

# **FCC REPORT**

## **(UNII)**

**Applicant:** 8Devices

**Address of Applicant:** Gedimino 47, Kaunas, LT-44242, Lithuania

**Equipment Under Test (EUT)**

Product Name: Komikan

Model No.: Komikan

**FCC ID:** Z9W-KOM

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart E Section 15.407

**Date of sample receipt:** 24 Mar., 2020

**Date of Test:** 24 Mar., to 06 May, 2020

**Date of report issued:** 06 May, 2020

**Test Result:** PASS\*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang  
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

## 2 Version

| Version No. | Date         | Description |
|-------------|--------------|-------------|
| 00          | 06 May, 2020 | Original    |
|             |              |             |
|             |              |             |
|             |              |             |
|             |              |             |

Tested by: Mike.ou  
Test Engineer

Date: 06 May, 2020

Reviewed by: Winner Zhang  
Project Engineer

Date: 06 May, 2020

### 3 Contents

Page

|       |                                                               |     |
|-------|---------------------------------------------------------------|-----|
| 1     | COVER PAGE.....                                               | 1   |
| 2     | VERSION.....                                                  | 2   |
| 3     | CONTENTS .....                                                | 3   |
| 4     | TEST SUMMARY .....                                            | 4   |
| 5     | GENERAL INFORMATION .....                                     | 5   |
| 5.1   | CLIENT INFORMATION.....                                       | 5   |
| 5.2   | GENERAL DESCRIPTION OF E.U.T.....                             | 5   |
| 5.3   | TEST ENVIRONMENT AND TEST MODE.....                           | 7   |
| 5.4   | DESCRIPTION OF SUPPORT UNITS.....                             | 7   |
| 5.5   | MEASUREMENT UNCERTAINTY.....                                  | 7   |
| 5.6   | ADDITIONS TO, DEVIATIONS, OR EXCLUSIONS FROM THE METHOD ..... | 7   |
| 5.7   | RELATED SUBMITTAL(S) / GRANT (S) .....                        | 7   |
| 5.8   | LABORATORY FACILITY .....                                     | 8   |
| 5.9   | LABORATORY LOCATION .....                                     | 8   |
| 5.10  | TEST INSTRUMENTS LIST .....                                   | 9   |
| 6     | TEST RESULTS AND MEASUREMENT DATA .....                       | 10  |
| 6.1   | ANTENNA REQUIREMENT .....                                     | 10  |
| 6.2   | CONDUCTED EMISSION .....                                      | 12  |
| 6.3   | CONDUCTED OUTPUT POWER .....                                  | 15  |
| 6.4   | OCCUPY BANDWIDTH .....                                        | 30  |
| 6.5   | POWER SPECTRAL DENSITY .....                                  | 59  |
| 6.6   | BAND EDGE .....                                               | 74  |
| 6.7   | SPURIOUS EMISSION.....                                        | 117 |
| 6.7.1 | Restricted Band.....                                          | 117 |
| 6.7.2 | Unwanted Emissions out of the Restricted Bands .....          | 118 |
| 6.8   | FREQUENCY STABILITY.....                                      | 164 |
| 7     | TEST SETUP PHOTO.....                                         | 166 |
| 8     | EUT CONSTRUCTIONAL DETAILS.....                               | 169 |

## 4 Test Summary

| Test Item                                                                                                                                                                                                                                                    | Section in CFR 47                                                                                   | Test Result |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------|
| Antenna requirement                                                                                                                                                                                                                                          | 15.203 & 15.407 (a)                                                                                 | Pass        |
| AC Power Line Conducted Emission                                                                                                                                                                                                                             | 15.207                                                                                              | Pass        |
| Conducted Peak Output Power                                                                                                                                                                                                                                  | 15.407 (a) (1) (iv) & (a) (3)                                                                       | Pass        |
| 26dB Occupied Bandwidth                                                                                                                                                                                                                                      | 15.407 (a) (5)                                                                                      | Pass        |
| 6dB Emission Bandwidth                                                                                                                                                                                                                                       | 15.407(e)                                                                                           | Pass        |
| Power Spectral Density                                                                                                                                                                                                                                       | 15.407 (a) (1) (iv) & (a) (3)                                                                       | Pass        |
| Band Edge                                                                                                                                                                                                                                                    | 15.407(b)                                                                                           | Pass        |
| Spurious Emission                                                                                                                                                                                                                                            | 15.407 (b) & 15.205 & 15.209                                                                        | Pass        |
| Frequency Stability                                                                                                                                                                                                                                          | 15.407(g)                                                                                           | Pass        |
| <b>Remark:</b><br>1. Pass: The EUT complies with the essential requirements in the standard.<br>2. N/A: Not Applicable.<br>3. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 1.0dB (provided by the customer). |                                                                                                     |             |
| <b>Test Method:</b>                                                                                                                                                                                                                                          | ANSI C63.4-2014<br>ANSI C63.10-2013<br>KDB 789033 D02 General UNII Test Procedures New Rules v02r01 |             |

## 5 General Information

### 5.1 Client Information

|                        |                                          |
|------------------------|------------------------------------------|
| Applicant:             | 8Devices                                 |
| Address:               | Gedimino 47, Kaunas, LT-44242, Lithuania |
| Manufacturer/ Factory: | 8Devices                                 |
| Address:               | Gedimino 47, Kaunas, LT-44242, Lithuania |

### 5.2 General Description of E.U.T.

|                                        |                                                                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:                          | Komikan                                                                                                                               |
| Model No.:                             | Komikan                                                                                                                               |
| Operation Frequency:                   | Band 1: 5150MHz-5250MHz, Band 4: 5725MHz-5825MHz                                                                                      |
| Channel numbers:                       | Band 1: 802.11a/802.11n/ac20: 4, 802.11n/ac40/: 2, 802.11ac80: 1<br>Band 4: 802.11a/802.11n/ac20: 5, 802.11n/ac40: 2, 802.11ac80: 1   |
| Channel separation:                    | 802.11a/802.11n/ac20: 20MHz, 802.11n/ac40: 40MHz, 802.11ac80: 80MHz                                                                   |
| Modulation technology (IEEE 802.11a):  | BPSK, QPSK, 16-QAM, 64-QAM                                                                                                            |
| Modulation technology (IEEE 802.11n):  | BPSK, QPSK, 16-QAM, 64-QAM                                                                                                            |
| Modulation technology (IEEE 802.11ac): | BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM                                                                                                   |
| Data speed (IEEE 802.11a):             | 6Mbps, 9Mbps,12Mbps,18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps                                                                            |
| Data speed (IEEE 802.11n20):           | MCS0: 6.5Mbps, MCS1:13Mbps,MCS2:19.5Mbps, MCS3:26Mbps, MCS4:39Mbps, MCS5:52Mbps, MCS6:58.5Mbps, MCS7:65Mbps                           |
| Data speed (IEEE 802.11n40):           | MCS0:15Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps                             |
| Data speed (IEEE 802.11ac):            | Up to 433.3Mbps                                                                                                                       |
| Antenna Type:                          | Ceramic Antenna, Whip Antenna, Flex Antenna                                                                                           |
| Antenna gain:                          | Ceramic Antenna: Band 1 and Band 4: 4.32dBi<br>Flex Antenna: Band 1 and Band 4: 4.75dBi<br>Whip Antenna: Band 1: 4.5dBi, Band 4: 5dBi |
| Power supply:                          | DC 3.3V                                                                                                                               |
| Test Sample Condition:                 | The test samples were provided in good working order with no visible defects.                                                         |

| Operation Frequency each of channel |           |                 |           |               |           |
|-------------------------------------|-----------|-----------------|-----------|---------------|-----------|
| Band 1                              |           |                 |           |               |           |
| 802.11a/802.11n/ac-HT20             |           | 802.11n/ac-HT40 |           | 802.11ac-HT80 |           |
| Channel                             | Frequency | Channel         | Frequency | Channel       | Frequency |
| 36                                  | 5180MHz   | 38              | 5190MHz   | 42            | 5210MHz   |
| 40                                  | 5200MHz   | 46              | 5230MHz   |               |           |
| 44                                  | 5220MHz   |                 |           |               |           |
| 48                                  | 5240MHz   |                 |           |               |           |
| Band 4                              |           |                 |           |               |           |
| 802.11a/802.11n/ac-HT20             |           | 802.11n/ac-HT40 |           | 802.11ac-HT80 |           |
| Channel                             | Frequency | Channel         | Frequency | Channel       | Frequency |
| 149                                 | 5745MHz   | 151             | 5755MHz   | 155           | 5775MHz   |
| 153                                 | 5765MHz   | 159             | 5795MHz   |               |           |
| 157                                 | 5785MHz   |                 |           |               |           |
| 161                                 | 5805MHz   |                 |           |               |           |
| 165                                 | 5825MHz   |                 |           |               |           |

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Band 1                  |           |                 |           |               |           |
|-------------------------|-----------|-----------------|-----------|---------------|-----------|
| 802.11a/802.11n/ac-HT20 |           | 802.11n/ac-HT40 |           | 802.11ac-HT80 |           |
| Channel                 | Frequency | Channel         | Frequency | Channel       | Frequency |
| Lowest                  | 5180MHz   | Lowest          | 5190MHz   | Middle        | 5210MHz   |
| Middle                  | 5200MHz   | Highest         | 5230MHz   |               |           |
| Highest                 | 5240MHz   |                 |           |               |           |
| Band 4                  |           |                 |           |               |           |
| 802.11a/802.11n/ac-HT20 |           | 802.11n/ac-HT40 |           | 802.11ac-HT80 |           |
| Channel                 | Frequency | Channel         | Frequency | Channel       | Frequency |
| Lowest                  | 5745MHz   | Lowest          | 5755MHz   | Middle        | 5775MHz   |
| Middle                  | 5785MHz   | Highest         | 5795MHz   |               |           |
| Highest                 | 5825MHz   |                 |           |               |           |

### 5.3 Test environment and test mode

|                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <b>Operating Environment:</b>                                                                                                                                                                                                                                                                                                                                                                                                           |                                                               |
| Temperature:                                                                                                                                                                                                                                                                                                                                                                                                                            | 24.0 °C                                                       |
| Humidity:                                                                                                                                                                                                                                                                                                                                                                                                                               | 54 % RH                                                       |
| Atmospheric Pressure:                                                                                                                                                                                                                                                                                                                                                                                                                   | 1010 mbar                                                     |
| <b>Test mode:</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                               |
| Continuously transmitting mode                                                                                                                                                                                                                                                                                                                                                                                                          | Keep the EUT in 100% duty cycle transmitting with modulation. |
| <b>Remark:</b><br>1. Conducted Emission and Radiated Emission below 1GHz pre-scan Ceramic Antenna and Flex Antenna and Whip Antenna, found Whip Antenna was worse case mode, the report only reflects the worst mode<br>2. We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows: |                                                               |
| <b>Per-scan all kind of data rate, and found the follow list were the worst case.</b>                                                                                                                                                                                                                                                                                                                                                   |                                                               |
| Mode                                                                                                                                                                                                                                                                                                                                                                                                                                    | Data rate                                                     |
| 802.11a                                                                                                                                                                                                                                                                                                                                                                                                                                 | 6 Mbps                                                        |
| 802.11n/ac20                                                                                                                                                                                                                                                                                                                                                                                                                            | 6.5 Mbps                                                      |
| 802.11n/ac40                                                                                                                                                                                                                                                                                                                                                                                                                            | 13.5 Mbps                                                     |
| 802.11ac80                                                                                                                                                                                                                                                                                                                                                                                                                              | 29.3 Mbps                                                     |

### 5.4 Description of Support Units

| Manufacturer | Description | Model        | Serial Number | FCC ID/DoC |
|--------------|-------------|--------------|---------------|------------|
| DELL         | PC          | OPTIPLEX7070 | 2J8XSZ2       | DoC        |
| DELL         | MONITOR     | SE2018HR     | 3M7QPY2       | DoC        |
| DELL         | KEYBOARD    | KB216d       | N/A           | DoC        |
| DELL         | MOUSE       | MS116t1      | N/A           | DoC        |

|               |               |                       |               |               |
|---------------|---------------|-----------------------|---------------|---------------|
| Test Software | Power Setting | Power setting command | Test Software | Power Setting |
|               |               |                       |               |               |

### 5.5 Measurement Uncertainty

| Parameters                          | Expanded Uncertainty |
|-------------------------------------|----------------------|
| Conducted Emission (9kHz ~ 30MHz)   | ±1.60 dB (k=2)       |
| Radiated Emission (9kHz ~ 30MHz)    | ±3.12 dB (k=2)       |
| Radiated Emission (30MHz ~ 1000MHz) | ±4.32 dB (k=2)       |
| Radiated Emission (1GHz ~ 18GHz)    | ±5.38 dB (k=2)       |
| Radiated Emission (18GHz ~ 40GHz)   | ±3.36 dB (k=2)       |

### 5.6 Additions to, deviations, or exclusions from the method

|    |
|----|
| No |
|----|

### 5.7 Related Submittal(s) / Grant (s)

|                                                              |
|--------------------------------------------------------------|
| This is an original grant, no related submittals and grants. |
|--------------------------------------------------------------|

## 5.8 Laboratory Facility

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

- **FCC - Designation No.: CN1211**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

## 5.9 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No.110~116, Building B, Jinyuan Business Building, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

## 5.10 Test Instruments list

| Test Equipment               | Manufacturer    | Model No.     | Serial No.         | Cal. Date<br>(mm-dd-yy) | Cal. Due date<br>(mm-dd-yy) |
|------------------------------|-----------------|---------------|--------------------|-------------------------|-----------------------------|
| 3m SAC                       | SAEMC           | 9m*6m*6m      | 966                | 07-22-2017              | 07-21-2020                  |
| BiConiLog Antenna            | SCHWARZBECK     | VULB9163      | 497                | 03-07-2020              | 03-06-2021                  |
| Biconical Antenna            | SCHWARZBECK     | VUBA9117      | 359                | 06-22-2017              | 06-21-2020                  |
| Horn Antenna                 | SCHWARZBECK     | BBHA9120D     | 916                | 03-07-2020              | 03-06-2021                  |
| Horn Antenna                 | SCHWARZBECK     | BBHA9120D     | 1805               | 06-22-2017              | 06-21-2020                  |
| Horn Antenna                 | SCHWARZBECK     | BBHA 9170     | BBHA9170582        | 11-18-2019              | 11-17-2020                  |
| EMI Test Software            | AUDIX           | E3            | Version: 6.110919b |                         |                             |
| Pre-amplifier                | HP              | 8447D         | 2944A09358         | 03-07-2020              | 03-06-2021                  |
| Pre-amplifier                | CD              | PAP-1G18      | 11804              | 03-07-2020              | 03-06-2021                  |
| Spectrum analyzer            | Rohde & Schwarz | FSP30         | 101454             | 03-05-2020              | 03-04-2021                  |
| Spectrum analyzer            | Rohde & Schwarz | FSP40         | 100363             | 11-18-2019              | 11-17-2020                  |
| EMI Test Receiver            | Rohde & Schwarz | ESRP7         | 101070             | 03-05-2020              | 03-04-2021                  |
| Spectrum Analyzer            | Agilent         | N9020A        | MY50510123         | 11-18-2019              | 11-17-2020                  |
| Signal Generator             | Rohde & Schwarz | SMX           | 835454/016         | 03-05-2020              | 03-04-2021                  |
| Signal Generator             | R&S             | SMR20         | 1008100050         | 03-05-2020              | 03-04-2021                  |
| RF Switch Unit               | MWRFTTEST       | MW200         | N/A                | N/A                     | N/A                         |
| Test Software                | MWRFTTEST       | MTS8200       | Version: 2.0.0.0   |                         |                             |
| Cable                        | ZDECL           | Z108-NJ-NJ-81 | 1608458            | 03-07-2020              | 03-06-2021                  |
| Cable                        | MICRO-COAX      | MFR64639      | K10742-5           | 03-07-2020              | 03-06-2021                  |
| Cable                        | SUHNER          | SUCOFLEX100   | 58193/4PE          | 03-07-2020              | 03-06-2021                  |
| DC Power Supply              | XinNuoEr        | WYK-10020K    | 1409050110020      | 09-25-2019              | 09-24-2020                  |
| Temperature Humidity Chamber | HengPu          | HPGDS-500     | 20140828008        | 11-01-2019              | 10-31-2020                  |
| Simulated Station            | Rohde & Schwarz | CMW500        | 140493             | 07-22-2019              | 07-21-2020                  |

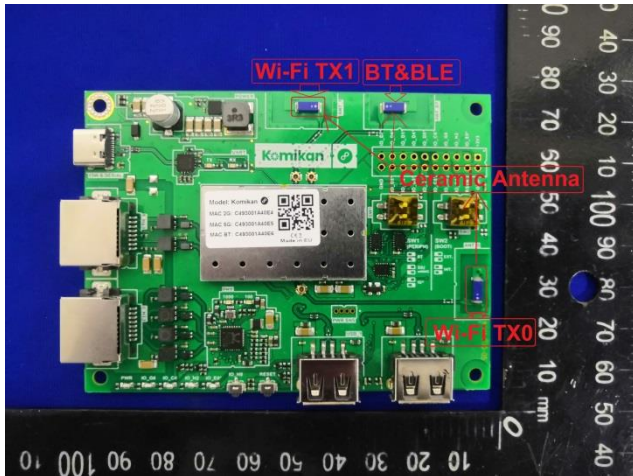
| Conducted Emission: |                 |            |                    |                         |                             |
|---------------------|-----------------|------------|--------------------|-------------------------|-----------------------------|
| Test Equipment      | Manufacturer    | Model No.  | Serial No.         | Cal. Date<br>(mm-dd-yy) | Cal. Due date<br>(mm-dd-yy) |
| EMI Test Receiver   | Rohde & Schwarz | ESCI       | 101189             | 03-05-2020              | 03-04-2021                  |
| Pulse Limiter       | SCHWARZBECK     | OSRAM 2306 | 9731               | 03-05-2020              | 03-04-2021                  |
| LISN                | CHASE           | MN2050D    | 1447               | 03-05-2020              | 03-04-2021                  |
| LISN                | Rohde & Schwarz | ESH3-Z5    | 8438621/010        | 07-21-2017              | 07-20-2020                  |
| Cable               | HP              | 10503A     | N/A                | 03-05-2020              | 03-04-2021                  |
| EMI Test Software   | AUDIX           | E3         | Version: 6.110919b |                         |                             |

## 6 Test results and Measurement Data

### 6.1 Antenna requirement

| Standard requirement:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | FCC Part 15 C Section 15.203 /247(b) |        |              |                   |  |        |        |                 |      |      |              |      |      |              |      |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------|--------------|-------------------|--|--------|--------|-----------------|------|------|--------------|------|------|--------------|------|------|
| <p>15.203 requirement:<br/>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>15.247(b) (4) requirement:<br/>(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.</p> |                                      |        |              |                   |  |        |        |                 |      |      |              |      |      |              |      |      |
| E.U.T Antenna:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                      |        |              |                   |  |        |        |                 |      |      |              |      |      |              |      |      |
| <p><i>The product is a professionally installed device which has two types of antennas for the application. The antennas information as below table:</i></p> <table><tr><th rowspan="2">Antenna Type</th><th colspan="2">Antenna Gain(dBi)</th></tr><tr><th>Band 1</th><th>Band 4</th></tr><tr><td>Ceramic Antenna</td><td>4.32</td><td>4.32</td></tr><tr><td>Flex Antenna</td><td>4.75</td><td>4.75</td></tr><tr><td>Whip Antenna</td><td>4.50</td><td>5.00</td></tr></table> <p><i>According to above information, the antennas meet the requirements of this section</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                      |        | Antenna Type | Antenna Gain(dBi) |  | Band 1 | Band 4 | Ceramic Antenna | 4.32 | 4.32 | Flex Antenna | 4.75 | 4.75 | Whip Antenna | 4.50 | 5.00 |
| Antenna Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Antenna Gain(dBi)                    |        |              |                   |  |        |        |                 |      |      |              |      |      |              |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Band 1                               | Band 4 |              |                   |  |        |        |                 |      |      |              |      |      |              |      |      |
| Ceramic Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4.32                                 | 4.32   |              |                   |  |        |        |                 |      |      |              |      |      |              |      |      |
| Flex Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4.75                                 | 4.75   |              |                   |  |        |        |                 |      |      |              |      |      |              |      |      |
| Whip Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4.50                                 | 5.00   |              |                   |  |        |        |                 |      |      |              |      |      |              |      |      |

Ceramic Antenna



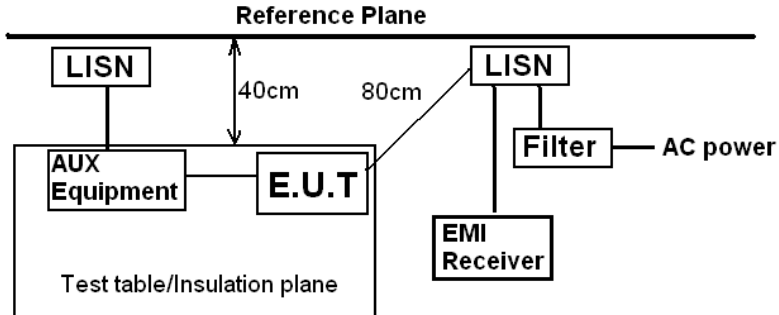
Flex Antenna



Whip Antenna

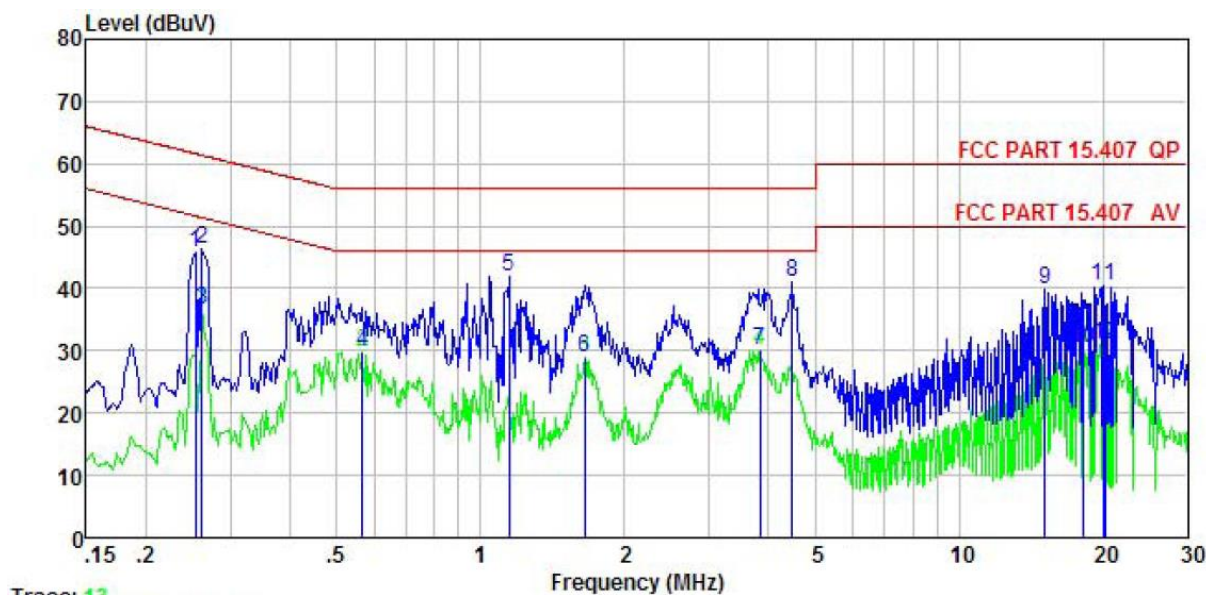


## 6.2 Conducted Emission

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |          |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------|
| Test Requirement:                                | FCC Part15 C Section 15.207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |          |
| Test Frequency Range:                            | 150kHz to 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |          |
| Class / Severity:                                | Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |          |
| Receiver setup:                                  | RBW=9kHz, VBW=30kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |          |
| Limit:                                           | Frequency range (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Limit (dBuV) |          |
|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Quasi-peak   |          |
|                                                  | 0.15-0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 66 to 56*    | 0.15-0.5 |
|                                                  | 0.5-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 56           | 0.5-5    |
|                                                  | 5-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 60           | 5-30     |
| * Decreases with the logarithm of the frequency. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |          |
| Test procedure                                   | <ol style="list-style-type: none"> <li>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). It provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10(latest version) on conducted measurement.</li> </ol> |              |          |
| Test setup:                                      |  <p><i>Remark</i><br/> <i>E.U.T: Equipment Under Test</i><br/> <i>LISN: Line Impedance Stabilization Network</i><br/> <i>Test table height=0.8m</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |          |
| Test Instruments:                                | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |          |
| Test mode:                                       | Refer to section 5.3 for details.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |          |
| Test results:                                    | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |          |

## Measurement Data:

|                 |                  |                |                        |
|-----------------|------------------|----------------|------------------------|
| Product name:   | Komikan          | Product model: | Komikan                |
| Test by:        | Mike             | Test mode:     | 5G Wi-Fi Tx mode       |
| Test frequency: | 150 kHz ~ 30 MHz | Phase:         | Line                   |
| Test voltage:   | AC 120 V/60 Hz   | Environment:   | Temp: 22.5°C Humi: 55% |

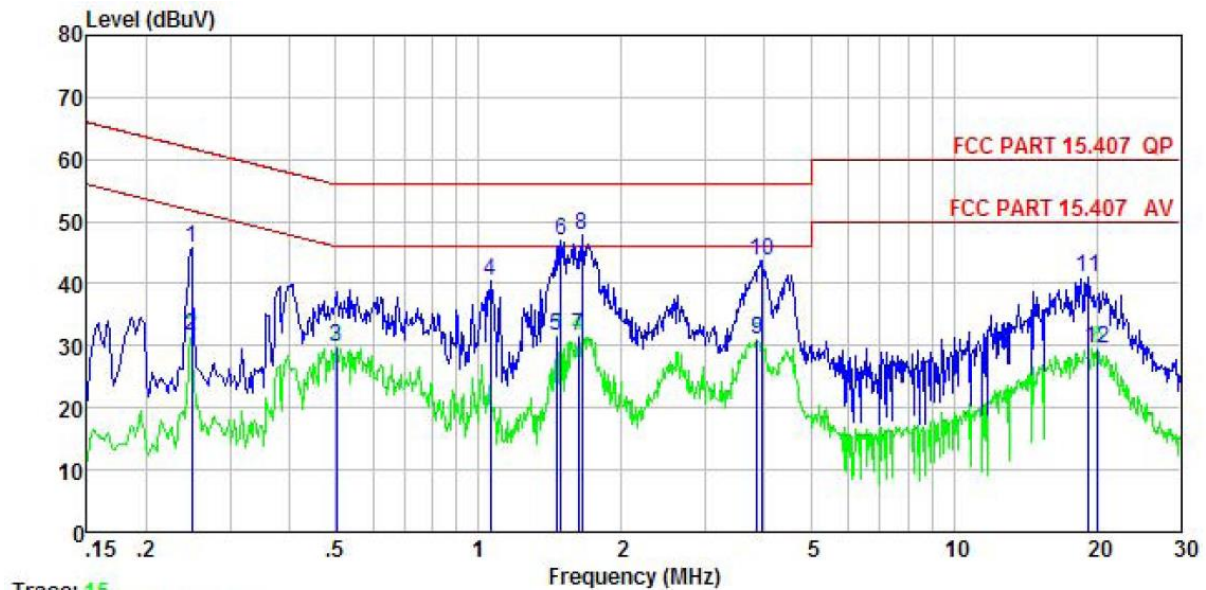


|    | Freq   | Read Level | LISN Factor | Aux Factor | Cable Loss | Level | Limit Line | Over Limit | Remark  |
|----|--------|------------|-------------|------------|------------|-------|------------|------------|---------|
|    | MHz    | dBuV       | dB          | dB         | dB         | dBuV  | dBuV       | dB         |         |
| 1  | 0.253  | 35.62      | -0.40       | -0.22      | 10.75      | 45.75 | 61.64      | -15.89     | QP      |
| 2  | 0.262  | 36.13      | -0.39       | -0.23      | 10.75      | 46.26 | 61.38      | -15.12     | QP      |
| 3  | 0.262  | 26.37      | -0.39       | -0.23      | 10.75      | 36.50 | 51.38      | -14.88     | Average |
| 4  | 0.567  | 19.76      | -0.39       | -0.37      | 10.76      | 29.76 | 46.00      | -16.24     | Average |
| 5  | 1.147  | 31.21      | -0.39       | 0.30       | 10.89      | 42.01 | 56.00      | -13.99     | QP      |
| 6  | 1.654  | 18.43      | -0.40       | -0.11      | 10.94      | 28.86 | 46.00      | -17.14     | Average |
| 7  | 3.840  | 19.76      | -0.46       | -0.07      | 10.89      | 30.12 | 46.00      | -15.88     | Average |
| 8  | 4.478  | 30.48      | -0.47       | 0.02       | 10.87      | 40.90 | 56.00      | -15.10     | QP      |
| 9  | 15.146 | 26.08      | -0.69       | 3.53       | 10.90      | 39.82 | 60.00      | -20.18     | QP      |
| 10 | 18.232 | 18.48      | -0.88       | 1.74       | 10.92      | 30.26 | 50.00      | -19.74     | Average |
| 11 | 20.056 | 29.52      | -0.97       | 0.89       | 10.93      | 40.37 | 60.00      | -19.63     | QP      |
| 12 | 20.270 | 20.11      | -0.97       | 0.90       | 10.93      | 30.97 | 50.00      | -19.03     | Average |

## Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

|                 |                  |                |                        |
|-----------------|------------------|----------------|------------------------|
| Product name:   | Komikan          | Product model: | Komikan                |
| Test by:        | Mike             | Test mode:     | 5G Wi-Fi Tx mode       |
| Test frequency: | 150 kHz ~ 30 MHz | Phase:         | Neutral                |
| Test voltage:   | AC 120 V/60 Hz   | Environment:   | Temp: 22.5°C Humi: 55% |

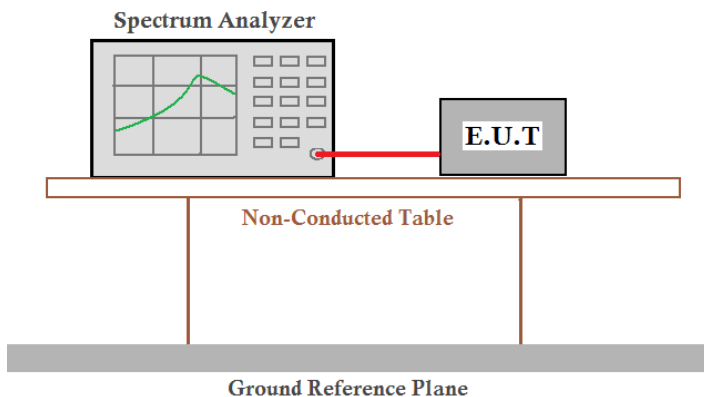


|    | Freq   | Read Level | LISN Factor | Aux Factor | Cable Loss | Level | Limit Line | Over Limit | Remark  |
|----|--------|------------|-------------|------------|------------|-------|------------|------------|---------|
|    | MHz    | dBuV       | dB          | dB         | dB         | dBuV  | dBuV       | dB         |         |
| 1  | 0.249  | 35.77      | -0.66       | 0.01       | 10.75      | 45.87 | 61.78      | -15.91     | QP      |
| 2  | 0.249  | 21.59      | -0.66       | 0.01       | 10.75      | 31.69 | 51.78      | -20.09     | Average |
| 3  | 0.502  | 19.80      | -0.65       | 0.03       | 10.76      | 29.94 | 46.00      | -16.06     | Average |
| 4  | 1.060  | 30.20      | -0.63       | 0.09       | 10.88      | 40.54 | 56.00      | -15.46     | QP      |
| 5  | 1.456  | 21.12      | -0.65       | 0.13       | 10.92      | 31.52 | 46.00      | -14.48     | Average |
| 6  | 1.487  | 36.66      | -0.65       | 0.13       | 10.92      | 47.06 | 56.00      | -8.94      | QP      |
| 7  | 1.619  | 21.09      | -0.66       | 0.14       | 10.93      | 31.50 | 46.00      | -14.50     | Average |
| 8  | 1.654  | 37.43      | -0.66       | 0.15       | 10.94      | 47.86 | 56.00      | -8.14      | QP      |
| 9  | 3.860  | 20.26      | -0.69       | 0.49       | 10.89      | 30.95 | 46.00      | -15.05     | Average |
| 10 | 3.964  | 33.10      | -0.70       | 0.50       | 10.89      | 43.79 | 56.00      | -12.21     | QP      |
| 11 | 19.224 | 30.79      | -1.33       | 0.64       | 10.93      | 41.03 | 60.00      | -18.97     | QP      |
| 12 | 20.056 | 19.79      | -1.41       | 0.23       | 10.93      | 29.54 | 50.00      | -20.46     | Average |

**Notes:**

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

## 6.3 Conducted Output Power

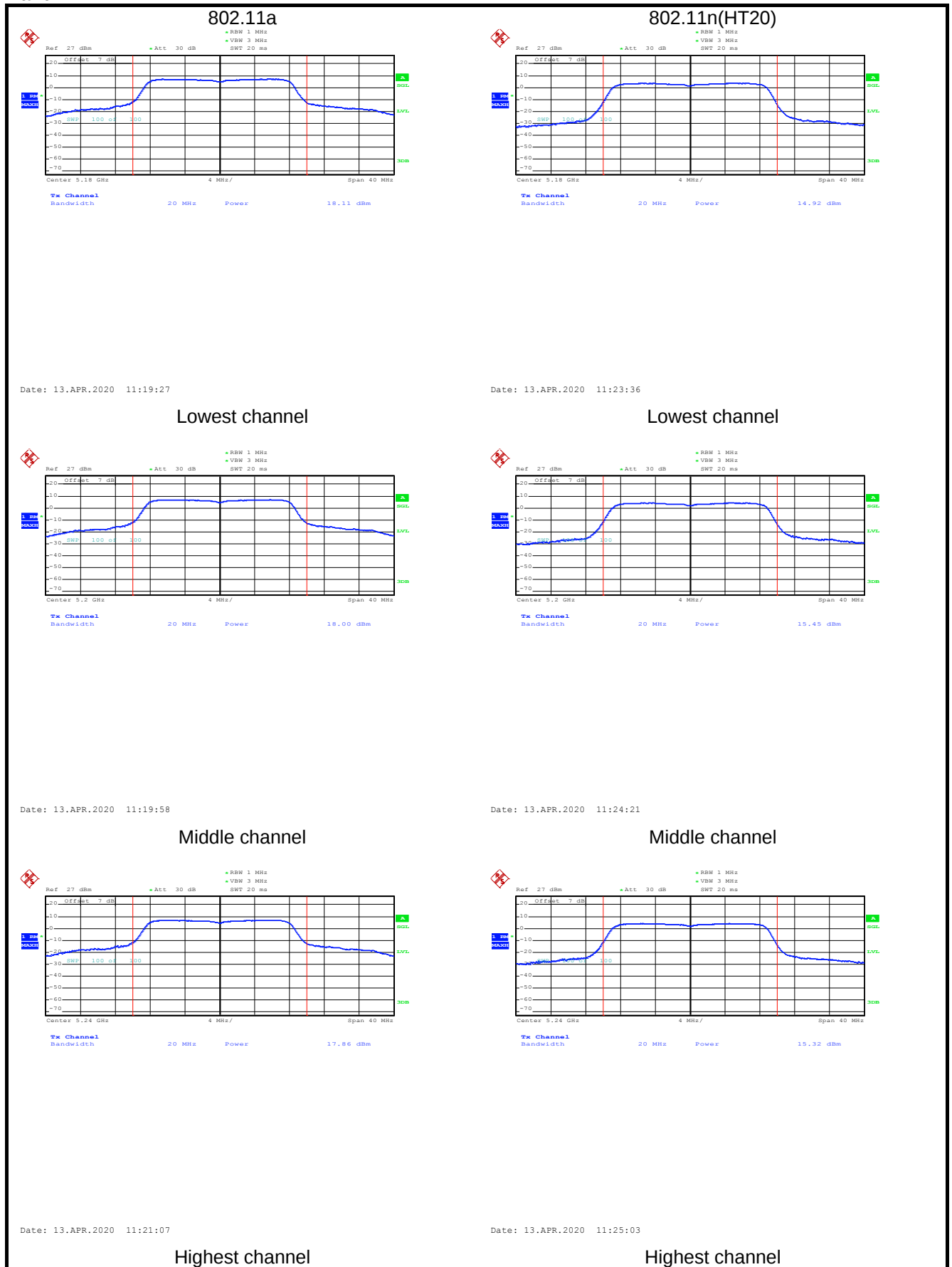
|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part15 E Section 15.407 (a) (1) (iv) & (a) (3)                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Limit:            | Band 1: 24dBm<br>Band 4: 30dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer, shown with a grid and a green curve, is connected to an E.U.T. (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a table labeled 'Non-Conducted Table'. This table is supported by two vertical legs and sits on a thick grey horizontal bar labeled 'Ground Reference Plane'.</p> |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Test results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Measurement Data:

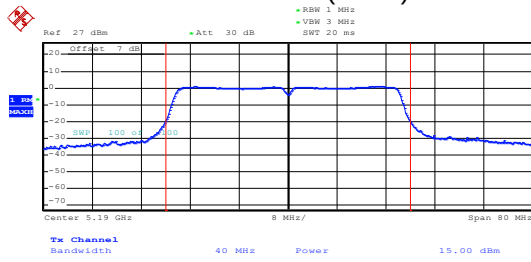
| Band 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |           |                             |                   |                                                                    |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|-----------------------------|-------------------|--------------------------------------------------------------------|--------|
| Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Test CH | Ant. Port | Conducted Output power(dBm) | Total power (dBm) | Limit (dBm)                                                        | Result |
| 802.11a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Lowest  | TX0       | 18.11                       | /                 | 24.00                                                              | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 18.11                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Middle  | TX0       | 18.00                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 18.28                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Highest | TX0       | 17.86                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 18.19                       |                   |                                                                    |        |
| 802.11n20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Lowest  | TX0       | 14.92                       | 18.16             | Ceramic Antenna:22.68<br>Flex Antenna:22.25<br>Whip Antenna:22.50  | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.37                       | 18.47             |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Middle  | TX0       | 15.45                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.46                       | 18.34             |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Highest | TX0       | 15.32                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.34                       |                   |                                                                    |        |
| 802.11n40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Lowest  | TX0       | 15.00                       | 18.07             | Ceramic Antenna:24<br>Flex Antenna:23.8<br>Whip Antenna:23.0       | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.11                       | 18.28             |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Highest | TX0       | 15.23                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.30                       |                   |                                                                    |        |
| 802.11ac20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lowest  | TX0       | 15.56                       | 18.35             | Ceramic Antenna:22.68<br>Flex Antenna:22.25<br>Whip Antenna:22.50  | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.11                       | 18.26             |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Middle  | TX0       | 15.34                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.16                       | 18.31             |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Highest | TX0       | 15.30                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.30                       |                   |                                                                    |        |
| 802.11ac40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lowest  | TX0       | 15.17                       | 18.19             | Ceramic Antenna:22.68<br>Flex Antenna:22.25<br>Whip Antenna:22.50  | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.18                       | 18.25             |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Highest | TX0       | 15.18                       |                   |                                                                    |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.30                       |                   |                                                                    |        |
| 802.11ac80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lowest  | TX0       | 15.03                       | 18.12             | Ceramic Antenna:22.68<br>Flex Antenna:22.25<br>Whip Antenna:22.500 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | TX1       | 15.19                       |                   |                                                                    |        |
| <div>1. Because transmit signals are correlated, Directional gain = <math>G_{ANT} + 10 \log(N_{ANT})</math> dBi.</div> <div>2. So Ceramic Antenna: The Directional gain=<math>4.32 + 10 \log(2)=7.32</math>dBi, The directional Gain of antenna is greater than 6 dBi, so the limit of power is 22.68 dBm (for 802.11n/ac).</div> <div>Flex Antenna: The Directional gain=<math>4.75 + 10 \log(2)=7.75</math>dBi, The directional Gain of antenna is greater than 6 dBi, so the limit of power is 22.25 dBm (for 802.11n/ac).</div> <div>Whip Antenna: The Directional gain=<math>4.5 + 10 \log(2)=7.5</math>dBi, The directional Gain of antenna is greater than 6dBi, so the limit of power is 22.5 dBm (for 802.11n/ac).</div> |         |           |                             |                   |                                                                    |        |

| Band 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |           |                             |                   |                                                                  |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|-----------------------------|-------------------|------------------------------------------------------------------|--------|
| Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Test CH | Ant. Port | Conducted Output power(dBm) | Total power (dBm) | Limit (dBm)                                                      | Result |
| 802.11a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Lowest  | TX0       | 17.80                       | /                 | 30.00                                                            | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 18.34                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Middle  | TX0       | 17.60                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 18.28                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 17.46                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 18.10                       |                   |                                                                  |        |
| 802.11n20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lowest  | TX0       | 15.53                       | 18.43             | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.0 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.30                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Middle  | TX0       | 15.44                       | 18.31             |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.15                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 15.39                       | 18.40             |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.38                       |                   |                                                                  |        |
| 802.11n40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lowest  | TX0       | 15.15                       | 18.26             | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.0 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.34                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 15.12                       | 18.20             |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.26                       |                   |                                                                  |        |
| 802.11ac20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lowest  | TX0       | 15.21                       | 18.21             | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.0 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.18                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Middle  | TX0       | 15.26                       | 18.29             |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.30                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 15.38                       | 18.21             |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.02                       |                   |                                                                  |        |
| 802.11ac40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lowest  | TX0       | 15.03                       | 18.09             | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.0 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.13                       |                   |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 15.05                       | 18.09             |                                                                  |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.11                       |                   |                                                                  |        |
| 802.11ac80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lowest  | TX0       | 15.15                       | 18.17             | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.0 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 15.17                       |                   |                                                                  |        |
| <div>1. Because transmit signals are correlated, Directional gain = <math>G_{ANT} + 10 \log(N_{ANT})</math> dBi.</div> <div>2. So Ceramic Antenna: The Directional gain=<math>4.32 + 10 \log(2)</math>=7.32dBi, The directional Gain of antenna is greater than 6 dBi, so the limit of power is 28.68 dBm (for 802.11n/ac).</div> <div>Flex Antenna: The Directional gain=<math>4.75 + 10 \log(2)</math>=7.75dBi, The directional Gain of antenna is greater than 6 dBi, so the limit of power is 28.25 dBm (for 802.11n/ac).</div> <div>Whip Antenna: The Directional gain=<math>5 + 10 \log(2)</math>=8.0dBi, The directional Gain of antenna is greater than 6dBi, so the limit of power is 28.0 dBm (for 802.11n/ac).</div> |         |           |                             |                   |                                                                  |        |

Test plot as follows: TX0:  
Band 1:

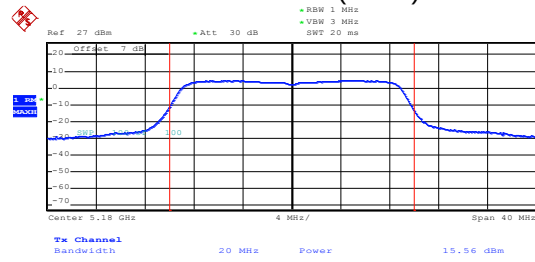


802.11n(HT40)



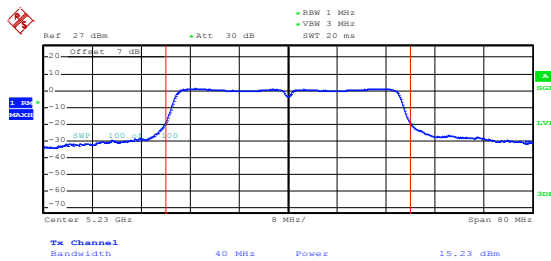
Date: 13.APR.2020 18:10:02

802.11ac(HT20)



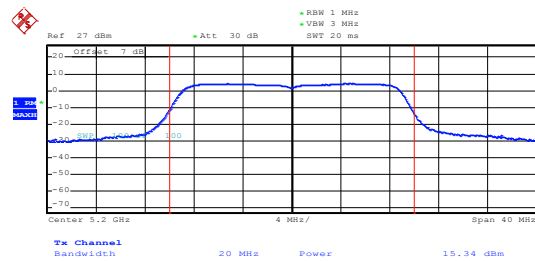
Date: 13.APR.2020 12:00:57

Lowest channel



Date: 13.APR.2020 18:15:13

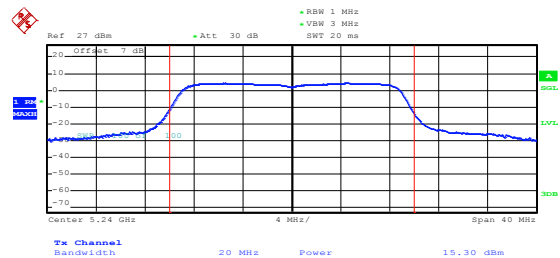
Lowest channel



Date: 13.APR.2020 11:26:02

Highest channel

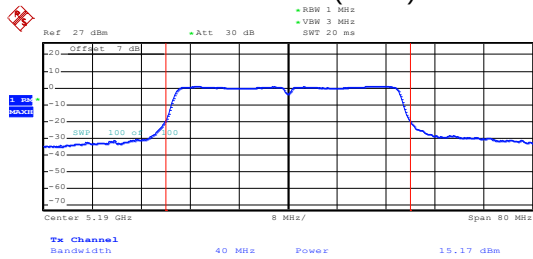
Middle channel



Date: 13.APR.2020 11:25:35

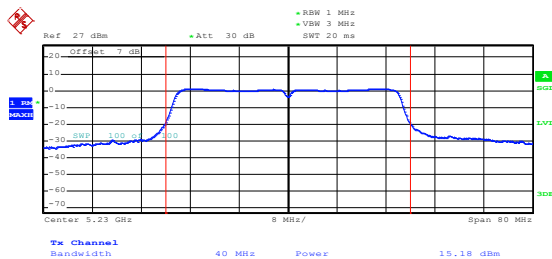
Highest channel

## 802.11ac(HT40)



Date: 13.APR.2020 18:16:14

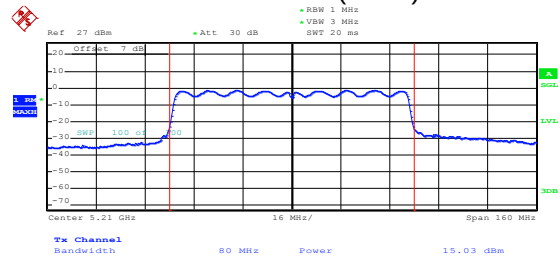
## Lowest channel



Date: 13.APR.2020 18:15:38

## Highest channel

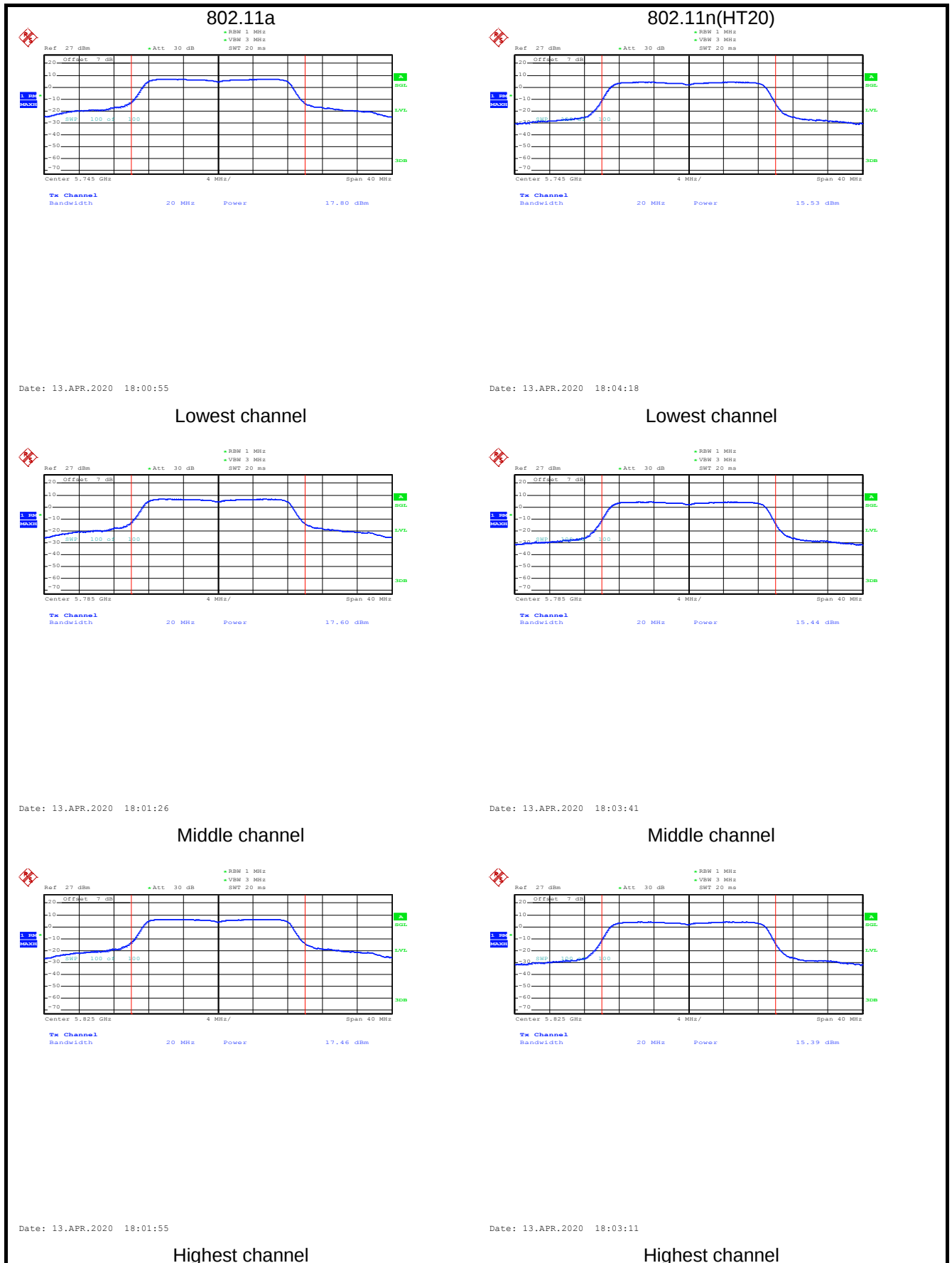
## 802.11ac(HT80)



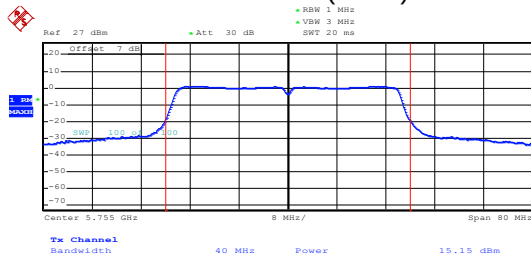
Date: 13.APR.2020 18:20:15

## Middle channel

## Band 4:

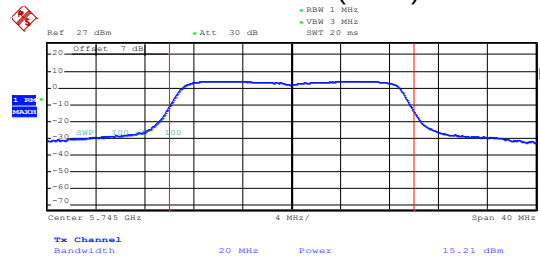


802.11n(HT40)



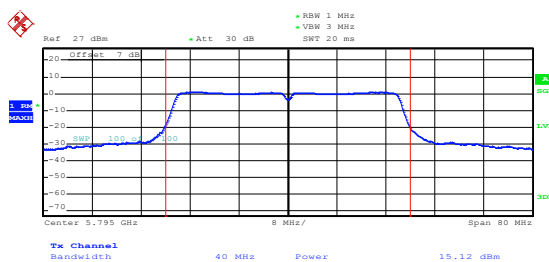
Date: 13.APR.2020 18:08:14

802.11ac(HT20)



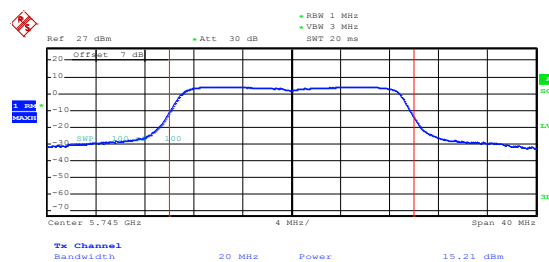
Date: 13.APR.2020 18:04:53

Lowest channel



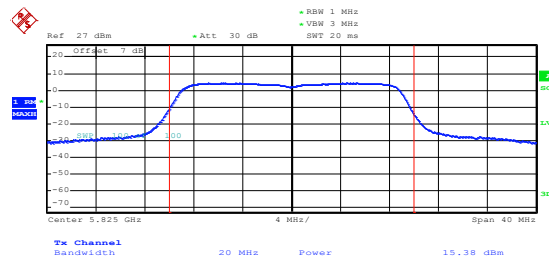
Date: 13.APR.2020 18:08:59

Lowest channel



Date: 13.APR.2020 18:05:21

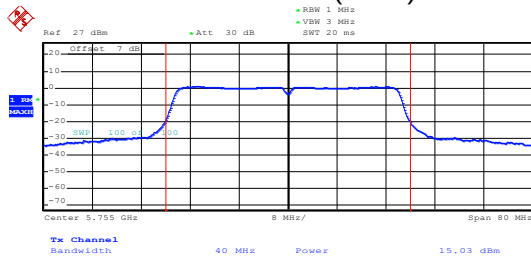
Highest channel



Date: 13.APR.2020 18:06:41

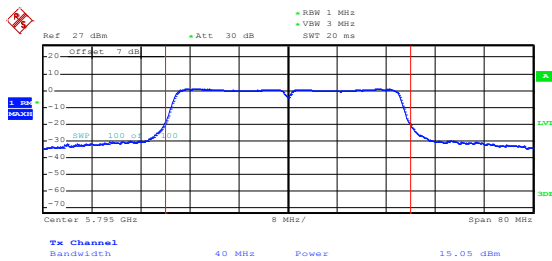
Highest channel

## 802.11ac(HT40)



Date: 13.APR.2020 18:17:19

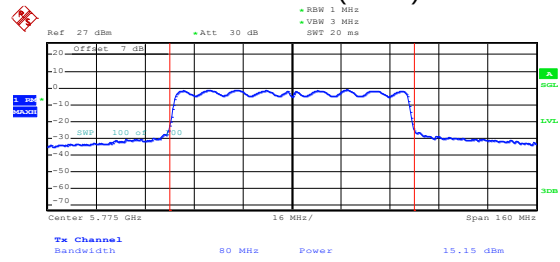
## Lowest channel



Date: 13.APR.2020 17:24:30

## Highest channel

## 802.11ac(HT80)



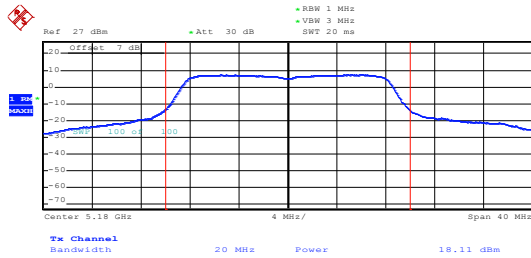
Date: 13.APR.2020 18:21:00

## Middle channel

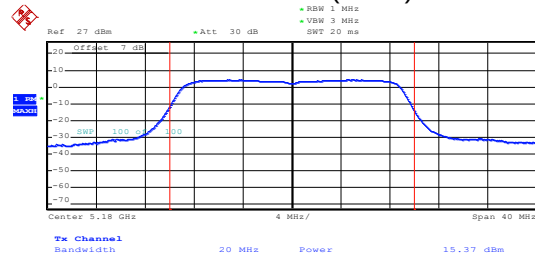
TX1:

Band 1:

802.11a



802.11n(HT20)

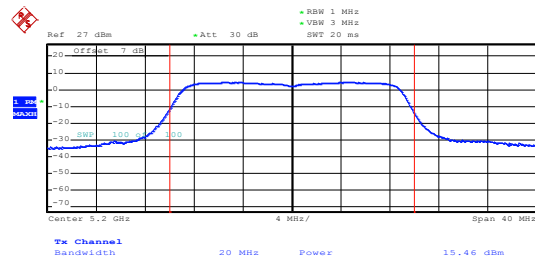
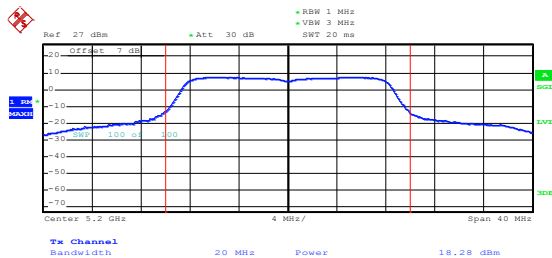


Date: 13.APR.2020 18:32:41

Date: 13.APR.2020 18:36:02

Lowest channel

Lowest channel

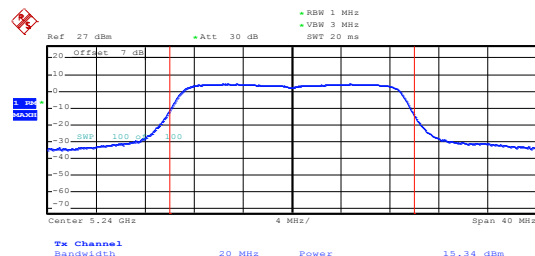
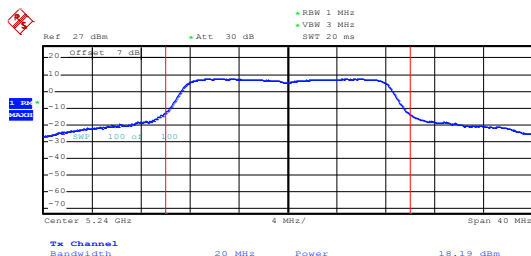


Date: 13.APR.2020 18:32:22

Date: 13.APR.2020 18:35:40

Middle channel

Middle channel



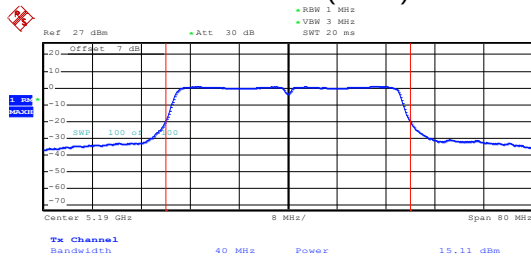
Date: 13.APR.2020 18:31:58

Date: 13.APR.2020 18:35:15

Highest channel

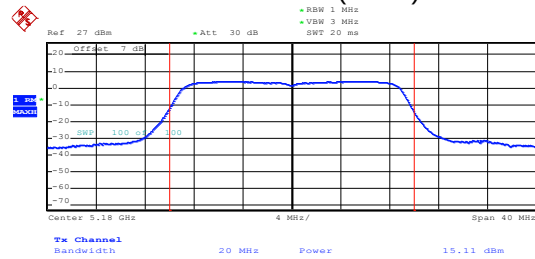
Highest channel

802.11n(HT40)



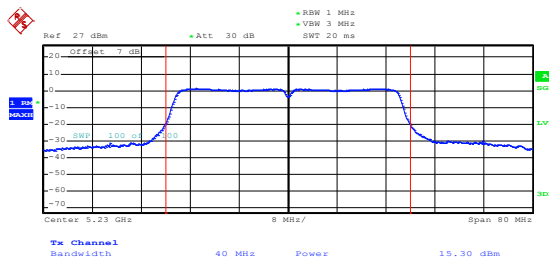
Date: 18.APR.2020 18:02:47

802.11ac(HT20)



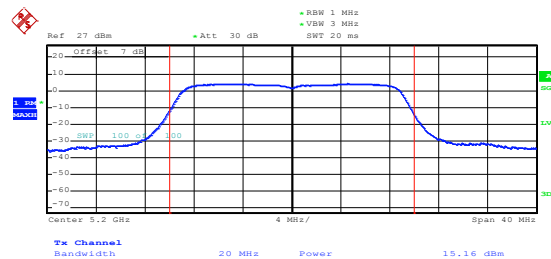
Date: 13.APR.2020 18:33:45

Lowest channel



Date: 18.APR.2020 18:03:24

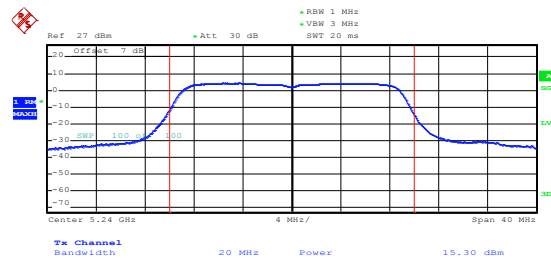
Lowest channel



Date: 13.APR.2020 18:34:08

Highest channel

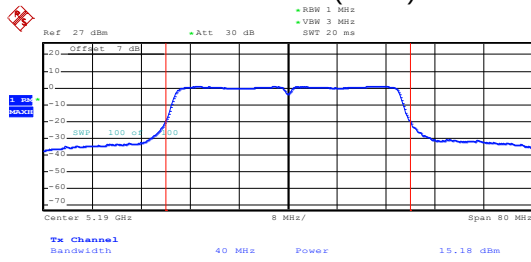
Middle channel



Date: 13.APR.2020 18:34:44

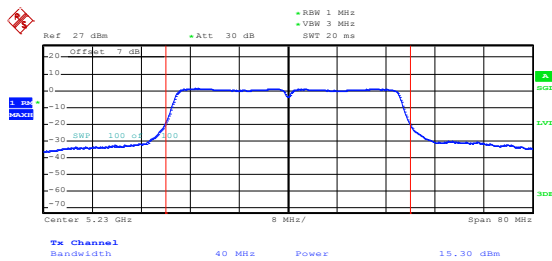
Highest channel

## 802.11ac(HT40)



Date: 13.APR.2020 18:45:29

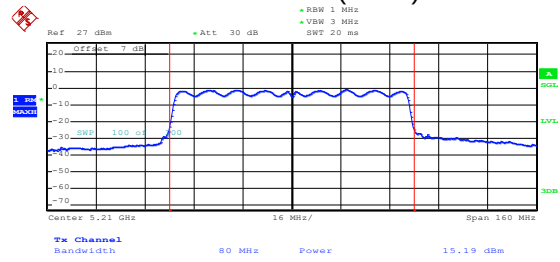
## Lowest channel



Date: 13.APR.2020 18:46:21

## Highest channel

## 802.11ac(HT80)

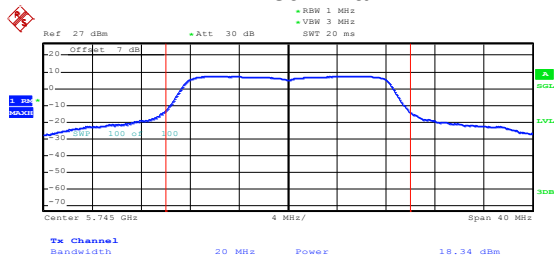


Date: 13.APR.2020 18:24:24

## Middle channel

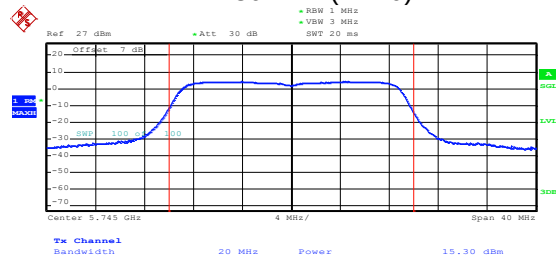
## Band 4:

802.11a



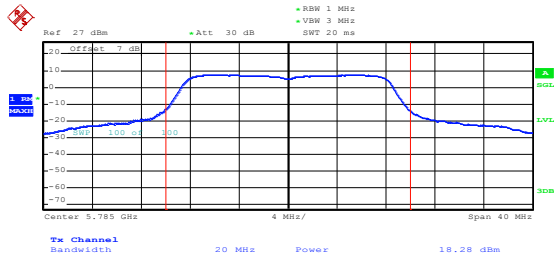
Date: 13.APR.2020 18:37:10

802.11n(HT20)



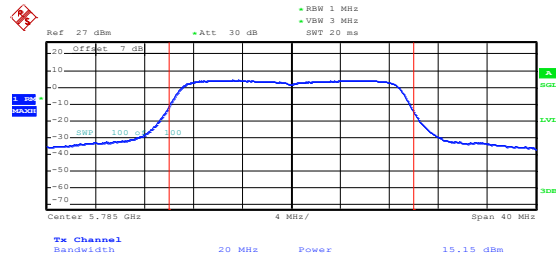
Date: 13.APR.2020 18:40:21

Lowest channel



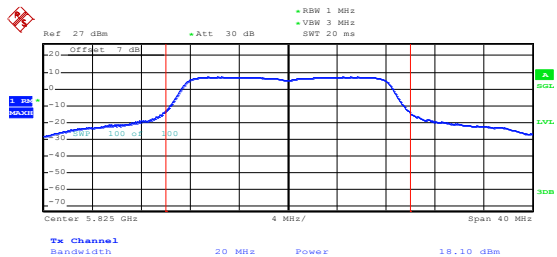
Date: 13.APR.2020 18:37:45

Lowest channel



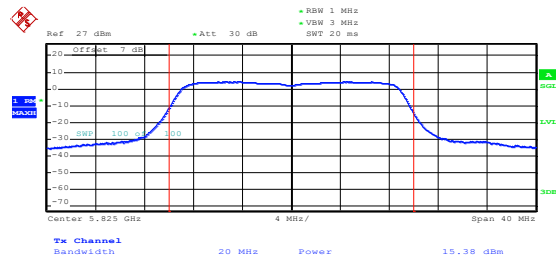
Date: 13.APR.2020 18:39:34

Middle channel



Date: 13.APR.2020 18:38:10

Middle channel

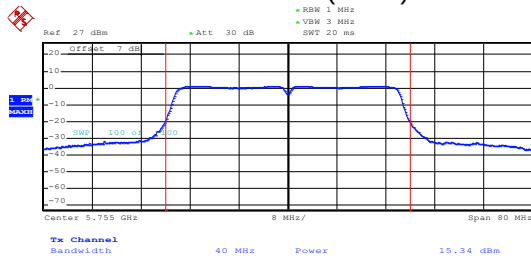


Date: 13.APR.2020 18:39:03

Highest channel

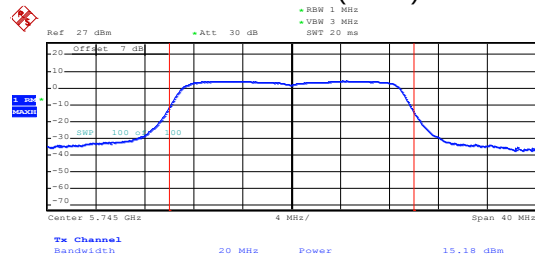
Highest channel

802.11n(HT40)



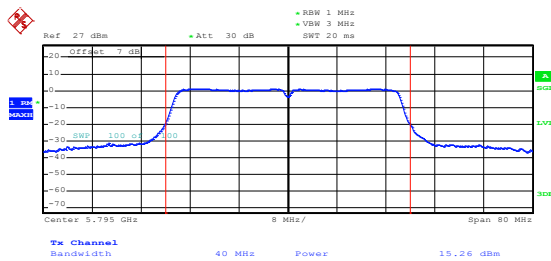
Date: 18.APR.2020 18:04:15

802.11ac(HT20)



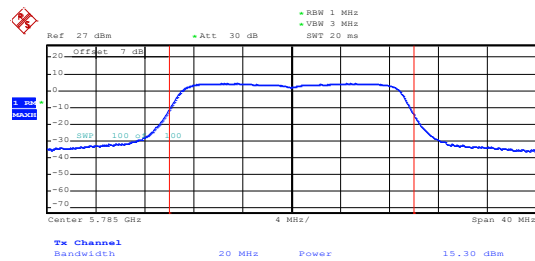
Date: 13.APR.2020 18:41:04

Lowest channel



Date: 18.APR.2020 18:04:57

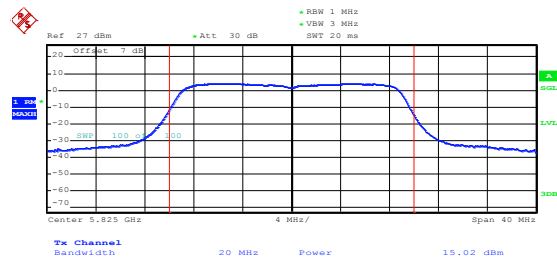
Lowest channel



Date: 13.APR.2020 18:41:38

Highest channel

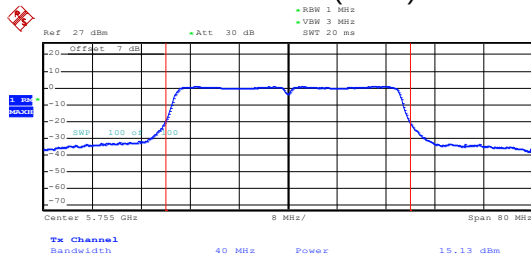
Middle channel



Date: 13.APR.2020 18:42:02

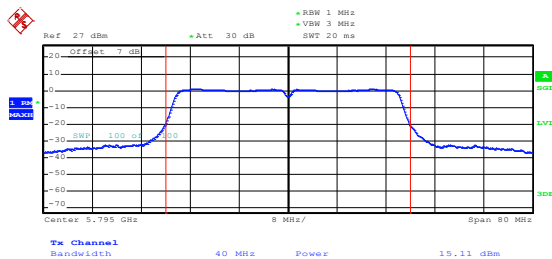
Highest channel

## 802.11ac(HT40)



Date: 13.APR.2020 18:44:10

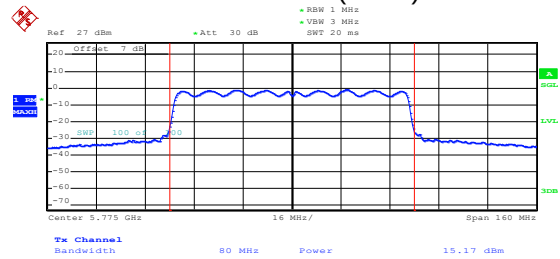
## Lowest channel



Date: 13.APR.2020 18:44:53

## Highest channel

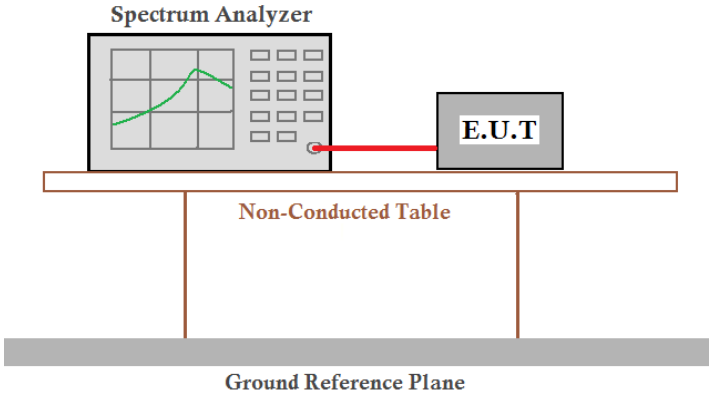
## 802.11ac(HT80)



Date: 13.APR.2020 18:23:36

## Middle channel

## 6.4 Occupancy Bandwidth

|                   |                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part15 E Section 15.407 (a) (5) and Section 15.407 (e)                                             |
| Limit:            | Band 1/4: N/A (26dB Emission Bandwidth and 99% Occupancy Bandwidth)<br>Band 4: >500kHz (6dB Bandwidth) |
| Test setup:       |                      |
| Test Instruments: | Refer to section 5.10 for details                                                                      |
| Test mode:        | Refer to section 5.3 for details                                                                       |
| Test results:     | Passed                                                                                                 |

### Measurement Data:

#### TX0:

#### Band 1:

| Test Channel | 26dB Emission Bandwidth (MHz) |                |                |                 |                 |                 | Limit | Result |
|--------------|-------------------------------|----------------|----------------|-----------------|-----------------|-----------------|-------|--------|
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |       |        |
| Lowest       | 22.06                         | 21.41          | 43.28          | 21.21           | 43.46           | ---             | N/A   | PASS   |
| Middle       | 21.43                         | 21.32          | ---            | 20.15           | ---             | 80.36           |       |        |
| Highest      | 20.09                         | 20.27          | 40.26          | 20.11           | 39.92           | ---             |       |        |
| Test Channel | 99% Occupancy Bandwidth (MHz) |                |                |                 |                 |                 | Limit | Result |
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |       |        |
| Lowest       | 17.60                         | 17.88          | 37.48          | 17.84           | 37.54           | ---             | N/A   | PASS   |
| Middle       | 17.52                         | 17.85          | ---            | 17.85           | ---             | 76.02           |       |        |
| Highest      | 17.58                         | 17.88          | 37.44          | 17.86           | 37.48           | ---             |       |        |

**Band 4:**

| Test Channel | 26dB Emission Bandwidth (MHz) |                |                |                 |                 |                 | Limit   | Result |
|--------------|-------------------------------|----------------|----------------|-----------------|-----------------|-----------------|---------|--------|
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |         |        |
| Lowest       | 21.51                         | 21.46          | 44.48          | 21.45           | 44.30           | ---             | N/A     | PASS   |
| Middle       | 21.78                         | 21.57          | ---            | 21.58           | ---             | 83.28           |         |        |
| Highest      | 22.31                         | 21.62          | 44.34          | 21.17           | 44.30           | ---             |         |        |
| Test Channel | 99% Occupy Bandwidth (MHz)    |                |                |                 |                 |                 | Limit   | Result |
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |         |        |
| Lowest       | 17.39                         | 17.99          | 37.60          | 18.02           | 37.58           | ---             | N/A     | PASS   |
| Middle       | 17.41                         | 17.96          | ---            | 17.98           | ---             | 76.52           |         |        |
| Highest      | 17.37                         | 17.96          | 37.56          | 17.97           | 37.58           | ---             |         |        |
| Test Channel | 6dB Emission Bandwidth (MHz)  |                |                |                 |                 |                 | Limit   | Result |
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |         |        |
| Lowest       | 16.56                         | 17.68          | 36.64          | 17.68           | 36.64           | ---             | >500kHz | PASS   |
| Middle       | 16.64                         | 17.68          | ---            | 17.68           | ---             | 76.48           |         |        |
| Highest      | 16.64                         | 17.76          | 36.64          | 17.68           | 36.64           | ---             |         |        |

## TX1:

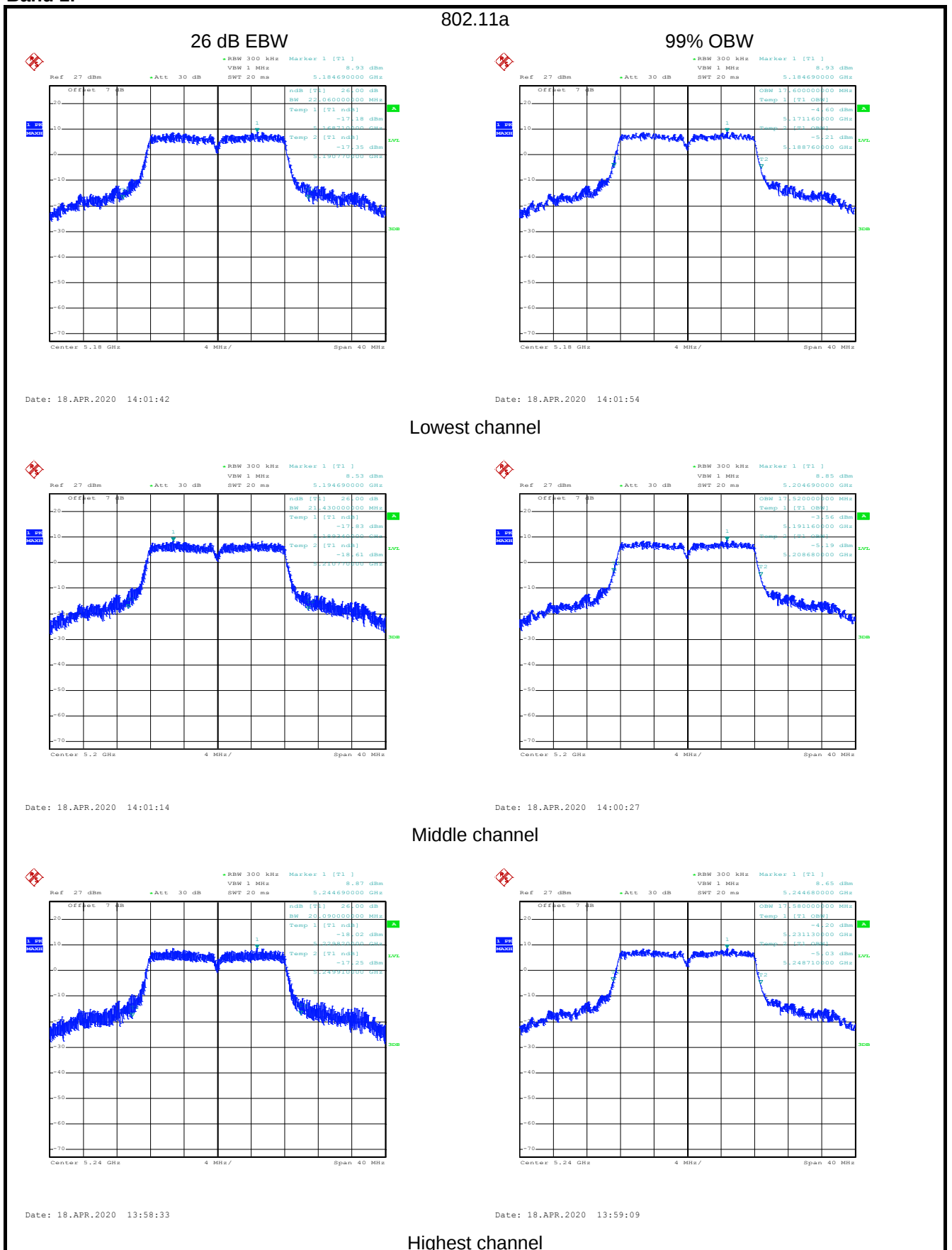
## Band 1:

| Test Channel | 26dB Emission Bandwidth (MHz) |                |                |                 |                 |                 | Limit | Result |
|--------------|-------------------------------|----------------|----------------|-----------------|-----------------|-----------------|-------|--------|
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |       |        |
| Lowest       | 21.12                         | 21.31          | 44.10          | 21.41           | 44.16           | ---             | N/A   | PASS   |
| Middle       | 22.40                         | 20.95          | ---            | 21.31           | ---             | 79.56           |       |        |
| Highest      | 20.15                         | 20.09          | 39.78          | 19.57           | 39.86           | ---             |       |        |
| Test Channel | 99% Occupy Bandwidth (MHz)    |                |                |                 |                 |                 | Limit | Result |
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |       |        |
| Lowest       | 17.19                         | 17.80          | 37.32          | 17.82           | 37.44           | ---             | N/A   | PASS   |
| Middle       | 17.18                         | 17.78          | ---            | 17.82           | ---             | 75.88           |       |        |
| Highest      | 17.09                         | 17.81          | 37.46          | 17.83           | 37.28           | ---             |       |        |

## Band 4:

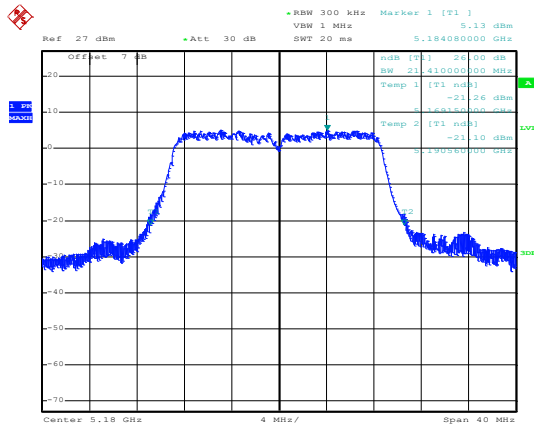
| Test Channel | 26dB Emission Bandwidth (MHz) |                |                |                 |                 |                 | Limit   | Result |
|--------------|-------------------------------|----------------|----------------|-----------------|-----------------|-----------------|---------|--------|
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |         |        |
| Lowest       | 21.99                         | 21.38          | 44.04          | 21.09           | 44.06           | ---             | N/A     | PASS   |
| Middle       | 21.70                         | 21.29          | ---            | 21.20           | ---             | 83.56           |         |        |
| Highest      | 21.48                         | 21.08          | 43.48          | 21.04           | 43.78           | ---             |         |        |
| Test Channel | 99% Occupy Bandwidth (MHz)    |                |                |                 |                 |                 | Limit   | Result |
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |         |        |
| Lowest       | 17.11                         | 17.80          | 37.38          | 17.81           | 37.28           | ---             | N/A     | PASS   |
| Middle       | 17.07                         | 17.81          | ---            | 17.81           | ---             | 75.96           |         |        |
| Highest      | 17.09                         | 17.80          | 37.32          | 17.83           | 37.38           | ---             |         |        |
| Test Channel | 6dB Emission Bandwidth (MHz)  |                |                |                 |                 |                 | Limit   | Result |
|              | 802.11a                       | 802.11n (HT20) | 802.11n (HT40) | 802.11ac (HT20) | 802.11ac (HT40) | 802.11ac (HT80) |         |        |
| Lowest       | 16.48                         | 17.68          | 36.64          | 17.52           | 36.64           | ---             | >500kHz | PASS   |
| Middle       | 16.48                         | 17.68          | ---            | 17.68           | ---             | 76.16           |         |        |
| Highest      | 16.48                         | 17.68          | 36.64          | 17.68           | 36.64           | ---             |         |        |

Test plot as follows: TX0:  
Band 1:



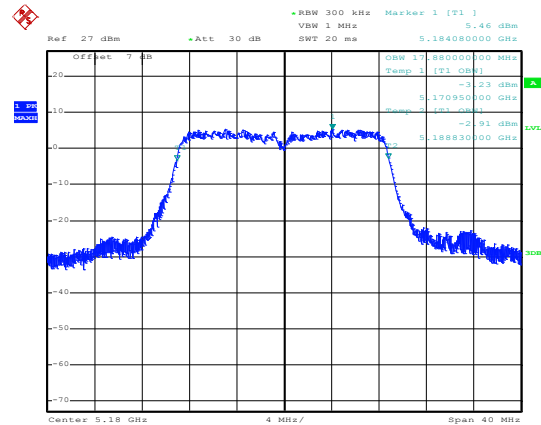
## 802.11n(HT20)

### 26 dB EBW



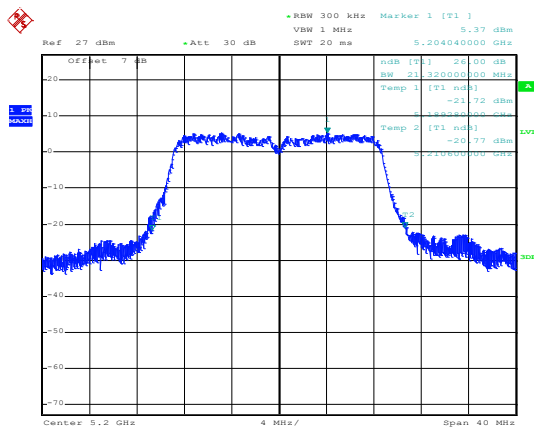
Date: 18.APR.2020 14:02:53

### 99% OBW

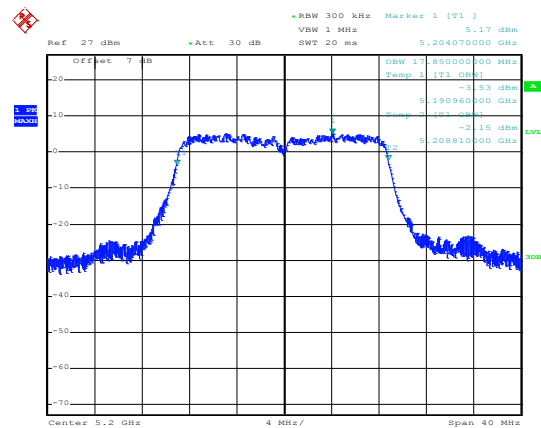


Date: 18.APR.2020 14:02:39

## Lowest channel

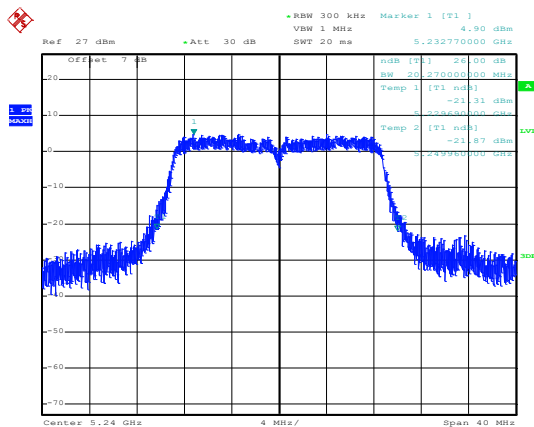


Date: 18.APR.2020 14:03:12

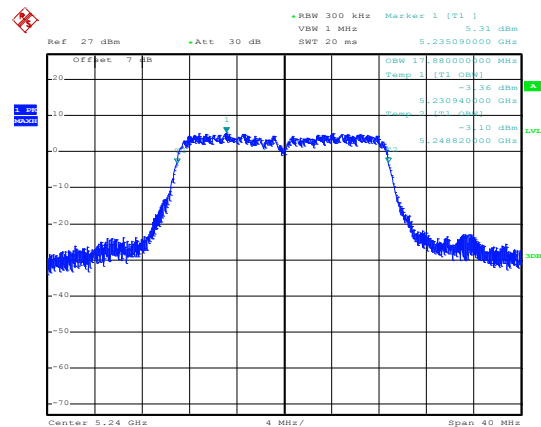


Date: 18.APR.2020 14:03:26

## Middle channel



Date: 18.APR.2020 14:04:17

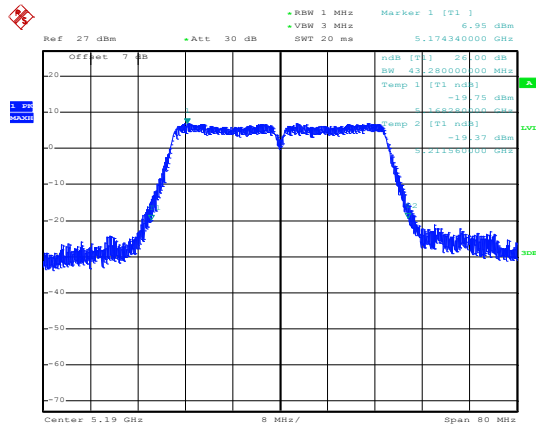


Date: 18.APR.2020 14:03:53

## Highest channel

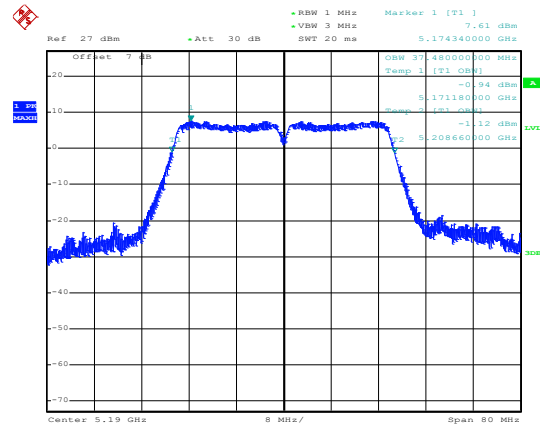
## 802.11n(HT40)

## 26 dB EBW



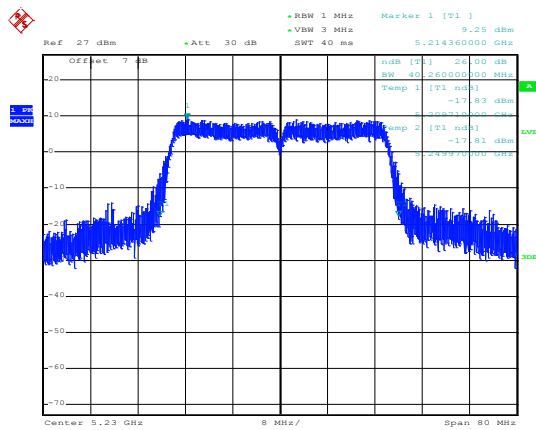
Date: 18.APR.2020 14:19:30

## 99% OBW

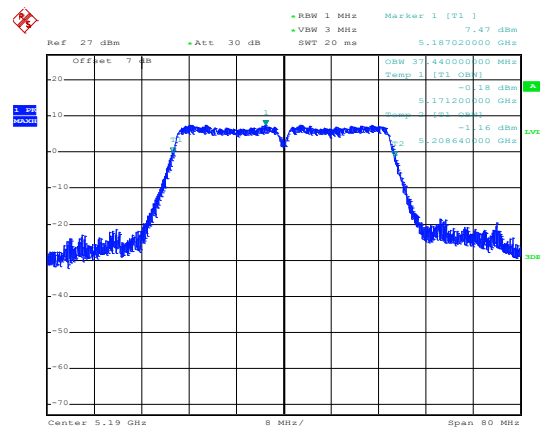


Date: 18.APR.2020 14:19:46

## Lowest channel



Date: 18.APR.2020 17:44:40

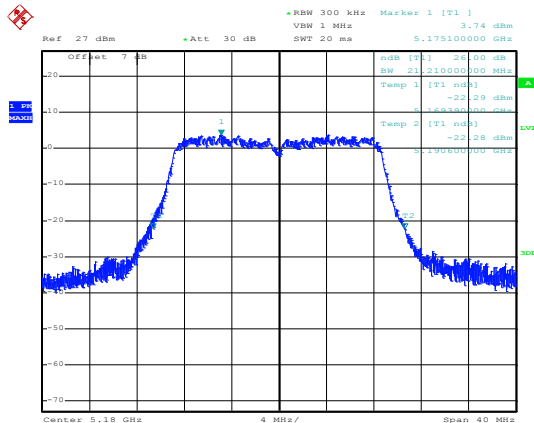


Date: 18.APR.2020 14:20:10

## Highest channel

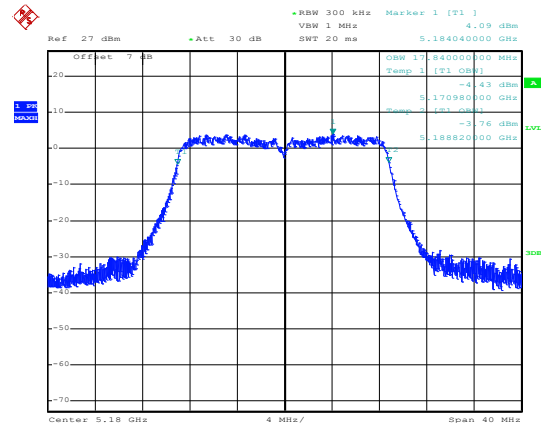
## 802.11ac(HT20)

### 26 dB EBW



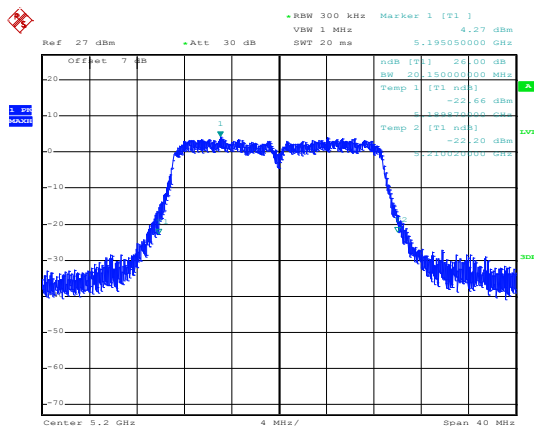
Date: 18.APR.2020 14:07:24

### 99% OBW

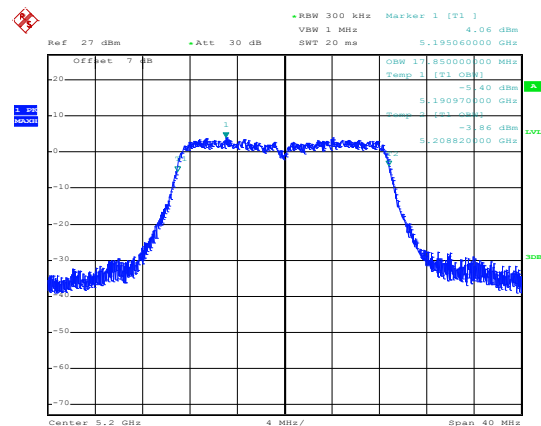


Date: 18.APR.2020 14:07:40

## Lowest channel

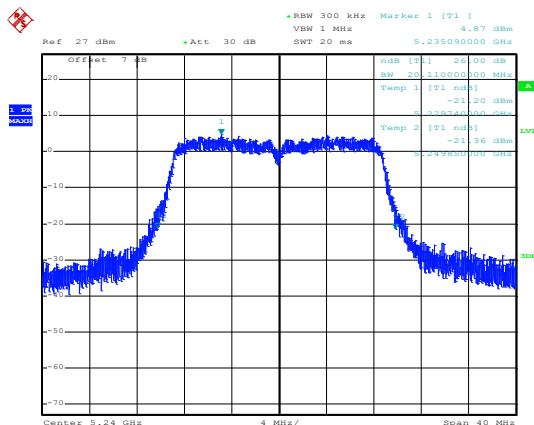


Date: 18.APR.2020 14:07:00

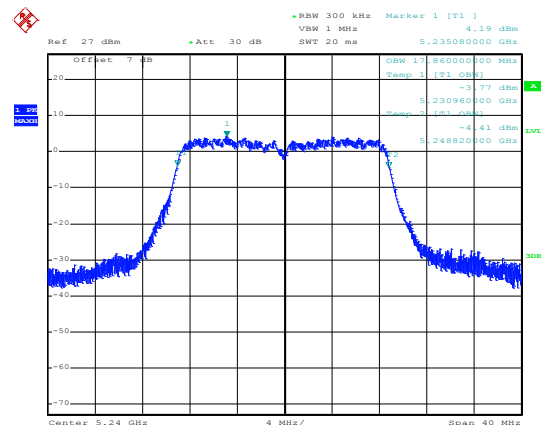


Date: 18.APR.2020 14:06:36

## Middle channel



Date: 18.APR.2020 14:05:50

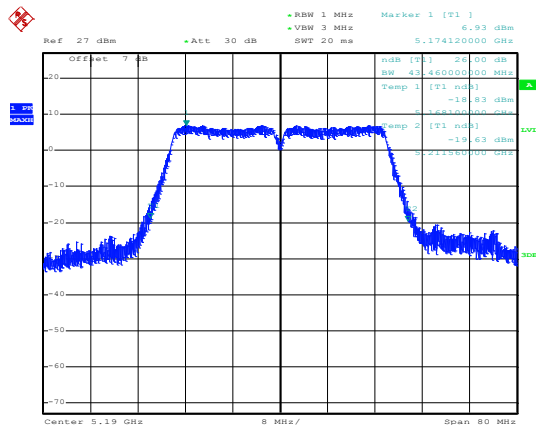


Date: 18.APR.2020 14:06:11

## Highest channel

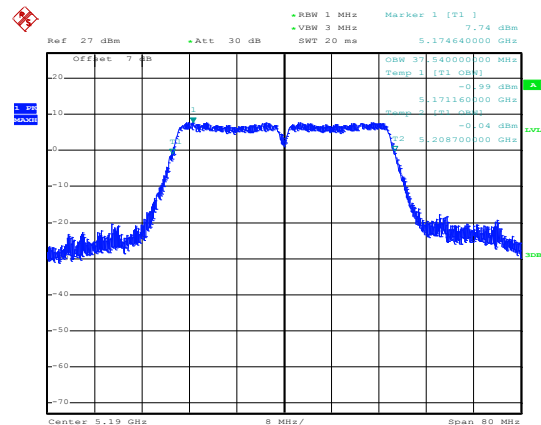
## 802.11ac(HT40)

26 dB EBW



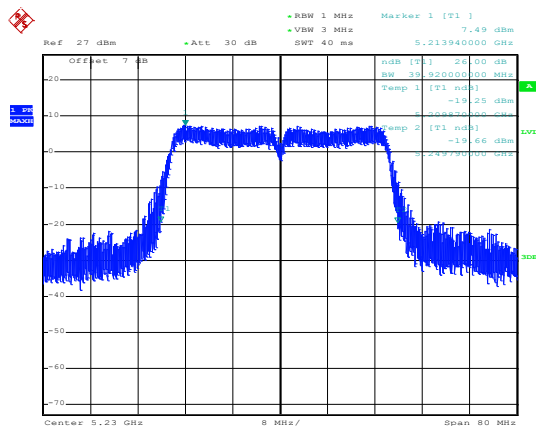
Date: 18.APR.2020 14:20:53

99% OBW

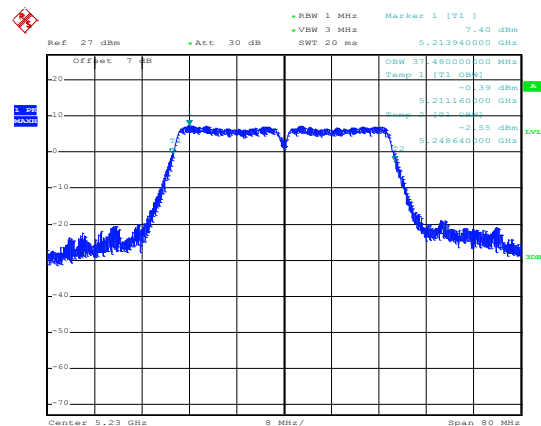


Date: 18.APR.2020 14:21:07

## Lowest channel



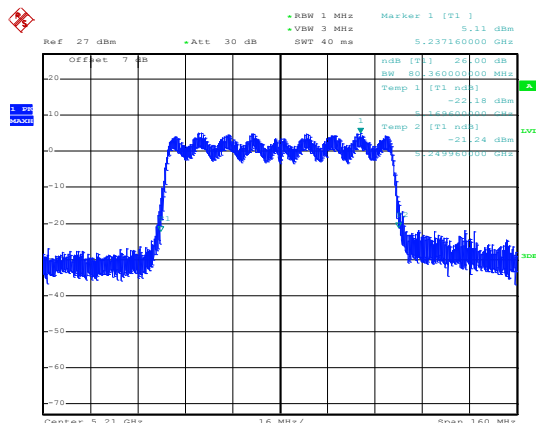
Date: 18.APR.2020 14:23:11



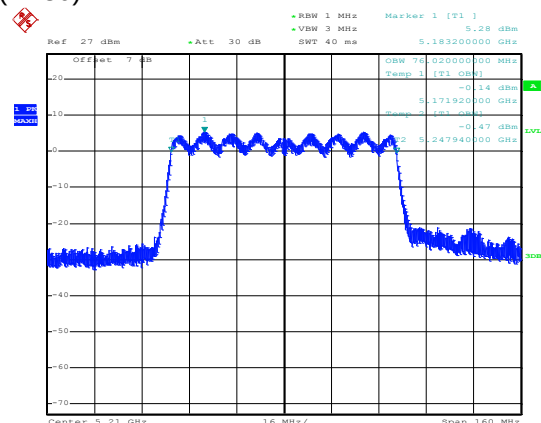
Date: 18.APR.2020 14:21:43

## Highest channel

## 802.11ac(HT80)



Date: 18.APR.2020 14:51:02



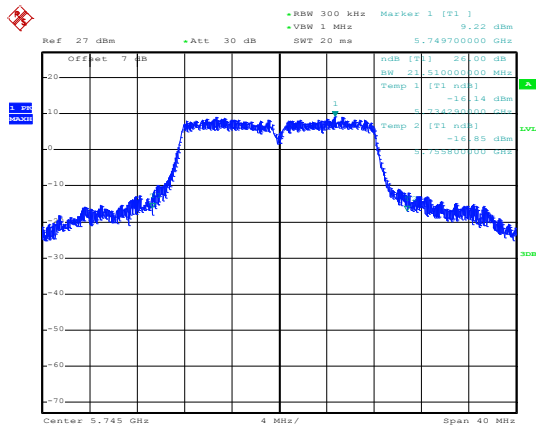
Date: 18.APR.2020 14:50:40

## Middle channel

## Band 4:

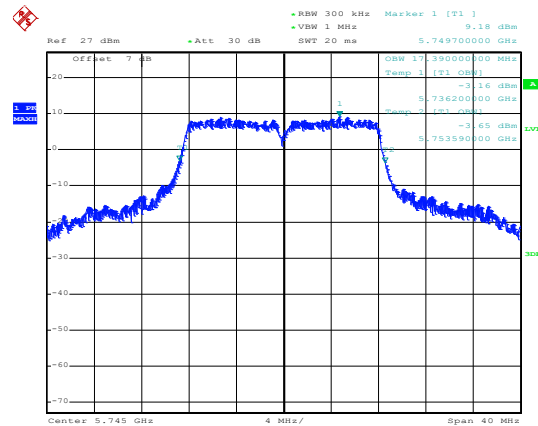
802.11a

26 dB EBW



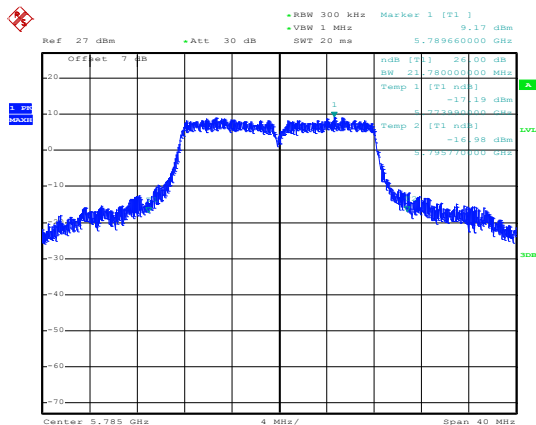
Date: 18.APR.2020 19:42:59

99% OBW

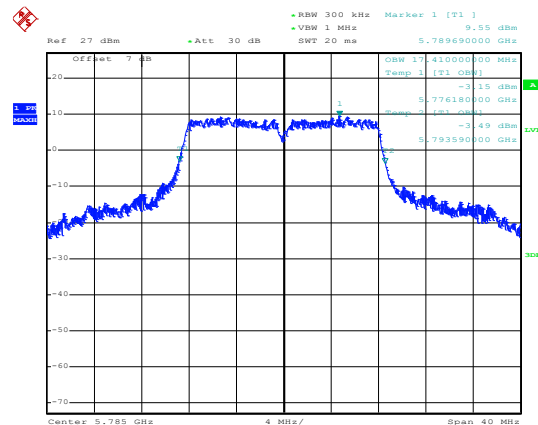


Date: 18.APR.2020 19:42:47

Lowest channel

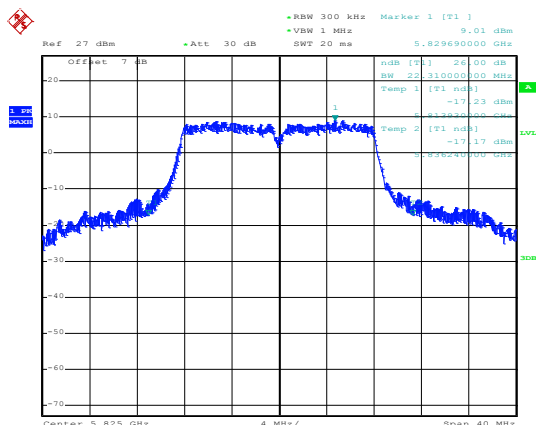


Date: 18.APR.2020 19:43:24

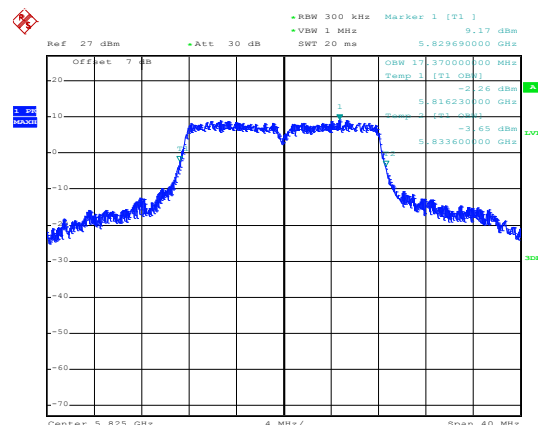


Date: 18.APR.2020 19:43:36

Middle channel



Date: 18.APR.2020 19:44:10

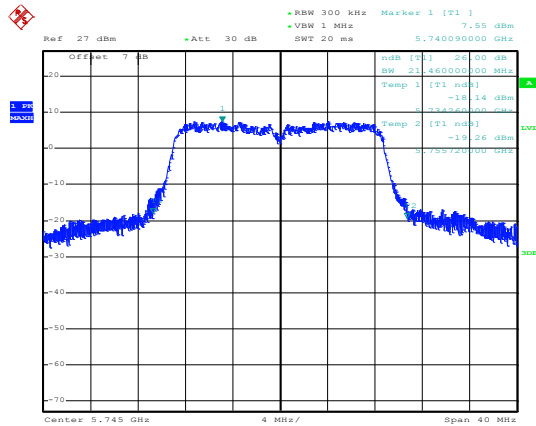


Date: 18.APR.2020 19:43:54

Highest channel

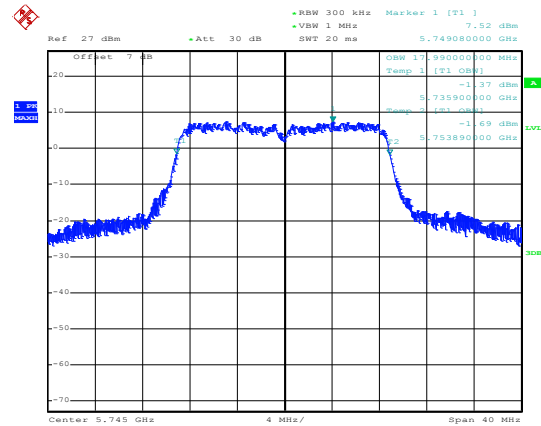
## 802.11n(HT20)

### 26 dB EBW



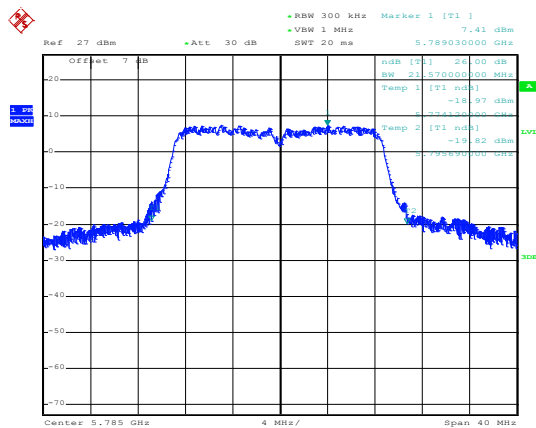
Date: 18.APR.2020 19:45:36

### 99% OBW

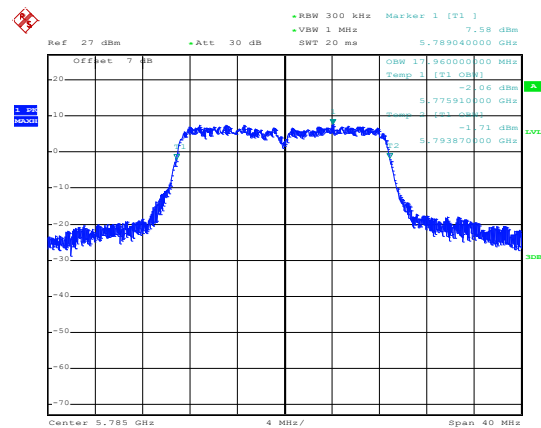


Date: 18.APR.2020 19:45:46

## Lowest channel

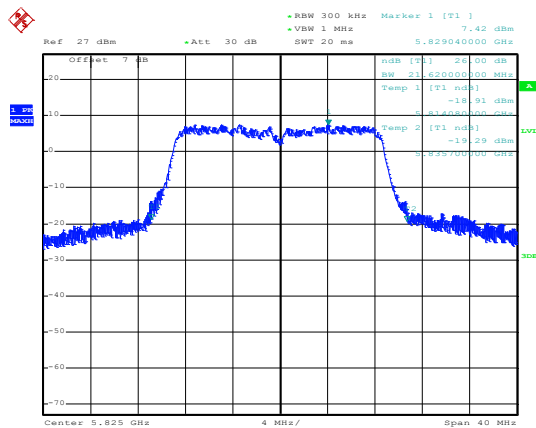


Date: 18.APR.2020 19:45:17

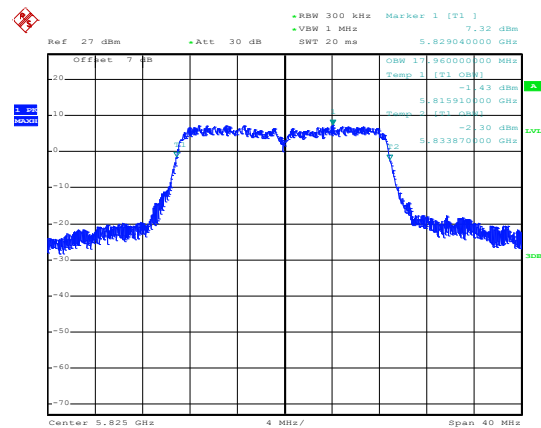


Date: 18.APR.2020 19:45:04

## Middle channel



Date: 18.APR.2020 19:44:36

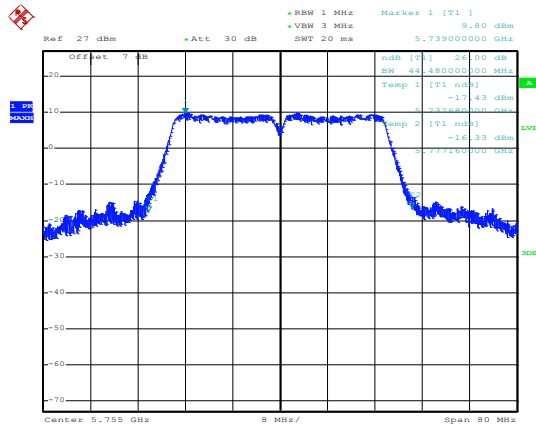


Date: 18.APR.2020 19:44:45

## Highest channel

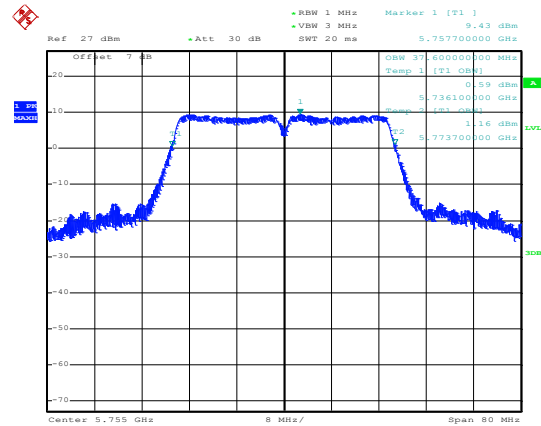
## 802.11n(HT40)

### 26 dB EBW



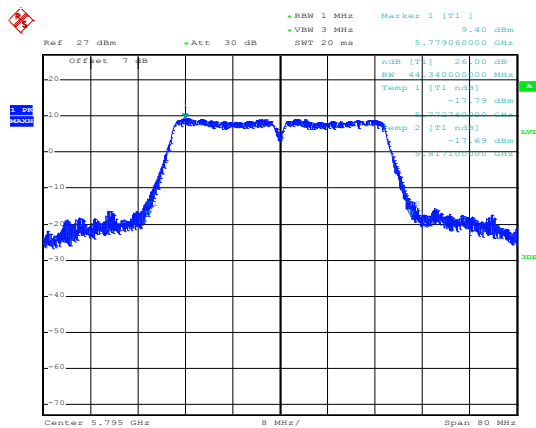
Date: 18.APR.2020 19:55:06

### 99% OBW

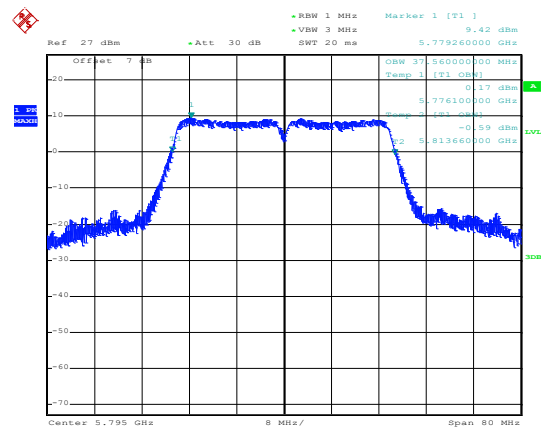


Date: 18.APR.2020 19:55:17

## Lowest channel



Date: 18.APR.2020 19:55:48

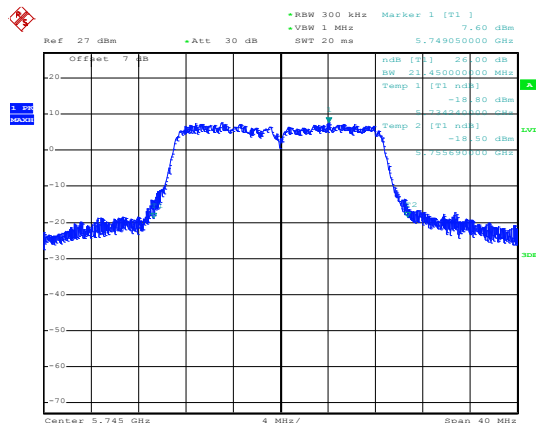


Date: 18.APR.2020 19:55:40

## Highest channel

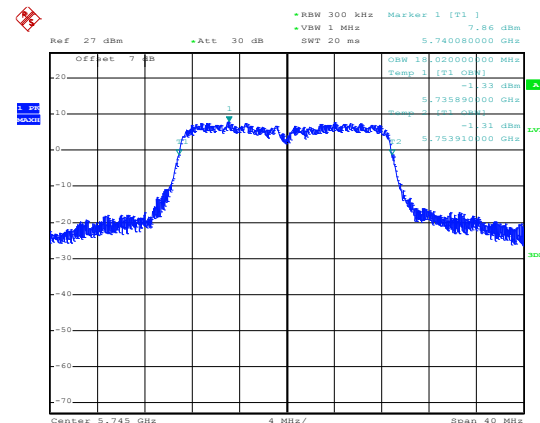
## 802.11ac(HT20)

### 26 dB EBW



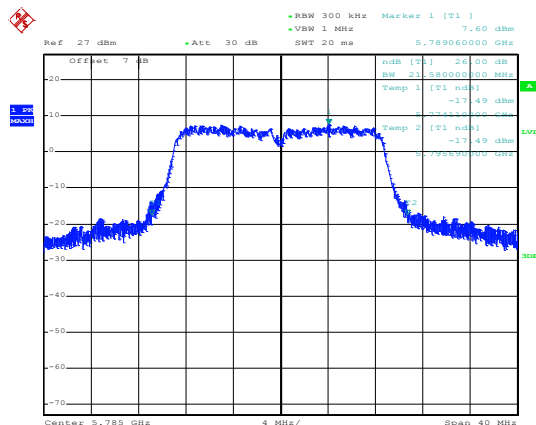
Date: 18.APR.2020 19:46:20

### 99% OBW

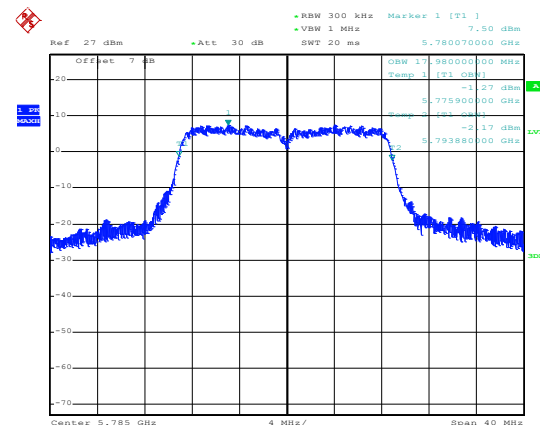


Date: 18.APR.2020 19:46:09

## Lowest channel

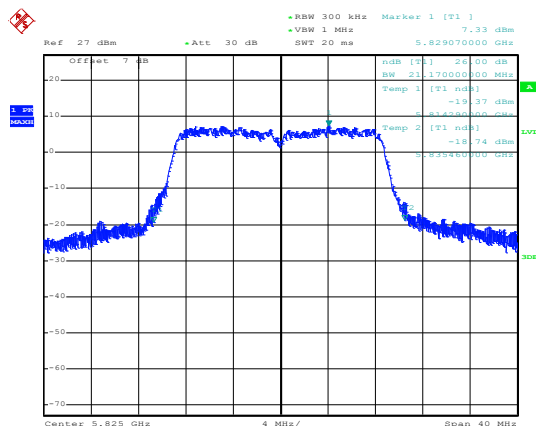


Date: 18.APR.2020 19:46:37

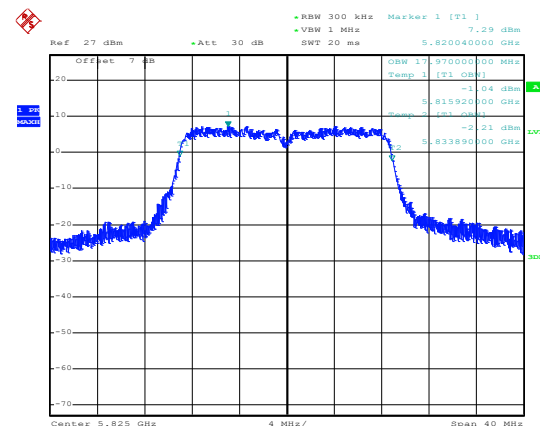


Date: 18.APR.2020 19:46:47

## Middle channel



Date: 18.APR.2020 19:47:13

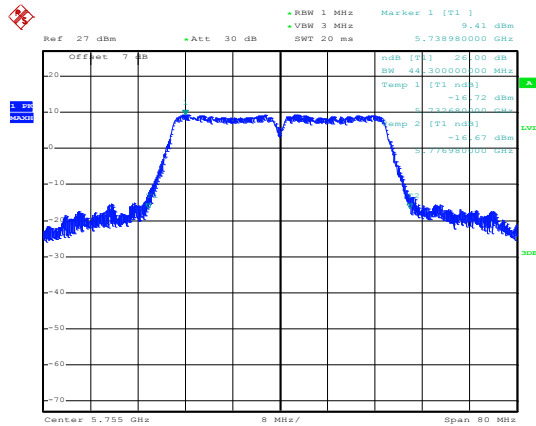


Date: 18.APR.2020 19:47:03

## Highest channel

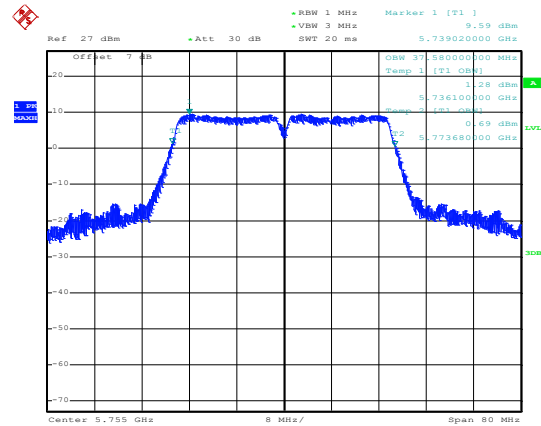
## 802.11ac(HT40)

26 dB EBW



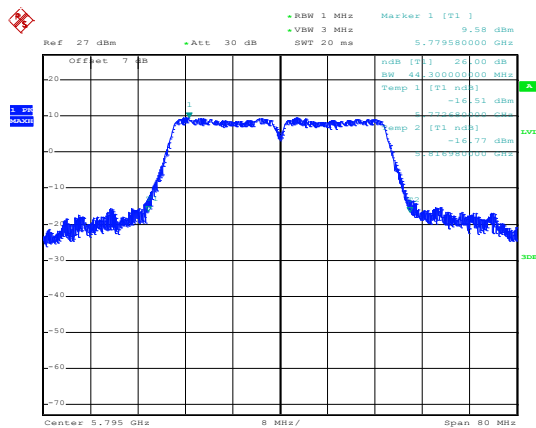
Date: 18.APR.2020 19:56:53

99% OBW

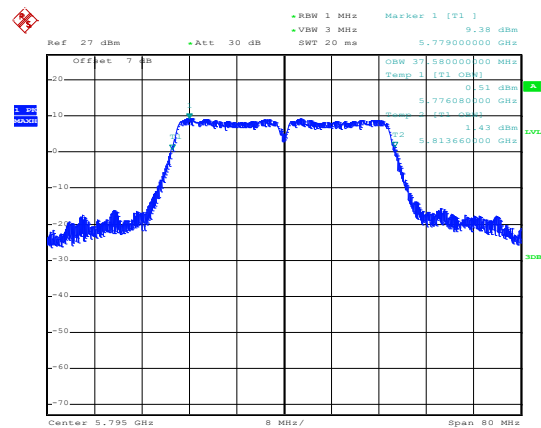


Date: 18.APR.2020 19:56:41

## Lowest channel



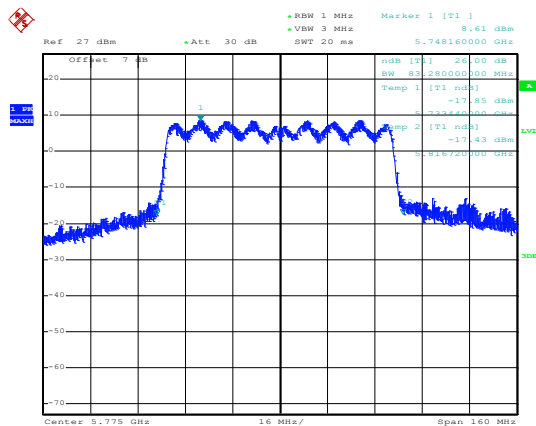
Date: 18.APR.2020 19:56:12



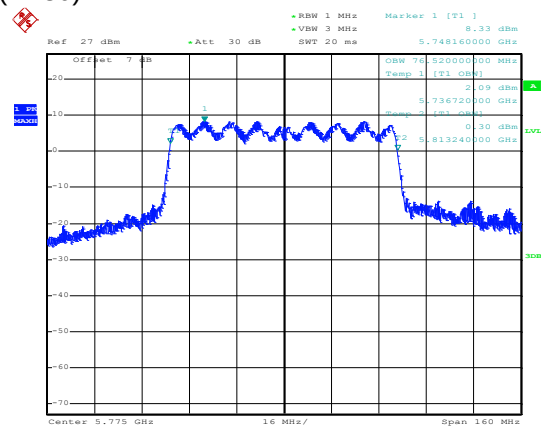
Date: 18.APR.2020 19:56:23

## Highest channel

## 802.11ac(HT80)



Date: 18.APR.2020 19:53:40

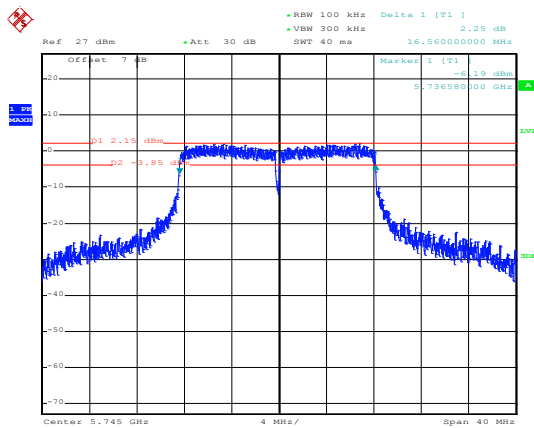


Date: 18.APR.2020 19:53:54

## Middle channel

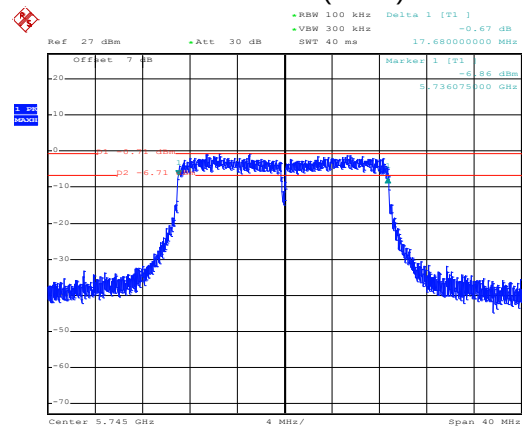
## 6dB BW

### 802.11a



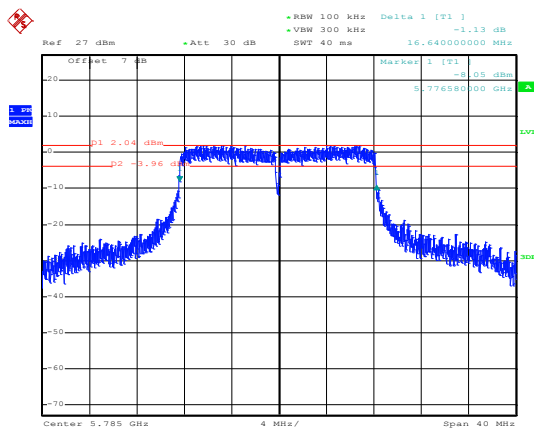
Date: 18.APR.2020 14:55:25

### 802.11n(HT20)



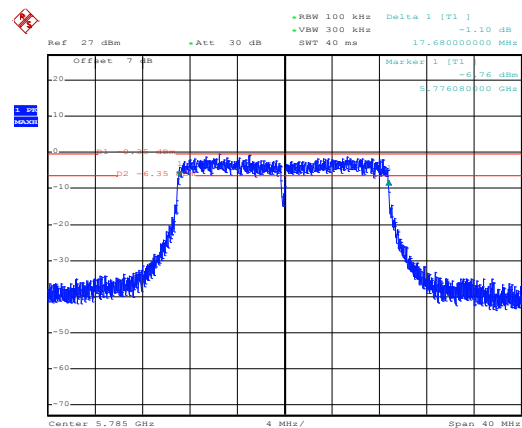
Date: 18.APR.2020 15:00:33

### Lowest channel



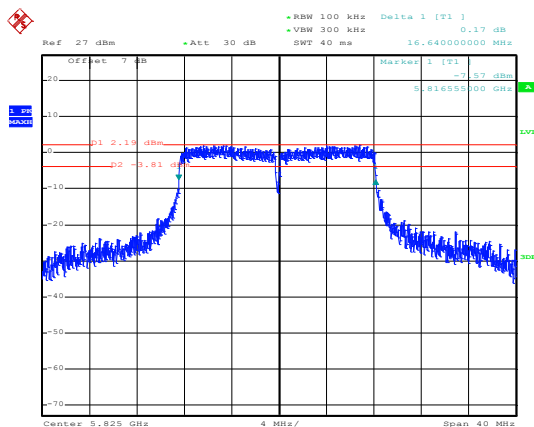
Date: 18.APR.2020 14:56:29

### Lowest channel



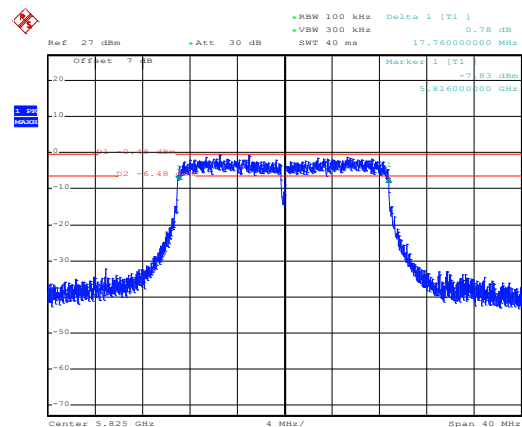
Date: 18.APR.2020 14:59:37

### Middle channel



Date: 18.APR.2020 14:57:40

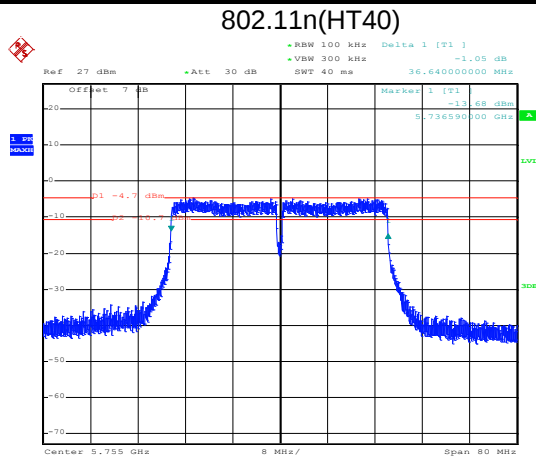
### Middle channel



Date: 18.APR.2020 14:58:53

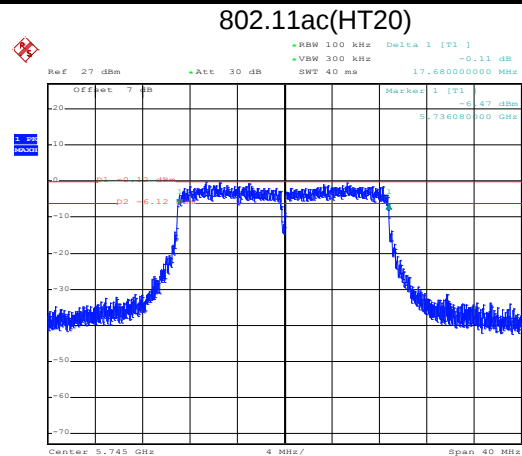
### Highest channel

### Highest channel



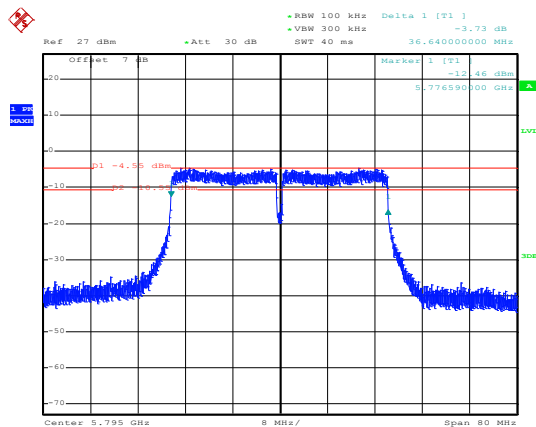
Date: 18.APR.2020 15:04:48

Lowest channel



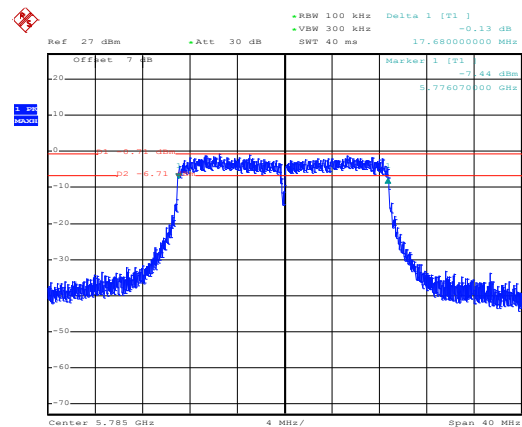
Date: 18.APR.2020 15:01:41

Lowest channel



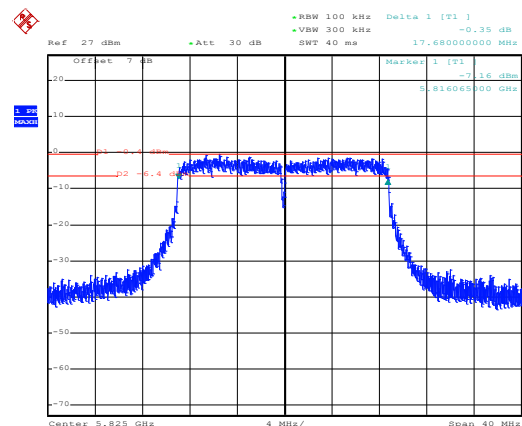
Date: 18.APR.2020 15:06:15

Highest channel



Date: 18.APR.2020 15:02:26

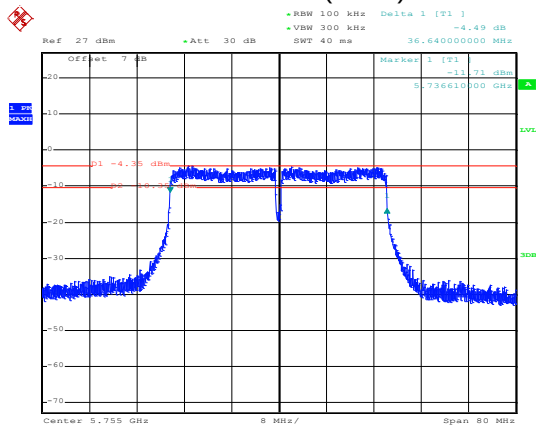
Middle channel



Date: 18.APR.2020 15:03:22

Highest channel

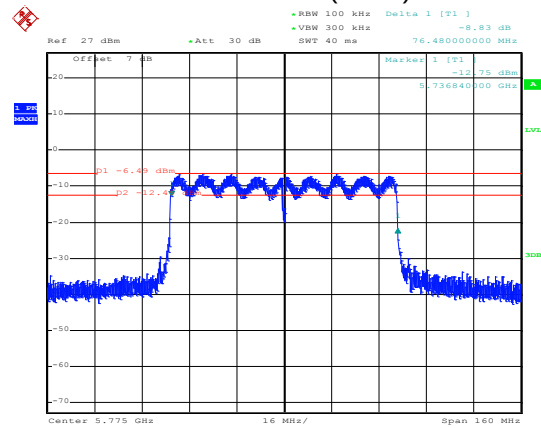
## 802.11ac(HT40)



Date: 18.APR.2020 15:08:50

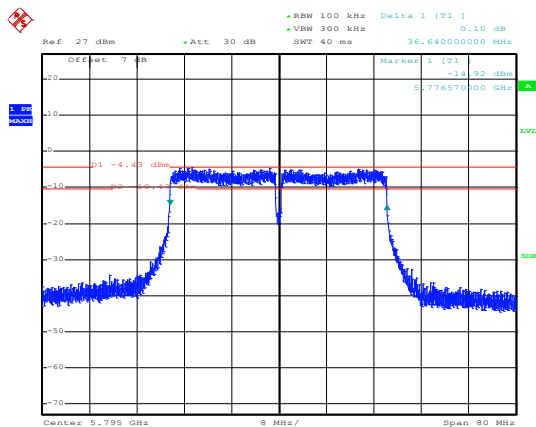
## Lowest channel

## 802.11ac(HT80)



Date: 18.APR.2020 14:53:57

## Middle channel



Date: 18.APR.2020 15:07:21

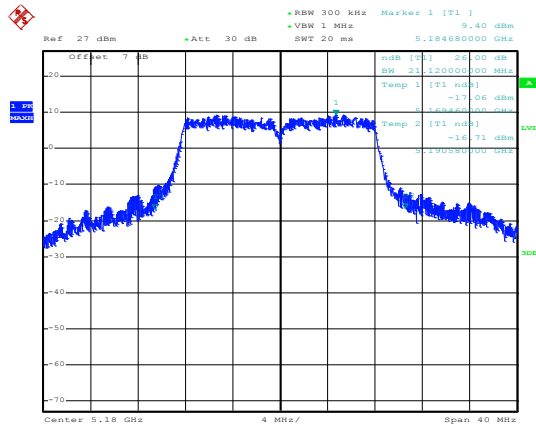
## Highest channel

TX1:

Band 1:

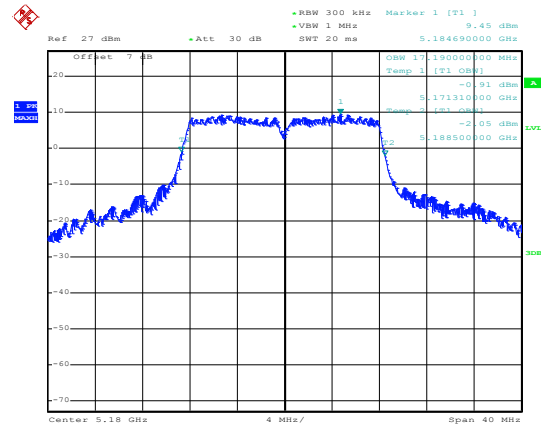
802.11a

26 dB EBW



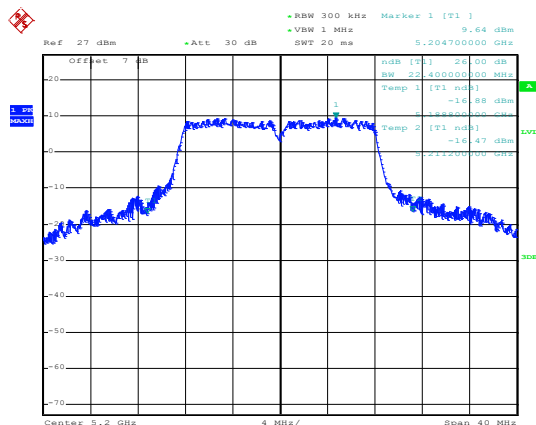
Date: 18.APR.2020 18:42:04

99% OBW

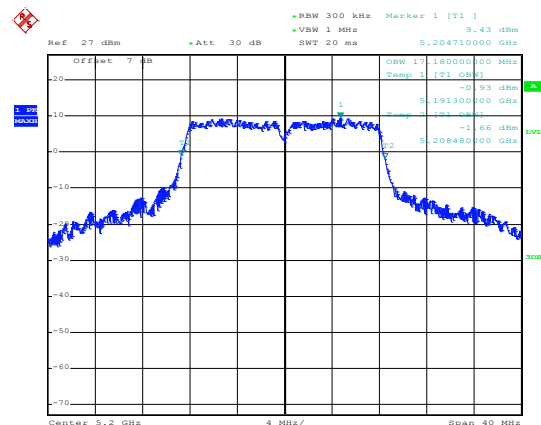


Date: 18.APR.2020 18:41:34

Lowest channel

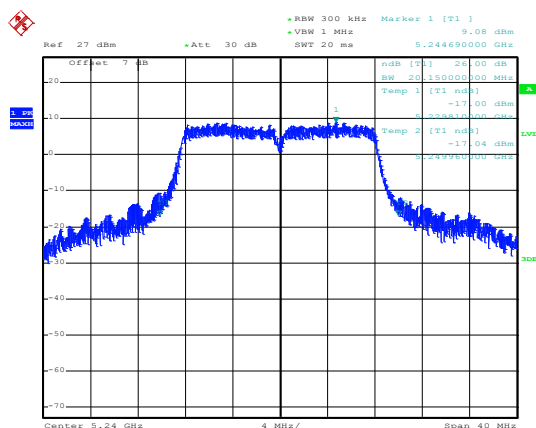


Date: 18.APR.2020 18:42:23

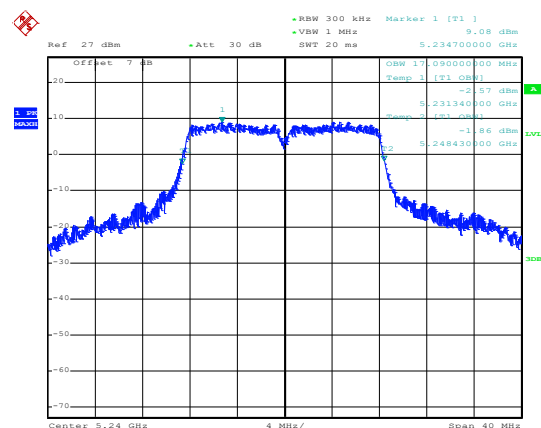


Date: 18.APR.2020 18:42:34

Middle channel



Date: 18.APR.2020 18:43:18

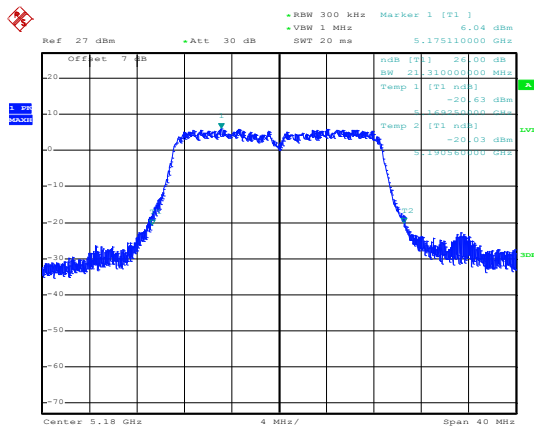


Date: 18.APR.2020 18:42:58

Highest channel

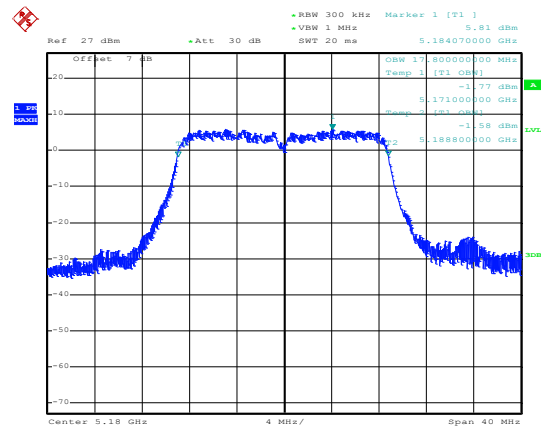
## 802.11n(HT20)

## 26 dB EBW



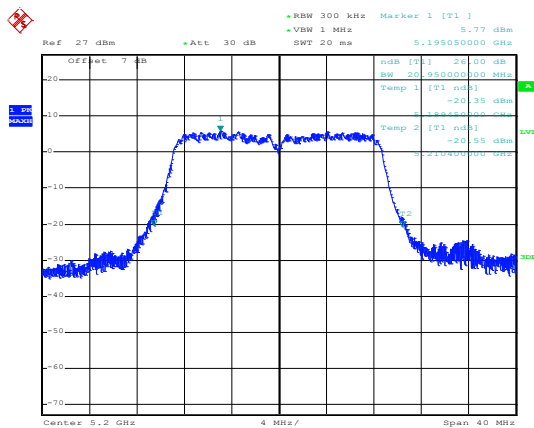
Date: 18.APR.2020 18:46:29

## 99% OBW

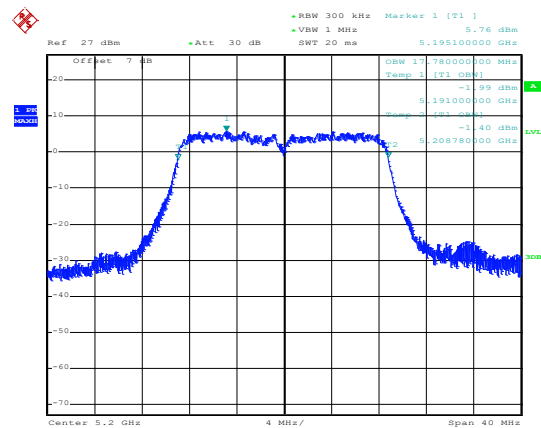


Date: 18.APR.2020 18:46:39

## Lowest channel

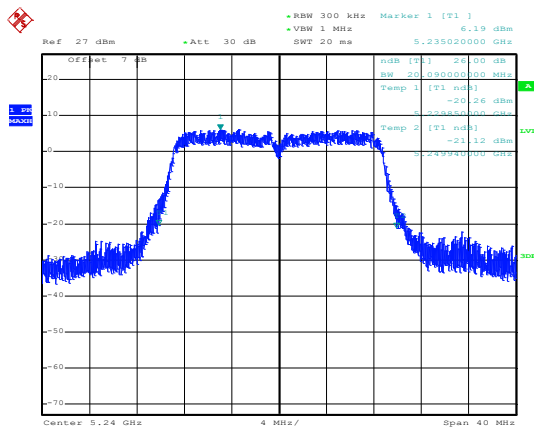


Date: 18.APR.2020 18:47:21

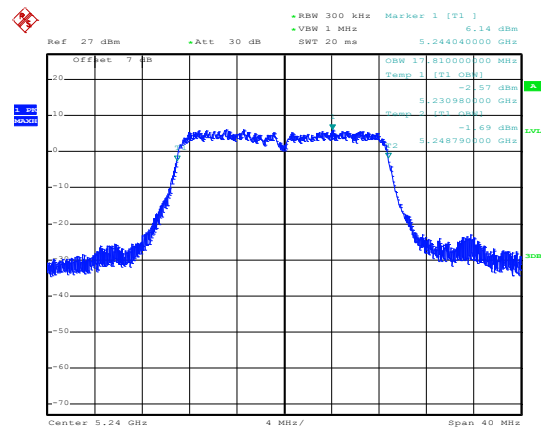


Date: 18.APR.2020 18:47:35

## Middle channel



Date: 18.APR.2020 18:48:25

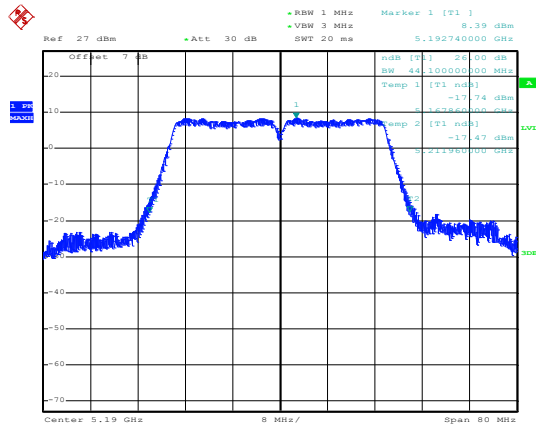


Date: 18.APR.2020 18:47:57

## Highest channel

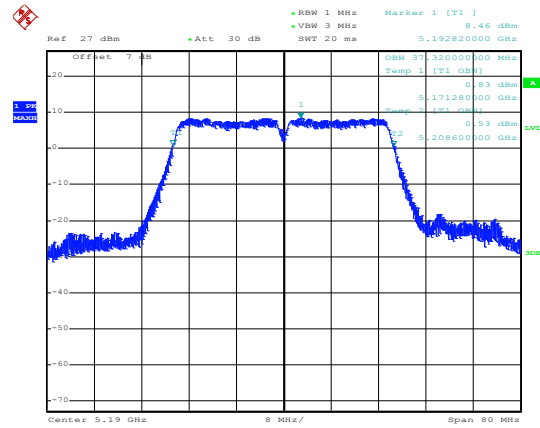
## 802.11n(HT40)

## 26 dB EBW



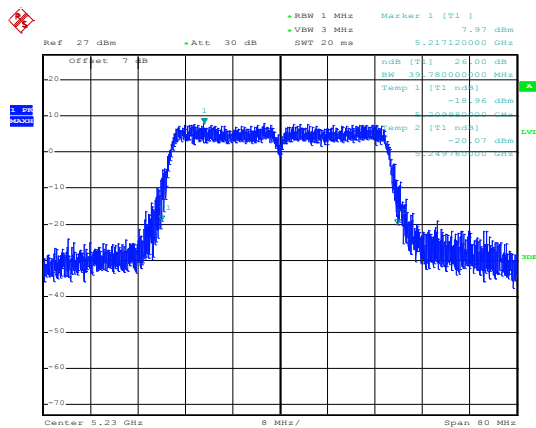
Date: 18.APR.2020 18:55:29

## 99% OBW

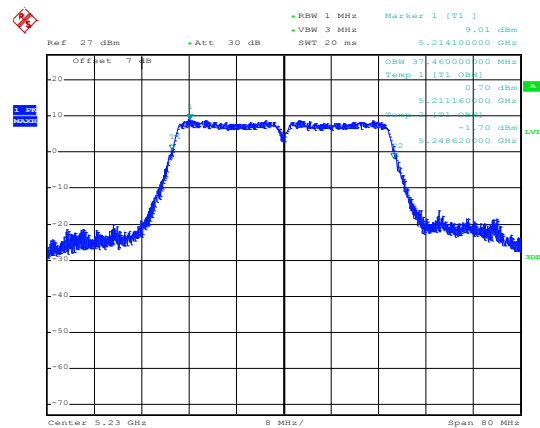


Date: 18.APR.2020 18:55:19

## Lowest channel



Date: 18.APR.2020 18:55:54

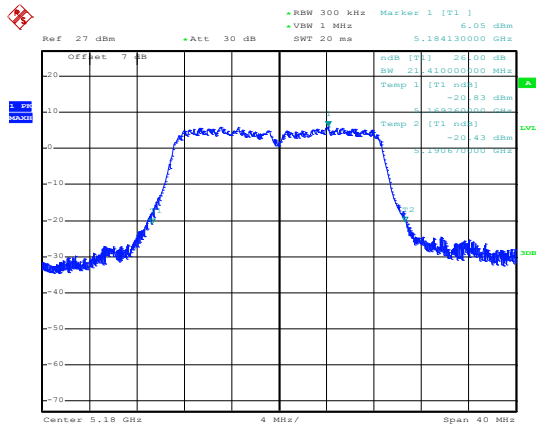


Date: 18.APR.2020 18:56:09

## Highest channel

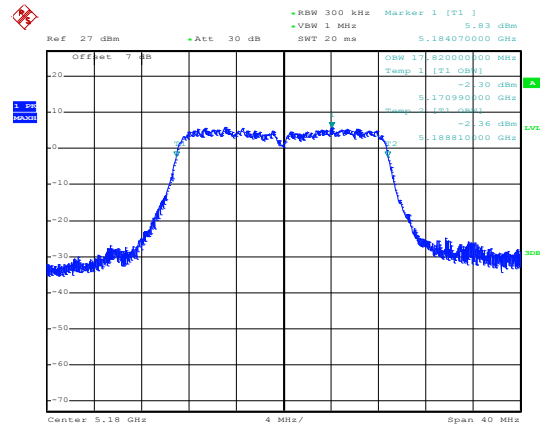
## 802.11ac(HT20)

26 dB EBW



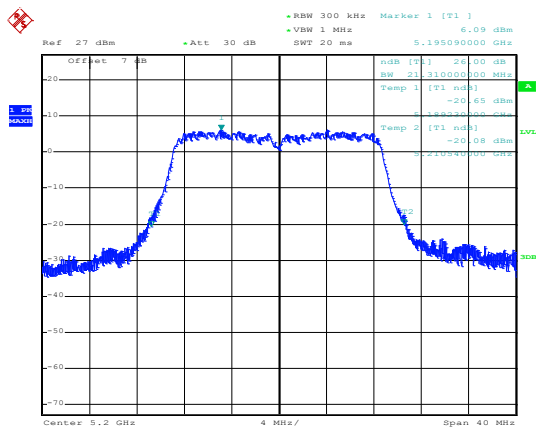
Date: 18.APR.2020 18:52:40

99% OBW

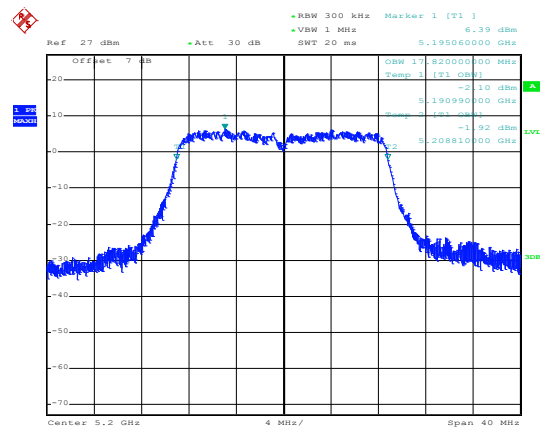


Date: 18.APR.2020 18:52:55

## Lowest channel

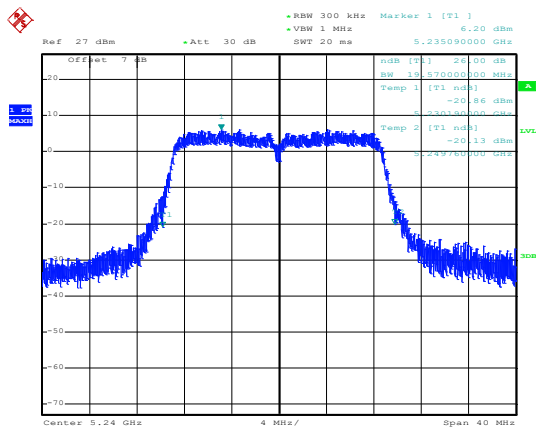


Date: 18.APR.2020 18:53:21

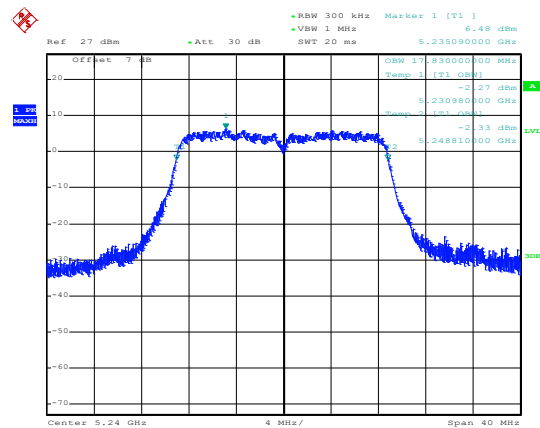


Date: 18.APR.2020 18:53:08

## Middle channel



Date: 18.APR.2020 18:54:09

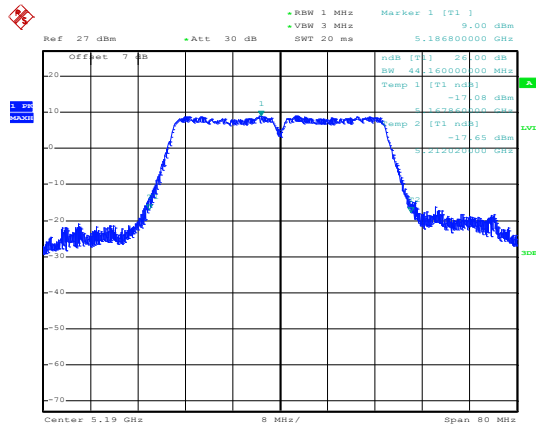


Date: 18.APR.2020 18:54:23

## Highest channel

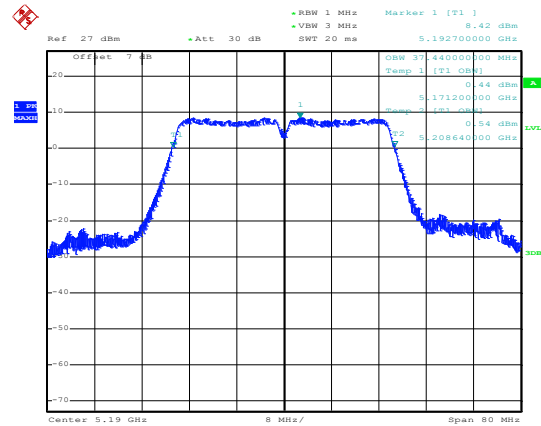
## 802.11ac(HT40)

26 dB EBW



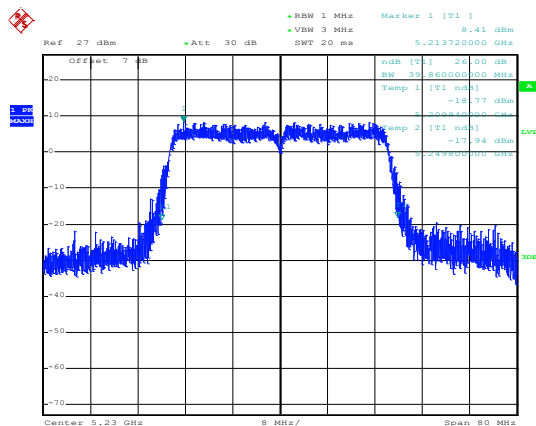
Date: 18.APR.2020 19:10:57

99% OBW

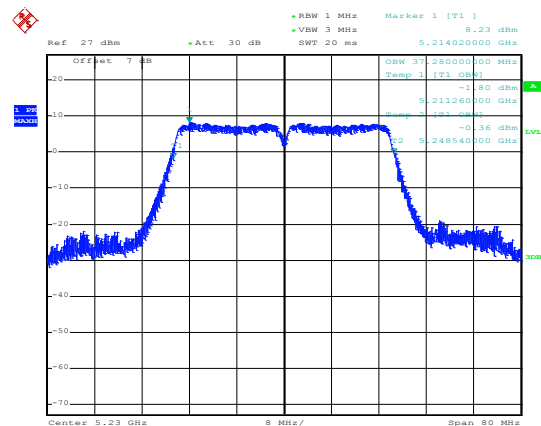


Date: 18.APR.2020 18:59:35

## Lowest channel



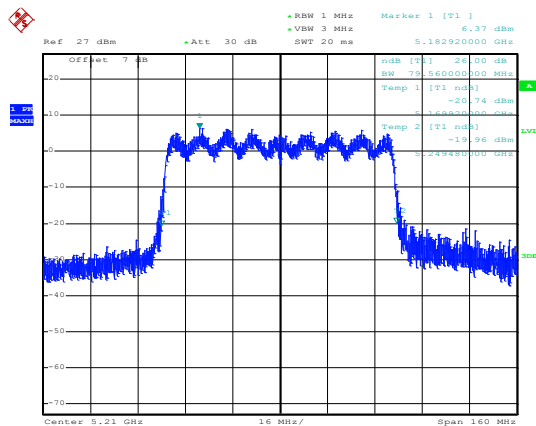
Date: 18.APR.2020 19:01:31



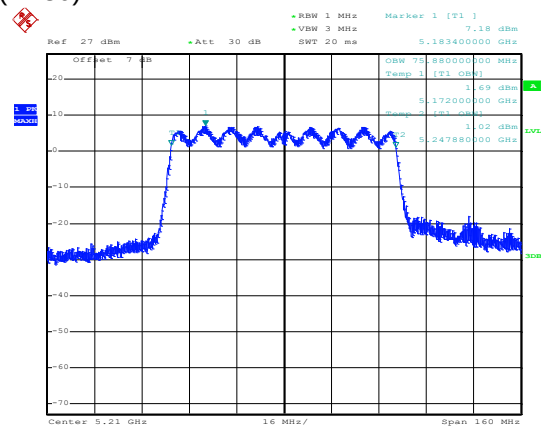
Date: 18.APR.2020 19:00:56

## Highest channel

## 802.11ac(HT80)



Date: 18.APR.2020 19:02:20



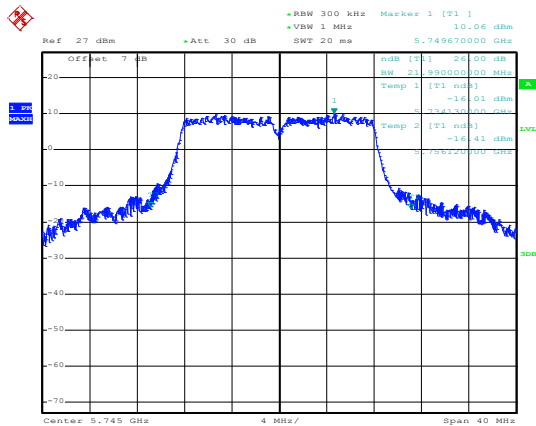
Date: 18.APR.2020 19:02:35

## Middle channel

## Band 4:

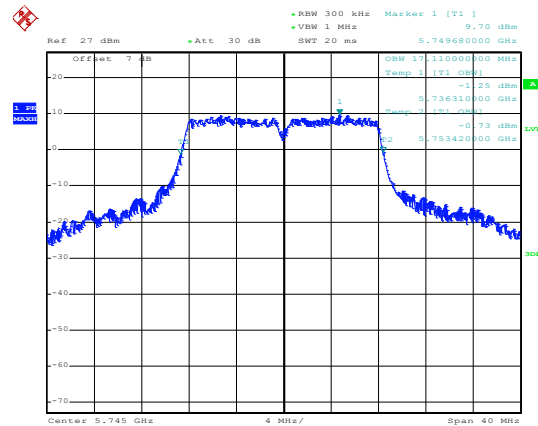
802.11a

26 dB EBW



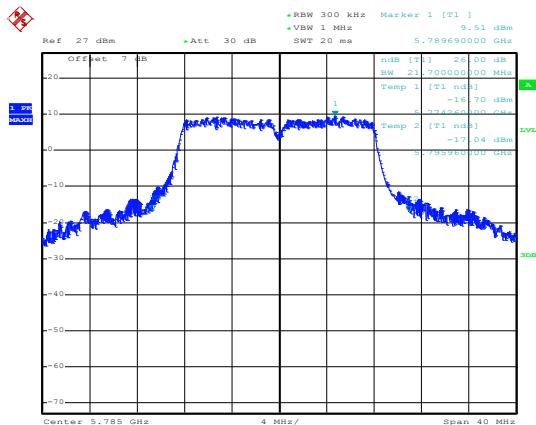
Date: 18.APR.2020 18:43:50

99% OBW

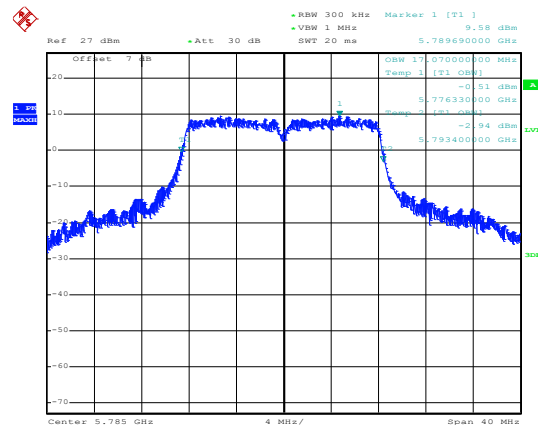


Date: 18.APR.2020 18:44:01

Lowest channel

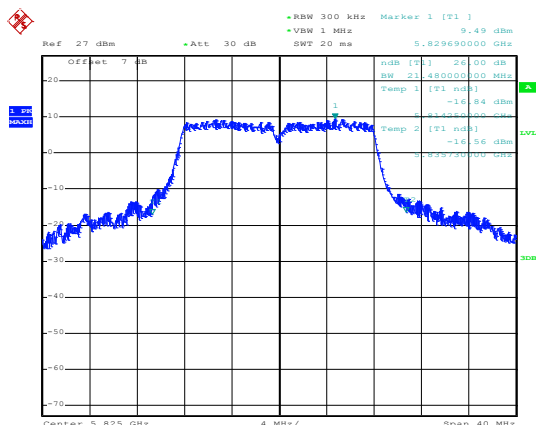


Date: 18.APR.2020 18:44:30

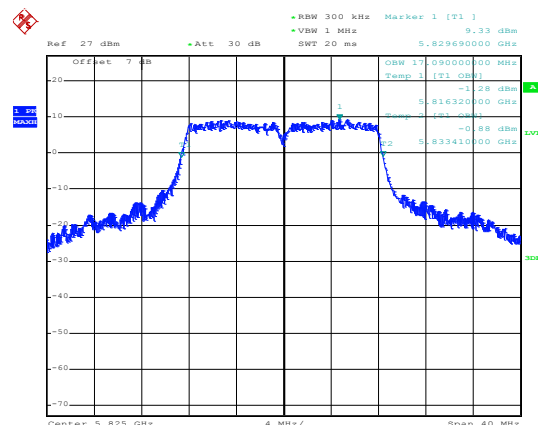


Date: 18.APR.2020 18:44:20

Middle channel



Date: 18.APR.2020 18:44:45

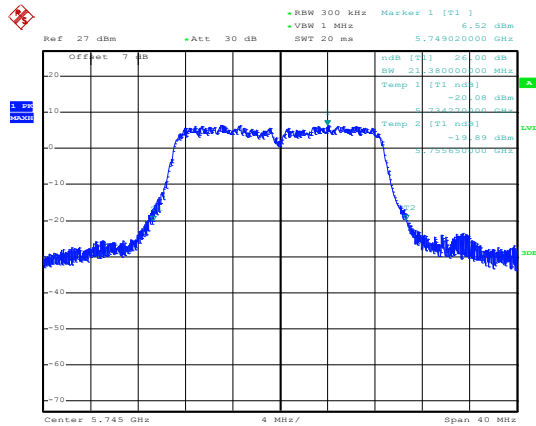


Date: 18.APR.2020 18:44:57

Highest channel

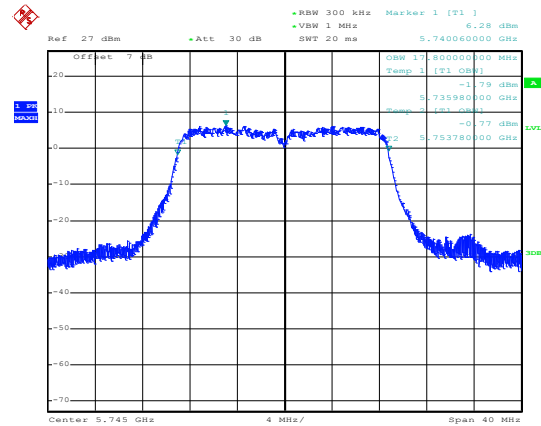
## 802.11n(HT20)

26 dB EBW



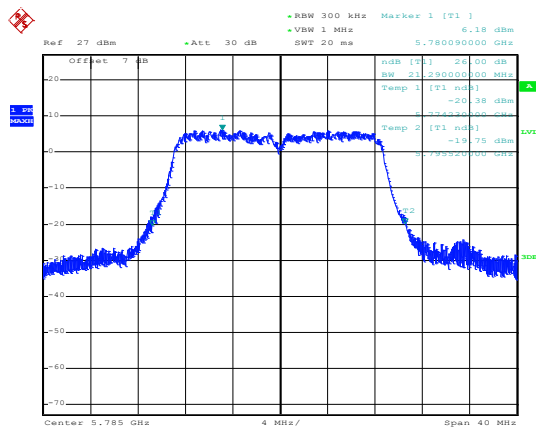
Date: 18.APR.2020 18:48:59

99% OBW

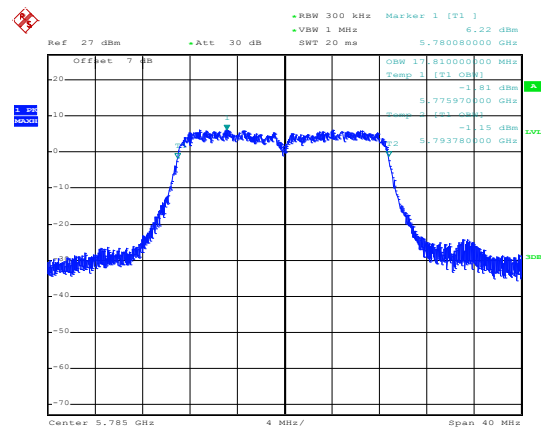


Date: 18.APR.2020 18:49:11

## Lowest channel

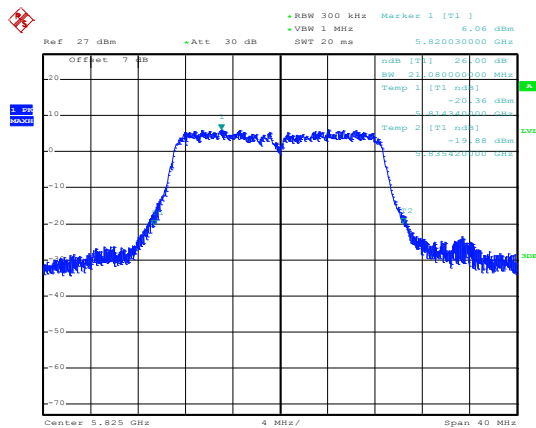


Date: 18.APR.2020 18:49:47

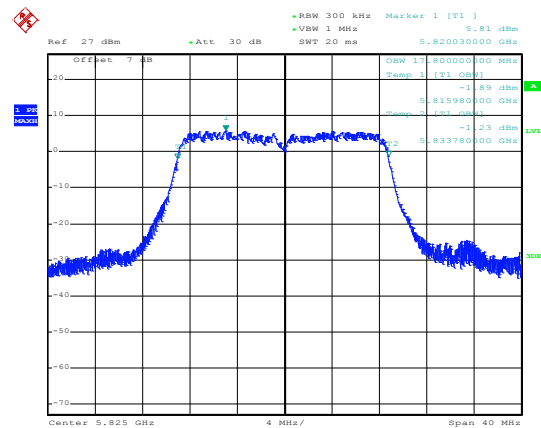


Date: 18.APR.2020 18:49:35

## Middle channel



Date: 18.APR.2020 18:50:03

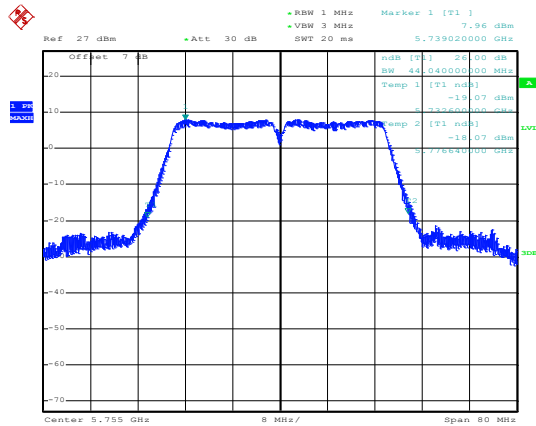


Date: 18.APR.2020 18:50:15

## Highest channel

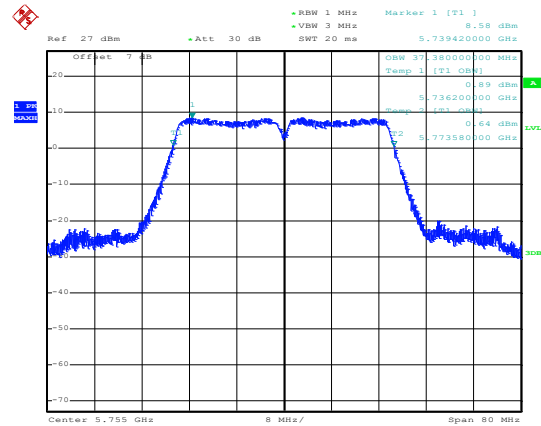
## 802.11n(HT40)

## 26 dB EBW



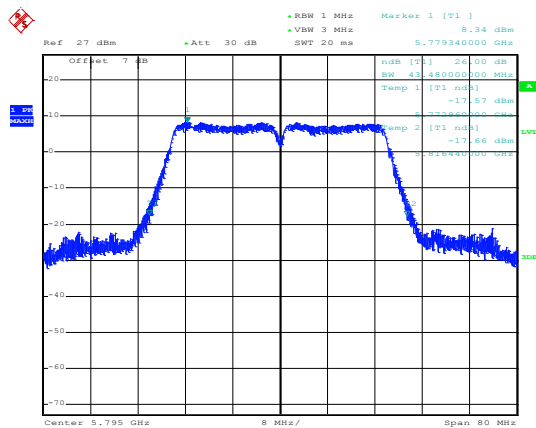
Date: 18.APR.2020 18:56:50

## 99% OBW

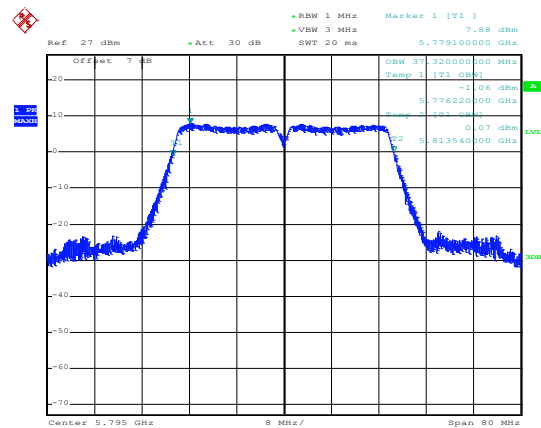


Date: 18.APR.2020 18:56:40

## Lowest channel



Date: 18.APR.2020 18:57:19

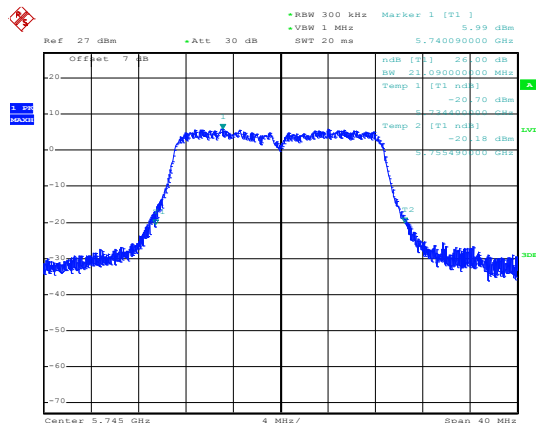


Date: 18.APR.2020 18:57:31

## Highest channel

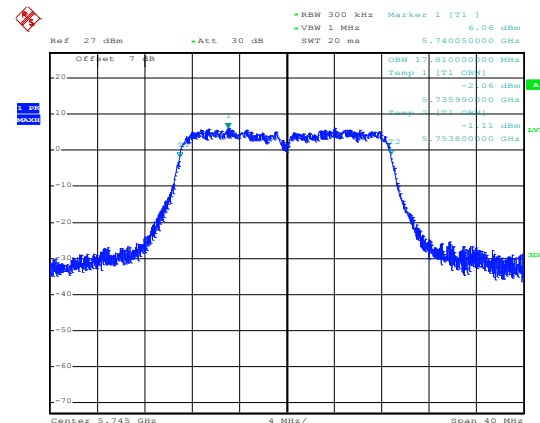
## 802.11ac(HT20)

### 26 dB EBW



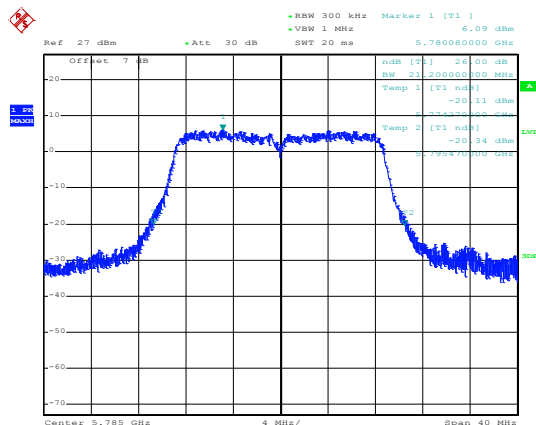
Date: 18.APR.2020 18:52:05

### 99% OBW

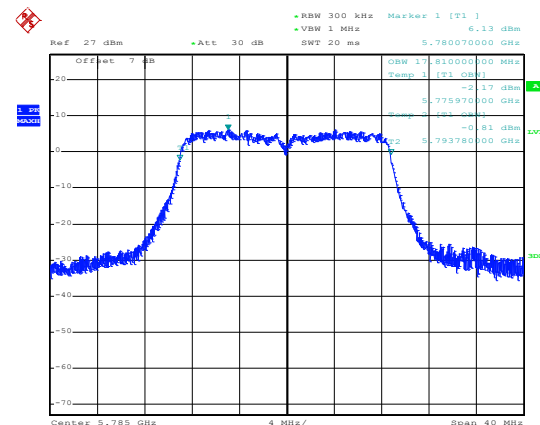


Date: 18.APR.2020 18:51:54

## Lowest channel

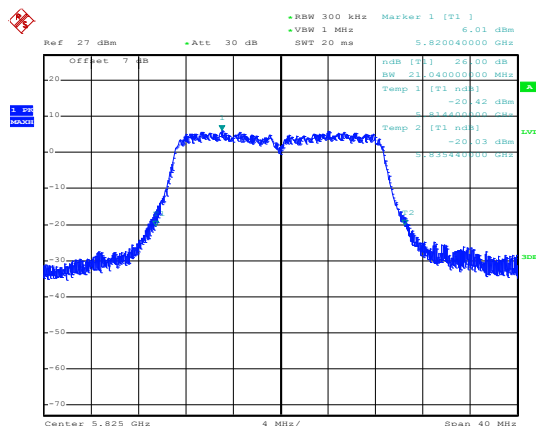


Date: 18.APR.2020 18:51:26

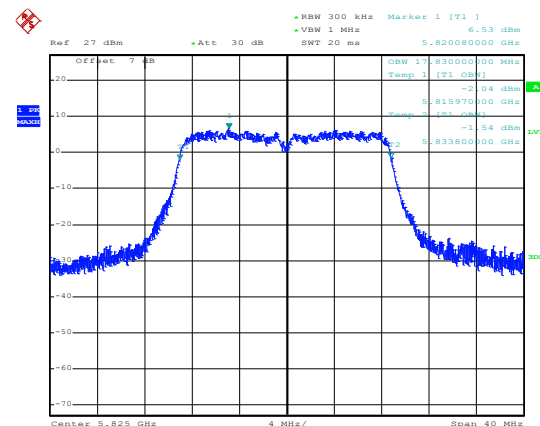


Date: 18.APR.2020 18:51:36

## Middle channel



Date: 18.APR.2020 18:50:53

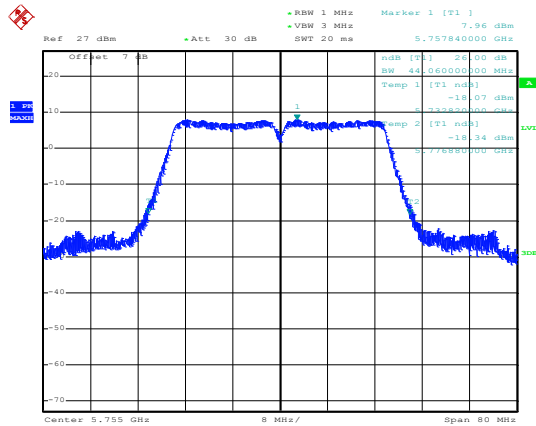


Date: 18.APR.2020 18:50:44

## Highest channel

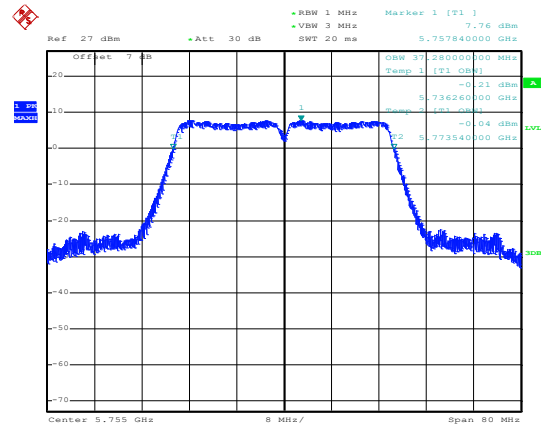
## 802.11ac(HT40)

26 dB EBW



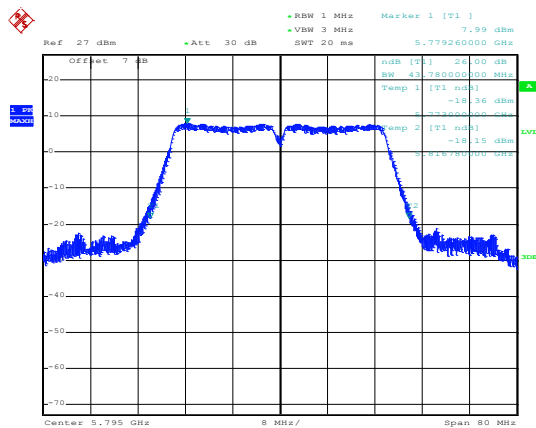
Date: 18.APR.2020 18:58:55

99% OBW

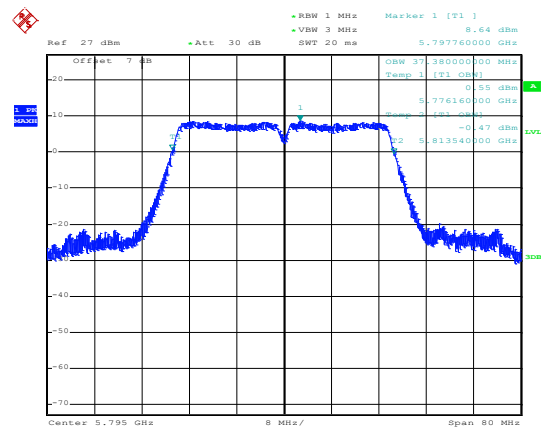


Date: 18.APR.2020 18:59:05

## Lowest channel



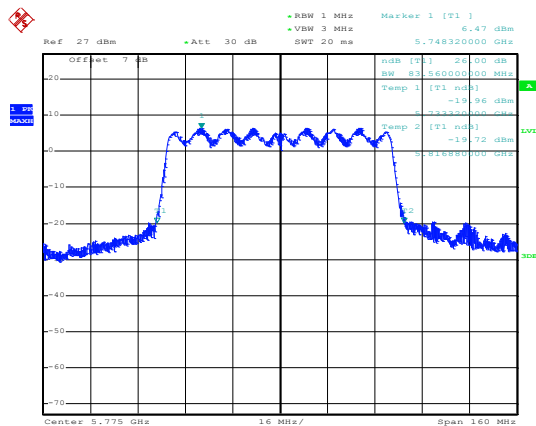
Date: 18.APR.2020 18:58:32



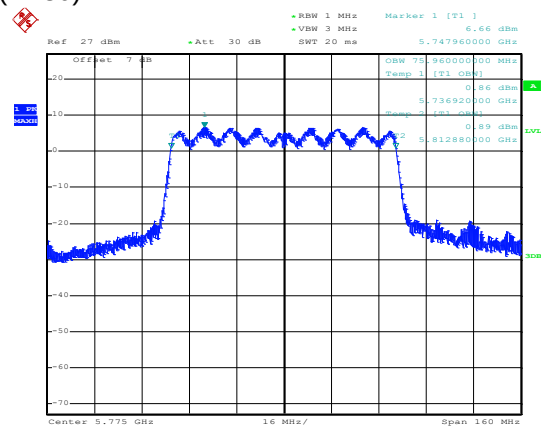
Date: 18.APR.2020 18:58:22

## Highest channel

## 802.11ac(HT80)



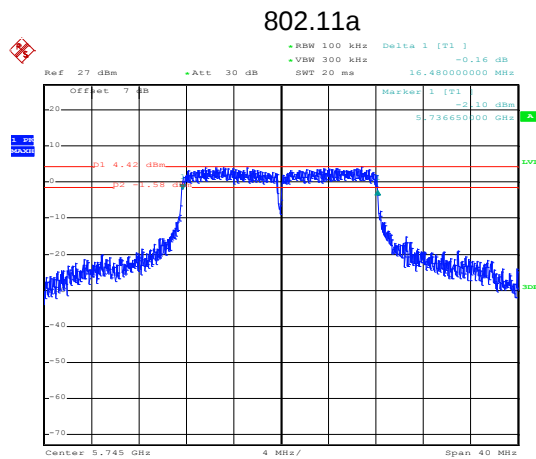
Date: 18.APR.2020 19:09:34



Date: 18.APR.2020 19:03:08

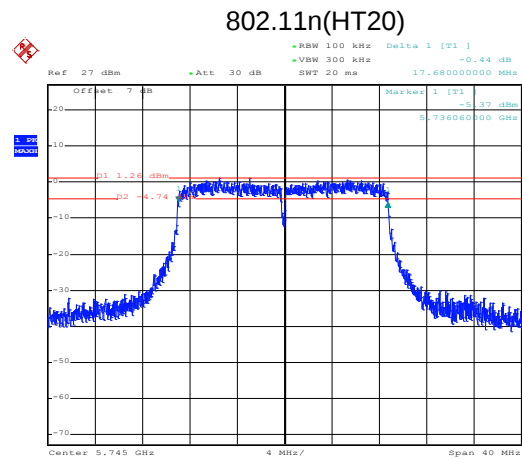
## Middle channel

6dB BW



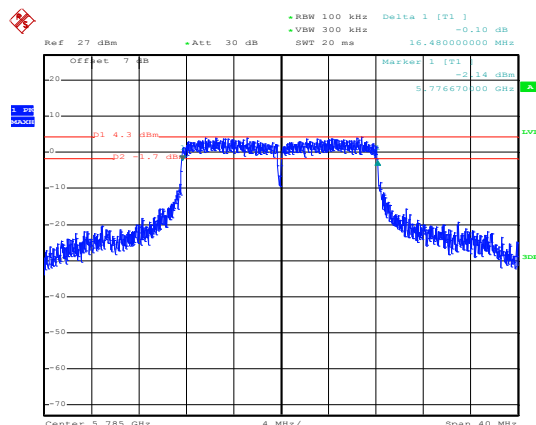
Date: 18.APR.2020 19:13:04

Lowest channel



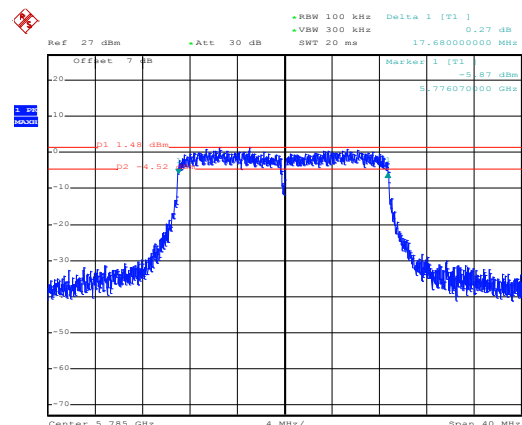
Date: 18.APR.2020 19:17:02

Lowest channel



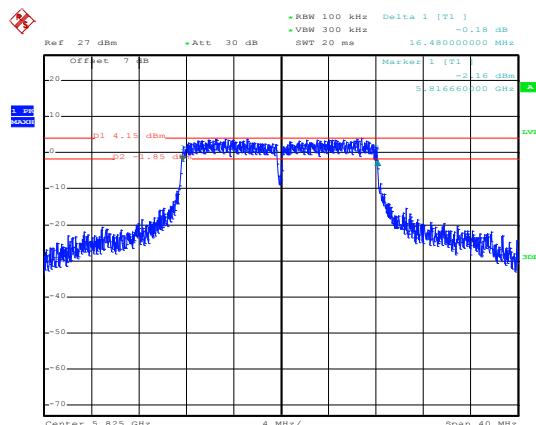
Date: 18.APR.2020 19:13:54

Middle channel



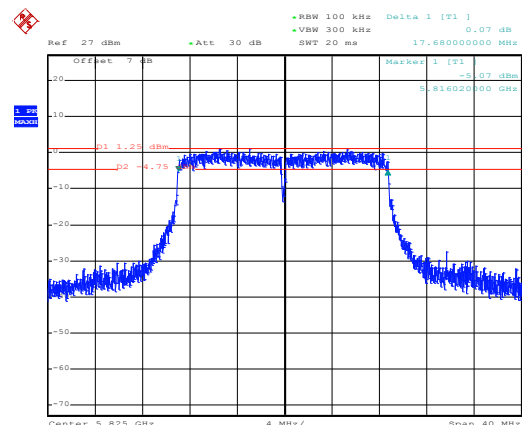
Date: 18.APR.2020 19:16:06

Middle channel



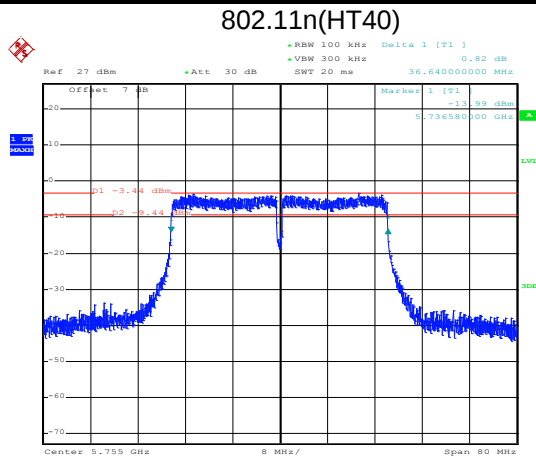
Date: 18.APR.2020 19:14:31

Highest channel



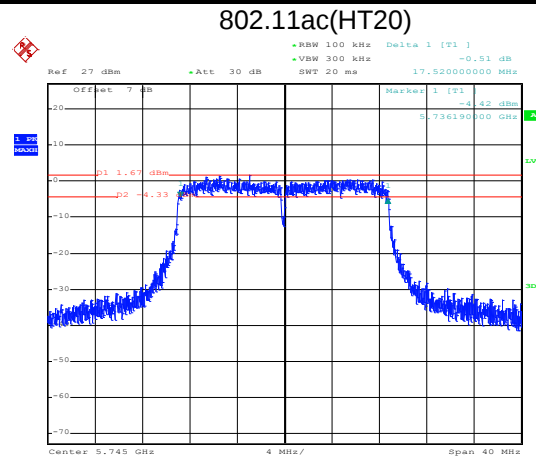
Date: 18.APR.2020 19:15:25

Highest channel



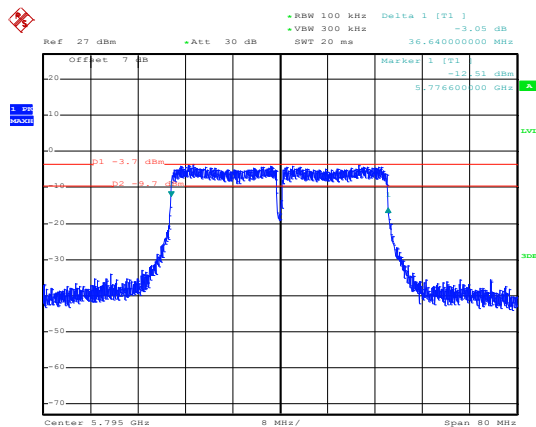
Date: 18.APR.2020 19:20:23

Lowest channel



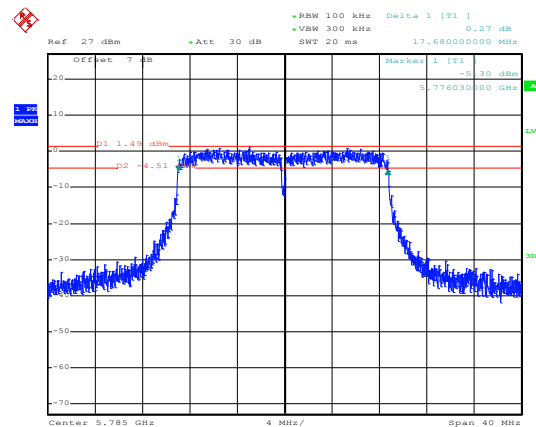
Date: 18.APR.2020 19:17:53

Lowest channel



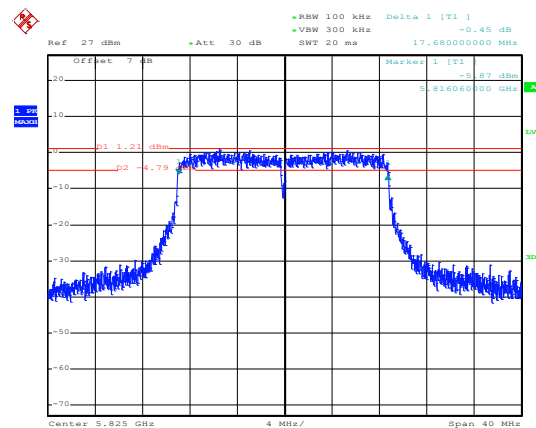
Date: 18.APR.2020 19:21:40

Highest channel



Date: 18.APR.2020 19:18:38

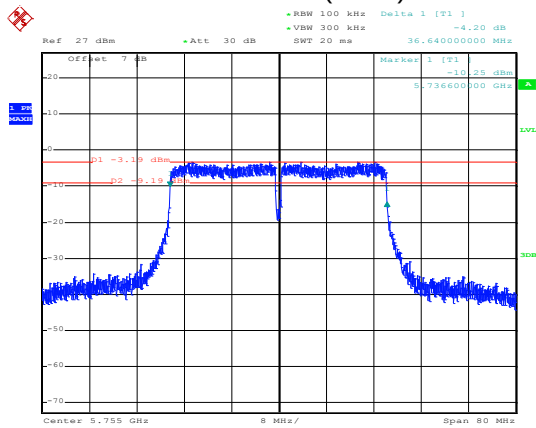
Middle channel



Date: 18.APR.2020 19:19:15

Highest channel

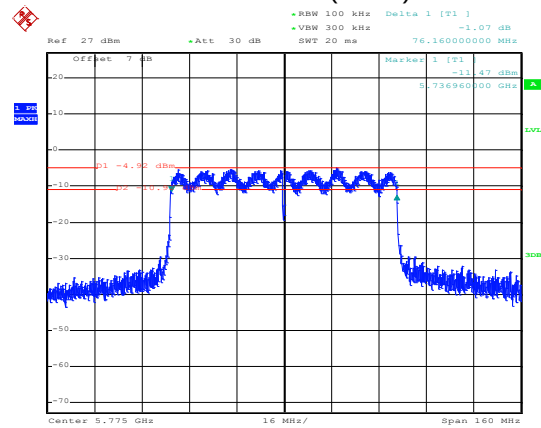
802.11ac(HT40)



Date: 18.APR.2020 19:23:23

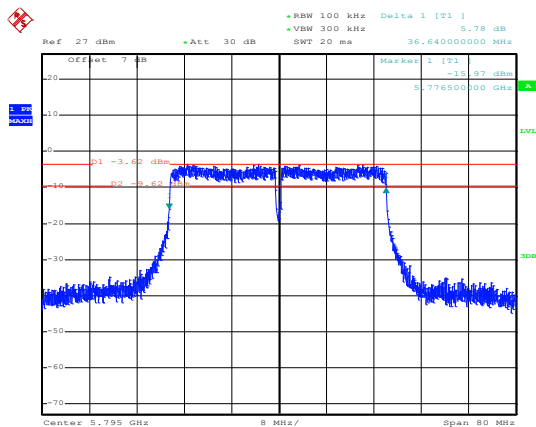
Lowest channel

802.11ac(HT80)



Date: 18.APR.2020 19:24:38

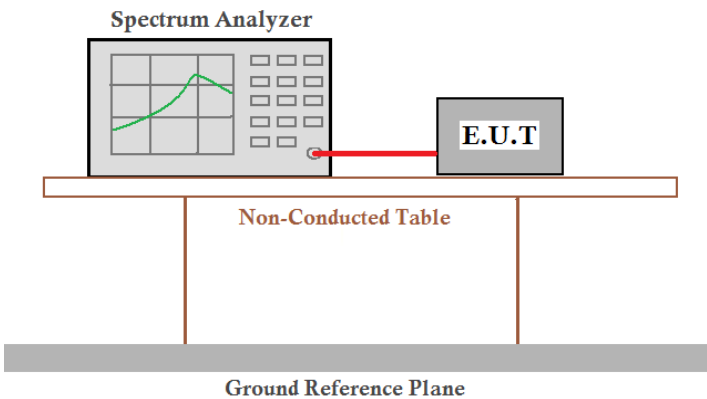
Middle channel



Date: 18.APR.2020 19:22:37

Highest channel

## 6.5 Power Spectral Density

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part15 E Section 15.407 (a) (1) (iv) & (a)(3)                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Limit:            | Band 1: 11 dBm/MHz<br>Band 4: 30 dBm/500kHz                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer, shown with a grid and a green curve, is connected to an E.U.T (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T are resting on a brown rectangular table labeled 'Non-Conducted Table'. Below this table is a thick grey horizontal bar labeled 'Ground Reference Plane'.</p> |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

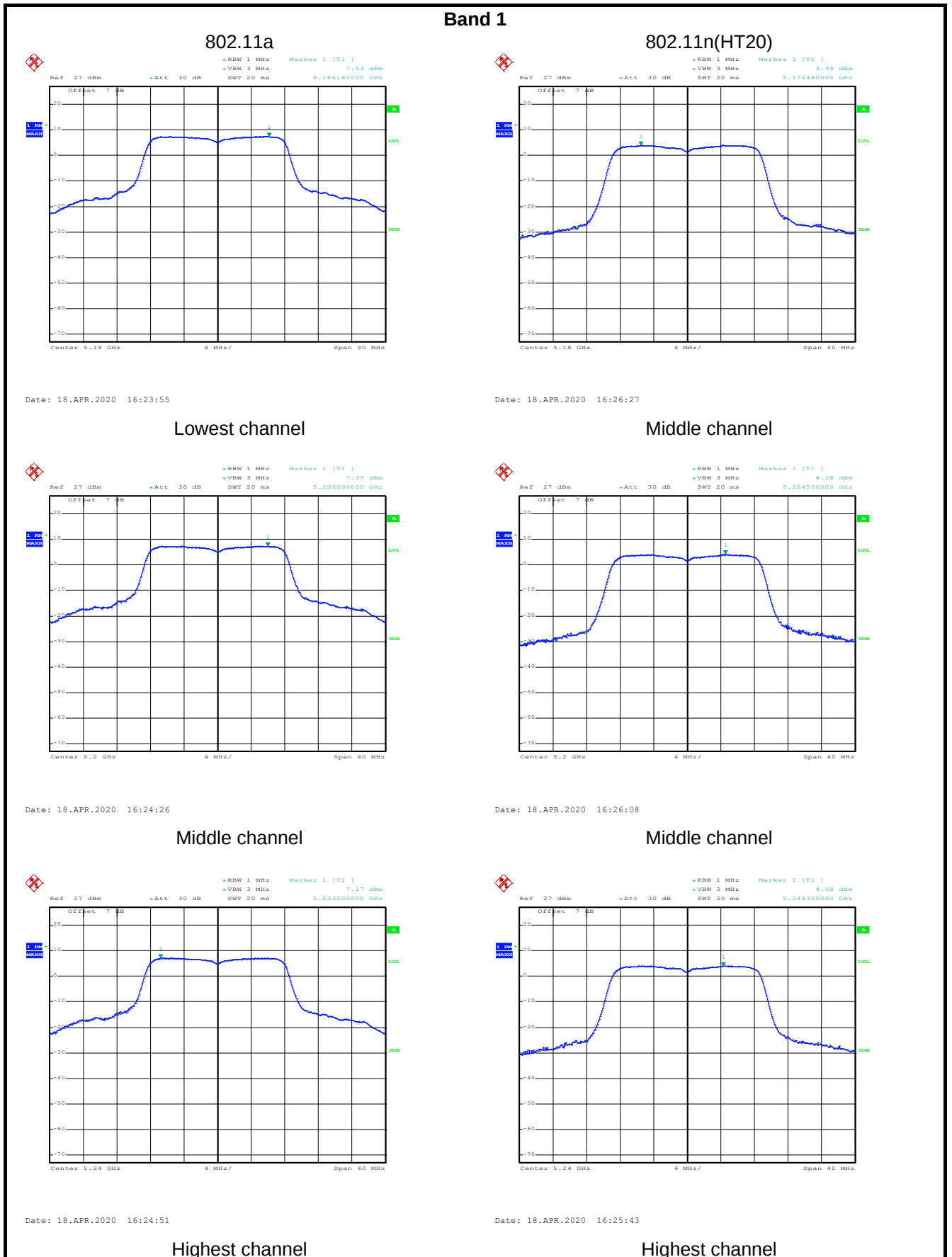
Measurement Data:

| Band 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |           |                       |                   |                                                                |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|-----------------------|-------------------|----------------------------------------------------------------|--------|
| Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Test CH | Ant. Port | Conducted P.S.D (dBm) | Total P.S.D (dBm) | Limit (dBm)                                                    | Result |
| 802.11a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Lowest  | TX0       | 7.53                  | /                 | 11.00                                                          | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 7.66                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Middle  | TX0       | 7.37                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 7.81                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 7.17                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 7.37                  |                   |                                                                |        |
| 802.11n20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lowest  | TX0       | 3.99                  | 7.05              | Ceramic Antenna:9.68<br>Flex Antenna:9.25<br>Whip Antenna:9.50 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 4.09                  | 7.42              |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Middle  | TX0       | 4.26                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 4.56                  | 7.14              |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 4.08                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 4.17                  |                   |                                                                |        |
| 802.11n40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lowest  | TX0       | 0.71                  | 3.58              | Ceramic Antenna:9.68<br>Flex Antenna:9.25<br>Whip Antenna:9.50 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 0.43                  | 3.79              |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 1.10                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 0.43                  |                   |                                                                |        |
| 802.11ac20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lowest  | TX0       | 3.81                  | 7.14              | Ceramic Antenna:9.68<br>Flex Antenna:9.25<br>Whip Antenna:9.50 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 4.43                  | 6.81              |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Middle  | TX0       | 3.76                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 3.83                  | 6.85              |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 3.55                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 4.12                  |                   |                                                                |        |
| 802.11ac40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lowest  | TX0       | 0.73                  | 3.54              | Ceramic Antenna:9.68<br>Flex Antenna:9.25<br>Whip Antenna:9.50 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 0.31                  | 3.93              |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Highest | TX0       | 1.22                  |                   |                                                                |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | 0.60                  |                   |                                                                |        |
| 802.11ac80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lowest  | TX0       | -1.13                 | 1.74              | Ceramic Antenna:9.68<br>Flex Antenna:9.25<br>Whip Antenna:9.50 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | TX1       | -1.41                 |                   |                                                                |        |
| <div>1. Because transmit signals are correlated, Directional gain = <math>G_{ANT} + 10 \log(N_{ANT})</math> dBi.</div> <div>2. So Ceramic Antenna: The Directional gain=<math>4.32 + 10 \log(2)=7.32</math>dBi, The directional Gain of antenna is greater than 6 dBi, so the limit of P.S.D is 9.68 dBm (for 802.11n/ac).</div> <div>Flex Antenna: The Directional gain=<math>4.75 + 10 \log(2)=7.75</math>dBi, The directional Gain of antenna is greater than 6 dBi, so the limit of P.S.D is 9.25 dBm (for 802.11n/ac).</div> <div>Whip Antenna: The Directional gain=<math>4.5 + 10 \log(2)=7.5</math>dBi, The directional Gain of antenna is greater than 6dBi, so the limit of power is 9.50 dBm (for 802.11n/ac).</div> |         |           |                       |                   |                                                                |        |

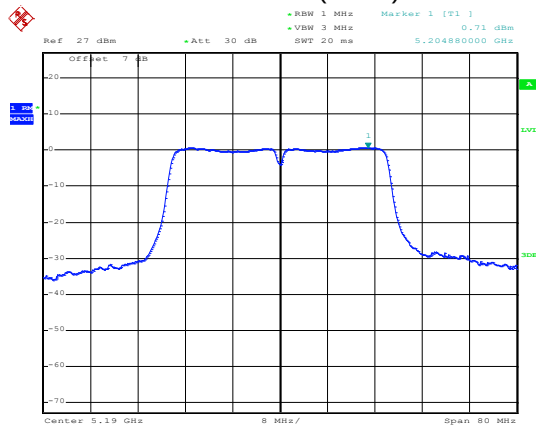
| Band 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |           |                       |                   |                                                                   |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|-----------------------|-------------------|-------------------------------------------------------------------|--------|
| Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Test CH | Ant. Port | Conducted P.S.D (dBm) | Total P.S.D (dBm) | Limit (dBm)                                                       | Result |
| 802.11a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Lowest  | TX0       | 8.03                  | /                 | 30.00                                                             | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 7.94                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Middle  | TX0       | 7.61                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 7.86                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Highest | TX0       | 7.58                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 7.83                  |                   |                                                                   |        |
| 802.11n20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lowest  | TX0       | 4.83                  | 7.90              | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.00 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 4.94                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Middle  | TX0       | 4.97                  | 7.85              |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 4.70                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Highest | TX0       | 4.66                  | 8.11              |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 5.50                  |                   |                                                                   |        |
| 802.11n40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lowest  | TX0       | 0.35                  | 3.42              | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.0  | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 0.46                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Highest | TX0       | 0.60                  | 3.54              |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 0.45                  |                   |                                                                   |        |
| 802.11ac20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lowest  | TX0       | 4.94                  | 8.39              | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.0  | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 5.78                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Middle  | TX0       | 5.00                  | 7.76              |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 4.49                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Highest | TX0       | 4.79                  | 8.07              |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 5.32                  |                   |                                                                   |        |
| 802.11ac40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lowest  | TX0       | 1.19                  | 3.92              | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.00 | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 0.62                  |                   |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Highest | TX0       | 0.96                  | 3.86              |                                                                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | 0.73                  |                   |                                                                   |        |
| 802.11ac80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lowest  | TX0       | -0.73                 | 2.14              | Ceramic Antenna:28.68<br>Flex Antenna:28.25<br>Whip Antenna:28.0  | Pass   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         | TX1       | -1.01                 |                   |                                                                   |        |
| <div>1. Because transmit signals are correlated, Directional gain = <math>G_{ANT} + 10 \log(N_{ANT})</math> dBi.</div> <div>2. So Ceramic Antenna: The Directional gain=<math>4.32 + 10 \log(2)</math>=7.32dBi, The directional Gain of antenna is greater than 6 dBi, so the limit of P.S.D is 28.68 dBm (for 802.11n/ac).</div> <div>Flex Antenna: The Directional gain=<math>4.75 + 10 \log(2)</math>=7.75dBi, The directional Gain of antenna is greater than 6 dBi, so the limit of P.S.D is 28.25 dBm (for 802.11n/ac).</div> <div>Whip Antenna: The Directional gain=<math>5 + 10 \log(2)</math>=8.0dBi, The directional Gain of antenna is greater than 6dBi, so the limit of P.S.D is 28.00 dBm (for 802.11n/ac).</div> |         |           |                       |                   |                                                                   |        |

Test plot as follows:

TX0:

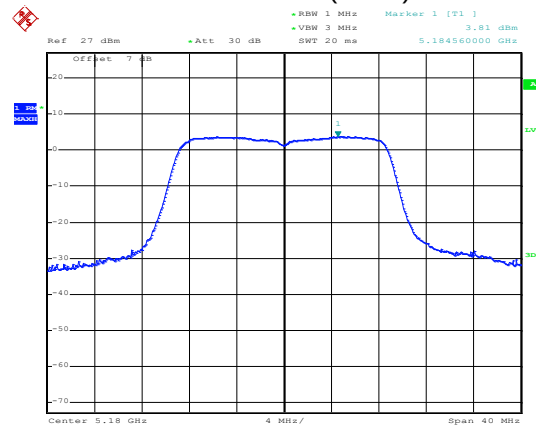


802.11n(HT40)



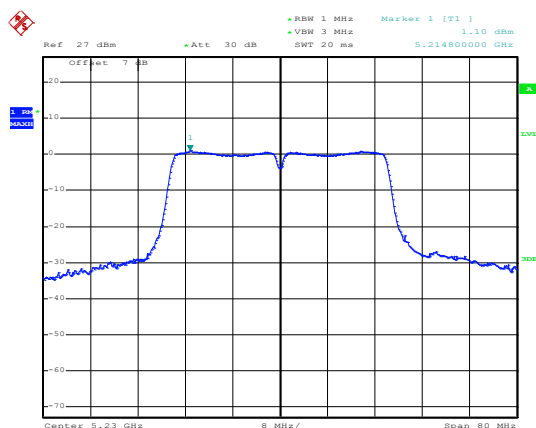
Date: 18.APR.2020 16:28:28

802.11ac(HT20)



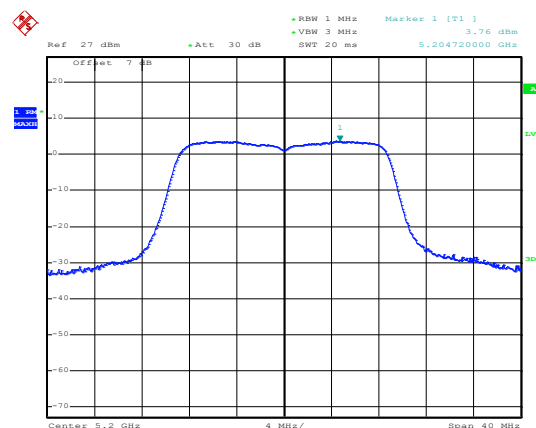
Date: 18.APR.2020 16:27:08

Lowest channel



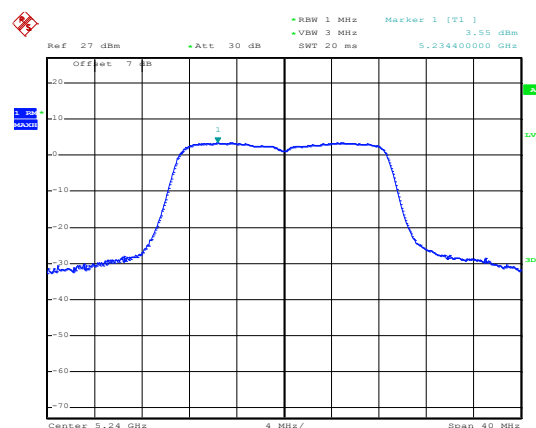
Date: 18.APR.2020 16:28:49

Middle channel



Date: 18.APR.2020 16:27:21

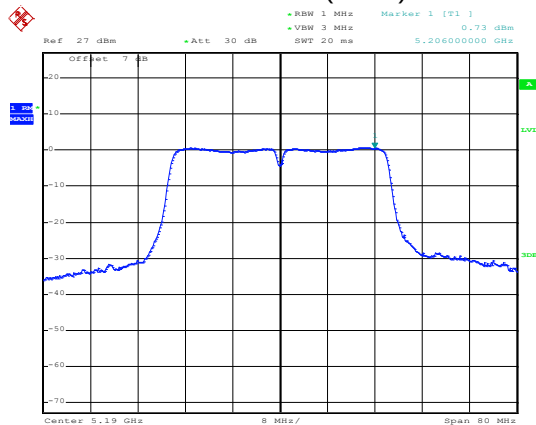
Highest channel



Date: 18.APR.2020 16:27:37

Highest channel

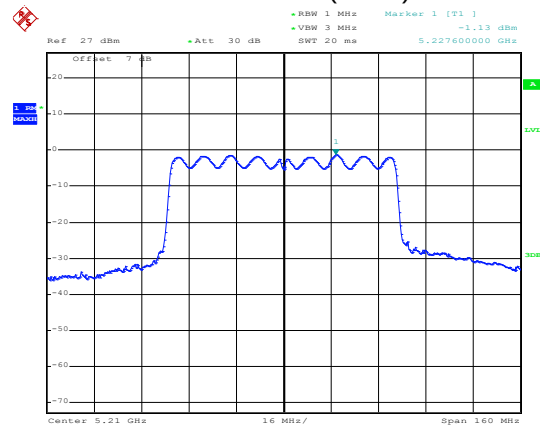
802.11ac(HT40)



Date: 18.APR.2020 16:29:21

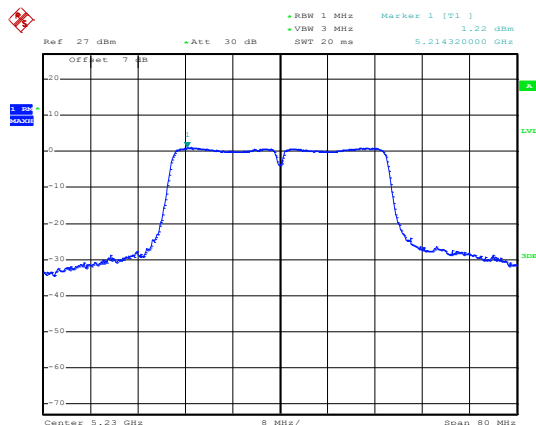
Lowest channel

802.11ac(HT80)



Date: 18.APR.2020 16:29:55

Middle channel



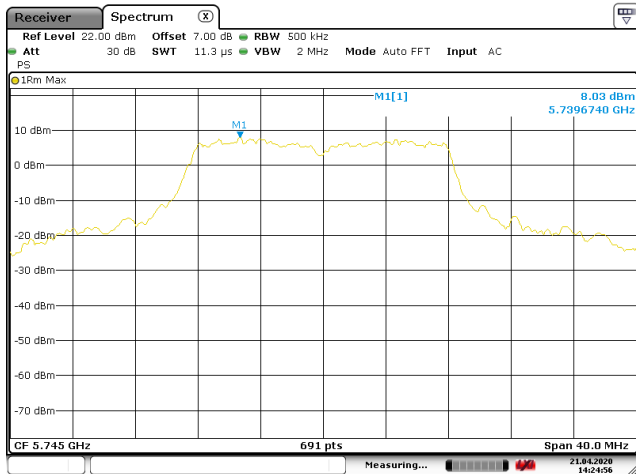
Date: 18.APR.2020 16:29:05

Highest channel

## Band 4

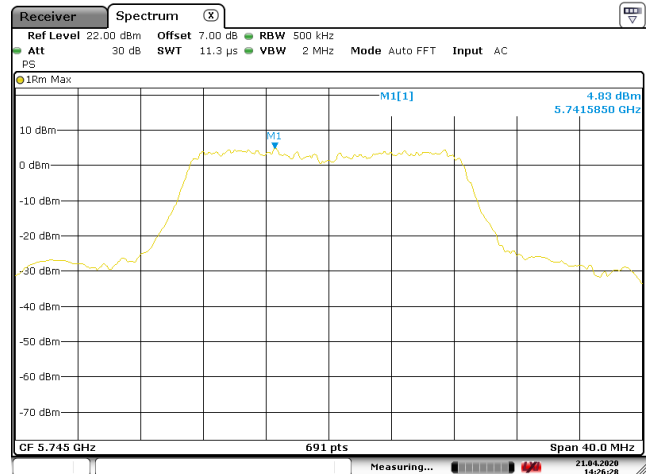
802.11a

802.11n(HT20)



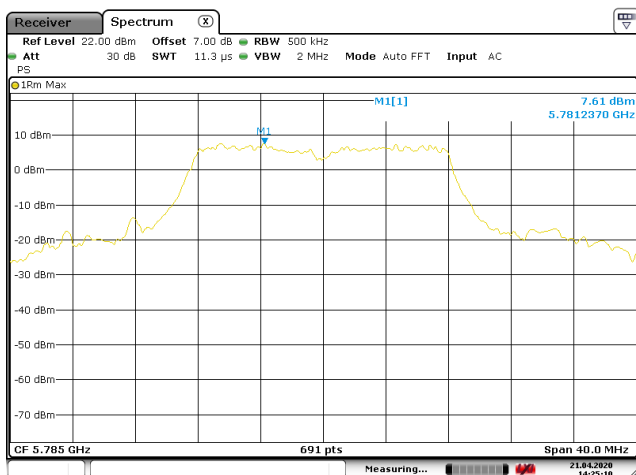
Date: 21.APR.2020 14:24:56

Lowest channel



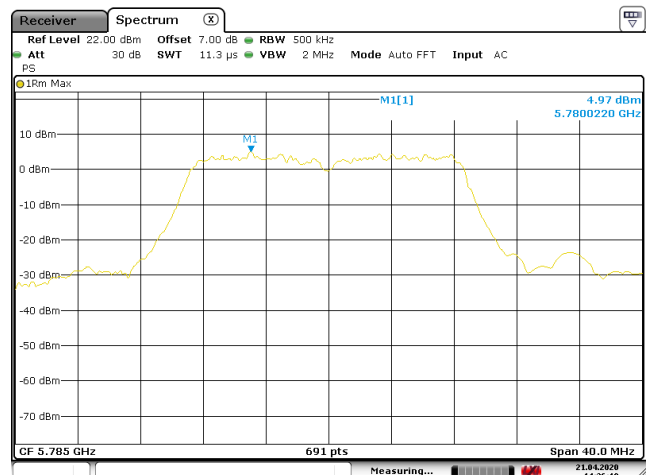
Date: 21.APR.2020 14:26:28

Middle channel



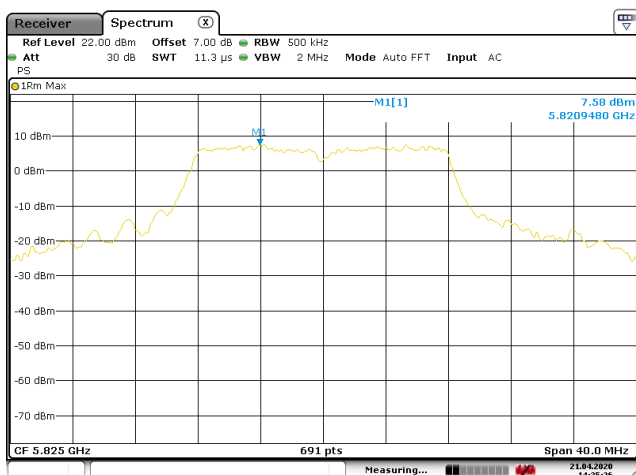
Date: 21.APR.2020 14:25:10

Middle channel



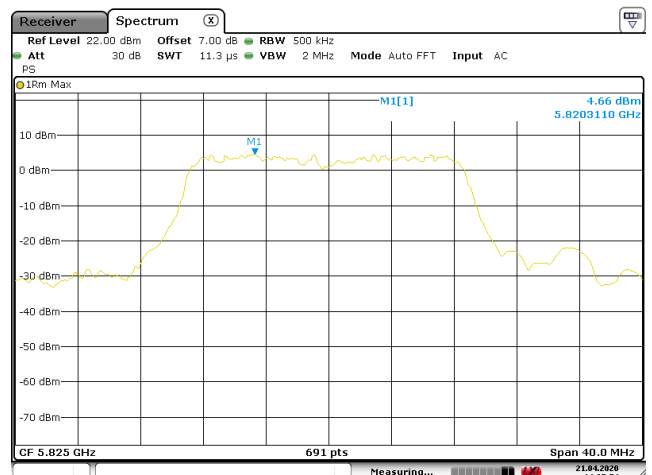
Date: 21.APR.2020 14:26:11

Middle channel



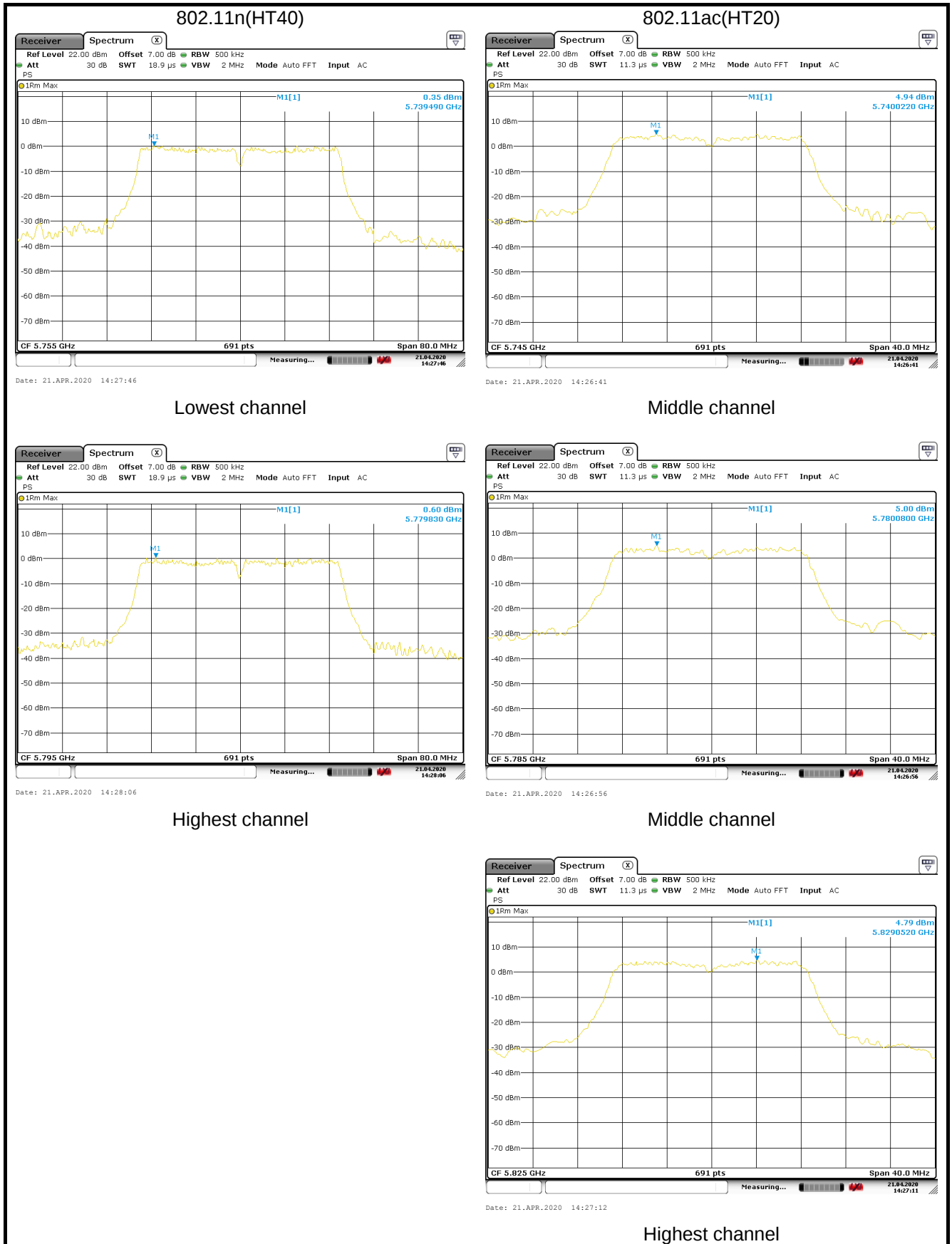
Date: 21.APR.2020 14:25:26

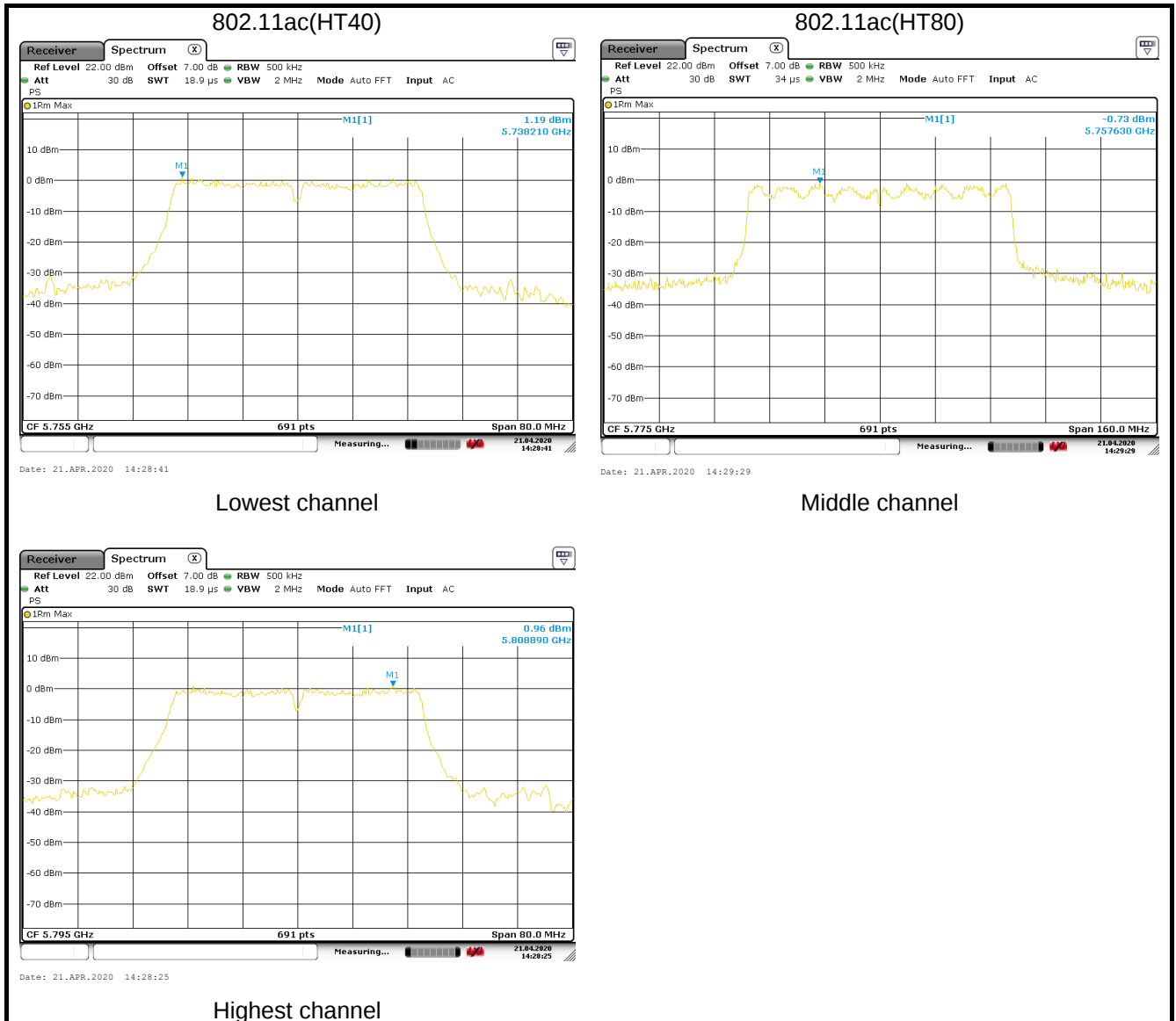
Highest channel



Date: 21.APR.2020 14:25:54

Highest channel

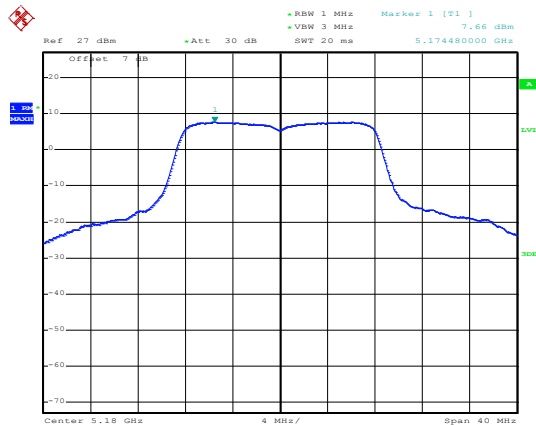




TX1:

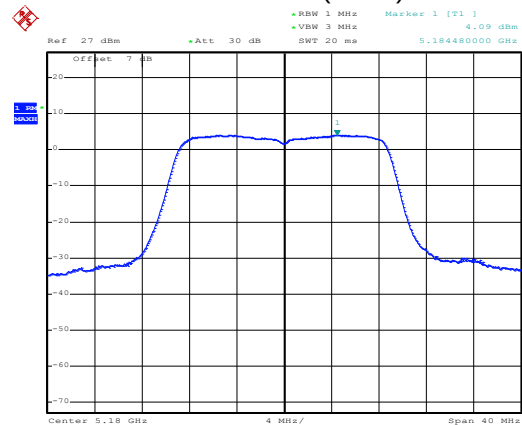
Band 1

802.11a



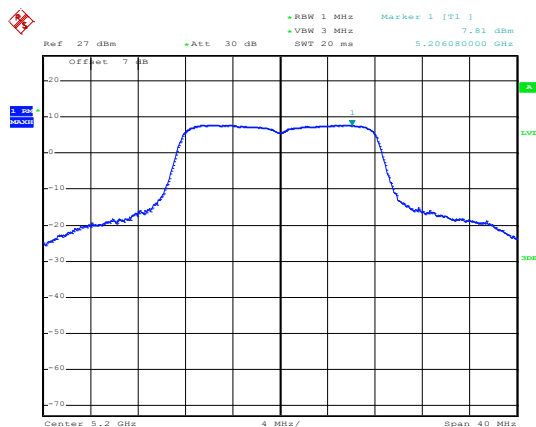
Date: 18.APR.2020 19:27:02

802.11n(HT20)



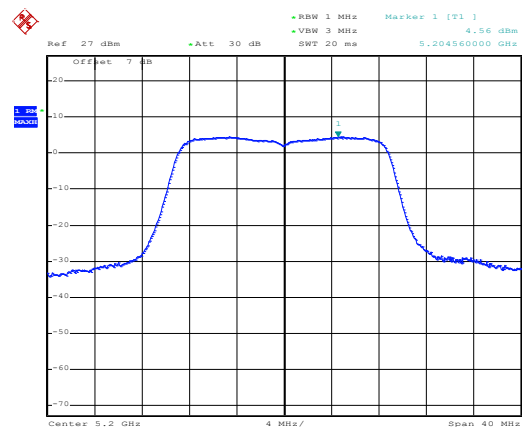
Date: 18.APR.2020 19:28:56

Lowest channel



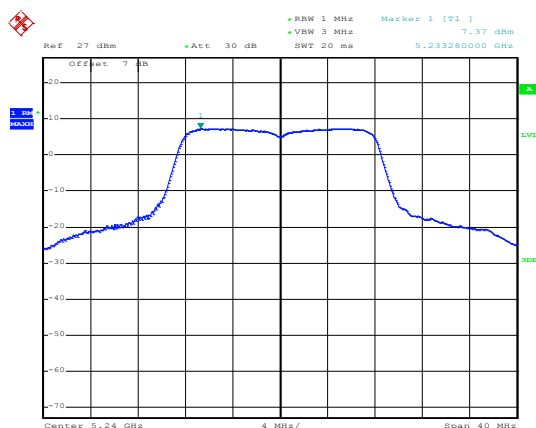
Date: 18.APR.2020 19:27:18

Middle channel



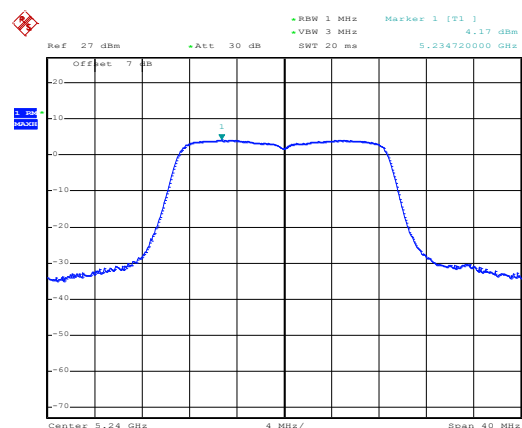
Date: 18.APR.2020 19:28:35

Middle channel



Date: 18.APR.2020 19:27:33

Middle channel

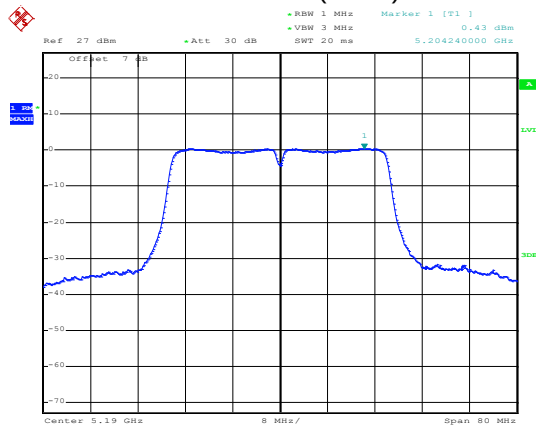


Date: 18.APR.2020 19:28:12

Highest channel

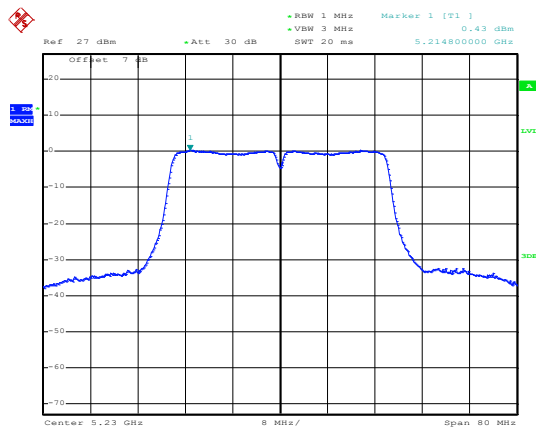
Highest channel

802.11n(HT40)



Date: 18.APR.2020 19:30:59

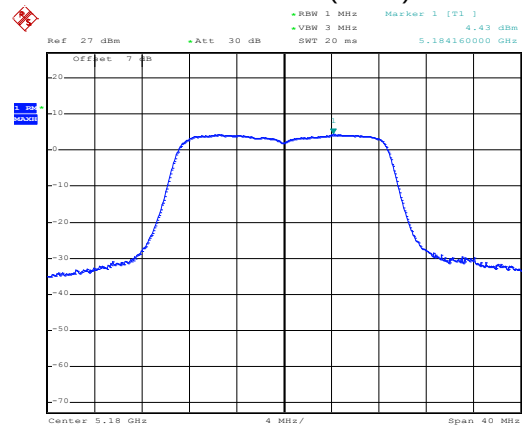
Lowest channel



Date: 18.APR.2020 19:31:14

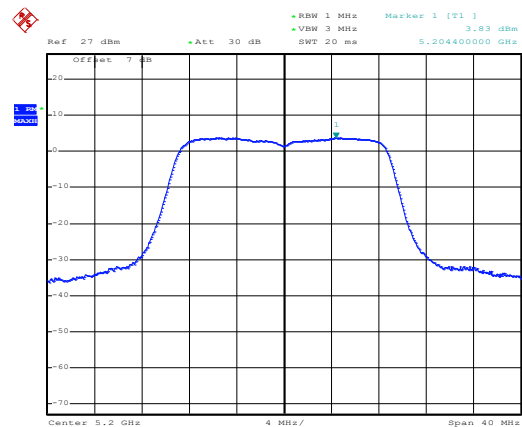
Highest channel

802.11ac(HT20)



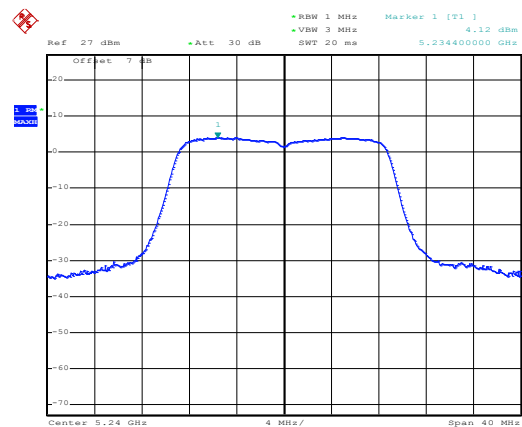
Date: 18.APR.2020 19:29:19

Middle channel



Date: 18.APR.2020 19:29:43

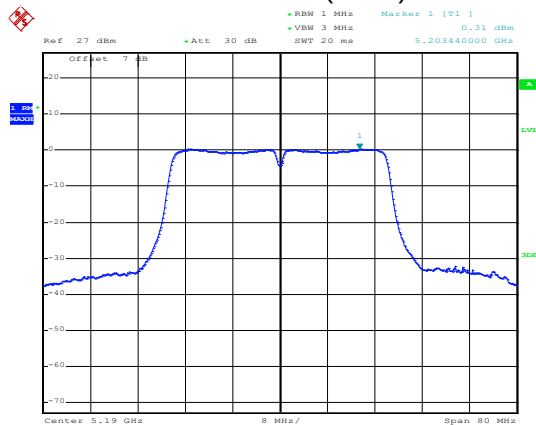
Middle channel



Date: 18.APR.2020 19:30:13

Highest channel

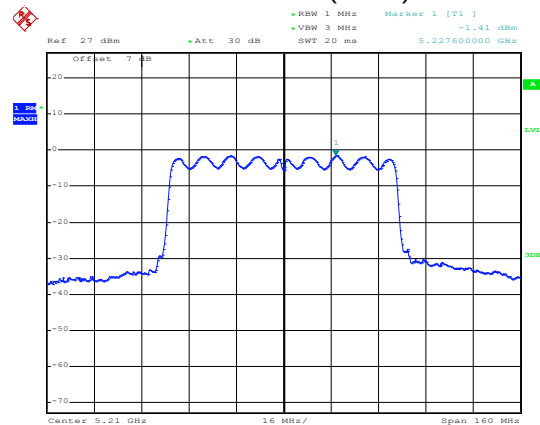
802.11ac(HT40)



Date: 18.APR.2020 19:31:58

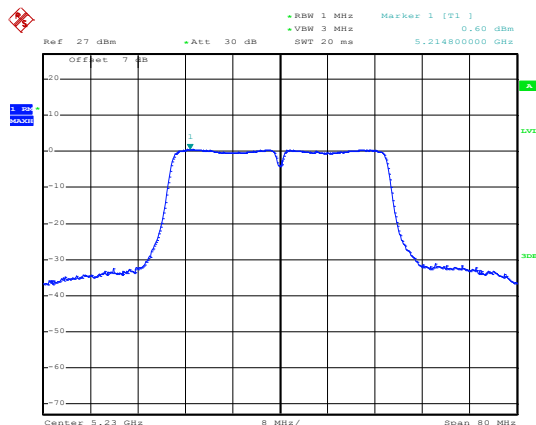
Lowest channel

802.11ac(HT80)



Date: 18.APR.2020 19:32:29

Middle channel



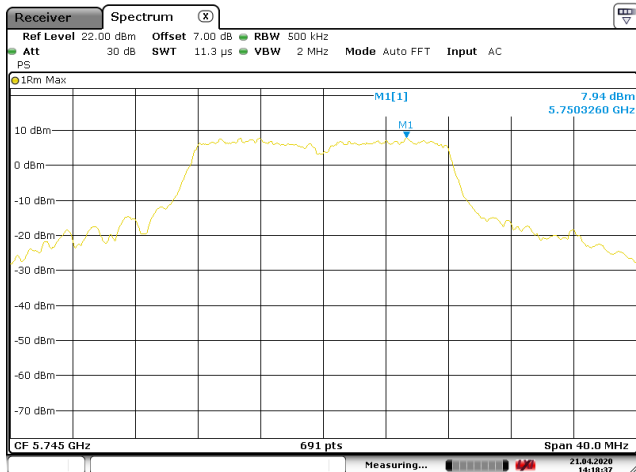
Date: 18.APR.2020 19:31:35

Highest channel

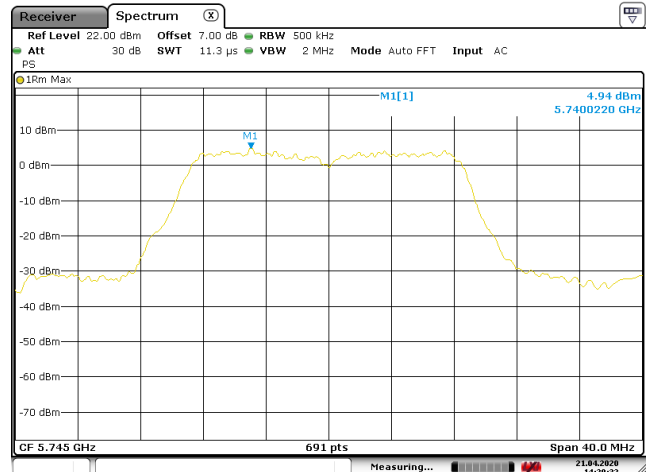
## Band 4

802.11a

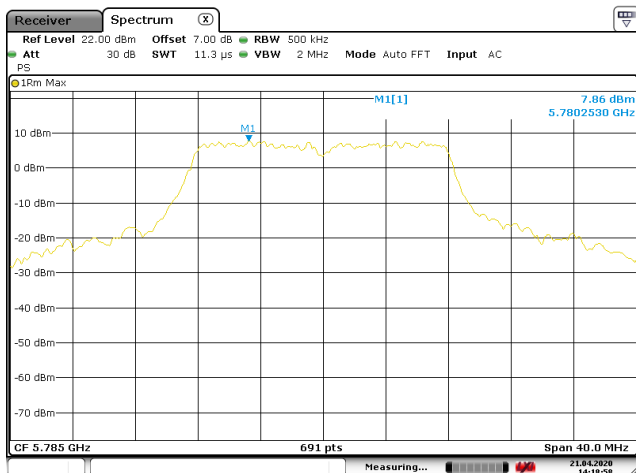
802.11n(HT20)



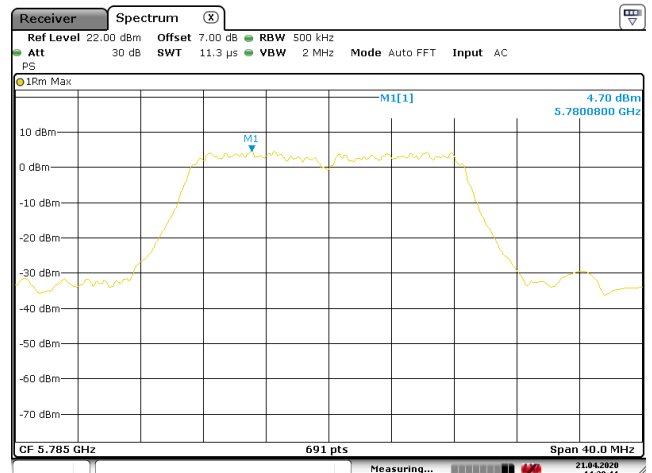
Lowest channel



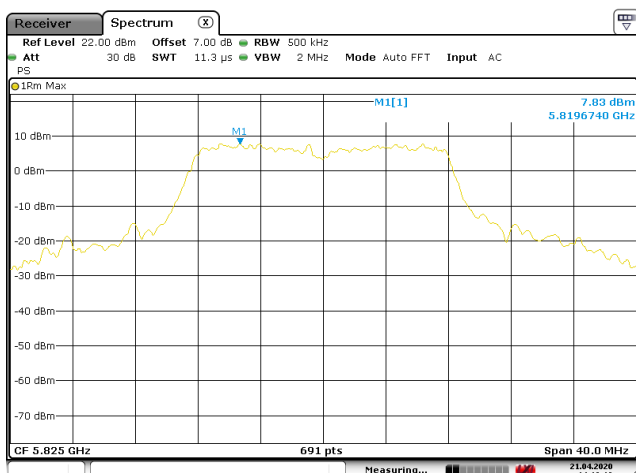
Middle channel



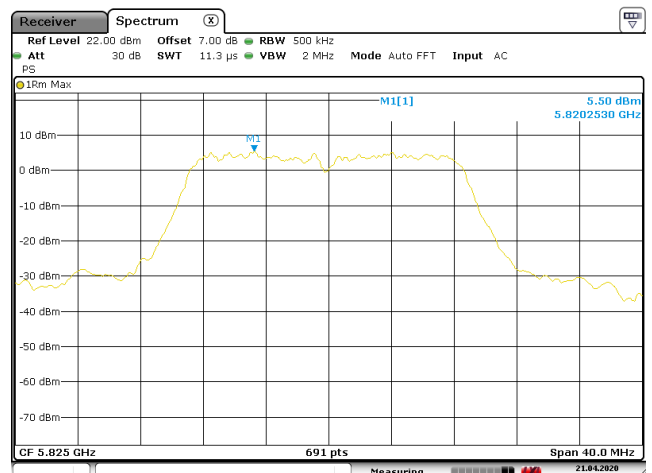
Middle channel



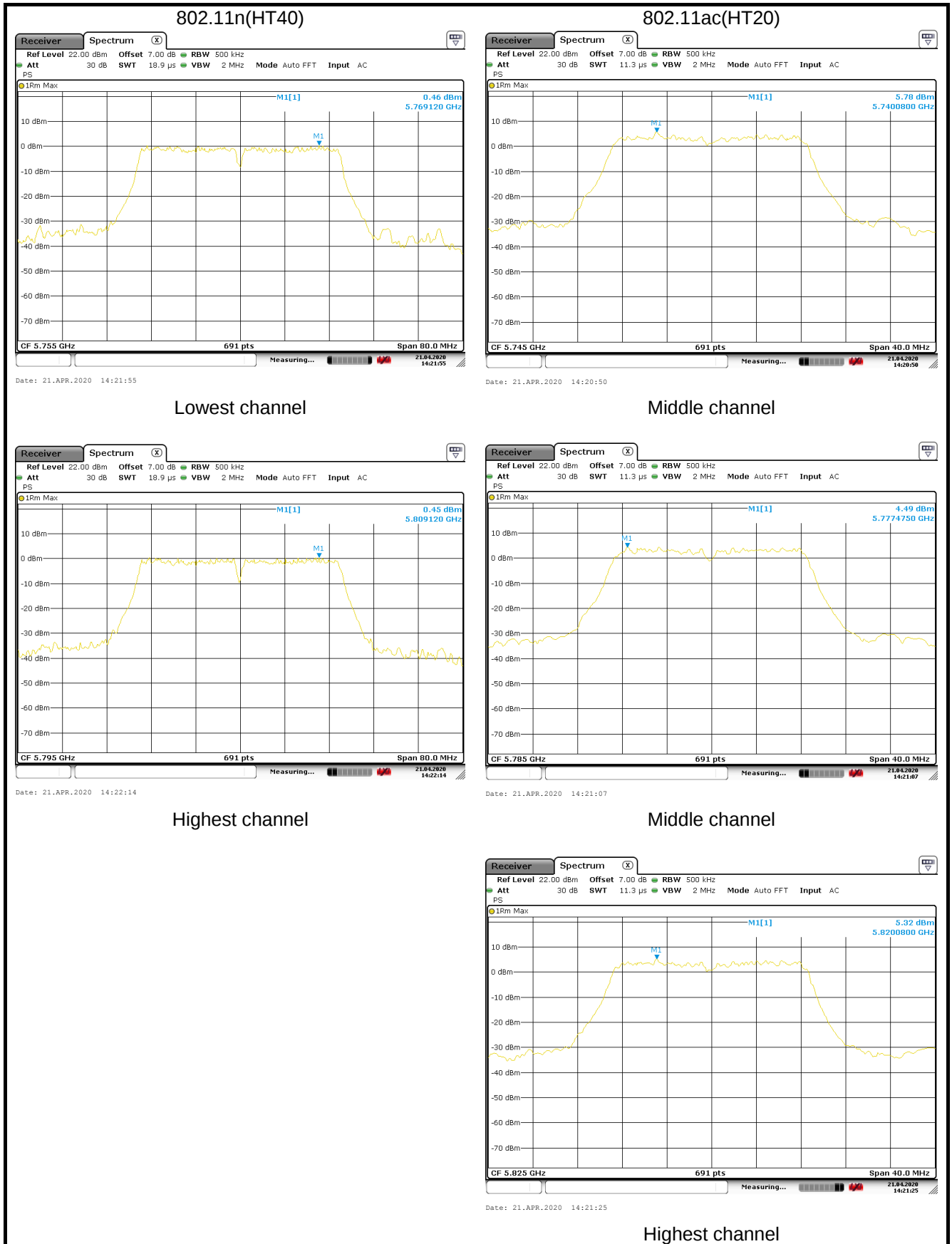
Middle channel

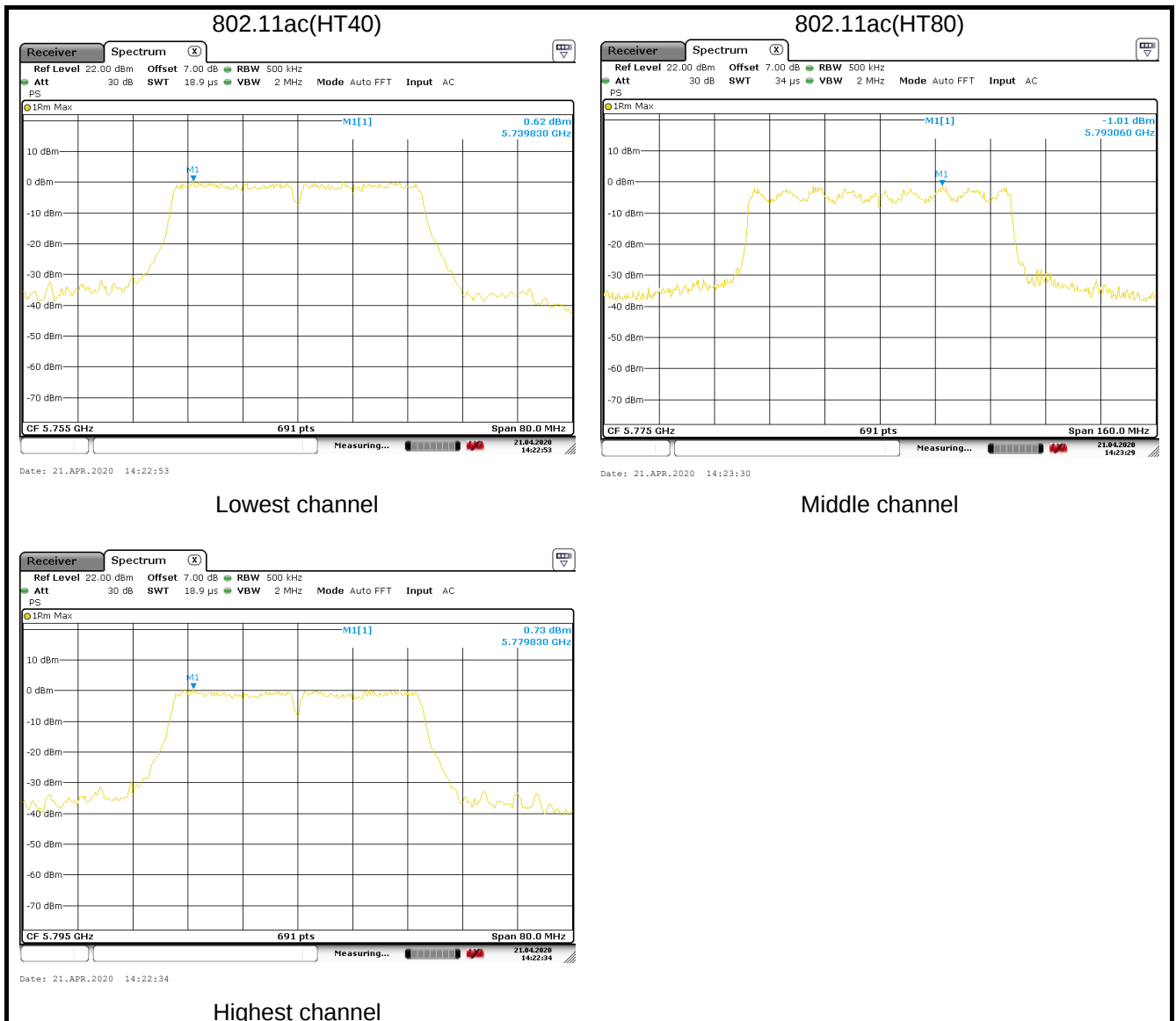


Highest channel

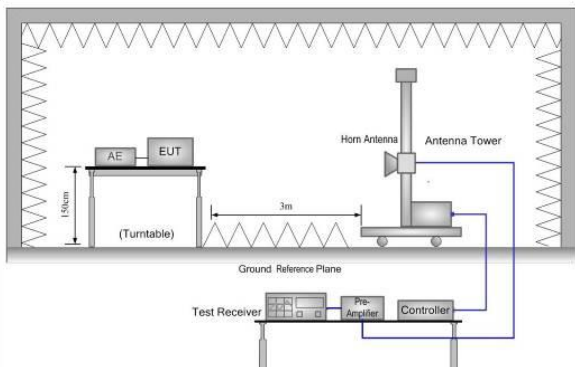


Highest channel





## 6.6 Band Edge

|                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |        |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|------------------|
| Test Requirement:                                                                                                                                                                                                                                                                                                                                                  | FCC Part 15 E Section 15.407 (b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |        |                  |
| Receiver setup:                                                                                                                                                                                                                                                                                                                                                    | Detector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | RBW                | VBW    | Remark           |
|                                                                                                                                                                                                                                                                                                                                                                    | Quasi-peak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 120kHz             | 300kHz | Quasi-peak Value |
|                                                                                                                                                                                                                                                                                                                                                                    | RMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1MHz               | 3MHz   | Average Value    |
| Limit:                                                                                                                                                                                                                                                                                                                                                             | Band                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Limit (dBuV/m @3m) |        | Remark           |
|                                                                                                                                                                                                                                                                                                                                                                    | Band 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 68.20              |        | Peak Value       |
|                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 54.00              |        | Average Value    |
|                                                                                                                                                                                                                                                                                                                                                                    | Band 4 limit:<br>For transmitters operating in the 5.725-5.85 GHz band:<br>All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |        |                  |
|                                                                                                                                                                                                                                                                                                                                                                    | Remark:<br>1. Band 1 limit:<br>$E[dB\mu V/m] = EIRP[dBm] + 95.2=68.2 \text{ dBuV/m}$ , for $EIPR[dBm]=-27dBm$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |        |                  |
| 2. Band 4 limit:<br>$E[dB\mu V/m] = EIRP[dBm] + 95.2=68.2 \text{ dBuV/m}$ , for $EIPR[dBm]=-27dBm$ .<br>$E[dB\mu V/m] = EIRP[dBm] + 95.2=105.2 \text{ dBuV/m}$ , for $EIPR[dBm]=10dBm$ .<br>$E[dB\mu V/m] = EIRP[dBm] + 95.2=110.8 \text{ dBuV/m}$ , for $EIPR[dBm]=15.6dBm$ .<br>$E[dB\mu V/m] = EIRP[dBm] + 95.2=122.2 \text{ dBuV/m}$ , for $EIPR[dBm]=27dBm$ . |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |        |                  |
| Test Procedure:                                                                                                                                                                                                                                                                                                                                                    | <div><div>1.</div><div>The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</div></div> <div><div>2.</div><div>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</div></div> <div><div>3.</div><div>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.</div></div> <div><div>4.</div><div>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 and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.</div></div> <div><div>5.</div><div>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div></div> <div><div>6.</div><div>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 peak, quasi-peak or average method as specified and then reported in a data sheet.</div></div> |                    |        |                  |
| Test setup:                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |        |                  |
| Test Instruments:                                                                                                                                                                                                                                                                                                                                                  | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |        |                  |
| Test mode:                                                                                                                                                                                                                                                                                                                                                         | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |        |                  |
| Test results:                                                                                                                                                                                                                                                                                                                                                      | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |        |                  |

**Measurement Data (worst case):****Ceramic Antenna:****Band 1:**

| Band 1 – 802.11a –TX0                                                                                                                                                                                                              |                     |                     |                 |                 |                    |                |                     |                 |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|-----------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Test channel: Lowest channel                                                                                                                                                                                                       |                     |                     |                 |                 |                    |                |                     |                 |              |
| Detector: Peak Value                                                                                                                                                                                                               |                     |                     |                 |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                                                                                                                                                                                                    | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Aux Factor (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5150.00                                                                                                                                                                                                                            | 49.92               | 31.77               | 7.05            | 2.54            | 41.93              | 49.35          | 68.20               | -18.85          | Horizontal   |
| 5150.00                                                                                                                                                                                                                            | 45.35               | 31.77               | 7.05            | 2.54            | 41.93              | 44.78          | 68.20               | -23.42          | Vertical     |
| Detector: Average Value                                                                                                                                                                                                            |                     |                     |                 |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                                                                                                                                                                                                    | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Aux Factor (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5150.00                                                                                                                                                                                                                            | 42.21               | 31.77               | 7.05            | 2.54            | 41.93              | 41.64          | 54.00               | -12.36          | Horizontal   |
| 5150.00                                                                                                                                                                                                                            | 39.68               | 31.77               | 7.05            | 2.54            | 41.93              | 39.11          | 54.00               | -14.89          | Vertical     |
| Test channel: Highest channel                                                                                                                                                                                                      |                     |                     |                 |                 |                    |                |                     |                 |              |
| Detector: Peak Value                                                                                                                                                                                                               |                     |                     |                 |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                                                                                                                                                                                                    | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Aux Factor (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00                                                                                                                                                                                                                            | 50.15               | 32.24               | 7.11            | 2.61            | 41.89              | 50.22          | 68.20               | -17.98          | Horizontal   |
| 5350.00                                                                                                                                                                                                                            | 50.00               | 32.24               | 7.11            | 2.61            | 41.89              | 50.07          | 68.20               | -18.13          | Vertical     |
| Detector: Average Value                                                                                                                                                                                                            |                     |                     |                 |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                                                                                                                                                                                                    | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Aux Factor (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00                                                                                                                                                                                                                            | 40.01               | 32.24               | 7.11            | 2.61            | 41.89              | 40.08          | 54.00               | -13.92          | Horizontal   |
| 5350.00                                                                                                                                                                                                                            | 41.87               | 32.24               | 7.11            | 2.61            | 41.89              | 41.94          | 54.00               | -12.06          | Vertical     |
| <b>Remark:</b><br>1. Final Level = Receiver Read level + Antenna Factor + Cable Loss + Aux Factor – Preamplifier Factor.<br>2. The emission levels of other frequencies are very lower than the limit and not show in test report. |                     |                     |                 |                 |                    |                |                     |                 |              |