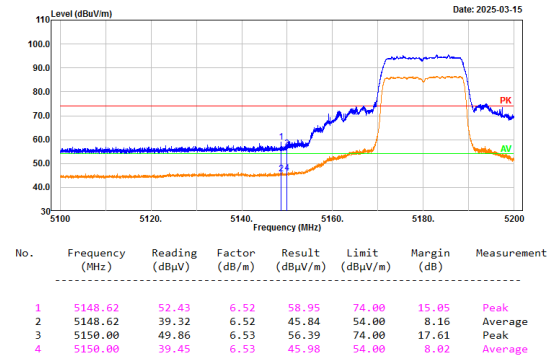
## 802.11n20, 5180MHz, Bandedge, Horizontal

Project No.: 2402A111445E-RF Serial No.: 2WA8-2  
Polarization: Horizontal Tester: Bill Yang  
Test Mode: Transmitting  
Note: 802.11n20\_U-NII-1 low channel 5180MHz  
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



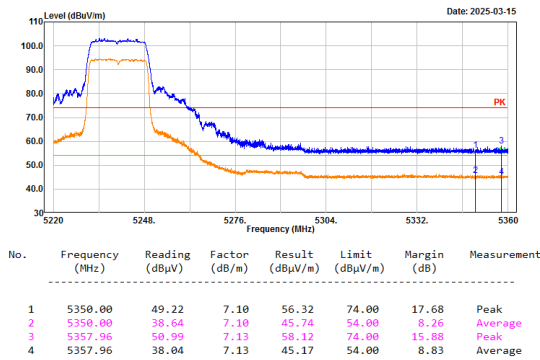
## 802.11n20, 5180MHz, Bandedge, Vertical

Project No.: 2402A111445E-RF Serial No.: 2WA8-2  
Polarization: Vertical Tester: Bill Yang  
Test Mode: Transmitting  
Note: 802.11n20\_U-NII-1 low channel 5180MHz  
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



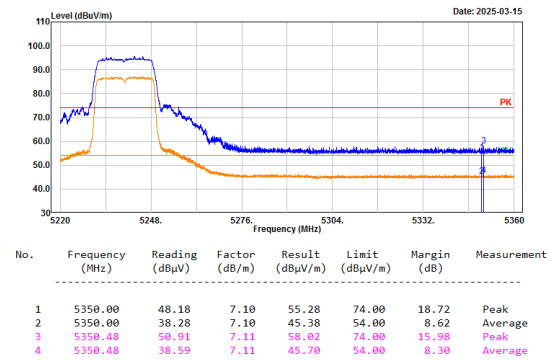
## 802.11n20, 5240MHz, Bandedge, Horizontal

Project No.: 2402A111445E-RF Serial No.: 2WA8-2  
Polarization: Horizontal Tester: Bill Yang  
Test Mode: Transmitting  
Note: 802.11n20\_U-NII-1 high channel 5240MHz  
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



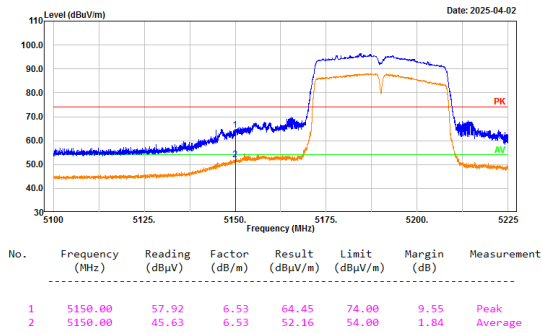
## 802.11n20, 5240MHz, Bandedge, Vertical

Project No.: 2402A111445E-RF Serial No.: 2WA8-2  
Polarization: Vertical Tester: Bill Yang  
Test Mode: Transmitting  
Note: 802.11n20\_U-NII-1 high channel 5240MHz  
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



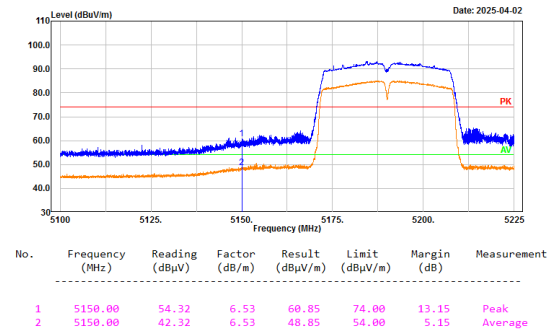
## 802.11n40, 5190MHz, Bandedge, Horizontal

Project No.: 2402A111445E-RF Serial No.: 2WAB-2  
Polarization: Horizontal Tester: Colin Yang  
Test Mode: Transmitting  
Note: 802.11n40\_U-NII-1 low channel 5190MHz  
Peak: RBW:1MHz, VBW:3MHz Ave:RBW:1MHz, VBW:5kHz



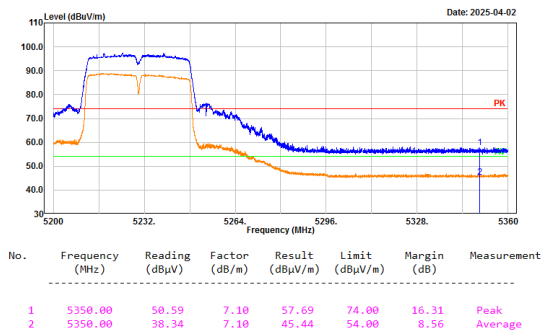
## 802.11n40, 5190MHz, Bandedge, Vertical

Project No.: 2402A111445E-RF Serial No.: 2WAB-2  
Polarization: Vertical Tester: Colin Yang  
Test Mode: Transmitting  
Note: 802.11n40\_U-NII-1 low channel 5190MHz  
Peak: RBW:1MHz, VBW:3MHz Ave:RBW:1MHz, VBW:5kHz



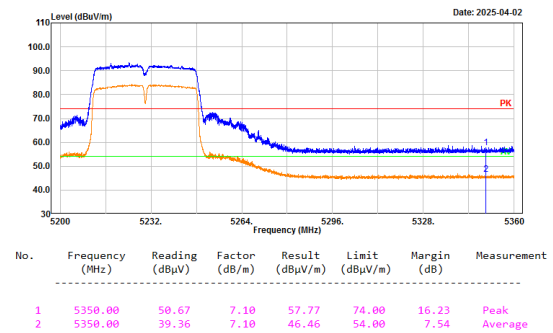
## 802.11n40, 5230MHz, Bandedge, Horizontal

Project No.: 2402A111445E-RF Serial No.: 2WAB-2  
Polarization: Horizontal Tester: Colin Yang  
Test Mode: Transmitting  
Note: 802.11n40\_U-NII-1 high channel 5230MHz  
Peak: RBW:1MHz, VBW:3MHz Ave:RBW:1MHz, VBW:5kHz



## 802.11n40, 5230MHz, Bandedge, Vertical

Project No.: 2402A111445E-RF Serial No.: 2WAB-2  
Polarization: Vertical Tester: Colin Yang  
Test Mode: Transmitting  
Note: 802.11n40\_U-NII-1 high channel 5230MHz  
Peak: RBW:1MHz, VBW:3MHz Ave:RBW:1MHz, VBW:5kHz



### 5.3 Emission Bandwidth

#### Test Information:

|             |          |              |              |
|-------------|----------|--------------|--------------|
| Serial No.: | 2WA8-1   | Test Date:   | 2025/1/2     |
| Test Site:  | RF       | Test Mode:   | Transmitting |
| Tester:     | Levi Shi | Test Result: | Pass         |

#### Environmental Conditions:

|                      |      |                              |    |                        |       |
|----------------------|------|------------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 24.2 | Relative<br>Humidity:<br>(%) | 45 | ATM Pressure:<br>(kPa) | 101.3 |
|----------------------|------|------------------------------|----|------------------------|-------|

#### Test Equipment List and Details:

| Manufacturer | Description        | Model             | Serial Number | Calibration Date | Calibration Due Date |
|--------------|--------------------|-------------------|---------------|------------------|----------------------|
| R&S          | Spectrum Analyzer  | FSU 26            | 100152        | 2024/4/1         | 2025/3/31            |
| Eastsheep    | Coaxial Attenuator | 2W-SMA-JK-6G-10dB | F-08-EM510    | 2024/6/7         | 2025/6/6             |

\* 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).

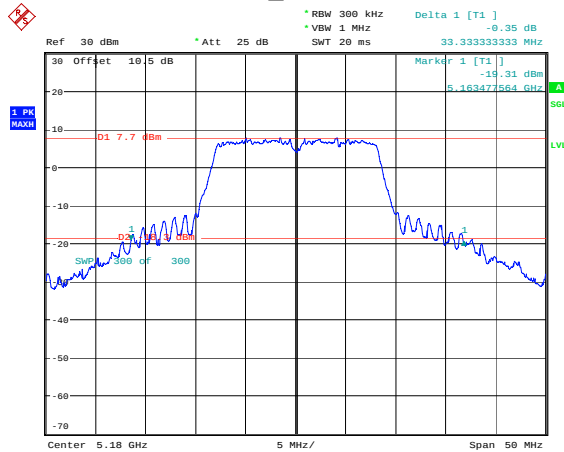
#### Test Data:

#### 26dB Emission Bandwidth 5150-5250MHz

| Mode      | Antenna | Test Frequency (MHz) | Result (MHz) |
|-----------|---------|----------------------|--------------|
| 802.11a   | Chain 0 | 5180                 | 33.33        |
|           |         | 5200                 | 33.25        |
|           |         | 5240                 | 33.72        |
| 802.11n20 | Chain 0 | 5180                 | 34.38        |
|           |         | 5200                 | 34.28        |
|           |         | 5240                 | 37.40        |
| 802.11n40 | Chain 0 | 5190                 | 71.44        |
|           |         | 5230                 | 70.90        |

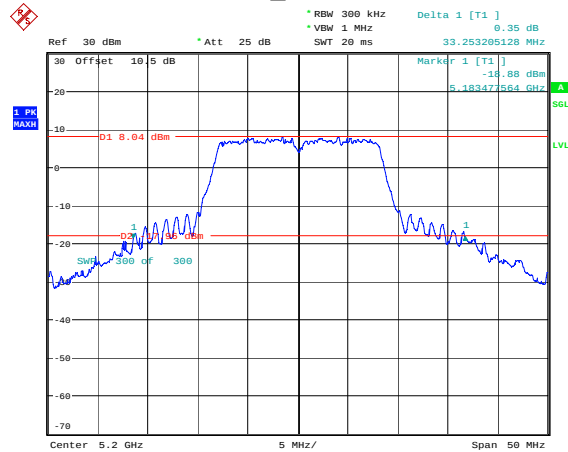
## 5150-5250MHz

## 802.11a\_5180MHz



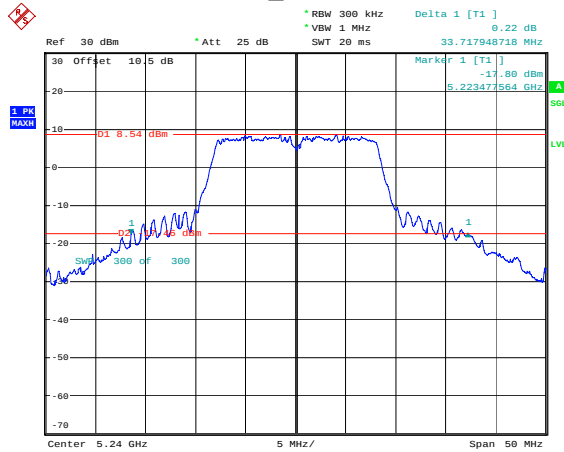
Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 19:29:02

## 802.11a\_5200MHz



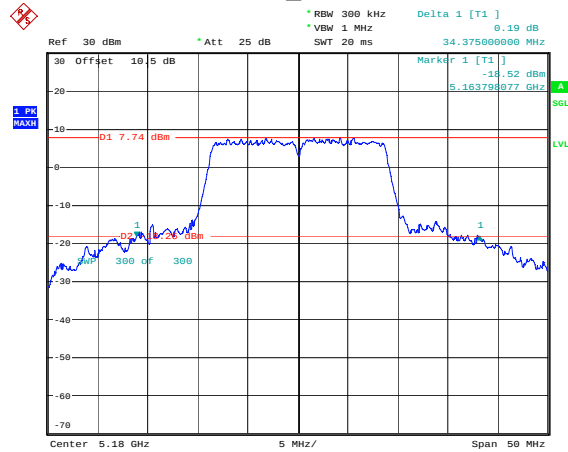
Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:01:25

## 802.11a\_5240MHz



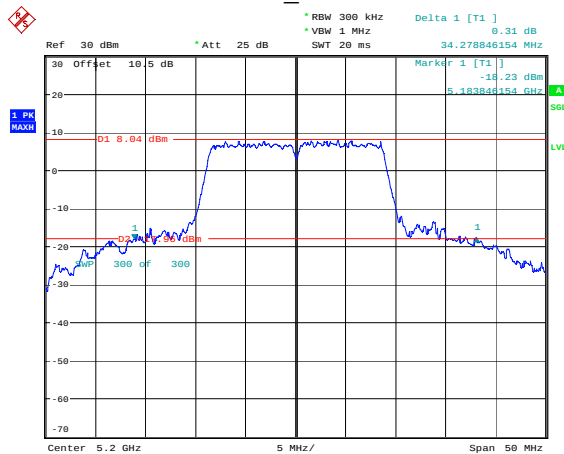
Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:03:30

## 802.11n20\_5180MHz



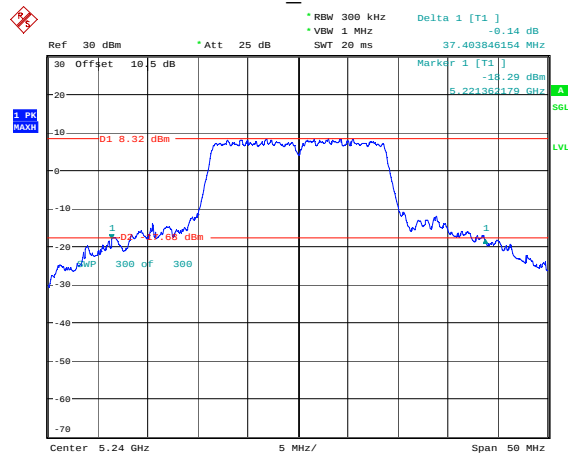
Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 20:57:46

## 802.11n20\_5200MHz

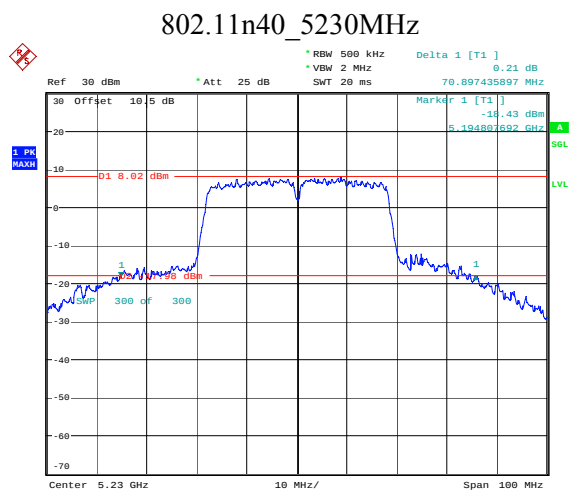


Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 20:59:35

## 802.11n20\_5240MHz



Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:04:52



Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:13:48

**5.4 99% Occupied Bandwidth****Test Information:**

|                    |          |                     |              |
|--------------------|----------|---------------------|--------------|
| <b>Serial No.:</b> | 2WA8-1   | <b>Test Date:</b>   | 2025/1/2     |
| <b>Test Site:</b>  | RF       | <b>Test Mode:</b>   | Transmitting |
| <b>Tester:</b>     | Levi Shi | <b>Test Result:</b> | Pass         |

**Environmental Conditions:**

|                             |      |                                  |    |                               |       |
|-----------------------------|------|----------------------------------|----|-------------------------------|-------|
| <b>Temperature:</b><br>(°C) | 24.2 | <b>Relative Humidity:</b><br>(%) | 45 | <b>ATM Pressure:</b><br>(kPa) | 101.3 |
|-----------------------------|------|----------------------------------|----|-------------------------------|-------|

**Test Equipment List and Details:**

| Manufacturer | Description        | Model             | Serial Number | Calibration Date | Calibration Due Date |
|--------------|--------------------|-------------------|---------------|------------------|----------------------|
| R&S          | Spectrum Analyzer  | FSU 26            | 100152        | 2024/4/1         | 2025/3/31            |
| Eastsheep    | Coaxial Attenuator | 2W-SMA-JK-6G-10dB | F-08-EM510    | 2024/6/7         | 2025/6/6             |

\* 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:****5150-5250MHz**

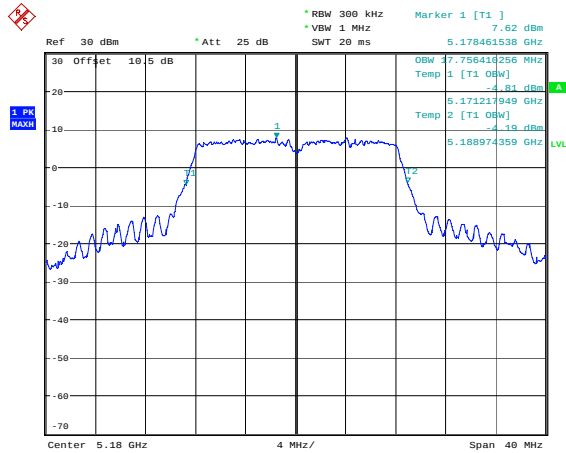
| Mode      | Test Frequency (MHz) | 99% OBW (MHz) |
|-----------|----------------------|---------------|
| 802.11a   | 5180                 | 17.76         |
|           | 5200                 | 17.76         |
|           | 5240                 | 17.82         |
| 802.11n20 | 5180                 | 18.4          |
|           | 5200                 | 18.46         |
|           | 5240                 | 18.59         |
| 802.11n40 | 5190                 | 37.31         |
|           | 5230                 | 37.31         |

Note:

The 99% Occupied Bandwidth have not fall into the band 5250-5350MHz, please refer to the test plots of 99% Occupied Bandwidth.

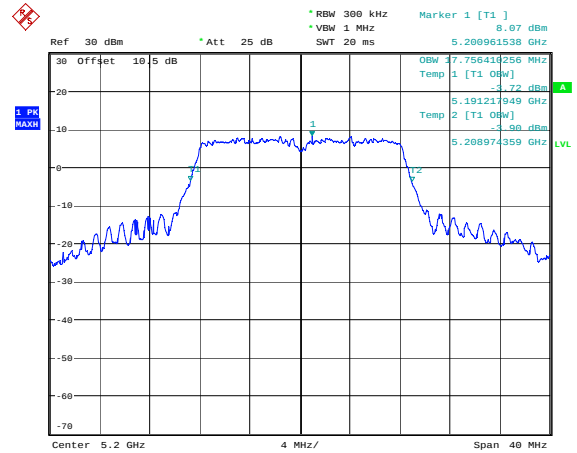
## 5150-5250MHz

## 802.11a\_5180MHz



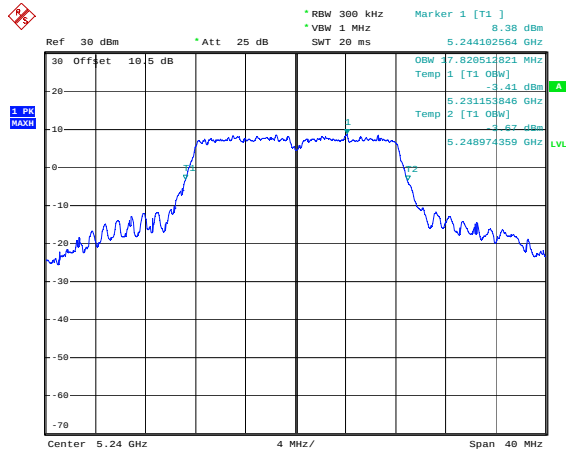
Comment: ProjectNo.:2402A111445E-RF Tester:Levi Shi  
Date: 2.JAN.2025 18:41:04

## 802.11a\_5200MHz



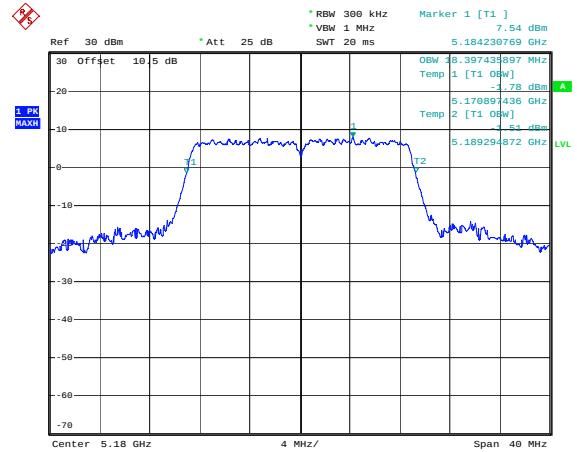
Comment: ProjectNo.:2402A111445E-RF Tester:Levi Shi  
Date: 2.JAN.2025 21:23:53

## 802.11a\_5240MHz



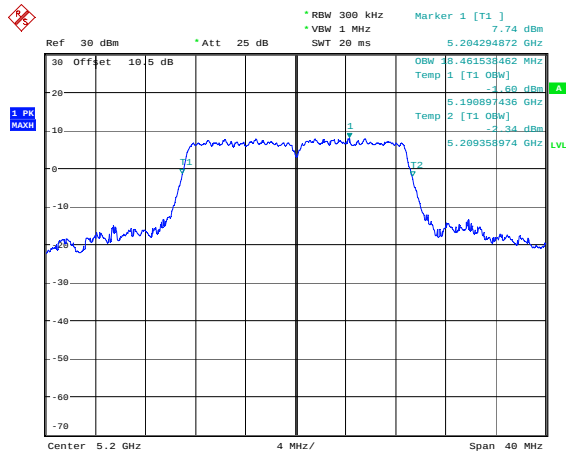
Comment: ProjectNo.:2402A111445E-RF Tester:Levi Shi  
Date: 2.JAN.2025 21:23:15

## 802.11n20\_5180MHz



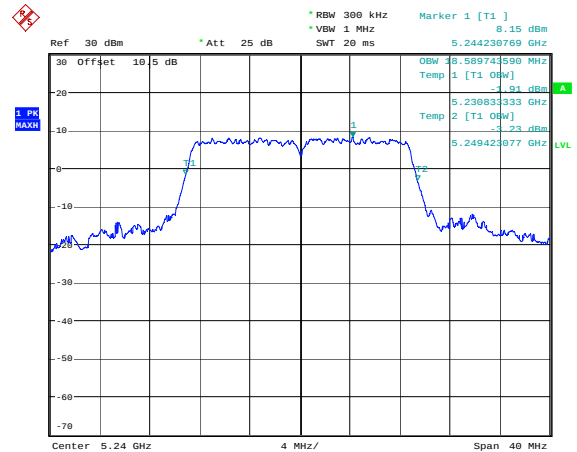
Comment: ProjectNo.:2402A111445E-RF Tester:Levi Shi  
Date: 2.JAN.2025 21:22:39

## 802.11n20\_5200MHz

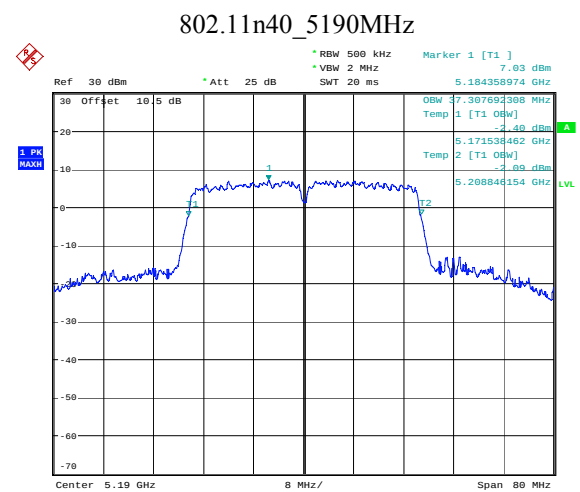


Comment: ProjectNo.:2402A111445E-RF Tester:Levi Shi  
Date: 2.JAN.2025 21:22:02

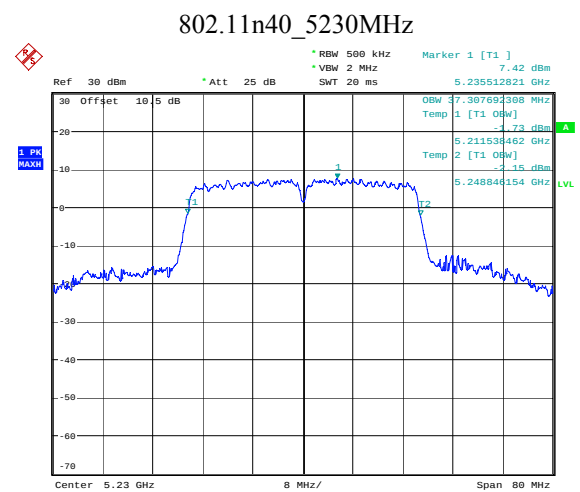
## 802.11n20\_5240MHz



Comment: ProjectNo.:2402A111445E-RF Tester:Levi Shi  
Date: 2.JAN.2025 21:21:34



Comment: ProjectNo.:2402A111445E-RF Tester:Levi Shi  
Date: 2.JAN.2025 21:20:39



Comment: ProjectNo.:2402A111445E-RF Tester:Levi Shi  
Date: 2.JAN.2025 21:18:04

## 5.5 Maximum Conducted Output Power

### Test Information:

|             |          |              |              |
|-------------|----------|--------------|--------------|
| Serial No.: | 2WA8-1   | Test Date:   | 2025/1/2     |
| Test Site:  | RF       | Test Mode:   | Transmitting |
| Tester:     | Levi Shi | Test Result: | Pass         |

### Environmental Conditions:

|                      |      |                              |    |                        |       |
|----------------------|------|------------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 24.2 | Relative<br>Humidity:<br>(%) | 45 | ATM Pressure:<br>(kPa) | 101.3 |
|----------------------|------|------------------------------|----|------------------------|-------|

### Test Equipment List and Details:

| Manufacturer | Description                 | Model             | Serial<br>Number | Calibration<br>Date | Calibration<br>Due Date |
|--------------|-----------------------------|-------------------|------------------|---------------------|-------------------------|
| Eastsheep    | Coaxial Attenuator          | 2W-SMA-JK-6G-10dB | F-08-EM510       | 2024/6/7            | 2025/6/6                |
| Anritsu      | Microwave Peak Power Sensor | MA24418A          | 12618            | 2024/9/4            | 2025/9/3                |

\* 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:

#### 5150-5250MHz

| Mode      | Antenna | Test Frequency<br>(MHz) | Average Output<br>Power<br>(dBm) | Limit<br>(dBm) | Verdict |
|-----------|---------|-------------------------|----------------------------------|----------------|---------|
| 802.11a   | Chain 0 | 5180                    | 15.99                            | 24             | Pass    |
|           |         | 5200                    | 16.12                            | 24             | Pass    |
|           |         | 5240                    | 16.58                            | 24             | Pass    |
| 802.11n20 | Chain 0 | 5180                    | 16.01                            | 24             | Pass    |
|           |         | 5200                    | 16.19                            | 24             | Pass    |
|           |         | 5240                    | 16.57                            | 24             | Pass    |
| 802.11n40 | Chain 0 | 5190                    | 16.43                            | 24             | Pass    |
|           |         | 5230                    | 16.99                            | 24             | Pass    |

Note: The device is a client device.

## 5.6 Power Spectral Density

### Test Information:

|             |          |              |              |
|-------------|----------|--------------|--------------|
| Serial No.: | 2WA8-1   | Test Date:   | 2025/1/2     |
| Test Site:  | RF       | Test Mode:   | Transmitting |
| Tester:     | Levi Shi | Test Result: | Pass         |

### Environmental Conditions:

|                      |      |                              |    |                        |       |
|----------------------|------|------------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 24.2 | Relative<br>Humidity:<br>(%) | 45 | ATM Pressure:<br>(kPa) | 101.3 |
|----------------------|------|------------------------------|----|------------------------|-------|

### Test Equipment List and Details:

| Manufacturer | Description        | Model             | Serial Number | Calibration Date | Calibration Due Date |
|--------------|--------------------|-------------------|---------------|------------------|----------------------|
| R&S          | Spectrum Analyzer  | FSU 26            | 100152        | 2024/4/1         | 2025/3/31            |
| Eastsheep    | Coaxial Attenuator | 2W-SMA-JK-6G-10dB | F-08-EM510    | 2024/6/7         | 2025/6/6             |

\* 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:

#### 5150-5250MHz

| Mode      | Antenna | Test Frequency (MHz) | Reading (dBm/MHz) | Duty Cycle Factor(dB) | Result (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|-----------|---------|----------------------|-------------------|-----------------------|------------------|-----------------|---------|
| 802.11a   | Chain 0 | 5180                 | 4.53              | /                     | 4.53             | 11              | Pass    |
|           |         | 5200                 | 4.78              | /                     | 4.78             | 11              | Pass    |
|           |         | 5240                 | 5.11              | /                     | 5.11             | 11              | Pass    |
| 802.11n20 | Chain 0 | 5180                 | 4.27              | /                     | 4.27             | 11              | Pass    |
|           |         | 5200                 | 4.49              | /                     | 4.49             | 11              | Pass    |
|           |         | 5240                 | 4.86              | /                     | 4.86             | 11              | Pass    |
| 802.11n40 | Chain 0 | 5190                 | 2.01              | /                     | 2.01             | 11              | Pass    |
|           |         | 5230                 | 2.48              | /                     | 2.48             | 11              | Pass    |

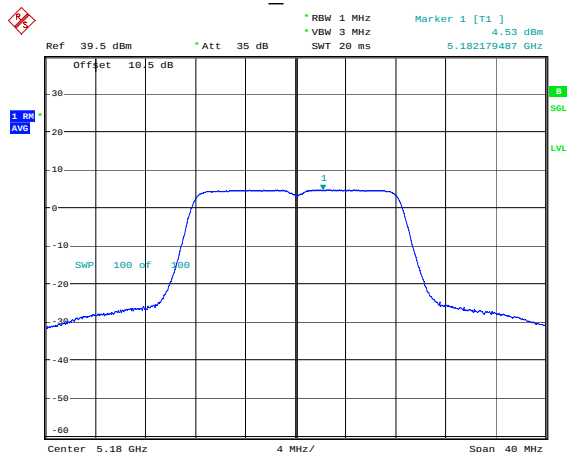
Note:

1. The device is a client device..

2. for the Duty Cycle  $\geq 98\%$  (duty cycle refers to Section 5.7 Duty Cycle), KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 was performed to the PSD test.

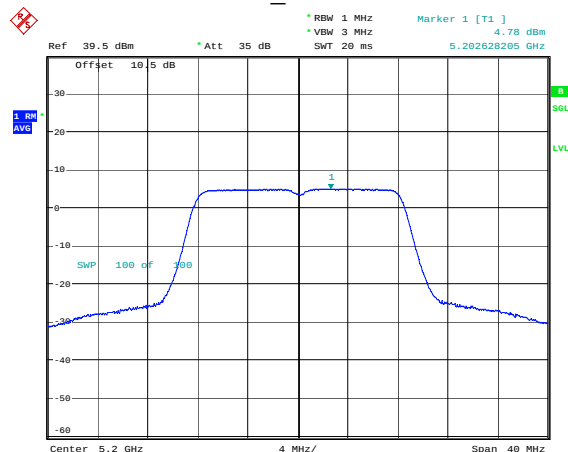
## 5150-5250MHz

## 802.11a\_5180MHz



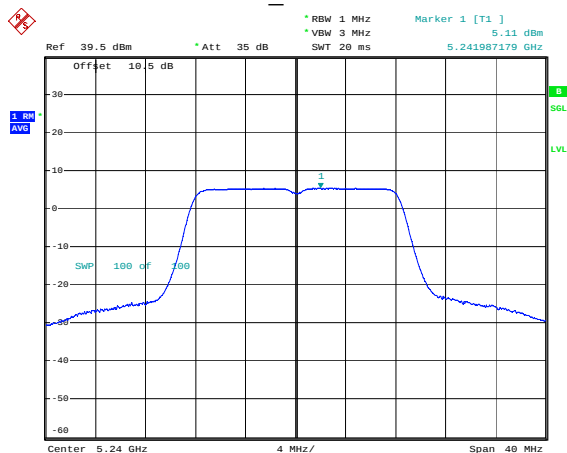
Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 19:32:25

## 802.11a\_5200MHz



Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 19:42:57

## 802.11a\_5240MHz



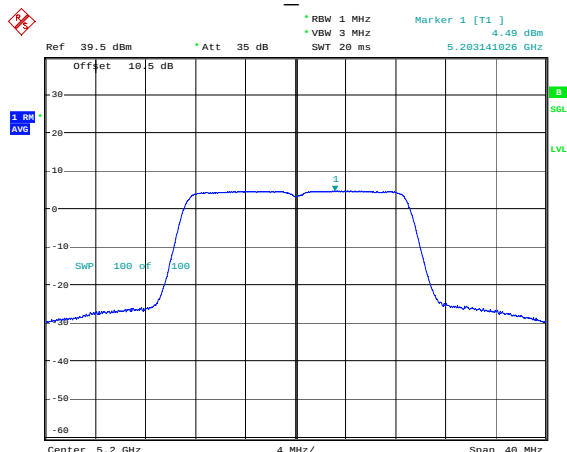
Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 19:41:55

## 802.11n20\_5180MHz



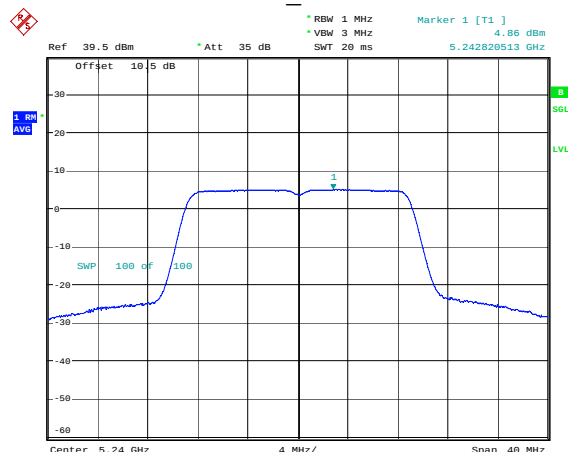
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Date: 2.JAN.2025 19:46:36

## 802.11n20\_5200MHz

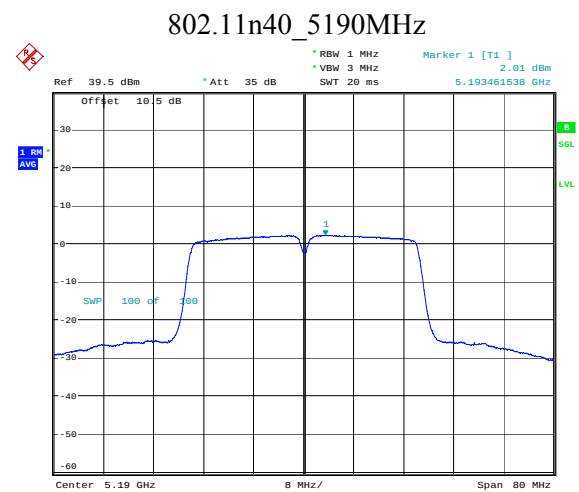


Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:00:16

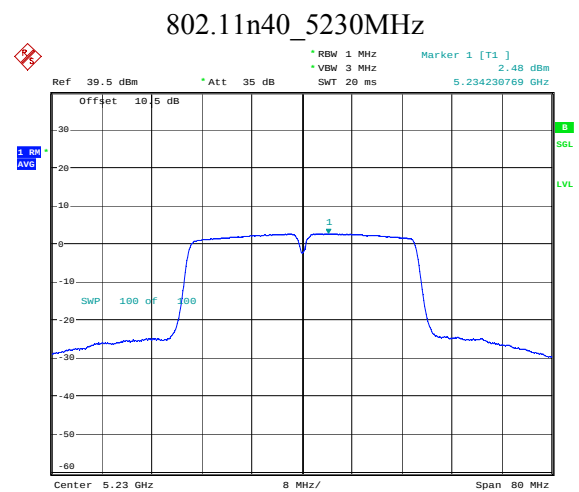
## 802.11n20\_5240MHz



Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:05:47



Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:07:40



Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:14:34

## 5.7 Duty Cycle

### Test Information:

|             |          |              |              |
|-------------|----------|--------------|--------------|
| Serial No.: | 2WA8-1   | Test Date:   | 2025/1/2     |
| Test Site:  | RF       | Test Mode:   | Transmitting |
| Tester:     | Levi Shi | Test Result: | N/A          |

### Environmental Conditions:

|                      |      |                              |    |                        |       |
|----------------------|------|------------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 24.2 | Relative<br>Humidity:<br>(%) | 45 | ATM Pressure:<br>(kPa) | 101.3 |
|----------------------|------|------------------------------|----|------------------------|-------|

### Test Equipment List and Details:

| Manufacturer | Description           | Model                 | Serial<br>Number | Calibration<br>Date | Calibration<br>Due Date |
|--------------|-----------------------|-----------------------|------------------|---------------------|-------------------------|
| R&S          | Spectrum<br>Analyzer  | FSU 26                | 100152           | 2024/4/1            | 2025/3/31               |
| Eastsheep    | Coaxial<br>Attenuator | 2W-SMA-JK-<br>6G-10dB | F-08-<br>EM510   | 2024/6/7            | 2025/6/6                |

\* 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).

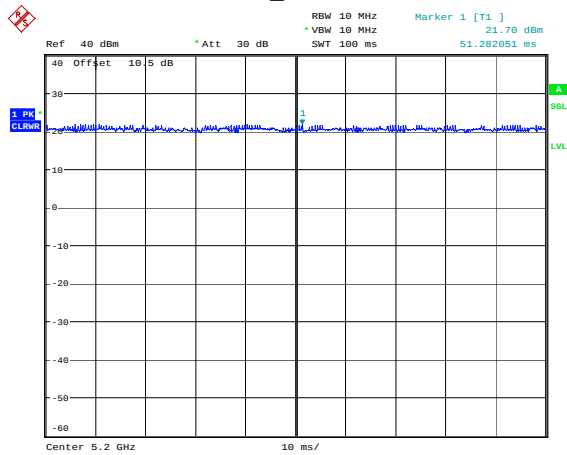
### Test Data:

#### 5150-5250MHz

| Mode      | Test<br>Frequency<br>(MHz) | Ton<br>(ms) | Ton+Toff<br>(ms) | Duty Cycle<br>(%) | Duty Cycle<br>Factor(dB) | 1/Ton<br>(Hz) | VBW<br>Setting<br>(kHz) |
|-----------|----------------------------|-------------|------------------|-------------------|--------------------------|---------------|-------------------------|
| 802.11a   | 5200                       | 100         | 100              | 100.00            | /                        | 10            | /                       |
| 802.11n20 | 5200                       | 100         | 100              | 100.00            | /                        | 10            | /                       |
| 802.11n40 | 5190                       | 100         | 100              | 100.00            | /                        | 10            | /                       |

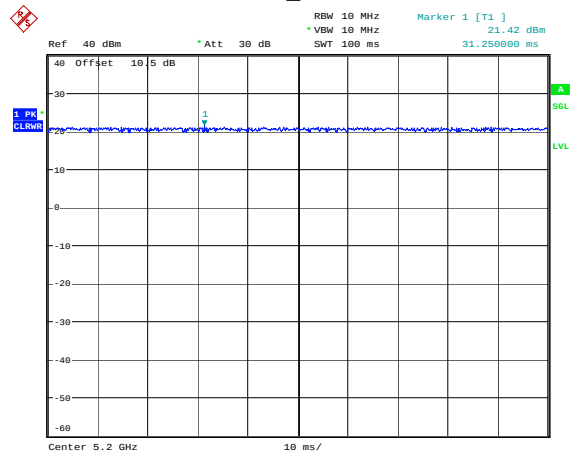
## 5150-5250MHz

## 802.11a\_5200MHz



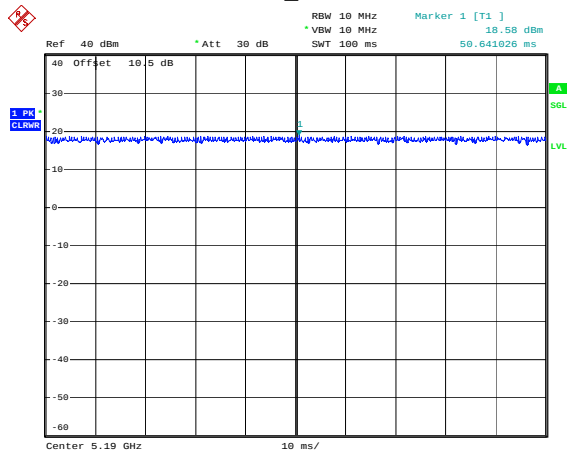
Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:28:08

## 802.11n20\_5200MHz



Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:31:16

## 802.11n40\_5190MHz



Comment: ProjectNo.:2402A111445E-RFiTester:Levi Shi  
Date: 2.JAN.2025 21:32:47

## **EXHIBIT A - EUT PHOTOGRAPHS**

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Please refer to the attachment 2402A111445E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2402A111445E-RF-INP EUT INTERNAL PHOTOGRAPHS.

## **EXHIBIT B - TEST SETUP PHOTOGRAPHS**

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Please refer to the attachment 2402A111445E-RF-00A-TSP TEST SETUP PHOTOGRAPHS.

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