

Report No.: ZR/2020/A001610

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FCC TEST REPORT

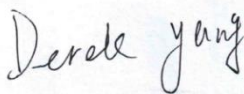
Application No.: ZR/2020/A0016
Applicant: HMD global Oy
Address of Applicant: Bertel Jungin aukio 9, 02600 Espoo, Finland
Manufacturer: HMD global Oy
Address of Manufacturer: Bertel Jungin aukio 9, 02600 Espoo, Finland
EUT Description: Smart Phone
Model No.: TA-1329
Trade Mark: NOKIA
FCC ID: 2AJOTTA-1329
Standards: 47 CFR FCC Part 2, Subpart J
47 CFR Part 15, Subpart C
Date of Receipt: 2020/10/19(for original report ZR/2020/A001604)
Date of Test: 2020/10/23 to 2020/12/10(for original report ZR/2020/A001604)
Date of Issue: 2020/12/11(for original report ZR/2020/A001604)
2020/12/16(for new report ZR/2020/A001610)

| | |
|----------------------|---------------|
| Test Result : | PASS * |
|----------------------|---------------|

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Remark:TA-1323 has the Dual SIM tray,TA-1329 has the Single SIM tray.

Authorized Signature:



Derek Yang
Wireless Laboratory Manager



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1 Version

| Revision Record | | | | |
|-----------------|---------|------------|----------|----------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2020-12-11 | | Original |
| | | | | |
| | | | | |

| | | | |
|--------------------------|--|---|--|
| Authorized for issue by: | | | |
| Tested By | |  _____ (Mike Hu) /Project Engineer | |
| Checked By | |  _____ (David Chen) /Reviewer | |

2 Test Summary

| Test Item | Test Requirement | Test Method | Test Result | Result |
|---|-------------------------|------------------|-------------|--------|
| AC Power Line Conducted Emission | 15.207 | ANSI C63.10 2013 | Clause 4.2 | PASS |
| Duty Cycle | -- | -- | Clause 4.3 | PASS |
| Conducted Output Power | 15.247 (b)(3) | ANSI C63.10 2013 | Clause 4.4 | PASS |
| DTS (6 dB) Bandwidth & 99% Occupied Bandwidth | 15.247 (a)(2) | ANSI C63.10 2013 | Clause 4.5 | PASS |
| Power Spectral Density | 15.247 (e) | ANSI C63.10 2013 | Clause 4.6 | PASS |
| Band-edge for RF Conducted Emissions | 15.247(d) | ANSI C63.10 2013 | Clause 4.7 | PASS |
| RF Conducted Spurious Emissions | 15.247(d) | ANSI C63.10 2013 | Clause 4.8 | PASS |
| Radiated Spurious Emissions | 15.247(d);15.205/15.209 | ANSI C63.10 2013 | Clause 4.9 | PASS |
| Restricted bands around fundamental frequency (Radiated Emission) | 15.247(d);15.205/15.209 | ANSI C63.10 2013 | Clause 4.10 | PASS |



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Remark:

This test report (Report No.: ZR/2020/A001610) is based on the original test report (Report No.: ZR/2020/A001604) issued on 2020-12-11.

Review this report and original report, this report just changing the parts according to the declaration letter from client.

According to the declaration from the applicant, the models: **TA-1323** and **TA-1329** are identical in specifications, only different according to the declaration letter from client.

Considering the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

Therefore in this report all items do not need to retest and all test data in this report are based on the previous report with report number ZR/2020/A001604.



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3 General Information

3.1 Details of Client

| | |
|-------------------------|---|
| Applicant: | HMD global Oy |
| Address of Applicant | Bertel Jungin aukio 9, 02600 Espoo, Finland |
| Manufacturer: | HMD global Oy |
| Address of Manufacturer | Bertel Jungin aukio 9, 02600 Espoo, Finland |

3.2 Test Location

| | |
|------------|---|
| Company: | SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch |
| Address: | No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China |
| Post code: | 518057 |



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3.3 Test Facility

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

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



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3.4 General Description of EUT

| | |
|---------------------------------|--|
| EUT Description: | Smart Phone |
| Model No.: | TA-1329 |
| Trade Mark: | NOKIA |
| Hardware Version: | V1.0 |
| Software Version: | 00WW_0_070 |
| IEEE 802.11 WLAN Mode Supported | <input checked="" type="checkbox"/> 802.11B (20 MHz channel bandwidth), <input checked="" type="checkbox"/> 802.11G (20 MHz channel bandwidth), <input checked="" type="checkbox"/> 802.11N (20 MHz channel bandwidth), <input type="checkbox"/> 802.11N (40 MHz channel bandwidth) |
| Operation Frequency: | 2400 MHz -2483.5MHz $f_c = 2407 \text{ MHz} + N * 5 \text{ MHz}$, where: $-f_c$ = "Operating Frequency" in MHz, $-N$ = "Channel Number" with the range from 1 to 11 for the 20 MHz channel bandwidth, or 3 to 9 for the 40 MHz channel bandwidth. |
| Type of Modulation: | IEEE for 802.11B: DSSS IEEE for 802.11G : OFDM IEEE for 802.11N(HT20) : OFDM |
| Sample Type: | <input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module |
| Antenna Type: | <input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated |
| Antenna Ports | <input checked="" type="checkbox"/> Ant 1, <input type="checkbox"/> Ant 2, <input type="checkbox"/> Ant 3 |
| Smart System | <input checked="" type="checkbox"/> SISO (for 802.11B/G/N), <input type="checkbox"/> MIMO (for 802.11N): 2 Tx & 2 Rx, <input type="checkbox"/> Diversity (for 802.11B/G) : Tx & Rx |
| Antenna Gain: | -1.0dBi |
| Power Supply | <input checked="" type="checkbox"/> AC/DC Adapter; <input type="checkbox"/> Battery <input type="checkbox"/> PoE;; <input type="checkbox"/> Other: |

| Operation Frequency of each channel (802.11B/G/N HT20) | | | | | | | |
|--|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1 | 2412MHz | 4 | 2427MHz | 7 | 2442MHz | 10 | 2457MHz |
| 2 | 2417MHz | 5 | 2432MHz | 8 | 2447MHz | 11 | 2462MHz |
| 3 | 2422MHz | 6 | 2437MHz | 9 | 2452MHz | | |



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Remark:

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:

| Channel | Frequency for 802.11B/G/N (HT20) |
|---------------------|----------------------------------|
| The Lowest channel | 2412MHz |
| The Middle channel | 2437MHz |
| The Highest channel | 2462MHz |

3.5 Test Environment and Mode

| Operating Environment: | |
|------------------------|--|
| Temperature: | 25.0 °C |
| Humidity: | 50 % RH |
| Atmospheric Pressure: | 101.30 KPa |
| Test mode: | |
| Transmitting mode: | Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate. |

3.6 Description of Support Units

The EUT has been tested independent unit.



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4 Test results and Measurement Data

4.1 Antenna Requirement

| | |
|--|--|
| Standard requirement: | 47 CFR Part 15C Section 15.203 /247(c) |
| <p>15.203 requirement: 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: 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> <p>The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -1.0dBi.</p> | |



4.2 AC Power Line Conducted Emissions

| | | | |
|--|--|--------------|-----------|
| Test Requirement: | 47 CFR Part 15C Section 15.207 | | |
| Test Method: | ANSI C63.10: 2013 | | |
| Test Frequency Range: | 150kHz to 30MHz | | |
| Limit: | Frequency range (MHz) | Limit (dBuV) | |
| | | Quasi-peak | Average |
| | 0.15-0.5 | 66 to 56* | 56 to 46* |
| | 0.5-5 | 56 | 46 |
| | 5-30 | 60 | 50 |
| * Decreases with the logarithm of the frequency. | | | |
| Test Procedure: | <p>1) The mains terminal disturbance voltage test was conducted in a shielded room.</p> <p>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</p> <p>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,</p> <p>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 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: 2013 on conducted measurement.</p> | | |



| | |
|------------------------|---|
| Test Setup: | |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates at lowest, middle and highest channel. Charge + Transmitting mode. |
| Final Test Mode: | Through Pre-scan, find the 1Mbps of rate of 802.11B at lowest channel is the worst case. Charge + Transmitting mode. Only the worst case is recorded in the report. |
| Instruments Used: | Refer to section 5.10 for details |
| Test Results: | Pass |



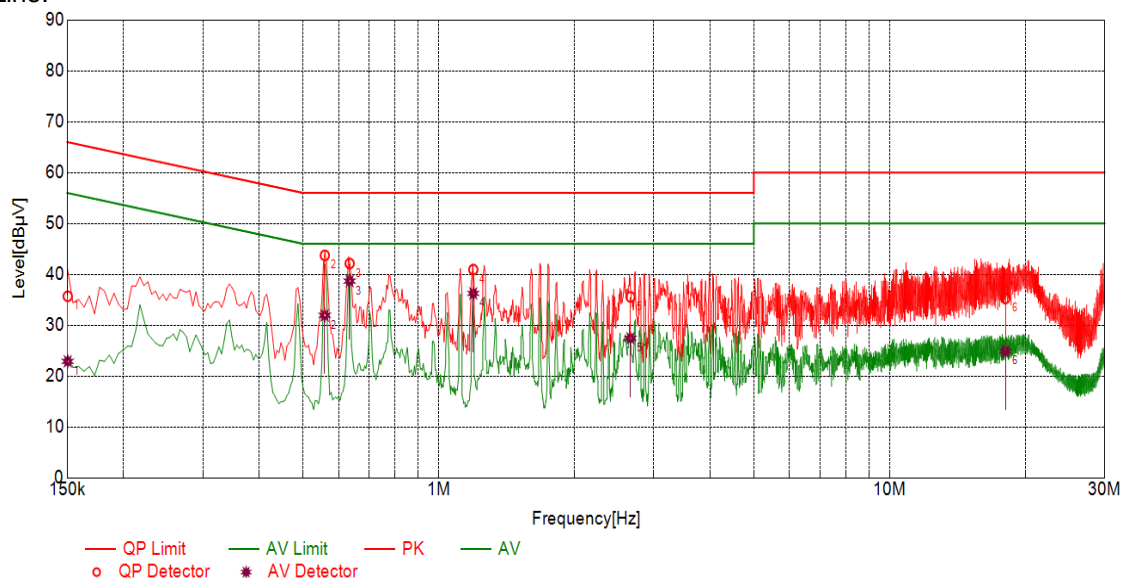
Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Firstly Supply:

Live Line:



Final Data List

| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBμV] | QP Limit [dBμV] | QP Margin [dB] | AV Value [dBμV] | AV Limit [dBμV] | AV Margin [dB] | Type |
|-----|-------------|-------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|------|
| 1 | 0.1504 | 10.10 | 35.68 | 65.98 | 30.30 | 22.89 | 55.98 | 33.09 | L |
| 2 | 0.5589 | 10.10 | 43.73 | 56.00 | 12.27 | 31.93 | 46.00 | 14.07 | L |
| 3 | 0.6347 | 10.10 | 42.13 | 56.00 | 13.87 | 38.67 | 46.00 | 7.33 | L |
| 4 | 1.1931 | 10.10 | 40.93 | 56.00 | 15.07 | 36.25 | 46.00 | 9.75 | L |
| 5 | 2.6624 | 10.10 | 35.55 | 56.00 | 20.45 | 27.42 | 46.00 | 18.58 | L |
| 6 | 18.0641 | 10.11 | 35.27 | 60.00 | 24.73 | 24.90 | 50.00 | 25.10 | L |

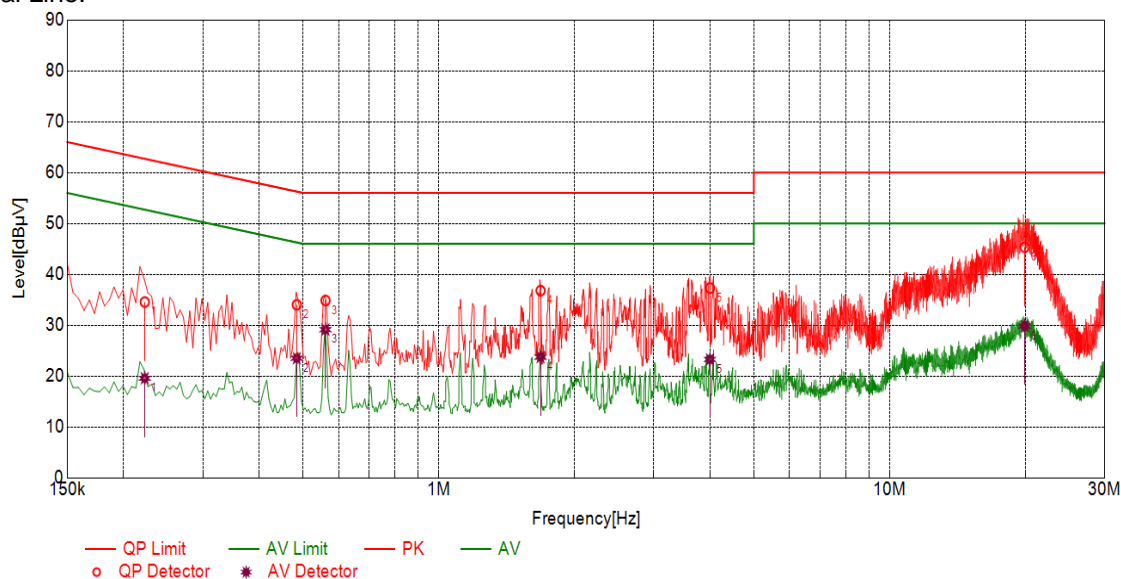


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Shenzhen Branch (SGS-CSTC Laboratory)

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Neutral Line:



Final Data List

| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBμV] | QP Limit [dBμV] | QP Margin [dB] | AV Value [dBμV] | AV Limit [dBμV] | AV Margin [dB] | Type |
|-----|----------------|----------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|------|
| 1 | 0.2229 | 10.10 | 34.55 | 62.71 | 28.16 | 19.57 | 52.71 | 33.14 | N |
| 2 | 0.4845 | 10.10 | 34.02 | 56.26 | 22.24 | 23.50 | 46.26 | 22.76 | N |
| 3 | 0.5609 | 10.10 | 34.86 | 56.00 | 21.14 | 29.13 | 46.00 | 16.87 | N |
| 4 | 1.6823 | 10.10 | 36.80 | 56.00 | 19.20 | 23.73 | 46.00 | 22.27 | N |
| 5 | 3.9959 | 10.10 | 37.31 | 56.00 | 18.69 | 23.27 | 46.00 | 22.73 | N |
| 6 | 19.9261 | 10.11 | 45.34 | 60.00 | 14.66 | 29.84 | 50.00 | 20.16 | N |



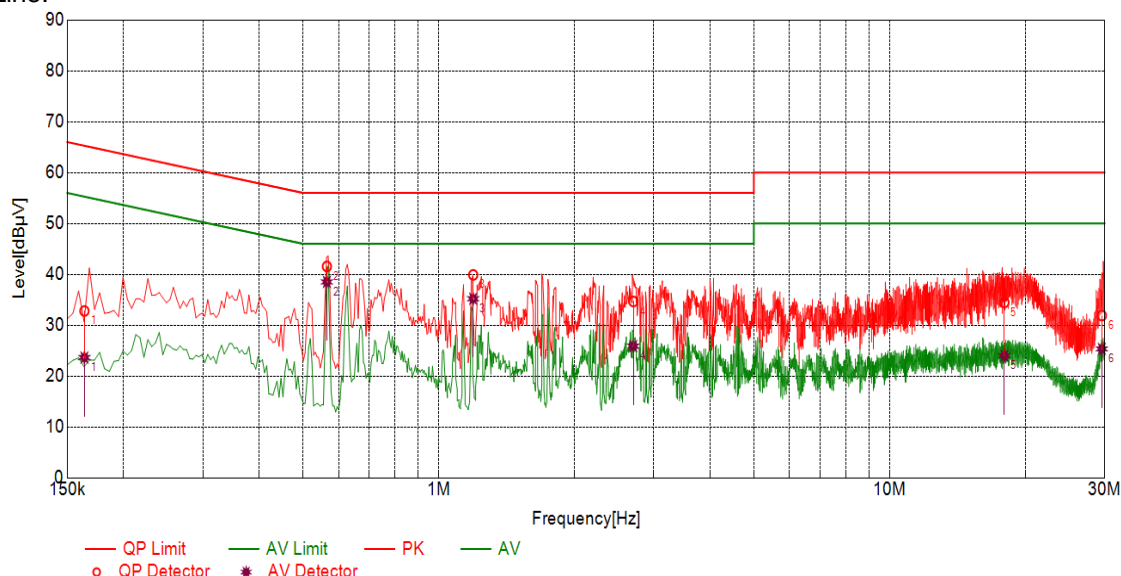
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Secondly Supply:

Live Line:

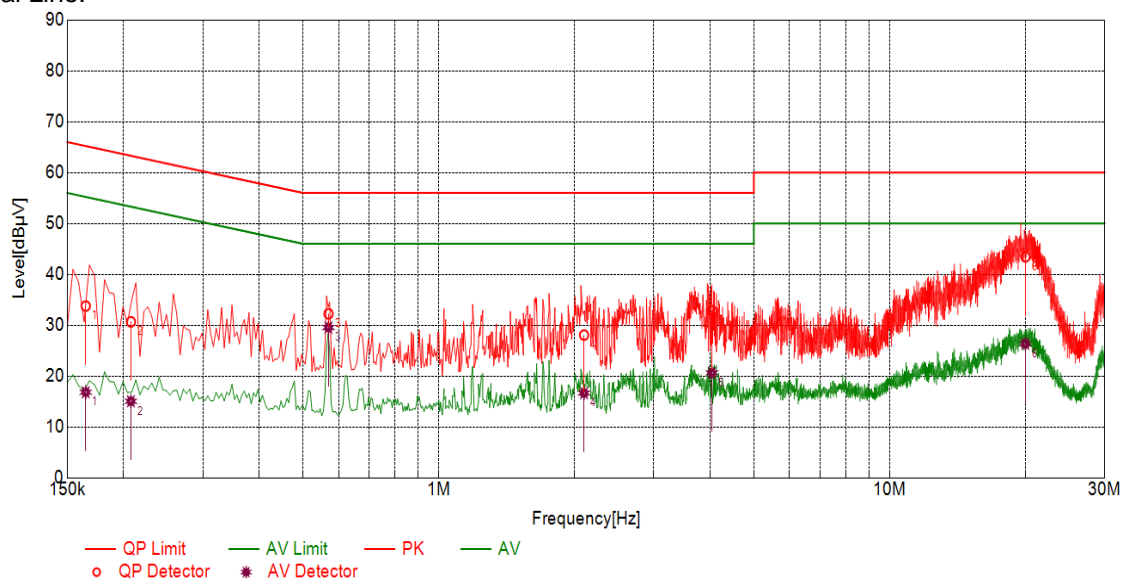


Final Data List

| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBμV] | QP Limit [dBμV] | QP Margin [dB] | AV Value [dBμV] | AV Limit [dBμV] | AV Margin [dB] | Type |
|-----|----------------|----------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|------|
| 1 | 0.1638 | 10.10 | 32.79 | 65.27 | 32.48 | 23.64 | 55.27 | 31.63 | L |
| 2 | 0.5650 | 10.10 | 41.55 | 56.00 | 14.45 | 38.51 | 46.00 | 7.49 | L |
| 3 | 1.1924 | 10.10 | 39.89 | 56.00 | 16.11 | 35.20 | 46.00 | 10.80 | L |
| 4 | 2.7019 | 10.10 | 34.66 | 56.00 | 21.34 | 25.89 | 46.00 | 20.11 | L |
| 5 | 17.9746 | 10.11 | 34.47 | 60.00 | 25.53 | 24.00 | 50.00 | 26.00 | L |
| 6 | 29.5575 | 10.11 | 31.90 | 60.00 | 28.10 | 25.34 | 50.00 | 24.66 | L |



Neutral Line:



Final Data List

| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBμV] | QP Limit [dBμV] | QP Margin [dB] | AV Value [dBμV] | AV Limit [dBμV] | AV Margin [dB] | Type |
|-----|-------------|-------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|------|
| 1 | 0.1649 | 10.10 | 33.76 | 65.21 | 31.45 | 16.82 | 55.21 | 38.39 | N |
| 2 | 0.2077 | 10.10 | 30.66 | 63.30 | 32.64 | 15.04 | 53.30 | 38.26 | N |
| 3 | 0.5696 | 10.10 | 32.24 | 56.00 | 23.76 | 29.55 | 46.00 | 16.45 | N |
| 4 | 2.1006 | 10.10 | 28.06 | 56.00 | 27.94 | 16.66 | 46.00 | 29.34 | N |
| 5 | 4.0374 | 10.10 | 32.85 | 56.00 | 23.15 | 20.63 | 46.00 | 25.37 | N |
| 6 | 19.9997 | 10.11 | 43.42 | 60.00 | 16.58 | 26.34 | 50.00 | 23.66 | N |

Remarks:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.



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4.3 Duty Cycle

4.3.1 Test Results

| Test Mode | TX Freq. [MHz] | Duty cycle [%] |
|-----------|---------------------|----------------|
| 11B | Ant 1: CH1,CH6,CH11 | 97.67 |
| 11G | Ant 1: CH1,CH6,CH11 | 87.04 |
| 11N20 | Ant 1: CH1,CH6,CH11 | 86.70 |



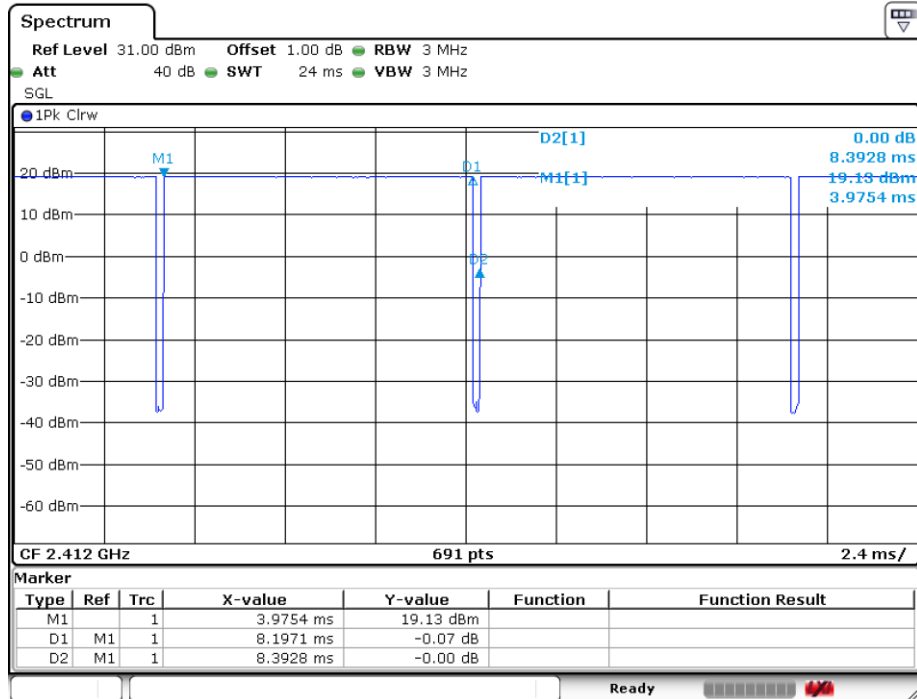
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4.3.2 Test Plots

4.3.2.1 ANT1

4.3.2.1.1 11B



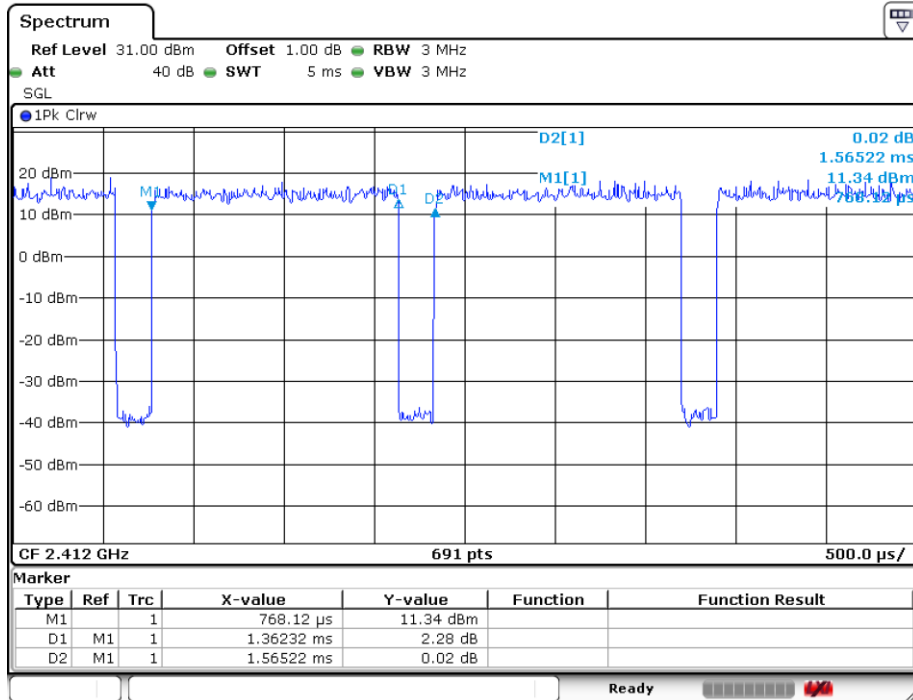
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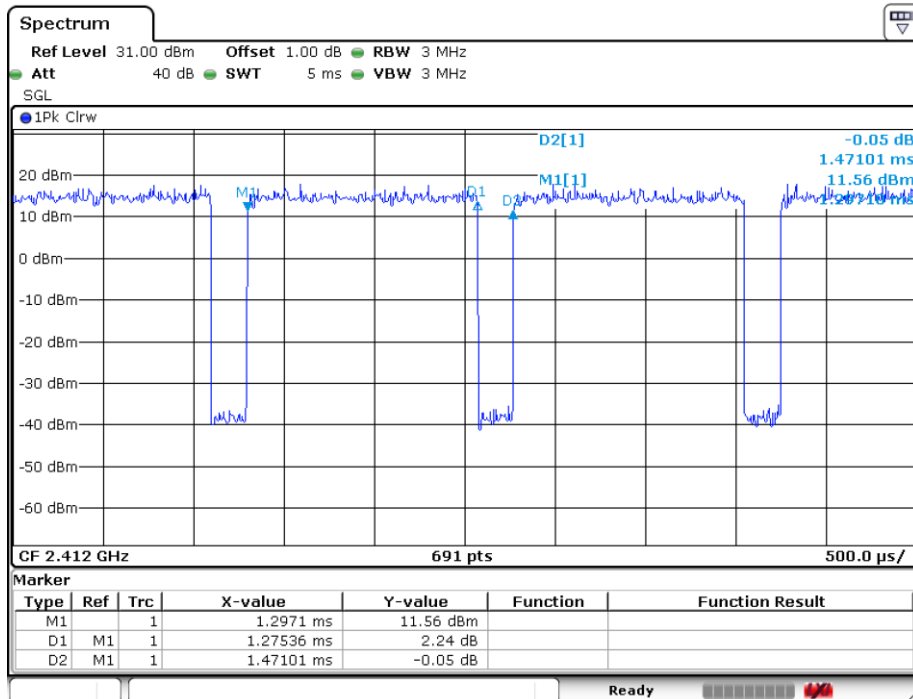
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4.3.2.1.2 11G



Date: 8.NOV.2020 14:57:15

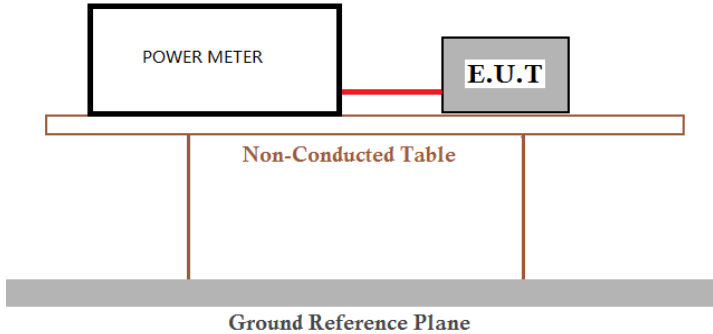
4.3.2.1.3 11N20



Date: 8.NOV.2020 14:57:59



4.4 Conducted Output Power

| | |
|------------------------|--|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (b)(3) |
| Test Method: | ANSI C63.10 :2013 Section 11.9.1.3 |
| Test Setup: |  |
| Test Instruments: | Refer to section 5.10 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); |
| Limit: | 30dBm |
| Test Results: | Pass |



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4.4.1 Test Results

Measurement Data of Peak Power:

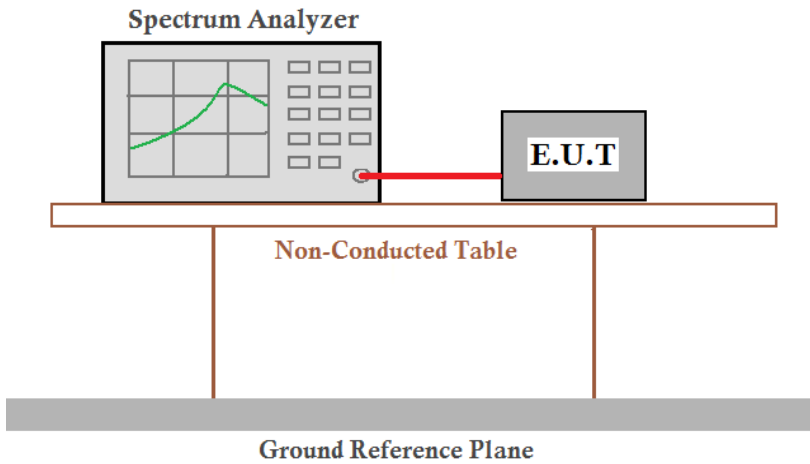
| Mode | Test Channel | Peak Output Power (dBm) | Limit (dBm) | Result |
|-----------|--------------|-------------------------|-------------|--------|
| 802.11B | Lowest | 19.69 | 30.00 | Pass |
| | Middle | 19.47 | 30.00 | Pass |
| | Highest | 19.21 | 30.00 | Pass |
| 802.11G | Lowest | 16.61 | 30.00 | Pass |
| | Middle | 16.37 | 30.00 | Pass |
| | Highest | 16.37 | 30.00 | Pass |
| 802.11N20 | Lowest | 15.64 | 30.00 | Pass |
| | Middle | 15.25 | 30.00 | Pass |
| | Highest | 15.55 | 30.00 | Pass |



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4.5 DTS (6 dB) Bandwidth & 99% Occupied Bandwidth

| | |
|------------------------|---|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (a)(2) |
| Test Method: | ANSI C63.10: 2013 Section 11.8.1 Option 1 |
| Test Setup: |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p> |
| Instruments Used: | Refer to section 5.10 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); |
| Limit: | ≥ 500 kHz |
| Test Results: | Pass |



4.5.1 Test Results

| Mode | Test Channel | Occupied Bandwidth (MHz) | 6dB Emission Bandwidth (MHz) | Limit (kHz) | Result |
|-----------|--------------|--------------------------|------------------------------|-------------|--------|
| 802.11B | Lowest | 13.24 | 8.55 | ≥500 | Pass |
| | Middle | 13.15 | 9.03 | ≥500 | Pass |
| | Highest | 13.24 | 9.07 | ≥500 | Pass |
| 802.11G | Lowest | 17.15 | 16.41 | ≥500 | Pass |
| | Middle | 17.28 | 16.45 | ≥500 | Pass |
| | Highest | 17.50 | 16.45 | ≥500 | Pass |
| 802.11N20 | Lowest | 18.10 | 17.54 | ≥500 | Pass |
| | Middle | 18.19 | 17.58 | ≥500 | Pass |
| | Highest | 18.32 | 17.58 | ≥500 | Pass |



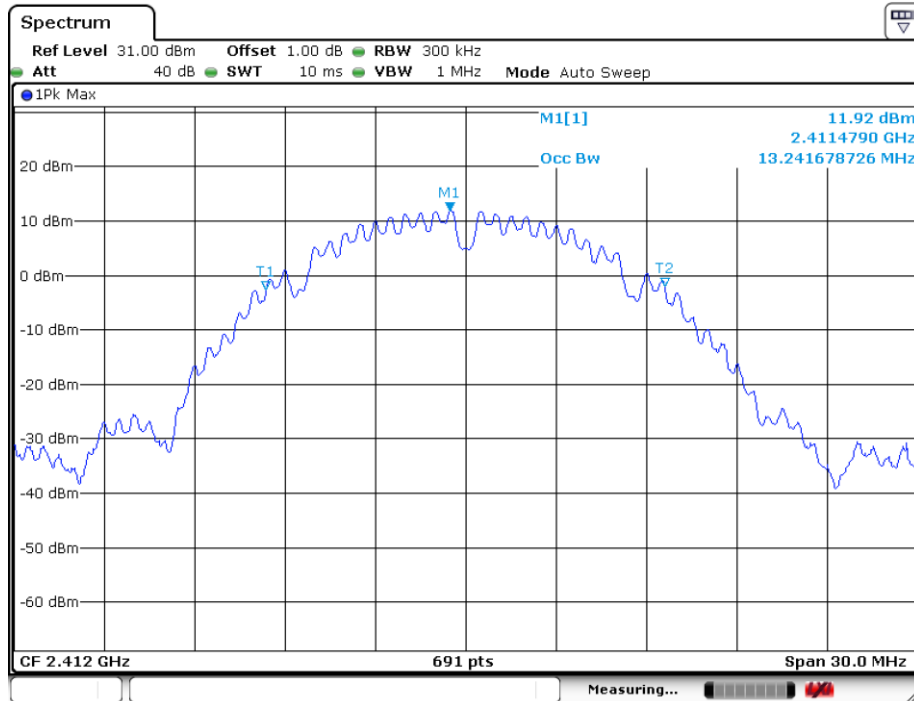
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4.5.2 Test Plots

4.5.2.1 ANT1

4.5.2.1.1 802.11B_Lowest Channel



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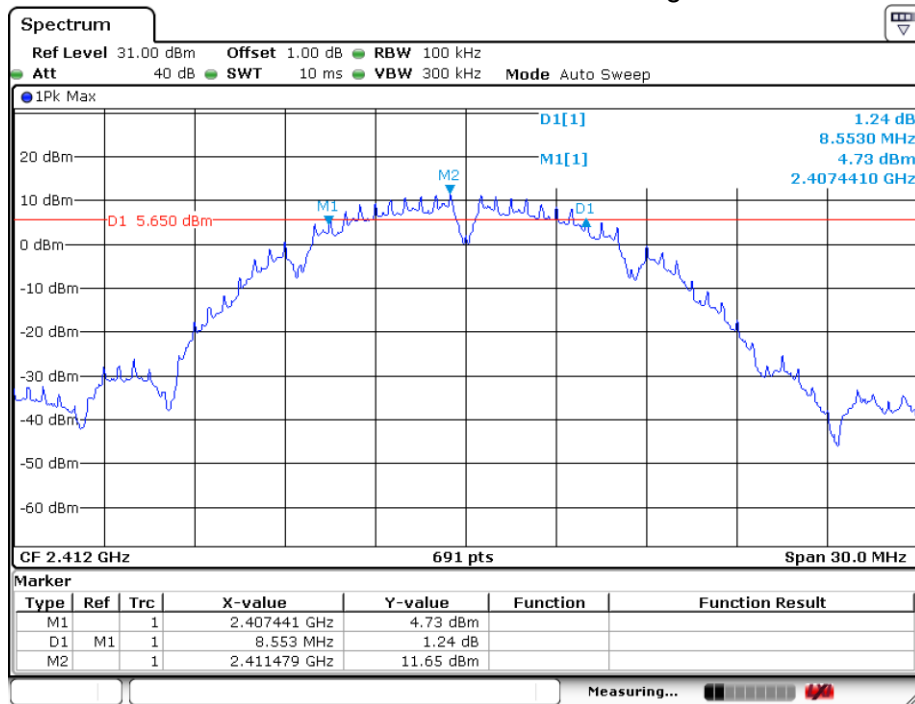


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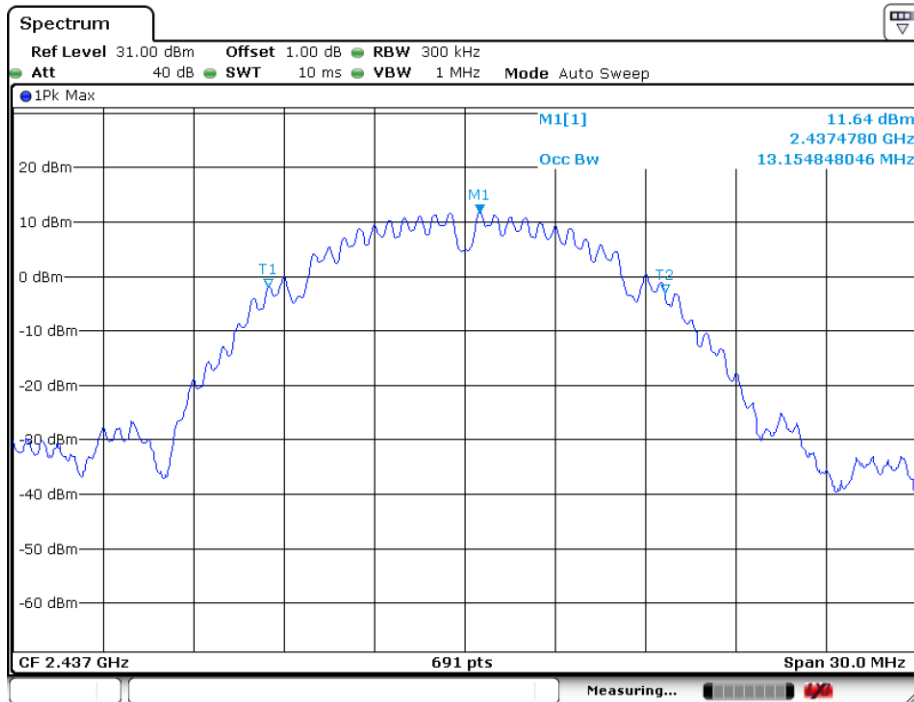
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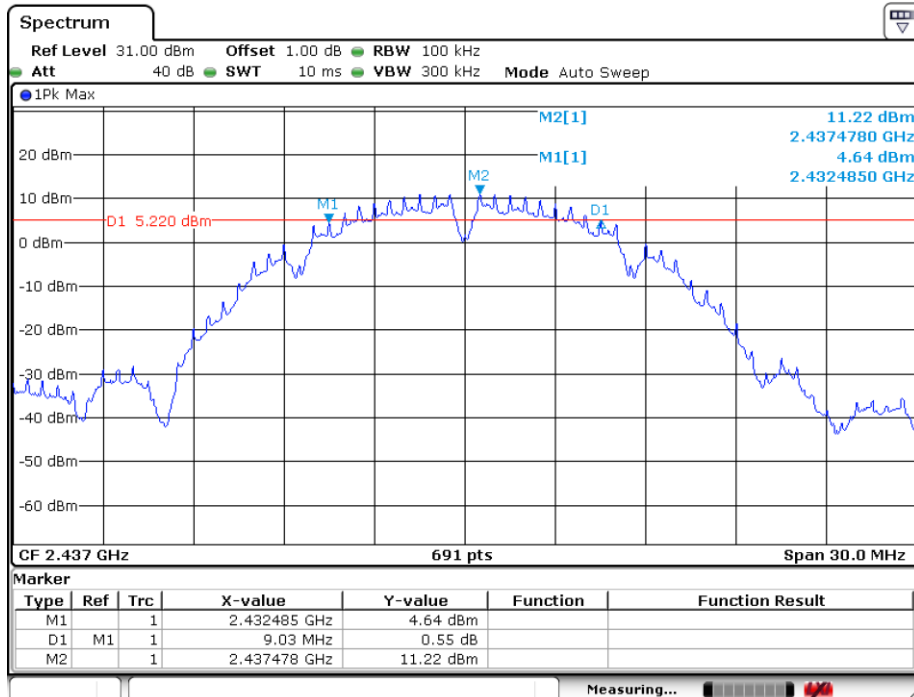
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4.5.2.1.2 802.11B_Middle Channel



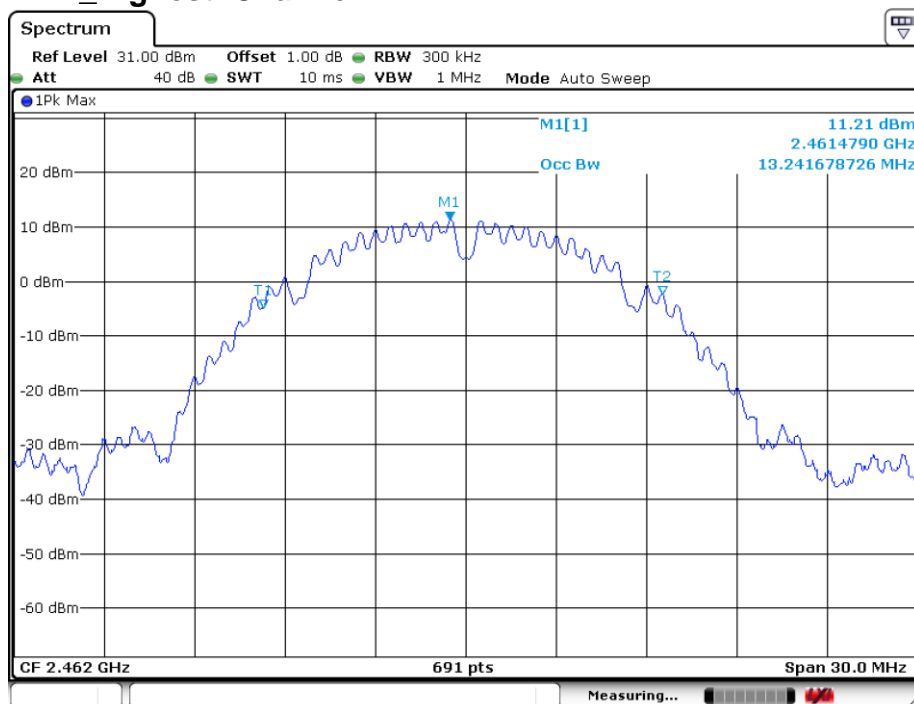
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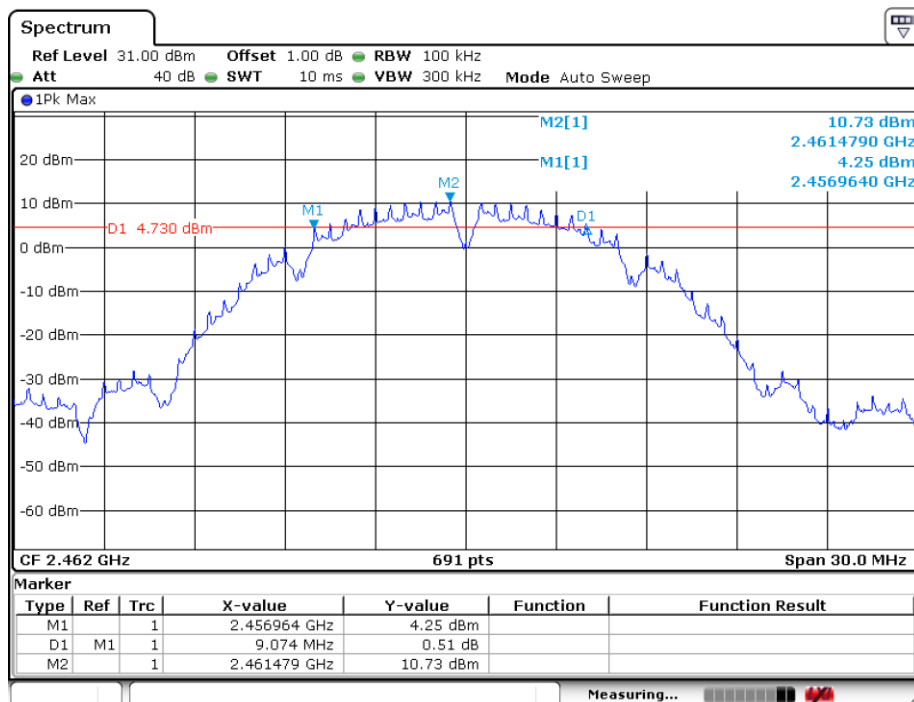
Date: 8.NOV.2020 14:31:12



4.5.2.1.3 802.11B_Highest Channel



Date: 8.NOV.2020 14:44:21



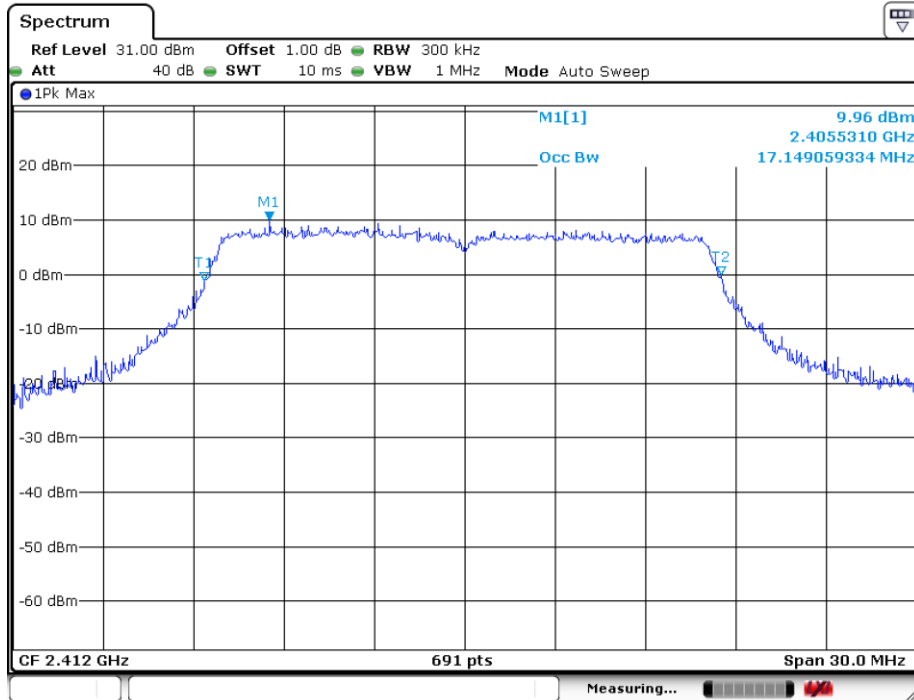
Date: 8.NOV.2020 14:31:50



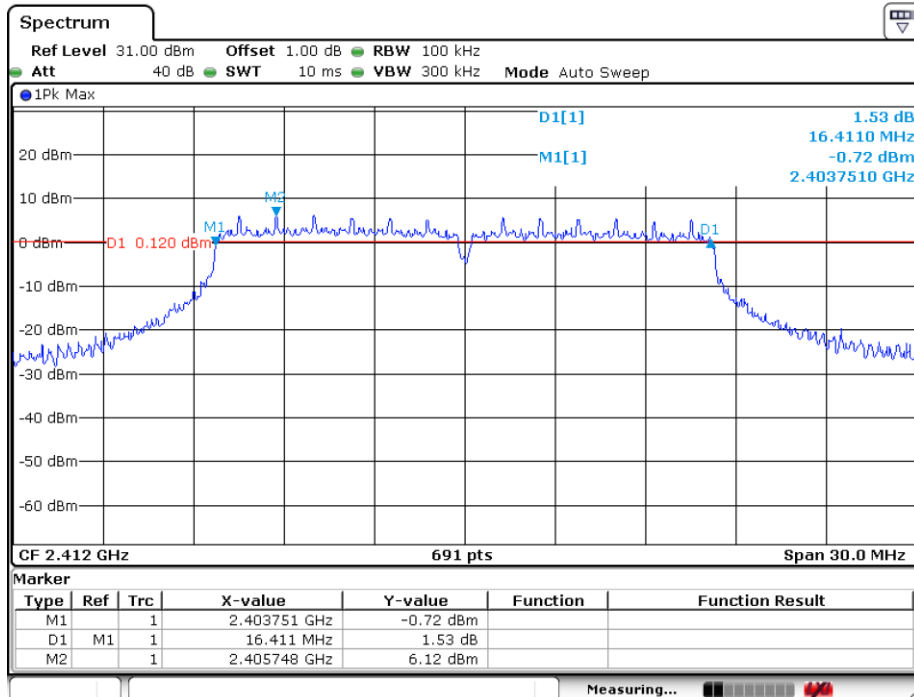
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4.5.2.1.4 802.11G_Lowest Channel



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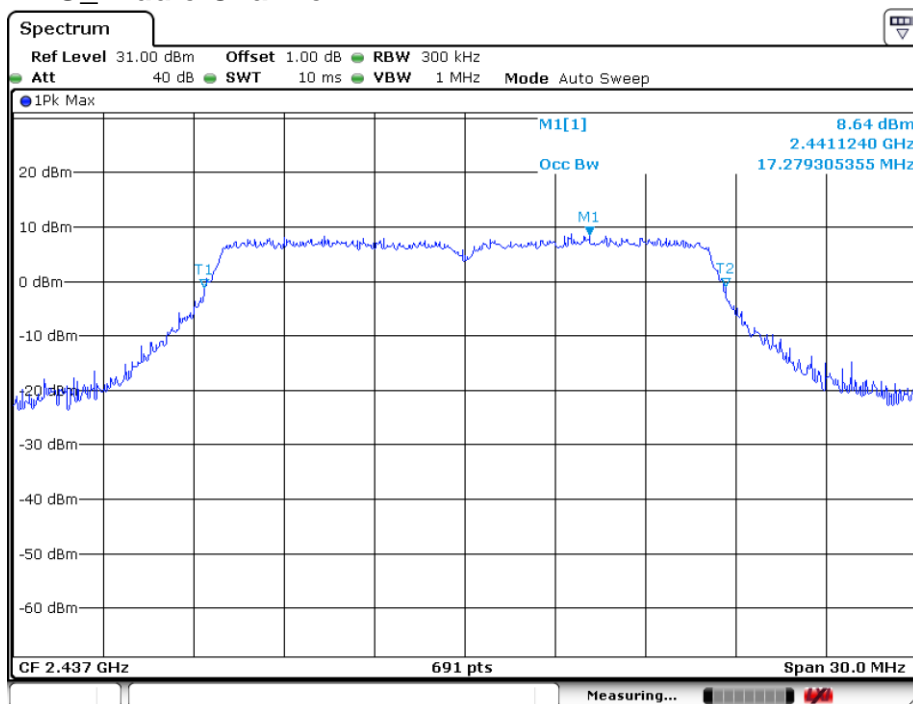
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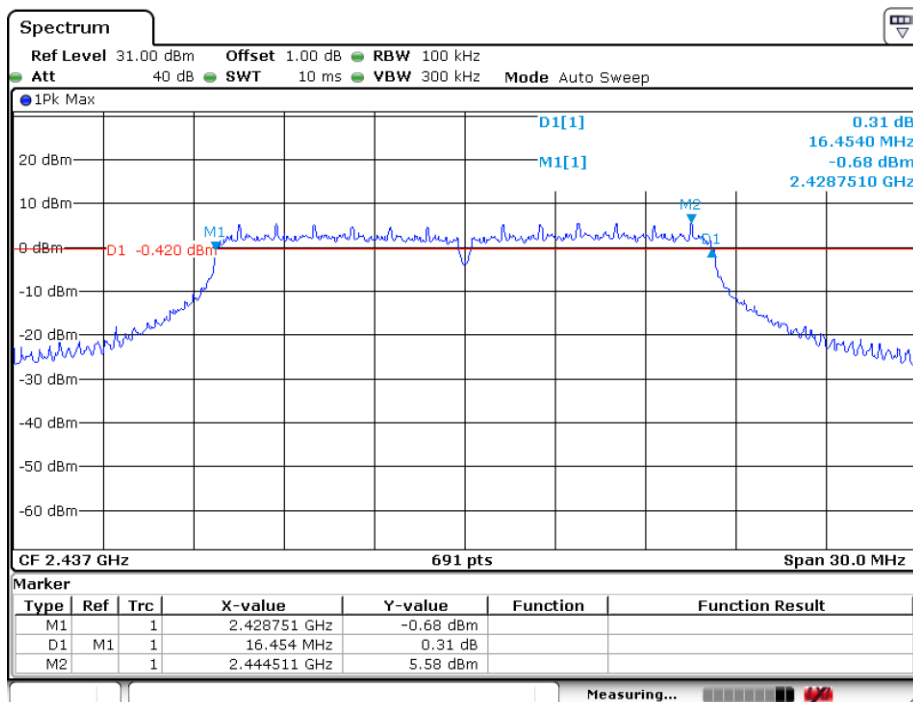
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4.5.2.1.5 802.11G_Middle Channel



Date: 8.NOV.2020 14:45:04



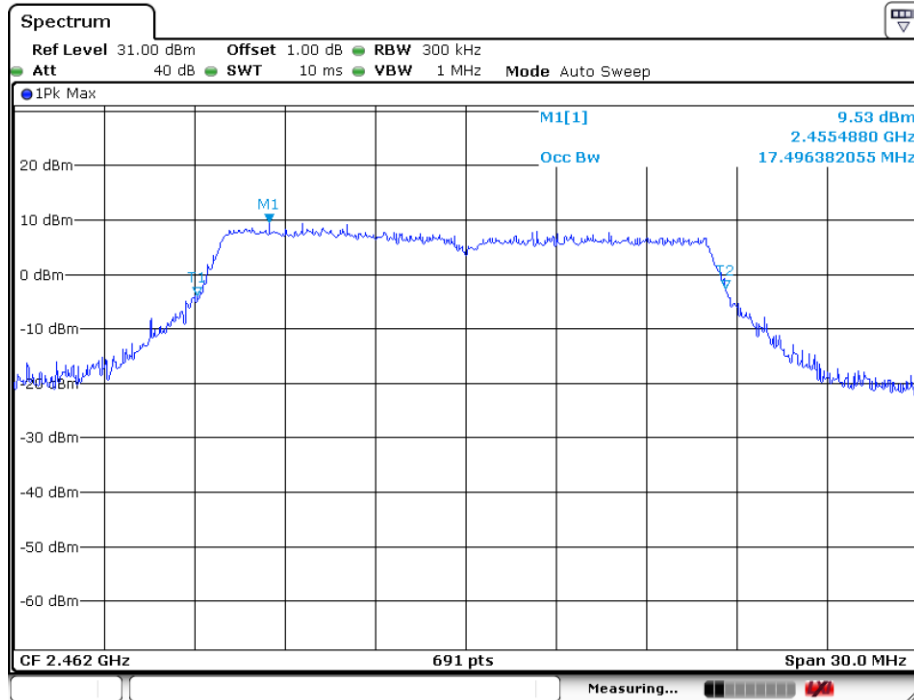
Date: 8.NOV.2020 14:29:19



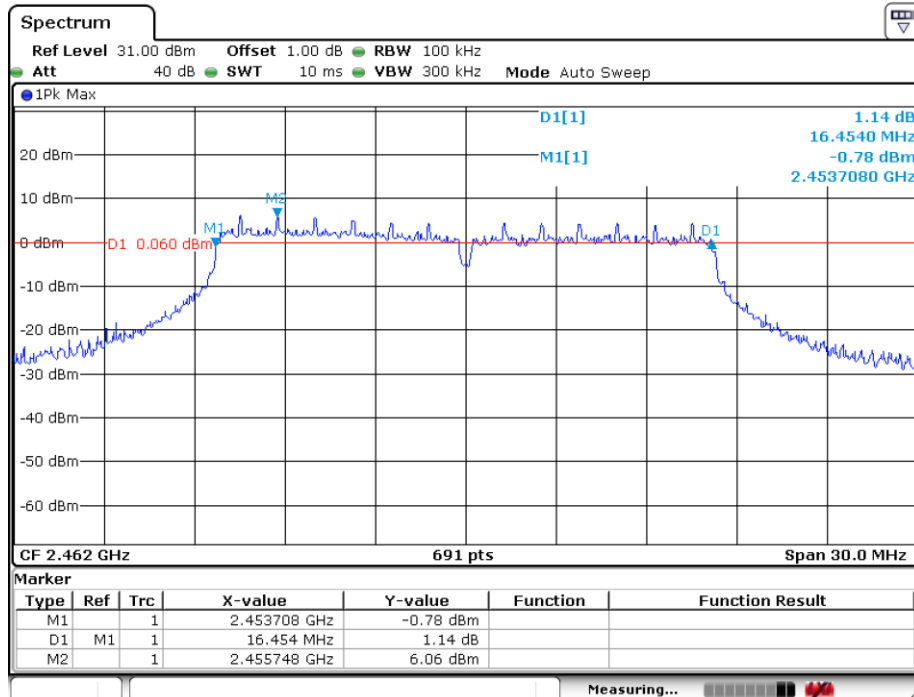
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4.5.2.1.6 802.11G_Highest Channel



Date: 8.NOV.2020 14:44:43

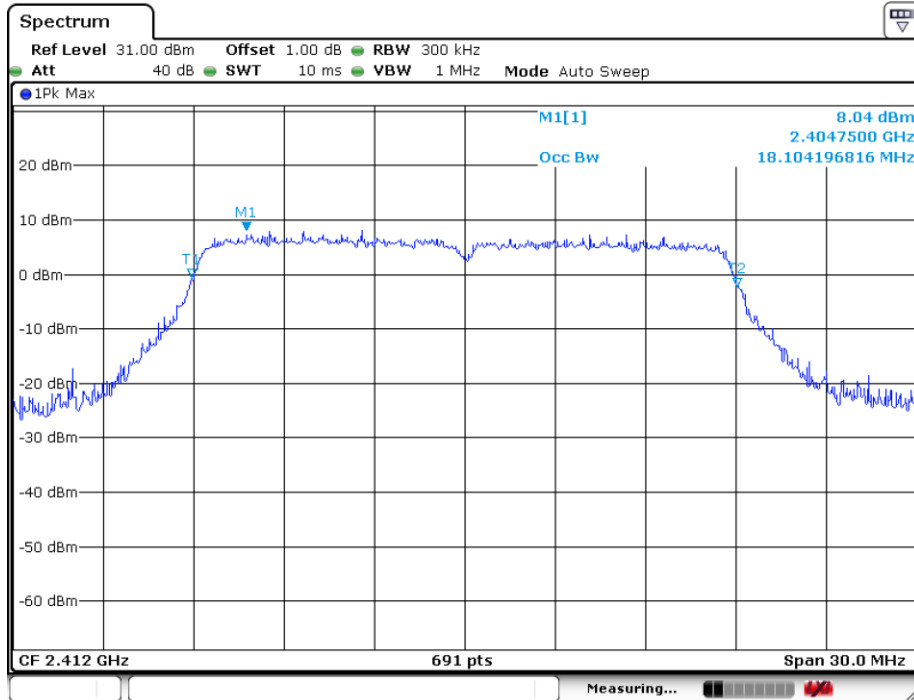


Date: 8.NOV.2020 14:21:02

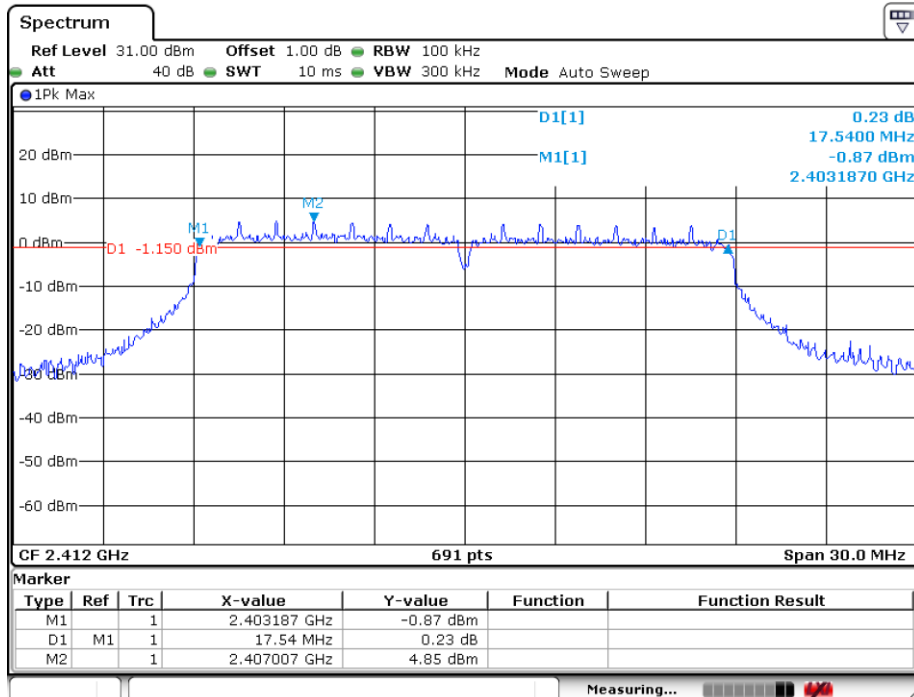


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4.5.2.1.7 802.11N20_Lowest Channel



Date: 8.NOV.2020 14:42:55

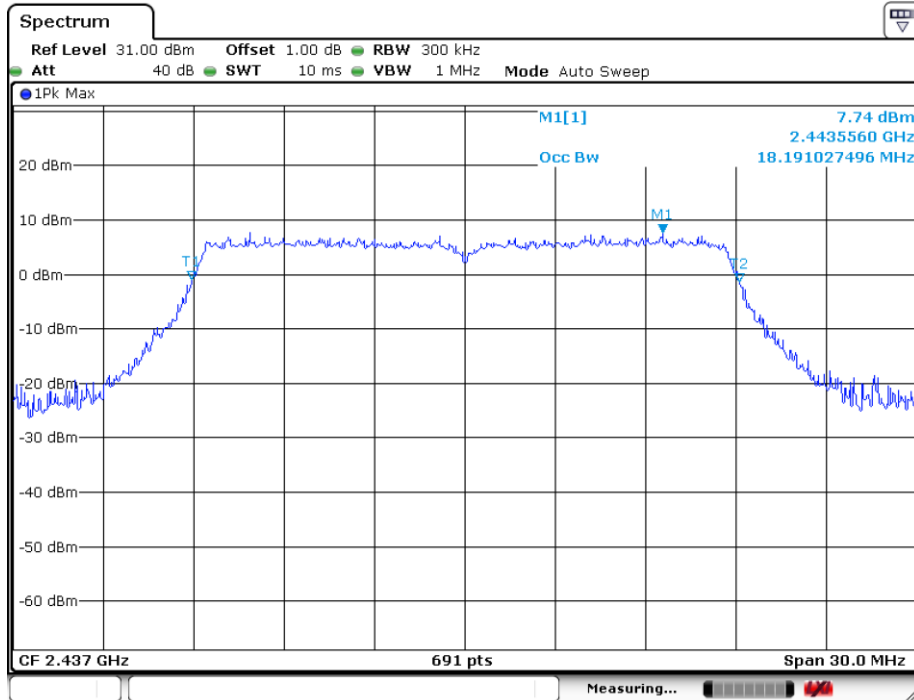


Date: 8.NOV.2020 14:17:51

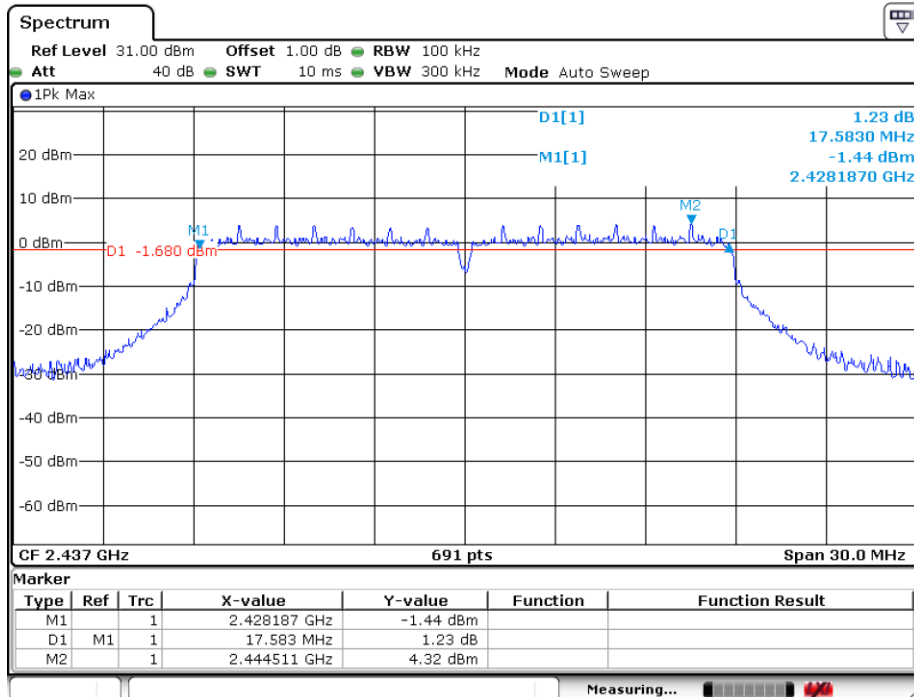


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4.5.2.1.8 802.11N20_Middle Channel



Date: 8.NOV.2020 14:42:33

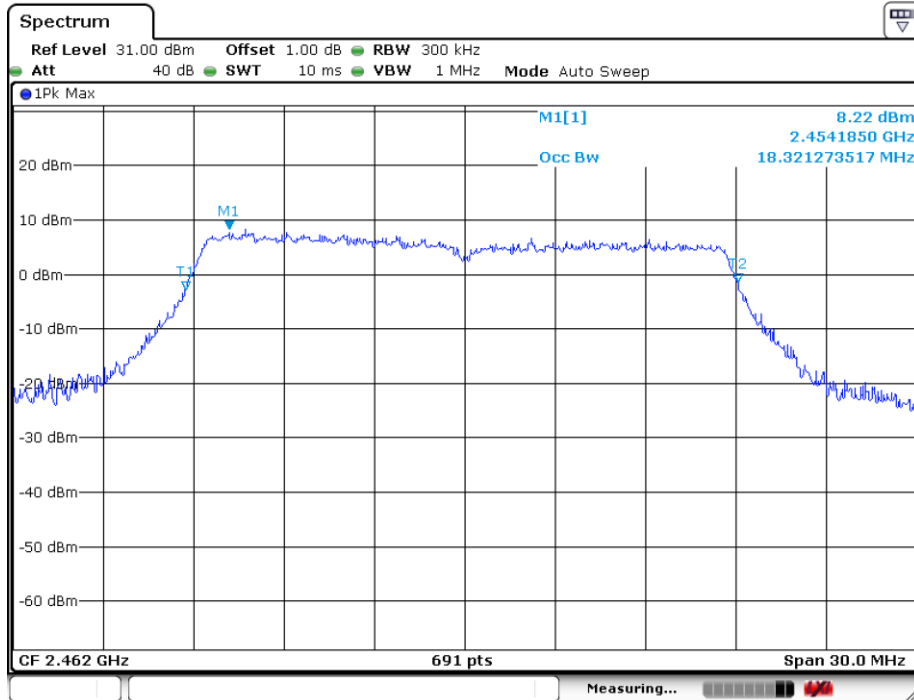


Date: 8.NOV.2020 14:19:01

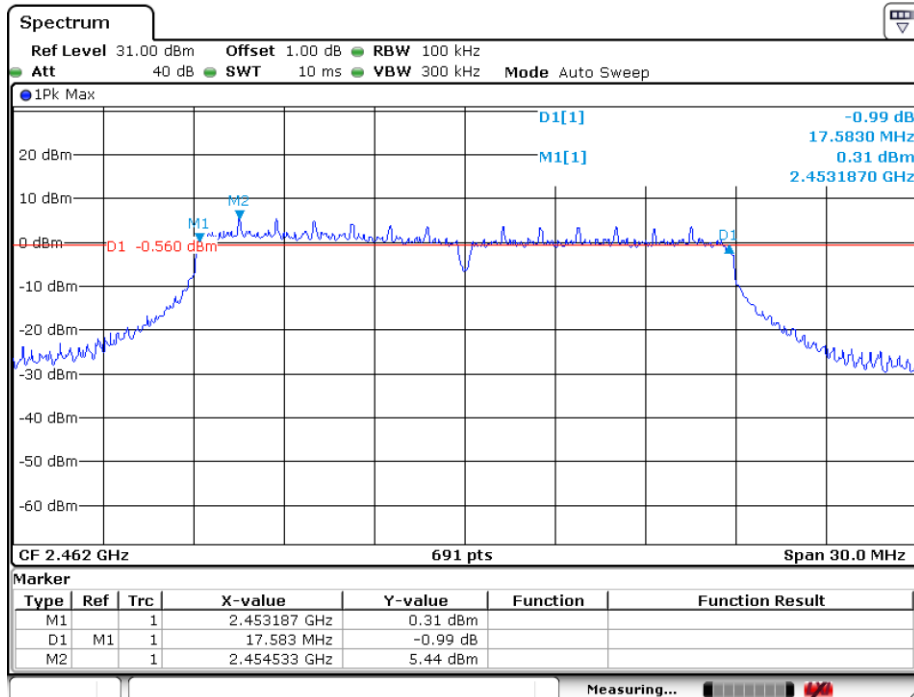


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4.5.2.1.9 802.11N20_Highest Channel



Date: 8.NOV.2020 14:42:13

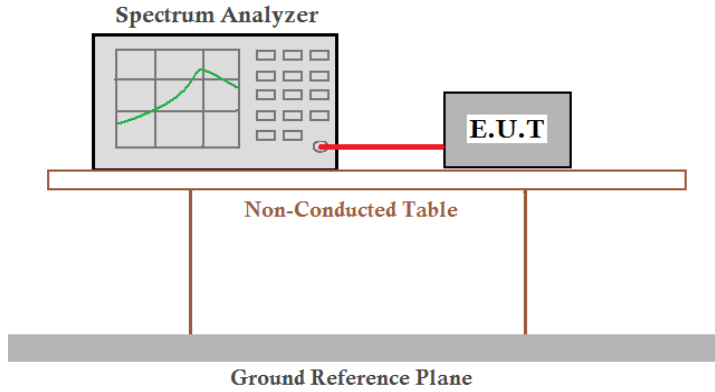


Date: 8.NOV.2020 14:20:27



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4.6 Power Spectral Density

| | |
|------------------------|--|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (e) |
| Test Method: | ANSI C63.10 :2013 Section 11.10.2 |
| Test Setup: |  |
| Test Instruments: | Refer to section 5.10 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); |
| Limit: | ≤8.00dBm/3kHz |
| Test Results: | Pass |

4.6.1 Test Results

| Mode | Test Channel | Power Spectral Density (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|-----------|--------------|-----------------------------------|------------------|--------|
| 802.11B | Lowest | -1.98 | ≤8.00 | Pass |
| | Middle | -2.44 | ≤8.00 | Pass |
| | Highest | -2.14 | ≤8.00 | Pass |
| 802.11G | Lowest | -7.02 | ≤8.00 | Pass |
| | Middle | -5.99 | ≤8.00 | Pass |
| | Highest | -6.47 | ≤8.00 | Pass |
| 802.11N20 | Lowest | -8.04 | ≤8.00 | Pass |
| | Middle | -8.66 | ≤8.00 | Pass |
| | Highest | -9.00 | ≤8.00 | Pass |



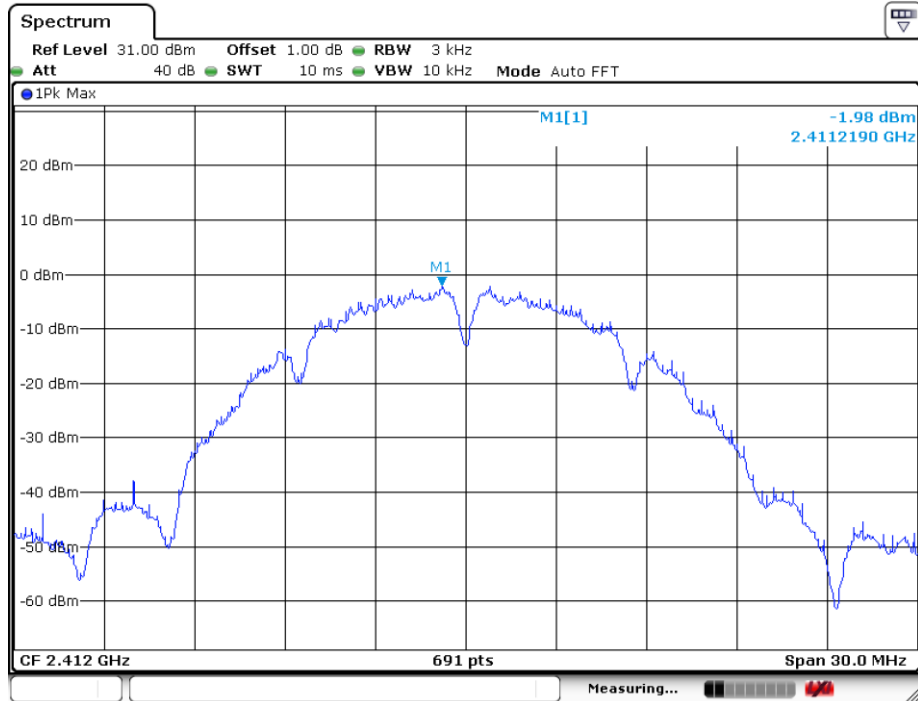
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4.6.2 Test Plots

4.6.2.1 ANT1

4.6.2.1.1 802.11B_Lowest Channel



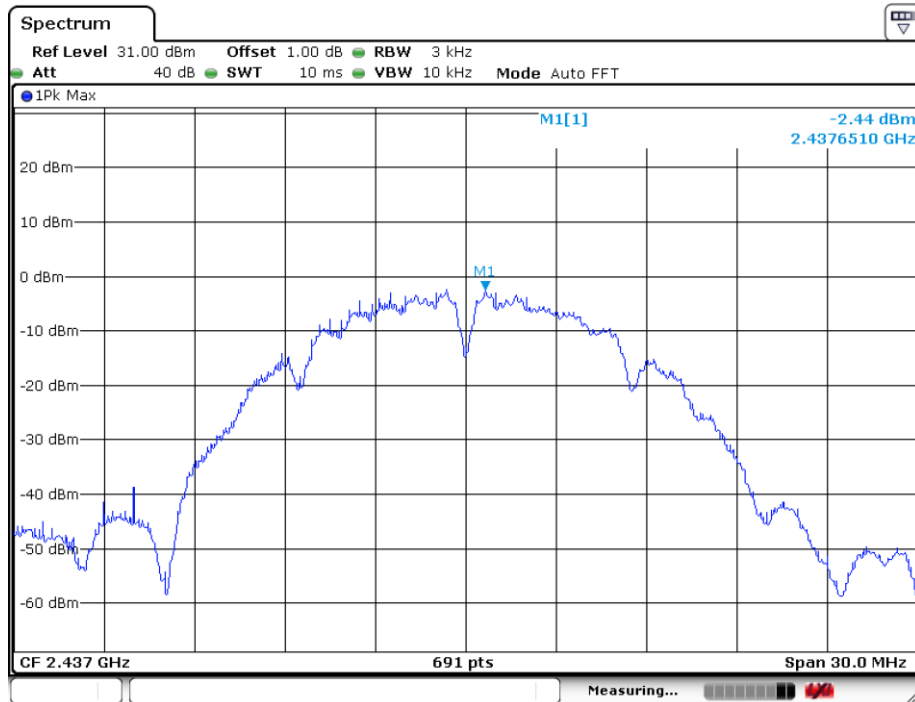
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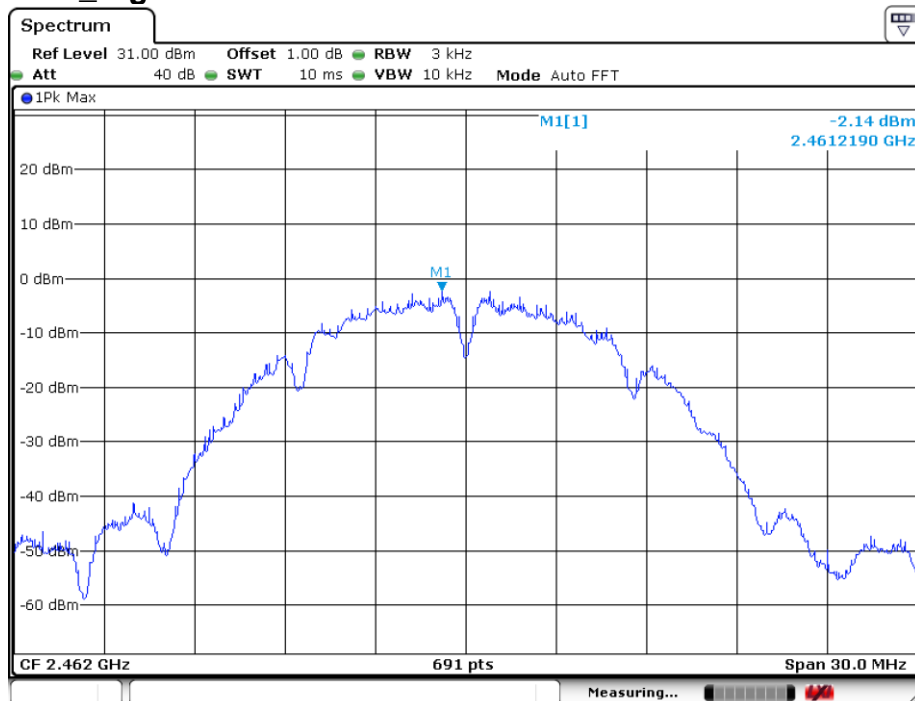
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4.6.2.1.2 802.11B_Middle Channel



Date: 8.NOV.2020 14:47:08

4.6.2.1.3 802.11B_Highest Channel



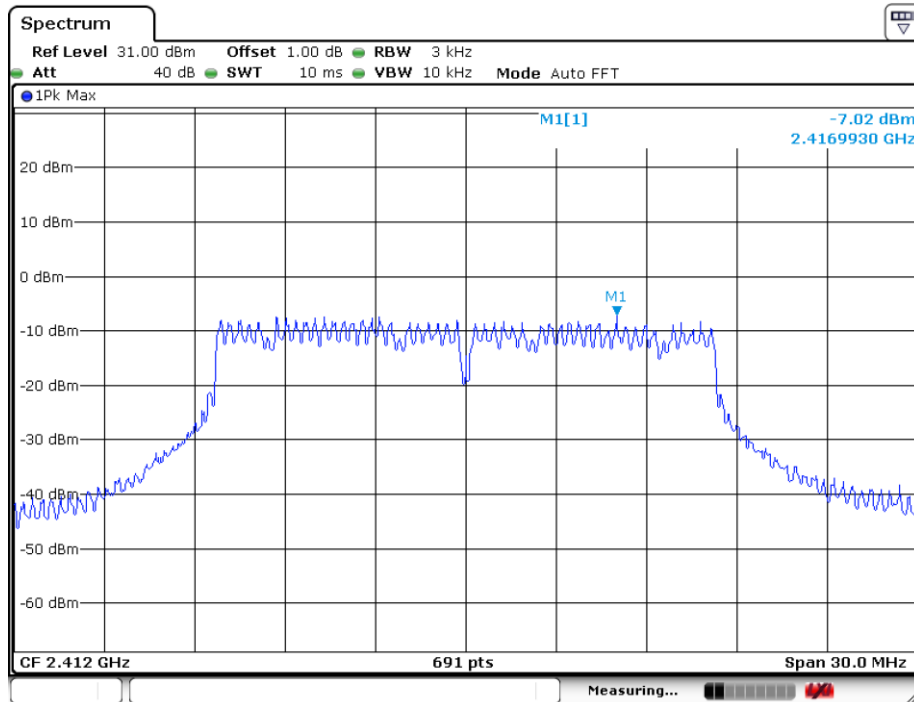
Date: 8.NOV.2020 14:46:45



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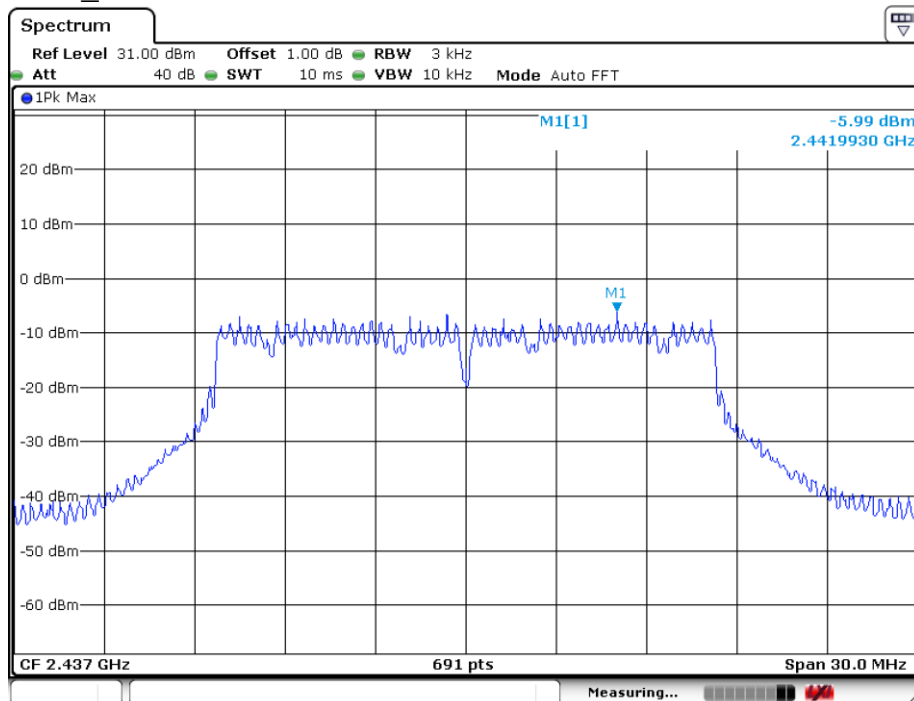
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4.6.2.1.4 802.11G_Lowest Channel



Date: 8.NOV.2020 14:45:38

4.6.2.1.5 802.11G_Middle Channel



Date: 8.NOV.2020 14:46:04



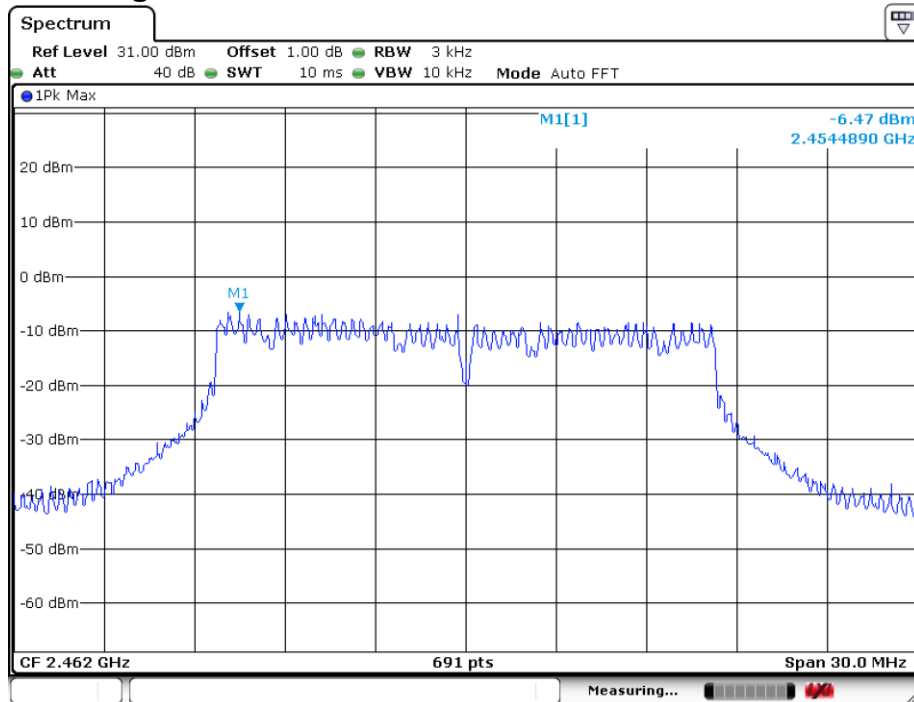
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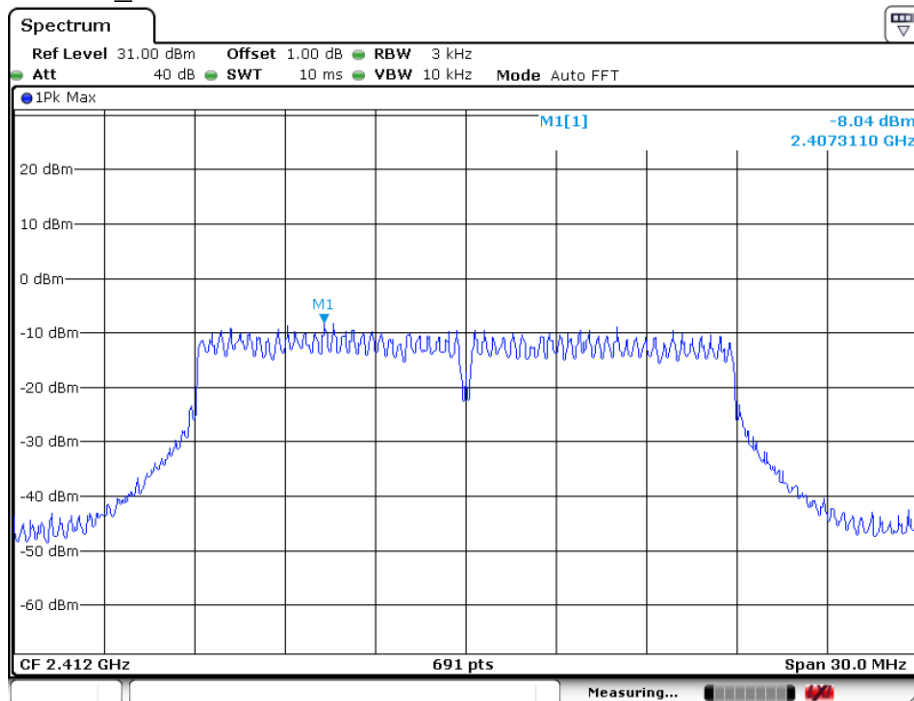
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4.6.2.1.6 802.11G_Highest Channel



Date: 8.NOV.2020 14:46:26

4.6.2.1.7 802.11N20_Lowest Channel

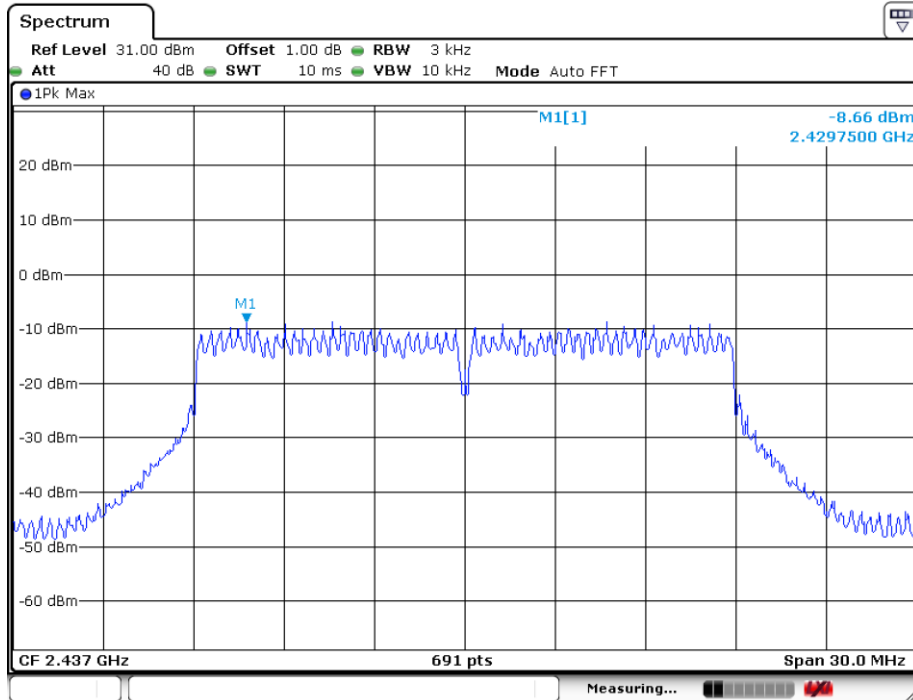


Date: 8.NOV.2020 14:48:49



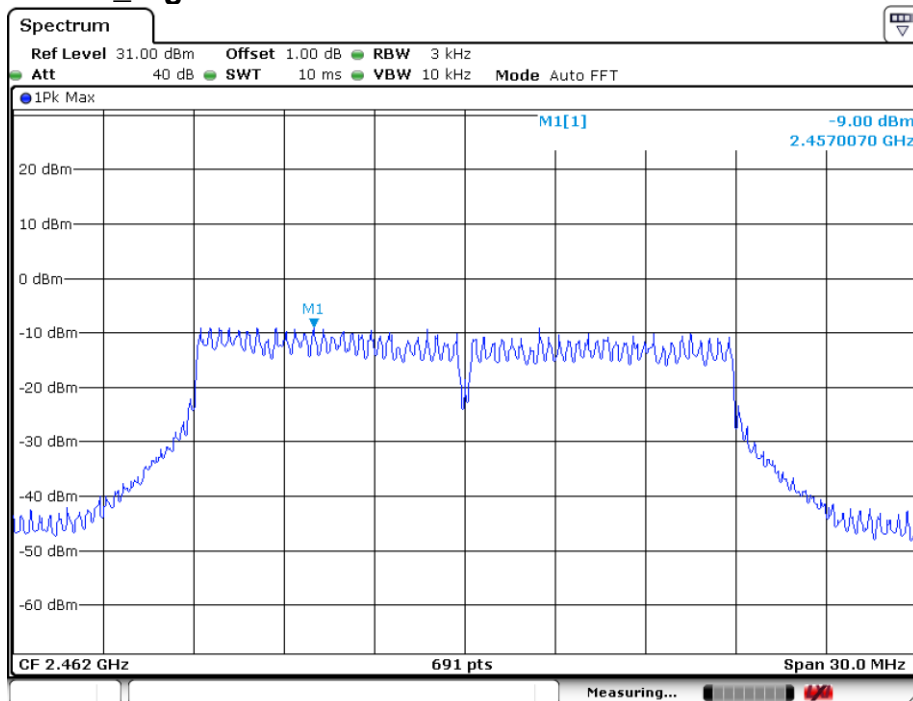
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4.6.2.1.8 802.11N20_Middle Channel



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4.6.2.1.9 802.11N20_Highest Channel



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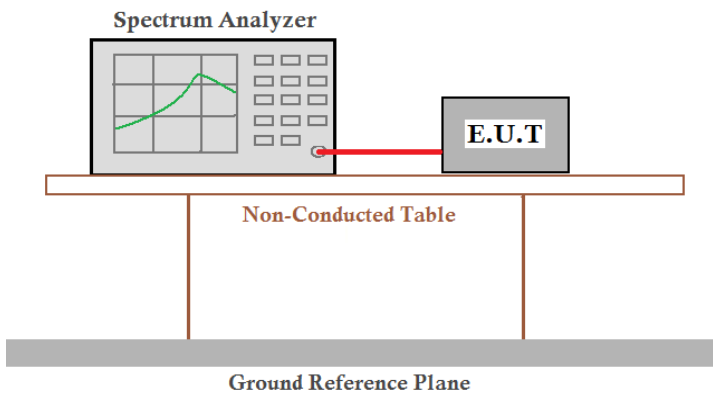
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4.7 Band-edge for RF Conducted Emissions

| | |
|------------------------|---|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (d) |
| Test Method: | ANSI C63.10: 2013 Section 11.13 |
| Test Setup: |  |
| Instruments Used: | Refer to section 5.10 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); 13.5Mbps of rate is the worst case of 802.11N(HT40). |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |
| Test Results: | Pass |

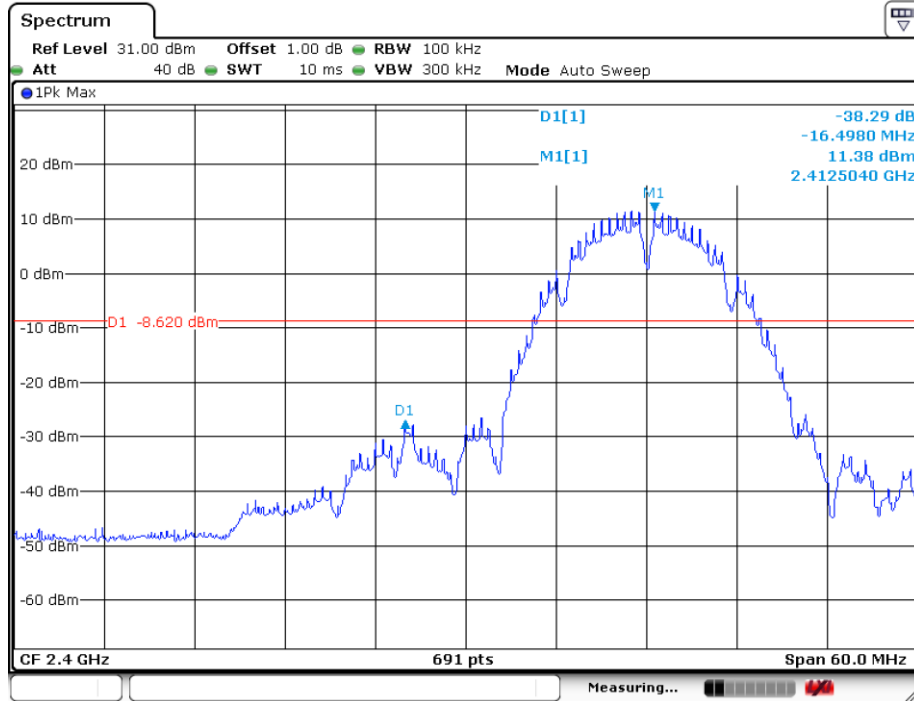


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4.7.1 Test Plots

4.7.1.1 ANT1

4.7.1.1.1 802.11B_Lowest Channel



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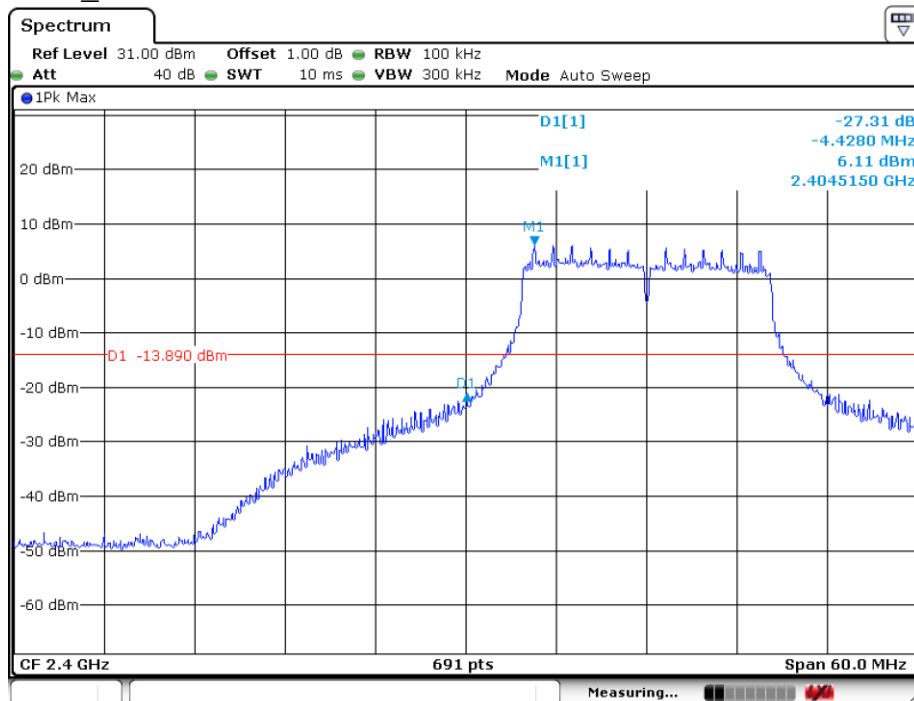
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4.7.1.1.2 802.11B_Highest Channel



Date: 8.NOV.2020 14:32:24

4.7.1.1.3 802.11G_Lowest Channel



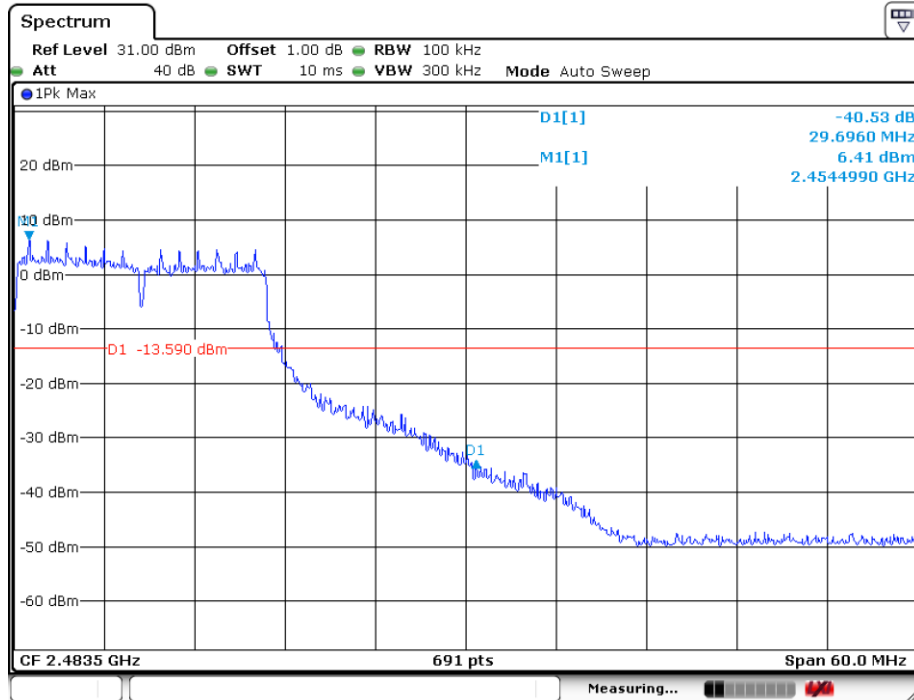
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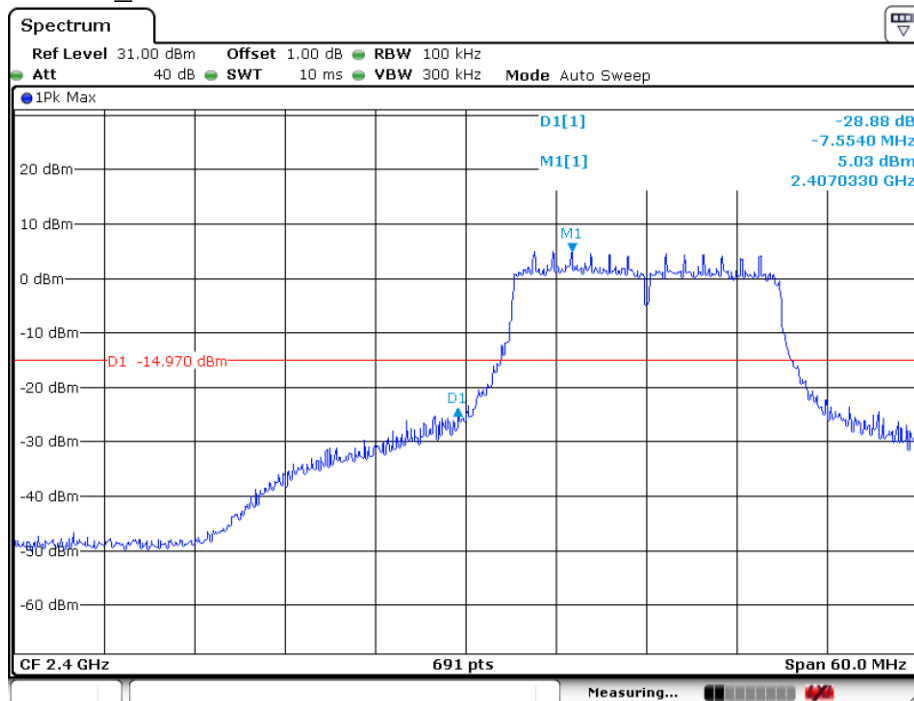
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4.7.1.1.4 802.11G_Highest Channel



Date: 8.NOV.2020 14:34:57

4.7.1.1.5 802.11N20_Lowest Channel

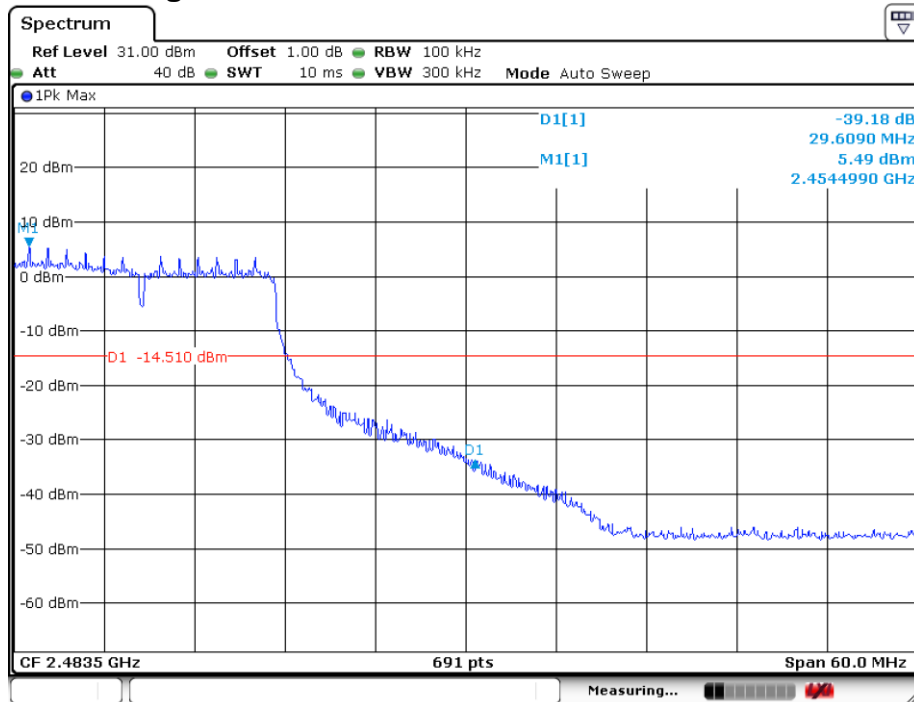


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4.7.1.1.6 802.11N20_Highest Channel



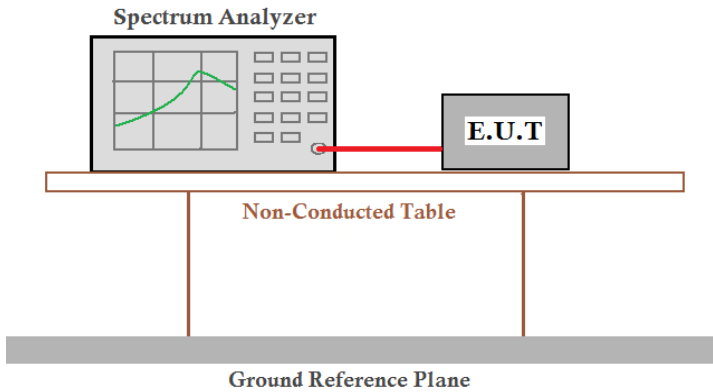
Date: 8.NOV.2020 14:39:56



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4.8 RF Conducted Spurious Emissions

| | |
|------------------------|---|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (d) |
| Test Method: | ANSI C63.10: 2013 Section 11.11 |
| Test Setup: |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a table labeled 'Non-Conducted Table'. This table is supported by two vertical legs and sits on a 'Ground Reference Plane'.</p> |
| Instruments Used: | Refer to section 5.10 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |
| Test Results: | Pass |

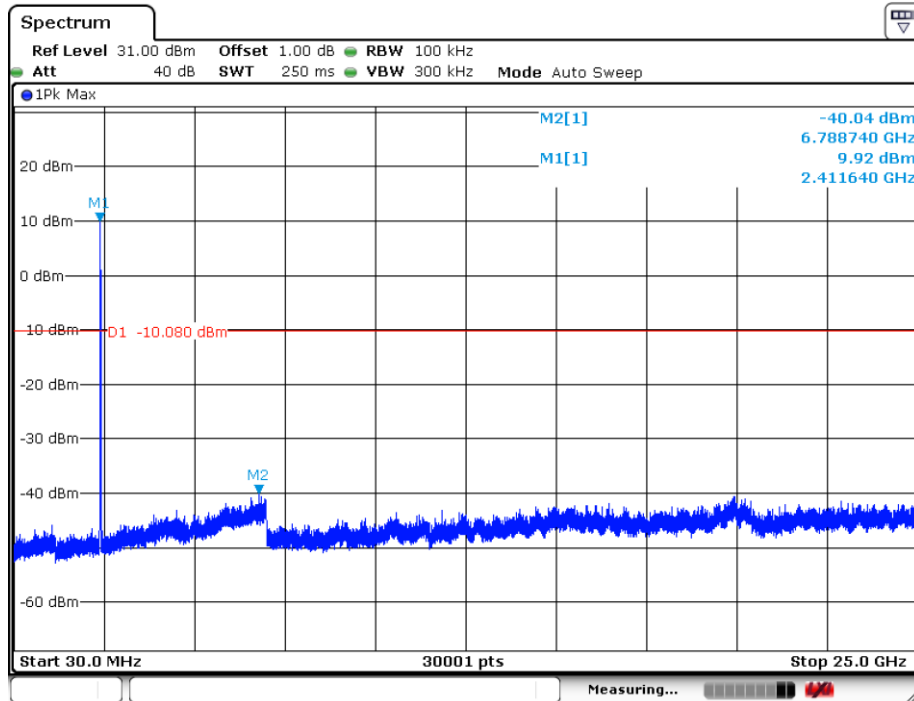


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4.8.1 Test Plots

4.8.1.1 ANT1

4.8.1.1.1 802.11B_Lowest Channel



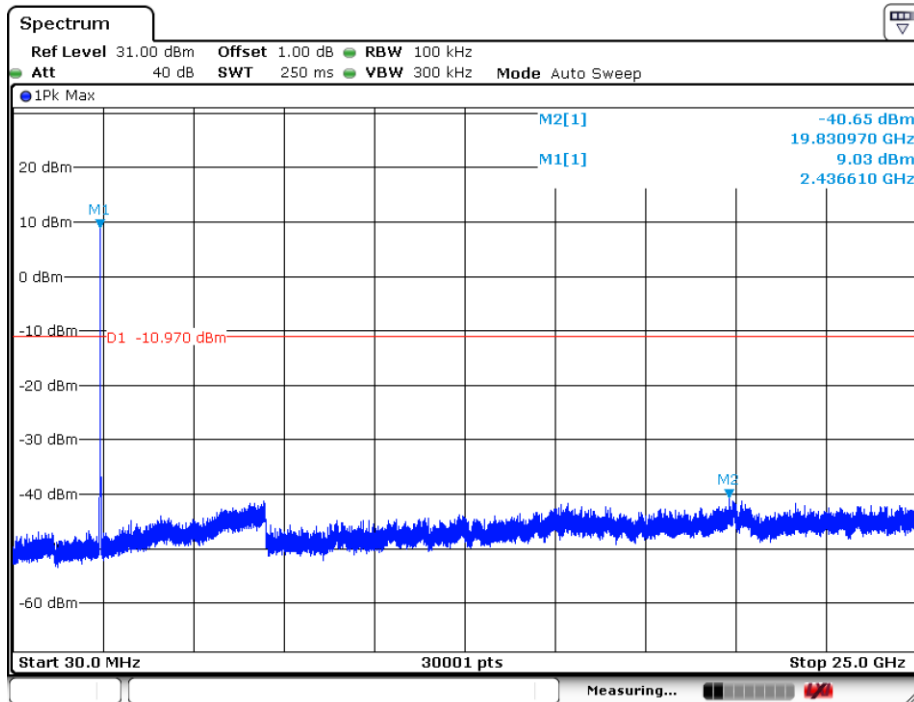
Date: 8.NOV.2020 14:53:43



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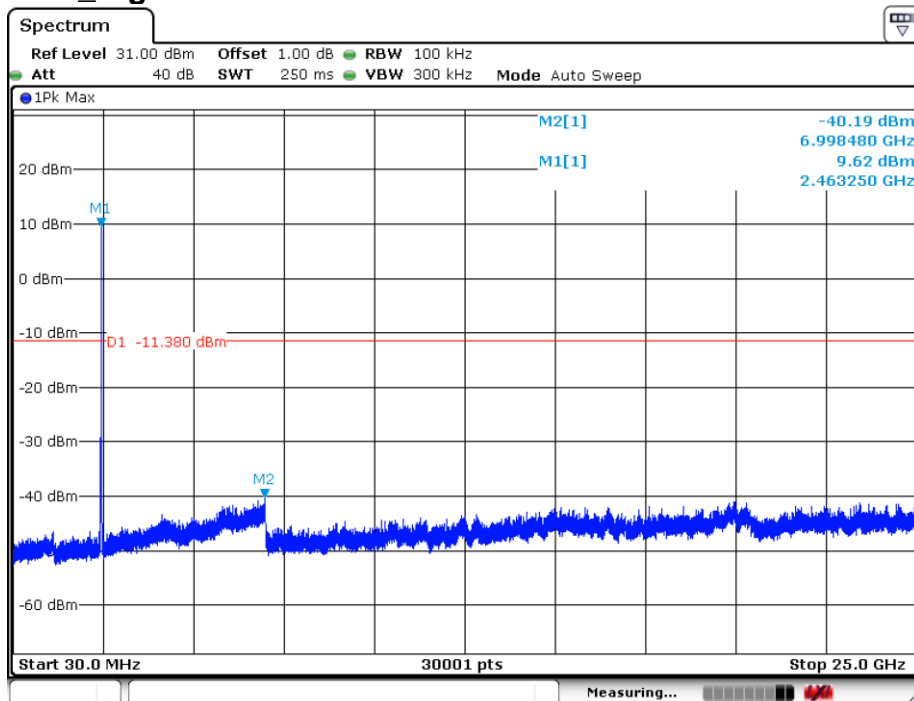
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4.8.1.1.2 802.11B_Middle Channel



Date: 8.NOV.2020 14:52:38

4.8.1.1.3 802.11B_Highest Channel



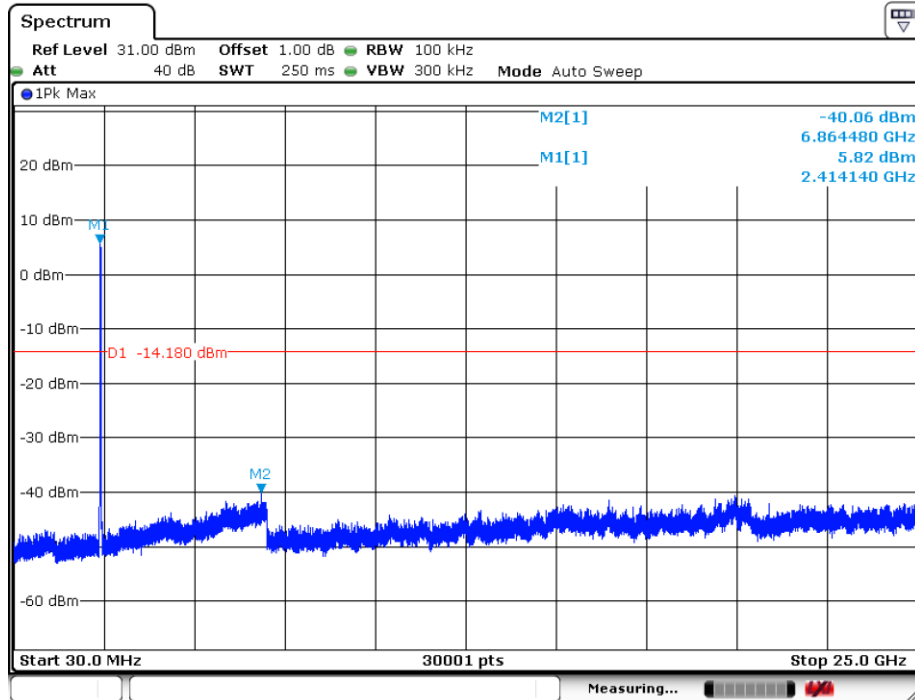
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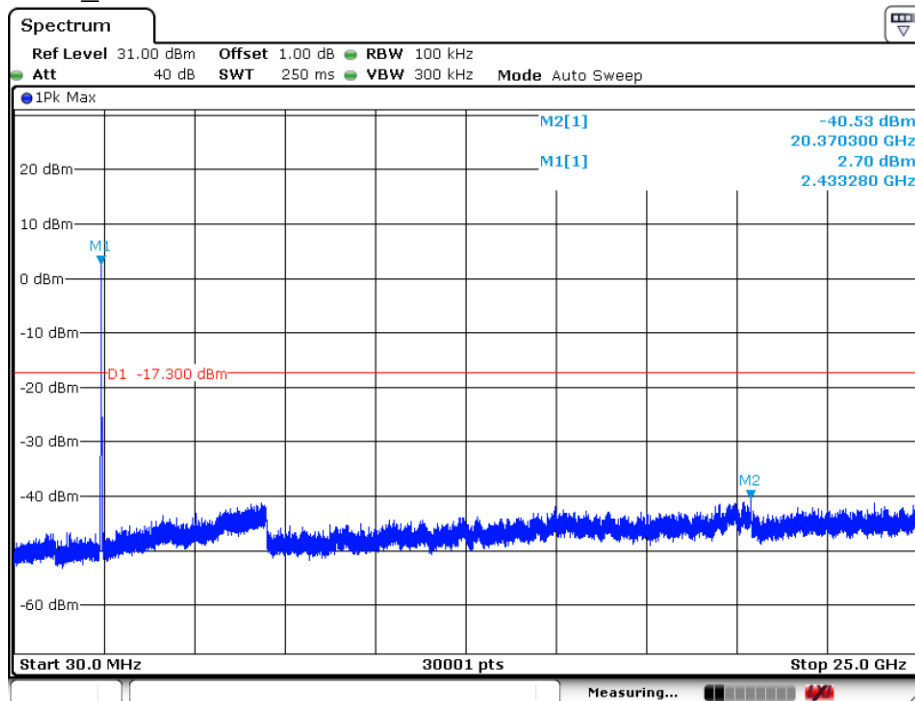
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4.8.1.1.4 802.11G_Lowest Channel



Date: 8.NOV.2020 14:54:27

4.8.1.1.5 802.11G_Middle Channel



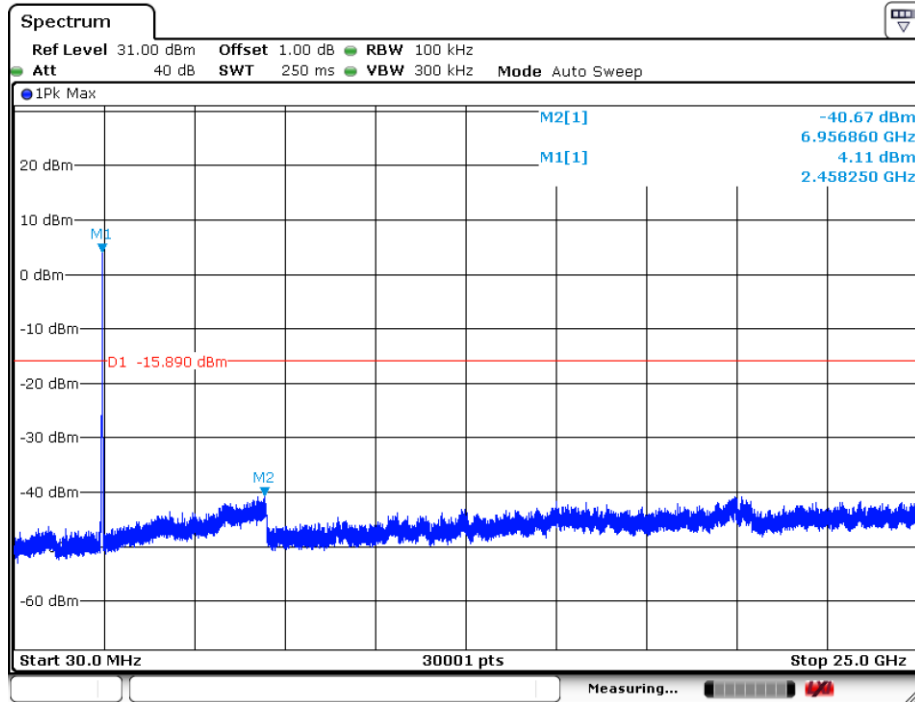
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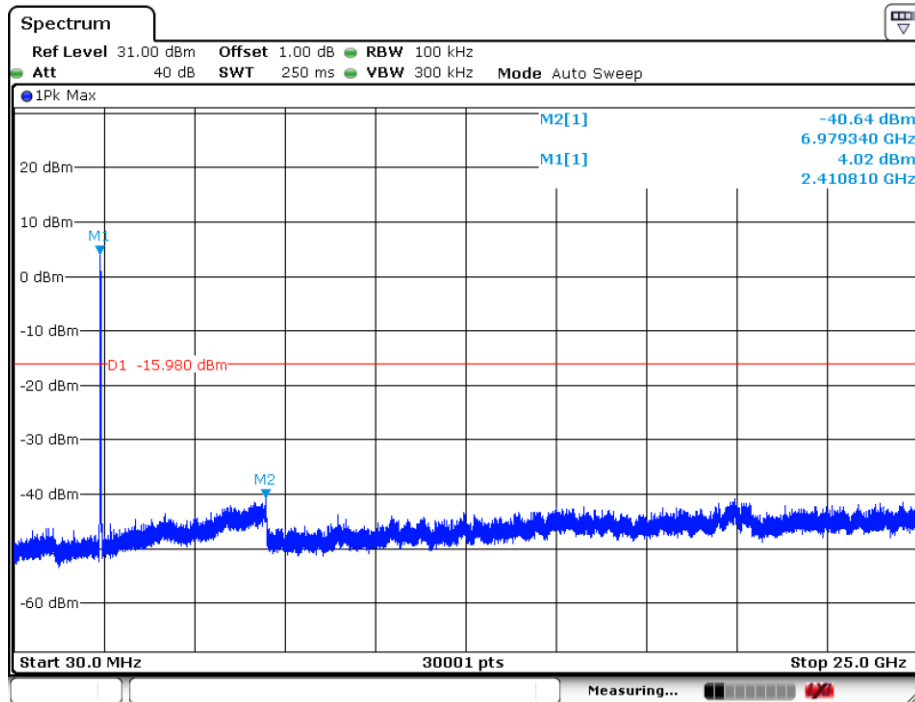
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4.8.1.1.6 802.11G_Highest Channel



Date: 8.NOV.2020 14:56:22

4.8.1.1.7 802.11N20_Lowest Channel



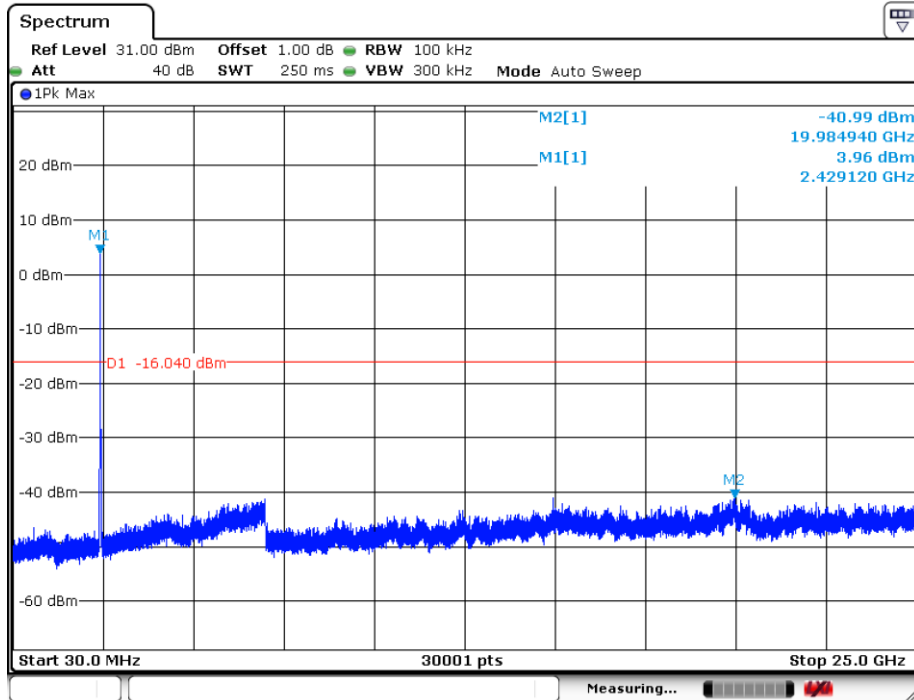
Date: 8.NOV.2020 14:49:49



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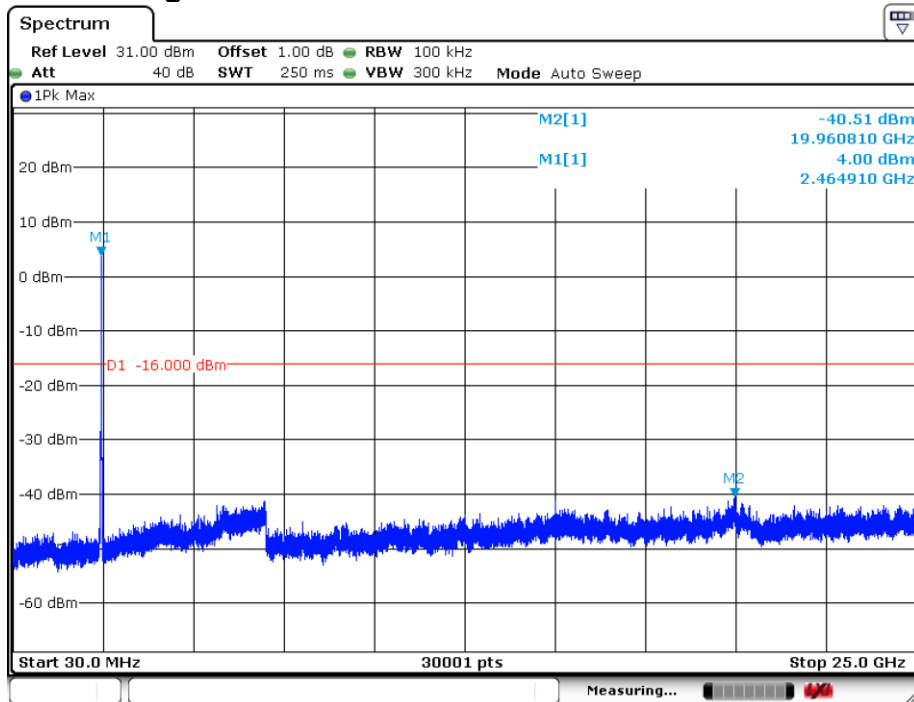
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4.8.1.1.8 802.11N20_Middle Channel



Date: 8.NOV.2020 14:50:26

4.8.1.1.9 802.11N20_Highest Channel



Date: 8.NOV.2020 14:50:56



4.9 Radiated Spurious Emissions

| | | | | | |
|-------------------|---|----------------------------------|----------------|------------|--------------------------|
| Test Requirement: | 47 CFR Part 15C Section 15.209 and 15.205 | | | | |
| Test Method: | ANSI C63.10 :2013 Section 11.12 | | | | |
| Test Site: | Measurement Distance: 3m or 10m (Semi-Anechoic Chamber) | | | | |
| Receiver Setup: | Frequency | Detector | RBW | VBW | Remark |
| | 0.009MHz-0.090MHz | Peak | 10kHz | 30kHz | Peak |
| | 0.009MHz-0.090MHz | Average | 10kHz | 30kHz | Average |
| | 0.090MHz-0.110MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| | 0.110MHz-0.490MHz | Peak | 10kHz | 30kHz | Peak |
| | 0.110MHz-0.490MHz | Average | 10kHz | 30kHz | Average |
| | 0.490MHz -30MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| | 30MHz-1GHz | Quasi-peak | 100kHz | 30kHz | Quasi-peak |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak |
| | | Peak | 1MHz | 10Hz | Average |
| Limit: | Frequency | Field strength (microvolt/meter) | Limit (dBuV/m) | Remark | Measurement distance (m) |
| | 0.009MHz-0.490MHz | 2400/F(kHz) | - | - | 300 |
| | 0.490MHz-1.705MHz | 24000/F(kHz) | - | - | 30 |
| | 1.705MHz-30MHz | 30 | - | - | 30 |
| | 30MHz-88MHz | 100 | 40.0 | Quasi-peak | 3 |
| | 88MHz-216MHz | 150 | 43.5 | Quasi-peak | 3 |
| | 216MHz-960MHz | 200 | 46.0 | Quasi-peak | 3 |
| | 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 |
| | Above 1GHz | 500 | 54.0 | Average | 3 |
| | Remark: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. | | | | |



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Test Setup:

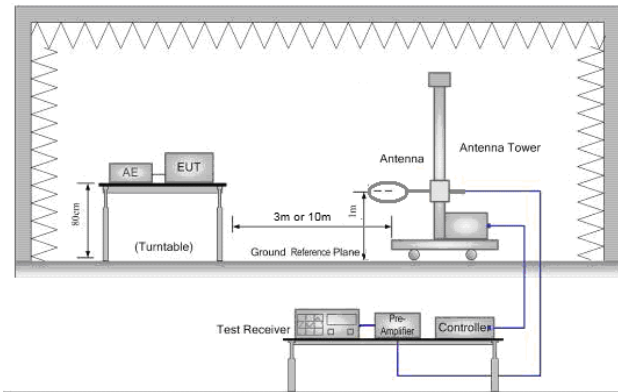


Figure 1. Below 30MHz

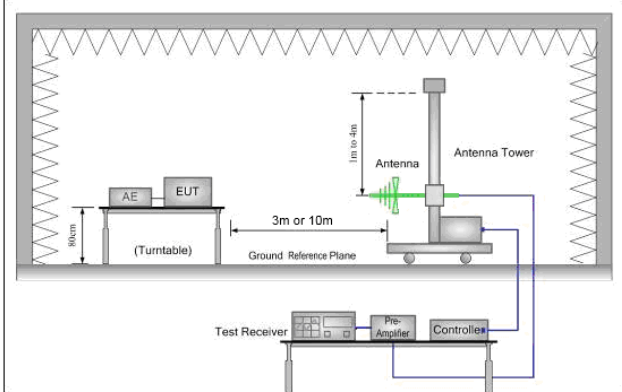


Figure 2. 30MHz to 1GHz

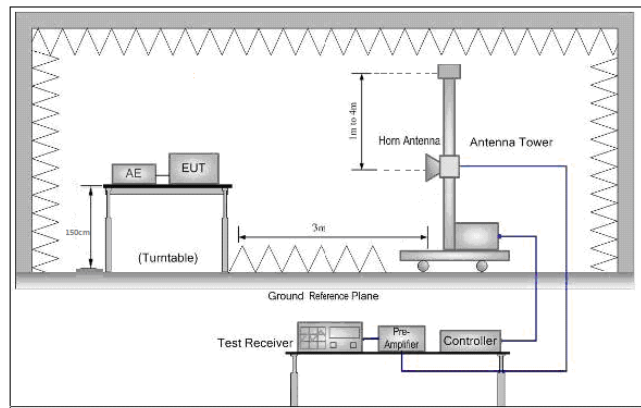


Figure 3. Above 1 GHz

Test Procedure:

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- Use the following spectrum analyzer settings:
 - Span shall wide enough to fully capture the emission being measured;
 - Set RBW=100 kHz for $f < 1$ GHz, RBW=1MHz for $f > 1$ GHz ;
VBW \geq RBW; Sweep = auto;
Detector function = peak; Trace = max hold for peak
 - For average measurement: use duty cycle correction factor method per 15.35(c).



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Report No.: ZR/2020/A001610

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| | |
|------------------------|---|
| | <p>Duty cycle = On time/100 milliseconds</p> <p>On time = $N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$</p> <p>Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.</p> <p>Average Emission Level = Peak Emission Level + $20 * \log(\text{Duty cycle})$</p> <p>f. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>g. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>h. 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.</p> <p>i. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>j. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.</p> <p>k. Repeat above procedures until all frequencies measured was complete.</p> |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates. Charge + Transmitting mode. |
| Final Test Mode: | <p>Pretest the EUT at Charge + Transmitting mode.</p> <p>Through Pre-scan, find the</p> <p>1Mbps of rate is the worst case of 802.11B;</p> <p>6Mbps of rate is the worst case of 802.11G;</p> <p>6.5Mbps of rate is the worst case of 802.11N(HT20);</p> <p>For below 1GHz, through Pre-scan, find the 1Mbps of rate of 802.11B at lowest channel is the worst case. Only the worst case is recorded in the report.</p> |
| Instruments Used: | Refer to section 5.10 for details |
| Test Results: | Pass |



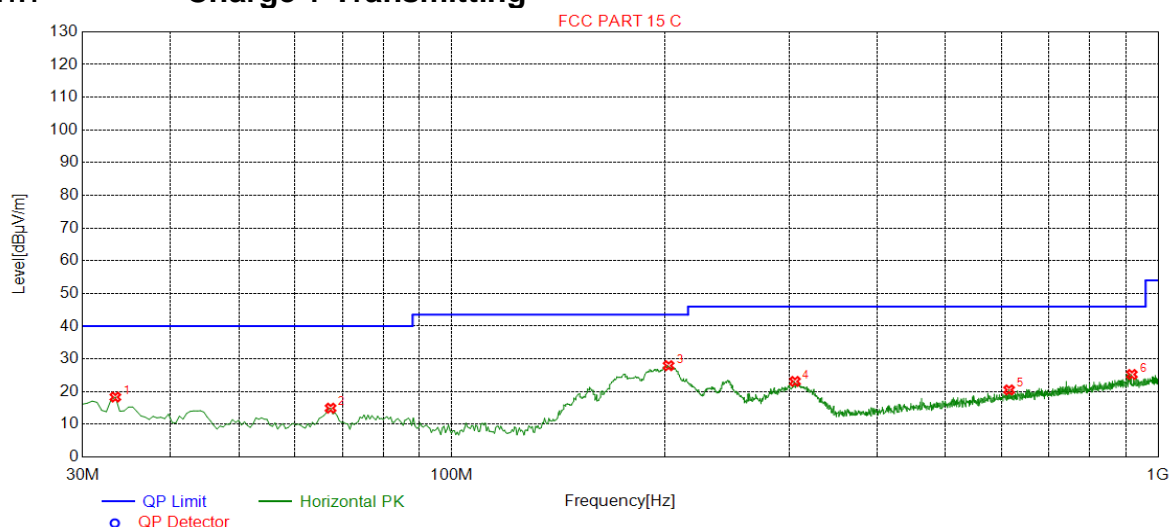
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Firstly Supply:

4.9.1 Radiated emission below 1GHz

4.9.1.1 Charge + Transmitting



Suspected List

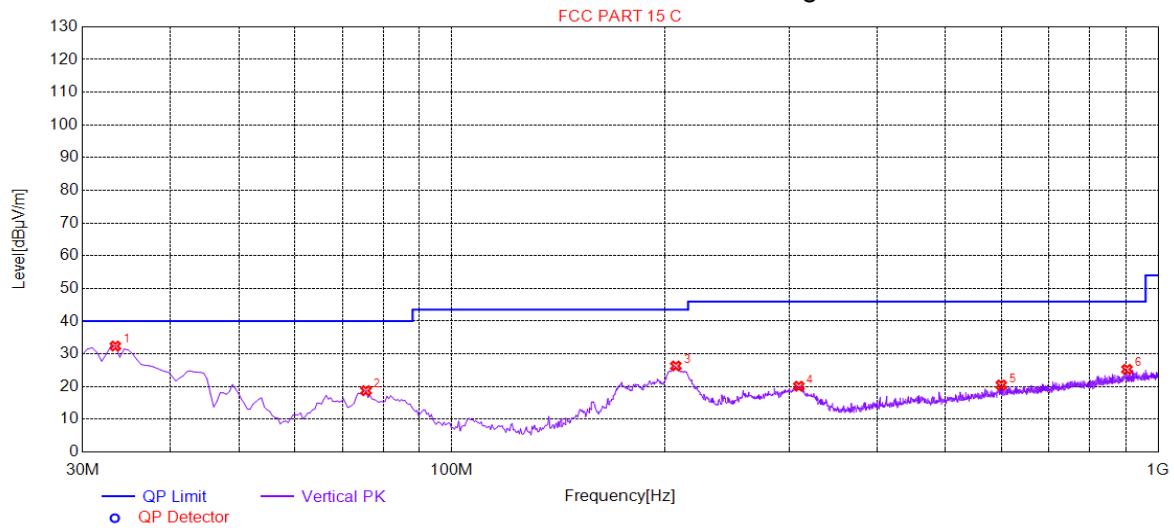
| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Polarity |
|-----|----------------|-------------------|----------------|-------------------|----------------|----------------|------------|
| 1 | 33.3967 | 18.33 | -32.79 | 40.00 | 21.67 | 150 | Horizontal |
| 2 | 67.3637 | 14.94 | -33.51 | 40.00 | 25.06 | 150 | Horizontal |
| 3 | 202.7464 | 27.93 | -30.76 | 43.50 | 15.57 | 150 | Horizontal |
| 4 | 306.1031 | 23.12 | -27.68 | 46.00 | 22.88 | 150 | Horizontal |
| 5 | 615.2026 | 20.52 | -19.87 | 46.00 | 25.48 | 150 | Horizontal |
| 6 | 917.9940 | 25.25 | -14.96 | 46.00 | 20.75 | 150 | Horizontal |

Final Data List



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Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|-------------|----------|
| 1 | 33.3967 | 32.40 | -32.79 | 40.00 | 7.60 | 150 | Vertical |
| 2 | 75.6128 | 18.77 | -35.13 | 40.00 | 21.23 | 150 | Vertical |
| 3 | 207.5988 | 26.31 | -30.67 | 43.50 | 17.19 | 150 | Vertical |
| 4 | 309.9850 | 20.12 | -27.56 | 46.00 | 25.88 | 150 | Vertical |
| 5 | 599.6748 | 20.49 | -20.09 | 46.00 | 25.51 | 150 | Vertical |
| 6 | 903.4367 | 25.27 | -15.18 | 46.00 | 20.73 | 150 | Vertical |

Final Data List

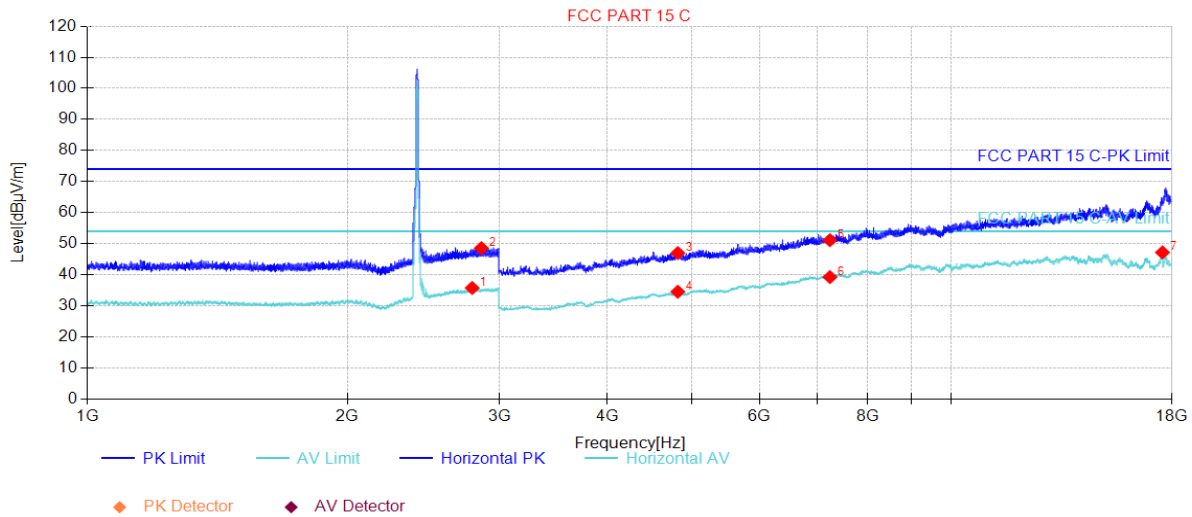
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4.9.2 Transmitter emission above 1GHz

4.9.2.1 802.11B_CH1



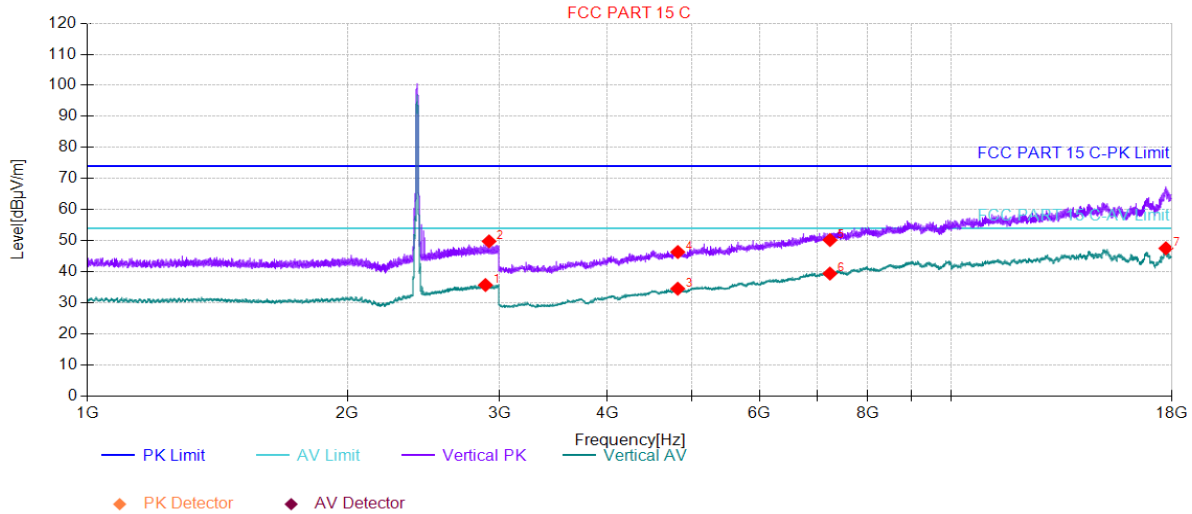
Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|------------|
| 1 | 2788.9789 | 35.73 | 6.62 | 54.00 | 18.27 | Horizontal |
| 2 | 2858.1858 | 48.53 | 6.86 | 74.00 | 25.47 | Horizontal |
| 3 | 4824.0000 | 46.96 | -10.56 | 74.00 | 27.04 | Horizontal |
| 4 | 4824.0000 | 34.50 | -10.56 | 54.00 | 19.50 | Horizontal |
| 5 | 7236.0000 | 51.11 | -2.59 | 74.00 | 22.89 | Horizontal |
| 6 | 7236.0000 | 39.23 | -2.59 | 54.00 | 14.77 | Horizontal |
| 7 | 17554.455 | 47.17 | 12.47 | 54.00 | 6.83 | Horizontal |

Final Data List

4.9.2.2

802.11B_CH1



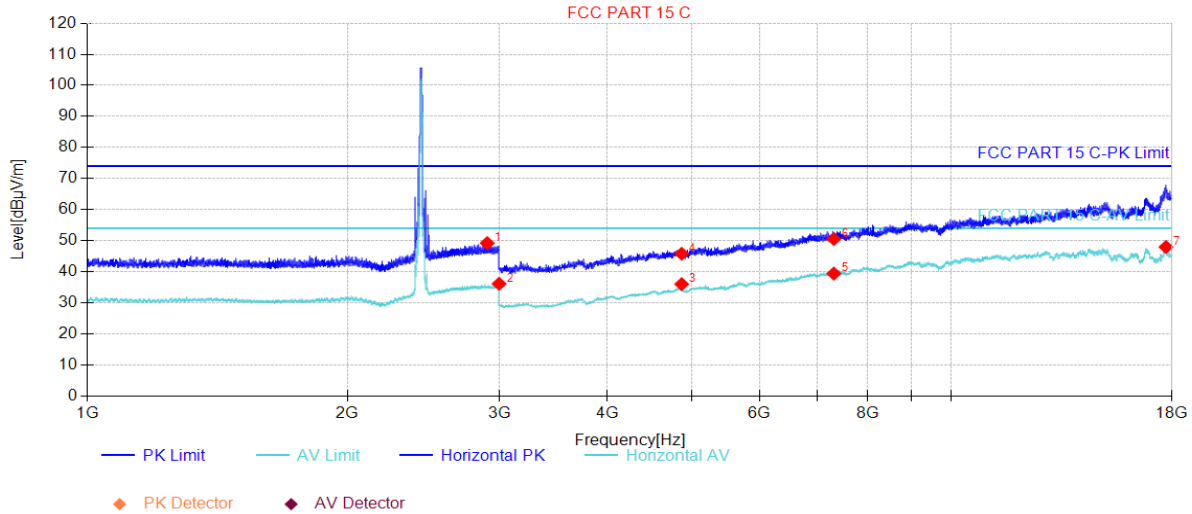
Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|----------|
| 1 | 2889.5890 | 35.70 | 6.93 | 54.00 | 18.30 | Vertical |
| 2 | 2917.5918 | 49.77 | 7.03 | 74.00 | 24.23 | Vertical |
| 3 | 4824.0000 | 34.52 | -10.56 | 54.00 | 19.48 | Vertical |
| 4 | 4824.0000 | 46.32 | -10.56 | 74.00 | 27.68 | Vertical |
| 5 | 7236.0000 | 50.20 | -2.59 | 74.00 | 23.80 | Vertical |
| 6 | 7236.0000 | 39.39 | -2.59 | 54.00 | 14.61 | Vertical |
| 7 | 17713.471 | 47.52 | 14.66 | 54.00 | 6.48 | Vertical |

Final Data List

4.9.2.3

802.11B_CH6



Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|------------|
| 1 | 2902.5903 | 49.19 | 6.96 | 74.00 | 24.81 | Horizontal |
| 2 | 2996.1996 | 36.11 | 7.39 | 54.00 | 17.89 | Horizontal |
| 3 | 4874.0000 | 35.98 | -10.40 | 54.00 | 18.02 | Horizontal |
| 4 | 4874.0000 | 45.78 | -10.40 | 74.00 | 28.22 | Horizontal |
| 5 | 7311.0000 | 39.37 | -2.57 | 54.00 | 14.63 | Horizontal |
| 6 | 7311.0000 | 50.52 | -2.57 | 74.00 | 23.48 | Horizontal |
| 7 | 17717.971 | 47.94 | 14.67 | 54.00 | 6.06 | Horizontal |

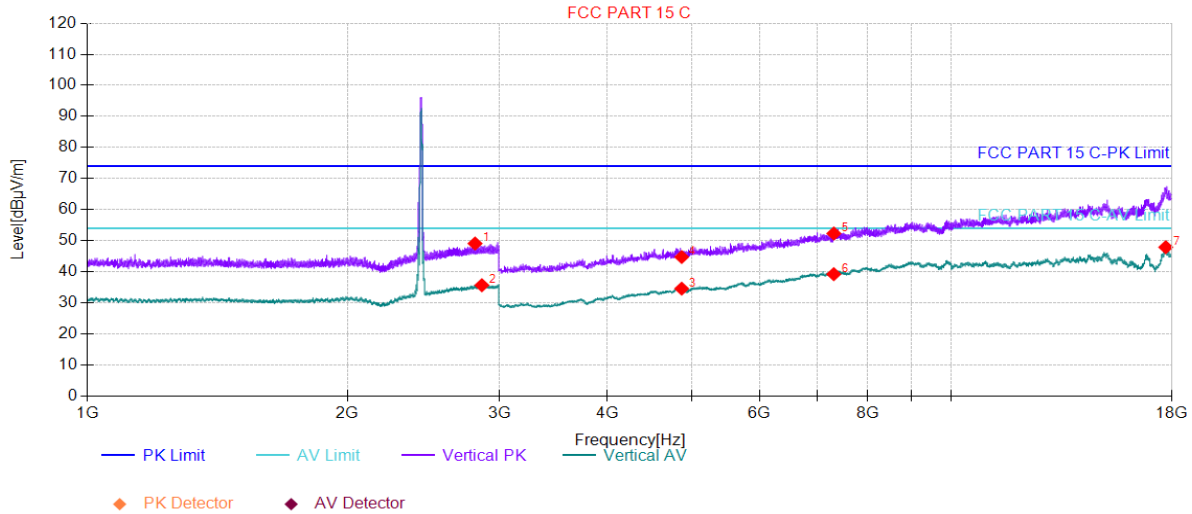
Final Data List



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4.9.2.4 802.11B_CH6



Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|----------|
| 1 | 2810.1810 | 49.06 | 6.75 | 74.00 | 24.94 | Vertical |
| 2 | 2861.5862 | 35.64 | 6.87 | 54.00 | 18.36 | Vertical |
| 3 | 4874.0000 | 34.54 | -10.40 | 54.00 | 19.46 | Vertical |
| 4 | 4874.0000 | 44.72 | -10.40 | 74.00 | 29.28 | Vertical |
| 5 | 7311.0000 | 52.30 | -2.57 | 74.00 | 21.70 | Vertical |
| 6 | 7311.0000 | 39.20 | -2.57 | 54.00 | 14.80 | Vertical |
| 7 | 17710.471 | 47.87 | 14.66 | 54.00 | 6.13 | Vertical |

Final Data List

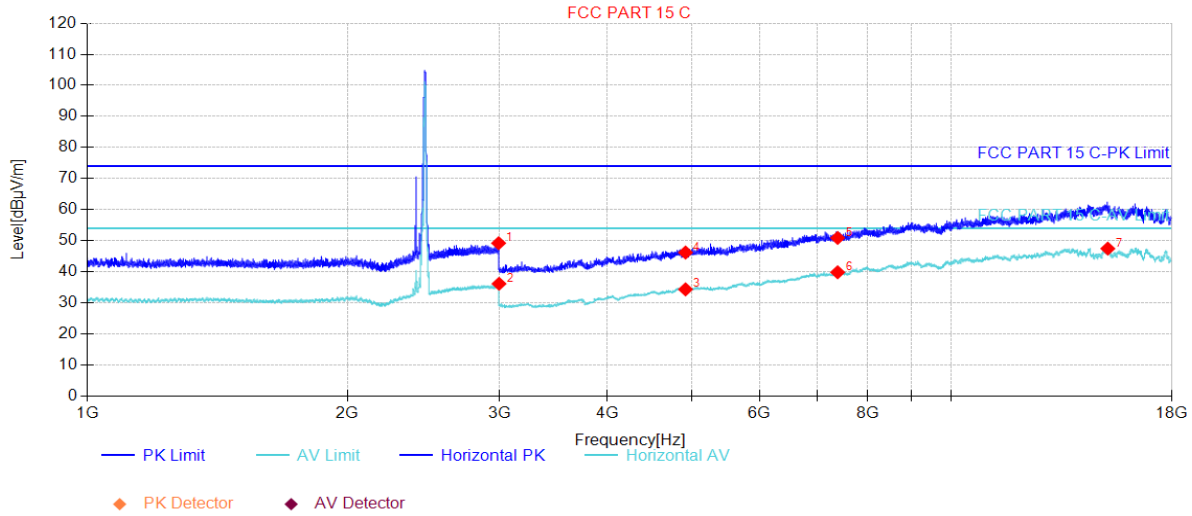


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4.9.2.5

802.11B_CH11



Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|------------|
| 1 | 2992.3992 | 49.18 | 7.38 | 74.00 | 24.82 | Horizontal |
| 2 | 2995.7996 | 36.10 | 7.39 | 54.00 | 17.90 | Horizontal |
| 3 | 4924.0000 | 34.31 | -10.22 | 54.00 | 19.69 | Horizontal |
| 4 | 4924.0000 | 46.16 | -10.22 | 74.00 | 27.84 | Horizontal |
| 5 | 7386.0000 | 50.86 | -2.06 | 74.00 | 23.14 | Horizontal |
| 6 | 7386.0000 | 39.81 | -2.06 | 54.00 | 14.19 | Horizontal |
| 7 | 15173.717 | 47.43 | 8.95 | 54.00 | 6.57 | Horizontal |

Final Data List

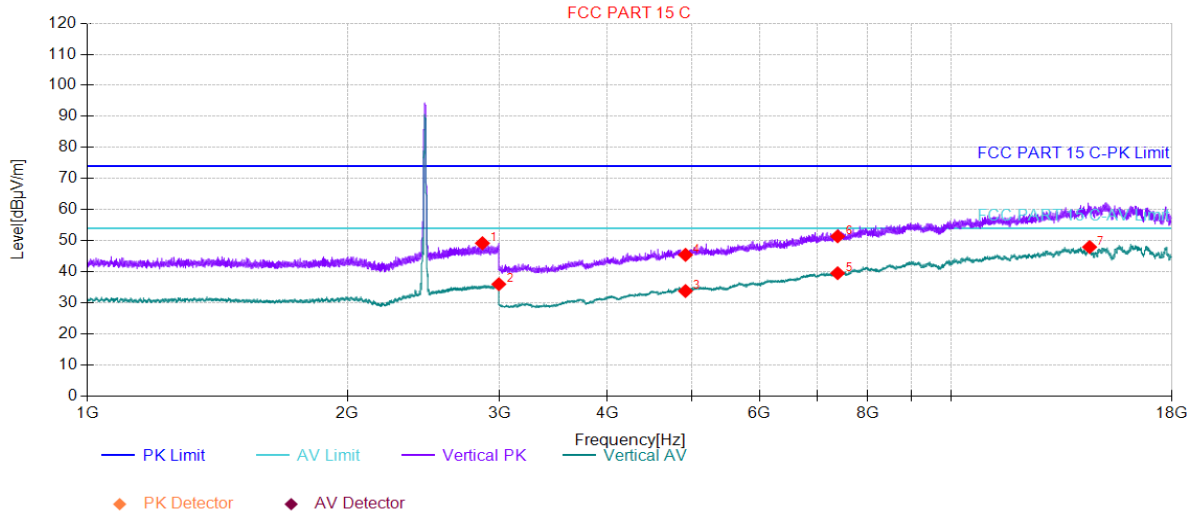


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4.9.2.6

802.11B_CH11



| Suspected List | | | | | | | |
|----------------|-------------|----------------|-------------|----------------|-------------|-------------|----------|
| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Polarity |
| 1 | 2865.986 | 49.16 | 6.88 | 74.00 | 24.84 | 150 | Vertical |
| 2 | 2994.199 | 35.97 | 7.38 | 54.00 | 18.03 | 150 | Vertical |
| 3 | 4924.000 | 33.77 | -10.22 | 54.00 | 20.23 | 150 | Vertical |
| 4 | 4924.000 | 45.42 | -10.22 | 74.00 | 28.58 | 150 | Vertical |
| 5 | 7386.000 | 39.52 | -2.06 | 54.00 | 14.48 | 150 | Vertical |
| 6 | 7386.000 | 51.37 | -2.06 | 74.00 | 22.63 | 150 | Vertical |
| 7 | 14456.64 | 47.93 | 7.69 | 54.00 | 6.07 | 150 | Vertical |

Final Data List

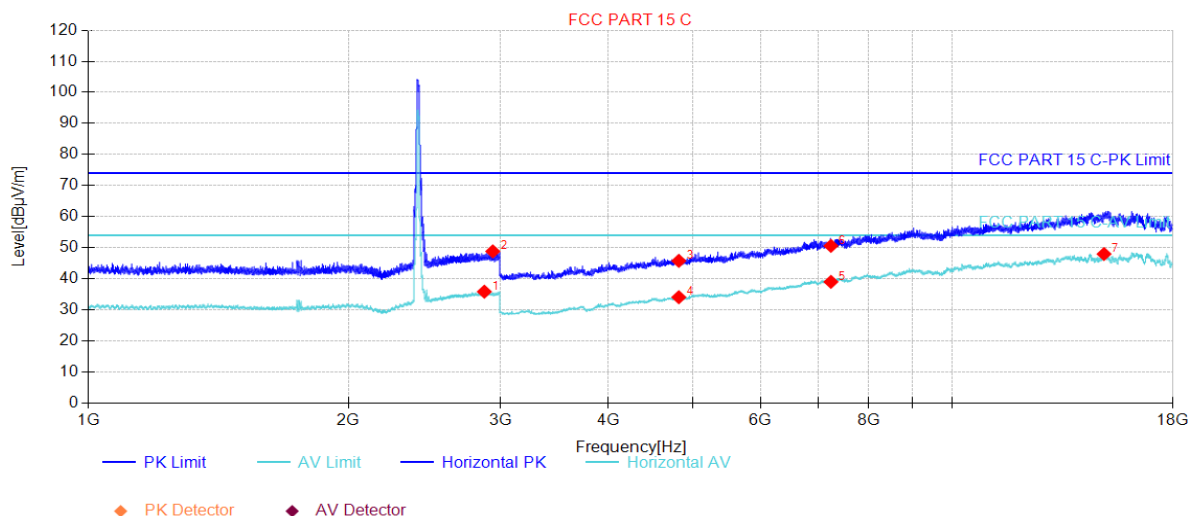


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4.9.2.7 802.11G_CH1



| Suspected List | | | | | | |
|----------------|-------------|----------------|-------------|----------------|-------------|------------|
| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
| 1 | 2873.3873 | 35.81 | 6.89 | 54.00 | 18.19 | Horizontal |
| 2 | 2938.7939 | 48.79 | 7.13 | 74.00 | 25.21 | Horizontal |
| 3 | 4824.0000 | 45.73 | -10.56 | 74.00 | 28.27 | Horizontal |
| 4 | 4824.0000 | 34.03 | -10.56 | 54.00 | 19.97 | Horizontal |
| 5 | 7236.0000 | 38.98 | -2.59 | 54.00 | 15.02 | Horizontal |
| 6 | 7236.0000 | 50.57 | -2.59 | 74.00 | 23.43 | Horizontal |
| 7 | 14983.198 | 47.94 | 8.49 | 54.00 | 6.06 | Horizontal |

Final Data List

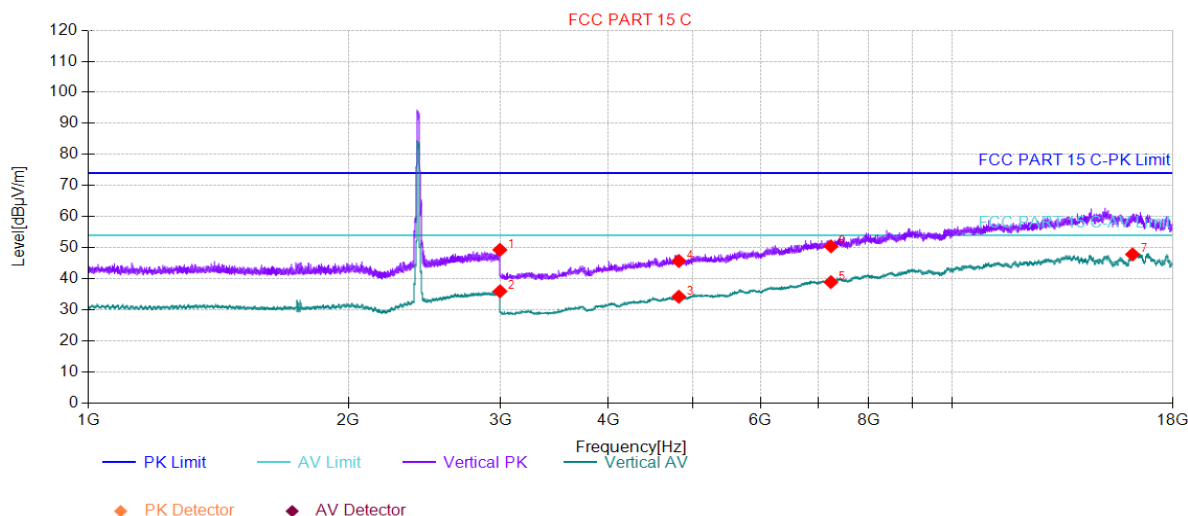


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4.9.2.8

802.11G_CH1



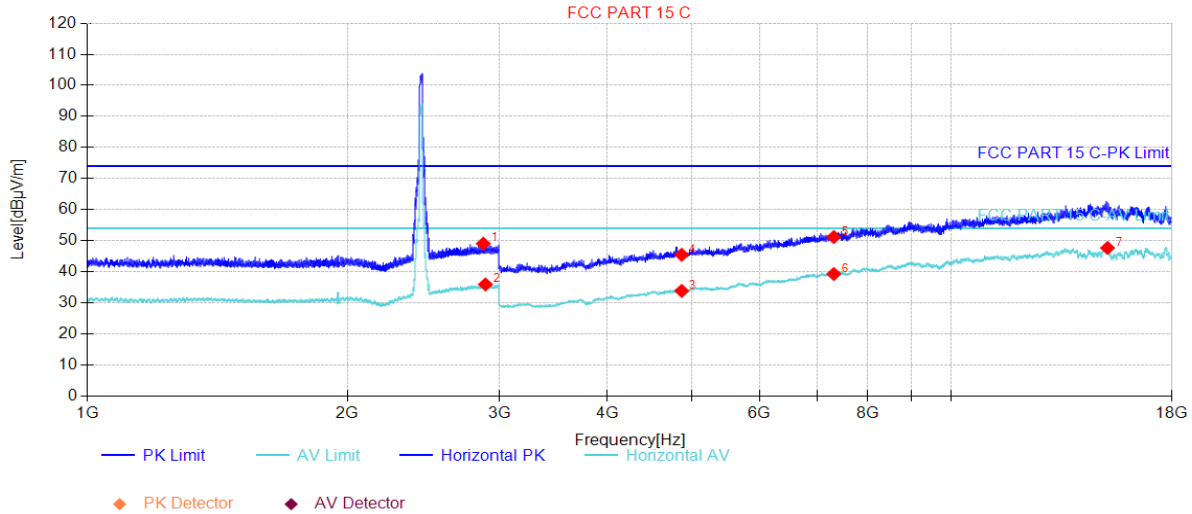
Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|----------|
| 1 | 2994.5995 | 49.28 | 7.39 | 74.00 | 24.72 | Vertical |
| 2 | 2995.5996 | 35.94 | 7.39 | 54.00 | 18.06 | Vertical |
| 3 | 4824.0000 | 34.20 | -10.56 | 54.00 | 19.80 | Vertical |
| 4 | 4824.0000 | 45.70 | -10.56 | 74.00 | 28.30 | Vertical |
| 5 | 7236.0000 | 38.90 | -2.59 | 54.00 | 15.10 | Vertical |
| 6 | 7236.0000 | 50.43 | -2.59 | 74.00 | 23.57 | Vertical |
| 7 | 16166.816 | 47.82 | 8.40 | 54.00 | 6.18 | Vertical |

Final Data List

4.9.2.9

802.11G_CH6



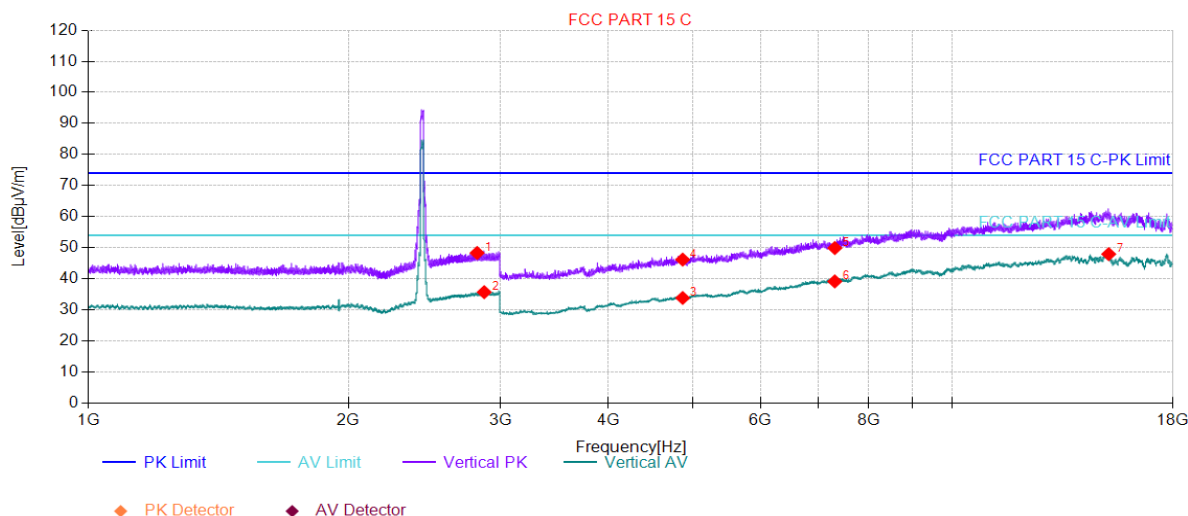
Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|------------|
| 1 | 2872.7873 | 49.01 | 6.89 | 74.00 | 24.99 | Horizontal |
| 2 | 2889.5890 | 35.89 | 6.93 | 54.00 | 18.11 | Horizontal |
| 3 | 4874.0000 | 33.81 | -10.40 | 54.00 | 20.19 | Horizontal |
| 4 | 4874.0000 | 45.45 | -10.40 | 74.00 | 28.55 | Horizontal |
| 5 | 7311.0000 | 51.16 | -2.57 | 74.00 | 22.84 | Horizontal |
| 6 | 7311.0000 | 39.25 | -2.57 | 54.00 | 14.75 | Horizontal |
| 7 | 15163.216 | 47.64 | 8.98 | 54.00 | 6.36 | Horizontal |

Final Data List

4.9.2.10

802.11G_CH6



Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|----------|
| 1 | 2817.7818 | 48.28 | 6.77 | 74.00 | 25.72 | Vertical |
| 2 | 2871.9872 | 35.65 | 6.89 | 54.00 | 18.35 | Vertical |
| 3 | 4874.0000 | 33.80 | -10.40 | 54.00 | 20.20 | Vertical |
| 4 | 4874.0000 | 46.15 | -10.40 | 74.00 | 27.85 | Vertical |
| 5 | 7311.0000 | 49.87 | -2.57 | 74.00 | 24.13 | Vertical |
| 6 | 7311.0000 | 39.12 | -2.57 | 54.00 | 14.88 | Vertical |
| 7 | 15169.216 | 47.91 | 8.96 | 54.00 | 6.09 | Vertical |

Final Data List

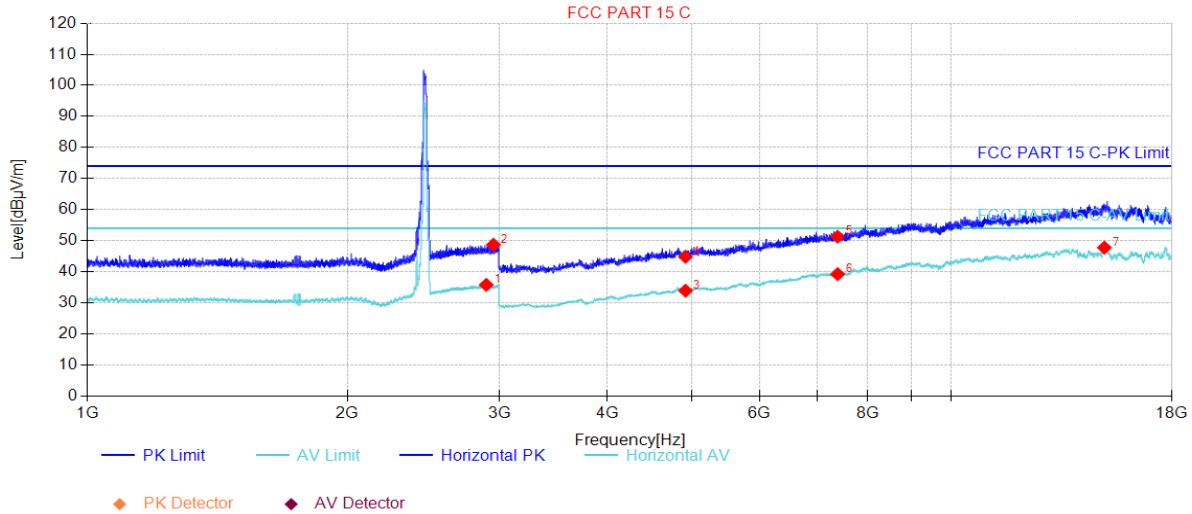


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4.9.2.11

802.11G_CH11



Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|------------|
| 1 | 2895.5896 | 35.76 | 6.94 | 54.00 | 18.24 | Horizontal |
| 2 | 2951.5952 | 48.66 | 7.19 | 74.00 | 25.34 | Horizontal |
| 3 | 4924.0000 | 33.88 | -10.22 | 54.00 | 20.12 | Horizontal |
| 4 | 4924.0000 | 44.79 | -10.22 | 74.00 | 29.21 | Horizontal |
| 5 | 7386.0000 | 51.26 | -2.06 | 74.00 | 22.74 | Horizontal |
| 6 | 7386.0000 | 39.21 | -2.06 | 54.00 | 14.79 | Horizontal |
| 7 | 15034.203 | 47.75 | 8.75 | 54.00 | 6.25 | Horizontal |

Final Data List

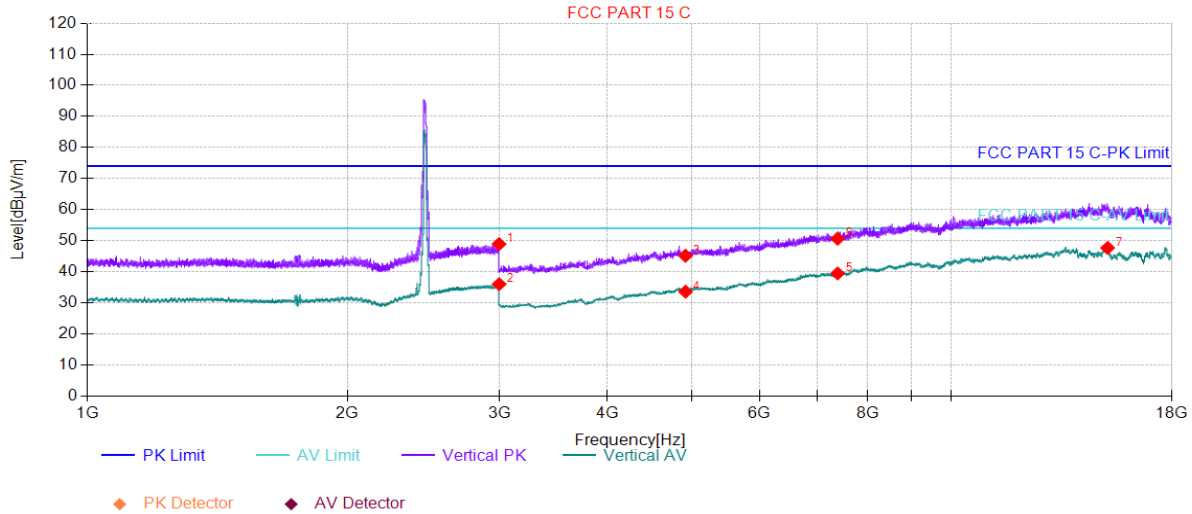


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4.9.2.12

802.11G_CH11



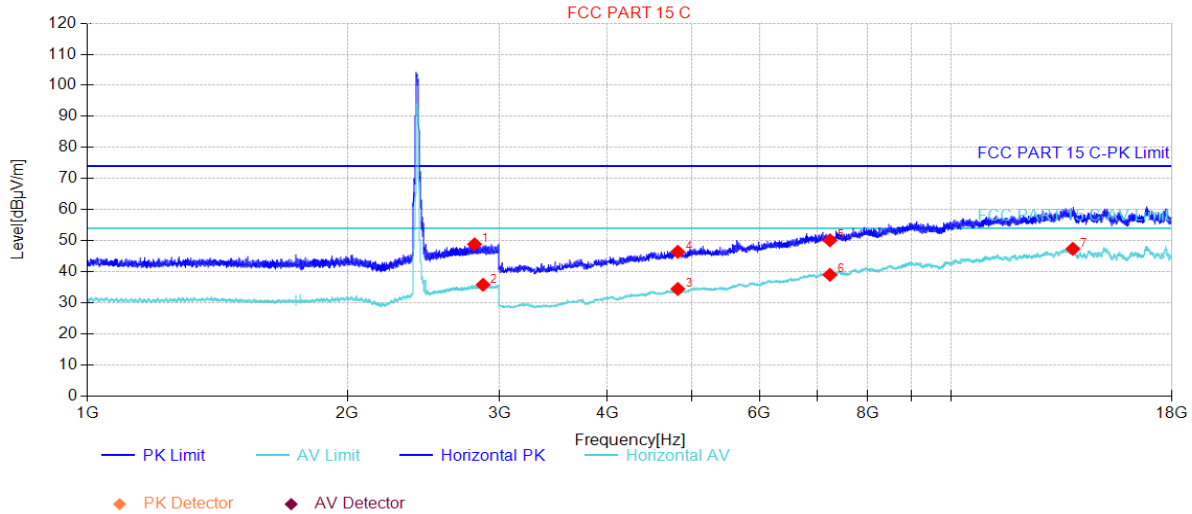
Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|----------|
| 1 | 2995.9996 | 48.90 | 7.39 | 74.00 | 25.10 | Vertical |
| 2 | 2996.7997 | 35.98 | 7.40 | 54.00 | 18.02 | Vertical |
| 3 | 4924.0000 | 45.13 | -10.22 | 74.00 | 28.87 | Vertical |
| 4 | 4924.0000 | 33.56 | -10.22 | 54.00 | 20.44 | Vertical |
| 5 | 7386.0000 | 39.43 | -2.06 | 54.00 | 14.57 | Vertical |
| 6 | 7386.0000 | 50.60 | -2.06 | 74.00 | 23.40 | Vertical |
| 7 | 15166.216 | 47.66 | 8.97 | 54.00 | 6.34 | Vertical |

Final Data List

4.9.2.13

802.11N20_CH1



Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|------------|
| 1 | 2806.5807 | 48.82 | 6.74 | 74.00 | 25.18 | Horizontal |
| 2 | 2870.7871 | 35.78 | 6.89 | 54.00 | 18.22 | Horizontal |
| 3 | 4824.0000 | 34.43 | -10.56 | 54.00 | 19.57 | Horizontal |
| 4 | 4824.0000 | 46.39 | -10.56 | 74.00 | 27.61 | Horizontal |
| 5 | 7236.0000 | 50.10 | -2.59 | 74.00 | 23.90 | Horizontal |
| 6 | 7236.0000 | 38.99 | -2.59 | 54.00 | 15.01 | Horizontal |
| 7 | 13825.082 | 47.34 | 5.79 | 54.00 | 6.66 | Horizontal |

Final Data List

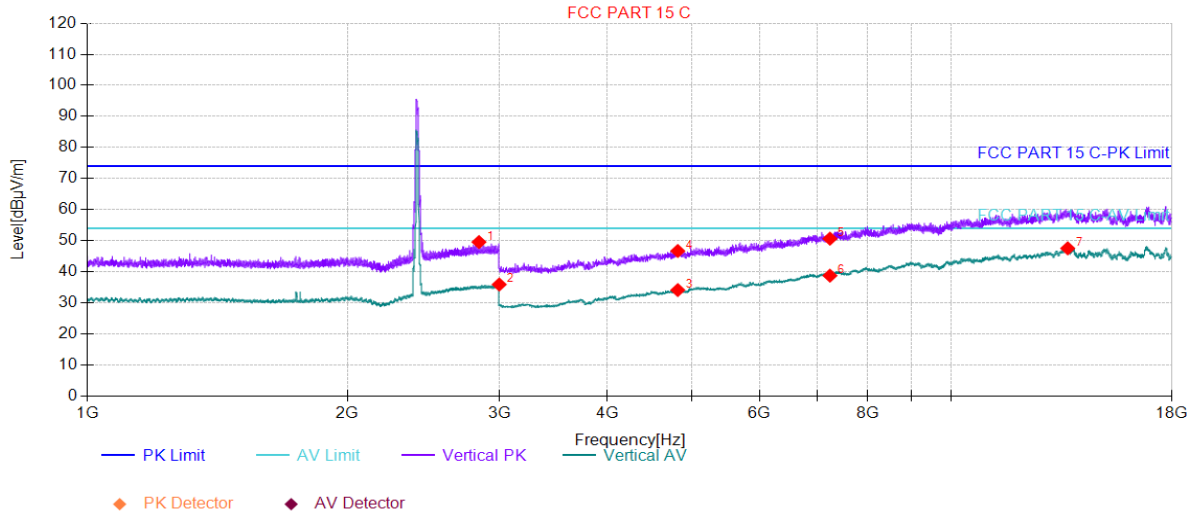


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4.9.2.14

802.11N20_CH1



Suspected List

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Polarity |
|-----|-------------|----------------|-------------|----------------|-------------|----------|
| 1 | 2839.5840 | 49.53 | 6.82 | 74.00 | 24.47 | Vertical |
| 2 | 2997.5998 | 35.87 | 7.40 | 54.00 | 18.13 | Vertical |
| 3 | 4824.0000 | 34.08 | -10.56 | 54.00 | 19.92 | Vertical |
| 4 | 4824.0000 | 46.66 | -10.56 | 74.00 | 27.34 | Vertical |
| 5 | 7236.0000 | 50.63 | -2.59 | 74.00 | 23.37 | Vertical |
| 6 | 7236.0000 | 38.72 | -2.59 | 54.00 | 15.28 | Vertical |
| 7 | 13636.063 | 47.51 | 6.05 | 54.00 | 6.49 | Vertical |

Final Data List



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