

# ELECTROMAGNETIC EMISSIONS **COMPLIANCE REPORT**



| Applicant:<br>Manufacturer: | silex technology, Inc.<br>2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,<br>Japan<br>silex technology, Inc. |
|-----------------------------|--|
|                             | 2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,<br>Japan   |
| Product Name:               | SX-PCEAX-AP  |
| Brand Name:                 | Silex Technology   |
| Model No.:                  | SX-PCEAX-AP  |
| Model Difference:           | N/A  |
| Report Number:              | TERF2310002605ER   |
| FCC ID                      | N6C-PCEAXAP  |
| IC:                         | 4908A-PCEAXAP  |
| Date of EUT Received:       | October 17, 2023   |
| Date of Test:               | October 17, 2023 $\sim$ December 6, 2023   |
| Issue Date:                 | February 5, 2024   |

Approved By\_\_\_\_\_

Rue Yang

## We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.407, ISED RSS-247.

The results of this report relate only to the sample identified in this report.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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| Revision History |          |             |                  |            |        |  |  |  |
|------------------|----------|-------------|------------------|------------|--------|--|--|--|
| Report Number    | Revision | Description | Issue Date       | Revised By | Remark |  |  |  |
| TERF2310002605ER | 00       | Original.   | February 5, 2024 | Susan Lin  |        |  |  |  |
|                  |          |             |                  |            |        |  |  |  |
|                  |          |             |                  |            |        |  |  |  |
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|                  |          |             |                  |            |        |  |  |  |
|                  |          |             |                  |            |        |  |  |  |
|                  |          |             |                  |            |        |  |  |  |

Note:

1 . The remark "\*" indicates modification of the report upon requests from certification body.

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#### **GENERAL INFORMATION** 1

#### 1.1 **Product Description**

| Product Name:                    | SX-PCEAX-AP        |
|----------------------------------|--------------------|
| Brand Name:                      | Silex Technology   |
| Model No.:                       | SX-PCEAX-AP        |
| Model Difference:                | N/A                |
| Hardware Version:                | N/A                |
| Firmware Version:                | N/A                |
| EUT Series No.:                  | ES4-3              |
| Power Supply:                    | 3.3Vdc             |
| Test Software<br>(Name/Version): | QRCT / 4.0.00203.0 |

#### 1.2 **Modulation & Data Rate**

|                  | 64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11a,11n |
|------------------|--|
|                  | 256QAM, 64QAM, 16QAM, QPSK, BPSK                 |
| Modulation type: | for OFDM in 802.11ac                             |
|                  | 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK        |
|                  | for OFDMA in 802.11ax                            |
|                  | 802.11 a: 6 - 54 Mbps                            |
|                  | 802.11 n_20MHz: up to 144.4 Mbps                 |
|                  | 802.11 n_40MHz: up to 300 Mbps                   |
|                  | 802.11 ac_20MHz: up to 173.4 Mbps                |
|                  | 802.11 ac_40MHz: up to 400 Mbps                  |
| Transition Rate: | 802.11 ac_80MHz: up to 866.6 Mbps                |
|                  | 802.11 ac_160MHz: up to 1733.4 Mbps              |
|                  | 802.11 ax_20MHz: up to 286.8 Mbps                |
|                  | 802.11 ax_40MHz: up to 573.6 Mbps                |
|                  | 802.11 ax_80MHz: up to 1201 Mbps                 |
|                  | 802.11 ax_160MHz: up to 2402 Mbps                |

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#### 1.3 **Antenna Designation**

| Antenna<br>Type | Supplier                             | Antenna<br>Part No. | Freq.<br>(MHz) | Peak Antenna<br>Gain (dBi) | Directional<br>Gain (dBi) |
|-----------------|--------------------------------------|---------------------|----------------|----------------------------|---------------------------|
|                 |                                      |                     | 5150~5250      | 3.175                      | 6.185                     |
| Dipole          | Molex                                | 146153              | 5250~5350      | 2.975                      | 5.985                     |
|                 | WOIEX                                |                     | 5470~5725      | 4.275                      | 7.285                     |
|                 |                                      |                     | 5725~5850      | 3.775                      | 6.785                     |
|                 |                                      | AA258               | 5150~5250      | 3.22                       | 6.23                      |
| Dipole          | Unictron Technologies<br>Corporation |                     | 5250~5350      | 3.91                       | 6.92                      |
|                 |                                      |                     | 5470~5725      | 2.77                       | 5.78                      |
|                 |                                      |                     | 5725~5850      | 3.92                       | 6.93                      |

Note:

1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.

2. Antenna information is provided by the applicant.

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| Wi-Fi            | Frequency Range | Channels | Rated Power(Avg)<br>(dBm) (Worst Case) | Modulation<br>Technology |
|------------------|-----------------|----------|--|--------------------------|
| a/               | 5180~5240       | 4        | 19.42 dBm                              | OFDM                     |
| n_HT/            | 5260~5320       | 4        | 19.41 dBm                              | OFDM                     |
| ac_VHT/<br>ax_HE | 5500~5720       | 12       | 19.49 dBm                              | OFDM                     |
| 20M              | 5745-5825       | 5        | 19.22 dBm                              | OFDM                     |
| o UT             | 5190~5230       | 2        | 19.30 dBm                              | OFDMA                    |
| n_HT<br>ac_VHT/  | 5270~5310       | 2        | 19.48 dBm                              | OFDMA                    |
| ax_HE<br>40M     | 5510~5710       | 6        | 19.40 dBm                              | OFDMA                    |
| 40101            | 5755-5795       | 2        | 19.28 dBm                              | OFDMA                    |
|                  | 5210            | 1        | 10.90 dBm                              | OFDMA                    |
| ac_VHT/          | 5290            | 1        | 15.48 dBm                              | OFDM                     |
| ax_HE<br>80M     | 5530~5690       | 3        | 18.17 dBm                              | OFDMA                    |
|                  | 5775            | 1        | 17.43 dBm                              | OFDMA                    |
| ac_VHT/<br>ax_HE | 5250            | 1        | 12.11 dBm                              | OFDMA                    |
| ax_ne<br>160M    | 5570            | 1        | 14.93 dBm                              | OFDMA                    |

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## Low Power

| Wi-Fi                                  | Frequency Range | Channels | Rated Power(Avg)<br>(dBm) (Worst Case) | Modulation<br>Technology |
|--|-----------------|----------|--|--------------------------|
| a/<br>n_HT/<br>ac_VHT/<br>ax_HE<br>20M | 5180~5240       | 4        | 14.49 dBm                              | OFDM                     |
| n_HT<br>ac_VHT/<br>ax_HE<br>40M        | 5190~5230       | 2        | 2 18.04 dBm                            |                          |
| ac_VHT/<br>ax_HE<br>80M                | 5210            |          | 10.90 dBm                              | OFDMA                    |
| ac_VHT/<br>ax_HE<br>160M               | 5250            | 1        | 12.11 dBm                              | OFDMA                    |

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### 1.5 ISED

### WLAN 5 GHz for ISED

| Wi-Fi                                  | Frequency Range | Channels | EIRP/Avg |       | er(EIRP/Avg)<br>orst Case)   | Modulation<br>Technology |
|--|-----------------|----------|----------|-------|------------------------------|--------------------------|
| a/<br>n_HT/<br>ac_VHT/<br>ax_HE<br>20M | 5180~5240       | 4        | EIRP     | 17.71 | dBm                          | OFDM                     |
| n_HT<br>ac_VHT/<br>ax_HE<br>40M        | 5190~5230       | 2        | EIRP     | 21.26 | dBm                          | OFDMA                    |
| ac_VHT/<br>ax_HE<br>80M                | 5210            | 1        | EIRP     | 14.12 | dBm                          | OFDMA                    |
| ac_VHT/<br>ax_HE<br>160M               | 5250            | 1        | Avg      | 15.33 | dBm                          | OFDMA                    |
| WLAN 5 GHz for ISED                    | )               |          |          |       |                              |                          |
| Wi-Fi                                  | Frequency Range | Channels | EIRP/Avg |       | wer(EIRP/Avg)<br>Worst Case) | Modulation<br>Technology |
|  | 5260~5320       | 4        | Avg      | 19.41 | dBm                          | OFDM                     |
| a/<br>n_HT/                            | (*)5500~5700    | 8        | Avg      | 19.49 | dBm                          | OFDM                     |
| ac_VHT/                                | 5720 (U-NII 2C) | 1        | Avg      | 18.08 | dBm                          | OFDM                     |
| ax_HE<br>20M                           | 5720 (U-NII 3)  | 1        | Avg      | 13.36 | dBm                          | OFDMA                    |
| 2011                                   | 5745-5825       | 5        | Avg      | 19.22 | dBm                          | OFDM                     |
|  | 5270~5310       | 2        | Avg      | 19.48 | dBm                          | OFDMA                    |
| n_HT                                   | (*)5510~5670    | 3        | Avg      | 19.40 | dBm                          | OFDMA                    |
| ac_VHT/<br>ax_HE                       | 5710 (U-NII 2C) | 1        | Avg      | 18.72 | dBm                          | OFDMA                    |
| 40M                                    | 5710 (U-NII 3)  | 1        | Avg      | 10.31 | dBm                          | OFDMA                    |
|  | 5755-5795       | 2        | Avg      | 19.28 | dBm                          | OFDMA                    |
|  | 5290            | 1        | Avg      | 15.48 | dBm                          | OFDM                     |
| ac_VHT/                                | 5530~5610       | 1        | Avg      | 15.45 | dBm                          | OFDMA                    |
| ax_HE                                  | 5690 (U-NII 2C) | 1        | Avg      | 17.12 | dBm                          | OFDM                     |
| 80M                                    | 5690 (U-NII 3)  | 1        | Avg      | 5.85  | dBm                          | OFDM                     |
|  | 5775            | 1        | Avg      | 17.43 | dBm                          | OFDMA                    |
| ac_VHT/<br>ax_HE<br>160M               | 5250            | 1        | Avg      | 12.11 | dBm                          | OFDMA                    |

\*Note : TDWR frequencies are not available in Canada.

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#### 1.6 **Test Methodology of Applied Standards**

FCC Part 15, Subpart E §15.407 FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 FCC KDB 291074 D02 EMC Measurement v01 RSS-247 issue 3 Aug. 2023 RSS-Gen, issue 5 April, 2018 ANSI C63.10:2013

#### 1.7 **Test Facility**

| Laboratory      | Test Site Address   | Test Site Name                        | FCC Designa-<br>tion number | IC CAB<br>identifier |
|-----------------|---|---------------------------------------|-----------------------------|----------------------|
|                 |   | SAC 1                                 |                             |                      |
|                 |   | SAC 2                                 |                             |                      |
|                 |   | SAC 3                                 |                             |                      |
|                 | No 124 Wu Kung Rood, Now Toingi   | Conduction 1                          |                             |                      |
|                 | No.134, Wu Kung Road, New Taipei<br>Industrial Park, Wuku District, New | Conducted 1                           | TW0027                      |                      |
|                 | Taipei City, Taiwan.  | Conducted 2                           | 100027                      |                      |
|                 | Taiper City, Taiwan.  | Conducted 3                           | _                           | TW3702               |
|                 |   | Conducted 4                           | -                           |                      |
|                 |   | Conducted 5                           |                             |                      |
| SGS Taiwan Ltd. |   | Conducted 6                           |                             |                      |
| Central RF Lab. | Na 2 Kaii 4et Dd. Quishan District                                      | Conduction C                          | -                           |                      |
| (TAF code 3702) |   | SAC C                                 |                             |                      |
|                 |   | SAC D                                 |                             |                      |
|                 |   | SAC G                                 |                             |                      |
|                 |   | Conducted A                           |                             |                      |
|                 | No.2, Keji 1st Rd., Guishan District,                                   | Conducted B                           | TW0028                      |                      |
|                 | Taoyuan City, Taiwan 333  | Conducted C                           |                             |                      |
|                 |   | Conducted D                           |                             |                      |
|                 |   | Conducted E                           |                             |                      |
|                 |   | Conducted F                           |                             |                      |
|                 |   | Conducted G                           |                             |                      |
|                 | ame is remarked on the equipmen<br>measurements occurred in specif      | Conducted G<br>t list in each section | -                           | is an ind            |

#### 1.8 **Special Accessories**

There are no special accessories used while test was conducted.

#### 1.9 **Equipment Modifications**

There was no modification incorporated into the EUT.

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#### SYSTEM TEST CONFIGURATION 2

#### 2.1 **EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

#### 2.2 **EUT Exercise**

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

#### 2.3 **Test Procedure**

#### 2.3.1 **Conducted Emissions**

The EUT is a placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50uH/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 **Conducted Test (RF)**

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

#### **Radiated Emissions** 2.3.3

The EUT is a placed on a turn table. For emissions testing at or below 1 GHz. the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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#### 2.4 Measurement Results Explanation Example

#### 2.4.1 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

#### 2.4.2 For all conducted test items:

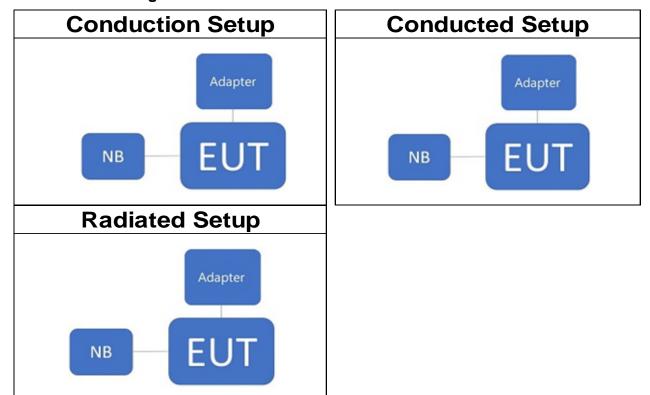
The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

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#### 2.5 **Test Configuration**



#### 2.6 Control Unit(s)

| AC Power-Line Conducted Emission Test Site: Conduction 1         |   |  |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|--|
| EQUIPMENT TYPE MFR MODEL NUMBER SERIAL NUMBER LAST CAL. CAL DUE. |   |  |  |  |  |  |  |  |
| Notebook   | Notebook Dell Latitude 5590 BYJMNV2 N/A N/A |  |  |  |  |  |  |  |
| Adapter  | Adapter EDAC EA10682N-120 N/A N/A N/A       |  |  |  |  |  |  |  |

| Conducted Emission Test Site: Conducted 1                        |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| EQUIPMENT TYPE MFR MODEL NUMBER SERIAL NUMBER LAST CAL. CAL DUE. |  |  |  |  |  |  |  |  |
| Notebook Dell Latitude 5590 BYJMNV2 N/A N/A                      |  |  |  |  |  |  |  |  |
| Adapter  |  |  |  |  |  |  |  |  |

| Radiated Emission Test Site: SAC 1 |      |               |               |           |          |
|------------------------------------|------|---------------|---------------|-----------|----------|
| EQUIPMENT TYPE                     | MFR  | MODEL NUMBER  | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| Notebook                           | Dell | Latitude 5590 | BYJMNV2       | N/A       | N/A      |
| Adapter                            | EDAC | EA10682N-120  | N/A           | N/A       | N/A      |

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## **3 SUMMARY OF TEST RESULT**

| FCC Rules                        | ISED Rules   | Description Of Test                               | Result    |
|----------------------------------|--|---|-----------|
| §15.207                          | RSS-Gen §8.8   | AC Power Line Conducted<br>Emission               | Compliant |
| §15.407(e)                       | RSS-Gen §6.7   | Emission Bandwidth                                | Compliant |
| §15.407(a)                       | RSS-247 §6.2.1~4 (1)<br>RSS-247 §6.2.5 (2)               | Maximum Conducted<br>Output Power                 | Compliant |
| §15.407(a)                       | RSS-247 §6.2.1~ 4 (1)<br>RSS-247 §6.2.5 (2)              | Power Spectral Density                            | Compliant |
| §15.205<br>§15.209<br>§15.407(b) | RSS-247 §6.2.1~3 (2)<br>§6.2.4 (3)<br>RSS-247 §6.2.5 (3) | Undesirable Radiated<br>Emissions                 | Compliant |
| §15.407(c)                       | RSS-247 §6.4   | Transmission in case of<br>Absence of Information | Compliant |
| §15.203                          | N/A  | Antenna Requirement                               | Compliant |

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Freq.

(MHz)

5270

5310



#### **DESCRIPTION OF TEST MODES** 4

#### 4.1 **Operating Frequencies**

CH

38

46

40MHz

CH

102

110

118

126

134

142

Freq.

(MHz)

5510

5550

5590

5630

5670

5710

## UNII-1 5150 MHz ~ 5250MI

| 20MHz   |                |  |  |
|---------|----------------|--|--|
| СН      | Freq.<br>(MHz) |  |  |
| 36      | 5180           |  |  |
| 40      | 5200           |  |  |
| 44      | 5220           |  |  |
| 48 5240 |                |  |  |

| Η     | Hz             |  |       |                |  |
|-------|----------------|--|-------|----------------|--|
| 10MHz |                |  | 80MHz |                |  |
|       | Freq.<br>(MHz) |  | СН    | Freq.<br>(MHz) |  |
|       | 5190           |  | 42    | 5210           |  |
|       | 5230           |  |       |                |  |

## UNII-2A 5250 MHz ~ 5350MHz

| 20MHz |                | 40MH: |            |
|-------|----------------|-------|------------|
| СН    | Freq.<br>(MHz) | СН    | Fre<br>(MF |
| 52    | 5260           | 54    | 527        |
| 56    | 5280           | 62    | 531        |
| 60    | 5300           |       |            |
| 64    | 5320           |       |            |
|       |                |       |            |

| 80MHz |                |  |
|-------|----------------|--|
| СН    | Freq.<br>(MHz) |  |
| 58    | 5290           |  |

| 16  | 160MHz |  |  |
|-----|--------|--|--|
| СН  | Freq.  |  |  |
| OIT | (MHz)  |  |  |
| 50  | 5250   |  |  |

| UNII-2C 5470 MHz ~ 5725 |
|-------------------------|
|-------------------------|

| -   |                |  |
|-----|----------------|--|
| 20  |                |  |
| СН  | Freq.<br>(MHz) |  |
| 100 | 5500           |  |
| 104 | 5520           |  |
| 108 | 5540           |  |
| 112 | 5560           |  |
| 116 | 5580           |  |
| 120 | 5600           |  |
| 124 | 5620           |  |
| 128 | 5640           |  |
| 132 | 5660           |  |
| 136 | 5680           |  |
| 140 | 5700           |  |
| 144 | 5720           |  |
|     |                |  |

| 80MHz |       |  |
|-------|-------|--|
| СН    | Freq. |  |
| ••••  | (MHz) |  |
| 106   | 5530  |  |
| 122   | 5610  |  |
| 138   | 5690  |  |

| 160MHz |                |  |
|--------|----------------|--|
| СН     | Freq.<br>(MHz) |  |
| 114    | 5570           |  |

## UNII-3 5725 MHz ~ 5850MHz

20MHz

CH

149

153

157

161

165

Freq.

(MHz)

5745

5765

5785

5805

5825

|  | 40MHz |       |
|--|-------|-------|
|  | СН    | Freq. |
|  | •     | (MHz) |
|  | 151   | 5755  |
|  | 159   | 5795  |
|  |       |       |

| 80MHz |                |  |  |  |  |
|-------|----------------|--|--|--|--|
| СН    | Freq.<br>(MHz) |  |  |  |  |
| 155   | 5775           |  |  |  |  |

## Note:

Operating in 5600~5650MHz is prohibited in Canada for Master device. 1.

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#### 4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting mode is programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case. The given UE is pre-scanned among below modes.

| N | <i>l</i> odulation |   |     | Trai | nsmiss | sion | Chain | in Single<br>Spatial |     |  |     | Tra | Multiple<br>ansmission<br>Spatial |
|---|--------------------|---|-----|------|--------|------|-------|----------------------|-----|--|-----|-----|-----------------------------------|
| v | 802.11 a           | v | Ch0 | v    | Ch1    |      | Ch2   |                      | Ch3 |  | 1TX | ۷   | 2TX                               |
| v | 802.11 n           | ۷ | Ch0 | ۷    | Ch1    |      | Ch2   |                      | Ch3 |  | 1TX | ۷   | 2TX                               |
| v | 802.11 ac          | ۷ | Ch0 | ۷    | Ch1    |      | Ch2   |                      | Ch3 |  | 1TX | ۷   | 2TX                               |
| v | 802.11 ax          | v | Ch0 | v    | Ch1    |      | Ch2   |                      | Ch3 |  | 1TX | v   | 2TX                               |

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

|                        |                         |                      | COND              | JCTED TEST |                     |                 |  |
|------------------------|-------------------------|----------------------|-------------------|------------|---------------------|-----------------|--|
| MODE                   | FREQUENCY<br>BAND (MHz) | AVAILABLE<br>CHANNEL | TESTED<br>CHANNEL | MODULATION | DATA RATE<br>(Mbps) | ANTENNA<br>PORT |  |
|                        | 5180~5240               | 36 to 48             | 36,44,48          |            |                     |                 |  |
| 902 11-                | 5260~5320               | 52 to 64             | 52,60,64          | OFDM       | c                   | OTV             |  |
| 802.11a                | 5500~5720               | 100 to 144           | 100,116,140,144   |            | 6                   | 2TX             |  |
|                        | 5745~5825               | 149 to 165           | 149,157,165       |            |                     |                 |  |
|                        | 5180~5240               | 36 to 48             | 36,44,48          |            |                     |                 |  |
| 802.11n_HT20           | 5260~5320               | 52 to 64             | 52,60,64          | OFDM       | MCS0                | οτv             |  |
|                        | 5500~5720               | 100 to 144           | 100,116,140,144   | OFDIM      | MCSU                | 2TX             |  |
|                        | 5745~5825               | 149 to 165           | 149,157,165       |            |                     |                 |  |
|                        | 5190~5230               | 38 to 46             | 38,46             |            |                     | 2TX             |  |
| 802.11n_HT40           | 5270~5310               | 54 to 62             | 54,62             | OFDM       | MCS0                |                 |  |
| 002.1111 <u></u> -1140 | 5510~5710               | 102 to 142           | 102,110,134,142   |            |                     |                 |  |
|                        | 5755~5795               | 151 to 159           | 151,159           |            |                     |                 |  |
|                        | 5210                    | 42                   | 42                |            |                     |                 |  |
| 902 11aa V/UT90        | 5290                    | 58                   | 58                | OFDM       | MCSO                | ΩTV             |  |
| 802.11ac_VHT80         | 5530~5690               | 106 to 138           | 106,122,138       | OFDIM      | MCS0                | 2TX             |  |
|                        | 5775 155 155            |                      |                   |            |                     |                 |  |
| 802 11aa V/UT160       | 5250                    | 50                   | 50                | OFDM       | MCS0                | 2TX             |  |
| 802.11ac_VHT160        | 5570                    | 114                  | 114               |            | MCSU                | 21X             |  |

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|                |            |            | COND            | UCTED TEST |               |           |         |
|----------------|------------|------------|-----------------|------------|---------------|-----------|---------|
| MODE           | FREQUENCY  | AVAILABLE  | TESTED          |            | RU            | DATA RATE | ANTENNA |
| MODE           | BAND (MHz) | CHANNEL    | CHANNEL         | MODULATION | CONFIGURATION | (Mbps)    | PORT    |
|                | 5180~5240  | 36 to 48   | 36,44,48        |            |               |           |         |
| 802.11ax_HE20  | 5260~5320  | 52 to 64   | 52,60,64        | OFDMA      | FULL RU       | MCCO      | 2TX     |
|                | 5500~5720  | 100 to 144 | 100,116,140,144 | OFDIMA     | FULL RU       | MCS0      | 217     |
|                | 5745~5825  | 149 to 165 | 149,157,165     |            |               |           |         |
|                | 5190~5230  | 38 to 46   | 38,46           |            | FULL RU       |           |         |
| 802.11ax HE40  | 5270~5310  | 54 to 62   | 54,62           | OFDMA      |               | MCS0      | 2TX     |
| 002.118X_HE40  | 5510~5710  | 102 to 142 | 102,110,134,142 | OFDIVIA    |               |           | 217     |
|                | 5755~5795  | 151 to 159 | 151,159         |            |               |           |         |
|                | 5210       | 42         | 42              |            |               |           |         |
| 802.11ax HE80  | 5290       | 58         | 58              | OFDMA      | FULL RU       | MCS0      | 2TX     |
| 002.118X_FE00  | 5530~5690  | 106 to 138 | 106,122,138     | OFDIVIA    | FULL KU       | NIC SU    | 217     |
|                | 5775       | 155        | 155             |            |               |           |         |
| 902 11ov HE160 | 5250       | 50         | 50              | OFDMA      | FULL RU       |           | ΩTV     |
| 802.11ax_HE160 | 5570       | 114        | 114             | OFDIMA     | FULL RU       | MCS0      | 2TX     |

|         | TRANSMIT RADIATED EMISSION TEST (BELOW 1 GHz) |            |         |            |           |         |  |  |  |  |
|---------|---|------------|---------|------------|-----------|---------|--|--|--|--|
| MODE    | FREQUENCY                                     | AVAILABLE  | TESTED  | MODULATION | DATA RATE | ANTENNA |  |  |  |  |
|         | BAND (MHz)                                    | CHANNEL    | CHANNEL | MODULATION | (Mbps)    | PORT    |  |  |  |  |
|         | 5180~5240                                     | 36 to 48   | 44      |            |           | 2TX     |  |  |  |  |
| 802.11a | 5260~5320                                     | 52 to 64   | 60      |            | OFDM 6    |         |  |  |  |  |
| 002.118 | 5500~5720                                     | 100 to 144 | 116     |            |           |         |  |  |  |  |
|         | 5745~5825                                     | 149 to 165 | 157     |            |           |         |  |  |  |  |

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|                  | - 1        | TRANSM     | T RADIATED E    | MISSION TES | T (ABOVE 1 GHz) |         |
|------------------|------------|------------|-----------------|-------------|-----------------|---------|
| MODE             | FREQUENCY  | AVAILABLE  | TESTED          | MODULATION  | DATA RATE       | ANTENNA |
| MODE             | BAND (MHz) | CHANNEL    | CHANNEL         | WODULATION  | (Mbps)          | PORT    |
|                  | 5180~5240  | 36 to 48   | 36,44,48        |             |                 |         |
| 802.11a          | 5260~5320  | 52 to 64   | 52,60,64        | OFDM        | 6               | 2TX     |
| 002.118          | 5500~5720  | 100 to 144 | 100,116,140,144 | OFDIN       | 0               | 217     |
|                  | 5745~5825  | 149 to 165 | 149,157,165     |             |                 |         |
|                  | 5180~5240  | 36 to 48   | 36,44,48        |             |                 |         |
| 802.11n_HT20     | 5260~5320  | 52 to 64   | 52,60,64        | OFDM        | MCS0            | 2TX     |
|                  | 5500~5720  | 100 to 144 | 100,116,140,144 |             | WCGU            | 217     |
|                  | 5745~5825  | 149 to 165 | 149,157,165     |             |                 |         |
|                  | 5190~5230  | 38 to 46   | 38,46           |             |                 |         |
| 802.11n_HT40     | 5270~5310  | 54 to 62   | 54,62           | OFDM        | MCS0            | 2TX     |
| 002.1111_11140   | 5510~5710  | 102 to 142 | 102,110,134,142 |             |                 | 217     |
|                  | 5755~5795  | 151 to 159 | 151,159         |             |                 |         |
|                  | 5210       | 42         | 42              |             |                 |         |
| 802.11ac_VHT80   | 5290       | 58         | 58              | OFDM        | MCS0            | 2TX     |
| 002.1180_011100  | 5530~5690  | 106 to 138 | 106,122,138     |             | WCGU            | 217     |
|                  | 5775       | 155        | 155             |             |                 |         |
| 802.11ac_VHT160  | 5250       | 50         | 50              | OFDM        | MCS0            | 2TX     |
| 002.1180_0111100 | 5570       | 114        | 114             | OFDINI      | WCOU            | 217     |

|                 |            | TRANSM     | T RADIATED E    | MISSION TES | T (ABOVE 1 GHz) |           |         |
|-----------------|------------|------------|-----------------|-------------|-----------------|-----------|---------|
| MODE            | FREQUENCY  | AVAILABLE  | TESTED          | MODULATION  | RU              | DATA RATE | ANTENNA |
|                 | BAND (MHz) | CHANNEL    | CHANNEL         |             | CONFIGURATION   | (Mbps)    | PORT    |
|                 | 5180~5240  | 36 to 48   | 36,44,48        |             |                 |           |         |
| 802.11ax_HE20   | 5260~5320  | 52 to 64   | 52,60,64        | OFDMA       | FULL RU         | MCS0      | 2TX     |
|                 | 5500~5720  | 100 to 144 | 100,116,140,144 |             |                 | WOOD      | 217     |
|                 | 5745~5825  | 149 to 165 | 149,157,165     |             |                 |           |         |
|                 | 5190~5230  | 38 to 46   | 38,46           |             |                 |           |         |
| 802.11ax HE40   | 5270~5310  | 54 to 62   | 54,62           | OFDMA       | FULL RU         | MCS0      | 2TX     |
| 002.11ax_11E40  | 5510~5710  | 102 to 142 | 102,110,134,142 | OFDIVIA     |                 | WIC30     | 217     |
|                 | 5755~5795  | 151 to 159 | 151,159         |             |                 |           |         |
|                 | 5210       | 42         | 42              |             |                 |           |         |
| 802.11ax HE80   | 5290       | 58         | 58              | OFDMA       | FULL RU         | MCS0      | 2TX     |
| 002.11ax_11200  | 5530~5690  | 106 to 138 | 106,122,138     |             |                 | WO00      | 217     |
|                 | 5775       | 155        | 155             |             |                 |           |         |
| 802.11ax_HE160  | 5250       | 50         | 50              | OFDMA       | FULL RU         | MCS0      | 2TX     |
| 002.11ax_11E100 | 5570       | 114        | 114             | OFDIVIA     |                 | IVIC OU   | 217     |

### Note:

The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

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#### **MEASUREMENT UNCERTAINTY** 5

| Test Items                       | Un  | certain | ty |
|----------------------------------|-----|---------|----|
| AC Power Line Conducted Emission | +/- | 2.32    | dB |
| Output Power measurement         | +/- | 1       | dB |
| Emission Bandwidth               | +/- | 1.53    | Hz |
| Conducted emission measurement   | +/- | 1.68    | dB |
| Peak Power Density               | +/- | 2.16    | dB |
| Temperature                      | +/- | 0.7     | °C |
| Humidity                         | +/- | 3       | %  |
| DC / AC Power Source             | +/- | 1       | %  |

| Radiated Spurious Emission Measurement Uncertainty |     |      |    |                 |  |  |
|--|-----|------|----|-----------------|--|--|
|  | +/- | 2.8  | dB | 9kHz~30MHz      |  |  |
| Polarization: Vertical                             | +/- | 4.82 | dB | 30MHz - 1000MHz |  |  |
|  | +/- | 4.37 | dB | 1GHz - 18GHz    |  |  |
|  | +/- | 4.21 | dB | 18GHz - 40GHz   |  |  |
|  | +/- | 2.8  | dB | 9kHz~30MHz      |  |  |
| Polarization: Horizontal                           | +/- | 4.54 | dB | 30MHz - 1000MHz |  |  |
| Polarization: Horizontal                           | +/- | 4.37 | dB | 1GHz - 18GHz    |  |  |
|  | +/- | 4.21 | dB | 18GHz - 40GHz   |  |  |

## Note:

- 1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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#### MEASUREMENT EQUIPMENT USED 6

#### 6.1 **Emission from AC power line**

|                   | AC Power-Line Conducted Emission Test Site: Conduction 1 |                          |               |            |            |  |  |  |  |
|-------------------|--|--------------------------|---------------|------------|------------|--|--|--|--|
| EQUIPMENT TYPE    | MFR  | MODEL NUMBER             | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |  |  |  |  |
| Test Software     | Audix  | e3                       | Ver. 9.210616 | N.C.R      | N.C.R      |  |  |  |  |
| LISN              | SCHWARZBECK  | NSLK 8127                | 1040          | 09/06/2023 | 09/05/2024 |  |  |  |  |
| Coaxial Cables    | EMC Instruments<br>Corp.                                 | EMCCFD300-BM-<br>BM-3000 | 161207        | 06/22/2023 | 06/21/2024 |  |  |  |  |
| Pulse Limiter     | SCHWARZBECK  | VTSD 9561F-N             | 793           | 06/22/2023 | 06/21/2024 |  |  |  |  |
| EMI Test Receiver | R&S  | ESCI 7                   | 100759        | 08/21/2023 | 08/20/2024 |  |  |  |  |

#### 6.2 **Condcuted Measurement**

|                          | Conducted Emission Test Site: Conducted 1 |                        |               |            |            |  |  |  |  |
|--------------------------|---|------------------------|---------------|------------|------------|--|--|--|--|
| EQUIPMENT TYPE           | MFR                                       | MODEL NUMBER           | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |  |  |  |  |
| EXA Spectrum<br>Analyzer | KEYSIGHT                                  | N9010B                 | MY59071571    | 06/07/2023 | 06/06/2024 |  |  |  |  |
| Test Software            | SGS                                       | Radio Test<br>Software | Ver. 21       | N.C.R      | N.C.R      |  |  |  |  |
| Power Meter              | Anritsu                                   | ML2496A                | 1804001       | 03/16/2023 | 03/15/2024 |  |  |  |  |
| Power Sensor             | Anritsu                                   | MA2411B                | 1726104       | 03/16/2023 | 03/15/2024 |  |  |  |  |
| Power Sensor             | Anritsu                                   | MA2411B                | 1726107       | 03/16/2023 | 03/15/2024 |  |  |  |  |
| Attenuator               | Mini-Circuits                             | BW-S10W2+              | 2             | 12/13/2022 | 12/12/2023 |  |  |  |  |
| DC Block                 | Mini-Circuits                             | BLK-18-S+              | 1             | 12/13/2022 | 12/12/2023 |  |  |  |  |

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#### 6.3 **Radiated Measurement**

|                                | Radiated Emission Test Site: SAC 1 |   |   |            |            |  |  |  |  |
|--------------------------------|------------------------------------|---|---|------------|------------|--|--|--|--|
| EQUIPMENT TYPE                 | MFR                                | MODEL NUMBER                                | SERIAL NUMBER                             | LAST CAL.  | CAL DUE.   |  |  |  |  |
| Loop Antenna                   | ETS.LINDGREN                       | 6502  | 148045                                    | 10/13/2023 | 10/12/2024 |  |  |  |  |
| Horn Antenna                   | RF SPIN                            | DRH0844                                     | LE2D05A0844                               | 07/03/2023 | 07/02/2024 |  |  |  |  |
| Horn Antenna                   | SCHWARZBECK                        | BBHA9120D                                   | D803                                      | 12/30/2022 | 12/29/2023 |  |  |  |  |
| Bi-log Antenna                 | TESEO                              | CBL 6112D                                   | 35242 & AT-N0555                          | 12/27/2022 | 12/26/2023 |  |  |  |  |
| EXA Spectrum<br>Analyzer       | KEYSIGHT                           | N9010B                                      | MY60242081                                | 10/17/2023 | 10/16/2024 |  |  |  |  |
| Test Software                  | Audix                              | e3  | Ver. 9.210616                             | N.C.R      | N.C.R      |  |  |  |  |
| EMI Test Receiver              | R&S                                | ESR 7                                       | 102525                                    | 02/18/2023 | 02/17/2024 |  |  |  |  |
| Site Cal                       | SGS                                | SAC 1                                       | N/A                                       | 08/31/2023 | 08/30/2024 |  |  |  |  |
| Pre-Amplifier                  | EMCI                               | EMC184045B                                  | 980135                                    | 08/31/2023 | 08/30/2024 |  |  |  |  |
| Pre-Amplifier                  | HP                                 | 8447D                                       | 2944A09469                                | 08/31/2023 | 08/30/2024 |  |  |  |  |
| Pre-Amplifier                  | EMCI                               | EMC118A45SEE                                | 980933                                    | 07/31/2023 | 07/30/2024 |  |  |  |  |
| Bandreject Filter<br>5150-5350 | Micro-Tronics                      | BRM50703                                    | 1   | 12/13/2022 | 12/12/2023 |  |  |  |  |
| Bandreject Filter<br>5470-5725 | Micro-Tronics                      | BRM50704                                    | 1   | 12/13/2022 | 12/12/2023 |  |  |  |  |
| Bandreject Filter<br>5725-5875 | Micro-Tronics                      | BRM50705                                    | 1   | 12/13/2022 | 12/12/2023 |  |  |  |  |
| 7GHz High Pass<br>Filter       | WI                                 | WHKX10-6090-<br>80SS                        | 4   | 12/13/2022 | 12/12/2023 |  |  |  |  |
| Coaxial Cables                 | Huber Suhner                       | SUCOFLEX 102                                | RX Cable 18G-40G<br>MY2630/2+805062<br>/2 | 08/31/2023 | 08/30/2024 |  |  |  |  |
| Coaxial Cable                  | EMCI                               | EMC104-SM-SM-<br>8000+EMC106-SM-<br>SM-7600 | RX Cable 9K-<br>18G(160125+15081<br>7)    | 09/12/2023 | 09/11/2024 |  |  |  |  |

**NOTE:** N.C.R refers to Not Calibrated Required.

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#### CONDUCTED EMISSION TEST 7

#### 7.1 Standard Applicable

Frequency range within 150 kHz to 30 MHz shall not exceed the Limit table as below.

| Frequency range | Limits<br>(dBuV) |          |  |
|-----------------|------------------|----------|--|
| MHz             | Quasi-peak       | Average  |  |
| 0.15 to 0.50    | 66 to 56         | 56 to 46 |  |
| 0.50 to 5       | 56               | 46       |  |
| 5 to 30         | 60               | 50       |  |
| Note            |                  |          |  |

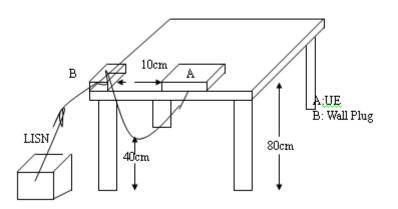
1. The lower limit shall apply at the transition frequencies

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

#### 7.2 EUT Setup:

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

#### **Test SET-UP** 7.3



#### 7.4 **Measurement Procedure**

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed.

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Report No.: TERF2310002605ER Page: 22 of 425



#### 7.5 **Measurement Result**

Note: Refer to next page for measurement data and plots. Note2: The \* reveals the worst-case results that closest to the limit.

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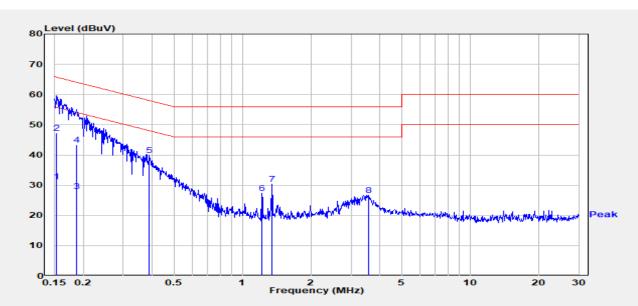
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## **AC POWER LINE CONDUCTED EMISSION TEST DATA**

| Report Number  | :TERF2310002605ER | Test Site   | :Conduction 1      |
|----------------|-------------------|-------------|--------------------|
| Operation Mode | :WLAN 5G          | Test Date   | :2023-11-21        |
| Power          | :120V/60Hz        | Temp./Humi. | : <b>25.1℃/64%</b> |
| Probe          | :L                | Engineer    | :Cooper Hsu        |



| Freq. | Detector<br>Mode | Spectrum<br>Reading Level | Factor | Actual<br>FS | Limit | Margin |
|-------|------------------|---------------------------|--------|--------------|-------|--------|
| MHz   | PK/QP/AV         | dBµV                      | dB     | dBµV         | dBµV  | dB     |
|       |                  |                           |        |              |       |        |
| 0.153 | Average          | 21.00                     | 10.13  | 31.13        | 55.82 | -24.69 |
| 0.153 | QP               | 37.20                     | 10.13  | 47.33        | 65.82 | -18.49 |
| 0.186 | Average          | 17.80                     | 10.13  | 27.93        | 54.20 | -26.27 |
| 0.186 | QP               | 33.30                     | 10.13  | 43.43        | 64.20 | -20.77 |
| 0.389 | Peak             | 29.69                     | 10.15  | 39.84        | 58.08 | -18.24 |
| 1.223 | Peak             | 17.02                     | 10.20  | 27.22        | 56.00 | -28.78 |
| 1.352 | Peak             | 20.10                     | 10.20  | 30.30        | 56.00 | -25.70 |
| 3.584 | Peak             | 16.35                     | 10.28  | 26.63        | 56.00 | -29.37 |

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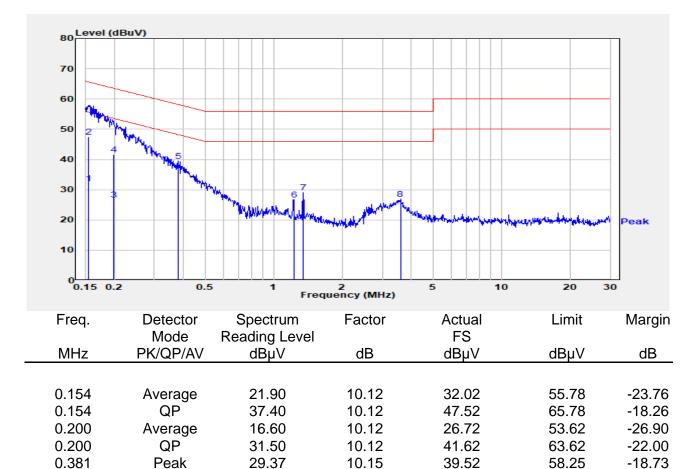
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| Report Number  | :TERF2310002605ER |
|----------------|-------------------|
| Operation Mode | :WLAN 5G          |
| Power          | :120V/60Hz        |
| Probe          | :N                |
|                |                   |

| Test Site   | :Conduction 1      |
|-------------|--------------------|
| Test Date   | :2023-11-21        |
| Temp./Humi. | : <b>25.1℃/64%</b> |
| Engineer    | :Cooper Hsu        |



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16.51

18.84

16.61

Peak

Peak

Peak

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10.19

10.19

10.29

26.70

29.03

26.90

1.229

1.352

3.603

t (886-2) 2299-3279

f (886-2) 2298-0488

-29.30

-26.97

-29.10

56.00

56.00

56.00

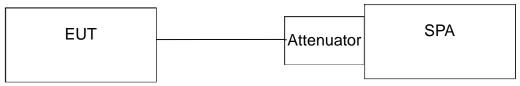


## 8 EMISSION BANDWIDTH MEASUREMENT

## 8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C. The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3.

## 8.2 Test Setup



## 8.3 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
  - 3.a. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto,

```
Detector = Peak,
```

Trace Mode = Max Hold,

Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.

- 3.b. Mark the peak frequency and -26dB (upper and lower) frequency.
- 4. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
- Minimum Emission Bandwidth for the band 5.725-5.850GHz.
  a. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3\*RBW, Span = large enough to capture all products of the modulation process, Detector=Peak, Sweep=auto

b. Mark the peak frequency and –6dB (upper and lower) frequency.

6. For 99% Bandwidth: Set the spectrum analyzer as

RBW = 1%, VBW = 3\*RBW, Span = large enough to capture all products of the modulation process, Detector=Sample, Sweep=auto.

7. Turn on the 99% bandwidth function, max reading.

## 8. Repeat above procedures until all frequency of interest measured was complete.

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#### 8.4 **Measurement Result**

#### 8.4.1 **FCC Occupied Bandwidth**

| 802.11a_Ch0    |                     |                    | 802.11a_Ch1    |                     |                    |
|----------------|---------------------|--------------------|----------------|---------------------|--------------------|
| Freq.<br>(MHz) | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
| 5180           | 18.90               | 12.760             | 5180           | 19.01               | 12.790             |
| 5220           | 18.71               | 12.720             | 5220           | 18.93               | 12.770             |
| 5240           | 18.75               | 12.730             | 5240           | 18.82               | 12.750             |
| 5260           | 19.63               | 12.930             | 5260           | 19.32               | 12.860             |
| 5300           | 18.69               | 12.720             | 5300           | 18.87               | 12.760             |
| 5320           | 18.54               | 12.680             | 5320           | 18.88               | 12.760             |
| 5500           | 18.70               | 12.720             | 5500           | 18.56               | 12.690             |
| 5580           | 21.40               | 13.300             | 5580           | 20.95               | 13.210             |
| 5700           | 18.99               | 12.790             | 5700           | 19.77               | 12.960             |
| 5720(U-NII 2C) | 14.44               | 11.600             | 5720(U-NII 2C) | 14.89               | 11.730             |
| 5720(U-NII 3)  | 4.44                | 6.480              | 5720(U-NII 3)  | 4.89                | 6.890              |
| 802.11a_Ch0    | -                   | -                  | 802.11a_Ch1    | -                   | -                  |

| Freq.<br>(MHz) | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|----------------|--------------------|--------------------|----------------|--------------------|--------------------|
| 5745           | 16.06              | 12.060             | 5745           | 16.04              | 12.050             |
| 5785           | 16.33              | 12.130             | 5785           | 16.31              | 12.120             |
| 5825           | 16.33              | 12.130             | 5825           | 16.36              | 12.140             |

### 802.11a Ch0

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5240           | 5248.17                    | < 5250         |
| 5745           | 5736.81                    | > 5725         |

### 802.11a Ch1

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5240           | 5248.18                    | < 5250         |
| 5745           | 5736.80                    | > 5725         |

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802.11n\_HT20\_Ch1

| Freq.<br>(MHz)   | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz)   | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|------------------|---------------------|--------------------|------------------|---------------------|--------------------|
| 5180             | 20.12               | 13.040             | 5180             | 19.72               | 12.950             |
| 5220             | 19.93               | 13.000             | 5220             | 20.19               | 13.050             |
| 5240             | 20.21               | 13.060             | 5240             | 19.95               | 13.000             |
| 5260             | 20.80               | 13.180             | 5260             | 19.79               | 12.960             |
| 5300             | 19.94               | 13.000             | 5300             | 20.32               | 13.080             |
| 5320             | 19.99               | 13.010             | 5320             | 19.77               | 12.960             |
| 5500             | 19.86               | 12.980             | 5500             | 19.88               | 12.980             |
| 5580             | 22.87               | 13.590             | 5580             | 22.27               | 13.480             |
| 5700             | 20.71               | 13.160             | 5700             | 20.57               | 13.130             |
| 5720(U-NII 2C)   | 15.27               | 11.840             | 5720(U-NII 2C)   | 15.48               | 11.900             |
| 5720(U-NII 3)    | 5.27                | 7.210              | 5720(U-NII 3)    | 5.48                | 7.390              |
| 802 11n HT20 Ch0 |                     |                    | 802 11n HT20 Ch1 |                     |                    |

802.11n\_HT20\_Ch0

802.11n\_HT20\_Ch0

802.11n\_HT20\_Ch1

| Freq.<br>(MHz) | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|----------------|--------------------|--------------------|----------------|--------------------|--------------------|
| 5745           | 17.60              | 12.460             | 5745           | 16.34              | 12.130             |
| 5785           | 16.64              | 12.210             | 5785           | 17.63              | 12.460             |
| 5825           | 17.68              | 12.470             | 5825           | 17.69              | 12.480             |

### 802.11n\_HT20\_Ch0

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5240           | 5248.76                    | < 5250         |
| 5745           | 5736.17                    | > 5725         |

### 802.11n\_HT20\_Ch1

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5240           | 5248.78                    | < 5250         |
| 5745           | 5736.16                    | > 5725         |

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802.11n\_HT40\_Ch0

802.11n\_HT40\_Ch1

| Freq.<br>(MHz)  | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz)   | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |  |
|-----------------|---------------------|--------------------|------------------|---------------------|--------------------|--|
| 5190            | 39.33               | 15.950             | 5190             | 39.16               | 15.930             |  |
| 5230            | 39.13               | 15.930             | 5230             | 39.37               | 15.950             |  |
| 5270            | 39.21               | 15.930             | 5270             | 38.98               | 15.910             |  |
| 5310            | 39.14               | 15.930             | 5310             | 39.10               | 15.920             |  |
| 5510            | 39.40               | 15.950             | 5510             | 39.16               | 15.930             |  |
| 5550            | 43.95               | 16.430             | 5550             | 41.59               | 16.190             |  |
| 5670            | 40.11               | 16.030             | 5670             | 39.08               | 15.920             |  |
| 5710(U-NII 2C)  | 34.63               | 15.390             | 5710(U-NII 2C)   | 35.13               | 15.460             |  |
| 5710(U-NII 3)   | 4.63                | 6.650              | 5710(U-NII 3)    | 5.13                | 7.100              |  |
| 02.11n_HT40_Ch0 | ·                   |                    | 802.11n_HT40_Ch1 |                     | •                  |  |

| Freq.<br>(MHz) | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|----------------|--------------------|--------------------|----------------|--------------------|--------------------|
| 5755           | 33.96              | 15.310             | 5755           | 36.38              | 15.610             |
| 5795           | 35.75              | 15.530             | 5795           | 36.33              | 15.600             |

802.11n\_HT40\_Ch0

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5230           | 5247.94                    | < 5250         |
| 5755           | 5736.98                    | > 5725         |

802.11n\_HT40\_Ch1

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5230           | 5247.97                    | < 5250         |
| 5755           | 5736.88                    | > 5725         |

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### 802.11ac\_VHT80\_Ch0

802.11ac\_VHT80\_Ch1

| Freq.<br>(MHz)       | 26dB<br>BW<br>(MHz) | 10 Log (B) Freq.<br>(dB) (MHz) |                     | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|----------------------|---------------------|--------------------------------|---------------------|---------------------|--------------------|
| 5210                 | 81.51               | 19.110                         | 5210                | 80.39               | 19.050             |
| 5290                 | 80.40               | 19.050                         | 5290                | 80.73               | 19.070             |
| 5530                 | 81.83               | 19.130                         | 5530                | 80.58               | 19.060             |
| 5610                 | 83.46               | 19.210                         | 5610                | 82.72               | 19.180             |
| 5690(U-NII 2C)       | 75.63               | 18.790                         | 5690(U-NII 2C)      | 75.68               | 18.790             |
| 5690(U-NII 3)        | 5.63                | 7.510                          | 5690(U-NII 3)       | 5.68                | 7.540              |
| 902 44 co VIIT00 Ch0 |                     |                                | 902 44aa VIIT90 Ch4 |                     |                    |

802.11ac\_VHT80\_Ch0

802.11ac\_VHT80\_Ch1

| Freq.<br>(MHz) | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|----------------|--------------------|--------------------|----------------|--------------------|--------------------|
| 5775           | 68.48              | 18.360             | 5775           | 69.07              | 18.390             |

802.11ac\_VHT80\_Ch0

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5210           | 5247.67                    | < 5250         |
| 5775           | 5737.19                    | > 5725         |

### 802.11ac\_VHT160\_Ch0

802.11ac\_VHT80\_Ch1

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5210           | 5247.64                    | < 5250         |
| 5775           | 5737.05                    | > 5725         |

### 802.11ac\_VHT160\_Ch1

| Freq.<br>(MHz) | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|----------------|---------------------|--------------------|----------------|---------------------|--------------------|
| 5250           | 162.80              | 22.120             | 5250           | 162.30              | 22.100             |
| 5570           | 163.10              | 22.120             | 5570           | 162.50              | 22.110             |

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802.11ax\_HE20\_Ch0

| 80 | )2.11ax_ | HE20 | Ch1 |
|----|----------|------|-----|

| Freq.<br>(MHz)     | RU config | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz)     | RU config | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|--------------------|-----------|---------------------|--------------------|--------------------|-----------|---------------------|--------------------|
| 5180               | full      | 20.59               | 13.140             | 5180               | full      | 20.43               | 13.100             |
| 5220               | full      | 20.33               | 13.080             | 5220               | full      | 20.61               | 13.140             |
| 5240               | full      | 20.73               | 13.170             | 5240               | full      | 20.53               | 13.120             |
| 5260               | full      | 20.80               | 13.180             | 5260               | full      | 21.07               | 13.240             |
| 5300               | full      | 20.60               | 13.140             | 5300               | full      | 20.61               | 13.140             |
| 5320               | full      | 20.47               | 13.110             | 5320               | full      | 20.72               | 13.160             |
| 5500               | full      | 20.80               | 13.180             | 5500               | full      | 20.71               | 13.160             |
| 5580               | full      | 20.87               | 13.200             | 5580               | full      | 22.81               | 13.580             |
| 5700               | full      | 20.50               | 13.120             | 5700               | full      | 20.63               | 13.140             |
| 5720<br>(U-NII 2C) | full      | 15.54               | 11.910             | 5720<br>(U-NII 2C) | full      | 15.37               | 11.870             |
| 5720<br>(U-NII 3)  | full      | 5.54                | 7.440              | 5720<br>(U-NII 3)  | full      | 5.37                | 7.300              |

802.11ax\_HE20\_Ch0

802.11ax\_HE20\_Ch1

| Freq.<br>(MHz) | RU config | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | RU config | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|----------------|-----------|--------------------|--------------------|----------------|-----------|--------------------|--------------------|
| 5745           | full      | 18.97              | 12.780             | 5745           | full      | 18.51              | 12.670             |
| 5785           | full      | 18.17              | 12.590             | 5785           | full      | 18.20              | 12.600             |
| 5825           | full      | 16.90              | 12.280             | 5825           | full      | 17.67              | 12.470             |

### 802.11ax\_HE20\_Ch0

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5240           | 5249.43                    | < 5250         |
| 5745           | 5735.53                    | > 5725         |

### 802.11ax\_HE20\_Ch1

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5240           | 5249.44                    | < 5250         |
| 5745           | 5735.49                    | > 5725         |

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# 802.11ax HE40 Ch1

| ••=                                 | <b>__</b> |                     |                    | •••=·····          |           |                     |                    |
|-------------------------------------|-----------|---------------------|--------------------|--------------------|-----------|---------------------|--------------------|
| Freq.<br>(MHz)                      | RU config | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz)     | RU config | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
| 5190                                | full      | 40.10               | 16.030             | 5190               | full      | 39.88               | 16.010             |
| 5230                                | full      | 40.19               | 16.040             | 5230               | full      | 39.76               | 15.990             |
| 5270                                | full      | 39.73               | 15.990             | 5270               | full      | 40.12               | 16.030             |
| 5310                                | full      | 39.81               | 16.000             | 5310               | full      | 39.84               | 16.000             |
| 5510                                | full      | 39.54               | 15.970             | 5510               | full      | 39.89               | 16.010             |
| 5550                                | full      | 41.26               | 16.160             | 5550               | full      | 42.70               | 16.300             |
| 5670                                | full      | 40.28               | 16.050             | 5670               | full      | 40.16               | 16.040             |
| 5710<br>(U-NII 2C)                  | full      | 34.93               | 15.430             | 5710<br>(U-NII 2C) | full      | 35.18               | 15.460             |
| 5710<br>(U-NII 3)                   | full      | 4.93                | 6.920              | 5710<br>(U-NII 3)  | full      | 5.18                | 7.140              |
| 802 11ay HE40 Cb0 802 11ay HE40 Cb1 |           |                     |                    |                    |           |                     |                    |

802.11ax\_HE40\_Ch0

802.11ax HE40 Ch0

802.11ax\_HE40\_Ch1

| Freq.<br>(MHz) | RU config | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | RU config | 6dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|----------------|-----------|--------------------|--------------------|----------------|-----------|--------------------|--------------------|
| 5755           | full      | 37.69              | 15.760             | 5755           | full      | 37.80              | 15.770             |
| 5795           | full      | 37.66              | 15.760             | 5795           | full      | 37.03              | 15.690             |

802.11ax\_HE40\_Ch0

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5230           | 5248.78                    | < 5250         |
| 5755           | 5736.12                    | > 5725         |

| 802.11ax_I | HE40_Ch1 |
|------------|----------|
|------------|----------|

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5230           | 5248.81                    | < 5250         |
| 5755           | 5736.03                    | > 5725         |

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(dB)

18.630

(MHz)

72.93



### 802.11ax\_HE80\_Ch0

802.11ax\_HE80\_Ch1

| Freq.<br>(MHz)     | RU config | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz)     | RU config | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|--------------------|-----------|---------------------|--------------------|--------------------|-----------|---------------------|--------------------|
| 5210               | full      | 81.11               | 19.090             | 5210               | full      | 80.86               | 19.080             |
| 5290               | full      | 81.72               | 19.120             | 5290               | full      | 81.11               | 19.090             |
| 5530               | full      | 80.79               | 19.070             | 5530               | full      | 81.91               | 19.130             |
| 5610               | full      | 82.51               | 19.170             | 5610               | full      | 82.74               | 19.180             |
| 5690<br>(U-NII 2C) | full      | 75.47               | 18.780             | 5690<br>(U-NII 2C) | full      | 75.60               | 18.790             |
| 5690<br>(U-NII 3)  | full      | 5.47                | 7.380              | 5690<br>(U-NII 3)  | full      | 5.60                | 7.490              |
| 802.11ax_HE80_Ch0  |           |                     |                    | 802.11ax_HE        | 80_Ch1    |                     |                    |
| Freq.              | RU config | 6dB<br>BW           | 10 Log (B)         | Freq.              | RU config | 6dB<br>BW           | 10 Log (B)         |

(dB)

18.650

(MHz)

73.35

802.11ax\_HE80\_Ch0

(MHz)

5775

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5210           | 5248.41                    | < 5250         |
| 5775           | 5736.25                    | > 5725         |

full

### 802.11ax\_HE80\_Ch1

(MHz)

5775

| Freq.<br>(MHz) | Measured<br>Freq.<br>(MHz) | Limit<br>(MHz) |
|----------------|----------------------------|----------------|
| 5210           | 5248.53                    | < 5250         |
| 5775           | 5736.20                    | > 5725         |

full

802.11ax\_HE160\_Ch0

802.11ax\_HE160\_Ch1

|   | Freq.<br>(MHz) | RU config | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) | Freq.<br>(MHz) | RU config | 26dB<br>BW<br>(MHz) | 10 Log (B)<br>(dB) |
|---|----------------|-----------|---------------------|--------------------|----------------|-----------|---------------------|--------------------|
|   | 5250           | full      | 163.10              | 22.120             | 5250           | full      | 162.87              | 22.120             |
| ſ | 5570           | full      | 163.86              | 22.140             | 5570           | full      | 162.68              | 22.110             |

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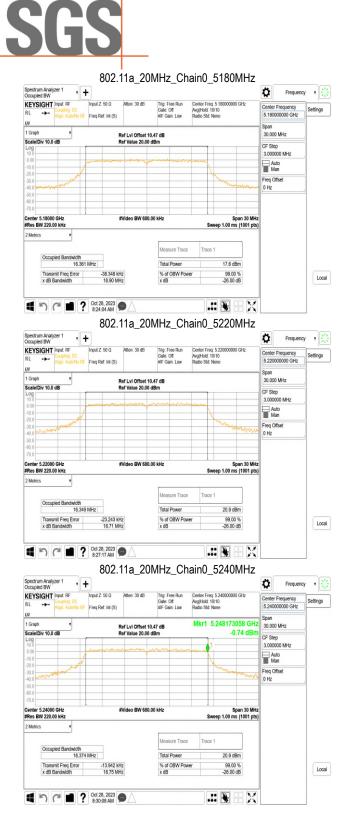
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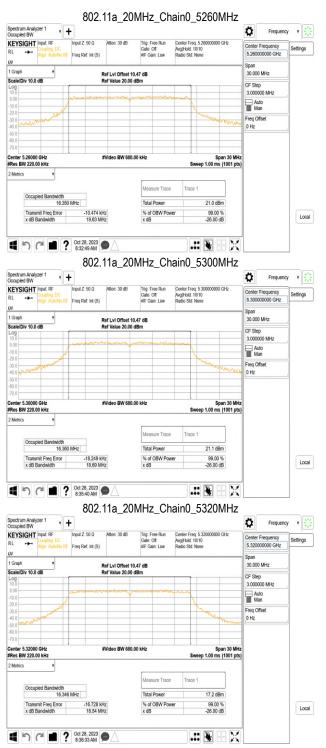
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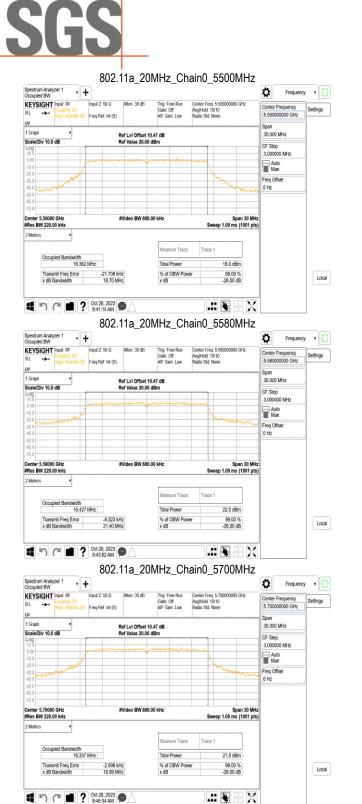
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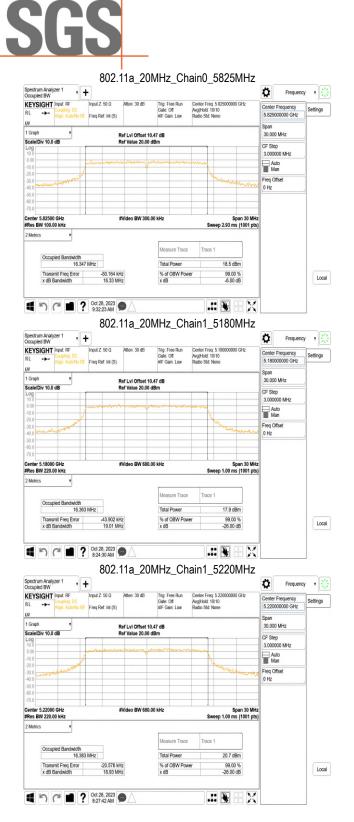
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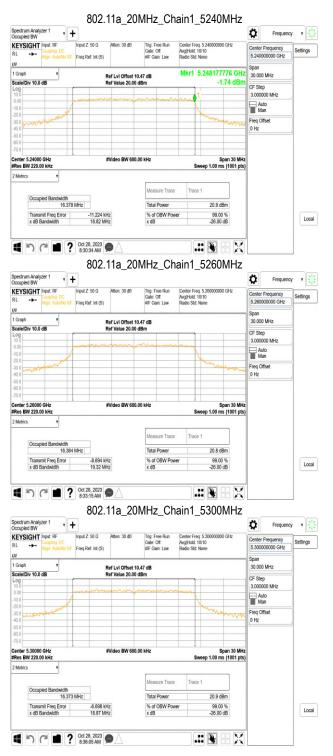
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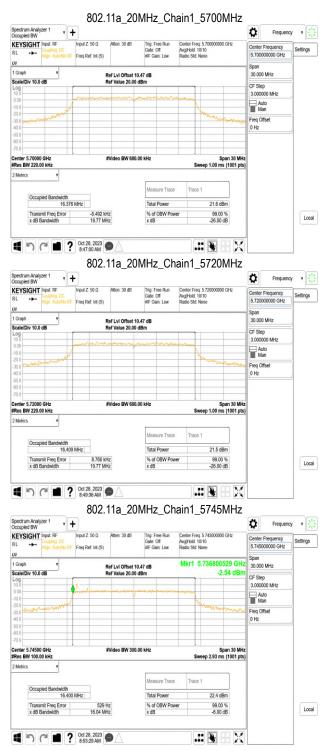
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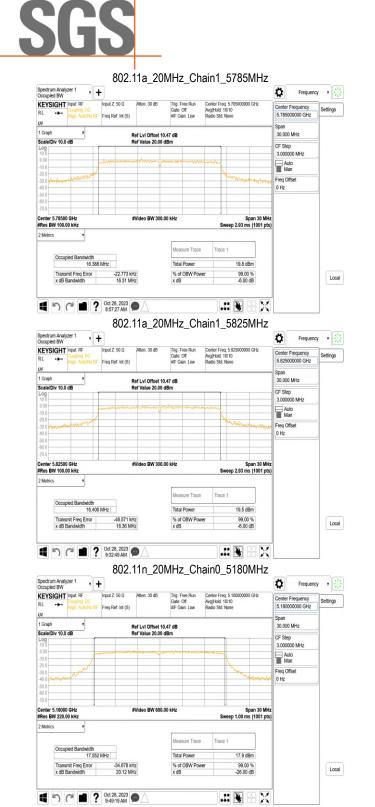
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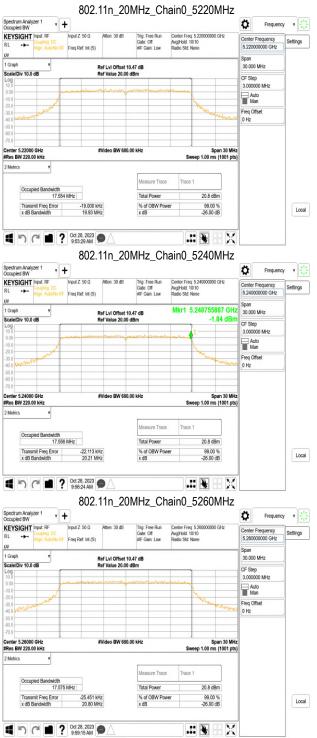
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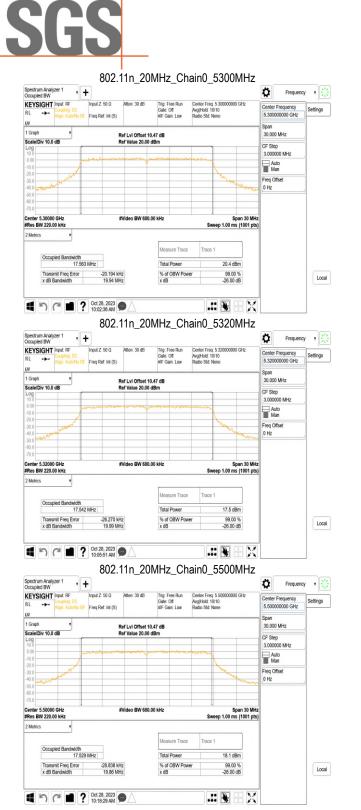
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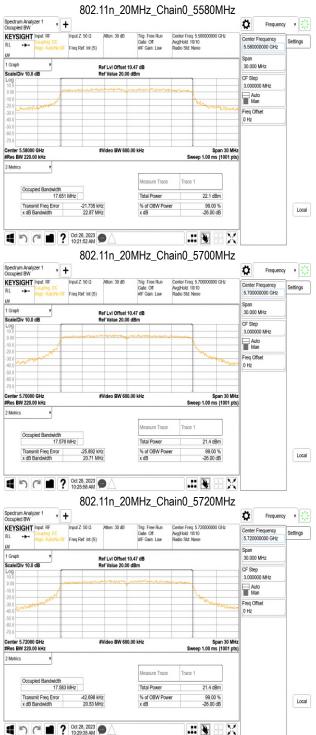
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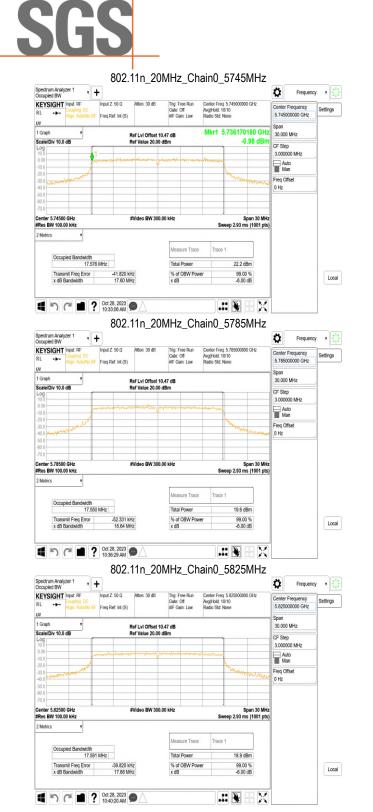
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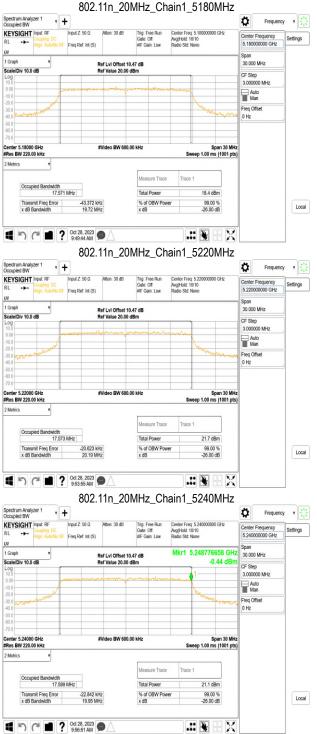
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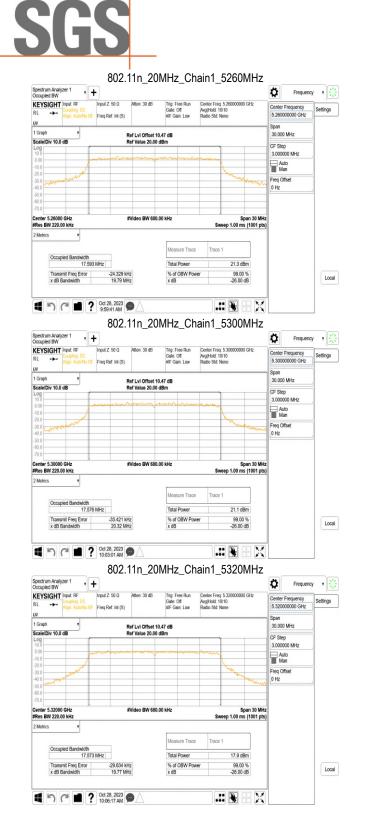
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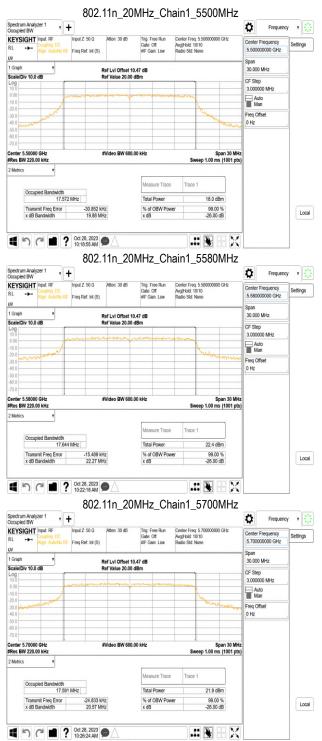
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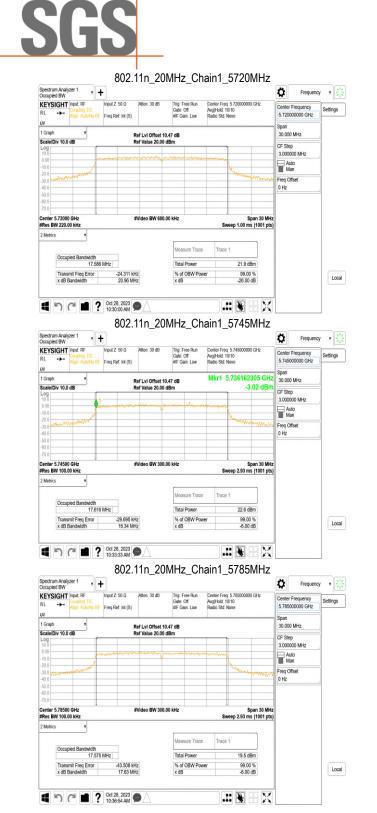
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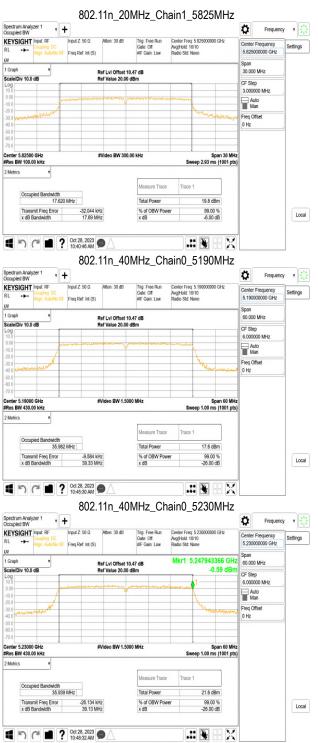
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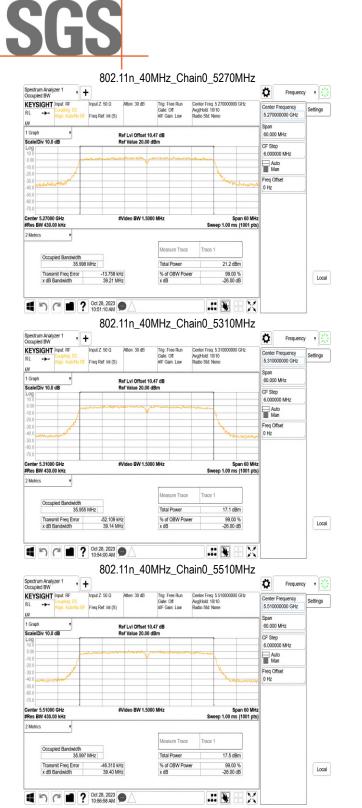
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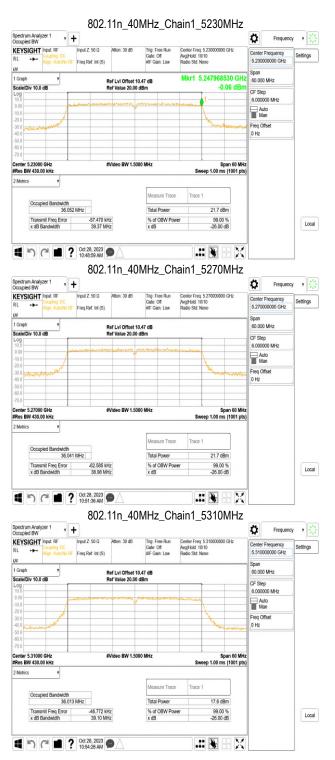
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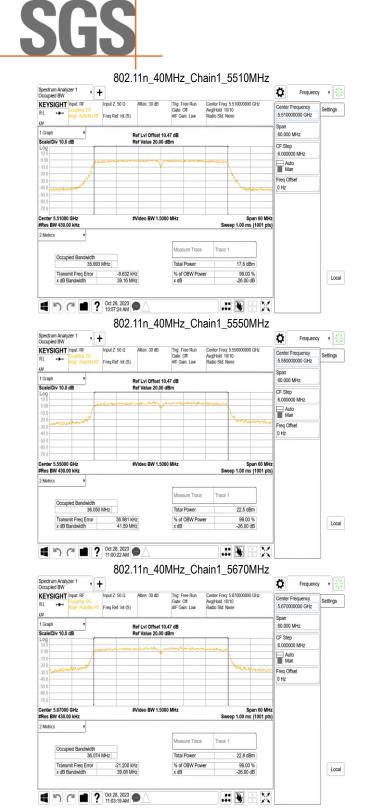
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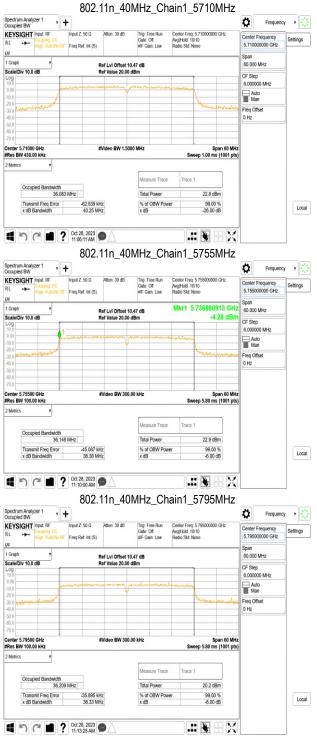
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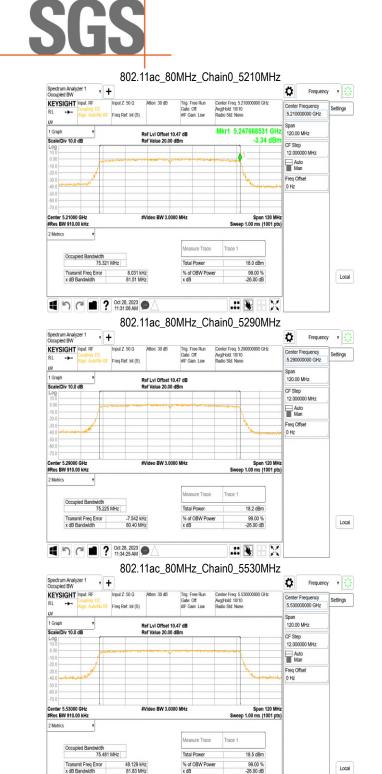
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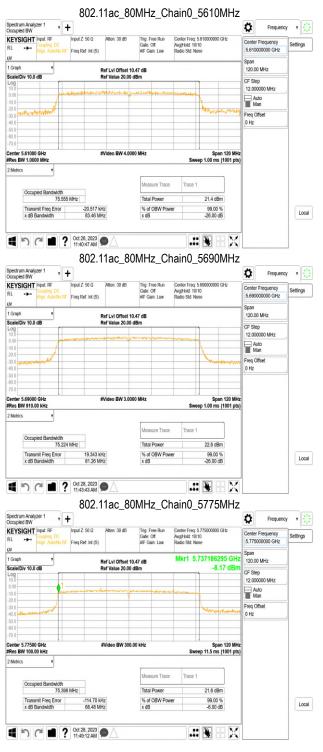
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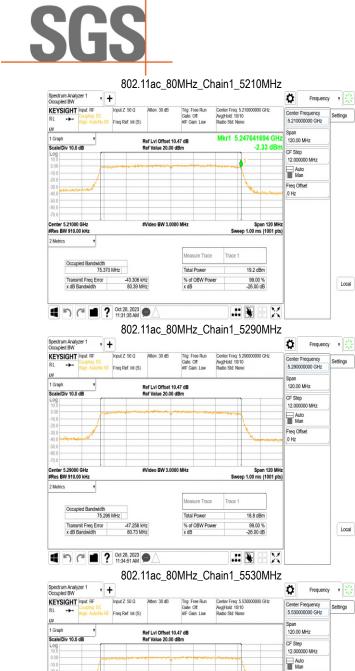
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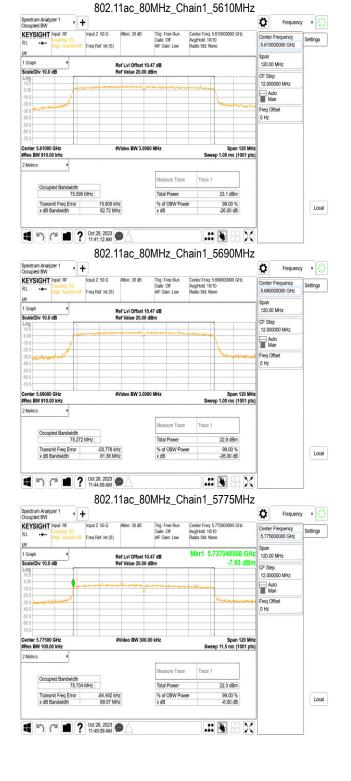
C C 28, 2023

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Freq Offsel 0 Hz

Local

n 120 MH

Span 120 MH Sweep 1.00 ms (1001 pts

18.7 dBm

99.00 % -26.00 dB

.: 🔖  $\mathbb{H}_{X}$ 

Trace 1

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#Video BW 3.0000 MH:

asure Trace

% of OBW Power x dB

Total Power

Center 5.53000 GHz #Res BW 910.00 kH

Occupied Bar

Transmit Freq Error x dB Bandwidth

vidth 75.431 MHz

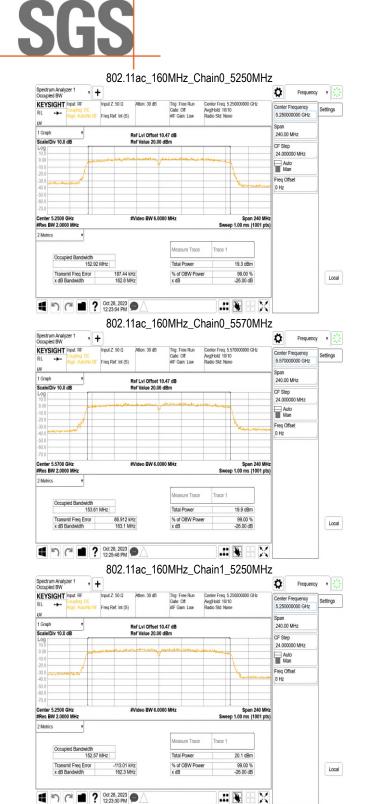
Cit 28, 2023

40.324 kHz

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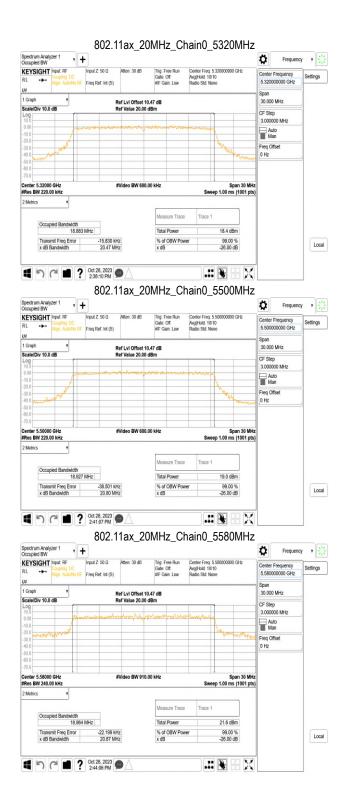
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an 30 MH:

Sweep 1.00 ms (1001 pts

21.2 dBm

99.00 % -26.00 dB

.: 🔖  $\mathbb{H}_{X}$ 

Trace 1

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#Video BW 680.00 kHz

asure Trace

% of OBW Power x dB

Total Power

ter 5,30000 GHz

Occupied Bar

Transmit Freq Error x dB Bandwires

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vidth 18.924 MHz

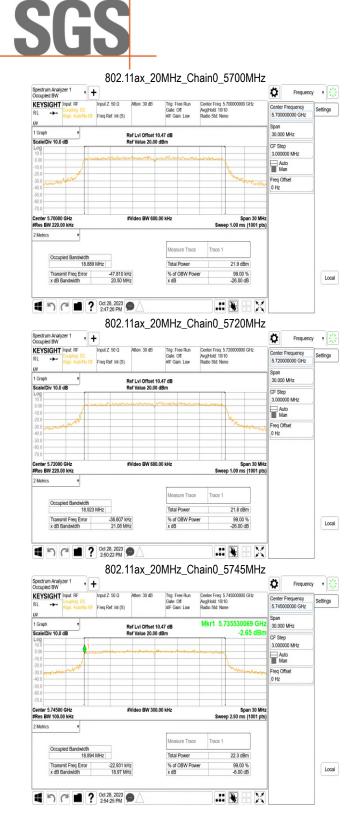
-26.903 kHz 20.60 MHz

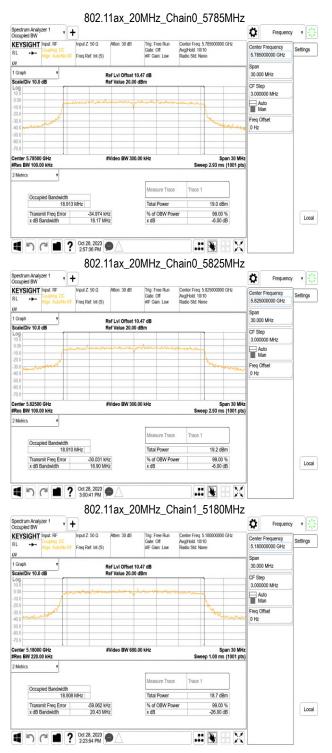
#Res BW 220.00 kH

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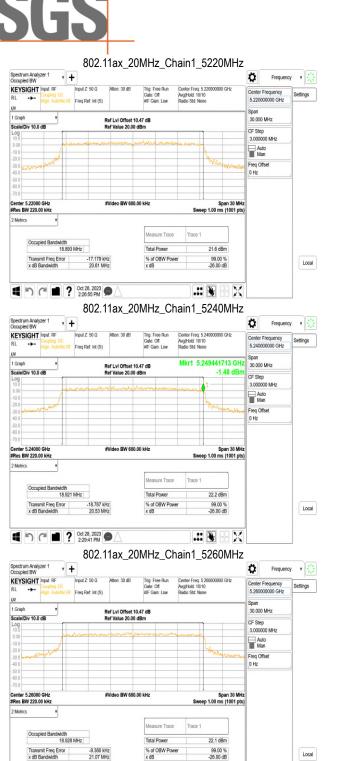
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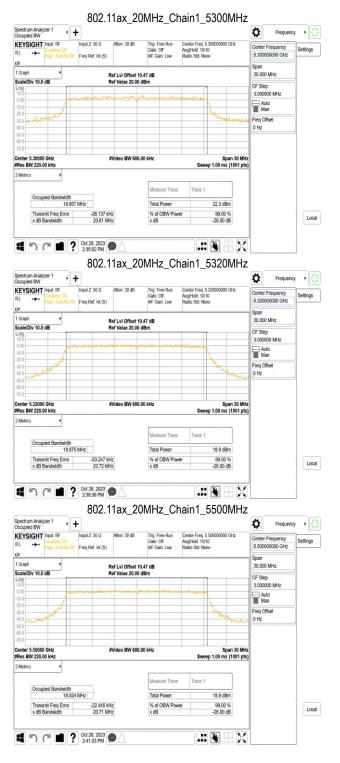
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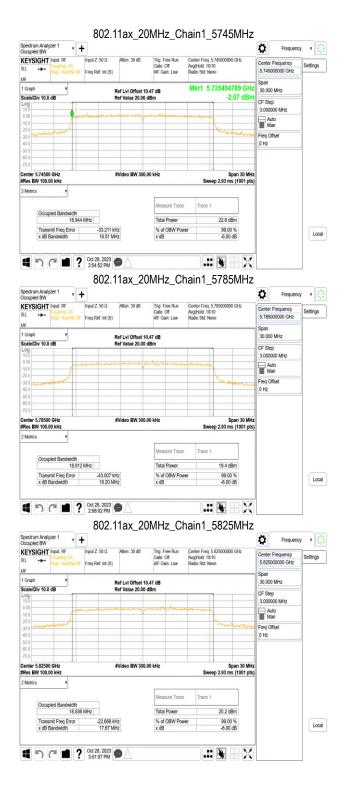
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#### 802.11ax 20MHz Chain1 5580MHz

Frequency .





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asure Trace

% of OBW Power x dB

Total Power

Occupied Bar

Transmit Freq Error x dB Bandwirth

€ C C E ? Oct 28, 2023

vidth 18.896 MHz

-38.167 kHz 20.74 MHz

Trace 1

22.3 dBm

99.00 % -26.00 dB

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