

### 7.13 Channel Closing Transmission Time

Test Requirement      KDB 905462 D02 Section 5.1  
Test Method:           KDB 905462 D02 Section 7.8.3

Limit:

| Test item                         | Limit   | Applicability                                |                                |
|-----------------------------------|---|--|--------------------------------|
|                                   |   | Master Device or client with Radar Detection | Client without Radar Detection |
| Non-occupancy period              | Minimum 30 minutes  | Yes  | Not required                   |
| Channel Availability Check Time   | 60 seconds  | Yes  | Not required                   |
| Channel Move Time                 | 10 seconds<br>See Note 1.   | Yes  | Yes                            |
| Channel Closing Transmission Time | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.<br>See Notes 1 and 2. | Yes  | Yes                            |
| U-NII Detection Bandwidth         | Minimum 100% of the U-NII 99% transmission power bandwidth.<br>See Note 3.                                | Yes  | Not required                   |

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

#### 7.13.1 E.U.T. Operation

Operating Environment:

Temperature: 34.3 °C

Humidity: 39.7 % RH

Atmospheric Pressure: 1010 mbar



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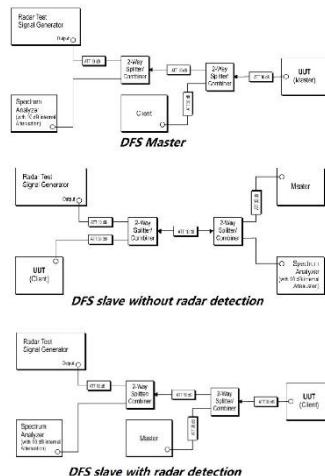
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### 7.13.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 02        | Charge + TX mode (U-NII-2A)_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80), Only the data of worst case is recorded in the report. |
| Final test            | 03        | Charge + TX mode (U-NII-2C)_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80), Only the data of worst case is recorded in the report. |

### 7.13.3 Test Setup Diagram



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**7.13.4 Measurement Procedure and Data**

- 1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- 3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
- 5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- 7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =  $S$  (12000ms) /  $B$  (4000); where Dwell is the dwell time per spectrum analyzer sampling bin,  $S$  is sweep time and  $B$  is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by:  $C$  (ms) =  $N$  X Dwell (0.3ms); where  $C$  is the Closing Time,  $N$  is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details



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**7.14 Radiated Emissions (Below 1GHz)**

Test Requirement 47 CFR Part 15, Subpart C 15.209 &amp; Subpart E 15.407(b)

Test Method: KDB 789033 D02 II G

Limit:

| Frequency(MHz) | Field strength(microvolts/meter) | Measurement distance(meters) |
|----------------|----------------------------------|------------------------------|
| 0.009-0.490    | 2400/F(kHz)                      | 300                          |
| 0.490-1.705    | 24000/F(kHz)                     | 30                           |
| 1.705-30.0     | 30                               | 30                           |
| 30-88          | 100                              | 3                            |
| 88-216         | 150                              | 3                            |
| 216-960        | 200                              | 3                            |
| 960-1000       | 500                              | 3                            |

**7.14.1 E.U.T. Operation**

Operating Environment:

Temperature: 23.5 °C

Humidity: 58.5 % RH

Atmospheric Pressure: 1010 mbar

**7.14.2 Test Mode Description**

| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 01        | Charge + TX mode (U-NII-1)_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80), Only the data of worst case is recorded in the report.  |
| Pre test              | 02        | Charge + TX mode (U-NII-2A)_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80), Only the data of worst case is recorded in the report. |
| Pre test              | 03        | Charge + TX mode (U-NII-2C)_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type  |

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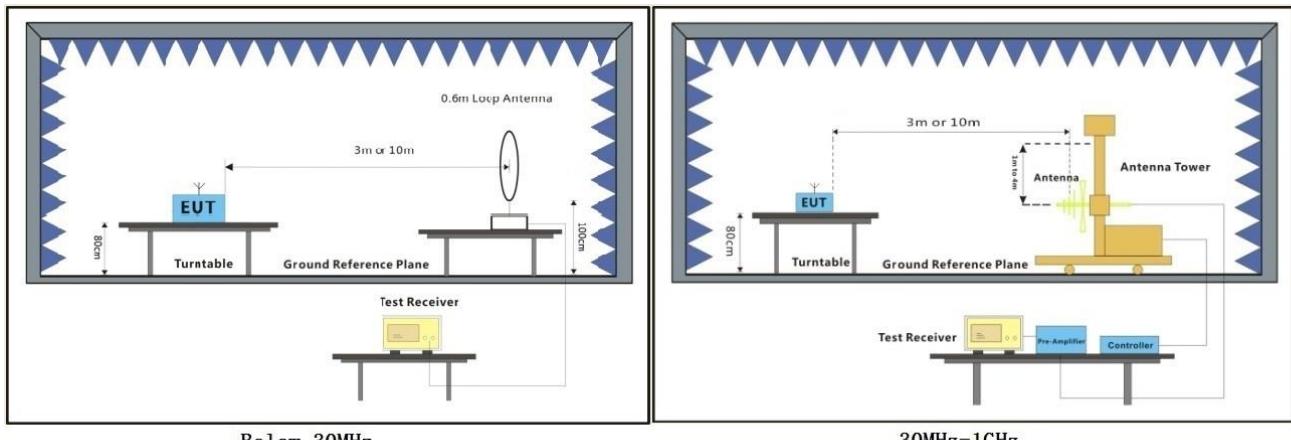
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|          |    |   |
|----------|----|---|
|          |    | have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80),. Only the data of worst case is recorded in the report.   |
| Pre test | 04 | Charge + TX mode (U-NII-3)_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80),. Only the data of worst case is recorded in the report. |

#### 7.14.3 Test Setup Diagram



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**7.14.4 Measurement Procedure and Data**

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. For emission below 1GHz, through the pre-scan found the worst case is the lowest channel of 802.11a. Only the worst case is recorded in the report.
3. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
4. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.



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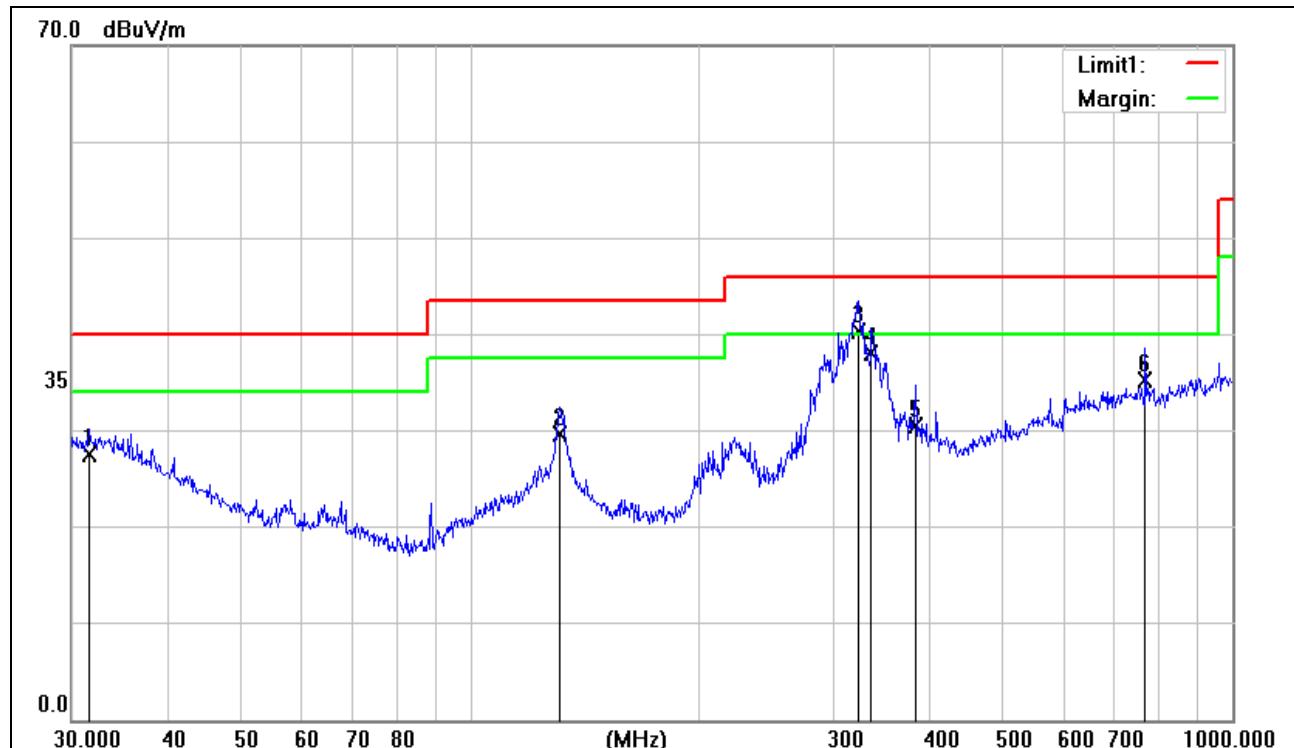
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Test Mode: 01; Polarity: Horizontal



| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 31.6202            | 2.50              | 25.14                   | 27.64              | 40.00             | -12.36         | 100            | 0                | QP     |
| 2   | 131.2965           | 10.35             | 19.33                   | 29.68              | 43.50             | -13.82         | 185            | 360              | QP     |
| 3   | 323.3204           | 19.24             | 21.12                   | 40.36              | 46.00             | -5.64          | 100            | 250              | QP     |
| 4   | 336.0352           | 16.76             | 21.36                   | 38.12              | 46.00             | -7.88          | 100            | 273              | QP     |
| 5   | 383.9318           | 7.96              | 22.60                   | 30.56              | 46.00             | -15.44         | 121            | 116              | QP     |
| 6   | 768.7482           | 7.12              | 28.09                   | 35.21              | 46.00             | -10.79         | 200            | 98               | QP     |



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Test Mode: 01; Polarity: Vertical



| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB/m) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1   | 30.1054            | 2.21              | 25.23                   | 27.44              | 40.00             | -12.56         | 100            | 50               | QP     |
| 2   | 57.5939            | 12.47             | 15.37                   | 27.84              | 40.00             | -12.16         | 100            | 237              | QP     |
| 3   | 122.8340           | 5.96              | 19.41                   | 25.37              | 43.50             | -18.13         | 100            | 355              | QP     |
| 4   | 230.9068           | 10.48             | 17.65                   | 28.13              | 46.00             | -17.87         | 100            | 6                | QP     |
| 5   | 336.0352           | 13.65             | 21.36                   | 35.01              | 46.00             | -10.99         | 104            | 360              | QP     |
| 6   | 396.2415           | 8.38              | 23.18                   | 31.56              | 46.00             | -14.44         | 100            | 358              | QP     |



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## 8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2210001890AT

## 9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2210001890AT



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## Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR221000189002

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## 10 Appendix



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**Appendix for KSCR2210001890AT-5G WIFI**

| Channel | 802.11a         |       | 802.11n(HT20)   |       | 802.11ac(VHT20) |       |
|---------|-----------------|-------|-----------------|-------|-----------------|-------|
|         | Ant 1           | Ant 2 | Ant 1           | Ant 2 | Ant 1           | Ant 2 |
| 36      | 14              | 15    | 14              | 15    | 15.5            | 16.5  |
| 40      | 14.5            | 16    | 14              | 15    | 15.5            | 16    |
| 48      | 14              | 15.5  | 14              | 14.5  | 14.5            | 15    |
| 52      | 14              | 15.5  | 14.5            | 15    | 14.5            | 15.5  |
| 60      | 14.5            | 15.5  | 14.5            | 15.5  | 14.5            | 15.5  |
| 64      | 15.5            | 16    | 15              | 16    | 14.5            | 15.5  |
| 100     | 14              | 14.5  | 14.5            | 16    | 14.5            | 15    |
| 116     | 14.5            | 15    | 15              | 16    | 14.5            | 15.5  |
| 140     | 15.5            | 15    | 15              | 15.5  | 16.5            | 17.5  |
| 149     | 15              | 15    | 15              | 16    | 15              | 16    |
| 157     | 15              | 15.5  | 15              | 16    | 15              | 16.5  |
| 165     | 14.5            | 14.5  | 14.5            | 15.5  | 15.5            | 16    |
| Channel | 802.11n(HT40)   |       | 802.11ac(VHT40) |       |                 |       |
|         | Ant 1           | Ant 2 | Ant 1           | Ant 2 |                 |       |
| 38      | 14              | 15    | 14.5            | 15    |                 |       |
| 46      | 14              | 14.5  | 14.5            | 15    |                 |       |
| 54      | 13.5            | 14.5  | 14.5            | 15    |                 |       |
| 62      | 14              | 14.5  | 16              | 17    |                 |       |
| 102     | 13.5            | 14    | 14.5            | 15.5  |                 |       |
| 110     | 14              | 15    | 15.5            | 15.5  |                 |       |
| 134     | 13              | 13.5  | 13.5            | 14    |                 |       |
| 151     | 15              | 15    | 15              | 16    |                 |       |
| 159     | 15              | 15.5  | 16              | 17    |                 |       |
| Channel | 802.11ac(VHT80) |       |                 |       |                 |       |
|         | Ant 1           | Ant 2 |                 |       |                 |       |
| 42      | 15              | 15.5  |                 |       |                 |       |
| 58      | 15              | 16    |                 |       |                 |       |
| 106     | 15              | 16    |                 |       |                 |       |
| 122     | 14.5            | 15    |                 |       |                 |       |
| 155     | 15.5            | 16    |                 |       |                 |       |

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## 1. Duty Cycle

### 1.1 Ant1

#### 1.1.1 Test Result

| Ant1             |         |                 |           |             |                |                                   |                       |
|------------------|---------|-----------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode             | TX Type | Frequency (MHz) | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| 802.11a          | SISO    | 5180            | 1.392     | 1.455       | 95.67          | 0.19                              | 0.07                  |
|                  |         | 5200            | 1.392     | 1.454       | 95.74          | 0.19                              | 0.07                  |
|                  |         | 5240            | 1.393     | 1.455       | 95.74          | 0.19                              | 0.03                  |
|                  |         | 5260            | 1.392     | 1.453       | 95.80          | 0.19                              | 0.04                  |
|                  |         | 5300            | 1.394     | 1.455       | 95.81          | 0.19                              | 0.03                  |
|                  |         | 5320            | 1.392     | 1.454       | 95.74          | 0.19                              | 0.07                  |
|                  |         | 5500            | 1.394     | 1.455       | 95.81          | 0.19                              | 0.06                  |
|                  |         | 5580            | 1.394     | 1.455       | 95.81          | 0.19                              | 0.03                  |
|                  |         | 5700            | 1.393     | 1.455       | 95.74          | 0.19                              | 0.07                  |
|                  |         | 5745            | 1.393     | 1.454       | 95.80          | 0.19                              | 0.03                  |
|                  |         | 5785            | 1.393     | 1.454       | 95.80          | 0.19                              | 0.03                  |
|                  |         | 5825            | 1.393     | 1.454       | 95.80          | 0.19                              | 0.07                  |
| 802.11n (HT20)   | MIMO    | 5180            | 1.301     | 1.363       | 95.45          | 0.20                              | 0.03                  |
|                  |         | 5200            | 1.301     | 1.363       | 95.45          | 0.20                              | 0.07                  |
|                  |         | 5240            | 1.301     | 1.362       | 95.52          | 0.20                              | 0.03                  |
|                  |         | 5260            | 1.301     | 1.363       | 95.45          | 0.20                              | 0.03                  |
|                  |         | 5300            | 1.301     | 1.363       | 95.45          | 0.20                              | 0.07                  |
|                  |         | 5320            | 1.302     | 1.363       | 95.52          | 0.20                              | 0.07                  |
|                  |         | 5500            | 1.302     | 1.363       | 95.52          | 0.20                              | 0.03                  |
|                  |         | 5580            | 1.302     | 1.363       | 95.52          | 0.20                              | 0.07                  |
|                  |         | 5700            | 1.302     | 1.363       | 95.52          | 0.20                              | 0.07                  |
|                  |         | 5745            | 1.301     | 1.362       | 95.52          | 0.20                              | 0.07                  |
|                  |         | 5785            | 1.302     | 1.363       | 95.52          | 0.20                              | 0.03                  |
|                  |         | 5825            | 1.301     | 1.362       | 95.52          | 0.20                              | 0.03                  |
| 802.11n (HT40)   | MIMO    | 5190            | 0.648     | 0.710       | 91.27          | 0.40                              | 0.03                  |
|                  |         | 5230            | 0.648     | 0.710       | 91.27          | 0.40                              | 0.03                  |
|                  |         | 5270            | 0.649     | 0.710       | 91.41          | 0.39                              | 0.03                  |
|                  |         | 5310            | 0.649     | 0.710       | 91.41          | 0.39                              | 0.03                  |
|                  |         | 5510            | 0.649     | 0.710       | 91.41          | 0.39                              | 0.03                  |
|                  |         | 5550            | 0.649     | 0.710       | 91.41          | 0.39                              | 0.03                  |
|                  |         | 5670            | 0.649     | 0.710       | 91.41          | 0.39                              | 0.03                  |
|                  |         | 5755            | 0.648     | 0.710       | 91.27          | 0.40                              | 0.07                  |
|                  |         | 5795            | 0.648     | 0.710       | 91.27          | 0.40                              | 0.06                  |
|                  |         | 5180            | 1.313     | 1.375       | 95.49          | 0.20                              | 0.07                  |
| 802.11ac (VHT20) | MIMO    | 5200            | 1.312     | 1.374       | 95.49          | 0.20                              | 0.03                  |

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|                     |      |      |       |       |       |      |      |
|---------------------|------|------|-------|-------|-------|------|------|
|                     |      | 5240 | 1.313 | 1.374 | 95.56 | 0.20 | 0.03 |
|                     |      | 5260 | 1.312 | 1.374 | 95.49 | 0.20 | 0.03 |
|                     |      | 5300 | 1.313 | 1.374 | 95.56 | 0.20 | 0.03 |
|                     |      | 5320 | 1.312 | 1.374 | 95.49 | 0.20 | 0.07 |
|                     |      | 5500 | 1.313 | 1.375 | 95.49 | 0.20 | 0.07 |
|                     |      | 5580 | 1.313 | 1.374 | 95.56 | 0.20 | 0.00 |
|                     |      | 5700 | 1.312 | 1.374 | 95.49 | 0.20 | 0.00 |
|                     |      | 5745 | 1.312 | 1.374 | 95.49 | 0.20 | 0.07 |
|                     |      | 5785 | 1.312 | 1.374 | 95.49 | 0.20 | 0.07 |
|                     |      | 5825 | 1.313 | 1.375 | 95.49 | 0.20 | 0.07 |
| 802.11ac<br>(VHT40) | MIMO | 5190 | 0.653 | 0.714 | 91.46 | 0.39 | 0.10 |
|                     |      | 5230 | 0.652 | 0.714 | 91.32 | 0.39 | 0.10 |
|                     |      | 5270 | 0.653 | 0.714 | 91.46 | 0.39 | 0.07 |
|                     |      | 5310 | 0.652 | 0.714 | 91.32 | 0.39 | 0.10 |
|                     |      | 5510 | 0.652 | 0.714 | 91.32 | 0.39 | 0.06 |
|                     |      | 5550 | 0.653 | 0.714 | 91.46 | 0.39 | 0.10 |
|                     |      | 5670 | 0.652 | 0.713 | 91.44 | 0.39 | 0.04 |
|                     |      | 5755 | 0.653 | 0.715 | 91.33 | 0.39 | 0.10 |
|                     |      | 5795 | 0.653 | 0.714 | 91.46 | 0.39 | 0.10 |
|                     |      | 5210 | 0.325 | 0.386 | 84.20 | 0.75 | 0.10 |
| 802.11ac<br>(VHT80) | MIMO | 5290 | 0.326 | 0.387 | 84.24 | 0.74 | 0.08 |
|                     |      | 5530 | 0.325 | 0.386 | 84.20 | 0.75 | 0.09 |
|                     |      | 5610 | 0.325 | 0.386 | 84.20 | 0.75 | 0.12 |
|                     |      | 5775 | 0.326 | 0.387 | 84.24 | 0.74 | 0.15 |

### 1.1.2 Test Graph

|                               |
|-------------------------------|
| 802.11a_LCH_5180MHz_Ant1_NTNV |
|-------------------------------|



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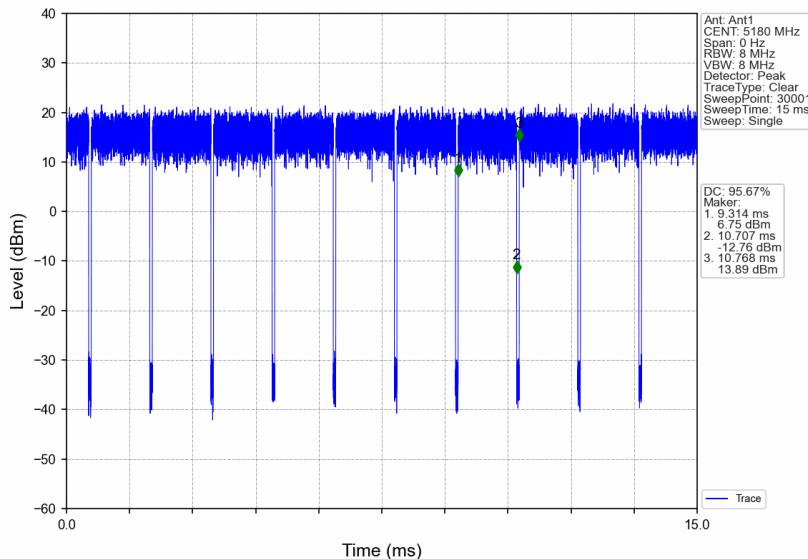
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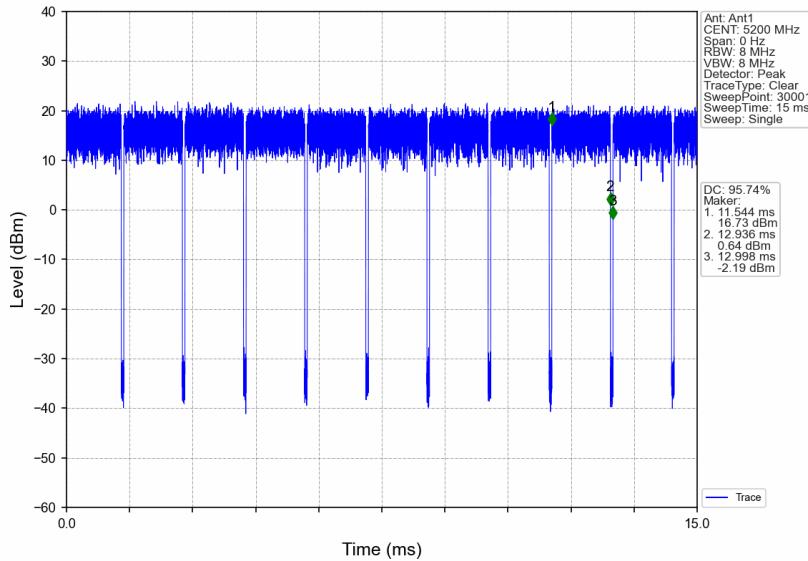
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802.11a\_MCH\_5200MHz\_Ant1\_NTNV



802.11a\_HCH\_5240MHz\_Ant1\_NTNV

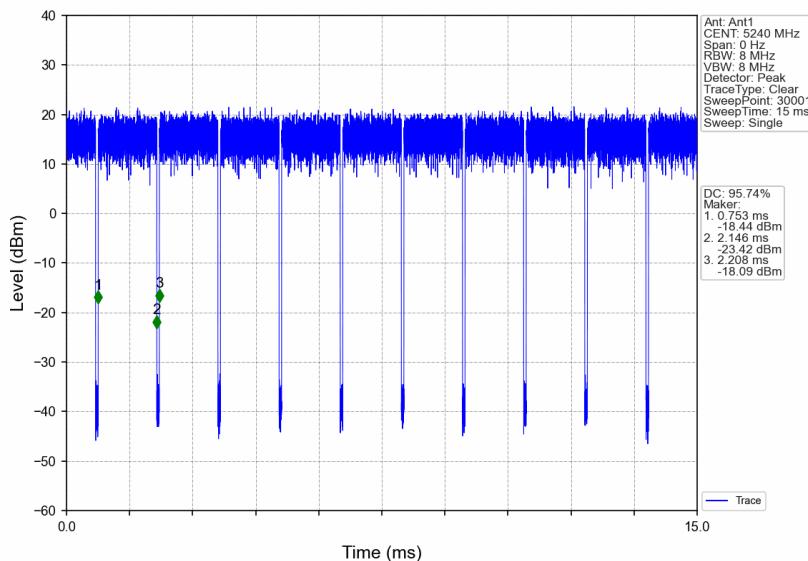


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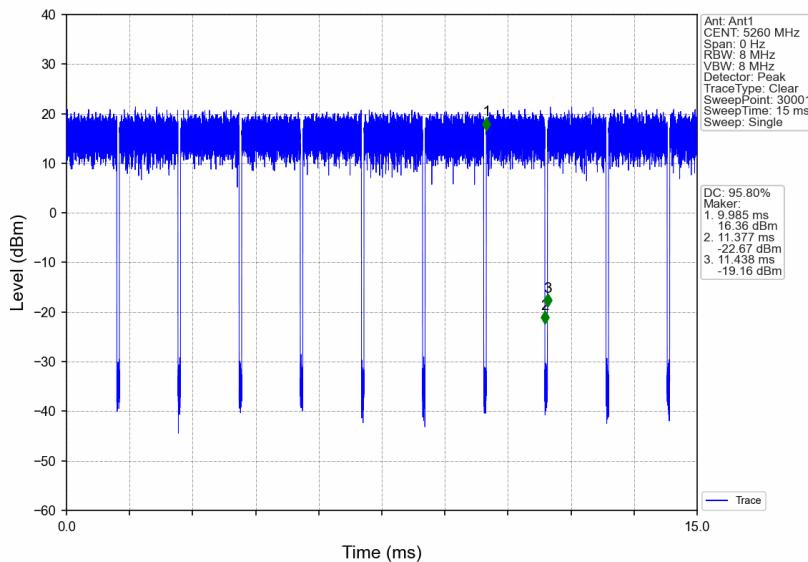
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802.11a\_LCH\_5260MHz\_Ant1\_NTNV

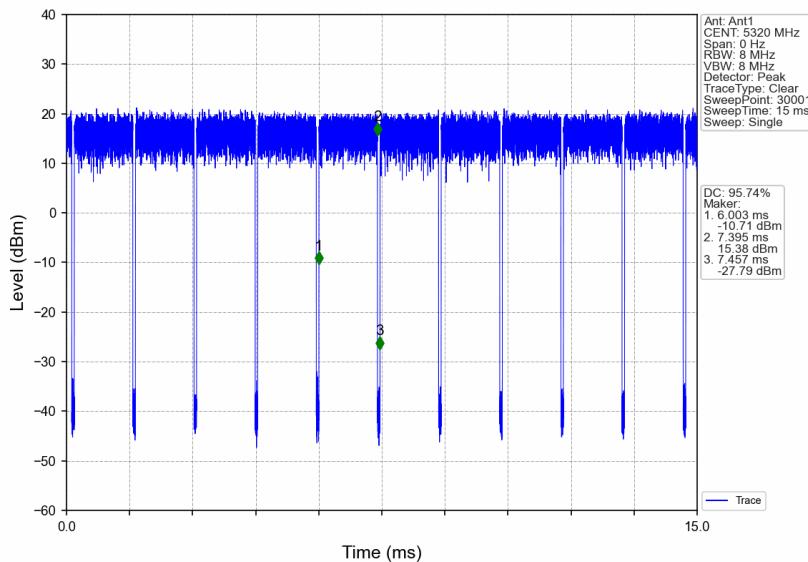
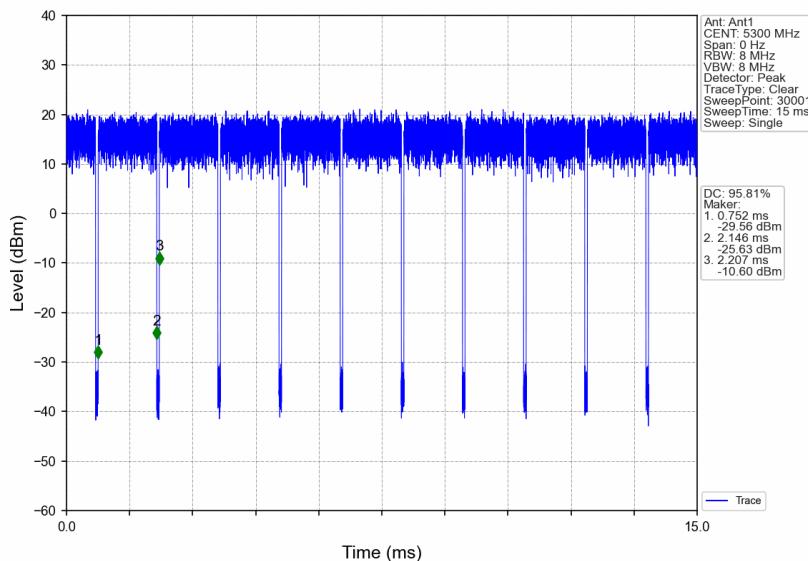


802.11a\_MCH\_5300MHz\_Ant1\_NTNV

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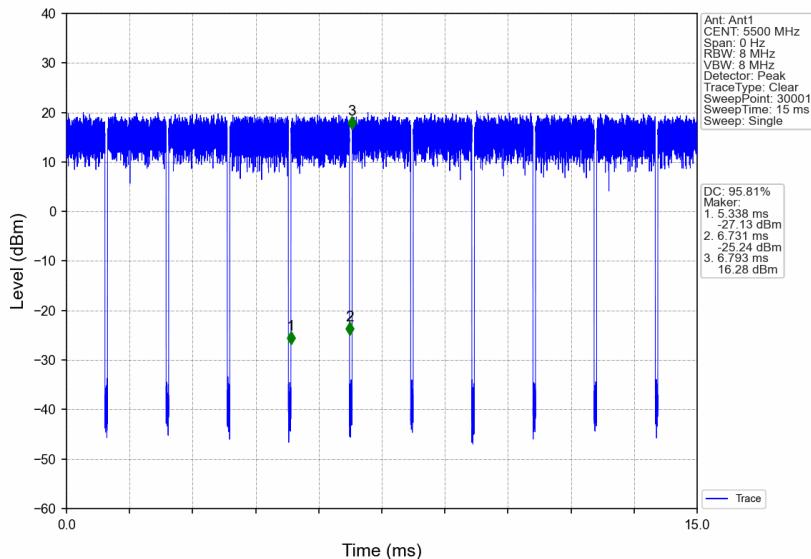




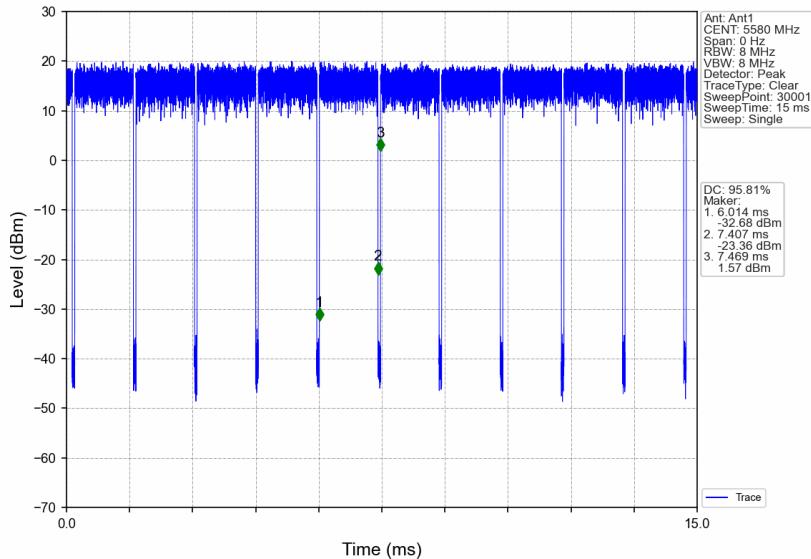
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802.11a\_MCH\_5580MHz\_Ant1\_NTNV



802.11a\_HCH\_5700MHz\_Ant1\_NTNV

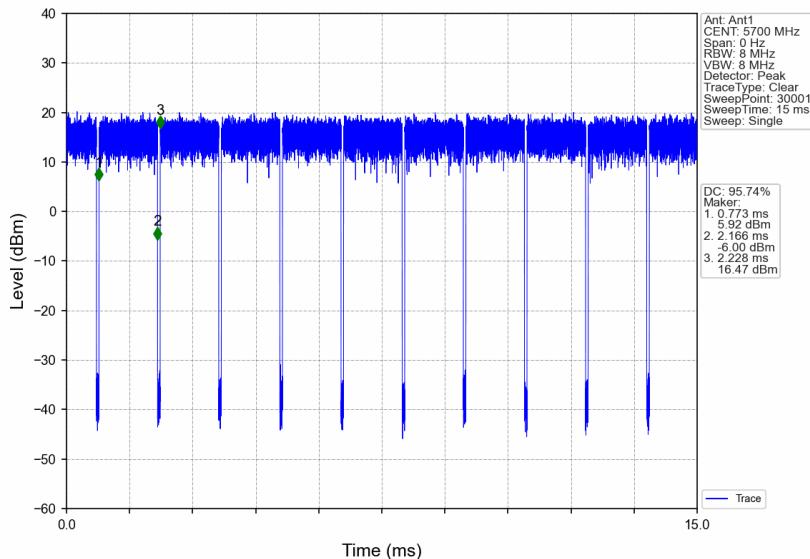


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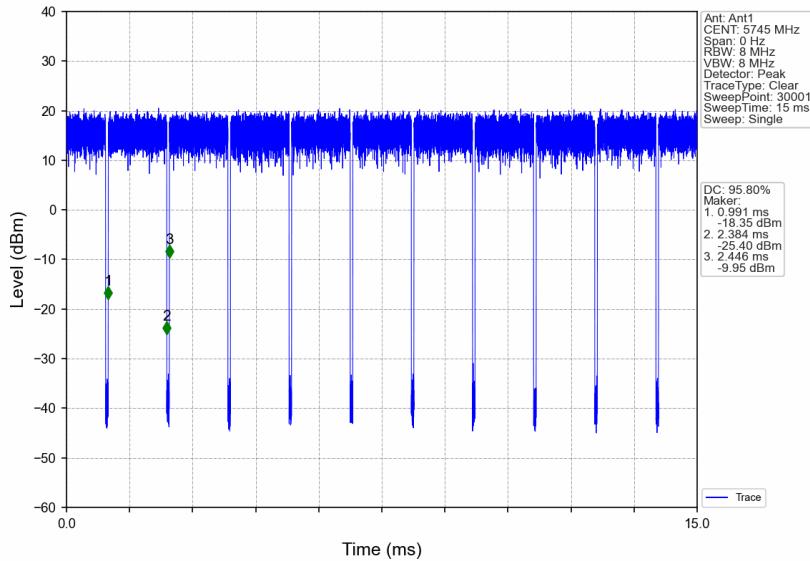
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802.11a\_LCH\_5745MHz\_Ant1\_NTNV



802.11a\_MCH\_5785MHz\_Ant1\_NTNV



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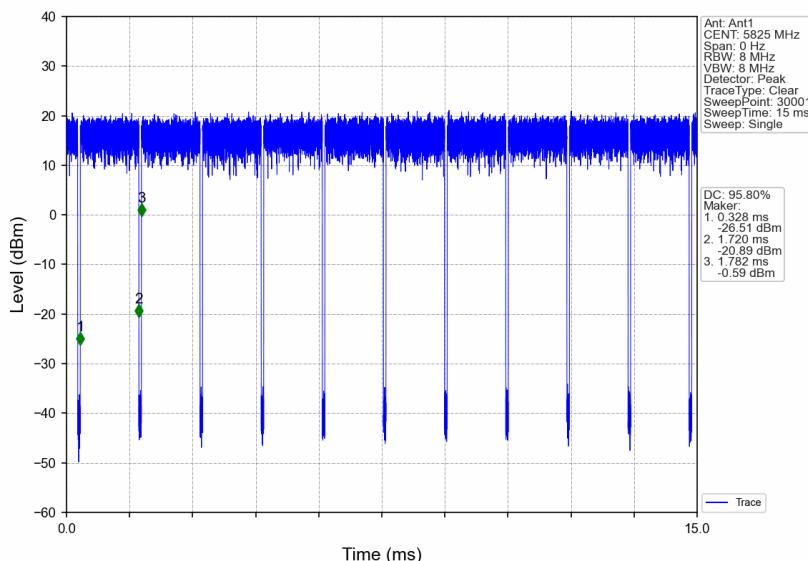
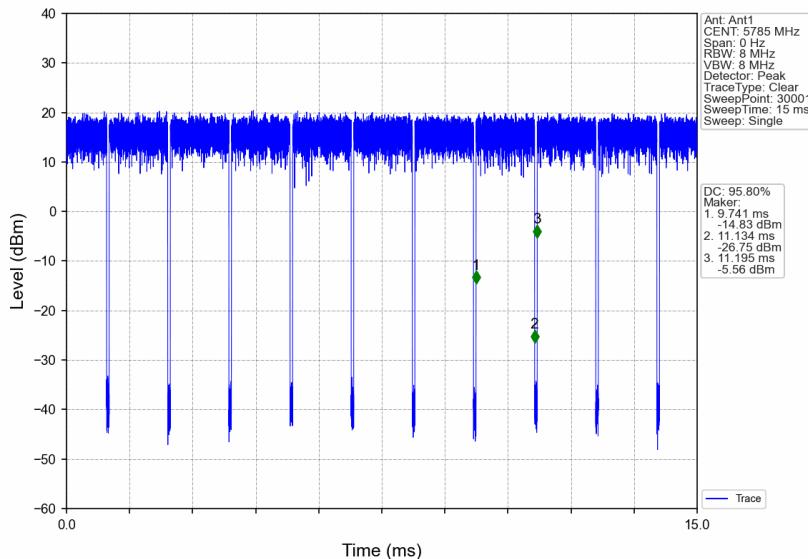
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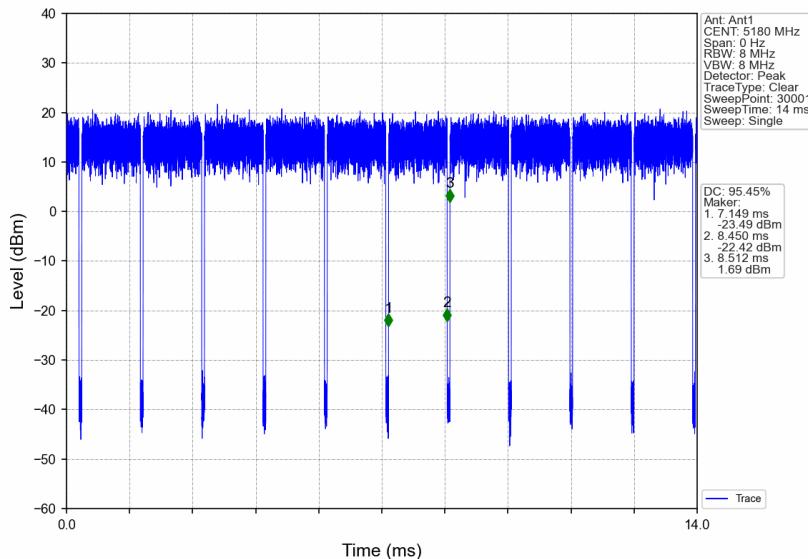
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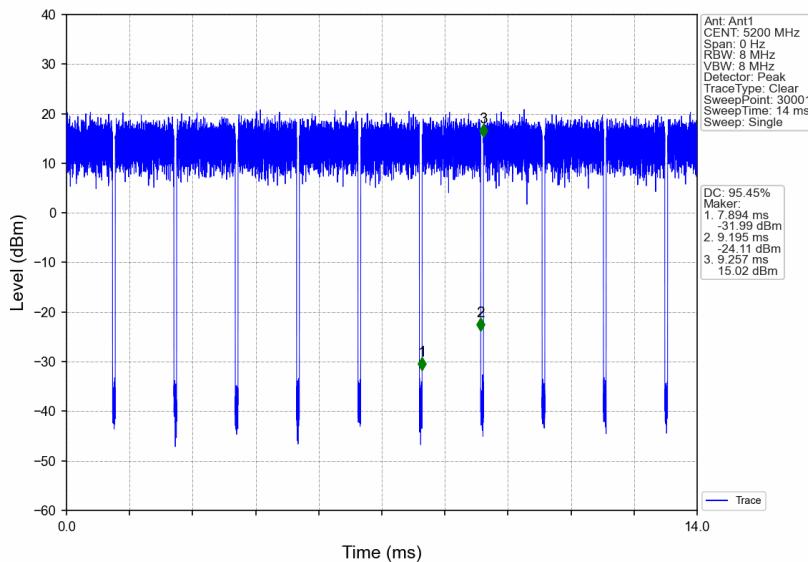
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802.11n(HT20)\_MCH\_5200MHz\_Ant1\_NTNV



802.11n(HT20)\_HCH\_5240MHz\_Ant1\_NTNV

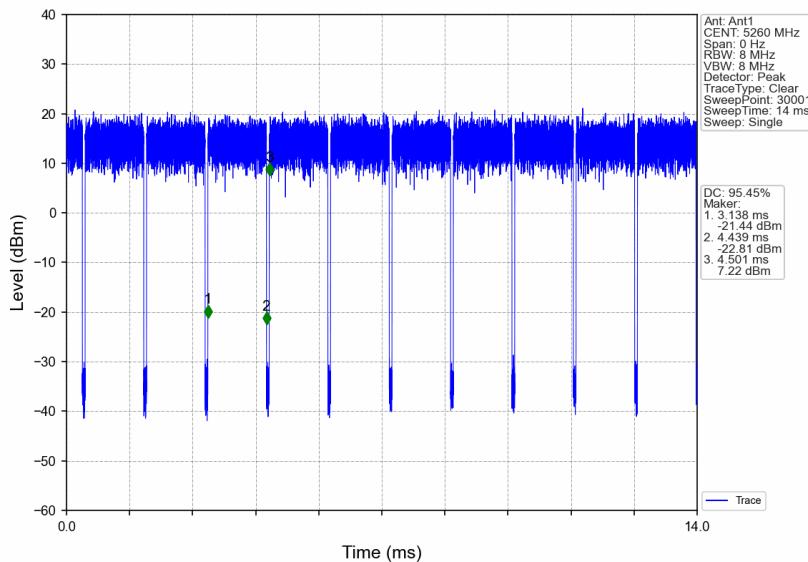
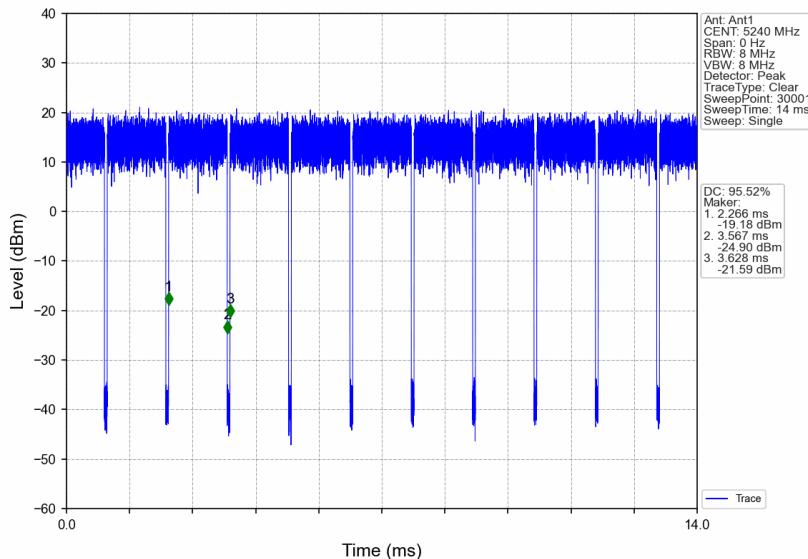


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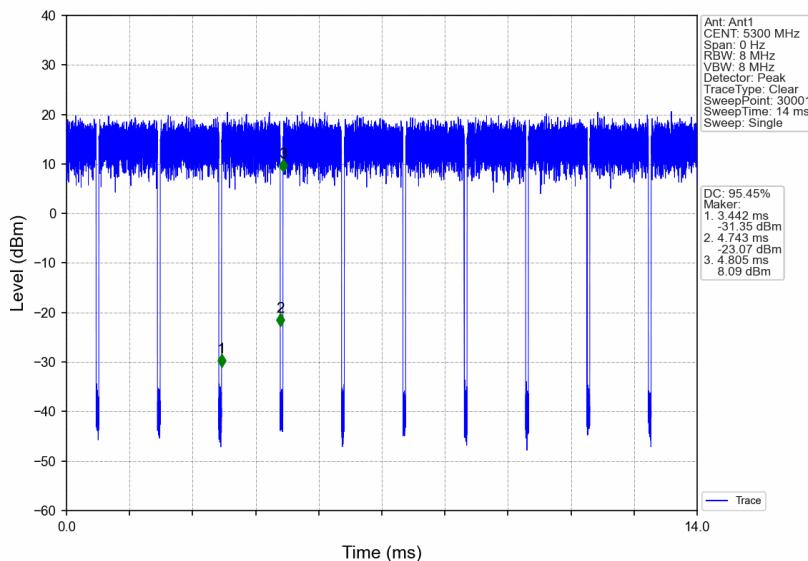
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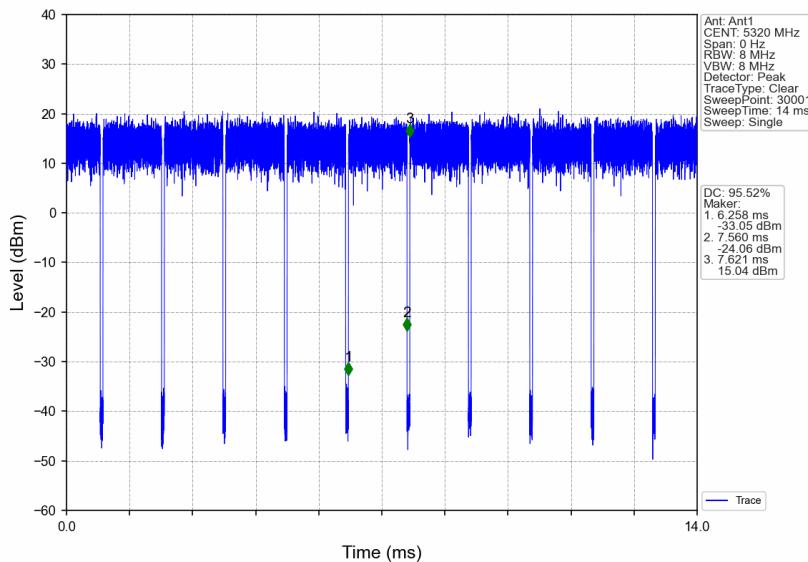
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802.11n(HT20)\_HCH\_5320MHz\_Ant1\_NTNV

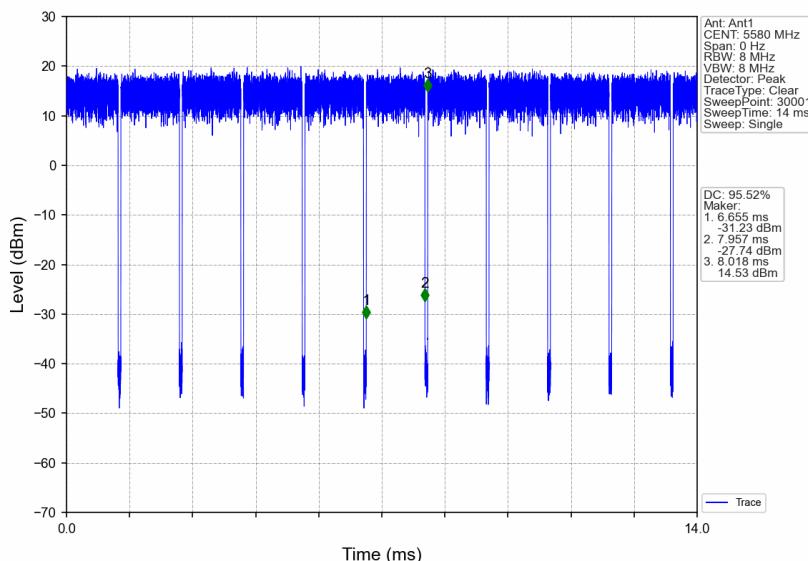
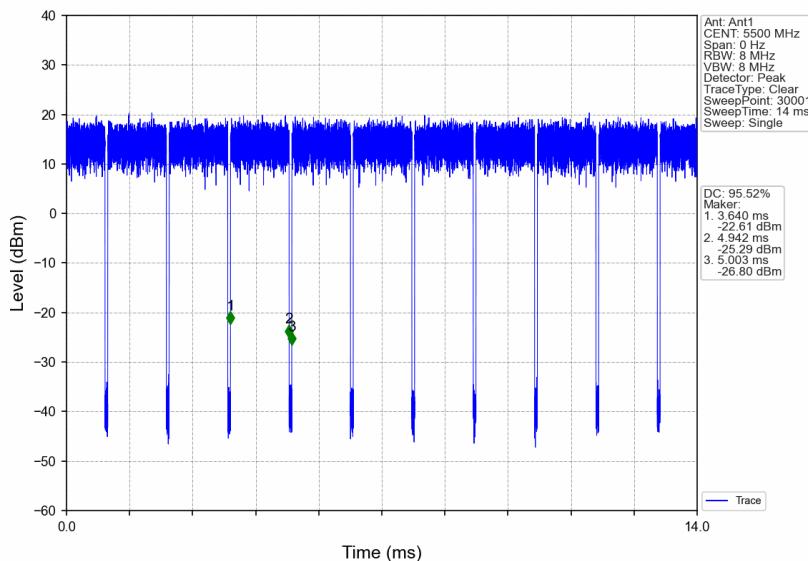


802.11n(HT20)\_LCH\_5500MHz\_Ant1\_NTNV

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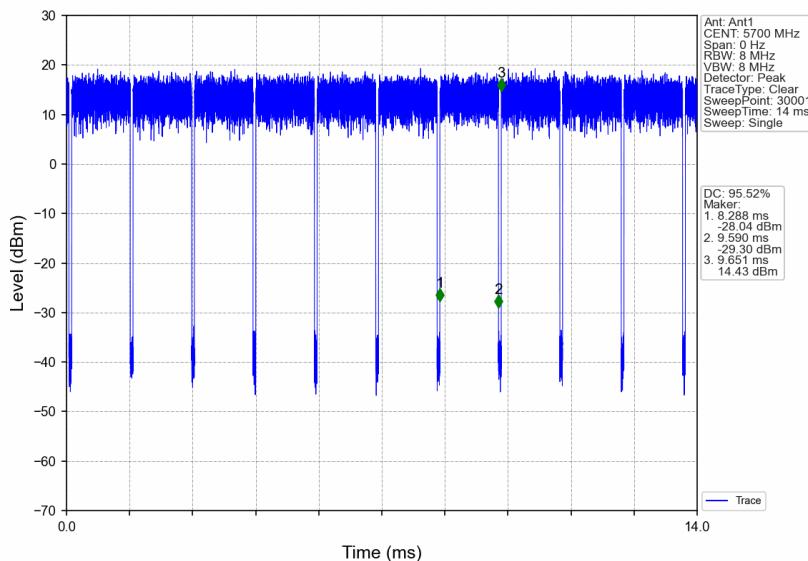




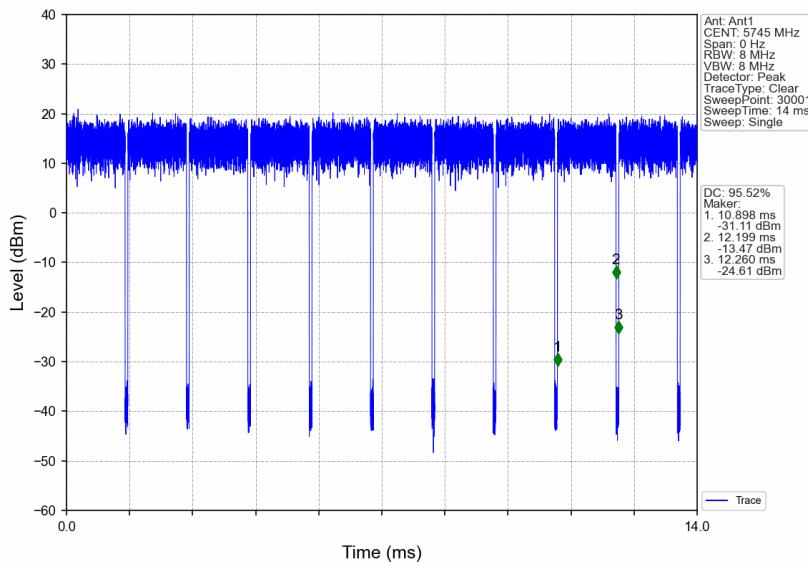
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802.11n(HT20)\_LCH\_5745MHz\_Ant1\_NTNV



802.11n(HT20)\_MCH\_5785MHz\_Ant1\_NTNV



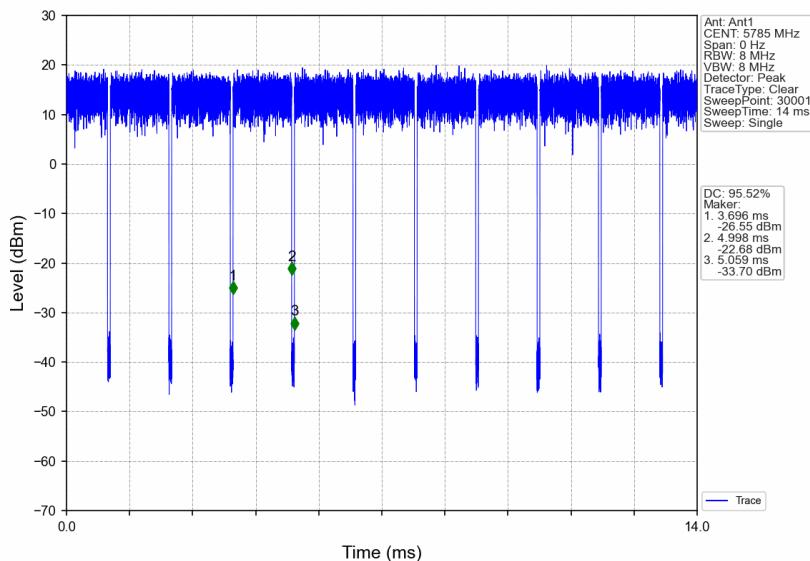
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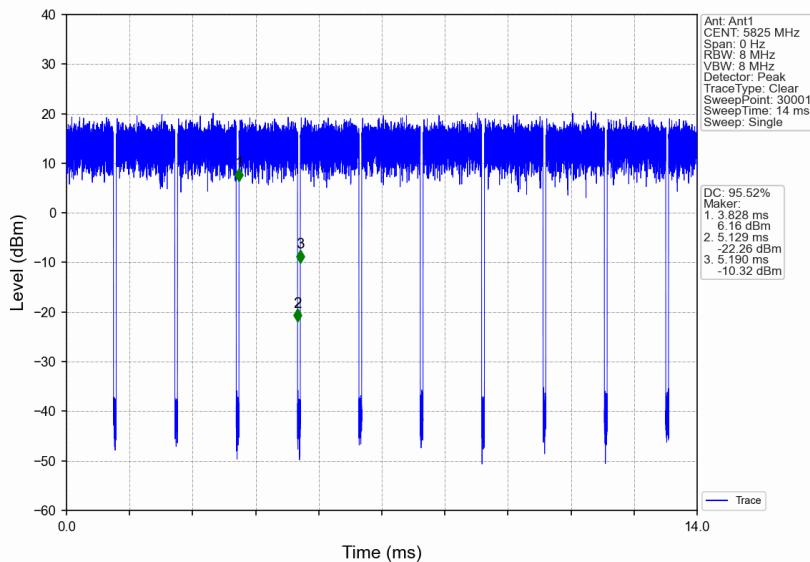
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802.11n(HT20)\_HCH\_5825MHz\_Ant1\_NTNV



802.11n(HT40)\_LCH\_5190MHz\_Ant1\_NTNV

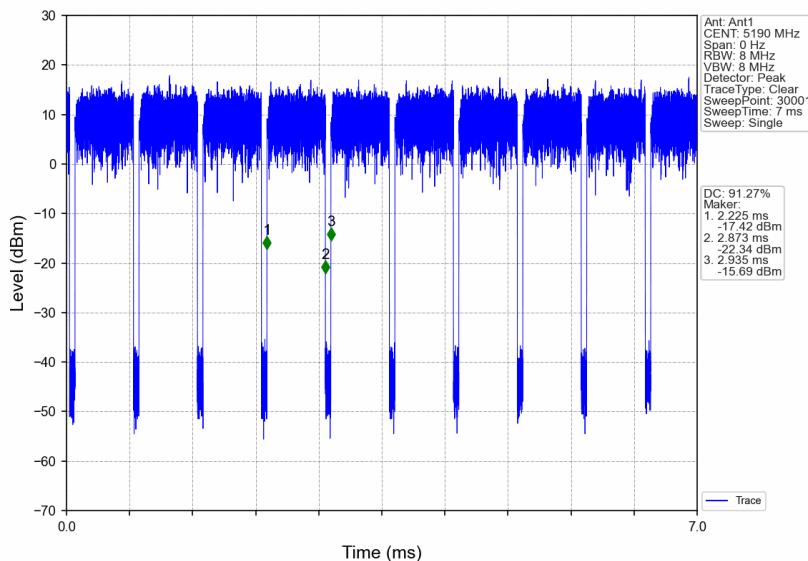


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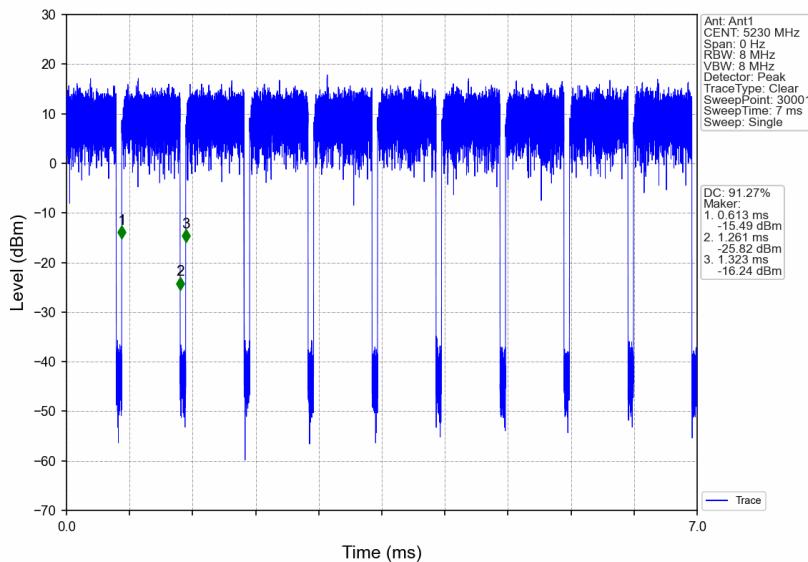
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802.11n(HT40)\_HCH\_5230MHz\_Ant1\_NTNV



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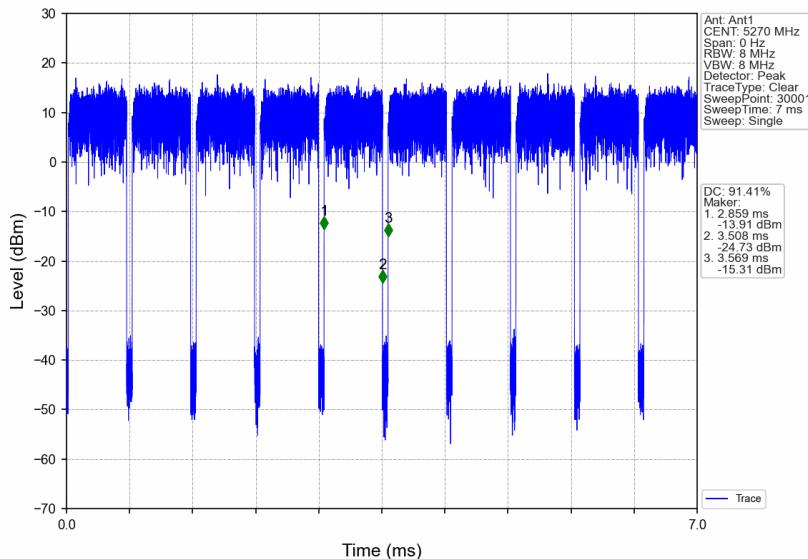
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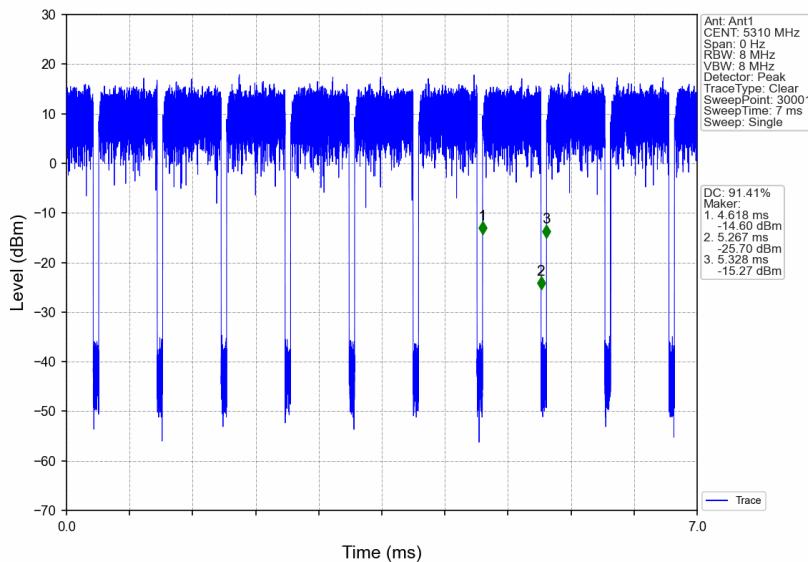
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802.11n(HT40)\_HCH\_5310MHz\_Ant1\_NTNV



802.11n(HT40)\_LCH\_5510MHz\_Ant1\_NTNV



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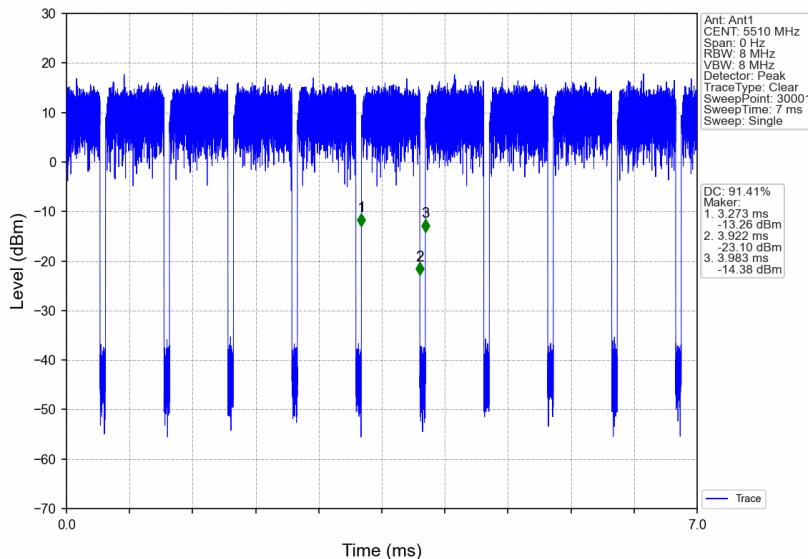
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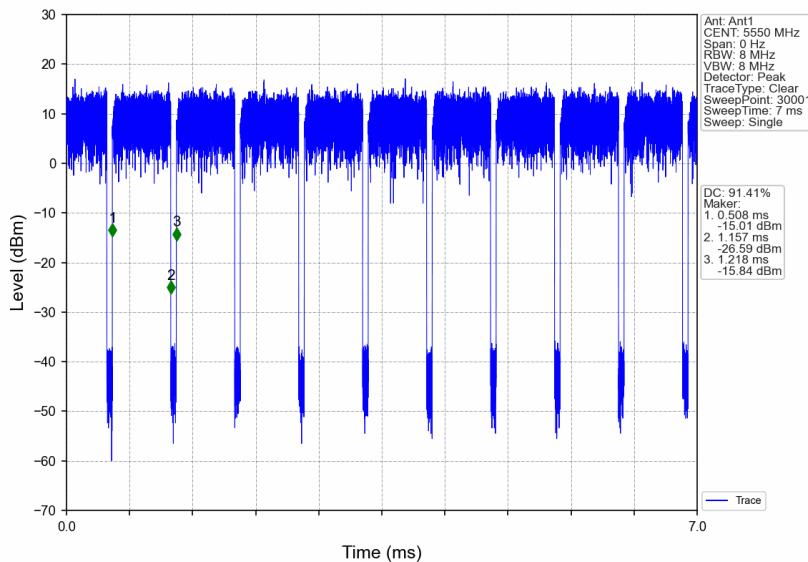
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802.11n(HT40)\_MCH\_5550MHz\_Ant1\_NTNV



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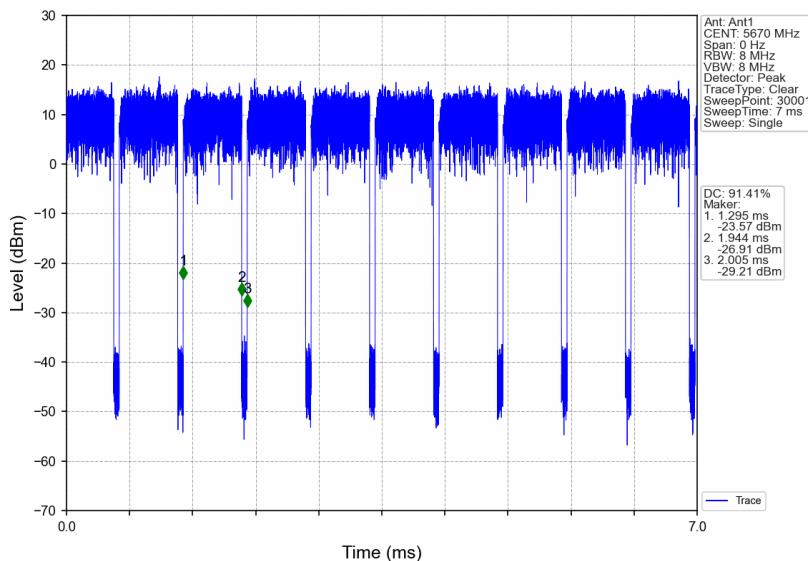


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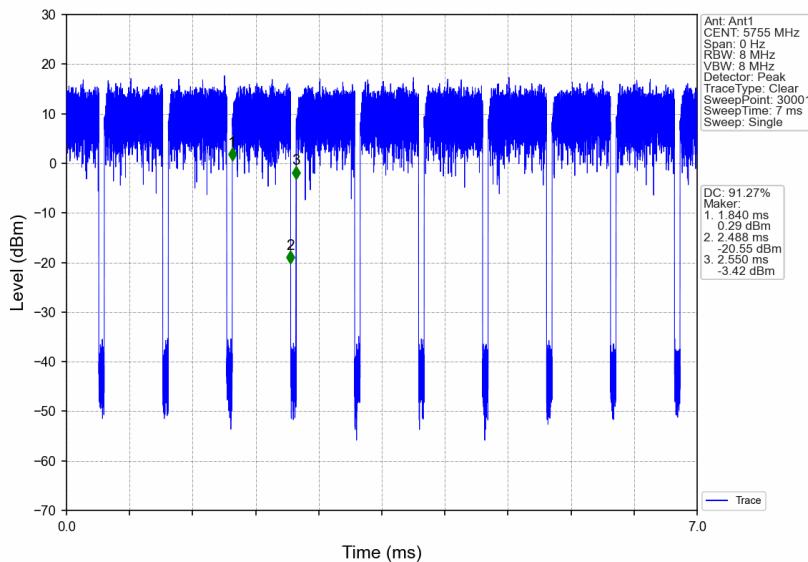
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802.11n(HT40)\_LCH\_5755MHz\_Ant1\_NTNV



802.11n(HT40)\_HCH\_5795MHz\_Ant1\_NTNV



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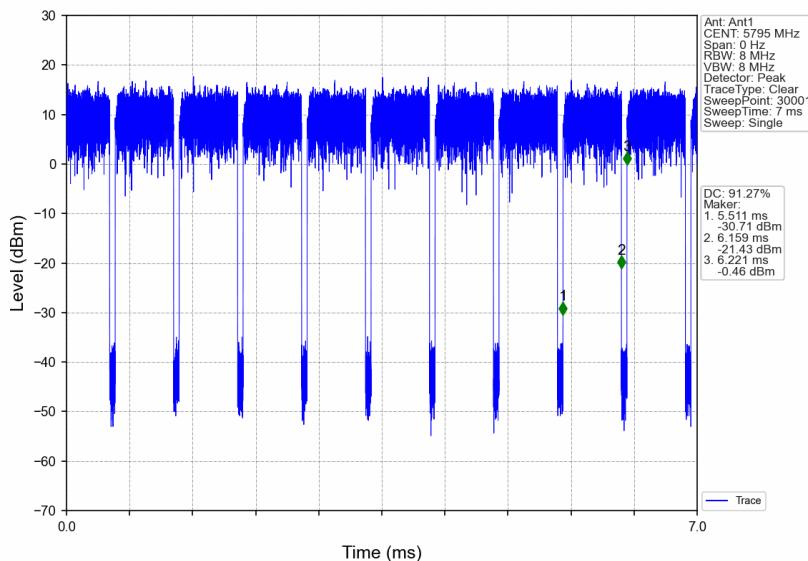
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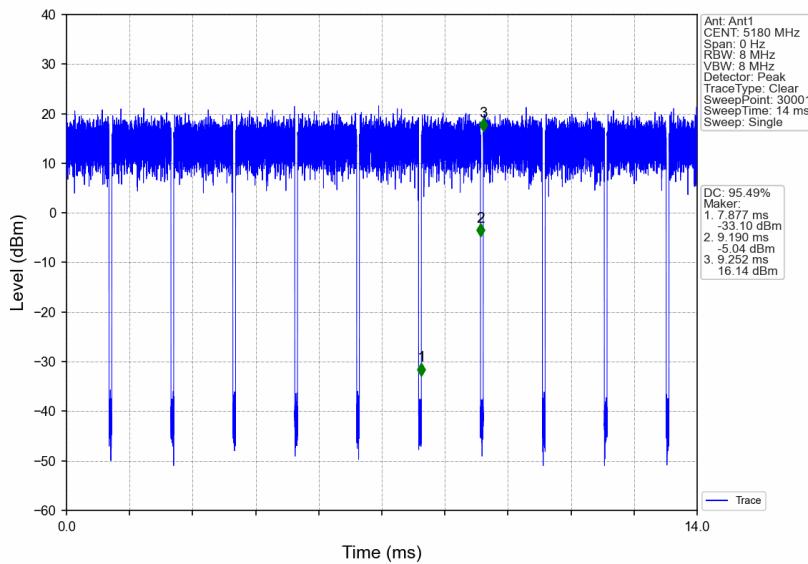
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802.11ac(VHT20)\_LCH\_5180MHz\_Ant1\_NTNV



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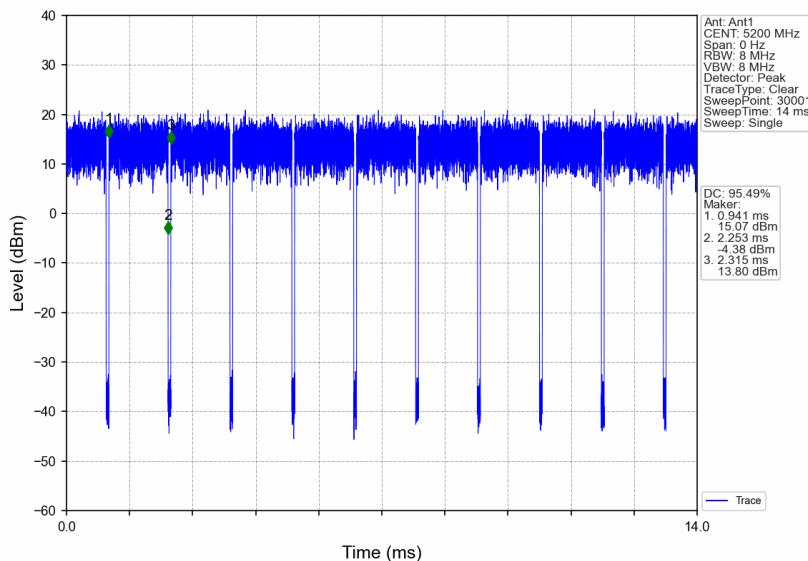


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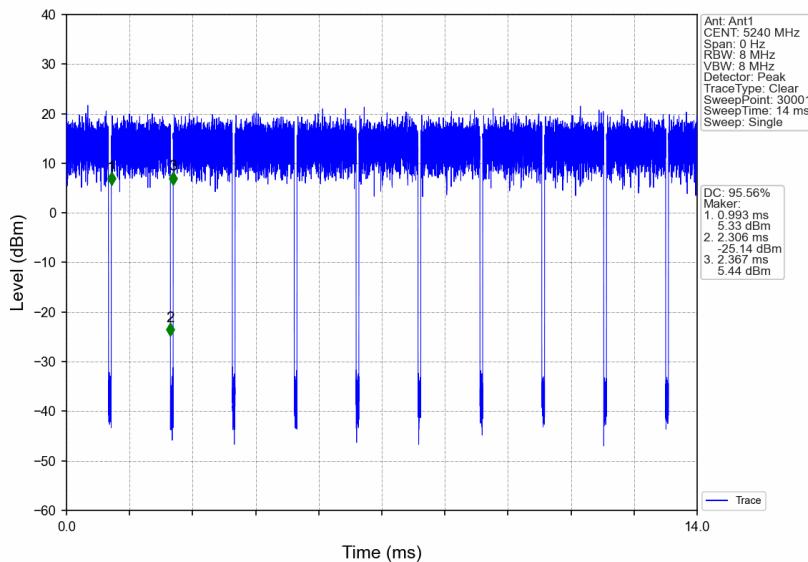
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802.11ac(VHT20)\_HCH\_5240MHz\_Ant1\_NTNV



802.11ac(VHT20)\_LCH\_5260MHz\_Ant1\_NTNV



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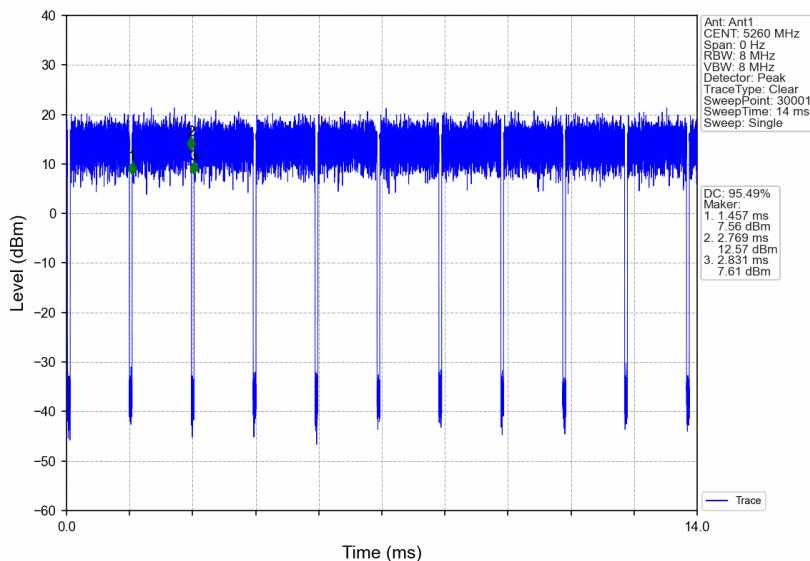
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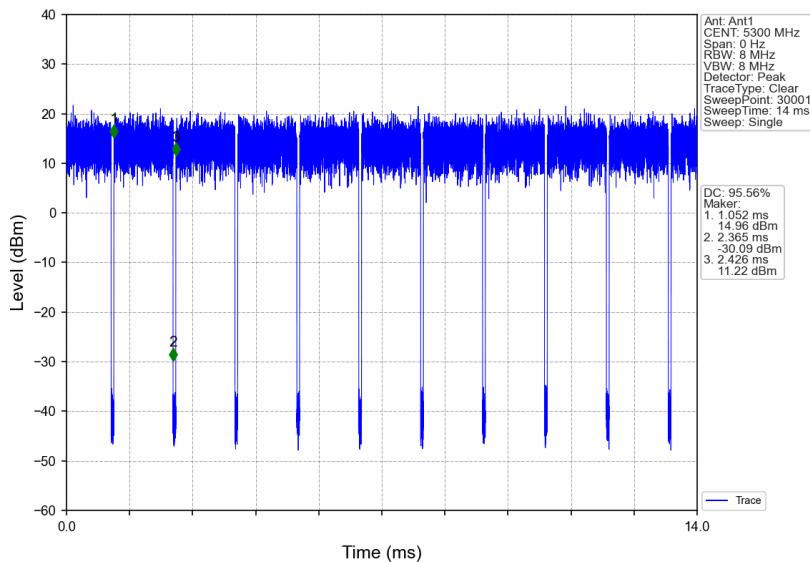
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802.11ac(VHT20)\_MCH\_5300MHz\_Ant1\_NTNV



802.11ac(VHT20)\_HCH\_5320MHz\_Ant1\_NTNV



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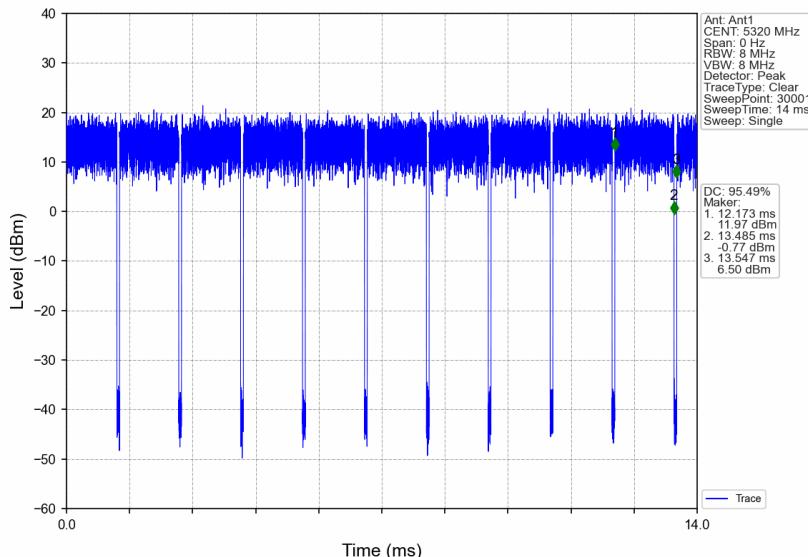
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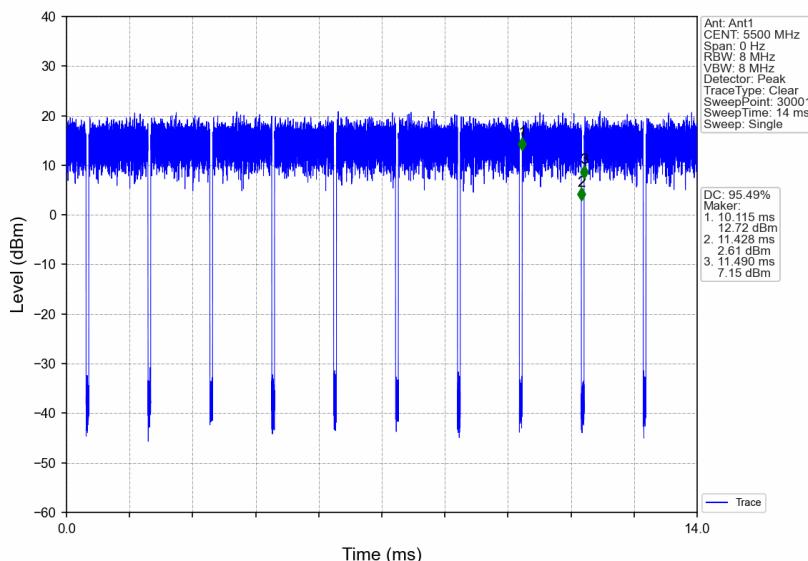
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802.11ac(VHT20)\_LCH\_5500MHz\_Ant1\_NTNV



802.11ac(VHT20)\_MCH\_5580MHz\_Ant1\_NTNV



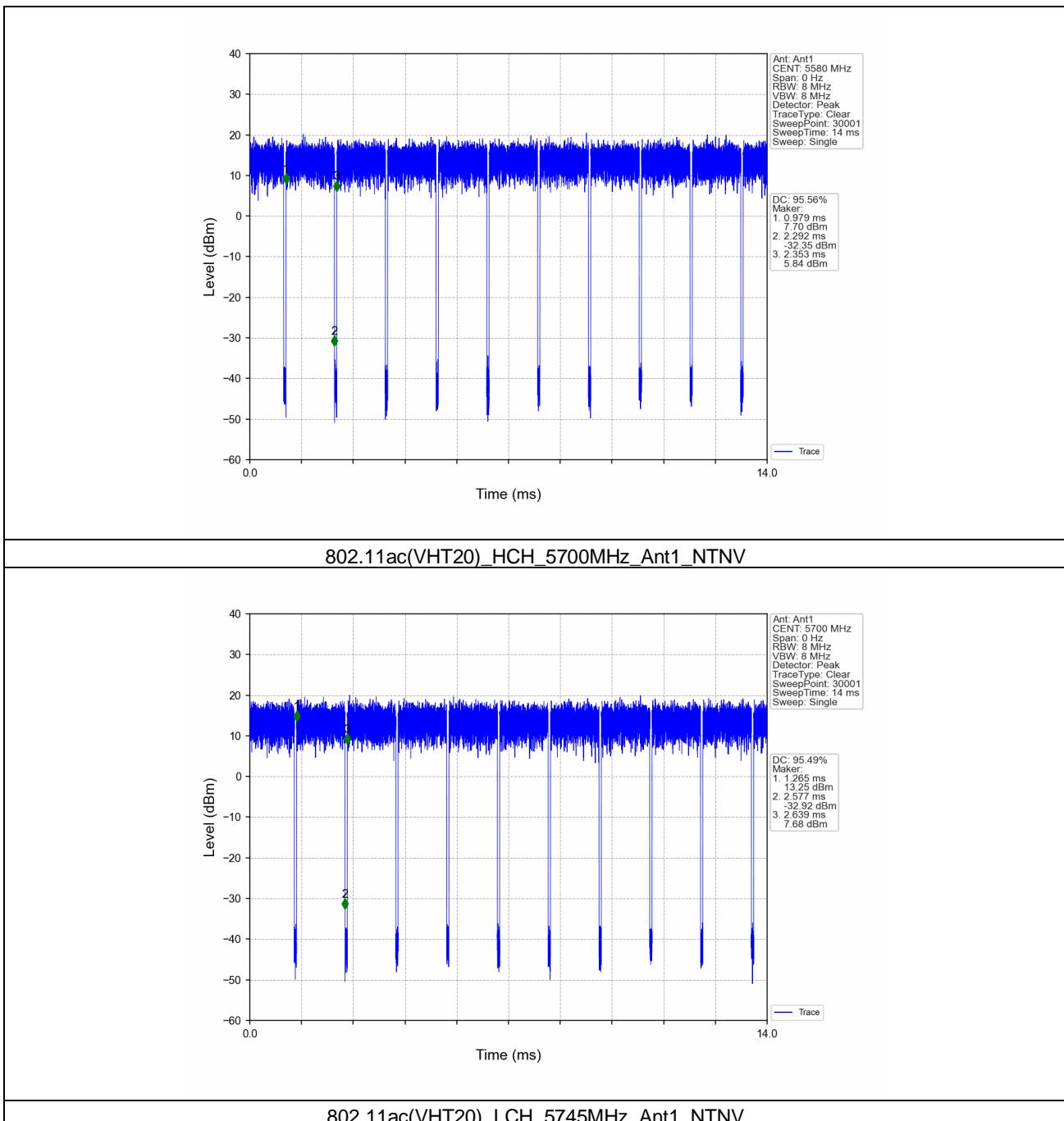
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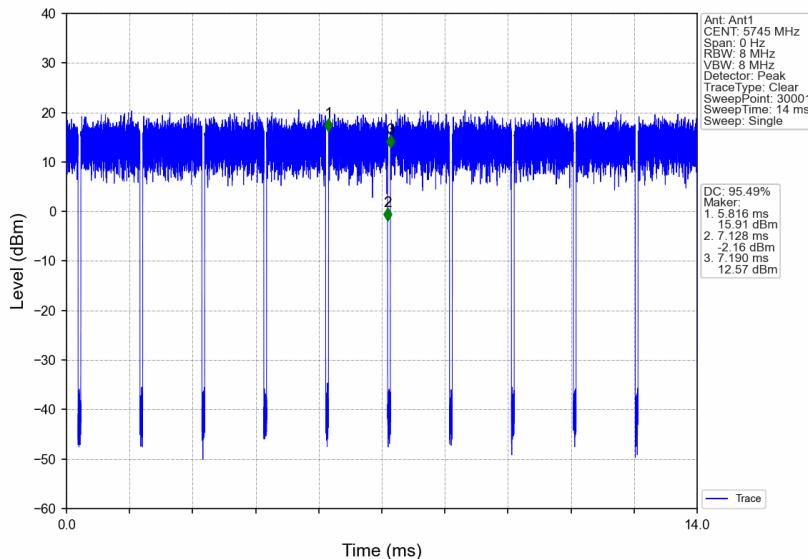
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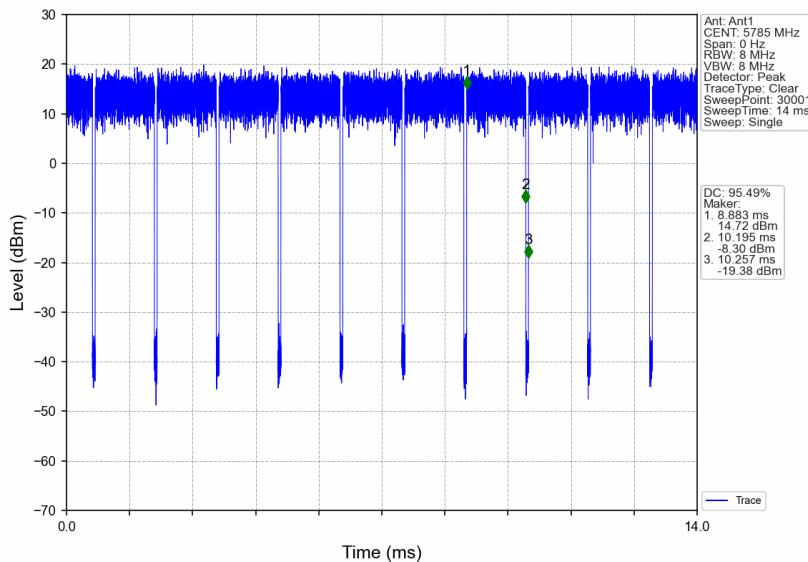
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802.11ac(VHT20)\_MCH\_5785MHz\_Ant1\_NTNV



802.11ac(VHT20)\_HCH\_5825MHz\_Ant1\_NTNV



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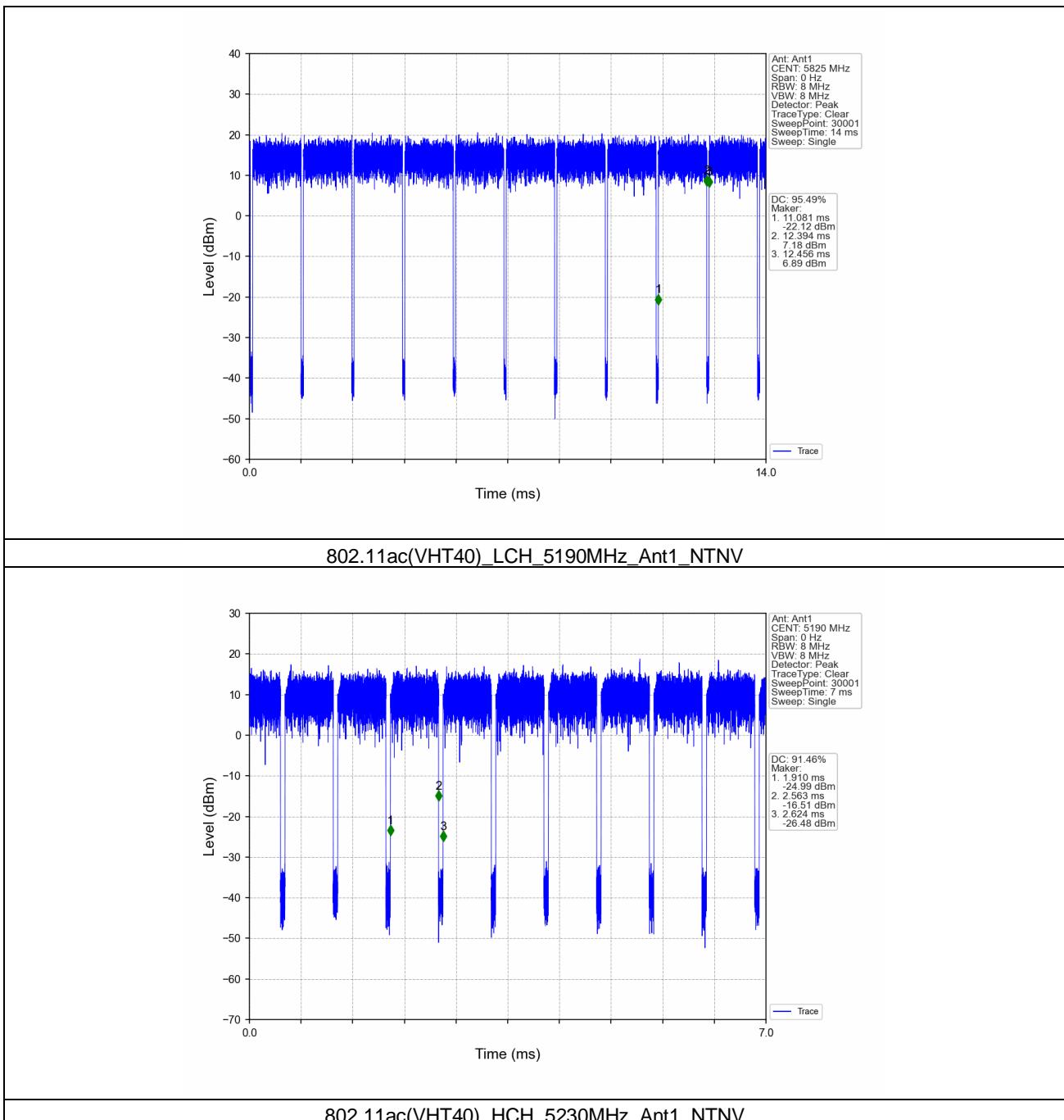
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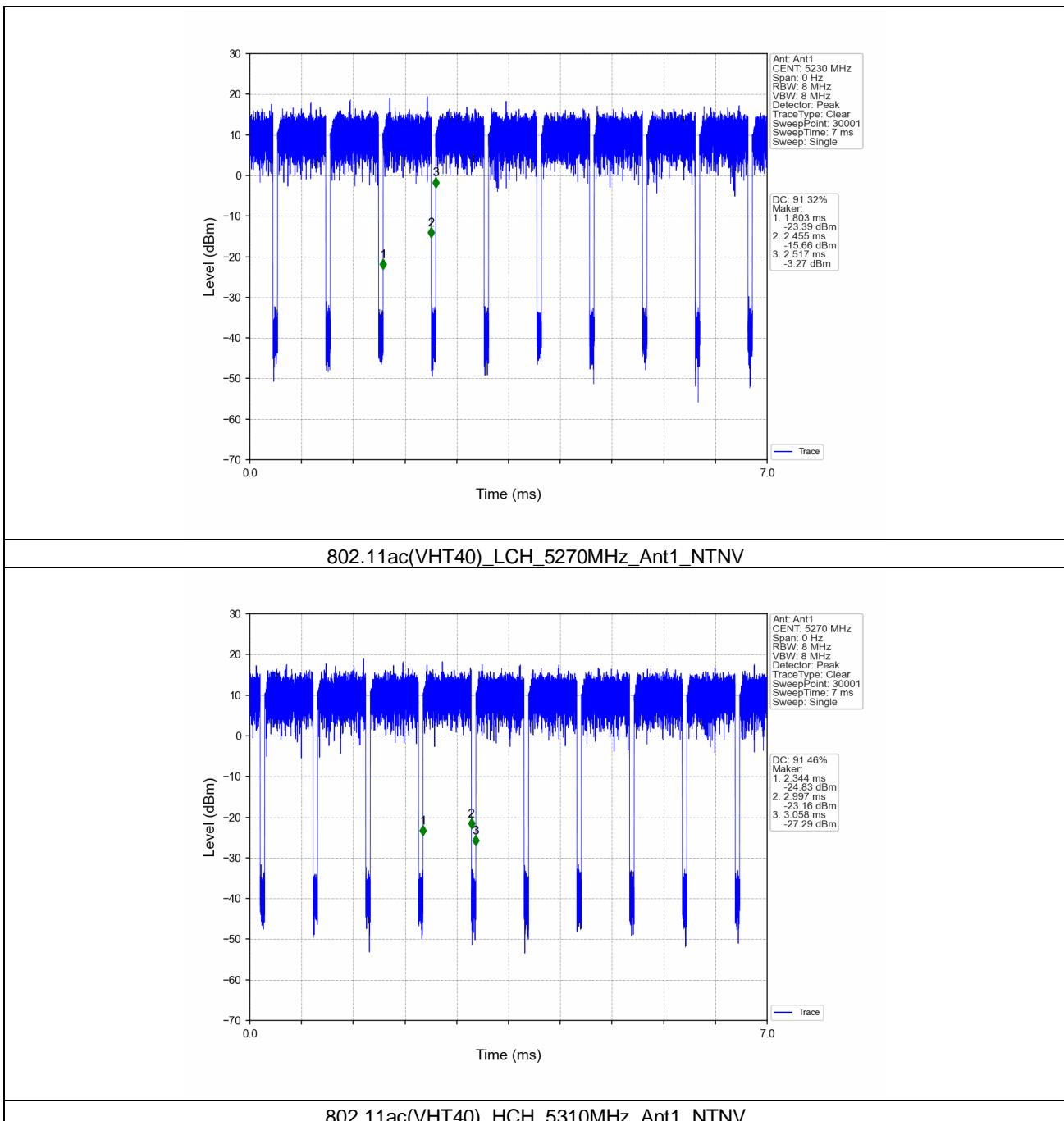
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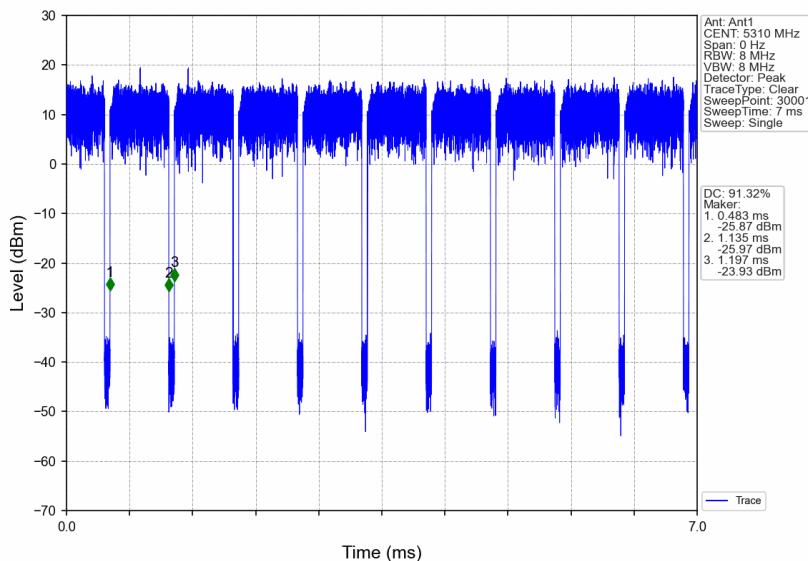
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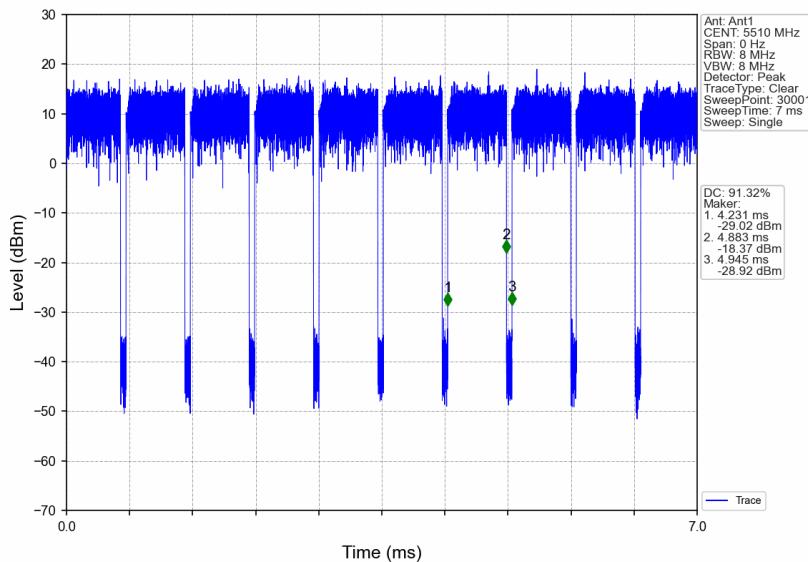
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802.11ac(VHT40)\_LCH\_5510MHz\_Ant1\_NTNV



802.11ac(VHT40)\_MCH\_5550MHz\_Ant1\_NTNV



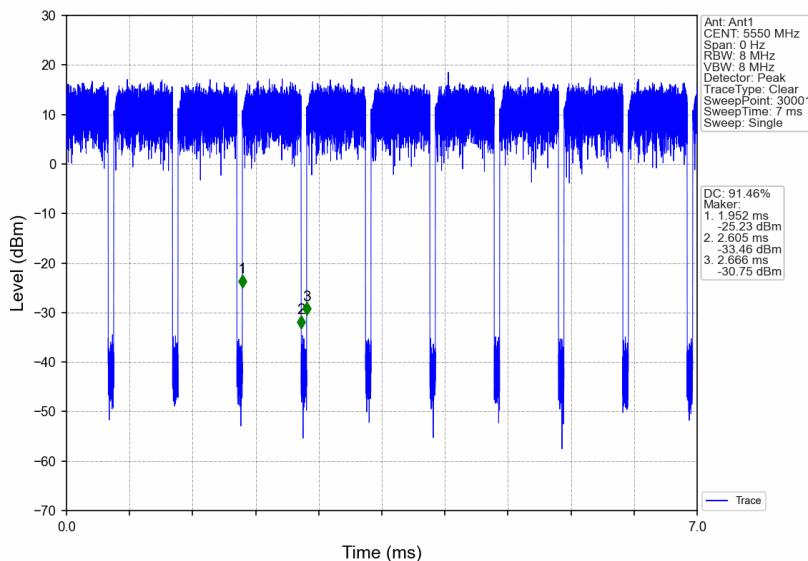
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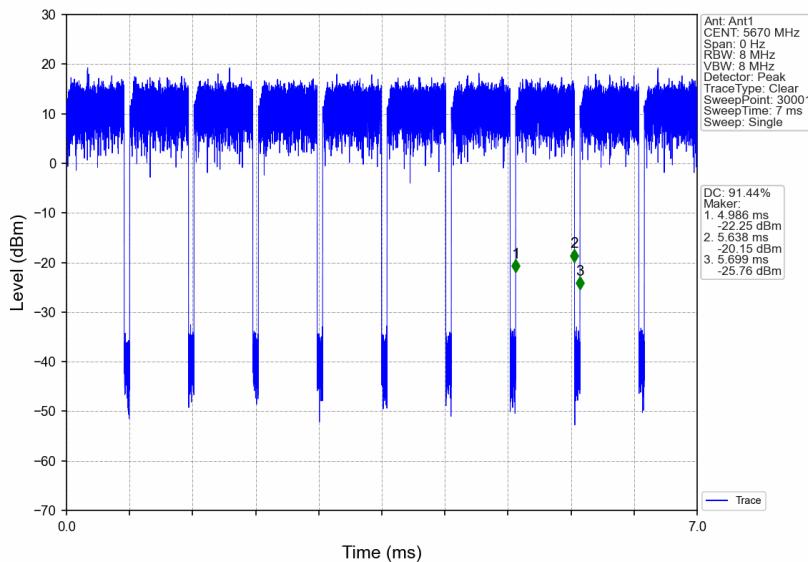
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802.11ac(VHT40)\_HCH\_5670MHz\_Ant1\_NTNV



802.11ac(VHT40)\_LCH\_5755MHz\_Ant1\_NTNV



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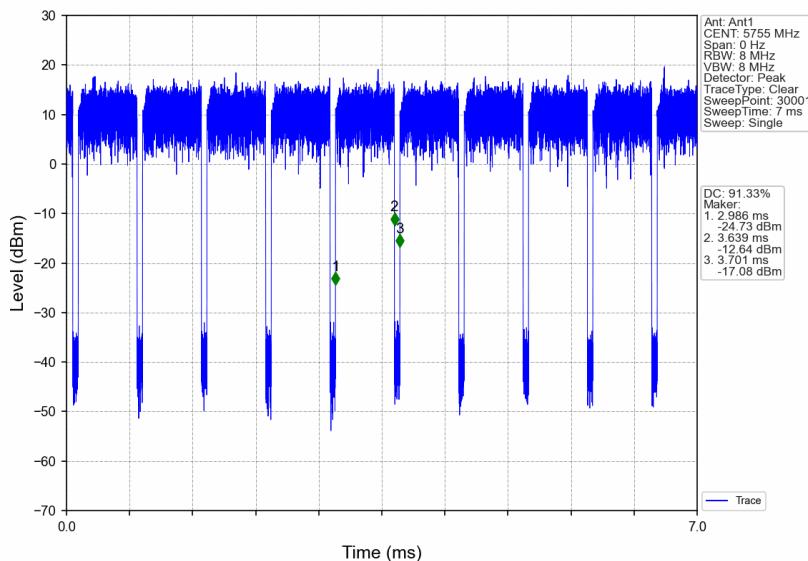
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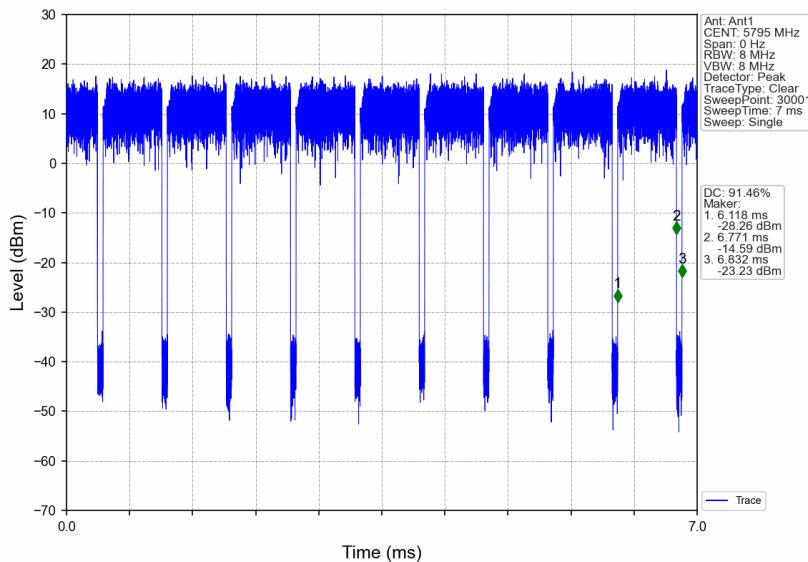
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802.11ac(VHT40)\_HCH\_5795MHz\_Ant1\_NTNV



802.11ac(VHT80)\_MCH\_5210MHz\_Ant1\_NTNV

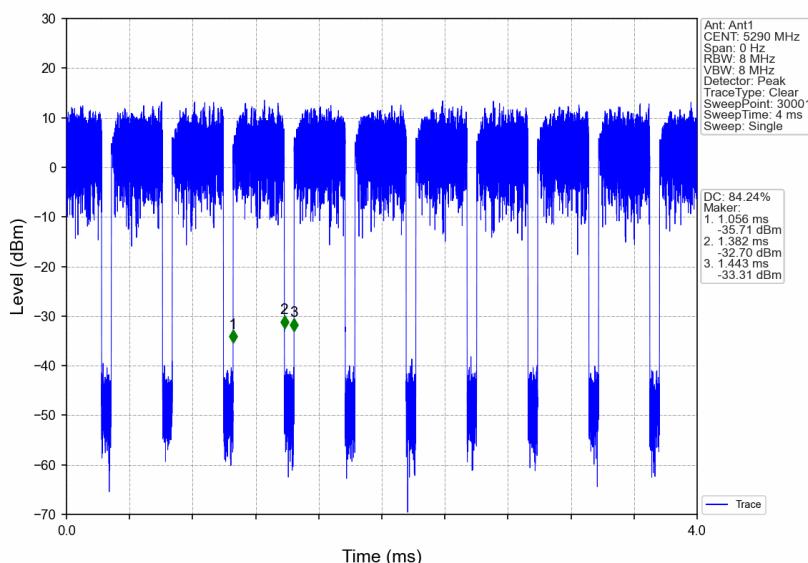
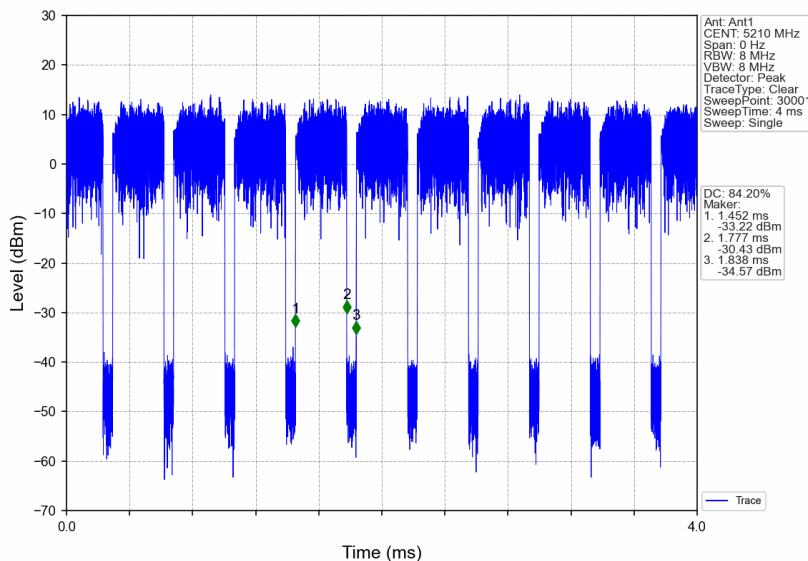


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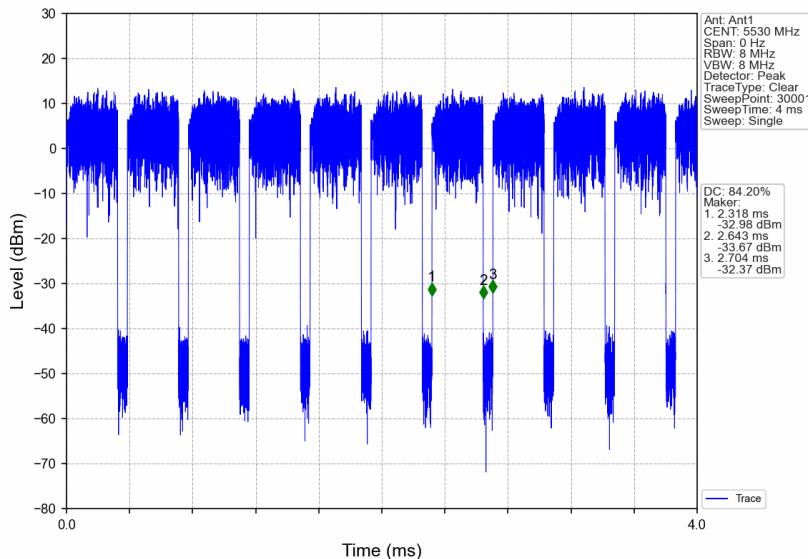
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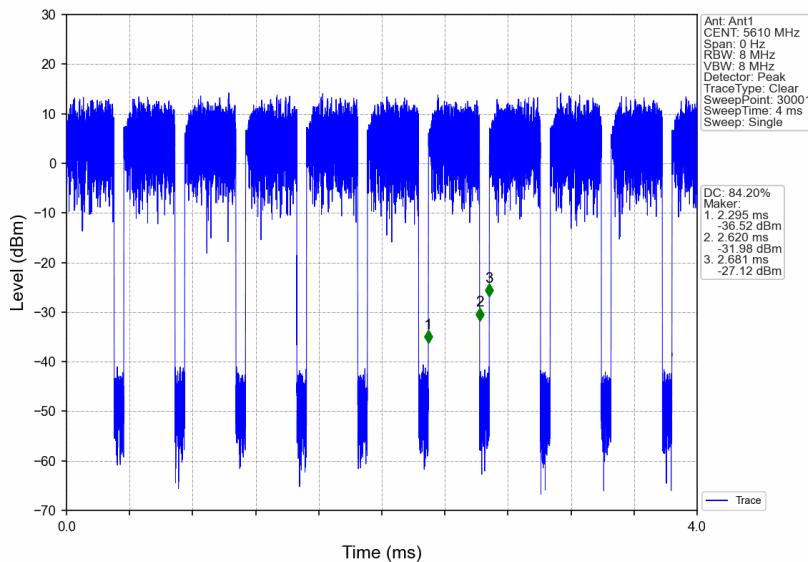
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802.11ac(VHT80)\_HCH\_5610MHz\_Ant1\_NTNU



802.11ac(VHT80)\_MCH\_5775MHz\_Ant1\_NTNU



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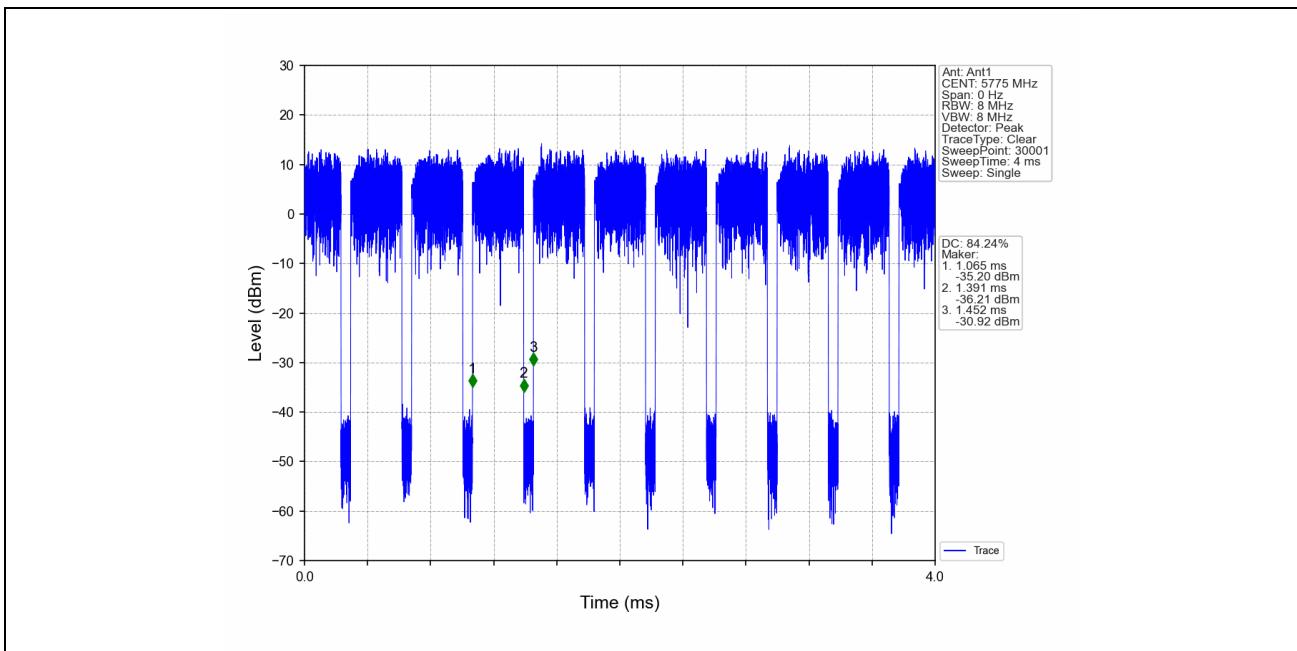
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## 2. Bandwidth

### 2.1 OBW

#### 2.1.1 Test Result

| Mode           | TX Type | Frequency (MHz) | ANT | 99% Occupied Bandwidth (MHz) | Verdict |
|----------------|---------|-----------------|-----|------------------------------|---------|
|                |         |                 |     | Result                       |         |
| 802.11a        | SISO    | 5180            | 1   | 17.309                       | Pass    |
|                |         |                 | 2   | 17.420                       | Pass    |
|                |         | 5200            | 1   | 17.284                       | Pass    |
|                |         |                 | 2   | 17.531                       | Pass    |
|                |         | 5240            | 1   | 17.403                       | Pass    |
|                |         |                 | 2   | 17.697                       | Pass    |
|                |         | 5260            | 1   | 17.307                       | Pass    |
|                |         |                 | 2   | 17.562                       | Pass    |
|                |         | 5300            | 1   | 17.455                       | Pass    |
|                |         |                 | 2   | 17.767                       | Pass    |
|                |         | 5320            | 1   | 17.537                       | Pass    |
|                |         |                 | 2   | 18.205                       | Pass    |
|                |         | 5500            | 1   | 17.604                       | Pass    |
|                |         |                 | 2   | 17.366                       | Pass    |
|                |         | 5580            | 1   | 18.231                       | Pass    |
|                |         |                 | 2   | 17.678                       | Pass    |
|                |         | 5700            | 1   | 17.559                       | Pass    |
|                |         |                 | 2   | 17.227                       | Pass    |
|                |         | 5745            | 1   | 17.556                       | Pass    |
|                |         |                 | 2   | 17.203                       | Pass    |
|                |         | 5785            | 1   | 17.591                       | Pass    |
|                |         |                 | 2   | 17.704                       | Pass    |
|                |         | 5825            | 1   | 17.242                       | Pass    |
|                |         |                 | 2   | 17.364                       | Pass    |
| 802.11n (HT20) | MIMO    | 5180            | 1   | 18.279                       | Pass    |
|                |         |                 | 2   | 18.237                       | Pass    |
|                |         | 5200            | 1   | 18.257                       | Pass    |
|                |         |                 | 2   | 18.270                       | Pass    |
|                |         | 5240            | 1   | 18.222                       | Pass    |
|                |         |                 | 2   | 18.205                       | Pass    |
|                |         | 5260            | 1   | 18.283                       | Pass    |
|                |         |                 | 2   | 18.343                       | Pass    |
|                |         | 5300            | 1   | 18.329                       | Pass    |
|                |         |                 | 2   | 18.275                       | Pass    |
|                |         | 5320            | 1   | 18.449                       | Pass    |
|                |         |                 | 2   | 18.397                       | Pass    |

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# Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR221000189002

Page: 296 of 607

|                     |      |      |   |        |      |
|---------------------|------|------|---|--------|------|
|                     |      | 5500 | 1 | 18.592 | Pass |
|                     |      |      | 2 | 18.610 | Pass |
|                     |      | 5580 | 1 | 19.013 | Pass |
|                     |      |      | 2 | 19.131 | Pass |
|                     |      | 5700 | 1 | 18.360 | Pass |
|                     |      |      | 2 | 18.342 | Pass |
|                     |      | 5745 | 1 | 18.289 | Pass |
|                     |      |      | 2 | 18.308 | Pass |
|                     |      | 5785 | 1 | 18.392 | Pass |
|                     |      |      | 2 | 18.377 | Pass |
| 802.11n<br>(HT40)   | MIMO | 5825 | 1 | 18.562 | Pass |
|                     |      |      | 2 | 18.558 | Pass |
|                     |      | 5190 | 1 | 36.718 | Pass |
|                     |      |      | 2 | 36.809 | Pass |
|                     |      | 5230 | 1 | 36.749 | Pass |
|                     |      |      | 2 | 36.851 | Pass |
|                     |      | 5270 | 1 | 36.694 | Pass |
|                     |      |      | 2 | 36.722 | Pass |
|                     |      | 5310 | 1 | 36.900 | Pass |
|                     |      |      | 2 | 36.900 | Pass |
|                     |      | 5510 | 1 | 36.960 | Pass |
|                     |      |      | 2 | 36.927 | Pass |
|                     |      | 5550 | 1 | 37.487 | Pass |
|                     |      |      | 2 | 37.485 | Pass |
|                     |      | 5670 | 1 | 37.162 | Pass |
|                     |      |      | 2 | 37.173 | Pass |
|                     |      | 5755 | 1 | 36.884 | Pass |
|                     |      |      | 2 | 36.941 | Pass |
|                     |      | 5795 | 1 | 37.216 | Pass |
|                     |      |      | 2 | 37.229 | Pass |
| 802.11ac<br>(VHT20) | MIMO | 5180 | 1 | 18.217 | Pass |
|                     |      |      | 2 | 18.086 | Pass |
|                     |      | 5200 | 1 | 18.201 | Pass |
|                     |      |      | 2 | 18.439 | Pass |
|                     |      | 5240 | 1 | 18.226 | Pass |
|                     |      |      | 2 | 18.262 | Pass |
|                     |      | 5260 | 1 | 18.227 | Pass |
|                     |      |      | 2 | 18.200 | Pass |
|                     |      | 5300 | 1 | 18.281 | Pass |
|                     |      |      | 2 | 18.319 | Pass |
|                     |      | 5320 | 1 | 18.316 | Pass |
|                     |      |      | 2 | 18.401 | Pass |
|                     |      | 5500 | 1 | 18.627 | Pass |
|                     |      |      | 2 | 18.482 | Pass |
|                     |      | 5580 | 1 | 18.831 | Pass |
|                     |      |      | 2 | 19.062 | Pass |

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|                     |      |      |   |        |      |
|---------------------|------|------|---|--------|------|
|                     |      | 5700 | 1 | 18.553 | Pass |
|                     |      |      | 2 | 18.676 | Pass |
|                     |      | 5745 | 1 | 18.256 | Pass |
|                     |      |      | 2 | 18.293 | Pass |
|                     |      | 5785 | 1 | 18.099 | Pass |
|                     |      |      | 2 | 18.207 | Pass |
|                     |      | 5825 | 1 | 18.187 | Pass |
|                     |      |      | 2 | 18.102 | Pass |
|                     |      | 5190 | 1 | 36.384 | Pass |
|                     |      |      | 2 | 36.361 | Pass |
| 802.11ac<br>(VHT40) | MIMO | 5230 | 1 | 36.346 | Pass |
|                     |      |      | 2 | 36.346 | Pass |
|                     |      | 5270 | 1 | 36.376 | Pass |
|                     |      |      | 2 | 36.332 | Pass |
|                     |      | 5310 | 1 | 36.648 | Pass |
|                     |      |      | 2 | 36.800 | Pass |
|                     |      | 5510 | 1 | 36.792 | Pass |
|                     |      |      | 2 | 36.870 | Pass |
|                     |      | 5550 | 1 | 37.595 | Pass |
|                     |      |      | 2 | 37.178 | Pass |
|                     |      | 5670 | 1 | 36.800 | Pass |
|                     |      |      | 2 | 36.739 | Pass |
|                     |      | 5755 | 1 | 36.456 | Pass |
|                     |      |      | 2 | 36.408 | Pass |
|                     |      | 5795 | 1 | 36.732 | Pass |
|                     |      |      | 2 | 36.917 | Pass |
| 802.11ac<br>(VHT80) | MIMO | 5210 | 1 | 76.563 | Pass |
|                     |      |      | 2 | 76.546 | Pass |
|                     |      | 5290 | 1 | 76.414 | Pass |
|                     |      |      | 2 | 76.620 | Pass |
|                     |      | 5530 | 1 | 76.620 | Pass |
|                     |      |      | 2 | 76.899 | Pass |
|                     |      | 5610 | 1 | 76.715 | Pass |
|                     |      |      | 2 | 76.680 | Pass |
|                     |      | 5775 | 1 | 76.502 | Pass |
|                     |      |      | 2 | 76.401 | Pass |

### 2.1.2 Test Graph

|                               |
|-------------------------------|
| 802.11a_LCH_5180MHz_Ant1_NTNV |
|-------------------------------|



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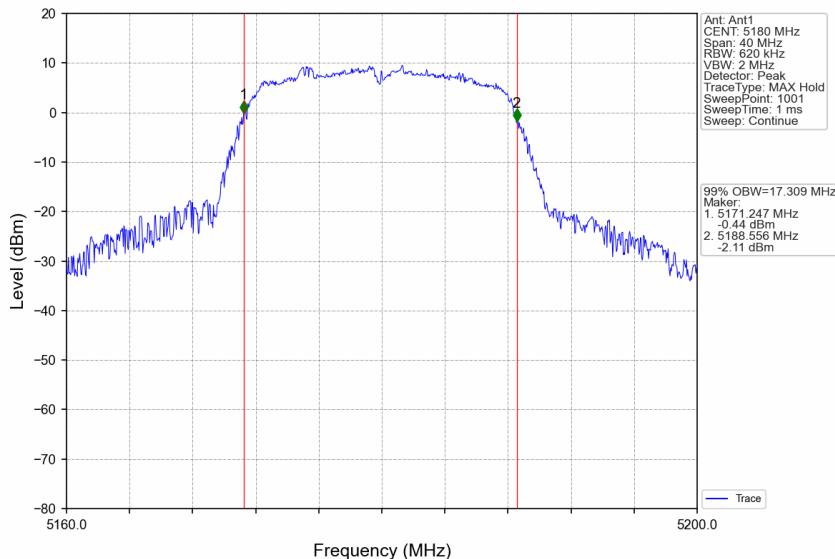
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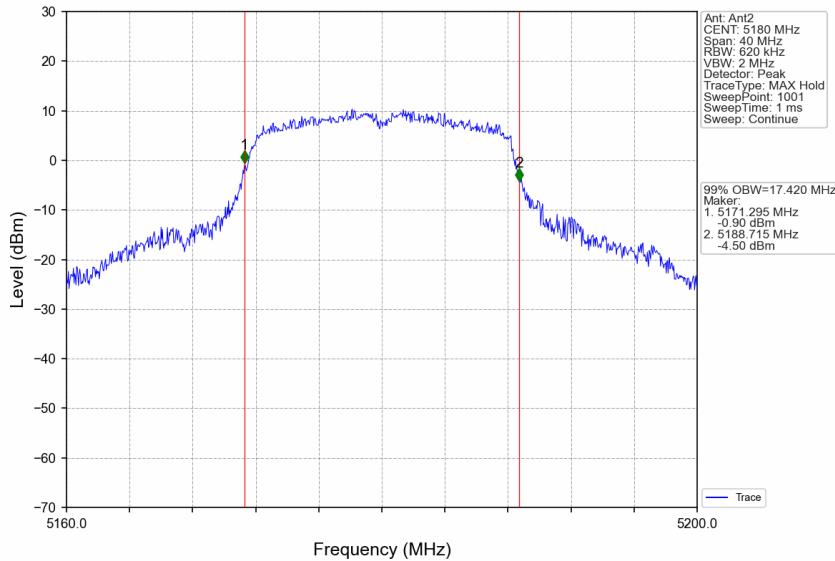
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802.11a\_LCH\_5180MHz\_Ant2\_NTNV



802.11a\_MCH\_5200MHz\_Ant1\_NTNV

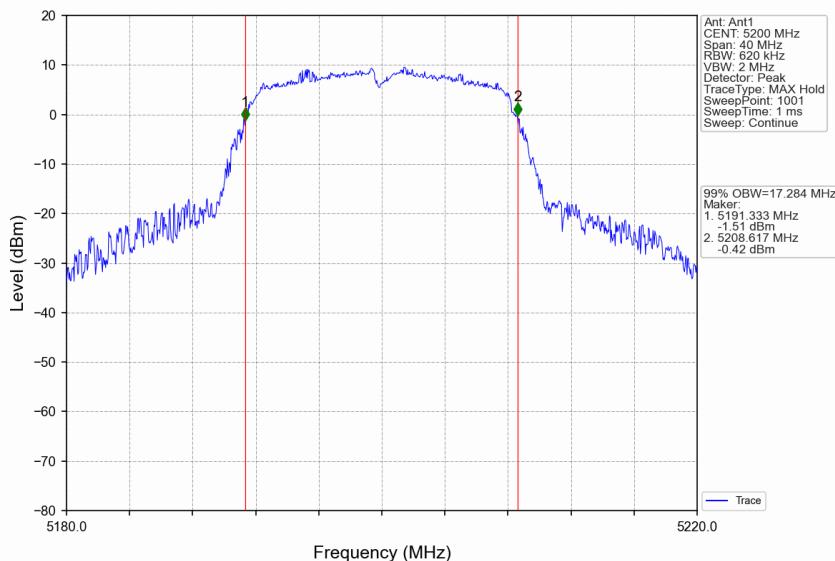


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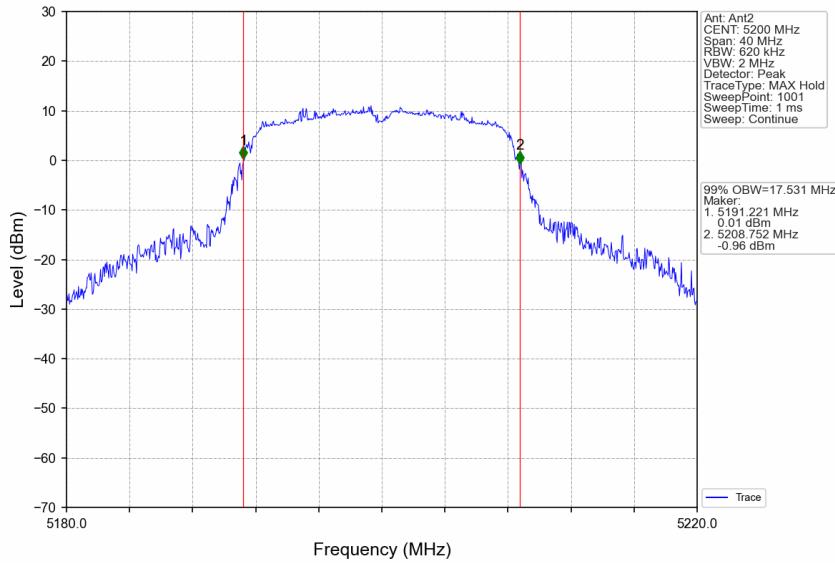
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802.11a\_MCH\_5200MHz\_Ant2\_NTNV

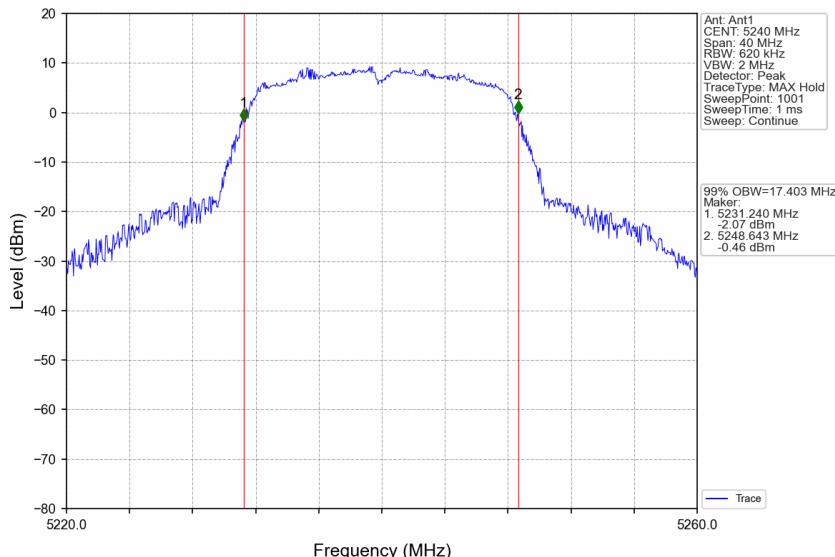


802.11a\_HCH\_5240MHz\_Ant1\_NTNV

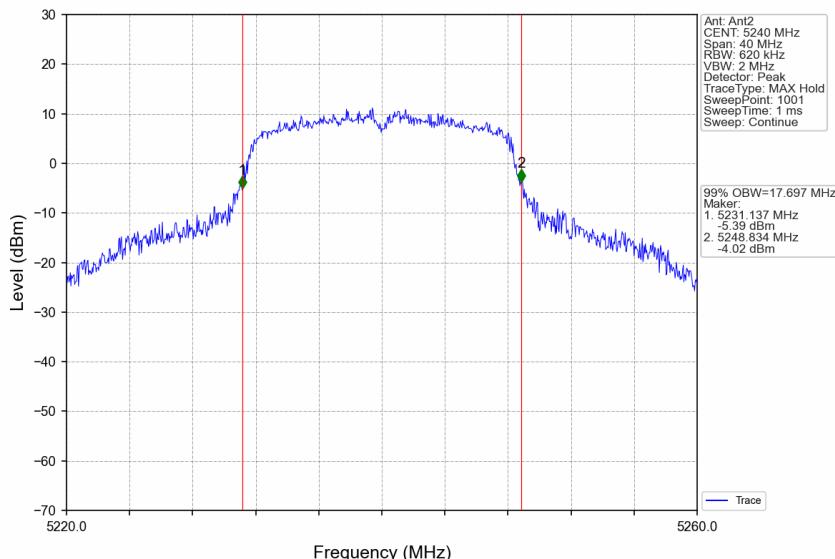
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802.11a\_HCH\_5240MHz\_Ant2\_NTNU



802.11a\_LCH\_5260MHz\_Ant1\_NTNU



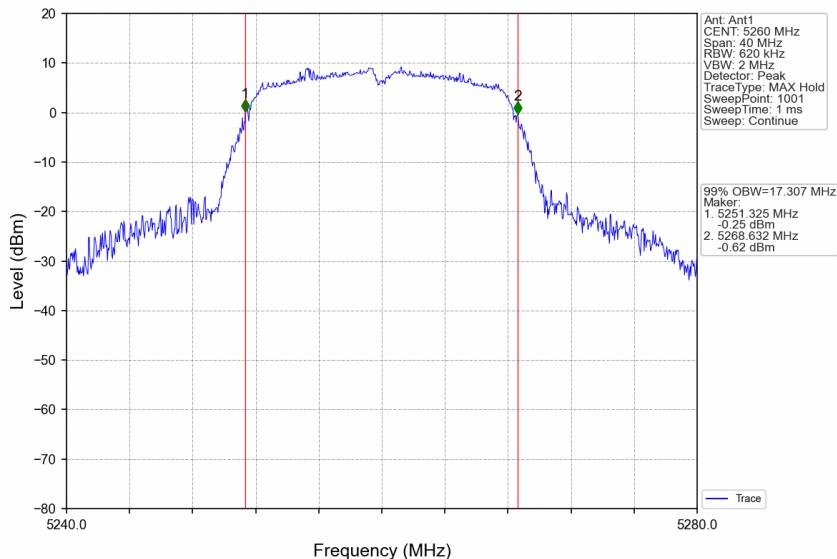
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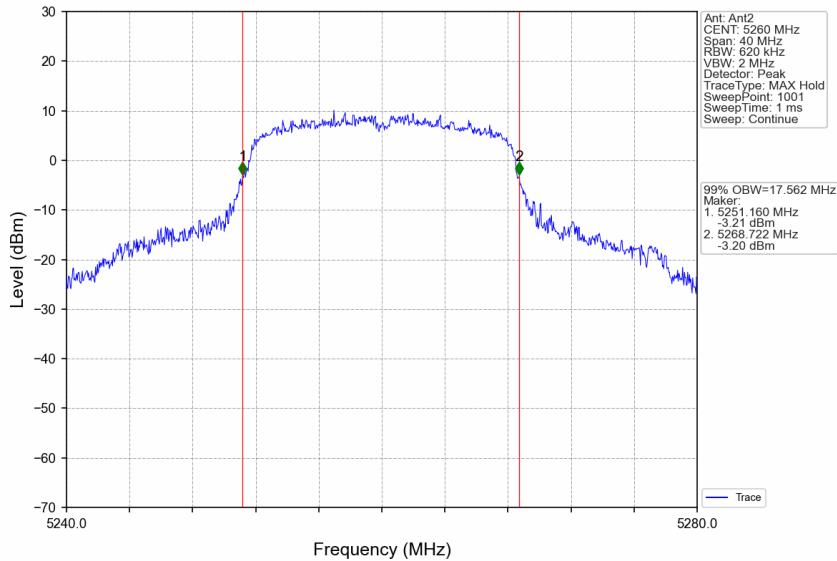
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802.11a\_LCH\_5260MHz\_Ant2\_NTNV



802.11a\_MCH\_5300MHz\_Ant1\_NTNV



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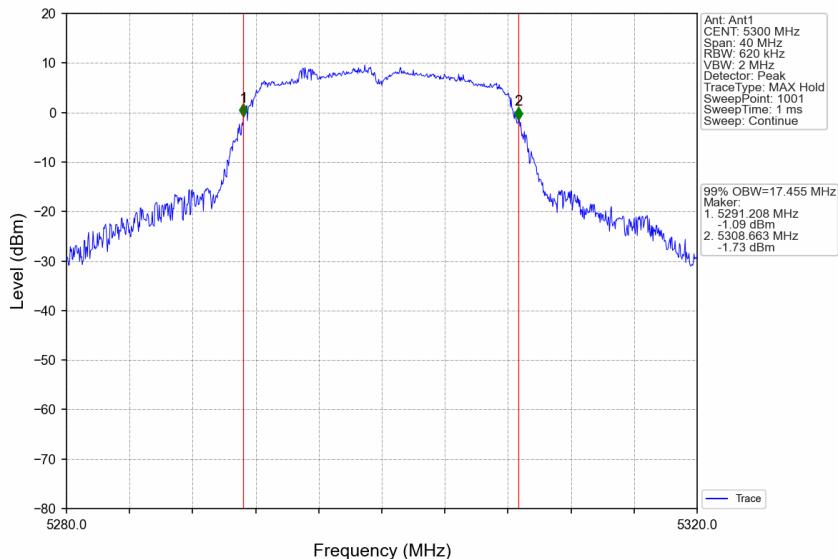
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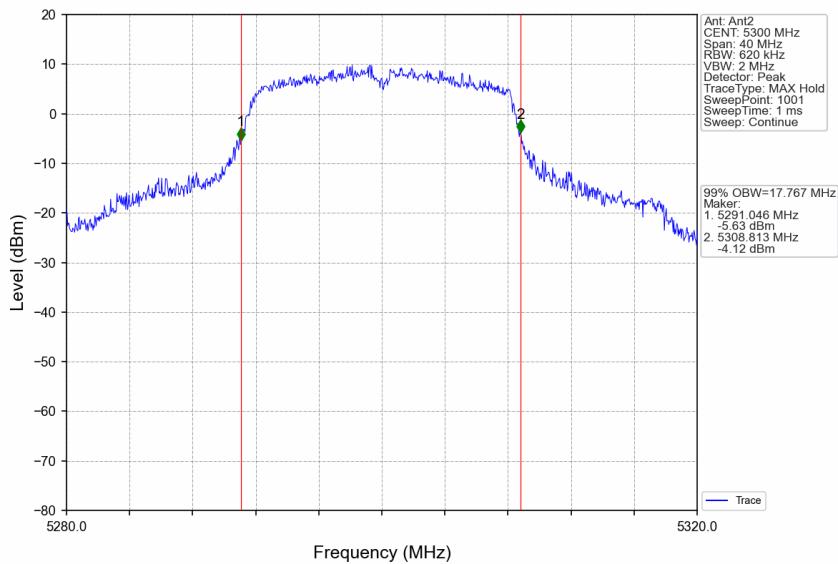
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802.11a\_MCH\_5300MHz\_Ant2\_NTNV



802.11a\_HCH\_5320MHz\_Ant1\_NTNV



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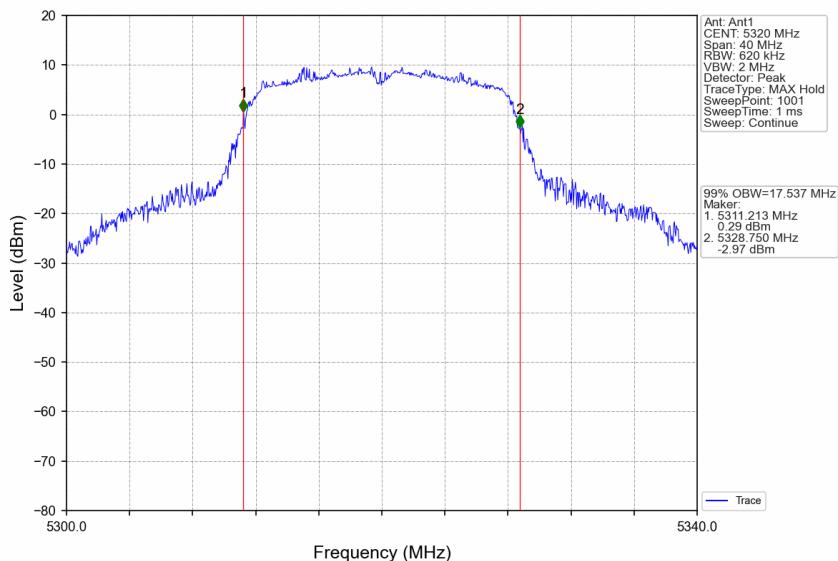
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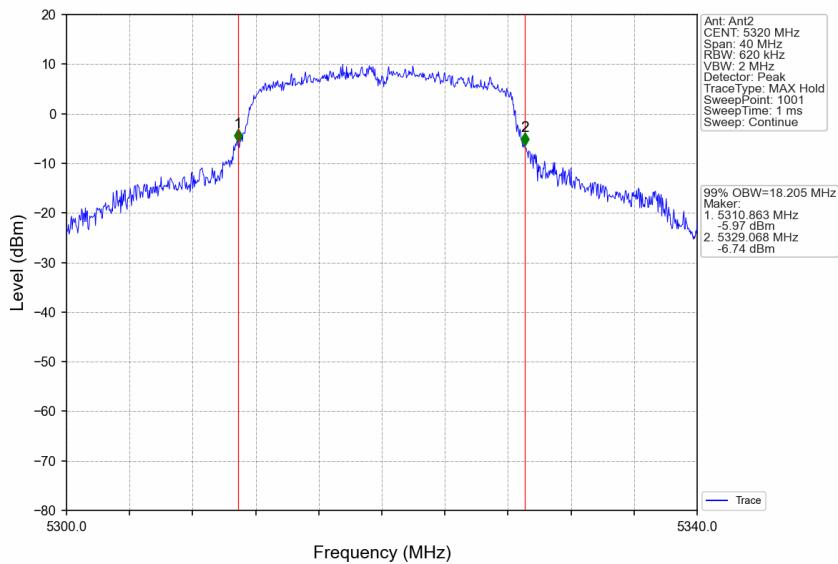
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802.11a\_HCH\_5320MHz\_Ant2\_NTNV



802.11a\_LCH\_5500MHz\_Ant1\_NTNV



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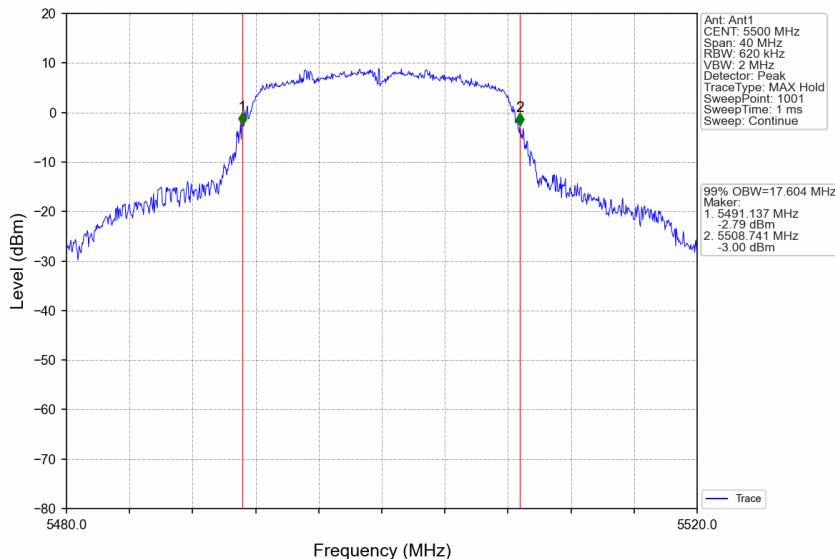
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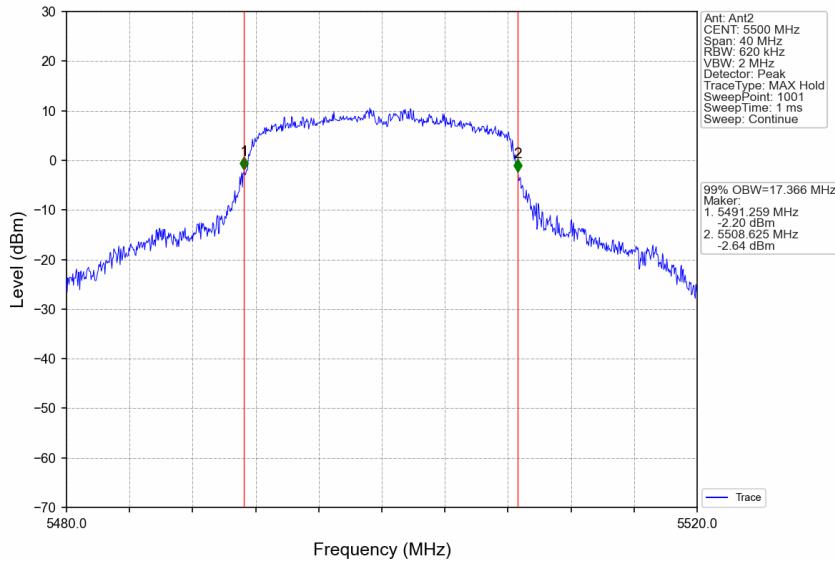
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802.11a\_LCH\_5500MHz\_Ant2\_NTNV



802.11a\_MCH\_5580MHz\_Ant1\_NTNV



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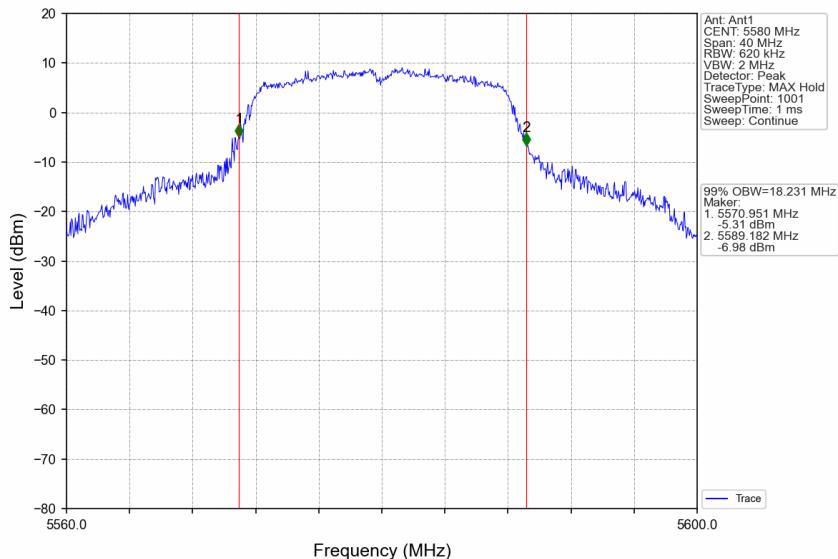
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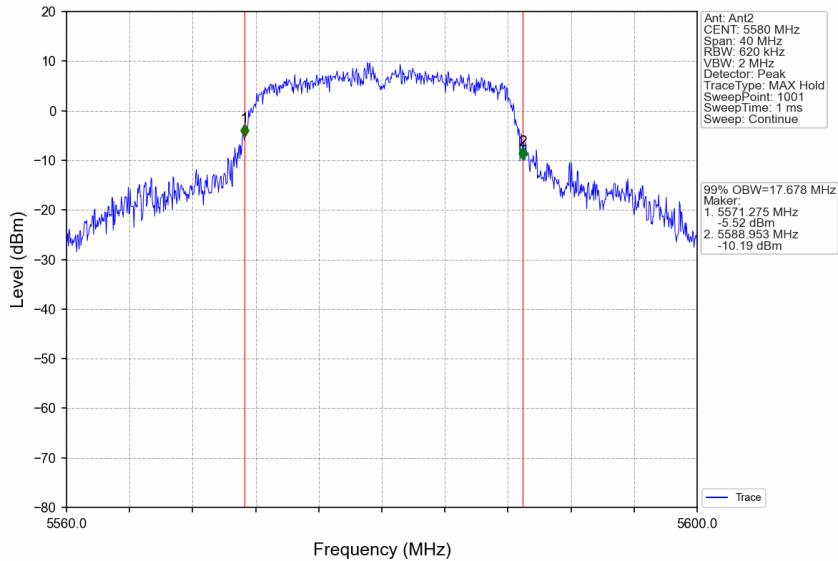
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