Testing Laboratory
1190

# FCC RADIO TEST REPORT

| | | |
|---|---|---|
| FCC ID | : | RSE-OWA3111 |
| Equipment Name | : | MESH Extender |
| Trade Name | : | Technicolor |
| Model Number | : | OWA3111, GFEX310 |
| Product Code | : | MESH Extender |
| Applicant | : | Technicolor Delivery Technologies Belgium<br>Prins Boudewijnlaan 47 Edegem B-2650<br>Belgium |
| Standard | : | 47 CFR FCC Part 15 Subpart C § 15.247 |

The product was received on Jun. 08, 2020, and testing was started from Jun. 08, 2020 and completed on Jul. 17, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013, 47 CFR FCC Part 15 Subpart C, KDB558074 D01 v05r02, KDB 662911 D01 v02r01 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

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# Table of Contents

# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR071024AA | 01 | Initial issue of report | Aug. 12, 2020 |
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# Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Measured | Limit |
|---|---|---|---|---|---|
| 2.1 | 15.207 | AC Power Line Conducted Emissions | PASS | 370.5kHz 30.44dBuV (Margin -18.05dB) | FCC 15.207 |
| 2.2 | 15.247(b)(3) | Maximum Conducted Output Power | PASS | Power [dBm]:<br>11b: 22.89dBm<br>11g: 24.73dBm<br>11ax(20M): 24.90dBm<br>11ax(40M): 24.30dBm | 30 dBm |
| 2.3 | 15.247(e) | Power Spectral Density | PASS | PSD [dBm]:<br>11b: 0.65dBm/3kHz<br>11g: -1.65dBm/3kHz<br>11ax(20M): -1.76dBm/3kHz<br>11ax(40M): -5.00dBm/3kHz | 8dBm/3kHz |
| 2.4 | 15.247(a)(2) | 6dB Spectrum and 99% Occupied Bandwidth | PASS | 6dB Bandwidth [MHz]<br>11b: 7.000MHz<br>11g: 16.275MHz<br>11ax(20M): 18.650MHz<br>11ax(40M): 35.650MHz<br>99% Occupied [MHz]<br>11b: 10.470MHz<br>11g: 19.465MHz<br>11ax(20M): 19.290MHz<br>11ax(40M): 37.981MHz | ≥500kHz |
| 2.5 | 15.247(d) | Radiated Emissions | PASS | 30MHz 36.33dBuV/m (Margin -3.67dB) | - |
| 2.6 | 15.247(d) | Band Edge Emissions | PASS | 2.39GHz 49.41dBuV/m (Margin -4.59dB) | - |
| 2.7 | 15.203 | Antenna Requirements | PASS | - | - |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| 1. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.<br>2. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

**Reviewed by: Sam Chen**

**Report Producer: Viola Huang**

# 1. General Information

## 1.1. Product Details

| Items | Description | | | |
|---|---|---|---|---|
| Equipment Name | MESH Extender | | | |
| Trade Name | Technicolor | | | |
| Model Number | OWA3111, GFEX310 | | | |
| Product Code | MESH Extender | | | |
| FCC ID | RSE-OWA3111 | | | |
| Power Type | From power adapter | | | |
| Antenna Type | Please refer to section 1.10 | | | |
| EUT Stage | ■ | Product Unit | □ | Pre-Sample |
| Operating Band<br>Conducted Output Power | 2400 ~ 2483.5MHz | | ■ | IEEE 802.11b: 22.89 dBm |
| | | | ■ | IEEE 802.11g: 24.73 dBm |
| | | | ■ | IEEE 802.11ax 20MHz: 24.90 dBm |
| | | | ■ | IEEE 802.11ax 40MHz: 24.30dBm |
| Product Type | For IEEE 802.11b: WLAN(1TX, 1RX)<br>For IEEE 802.11g: WLAN(2TX, 2RX)<br>For IEEE 802.11n: WLAN(2TX, 2RX)<br>For IEEE 802.11ac: WLAN(2TX, 2RX)<br>For IEEE 802.11ax: WLAN(2TX, 2RX) | | | |
| Number of Channel | 11 channels for 11n/ac/ax (20MHz) / 7 channel for 11n/ac/ax (40MHz) | | | |
| Nominal Chennel Bandwidth | 20MHz / 40MHz | | | |
| Modulation | 802.11b: DSSS (DBPSK, DQPSK, CCK)<br>802.11g: OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>802.11n: OFDM (BPSK / QPSK / 16QAM / 64QAM) See the below table<br>802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM/ 256QAM) See the below table<br>802.11ax: OFDMA (BPSK / QPSK / 16QAM / 64QAM/ 256QAM/ 1024QAM)<br>See the below table | | | |
| Data Rate (Mbps) | 11b mode: DSSS (1/2/5.5/11)<br>11g mode: OFDM (6/9/12/18/24/36/48/54)<br>11n(20MHz) mode : (MCS0~MCS15);<br>11n(40MHz) mode : (MCS0~MCS15) See the below table<br>11ac(20MHz) mode : (MCS0~MCS9 for Nss1~Nss2); | | | |

| | |
|---|---|
| | 11ac(40MHz) mode : (MCS0~MCS9 for Nss1~Nss2) See the below table<br>11ax(20MHz) mode : (MCS0~MCS11 for Nss1~Nss2) See the below table<br>11ax(40MHz) mode : (MCS0~MCS11 for Nss1~Nss2) See the below table |
| I/O Ports | LAN Port x 1<br>WAN Port x 1<br>USB Port x 1 |
| Hardware Version | BETA 2 |
| Software Version | 19.4.0292-4849007-20200616180558-f2534517ca3ad3f315c2e982b801eb89d87dc5a6 |

**802.11n Data Rate spec**

| Standard | INDEX | Data Rate (Mbps) | | Standard | INDEX | Data Rate (Mbps) | |
|---|---|---|---|---|---|---|---|
| - | - | LGI (800ns) | SGI (400ns) | - | - | LGI (800ns) | SGI (400ns) |
| 11n 20MHz $N_{SS}$ = 1 | MCS0 | 6.5 | 7.2 | 11n 40MHz $N_{SS}$ = 1 | MCS0 | 13.5 | 15 |
| | MCS1 | 13 | 14.4 | | MCS1 | 27 | 30 |
| | MCS2 | 19.5 | 21.7 | | MCS2 | 40.5 | 45 |
| | MCS3 | 26 | 28.9 | | MCS3 | 54 | 60 |
| | MCS4 | 39 | 43.3 | | MCS4 | 81 | 90 |
| | MCS5 | 52 | 57.8 | | MCS5 | 108 | 120 |
| | MCS6 | 58.5 | 65 | | MCS6 | 121.5 | 135 |
| | MCS7 | 65 | 72.2 | | MCS7 | 135 | 150 |
| 11n 20MHz $N_{SS}$ = 2 | MCS8 | 13 | 14.4 | 11n 40MHz $N_{SS}$ = 2 | MCS8 | 27 | 30 |
| | MCS9 | 26 | 28.9 | | MCS9 | 54 | 60 |
| | MCS10 | 39 | 43.3 | | MCS10 | 81 | 90 |
| | MCS11 | 52 | 57.8 | | MCS11 | 108 | 120 |
| | MCS12 | 78 | 86.7 | | MCS12 | 162 | 180 |
| | MCS13 | 104 | 115.6 | | MCS13 | 216 | 240 |
| | MCS14 | 117 | 130 | | MCS14 | 243 | 270 |
| | MCS15 | 130 | 144.4 | | MCS15 | 270 | 300 |

**802.11ac Data Rate spec**

| Standard | INDEX | Data Rate (Mbps) | | Standard | INDEX | Data Rate (Mbps) | |
|---|---|---|---|---|---|---|---|
| - | - | LGI (800ns) | SGI (400ns) | - | - | LGI (800ns) | SGI (400ns) |
| 11ac 20MHz $N_{SS}$ = 1 | MCS0 | 6.5 | 7.2 | 11ac 40MHz $N_{SS}$ = 1 | MCS0 | 13.5 | 15.0 |
| | MCS1 | 13.0 | 14.4 | | MCS1 | 27 | 30.0 |
| | MCS2 | 19.5 | 21.7 | | MCS2 | 40.5 | 45.0 |
| | MCS3 | 26 | 28.9 | | MCS3 | 54 | 60.0 |
| | MCS4 | 39 | 43.3 | | MCS4 | 81 | 90.0 |
| | MCS5 | 52 | 57.8 | | MCS5 | 108 | 120.0 |
| | MCS6 | 58.5 | 65 | | MCS6 | 121.5 | 135.0 |
| | MCS7 | 65 | 72.2 | | MCS7 | 135.0 | 150.0 |
| | MCS8 | 78 | 86.7 | | MCS8 | 162.0 | 180.0 |
| | MCS9 | Note | Note | | MCS9 | 180.0 | 200.0 |
| NOTE: MCS 9 is invalid due to mod(NCBPS/NES, DR) not being equal to 0. | | | | | | | |
| Standard | INDEX | Data Rate (Mbps) | | Standard | INDEX | Data Rate (Mbps) | |
| - | - | LGI (800ns) | SGI (400ns) | - | - | LGI (800ns) | SGI (400ns) |
| 11ac 20MHz $N_{SS}$ = 2 | MCS0 | 13.0 | 14.4 | 11ac 40MHz $N_{SS}$ = 2 | MCS0 | 27.0 | 30.0 |
| | MCS1 | 26.0 | 28.9 | | MCS1 | 54.0 | 60.0 |
| | MCS2 | 39.0 | 43.3 | | MCS2 | 81.0 | 90.0 |
| | MCS3 | 52.0 | 57.8 | | MCS3 | 108.0 | 120.0 |
| | MCS4 | 78.0 | 86.7 | | MCS4 | 162.0 | 180.0 |
| | MCS5 | 104.0 | 115.6 | | MCS5 | 216.0 | 240.0 |
| | MCS6 | 117.0 | 130.0 | | MCS6 | 243.0 | 270.0 |
| | MCS7 | 130.0 | 144.4 | | MCS7 | 270.0 | 300.0 |
| | MCS8 | 156.0 | 173.3 | | MCS8 | 324.0 | 360.0 |
| | MCS9 | 13.0 | 14.4 | | MCS9 | 360.0 | 400.0 |

**802.11ax Data Rate spec**

| Standard | INDEX | Data Rate (Mbps) | | | Standard | INDEX | Data Rate (Mbps) | | |
|---|---|---|---|---|---|---|---|---|---|
| - | - | SGI (0.8us) | MGI (1.6us) | LGI (3.2us) | - | - | SGI (0.8us) | MGI (1.6us) | LGI (3.2us) |
| 11ax 20MHz $N_{SS}$ = 1 | MCS0 | 8.6 | 8.1 | 7.3 | 11ax 40MHz $N_{SS}$ = 1 | MCS0 | 17.2 | 16.3 | 14.6 |
| | MCS1 | 17.2 | 16.3 | 14.6 | | MCS1 | 34.4 | 32.5 | 29.3 |
| | MCS2 | 25.8 | 24.4 | 21.9 | | MCS2 | 51.6 | 48.8 | 43.9 |
| | MCS3 | 34.4 | 32.5 | 29.3 | | MCS3 | 68.8 | 65 | 58.5 |
| | MCS4 | 51.6 | 48.8 | 43.9 | | MCS4 | 103.2 | 97.5 | 87.8 |
| | MCS5 | 68.8 | 65 | 58.5 | | MCS5 | 137.6 | 130 | 117 |
| | MCS6 | 77.4 | 73.1 | 65.8 | | MCS6 | 154.9 | 146.3 | 131.6 |
| | MCS7 | 86 | 81.3 | 73.1 | | MCS7 | 172.1 | 162.5 | 146.3 |
| | MCS8 | 103.2 | 97.5 | 87.8 | | MCS8 | 206.5 | 195 | 175.5 |
| | MCS9 | 114.7 | 108.3 | 97.5 | | MCS9 | 229.4 | 216.7 | 195 |
| | MCS10 | 129 | 121.9 | 109.7 | | MCS10 | 258.1 | 243.8 | 219.4 |
| | MCS11 | 143.4 | 135.4 | 121.9 | | MCS11 | 286.8 | 270.8 | 243.8 |
| 11ax 20MHz $N_{SS}$ = 2 | MCS0 | 17.2 | 16.3 | 14.6 | 11ax 40MHz $N_{SS}$ = 2 | MCS0 | 34.4 | 32.5 | 29.3 |
| | MCS1 | 34.4 | 32.5 | 29.3 | | MCS1 | 68.8 | 65 | 58.5 |
| | MCS2 | 51.6 | 48.8 | 43.9 | | MCS2 | 103.2 | 97.5 | 87.8 |
| | MCS3 | 68.8 | 65 | 58.5 | | MCS3 | 137.6 | 130 | 117 |
| | MCS4 | 103.2 | 97.5 | 87.8 | | MCS4 | 206.5 | 195 | 175.5 |
| | MCS5 | 137.6 | 130 | 117 | | MCS5 | 275.3 | 260 | 234 |
| | MCS6 | 154.9 | 146.3 | 131.6 | | MCS6 | 309.7 | 292.5 | 263.3 |
| | MCS7 | 172.1 | 162.5 | 146.3 | | MCS7 | 344.1 | 325 | 292.5 |
| | MCS8 | 206.5 | 195 | 175.5 | | MCS8 | 412.`9 | 390 | 351 |
| | MCS9 | 229.4 | 216.7 | 195 | | MCS9 | 458.8 | 433.3 | 390 |
| | MCS10 | 258.1 | 243.8 | 219.4 | | MCS10 | 516.2 | 487.5 | 438.8 |
| | MCS11 | 286.8 | 270.8 | 243.8 | | MCS11 | 573.5 | 541.7 | 487.5 |

## 1.2. Accessories

**Adapter**

| | |
|---|---|
| **Model** | ADS-24FUA-12 12024EPCU |
| **Technicolor P/N** | 6265293A |
| **ID** | 01 |
| **Manufacturer** | HONOR |
| **Input Power** | 100-240V~50/60Hz, MAX. 0.7A |
| **Output Power** | 12V, 2.0A |
| **Cable Length** | Non-shielded 1.2m |

**RJ-45 cable**

| | |
|---|---|
| **Cable Length** | Non-shielded 1.5m |

## 1.3. Information Provided by the Manufacturer

**Interface Availability**

| Interface / Model Number | Internal AC~DC Power Input:100~240V output: DC 12Vdc | LAN 10/100/1000 Mbps | WAN 10/100/1000 Mbps | USB 2.0 | WLAN IEEE 802.11a/b/g/n/ac/ax (2.4GHz 2*2) (5GHz L 2*2 ax) (5GHz H 4*4 ax) |
|---|---|---|---|---|---|
| OWA3111, GFEX310 | ● (2A) | ● (1 port ) | ● (1 port ) | ● (1 port) | ● |

Note:

● : Equipped

○ : Not Equipped

## 1.4. General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR FCC Part 15

ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF.

FCC KDB 558074 D01 v05r02

FCC KDB 662911 D01 v02r01

FCC KDB 474788 D01 v01r01

All test items have been performed and recorded as per the above standards.

## 1.5. Table for Multiple Listing

The model names in the following table are all refer to the identical product.

| Model Number | Description |
|---|---|
| OWA3111 | For marketing reason the same product will be covered by different name. |
| GFEX310 | |

From the above models, model: OWA3111 was selected as representative model for the test and its data was recorded in this report.

## 1.6. Cabling Attached to the Equipment

**Table 1- Cable and Interconnection**

| Interface | Cable type | Cable length delivered with the modem | "Real life" Cable length that can be attached to this type of interface | Cable length to be used for testing | Internal/external connection |
|---|---|---|---|---|---|
| WAN | UTP Cat 5 | 1 meter | > 10 meter | 10 meter | Intermal |
| LAN | UTP Cat 5 | 1 meter | > 10 meter | 10 meter | Intermal |
| USB | STP | 1 meter | < 3meter | 1 meter | Internal |
| AC power | - | - | - | - | External |

## 1.7. Panel Drawing

## 1.8. Transmit Operating Modes

| Transmit Operating Mode | | | | | | | Transmit Muitiple Antennas | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ | Operating mode 1 (single antenna) | | | | | | ■ | 1TX | | | | |
| ■ | Operating mode 2 (muitiple antenna, no beam forming) | | | | | | ■ | 2TX | □ | 3TX | □ | 4TX |
| ■ | Operating mode 3 (muitiple antenna, with beam forming) | | | | | | ■ | 2TX | □ | 3TX | □ | 4TX |
| ■ | 802.11b | Operating mode | ■ | 1TX | □ | 2TX | □ | 3TX | □ | Cyclic shift | | |
| ■ | 802.11g | Operating mode | ■ | 1TX | ■ | 2TX | □ | 3TX | □ | Cyclic shift | | |
| ■ | 802.11n 20MHz | Operating mode | ■ | 1TX | ■ | 2TX | □ | 3TX | □ | Cyclic shift | | |
| ■ | 802.11n 40MHz | Operating mode | ■ | 1TX | ■ | 2TX | □ | 3TX | □ | Cyclic shift | | |
| ■ | VHT 20MHz | Operating mode | ■ | 1TX | ■ | 2TX | □ | 3TX | □ | Cyclic shift | | |
| ■ | VHT 40MHz | Operating mode | ■ | 1TX | ■ | 2TX | □ | 3TX | □ | Cyclic shift | | |
| ■ | 802.11ax 20MHz | Operating mode | ■ | 1TX | ■ | 2TX | □ | 3TX | □ | Cyclic shift | | |
| ■ | 802.11ax 40MHz | Operating mode | ■ | 1TX | ■ | 2TX | □ | 3TX | □ | Cyclic shift | | |

Note:

For IEEE802.11b, 1Mbps~11Mbps: 1TX;

For IEEE802.11g, 6Mbps~54Mbps: 1TX; 2TX;

For IEEE802.11n,

MCS0~MCS7: 1 Stream 1TX, 1 Stream 2TX,

MCS8~MCS15: 2 Stream 2TX,

For IEEE802.11ac,

Nss1MCS0~Nss1MCS9: 1 Stream 1TX, 1 Stream 2TX,

Nss2MCS0~Nss2MCS9: 2 Stream 2TX,

For IEEE802.11ax,

Nss1MCS0~Nss1MCS11: 1Stream 1TX, 1Stream 2TX,

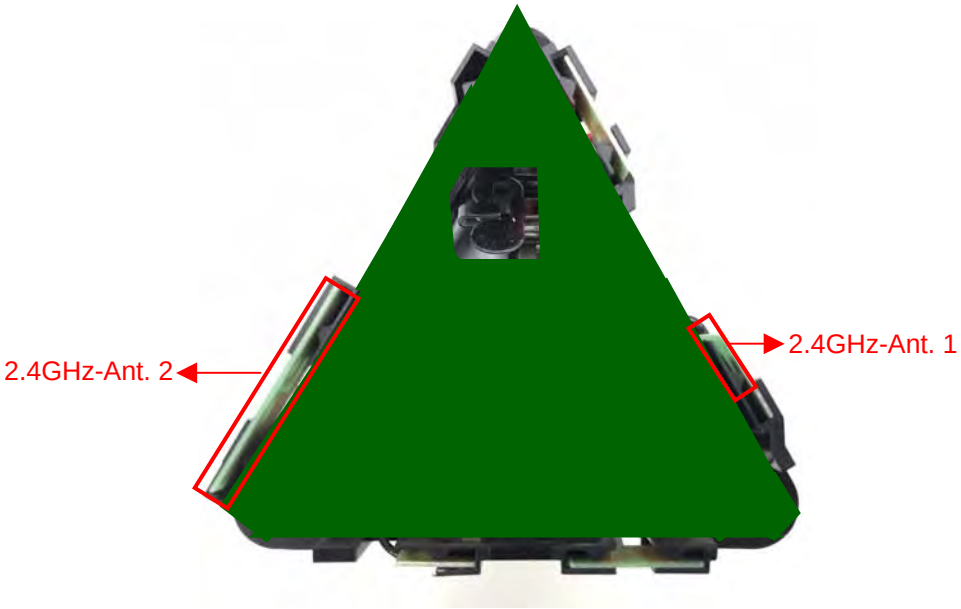
Nss2MCS0~Nss2MCS11: 2 Stream 2TX,

## 1.9. Antenna Requirements

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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 shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

## 1.10. Table for Filed Antenna

| Ant. | Brand | Model Name | Antenna Type | Connector | Cable Length (mm) |
|---|---|---|---|---|---|
| 2.4GHz-Ant. 1 | WALSIN | RFPCA291205IMLB303 | PCB Antenna | I-PEX | 50mm |
| 2.4GHz-Ant. 2 | WALSIN | RFPCA291203IMLB302 | PCB Antenna | I-PEX | 30mm |



**Number of Transmitter Antennas & Bandwidth**

| Number of Transmitter Antennas | 1TX | | 2TX | |
|---|---|---|---|---|
| Bandwidth Mode | 20 MHz | 40 MHz | 20 MHz | 40 MHz |
| 802.11b | V | X | X | X |
| 802.11g | V | X | V | X |
| 802.11n | V | V | V | V |
| 802.11ac | V | V | V | V |
| 802.11ax | V | V | V | V |

**For 2400~2483.5MHz**

| Frequency | Antenna Gain (dBi) | | | |
|---|---|---|---|---|
| | Ant. 1 | | Ant. 2 | |
| | 20 MHz | 40 MHz | 20 MHz | 40 MHz |
| 2412 MHz | 2.04 | - | 3.10 | - |
| 2422 MHz | - | 2.12 | - | 3.48 |
| 2437 MHz | 2.12 | 2.12 | 3.88 | 3.88 |
| 2452 MHz | - | 2.52 | - | 3.81 |
| 2462 MHz | 2.69 | - | 3.51 | - |

| Frequency | Maximum Gain (dBi) for CDD mode | |
|---|---|---|
| | CDD mode (1 Stream 2 TX) for PSD Gain (KDB 662911 Option 2) | |
| | 20 MHz | 40 MHz |
| 2412 MHz | 5.07 | - |
| 2422 MHz | - | 5.12 |
| 2437 MHz | 5.01 | 5.01 |
| 2452 MHz | - | 5.13 |
| 2462 MHz | 5.19 | - |

| Frequency | Maximum Gain (dBi) for TXBF mode | |
|---|---|---|
| | TXBF mode (1 Stream 2 TX) for Power & PSD Gain (KDB 662911 Option 2) | |
| | 20 MHz | 40 MHz |
| 2412 MHz | 5.07 | - |
| 2422 MHz | - | 5.12 |
| 2437 MHz | 5.01 | 5.01 |
| 2452 MHz | - | 5.13 |
| 2462 MHz | 5.19 | - |

Note:

1. Antenna Gain refer to “OWA3111_NAM_Directional_Gain_20200120” files
2. Maximum Correlated Directional Gain = $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$
3. Maximum Uncorrelated Directional Gain = $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

## 1.11. Table for Carrier Frequencies

11 channels are provided for 802.11b, 802.11g, 802.11n 20MHz, 802.11ac 20MHz, 802.11ax 20MHz:

| Frequency Band | Channel No. | Frequency | Channel No. | Frequency |
|---|---|---|---|---|
| 2400~2483.5MHz | 1 | 2412 MHz | 7 | 2442 MHz |
| | 2 | 2417 MHz | 8 | 2447 MHz |
| | 3 | 2422 MHz | 9 | 2452 MHz |
| | 4 | 2427 MHz | 10 | 2457 MHz |
| | 5 | 2432 MHz | 11 | 2462 MHz |
| | 6 | 2437 MHz | - | - |

7 channels are provided for 802.11n 40MHz, 802.11ac 40MHz, 802.11ax 40MHz:

| Frequency Band | Channel No. | Frequency | Channel No. | Frequency |
|---|---|---|---|---|
| 2400~2483.5MHz | 3 | 2422 MHz | 7 | 2442 MHz |
| | 4 | 2427 MHz | 8 | 2447 MHz |
| | 5 | 2432 MHz | 9 | 2452 MHz |
| | 6 | 2437 MHz | - | - |

## 1.12. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. The following table is a list of the test modes shown in this test report.

| Test Items | Mode | Note | Channel | Data Rate | Antenna |
|---|---|---|---|---|---|
| AC Power Line Conducted Emissions | CTX | - | - | - | - |
| Maximum Conducted Output Power | 11b | DSSS/DBPSK | 1/6/11 | 1S1T 1 Mbps | 1 |
| | 11g | OFDM/BPSK | 1/6/11 | 1S2T CDD 6 Mbps | 1+2 |
| | 11ax 20MHz | OFDMA/BPSK | 1/6/11 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |
| | 11ax 40MHz | | 3/6/9 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |
| Power Spectral Density | 11b | DSSS/DBPSK | 1/6/11 | 1S1T 1 Mbps | 1 |
| | 11g | OFDM/BPSK | 1/6/11 | 1S2T CDD 6 Mbps | 1+2 |
| | 11ax 20MHz | OFDMA/BPSK | 1/6/11 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |
| | 11ax 40MHz | | 3/6/9 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |
| 6dB Spectrum and 99% Occupied Bandwidth | 11b | DSSS/DBPSK | 1/6/11 | 1S1T 1 Mbps | 1 |
| | 11g | OFDM/BPSK | 1/6/11 | 1S2T CDD 6 Mbps | 1+2 |
| | 11ax 20MHz | OFDMA/BPSK | 1/6/11 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |
| | 11ax 40MHz | | 3/6/9 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TxBF MCS0 | 1+2 |

| | | | | | |
|---|---|---|---|---|---|
| Radiated Emissions 9kHz~1GHz | CTX | - | - | - | - |
| Radiated Emissions 1GHz~10th Harmonic | 11b | DSSS/DBPSK | 1/6/11 | 1S1T 1 Mbps | 1 |
| | 11ax 20MHz | OFDMA/BPSK | 1/6/11 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |
| | 11ax 40MHz | | 3/6/9 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |
| Band Edge Emissions | 11b | DSSS/DBPSK | 1/6/11 | 1S1T 1 Mbps | 1 |
| | 11ax 20MHz | OFDMA/BPSK | 1/6/11 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |
| | 11ax 40MHz | | 3/6/9 | 1S2T CDD MCS0 | 1+2 |
| | | | | 1S2T TXBF MCS0 | 1+2 |

Note 1: The device with multiple operating mode, measurements on the middle channel were tested to determine the worst case mode. (Each modulation family were tested in band edge, spurious emission and in band PSD after investigate worst case mode).

Note 2: Base on tx core command, the 802.11g default mode is 1S2T CDD , the 802.11ax 20MHz/ 40MHz, default mode are 1S2T TxBF,1S2T CDD.
wl -i wl0 txcore
t xcore enabled bitmap (Nsts {4..1}) 0x00 0x00 0x03 0x03 txcore mask OFDM 0x03 CCK 0x01

Note 3: Base on same power setting, the 802.11g mode were only tested the “Maximum Conducted Output Power” , “Power Spectral Density” and” Bandwidth”

Note 4: The power setting for 802.11ac 20MHz and 40 MHz are same or lower than 802.11ax 20 MHz/ 40 MHz.

Note 5: The EUT can only be used at Y axis position.

Note 6: AC power line conducted emissions and radiated emissions below 1GHz only worse case is selected for photos and test system connection diagram presentaion in the report.

The following test modes were performed for all tests:

**For AC Power Conducted Emission test:**

Test Mode 1: CTX mode, EUT – WLAN 2.4GHz

Test Mode 2: CTX mode, EUT – WLAN 5GHz Band 1

Test Mode 3: CTX mode, EUT – WLAN 5GHz Band 4

**For Radiated Emission Below 1GHz test:**

Test Mode 1: CTX mode, EUT Y axis – WLAN 2.4GHz

Test Mode 2: CTX mode, EUT Y axis – WLAN 5GHz Band 1

Test Mode 3: CTX mode, EUT Y axis – WLAN 5GHz Band 4

**For Radiated Emission Above 1GHz test:**

Test Mode 1: CTX mode, EUT Y axis

**For Co-location MPE and Radiated Emission Co-location Test:**

The EUT could be applied with WLAN 2.4GHz function, WLAN 5GHz Band 1 function and WLAN 5GHz Band 4 function.

For Co-location Maximum Permissible Exposure: Co-location Maximum Permissible Exposure (Please refer to FA071024) test is added for simultaneously transmit between WLAN 2.4GHz function, WLAN 5GHz Band 1 function and WLAN 5GHz Band 4 function.

For Radiated Emission Co-location:

Both WLAN 2.4G and WLAN 5G simultaneously could be transmitted with a same antenna.

Radiated Emission Co-location (please refer to Appendix A) test is added for simultaneously transmit between WLAN 2.4GHz function and WLAN 5GHz Band 1 function.

## 1.13. Table for Testing Locations

| Testing Location | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☐ | HWA YA | ADD | : | No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) | | | |
| | | TEL | : | 886-3-327-3456 | FAX | : | 886-3-327-0973 |
| ☒ | JHUBEI | ADD | : | No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. | | | |
| | | TEL | : | 886-3-656-9065 | FAX | : | 886-3-656-9085 |

| Test Condition | Test Site No. | Test Engineer | Test Environment | Test Date |
|---|---|---|---|---|
| RF Conducted | TH01-CB | Serway Li | 24.7~25.9°C / 58~62% | Jul. 01, 2020 ~ Jul. 17, 2020 |
| Radiated below 1GHz | 03CH05-CB | Ron Huang | 23.8~26°C / 61~63% | Jun. 08, 2020 ~ Jul. 13, 2020 |
| Radiated Above 1GHz (Co-location) | | | | |
| Radiated Above 1GHz (Other) | 03CH04-CB | Ron Huang | 24.8~26.8°C / 53~57% | Jun. 08, 2020 ~ Jul. 13, 2020 |
| AC Conduction | CO02-CB | Wei Li | 24~25°C / 59~62% | Jul. 10, 2020 |

Test site Designation No. TW0006 with FCC
Test site registered number IC 4086D with Industry Canada.

## 1.14. Table for Supporting Units

**For AC Conduction:**

| No. | Support Unit | Brand | Model | FCC ID |
|---|---|---|---|---|
| A | LAN NB | DELL | E6430 | N/A |
| B | Flash disk3.0 | Transcend | JetFlash-700 | N/A |

**Radiated Emissions below 1GHz:**

| No. | Support Unit | Brand | Model | FCC ID |
|---|---|---|---|---|
| A | NB | DELL | E4300 | N/A |

**For Radiated Above 1GHz (CDD mode) and RF Conducted (CDD mode):**

| No. | Support Unit | Brand | Model | FCC ID |
|---|---|---|---|---|
| A | NB | DELL | E4300 | N/A |

**For Radiated Above 1GHz (TXBF mode) and RF Conducted (TXBF mode):**

| No. | Support Unit | Brand | Model | FCC ID |
|---|---|---|---|---|
| A | NB | DELL | E4300 | N/A |
| B | NB | DELL | E4300 | N/A |
| C | WLAN AP (RX Device) | ASUS | RT-AX88U | MSQ-RTAXHP00 |

## 1.15. Table for Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

| The Power Setting Parameter | | | | | |
|---|---|---|---|---|---|
| **Test Software Version** | 19.4.0292-4849007-20200616180558-f2534517ca3ad3f315c2e982b801eb89d87dc5a6 | | | | |
| **Worst Modulation Mode** | **Number of Transmit Chains (NTX)** | **Frequency (MHz)** | **Maximum Output Power (dBm)** | **Power Setting** | **Data Rate / MCS** |
| 802.11b, Ant. 1 (SISO) | 1Stream 1TX | 2412 | 22.12 | 88 | 1Mbps |
| 802.11b, Ant. 1 (SISO) | 1Stream 1TX | 2437 | 22.89 | 88 | 1Mbps |
| 802.11b, Ant. 1 (SISO) | 1Stream 1TX | 2462 | 22.38 | 88 | 1Mbps |
| 802.11g, Ant. 1+2 (CDD) | 1Stream 2TX | 2412 | 21.91 | 76 | 6Mbps |
| 802.11g, Ant. 1+2 (CDD) | 1Stream 2TX | 2437 | 24.73 | 86 | 6Mbps |
| 802.11g, Ant. 1+2 (CDD) | 1Stream 2TX | 2462 | 24.26 | 86 | 6Mbps |
| 802.11ax 20MHz, Ant. 1+2 (CDD) | 1Stream 2TX | 2412 | 22.16 | 76 | MCS0/Nss1 (8.6) |
| 802.11ax 20MHz, Ant. 1+2 (CDD) | 1Stream 2TX | 2437 | 24.85 | 86 | MCS0/Nss1 (8.6) |
| 802.11ax 20MHz, Ant. 1+2 (CDD) | 1Stream 2TX | 2462 | 24.41 | 86 | MCS0/Nss1 (8.6) |
| 802.11ax 20MHz, Ant. 1+2 (TXBF) | 1Stream 2TX | 2412 | 22.08 | 76 | MCS0/Nss1 (8.6) |
| 802.11ax 20MHz, Ant. 1+2 (TXBF) | 1Stream 2TX | 2437 | 24.90 | 86 | MCS0/Nss1 (8.6) |
| 802.11ax 20MHz, Ant. 1+2 (TXBF) | 1Stream 2TX | 2462 | 24.36 | 86 | MCS0/Nss1 (8.6) |
| 802.11ax 40MHz, Ant. 1+2 (CDD) | 1Stream 2TX | 2422 | 21.79 | 75 | MCS0/Nss1 (17.2) |
| 802.11ax 40MHz, Ant. 1+2 (CDD) | 1Stream 2TX | 2437 | 23.77 | 82 | MCS0/Nss1 (17.2) |
| 802.11ax 40MHz, Ant. 1+2 (CDD) | 1Stream 2TX | 2452 | 24.30 | 86 | MCS0/Nss1 (17.2) |
| 802.11ax 40MHz, Ant. 1+2 (TXBF) | 1Stream 2TX | 2422 | 21.78 | 75 | MCS0/Nss1 (17.2) |
| 802.11ax 40MHz, Ant. 1+2 (TXBF) | 1Stream 2TX | 2437 | 23.70 | 82 | MCS0/Nss1 (17.2) |
| 802.11ax 40MHz, Ant. 1+2 (TXBF) | 1Stream 2TX | 2452 | 24.29 | 86 | MCS0/Nss1 (17.2) |

## 1.16. EUT Operation during Test

For CTX Mode:

For CDD mode:

The EUT was programmed to be in continuously transmitting mode.

For TXBF mode:

During the test, the following programs under WIN 7 were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Execute command via SSH to fix channel under test.
3. Run "Iperf.exe" to generate traffic to max transmit duty cycle and receive by Rx device.

For Normal Link:

During the test, the EUT operation to normal function.

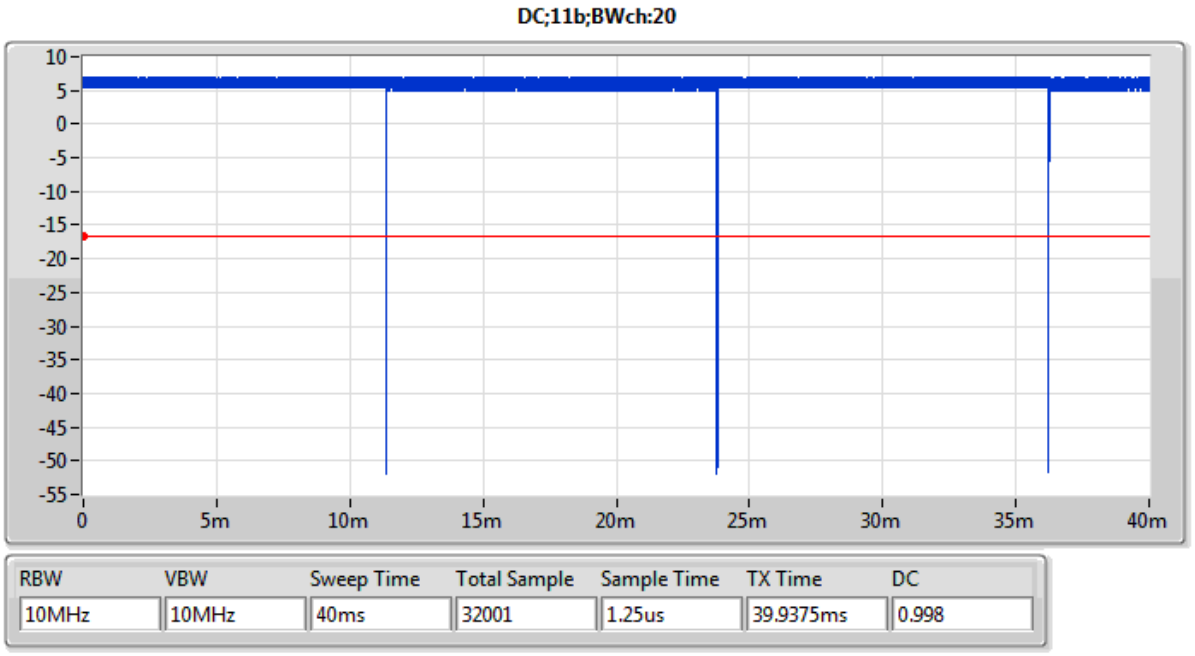
## 1.17. Duty Cycle

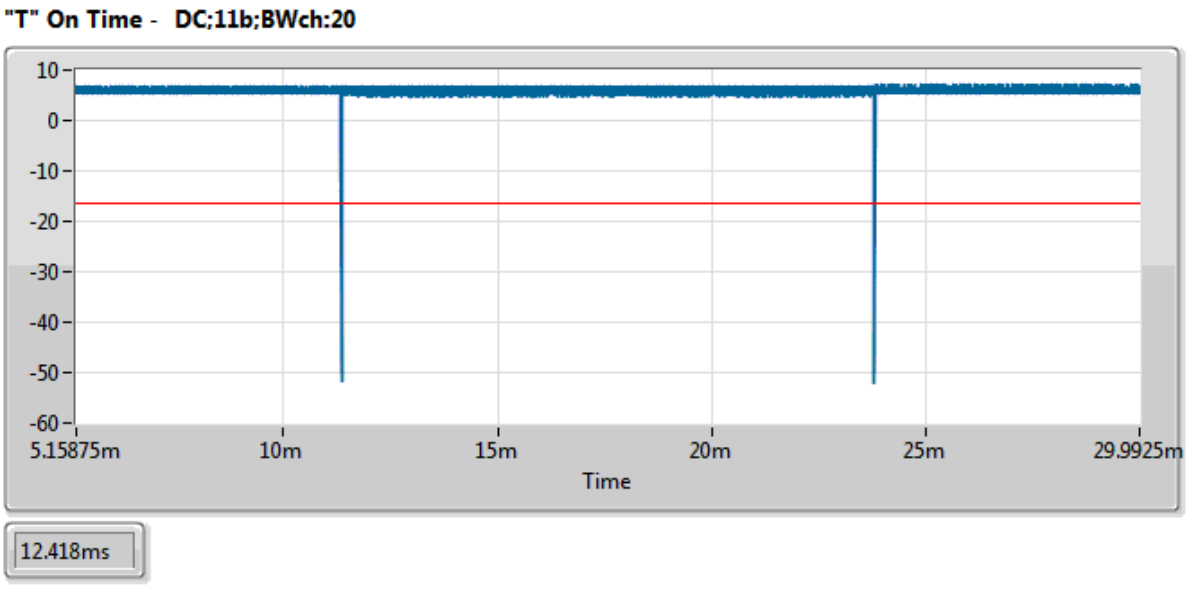
| Mode | Total On Time (ms) | Period (ms) | on time (ms) | Duty Cycle (%) | Duty Factor (dB) | 1/T Minimum VBW/(kHz) |
|---|---|---|---|---|---|---|
| 802.11b 1Mbps, Ant. 1, 1S1T (SISO) | 39.938 | 40 | 12.418 | 99.8% | 0.01 | 0.01 |
| 802.11g 6Mbps, Ant. 1+2 (CDD) | 19.831 | 20 | 2.065 | 99.2% | 0.04 | 0.01 |
| 802.11ax 20MHz MCS0 / Ant. 1+2, 1S2T (CDD) | 9.879 | 10 | 1.489 | 98.8% | 0.05 | 0.01 |
| 802.11ax 20MHz MCS0 / Ant. 1+2, 1S2T (TXBF) | 19.048 | 20 | 2.928 | 95.2% | 0.21 | 0.34 |
| 802.11ax 40MHz MCS0 / Ant. 1+2, 1S2T (CDD) | 9.745 | 10 | 0.773 | 97.5% | 0.11 | 1.29 |
| 802.11ax 40MHz MCS0 / Ant. 1+2, 1S2T (TXBF) | 18.995 | 20 | 4.195 | 95.0% | 0.22 | 0.24 |

Note: Power measurement using sweep trigger and gating of the power meter, duty factor is not required.

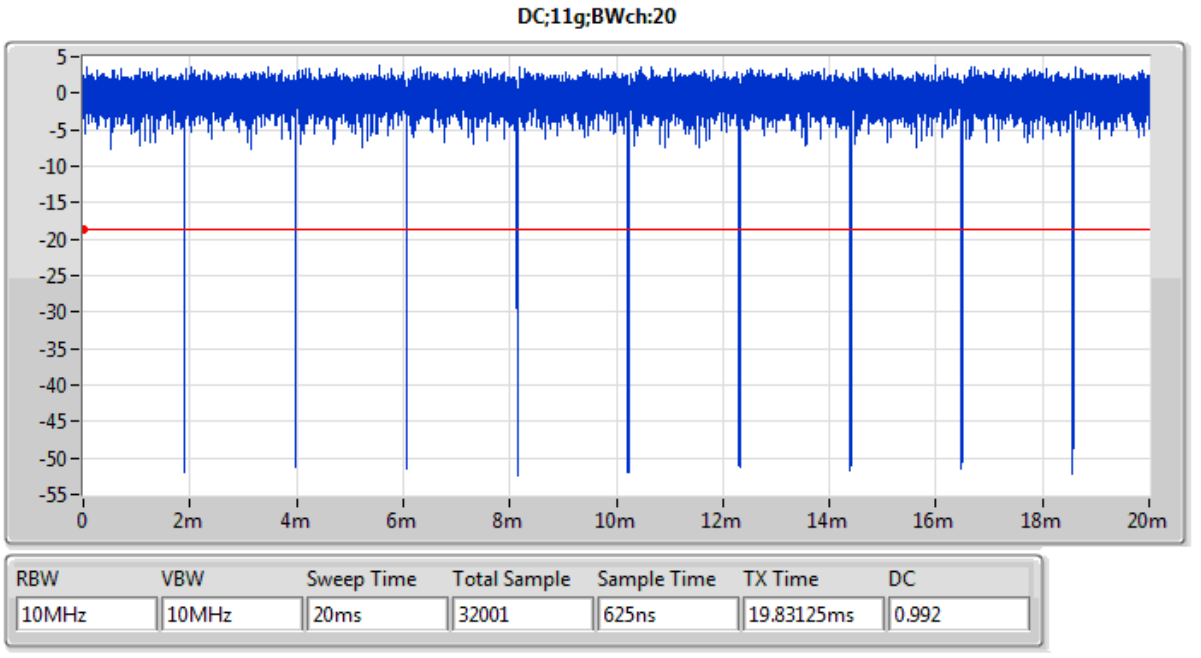
**Plot:**

**802.11b 1Mbps, Ant. 1, 1S1T (SISO)**

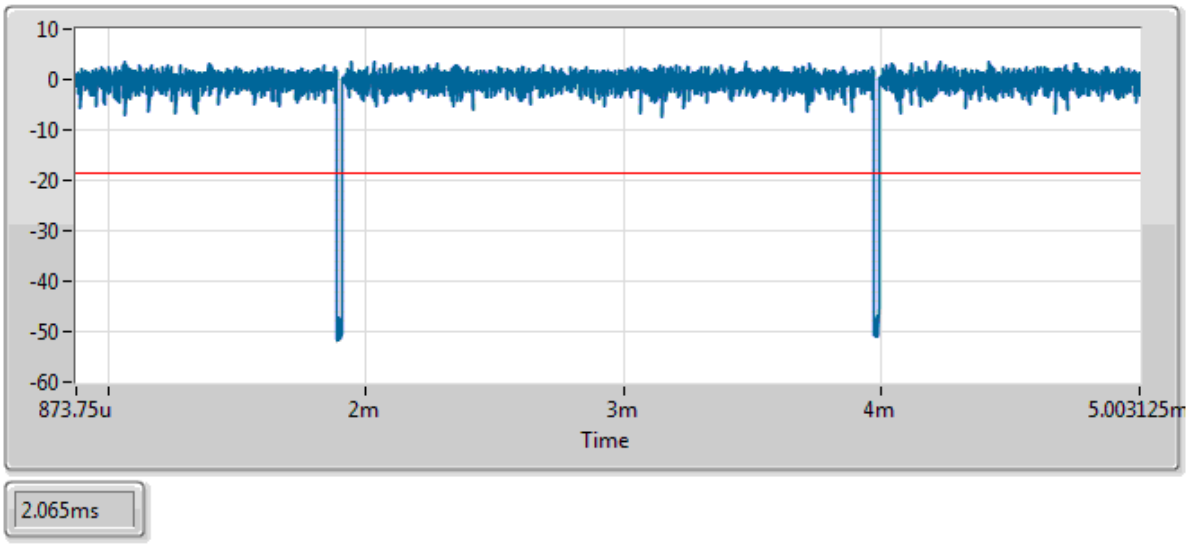


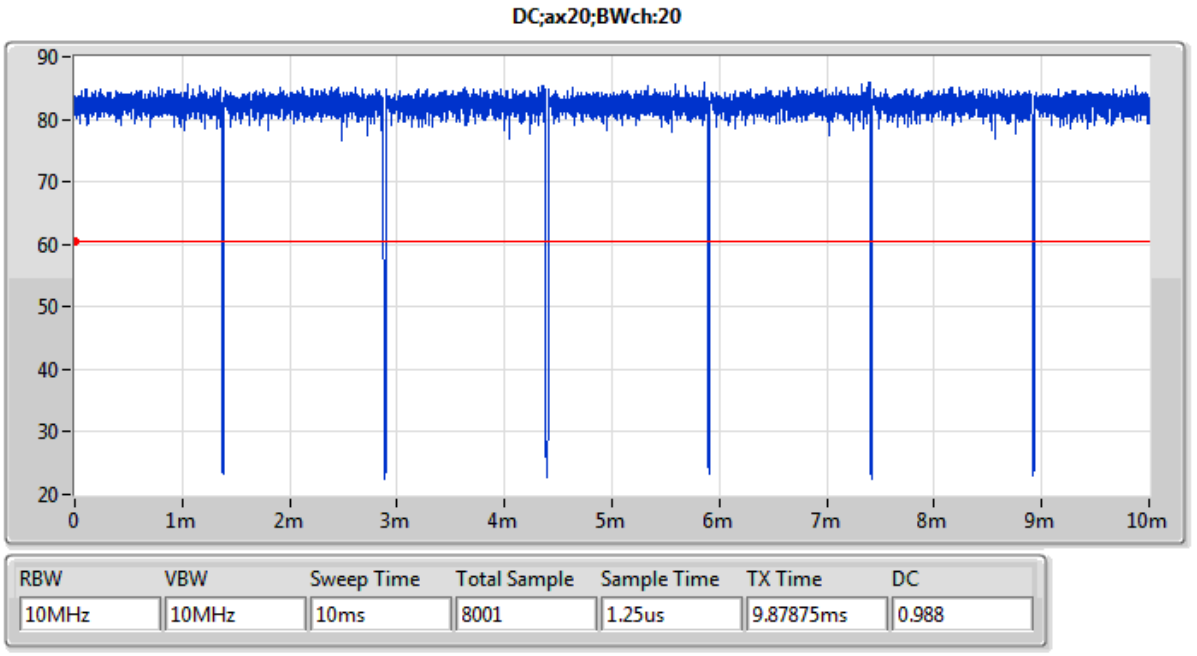
## 802.11g 6Mbps, Ant. 1+2, 1S2T (CDD)

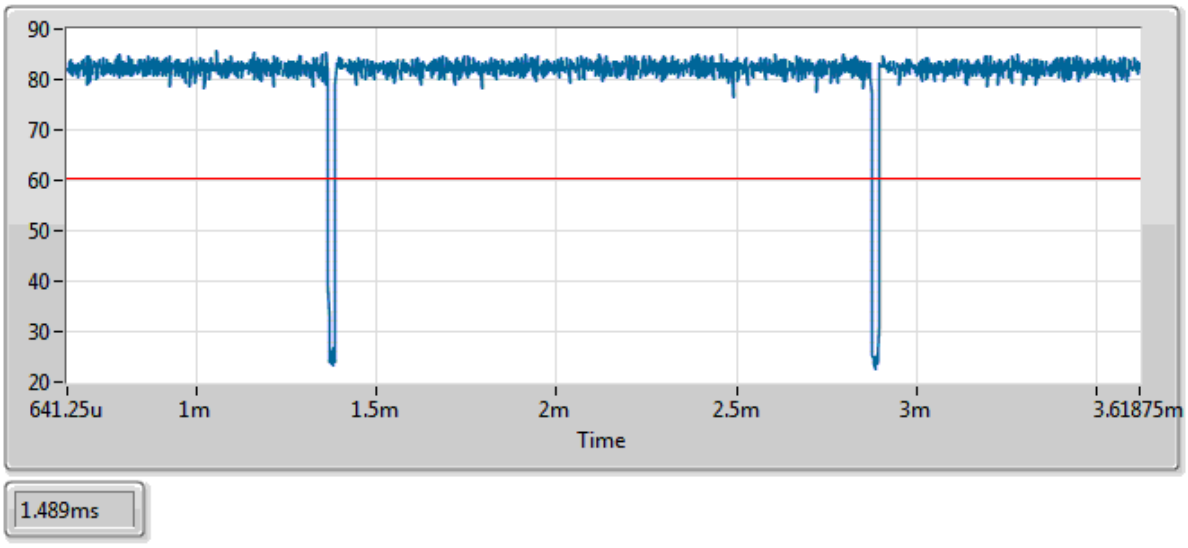



| RBW | VBW | Sweep Time | Total Sample | Sample Time | TX Time | DC |
|---|---|---|---|---|---|---|
| 10MHz | 10MHz | 20ms | 32001 | 625ns | 19.83125ms | 0.992 |

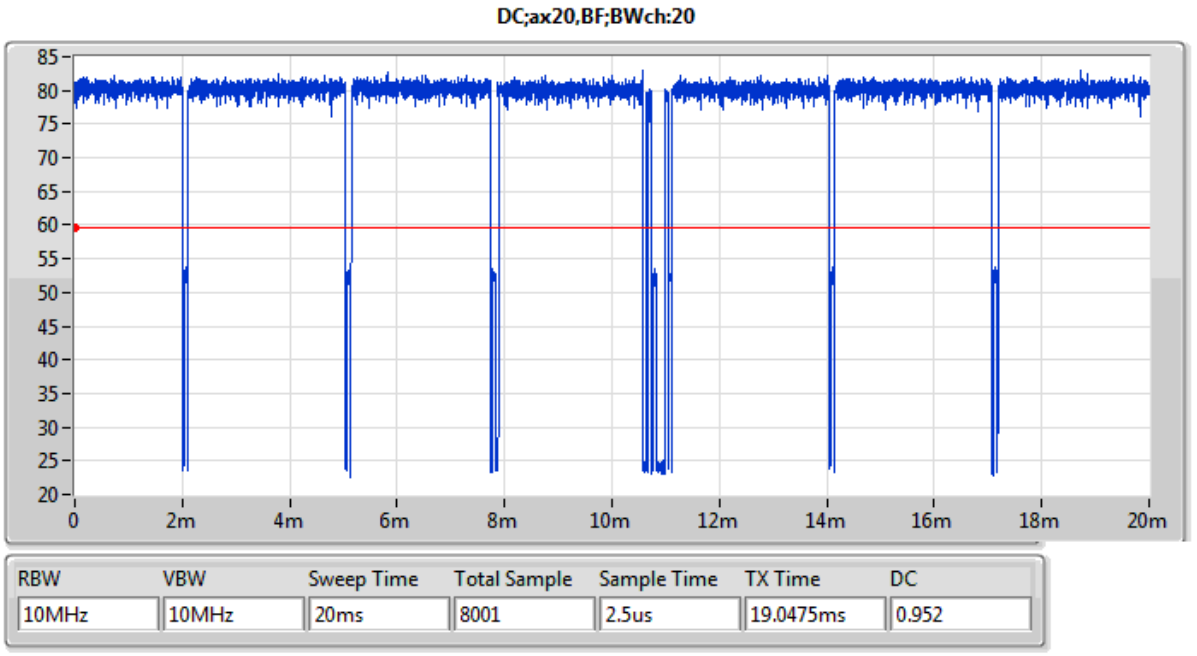


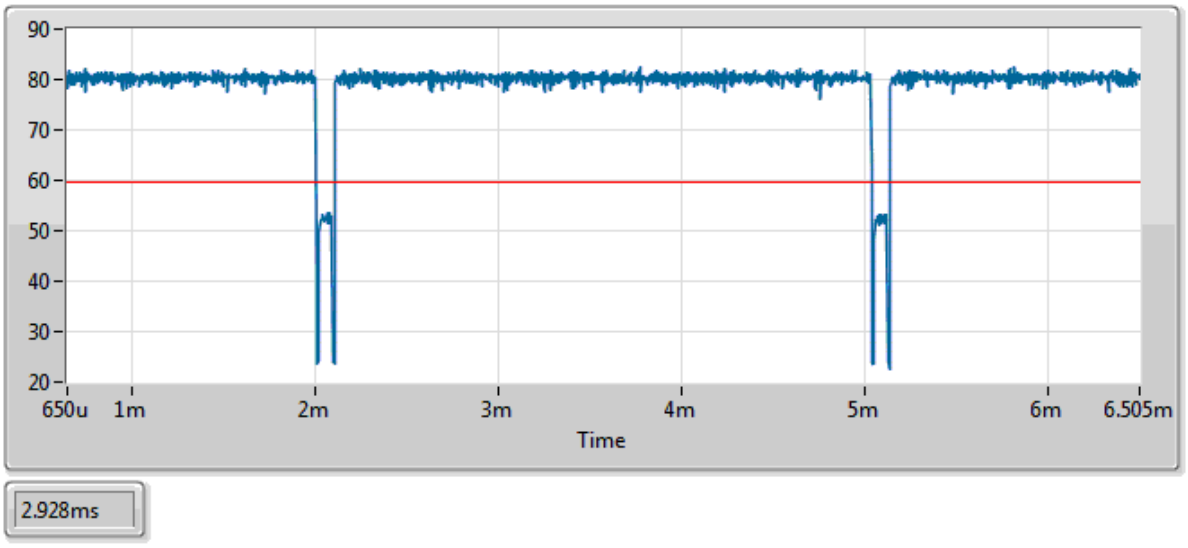
## 802.11ax 20MHz MCS0 / Ant. 1+2, 1S2T (CDD)



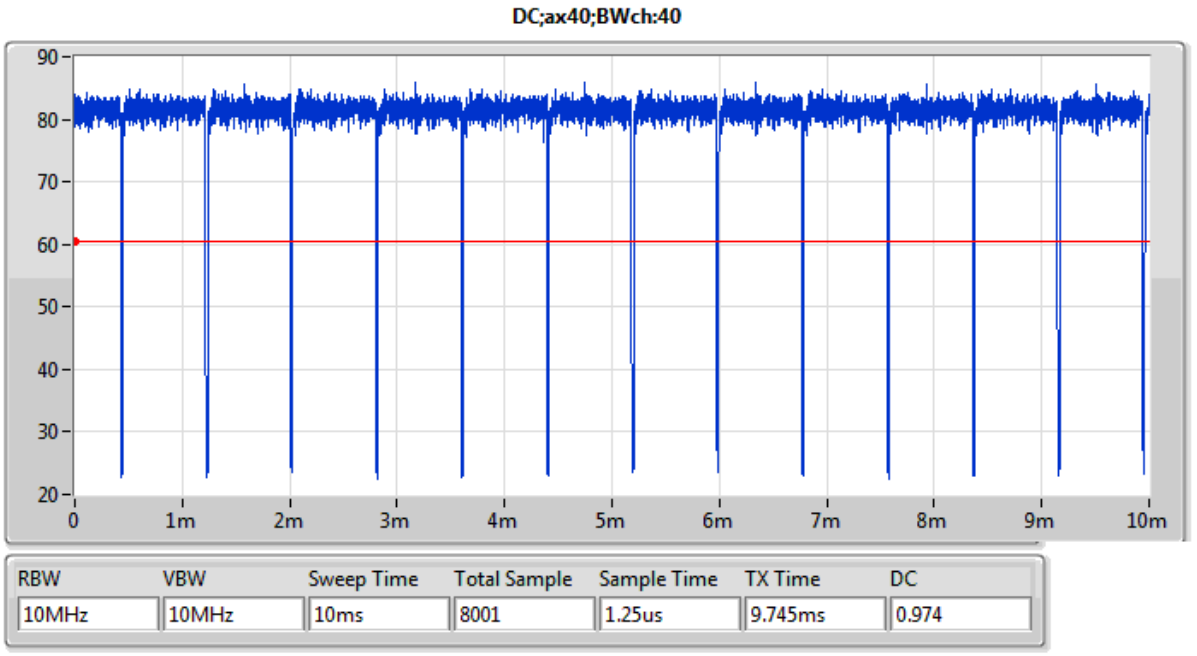



| 802.11ax 20MHz MCS0 / Ant. 1+2, 1S2T (TXBF) |
|---|

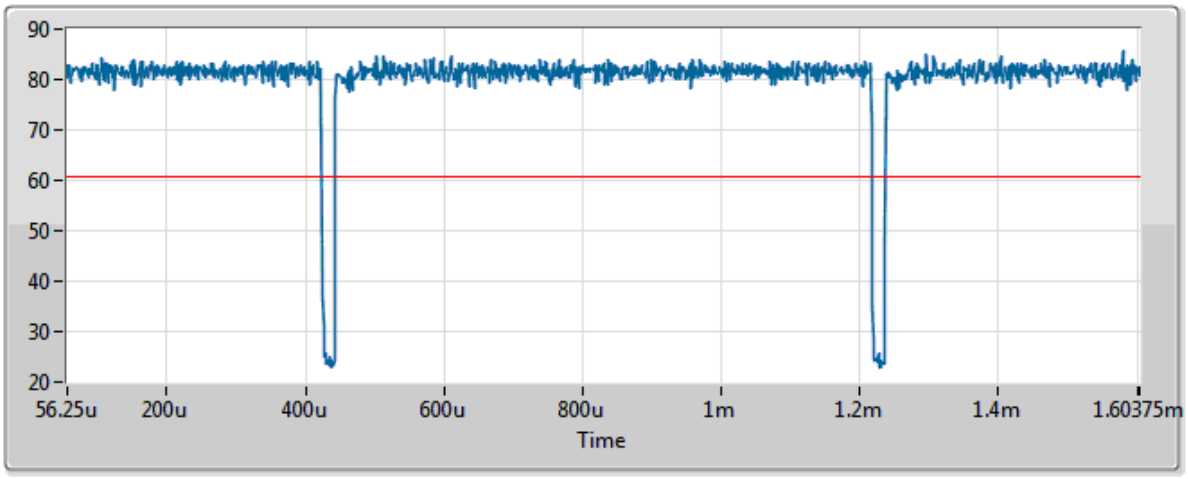


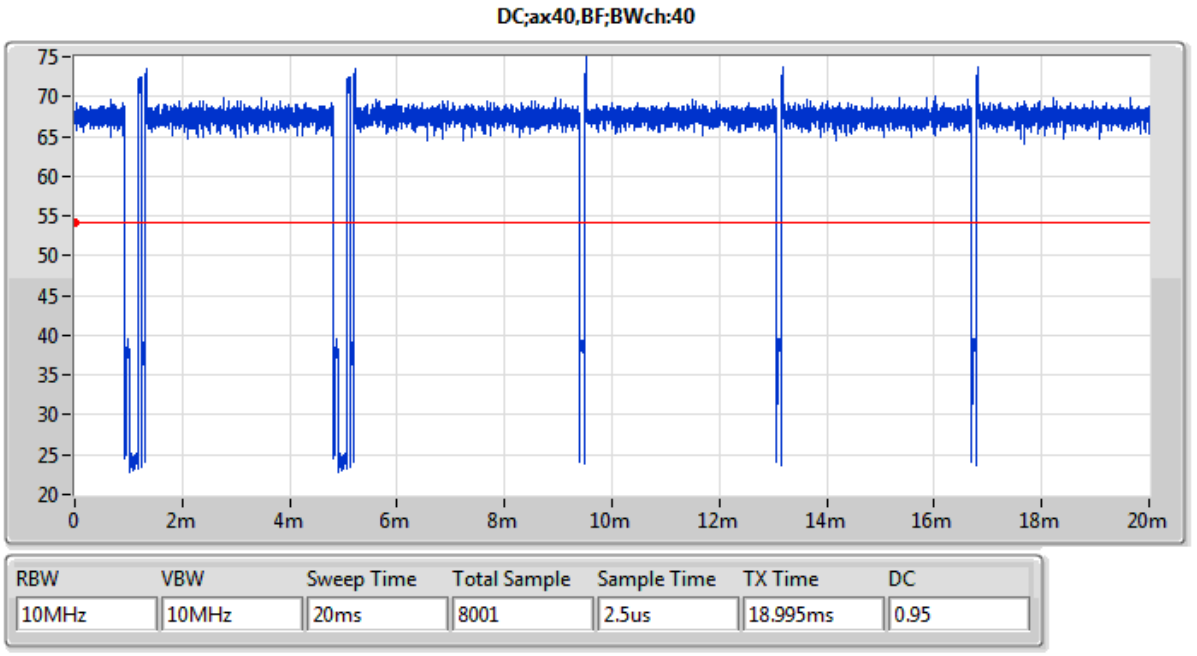
## 802.11ax 40MHz MCS0 / Ant. 1+2, 1S2T (CDD)



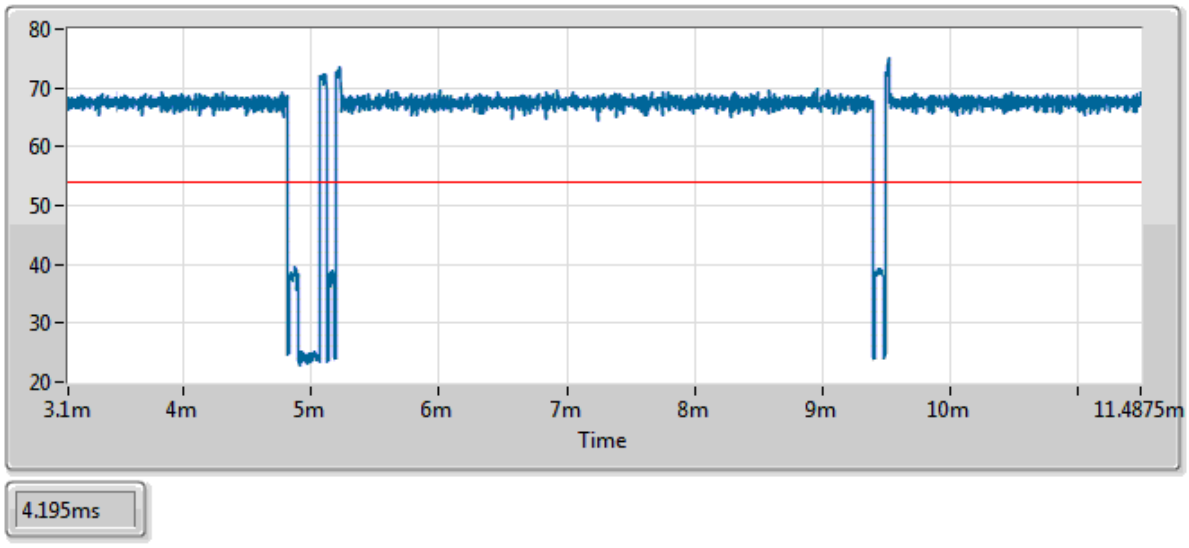

| RBW | VBW | Sweep Time | Total Sample | Sample Time | TX Time | DC |
|---|---|---|---|---|---|---|
| 10MHz | 10MHz | 10ms | 8001 | 1.25us | 9.745ms | 0.974 |



**802.11ax 40MHz MCS0 / Ant. 1+2, 1S2T (TXBF)**

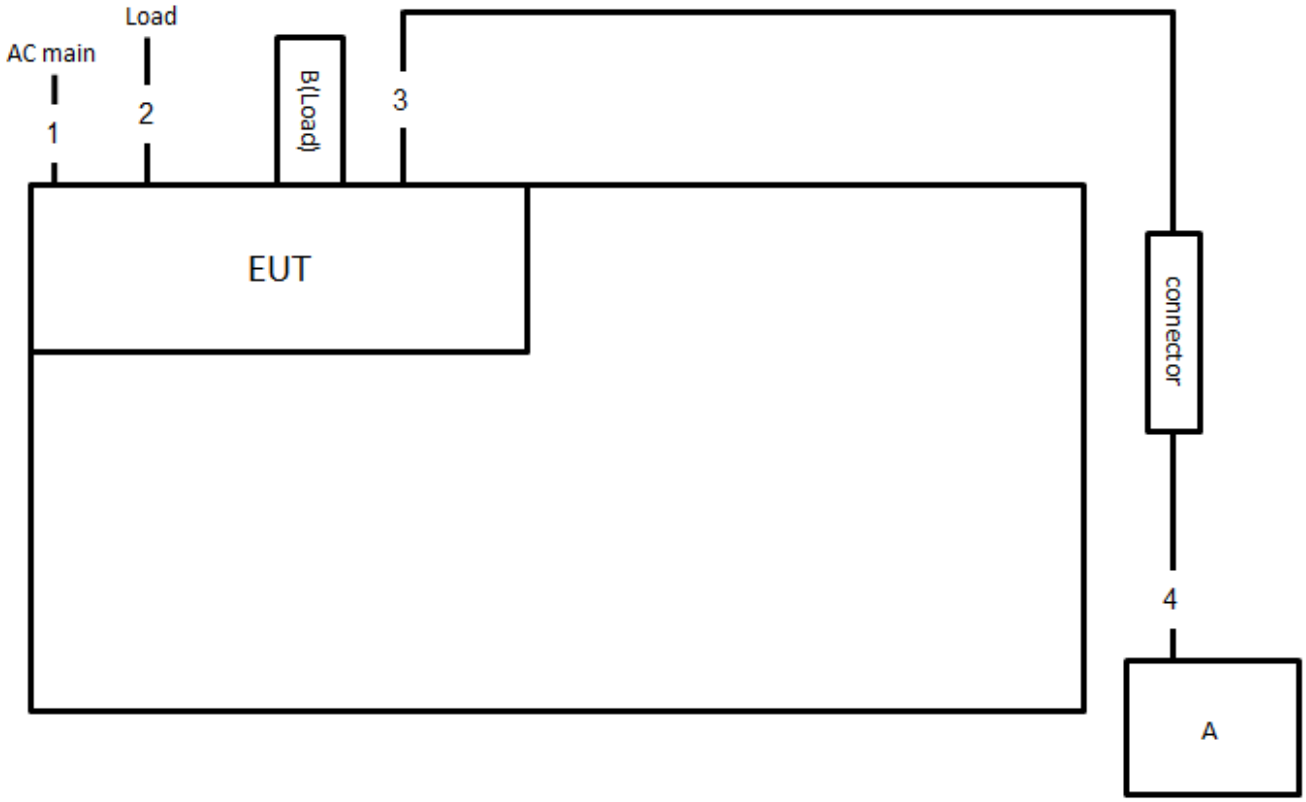



| RBW | VBW | Sweep Time | Total Sample | Sample Time | TX Time | DC |
|---|---|---|---|---|---|---|
| 10MHz | 10MHz | 20ms | 8001 | 2.5us | 18.995ms | 0.95 |



## 1.18. Test Configurations

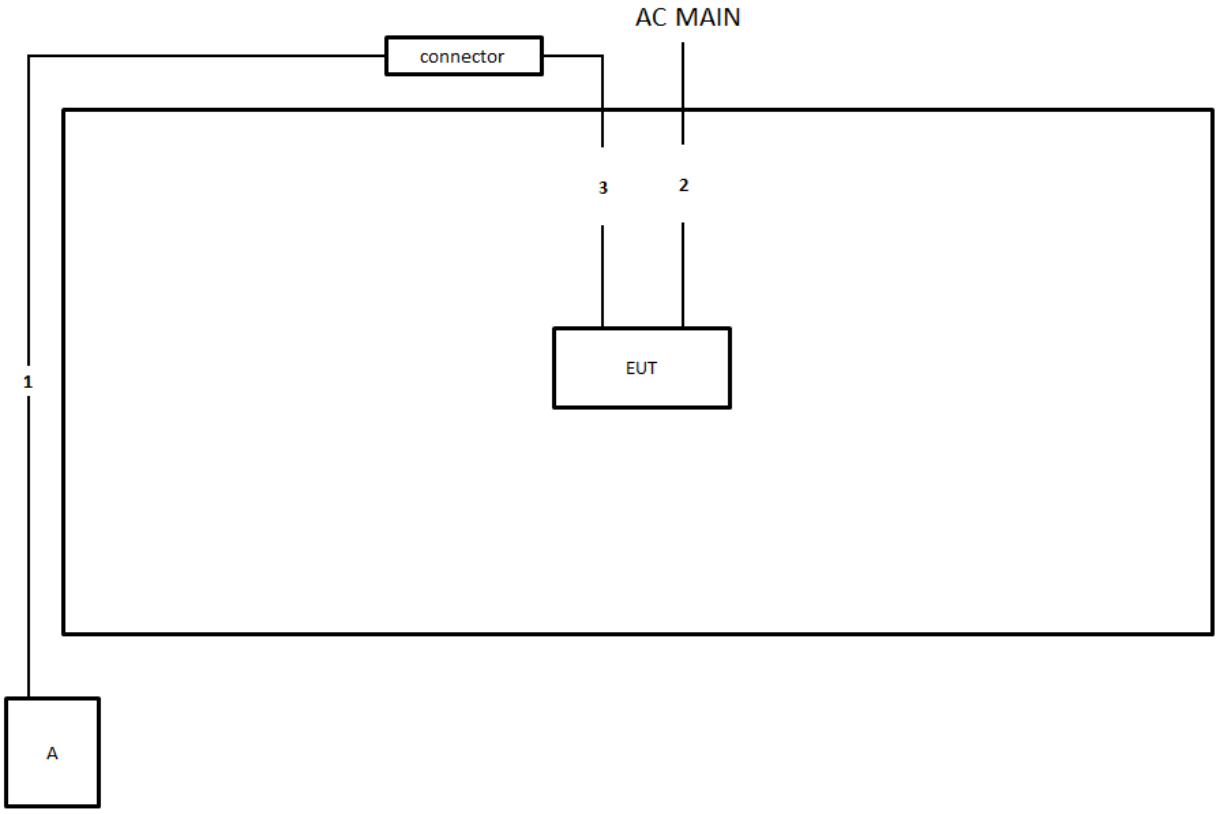
### 1.18.1. AC Power Line Conduction Emissions Test Configuration




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | Power cable | No | 1.2m |
| 2 | RJ-45 cable | No | 1.5m |
| 3 | RJ-45 cable | No | 1.5m |
| 4 | RJ-45 cable | No | 10m |

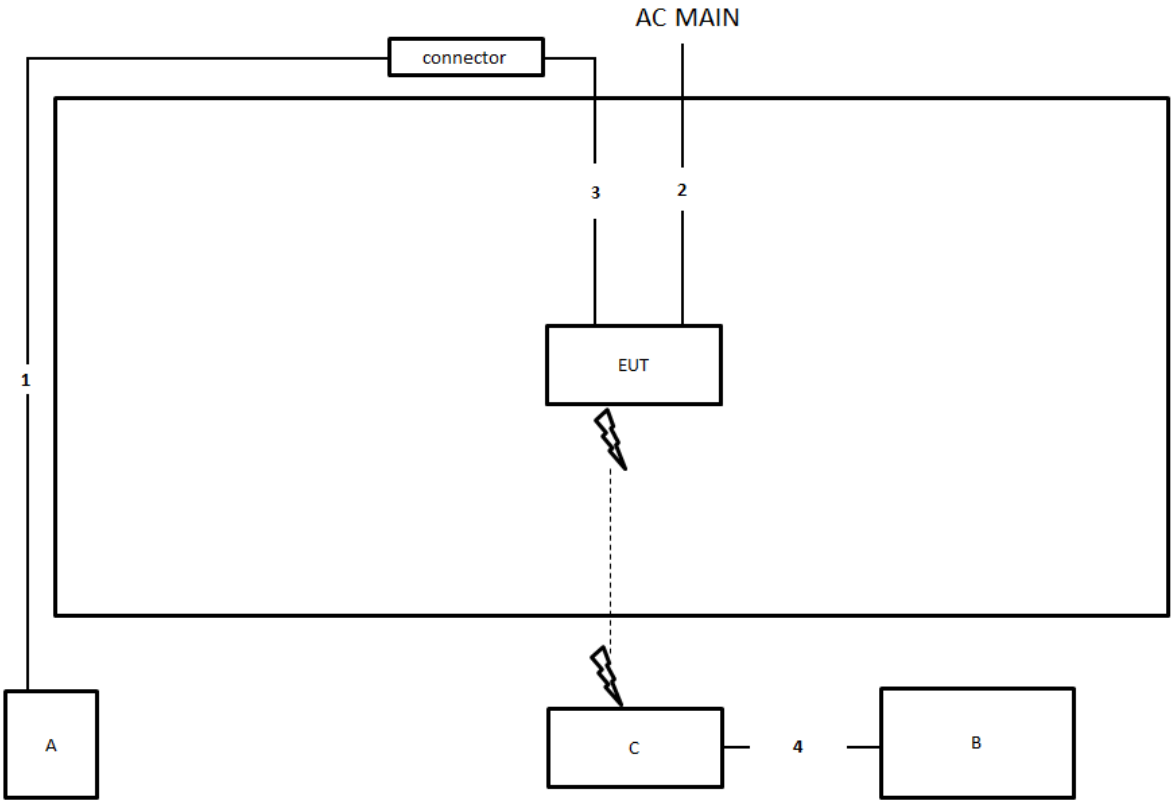
### 1.18.2. Radiation Emissions Test Configuration

Test Configuration: Below 1GHz and Above 1GHz (CDD mode)




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | RJ-45 cable | No | 10m |
| 2 | Power cable | No | 1.2m |
| 3 | RJ-45 cable | No | 1.5m |

Test Configuration: Above 1GHz (TXBF mode)




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | RJ-45 cable | No | 10m |
| 2 | Power cable | No | 1.2m |
| 3 | RJ-45 cable | No | 1.5m |
| 4 | RJ-45 cable | No | 1m |

# 2. Test Result

## 2.1. AC Power Line Conducted Emissions Measurement

### 2.1.1. Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

| Frequency (MHz) | QP Limit (dBuV) | AV Limit (dBuV) |
|---|---|---|
| 0.15~0.5 | 66~56 | 56~46 |
| 0.5~5 | 56 | 46 |
| 5~30 | 60 | 50 |

### 2.1.2. Measuring Instruments and Setting

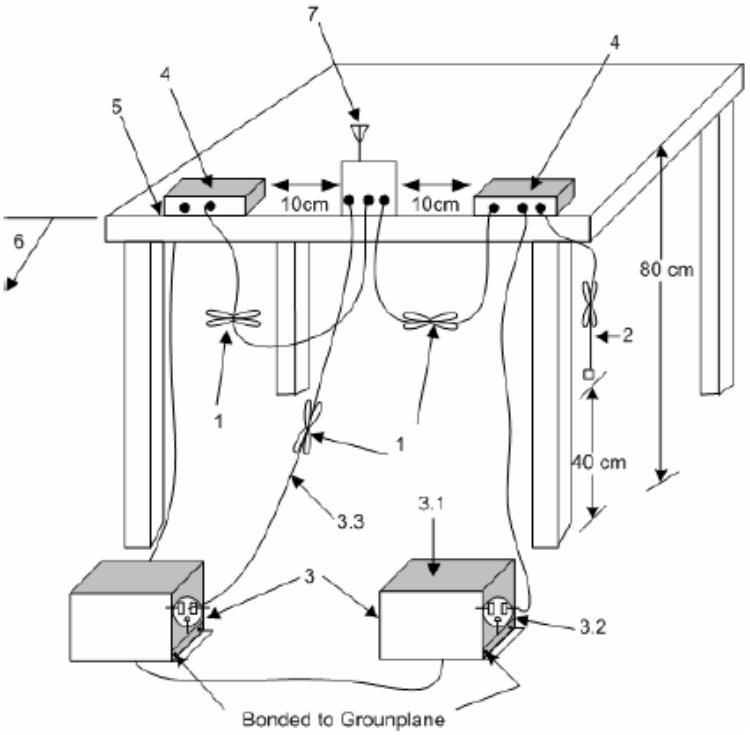
Please refer to section 3 of equipments list in this report. The following table is the setting of the receiver.

| Receiver Parameters | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

### 2.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

### 2.1.4. Test Setup Layout




1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.

2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.

3.1—All other equipment powered from additional LISN(s).

3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.

3.3—LISN at least 80 cm from nearest part of EUT chassis.

4—Non-EUT components of EUT system being tested.

5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.

6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

### 2.1.5. Test Deviation

There is no deviation with the original standard.

### 2.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

### 2.1.7. Measurement Results Calculation

The measured Level is calculated using:

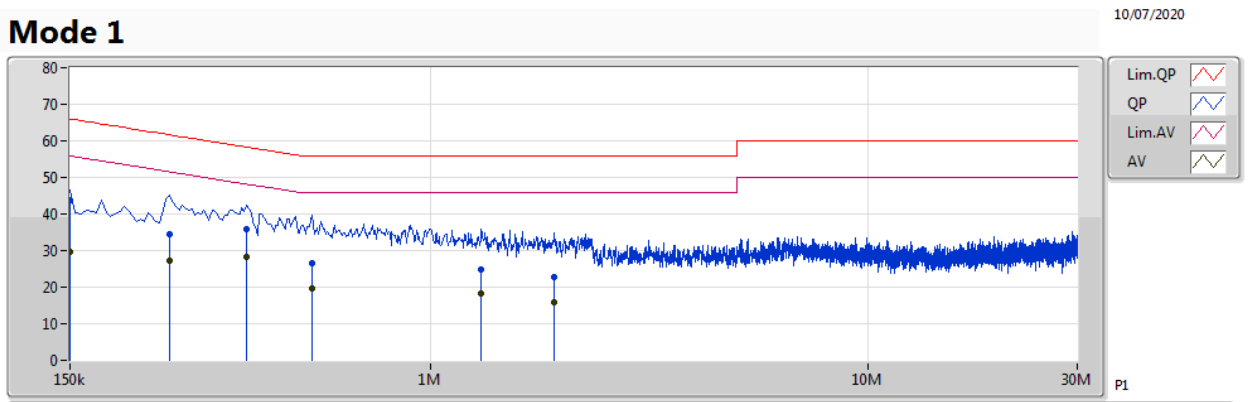
a. Corrected Reading (dBuV) = LISN Factor + Cable Loss + Read Level = Level

b. Margin = - Limit + (Read Level + LISN Factor + Cable Loss)

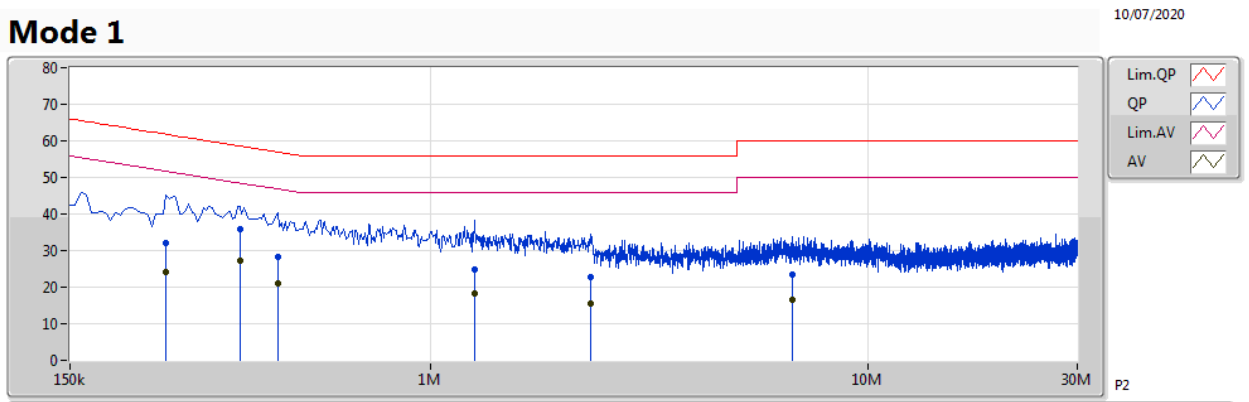
## 2.1.8. Results of AC Power Line Conducted Emissions Measurement

**Mode Configure**

| Mode | Configure |
|---|---|
| Mode 1 | CTX mode, EUT – WLAN 2.4GHz |
| Mode 2 | CTX mode, EUT – WLAN 5GHz Band 1 |
| Mode 3 | CTX mode, EUT – WLAN 5GHz Band 4 |



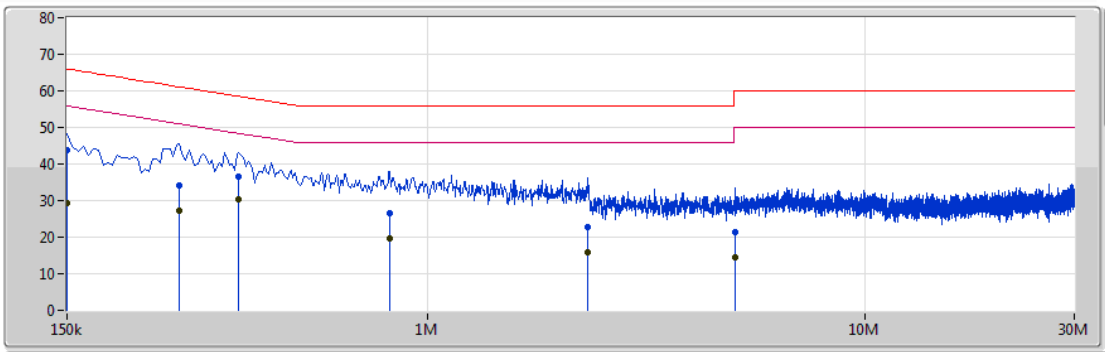

| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | AF | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 150k | 43.87 | 66.00 | -22.13 | 10.20 | Line | - | 33.67 | 0.05 | 0.05 | 10.10 |
| AV | 150k | 29.55 | 56.00 | -26.45 | 10.20 | Line | - | 19.35 | 0.05 | 0.05 | 10.10 |
| QP | 253.5k | 34.49 | 61.64 | -27.15 | 10.22 | Line | - | 24.27 | 0.05 | 0.07 | 10.10 |
| AV | 253.5k | 27.31 | 51.64 | -24.33 | 10.22 | Line | - | 17.09 | 0.05 | 0.07 | 10.10 |
| QP | 379.5k | 35.77 | 58.29 | -22.52 | 10.23 | Line | - | 25.54 | 0.05 | 0.08 | 10.10 |
| AV | 379.5k | 28.29 | 48.29 | -20.00 | 10.23 | Line | "Worst" | 18.06 | 0.05 | 0.08 | 10.10 |
| QP | 537k | 26.65 | 56.00 | -29.35 | 10.24 | Line | - | 16.41 | 0.05 | 0.09 | 10.10 |
| AV | 537k | 19.66 | 46.00 | -26.34 | 10.24 | Line | - | 9.42 | 0.05 | 0.09 | 10.10 |
| QP | 1.307M | 24.95 | 56.00 | -31.05 | 10.31 | Line | - | 14.64 | 0.07 | 0.14 | 10.10 |
| AV | 1.307M | 18.13 | 46.00 | -27.87 | 10.31 | Line | - | 7.82 | 0.07 | 0.14 | 10.10 |
| QP | 1.914M | 22.68 | 56.00 | -33.32 | 10.35 | Line | - | 12.33 | 0.09 | 0.16 | 10.10 |
| AV | 1.914M | 15.86 | 46.00 | -30.14 | 10.35 | Line | - | 5.51 | 0.09 | 0.16 | 10.10 |



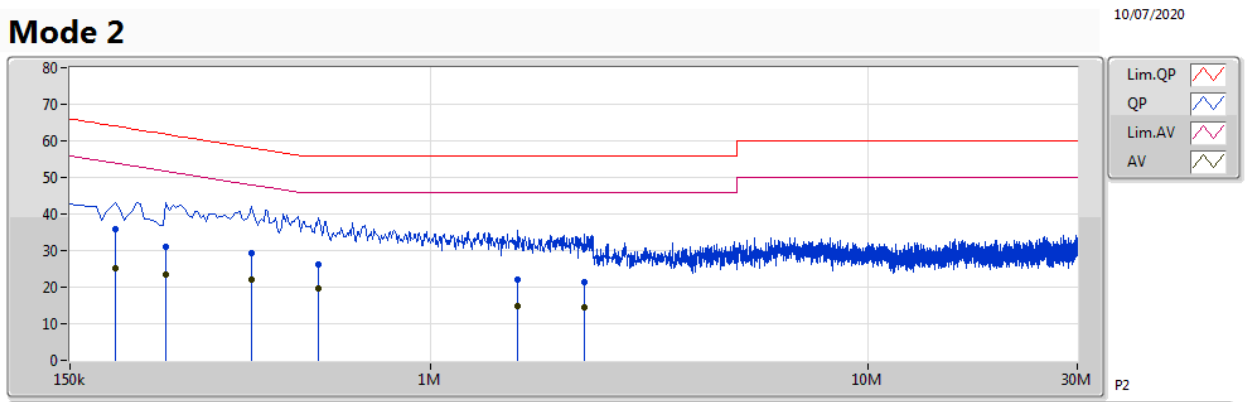

| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | AF | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 249k | 32.11 | 61.79 | -29.68 | 10.22 | Neutral | - | 21.89 | 0.05 | 0.07 | 10.10 |
| AV | 249k | 24.13 | 51.79 | -27.66 | 10.22 | Neutral | - | 13.91 | 0.05 | 0.07 | 10.10 |
| QP | 366k | 35.75 | 58.60 | -22.85 | 10.23 | Neutral | - | 25.52 | 0.05 | 0.08 | 10.10 |
| AV | 366k | 27.26 | 48.60 | -21.34 | 10.23 | Neutral | "Worst" | 17.03 | 0.05 | 0.08 | 10.10 |
| QP | 447k | 28.18 | 56.94 | -28.76 | 10.23 | Neutral | - | 17.95 | 0.05 | 0.08 | 10.10 |
| AV | 447k | 21.15 | 46.94 | -25.79 | 10.23 | Neutral | - | 10.92 | 0.05 | 0.08 | 10.10 |
| QP | 1.257M | 24.98 | 56.00 | -31.02 | 10.30 | Neutral | - | 14.68 | 0.07 | 0.13 | 10.10 |
| AV | 1.257M | 18.22 | 46.00 | -27.78 | 10.30 | Neutral | - | 7.92 | 0.07 | 0.13 | 10.10 |
| QP | 2.315M | 22.65 | 56.00 | -33.35 | 10.35 | Neutral | - | 12.30 | 0.09 | 0.16 | 10.10 |
| AV | 2.315M | 15.67 | 46.00 | -30.33 | 10.35 | Neutral | - | 5.32 | 0.09 | 0.16 | 10.10 |
| QP | 6.72M | 23.59 | 60.00 | -36.41 | 10.43 | Neutral | - | 13.16 | 0.16 | 0.16 | 10.11 |
| AV | 6.72M | 16.38 | 50.00 | -33.62 | 10.43 | Neutral | - | 5.95 | 0.16 | 0.16 | 10.11 |

## Mode 2

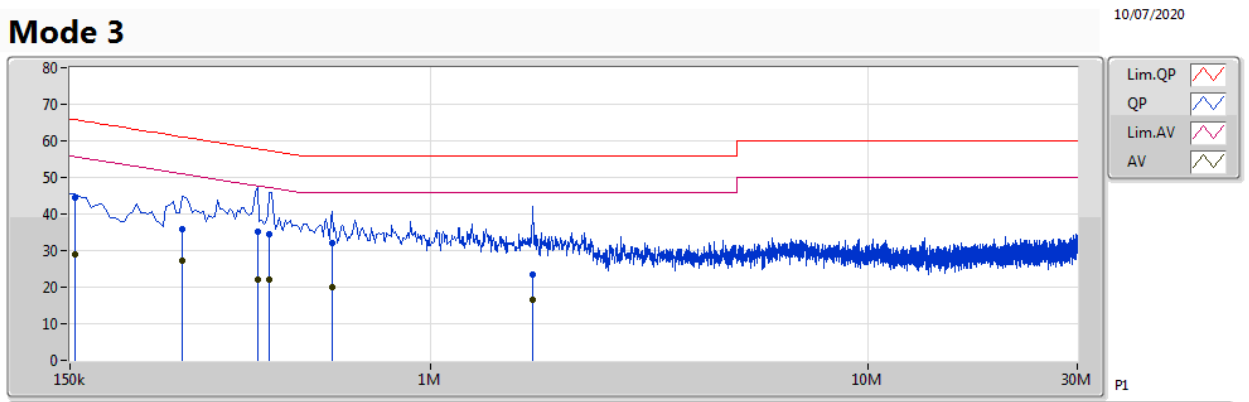
10/07/2020



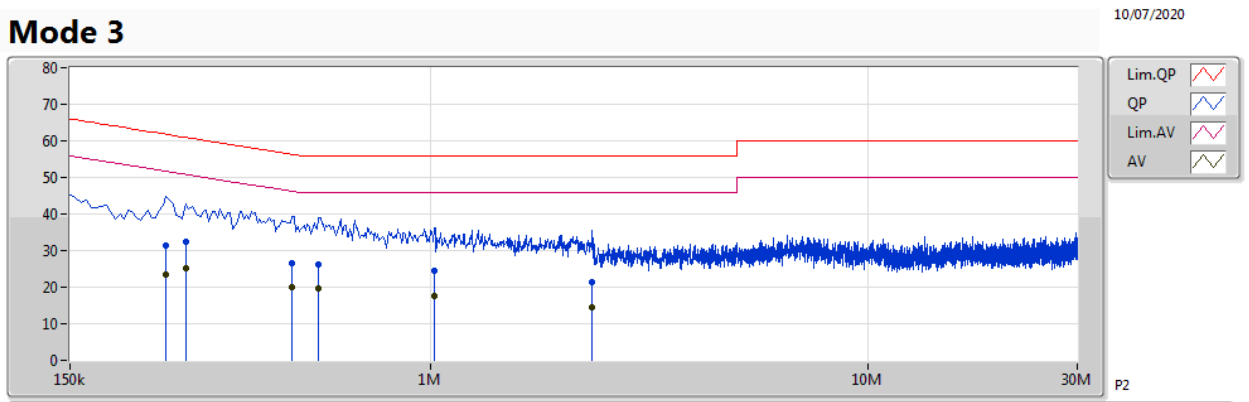

| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | AF | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 150k | 43.71 | 66.00 | -22.29 | 10.20 | Line | - | 33.51 | 0.05 | 0.05 | 10.10 |
| AV | 150k | 29.22 | 56.00 | -26.78 | 10.20 | Line | - | 19.02 | 0.05 | 0.05 | 10.10 |
| QP | 271.5k | 34.21 | 61.07 | -26.86 | 10.22 | Line | - | 23.99 | 0.05 | 0.07 | 10.10 |
| AV | 271.5k | 27.10 | 51.07 | -23.97 | 10.22 | Line | - | 16.88 | 0.05 | 0.07 | 10.10 |
| QP | 370.5k | 36.70 | 58.49 | -21.79 | 10.23 | Line | - | 26.47 | 0.05 | 0.08 | 10.10 |
| AV | 370.5k | 30.44 | 48.49 | -18.05 | 10.23 | Line | "Worst" | 20.21 | 0.05 | 0.08 | 10.10 |
| QP | 820.5k | 26.42 | 56.00 | -29.58 | 10.27 | Line | - | 16.15 | 0.06 | 0.11 | 10.10 |
| AV | 820.5k | 19.67 | 46.00 | -26.33 | 10.27 | Line | - | 9.40 | 0.06 | 0.11 | 10.10 |
| QP | 2.319M | 22.72 | 56.00 | -33.28 | 10.36 | Line | - | 12.36 | 0.10 | 0.16 | 10.10 |
| AV | 2.319M | 15.70 | 46.00 | -30.30 | 10.36 | Line | - | 5.34 | 0.10 | 0.16 | 10.10 |
| QP | 5.037M | 21.51 | 60.00 | -38.49 | 10.40 | Line | - | 11.11 | 0.15 | 0.15 | 10.10 |
| AV | 5.037M | 14.49 | 50.00 | -35.51 | 10.40 | Line | - | 4.09 | 0.15 | 0.15 | 10.10 |




| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | AF | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 190.5k | 35.90 | 64.01 | -28.11 | 10.22 | Neutral | - | 25.68 | 0.05 | 0.07 | 10.10 |
| AV | 190.5k | 25.13 | 54.01 | -28.88 | 10.22 | Neutral | - | 14.91 | 0.05 | 0.07 | 10.10 |
| QP | 249k | 30.97 | 61.79 | -30.82 | 10.22 | Neutral | - | 20.75 | 0.05 | 0.07 | 10.10 |
| AV | 249k | 23.46 | 51.79 | -28.33 | 10.22 | Neutral | - | 13.24 | 0.05 | 0.07 | 10.10 |
| QP | 388.5k | 29.16 | 58.10 | -28.94 | 10.23 | Neutral | - | 18.93 | 0.05 | 0.08 | 10.10 |
| AV | 388.5k | 22.14 | 48.10 | -25.96 | 10.23 | Neutral | "Worst" | 11.91 | 0.05 | 0.08 | 10.10 |
| QP | 555k | 26.31 | 56.00 | -29.69 | 10.24 | Neutral | - | 16.07 | 0.05 | 0.09 | 10.10 |
| AV | 555k | 19.51 | 46.00 | -26.49 | 10.24 | Neutral | - | 9.27 | 0.05 | 0.09 | 10.10 |
| QP | 1.581M | 21.91 | 56.00 | -34.09 | 10.32 | Neutral | - | 11.59 | 0.07 | 0.15 | 10.10 |
| AV | 1.581M | 15.00 | 46.00 | -31.00 | 10.32 | Neutral | - | 4.68 | 0.07 | 0.15 | 10.10 |
| QP | 2.243M | 21.47 | 56.00 | -34.53 | 10.34 | Neutral | - | 11.13 | 0.08 | 0.16 | 10.10 |
| AV | 2.243M | 14.58 | 46.00 | -31.42 | 10.34 | Neutral | - | 4.24 | 0.08 | 0.16 | 10.10 |




| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | AF | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 154.5k | 44.58 | 65.75 | -21.17 | 10.21 | Line | "Worst" | 34.37 | 0.05 | 0.06 | 10.10 |
| AV | 154.5k | 28.94 | 55.75 | -26.81 | 10.21 | Line | - | 18.73 | 0.05 | 0.06 | 10.10 |
| QP | 271.5k | 35.89 | 61.07 | -25.18 | 10.22 | Line | - | 25.67 | 0.05 | 0.07 | 10.10 |
| AV | 271.5k | 27.37 | 51.07 | -23.70 | 10.22 | Line | - | 17.15 | 0.05 | 0.07 | 10.10 |
| QP | 402k | 35.15 | 57.82 | -22.67 | 10.23 | Line | - | 24.92 | 0.05 | 0.08 | 10.10 |
| AV | 402k | 21.95 | 47.82 | -25.87 | 10.23 | Line | - | 11.72 | 0.05 | 0.08 | 10.10 |
| QP | 429k | 34.34 | 57.28 | -22.94 | 10.23 | Line | - | 24.11 | 0.05 | 0.08 | 10.10 |
| AV | 429k | 22.08 | 47.28 | -25.20 | 10.23 | Line | - | 11.85 | 0.05 | 0.08 | 10.10 |
| QP | 595.5k | 31.95 | 56.00 | -24.05 | 10.25 | Line | - | 21.70 | 0.05 | 0.10 | 10.10 |
| AV | 595.5k | 19.98 | 46.00 | -26.02 | 10.25 | Line | - | 9.73 | 0.05 | 0.10 | 10.10 |
| QP | 1.712M | 23.60 | 56.00 | -32.40 | 10.33 | Line | - | 13.27 | 0.08 | 0.15 | 10.10 |
| AV | 1.712M | 16.65 | 46.00 | -29.35 | 10.33 | Line | - | 6.32 | 0.08 | 0.15 | 10.10 |




| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | AF | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 249k | 31.26 | 61.79 | -30.53 | 10.22 | Neutral | - | 21.04 | 0.05 | 0.07 | 10.10 |
| AV | 249k | 23.58 | 51.79 | -28.21 | 10.22 | Neutral | - | 13.36 | 0.05 | 0.07 | 10.10 |
| QP | 276k | 32.28 | 60.93 | -28.65 | 10.22 | Neutral | - | 22.06 | 0.05 | 0.07 | 10.10 |
| AV | 276k | 25.33 | 50.93 | -25.60 | 10.22 | Neutral | "Worst" | 15.11 | 0.05 | 0.07 | 10.10 |
| QP | 483k | 26.54 | 56.29 | -29.75 | 10.24 | Neutral | - | 16.30 | 0.05 | 0.09 | 10.10 |
| AV | 483k | 19.88 | 46.29 | -26.41 | 10.24 | Neutral | - | 9.64 | 0.05 | 0.09 | 10.10 |
| QP | 555k | 26.22 | 56.00 | -29.78 | 10.24 | Neutral | - | 15.98 | 0.05 | 0.09 | 10.10 |
| AV | 555k | 19.60 | 46.00 | -26.40 | 10.24 | Neutral | - | 9.36 | 0.05 | 0.09 | 10.10 |
| QP | 1.019M | 24.43 | 56.00 | -31.57 | 10.28 | Neutral | - | 14.15 | 0.06 | 0.12 | 10.10 |
| AV | 1.019M | 17.53 | 46.00 | -28.47 | 10.28 | Neutral | - | 7.25 | 0.06 | 0.12 | 10.10 |
| QP | 2.337M | 21.37 | 56.00 | -34.63 | 10.35 | Neutral | - | 11.02 | 0.09 | 0.16 | 10.10 |
| AV | 2.337M | 14.58 | 46.00 | -31.42 | 10.35 | Neutral | - | 4.23 | 0.09 | 0.16 | 10.10 |

## 2.2. Maximum Conducted Output Power Measurement

### 2.2.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm.. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

### 2.2.2. Measuring Instruments and Setting

Please refer to section 3 of equipments list in this report. The following table is the setting of the power meter.

| Power Meter Parameter | Setting |
|---|---|
| Filter No. | Auto |
| Measurement time | 0.135 s ~ 26 s |
| Power Sensor | E9327A |
| Power Meter | E4416A |

### 2.2.3. Test Procedures

1. Test was performed in accordance with Measurement of Digital Transmission Systems Operating under KDB558074 D01 v05r02, in section “Maximum conducted output power Method AVGPM-G”.
2. The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and enable the trigger function to get the all on time transmission. Record the average power level.
3. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

### 2.2.4. Test Setup Layout

**Maximum Conducted Output Power**

### 2.2.5. Test Deviation

There is no deviation with the original standard.

### 2.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 2.2.7. Test Result of Maximum Conducted Output Power

**Configuration IEEE 802.11b**

**<1Mbps, Ant. 1, 1S1T, SISO>**

| Channel | Frequency | Conducted Power (dBm) | Antenna Gain (dBi) | Max. Limit (dBm) | Result |
|---|---|---|---|---|---|
| 1 | 2412 MHz | 22.12 | 3.10 | 30.00 | PASS |
| 6 | 2437 MHz | 22.89 | 3.88 | 30.00 | PASS |
| 11 | 2462 MHz | 22.38 | 3.51 | 30.00 | PASS |

Note:

2412 MHz= Antenna Gain= 3.10dBi <6dBi, so the limit doesn't reduce.

2437 MHz= Antenna Gain= 3.88dBi <6dBi, so the limit doesn't reduce.

2462 MHz= Antenna Gain= 3.51dBi <6dBi, so the limit doesn't reduce.

**Configuration IEEE 802.11g**

**<6Mbps, Ant. 1+2, 1S2T, CDD>**

| Channel | Frequency | Conducted Power (dBm) | | Total Conducted Power (dBm) | Antenna Gain (dBi) | Max. Limit (dBm) | Result |
|---|---|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | | | |
| 1 | 2412 MHz | 18.98 | 18.82 | 21.91 | 3.10 | 30.00 | PASS |
| 6 | 2437 MHz | 21.95 | 21.48 | 24.73 | 3.88 | 30.00 | PASS |
| 11 | 2462 MHz | 21.47 | 21.01 | 24.26 | 3.51 | 30.00 | PASS |

Note:

2412 MHz= Antenna Gain= 3.10dBi <6dBi, so the limit doesn't reduce.

2437 MHz= Antenna Gain= 3.88dBi <6dBi, so the limit doesn't reduce.

2462 MHz= Antenna Gain= 3.51dBi <6dBi, so the limit doesn't reduce.

**Configuration IEEE 802.11ax 20MHz**

**<MCS0, Ant. 1+2, 1S2T, CDD>**

| Channel | Frequency | Conducted Power (dBm) | | Total Conducted Power (dBm) | Antenna Gain (dBi) | Max. Limit (dBm) | Result |
|---|---|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | | | |
| 1 | 2412 MHz | 19.16 | 19.13 | 22.16 | 3.10 | 30.00 | PASS |
| 6 | 2437 MHz | 22.14 | 21.51 | 24.85 | 3.88 | 30.00 | PASS |
| 11 | 2462 MHz | 21.67 | 21.11 | 24.41 | 3.51 | 30.00 | PASS |

Note:

2412 MHz= Antenna Gain= 3.10dBi <6dBi, so the limit doesn't reduce.

2437 MHz= Antenna Gain= 3.88dBi <6dBi, so the limit doesn't reduce.

2462 MHz= Antenna Gain= 3.51dBi <6dBi, so the limit doesn't reduce.

**<MCS0, Ant. 1+2, 1S2T, TXBF>**

| Channel | Frequency | Conducted Power (dBm) | | Total Conducted Power (dBm) | Directional Gain (dBi) | Max. Limit (dBm) | Result |
|---|---|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | | | |
| 1 | 2412 MHz | 19.05 | 19.08 | 22.08 | 5.07 | 30.00 | PASS |
| 6 | 2437 MHz | 22.13 | 21.64 | 24.90 | 5.01 | 30.00 | PASS |
| 11 | 2462 MHz | 21.65 | 21.03 | 24.36 | 5.19 | 30.00 | PASS |

Note:

2412 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.07dBi<6dBi, so the limit doesn't reduce.

2437 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.01dBi<6dBi, so the limit doesn't reduce.

2462 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.19dBi<6dBi, so the limit doesn't reduce.

**Configuration IEEE 802.11ax 40MHz**

**<MCS0, Ant. 1+2, 1S2T, CDD>**

| Channel | Frequency | Conducted Power (dBm) | | Total Conducted Power (dBm) | Directional Gain (dBi) | Max. Limit (dBm) | Result |
|---|---|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | | | |
| 3 | 2422 MHz | 18.76 | 18.79 | 21.79 | 3.48 | 30.00 | PASS |
| 6 | 2437 MHz | 20.91 | 20.61 | 23.77 | 3.88 | 30.00 | PASS |
| 9 | 2452 MHz | 21.50 | 21.07 | 24.30 | 3.81 | 30.00 | PASS |

Note:

2422 MHz= Antenna Gain= 3.48dBi <6dBi, so the limit doesn't reduce.

2437 MHz= Antenna Gain= 3.88dBi <6dBi, so the limit doesn't reduce.

2452 MHz= Antenna Gain= 3.81dBi <6dBi, so the limit doesn't reduce.

**<MCS0, Ant. 1+2, 1S2T, TXBF>**

| Channel | Frequency | Conducted Power (dBm) | | Total Conducted Power (dBm) | Directional Gain (dBi) | Max. Limit (dBm) | Result |
|---|---|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | | | |
| 3 | 2422 MHz | 18.76 | 18.78 | 21.78 | 5.12 | 30.00 | PASS |
| 6 | 2437 MHz | 20.90 | 20.47 | 23.70 | 5.01 | 30.00 | PASS |
| 9 | 2452 MHz | 21.48 | 21.06 | 24.29 | 5.13 | 30.00 | PASS |

Note:

2422 MHz= $Directional\ Gain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ = 5.12dBi<6dBi, so the limit doesn't reduce.

2437 MHz= $Directional\ Gain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ = 5.01dBi<6dBi, so the limit doesn't reduce.

2452 MHz= $Directional\ Gain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ = 5.13dBi<6dBi, so the limit doesn't reduce.

## 2.3. Power Spectral Density Measurement

### 2.3.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 2.3.2. Measuring Instruments and Setting

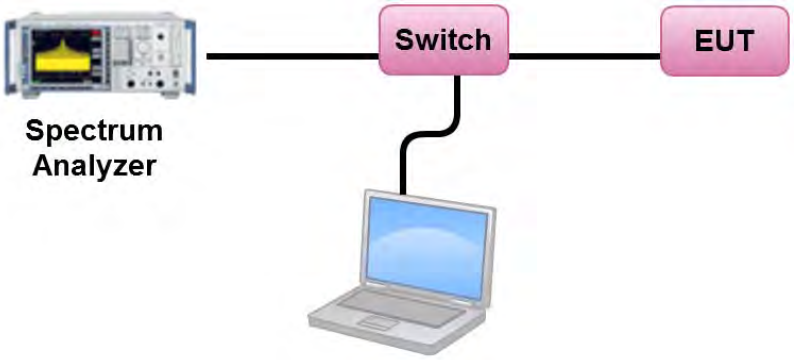
Please refer to section 3 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | Set the span to 1.5 times the DTS channel bandwidth. |
| RBW | Set the RBW ≥ 3 kHz |
| VBW | Set the VBW ≥ 3 x RBW |
| Detector | RMS |
| Trace | Average sweep count 100 |
| Sweep Time | Auto couple |

### 2.3.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with Measurement of Digital Transmission Systems Operating under KDB558074 D01 v05r02, in section “Maximum power spectral density level in the fundamental emission Method AVGPSD-1”.
3. Multiple antenna systems was performed in accordance KDB 662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements (a) Measure and sum the spectra across the outputs (bin-by-bin summing).
4. This procedure may be used when the maximum (average) conducted output power was used to demonstrate compliance to the output power limit. The EUT must be configured to transmit continuously (duty cycle ≥ 98%) to ensure that measurements are made only when the EUT is transmitting at its maximum power control level (no transmitter off time is to be considered).
5. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
   When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.

### 2.3.4. Test Setup Layout

| Power Spectral Density |
|---|
|  |



### 2.3.5. Test Deviation

There is no deviation with the original standard.

### 2.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 2.3.7. Test Result of Power Spectral Density

**Configuration IEEE 802.11b**

**<1Mbps, Ant. 1, 1S1T, SISO>**

| Channel | Frequency | Power Density (dBm/3kHz) | Antenna Gain (dBi) | Limit (dBm/3kHz) | Result |
|---|---|---|---|---|---|
| 1 | 2412 MHz | 0.05 | 3.10 | 8 | PASS |
| 6 | 2437 MHz | 0.31 | 3.88 | 8 | PASS |
| 11 | 2462 MHz | 0.65 | 3.51 | 8 | PASS |

Note 1:

Method 1 of powr density measurement of KDB 662911 is using for calculation totol power density.

Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

Note 2:

Refer to section 1.16 for duty cycle spectroum plot.

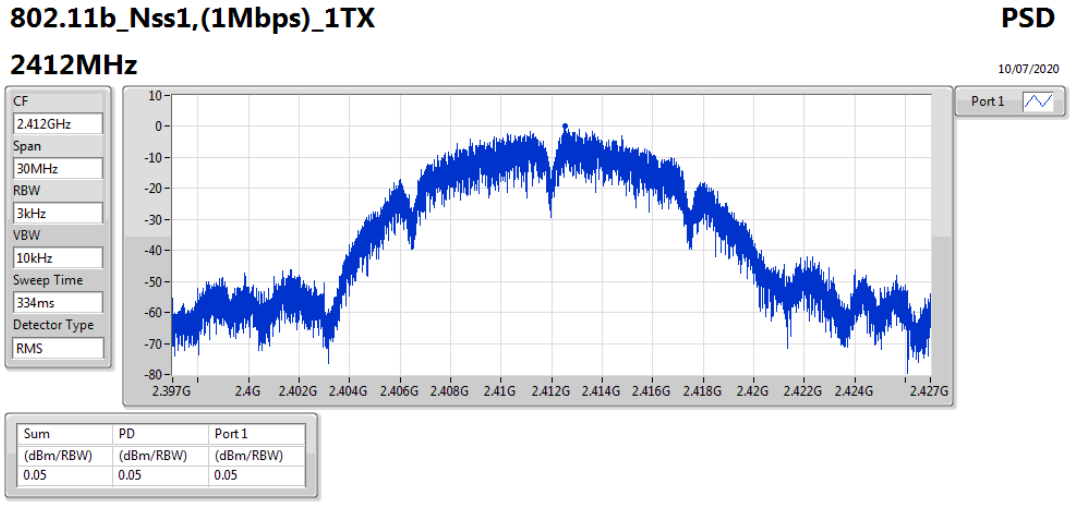
Note 3:

2412 MHz= Antenna Gain= 3.10dBi <6dBi, so the limit doesn't reduce.

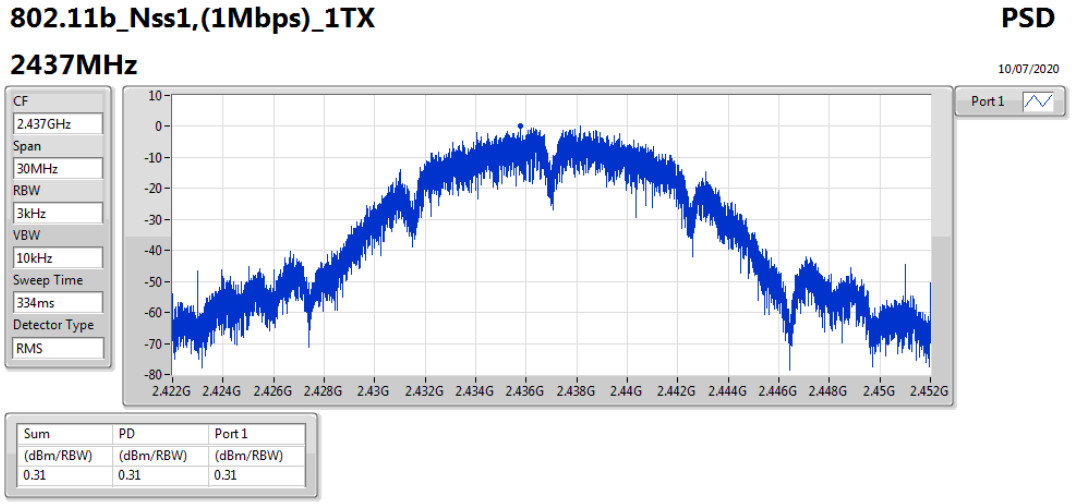
2437 MHz= Antenna Gain= 3.88dBi <6dBi, so the limit doesn't reduce.

2462 MHz= Antenna Gain= 3.51dBi <6dBi, so the limit doesn't reduce.

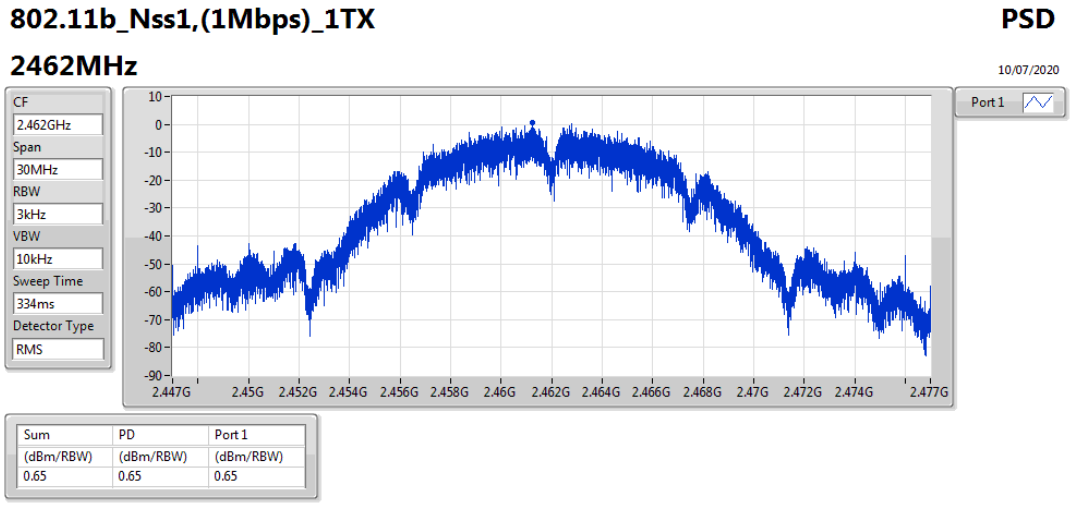
**Power Density Plot on Configuration IEEE 802.11b 1Mbps / CH 1 / Ant. 1 (1S1T, SISO)**




**Power Density Plot on Configuration IEEE 802.11b 1Mbps / CH 6 / Ant. 1 (1S1T, SISO)**



**Power Density Plot on Configuration IEEE 802.11b 1Mbps / CH 11 / Ant. 1 (1S1T, SISO)**



**Configuration IEEE 802.11g**

**<6Mbps, Ant. 1+2, 1S2T, CDD>**

| Channel | Frequency | Power Density (dBm/3kHz) | Directional Gain (dBi) | Limit (dBm/3kHz) | Result |
|---|---|---|---|---|---|
| 1 | 2412 MHz | -3.66 | 5.07 | 8 | PASS |
| 6 | 2437 MHz | -1.65 | 5.01 | 8 | PASS |
| 11 | 2462 MHz | -2.17 | 5.19 | 8 | PASS |

Note 1:

Method 1 of powr density measurement of KDB 662911 is using for calculation totol power density.

Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

Note 2:

Refer to section 1.16 for duty cycle spectroum plot.

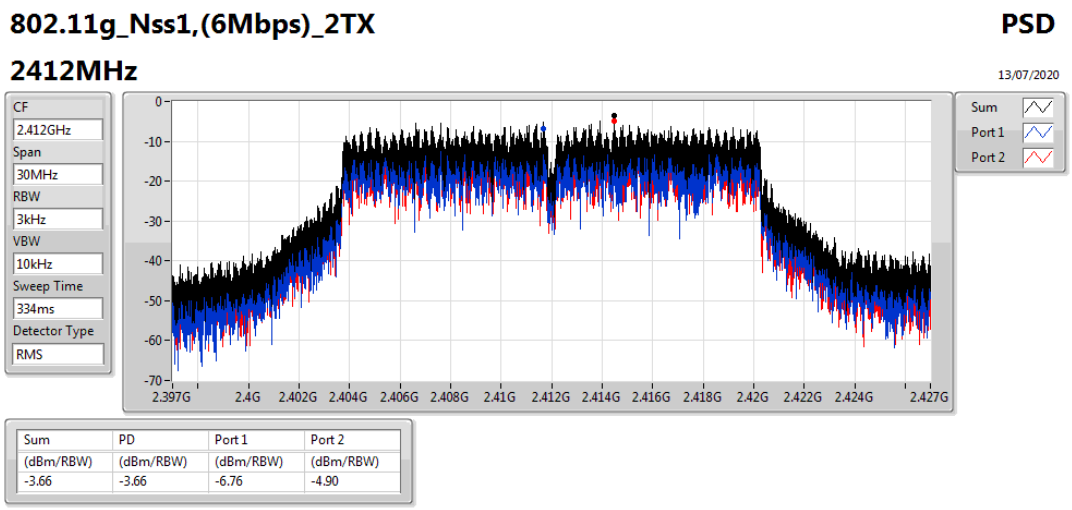
Note 3:

2412 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.07dBi <6dBi, so the limit doesn't reduce.

2437 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.01dBi <6dBi, so the limit doesn't reduce.

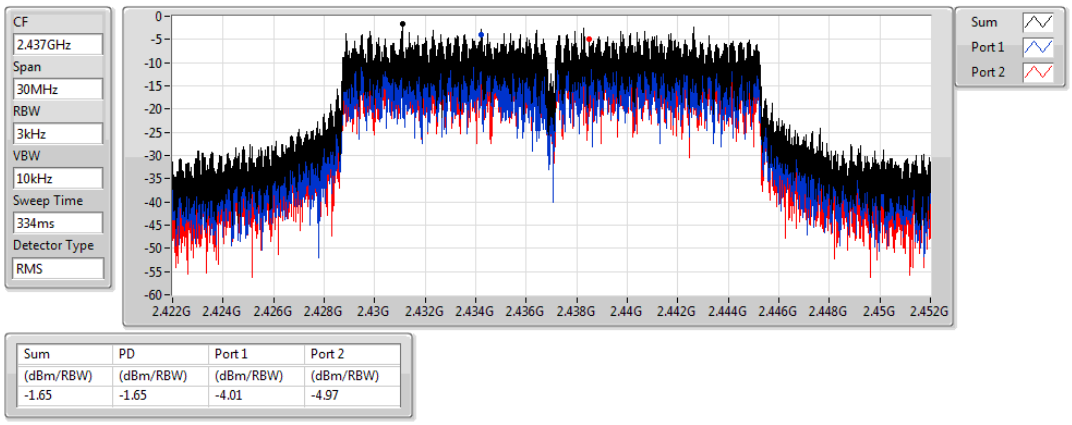
2462 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.19dBi <6dBi, so the limit doesn't reduce.

**Power Density Plot on Configuration IEEE 802.11g 6Mbps / CH 1 / Ant. 1+2 (1S2T, CDD)**



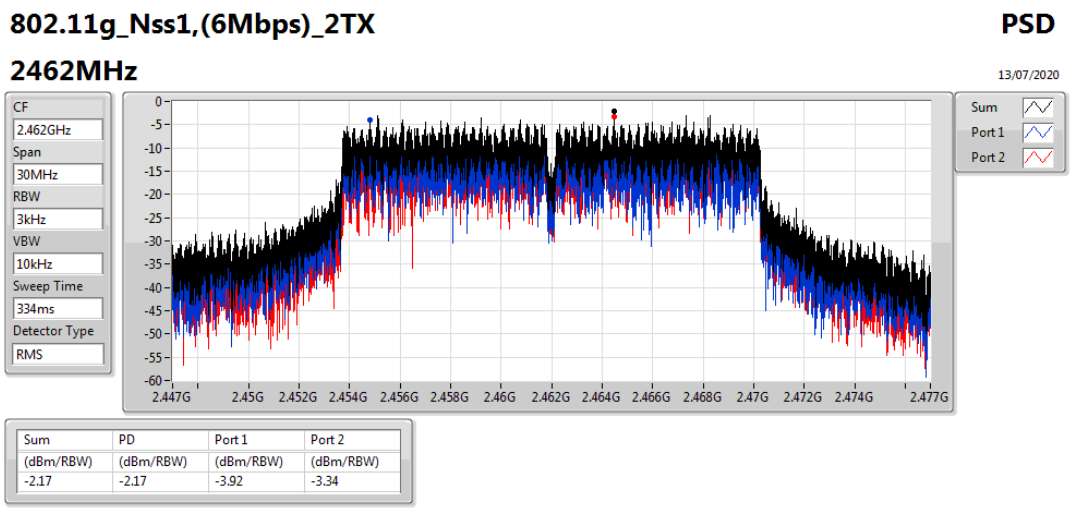

| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -3.66 | -3.66 | -6.76 | -4.90 |

**Power Density Plot on Configuration IEEE 802.11g 6Mbps / CH 6 / Ant. 1+2 (1S2T, CDD)**




| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -1.65 | -1.65 | -4.01 | -4.97 |

**Power Density Plot on Configuration IEEE 802.11g 6Mbps / CH 11 / Ant. 1+2 (1S2T, CDD)**




| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -2.17 | -2.17 | -3.92 | -3.34 |

**Configuration IEEE 802.11ax 20MHz**

**<MCS0, Ant. 1+2, 1S2T, CDD>**

| Channel | Frequency | Power Density (dBm/3kHz) | Directional Gain (dBi) | Limit (dBm/3kHz) | Result |
|---|---|---|---|---|---|
| 1 | 2412 MHz | -3.75 | 5.07 | 8 | PASS |
| 6 | 2437 MHz | -2.61 | 5.01 | 8 | PASS |
| 11 | 2462 MHz | -2.35 | 5.19 | 8 | PASS |

Note 1:

Method 1 of powr density measurement of KDB 662911 is using for calculation totol power density.

Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

Note 2:

Refer to section 1.16 for duty cycle spectroum plot.

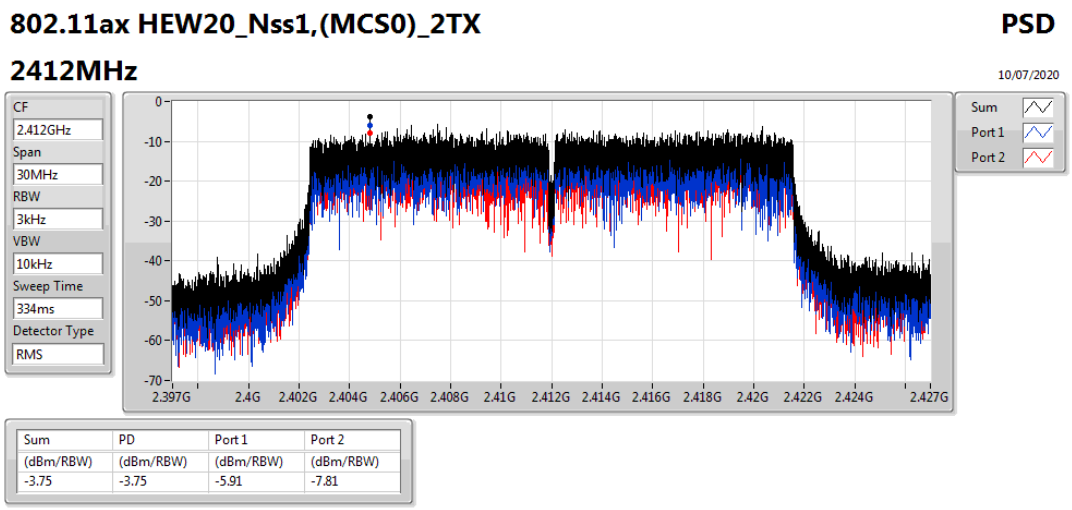
Note 3:

2412 MHz= $Directional\ Gain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.07dBi <6dBi, so the limit doesn't reduce.

2437 MHz= $Directional\ Gain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.01dBi <6dBi, so the limit doesn't reduce.

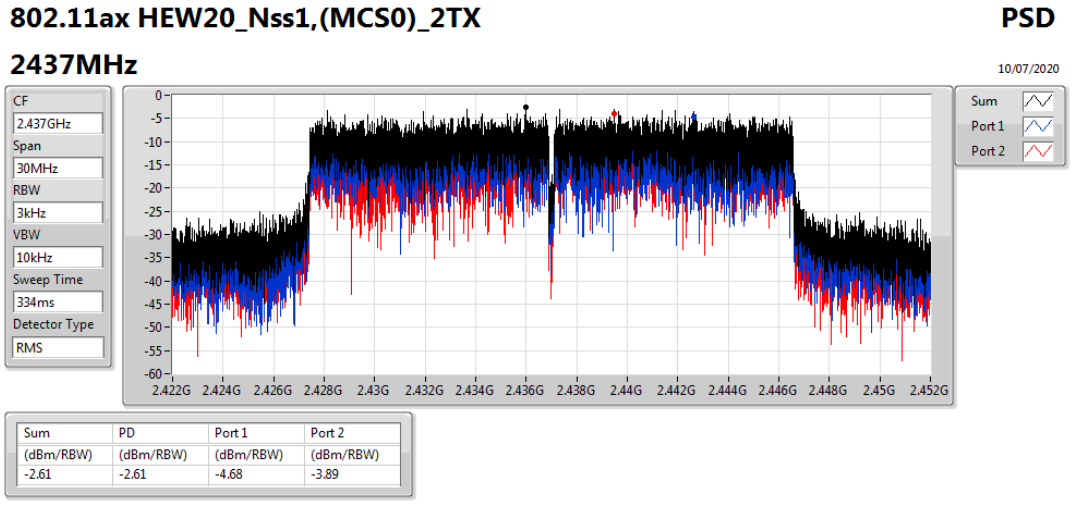
2462 MHz= $Directional\ Gain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.19dBi <6dBi, so the limit doesn't reduce.

**Power Density Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 1 / Ant. 1+2 (1S2T, CDD)**



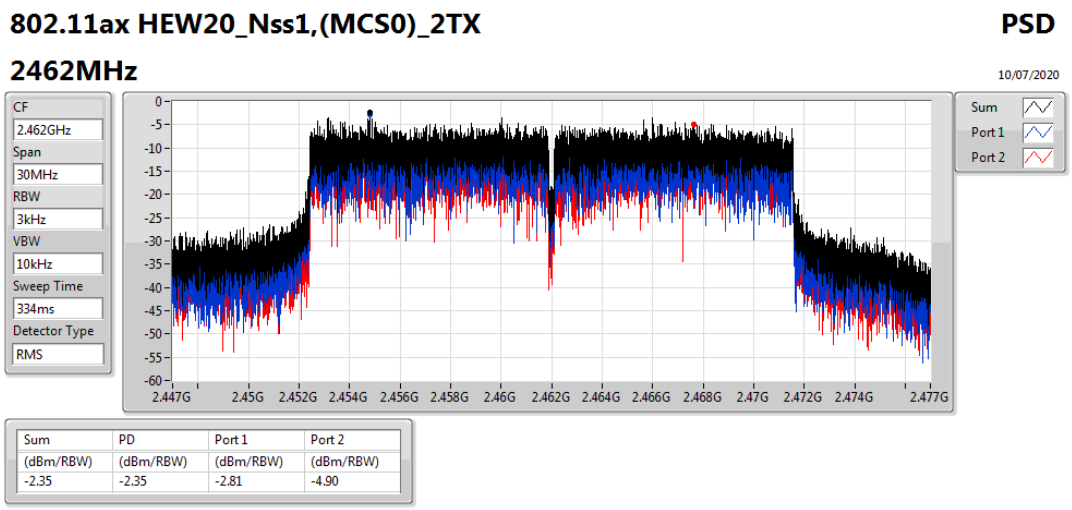

| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -3.75 | -3.75 | -5.91 | -7.81 |

**Power Density Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 6 / Ant. 1+2 (1S2T, CDD)**




| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -2.61 | -2.61 | -4.68 | -3.89 |

**Power Density Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 11 / Ant. 1+2 (1S2T, CDD)**



**<MCS0, Ant. 1+2, 1S2T, TXBF>**

| Channel | Frequency | Power Density (dBm/3kHz) | Directional Gain (dBi) | Limit (dBm/3kHz) | Result |
|---|---|---|---|---|---|
| 1 | 2412 MHz | -4.92 | 5.07 | 8 | PASS |
| 6 | 2437 MHz | -2.80 | 5.01 | 8 | PASS |
| 11 | 2462 MHz | -1.76 | 5.19 | 8 | PASS |

Note 1:

Method 1 of powr density measurement of KDB 662911 is using for calculation totol power density.

Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

Note 2:

Refer to section 1.16 for duty cycle spectroum plot.

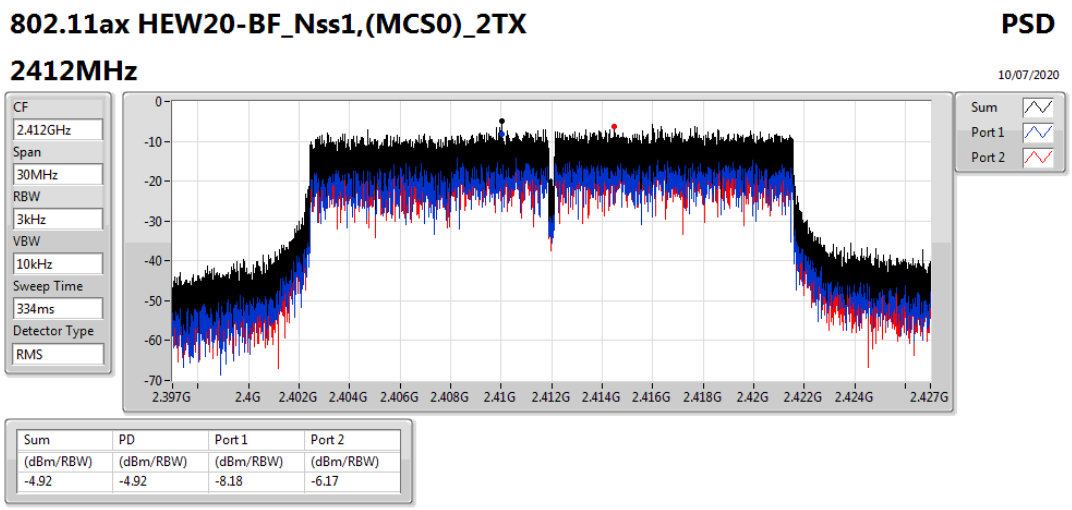
Note 3:

2412 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.07dBi <6dBi, so the limit doesn't reduce.

2437 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.01dBi <6dBi, so the limit doesn't reduce.

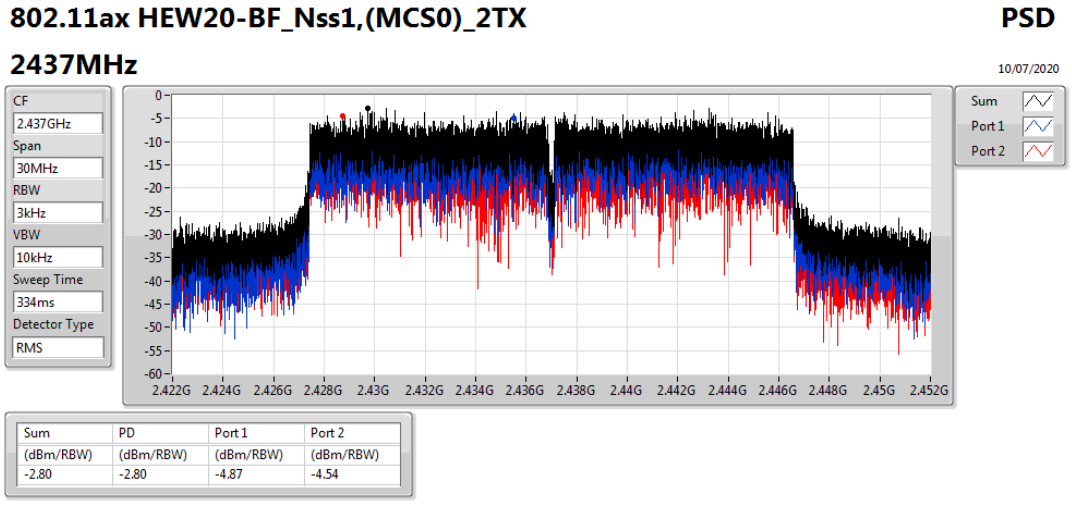
2462 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.19dBi <6dBi, so the limit doesn't reduce.

**Power Density Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 1 / Ant. 1+2 (1S2T, TXBF)**



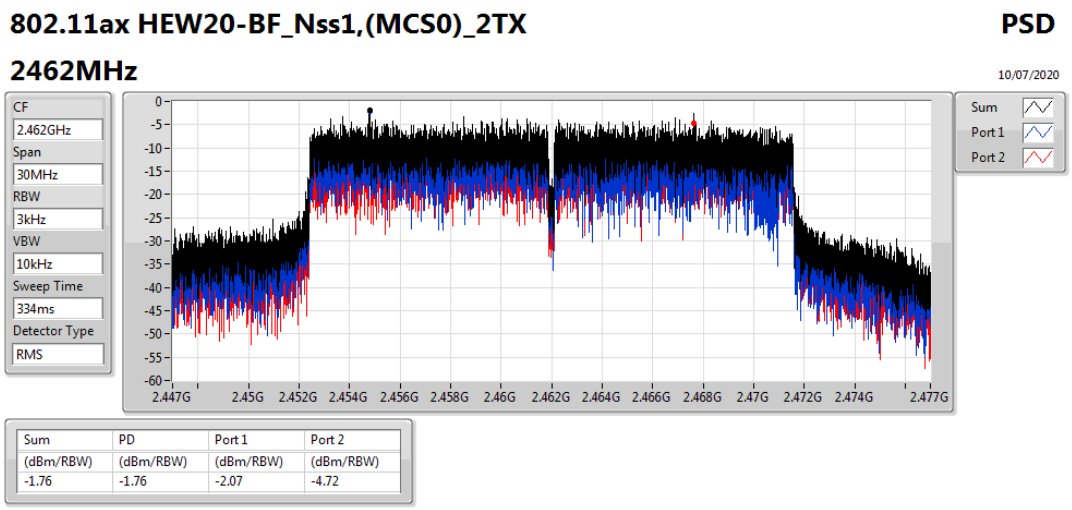

| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -4.92 | -4.92 | -8.18 | -6.17 |

**Power Density Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 6 / Ant. 1+2 (1S2T, TXBF)**




| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -2.80 | -2.80 | -4.87 | -4.54 |

**Power Density Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 11 / Ant. 1+2 (1S2T, TXBF)**



**Configuration IEEE 802.11ax 40MHz**

**<MCS0, Ant. 1+2, 1S2T, CDD>**

| Channel | Frequency | Power Density (dBm/3kHz) | Directional Gain (dBi) | Limit (dBm/3kHz) | Result |
|---|---|---|---|---|---|
| 3 | 2422 MHz | -7.58 | 5.12 | 8 | PASS |
| 6 | 2437 MHz | -6.66 | 5.01 | 8 | PASS |
| 9 | 2452 MHz | -5.26 | 5.13 | 8 | PASS |

Note 1:

Method 1 of powr density measurement of KDB 662911 is using for calculation totol power density.

Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

Note 2:

Refer to section 1.16 for duty cycle spectroum plot.

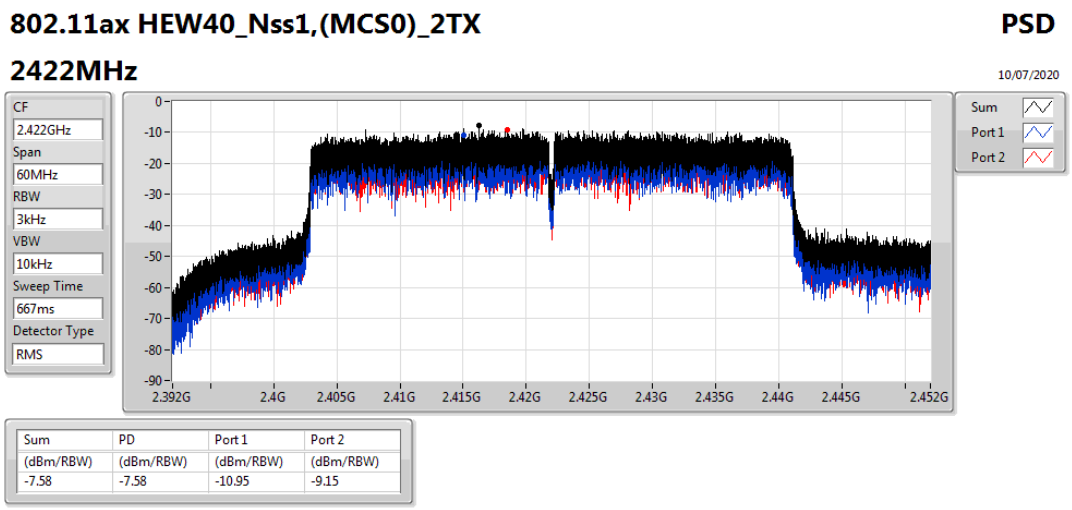
Note 3:

2422 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.12dBi <6dBi, so the limit doesn't reduce.

2437 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.01dBi <6dBi, so the limit doesn't reduce.

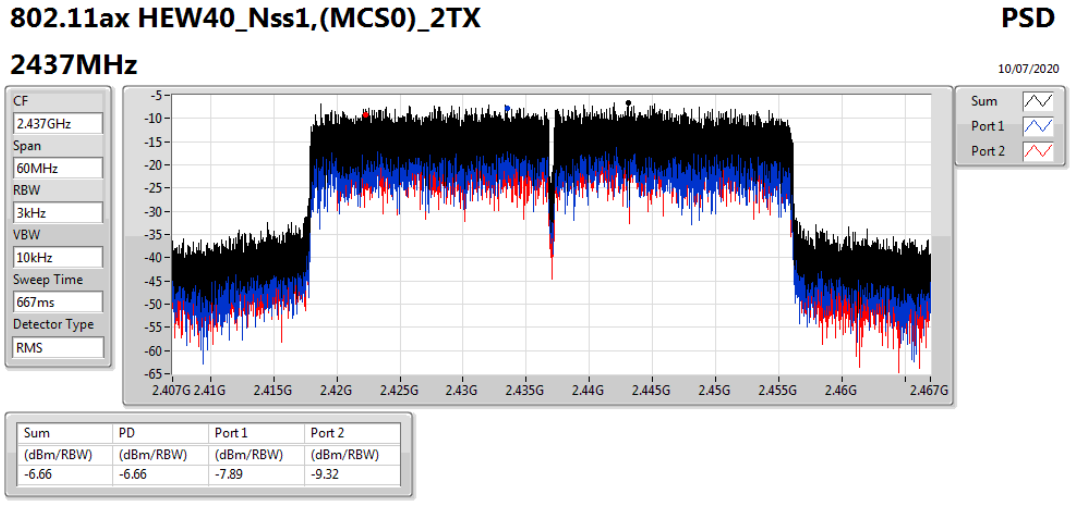
2452 MHz= $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.13dBi <6dBi, so the limit doesn't reduce.

**Power Density Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 3 / Ant. 1+2 (1S2T, CDD)**



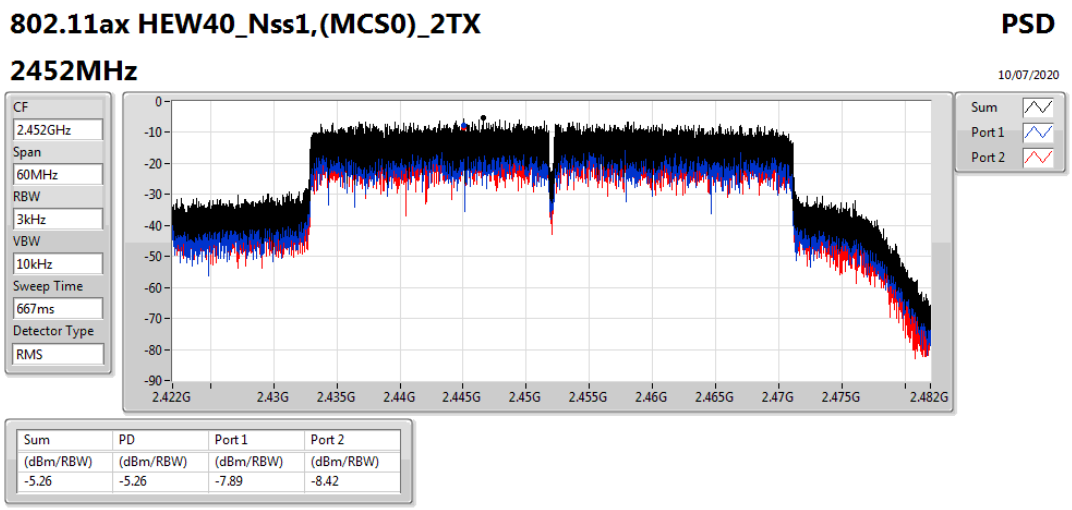

| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -7.58 | -7.58 | -10.95 | -9.15 |

**Power Density Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 6 / Ant. 1+2 (1S2T, CDD)**




| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -6.66 | -6.66 | -7.89 | -9.32 |

**Power Density Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 9 / Ant. 1+2 (1S2T, CDD)**



**<MCS0, Ant. 1+2, 1S2T, TXBF>**

| Channel | Frequency | Power Density (dBm/3kHz) | Directional Gain (dBi) | Limit (dBm/3kHz) | Result |
|---|---|---|---|---|---|
| 3 | 2422 MHz | -6.08 | 5.12 | 8 | PASS |
| 6 | 2437 MHz | -6.23 | 5.01 | 8 | PASS |
| 9 | 2452 MHz | -5.00 | 5.13 | 8 | PASS |

Note 1:

Method 1 of powr density measurement of KDB 662911 is using for calculation totol power density.

Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

Note 2:

Refer to section 1.16 for duty cycle spectroum plot.

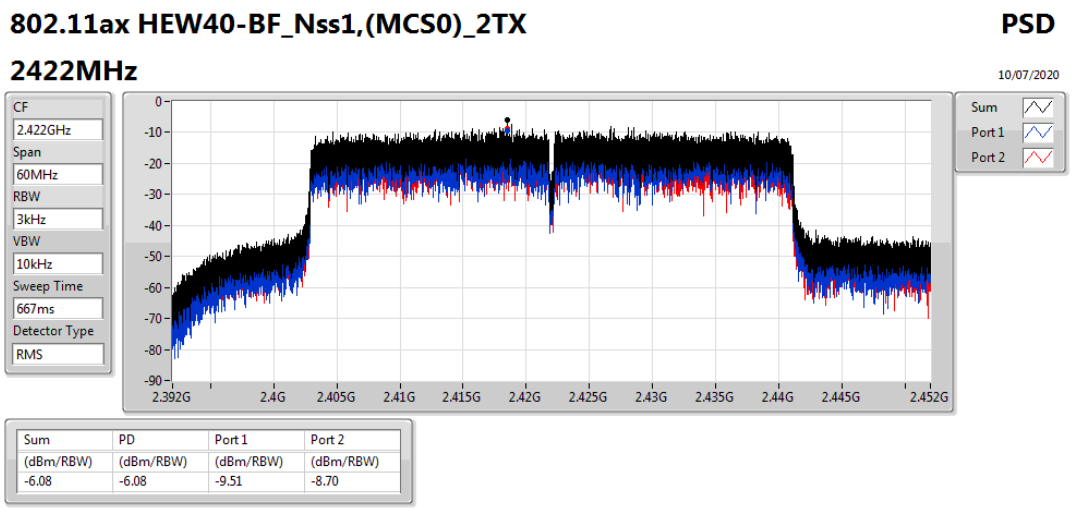
Note 3:

2422 MHz= $Directiona\ lGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ = 5.12dBi <6dBi, so the limit doesn't reduce.

2437 MHz= $Directiona\ lGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ = 5.01dBi <6dBi, so the limit doesn't reduce.

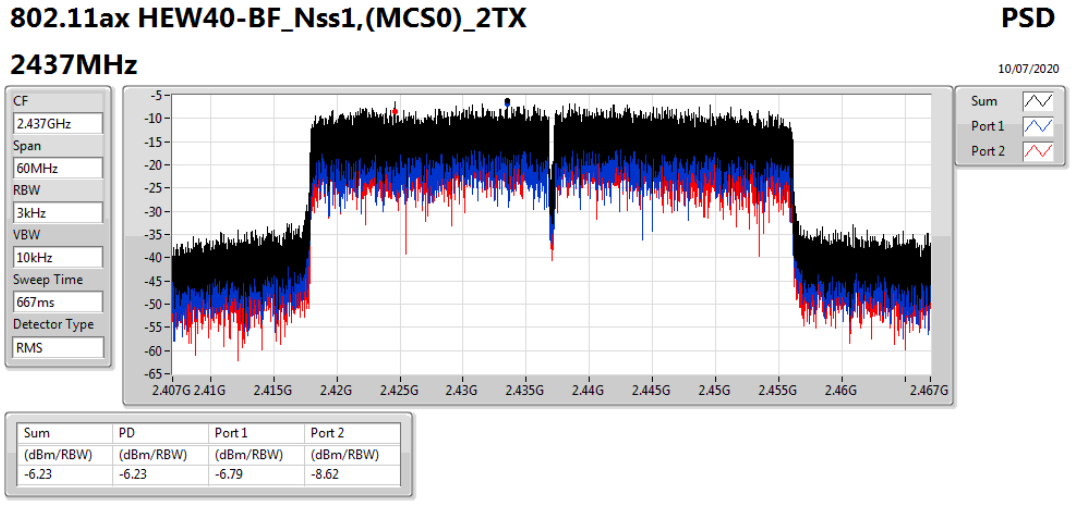
2452 MHz= $Directiona\ lGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ = 5.13dBi <6dBi, so the limit doesn't reduce.

**Power Density Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 3 / Ant. 1+2 (1S2T, TXBF)**



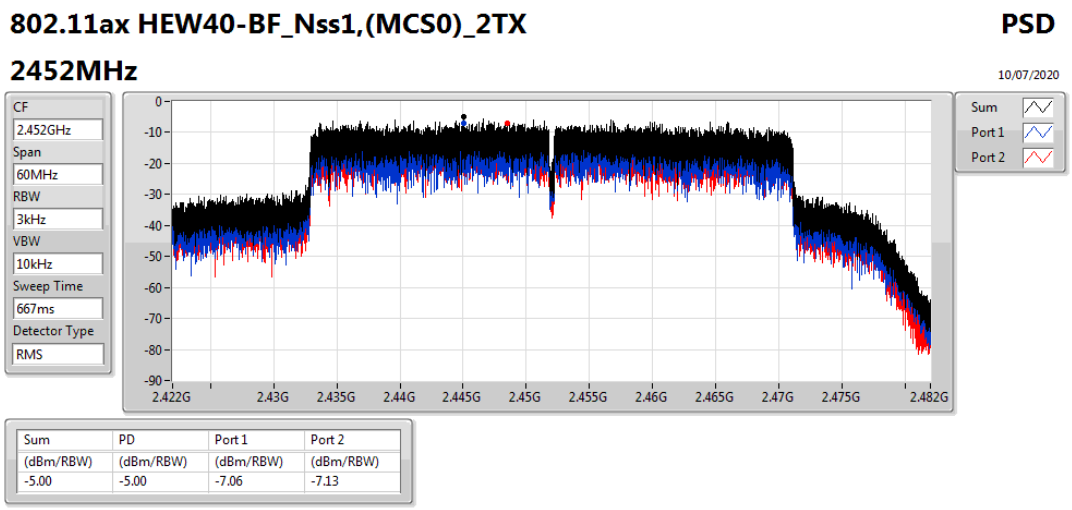

| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -6.08 | -6.08 | -9.51 | -8.70 |

**Power Density Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 6 / Ant. 1+2 (1S2T, TXBF)**




| Sum | PD | Port 1 | Port 2 |
|---|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -6.23 | -6.23 | -6.79 | -8.62 |

**Power Density Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 9 / Ant. 1+2 (1S2T, TXBF)**



## 2.4. 6dB Spectrum and 99% Occupied Bandwidth Measurement

### 2.4.1. Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

### 2.4.2. Measuring Instruments and Setting

Please refer to section 3 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

| 6dB Spectrum Bandwidth | |
|---|---|
| **Spectrum Parameters** | **Setting** |
| Attenuation | Auto |
| Span Frequency | > 6dB Bandwidth |
| RBW | 100kHz |
| VBW | ≥ 3 x RBW |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |
| **99% Occupied Bandwidth** | |
| **Spectrum Parameters** | **Setting** |
| Span | 1.5 times to 5.0 times the OBW |
| RBW | 1 % to 5 % of the OBW |
| VBW | ≥ 3 x RBW |
| Detector | Peak |
| Trace | Max Hold |

### 2.4.3. Test Procedures

For 6dB Bandwidth Measurement:

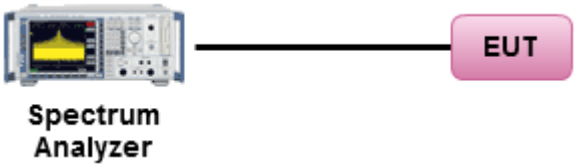
1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier frequency. A peak reading was taken; two markers were set 6 dB below the maximum level on the right and the left side of the emissions.
3. The 6dB bandwidth is the frequency difference between the two markers.

For 99% Occupied Bandwidth Measurement:

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak, Max hold mode.
2. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier frequency. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to peak.
3. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

### 2.4.4. Test Setup Layout

**DTS Bandwidth**




### 2.4.5. Test Deviation

There is no deviation with the original standard.

### 2.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 2.4.7. Test Result of 6dB Spectrum Bandwidth

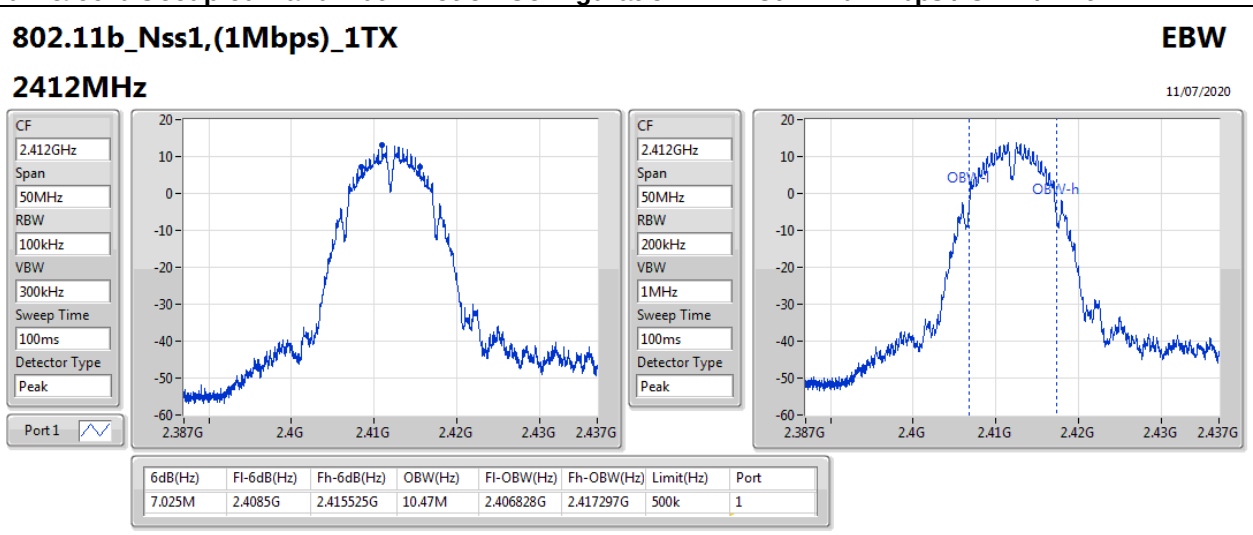
**Configuration IEEE 802.11b**

**<1Mbps, Ant. 1, 1S1T, SISO>**

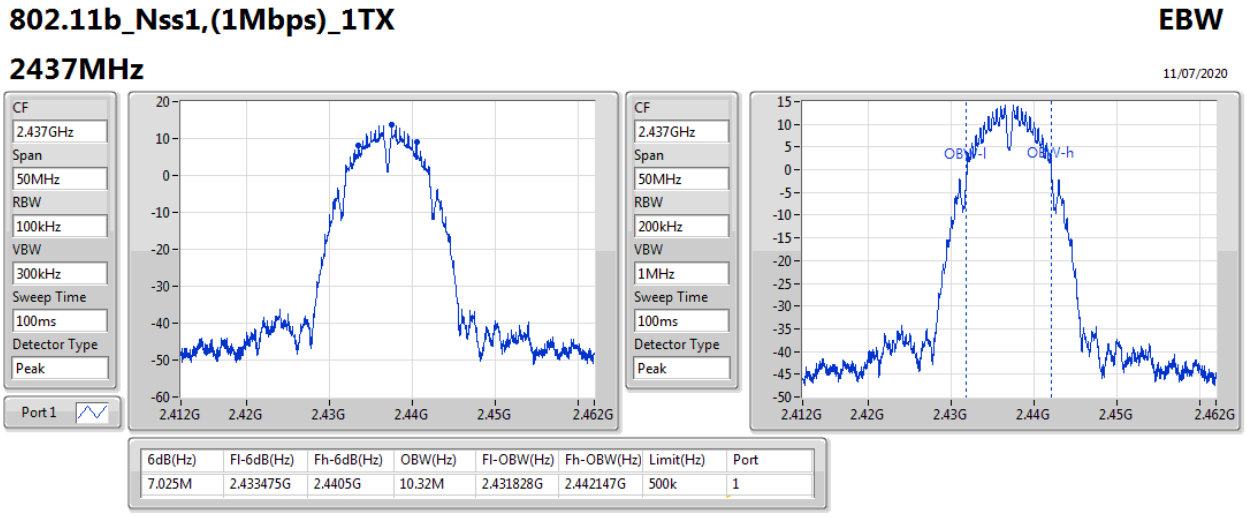
| Channel | Frequency | 6dB Bandwidth (MHz) | Min. Limit (kHz) | Test Result |
|---|---|---|---|---|
| 1 | 2412 MHz | 7.025 | 500 | PASS |
| 6 | 2437 MHz | 7.025 | 500 | PASS |
| 11 | 2462 MHz | 7.000 | 500 | PASS |

| Channel | Frequency | 99% Occupied Bandwidth (MHz) |
|---|---|---|
| 1 | 2412 MHz | 10.470 |
| 6 | 2437 MHz | 10.320 |
| 11 | 2462 MHz | 10.295 |

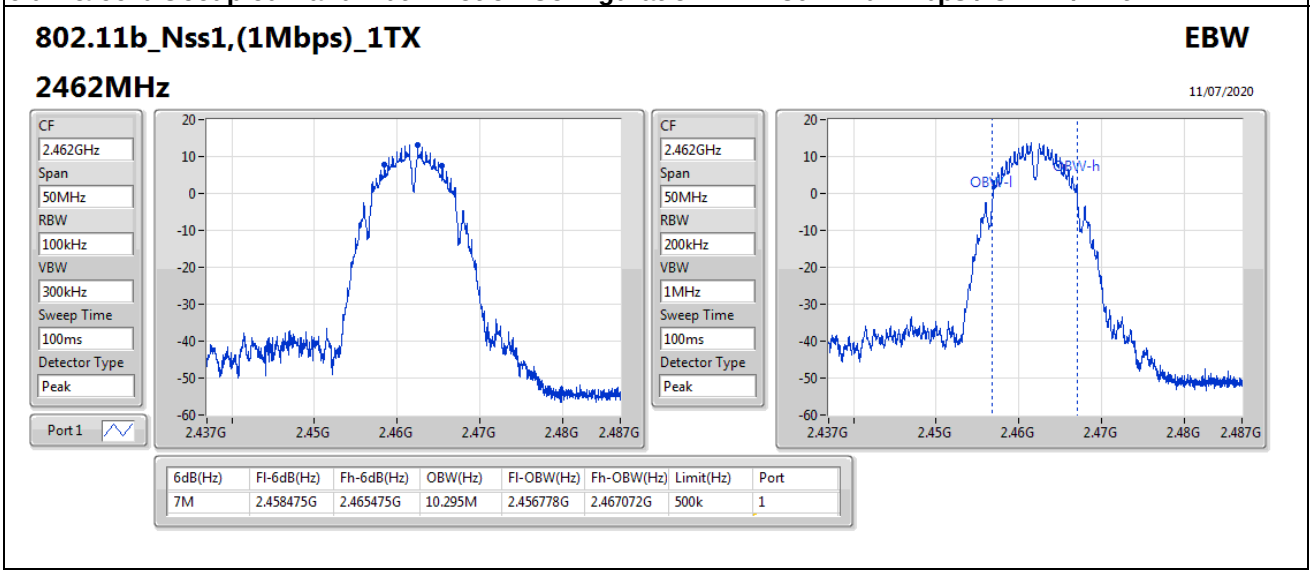
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11b 1Mbps / CH 1 / Ant. 1**




**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11b 1Mbps / CH 6 / Ant. 1**



**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11b 1Mbps / CH 11 / Ant. 1**



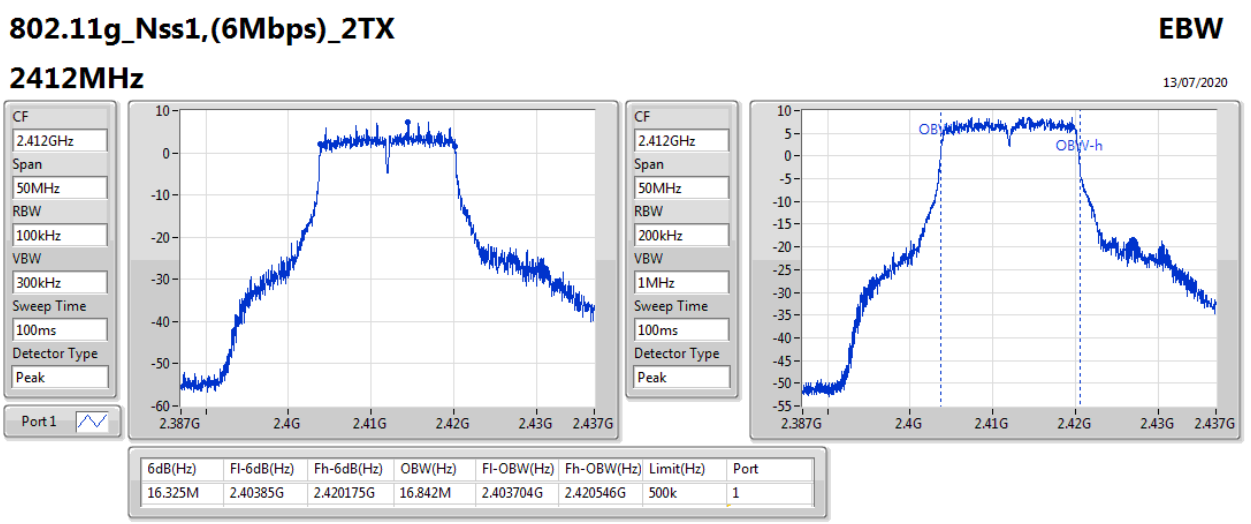
**Configuration IEEE 802.11g**

**<6Mbps, Ant. 1+2, 1S2T, CDD>**

| Channel | Frequency | 6dB Bandwidth (MHz) | | Min. Limit (kHz) | Test Result |
|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | |
| 1 | 2412 MHz | 16.325 | 16.350 | 500 | PASS |
| 6 | 2437 MHz | 16.325 | 16.325 | 500 | PASS |
| 11 | 2462 MHz | 16.275 | 16.275 | 500 | PASS |

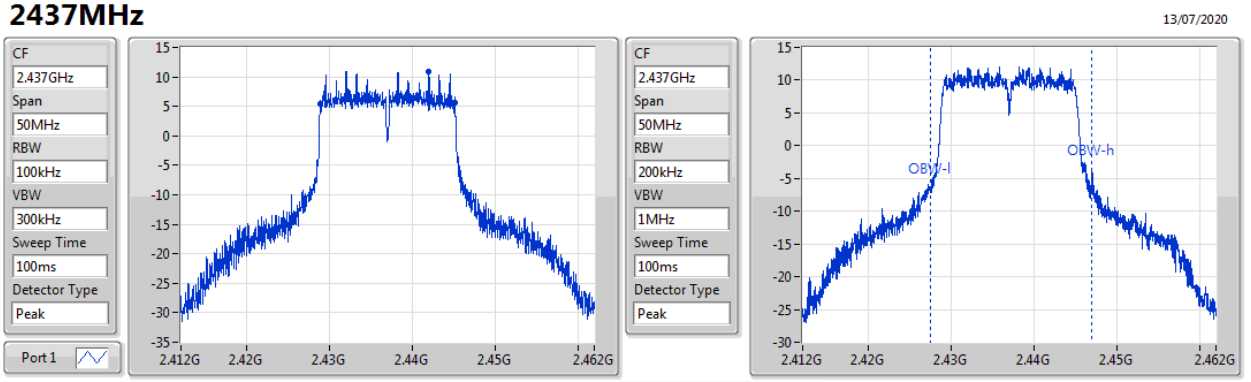
| Channel | Frequency | 99% Occupied Bandwidth (MHz) | |
|---|---|---|---|
| | | Ant. 1 | Ant. 2 |
| 1 | 2412 MHz | 16.842 | 16.742 |
| 6 | 2437 MHz | 19.465 | 17.916 |
| 11 | 2462 MHz | 18.441 | 18.066 |

**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11g 6Mbps / CH 1 / Ant. 1 (1S2T, CDD)**



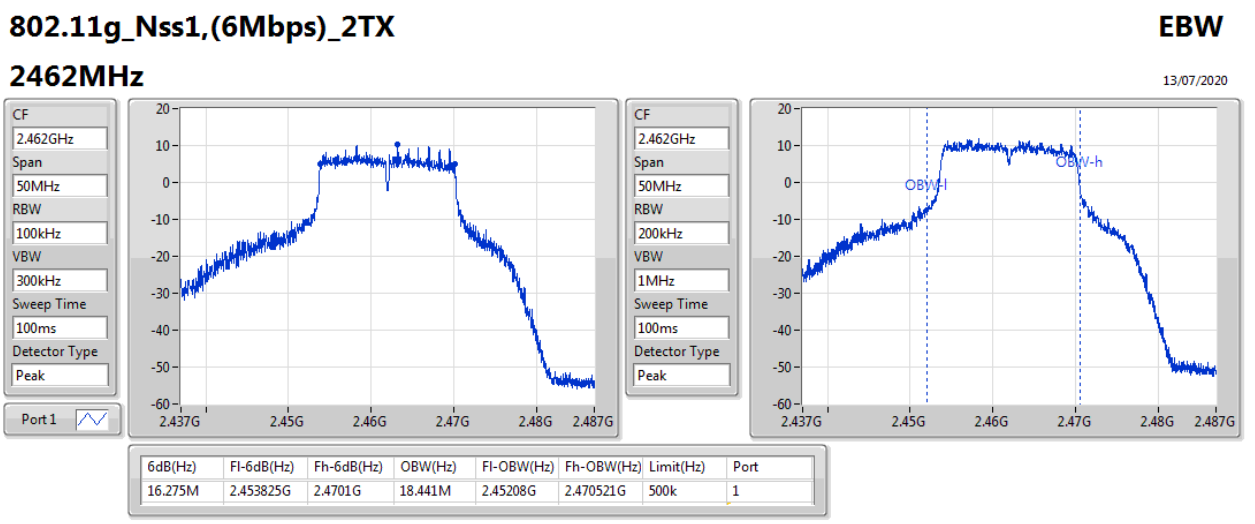

| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 16.325M | 2.40385G | 2.420175G | 16.842M | 2.403704G | 2.420546G | 500k | 1 |

**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11g 6Mbps / CH 6 / Ant. 1 (1S2T, CDD)**

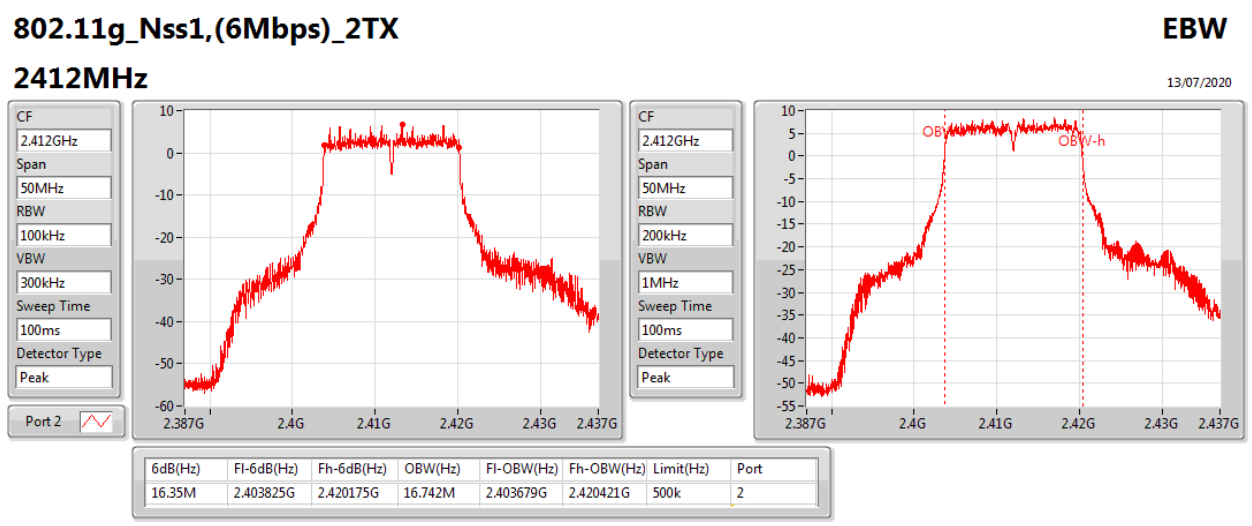



| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 16.325M | 2.428825G | 2.44515G | 19.465M | 2.427455G | 2.44692G | 500k | 1 |

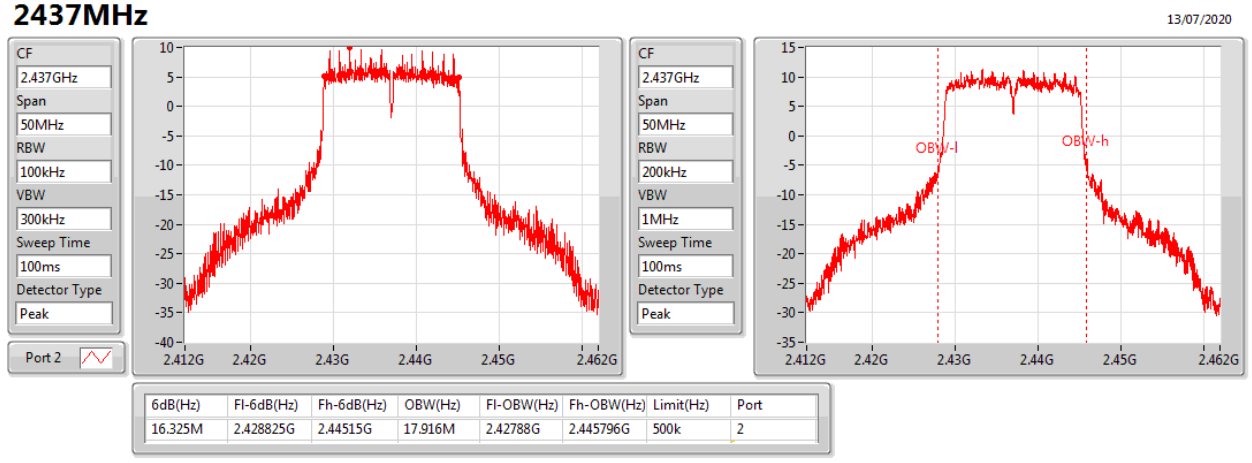
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11g 6Mbps / CH 11 / Ant. 1(1S2T, CDD)**



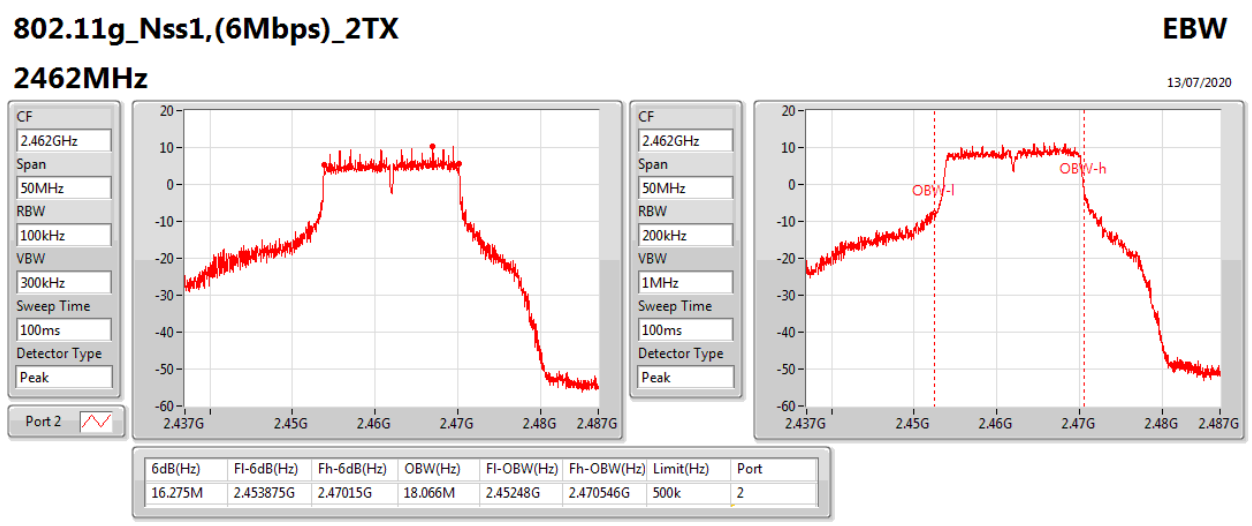
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11g 6Mbps / CH 1 / Ant. 2 (1S2T, CDD)**




**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11g 6Mbps / CH 6 / Ant. 2 (1S2T, CDD)**



**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11g 6Mbps / CH 11 / Ant. 2 (1S2T, CDD)**



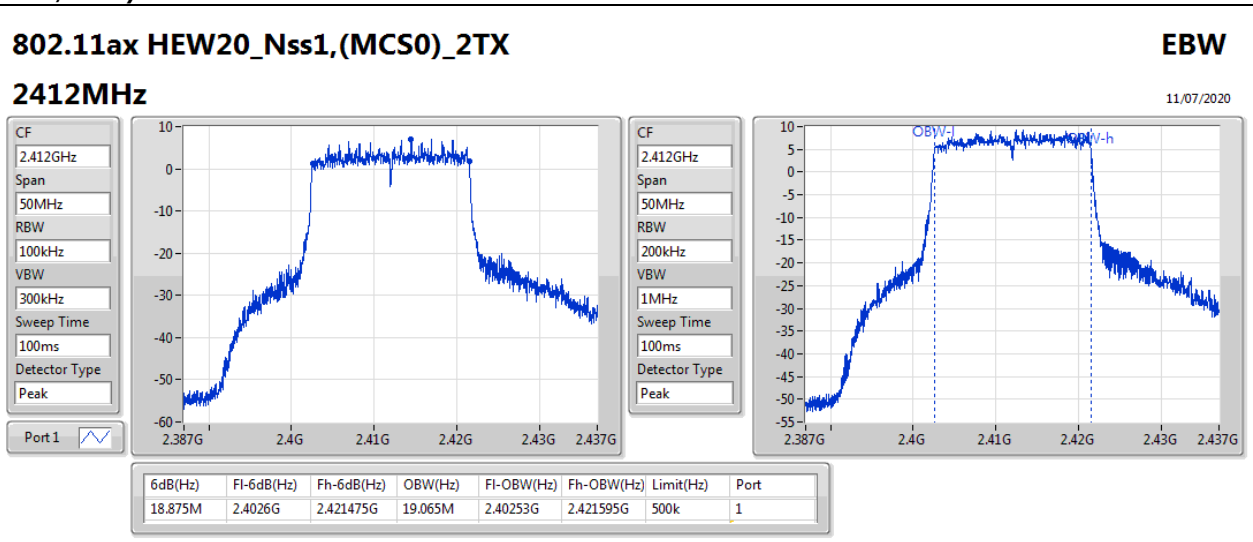
**Configuration IEEE 802.11ax 20MHz**

**<MCS0, Ant. 1+2, 1S2T, CDD>**

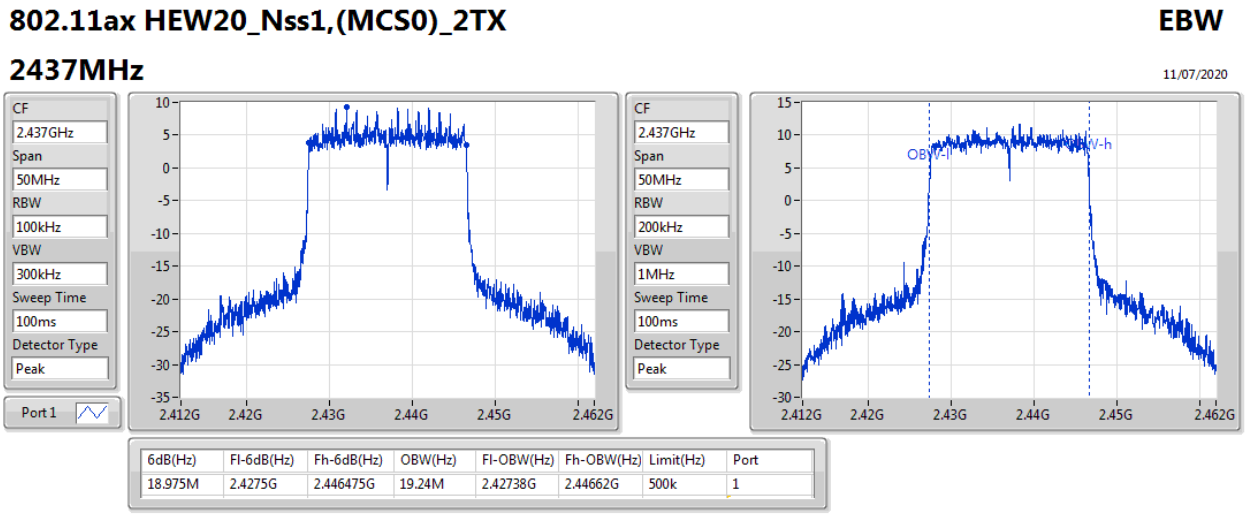
| Channel | Frequency | 6dB Bandwidth (MHz) | | Min. Limit (kHz) | Test Result |
|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | |
| 1 | 2412 MHz | 18.875 | 18.950 | 500 | PASS |
| 6 | 2437 MHz | 18.975 | 18.925 | 500 | PASS |
| 11 | 2462 MHz | 18.675 | 18.650 | 500 | PASS |

| Channel | Frequency | 99% Occupied Bandwidth (MHz) | |
|---|---|---|---|
| | | Ant. 1 | Ant. 2 |
| 1 | 2412 MHz | 19.065 | 19.090 |
| 6 | 2437 MHz | 19.240 | 19.215 |
| 11 | 2462 MHz | 19.190 | 19.165 |

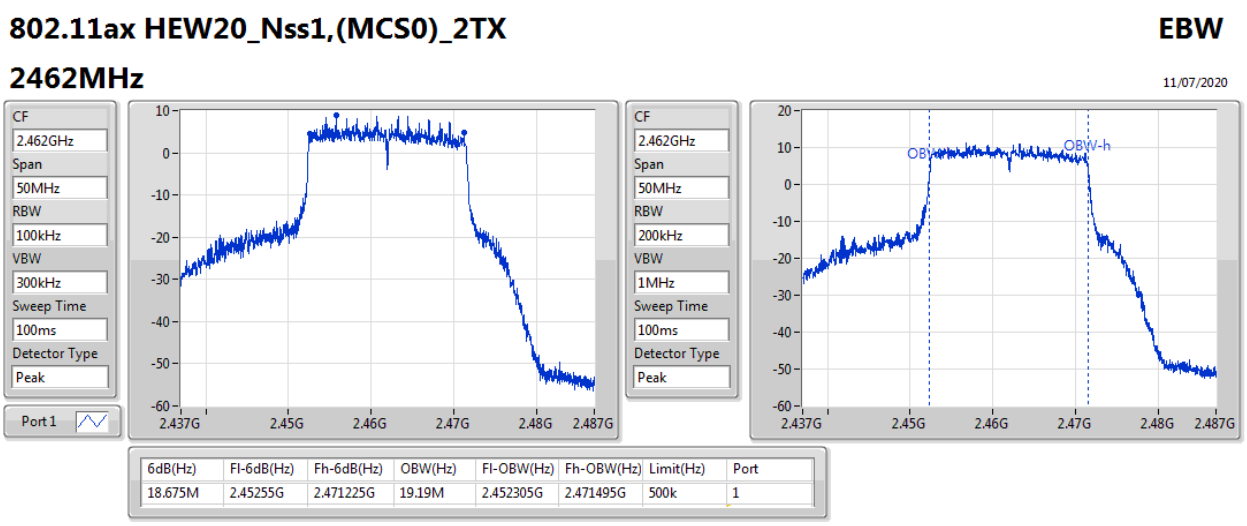
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 1 / Ant. 1 (1S2T, CDD)**



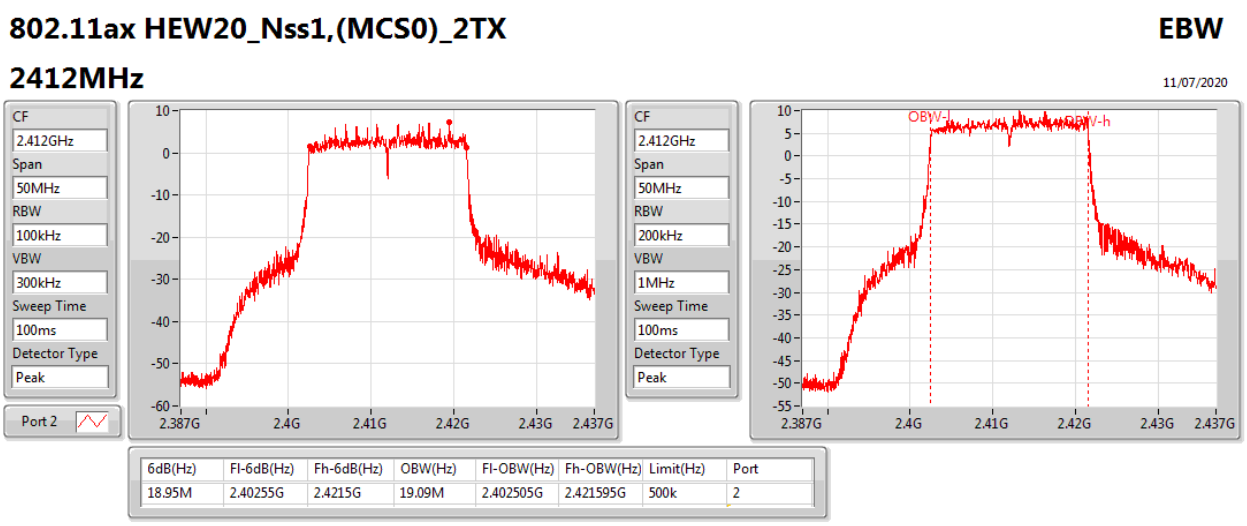

**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 6 / Ant. 1 (1S2T, CDD)**



**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 11 / Ant. 1 (1S2T, CDD)**

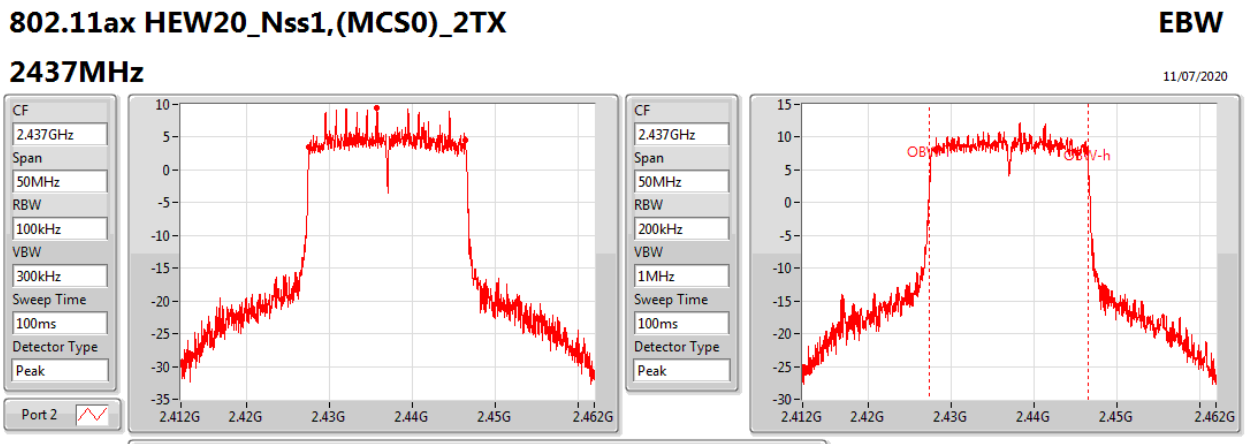


**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 1 / Ant. 2 (1S2T, CDD)**



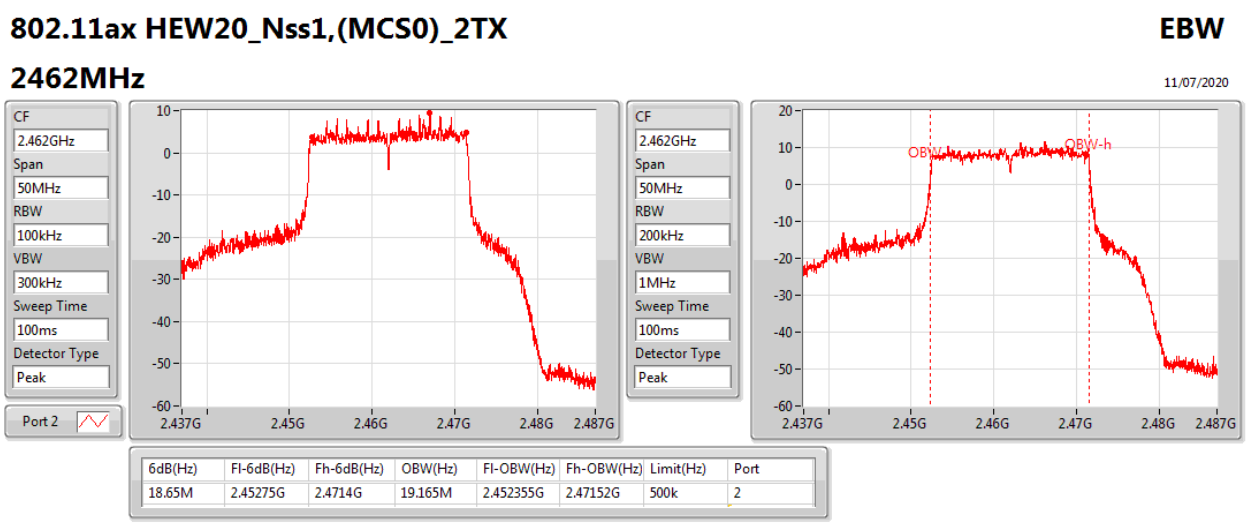

| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 18.95M | 2.40255G | 2.4215G | 19.09M | 2.402505G | 2.421595G | 500k | 2 |

**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 6 / Ant. 2 (1S2T, CDD)**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 18.925M | 2.427525G | 2.44645G | 19.215M | 2.42738G | 2.446595G | 500k | 2 |

**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 11 / Ant. 2 (1S2T, CDD)**

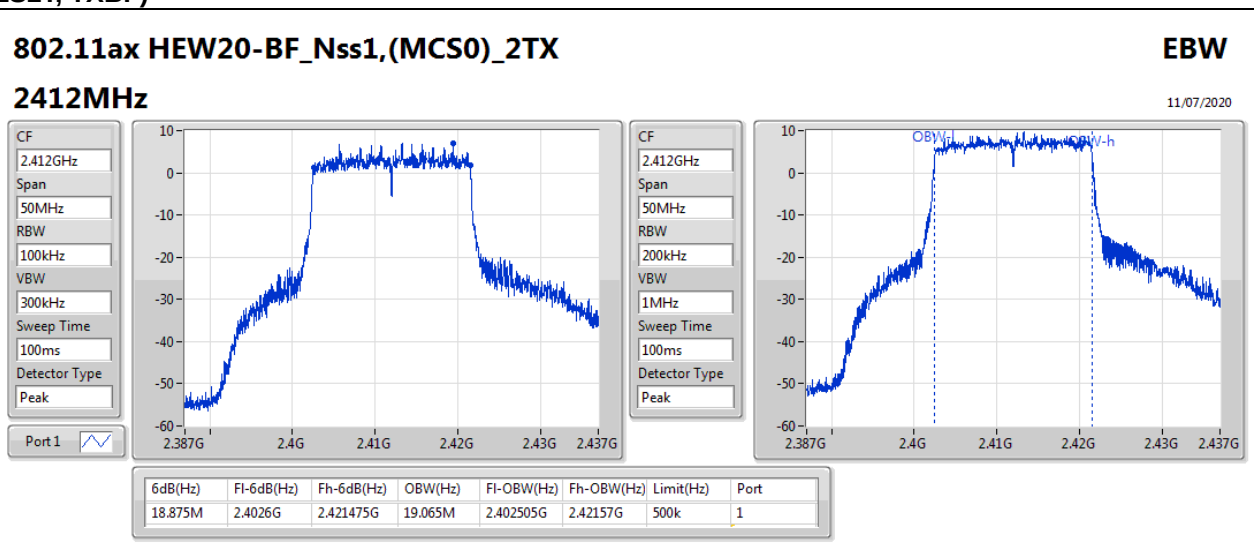


**<MCS0, Ant. 1+2, 1S2T, TXBF>**

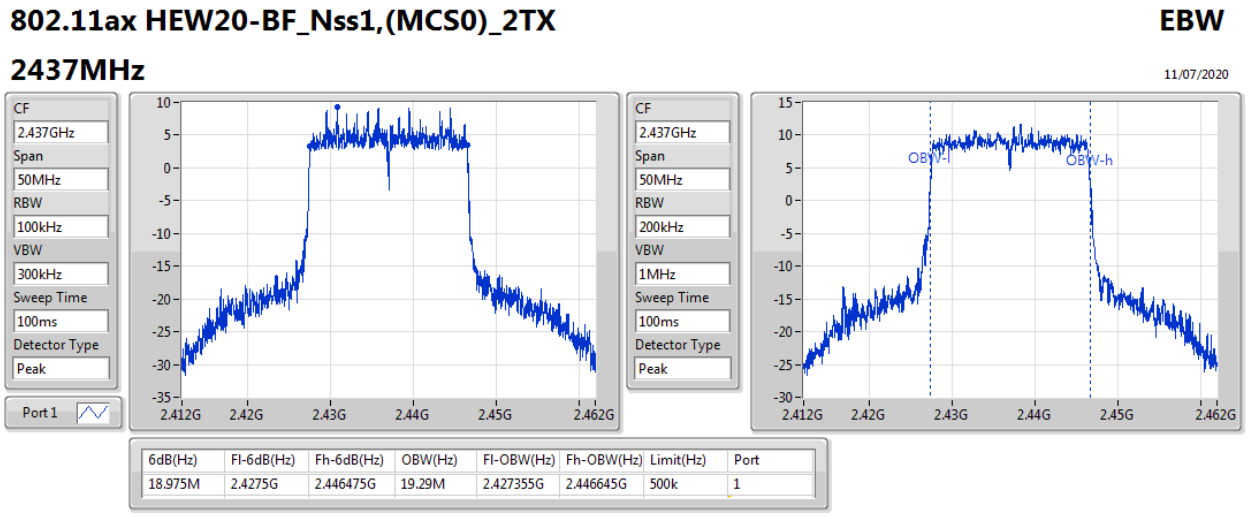
| Channel | Frequency | 6dB Bandwidth (MHz) | | Min. Limit (kHz) | Test Result |
|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | |
| 1 | 2412 MHz | 18.875 | 18.950 | 500 | PASS |
| 6 | 2437 MHz | 18.975 | 18.925 | 500 | PASS |
| 11 | 2462 MHz | 18.700 | 18.775 | 500 | PASS |

| Channel | Frequency | 99% Occupied Bandwidth (MHz) | |
|---|---|---|---|
| | | Ant. 1 | Ant. 2 |
| 1 | 2412 MHz | 19.065 | 19.140 |
| 6 | 2437 MHz | 19.290 | 19.240 |
| 11 | 2462 MHz | 19.165 | 19.215 |

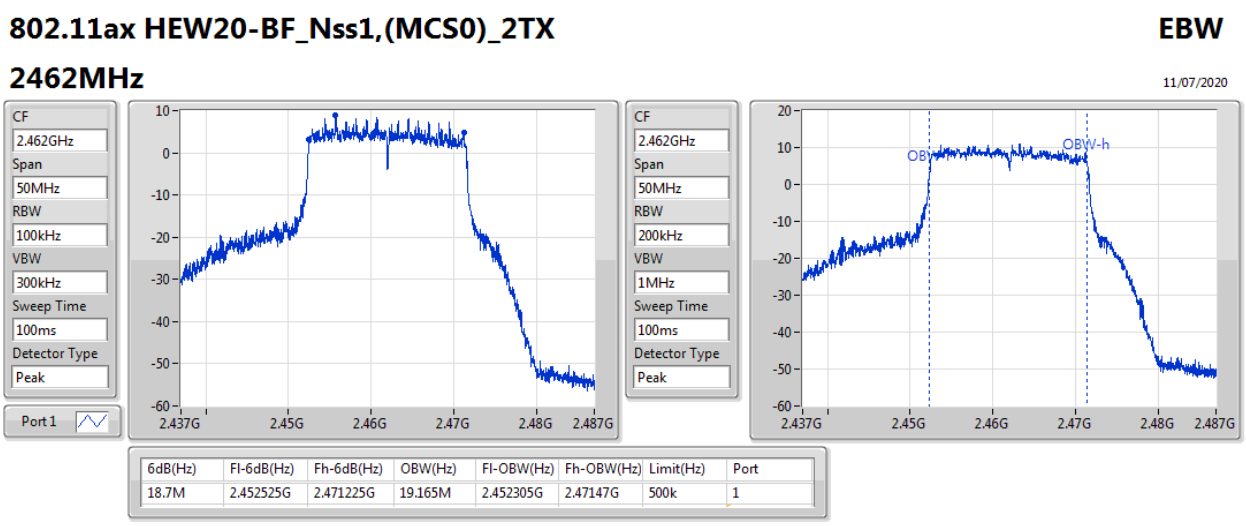
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 1 / Ant. 1 (1S2T, TXBF)**



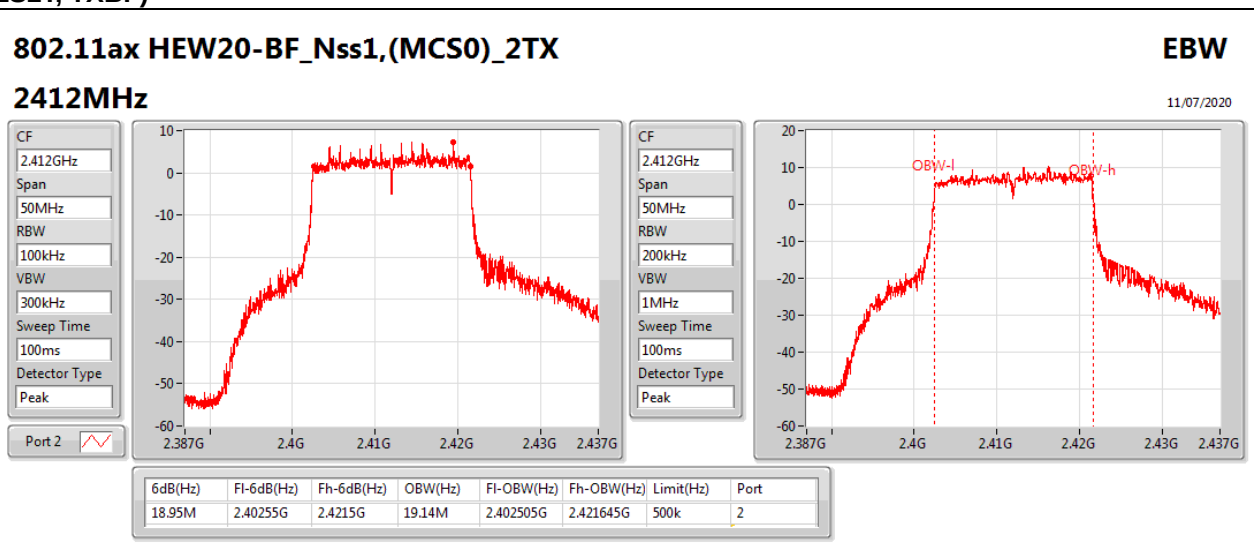

**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 6 / Ant. 1 (1S2T, TXBF)**



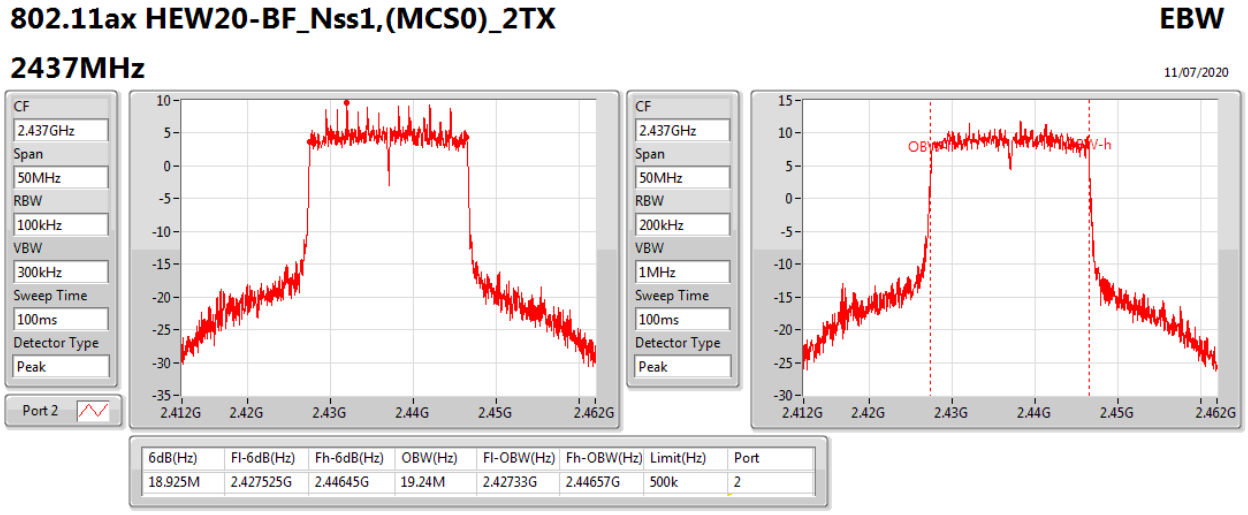
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 11 / Ant. 1 (1S2T, TXBF)**



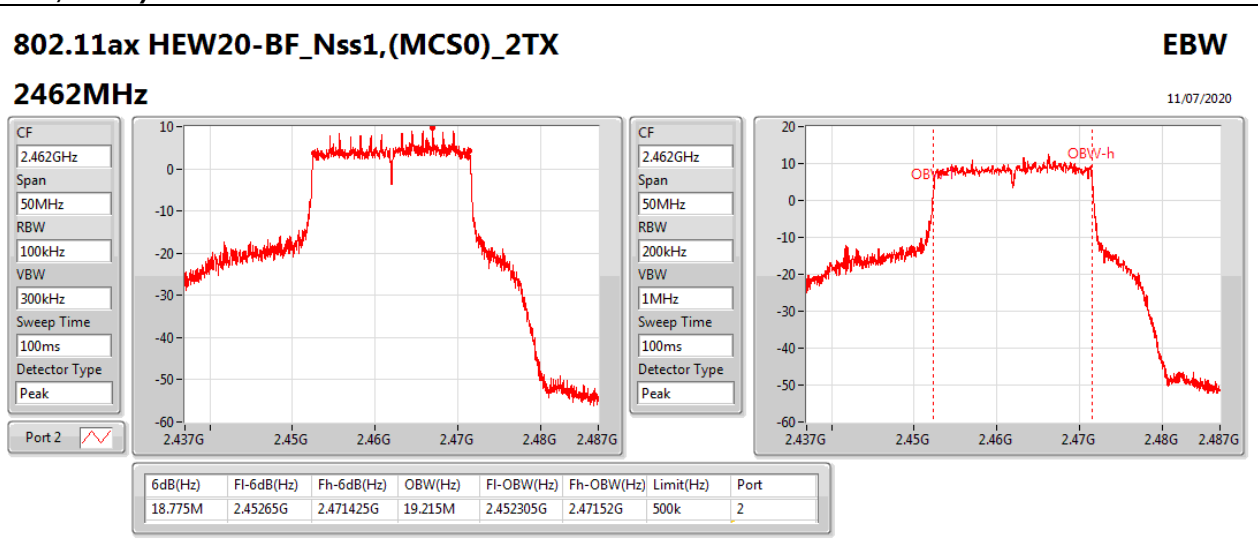
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 1 / Ant. 2 (1S2T, TXBF)**




**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 6 / Ant. 2 (1S2T, TXBF)**



**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 20MHz MCS0 / CH 11 / Ant. 2 (1S2T, TXBF)**



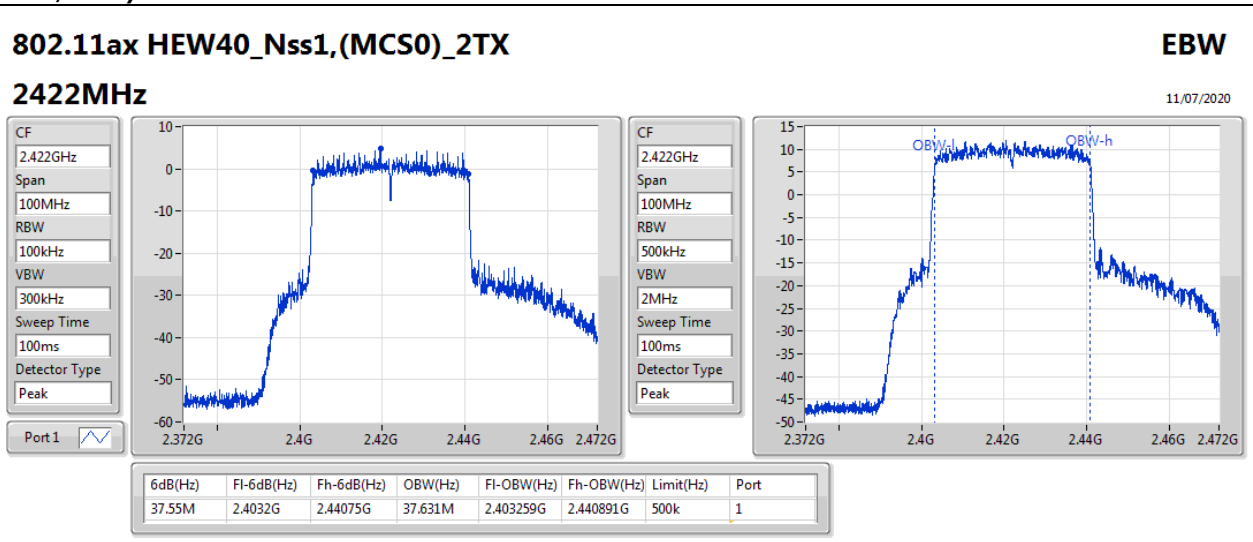
**Configuration IEEE 802.11ax 40MHz**

**<MCS0, Ant. 1+2, 1S2T, CDD>**

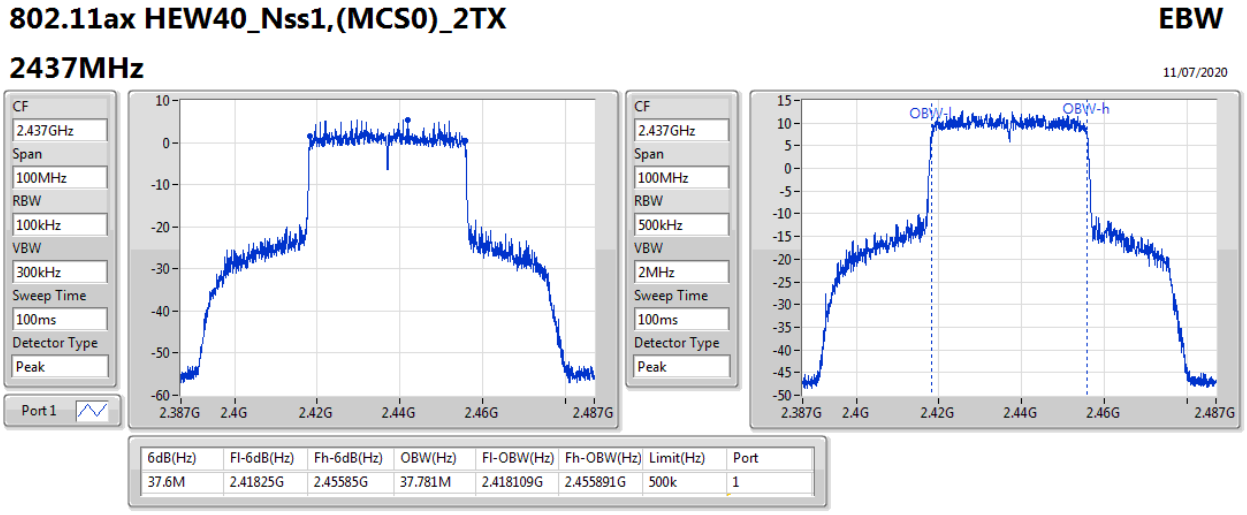
| Channel | Frequency | 6dB Bandwidth (MHz) | | Min. Limit (kHz) | Test Result |
|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | |
| 3 | 2422 MHz | 37.550 | 36.350 | 500 | PASS |
| 6 | 2437 MHz | 37.600 | 35.650 | 500 | PASS |
| 9 | 2452 MHz | 36.850 | 37.350 | 500 | PASS |

| Channel | Frequency | 99% Occupied Bandwidth (MHz) | |
|---|---|---|---|
| | | Ant. 1 | Ant. 2 |
| 3 | 2422 MHz | 37.631 | 37.631 |
| 6 | 2437 MHz | 37.781 | 37.731 |
| 9 | 2452 MHz | 37.681 | 37.981 |

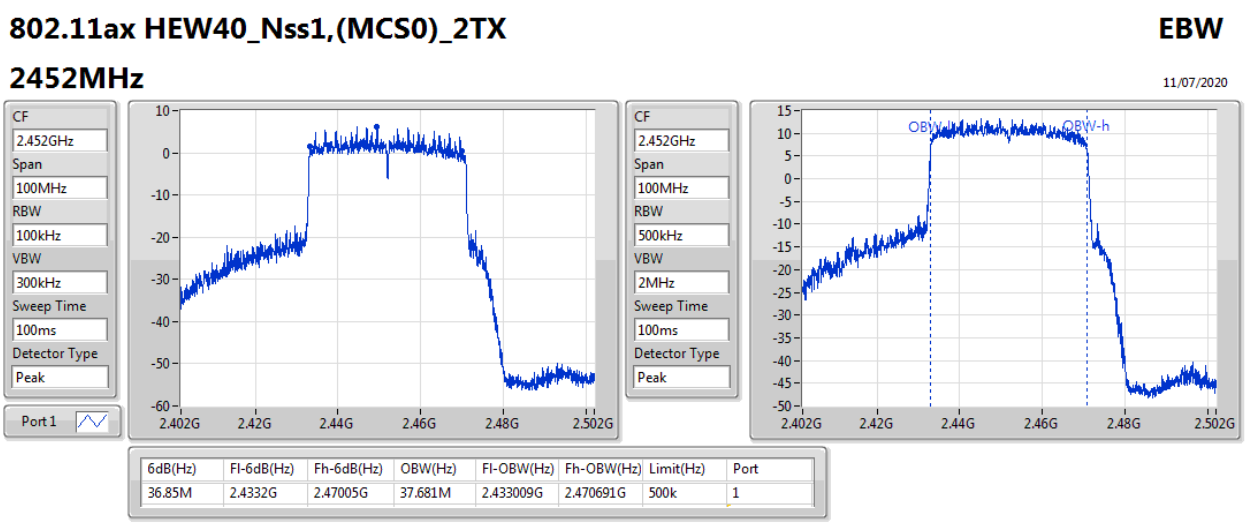
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 3 / Ant. 1 (1S2T, CDD)**



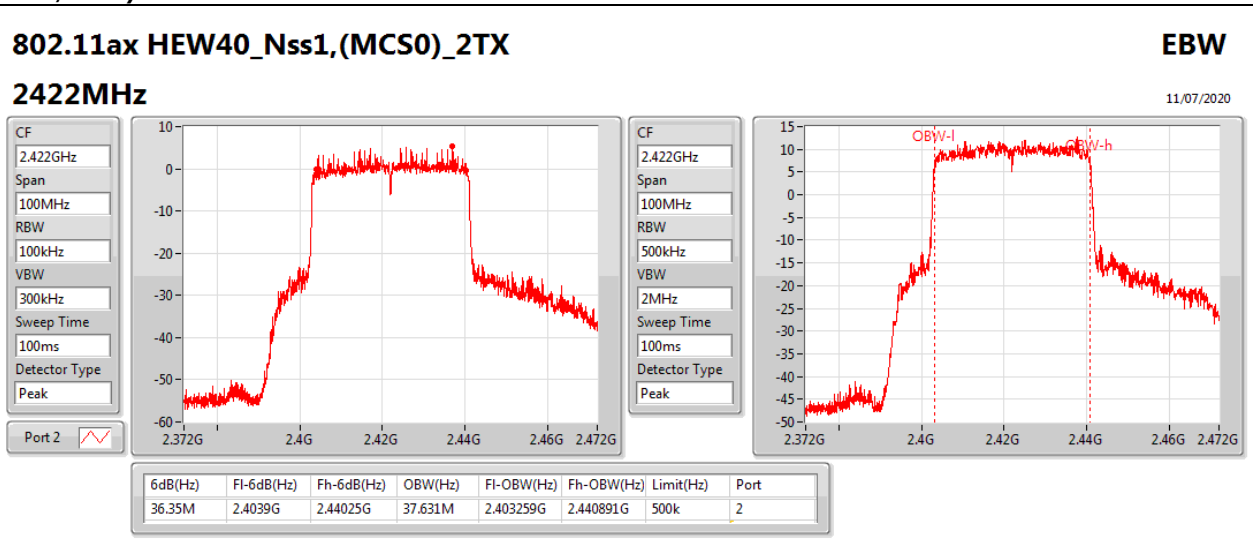

**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 6 / Ant. 1 (1S2T, CDD)**



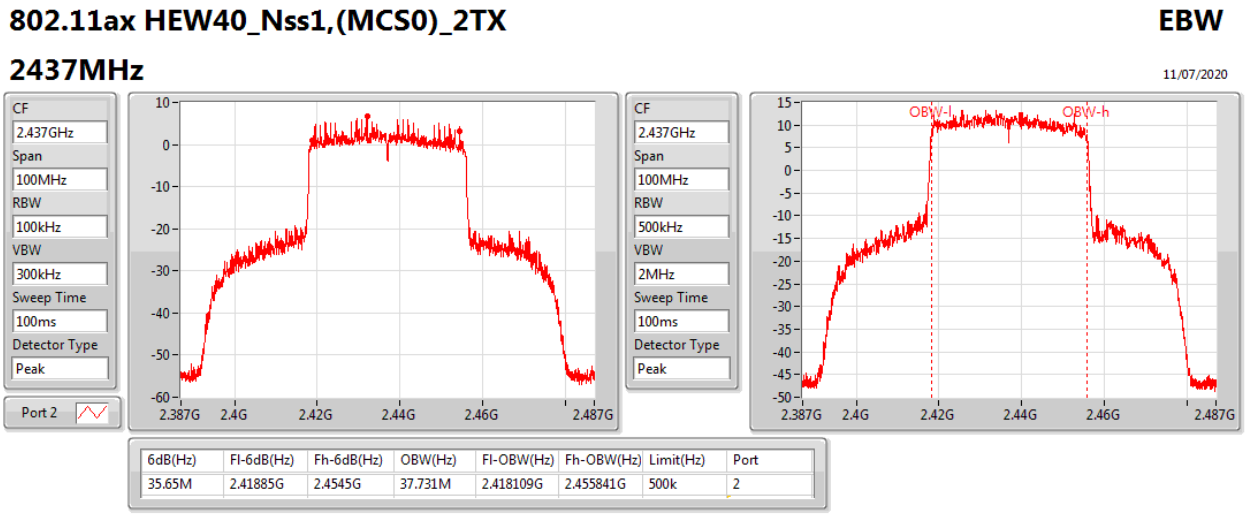
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 9 / Ant. 1 (1S2T, CDD)**



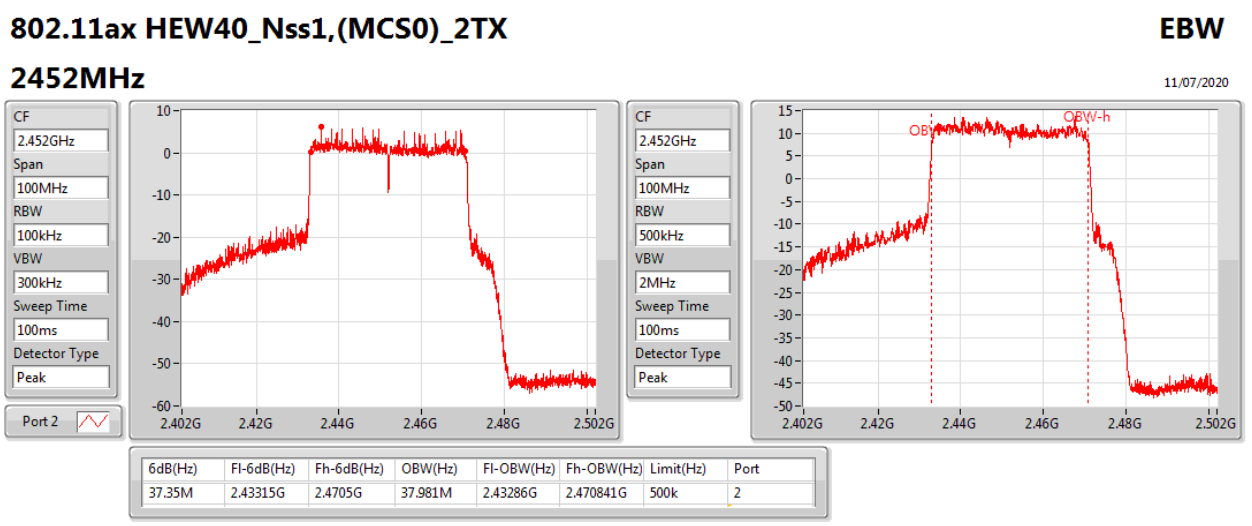
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 3 / Ant. 2 (1S2T, CDD)**




**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 6 / Ant. 2 (1S2T, CDD)**



**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 9 / Ant. 2 (1S2T, CDD)**

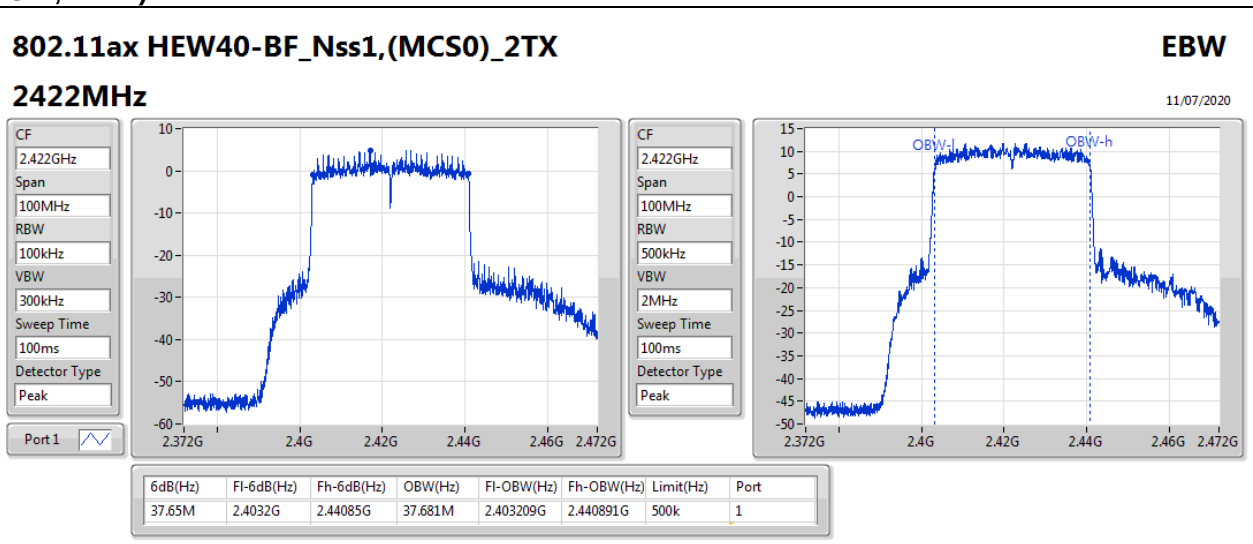


**<MCS0, Ant. 1+2, 1S2T, TXBF>**

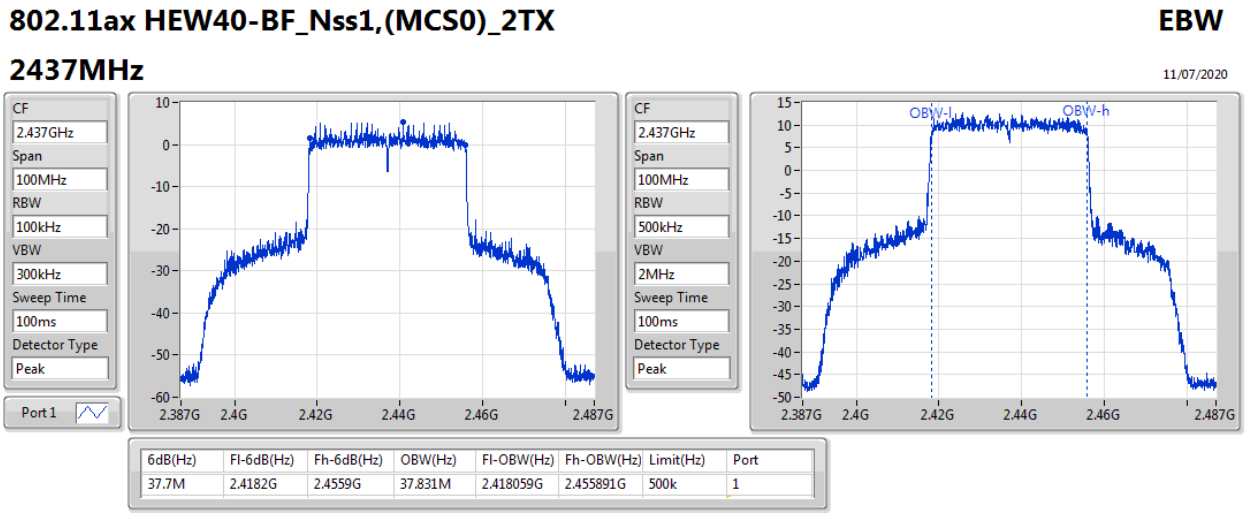
| Channel | Frequency | 6dB Bandwidth (MHz) | | Min. Limit (kHz) | Test Result |
|---|---|---|---|---|---|
| | | Ant. 1 | Ant. 2 | | |
| 3 | 2422 MHz | 37.650 | 36.600 | 500 | PASS |
| 6 | 2437 MHz | 37.700 | 36.600 | 500 | PASS |
| 9 | 2452 MHz | 36.900 | 37.200 | 500 | PASS |

| Channel | Frequency | 99% Occupied Bandwidth (MHz) | |
|---|---|---|---|
| | | Ant. 1 | Ant. 2 |
| 3 | 2422 MHz | 37.681 | 37.631 |
| 6 | 2437 MHz | 37.831 | 37.781 |
| 9 | 2452 MHz | 37.731 | 37.931 |

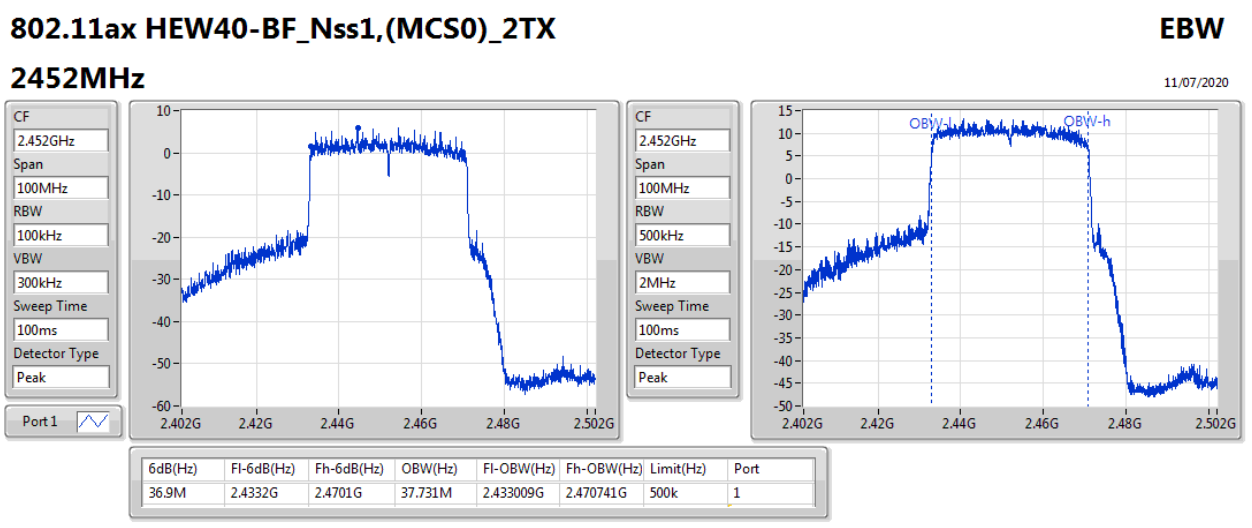
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 3 / Ant. 1 (1S2T, TXBF)**



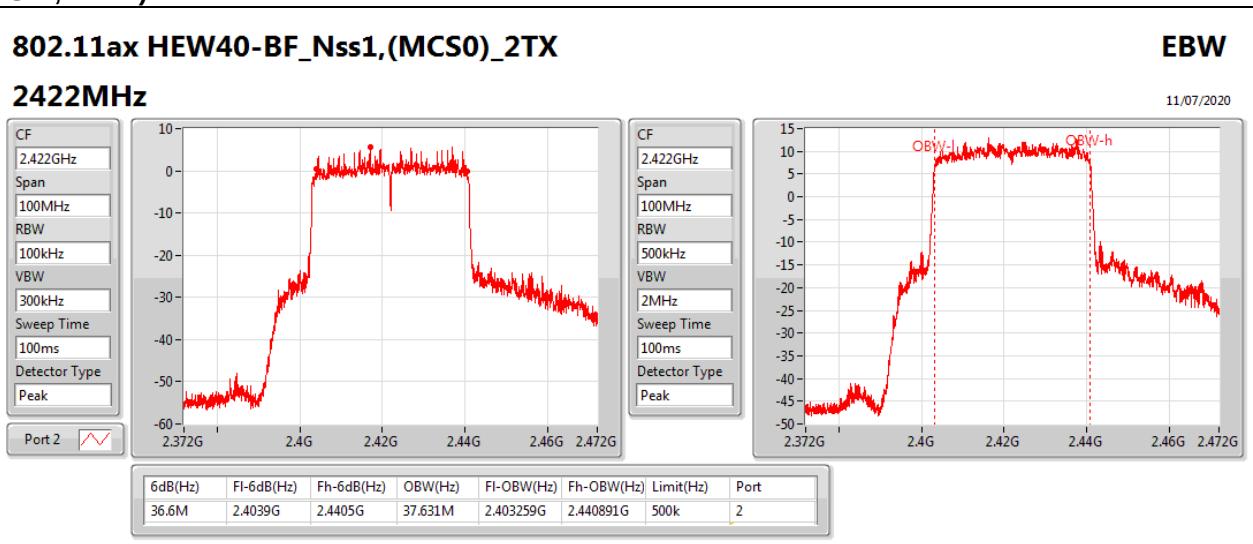

**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 6 / Ant. 1 (1S2T, TXBF)**



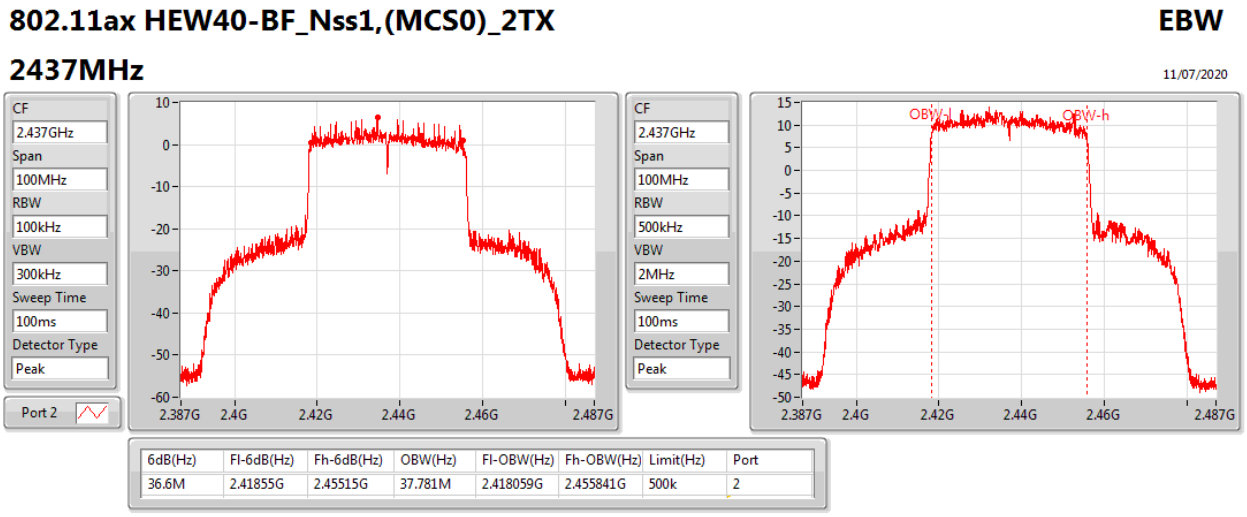
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 9 / Ant. 1 (1S2T, TXBF)**



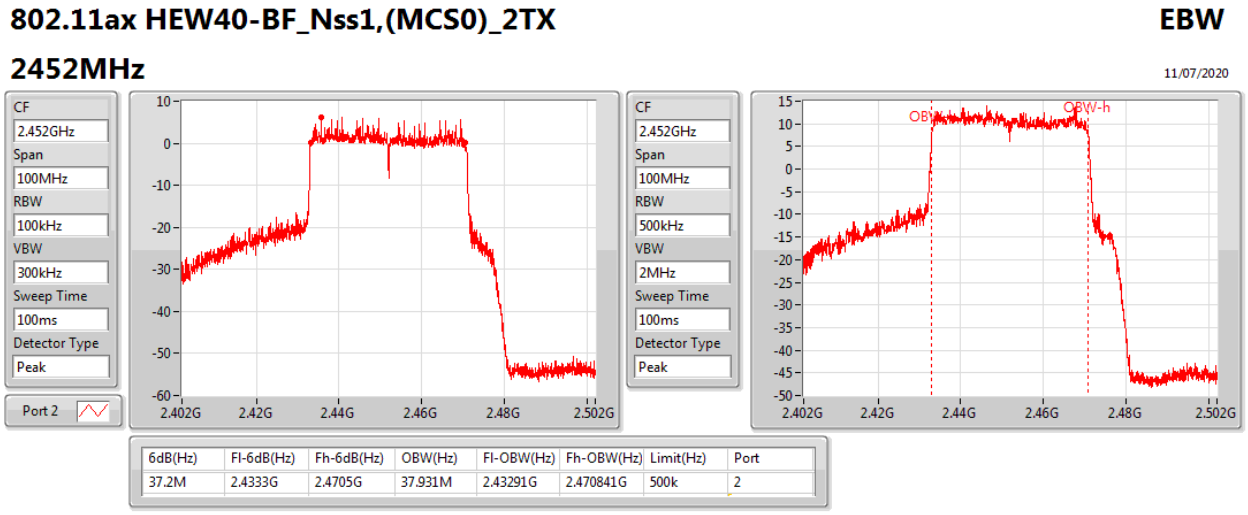
**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 3 / Ant. 2 (1S2T, TXBF)**




**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 6 / Ant. 2 (1S2T, TXBF)**



**6 dB & 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ax 40MHz MCS0 / CH 9 / Ant. 2 (1S2T, TXBF)**



## 2.5. Radiated Emissions Measurement

### 2.5.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(kHz) | 300 |
| 0.490~1.705 | 24000/F(kHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 2.5.2. Measuring Instruments and Setting

Please refer to section 3 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RBW / VBW (Emission in restricted band) | 1MHz / 3MHz for Peak, 1MHz / 1/T for Average |
| RBW / VBW (Emission in non-restricted band) | 100kHz / 300kHz for peak |

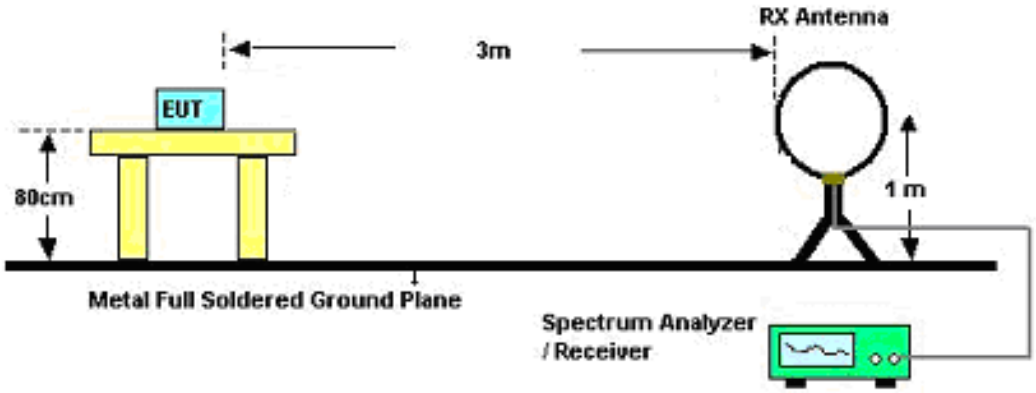
| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RBW 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RBW 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RBW 120kHz for QP |

### 2.5.3. Test Procedures

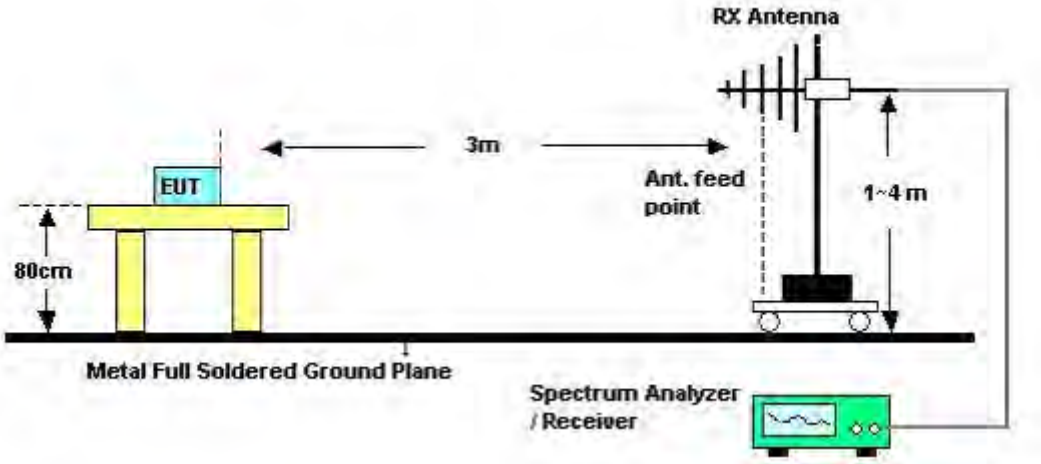
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground for below 1G and 1.5 meter above ground for above 1G . The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and the VBW is ≥ 1/T(Duty Cycle < 98%) or 10Hz(Duty cycle ≥ 98%) for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

## 2.5.4. Test Setup Layout

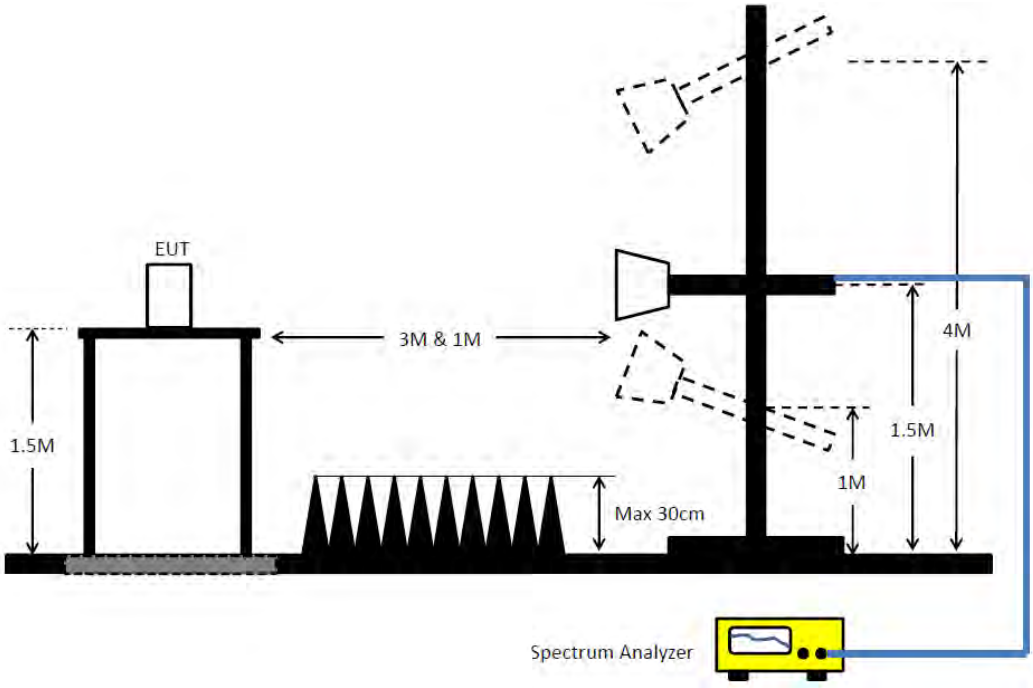
**For Radiated Emissions: 9kHz ~30MHz**




**For Radiated Emissions: 30MHz~1GHz**



**For Radiated Emissions: Above 1GHz**




### 2.5.5. Test Deviation

There is no deviation with the original standard.

### 2.5.6. EUT Operation during Test

For CDD mode:

The EUT was programmed to be in continuously transmitting mode.

For TXBF mode:

The EUT was programmed to be in beamforming transmitting mode.

### 2.5.7. Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor (if applicable) = Level.

### 2.5.8. Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

### 2.5.9. Results of Radiated Emissions (9kHz~30MHz)

| Configurations | CTX | Test Mode | Mode 1~Mode 3 |
|---|---|---|---|

| Freq. (MHz) | Level (dBuV) | Over Limit (dB) | Limit Line (dBuV) | Remark |
|---|---|---|---|---|
| - | - | - | - | See Note |

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

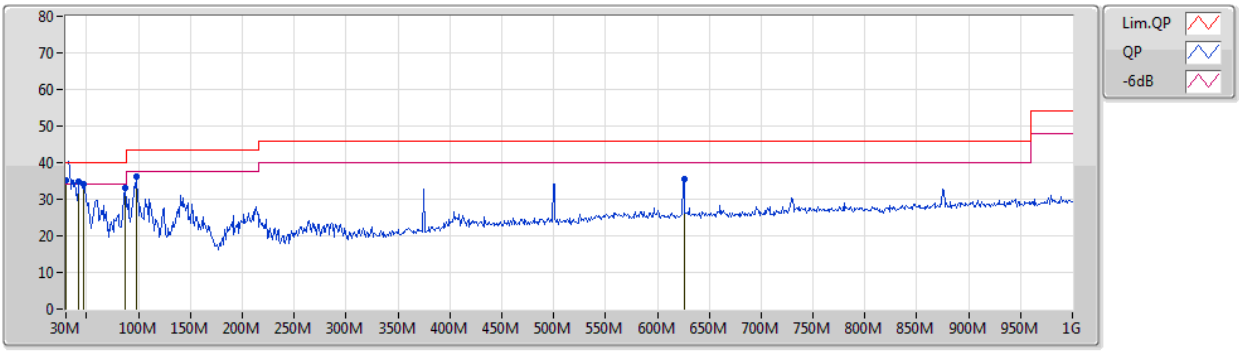
## 2.5.10. Results of Radiated Emissions (30MHz~1GHz)

**Mode Configure**

| Mode | Configure |
|---|---|
| Mode 1 | CTX mode, EUT Y axis – WLAN 2.4GHz |
| Mode 2 | CTX mode, EUT Y axis – WLAN 5GHz Band 1 |
| Mode 3 | CTX mode, EUT Y axis – WLAN 5GHz Band 4 |

## Mode 1

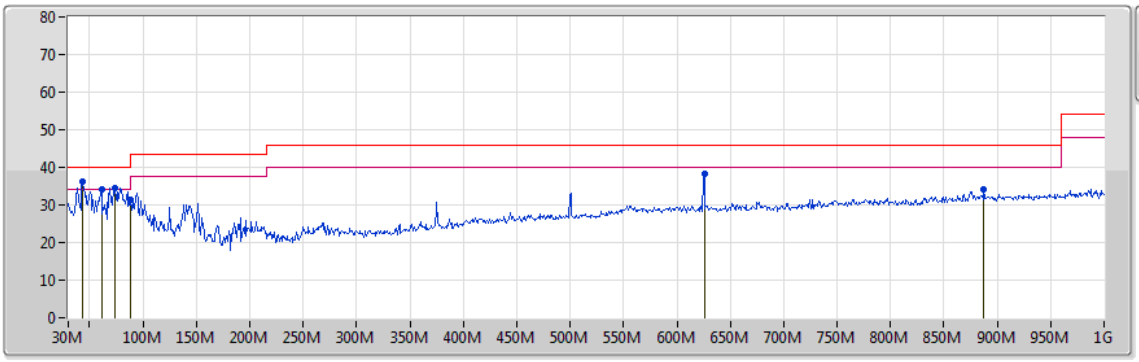
13/07/2020




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV/m) | (dB/m) | (dB) | (dB) |
| QP | 30M | 35.21 | 40.00 | -4.79 | -6.17 | 3 | Vertical | 360 | 3.00 | "Worst" | 41.38 | 24.19 | 1.20 | 31.56 |
| PK | 42.61M | 34.72 | 40.00 | -5.28 | -12.54 | 3 | Vertical | 360 | 2.00 | - | 47.26 | 17.61 | 1.30 | 31.45 |
| PK | 47.46M | 34.21 | 40.00 | -5.79 | -14.79 | 3 | Vertical | 326 | 2.00 | - | 49.00 | 15.55 | 1.20 | 31.54 |
| PK | 87.23M | 33.23 | 40.00 | -6.77 | -16.29 | 3 | Vertical | 282 | 3.00 | - | 49.52 | 14.12 | 1.40 | 31.81 |
| PK | 97.9M | 36.36 | 43.50 | -7.14 | -14.00 | 3 | Vertical | 255 | 3.00 | - | 50.36 | 16.39 | 1.50 | 31.89 |
| PK | 625.58M | 35.63 | 46.00 | -10.37 | -4.45 | 3 | Vertical | 172 | 1.50 | - | 40.08 | 24.41 | 3.55 | 32.41 |

**Mode 1**

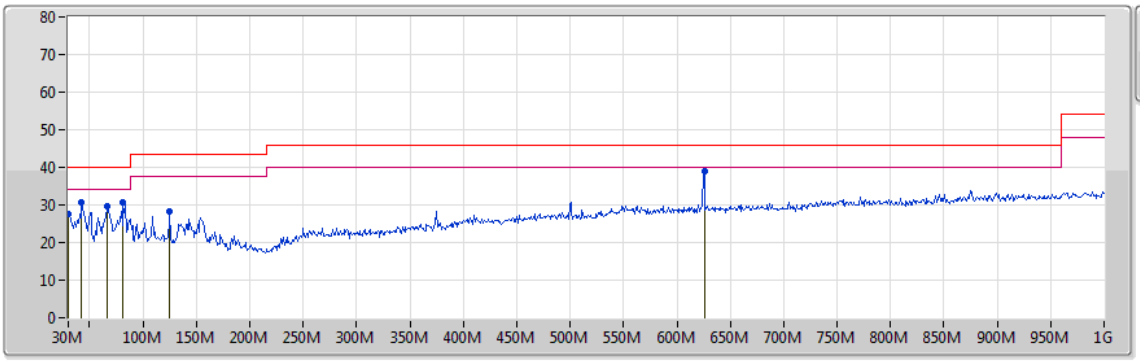
12/07/2020




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV/m) | (dB/m) | (dB) | (dB) |
| PK | 43.58M | 36.23 | 40.00 | -3.77 | -13.01 | 3 | Horizontal | 360 | 1.00 | "Worst" | 49.24 | 17.19 | 1.26 | 31.46 |
| PK | 61.04M | 34.09 | 40.00 | -5.91 | -18.01 | 3 | Horizontal | 340 | 1.50 | - | 52.10 | 12.60 | 1.20 | 31.81 |
| PK | 73.65M | 34.52 | 40.00 | -5.48 | -17.96 | 3 | Horizontal | 183 | 2.00 | - | 52.48 | 12.50 | 1.30 | 31.76 |
| PK | 88M | 31.48 | 43.50 | -12.02 | -16.15 | 3 | Horizontal | 111 | 1.25 | - | 47.63 | 14.27 | 1.40 | 31.82 |
| PK | 625.58M | 38.11 | 46.00 | -7.89 | -4.45 | 3 | Horizontal | 286 | 1.00 | - | 42.56 | 24.41 | 3.55 | 32.41 |
| PK | 887.48M | 34.19 | 46.00 | -11.81 | -1.90 | 3 | Horizontal | 59 | 2.00 | - | 36.09 | 25.94 | 4.51 | 32.35 |

## Mode 2

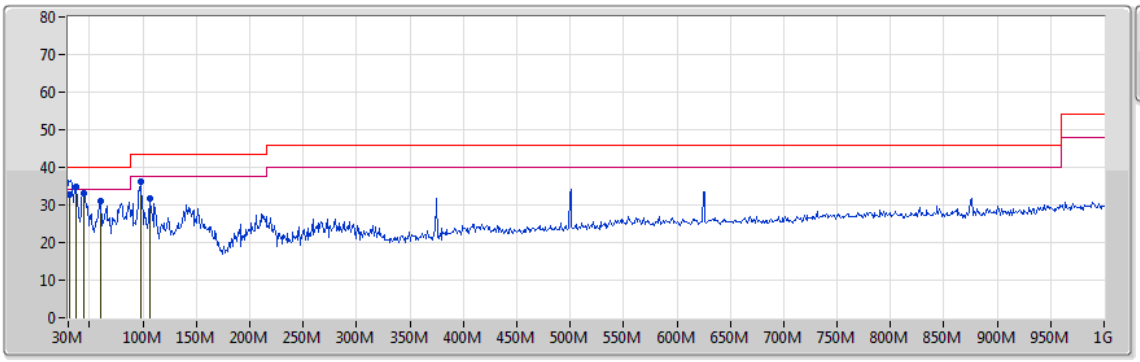
13/07/2020




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV/m) | (dB/m) | (dB) | (dB) |
| PK | 30M | 27.61 | 40.00 | -12.39 | -6.17 | 3 | Vertical | 307 | 2.00 | - | 33.78 | 24.19 | 1.20 | 31.56 |
| PK | 42.61M | 30.57 | 40.00 | -9.43 | -12.54 | 3 | Vertical | 182 | 1.00 | - | 43.11 | 17.61 | 1.30 | 31.45 |
| PK | 65.89M | 29.76 | 40.00 | -10.24 | -18.07 | 3 | Vertical | 248 | 1.50 | - | 47.83 | 12.52 | 1.22 | 31.81 |
| PK | 81.41M | 30.70 | 40.00 | -9.30 | -17.32 | 3 | Vertical | 359 | 1.25 | - | 48.02 | 13.04 | 1.40 | 31.76 |
| PK | 125.06M | 28.16 | 43.50 | -15.34 | -12.07 | 3 | Vertical | 104 | 1.00 | - | 40.23 | 17.98 | 1.73 | 31.78 |
| PK | 625.58M | 39.03 | 46.00 | -6.97 | -4.45 | 3 | Vertical | 235 | 1.25 | "Worst" | 43.48 | 24.41 | 3.55 | 32.41 |

## Mode 2

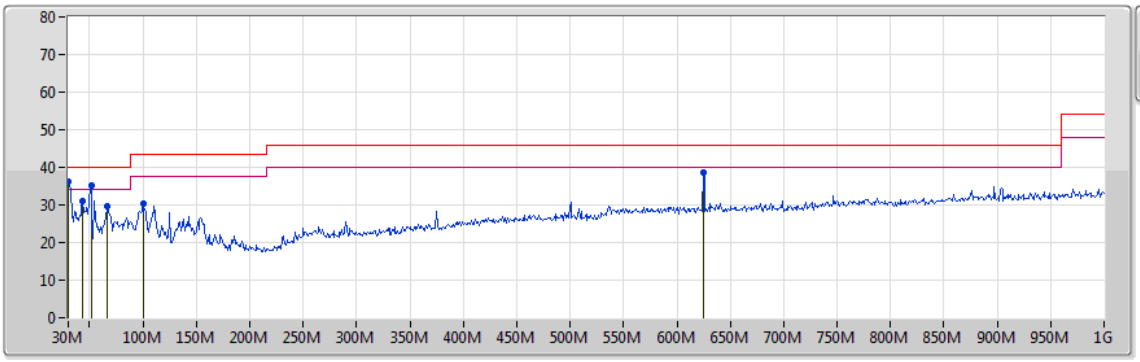
13/07/2020




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV/m) | (dB/m) | (dB) | (dB) |
| QP | 30.97M | 32.60 | 40.00 | -7.40 | -6.70 | 3 | Horizontal | 123 | 3.00 | - | 39.30 | 23.62 | 1.22 | 31.54 |
| PK | 36.79M | 34.79 | 40.00 | -5.21 | -9.31 | 3 | Horizontal | 71 | 3.00 | "Worst" | 44.10 | 20.81 | 1.34 | 31.46 |
| PK | 44.55M | 33.18 | 40.00 | -6.82 | -13.38 | 3 | Horizontal | 360 | 3.00 | - | 46.56 | 16.87 | 1.22 | 31.47 |
| PK | 60.07M | 30.99 | 40.00 | -9.01 | -17.92 | 3 | Horizontal | 227 | 3.00 | - | 48.91 | 12.69 | 1.20 | 31.81 |
| PK | 97.9M | 36.07 | 43.50 | -7.43 | -14.00 | 3 | Horizontal | 184 | 3.00 | - | 50.07 | 16.39 | 1.50 | 31.89 |
| PK | 106.63M | 31.58 | 43.50 | -11.92 | -12.78 | 3 | Horizontal | 281 | 3.00 | - | 44.36 | 17.47 | 1.57 | 31.82 |

## Mode 3

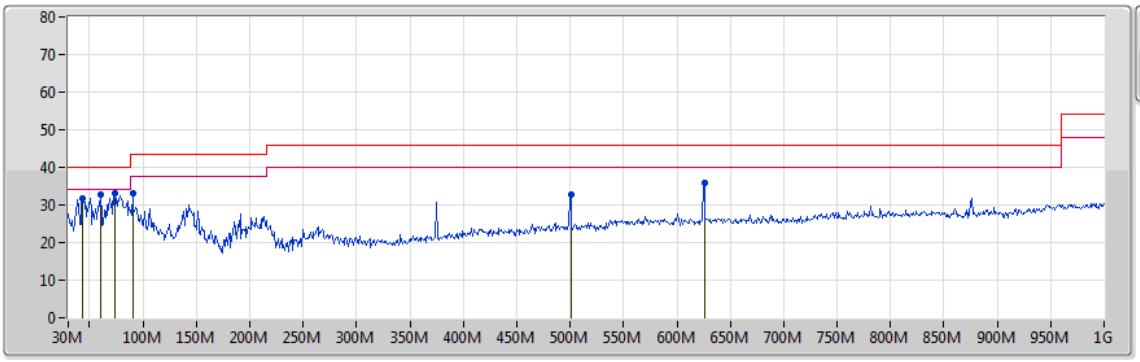
13/07/2020




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV/m) | (dB/m) | (dB) | (dB) |
| PK | 30M | 36.33 | 40.00 | -3.67 | -6.17 | 3 | Vertical | 328 | 2.00 | "Worst" | 42.50 | 24.19 | 1.20 | 31.56 |
| PK | 43.58M | 31.09 | 40.00 | -8.91 | -13.01 | 3 | Vertical | 195 | 1.00 | - | 44.10 | 17.19 | 1.26 | 31.46 |
| PK | 51.34M | 35.13 | 40.00 | -4.87 | -16.35 | 3 | Vertical | 189 | 1.50 | - | 51.48 | 14.13 | 1.17 | 31.65 |
| PK | 66.86M | 29.56 | 40.00 | -10.44 | -18.08 | 3 | Vertical | 235 | 1.00 | - | 47.64 | 12.48 | 1.24 | 31.80 |
| PK | 99.84M | 30.26 | 43.50 | -13.24 | -13.77 | 3 | Vertical | 288 | 2.00 | - | 44.03 | 16.62 | 1.50 | 31.89 |
| PK | 624.61M | 38.61 | 46.00 | -7.39 | -4.47 | 3 | Vertical | 245 | 1.25 | - | 43.08 | 24.39 | 3.55 | 32.41 |

## Mode 3

13/07/2020




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV/m) | (dB/m) | (dB) | (dB) |
| PK | 43.58M | 31.78 | 40.00 | -8.22 | -13.01 | 3 | Horizontal | 218 | 1.25 | - | 44.79 | 17.19 | 1.26 | 31.46 |
| PK | 60.07M | 32.60 | 40.00 | -7.40 | -17.92 | 3 | Horizontal | 0 | 1.00 | - | 50.52 | 12.69 | 1.20 | 31.81 |
| PK | 73.65M | 33.18 | 40.00 | -6.82 | -17.96 | 3 | Horizontal | 245 | 1.00 | "Worst" | 51.14 | 12.50 | 1.30 | 31.76 |
| PK | 90.14M | 33.03 | 43.50 | -10.47 | -15.63 | 3 | Horizontal | 325 | 1.00 | - | 48.66 | 14.82 | 1.40 | 31.85 |
| PK | 500.45M | 32.60 | 46.00 | -13.40 | -6.32 | 3 | Horizontal | 214 | 1.00 | - | 38.92 | 22.95 | 3.10 | 32.37 |
| PK | 625.58M | 36.03 | 46.00 | -9.97 | -4.45 | 3 | Horizontal | 285 | 1.00 | - | 40.48 | 24.41 | 3.55 | 32.41 |

## 2.5.11. Results for Radiated Emissions (1GHz~10th Harmonic)

**Following channel(s) was (were) selected for the final test as listed below.**

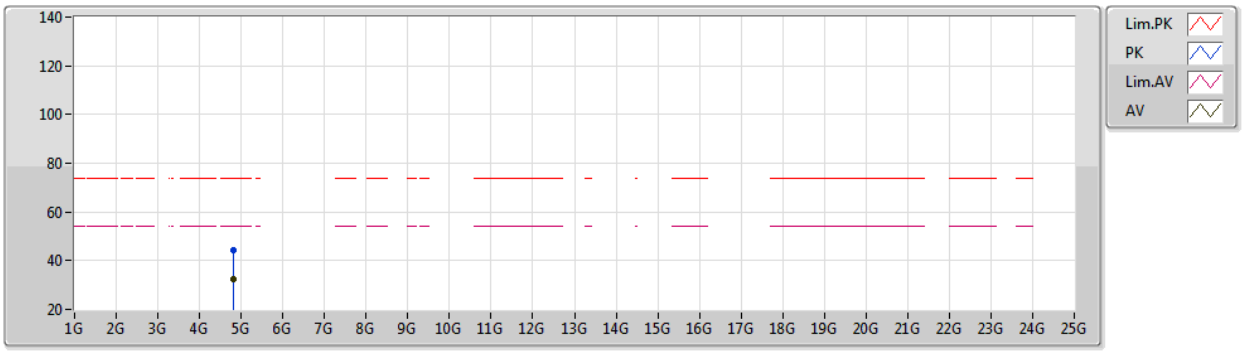
| MODE | TX Chain | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|
| 802.11b | Ant. 1, 1S1T (SISO) | 1, 6, 11 | DSSS | DBPSK | 1 |
| 802.11ax 20MHz | Ant. 1+2, 1S2T (CDD) | 1, 6, 11 | OFDMA | BPSK | MCS0/Nss1 (8.6) |
| 802.11ax 20MHz | Ant. 1+2, 1S2T (TXBF) | 1, 6, 11 | OFDMA | BPSK | MCS0/Nss1 (8.6) |
| 802.11ax 40MHz | Ant. 1+2, 1S2T (CDD) | 3, 6, 9 | OFDMA | BPSK | MCS0/Nss1 (17.2) |
| 802.11ax 40MHz | Ant. 1+2, 1S2T (TXBF) | 3, 6, 9 | OFDMA | BPSK | MCS0/Nss1 (17.2) |

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 1 / Ant. 1, 1S1T (SISO) | **Polarization** | V |

**802.11b_Nss1,(1Mbps)_1TX**

**2412MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

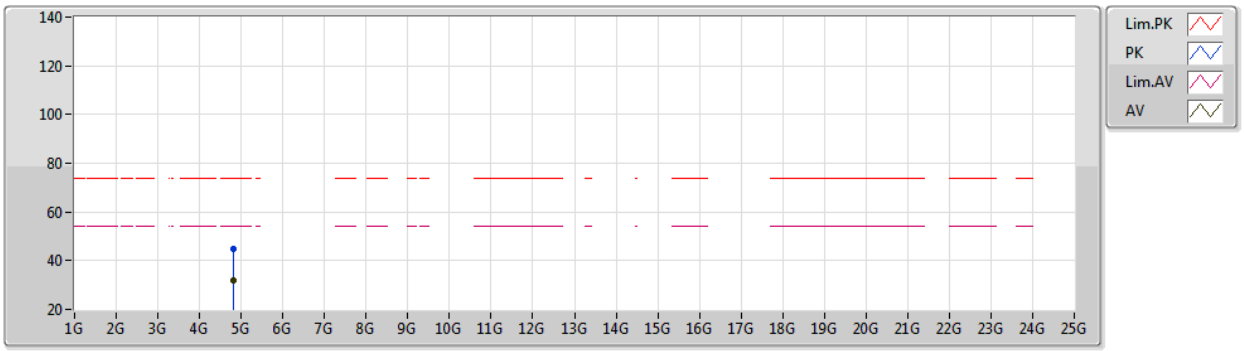
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.82458G | 44.16 | 74.00 | -29.84 | 40.11 | 3 | Vertical | 62 | 1.68 | - | 32.60 | 4.93 | 33.48 |
| AV | 4.824G | 32.41 | 54.00 | -21.59 | 28.36 | 3 | Vertical | 62 | 1.68 | - | 32.60 | 4.93 | 33.48 |

Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 1 / Ant. 1, 1S1T (SISO) | **Polarization** | H |

**802.11b_Nss1,(1Mbps)_1TX**

**2412MHz_TX**




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.82798G | 44.84 | 74.00 | -29.16 | 40.78 | 3 | Horizontal | 278 | 1.80 | - | 32.61 | 4.93 | 33.48 |
| AV | 4.82398G | 31.84 | 54.00 | -22.16 | 27.79 | 3 | Horizontal | 278 | 1.80 | - | 32.60 | 4.93 | 33.48 |

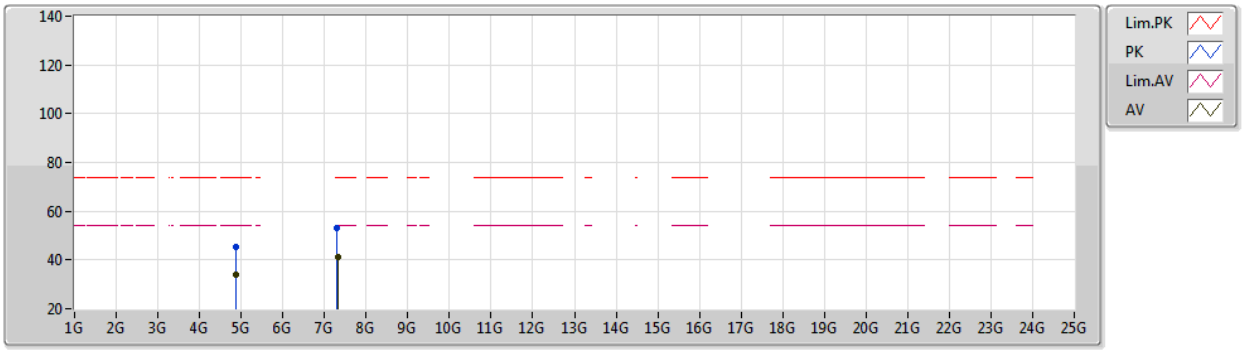
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 6 / Ant. 1, 1S1T (SISO) | **Polarization** | V |

**802.11b_Nss1,(1Mbps)_1TX**

**2437MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87396G | 45.45 | 74.00 | -28.55 | 41.14 | 3 | Vertical | 63 | 1.78 | - | 32.80 | 4.96 | 33.45 |
| AV | 4.874G | 33.93 | 54.00 | -20.07 | 29.62 | 3 | Vertical | 63 | 1.78 | - | 32.80 | 4.96 | 33.45 |
| PK | 7.30992G | 53.00 | 74.00 | -21.00 | 43.23 | 3 | Vertical | 124 | 1.80 | - | 37.51 | 6.22 | 33.96 |
| AV | 7.31184G | 41.20 | 54.00 | -12.80 | 31.43 | 3 | Vertical | 124 | 1.80 | - | 37.51 | 6.22 | 33.96 |

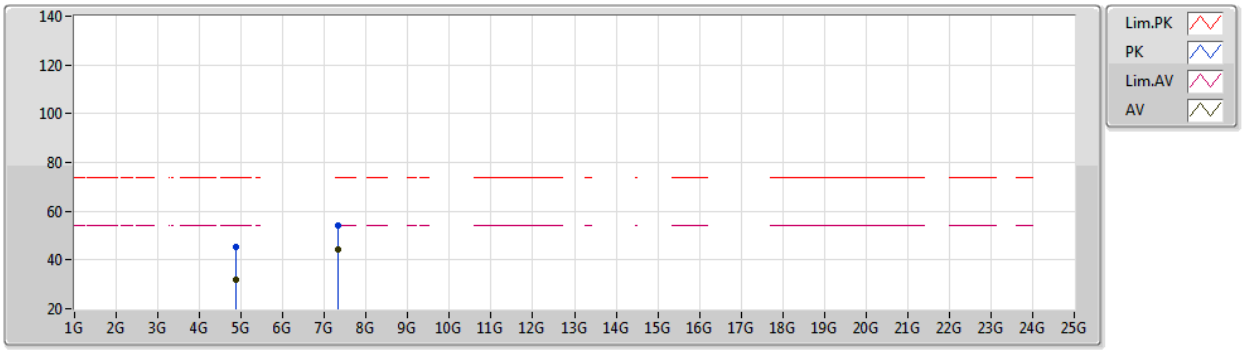
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 6 / Ant. 1, 1S1T (SISO) | **Polarization** | H |

**802.11b_Nss1,(1Mbps)_1TX**

**2437MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87392G | 45.43 | 74.00 | -28.57 | 41.12 | 3 | Horizontal | 165 | 1.68 | - | 32.80 | 4.96 | 33.45 |
| AV | 4.87392G | 32.15 | 54.00 | -21.85 | 27.84 | 3 | Horizontal | 165 | 1.68 | - | 32.80 | 4.96 | 33.45 |
| PK | 7.31188G | 54.06 | 74.00 | -19.94 | 44.29 | 3 | Horizontal | 173 | 1.80 | - | 37.51 | 6.22 | 33.96 |
| AV | 7.31028G | 44.13 | 54.00 | -9.87 | 34.36 | 3 | Horizontal | 173 | 1.80 | - | 37.51 | 6.22 | 33.96 |

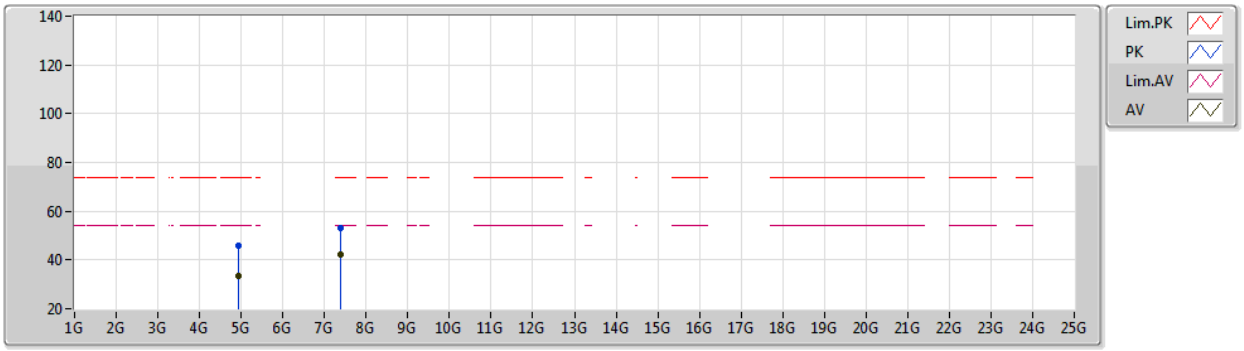
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 11 / Ant. 1, 1S1T (SISO) | **Polarization** | V |

**802.11b_Nss1,(1Mbps)_1TX**

**2462MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.92408G | 45.83 | 74.00 | -28.17 | 41.32 | 3 | Vertical | 114 | 1.80 | - | 32.95 | 4.98 | 33.42 |
| AV | 4.92398G | 33.39 | 54.00 | -20.61 | 28.88 | 3 | Vertical | 114 | 1.80 | - | 32.95 | 4.98 | 33.42 |
| PK | 7.38532G | 52.91 | 74.00 | -21.09 | 43.09 | 3 | Vertical | 124 | 1.93 | - | 37.59 | 6.25 | 34.02 |
| AV | 7.38672G | 42.26 | 54.00 | -11.74 | 32.44 | 3 | Vertical | 124 | 1.93 | - | 37.59 | 6.25 | 34.02 |

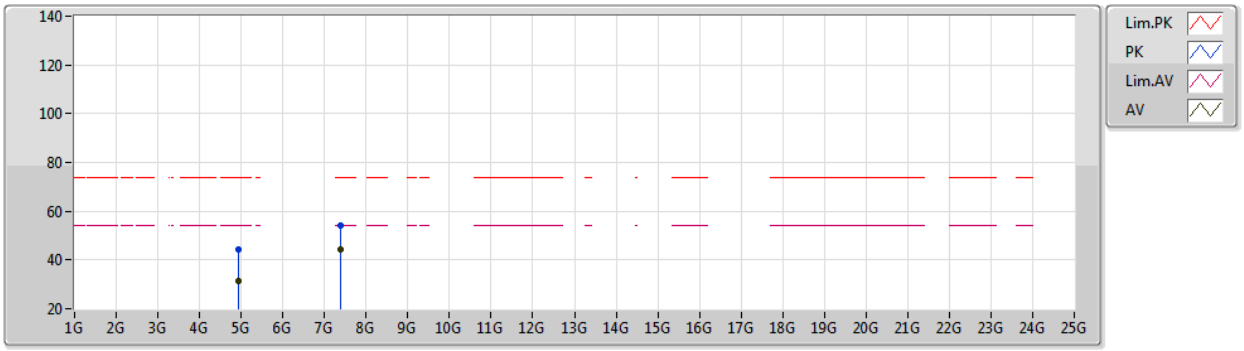
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 11 / Ant. 1, 1S1T (SISO) | **Polarization** | H |

**802.11b_Nss1,(1Mbps)_1TX**

**2462MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.92628G | 44.10 | 74.00 | -29.90 | 39.58 | 3 | Horizontal | 273 | 1.04 | - | 32.95 | 4.98 | 33.41 |
| AV | 4.92388G | 31.17 | 54.00 | -22.83 | 26.66 | 3 | Horizontal | 273 | 1.04 | - | 32.95 | 4.98 | 33.42 |
| PK | 7.38516G | 53.95 | 74.00 | -20.05 | 44.13 | 3 | Horizontal | 166 | 2.07 | - | 37.59 | 6.25 | 34.02 |
| AV | 7.38668G | 44.40 | 54.00 | -9.60 | 34.58 | 3 | Horizontal | 166 | 2.07 | - | 37.59 | 6.25 | 34.02 |

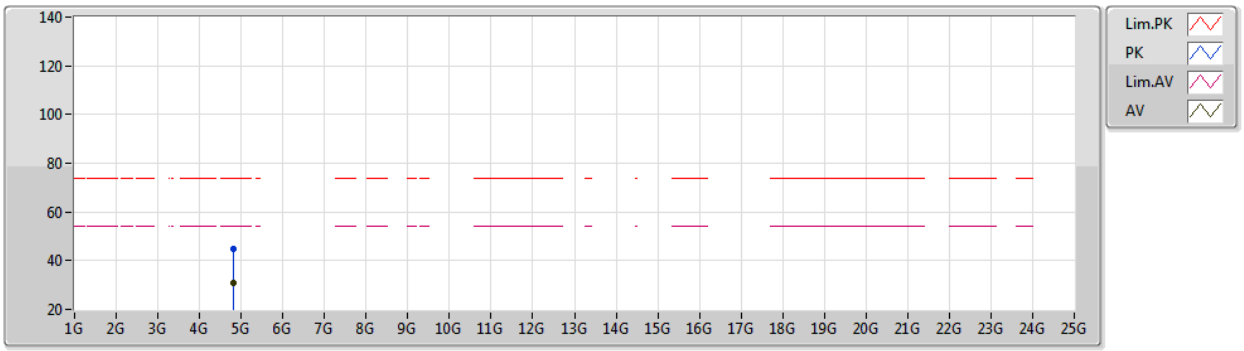
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2412MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.82634G | 44.73 | 74.00 | -29.27 | 40.67 | 3 | Vertical | 141 | 1.26 | - | 32.61 | 4.93 | 33.48 |
| AV | 4.82398G | 30.72 | 54.00 | -23.28 | 26.67 | 3 | Vertical | 141 | 1.26 | - | 32.60 | 4.93 | 33.48 |

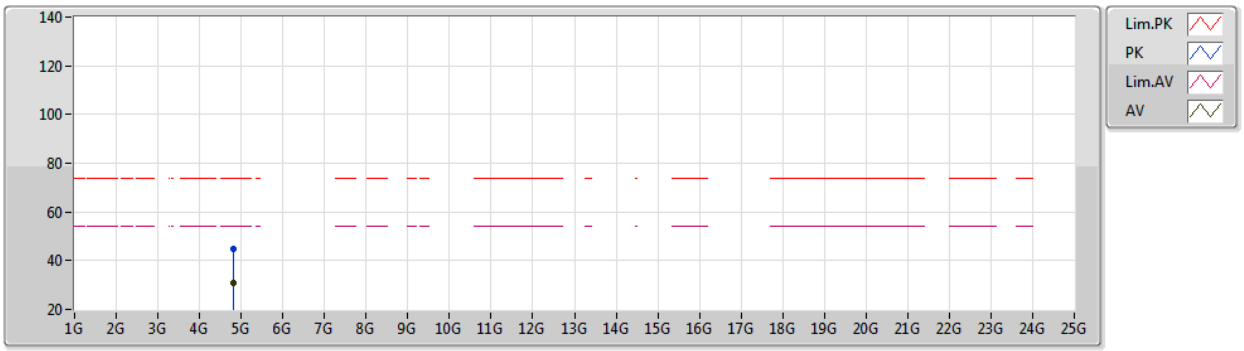
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2412MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.82692G | 44.89 | 74.00 | -29.11 | 40.83 | 3 | Horizontal | 250 | 2.13 | - | 32.61 | 4.93 | 33.48 |
| AV | 4.82154G | 30.66 | 54.00 | -23.34 | 26.62 | 3 | Horizontal | 250 | 2.13 | - | 32.59 | 4.93 | 33.48 |

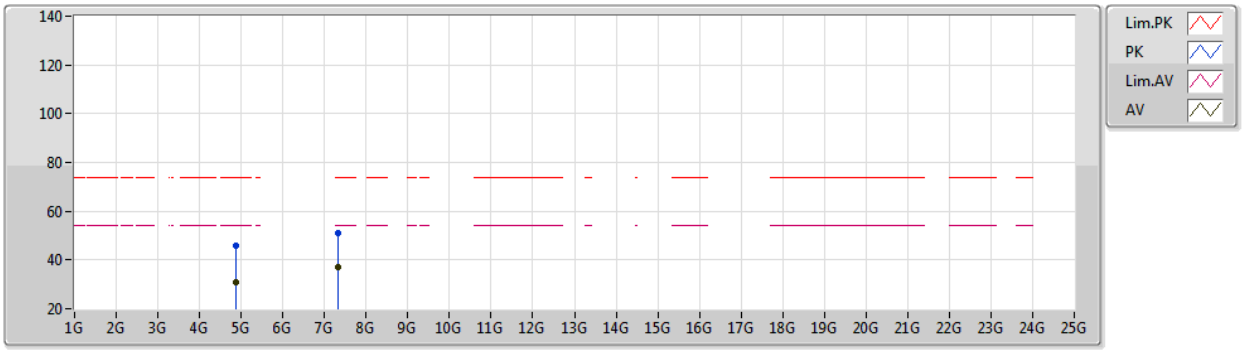
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87198G | 45.81 | 74.00 | -28.19 | 41.51 | 3 | Vertical | 308 | 1.53 | - | 32.79 | 4.96 | 33.45 |
| AV | 4.87556G | 30.97 | 54.00 | -23.03 | 26.66 | 3 | Vertical | 308 | 1.53 | - | 32.80 | 4.96 | 33.45 |
| PK | 7.31502G | 50.89 | 74.00 | -23.11 | 41.10 | 3 | Vertical | 96 | 1.16 | - | 37.52 | 6.23 | 33.96 |
| AV | 7.3153G | 36.87 | 54.00 | -17.13 | 27.08 | 3 | Vertical | 96 | 1.16 | - | 37.52 | 6.23 | 33.96 |

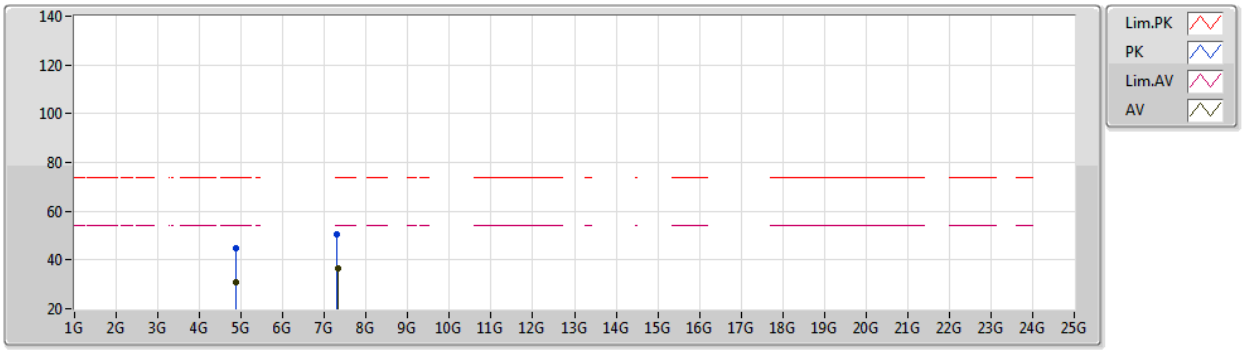
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.8789G | 45.05 | 74.00 | -28.95 | 40.71 | 3 | Horizontal | 335 | 1.71 | - | 32.82 | 4.96 | 33.44 |
| AV | 4.87496G | 30.86 | 54.00 | -23.14 | 26.55 | 3 | Horizontal | 335 | 1.71 | - | 32.80 | 4.96 | 33.45 |
| PK | 7.30796G | 50.60 | 74.00 | -23.40 | 40.83 | 3 | Horizontal | 89 | 1.80 | - | 37.51 | 6.22 | 33.96 |
| AV | 7.31546G | 36.79 | 54.00 | -17.21 | 27.00 | 3 | Horizontal | 89 | 1.80 | - | 37.52 | 6.23 | 33.96 |

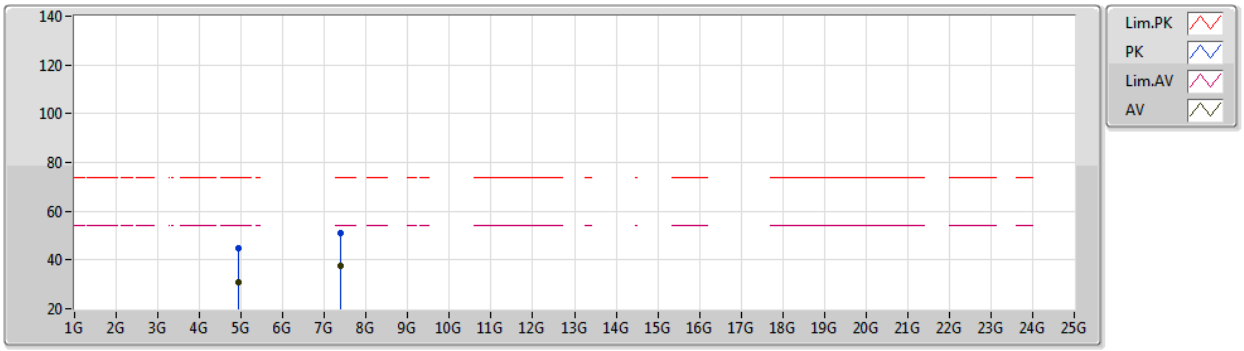
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2462MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.92374G | 45.03 | 74.00 | -28.97 | 40.52 | 3 | Vertical | 169 | 2.30 | - | 32.95 | 4.98 | 33.42 |
| AV | 4.92476G | 31.06 | 54.00 | -22.94 | 26.55 | 3 | Vertical | 169 | 2.30 | - | 32.95 | 4.98 | 33.42 |
| PK | 7.3888G | 51.08 | 74.00 | -22.92 | 41.25 | 3 | Vertical | 124 | 1.80 | - | 37.59 | 6.26 | 34.02 |
| AV | 7.38976G | 37.83 | 54.00 | -16.17 | 28.00 | 3 | Vertical | 124 | 1.80 | - | 37.59 | 6.26 | 34.02 |

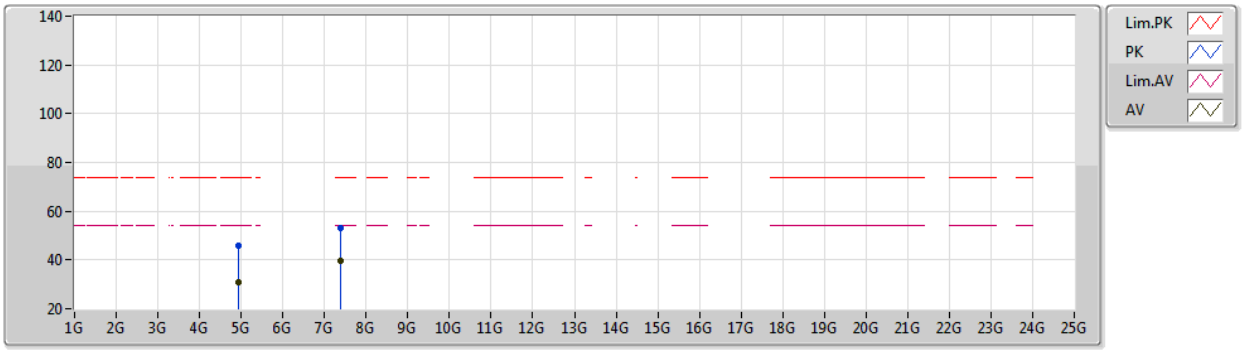
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2462MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.92432G | 46.06 | 74.00 | -27.94 | 41.55 | 3 | Horizontal | 36 | 2.92 | - | 32.95 | 4.98 | 33.42 |
| AV | 4.92514G | 31.09 | 54.00 | -22.91 | 26.57 | 3 | Horizontal | 36 | 2.92 | - | 32.95 | 4.98 | 33.41 |
| PK | 7.3888G | 53.19 | 74.00 | -20.81 | 43.36 | 3 | Horizontal | 168 | 1.55 | - | 37.59 | 6.26 | 34.02 |
| AV | 7.3856G | 39.43 | 54.00 | -14.57 | 29.61 | 3 | Horizontal | 168 | 1.55 | - | 37.59 | 6.25 | 34.02 |

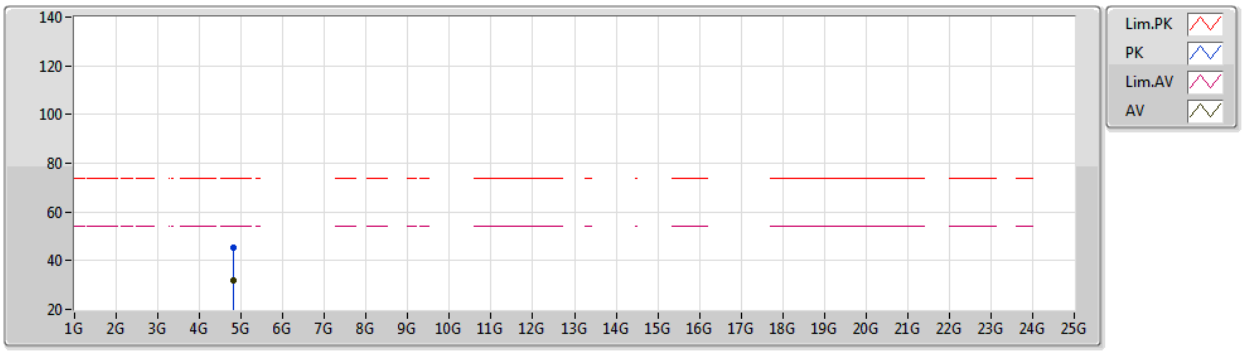
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2412MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.82238G | 45.10 | 74.00 | -28.90 | 41.06 | 3 | Vertical | 63 | 1.53 | - | 32.59 | 4.93 | 33.48 |
| AV | 4.82842G | 31.80 | 54.00 | -22.20 | 27.74 | 3 | Vertical | 63 | 1.53 | - | 32.61 | 4.93 | 33.48 |

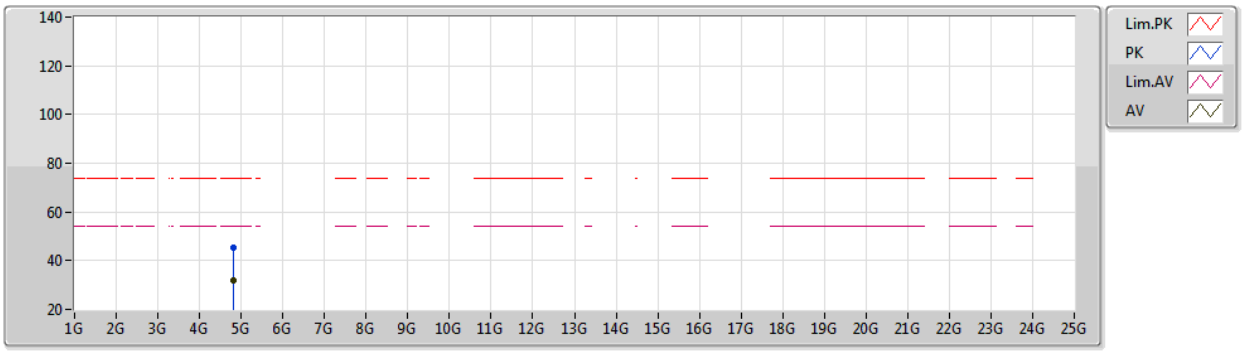
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2412MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.81964G | 45.55 | 74.00 | -28.45 | 41.53 | 3 | Horizontal | 229 | 2.09 | - | 32.58 | 4.93 | 33.49 |
| AV | 4.82336G | 31.80 | 54.00 | -22.20 | 27.76 | 3 | Horizontal | 229 | 2.09 | - | 32.59 | 4.93 | 33.48 |

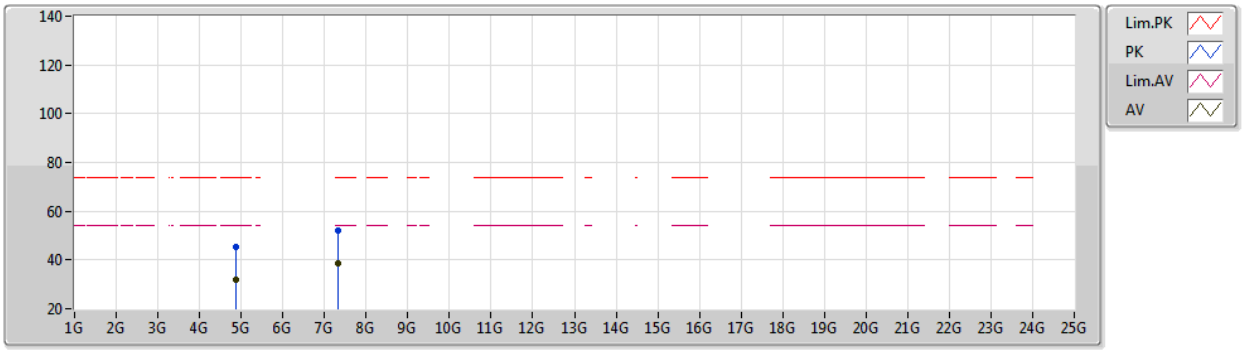
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87688G | 45.23 | 74.00 | -28.77 | 40.91 | 3 | Vertical | 209 | 1.88 | - | 32.81 | 4.96 | 33.45 |
| AV | 4.87242G | 31.94 | 54.00 | -22.06 | 27.64 | 3 | Vertical | 209 | 1.88 | - | 32.79 | 4.96 | 33.45 |
| PK | 7.321G | 52.18 | 74.00 | -21.82 | 42.40 | 3 | Vertical | 127 | 1.80 | - | 37.52 | 6.23 | 33.97 |
| AV | 7.3182G | 38.64 | 54.00 | -15.36 | 28.85 | 3 | Vertical | 127 | 1.80 | - | 37.52 | 6.23 | 33.96 |

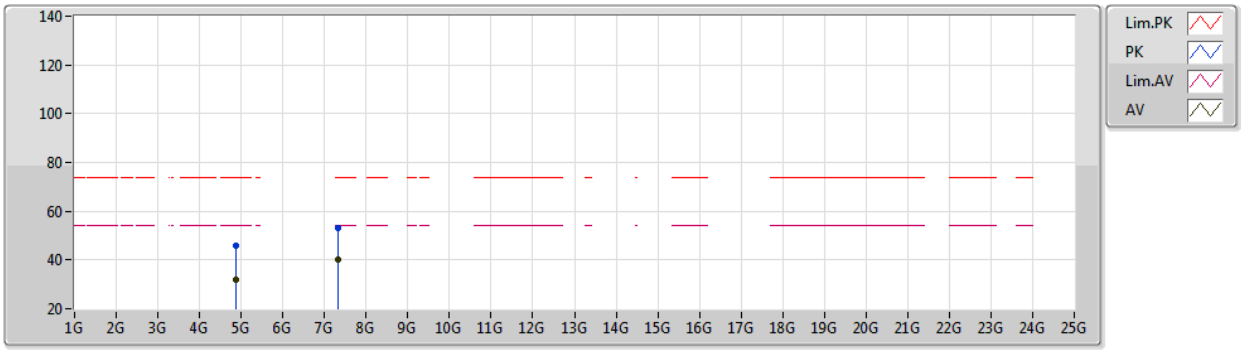
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.86962G | 45.91 | 74.00 | -28.09 | 41.63 | 3 | Horizontal | 241 | 2.44 | - | 32.78 | 4.95 | 33.45 |
| AV | 4.87498G | 32.02 | 54.00 | -21.98 | 27.71 | 3 | Horizontal | 241 | 2.44 | - | 32.80 | 4.96 | 33.45 |
| PK | 7.323G | 52.98 | 74.00 | -21.02 | 43.20 | 3 | Horizontal | 171 | 1.41 | - | 37.52 | 6.23 | 33.97 |
| AV | 7.3242G | 39.92 | 54.00 | -14.08 | 30.14 | 3 | Horizontal | 171 | 1.41 | - | 37.52 | 6.23 | 33.97 |

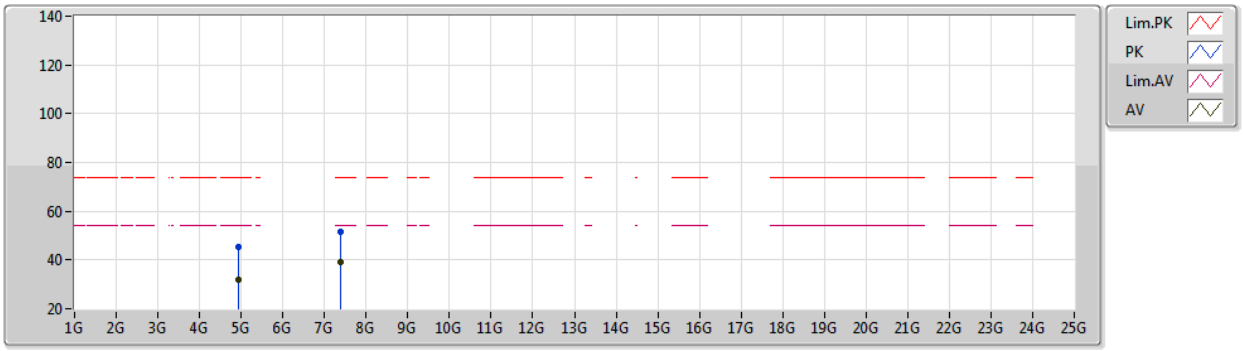
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2462MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.92124G | 45.50 | 74.00 | -28.50 | 41.00 | 3 | Vertical | 62 | 1.28 | - | 32.94 | 4.98 | 33.42 |
| AV | 4.9268G | 32.14 | 54.00 | -21.86 | 27.62 | 3 | Vertical | 62 | 1.28 | - | 32.95 | 4.98 | 33.41 |
| PK | 7.3932G | 51.41 | 74.00 | -22.59 | 41.58 | 3 | Vertical | 98 | 2.81 | - | 37.59 | 6.26 | 34.02 |
| AV | 7.3964G | 38.91 | 54.00 | -15.09 | 29.08 | 3 | Vertical | 98 | 2.81 | - | 37.60 | 6.26 | 34.03 |

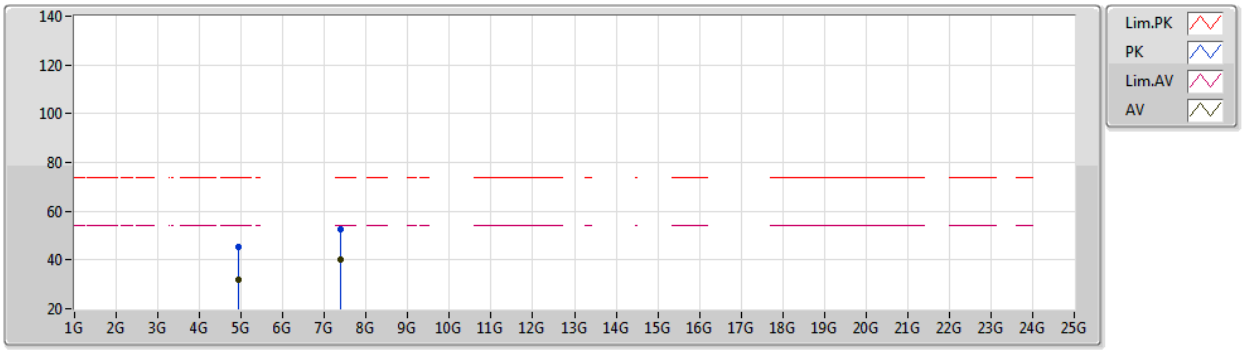
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2462MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.92656G | 45.22 | 74.00 | -28.78 | 40.70 | 3 | Horizontal | 48 | 1.41 | - | 32.95 | 4.98 | 33.41 |
| AV | 4.92544G | 32.09 | 54.00 | -21.91 | 27.57 | 3 | Horizontal | 48 | 1.41 | - | 32.95 | 4.98 | 33.41 |
| PK | 7.3776G | 52.70 | 74.00 | -21.30 | 42.88 | 3 | Horizontal | 164 | 2.10 | - | 37.58 | 6.25 | 34.01 |
| AV | 7.3804G | 40.08 | 54.00 | -13.92 | 30.26 | 3 | Horizontal | 164 | 2.10 | - | 37.58 | 6.25 | 34.01 |

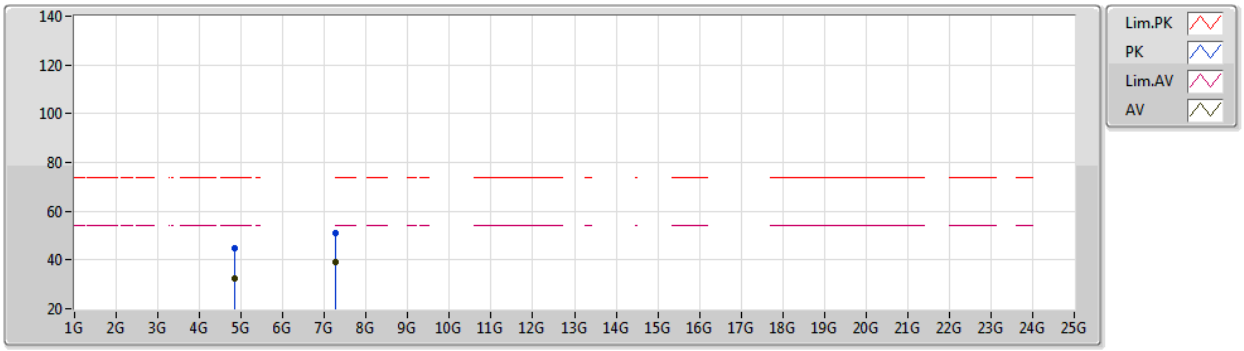
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2422MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.84182G | 44.90 | 74.00 | -29.10 | 40.76 | 3 | Vertical | 225 | 2.34 | - | 32.67 | 4.94 | 33.47 |
| AV | 4.8473G | 32.60 | 54.00 | -21.40 | 28.44 | 3 | Vertical | 225 | 2.34 | - | 32.69 | 4.94 | 33.47 |
| PK | 7.2592G | 51.28 | 74.00 | -22.72 | 41.65 | 3 | Vertical | 131 | 1.61 | - | 37.34 | 6.20 | 33.91 |
| AV | 7.2596G | 38.98 | 54.00 | -15.02 | 29.35 | 3 | Vertical | 131 | 1.61 | - | 37.34 | 6.20 | 33.91 |

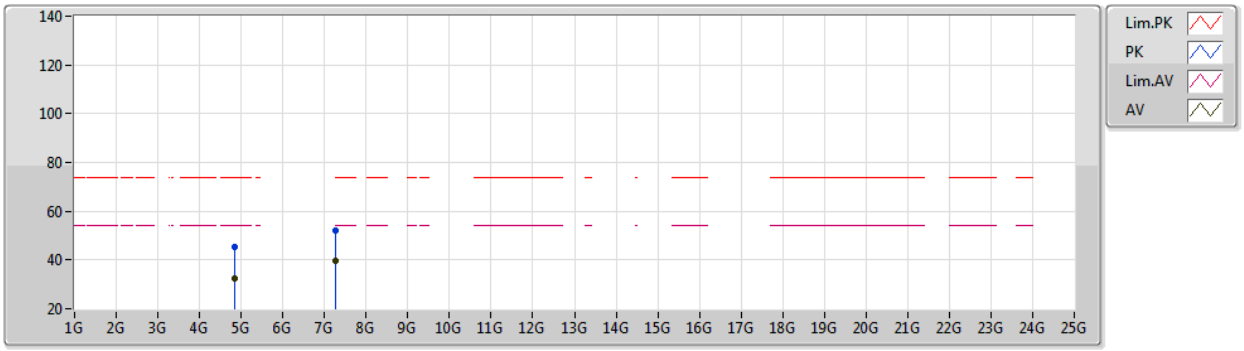
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2422MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.84478G | 45.34 | 74.00 | -28.66 | 41.19 | 3 | Horizontal | 25 | 1.87 | - | 32.68 | 4.94 | 33.47 |
| AV | 4.83928G | 32.66 | 54.00 | -21.34 | 28.53 | 3 | Horizontal | 25 | 1.87 | - | 32.66 | 4.94 | 33.47 |
| PK | 7.2556G | 51.95 | 74.00 | -22.05 | 42.35 | 3 | Horizontal | 160 | 2.34 | - | 37.32 | 6.19 | 33.91 |
| AV | 7.2568G | 39.54 | 54.00 | -14.46 | 29.93 | 3 | Horizontal | 160 | 2.34 | - | 37.33 | 6.19 | 33.91 |

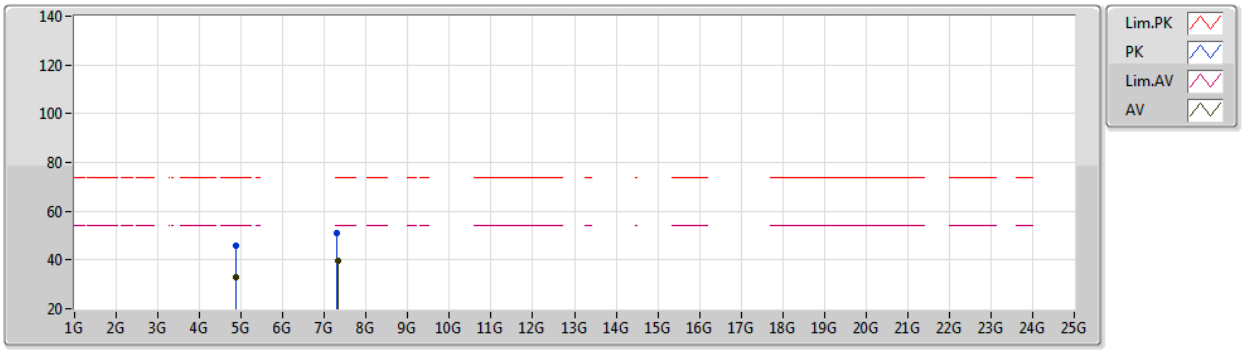
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87626G | 45.62 | 74.00 | -28.38 | 41.30 | 3 | Vertical | 285 | 2.03 | - | 32.81 | 4.96 | 33.45 |
| AV | 4.87844G | 32.83 | 54.00 | -21.17 | 28.51 | 3 | Vertical | 285 | 2.03 | - | 32.81 | 4.96 | 33.45 |
| PK | 7.2914G | 51.02 | 74.00 | -22.98 | 41.28 | 3 | Vertical | 93 | 2.69 | - | 37.47 | 6.21 | 33.94 |
| AV | 7.3302G | 39.50 | 54.00 | -14.50 | 29.71 | 3 | Vertical | 93 | 2.69 | - | 37.53 | 6.23 | 33.97 |

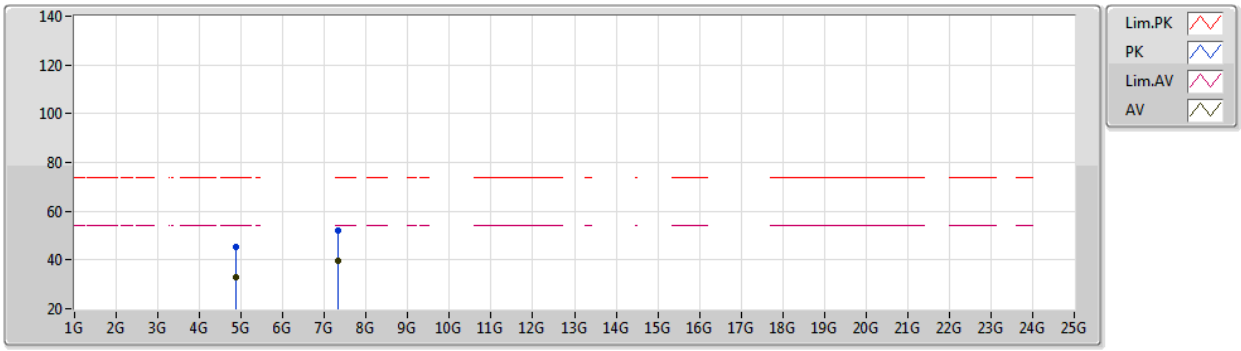
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87778G | 45.55 | 74.00 | -28.45 | 41.23 | 3 | Horizontal | 145 | 1.55 | - | 32.81 | 4.96 | 33.45 |
| AV | 4.8789G | 32.89 | 54.00 | -21.11 | 28.55 | 3 | Horizontal | 145 | 1.55 | - | 32.82 | 4.96 | 33.44 |
| PK | 7.321G | 52.03 | 74.00 | -21.97 | 42.25 | 3 | Horizontal | 173 | 2.13 | - | 37.52 | 6.23 | 33.97 |
| AV | 7.3278G | 39.81 | 54.00 | -14.19 | 30.02 | 3 | Horizontal | 173 | 2.13 | - | 37.53 | 6.23 | 33.97 |

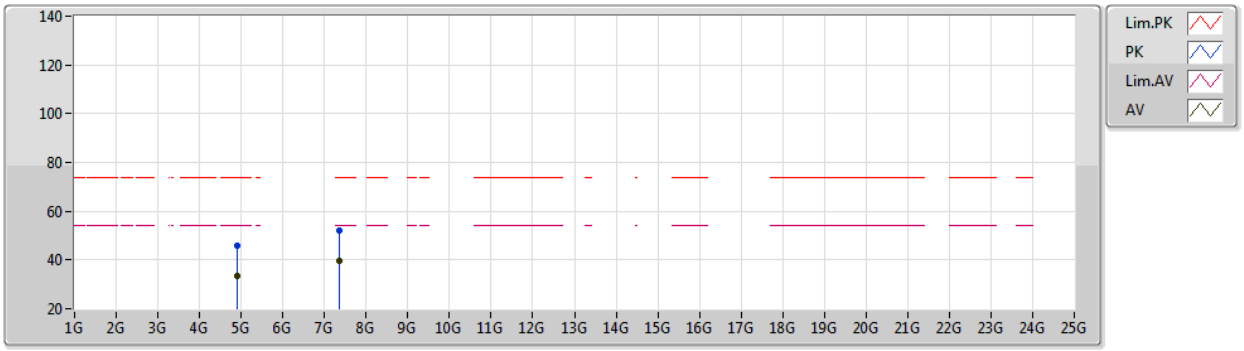
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2452MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.908G | 45.95 | 74.00 | -28.05 | 41.49 | 3 | Vertical | 18 | 1.80 | - | 32.92 | 4.97 | 33.43 |
| AV | 4.90392G | 33.33 | 54.00 | -20.67 | 28.88 | 3 | Vertical | 18 | 1.80 | - | 32.91 | 4.97 | 33.43 |
| PK | 7.35604G | 51.91 | 74.00 | -22.09 | 42.10 | 3 | Vertical | 85 | 2.98 | - | 37.56 | 6.24 | 33.99 |
| AV | 7.35912G | 39.54 | 54.00 | -14.46 | 29.74 | 3 | Vertical | 85 | 2.98 | - | 37.56 | 6.24 | 34.00 |

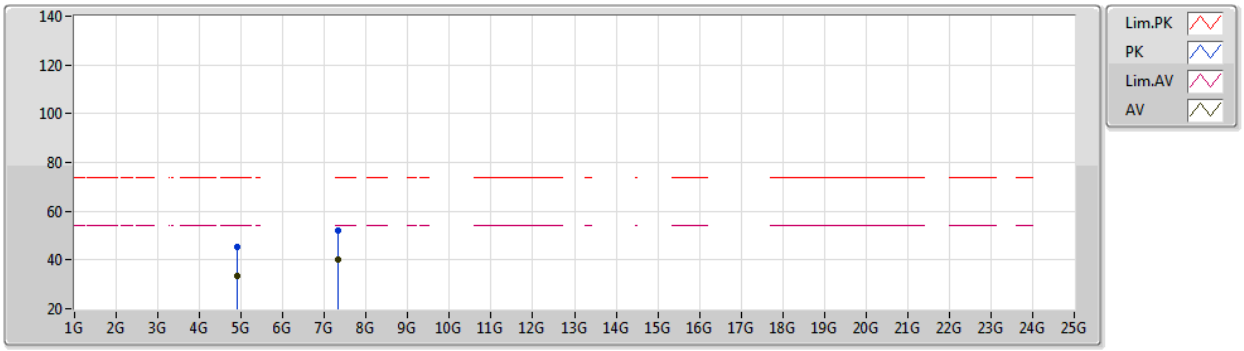
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2452MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.89976G | 45.52 | 74.00 | -28.48 | 41.08 | 3 | Horizontal | 79 | 1.99 | - | 32.90 | 4.97 | 33.43 |
| AV | 4.90156G | 33.26 | 54.00 | -20.74 | 28.82 | 3 | Horizontal | 79 | 1.99 | - | 32.90 | 4.97 | 33.43 |
| PK | 7.3396G | 52.19 | 74.00 | -21.81 | 42.39 | 3 | Horizontal | 169 | 1.64 | - | 37.54 | 6.24 | 33.98 |
| AV | 7.3356G | 40.05 | 54.00 | -13.95 | 30.26 | 3 | Horizontal | 169 | 1.64 | - | 37.54 | 6.23 | 33.98 |

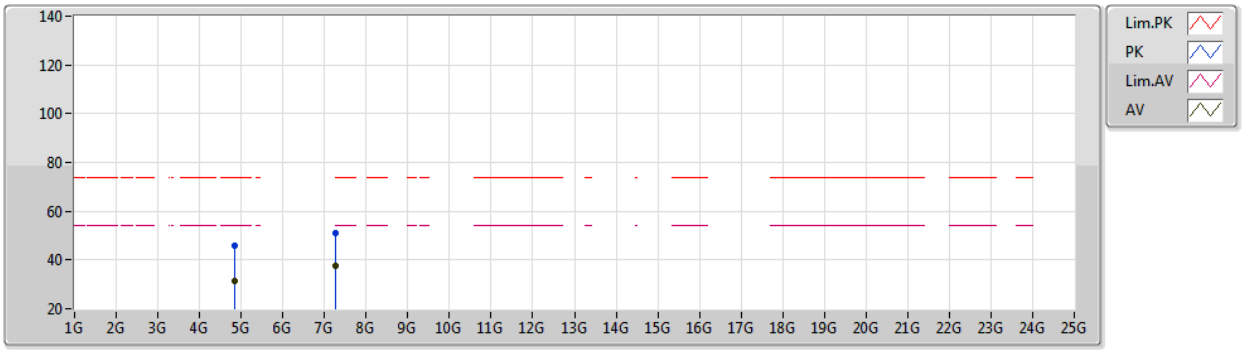
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2422MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.84612G | 45.66 | 74.00 | -28.34 | 41.51 | 3 | Vertical | 328 | 1.34 | - | 32.68 | 4.94 | 33.47 |
| AV | 4.84704G | 31.50 | 54.00 | -22.50 | 27.34 | 3 | Vertical | 328 | 1.34 | - | 32.69 | 4.94 | 33.47 |
| PK | 7.254G | 51.25 | 74.00 | -22.75 | 41.65 | 3 | Vertical | 179 | 1.80 | - | 37.32 | 6.19 | 33.91 |
| AV | 7.2524G | 37.41 | 54.00 | -16.59 | 27.82 | 3 | Vertical | 179 | 1.80 | - | 37.31 | 6.19 | 33.91 |

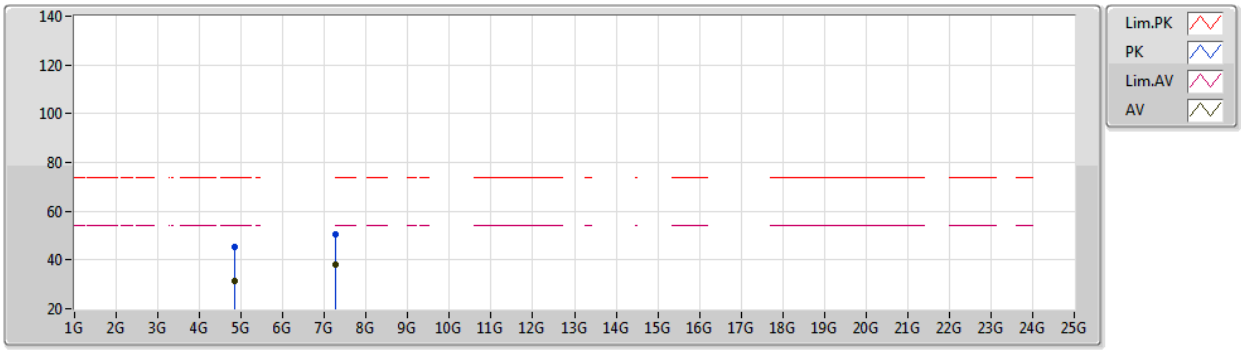
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2422MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.8391G | 45.28 | 74.00 | -28.72 | 41.15 | 3 | Horizontal | 246 | 1.65 | - | 32.66 | 4.94 | 33.47 |
| AV | 4.84078G | 31.46 | 54.00 | -22.54 | 27.33 | 3 | Horizontal | 246 | 1.65 | - | 32.66 | 4.94 | 33.47 |
| PK | 7.2712G | 50.74 | 74.00 | -23.26 | 41.08 | 3 | Horizontal | 162 | 2.28 | - | 37.38 | 6.20 | 33.92 |
| AV | 7.2584G | 37.96 | 54.00 | -16.04 | 28.34 | 3 | Horizontal | 162 | 2.28 | - | 37.33 | 6.20 | 33.91 |

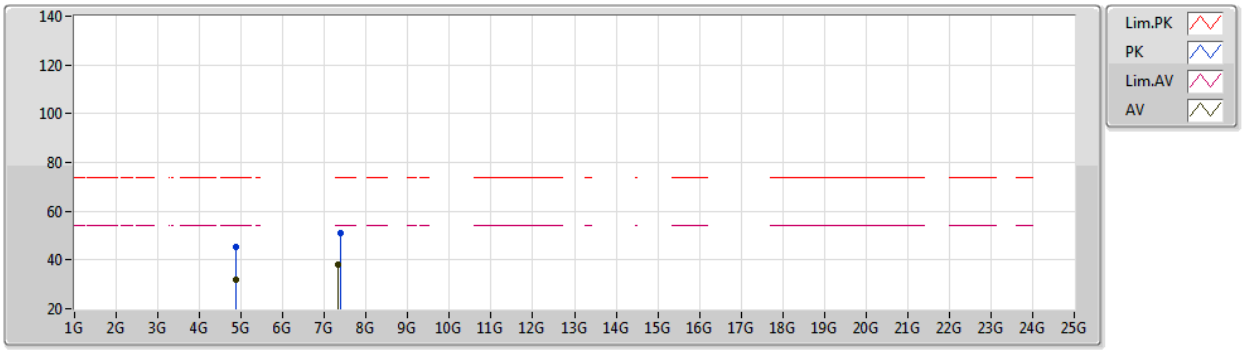
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87272G | 45.55 | 74.00 | -28.45 | 41.25 | 3 | Vertical | 295 | 2.30 | - | 32.79 | 4.96 | 33.45 |
| AV | 4.87436G | 31.73 | 54.00 | -22.27 | 27.42 | 3 | Vertical | 295 | 2.30 | - | 32.80 | 4.96 | 33.45 |
| PK | 7.381G | 50.87 | 74.00 | -23.13 | 41.05 | 3 | Vertical | 184 | 2.99 | - | 37.58 | 6.25 | 34.01 |
| AV | 7.3166G | 37.92 | 54.00 | -16.08 | 28.13 | 3 | Vertical | 184 | 2.99 | - | 37.52 | 6.23 | 33.96 |

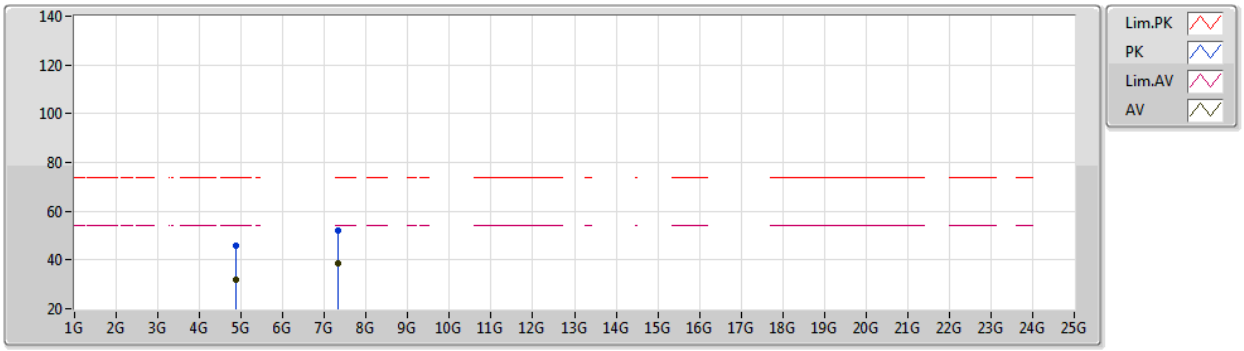
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87282G | 45.77 | 74.00 | -28.23 | 41.47 | 3 | Horizontal | 335 | 1.03 | - | 32.79 | 4.96 | 33.45 |
| AV | 4.87586G | 31.68 | 54.00 | -22.32 | 27.37 | 3 | Horizontal | 335 | 1.03 | - | 32.80 | 4.96 | 33.45 |
| PK | 7.3226G | 52.23 | 74.00 | -21.77 | 42.45 | 3 | Horizontal | 172 | 1.48 | - | 37.52 | 6.23 | 33.97 |
| AV | 7.3262G | 38.70 | 54.00 | -15.30 | 28.91 | 3 | Horizontal | 172 | 1.48 | - | 37.53 | 6.23 | 33.97 |

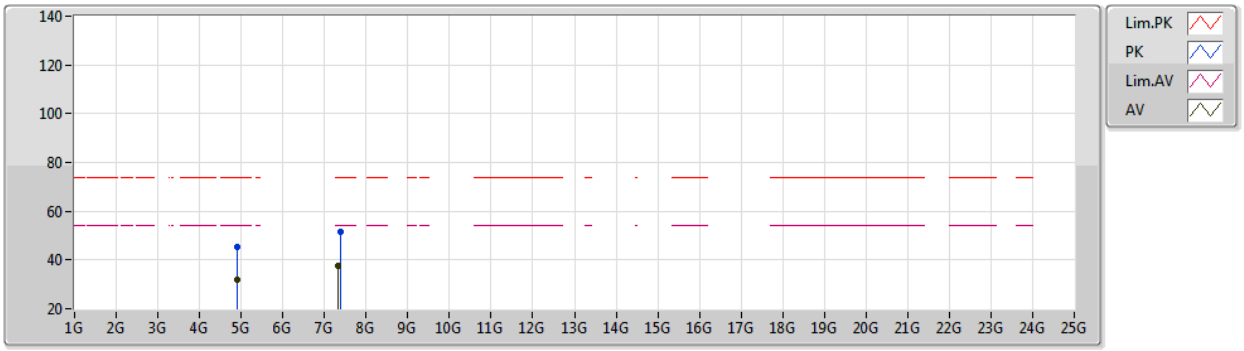
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2452MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.90538G | 45.55 | 74.00 | -28.45 | 41.10 | 3 | Vertical | 270 | 1.71 | - | 32.91 | 4.97 | 33.43 |
| AV | 4.9011G | 31.84 | 54.00 | -22.16 | 27.40 | 3 | Vertical | 270 | 1.71 | - | 32.90 | 4.97 | 33.43 |
| PK | 7.39G | 51.51 | 74.00 | -22.49 | 41.68 | 3 | Vertical | 128 | 1.80 | - | 37.59 | 6.26 | 34.02 |
| AV | 7.3216G | 37.72 | 54.00 | -16.28 | 27.94 | 3 | Vertical | 128 | 1.80 | - | 37.52 | 6.23 | 33.97 |

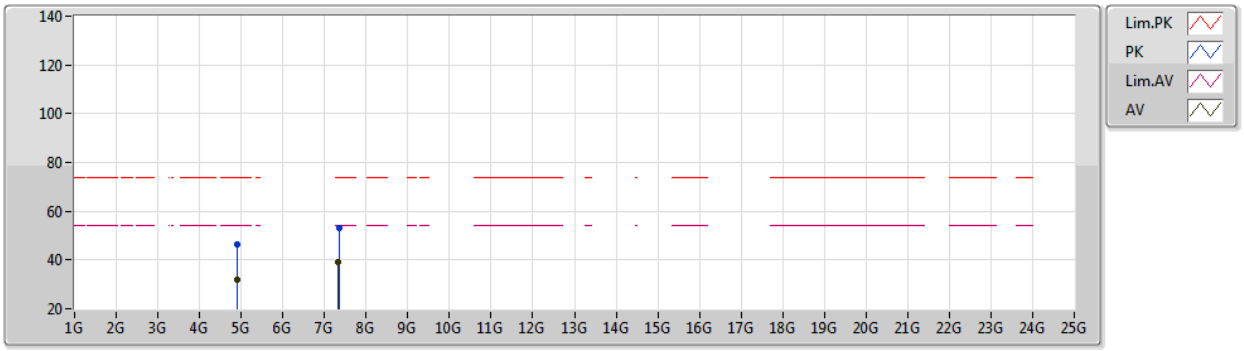
Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Emissions (1GHz~10th Harmonic) | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2452MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.90082G | 46.36 | 74.00 | -27.64 | 41.92 | 3 | Horizontal | 237 | 1.70 | - | 32.90 | 4.97 | 33.43 |
| AV | 4.90122G | 31.86 | 54.00 | -22.14 | 27.42 | 3 | Horizontal | 237 | 1.70 | - | 32.90 | 4.97 | 33.43 |
| PK | 7.358G | 53.03 | 74.00 | -20.97 | 43.23 | 3 | Horizontal | 164 | 1.75 | - | 37.56 | 6.24 | 34.00 |
| AV | 7.3308G | 39.04 | 54.00 | -14.96 | 29.25 | 3 | Horizontal | 164 | 1.75 | - | 37.53 | 6.23 | 33.97 |

Note 1: The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

## 2.6. Emissions Measurement

### 2.6.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(kHz) | 300 |
| 0.490~1.705 | 24000/F(kHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 2.6.2. Measuring Instruments and Setting

Please refer to section 3 of equipments list in this report. The following table is the setting of the spectrum analyzer.

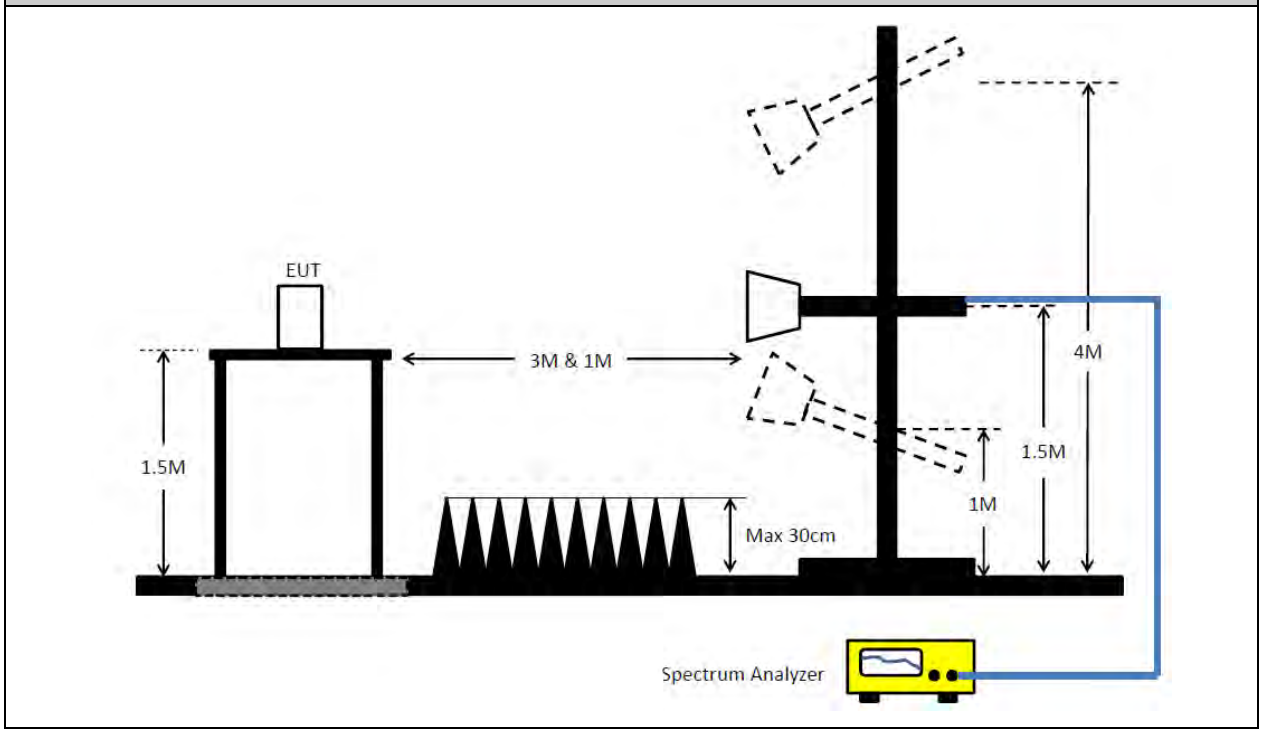
| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | 100 MHz |
| RBW / VBW (Emission in restricted band) | 1MHz / 3MHz for Peak,<br>1MHz / 1/T for Average |
| RBW / VBW (30dBc in any 100 kHz bandwidth emission) | 100 kHz / 300 kHz for Peak |

### 2.6.3. Test Procedures

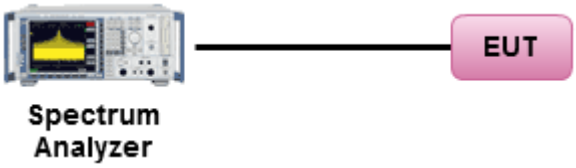
1. The test procedure for Emission in restricted band is the same as section 2.5.3, only the frequency range investigated is limited to 100MHz around band edges.
2. Test for Emission in non-restricted band was performed in accordance with KDB558074 D01 v05r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 11 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure.

### 2.6.4. Test Setup Layout

**Emission in restricted band**




**Emission in non-restricted band**




### 2.6.5. Test Deviation

There is no deviation with the original standard.

### 2.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

### 2.6.7. Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor (if applicable) = Level.

### 2.6.8. Test Result of Band Edge and Fundamental Emissions

**Following channel(s) was (were) selected for the final test as listed below.**

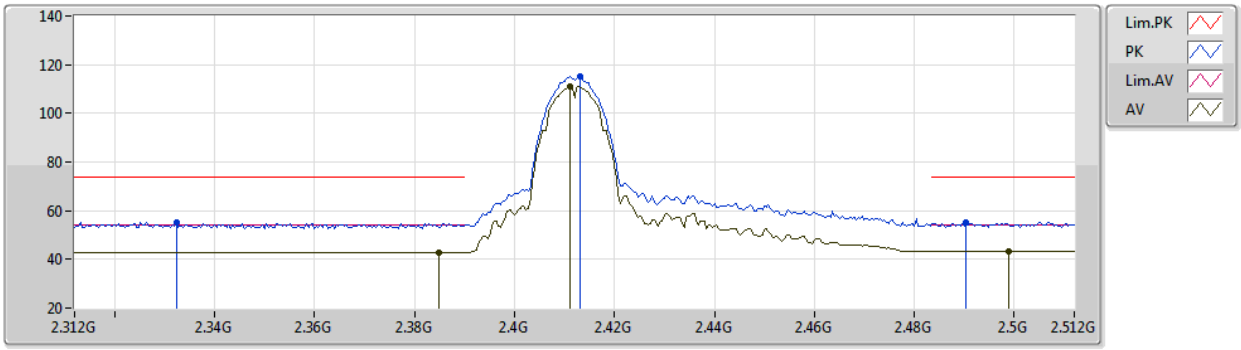
| MODE | TX Chain | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|
| 802.11b | Ant. 3, 1S1T (SISO) | 1, 6, 11 | DSSS | DBPSK | 1 |
| 802.11ax 20MHz | Ant. 1+2, 1S2T (CDD) | 1, 6, 11 | OFDMA | BPSK | MCS0/Nss1 (8.6) |
| 802.11ax 20MHz | Ant. 1+2, 1S2T (TXBF) | 1, 6, 11 | OFDMA | BPSK | MCS0/Nss1 (8.6) |
| 802.11ax 40MHz | Ant. 1+2, 1S2T (CDD) | 3, 6, 9 | OFDMA | BPSK | MCS0/Nss1 (17.2) |
| 802.11ax 40MHz | Ant. 1+2, 1S2T (TXBF) | 3, 6, 9 | OFDMA | BPSK | MCS0/Nss1 (17.2) |

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 1 / Ant. 1, 1S1T (SISO) | **Polarization** | V |

**802.11b_Nss1,(1Mbps)_1TX**

**2412MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3324G | 55.30 | 74.00 | -18.70 | 24.91 | 3 | Vertical | 270 | 1.36 | - | 27.57 | 2.82 | - |
| AV | 2.3848G | 42.95 | 54.00 | -11.05 | 12.58 | 3 | Vertical | 270 | 1.36 | - | 27.52 | 2.85 | - |
| PK | 2.4132G | 115.02 | Inf | -Inf | 84.60 | 3 | Vertical | 270 | 1.36 | - | 27.55 | 2.87 | - |
| AV | 2.4112G | 111.09 | Inf | -Inf | 80.68 | 3 | Vertical | 270 | 1.36 | - | 27.54 | 2.87 | - |
| PK | 2.4904G | 55.01 | 74.00 | -18.99 | 24.24 | 3 | Vertical | 270 | 1.36 | - | 27.86 | 2.91 | - |
| AV | 2.4988G | 43.24 | 54.00 | -10.76 | 12.42 | 3 | Vertical | 270 | 1.36 | - | 27.90 | 2.92 | - |

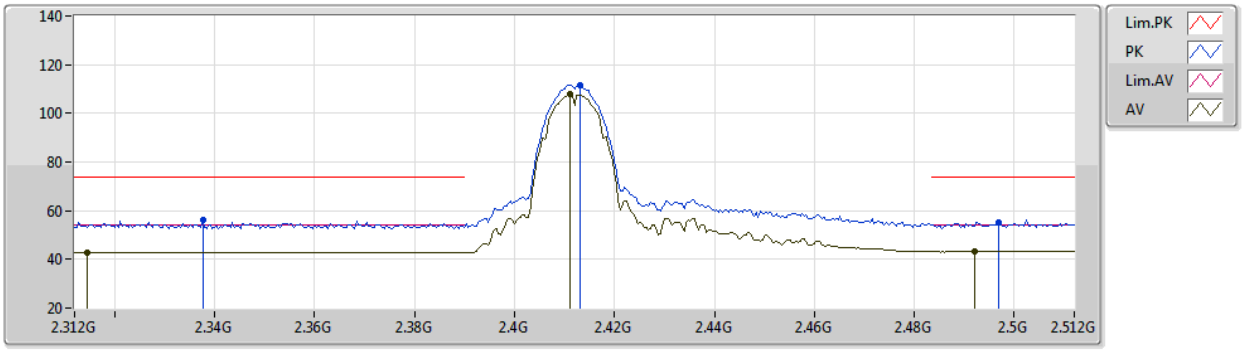
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2412 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 1 / Ant. 1, 1S1T (SISO) | **Polarization** | H |

**802.11b_Nss1,(1Mbps)_1TX**

**2412MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3376G | 56.32 | 74.00 | -17.68 | 25.94 | 3 | Horizontal | 133 | 1.33 | - | 27.56 | 2.82 | - |
| AV | 2.3144G | 42.96 | 54.00 | -11.04 | 12.56 | 3 | Horizontal | 133 | 1.33 | - | 27.59 | 2.81 | - |
| PK | 2.4132G | 111.75 | Inf | -Inf | 81.33 | 3 | Horizontal | 133 | 1.33 | - | 27.55 | 2.87 | - |
| AV | 2.4112G | 107.91 | Inf | -Inf | 77.50 | 3 | Horizontal | 133 | 1.33 | - | 27.54 | 2.87 | - |
| PK | 2.4968G | 55.09 | 74.00 | -18.91 | 24.28 | 3 | Horizontal | 133 | 1.33 | - | 27.89 | 2.92 | - |
| AV | 2.492G | 43.21 | 54.00 | -10.79 | 12.42 | 3 | Horizontal | 133 | 1.33 | - | 27.87 | 2.92 | - |

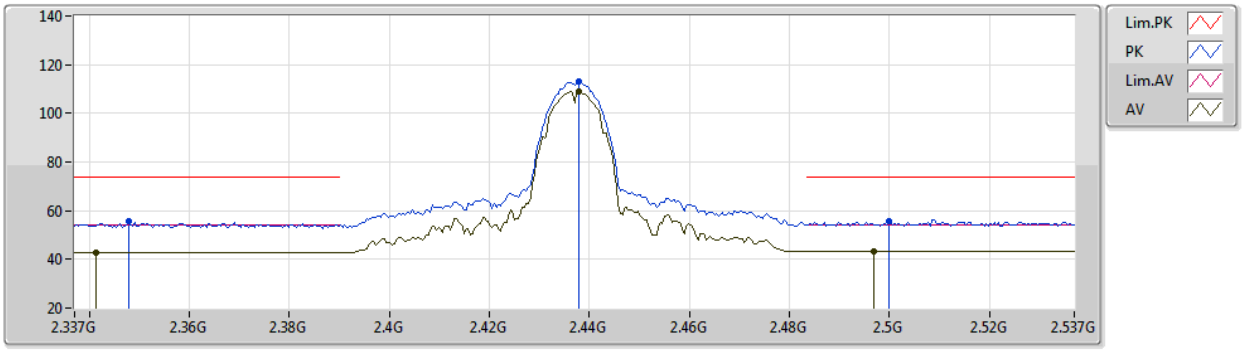
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2412 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 6 / Ant. 1, 1S1T (SISO) | **Polarization** | V |

**802.11b_Nss1,(1Mbps)_1TX**

**2437MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3478G | 55.63 | 74.00 | -18.37 | 25.25 | 3 | Vertical | 135 | 1.50 | - | 27.55 | 2.83 | - |
| AV | 2.3414G | 42.85 | 54.00 | -11.15 | 12.47 | 3 | Vertical | 135 | 1.50 | - | 27.56 | 2.82 | - |
| PK | 2.4378G | 112.97 | Inf | -Inf | 82.44 | 3 | Vertical | 135 | 1.50 | - | 27.65 | 2.88 | - |
| AV | 2.4378G | 108.92 | Inf | -Inf | 78.39 | 3 | Vertical | 135 | 1.50 | - | 27.65 | 2.88 | - |
| PK | 2.4998G | 55.48 | 74.00 | -18.52 | 24.66 | 3 | Vertical | 135 | 1.50 | - | 27.90 | 2.92 | - |
| AV | 2.497G | 43.31 | 54.00 | -10.69 | 12.50 | 3 | Vertical | 135 | 1.50 | - | 27.89 | 2.92 | - |

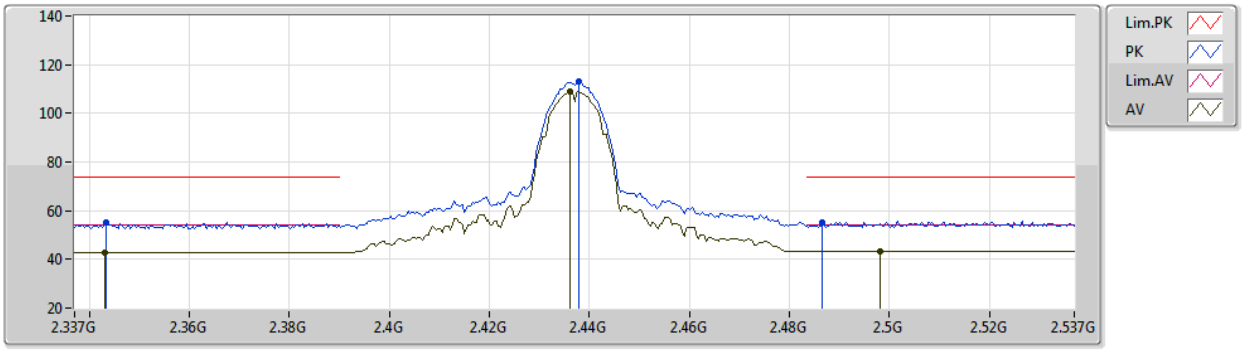
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 6 / Ant. 1, 1S1T (SISO) | **Polarization** | H |

**802.11b_Nss1,(1Mbps)_1TX**

**2437MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3434G | 55.02 | 74.00 | -18.98 | 24.63 | 3 | Horizontal | 153 | 2.34 | - | 27.56 | 2.83 | - |
| AV | 2.343G | 42.86 | 54.00 | -11.14 | 12.47 | 3 | Horizontal | 153 | 2.34 | - | 27.56 | 2.83 | - |
| PK | 2.4378G | 112.90 | Inf | -Inf | 82.37 | 3 | Horizontal | 153 | 2.34 | - | 27.65 | 2.88 | - |
| AV | 2.4362G | 108.75 | Inf | -Inf | 78.23 | 3 | Horizontal | 153 | 2.34 | - | 27.64 | 2.88 | - |
| PK | 2.4866G | 55.40 | 74.00 | -18.60 | 24.64 | 3 | Horizontal | 153 | 2.34 | - | 27.85 | 2.91 | - |
| AV | 2.4982G | 43.31 | 54.00 | -10.69 | 12.50 | 3 | Horizontal | 153 | 2.34 | - | 27.89 | 2.92 | - |

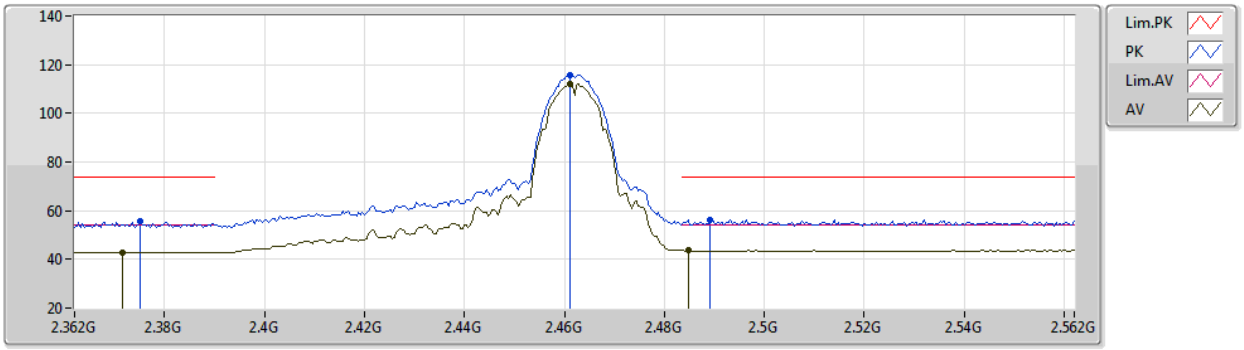
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 11 / Ant. 1, 1S1T (SISO) | **Polarization** | V |

**802.11b_Nss1,(1Mbps)_1TX**

**2462MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3752G | 55.79 | 74.00 | -18.21 | 25.42 | 3 | Vertical | 270 | 1.91 | - | 27.52 | 2.85 | - |
| AV | 2.3716G | 42.88 | 54.00 | -11.12 | 12.51 | 3 | Vertical | 270 | 1.91 | - | 27.53 | 2.84 | - |
| PK | 2.4612G | 115.91 | Inf | -Inf | 85.27 | 3 | Vertical | 270 | 1.91 | - | 27.74 | 2.90 | - |
| AV | 2.4612G | 112.14 | Inf | -Inf | 81.50 | 3 | Vertical | 270 | 1.91 | - | 27.74 | 2.90 | - |
| PK | 2.4892G | 56.45 | 74.00 | -17.55 | 25.68 | 3 | Vertical | 270 | 1.91 | - | 27.86 | 2.91 | - |
| AV | 2.4848G | 43.59 | 54.00 | -10.41 | 12.84 | 3 | Vertical | 270 | 1.91 | - | 27.84 | 2.91 | - |

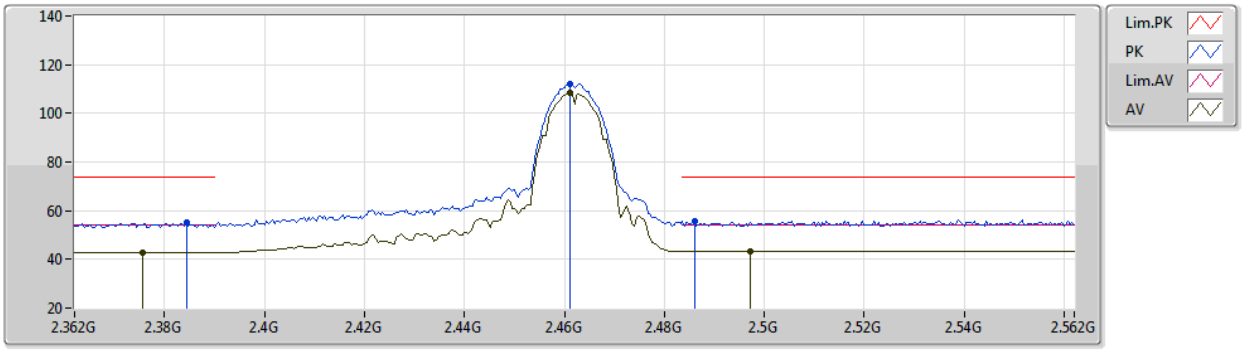
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2462 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11b 1Mbps / CH 11 / Ant. 1, 1S1T (SISO) | **Polarization** | H |

**802.11b_Nss1,(1Mbps)_1TX**

**2462MHz_TX**

22/06/2020




EUT Y_1TX_ANT 1
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3844G | 55.16 | 74.00 | -18.84 | 24.79 | 3 | Horizontal | 136 | 1.73 | - | 27.52 | 2.85 | - |
| AV | 2.3756G | 42.83 | 54.00 | -11.17 | 12.46 | 3 | Horizontal | 136 | 1.73 | - | 27.52 | 2.85 | - |
| PK | 2.4612G | 112.30 | Inf | -Inf | 81.66 | 3 | Horizontal | 136 | 1.73 | - | 27.74 | 2.90 | - |
| AV | 2.4612G | 108.55 | Inf | -Inf | 77.91 | 3 | Horizontal | 136 | 1.73 | - | 27.74 | 2.90 | - |
| PK | 2.486G | 55.58 | 74.00 | -18.42 | 24.83 | 3 | Horizontal | 136 | 1.73 | - | 27.84 | 2.91 | - |
| AV | 2.4972G | 43.41 | 54.00 | -10.59 | 12.60 | 3 | Horizontal | 136 | 1.73 | - | 27.89 | 2.92 | - |

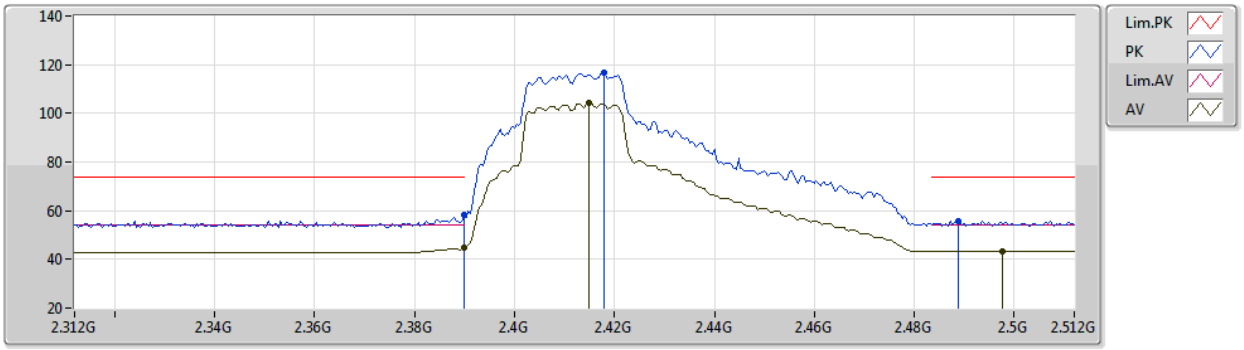
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2462 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2412MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.39G | 58.46 | 74.00 | -15.54 | 28.10 | 3 | Vertical | 251 | 1.79 | - | 27.51 | 2.85 | - |
| AV | 2.39G | 44.90 | 54.00 | -9.10 | 14.54 | 3 | Vertical | 251 | 1.79 | - | 27.51 | 2.85 | - |
| PK | 2.418G | 116.61 | Inf | -Inf | 86.17 | 3 | Vertical | 251 | 1.79 | - | 27.57 | 2.87 | - |
| AV | 2.4148G | 104.37 | Inf | -Inf | 73.94 | 3 | Vertical | 251 | 1.79 | - | 27.56 | 2.87 | - |
| PK | 2.4888G | 55.78 | 74.00 | -18.22 | 25.01 | 3 | Vertical | 251 | 1.79 | - | 27.86 | 2.91 | - |
| AV | 2.4976G | 43.33 | 54.00 | -10.67 | 12.52 | 3 | Vertical | 251 | 1.79 | - | 27.89 | 2.92 | - |

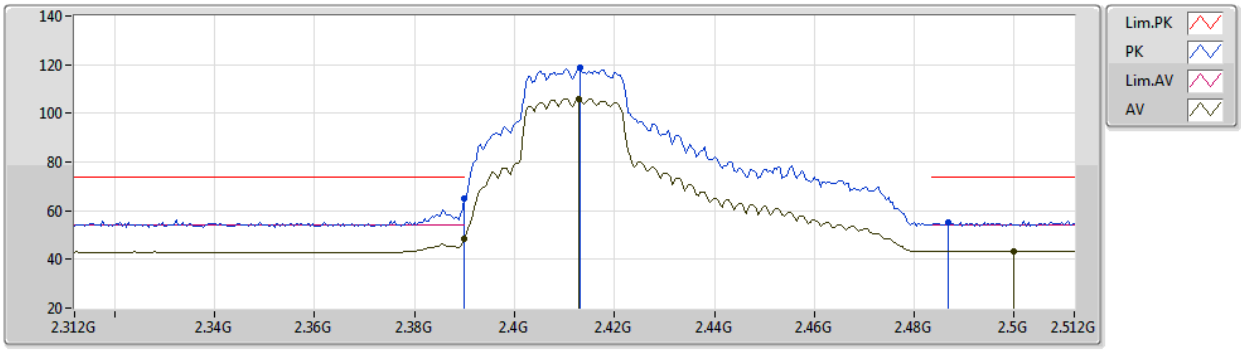
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2412 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2412MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.39G | 65.01 | 74.00 | -8.99 | 34.65 | 3 | Horizontal | 57 | 2.81 | - | 27.51 | 2.85 | - |
| AV | 2.39G | 48.48 | 54.00 | -5.52 | 18.12 | 3 | Horizontal | 57 | 2.81 | - | 27.51 | 2.85 | - |
| PK | 2.4132G | 118.93 | Inf | -Inf | 88.51 | 3 | Horizontal | 57 | 2.81 | - | 27.55 | 2.87 | - |
| AV | 2.4128G | 105.98 | Inf | -Inf | 75.56 | 3 | Horizontal | 57 | 2.81 | - | 27.55 | 2.87 | - |
| PK | 2.4868G | 55.01 | 74.00 | -18.99 | 24.25 | 3 | Horizontal | 57 | 2.81 | - | 27.85 | 2.91 | - |
| AV | 2.5G | 43.37 | 54.00 | -10.63 | 12.55 | 3 | Horizontal | 57 | 2.81 | - | 27.90 | 2.92 | - |

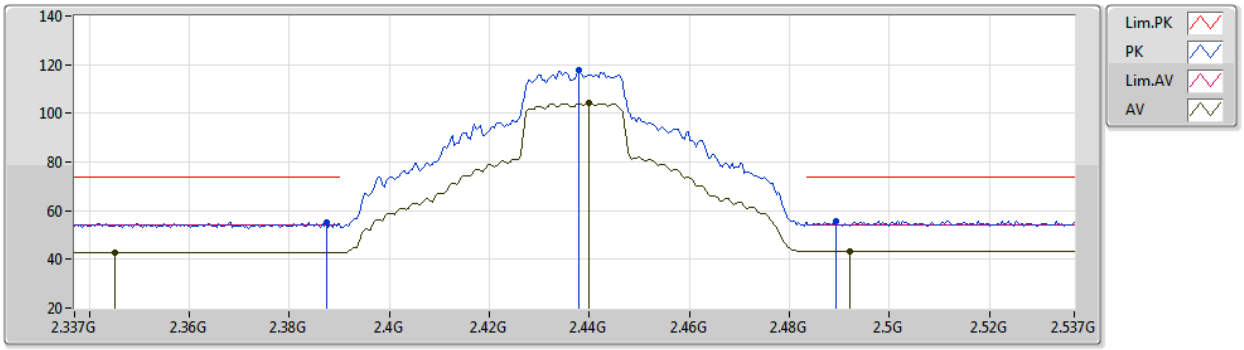
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2412 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3874G | 55.24 | 74.00 | -18.76 | 24.88 | 3 | Vertical | 265 | 1.76 | - | 27.51 | 2.85 | - |
| AV | 2.345G | 42.92 | 54.00 | -11.08 | 12.54 | 3 | Vertical | 265 | 1.76 | - | 27.55 | 2.83 | - |
| PK | 2.4378G | 117.70 | Inf | -Inf | 87.17 | 3 | Vertical | 265 | 1.76 | - | 27.65 | 2.88 | - |
| AV | 2.4398G | 104.38 | Inf | -Inf | 73.84 | 3 | Vertical | 265 | 1.76 | - | 27.66 | 2.88 | - |
| PK | 2.4894G | 55.92 | 74.00 | -18.08 | 25.15 | 3 | Vertical | 265 | 1.76 | - | 27.86 | 2.91 | - |
| AV | 2.4922G | 43.38 | 54.00 | -10.62 | 12.59 | 3 | Vertical | 265 | 1.76 | - | 27.87 | 2.92 | - |

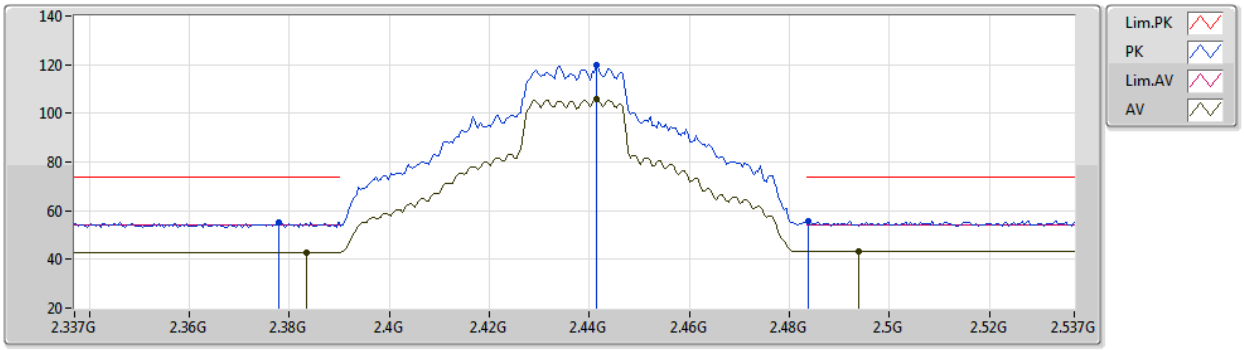
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3778G | 55.26 | 74.00 | -18.74 | 24.89 | 3 | Horizontal | 56 | 2.51 | - | 27.52 | 2.85 | - |
| AV | 2.3834G | 42.97 | 54.00 | -11.03 | 12.60 | 3 | Horizontal | 56 | 2.51 | - | 27.52 | 2.85 | - |
| PK | 2.4414G | 119.87 | Inf | -Inf | 89.32 | 3 | Horizontal | 56 | 2.51 | - | 27.67 | 2.88 | - |
| AV | 2.4414G | 105.74 | Inf | -Inf | 75.19 | 3 | Horizontal | 56 | 2.51 | - | 27.67 | 2.88 | - |
| PK | 2.4838G | 55.73 | 74.00 | -18.27 | 24.98 | 3 | Horizontal | 56 | 2.51 | - | 27.84 | 2.91 | - |
| AV | 2.4938G | 43.34 | 54.00 | -10.66 | 12.54 | 3 | Horizontal | 56 | 2.51 | - | 27.88 | 2.92 | - |

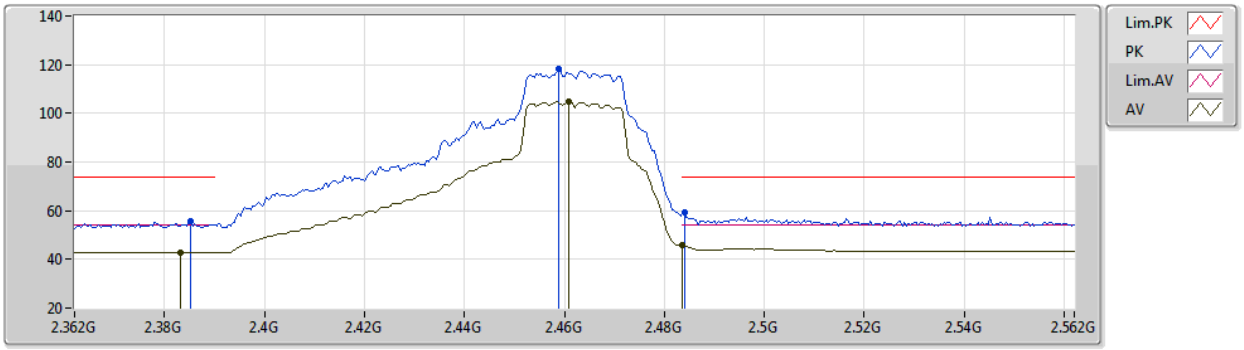
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2462MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

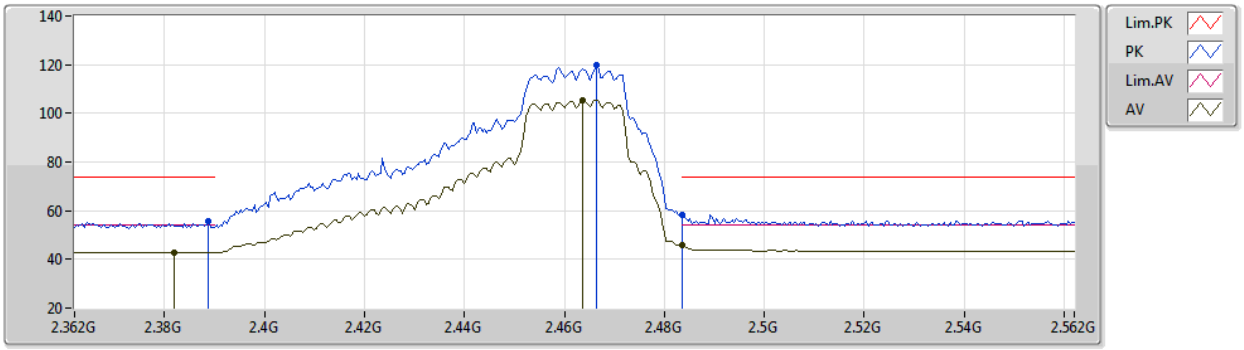
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3852G | 55.70 | 74.00 | -18.30 | 25.34 | 3 | Vertical | 268 | 2.13 | - | 27.51 | 2.85 | - |
| AV | 2.3832G | 42.77 | 54.00 | -11.23 | 12.40 | 3 | Vertical | 268 | 2.13 | - | 27.52 | 2.85 | - |
| PK | 2.4588G | 118.52 | Inf | -Inf | 87.88 | 3 | Vertical | 268 | 2.13 | - | 27.74 | 2.90 | - |
| AV | 2.4608G | 104.75 | Inf | -Inf | 74.11 | 3 | Vertical | 268 | 2.13 | - | 27.74 | 2.90 | - |
| PK | 2.484G | 59.25 | 74.00 | -14.75 | 28.50 | 3 | Vertical | 268 | 2.13 | - | 27.84 | 2.91 | - |
| AV | 2.4835G | 45.87 | 54.00 | -8.13 | 15.13 | 3 | Vertical | 268 | 2.13 | - | 27.83 | 2.91 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2452 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW20_Nss1,(MCS0)_2TX**

**2462MHz_TX**




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3888G | 55.50 | 74.00 | -18.50 | 25.14 | 3 | Horizontal | 61 | 1.99 | - | 27.51 | 2.85 | - |
| AV | 2.382G | 42.73 | 54.00 | -11.27 | 12.36 | 3 | Horizontal | 61 | 1.99 | - | 27.52 | 2.85 | - |
| PK | 2.4664G | 119.57 | Inf | -Inf | 88.90 | 3 | Horizontal | 61 | 1.99 | - | 27.77 | 2.90 | - |
| AV | 2.4636G | 105.41 | Inf | -Inf | 74.76 | 3 | Horizontal | 61 | 1.99 | - | 27.75 | 2.90 | - |
| PK | 2.4835G | 58.41 | 74.00 | -15.59 | 27.67 | 3 | Horizontal | 61 | 1.99 | - | 27.83 | 2.91 | - |
| AV | 2.4835G | 45.83 | 54.00 | -8.17 | 15.09 | 3 | Horizontal | 61 | 1.99 | - | 27.83 | 2.91 | - |

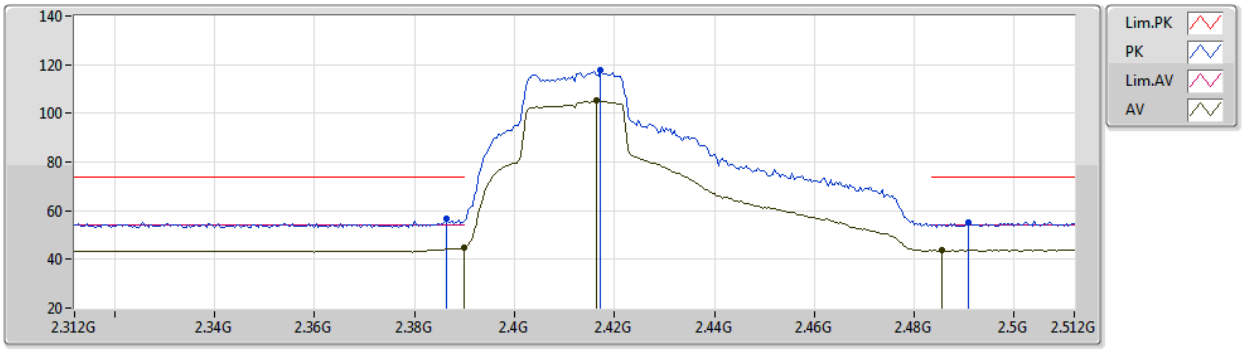
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2452 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2412MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3864G | 56.83 | 74.00 | -17.17 | 26.47 | 3 | Vertical | 279 | 2.11 | - | 27.51 | 2.85 | - |
| AV | 2.39G | 44.83 | 54.00 | -9.17 | 14.47 | 3 | Vertical | 279 | 2.11 | - | 27.51 | 2.85 | - |
| PK | 2.4172G | 117.68 | Inf | -Inf | 87.24 | 3 | Vertical | 279 | 2.11 | - | 27.57 | 2.87 | - |
| AV | 2.4164G | 105.30 | Inf | -Inf | 74.86 | 3 | Vertical | 279 | 2.11 | - | 27.57 | 2.87 | - |
| PK | 2.4908G | 55.18 | 74.00 | -18.82 | 24.41 | 3 | Vertical | 279 | 2.11 | - | 27.86 | 2.91 | - |
| AV | 2.4856G | 43.88 | 54.00 | -10.12 | 13.13 | 3 | Vertical | 279 | 2.11 | - | 27.84 | 2.91 | - |

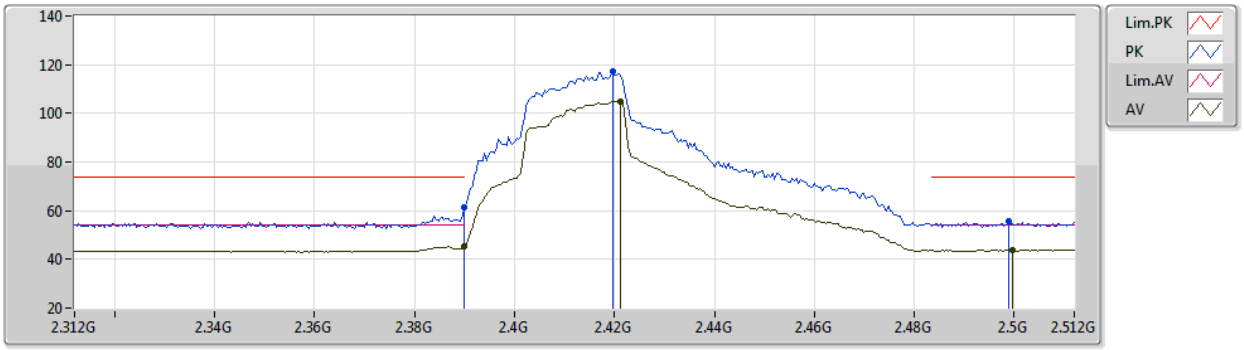
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2412 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2412MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

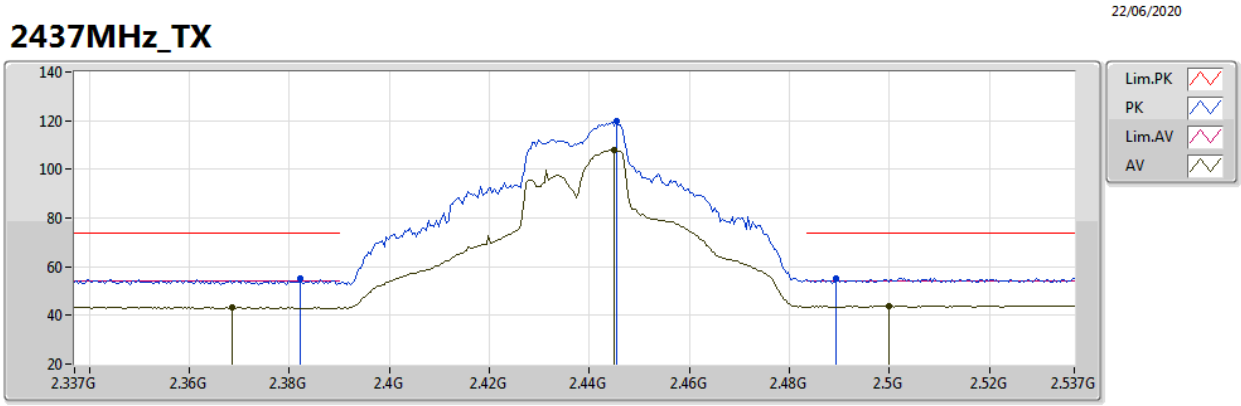
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.39G | 61.23 | 74.00 | -12.77 | 30.87 | 3 | Horizontal | 253 | 2.27 | - | 27.51 | 2.85 | - |
| AV | 2.39G | 45.23 | 54.00 | -8.77 | 14.87 | 3 | Horizontal | 253 | 2.27 | - | 27.51 | 2.85 | - |
| PK | 2.4196G | 117.47 | Inf | -Inf | 87.02 | 3 | Horizontal | 253 | 2.27 | - | 27.58 | 2.87 | - |
| AV | 2.4212G | 104.88 | Inf | -Inf | 74.43 | 3 | Horizontal | 253 | 2.27 | - | 27.58 | 2.87 | - |
| PK | 2.4988G | 55.75 | 74.00 | -18.25 | 24.93 | 3 | Horizontal | 253 | 2.27 | - | 27.90 | 2.92 | - |
| AV | 2.4996G | 43.63 | 54.00 | -10.37 | 12.81 | 3 | Horizontal | 253 | 2.27 | - | 27.90 | 2.92 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2412 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2437MHz_TX**




EUT Y_2TX
Setting 88
04-E-P-2

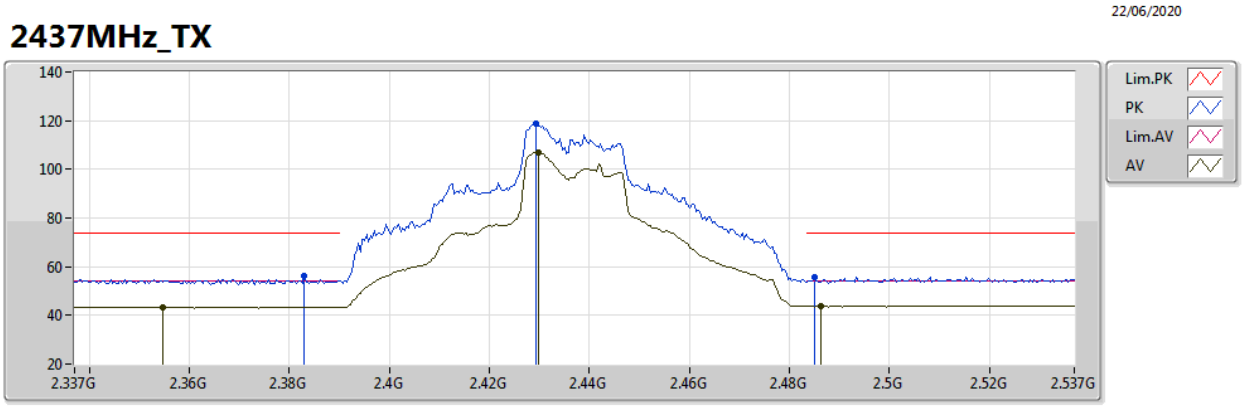
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3822G | 55.05 | 74.00 | -18.95 | 24.68 | 3 | Vertical | 278 | 1.09 | - | 27.52 | 2.85 | - |
| AV | 2.3686G | 43.26 | 54.00 | -10.74 | 12.89 | 3 | Vertical | 278 | 1.09 | - | 27.53 | 2.84 | - |
| PK | 2.4454G | 119.81 | Inf | -Inf | 89.24 | 3 | Vertical | 278 | 1.09 | - | 27.68 | 2.89 | - |
| AV | 2.445G | 107.91 | Inf | -Inf | 77.34 | 3 | Vertical | 278 | 1.09 | - | 27.68 | 2.89 | - |
| PK | 2.4894G | 55.11 | 74.00 | -18.89 | 24.34 | 3 | Vertical | 278 | 1.09 | - | 27.86 | 2.91 | - |
| AV | 2.4998G | 43.77 | 54.00 | -10.23 | 12.95 | 3 | Vertical | 278 | 1.09 | - | 27.90 | 2.92 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.383G | 56.22 | 74.00 | -17.78 | 25.85 | 3 | Horizontal | 120 | 2.09 | - | 27.52 | 2.85 | - |
| AV | 2.3546G | 43.48 | 54.00 | -10.52 | 13.10 | 3 | Horizontal | 120 | 2.09 | - | 27.55 | 2.83 | - |
| PK | 2.4294G | 119.04 | Inf | -Inf | 88.54 | 3 | Horizontal | 120 | 2.09 | - | 27.62 | 2.88 | - |
| AV | 2.4298G | 106.87 | Inf | -Inf | 76.37 | 3 | Horizontal | 120 | 2.09 | - | 27.62 | 2.88 | - |
| PK | 2.485G | 55.91 | 74.00 | -18.09 | 25.16 | 3 | Horizontal | 120 | 2.09 | - | 27.84 | 2.91 | - |
| AV | 2.4862G | 43.86 | 54.00 | -10.14 | 13.11 | 3 | Horizontal | 120 | 2.09 | - | 27.84 | 2.91 | - |

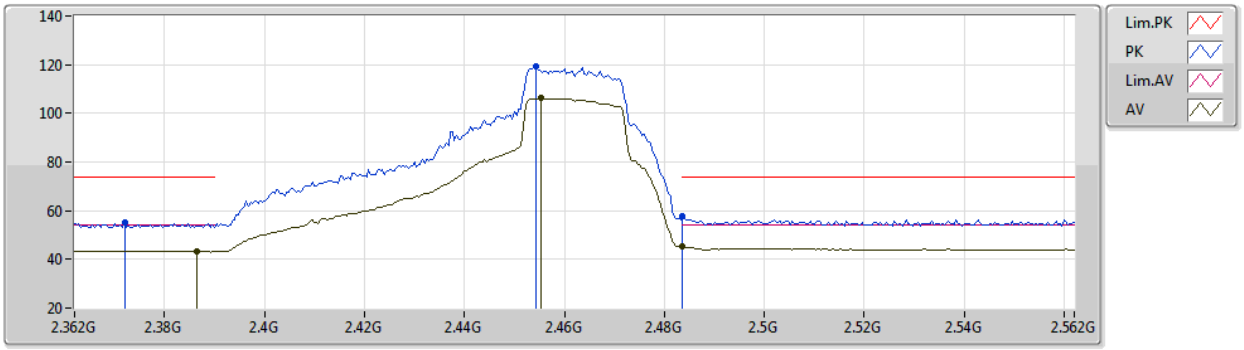
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2462MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

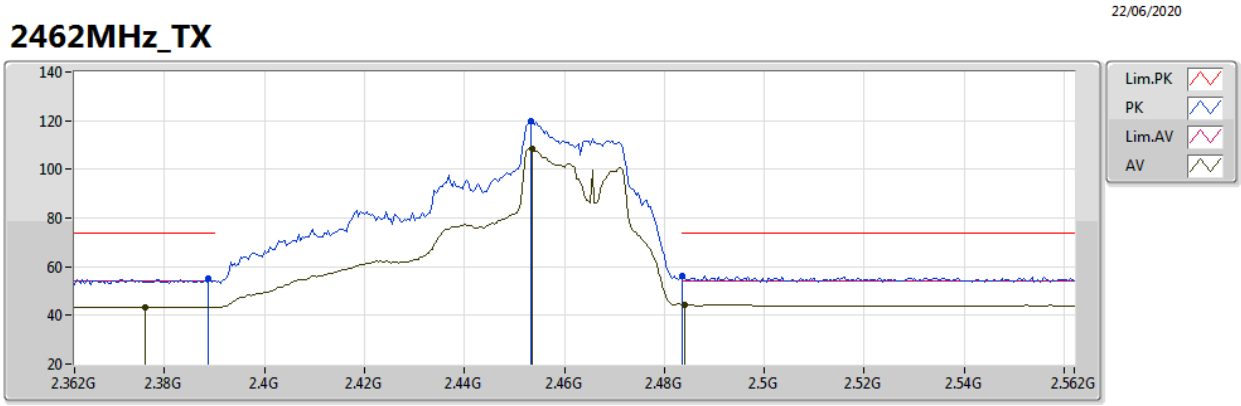
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.372G | 54.92 | 74.00 | -19.08 | 24.55 | 3 | Vertical | 290 | 2.15 | - | 27.53 | 2.84 | - |
| AV | 2.3864G | 43.40 | 54.00 | -10.60 | 13.04 | 3 | Vertical | 290 | 2.15 | - | 27.51 | 2.85 | - |
| PK | 2.4544G | 119.27 | Inf | -Inf | 88.66 | 3 | Vertical | 290 | 2.15 | - | 27.72 | 2.89 | - |
| AV | 2.4552G | 106.21 | Inf | -Inf | 75.60 | 3 | Vertical | 290 | 2.15 | - | 27.72 | 2.89 | - |
| PK | 2.4835G | 57.63 | 74.00 | -16.37 | 26.89 | 3 | Vertical | 290 | 2.15 | - | 27.83 | 2.91 | - |
| AV | 2.4835G | 45.21 | 54.00 | -8.79 | 14.47 | 3 | Vertical | 290 | 2.15 | - | 27.83 | 2.91 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2462 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW20-BF_Nss1,(MCS0)_2TX**

**2462MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3888G | 55.09 | 74.00 | -18.91 | 24.73 | 3 | Horizontal | 16 | 2.00 | - | 27.51 | 2.85 | - |
| AV | 2.376G | 43.43 | 54.00 | -10.57 | 13.06 | 3 | Horizontal | 16 | 2.00 | - | 27.52 | 2.85 | - |
| PK | 2.4532G | 119.80 | Inf | -Inf | 89.20 | 3 | Horizontal | 16 | 2.00 | - | 27.71 | 2.89 | - |
| AV | 2.4536G | 108.48 | Inf | -Inf | 77.88 | 3 | Horizontal | 16 | 2.00 | - | 27.71 | 2.89 | - |
| PK | 2.4835G | 56.34 | 74.00 | -17.66 | 25.60 | 3 | Horizontal | 16 | 2.00 | - | 27.83 | 2.91 | - |
| AV | 2.484G | 44.47 | 54.00 | -9.53 | 13.72 | 3 | Horizontal | 16 | 2.00 | - | 27.84 | 2.91 | - |

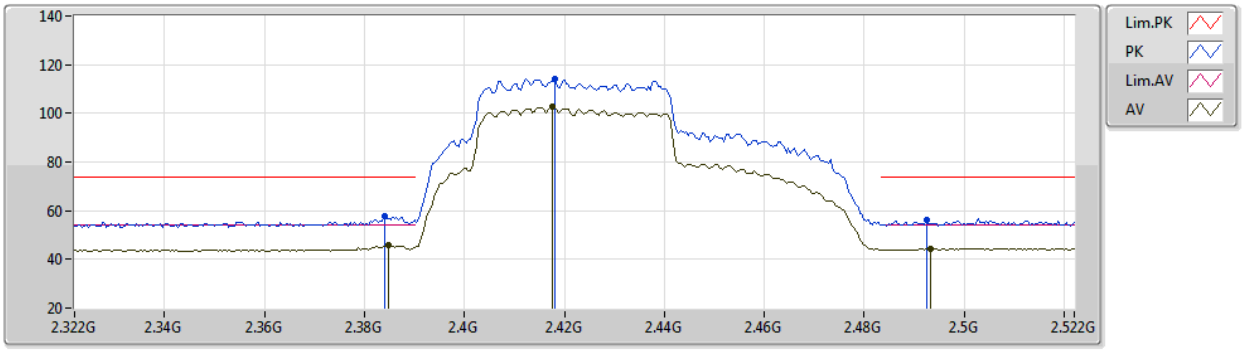
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2462 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2422MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.384G | 57.57 | 74.00 | -16.43 | 27.20 | 3 | Vertical | 250 | 1.78 | - | 27.52 | 2.85 | - |
| AV | 2.3848G | 45.83 | 54.00 | -8.17 | 15.46 | 3 | Vertical | 250 | 1.78 | - | 27.52 | 2.85 | - |
| PK | 2.418G | 113.99 | Inf | -Inf | 83.55 | 3 | Vertical | 250 | 1.78 | - | 27.57 | 2.87 | - |
| AV | 2.4176G | 102.58 | Inf | -Inf | 72.14 | 3 | Vertical | 250 | 1.78 | - | 27.57 | 2.87 | - |
| PK | 2.4924G | 56.18 | 74.00 | -17.82 | 25.39 | 3 | Vertical | 250 | 1.78 | - | 27.87 | 2.92 | - |
| AV | 2.4932G | 44.34 | 54.00 | -9.66 | 13.55 | 3 | Vertical | 250 | 1.78 | - | 27.87 | 2.92 | - |

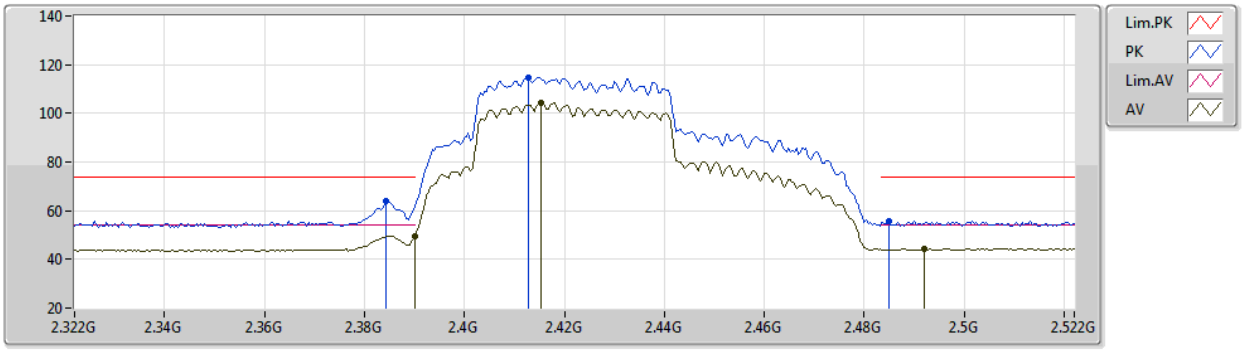
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2422 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2422MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3844G | 64.14 | 74.00 | -9.86 | 33.77 | 3 | Horizontal | 52 | 2.13 | - | 27.52 | 2.85 | - |
| AV | 2.39G | 49.41 | 54.00 | -4.59 | 19.05 | 3 | Horizontal | 52 | 2.13 | - | 27.51 | 2.85 | - |
| PK | 2.4128G | 114.76 | Inf | -Inf | 84.34 | 3 | Horizontal | 52 | 2.13 | - | 27.55 | 2.87 | - |
| AV | 2.4152G | 104.19 | Inf | -Inf | 73.76 | 3 | Horizontal | 52 | 2.13 | - | 27.56 | 2.87 | - |
| PK | 2.4848G | 55.55 | 74.00 | -18.45 | 24.80 | 3 | Horizontal | 52 | 2.13 | - | 27.84 | 2.91 | - |
| AV | 2.492G | 44.39 | 54.00 | -9.61 | 13.60 | 3 | Horizontal | 52 | 2.13 | - | 27.87 | 2.92 | - |

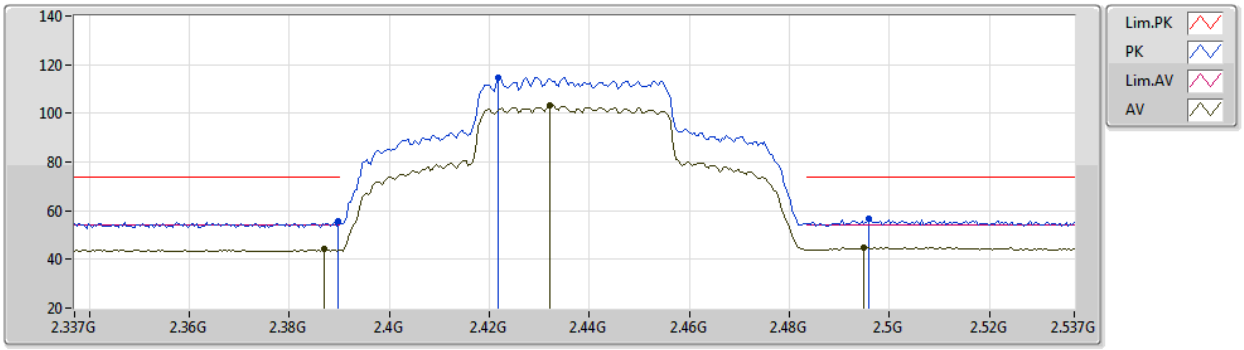
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2422 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2437MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

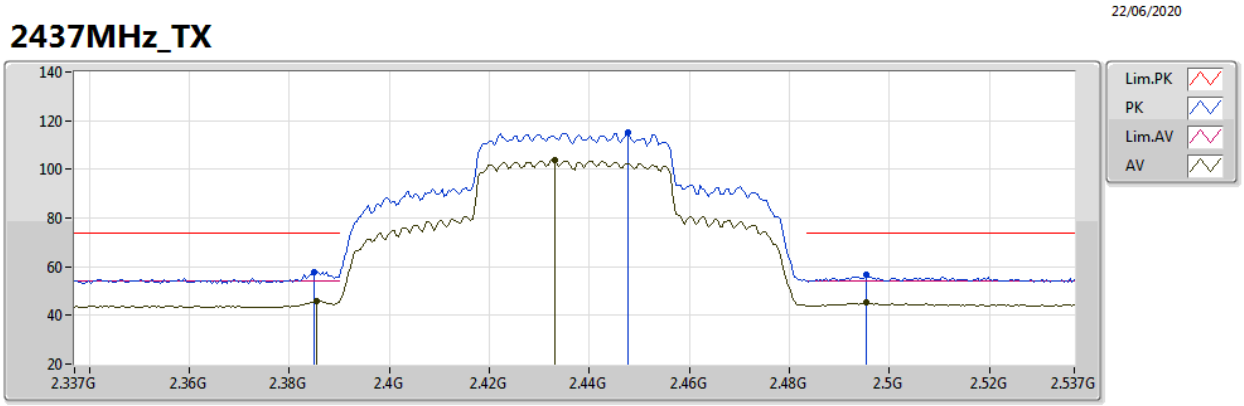
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3898G | 55.91 | 74.00 | -18.09 | 25.55 | 3 | Vertical | 273 | 1.97 | - | 27.51 | 2.85 | - |
| AV | 2.387G | 44.31 | 54.00 | -9.69 | 13.95 | 3 | Vertical | 273 | 1.97 | - | 27.51 | 2.85 | - |
| PK | 2.4218G | 114.77 | Inf | -Inf | 84.31 | 3 | Vertical | 273 | 1.97 | - | 27.59 | 2.87 | - |
| AV | 2.4322G | 103.10 | Inf | -Inf | 72.59 | 3 | Vertical | 273 | 1.97 | - | 27.63 | 2.88 | - |
| PK | 2.4958G | 56.96 | 74.00 | -17.04 | 26.16 | 3 | Vertical | 273 | 1.97 | - | 27.88 | 2.92 | - |
| AV | 2.495G | 44.71 | 54.00 | -9.29 | 13.91 | 3 | Vertical | 273 | 1.97 | - | 27.88 | 2.92 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.385G | 57.92 | 74.00 | -16.08 | 27.55 | 3 | Horizontal | 58 | 2.41 | - | 27.52 | 2.85 | - |
| AV | 2.3854G | 45.93 | 54.00 | -8.07 | 15.57 | 3 | Horizontal | 58 | 2.41 | - | 27.51 | 2.85 | - |
| PK | 2.4478G | 115.41 | Inf | -Inf | 84.83 | 3 | Horizontal | 58 | 2.41 | - | 27.69 | 2.89 | - |
| AV | 2.433G | 103.63 | Inf | -Inf | 73.12 | 3 | Horizontal | 58 | 2.41 | - | 27.63 | 2.88 | - |
| PK | 2.4954G | 56.48 | 74.00 | -17.52 | 25.68 | 3 | Horizontal | 58 | 2.41 | - | 27.88 | 2.92 | - |
| AV | 2.4954G | 45.09 | 54.00 | -8.91 | 14.29 | 3 | Horizontal | 58 | 2.41 | - | 27.88 | 2.92 | - |

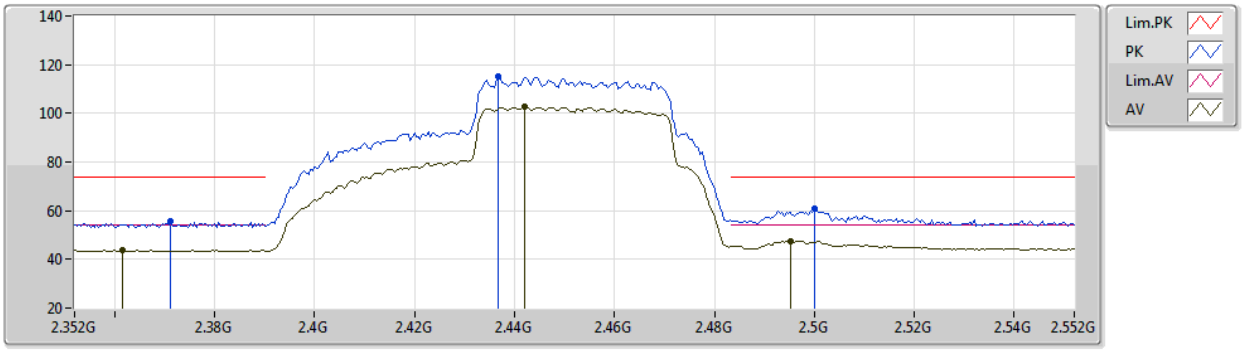
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1+2, 1S2T (CDD) | **Polarization** | V |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2452MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3712G | 55.58 | 74.00 | -18.42 | 25.21 | 3 | Vertical | 269 | 1.78 | - | 27.53 | 2.84 | - |
| AV | 2.3616G | 43.90 | 54.00 | -10.10 | 13.52 | 3 | Vertical | 269 | 1.78 | - | 27.54 | 2.84 | - |
| PK | 2.4368G | 115.21 | Inf | -Inf | 84.68 | 3 | Vertical | 269 | 1.78 | - | 27.65 | 2.88 | - |
| AV | 2.442G | 102.54 | Inf | -Inf | 71.98 | 3 | Vertical | 269 | 1.78 | - | 27.67 | 2.89 | - |
| PK | 2.5G | 60.90 | 74.00 | -13.10 | 30.08 | 3 | Vertical | 269 | 1.78 | - | 27.90 | 2.92 | - |
| AV | 2.4952G | 47.46 | 54.00 | -6.54 | 16.66 | 3 | Vertical | 269 | 1.78 | - | 27.88 | 2.92 | - |

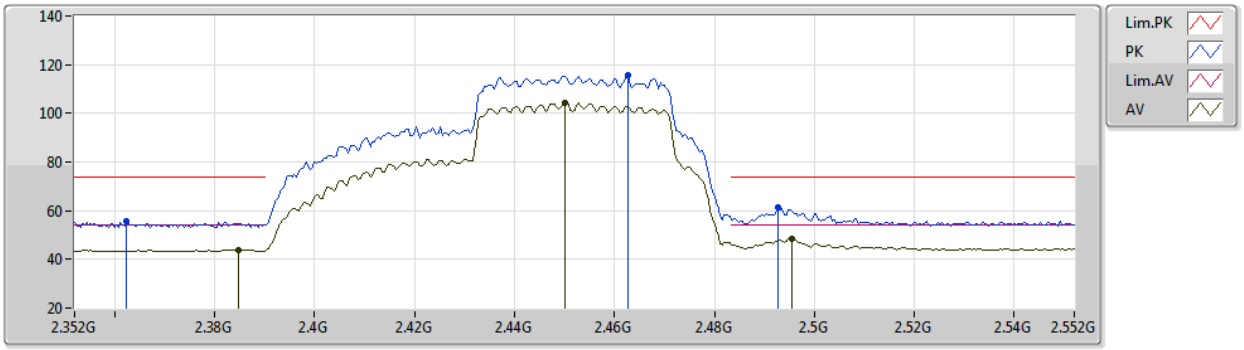
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2452 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1+2, 1S2T (CDD) | **Polarization** | H |

**802.11ax HEW40_Nss1,(MCS0)_2TX**

**2452MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

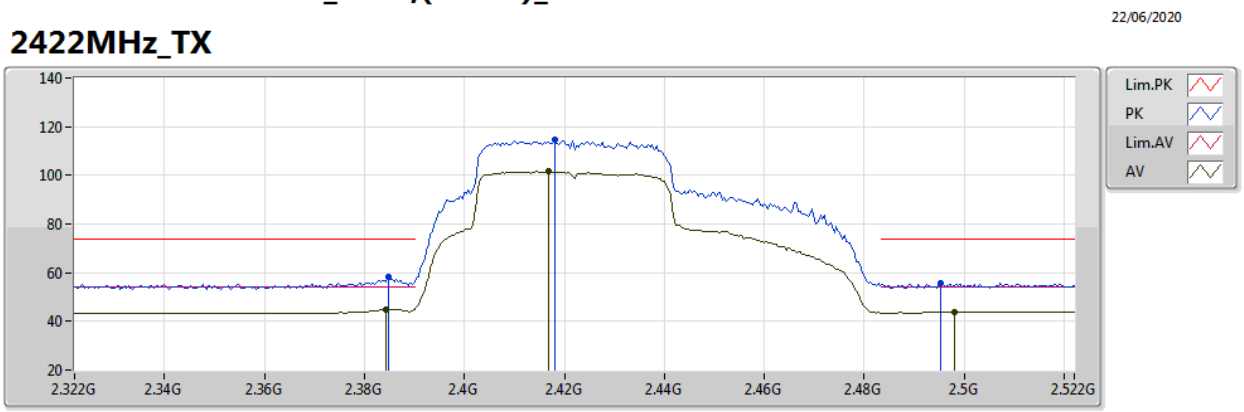
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3624G | 55.49 | 74.00 | -18.51 | 25.11 | 3 | Horizontal | 56 | 2.21 | - | 27.54 | 2.84 | - |
| AV | 2.3848G | 43.97 | 54.00 | -10.03 | 13.60 | 3 | Horizontal | 56 | 2.21 | - | 27.52 | 2.85 | - |
| PK | 2.4628G | 115.44 | Inf | -Inf | 84.79 | 3 | Horizontal | 56 | 2.21 | - | 27.75 | 2.90 | - |
| AV | 2.45G | 104.11 | Inf | -Inf | 73.52 | 3 | Horizontal | 56 | 2.21 | - | 27.70 | 2.89 | - |
| PK | 2.4928G | 61.36 | 74.00 | -12.64 | 30.57 | 3 | Horizontal | 56 | 2.21 | - | 27.87 | 2.92 | - |
| AV | 2.4956G | 48.51 | 54.00 | -5.49 | 17.71 | 3 | Horizontal | 56 | 2.21 | - | 27.88 | 2.92 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2452 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2422MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3848G | 58.23 | 74.00 | -15.77 | 27.86 | 3 | Vertical | 268 | 1.99 | - | 27.52 | 2.85 | - |
| AV | 2.3844G | 45.00 | 54.00 | -9.00 | 14.63 | 3 | Vertical | 268 | 1.99 | - | 27.52 | 2.85 | - |
| PK | 2.418G | 114.47 | Inf | -Inf | 84.03 | 3 | Vertical | 268 | 1.99 | - | 27.57 | 2.87 | - |
| AV | 2.4168G | 101.72 | Inf | -Inf | 71.28 | 3 | Vertical | 268 | 1.99 | - | 27.57 | 2.87 | - |
| PK | 2.4952G | 55.70 | 74.00 | -18.30 | 24.90 | 3 | Vertical | 268 | 1.99 | - | 27.88 | 2.92 | - |
| AV | 2.498G | 43.83 | 54.00 | -10.17 | 13.02 | 3 | Vertical | 268 | 1.99 | - | 27.89 | 2.92 | - |

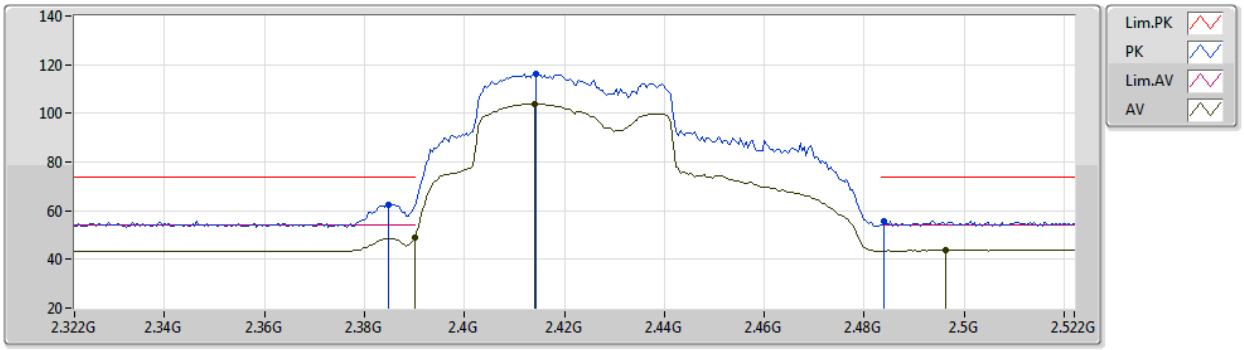
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2422 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2422MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

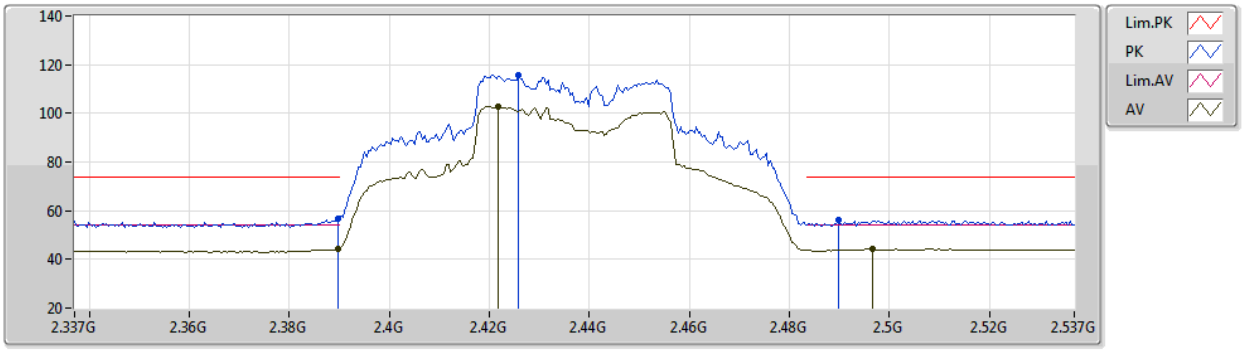
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3848G | 62.60 | 74.00 | -11.40 | 32.23 | 3 | Horizontal | 58 | 2.79 | - | 27.52 | 2.85 | - |
| AV | 2.39G | 49.14 | 54.00 | -4.86 | 18.78 | 3 | Horizontal | 58 | 2.79 | - | 27.51 | 2.85 | - |
| PK | 2.4144G | 116.39 | Inf | -Inf | 85.96 | 3 | Horizontal | 58 | 2.79 | - | 27.56 | 2.87 | - |
| AV | 2.414G | 103.91 | Inf | -Inf | 73.48 | 3 | Horizontal | 58 | 2.79 | - | 27.56 | 2.87 | - |
| PK | 2.484G | 55.73 | 74.00 | -18.27 | 24.98 | 3 | Horizontal | 58 | 2.79 | - | 27.84 | 2.91 | - |
| AV | 2.4964G | 43.73 | 54.00 | -10.27 | 12.92 | 3 | Horizontal | 58 | 2.79 | - | 27.89 | 2.92 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2422 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2437MHz_TX**




EUT Y_2TX
Setting 88
04-E-P-2

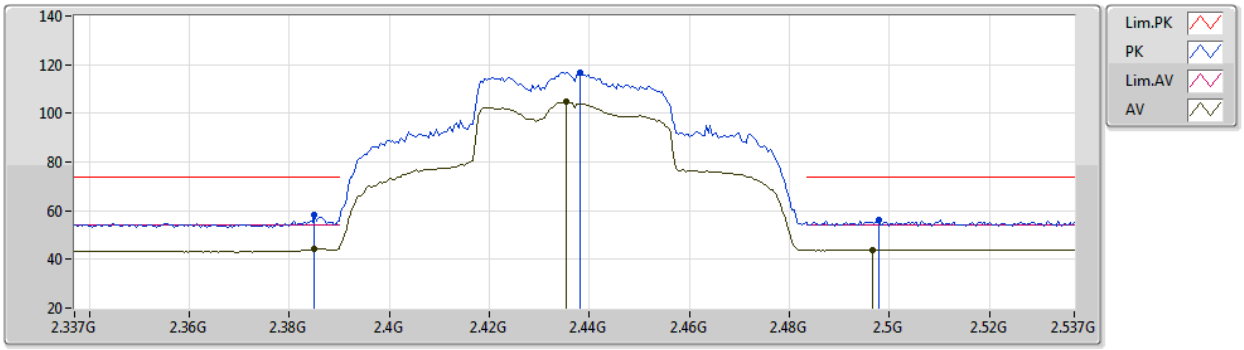
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3898G | 56.77 | 74.00 | -17.23 | 26.41 | 3 | Vertical | 322 | 2.44 | - | 27.51 | 2.85 | - |
| AV | 2.3898G | 44.22 | 54.00 | -9.78 | 13.86 | 3 | Vertical | 322 | 2.44 | - | 27.51 | 2.85 | - |
| PK | 2.4258G | 115.80 | Inf | -Inf | 85.32 | 3 | Vertical | 322 | 2.44 | - | 27.60 | 2.88 | - |
| AV | 2.4218G | 102.65 | Inf | -Inf | 72.19 | 3 | Vertical | 322 | 2.44 | - | 27.59 | 2.87 | - |
| PK | 2.4898G | 56.44 | 74.00 | -17.56 | 25.67 | 3 | Vertical | 322 | 2.44 | - | 27.86 | 2.91 | - |
| AV | 2.4966G | 44.17 | 54.00 | -9.83 | 13.36 | 3 | Vertical | 322 | 2.44 | - | 27.89 | 2.92 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.385G | 58.31 | 74.00 | -15.69 | 27.94 | 3 | Horizontal | 60 | 2.01 | - | 27.52 | 2.85 | - |
| AV | 2.385G | 44.32 | 54.00 | -9.68 | 13.95 | 3 | Horizontal | 60 | 2.01 | - | 27.52 | 2.85 | - |
| PK | 2.4382G | 116.84 | Inf | -Inf | 86.31 | 3 | Horizontal | 60 | 2.01 | - | 27.65 | 2.88 | - |
| AV | 2.4354G | 104.65 | Inf | -Inf | 74.13 | 3 | Horizontal | 60 | 2.01 | - | 27.64 | 2.88 | - |
| PK | 2.4978G | 56.15 | 74.00 | -17.85 | 25.34 | 3 | Horizontal | 60 | 2.01 | - | 27.89 | 2.92 | - |
| AV | 2.4966G | 44.01 | 54.00 | -9.99 | 13.20 | 3 | Horizontal | 60 | 2.01 | - | 27.89 | 2.92 | - |

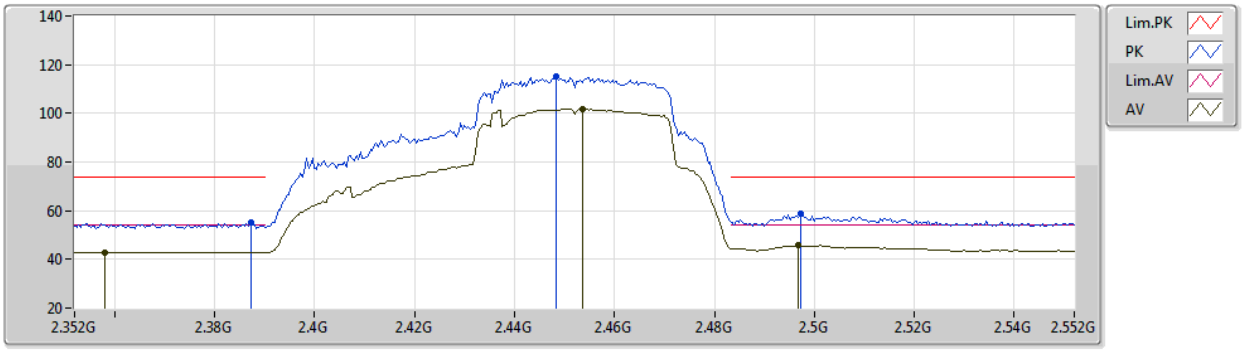
Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2437 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | V |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2452MHz_TX**

22/06/2020




EUT Y_2TX
Setting 88
04-E-P-2

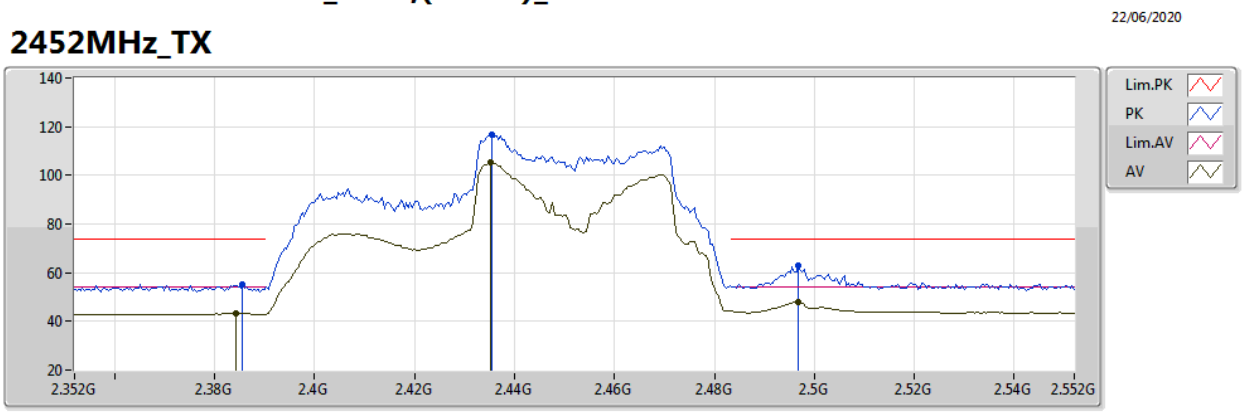
| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3872G | 55.03 | 74.00 | -18.97 | 24.67 | 3 | Vertical | 269 | 1.80 | - | 27.51 | 2.85 | - |
| AV | 2.358G | 42.99 | 54.00 | -11.01 | 12.62 | 3 | Vertical | 269 | 1.80 | - | 27.54 | 2.83 | - |
| PK | 2.4484G | 115.03 | Inf | -Inf | 84.45 | 3 | Vertical | 269 | 1.80 | - | 27.69 | 2.89 | - |
| AV | 2.4536G | 101.80 | Inf | -Inf | 71.20 | 3 | Vertical | 269 | 1.80 | - | 27.71 | 2.89 | - |
| PK | 2.4972G | 58.72 | 74.00 | -15.28 | 27.91 | 3 | Vertical | 269 | 1.80 | - | 27.89 | 2.92 | - |
| AV | 2.4968G | 45.68 | 54.00 | -8.32 | 14.87 | 3 | Vertical | 269 | 1.80 | - | 27.89 | 2.92 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2452 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Band Edge and Fundamental Emissions | | | |
|---|---|---|---|
| **Operating Mode** | 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1+2, 1S2T (TXBF) | **Polarization** | H |

**802.11ax HEW40-BF_Nss1,(MCS0)_2TX**

**2452MHz_TX**




EUT Y_2TX
Setting 88
04-E-P-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3856G | 55.13 | 74.00 | -18.87 | 24.77 | 3 | Horizontal | 254 | 2.78 | - | 27.51 | 2.85 | - |
| AV | 2.3844G | 43.28 | 54.00 | -10.72 | 12.91 | 3 | Horizontal | 254 | 2.78 | - | 27.52 | 2.85 | - |
| PK | 2.4356G | 116.56 | Inf | -Inf | 86.04 | 3 | Horizontal | 254 | 2.78 | - | 27.64 | 2.88 | - |
| AV | 2.4352G | 105.16 | Inf | -Inf | 74.64 | 3 | Horizontal | 254 | 2.78 | - | 27.64 | 2.88 | - |
| PK | 2.4968G | 62.94 | 74.00 | -11.06 | 32.13 | 3 | Horizontal | 254 | 2.78 | - | 27.89 | 2.92 | - |
| AV | 2.4968G | 48.01 | 54.00 | -5.99 | 17.20 | 3 | Horizontal | 254 | 2.78 | - | 27.89 | 2.92 | - |

Note 1: Frequencies within 2400~2483.5 are the fundamental frequency at 2452 MHz.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

### 2.6.9. Test Results of Emission not in Restricted Band

**Following channel(s) was (were) selected for the final test as listed below.**

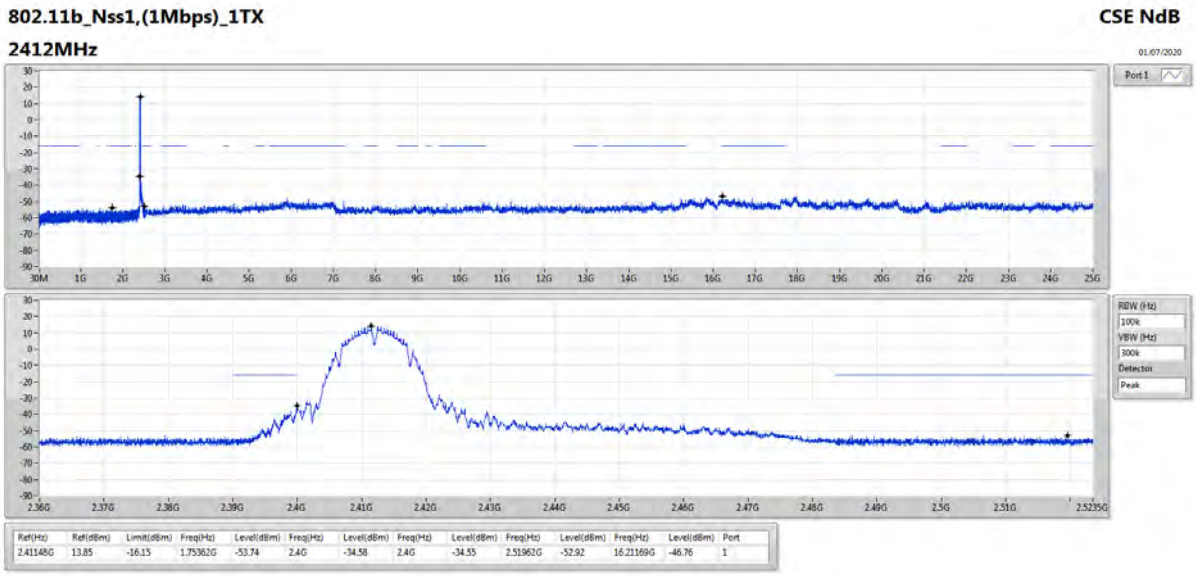
| MODE | TX Chain | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|
| 802.11b | Ant. 1, 1S1T (SISO) | 1, 6, 11 | DSSS | DBPSK | 1 |
| 802.11ax 20MHz | Ant. 1+2, 1S2T (CDD) | 1, 6, 11 | OFDMA | BPSK | MCS0/Nss1 (8.6) |
| 802.11ax 20MHz | Ant. 1+2, 1S2T (TXBF) | 1, 6, 11 | OFDMA | BPSK | MCS0/Nss1 (8.6) |
| 802.11ax 40MHz | Ant. 1+2, 1S2T (CDD) | 3, 6, 9 | OFDMA | BPSK | MCS0/Nss1 (17.2) |
| 802.11ax 40MHz | Ant. 1+2, 1S2T (TXBF) | 3, 6, 9 | OFDMA | BPSK | MCS0/Nss1 (17.2) |

**Configuration IEEE 802.11b**

**<1Mbps, Ant. 1, 1S1T, SISO>**

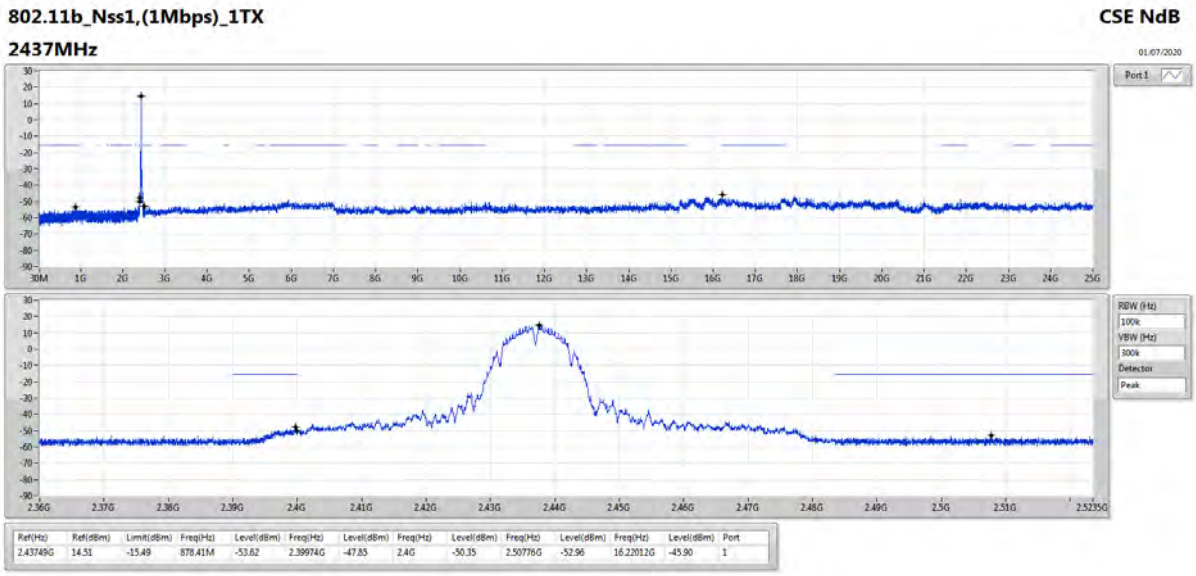
**Plot on Configuration IEEE 802.11b 1Mbps / CH 1 / Ant. 1 / Reference Level**

**Plot on Configuration IEEE 802.11b 1Mbps / CH 1 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



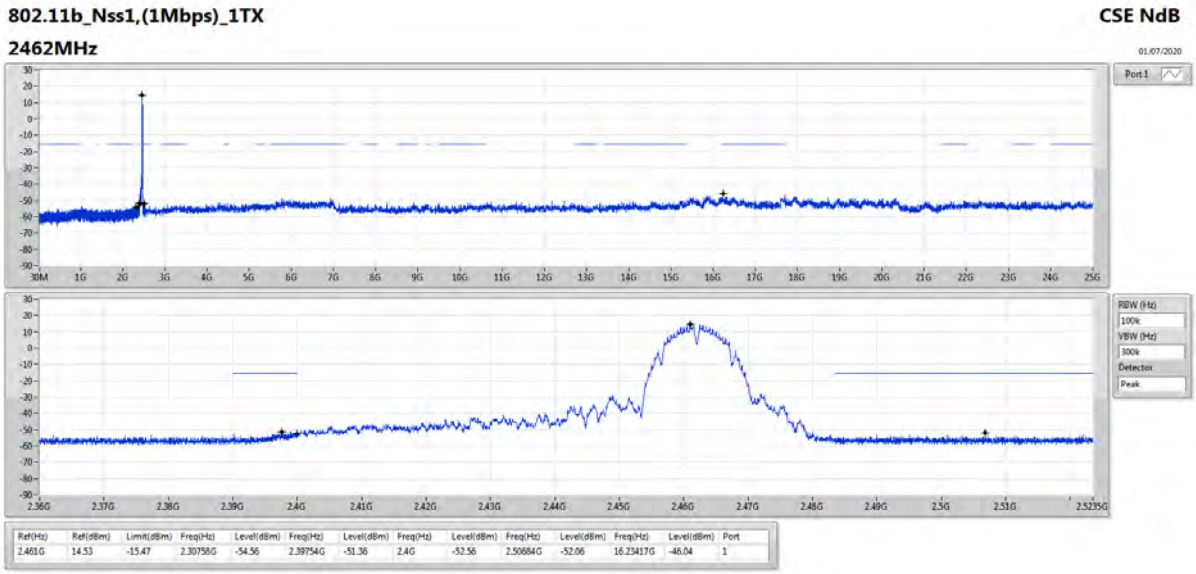

**Plot on Configuration IEEE 802.11b 1Mbps / CH 6 / Ant. 1 / Reference Level**

**Plot on Configuration IEEE 802.11b 1Mbps / CH 6 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



**Plot on Configuration IEEE 802.11b 1Mbps / CH 11 / Ant. 1 / Reference Level**

**Plot on Configuration IEEE 802.11b 1Mbps / CH 11 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**

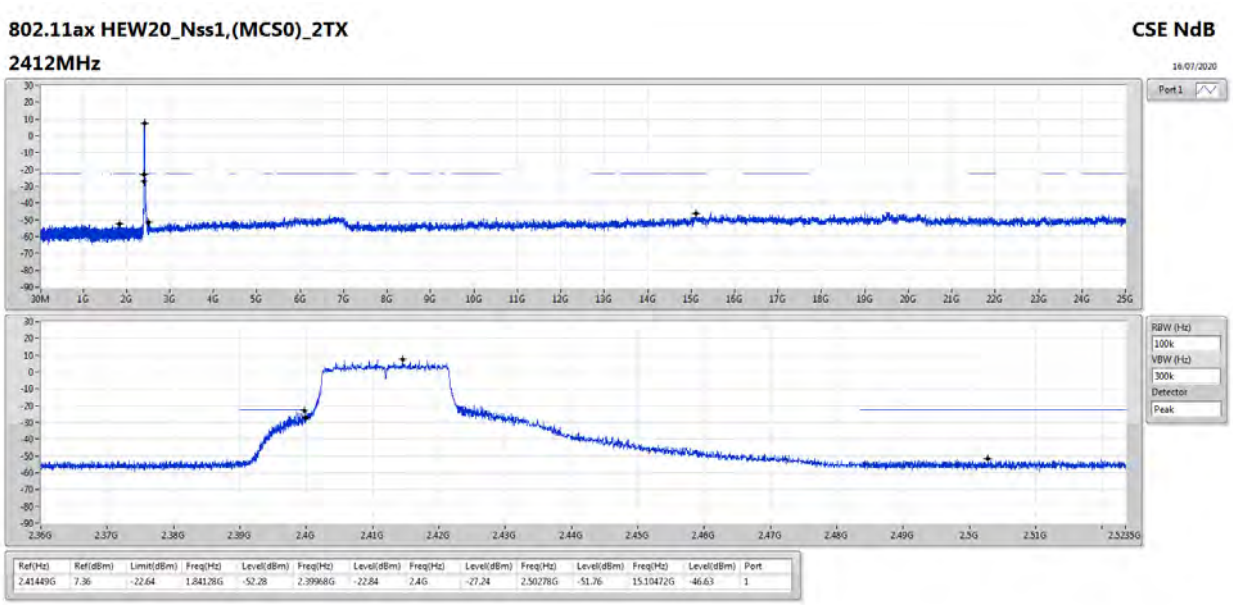


**Configuration IEEE 802.11ax 20MHz**

**<MCS0, Ant. 1+2, 1S2T, CDD>**

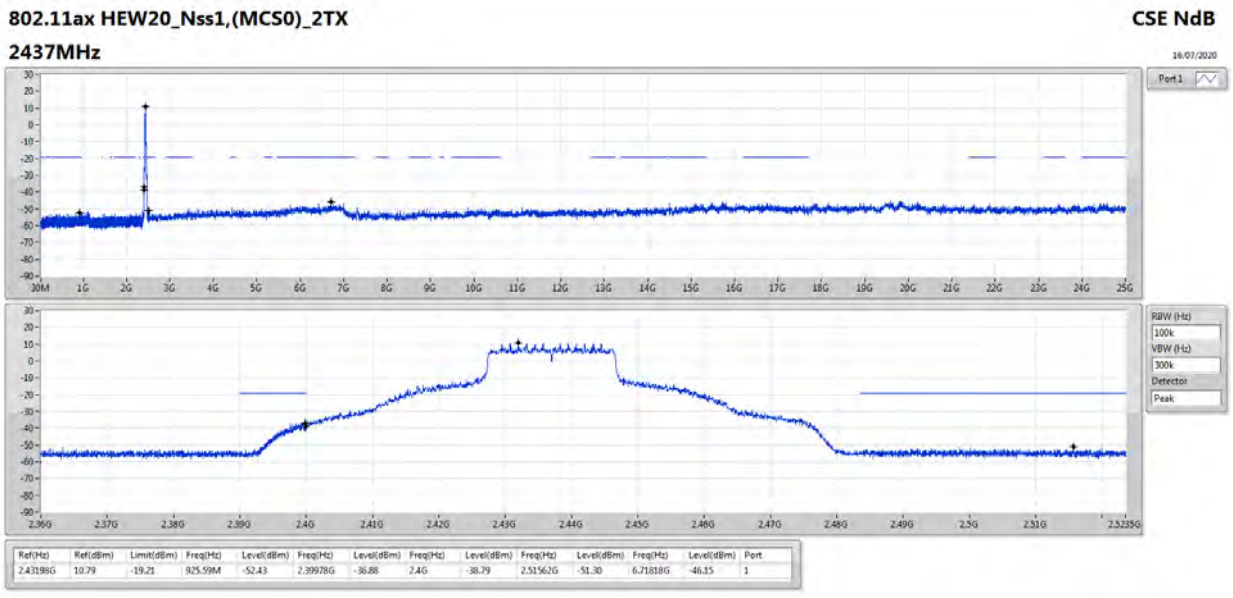
**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



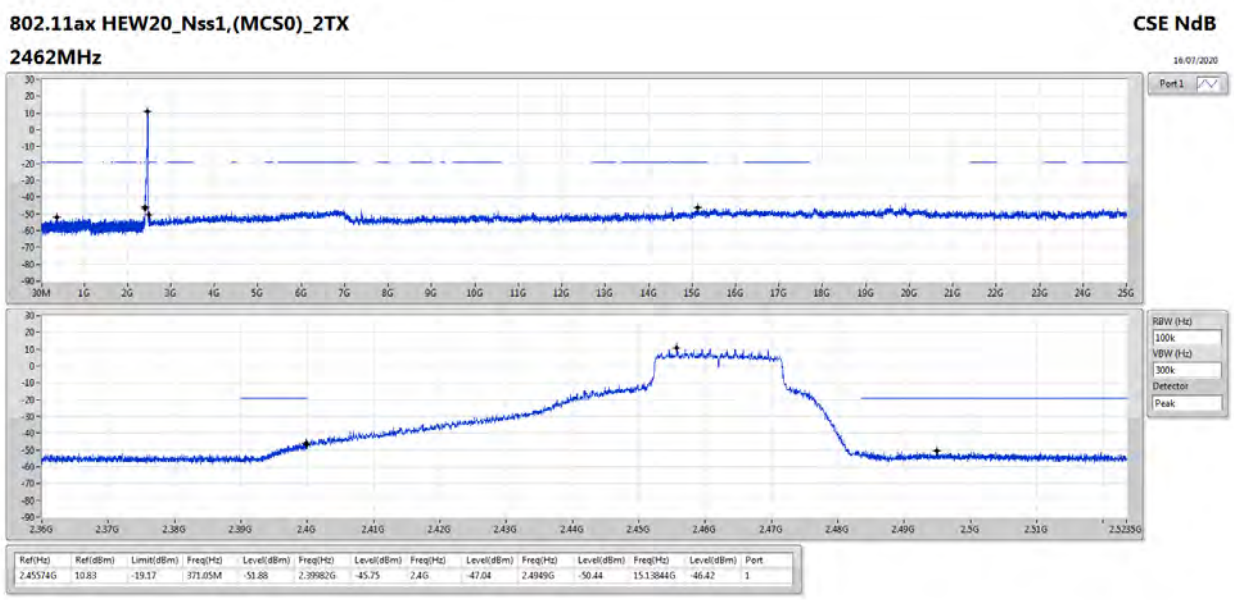

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 2 / Reference Level**

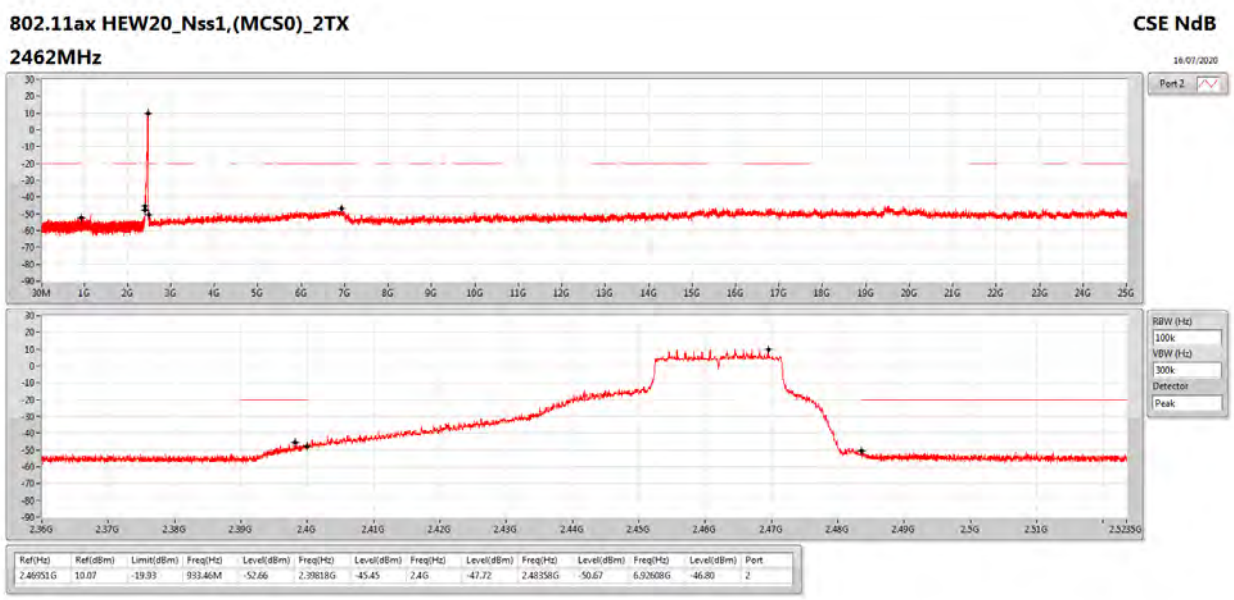
**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**


**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 2 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 2 / Reference Level**

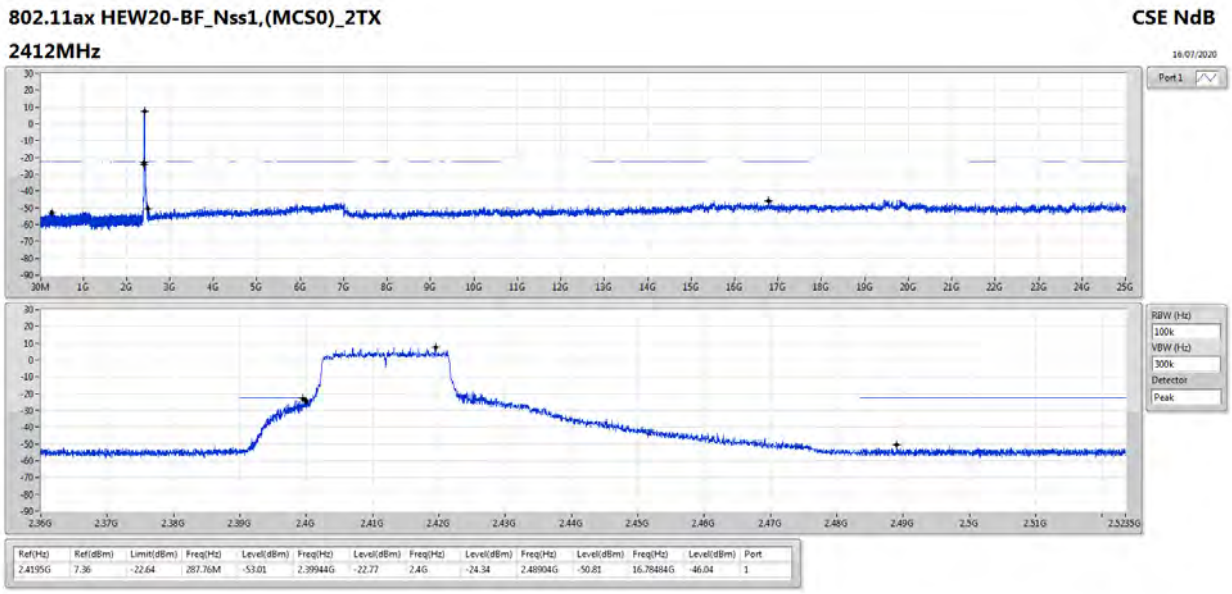
**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**



**<MCS0, Ant. 1+2, 1S2T, TXBF>**

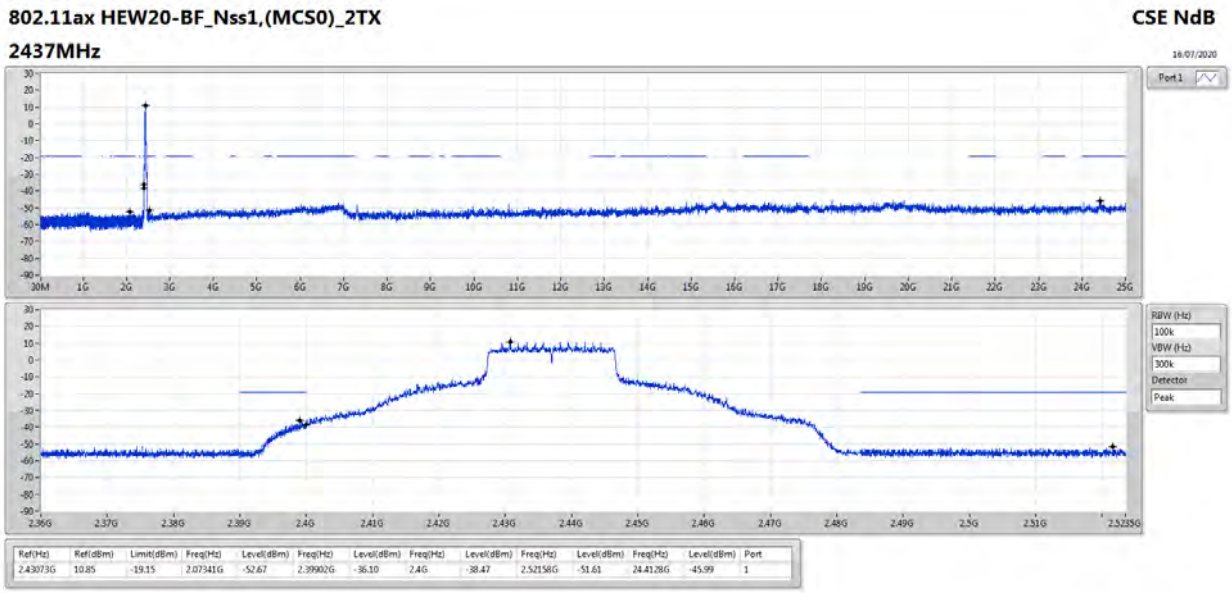
**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



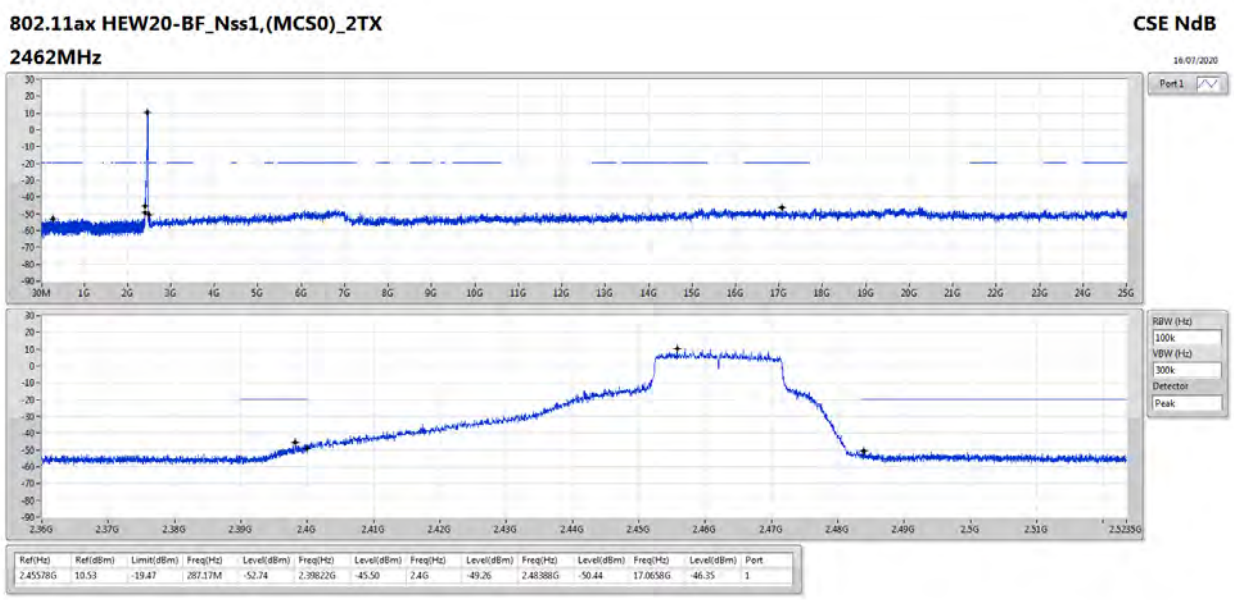

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**

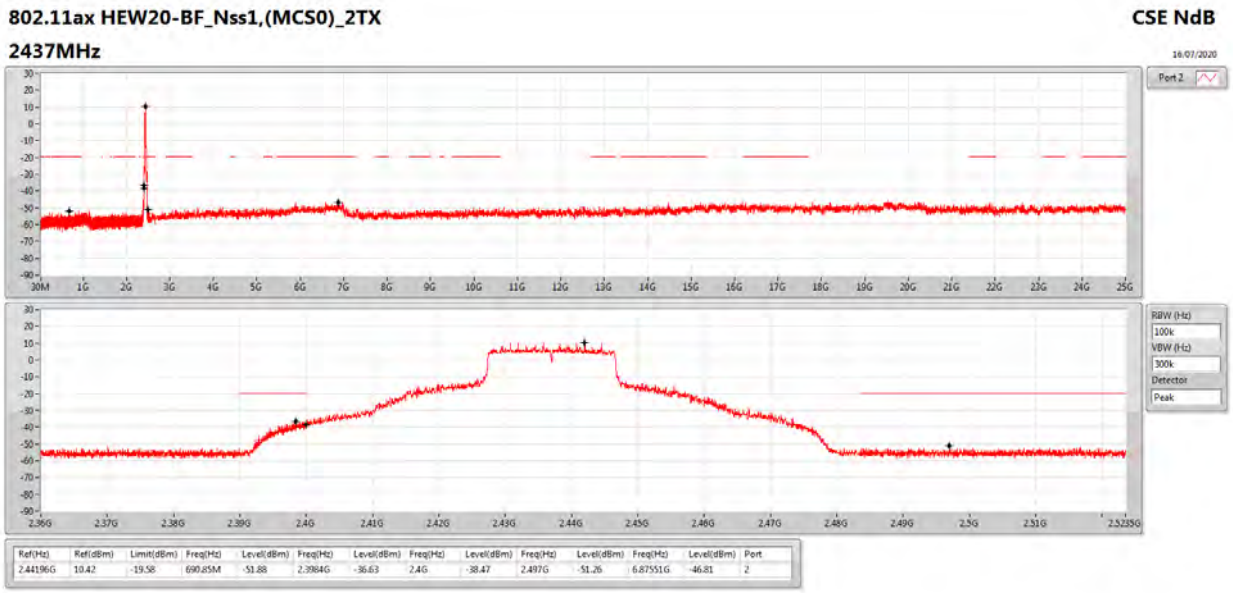


**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 2 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 1 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**

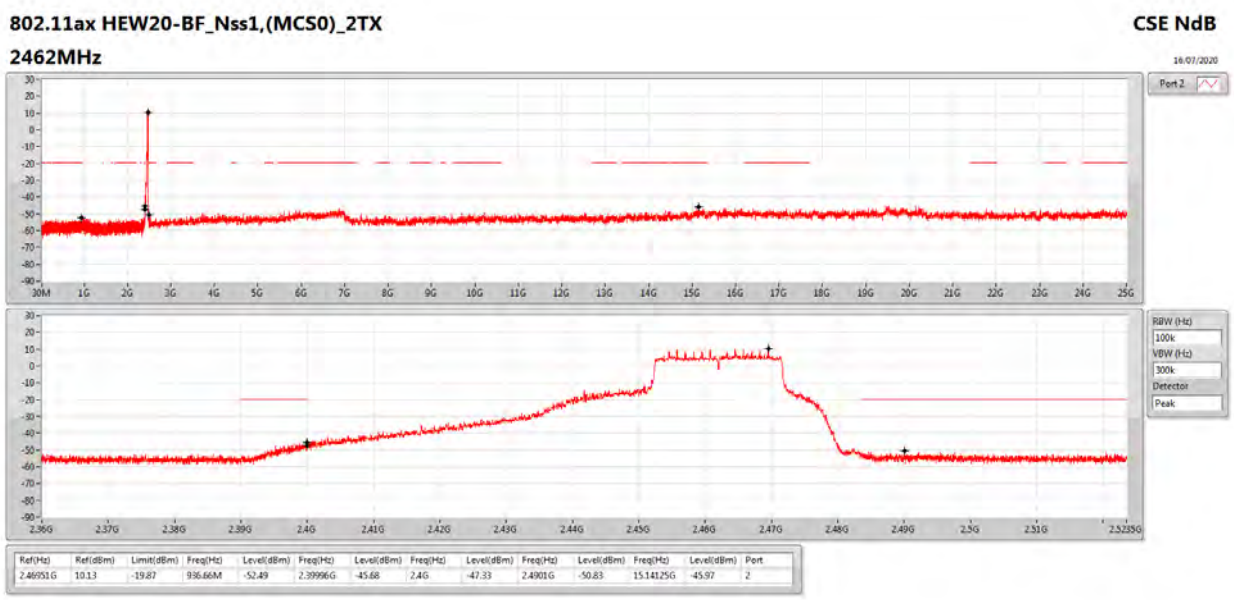

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 2 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 6 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**



**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 2 / Reference Level**

**IEEE 802.11ax 20MHz MCS0/Nss1 / CH 11 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**

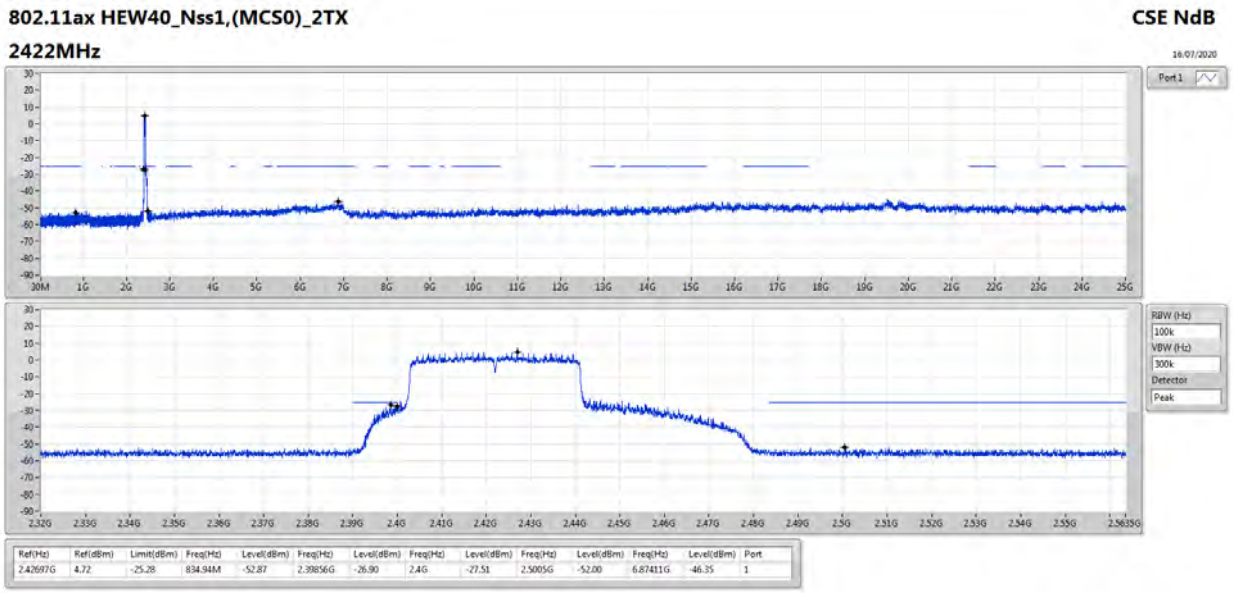


**Configuration IEEE 802.11ax 40MHz**

**<MCS0, Ant. 1+2, 1S2T, CDD>**

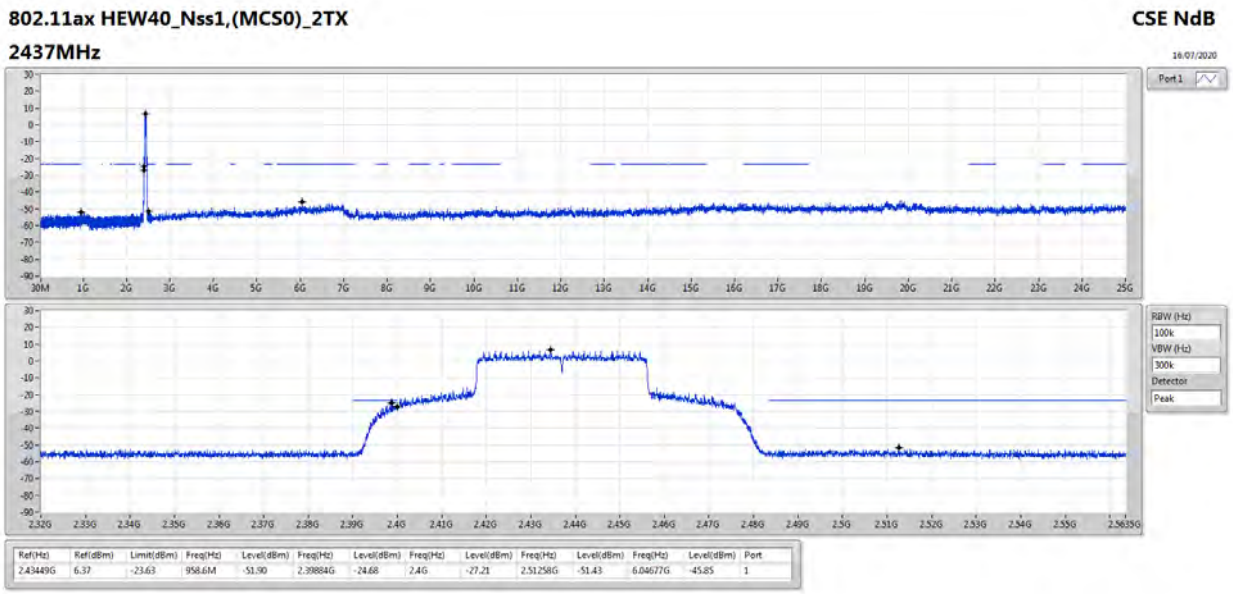
**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



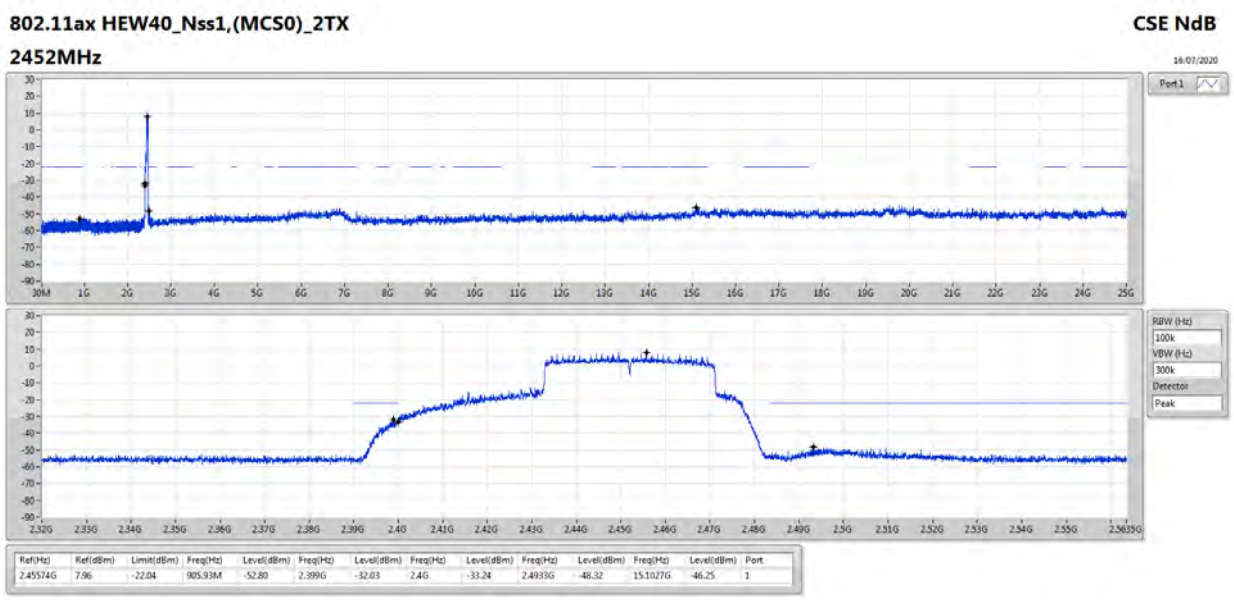

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 2 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**


**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 2 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**

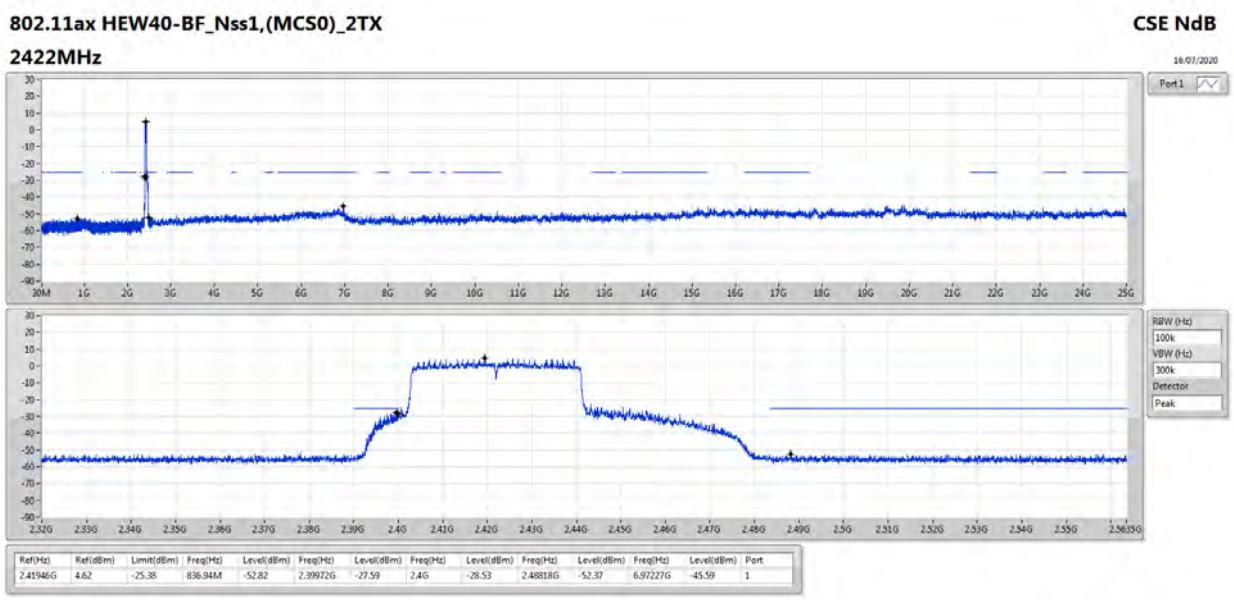
**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 2 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**

**<MCS0, Ant. 1+2, 1S2T, TXBF>**

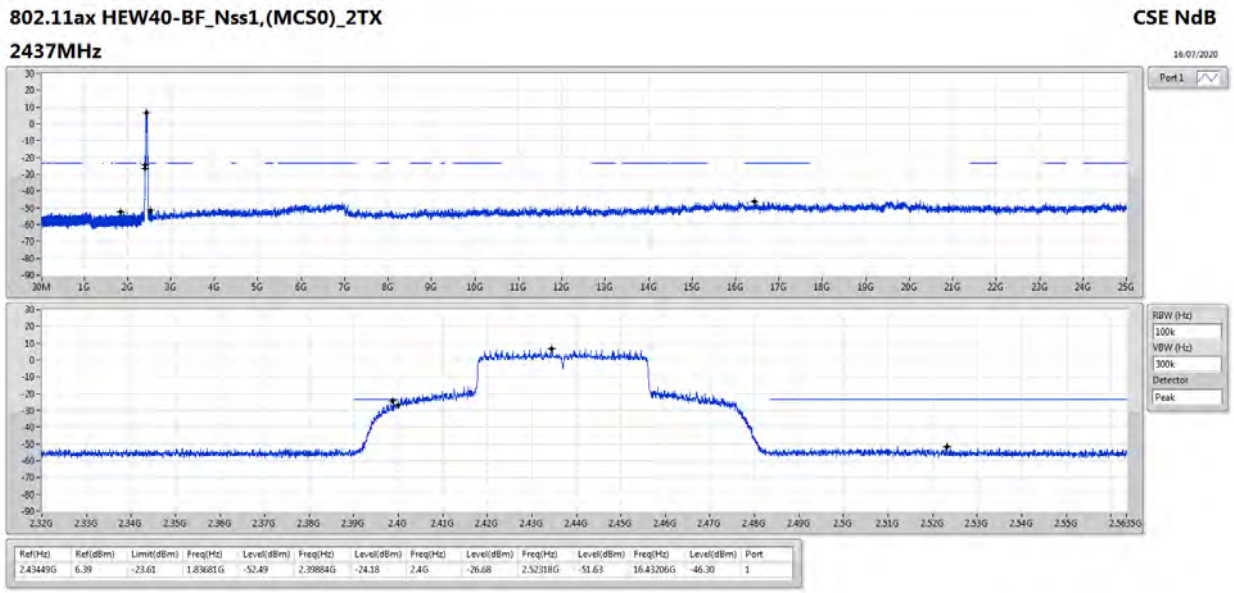
**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



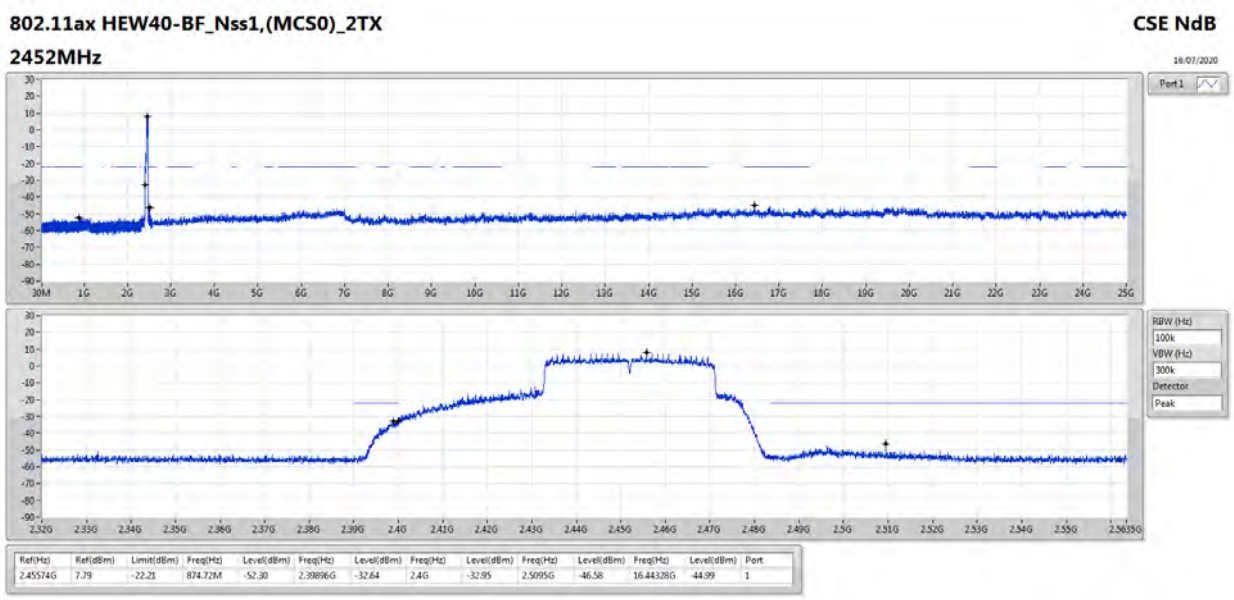

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



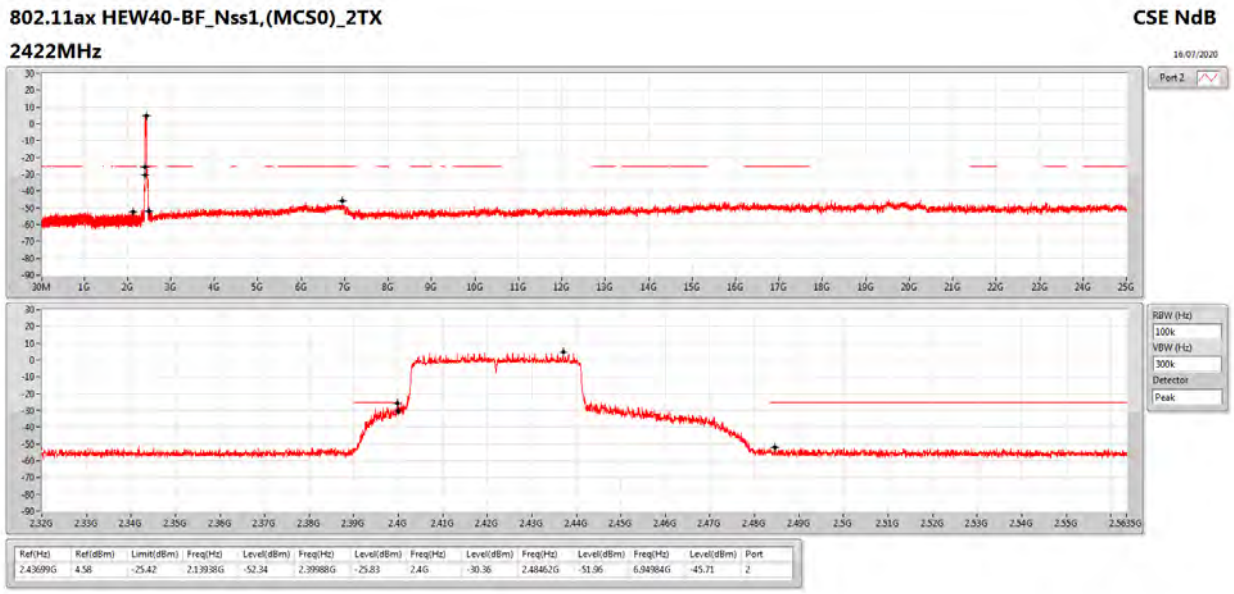
**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 1 / 30MHz~10th Harmonic (down 30dBc)**



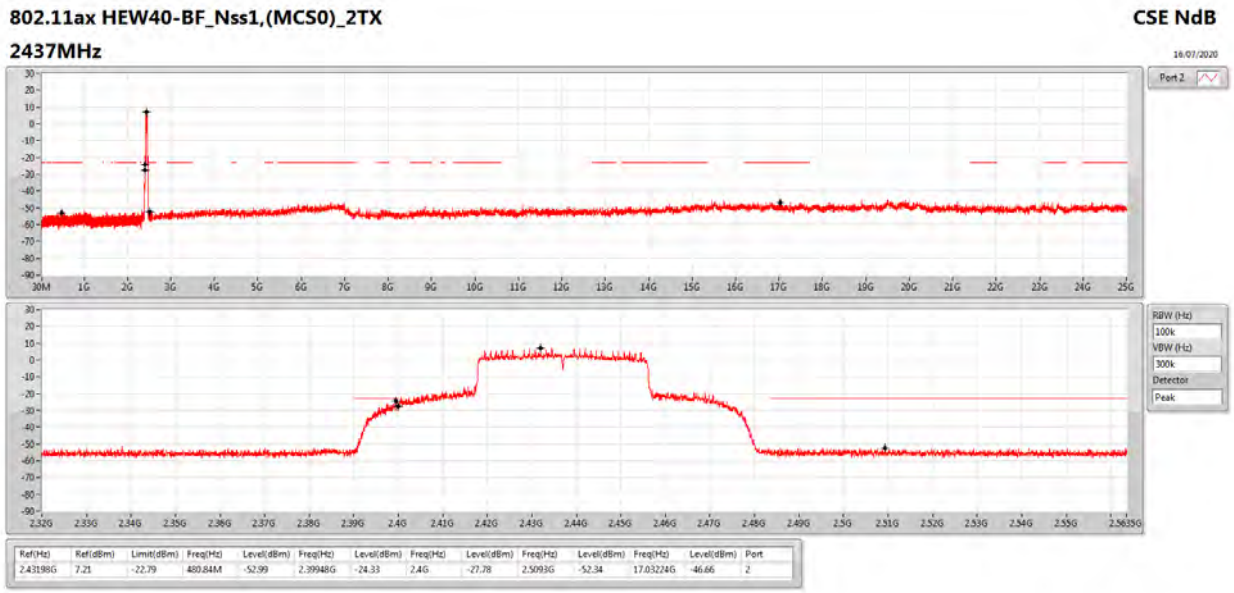
**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 2 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 3 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**



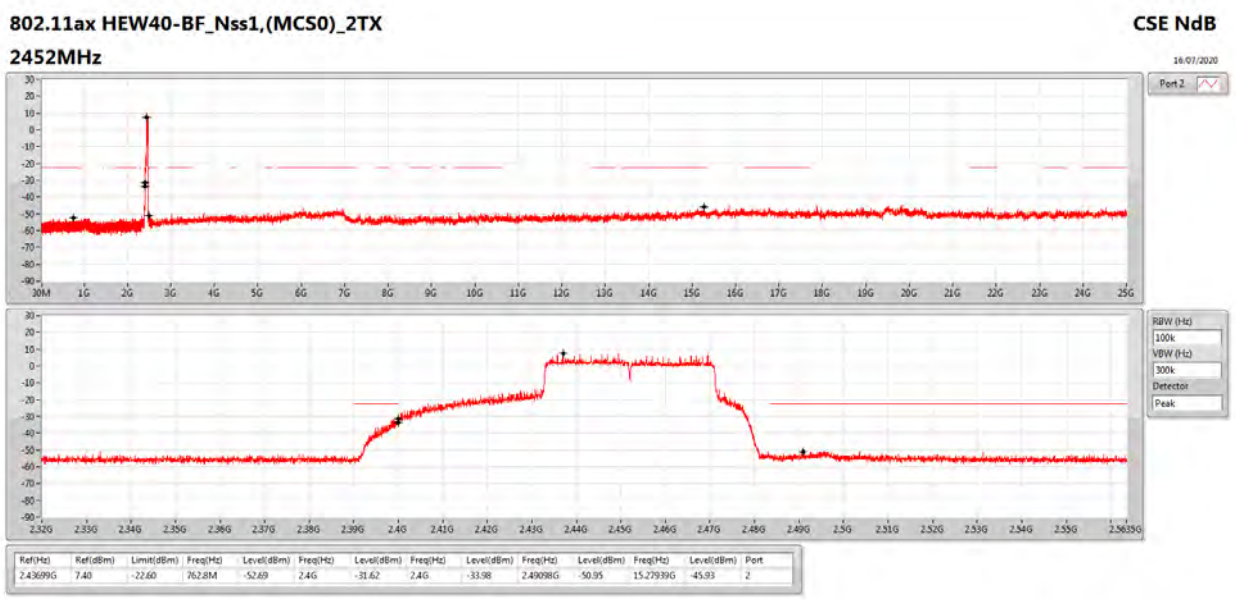

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 2 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 6 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**



**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 2 / Reference Level**

**IEEE 802.11ax 40MHz MCS0/Nss1 / CH 9 / Ant. 2 / 30MHz~10th Harmonic (down 30dBc)**



## 2.7. Antenna Requirements

### 2.7.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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 shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

### 2.7.2. Antenna Connector Construction

The antenna connector complied with the requirements.

# 3. List of Measuring Equipments

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|---|---|---|---|---|---|---|---|
| LISN | Schwarzbeck | NSLK 8127 | 8127650 | 9kHz ~ 30MHz | Nov. 21, 2019 | Nov. 20, 2020 | Conduction (CO02-CB) |
| LISN | Schwarzbeck | NSLK 8127 | 8127478 | 9kHz ~ 30MHz | Oct. 30, 2019 | Oct. 29, 2020 | Conduction (CO02-CB) |
| EMI Receiver | Agilent | N9038A | MY52260140 | 9kHz ~ 8.4GHz | Mar. 10, 2020 | Mar. 09, 2021 | Conduction (CO02-CB) |
| COND Cable | Woken | Cable | 2 | 0.15MHz~30MHz | Oct. 21, 2019 | Oct. 20, 2020 | Conduction (CO02-CB) |
| Software | Audix | E3 | 6.120210n | - | N.C.R. | N.C.R. | Conduction (CO02-CB) |
| Pulse Limiter | Schwarzbeck | VTSD 9561F-N | 00378 | 9kHz ~ 30MHz | Mar. 19, 2020 | Mar. 18, 2021 | Conduction (CO02-CB) |
| Bilog Antenna with 6dB Attenuator | TESEQ & EMCI | CBL 6112D & N-6-06 | 35236 & AT-N0610 | 30MHz ~ 2GHz | Mar. 27, 2020 | Mar. 26, 2021 | Radiation (03CH05-CB) |
| Loop Antenna | Teseq | HLA 6120 | 24155 | 9kHz - 30 MHz | Apr. 13, 2020 | Apr. 12, 2021 | Radiation (03CH05-CB) |
| Horn Antenna | SCHWARZBECK | BBHA9120D | BBHA 9120D-1291 | 1GHz~18GHz | Oct. 05, 2019 | Oct. 04, 2020 | Radiation (03CH05-CB) |
| Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170252 | 15GHz ~ 40GHz | Jun. 27, 2019 | Jun. 26, 2020 | Radiation (03CH05-CB) |
| Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170507 | 15GHz ~ 40GHz | Jun. 11, 2020 | Jun. 10, 2021 | Radiation (03CH05-CB) |
| Pre-Amplifier | EMCI | EMC330N | 980331 | 20MHz ~ 3GHz | Apr. 28, 2020 | Apr. 27, 2021 | Radiation (03CH05-CB) |
| Pre-Amplifier | EMCI | EMC12630SE | 980287 | 1GHz – 26.5GHz | Apr. 15, 2020 | Apr. 14, 2021 | Radiation (03CH05-CB) |
| Pre-Amplifier | EMCI | EMC12630SE | 980287 | 1GHz – 26.5GHz | Jul. 03, 2020 | Jul. 02, 2021 | Radiation (03CH05-CB) |
| Pre-Amplifier | MITEQ | TTA1840-35-HG | 1864479 | 18GHz ~ 40GHz | Jul. 03, 2019 | Jul. 02, 2020 | Radiation (03CH05-CB) |
| Amplifier | - | - | TF-130N-R1 | 18GHz ~ 40GHz | Jun. 19, 2020 | Jun. 18, 2021 | Radiation (03CH05-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100304 | 9kHz ~ 40GHz | Aug. 15, 2019 | Aug. 14, 2020 | Radiation (03CH05-CB) |
| EMI Test Receiver | R&S | ESCS | 826547/017 | 9kHz ~ 2.75GHz | May 13, 2020 | May 12, 2021 | Radiation (03CH05-CB) |
| RF Cable-low | Woken | RG402 | LOW Cable-04+23 | 30MHz~1GHz | Oct. 07, 2019 | Oct. 06, 2020 | Radiation (03CH05-CB) |
| RF Cable-high | Woken | RG402 | High Cable-28 | 1GHz~18GHz | Oct. 07, 2019 | Oct. 06, 2020 | Radiation (03CH05-CB) |
| RF Cable-high | Woken | RG402 | High Cable-04+28 | 1GHz~18GHz | Feb. 01, 2020 | Jan. 31, 2021 | Radiation (03CH05-CB) |
| RF Cable-high | Woken | RG402 | High Cable-40G#1 | 18GHz ~ 40 GHz | Jul. 24, 2019 | Jul. 23, 2020 | Radiation (03CH05-CB) |
| RF Cable-high | Woken | RG402 | High Cable-40G#2 | 18GHz ~ 40 GHz | Jul. 24, 2019 | Jul. 23, 2020 | Radiation (03CH05-CB) |

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|---|---|---|---|---|---|---|---|
| Horn Antenna | ETS・Lindgren | 3115 | 00143147 | 750MHz~18GHz | Oct. 22, 2019 | Oct. 21, 2020 | Radiation (03CH04-CB) |
| Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170252 | 15GHz ~ 40GHz | Jun. 27, 2019 | Jun. 26, 2020 | Radiation (03CH04-CB) |
| Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170507 | 15GHz ~ 40GHz | Jun. 11, 2020 | Jun. 10, 2021 | Radiation (03CH04-CB) |
| Pre-Amplifier | Agilent | 83017A | MY53270063 | 0.5GHz~26.5GHz | Mar. 11, 2020 | Mar. 10, 2021 | Radiation (03CH04-CB) |
| Pre-Amplifier | MITEQ | TTA1840-35-HG | 1864479 | 18GHz ~ 40GHz | Jul. 03, 2019 | Jul. 02, 2020 | Radiation (03CH04-CB) |
| Amplifier | - | - | TF-130N-R1 | 18GHz ~ 40GHz | Jun. 19, 2020 | Jun. 18, 2021 | Radiation (03CH04-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100142 | 9kHz~40GHz | Dec. 18, 2019 | Dec. 17, 2020 | Radiation (03CH04-CB) |
| RF Cable-high | Woken | RG402 | High Cable-21 | 1GHz - 18GHz | Feb. 01, 2020 | Jan. 31, 2021 | Radiation (03CH04-CB) |
| RF Cable-high | Woken | RG402 | High Cable-21 | 1GHz - 18GHz | Jul. 07, 2020 | Jul. 06, 2021 | Radiation (03CH04-CB) |
| RF Cable-high | Woken | RG402 | High Cable-21+22 | 1GHz - 18GHz | Feb. 01, 2020 | Jan. 31, 2021 | Radiation (03CH04-CB) |
| RF Cable-high | Woken | RG402 | High Cable-40G#1 | 18GHz ~ 40 GHz | Jul. 24, 2019 | Jul. 23, 2020 | Radiation (03CH04-CB) |
| RF Cable-high | Woken | RG402 | High Cable-40G#2 | 18GHz ~ 40 GHz | Jul. 24, 2019 | Jul. 23, 2020 | Radiation (03CH04-CB) |
| Spectrum analyzer | R&S | FSV40 | 100979 | 9kHz~40GHz | May 05, 2020 | May 04, 2021 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-06 | 1 GHz – 26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-07 | 1 GHz –26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-08 | 1 GHz –26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-09 | 1 GHz –26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-10 | 1 GHz –26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-28 | 1 GHz –26.5 GHz | Nov. 18, 2019 | Nov. 17, 2020 | Conducted (TH01-CB) |
| Power Sensor | Agilent | E9327A | US40442088 | 50MHz~18GHz | Feb. 07, 2020 | Feb. 06, 2021 | Conducted (TH01-CB) |
| Power Meter | Agilent | E4416A | GB41291199 | 50MHz~18GHz | Feb. 07, 2020 | Feb. 06, 2021 | Conducted (TH01-CB) |

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.

# 4. Measurement Uncertainty

| Test Items | Uncertainty | Remark |
|---|---|---|
| Conducted Emission (150kHz ~ 30MHz) | 2.0 dB | Confidence levels of 95% |
| Radiated Emission (30MHz ~ 1,000MHz) | 5.6 dB | Confidence levels of 95% |
| Radiated Emission (1GHz ~ 18GHz) | 4.9 dB | Confidence levels of 95% |
| Radiated Emission (18GHz ~ 40GHz) | 4.6 dB | Confidence levels of 95% |
| Conducted Emission | 2.4 dB | Confidence levels of 95% |
| Output Power Measurement | 1.5 dB | Confidence levels of 95% |
| Power Density Measurement | 2.4 dB | Confidence levels of 95% |
| Bandwidth Measurement | 2% | Confidence levels of 95% |

# Appendix A. Radiated Emission Co-location Report


TEL : 886-3-656-9065
FAX : 886-3-656-9085

# 1. Results of Radiated Emissions for Co-located

**Mode Configure**

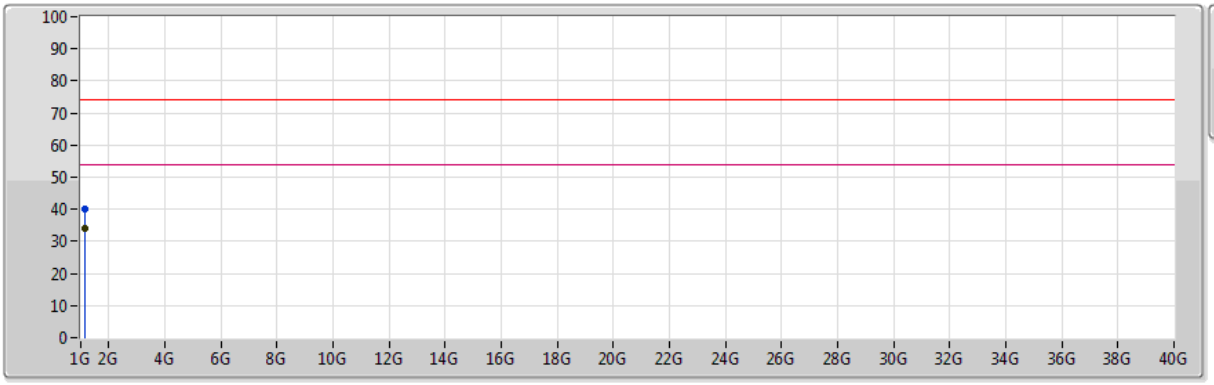
| Mode | Configure |
|---|---|
| Mode 1 | 2.4G+5G band 1 |

Note: Both WLAN 2.4G and WLAN 5G simultaneously could be transmitted with a same antenna.


TEL : 886-3-656-9065
FAX : 886-3-656-9085

## Mode 1

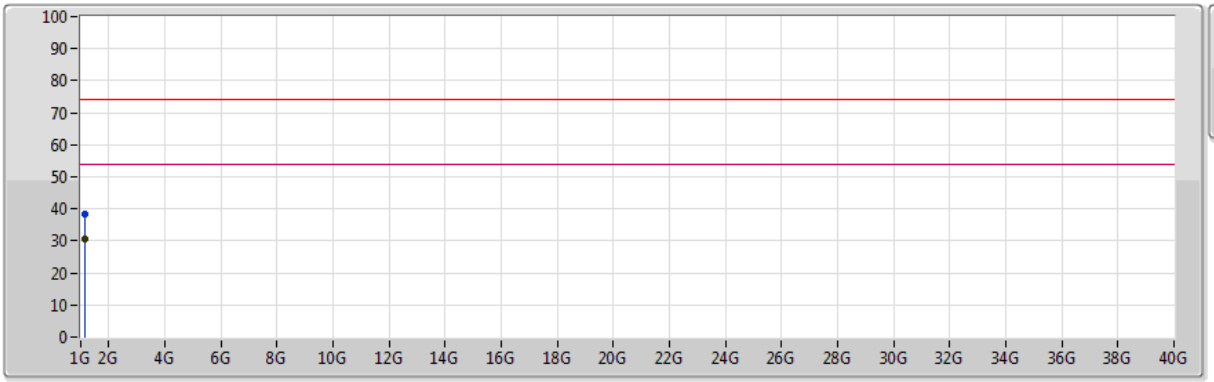
13/07/2020




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) | (dB) | (dB) | (dB) |
| PK | 1.12483G | 39.96 | 74.00 | -34.04 | -8.99 | 3 | Vertical | 37 | 1.15 | - | 48.95 | 24.72 | 2.84 | 36.55 |
| AV | 1.12489G | 34.15 | 54.00 | -19.85 | -8.99 | 3 | Vertical | 37 | 1.15 | "Worst" | 43.14 | 24.72 | 2.84 | 36.55 |

## Mode 1

13/07/2020




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) | (dB) | (dB) | (dB) |
| PK | 1.12532G | 38.50 | 74.00 | -35.50 | -8.99 | 3 | Horizontal | 155 | 1.47 | - | 47.49 | 24.73 | 2.84 | 36.56 |
| AV | 1.12509G | 30.75 | 54.00 | -23.25 | -8.99 | 3 | Horizontal | 155 | 1.47 | "Worst" | 39.74 | 24.73 | 2.84 | 36.56 |