



Report No:
File reference No:

TW2203321-05E
2022-05-25

Applicant: Autel Robotics Co., Ltd.

Product: Live Deck 2

Model No: Live Deck 2

Trademark: **AUTEL**
ROBOTICS

Test Standards: FCC Part 15 Subpart E, Paragraph 15.407

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of electromagnetic compatibility

Approved By

Terry Tang

Terry Tang

Manager

Dated: May 25, 2022

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail: info@timeway-lab.com



Special Statement:

The testing quality ability of our laboratory meet with “Quality Law of People’s Republic of China” Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO 17025:2017 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

CAB identifier: CN0033

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Test Report Conclusion

Content

| | | |
|-------------|------------------------------------------------|----|
| 1.0 | General Details | 4 |
| 1.1 | Test Lab Details | 4 |
| 1.2 | Applicant Details | 4 |
| 1.3 | Description of EUT | 4 |
| 1.4 | Submitted Sample | 6 |
| 1.5 | Test Duration | 6 |
| 1.6 | Test Uncertainty | 6 |
| 1.7 | Test By | 6 |
| 2.0 | List of Measurement Equipment | 7 |
| 3.0 | Technical Details | 8 |
| 3.1 | Summary of Test Results | 8 |
| 3.2 | Test Standards | 8 |
| 4.0 | EUT Modification | 8 |
| 5.0 | Power Line Conducted Emission Test | 9 |
| 5.1 | Schematics of the Test | 9 |
| 5.2 | Test Method and Test Procedure | 9 |
| 5.3 | Configuration of the EUT | 9 |
| 5.4 | EUT Operating Condition | 10 |
| 5.5 | Conducted Emission Limit | 10 |
| 5.6 | Test Result | 10 |
| 6.0 | Undesirable Emission and Restrict band | 13 |
| 7.0 | Bandwidth Measurement | 29 |
| 8.0 | Peak Transmit Power Measurement | 46 |
| 9.0 | Peak Power Spectral Density Measurement | 55 |
| 10.0 | Frequency Stability | 64 |
| 11.0 | Antenna Requirement | 66 |

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1.0 General Details


1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: (755) 83448688
Fax: (755) 83442996
Site Listed with Federal Communications commission (FCC)
Registration Number: 744189
For 3m Anechoic Chamber
Site Listed with Industry Canada of Ottawa, Canada
Registration Number: IC: 5205A
For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Autel Robotics Co., Ltd.
Address: 9 Floor, Building B1, Zhiyuan, No.1001, Xueyuan Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China
Telephone: --
Fax: --

1.3 Description of EUT

Product: Live Deck 2
Manufacturer: Autel Robotics Co., Ltd.
Address: 9 Floor, Building B1, Zhiyuan, No.1001, Xueyuan Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China
Trademark: 
Additional Trademark: N/A
Model Number: Live Deck 2
Additional Model Number: N/A
Hardware Version: LD2L-MAIN-V3
Software Version: Modem_V7.2.1_MS_CP_128MB_20220428
Serial No.: SN202205250001
Rating: Input: DC5V/9/12V, 18W Max; USB OUT: DC5V, 0.5A
Type of Modulation: IEEE 802.11a/n (HT20/HT40): OFDM (64QAM, 16QAM, QPSK, BPSK);
IEEE 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Frequency: Band 4: 5745MHz-5825MHz
Air Data Rate: IEEE 802.11a: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
IEEE 802.11n/HT20: mcs0-mcs15
IEEE 802.11n/HT40: mcs0-mcs15

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IEEE 802.11ac: NSS1 mcs0-mcs9

Antenna: Integral Antenna. The gain of the antennas is 4.7dBi (Get from the antenna specification)

Test Mode: During testing, EUT was set to 100% duty cycle. 6Mbps air data rate was the worst case for 802.11a mode; mcs0 air data rate was the worst case for 802.11n mode; NSS1 mcs0 air data rate was the worst case for 802.11ac mode;

Frequency Selection By software

Each Channel Operation Frequency

| Band 4 | | | | | |
|-------------------------------------|-----------|------------------------------|-----------|----------------|-----------|
| 802.11a / 11n HT20 / 802.11ac VHT20 | | 802.11n HT40 / 802.11acVHT40 | | 802.11ac VHT80 | |
| Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 149 | 5745 MHz | 151 | 5755 MHz | 155 | 5775 MHz |
| 153 | 5765 MHz | 159 | 5795 MHz | | |
| 157 | 5785 MHz | | | | |
| 161 | 5825 MHz | | | | |

The selected test channels as follows:

| Band 4 | | | | | |
|--------------------|-----------|--------------|-----------|----------------|-----------|
| 802.11a / 11n HT20 | | 802.11n HT40 | | 802.11ac VHT80 | |
| Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 149 | 5745 MHz | 151 | 5755 MHz | 155 | 5775 MHz |
| 157 | 5785 MHz | 159 | 5795 MHz | | |
| 161 | 5825 MHz | | | | |

Note: 802.11ac VHT20/VHT40 is similar with 802.11n HT20/HT40.

1.4 Submitted Sample:2 Samples

1.5 Test Duration

2022-03-23 to 2022-05-25

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

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Note: The measurement uncertainty is for coverage factor of $k=2$ and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by

Andy Xing

Print Name: Andy Xing

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| 2.0 Test Equipment | | | | | |
|--------------------|--------------|----------------------|--------------|--------------|------------|
| Instrument Type | Manufacturer | Model | Serial No. | Date of Cal. | Due Date |
| ESPI Test Receiver | R&S | ESPI 3 | 100379 | 2021-06-18 | 2022-06-17 |
| LISN | R&S | EZH3-Z5 | 100294 | 2021-06-18 | 2022-06-17 |
| LISN | R&S | EZH3-Z5 | 100253 | 2021-06-18 | 2022-06-17 |
| Impuls-Begrenzer | R&S | ESH3-Z2 | 100281 | 2021-06-18 | 2022-06-17 |
| Loop Antenna | EMCO | 6507 | 00078608 | 2021-06-18 | 2024-06-17 |
| Spectrum | R&S | FSIQ26 | 100292 | 2021-06-18 | 2022-06-17 |
| Horn Antenna | A-INFO | LB-180400-KF | J211060660 | 2021-06-18 | 2022-06-17 |
| Horn Antenna | R&S | BBHA 9120D | 9120D-631 | 2021-07-02 | 2024-07-01 |
| Power meter | Anritsu | ML2487A | 6K00003613 | 2021-06-18 | 2022-06-17 |
| Power sensor | Anritsu | MA2491A | 32263 | 2021-06-18 | 2022-06-17 |
| Bilog Antenna | Schwarebeck | VULB9163 | 9163/340 | 2021-07-02 | 2024-07-01 |
| 9*6*6 Anechoic | -- | -- | N/A | 2021-07-02 | 2022-07-01 |
| EMI Test Receiver | RS | ESVB | 826156/011 | 2021-06-18 | 2022-06-17 |
| EMI Test Receiver | RS | ESH3 | 860904/006 | 2021-06-18 | 2022-06-17 |
| Spectrum | HP/Agilent | ESA-L1500A | US37451154 | 2021-06-18 | 2022-06-17 |
| Spectrum | HP/Agilent | E4407B | MY50441392 | 2021-06-18 | 2022-06-17 |
| Spectrum | RS | FSP | 1164.4391.38 | 2022-01-14 | 2023-01-13 |
| RF Cable | Zhengdi | ZT26-NJ-NJ-8 M/FA | -- | 2021-06-18 | 2022-06-17 |
| RF Cable | Zhengdi | 7m | -- | 2021-06-18 | 2022-06-17 |
| RF Switch | EM | EMSW18 | 060391 | 2021-06-18 | 2022-06-17 |
| Pre-Amplifier | Schwarebeck | BBV9743 | #218 | 2021-06-18 | 2022-06-17 |
| Pre-Amplifier | HP/Agilent | 8449B | 3008A00160 | 2021-06-18 | 2022-06-17 |
| LISN | SCHAFFNER | NNB42 | 00012 | 2022-01-05 | 2023-01-04 |

2.2 Automation Test Software

For Conducted Emission Test

| Name | Version |
|--------|-------------------|
| EZ-EMC | Ver.EMC-CON 3A1.1 |

For Radiated Emissions

| Name | Version |
|-------------------------------------------------|---------|
| EMI Test Software BL410-EV18.91 | V18.905 |
| EMI Test Software BL410-EV18.806 High Frequency | V18.06 |

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3.0 Technical Details

3.1 Summary of test results

| The EUT has been tested according to the following specifications: | | | |
|----------------------------------------------------------------------------------------|-------------------------------------------|--------|----------|
| Standard | Test Type | Result | Notes |
| FCC Part 15, Paragraph 15.407 | Conducted Emission Test | Pass | Complies |
| FCC Part 15 Subpart E Paragraph 15.407 (b1/4/5/6/7), Part 15.205 and Part 15.209 | Undesirable Emission and Restrict band | Pass | Complies |
| FCC Part 15, Paragraph 15.407 (a1/2/3) | Peak Transmit Power | Pass | Complies |
| FCC Part 15, Paragraph 15.407 (a)(6) | Peak Power Excursion | Pass | Complies |
| FCC Part 15, Paragraph 15.407 (a1/2/3) | Peak Power Spectral Density | Pass | Complies |
| FCC Part 15, Paragraph 15.407(g) | Frequency Stability | Pass | Complies |

3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247, ANSI C63.10 :2013 and ANSI C63.4 :2014
789033 D02 General UNII Test Procedures New Rules v01r04

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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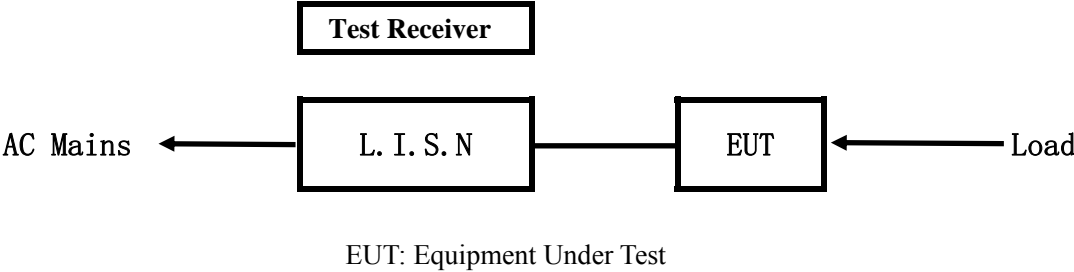
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

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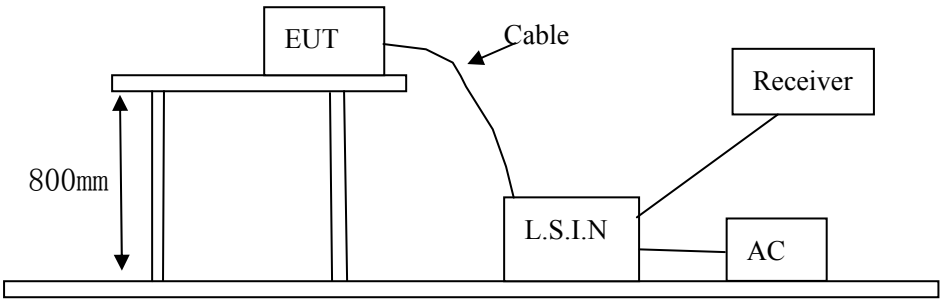
5. Power Line Conducted Emission Test

5.1 Schematics of the test



5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2009. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2013.
Test Voltage: 120V~, 60Hz
Block diagram of Test setup



5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

| Device | Manufacturer | Model | FCC ID |
|-------------|--------------------------|-------------|-----------------|
| Live Deck 2 | Autel Robotics Co., Ltd. | Live Deck 2 | 2AGNTLDK240958A |

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B. Internal Device

| Device | Manufacturer | Model | Rating |
|--------|--------------|-------|--------|
| | | | |

C. Peripherals

| Device | Manufacturer | Model | Rating |
|--------------|--------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply | Autel | XY-PD030D32 | Input: 100-240V~, 50/60Hz, 1A; Output: USB-C: DC5V, 3A; DC9V, 3A; DC12V, 2.5A; USB-A: DC5V, 3A, DC9V, 2A; DC12V, 1.5A; USB-C + USB-A: DC5V, 3.1A |

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10 -2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

| Frequency (MHz) | Limits (dB μ V) | |
|--------------------|---------------------|---------------|
| | Quasi-peak Level | Average Level |
| 0.15 ~ 0.50 | 66.0~56.0* | 56.0~46.0* |
| 0.50 ~ 5.00 | 56.0 | 46.0 |
| 5.00 ~ 30.00 | 60.0 | 50.0 |

- Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Note: Only the worst case was recorded in the test report.

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

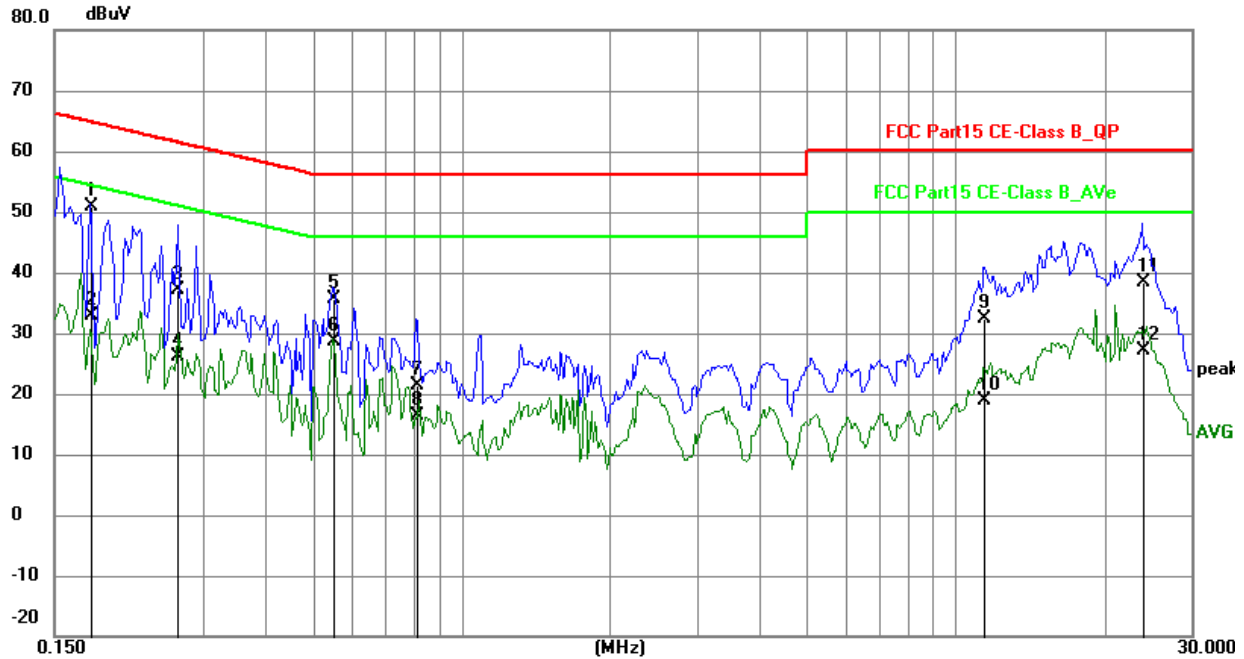
EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keeping WIFI Transmitting

Results: Pass

Please refer to following diagram for individual



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1 | 0.1773 | 41.11 | 9.77 | 50.88 | 64.61 | -13.73 | QP | P |
| 2 | 0.1773 | 23.22 | 9.77 | 32.99 | 54.61 | -21.62 | AVG | P |
| 3 | 0.2670 | 27.40 | 9.75 | 37.15 | 61.21 | -24.06 | QP | P |
| 4 | 0.2670 | 16.32 | 9.75 | 26.07 | 51.21 | -25.14 | AVG | P |
| 5 | 0.5517 | 25.74 | 9.77 | 35.51 | 56.00 | -20.49 | QP | P |
| 6 | 0.5517 | 18.97 | 9.77 | 28.74 | 46.00 | -17.26 | AVG | P |
| 7 | 0.8130 | 11.68 | 9.78 | 21.46 | 56.00 | -34.54 | QP | P |
| 8 | 0.8130 | 6.58 | 9.78 | 16.36 | 46.00 | -29.64 | AVG | P |
| 9 | 11.4279 | 22.18 | 10.22 | 32.40 | 60.00 | -27.60 | QP | P |
| 10 | 11.4279 | 8.69 | 10.22 | 18.91 | 50.00 | -31.09 | AVG | P |
| 11 | 23.9040 | 27.43 | 10.92 | 38.35 | 60.00 | -21.65 | QP | P |
| 12 | 23.9040 | 16.19 | 10.92 | 27.11 | 50.00 | -22.89 | AVG | P |

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

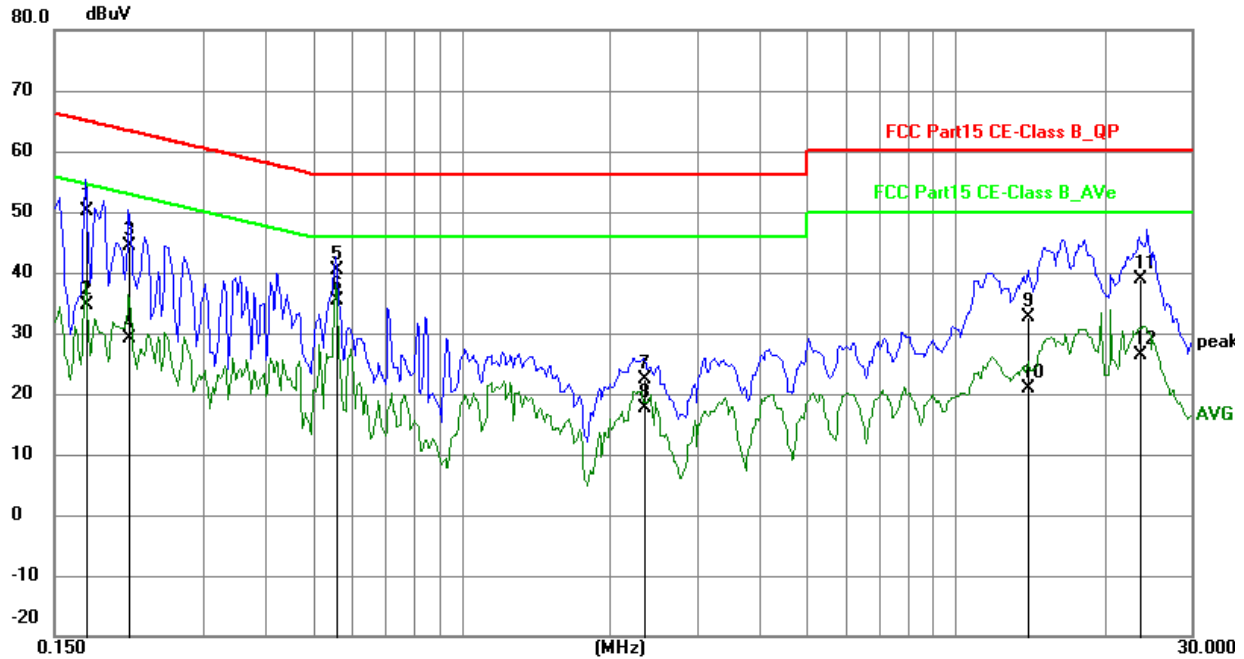
EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keeping WIFI Transmitting

Results: Pass

Please refer to following diagram for individual



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1 | 0.1734 | 40.48 | 9.77 | 50.25 | 64.80 | -14.55 | QP | P |
| 2 | 0.1734 | 24.88 | 9.77 | 34.65 | 54.80 | -20.15 | AVG | P |
| 3 | 0.2124 | 34.52 | 9.75 | 44.27 | 63.11 | -18.84 | QP | P |
| 4 | 0.2124 | 19.46 | 9.75 | 29.21 | 53.11 | -23.90 | AVG | P |
| 5 | 0.5556 | 30.70 | 9.77 | 40.47 | 56.00 | -15.53 | QP | P |
| 6 | 0.5556 | 25.57 | 9.77 | 35.34 | 46.00 | -10.66 | AVG | P |
| 7 | 2.3340 | 12.66 | 9.81 | 22.47 | 56.00 | -33.53 | QP | P |
| 8 | 2.3340 | 7.77 | 9.81 | 17.58 | 46.00 | -28.42 | AVG | P |
| 9 | 14.0292 | 22.32 | 10.34 | 32.66 | 60.00 | -27.34 | QP | P |
| 10 | 14.0292 | 10.61 | 10.34 | 20.95 | 50.00 | -29.05 | AVG | P |
| 11 | 23.5803 | 28.02 | 10.90 | 38.92 | 60.00 | -21.08 | QP | P |
| 12 | 23.5803 | 15.60 | 10.90 | 26.50 | 50.00 | -23.50 | AVG | P |

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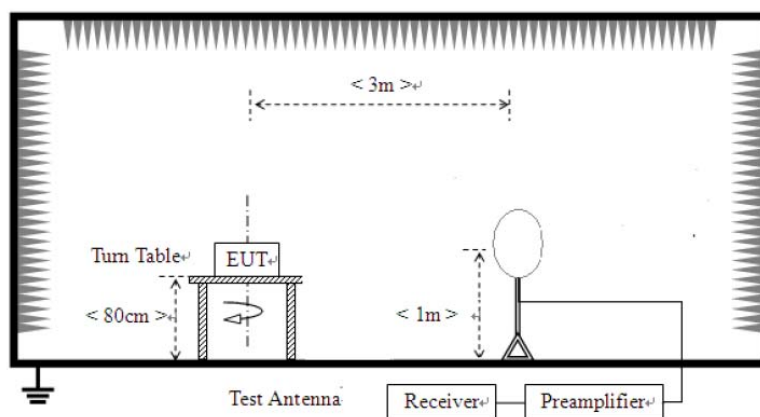
6 Undesirable Emission and Restrict band

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 40 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz, VBW=3MHz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a “QP” in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



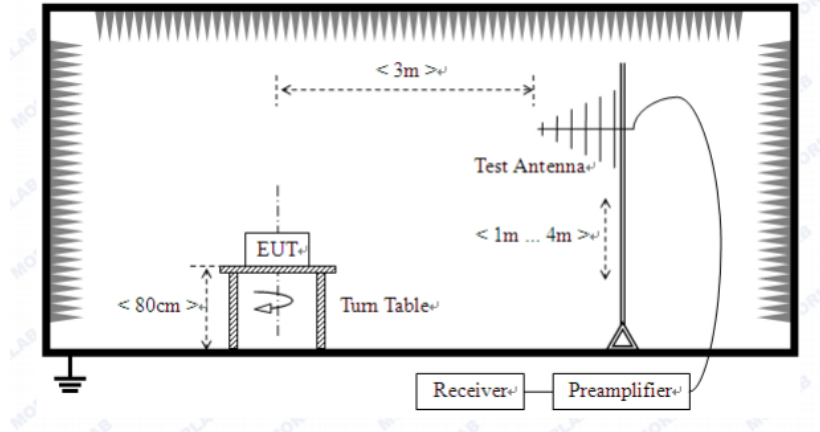
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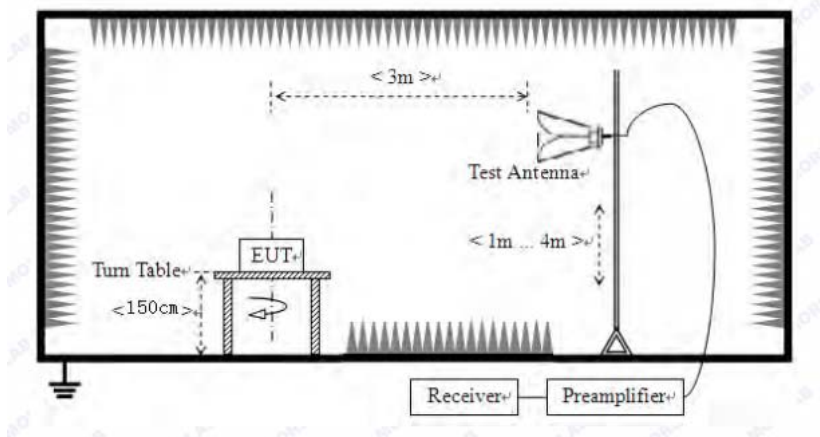
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For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

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Frequencies in restricted band are complied to limit on Paragraph 15.209

| Frequency Range (MHz) | Distance (m) | Field strength (dB μ V/m) |
|-----------------------|--------------|-------------------------------|
| 30-88 | 3 | 40.0 |
| 88-216 | 3 | 43.5 |
| 216-960 | 3 | 46.0 |
| Above 960 | 3 | 54.0 |

- (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm/MHz
- (2) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27dBm/MHz.

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (μ V)
 2. In the Above Table, the higher limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

Note: Only the worst case was recorded in the test report. and 802.11a is the worst case.

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Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keeping WIFI Transmitting

Results: Pass

The report refers only to the sample tested and does not apply to the bulk.

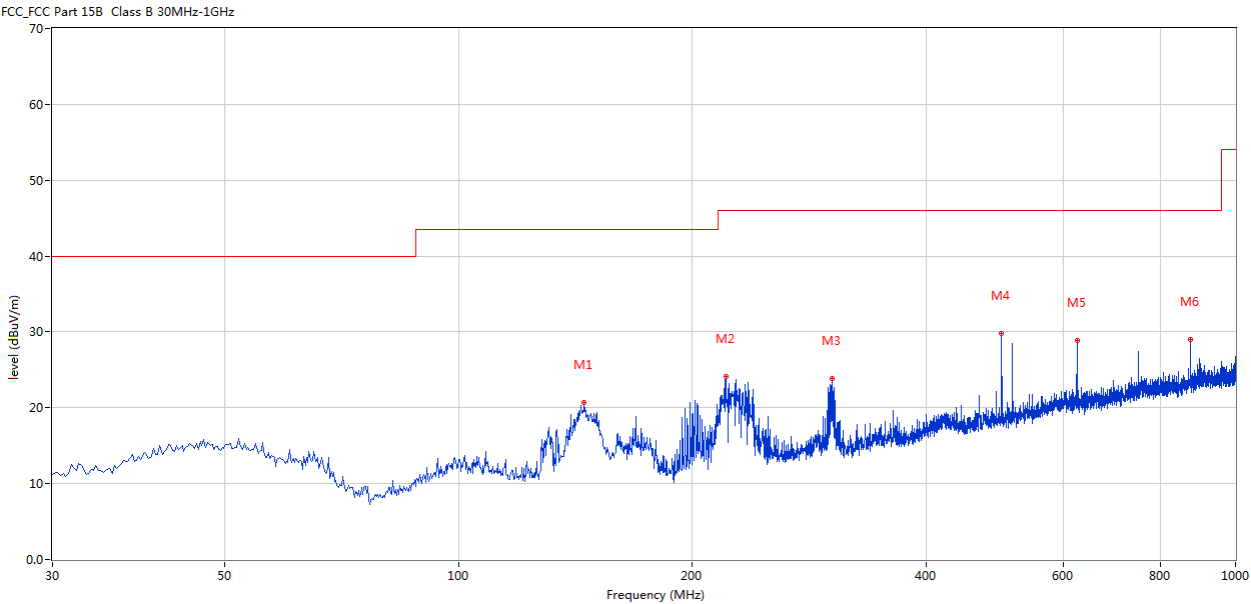
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Test Figure:

H



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (o) | Height (cm) | ANT | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|-----------|-------------|------------|---------|
| 1 | 145.159 | 20.72 | -17.26 | 40.0 | -19.28 | Peak | 132.00 | 200 | Horizontal | Pass |
| 2 | 220.800 | 24.17 | -13.29 | 40.0 | -15.83 | Peak | 0.00 | 100 | Horizontal | Pass |
| 3 | 302.259 | 23.92 | -10.98 | 47.0 | -23.08 | Peak | 215.00 | 100 | Horizontal | Pass |
| 4 | 500.090 | 29.84 | -6.91 | 47.0 | -17.16 | Peak | 274.00 | 200 | Horizontal | Pass |
| 5 | 625.189 | 28.91 | -4.84 | 47.0 | -18.09 | Peak | 31.00 | 100 | Horizontal | Pass |
| 6 | 875.144 | 29.05 | -2.17 | 47.0 | -17.95 | Peak | 123.00 | 100 | Horizontal | Pass |

The report refers only to the sample tested and does not apply to the bulk.

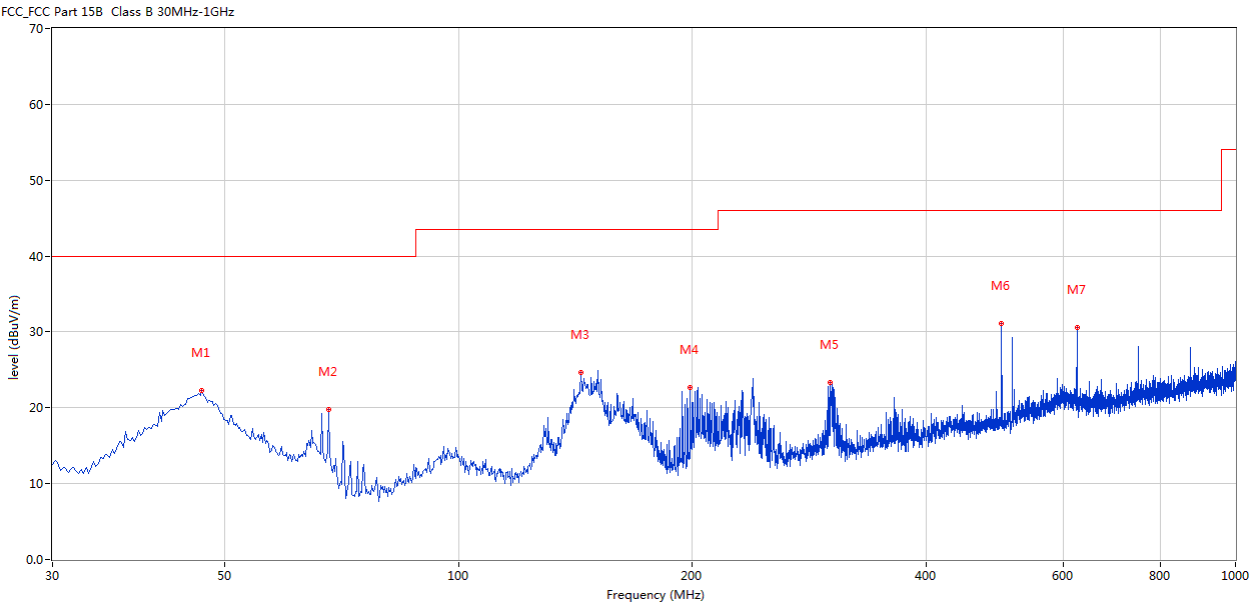
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Test Figure:

V



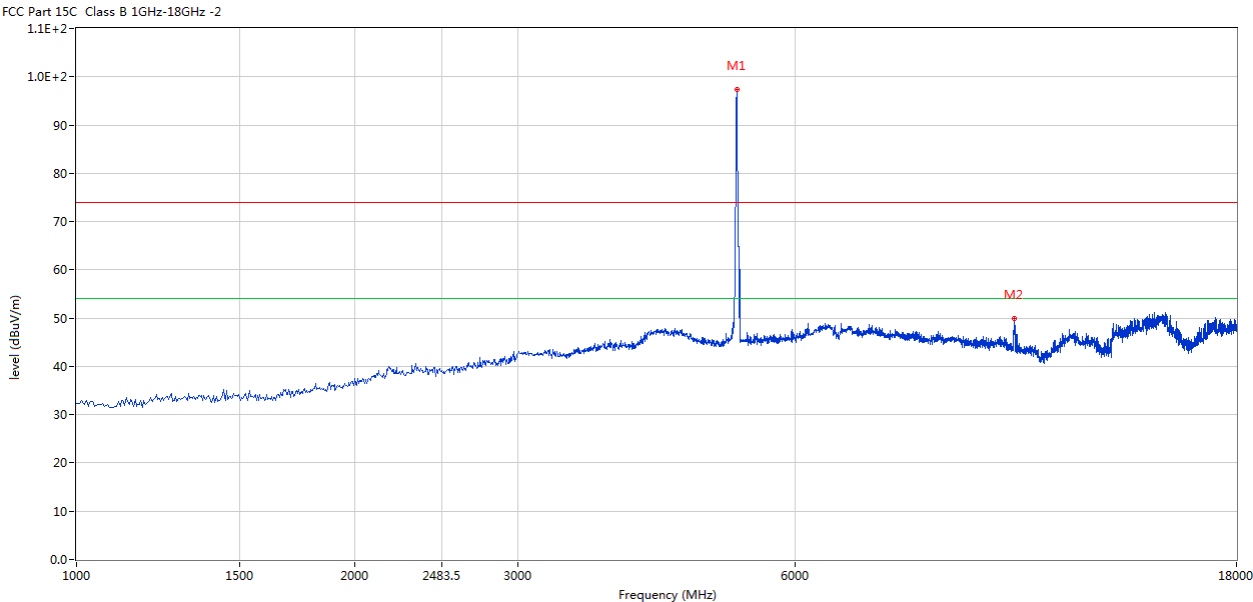
| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (o) | Height (cm) | ANT | Verdict |
|-----|--------------------|---------------------|----------------|-------------------|--------------------|----------|--------------|----------------|----------|---------|
| 1 | 46.728 | 22.24 | -11.44 | 40.0 | -17.76 | Peak | 273.00 | 100 | Vertical | Pass |
| 2 | 68.063 | 19.78 | -14.68 | 40.0 | -20.22 | Peak | 264.00 | 100 | Vertical | Pass |
| 3 | 143.704 | 24.61 | -17.14 | 40.0 | -15.39 | Peak | 197.00 | 100 | Vertical | Pass |
| 4 | 198.495 | 22.65 | -13.50 | 40.0 | -17.35 | Peak | 189.00 | 100 | Vertical | Pass |
| 5 | 300.805 | 23.33 | -11.01 | 47.0 | -23.67 | Peak | 46.00 | 100 | Vertical | Pass |
| 6 | 500.090 | 31.12 | -6.91 | 47.0 | -15.88 | Peak | 146.00 | 100 | Vertical | Pass |
| 7 | 625.189 | 30.53 | -4.84 | 47.0 | -16.47 | Peak | 239.00 | 100 | Vertical | Pass |

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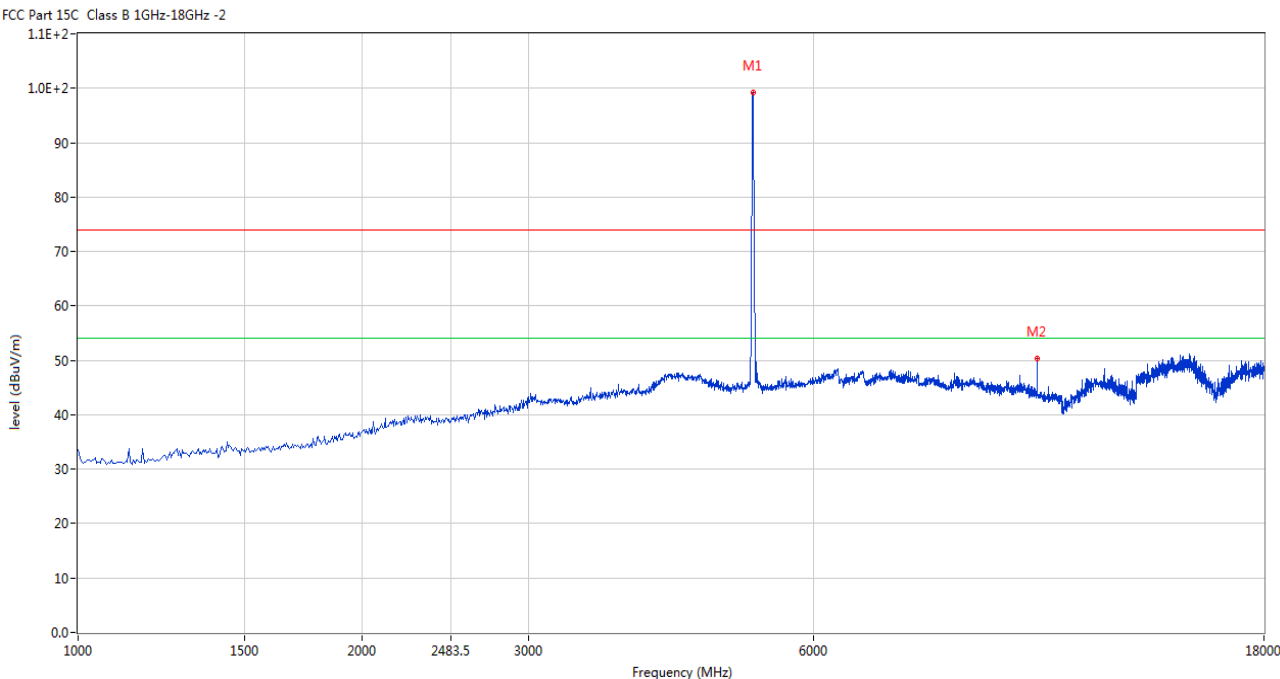


Please refer to the following test plots for details:

CH149 for 11a at 6Mbps: Horizontal



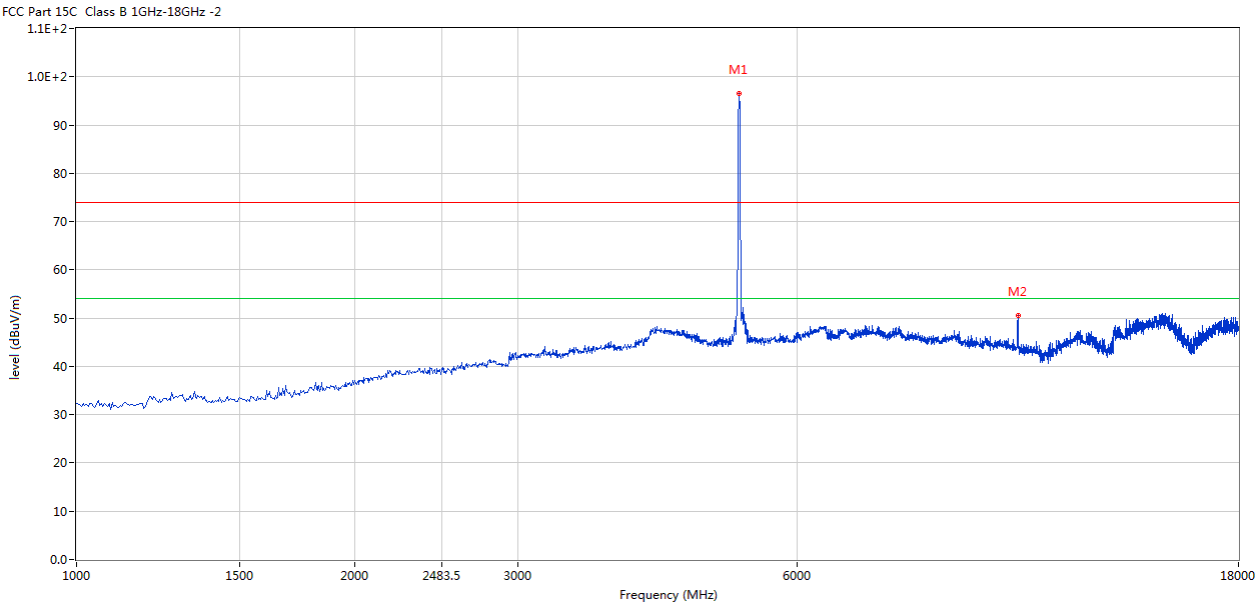
CH149 for 11a at 6Mbps: Vertical



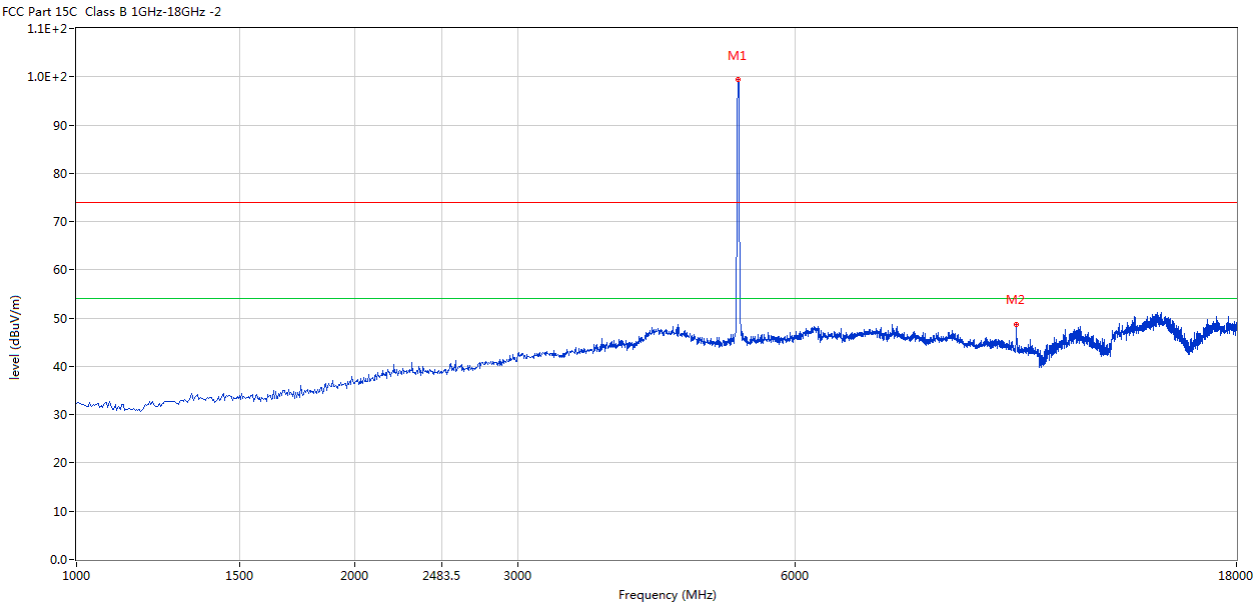
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CH153 for 11a at 6Mbps: Horizontal



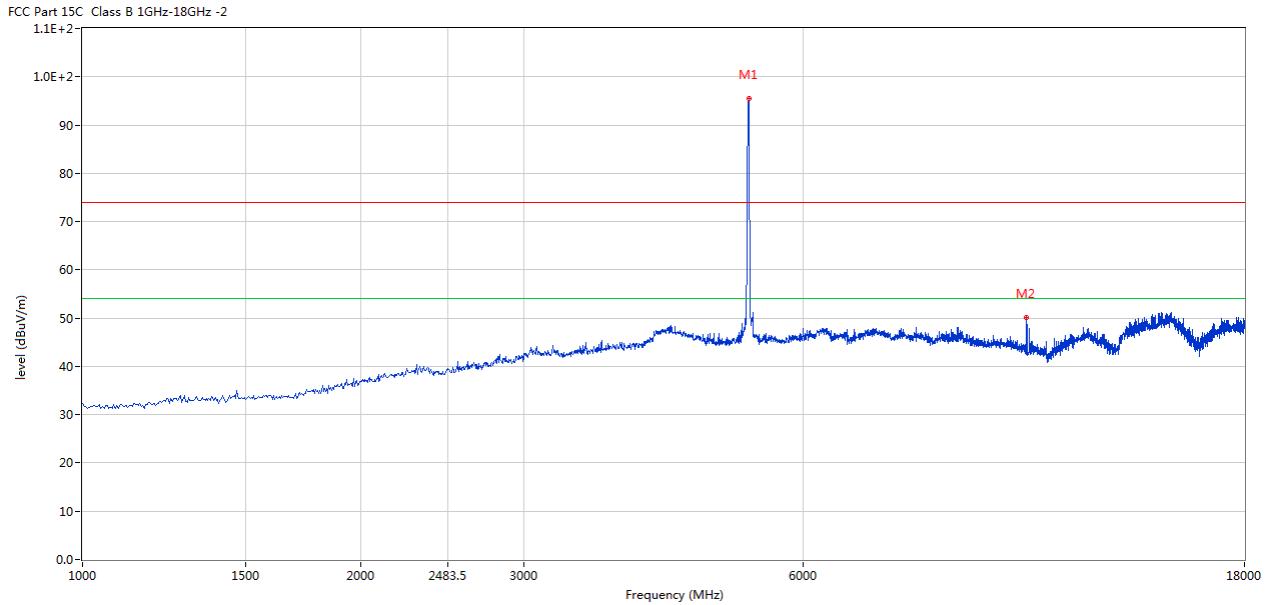
CH153 for 11a at 6Mbps: Vertical



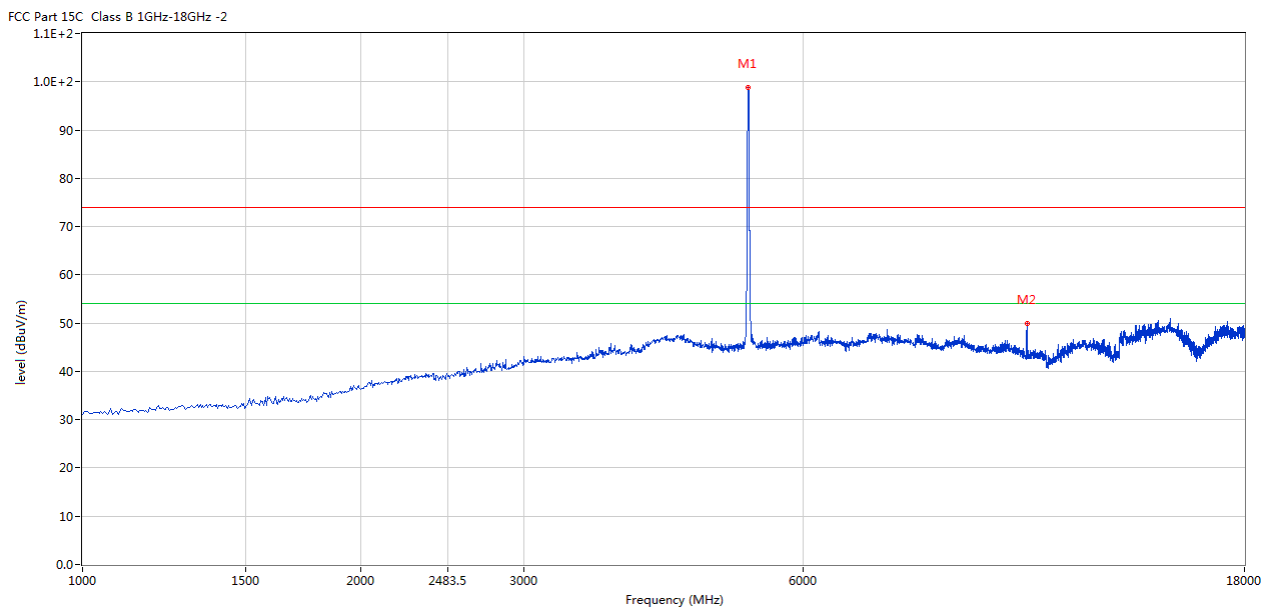
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CH161 for 11a at 6Mbps: Horizontal



CH161 for 11g at 6Mbps: Vertical



- Note: 1. For radiated Emissions from 18-40GHz and below 30MHz, it is only the floor noise and less than the limit for more than 20dB. No necessary to take down.
2. 802.11a is the worst case.

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| Restricted band Measurement | | | |
|-----------------------------|----------------------|-----------|---------------------------|
| EUT | Live Deck 2 | | Test Mode: |
| Mode | Keeping Transmitting | | Channel 149 (5745MHz)-11a |
| Temperature | 24 deg. C, | | Input Voltage |
| Test Result: | Pass | | Humidity |
| 5725 | PK (dBμV/m) | 53.1 (PK) | 56% RH |
| | EIRP (dBm) | -42.1 | Detector |
| Polarity | Horizontal | | PK |
| | | | Limit |
| | | | -17dBm/MHz |
| | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 53.1 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 53.1 - 95.2 = -42.1 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

| Restricted band Measurement | | | |
|-----------------------------|----------------------|----------|---------------------------|
| EUT | Live Deck 2 | | Test Mode: |
| Mode | Keeping Transmitting | | Channel 149 (5745MHz)-11a |
| Temperature | 24 deg. C, | | Input Voltage |
| Test Result: | Pass | | Humidity |
| 5725 | PK (dBμV/m) | 47.9(PK) | 56% RH |
| | EIRP (dBm) | -47.3 | Detector |
| Polarity | Vertical | | PK |
| | | | Limit |
| | | | -17dBm/MHz |
| | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 47.9 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 47.9 - 95.2 = -47.3 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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| Restricted band Measurement | | | |
|-----------------------------|----------------------|-----------|---------------------------|
| EUT | Live Deck 2 | | Test Mode: |
| Mode | Keeping Transmitting | | Channel 161 (5825MHz)-11a |
| Temperature | 24 deg. C, | | Input Voltage |
| Test Result: | Pass | | Humidity |
| 5850 | PK (dBμV/m) | 55.2 (PK) | 56% RH |
| | EIRP (dBm) | -40.0 | Detector |
| Polarity | Horizontal | | PK |
| | | | Limit |
| | | | -17dBm/MHz |
| | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 55.2 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 55.2 - 95.2 = -40.0 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

| Restricted band Measurement | | | |
|-----------------------------|----------------------|-----------|---------------------------|
| EUT | Live Deck 2 | | Test Mode: |
| Mode | Keeping Transmitting | | Channel 161 (5825MHz)-11a |
| Temperature | 24 deg. C, | | Input Voltage |
| Test Result: | Pass | | Humidity |
| 5850 | PK (dBμV/m) | 50.7 (PK) | 56% RH |
| | EIRP (dBm) | -44.5 | Detector |
| Polarity | Vertical | | PK |
| | | | Limit |
| | | | -17dBm/MHz |
| | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 50.7 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 50.7 - 95.2 = -44.5 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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| Restricted band Measurement | | | | |
|-----------------------------|----------------------|-----------|---------------|--------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 149 (5745MHz)-11n/HT20 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5725 | PK (dBμV/m) | 50.3 (PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -44.9 | | |
| Polarity | Horizontal | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 50.3 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 50.3 - 95.2 = -44.9 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

| Restricted band Measurement | | | | |
|-----------------------------|----------------------|-----------|---------------|--------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 149 (5745MHz)-11n/HT20 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5725 | PK (dBμV/m) | 46.4 (PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -48.8 | | |
| Polarity | Vertical | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 46.4 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 46.4 - 95.2 = -48.8 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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| Restricted band Measurement | | | | |
|-----------------------------|----------------------|-----------|---------------|--------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 161 (5825MHz)-11n/HT20 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5850 | PK (dBμV/m) | 50.0 (PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -45.2 | | |
| Polarity | Horizontal | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 50.0\text{dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 50.0 - 95.2 = -45.2\text{dBm}$$

2. RBW=1MHz, VBW=3MHz

| Restricted band Measurement | | | | |
|-----------------------------|----------------------|-----------|---------------|--------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 161 (5825MHz)-11n/HT20 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5850 | PK (dBμV/m) | 46.8 (PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -48.4 | | |
| Polarity | Vertical | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 46.8\text{dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 46.8 - 95.2 = -48.4\text{dBm}$$

2. RBW=1MHz, VBW=3MHz

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| Restricted band Measurement | | | | |
|-----------------------------|----------------------|----------|---------------|--------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 151 (5755MHz)-11n/HT40 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5725 | PK (dBμV/m) | 51.6(PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -43.6 | | |
| Polarity | Horizontal | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 51.6 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 51.6 - 95.2 = -43.6 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

| Restricted band Measurement | | | | |
|-----------------------------|----------------------|----------|---------------|--------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 151 (5755MHz)-11n/HT40 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5725 | PK (dBμV/m) | 46.4(PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -48.8 | | |
| Polarity | Vertical | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 46.4 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 46.4 - 95.2 = -48.8 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

The report refers only to the sample tested and does not apply to the bulk.

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| Restricted band Measurement | | | | |
|-----------------------------|----------------------|----------|---------------|--------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 159 (5795MHz)-11n/HT40 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5850 | PK (dBμV/m) | 53.6(PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -41.6 | | |
| Polarity | Horizontal | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 53.6 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 53.6 - 95.2 = -41.6 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

| Restricted band Measurement | | | | |
|-----------------------------|----------------------|----------|---------------|--------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 159 (5795MHz)-11n/HT40 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5850 | PK (dBμV/m) | 47.1(PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -48.1 | | |
| Polarity | Vertical | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 47.1 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 47.1 - 95.2 = -48.1 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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| Restricted band Measurement | | | | |
|-----------------------------|----------------------|-----------|---------------|----------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 155 (5775MHz)-11ac/VHT80 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5850 | PK (dBμV/m) | 52.1 (PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -43.1 | | |
| Polarity | Horizontal | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 52.1 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 52.1 - 95.2 = -43.1 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

| Restricted band Measurement | | | | |
|-----------------------------|----------------------|-----------|---------------|----------------------------------|
| EUT | Live Deck 2 | | Test Mode: | Channel 157 (5775MHz)-11ac/VHT80 |
| Mode | Keeping Transmitting | | Input Voltage | DC3.85V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 5850 | PK (dBμV/m) | 47.7 (PK) | Limit | -17dBm/MHz |
| | EIRP (dBm) | -47.5 | | |
| Polarity | Vertical | | -- | -- |

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]} = 47.7 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 47.7 - 95.2 = -47.5 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

The report refers only to the sample tested and does not apply to the bulk.

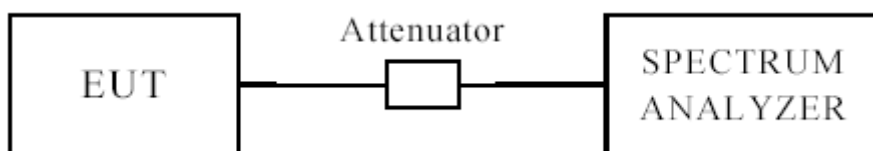
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7.0 Emission Bandwidth

7.1 Test Setup



7.3 Test Procedure for Emission Bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set VBW > RBW
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

7.4 Test Procedure for Minimum Bandwidth for the Band 5725-5850MHz

1. Set RBW = 100 kHz.
2. Set $VBW \geq 3 \times RBW$.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.5 Test Procedure for 99% Bandwidth

1. Set center frequency to the nominal EUT channel center frequency
2. Set span = 1.5 times to 5.0 times OBW
3. Set RBW = 1% TO 5% of the OBW
4. Set $VBW \geq 3 \times RBW$
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Other, peak detection and max mode (until trace stabilizes) shall be used.
6. Use the 99% power bandwidth function of the instrument

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7.6 Test Result

| Mode | TX Type | Frequency (MHz) | ANT | 99% Occupied Bandwidth (MHz) | Verdict |
|------------------|---------|-----------------|-----|------------------------------|---------|
| | | | | Result | |
| 802.11a | SISO | 5745 | 1 | 17.030 | Pass |
| | | 5785 | 1 | 17.159 | Pass |
| | | 5825 | 1 | 17.123 | Pass |
| 802.11n (HT20) | SISO | 5745 | 1 | 18.345 | Pass |
| | | 5785 | 1 | 18.369 | Pass |
| | | 5825 | 1 | 18.372 | Pass |
| 802.11n (HT40) | SISO | 5755 | 1 | 36.587 | Pass |
| | | 5795 | 1 | 36.642 | Pass |
| 802.11ac (VHT20) | SISO | 5745 | 1 | 18.532 | Pass |
| | | 5785 | 1 | 18.539 | Pass |
| | | 5825 | 1 | 18.503 | Pass |
| 802.11ac (VHT40) | SISO | 5755 | 1 | 37.035 | Pass |
| | | 5795 | 1 | 37.050 | Pass |
| 802.11ac (VHT80) | SISO | 5775 | 1 | 75.579 | Pass |

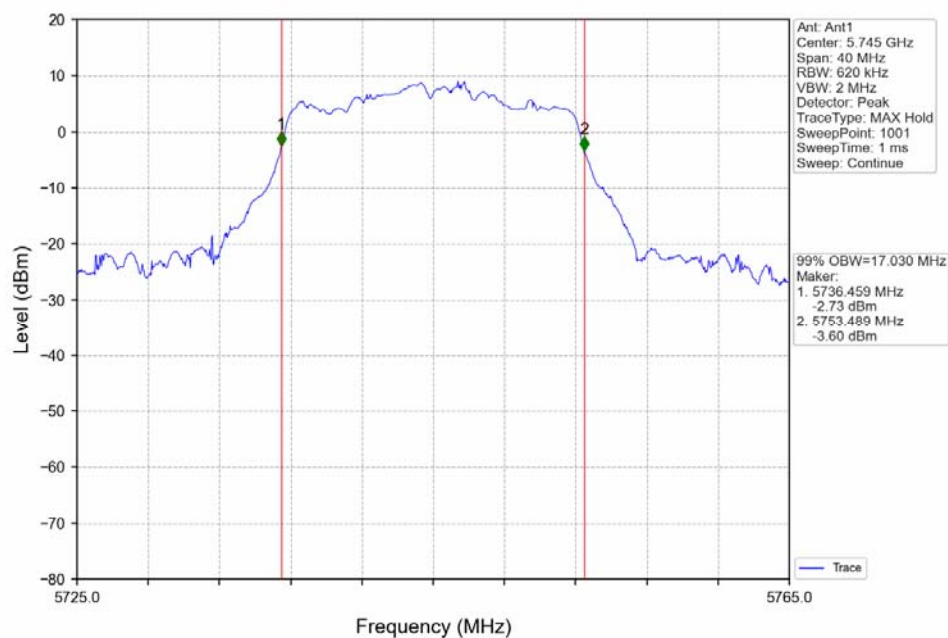
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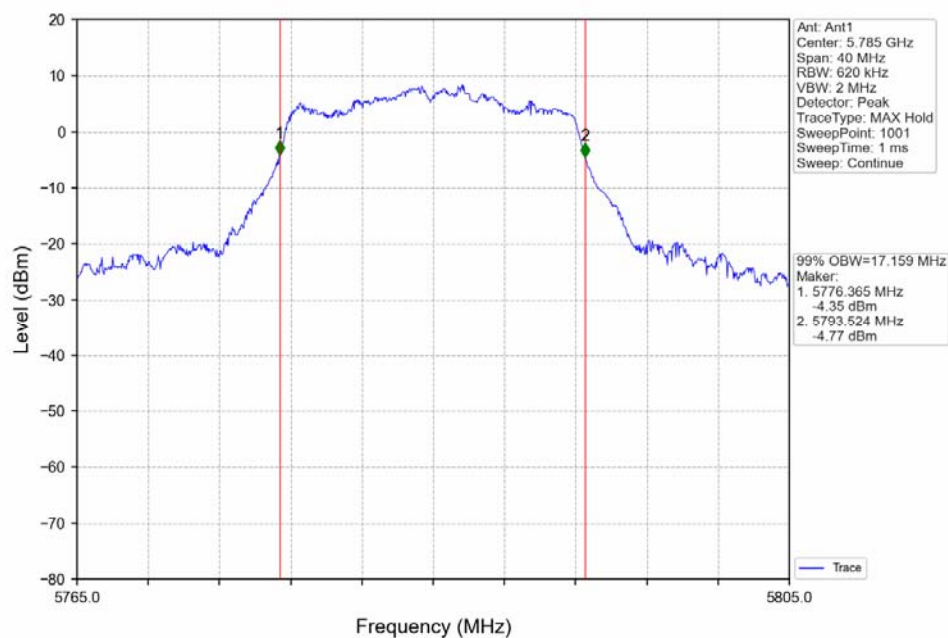
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802.11a_LCH_5745MHz_Ant1_NTNV



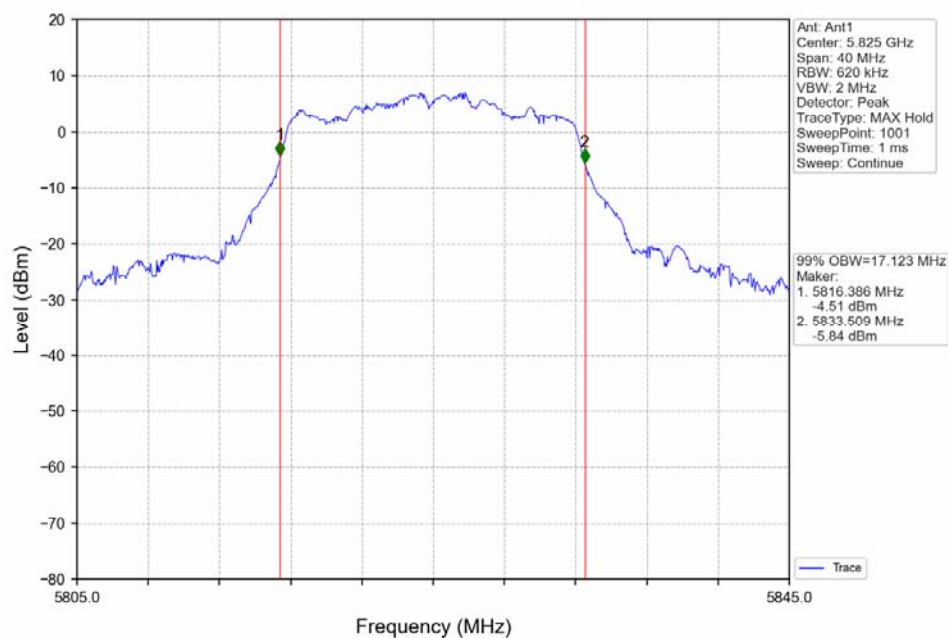
802.11a_MCH_5785MHz_Ant1_NTNV



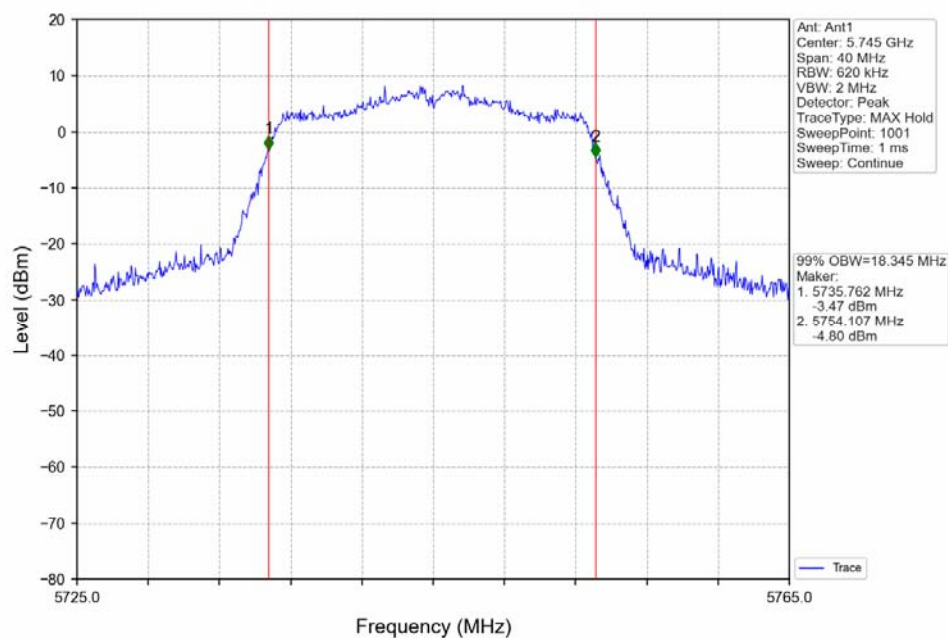
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802.11a_HCH_5825MHz_Ant1_NTNV



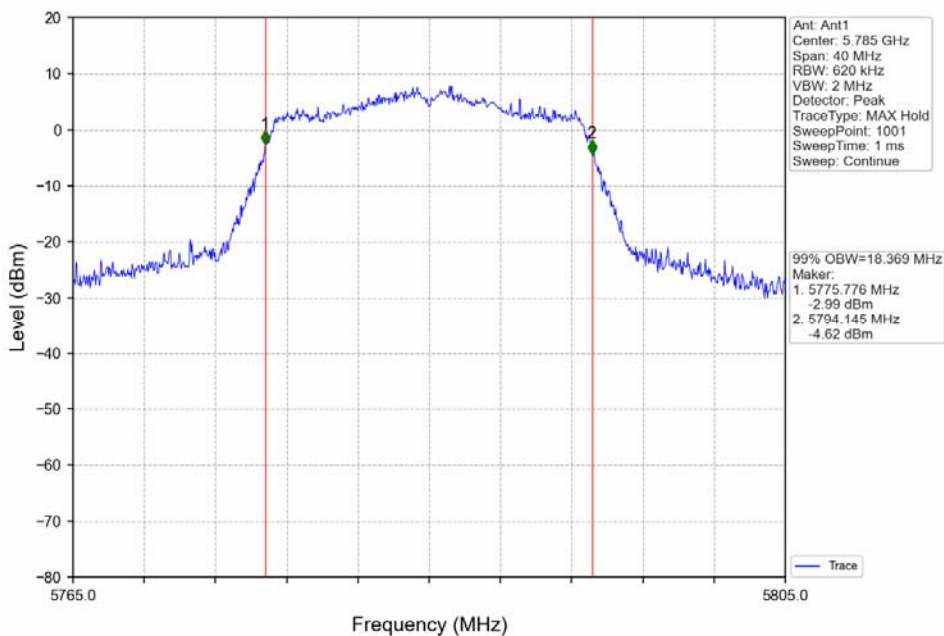
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



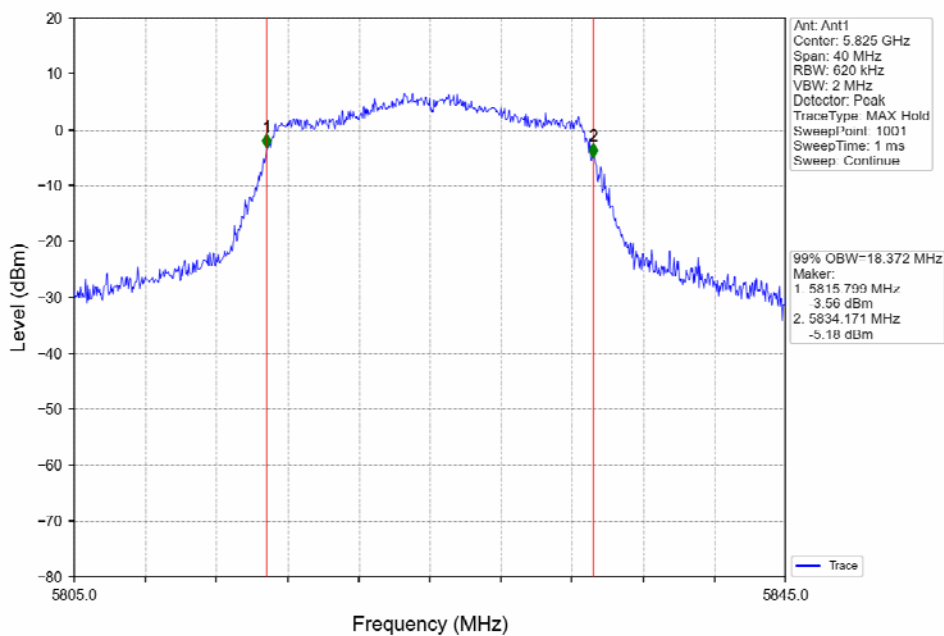
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802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



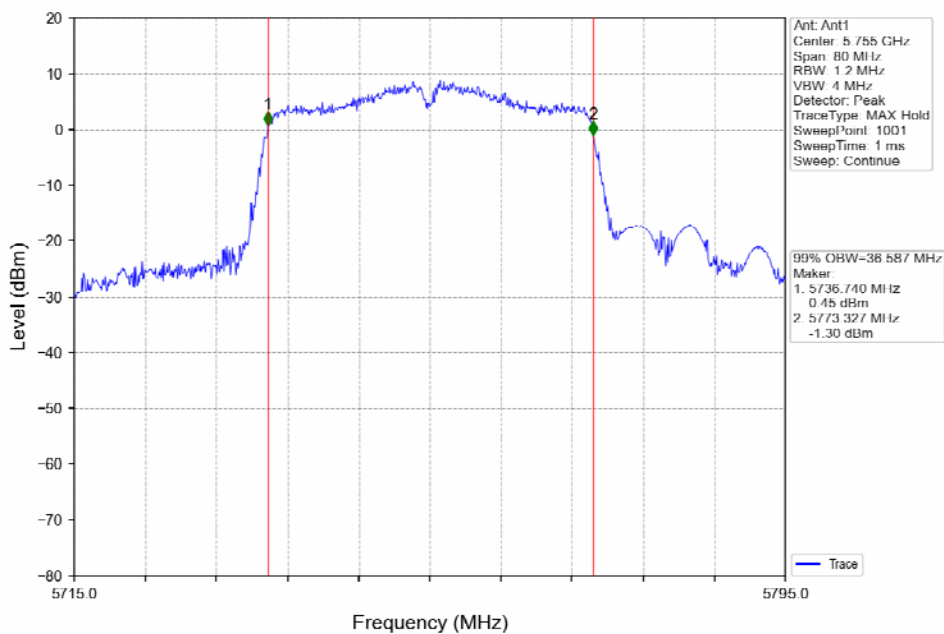
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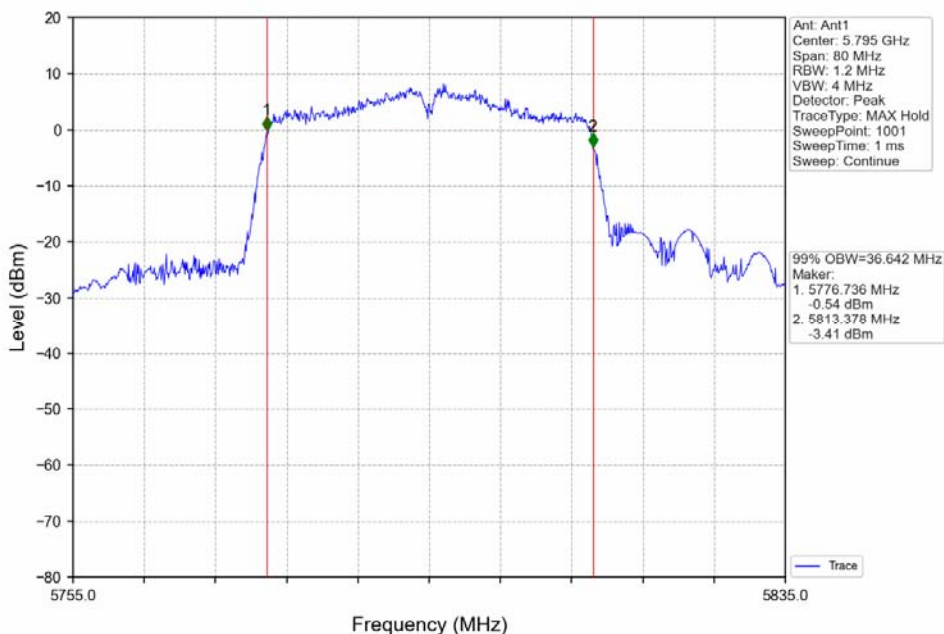
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802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



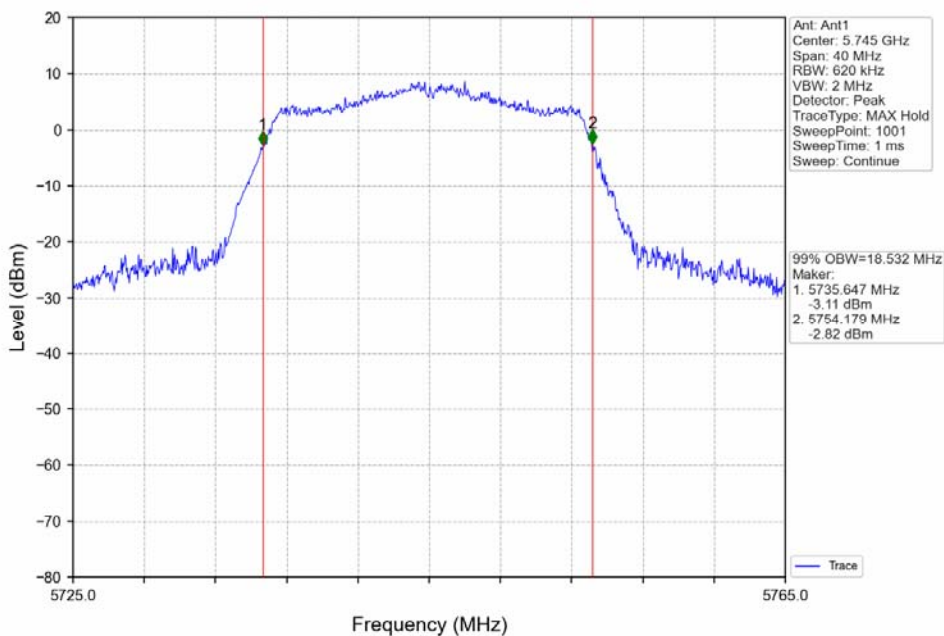
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



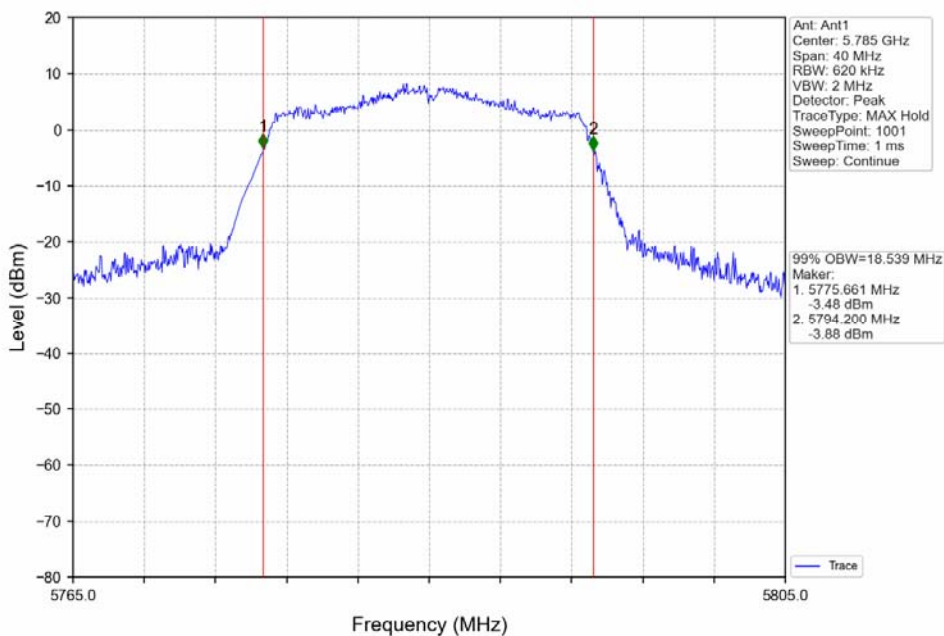
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802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



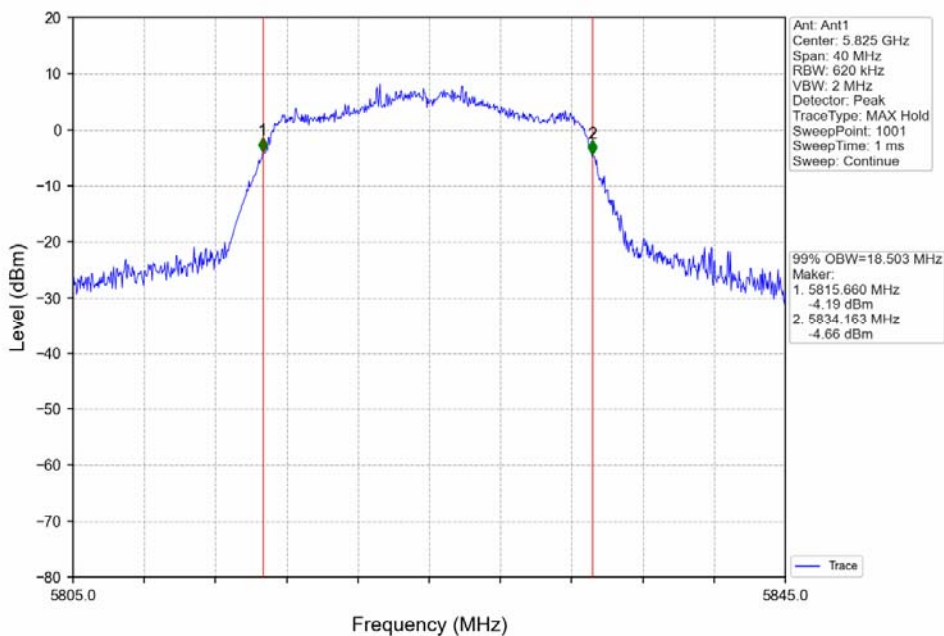
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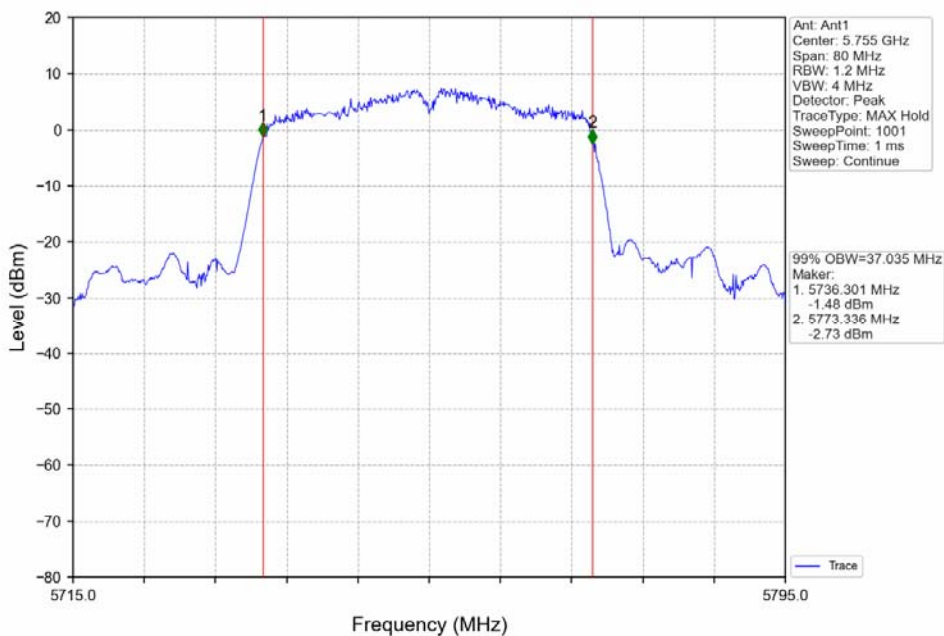
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802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



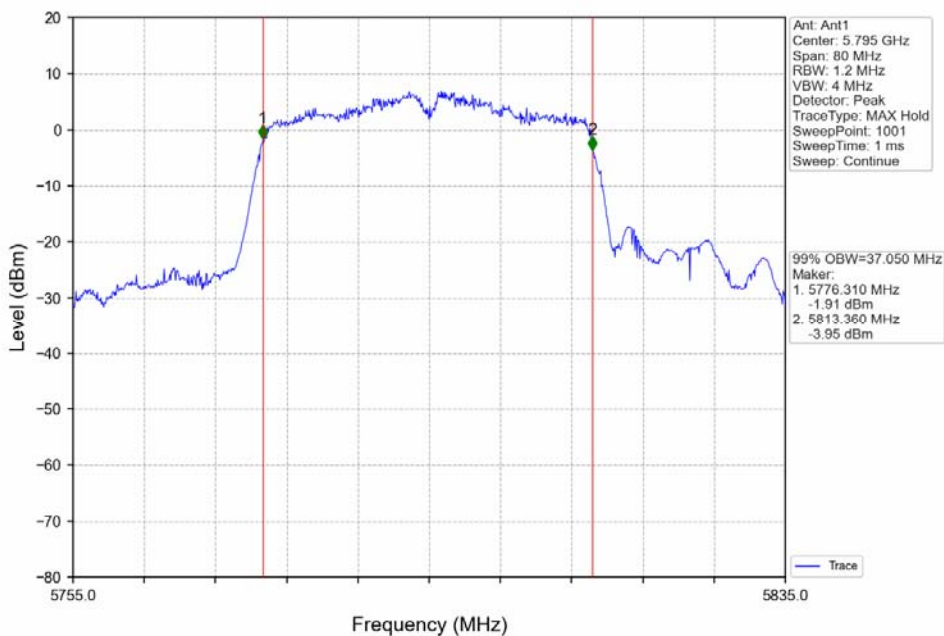
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



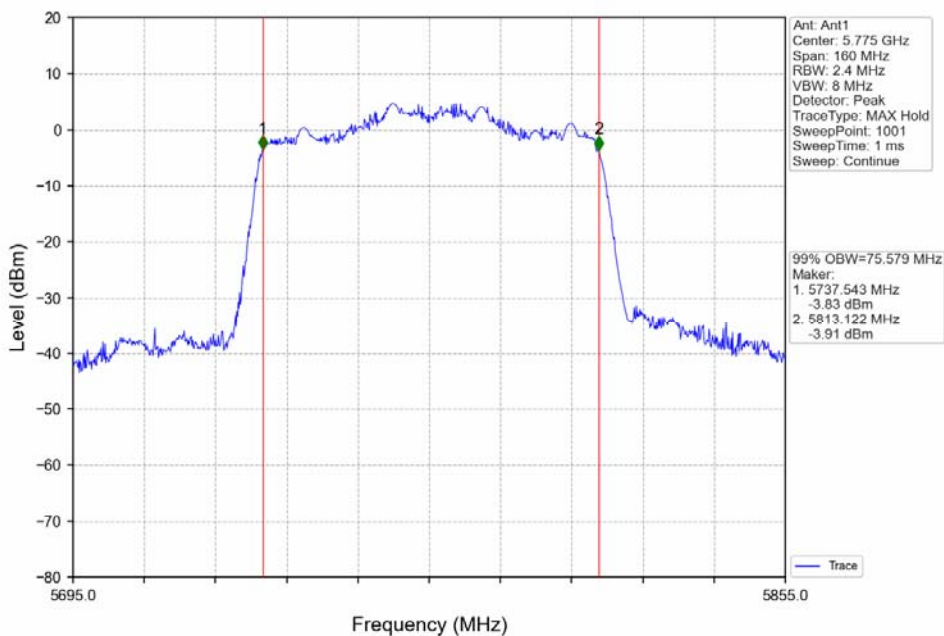
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802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



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| Mode | TX Type | Frequency (MHz) | ANT | 6dB Bandwidth (MHz) | | Verdict |
|------------------|---------|-----------------|-----|---------------------|------------|---------|
| | | | | Result | Limit | |
| 802.11a | SISO | 5745 | 1 | 16.022 | ≥ 0.5 | Pass |
| | | 5785 | 1 | 15.706 | ≥ 0.5 | Pass |
| | | 5825 | 1 | 15.723 | ≥ 0.5 | Pass |
| 802.11n (HT20) | SISO | 5745 | 1 | 17.597 | ≥ 0.5 | Pass |
| | | 5785 | 1 | 17.634 | ≥ 0.5 | Pass |
| | | 5825 | 1 | 16.544 | ≥ 0.5 | Pass |
| 802.11n (HT40) | SISO | 5755 | 1 | 35.777 | ≥ 0.5 | Pass |
| | | 5795 | 1 | 35.498 | ≥ 0.5 | Pass |
| 802.11ac (VHT20) | SISO | 5745 | 1 | 17.660 | ≥ 0.5 | Pass |
| | | 5785 | 1 | 17.591 | ≥ 0.5 | Pass |
| | | 5825 | 1 | 16.985 | ≥ 0.5 | Pass |
| 802.11ac (VHT40) | SISO | 5755 | 1 | 35.763 | ≥ 0.5 | Pass |
| | | 5795 | 1 | 35.240 | ≥ 0.5 | Pass |
| 802.11ac (VHT80) | SISO | 5775 | 1 | 75.225 | ≥ 0.5 | Pass |

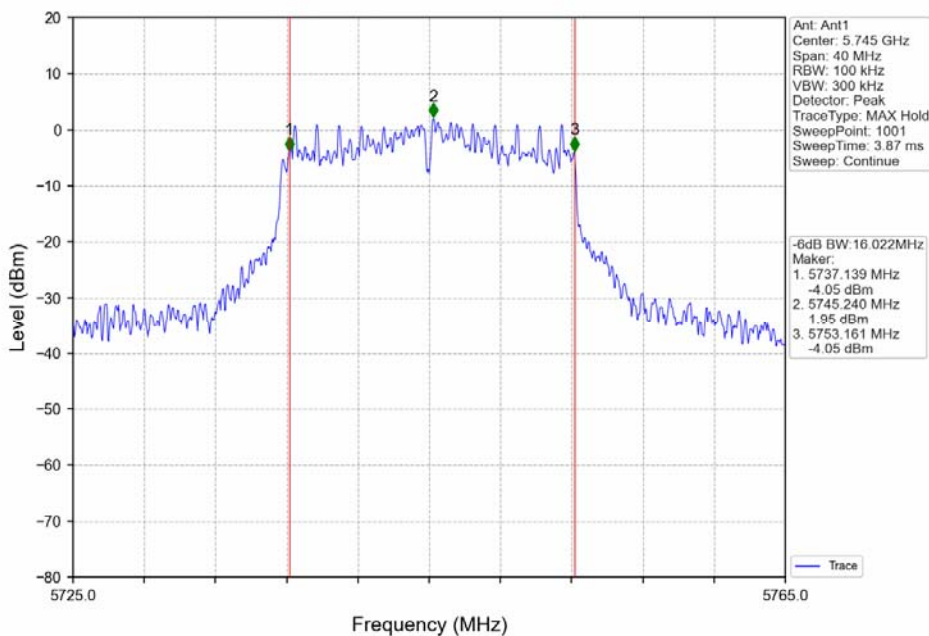
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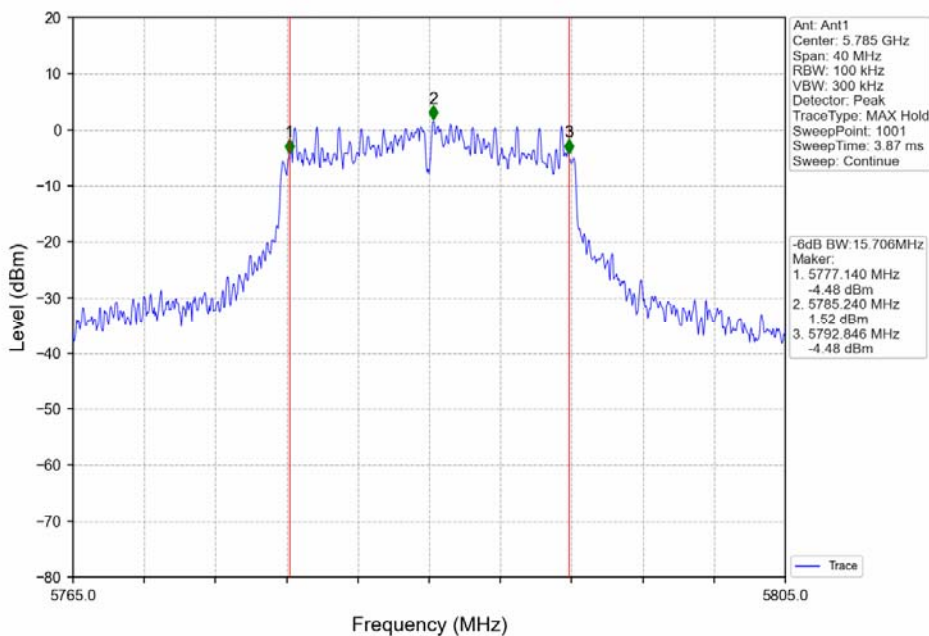
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802.11a_LCH_5745MHz_Ant1_NTNV



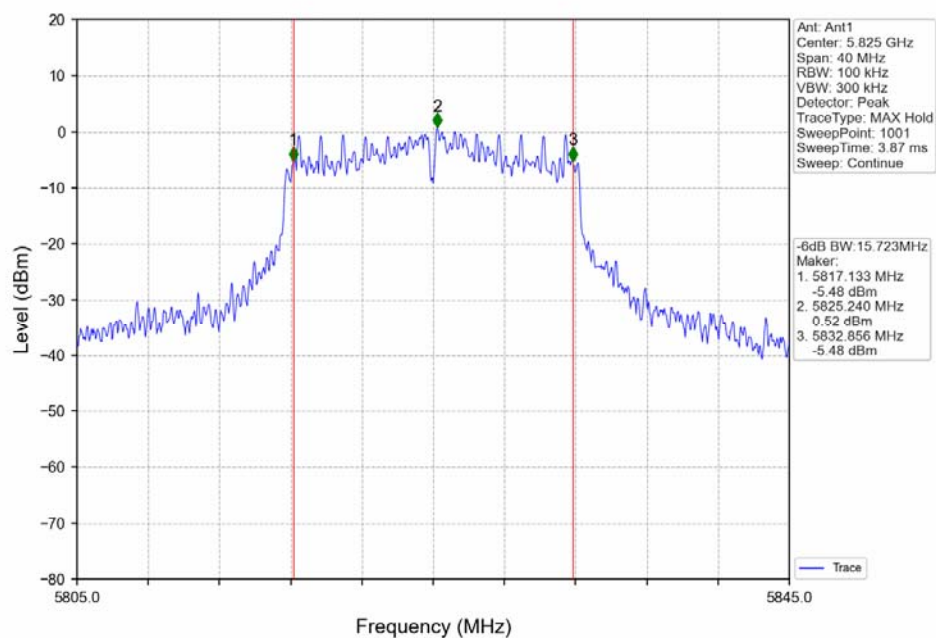
802.11a_MCH_5785MHz_Ant1_NTNV



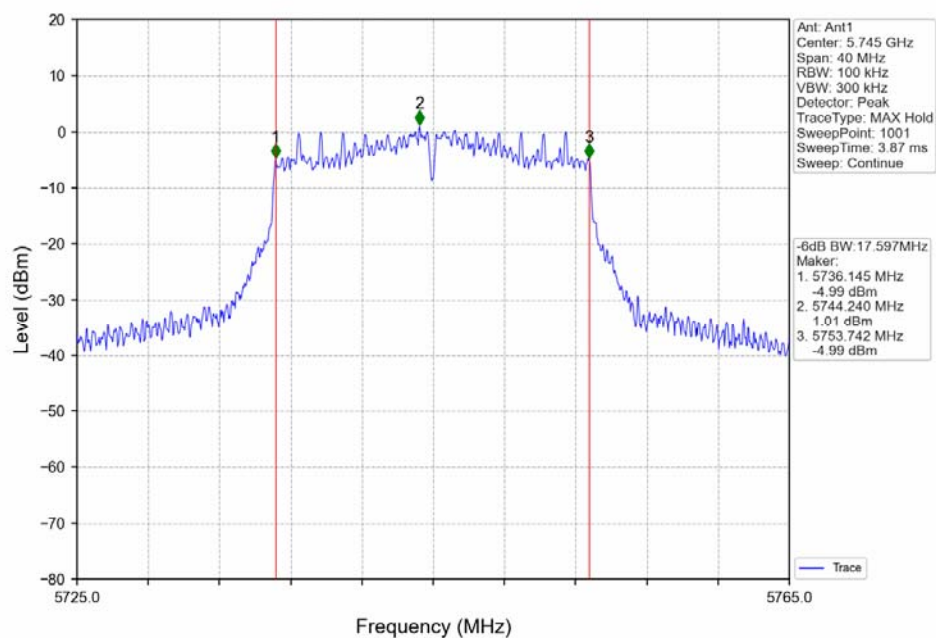
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802.11a_HCH_5825MHz_Ant1_NTNV



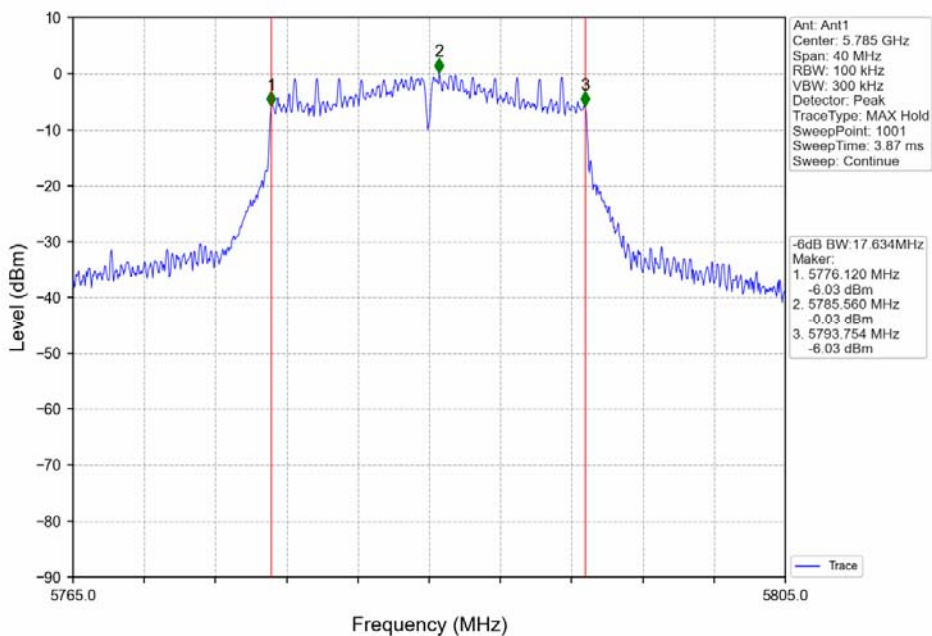
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



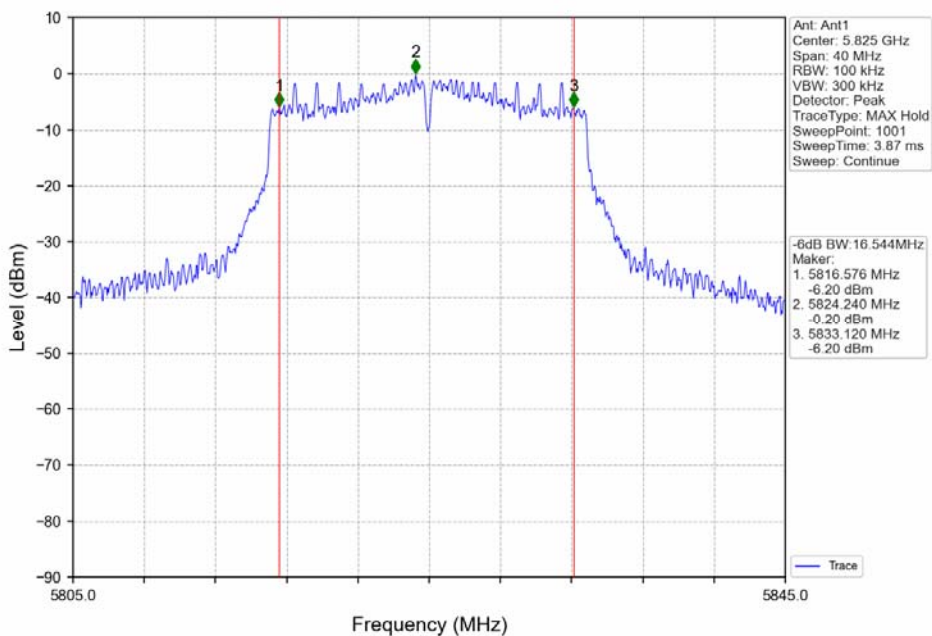
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802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



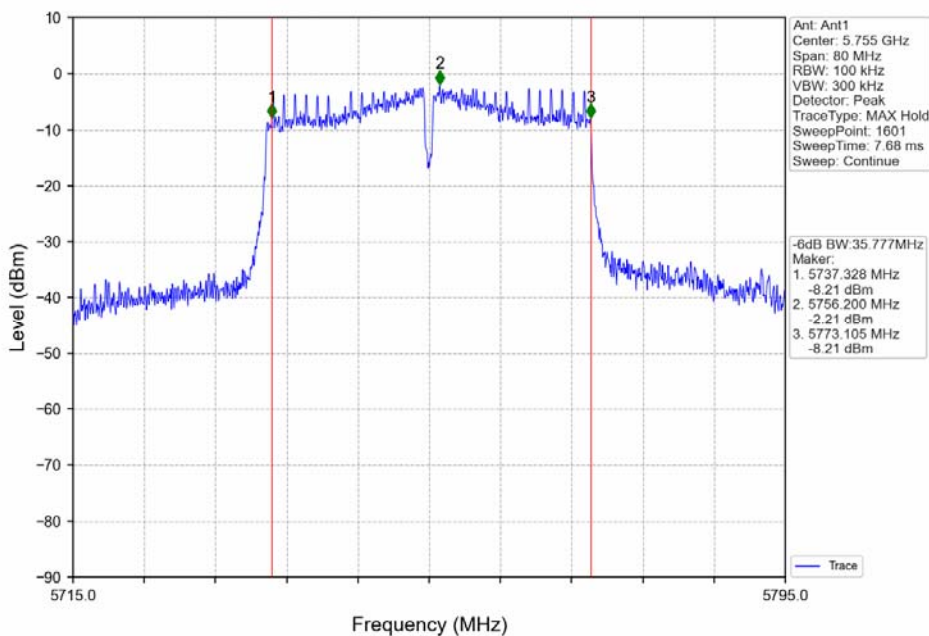
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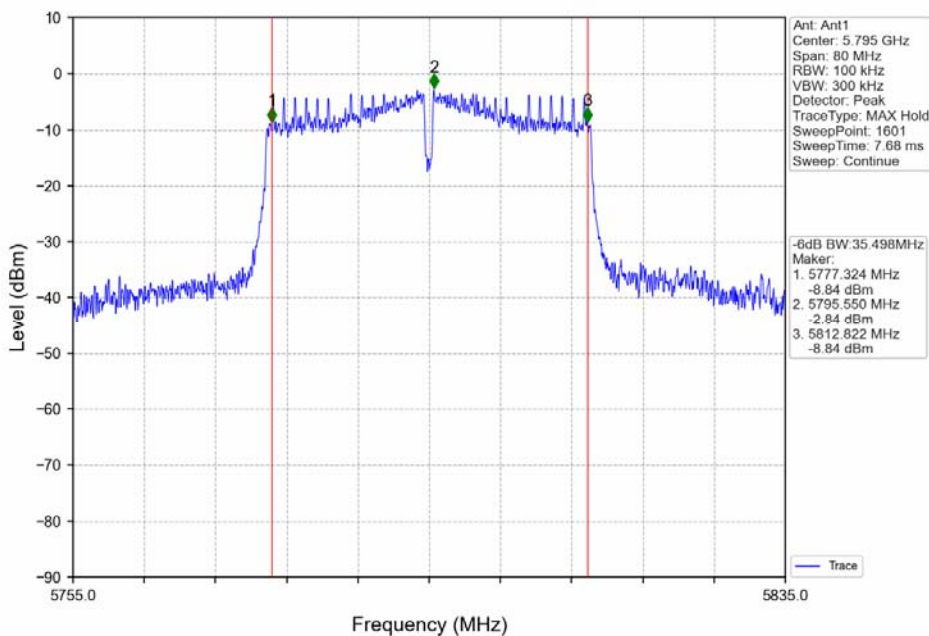
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802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



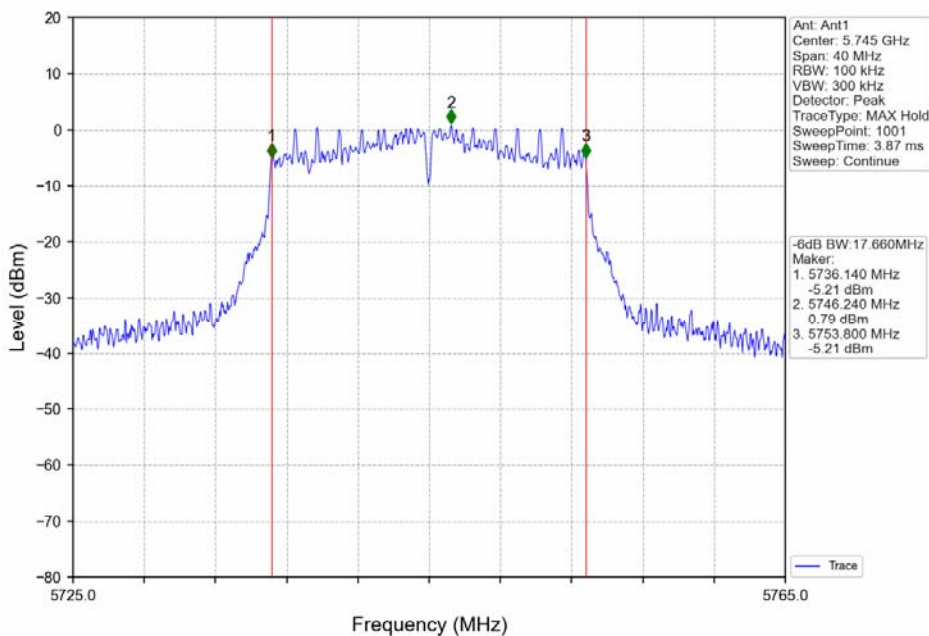
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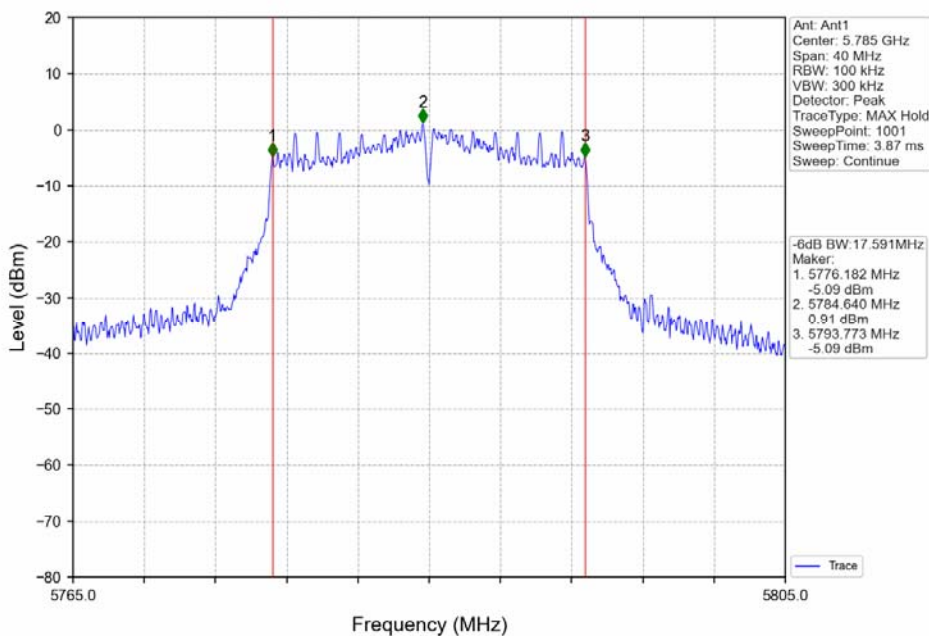
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802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



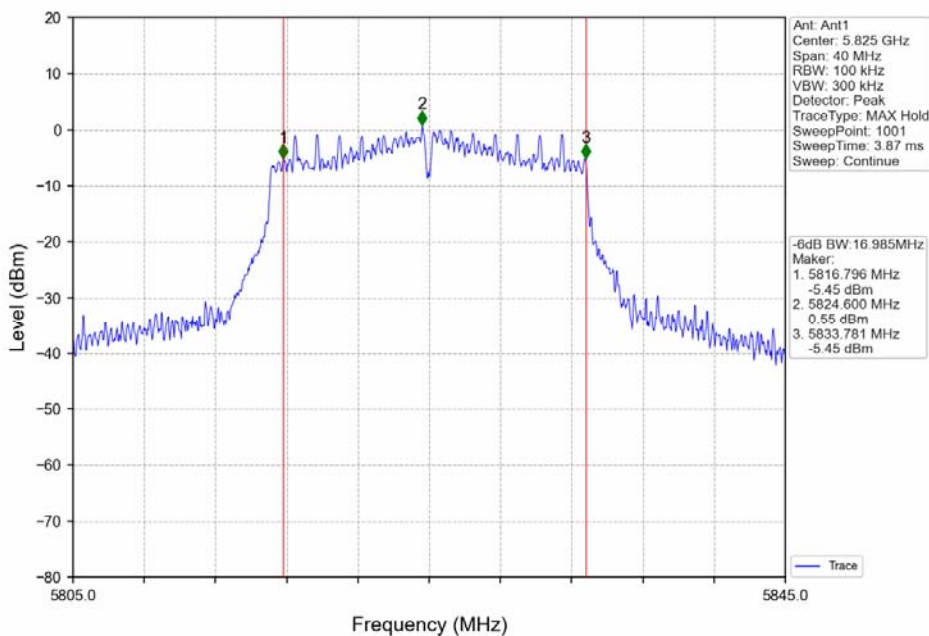
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



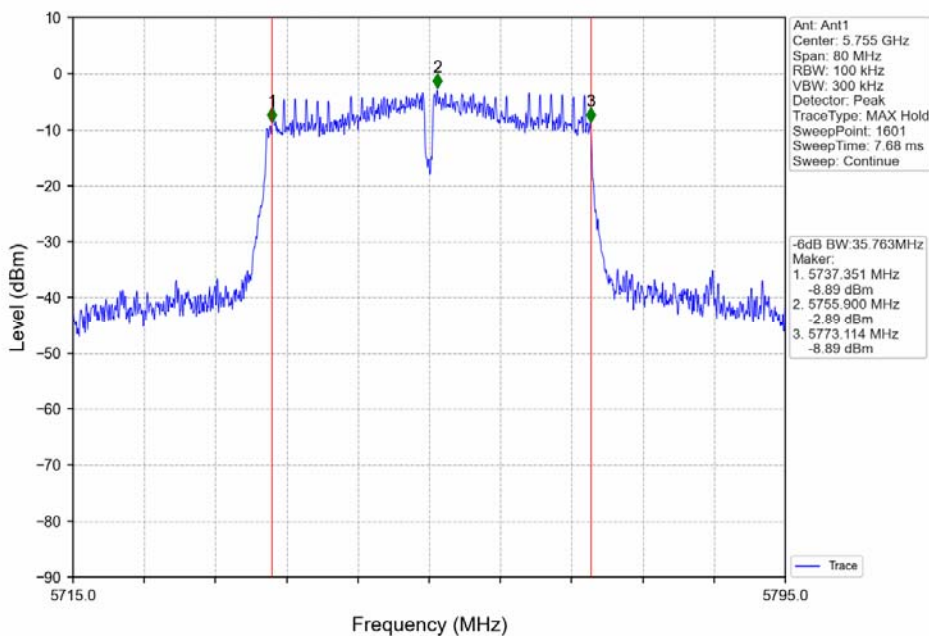
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802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



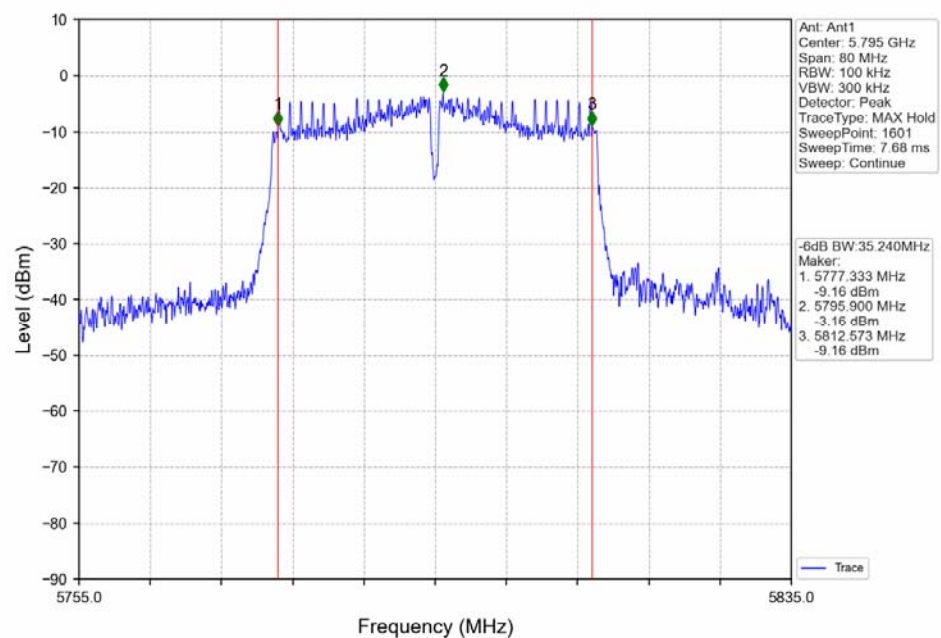
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



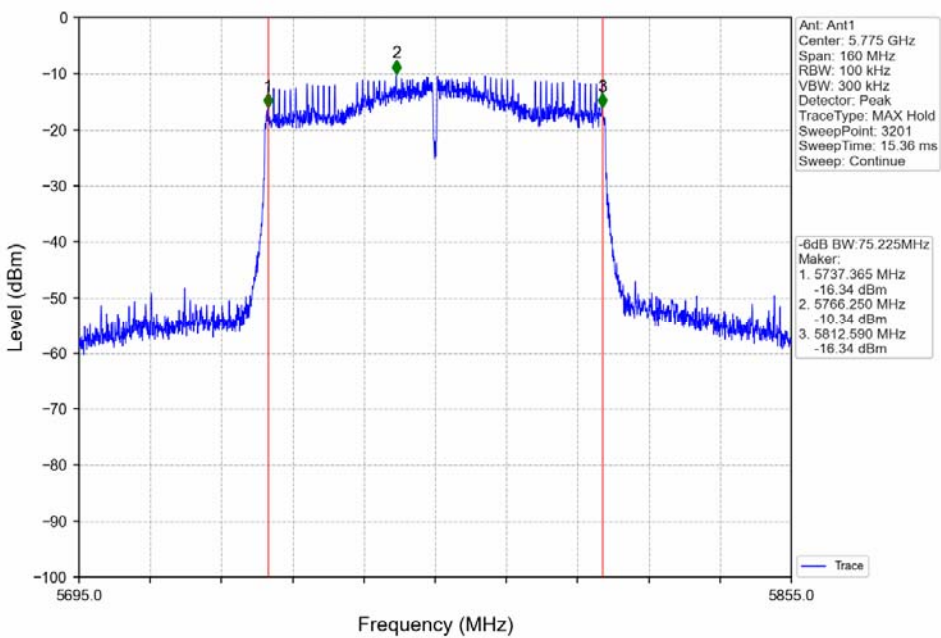
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802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV

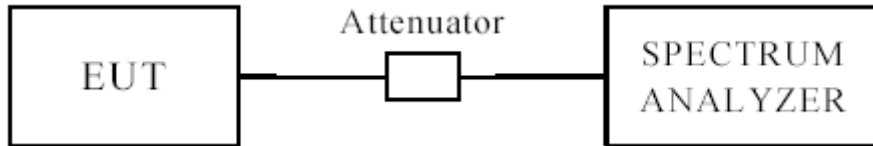


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8.0 Peak Transmit Power Measurement

8.1 Test Setup



8.2 Limits of Peak Transmit Power Measurement

| Operation Band | EUT Category | | Limit |
|----------------|--------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| U-NII-1 | | Outdoor Access Point | 1 Watt (30 dBm) \cong (Max. e.i.r.p 125mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon) |
| | | Fixed point-to-point Access Point | 1 Watt (30 dBm) |
| | | Indoor Access Point | 1 Watt (30 dBm) |
| | ✓ | Mobile and Portable client device | 250mW (24 dBm) |
| U-NII-2A | -- | | 250mW (24 dBm) or 11 dBm+10 log B* |
| U-NII-2C | -- | | 250mW (24 dBm) or 11 dBm+10 log B* |
| U-NII-3 | -- | | 1 Watt (30 dBm) |

Note: Where B is the 26dB emission bandwidth in MHz.

8.3 Test Procedure

The RF power output was measured with a Spectrum analyzer connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the average power was measured

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8.4 Test Results

| Mode | TX Type | Frequency (MHz) | Maximum Average Conducted Output Power (dBm) | | Verdict |
|-------------------------------------|---------|-----------------|----------------------------------------------|-----------|---------|
| | | | ANT1 | Limit | |
| 802.11a | SISO | 5745 | 12.65 | ≤ 30 | Pass |
| | | 5785 | 11.96 | ≤ 30 | Pass |
| | | 5825 | 11.17 | ≤ 30 | Pass |
| 802.11n (HT20) | SISO | 5745 | 11.31 | ≤ 30 | Pass |
| | | 5785 | 10.66 | ≤ 30 | Pass |
| | | 5825 | 9.87 | ≤ 30 | Pass |
| 802.11n (HT40) | SISO | 5755 | 11.45 | ≤ 30 | Pass |
| | | 5795 | 10.38 | ≤ 30 | Pass |
| 802.11ac (VHT20) | SISO | 5745 | 11.42 | ≤ 30 | Pass |
| | | 5785 | 11.12 | ≤ 30 | Pass |
| | | 5825 | 10.12 | ≤ 30 | Pass |
| 802.11ac (VHT40) | SISO | 5755 | 10.50 | ≤ 30 | Pass |
| | | 5795 | 9.78 | ≤ 30 | Pass |
| 802.11ac (VHT80) | SISO | 5775 | 6.89 | ≤ 30 | Pass |
| Note1: Antenna Gain: Ant1: 4.70dBi; | | | | | |

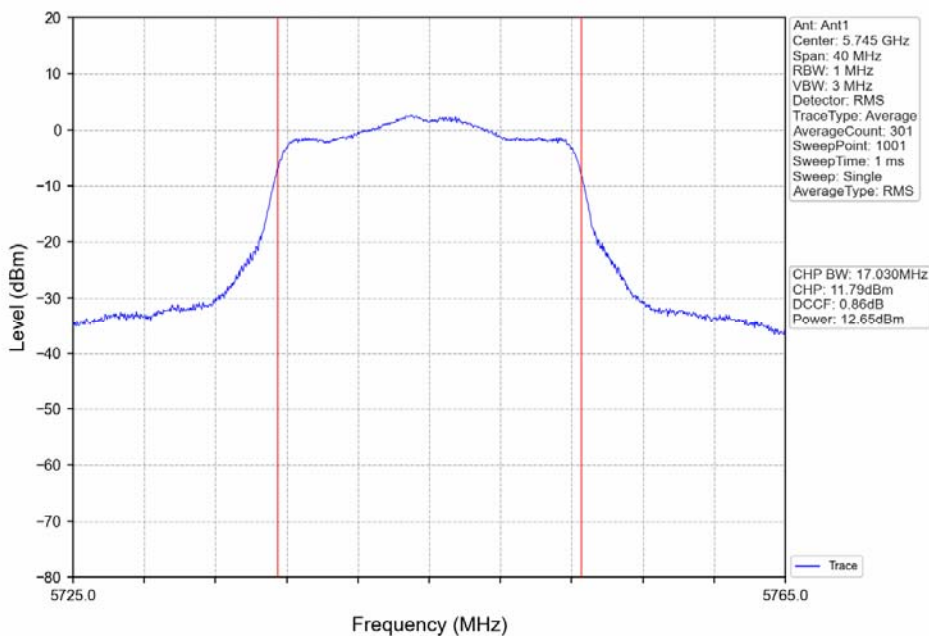
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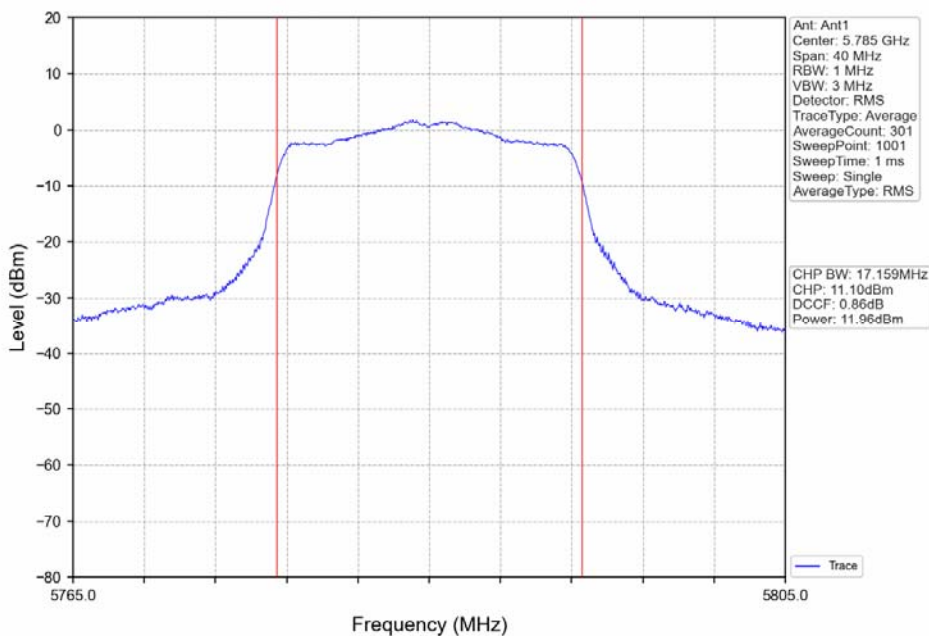
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802.11a_LCH_5745MHz_Ant1_NTNV



802.11a_MCH_5785MHz_Ant1_NTNV



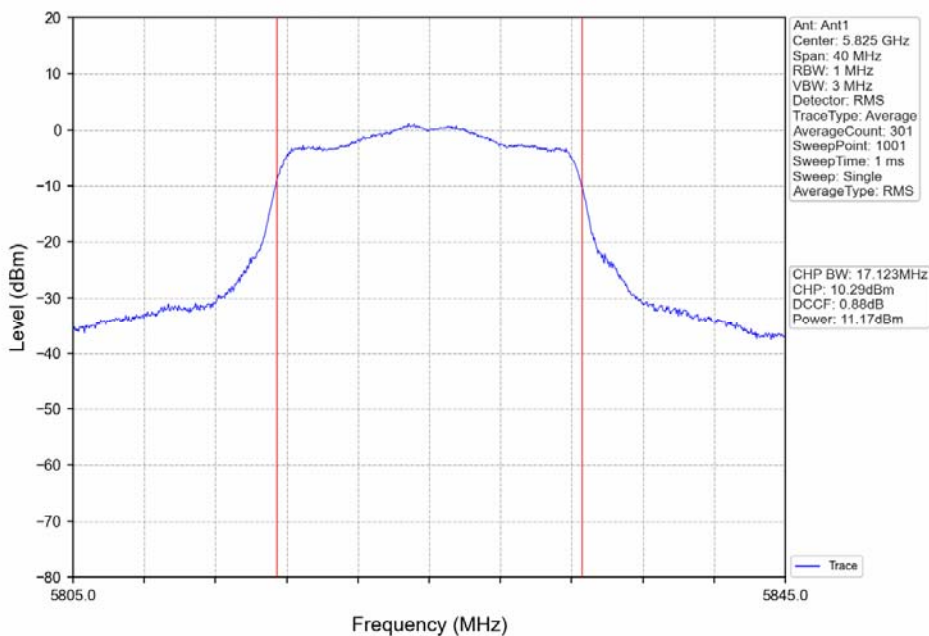
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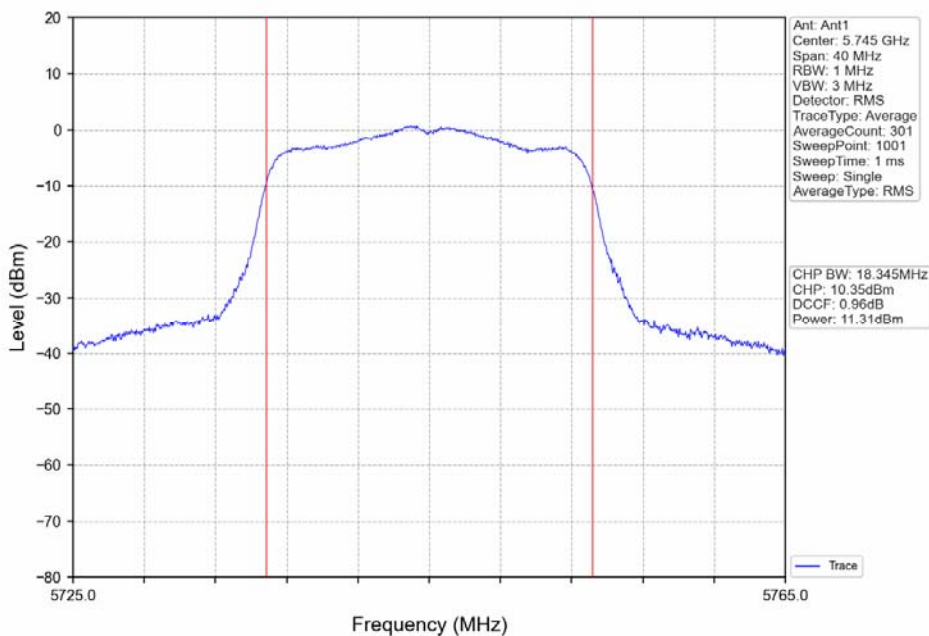
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802.11a_HCH_5825MHz_Ant1_NTNV



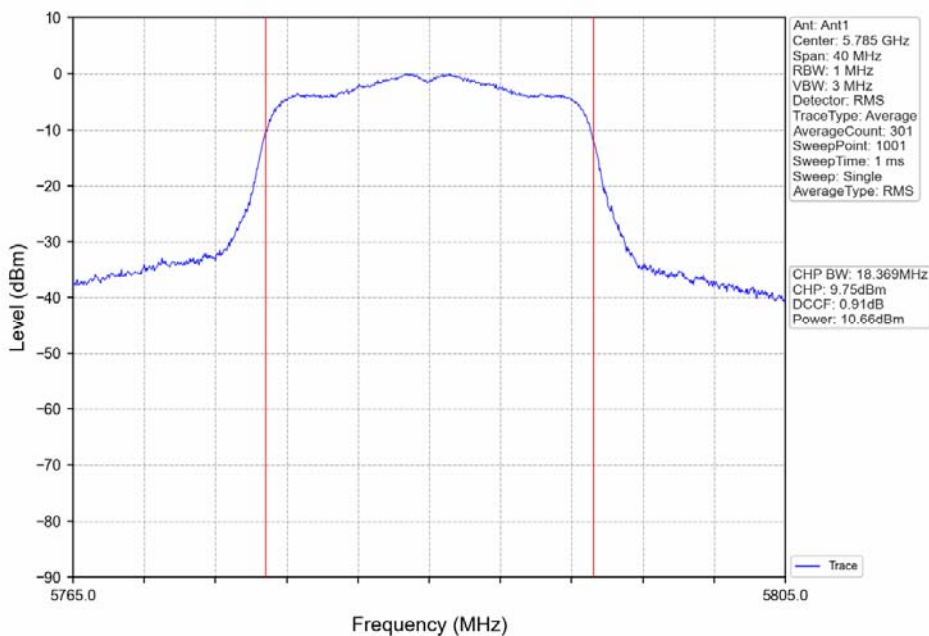
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



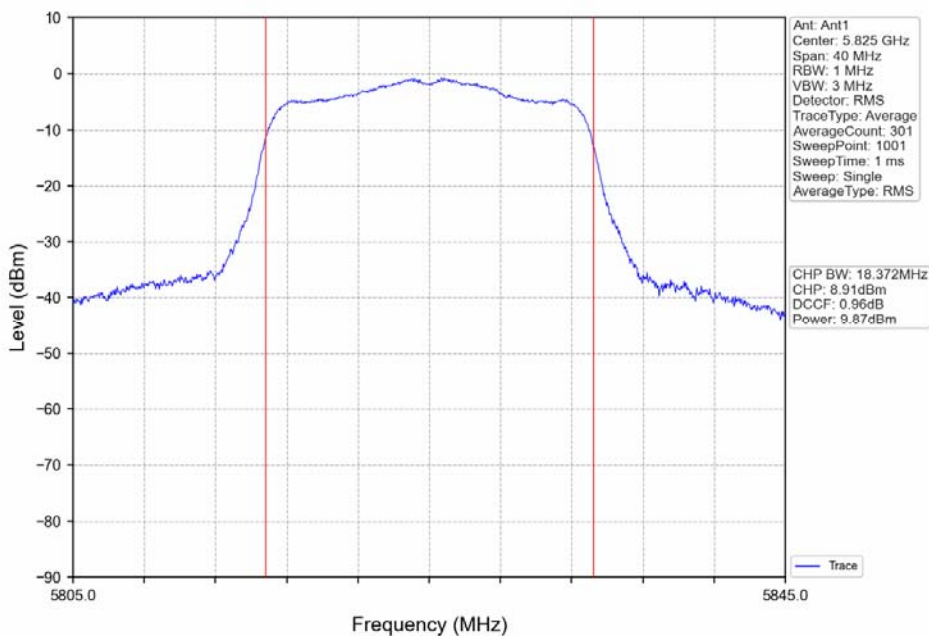
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802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



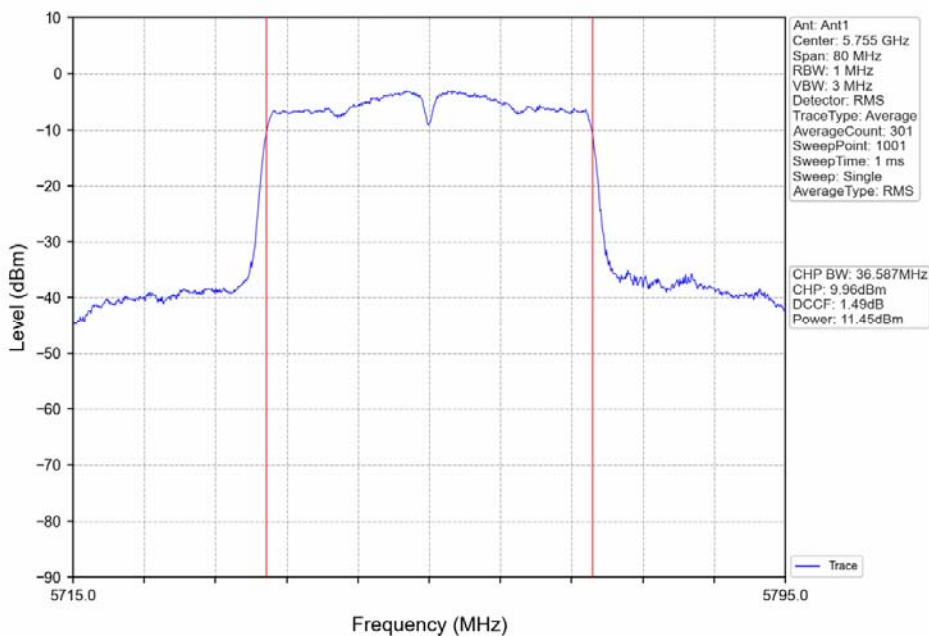
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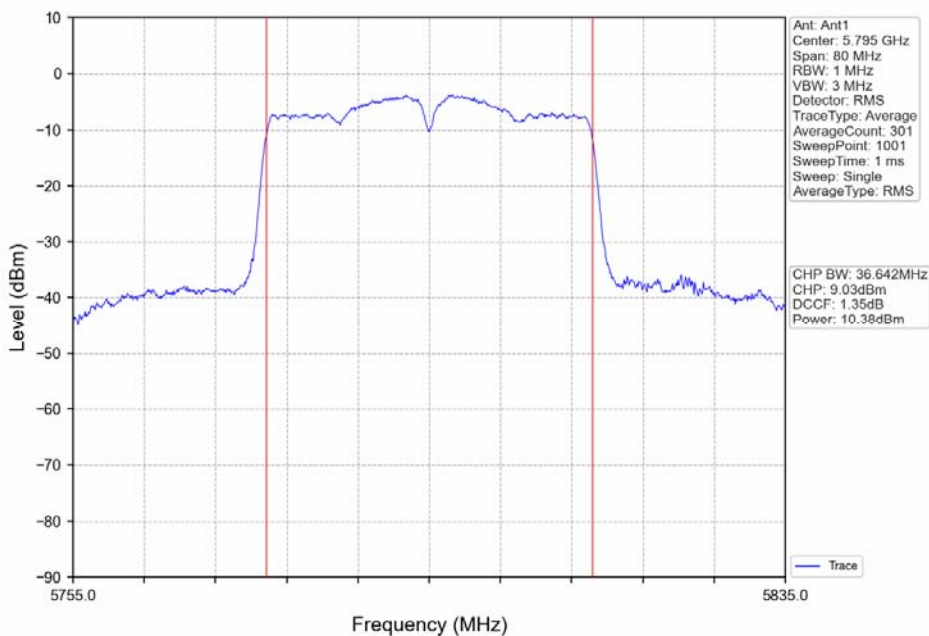
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802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



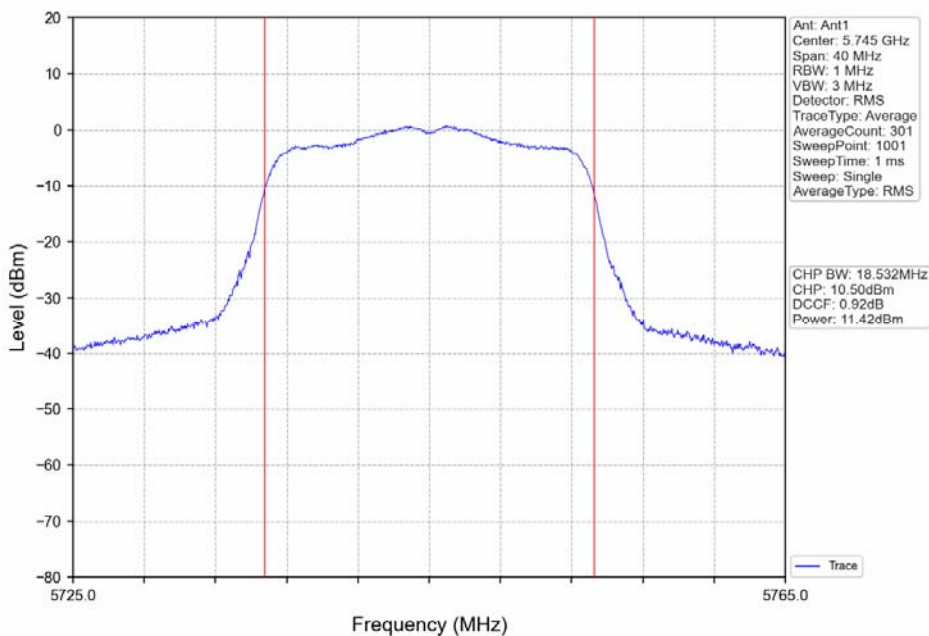
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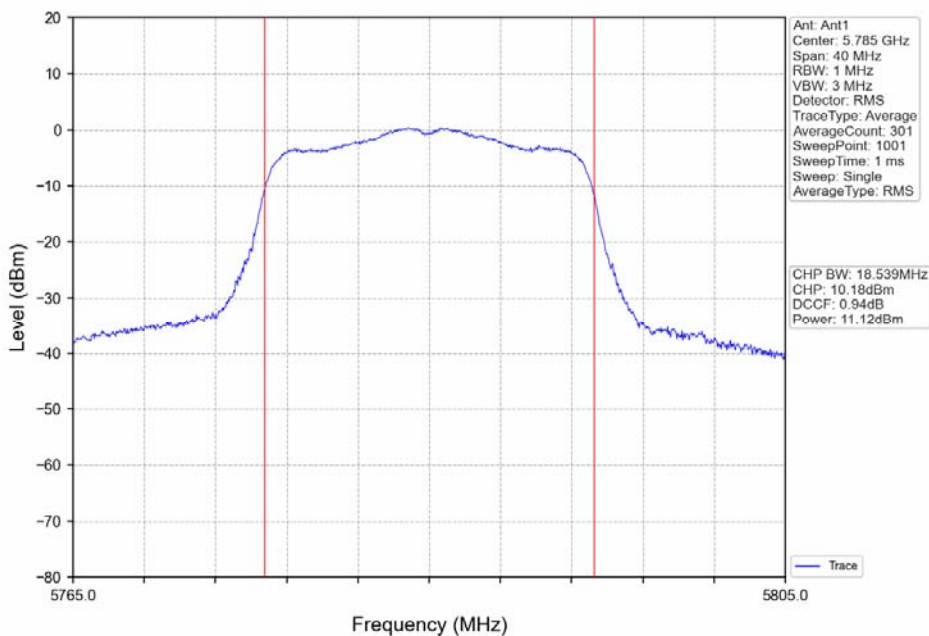
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802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



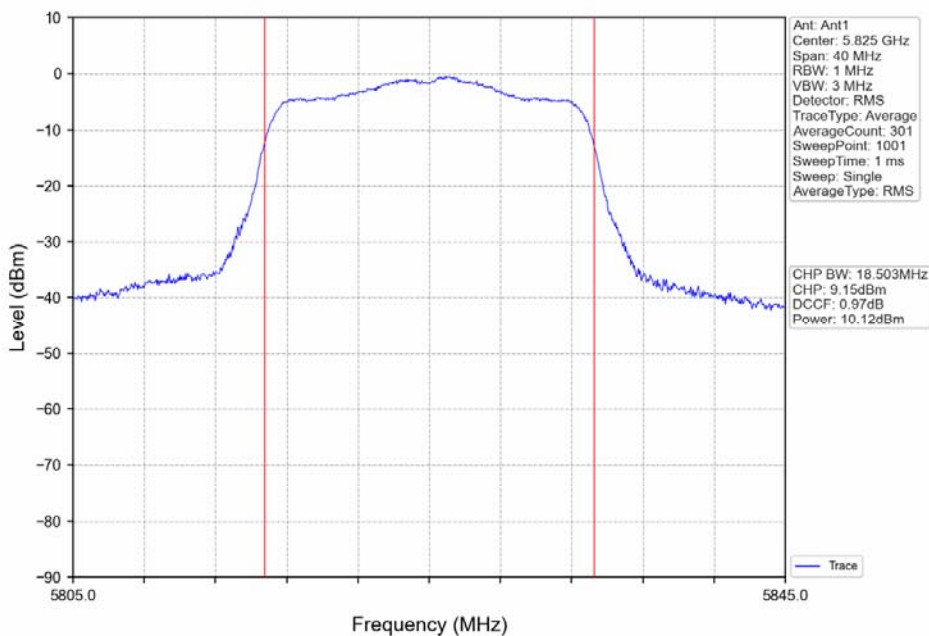
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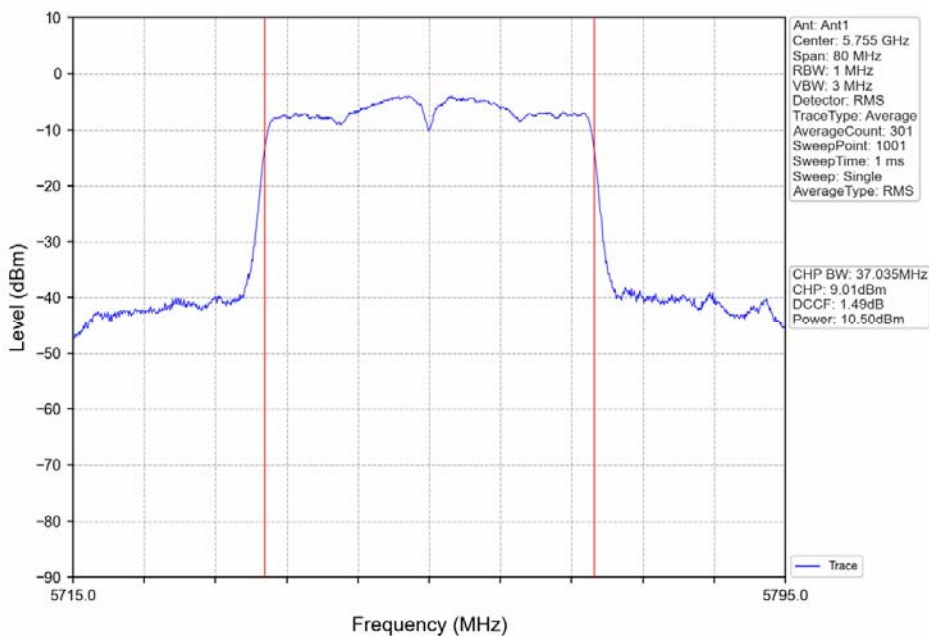
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802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



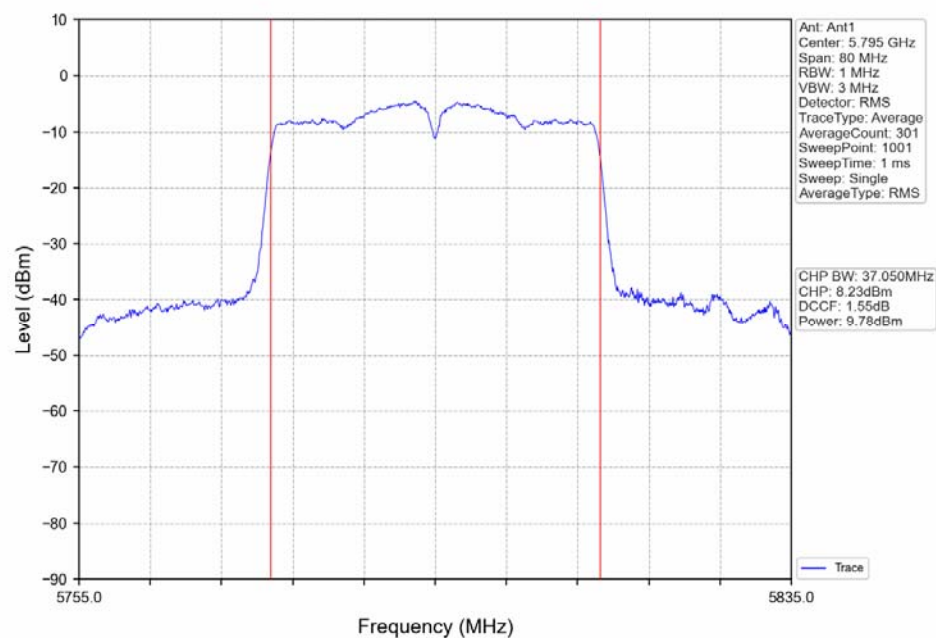
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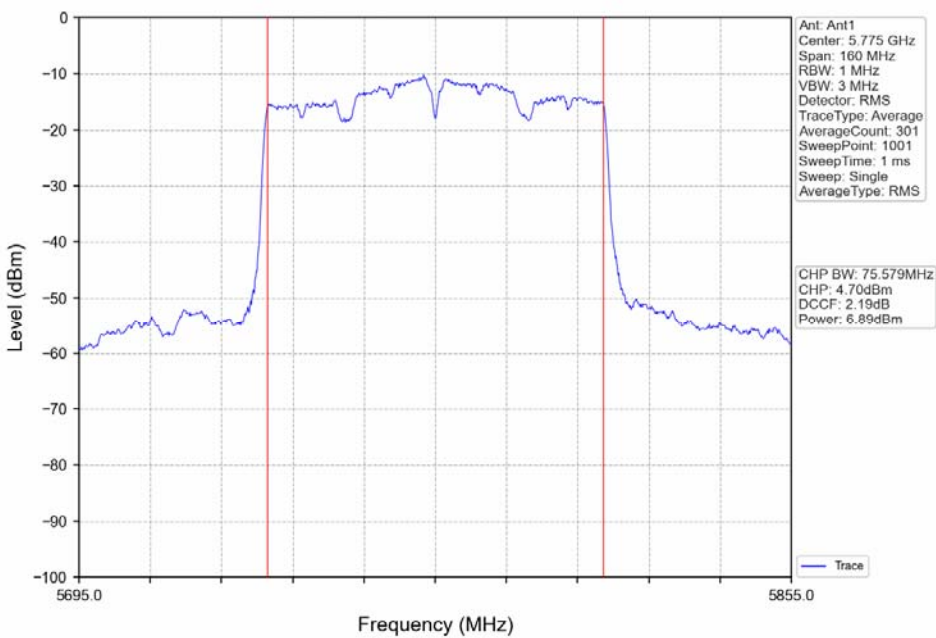
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802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV

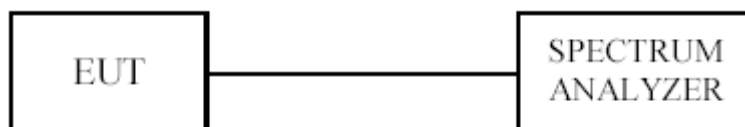


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9. Power Spectral Density Measurement

9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

| Operation Band | EUT Category | | Limit |
|----------------|--------------|-----------------------------------|--------------|
| U-NII-1 | | Outdoor Access Point | 17dBm/MHz |
| | | Fixed point-to-point Access Point | |
| | | Indoor Access Point | |
| | √ | Mobile and Portable client device | 11dBm/MHz |
| U-NII-2A | -- | | 11dBm/MHz |
| U-NII-2C | -- | | 11dBm/MHz |
| U-NII-3 | -- | | 30dBm/500kHz |

9.3 Test Procedure

1. The EUT was directly connected to the spectrum analyzer
2. Set the RBW = 300kHz
3. Set the VBW = 1MHz
4. Set the span to encompass the entire emissions bandwidth (EBW) of the signal
5. Detector = RMS
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.

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9.4 Test Result

| Mode | TX Type | Frequency (MHz) | Maximum PSD (dBm/500kHz) | | Verdict |
|-------------------------------------|---------|-----------------|--------------------------|-----------|---------|
| | | | ANT1 | Limit | |
| 802.11a | SISO | 5745 | 1.12 | ≤ 30 | Pass |
| | | 5785 | 0.08 | ≤ 30 | Pass |
| | | 5825 | -0.43 | ≤ 30 | Pass |
| 802.11n (HT20) | SISO | 5745 | -1.03 | ≤ 30 | Pass |
| | | 5785 | -1.42 | ≤ 30 | Pass |
| | | 5825 | -2.37 | ≤ 30 | Pass |
| 802.11n (HT40) | SISO | 5755 | -4.01 | ≤ 30 | Pass |
| | | 5795 | -4.85 | ≤ 30 | Pass |
| 802.11ac (VHT20) | SISO | 5745 | -0.83 | ≤ 30 | Pass |
| | | 5785 | -1.00 | ≤ 30 | Pass |
| | | 5825 | -1.80 | ≤ 30 | Pass |
| 802.11ac (VHT40) | SISO | 5755 | -4.65 | ≤ 30 | Pass |
| | | 5795 | -5.00 | ≤ 30 | Pass |
| 802.11ac (VHT80) | SISO | 5775 | -11.47 | ≤ 30 | Pass |
| Note1: Antenna Gain: Ant1: 4.70dBi; | | | | | |

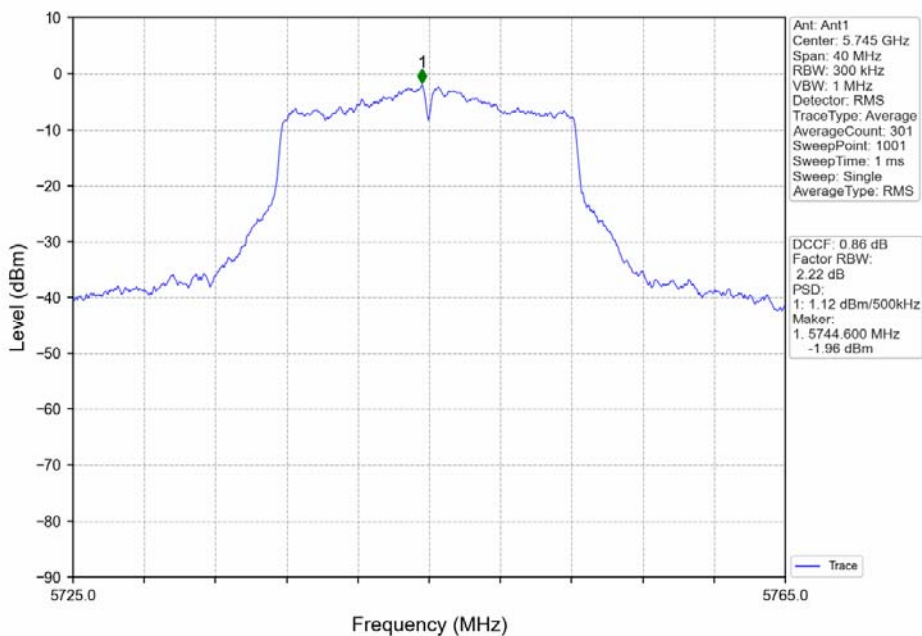
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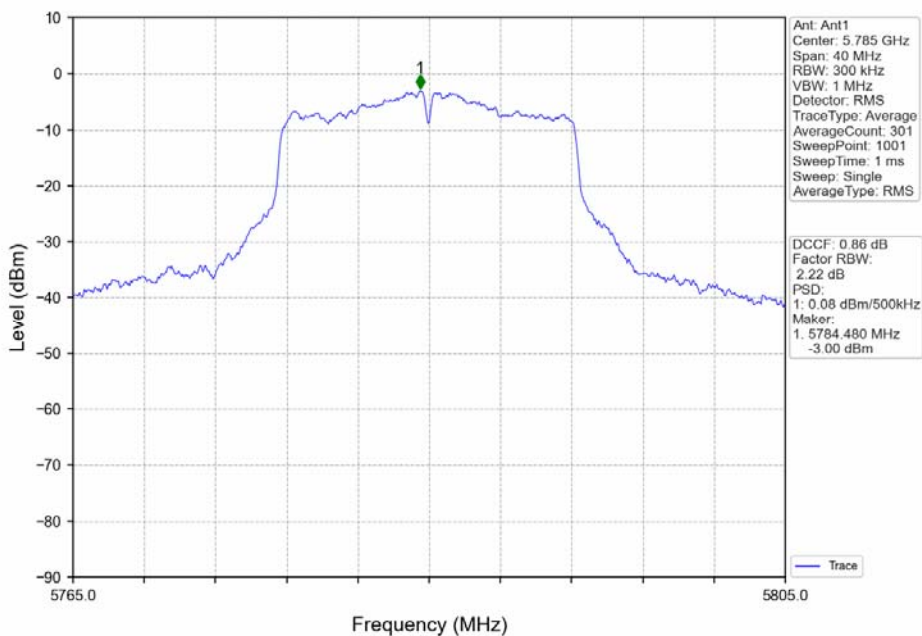
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802.11a_LCH_5745MHz_Ant1_NTNV



802.11a_MCH_5785MHz_Ant1_NTNV



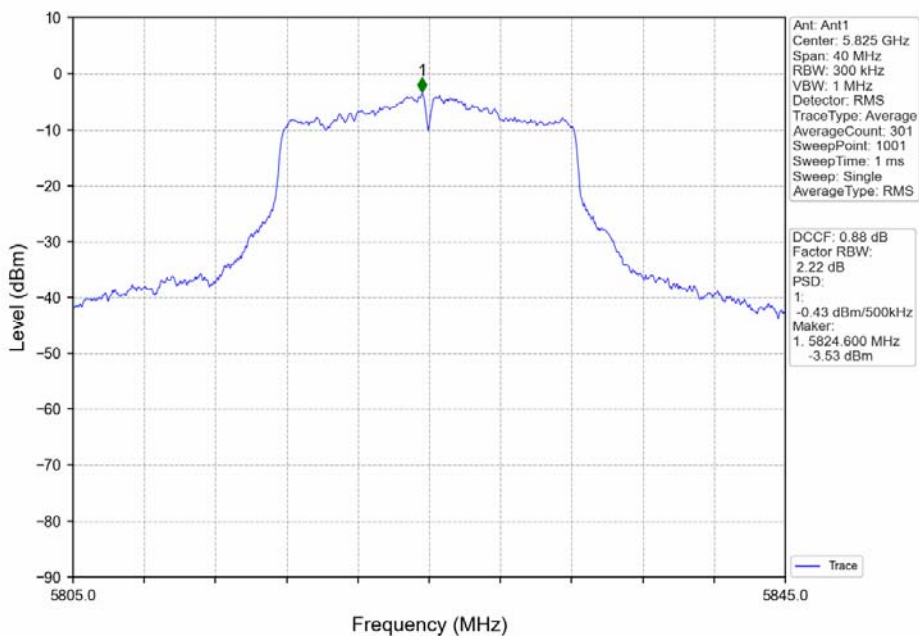
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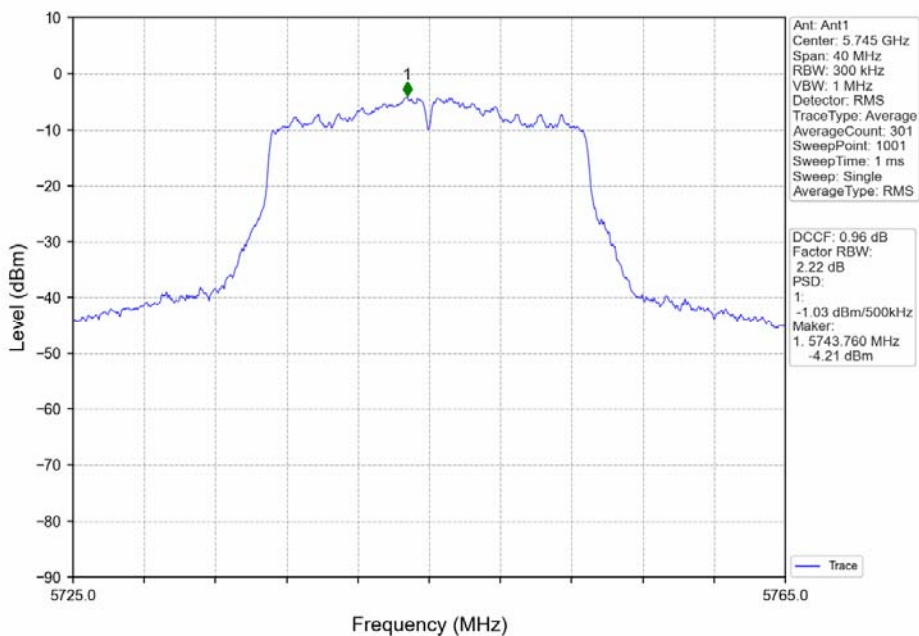
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802.11a_HCH_5825MHz_Ant1_NTNV



802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



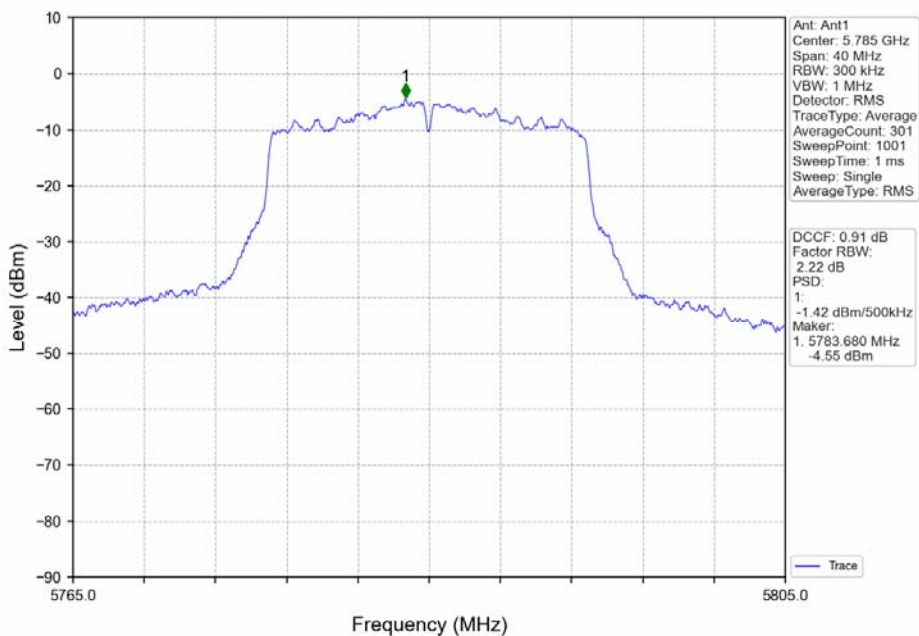
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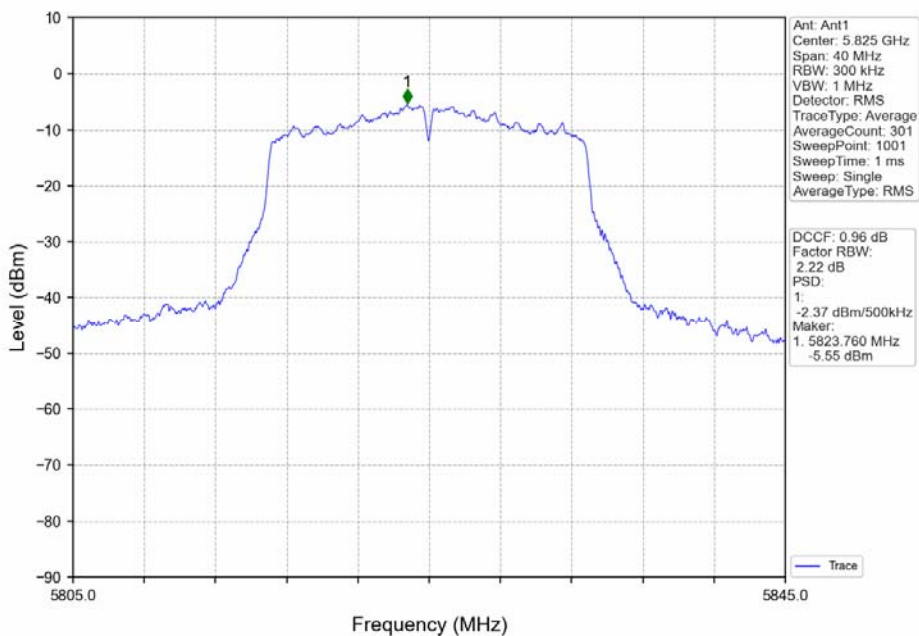
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802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



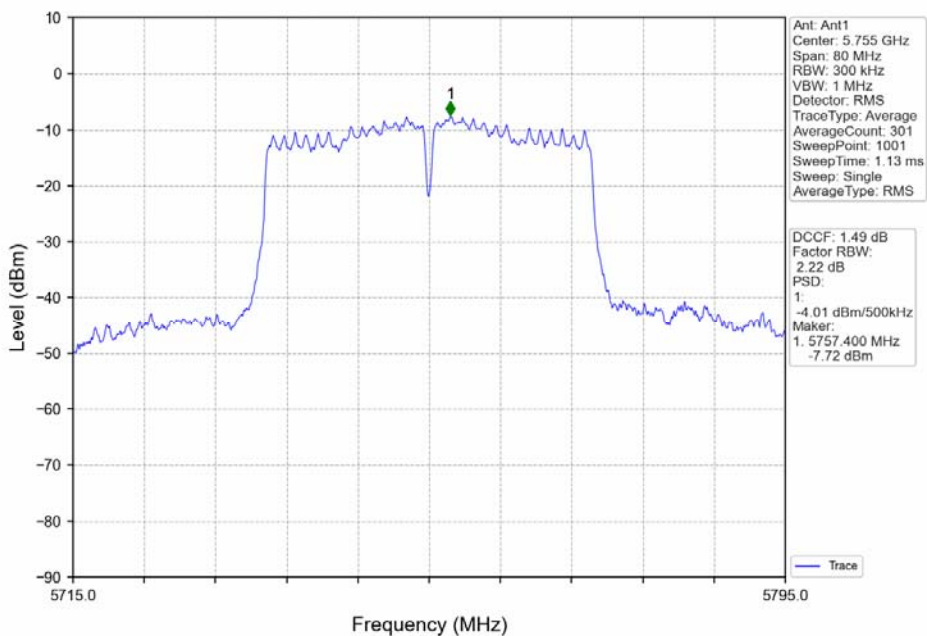
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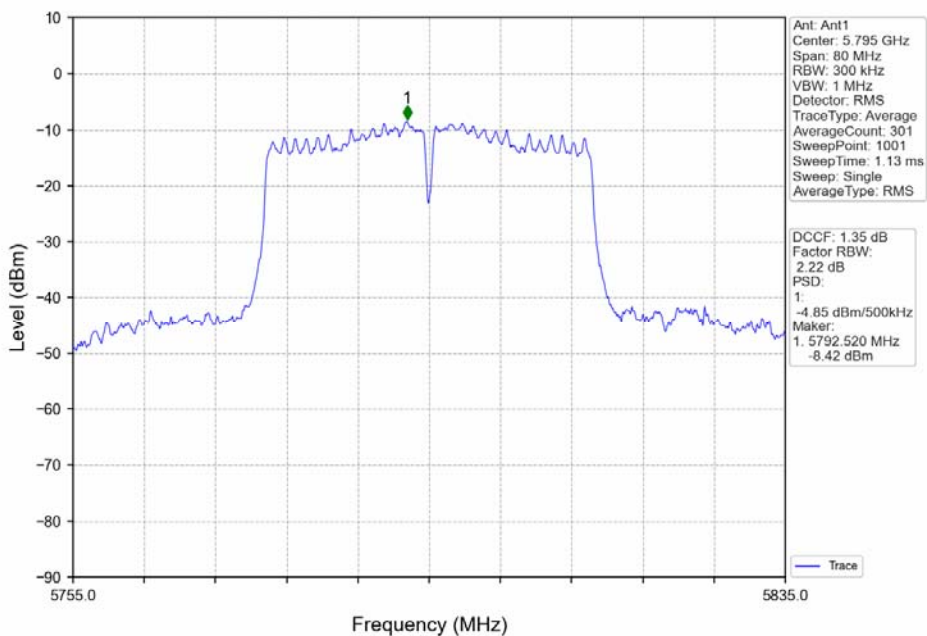
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802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



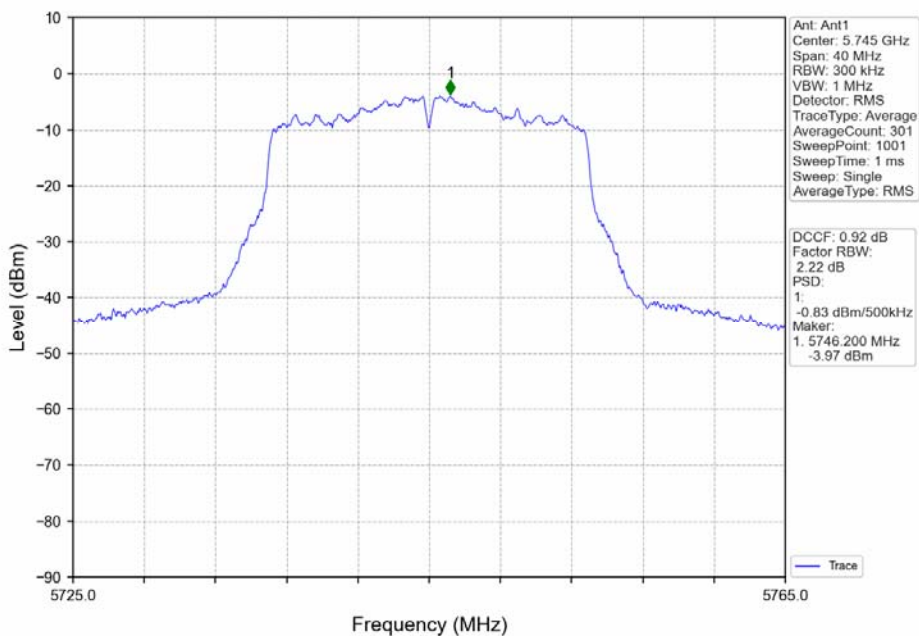
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



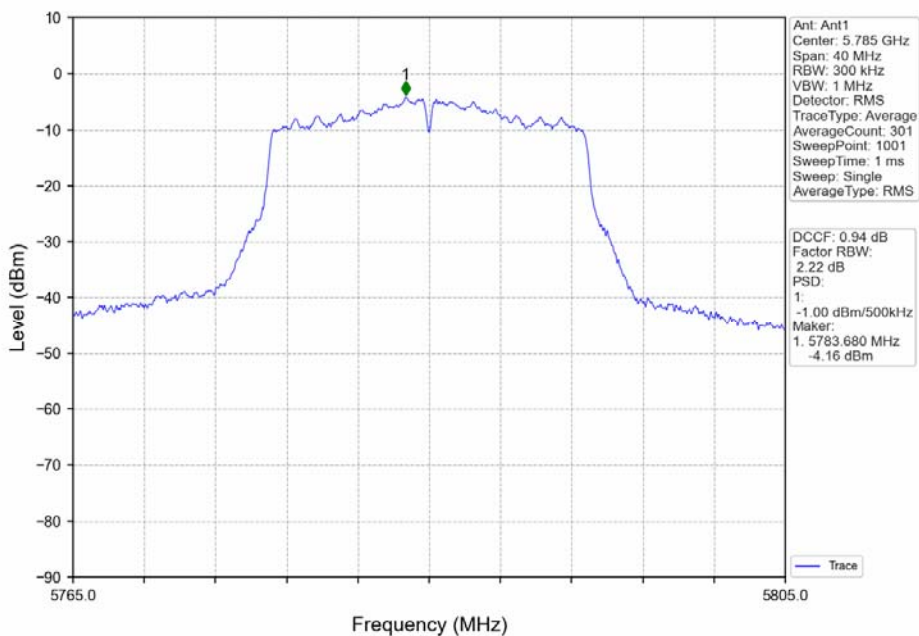
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802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



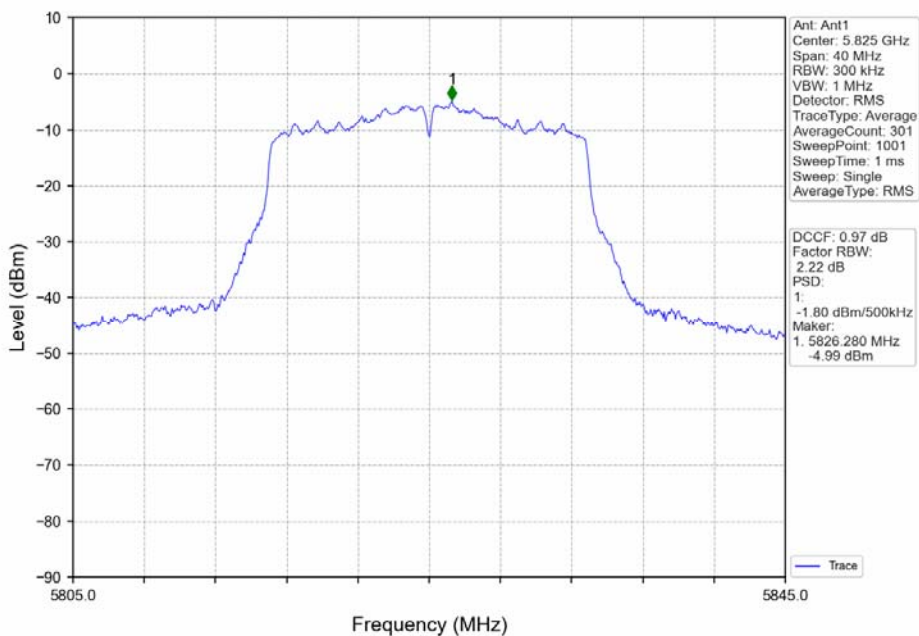
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



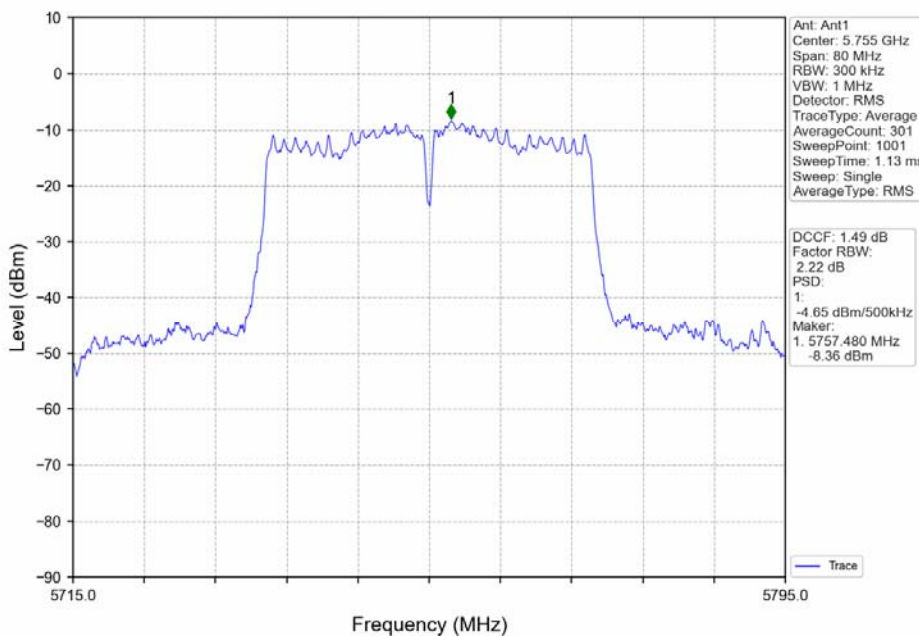
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802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



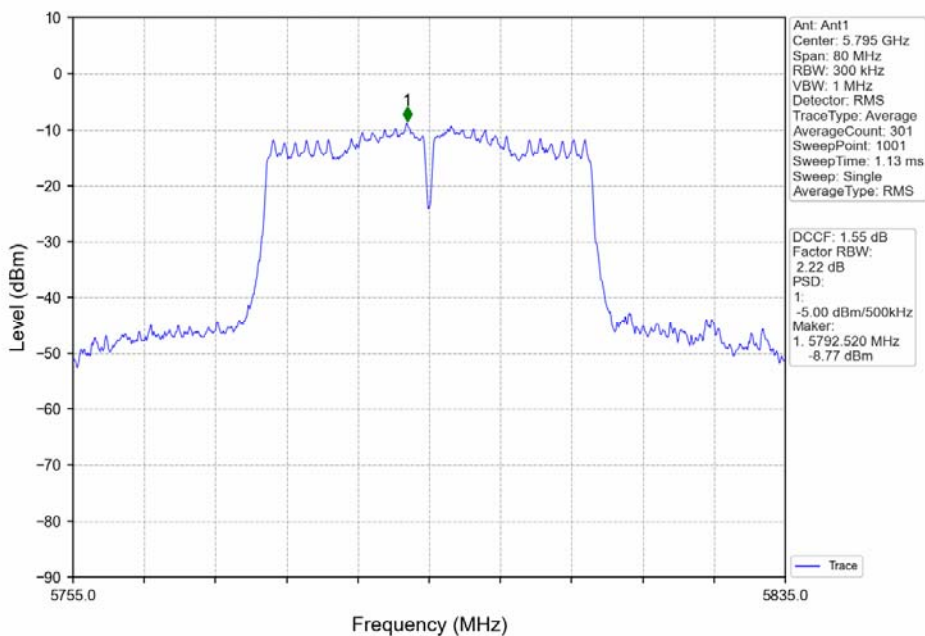
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



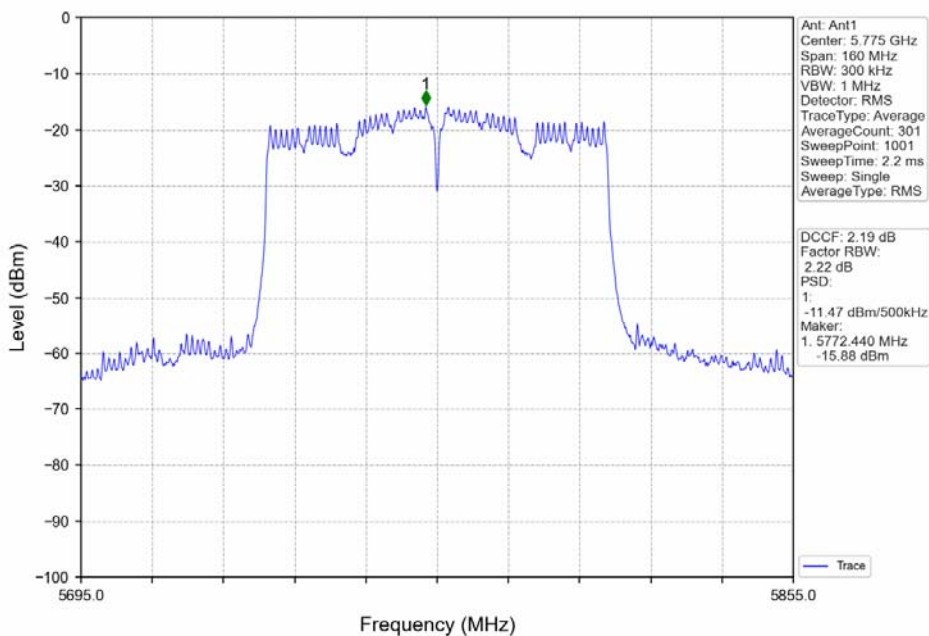
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802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



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10.0 Frequency Stability

10.1 Limits of Frequency Stability Measurement

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.02\%$ of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees

10.2 Test Procedure

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at $+20$ degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

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10.3 Test Result

Test Frequency: 5785MHz

Voltage vs. Frequency Stability

| Voltage | Measurement Frequency (MHz) |
|----------------------|-----------------------------|
| 3.85V | 5785.0479 |
| 3.3V | 5785.0486 |
| 4.2V | 5785.0461 |
| Max. Deviation (MHz) | 0.0486 |
| Max. Deviation (ppm) | 8.40 |

Rated working voltage: DC3.85V

Temperature vs. Frequency Stability

| Temperature (°C) | Measurement Frequency (MHz) |
|----------------------|-----------------------------|
| -30 | 5785.0465 |
| -20 | 5785.0480 |
| -10 | 5785.0472 |
| 0 | 5785.0467 |
| 10 | 5785.0453 |
| 20 | 5785.0470 |
| 30 | 5785.0463 |
| 40 | 5785.0475 |
| 50 | 5785.0468 |
| Max. Deviation (MHz) | 0.0480 |
| Max. Deviation (ppm) | 8.30 |

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11.0 Antenna Requirement

11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2 Antenna Connected construction

Integral antennas used. The gain of the antennas is 4.7dBi maximum. (Get from the antenna specification)

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