# FCC Test Report

| | | |
|---|---|---|
| Equipment | : | 802.11 3T3R a/n/ac module |
| Brand Name | : | Senao |
| Model No. | : | PCE4553AH |
| FCC ID | : | U2M-PCE4553AH |
| Standard | : | 47 CFR FCC Part 15.247 |
| Operating Band | : | 5725 MHz – 5850 MHz |
| FCC Classification | : | DTS |
| Applicant<br>Manufacturer | : | Senao Networks, Inc.<br>3F, No. 529, Chung Cheng Rd., Hsintien,Taipei,Taiwan |

The product sample received on Nov. 05, 2013 and completely tested on Feb. 20, 2014. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 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., the test report shall not be reproduced except in full.

Reviewed by:

James Fan / Assistant Manager

Testing Laboratory
1190

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# Summary of Test Result

| Conformance Test Specifications | | | | | |
|---|---|---|---|---|---|
| **Report Clause** | **Ref. Std. Clause** | **Description** | **Measured** | **Limit** | **Result** |
| 1.1.2 | 15.203 | Antenna Requirement | Antenna connector mechanism complied | FCC 15.203 | Complied |
| 3.1 | 15.207 | AC Power-line Conducted Emissions | [dBuV]:0.155MHz<br>46.02 (Margin 9.72dB) - AV<br>52.11 (Margin 13.63dB) - QP | FCC 15.207 | Complied |
| 3.2 | 15.247(a) | 6dB Bandwidth | 6dB Bandwidth [MHz]<br>20M:16.35 / 40M:35.71<br>80M: 72.58 | ≥500kHz | Complied |
| 3.3 | 15.247(b) | RF Output Power (Maximum Conducted (Average) Output Power) | Power [dBm]:26.88 | Power [dBm]:30 | Complied |
| 3.4 | 15.247(e) | Power Spectral Density | PSD [dBm/3kHz]:2.17 | PSD [dBm/3kHz]:8 | Complied |
| 3.5 | 15.247(d) | Emissions in non-restricted frequency bands | Out-of -band emissions are 30dB below the highest power | Non-Restricted Bands: > 30 dBc<br>Restricted Bands: FCC 15.209 | Complied |
| 3.6 | 15.247(d) | Transmitter Radiated Unwanted Emissions | Restricted Bands [dBuV/m at 3m]:11570.00MHz<br>53.00 (Margin 1.00dB) - AV | Non-Restricted Bands: > 30 dBc<br>Restricted Bands: FCC 15.209 | Complied |

# Revision History

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR3N0541AI | Rev. 01 | Initial issue of report | Mar. 28, 2014 |
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# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

| RF General Information | | | | | | |
|---|---|---|---|---|---|---|
| Frequency Range (MHz) | IEEE Std. 802.11 | Ch. Freq. (MHz) | Channel Number | Transmit Chains ($N_{TX}$) | RF Output Power (dBm) | Co-location |
| 5725-5850 | a | 5745-5825 | 149-165 [5] | 3 | 26.65 | N/A |
| 5725-5850 | n(HT20) | 5745-5825 | 149-165 [5] | 3 | 26.74 | N/A |
| 5725-5850 | n(HT40) | 5755-5795 | 151-159 [2] | 3 | 26.82 | N/A |
| 5725-5850 | ac(VHT20) | 5745-5825 | 149-165 [5] | 3 | 26.81 | N/A |
| 5725-5850 | ac(VHT40) | 5755-5795 | 151-159 [2] | 3 | 26.88 | N/A |
| 5725-5850 | ac(VHT80) | 5775 | 155 [1] | 3 | 24.55 | N/A |

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.
Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
Note 3: 802.11ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
Note 4: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)

### 1.1.2 Antenna Information

| Antenna Category | | | |
|---|---|---|---|
| ☐ | Equipment placed on the market without antennas | | |
| ☐ | Integral antenna (antenna permanently attached) | | |
| | ☐ | Temporary RF connector provided | |
| | ☐ | No temporary RF connector provided<br>Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path. | |
| ☒ | External antenna (dedicated antennas) | | |
| | ☐ | Single power level with corresponding antenna(s). | |
| | ☐ | Multiple power level and corresponding antenna(s). | |
| | ☒ | RF connector provided | |
| | | ☒ | Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type…) |
| | | ☐ | Standard antenna connector. (e.g., SMA, N, BNC, and TNC type…) |

| Antenna General Information | | | | | |
|---|---|---|---|---|---|
| **No.** | **Ant. Cat.** | **Ant. Model** | **Ant. Type** | **Connector** | **Gain (dBi)** |
| 1 | External | Ant 2 (1002299) | PCB Dipole | UFL | 4.2025 |
| 2 | External | Ant 4 (1002300) | PCB Dipole | UFL | 4.0181 |
| 3 | External | Ant 6 (1002301) | PCB Dipole | UFL | 3.4374 |

### 1.1.3 Type of EUT

| Identify EUT | |
|---|---|
| EUT Serial Number | N/A |
| Presentation of Equipment | ☐ Production ; ☒ Pre-Production ; ☐ Prototype |

| Type of EUT | |
|---|---|
| ☐ | Stand-alone |
| ☐ | Combined (EUT where the radio part is fully integrated within another device)<br>Combined Equipment - Brand Name / Model No.: … |
| ☒ | Plug-in radio |
| ☐ | Other: |

### 1.1.4 Test Signal Duty Cycle

| Operated Mode for Worst Duty Cycle | |
|---|---|
| ☐ Operated normally mode for worst duty cycle | |
| ☒ Operated test mode for worst duty cycle | |
| **Test Signal Duty Cycle (x)** | **Power Duty Factor [dB] – (10 log 1/x)** |
| ☒ 100.00% - IEEE 802.11a | 0 |
| ☒ 100.00% - IEEE 802.11ac (VHT20) | 0 |
| ☒ 100.00% - IEEE 802.11ac (VHT40) | 0 |
| ☒ 100.00% - IEEE 802.11ac (VHT80) | 0 |

### 1.1.5 EUT Operational Condition

| | | | |
|---|---|---|---|
| **Supply Voltage** | ☐ AC mains | ☒ DC | |
| **Type of DC Source** | ☐ Internal DC supply | ☐ External DC adapter | ☒ Host |

## 1.2 Support Equipment

| Support Equipment | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **Serial No.** |
| 1 | Notebook | DELL | E6430 | DoC |
| 2 | Power Supply | GW INSTEK | GPC-6030D | --- |
| 3 | Extender card | NA | adapter | NA |

## 1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2009
- FCC KDB 558074 v03r01
- FCC KDB 662911 v02r01
- FCC KDB 412172 v01

## 1.4 Testing Location Information

| Testing Location | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ☒ | Sporton Lab | ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL : 886-3-327-3456 FAX : 886-3-318-0055 | | | | | | |
| ☒ | ICC Lab | ADD : No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsein 333, Taiwan (R.O.C.)<br>TEL : 886-3-271-8666 FAX : 886-3-318-0155 | | | | | | |
| **Test Condition** | | **Test Site No.** | **Test Engineer** | **Test Environment** | **Test Date** | | | |
| RF Conducted | | TH01-HY | Mark Liao | 22°C / 62% | Feb. 19, 2014 | | | |
| *AC Conduction | | CO01-WS | Skys Huang | 15°C / 70% | Feb. 20, 2014 | | | |
| *Radiated Emission | | 03CH01-WS | Aska Huang | 16-19°C / 62-64% | Feb. 07 ~ Feb. 10, 2014 | | | |
| Test site registered number [657002] with FCC.<br>Test site registered number [10807A-1] with IC. | | | | | | | | |

Note: * Sporton Lab subcontracts this test item to ICC lab (TAF: 2732).
ICC lab is a TAF accreditation test firm and also is an approved provider of Sporton lab.

## 1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

| Measurement Uncertainty | | | |
|---|---|---|---|
| **Test Item** | | **Uncertainty** | **Limit** |
| AC power-line conducted emissions | | ±2.26 dB | N/A |
| Emission bandwidth, 6dB bandwidth | | ±1.42 % | N/A |
| RF output power, conducted | | ±0.63 dB | N/A |
| Power density, conducted | | ±0.81 dB | N/A |
| All emissions, radiated | 30 – 1000 MHz | ±3.9 dB | N/A |
| | Above 1GHz | ±4.2 dB | N/A |
| Temperature | | ±0.8 °C | N/A |
| Humidity | | ±3 % | N/A |
| DC and low frequency voltages | | ±3 % | N/A |
| Time | | ±1.42 % | N/A |
| Duty Cycle | | ±1.42 % | N/A |

# 2 Test Configuration of EUT

## 2.1 The Worst Case Modulation Configuration

| Worst Modulation Used for Conformance Testing | | | |
|---|---|---|---|
| **Modulation Mode** | **Transmit Chains ($N_{TX}$)** | **Data Rate / MCS** | **Worst Data Rate / MCS** |
| 11a | 3 | 6-54Mbps | 6 Mbps |
| HT20 | 3 | M0-23 | M0 |
| HT40 | 3 | M0-23 | M0 |
| VHT20 | 3 | M0-8 | M0 |
| VHT40 | 3 | M0-9 | M0 |
| VHT80 | 3 | M0-9 | M0 |

## 2.2 The Worst Case Power Setting Parameter

| The Worst Case Power Setting Parameter (5725-5850MHz band) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Test Software Version** | art2, Version: 4_9_575_5_CS_U3 | | | | | | |
| **Modulation Mode** | **$N_{TX}$** | **Test Frequency (MHz)** | | | | | |
| | | **NCB: 20MHz** | | | **NCB: 40MHz** | | **NCB: 80MHz** |
| | | **5745** | **5785** | **5825** | **5755** | **5795** | **5775** |
| 11a,6-54Mbps | 3 | 21 | 21 | 20 | --- | --- | --- |
| HT20,M0-23 | 3 | 21 | 21.5 | 20.5 | --- | --- | --- |
| HT40,M0-23 | 3 | --- | --- | --- | 19.5 | 21.5 | --- |
| VHT20,M0-8 | 3 | 21 | 21.5 | 20.5 | --- | --- | --- |
| VHT40,M0-9 | 3 | --- | --- | --- | 19.5 | 21.5 | --- |
| VHT80,M0-9 | 3 | --- | --- | --- | --- | --- | 18.5 |

## 2.3 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | AC power-line conducted emissions |
| **Condition** | AC power-line conducted measurement for line and neutral<br>Test Voltage: 120Vac / 60Hz |
| **Operating Mode** | Operating Mode Description |
| 1 | DC Power & Radio link(WLAN) |

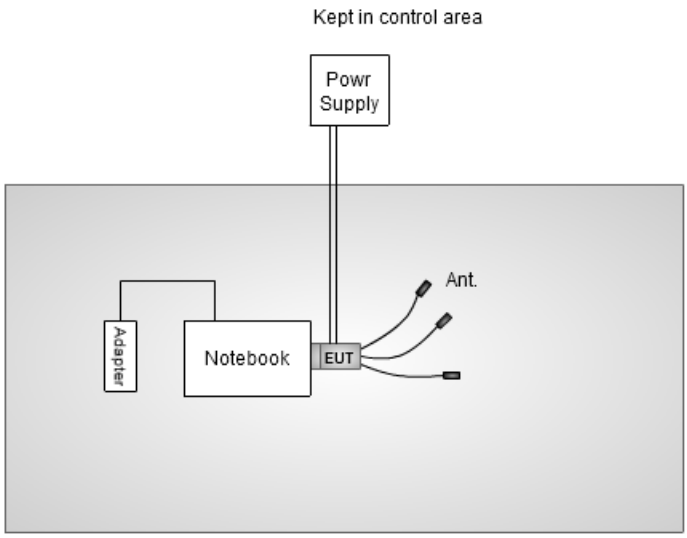
| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | RF Output Power |
| **Test Condition** | Conducted measurement at transmit chains |
| **Modulation Mode** | 11a, HT20, HT40, VHT20, VHT40, VHT80 |
| **Operating Mode** | Operating Mode Description |
| 1 | DC Power & Radio link(WLAN) |

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | Power Spectral Density, 6 dB Bandwidth |
| **Test Condition** | Conducted measurement at transmit chains |
| **Modulation Mode** | 11a, VHT20, VHT40, VHT80 |
| **Operating Mode** | Operating Mode Description |
| 1 | DC Power & Radio link(WLAN) |
| Note:<br>1. 802.11n/ac modulation modes consist of HT20, HT40, VHT20, VHT40 and VHT80. After pretested, VHT20, VHT40, and VHT80 were the worst cases and were selected for final test. | |

| The Worst Case Mode for Following Conformance Tests | | | |
|---|---|---|---|
| **Tests Item** | Transmitter Radiated Unwanted Emissions | | |
| **Test Condition** | Radiated measurement<br>If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type. | | |
| **User Position** | ☐ EUT will be placed in fixed position. | | |
| | ☒ EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst planes is X. | | |
| | ☐ EUT will be operating multiple positions. The dipole antenna of EUT was pre-tested on the positioned of each 3 axis. The worst plane is Y. | | |
| **Operating Mode** | ☒ 1. DC Power & Radio link (WLAN) | | |
| **Modulation Mode** | 11a, VHT20, VHT40, VHT80 | | |
| **Orthogonal Planes of EUT** | **X Plane** | **Y Plane** | **Z Plane** |
| | | | |
| Note:<br>1. 802.11n/ac modulation modes consist of HT20, HT40, VHT20, VHT40 and VHT80. After pretested, VHT20, VHT40, and VHT80 were the worst cases and were selected for final test. | | | |

## 2.4 Test Setup Diagram

**Test Setup Diagram**



# 3 Transmitter Test Result

## 3.1 AC Power-line Conducted Emissions

### 3.1.1 AC Power-line Conducted Emissions Limit

| AC Power-line Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 – 56 * | 56 – 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

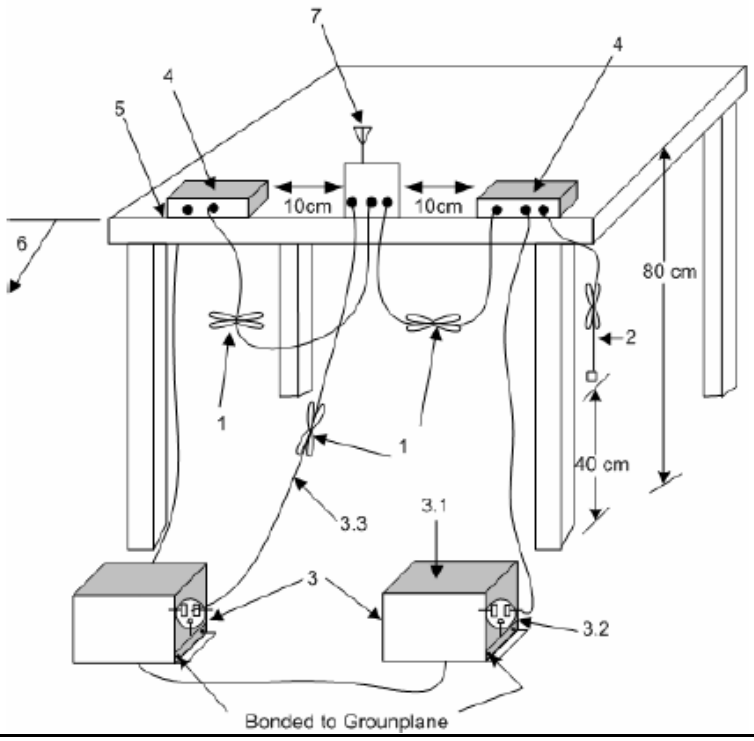
### 3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.1.3 Test Procedures

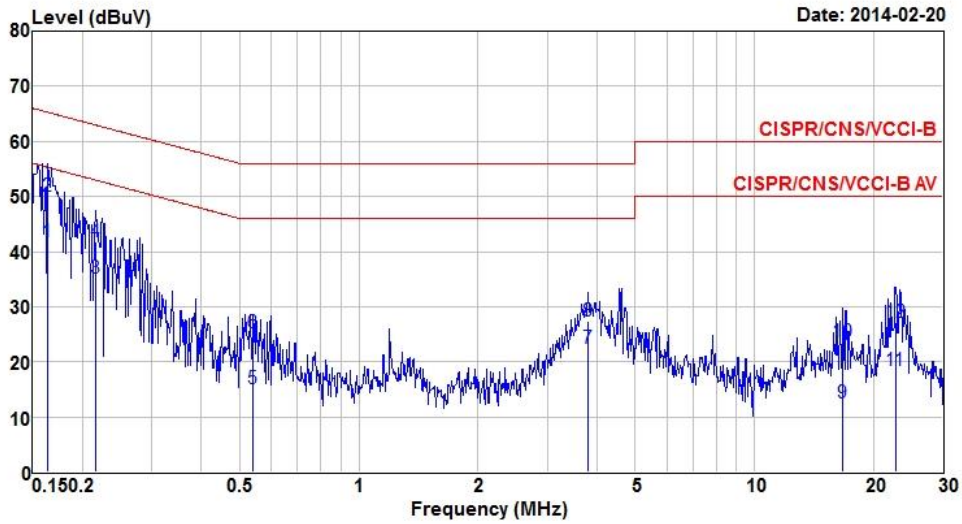
| Test Method |
|---|
| ☒ Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions. |

### 3.1.4 Test Setup

| AC Power-line Conducted Emissions |
|---|
|  |

### 3.1.5 Test Result of AC Power-line Conducted Emissions

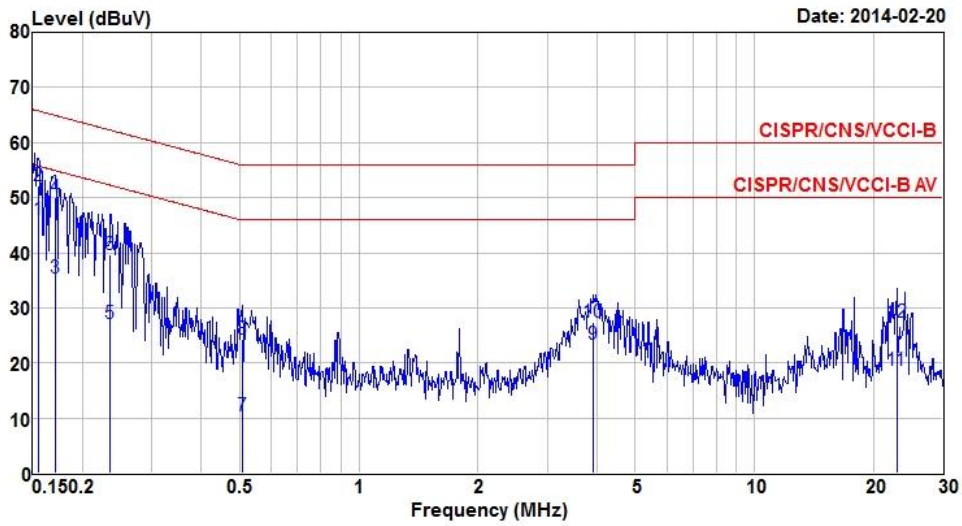
| AC Power-line Conducted Emissions Result | | | |
|---|---|---|---|
| **Operating Mode** | 1 | **Power Phase** | Neutral |
| **Operating Function** | DC Power & Radio link(WLAN) | | |




| | Freq MHz | Level dBuV | Limit Line dBuV | Over Limit dB | Read Level dBuV | LISN factor dB | cable loss dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1* | 0.163 | 41.72 | 55.30 | -13.58 | 41.15 | 0.48 | 0.09 | Average |
| 2 | 0.163 | 50.13 | 65.30 | -15.17 | 49.56 | 0.48 | 0.09 | QP |
| 3 | 0.216 | 35.06 | 52.96 | -17.90 | 34.42 | 0.48 | 0.16 | Average |
| 4 | 0.216 | 41.86 | 62.96 | -21.10 | 41.22 | 0.48 | 0.16 | QP |
| 5 | 0.541 | 15.15 | 46.00 | -30.85 | 14.63 | 0.47 | 0.05 | Average |
| 6 | 0.541 | 25.23 | 56.00 | -30.77 | 24.71 | 0.47 | 0.05 | QP |
| 7 | 3.799 | 22.53 | 46.00 | -23.47 | 21.78 | 0.52 | 0.23 | Average |
| 8 | 3.799 | 27.37 | 56.00 | -28.63 | 26.62 | 0.52 | 0.23 | QP |
| 9 | 16.750 | 12.50 | 50.00 | -37.50 | 11.79 | 0.56 | 0.15 | Average |
| 10 | 16.750 | 23.68 | 60.00 | -36.32 | 22.97 | 0.56 | 0.15 | QP |
| 11 | 22.775 | 18.49 | 50.00 | -31.51 | 17.58 | 0.54 | 0.37 | Average |
| 12 | 22.775 | 27.15 | 60.00 | -32.85 | 26.24 | 0.54 | 0.37 | QP |

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

| AC Power-line Conducted Emissions Result | | | |
|---|---|---|---|
| **Operating Mode** | 1 | **Power Phase** | Line |
| **Operating Function** | DC Power & Radio link(WLAN) | | |




| | Freq MHz | Level dBuV | Limit Line dBuV | Over Limit dB | Read Level dBuV | LISN factor dB | cable loss dB | Remark |
|---|---|---|---|---|---|---|---|---|
| 1* | 0.155 | 46.02 | 55.74 | -9.72 | 45.55 | 0.40 | 0.07 | Average |
| 2 | 0.155 | 52.11 | 65.74 | -13.63 | 51.64 | 0.40 | 0.07 | QP |
| 3 | 0.170 | 35.39 | 54.94 | -19.55 | 34.88 | 0.40 | 0.11 | Average |
| 4 | 0.170 | 49.94 | 64.94 | -15.00 | 49.43 | 0.40 | 0.11 | QP |
| 5 | 0.235 | 27.26 | 52.26 | -25.00 | 26.72 | 0.39 | 0.15 | Average |
| 6 | 0.235 | 39.74 | 62.26 | -22.52 | 39.20 | 0.39 | 0.15 | QP |
| 7 | 0.507 | 10.49 | 46.00 | -35.51 | 10.04 | 0.40 | 0.05 | Average |
| 8 | 0.507 | 24.42 | 56.00 | -31.58 | 23.97 | 0.40 | 0.05 | QP |
| 9 | 3.922 | 23.37 | 46.00 | -22.63 | 22.67 | 0.46 | 0.24 | Average |
| 10 | 3.922 | 27.41 | 56.00 | -28.59 | 26.71 | 0.46 | 0.24 | QP |
| 11 | 22.896 | 18.61 | 50.00 | -31.39 | 17.68 | 0.55 | 0.38 | Average |
| 12 | 22.896 | 27.40 | 60.00 | -32.60 | 26.47 | 0.55 | 0.38 | QP |

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

## 3.2 6dB Bandwidth

### 3.2.1 6dB Bandwidth Limit

| 6dB Bandwidth Limit |
|---|
| **Systems using digital modulation techniques:** |
| ☒ 6 dB bandwidth ≥ 500 kHz. |

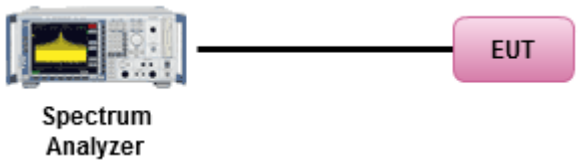
### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.2.3 Test Procedures

| Test Method | | | |
|---|---|---|---|
| ☒ | For the emission bandwidth shall be measured using one of the options below: | | |
| | ☒ | Refer as FCC KDB 558074 v03r01, clause 8.1 Option 1 for 6 dB bandwidth measurement. | |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 8.2 Option 2 for 6 dB bandwidth measurement. | |
| | ☐ | Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing. | |
| ☒ | For conducted measurement. | | |
| | ☐ | The EUT supports single transmit chain and measurements performed on this transmit chain. | |
| | ☐ | The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. | |
| | ☒ | The EUT supports multiple transmit chains using options given below: | |
| | | ☐ | Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1. |
| | | ☒ | Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains. |

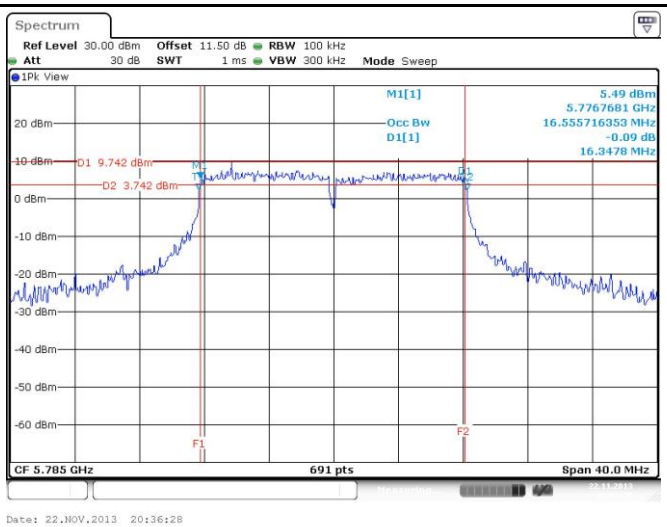
### 3.2.4 Test Setup

| Emission Bandwidth |
|---|
|   |

### 3.2.5 Test Result of Emission Bandwidth

| Emission Bandwidth Result | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Condition | | | Emission Bandwidth (MHz) | | | | | | | |
| Modulation Mode | $N_{TX}$ | Freq. (MHz) | 99% Bandwidth | | | | 6dB Bandwidth | | | |
| | | | Chain-Port 1 | Chain-Port 2 | Chain-Port 3 | Chain-Port 4 | Chain-Port 1 | Chain-Port 2 | Chain-Port 3 | Chain-Port 4 |
| 11a | 3 | 5745 | 17.08 | 17.00 | 17.15 | --- | 16.41 | 16.52 | 16.41 | --- |
| 11a | 3 | 5785 | 17.15 | 17.00 | 17.33 | --- | 16.35 | 16.58 | 16.46 | --- |
| 11a | 3 | 5825 | 17.00 | 16.86 | 16.97 | --- | 16.41 | 16.52 | 16.35 | --- |
| VHT20 | 3 | 5745 | 18.05 | 18.20 | 18.05 | --- | 17.62 | 17.62 | 17.62 | --- |
| VHT20 | 3 | 5785 | 18.20 | 18.02 | 18.34 | --- | 17.80 | 17.62 | 17.62 | --- |
| VHT20 | 3 | 5825 | 18.16 | 18.05 | 18.20 | --- | 17.62 | 17.74 | 17.62 | --- |
| VHT40 | 3 | 5755 | 37.25 | 36.79 | 37.05 | --- | 36.29 | 36.52 | 36.29 | --- |
| VHT40 | 3 | 5795 | 37.38 | 37.12 | 37.12 | --- | 36.29 | 35.71 | 36.29 | --- |
| VHT80 | 3 | 5775 | 76.14 | 76.02 | 75.90 | --- | 76.06 | 72.58 | 76.06 | --- |
| Limit | | | N/A | | | | ≥500 kHz | | | |
| Result | | | Complied | | | | | | | |
| Note 1: $N_{TX}$ = Number of Transmit Chains | | | | | | | | | | |

**Worst Emission Bandwidth Plots**



## 3.3 RF Output Power

### 3.3.1 RF Output Power Limit

| RF Output Power Limit | | |
|---|---|---|
| **Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit (for ac(VHT80) only)** | | |
| ☒ | 5725-5850 MHz Band: | |
| | ☒ | If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W) |
| | ☒ | Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm |
| | ☐ | Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30$ dBm |
| **e.i.r.p. Power Limit:** | | |
| ☒ | 5725-5850 MHz Band | |
| | ☒ | Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W) |
| | ☐ | Point-to-point systems (P2P): N/A |
| $\mathbf{P_{Out}}$ = maximum peak conducted output power or maximum conducted output power in dBm,<br>$\mathbf{G_{TX}}$ = the maximum transmitting antenna directional gain in dBi.<br>$\mathbf{P_{eirp}}$ = e.i.r.p. Power in dBm. | | |

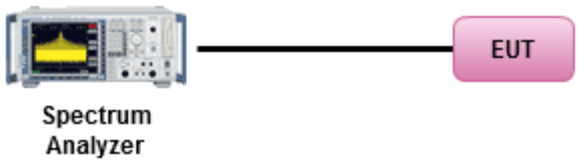
### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.3.3 Test Procedures

| Test Method | | |
|---|---|---|
| ☐ | Maximum Peak Conducted Output Power | |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 9.1.1 (RBW ≥ DTS BW). |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 9.1.2 (Integrated band power method). |
| | ☒ | Refer as FCC KDB 558074 v03r01, clause 9.1.3 (Peak power meter) |
| ☒ | Maximum Conducted Output Power | |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 9.2.1.2 Method AVGSA-1 (spectral trace averaging). |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 9.2.1.3 Method AVGSA-1 Alt. (slow sweep speed) |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 9.2.1.4 Method AVGSA-2 (spectral trace averaging). |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 9.2.1.5 Method AVGSA-2 Alt. (slow sweep speed) |
| | RF power meter and average over on/off periods with duty factor or gated trigger | |
| | ☒ | Refer as FCC KDB 558074 v03r01, clause 9.2.2 Method AVGPM-G (using a gated RF average power meter) |
| ☒ | For conducted measurement. | |
| | ☐ | The EUT supports single transmit chain and measurements performed on this transmit chain. |
| | ☐ | The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. |
| | ☒ | The EUT supports multiple transmit chains using options given below:<br>Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. |
| | ☒ | If multiple transmit chains, EIRP calculation could be following as methods:<br>$P_{total} = P_1 + P_2 + \ldots + P_n$<br>(calculated in linear unit [mW] and transfer to log unit [dBm])<br>$EIRP_{total} = P_{total} + DG$ |

### 3.3.4 Test Setup

| RF Output Power (Spectrum Analyzer), for 11ac VHT 80 |
|---|
|   |

| RF Output Power (Power Meter), for all modes except 11ac VHT80. |
|---|
| |

### 3.3.5 Directional Gain for Power Measurement

| Directional Gain (DG) Result | | | | | |
|---|---|---|---|---|---|
| **Transmit Chains No.** | | 1 | 2 | 3 | - |
| **Maximum $G_{ANT}$ (dBi)** | | 4.2025 | 4.0181 | 3.4374 | - |
| **Modulation Mode** | **DG (dBi)** | **$N_{TX}$** | **$N_{SS}$** | **STBC** | **Array Gain (dB)** |
| 11a,6-54Mbps | 4.2025 | 3 | 1 | - | - |
| HT20,M0-23 | 4.2025 | 3 | 1 | - | - |
| HT40,M0-23 | 4.2025 | 3 | 1 | - | - |
| VHT20,M0-9 | 4.2025 | 3 | 1 | - | - |
| VHT40,M0-9 | 4.2025 | 3 | 1 | - | - |
| VHT80,M0-9 | 4.2025 | 3 | 1 | - | - |

Note 1: For CDD transmissions, directional gain is calculated as power measurements:
Directional Gain (DG) = $G_{ANT}$ + Array Gain, where Array Gain is as follows:
Array Gain = 0 dB (i.e., no array gain) for $N_{TX} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any $N_{TX}$;
Note 2: Directional gain may be calculated by using the formulas applicable to equal gain antennas with $G_{ANT}$ set equal to the gain of the antenna having the highest gain

### 3.3.6 Test Result of Maximum Conducted (Average) Output Power

| Condition | | | RF Output Power (dBm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Modulation Mode | $N_{TX}$ | Freq. (MHz) | Chain Port 1 | Chain Port 2 | Chain Port 3 | Sum Chain | Power Limit | DG (dBi) | EIRP Power | EIRP Limit |
| 11a | 3 | 5745 | 21.26 | 21.33 | 22.85 | 26.65 | 30.00 | 4.2025 | 30.8525 | 36.00 |
| 11a | 3 | 5785 | 21.14 | 21.09 | 22.75 | 26.50 | 30.00 | 4.2025 | 30.7025 | 36.00 |
| 11a | 3 | 5825 | 20.22 | 19.87 | 22.16 | 25.64 | 30.00 | 4.2025 | 29.8425 | 36.00 |
| HT20 | 3 | 5745 | 19.81 | 19.89 | 21.42 | 25.21 | 30.00 | 4.2025 | 29.4125 | 36.00 |
| HT20 | 3 | 5785 | 21.46 | 21.26 | 22.97 | 26.74 | 30.00 | 4.2025 | 30.9425 | 36.00 |
| HT20 | 3 | 5825 | 20.42 | 20.18 | 22.49 | 25.93 | 30.00 | 4.2025 | 30.1325 | 36.00 |
| HT40 | 3 | 5755 | 19.68 | 19.98 | 21.45 | 25.21 | 30.00 | 4.2025 | 29.4125 | 36.00 |
| HT40 | 3 | 5795 | 21.41 | 21.39 | 23.11 | 26.82 | 30.00 | 4.2025 | 31.0225 | 36.00 |
| VHT20 | 3 | 5745 | 19.86 | 19.92 | 21.48 | 25.26 | 30.00 | 4.2025 | 29.4625 | 36.00 |
| VHT20 | 3 | 5785 | 21.53 | 21.38 | 23.02 | 26.81 | 30.00 | 4.2025 | 31.0125 | 36.00 |
| VHT20 | 3 | 5825 | 20.53 | 20.27 | 22.57 | 26.02 | 30.00 | 4.2025 | 30.2225 | 36.00 |
| VHT40 | 3 | 5755 | 19.77 | 20.06 | 21.52 | 25.29 | 30.00 | 4.2025 | 29.4925 | 36.00 |
| VHT40 | 3 | 5795 | 21.48 | 21.47 | 23.16 | 26.88 | 30.00 | 4.2025 | 31.0825 | 36.00 |
| VHT80 | 3 | 5775 | 18.83 | 19.31 | 20.92 | 24.55 | 30.00 | 4.2025 | 28.7525 | 36.00 |
| Result | | | Complied | | | | | | | |

# 3.4 Power Spectral Density

## 3.4.1 Power Spectral Density Limit

| Power Spectral Density Limit |
|---|
| ☒ Power Spectral Density (PSD) ≤ 8 dBm/3kHz |

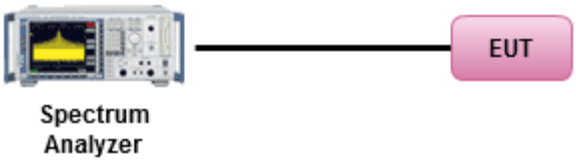
## 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

## 3.4.3 Test Procedures

| Test Method | | | |
|---|---|---|---|
| ☒ | Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option). | | |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 10.2 Method PKPSD (RBW=3kHz; detector=peak).. | |
| | ☒ | Refer as FCC KDB 558074 v03r01, clause 10.3 Method AVGPSD-1 (spectral trace averaging). (For 11a / 11ac VHT20) | |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 10.4 Method AVGPSD-1 Alt. (slow sweep speed) | |
| | ☐ | Refer as FCC KDB 558074 v03r01, clause 10.5 Method AVGPSD-2 (spectral trace averaging). | |
| | ☒ | Refer as FCC KDB 558074 v03r01, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed) (For 11ac VHT40 / VHT80) | |
| ☒ | For conducted measurement. | | |
| | ☐ | The EUT supports single transmit chain and measurements performed on this transmit chain. | |
| | ☐ | The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. | |
| | ☒ | The EUT supports multiple transmit chains using options given below: | |
| | | ☒ | Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the $N_{TX}$ output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace. |
| | | ☐ | Option 2: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit. |

### 3.4.4 Test Setup

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

### 3.4.5 Directional Gain for Power Measurement

| Directional Gain (DG) Result | | | | | |
|---|---|---|---|---|---|
| **Transmit Chains No.** | | 1 | 2 | 3 | - |
| **Maximum $G_{ANT}$ (dBi)** | | 4.2025 | 4.0181 | 3.4374 | - |
| **Modulation Mode** | **DG (dBi)** | **$N_{TX}$** | **$N_{SS}$** | **STBC** | **Array Gain (dB)** |
| 11a,6-54Mbps | 8.66 | 3 | 1 | - | - |
| HT20,M0-23 | 8.66 | 3 | 1 | - | - |
| HT40,M0-23 | 8.66 | 3 | 1 | - | - |
| VHT20,M0-9 | 8.66 | 3 | 1 | - | - |
| VHT40,M0-9 | 8.66 | 3 | 1 | - | - |
| VHT80,M0-9 | 8.66 | 3 | 1 | - | - |
| Note 1: Directional gain = $10 \log[(10^{4.2025/20} + 10^{4.0181/20} + 10^{3.4374/20})^2/3]$ = 8.66 dBi > 6dBi<br>Power spectral density limit shall be reduced to 8 dBm – ( 8.66 dBi - 6 dBi ) = 5.34 dBm | | | | | |

### 3.4.6 Test Result of Power Spectral Density

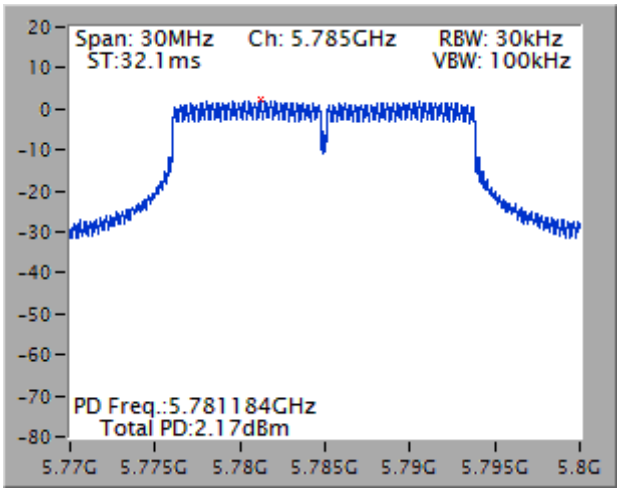
| Power Spectral Density Result | | | | |
|---|---|---|---|---|
| Condition | | | Power Spectral Density (dBm/3kHz) | |
| Modulation Mode | $N_{TX}$ | Freq. (MHz) | Sum Chain | Power Limit |
| 11a | 3 | 5745 | 1.46 | 5.34 |
| 11a | 3 | 5785 | 1.90 | 5.34 |
| 11a | 3 | 5825 | 1.13 | 5.34 |
| VHT20 | 3 | 5745 | 0.06 | 5.34 |
| VHT20 | 3 | 5785 | 2.17 | 5.34 |
| VHT20 | 3 | 5825 | 1.59 | 5.34 |
| VHT40 | 3 | 5755 | -3.21 | 5.34 |
| VHT40 | 3 | 5795 | -1.47 | 5.34 |
| VHT80 | 3 | 5775 | -6.57 | 5.34 |
| Result | | | Complied | |

Note 1: PSD = sum each transmit chains by bin-to-bin PSD

Note 2: Directional gain = $10 \log[(10^{4.2025/20} + 10^{4.0181/20} + 10^{3.4374/20})^2/3] = 8.66$ dBi > 6dBi

Power spectral density limit shall be reduced to 8 dBm – ( 8.66 dBi - 6 dBi ) = 5.34 dBm

**Worst Power Spectral Density Plots**



## 3.5 Emissions in non-restricted frequency bands

### 3.5.1 Emissions in non-restricted frequency bands limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz

### 3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.5.3 Test Procedures

**Reference level measurement**

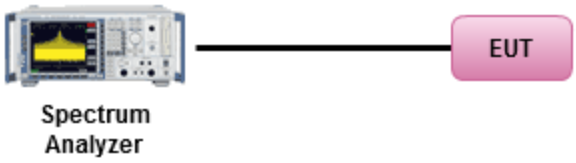
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

**Emission level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 40GHz
4. Use the peak marker function to determine the maximum amplitude level

### 3.5.4 Test Setup

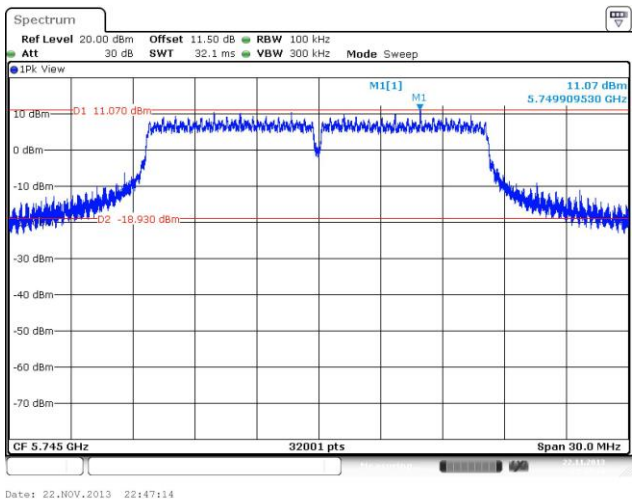
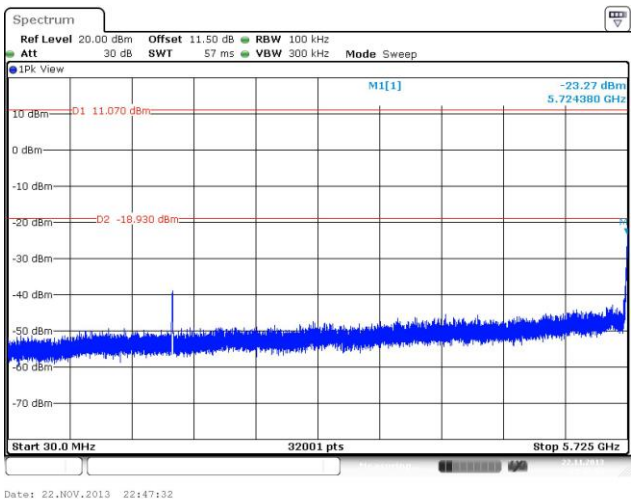
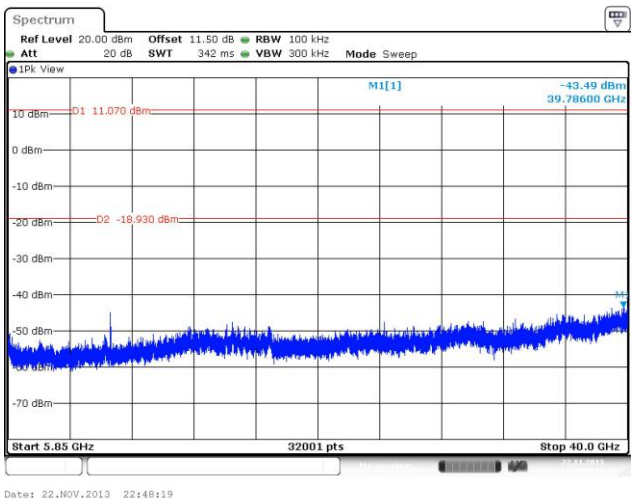
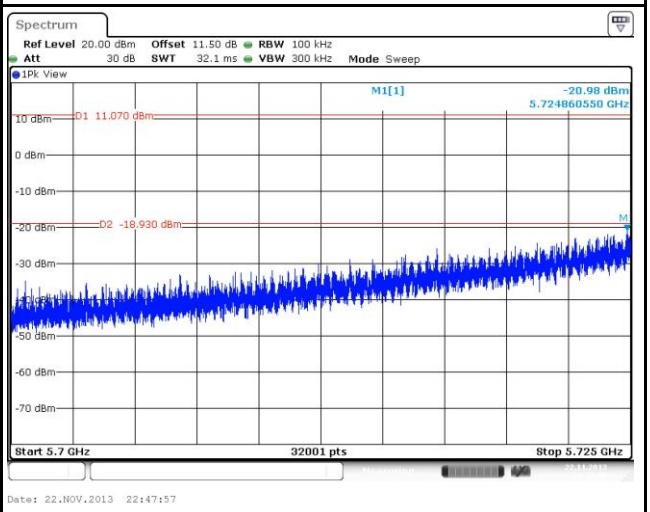
**Transmitter Radiated Bandedge Emissions**

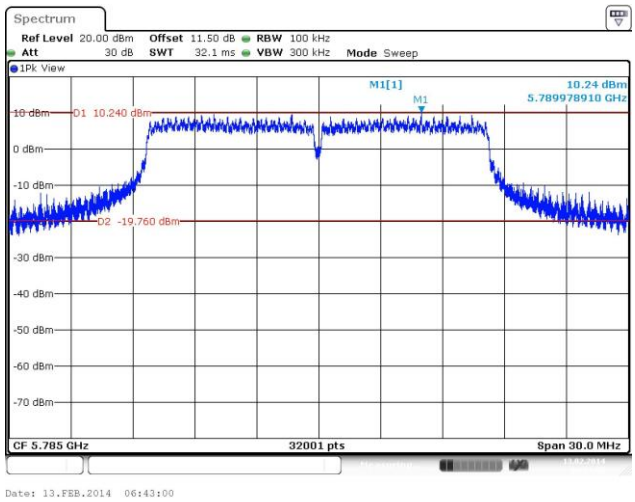
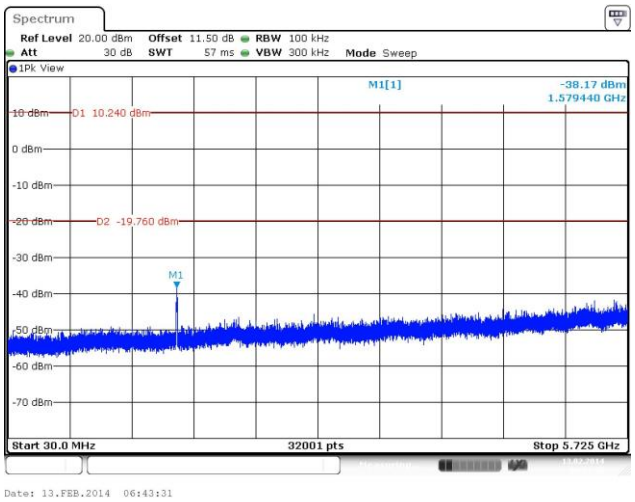
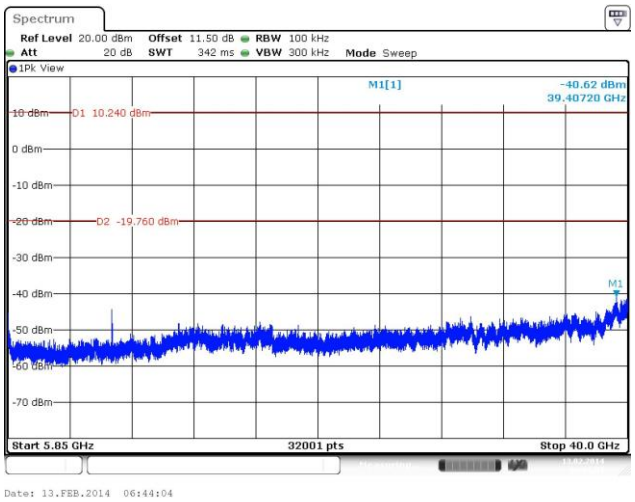
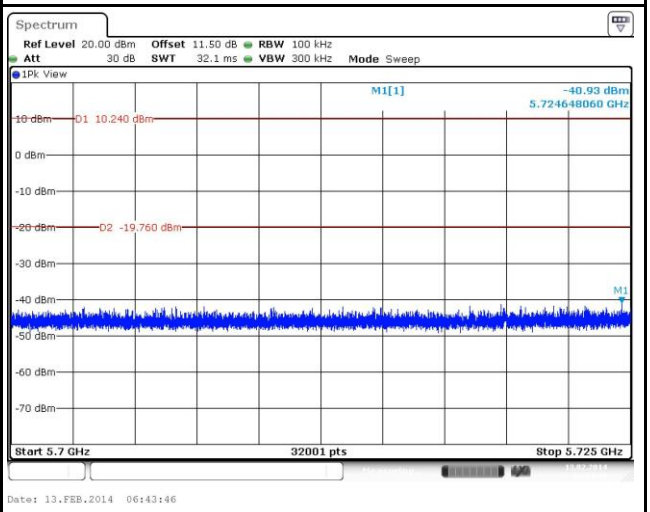


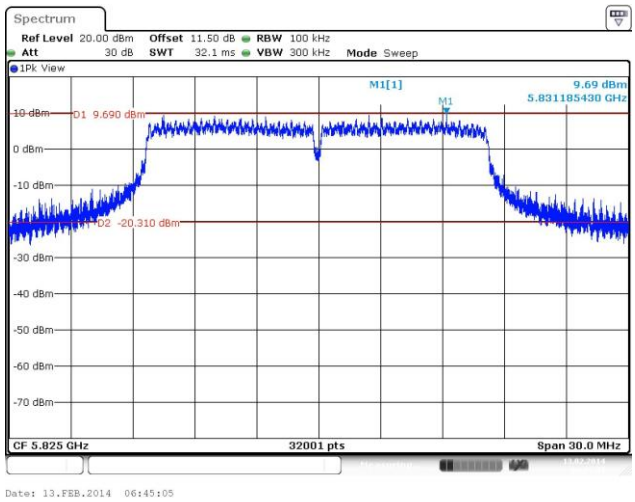
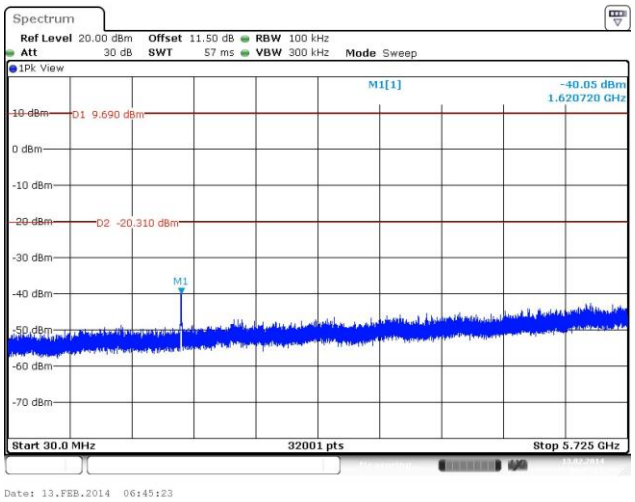
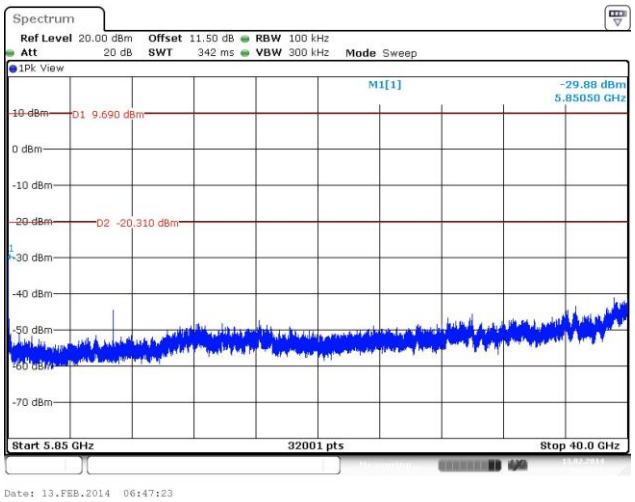
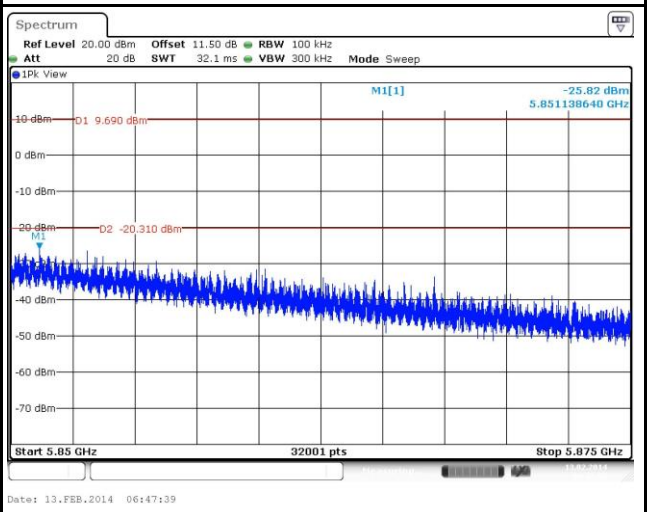

### 3.5.5 Test Result of Emissions in non-restricted frequency bands

This test item is performed on each TX output individually without summing or adding 10 log($N_{ANT}$) since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

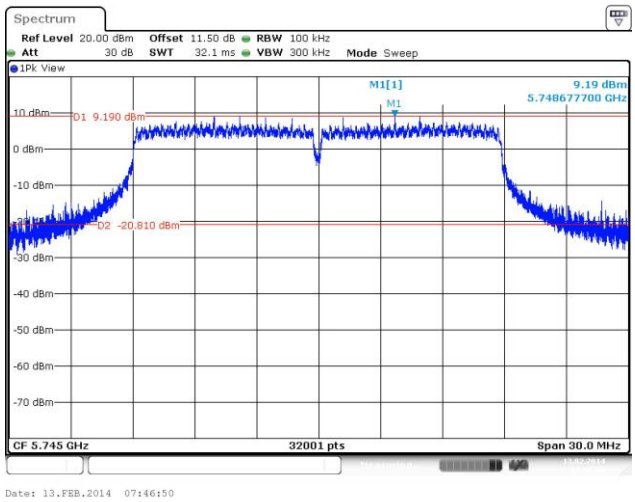
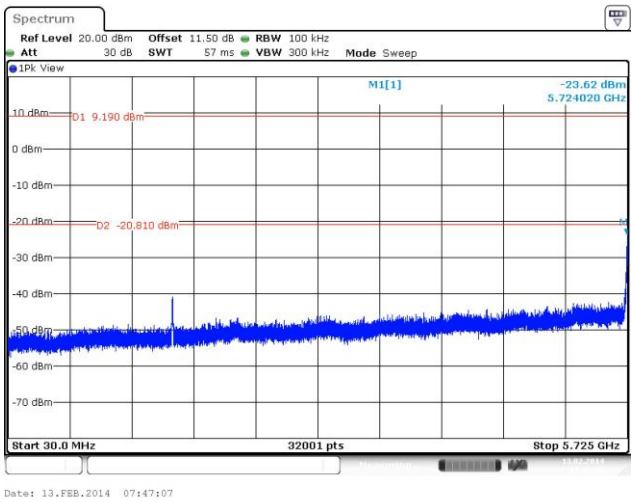
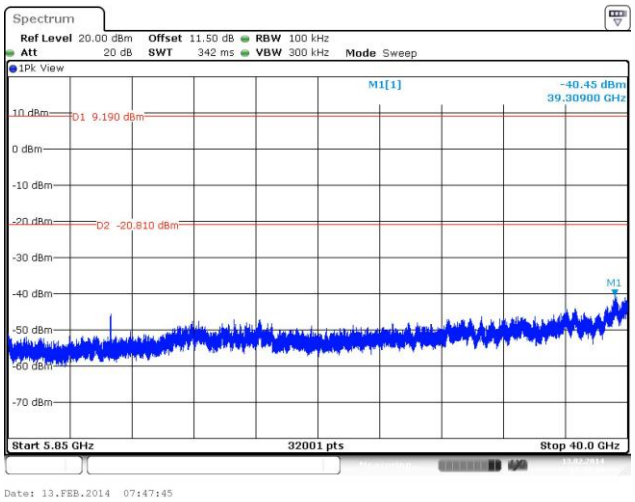
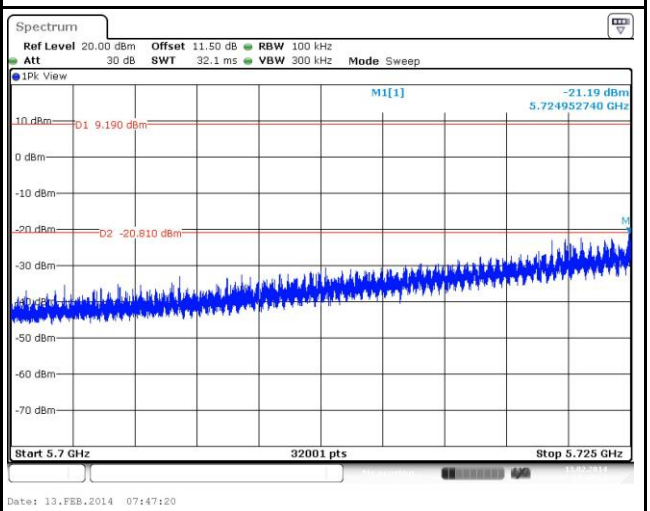
**802.11a**

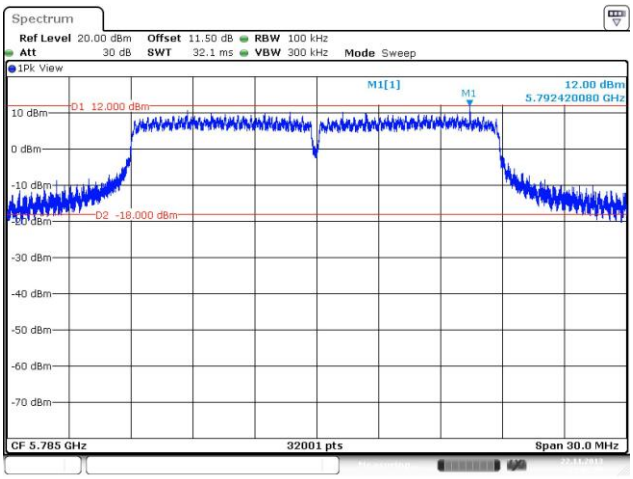
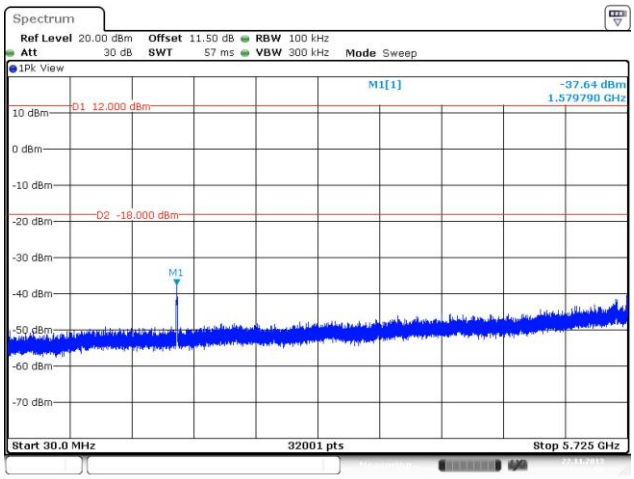
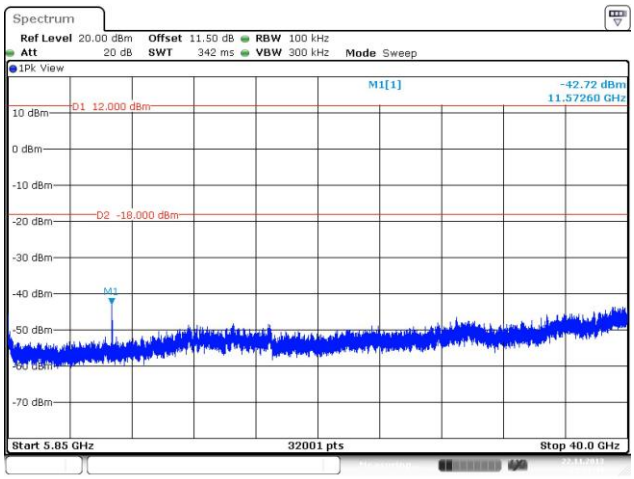
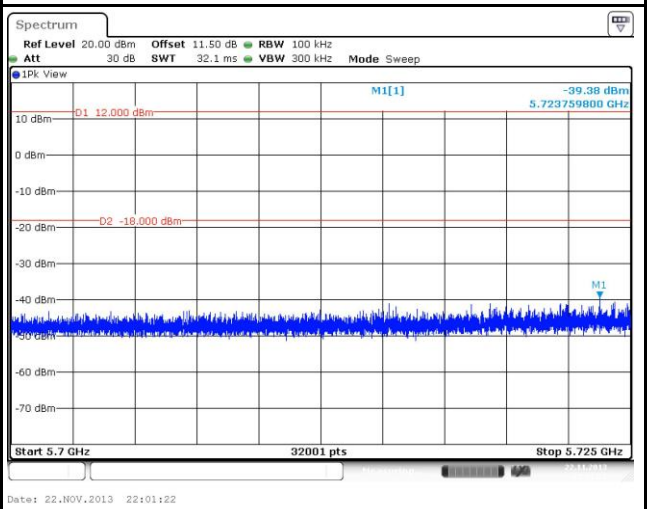
| Reference Level | Tx 5745MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|  |  |
| --- |  |
| --- |  |

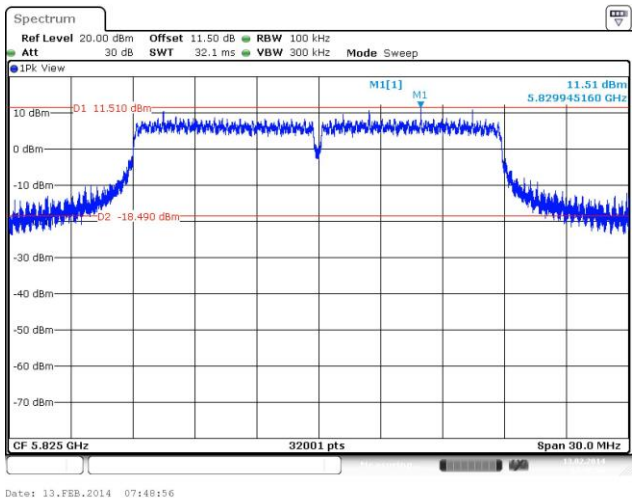
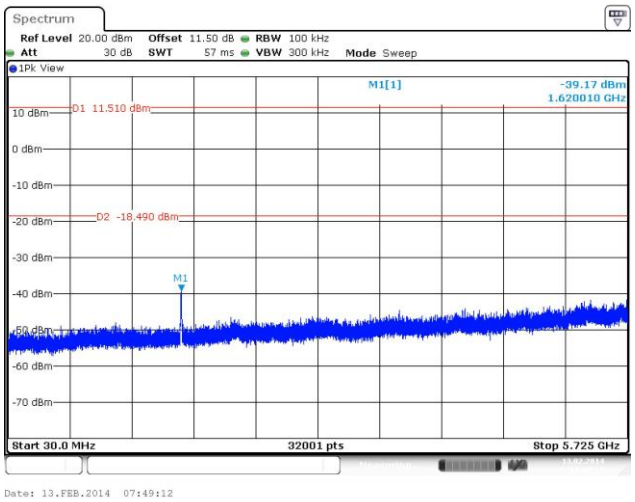
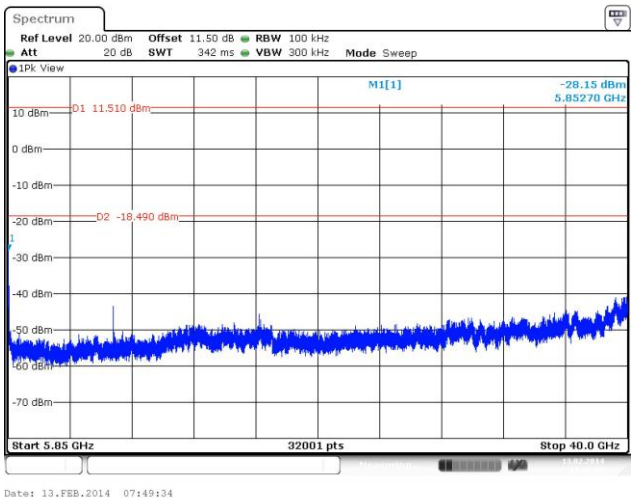
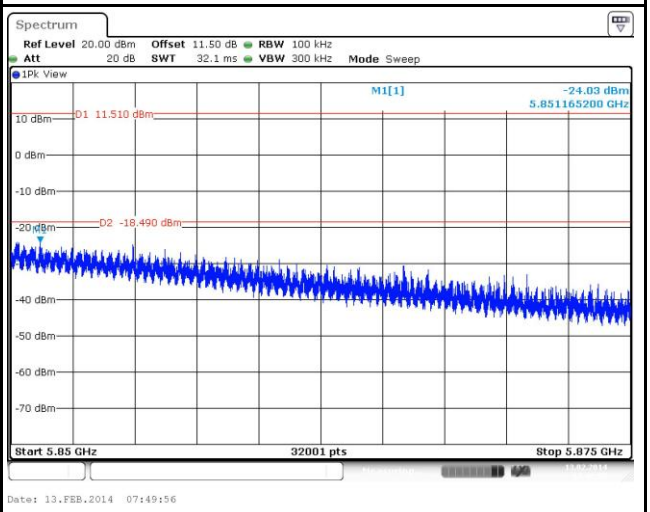
| Reference Level | Tx 5785MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|  |  |
| --- |  |
| --- |  |

| Reference Level | Tx 5825MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|  |  |
| --- |  |
| --- |  |

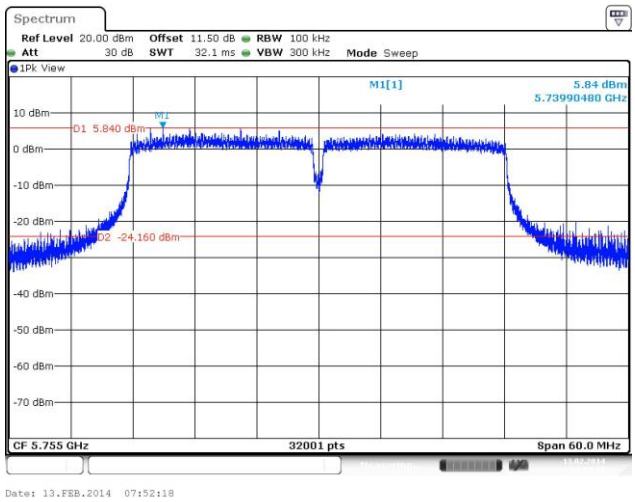
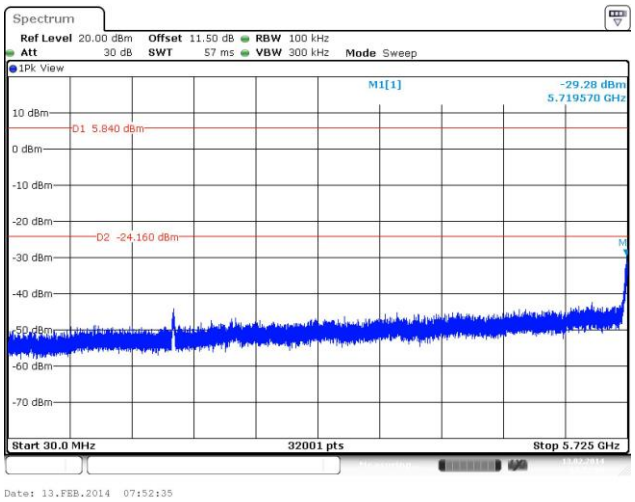
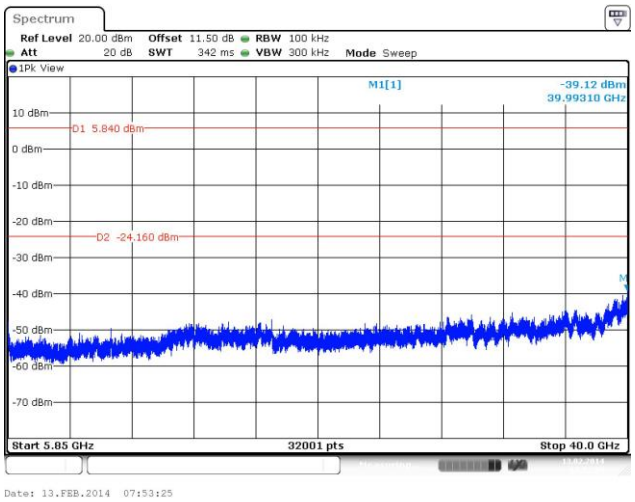
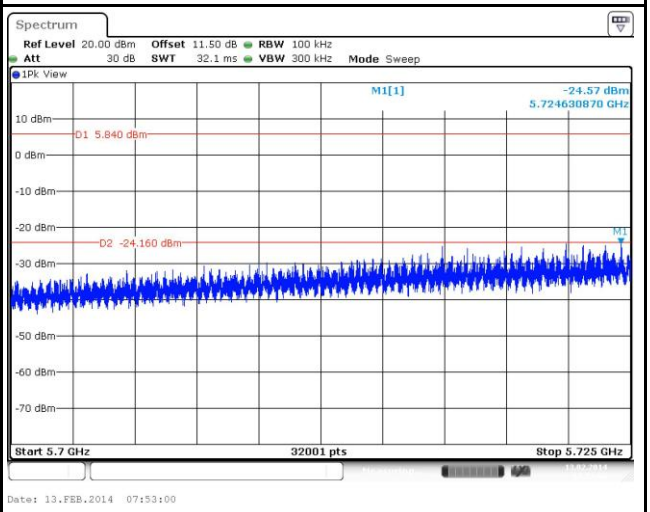
**802.11ac VHT20**

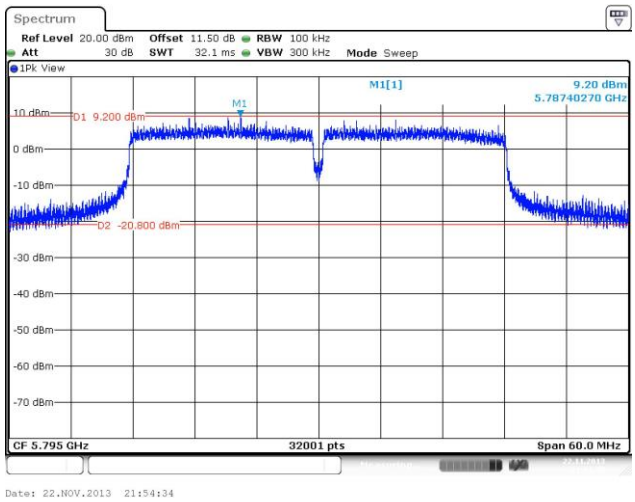
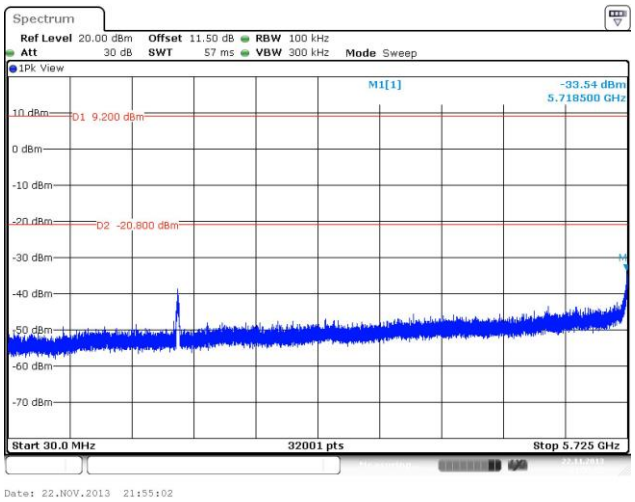
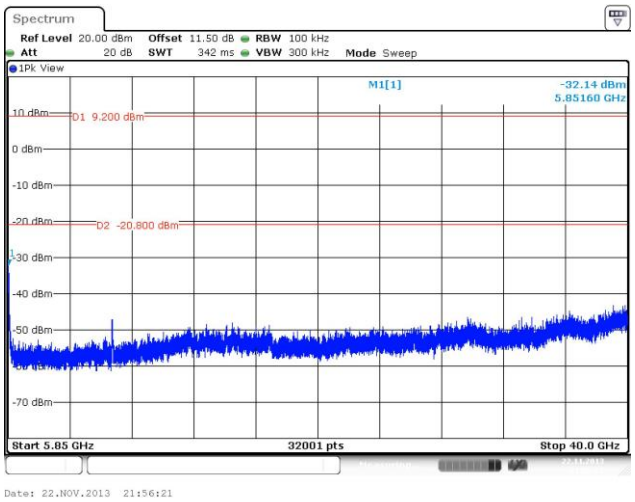
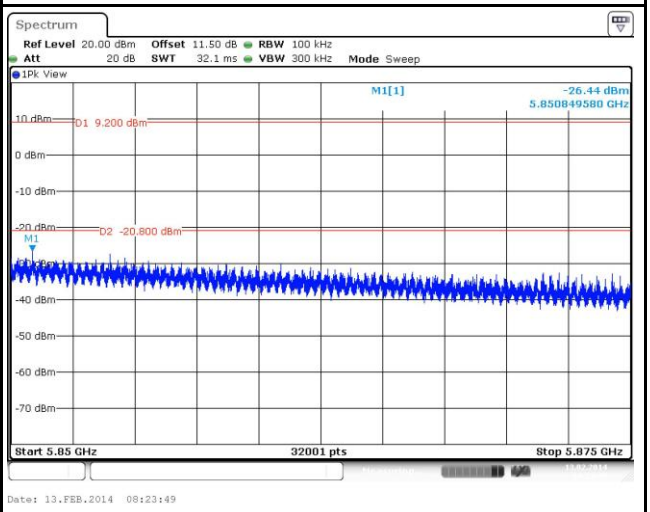
| Reference Level | Tx 5745MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|   |   |
| --- |   |
| --- |   |

| Reference Level | Tx 5785MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|  |  |
| --- |  |
| --- |  |

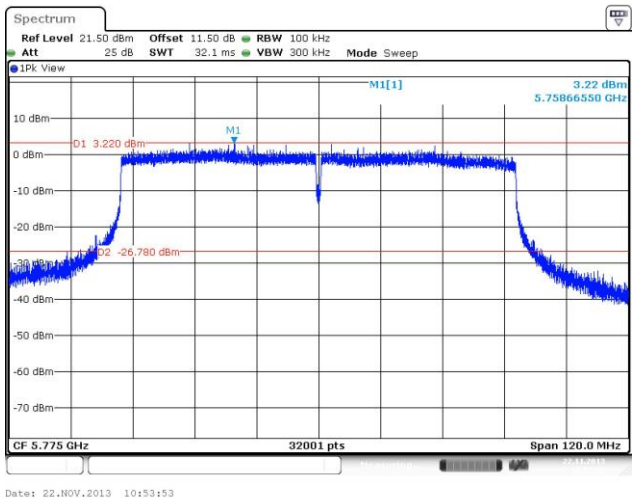
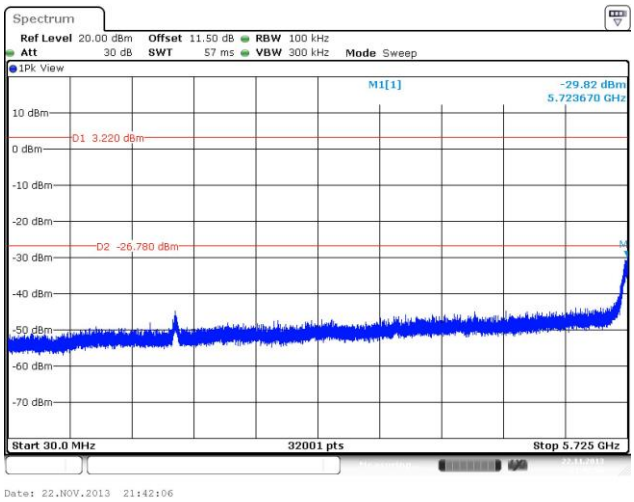
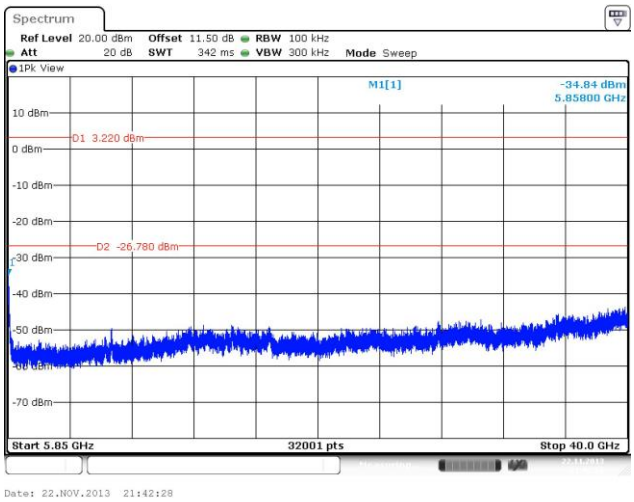
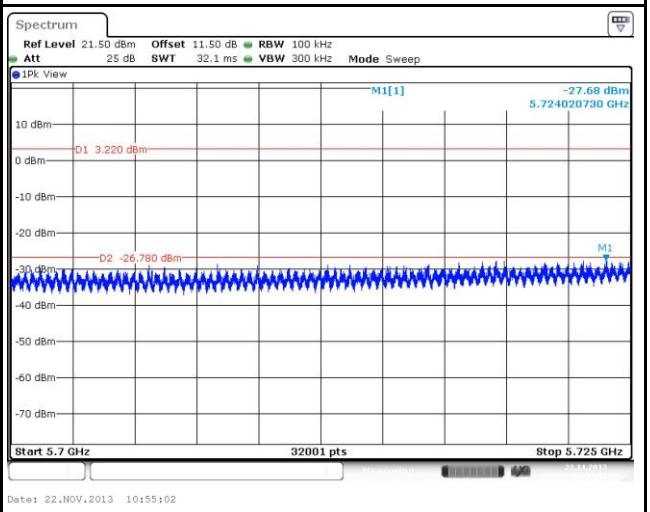
| Reference Level | Tx 5825MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|  |  |
| --- |  |
| --- |  |

**802.11ac VHT40**

| Reference Level | Tx 5755MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|  |  |
| --- |  |
| --- |  |

| Reference Level | Tx 5795MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|  |  |
| --- |  |
| --- |  |

**802.11ac VHT80**

| Reference Level | Tx 5775MHz / 30MHz~40GHz (down 30dBc) |
|---|---|
|  |  |
| --- |  |
| --- |  |

## 3.6 Transmitter Radiated Unwanted Emissions

### 3.6.1 Transmitter Radiated Unwanted Emissions Limit

| Restricted Band Emissions Limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

| Un-restricted Band Emissions Limit | |
|---|---|
| **RF output power procedure** | **Limit (dB)** |
| Peak output power procedure | 20 |
| Average output power procedure | 30 |

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

### 3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

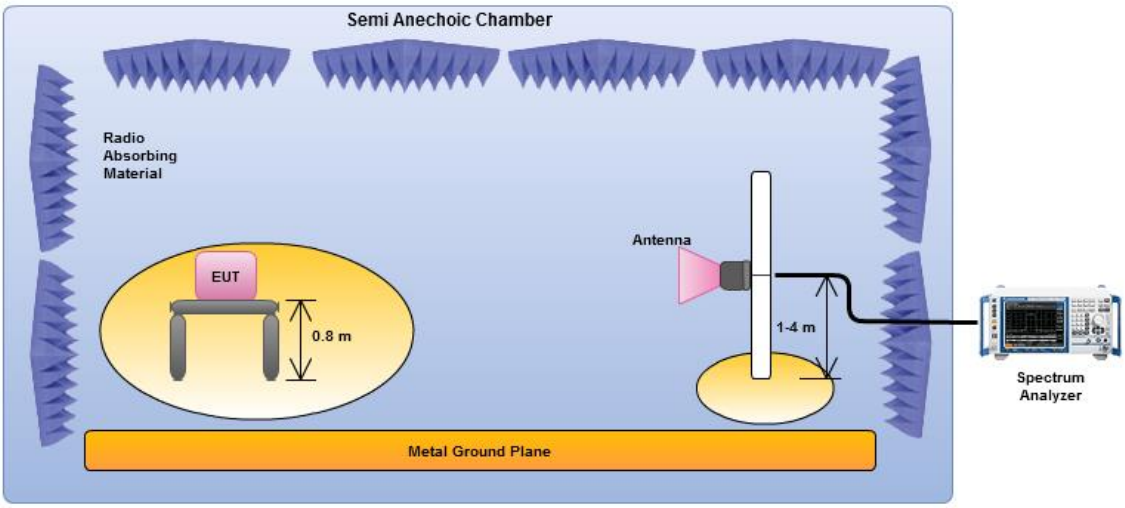
### 3.6.3 Test Procedures

| Test Method | | | |
|---|---|---|---|
| ☒ | Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). | | |
| ☒ | The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. | | |
| ☒ | For the transmitter unwanted emissions shall be measured using following options below: | | |
| | ☒ | Refer as FCC KDB 558074 v03r01, clause 11 for unwanted emissions into non-restricted bands. | |
| | ☒ | Refer as FCC KDB 558074 v03r01, clause 12 for unwanted emissions into restricted bands. | |
| | | ☐ | Refer as FCC KDB 558074 v03r01, clause 12.2.4.1 Option 1 (trace averaging for duty cycle ≥98%) |
| | | ☐ | Refer as FCC KDB 558074 v03r01, clause 12.2.4.2 Option 2 (trace averaging + duty factor). |
| | | ☒ | Refer as FCC KDB 558074 v03r01, clause 12.2.4.3 Option 3 (Reduced VBW≥1/T). |
| | | ☐ | Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time. |
| | | ☐ | Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions. |
| | | ☒ | Refer as FCC KDB 558074 v03r01, 12.2.3 measurement procedure peak limit. |
| | | ☐ | Refer as FCC KDB 558074 v03r01, clause 12.2.2 measurement procedure Quasi-Peak limit. |
| ☒ | For radiated measurement, refer as FCC KDB 558074 v03r01, clause 12.2.6. | | |
| | ☒ | Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. | |
| | ☒ | Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz. | |
| | ☒ | Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz. | |

| Test Method | | |
|---|---|---|
| ☐ | For conducted and cabinet radiation measurement, refer as FCC KDB 558074 v03r01, clause 12.2 | |
| | ☐ | For conducted unwanted emissions into non-restricted bands (relative emission limits).<br>Devices with multiple transmit chains:<br>Refer as FCC KDB 662911, when testing out-of-band and spurious emissions against relative emission limits, tests may be performed on each output individually without summing or adding 10 log(N) if the measurements are made relative to the in-band emissions on the individual outputs. |
| | ☐ | For conducted unwanted emissions into restricted bands (absolute emission limits).<br>Devices with multiple transmit chains using options given below:<br>(1) Measure and sum the spectra across the outputs or<br>(2) Measure and add 10 log(N) dB |

### 3.6.4 Test Setup

**Transmitter Radiated Unwanted Emissions**




Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn antenna.

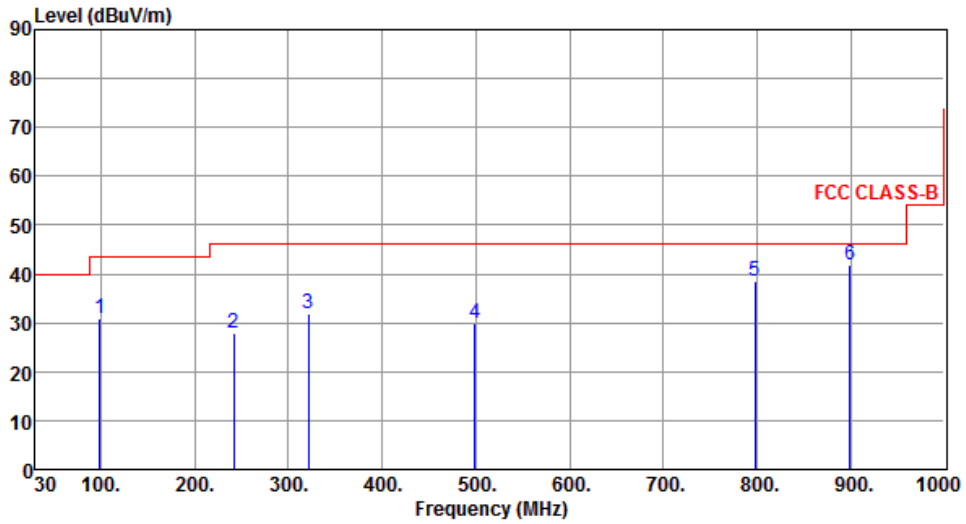
Note: The test distance is 3m.

### 3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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

### 3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

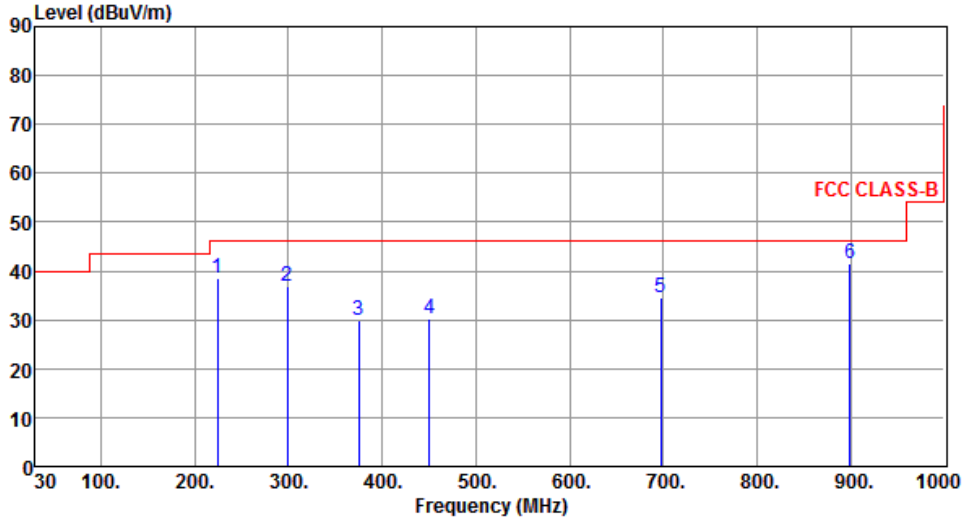
| Transmitter Radiated Unwanted Emissions (Below 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5795 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 98.46 | 30.79 | 43.50 | -12.71 | 52.81 | -22.02 | Peak | --- | --- |
| 2 | 241.65 | 27.98 | 46.00 | -18.02 | 46.10 | -18.12 | Peak | --- | --- |
| 3 | 321.11 | 31.86 | 46.00 | -14.14 | 47.55 | -15.69 | Peak | --- | --- |
| 4 | 498.72 | 30.05 | 46.00 | -15.95 | 41.63 | -11.58 | Peak | --- | --- |
| 5 | 797.66 | 38.51 | 46.00 | -7.49 | 45.31 | -6.80 | Peak | --- | --- |
| 6 | 898.94 | 41.86 | 46.00 | -4.14 | 47.36 | -5.50 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

| Transmitter Radiated Unwanted Emissions (Below 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5795 |
| **Operating Mode** | 1 | **Polarization** | H |

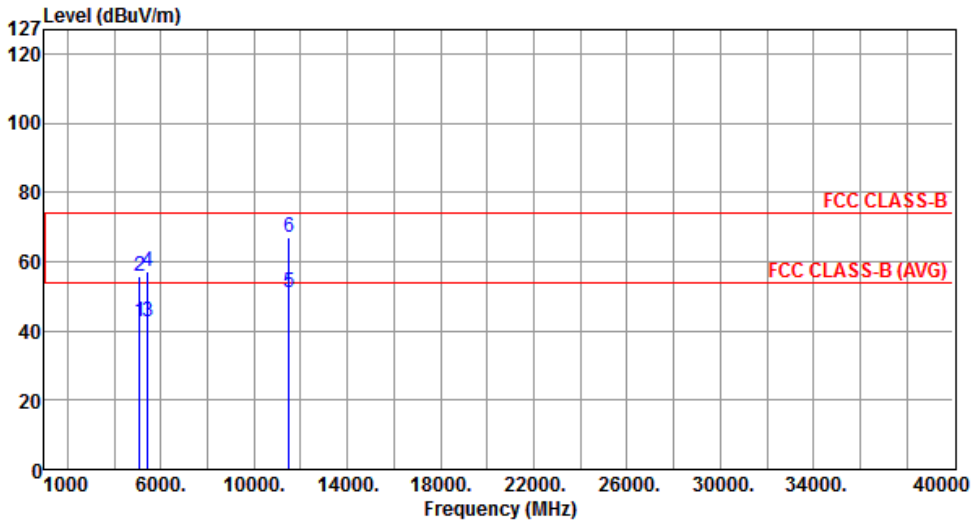



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 224.00 | 38.62 | 46.00 | -7.38 | 57.52 | -18.90 | Peak | --- | --- |
| 2 | 298.84 | 36.89 | 46.00 | -9.11 | 53.07 | -16.18 | Peak | --- | --- |
| 3 | 375.16 | 29.87 | 46.00 | -16.13 | 44.22 | -14.35 | Peak | --- | --- |
| 4 | 450.48 | 30.26 | 46.00 | -15.74 | 42.77 | -12.51 | Peak | --- | --- |
| 5 | 697.24 | 34.55 | 46.00 | -11.45 | 42.82 | -8.27 | Peak | --- | --- |
| 6 | 898.91 | 41.63 | 46.00 | -4.37 | 47.13 | -5.50 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

### 3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11a

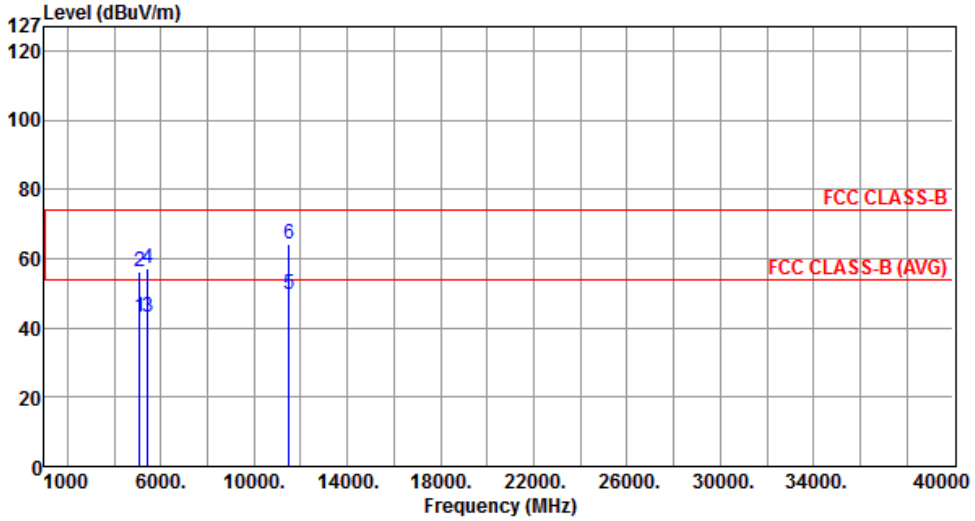
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5745 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 42.59 | 54.00 | -11.41 | 36.62 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 55.76 | 74.00 | -18.24 | 49.79 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 42.87 | 54.00 | -11.13 | 36.75 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 57.11 | 74.00 | -16.89 | 50.99 | 6.12 | Peak | --- | --- |
| 5 | 11490.00 | 51.26 | 54.00 | -2.74 | 36.39 | 14.87 | Average | --- | --- |
| 6 | 11490.00 | 66.89 | 74.00 | -7.11 | 52.02 | 14.87 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

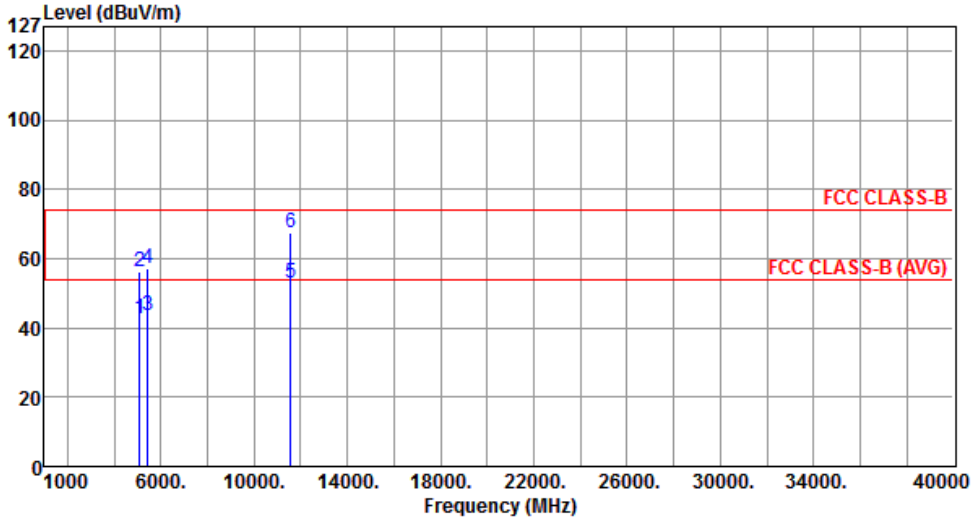
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5745 |
| **Operating Mode** | 1 | **Polarization** | H |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.23 | 54.00 | -10.77 | 37.26 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.22 | 74.00 | -17.78 | 50.25 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.33 | 54.00 | -10.67 | 37.21 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 56.95 | 74.00 | -17.05 | 50.83 | 6.12 | Peak | --- | --- |
| 5 | 11490.00 | 49.46 | 54.00 | -4.54 | 34.59 | 14.87 | Average | --- | --- |
| 6 | 11490.00 | 64.43 | 74.00 | -9.57 | 49.56 | 14.87 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

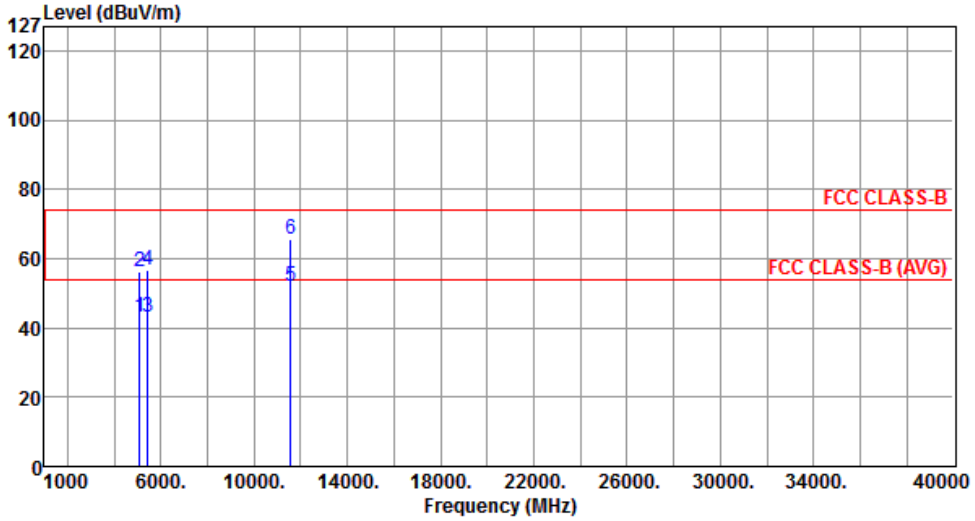
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5785 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 42.82 | 54.00 | -11.18 | 36.85 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.07 | 74.00 | -17.93 | 50.10 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.42 | 54.00 | -10.58 | 37.30 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 57.30 | 74.00 | -16.70 | 51.18 | 6.12 | Peak | --- | --- |
| 5 | 11570.00 | 53.00 | 54.00 | -1.00 | 38.21 | 14.79 | Average | --- | --- |
| 6 | 11570.00 | 67.56 | 74.00 | -6.44 | 52.77 | 14.79 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

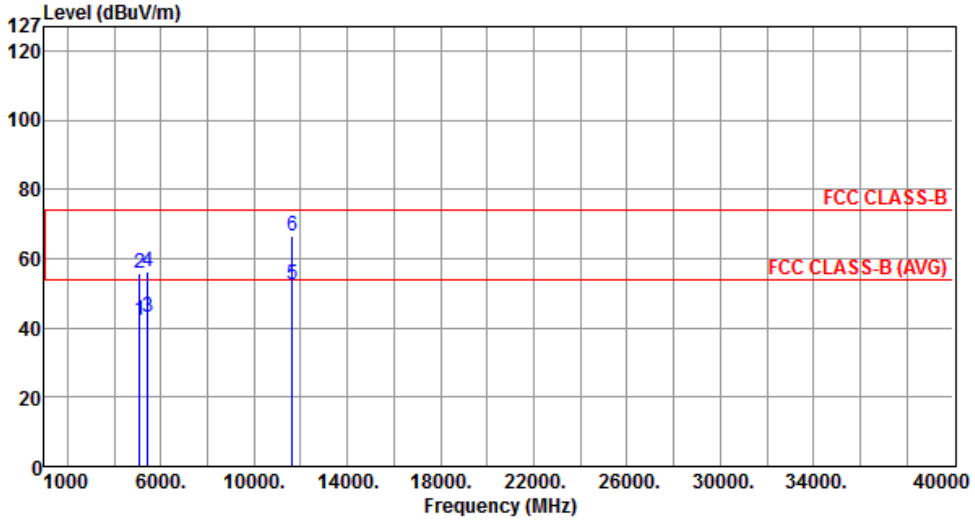
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5785 |
| **Operating Mode** | 1 | **Polarization** | H |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 42.94 | 54.00 | -11.06 | 36.97 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.43 | 74.00 | -17.57 | 50.46 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.00 | 54.00 | -11.00 | 36.88 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 56.90 | 74.00 | -17.10 | 50.78 | 6.12 | Peak | --- | --- |
| 5 | 11570.00 | 52.14 | 54.00 | -1.86 | 37.35 | 14.79 | Average | --- | --- |
| 6 | 11570.00 | 65.71 | 74.00 | -8.29 | 50.92 | 14.79 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

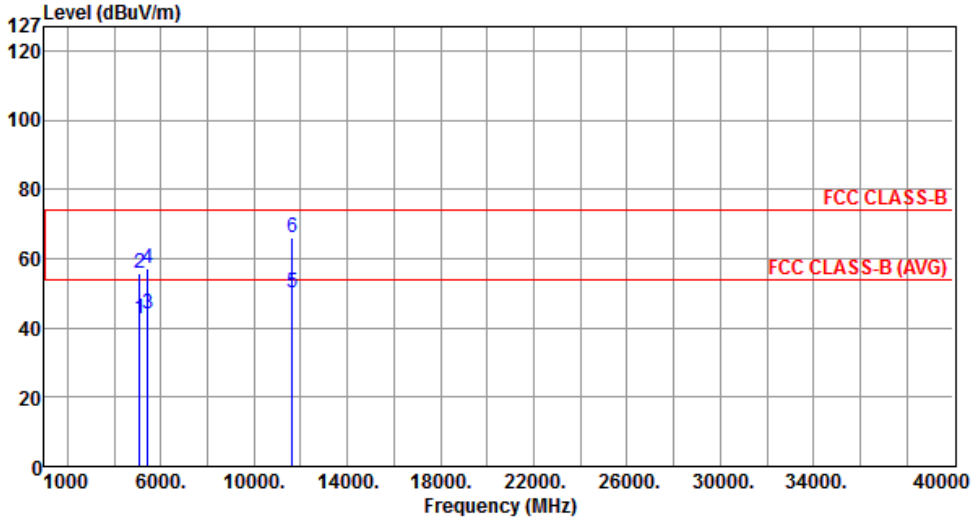
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5825 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 42.40 | 54.00 | -11.60 | 36.43 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 55.57 | 74.00 | -18.43 | 49.60 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.13 | 54.00 | -10.87 | 37.01 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 56.22 | 74.00 | -17.78 | 50.10 | 6.12 | Peak | --- | --- |
| 5 | 11650.00 | 52.46 | 54.00 | -1.54 | 37.77 | 14.69 | Average | --- | --- |
| 6 | 11650.00 | 66.44 | 74.00 | -7.56 | 51.75 | 14.69 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5825 |
| **Operating Mode** | 1 | **Polarization** | H |

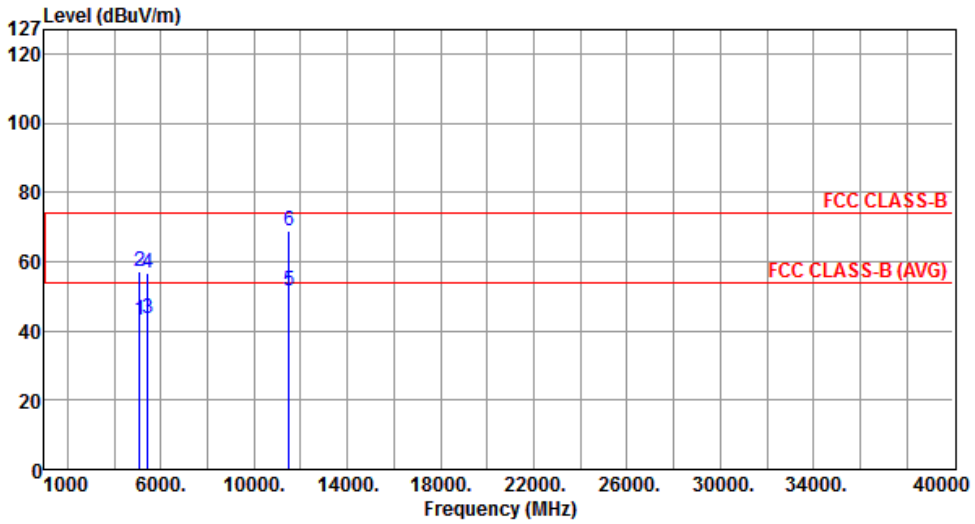



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 42.71 | 54.00 | -11.29 | 36.74 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 55.81 | 74.00 | -18.19 | 49.84 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 44.03 | 54.00 | -9.97 | 37.91 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 57.17 | 74.00 | -16.83 | 51.05 | 6.12 | Peak | --- | --- |
| 5 | 11650.00 | 49.98 | 54.00 | -4.02 | 35.29 | 14.69 | Average | --- | --- |
| 6 | 11650.00 | 66.07 | 74.00 | -7.93 | 51.38 | 14.69 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

### 3.6.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT20

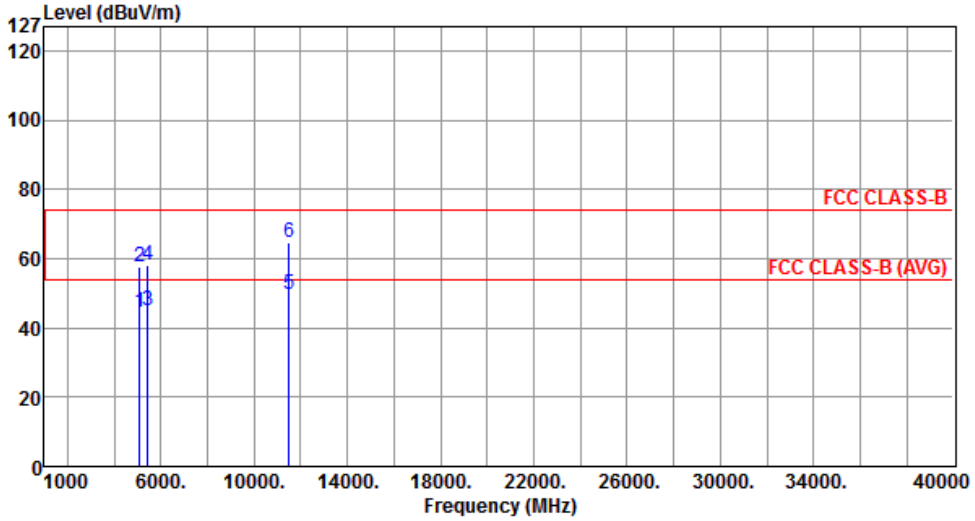
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5745 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.21 | 54.00 | -10.79 | 37.24 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 57.18 | 74.00 | -16.82 | 51.21 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.62 | 54.00 | -10.38 | 37.50 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 56.78 | 74.00 | -17.22 | 50.66 | 6.12 | Peak | --- | --- |
| 5 | 11490.00 | 51.45 | 54.00 | -2.55 | 36.58 | 14.87 | Average | --- | --- |
| 6 | 11490.00 | 68.88 | 74.00 | -5.12 | 54.01 | 14.87 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

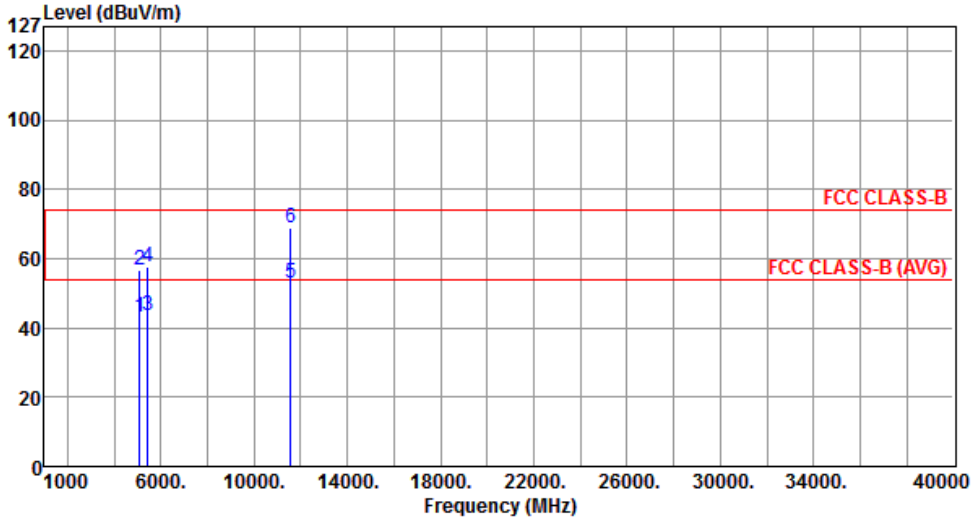
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5745 |
| **Operating Mode** | 1 | **Polarization** | H |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 44.32 | 54.00 | -9.68 | 38.35 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 57.59 | 74.00 | -16.41 | 51.62 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 44.79 | 54.00 | -9.21 | 38.67 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 58.04 | 74.00 | -15.96 | 51.92 | 6.12 | Peak | --- | --- |
| 5 | 11490.00 | 49.74 | 54.00 | -4.26 | 34.87 | 14.87 | Average | --- | --- |
| 6 | 11490.00 | 64.68 | 74.00 | -9.32 | 49.81 | 14.87 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

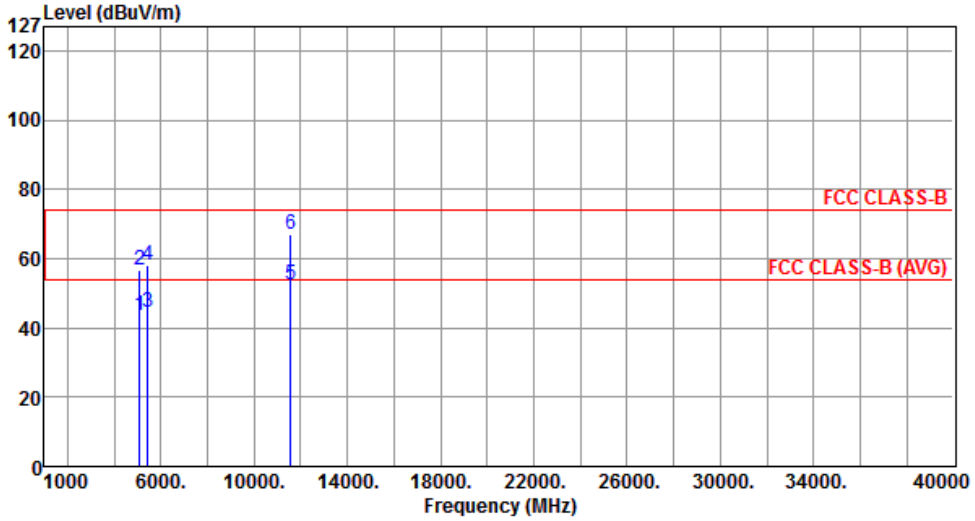
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5785 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.25 | 54.00 | -10.75 | 37.28 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.73 | 74.00 | -17.27 | 50.76 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.65 | 54.00 | -10.35 | 37.53 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 57.54 | 74.00 | -16.46 | 51.42 | 6.12 | Peak | --- | --- |
| 5 | 11570.00 | 52.97 | 54.00 | -1.03 | 38.18 | 14.79 | Average | --- | --- |
| 6 | 11570.00 | 68.84 | 74.00 | -5.16 | 54.05 | 14.79 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

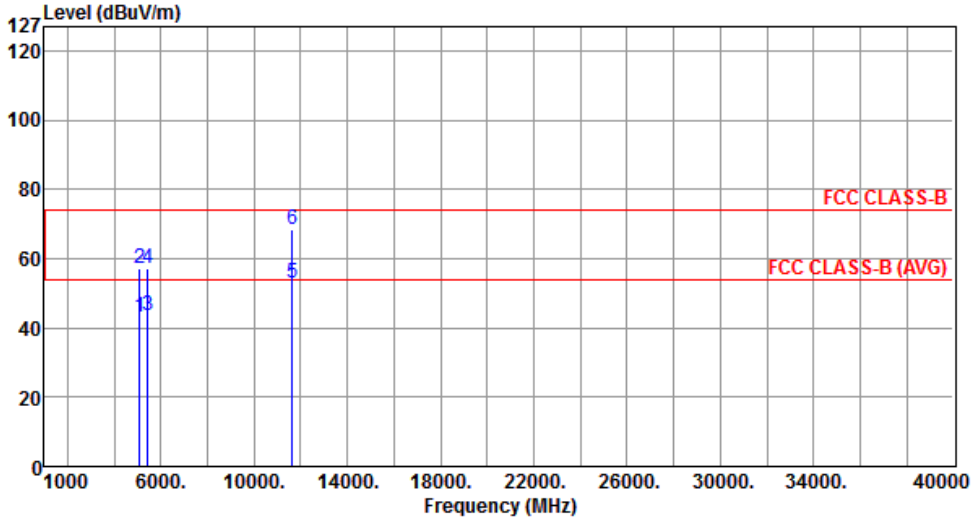
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5785 |
| **Operating Mode** | 1 | **Polarization** | H |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.65 | 54.00 | -10.35 | 37.68 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.86 | 74.00 | -17.14 | 50.89 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 44.60 | 54.00 | -9.40 | 38.48 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 58.00 | 74.00 | -16.00 | 51.88 | 6.12 | Peak | --- | --- |
| 5 | 11570.00 | 52.37 | 54.00 | -1.63 | 37.58 | 14.79 | Average | --- | --- |
| 6 | 11570.00 | 66.95 | 74.00 | -7.05 | 52.16 | 14.79 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

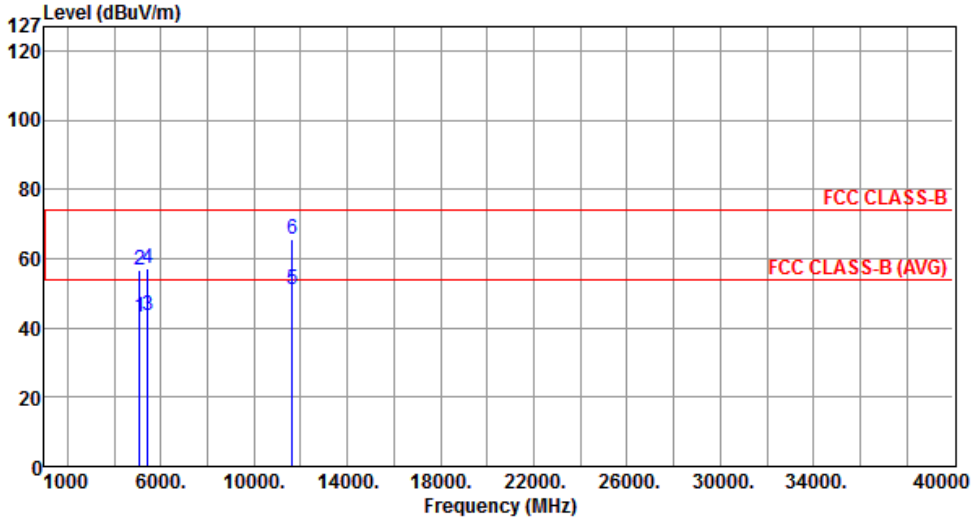
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5825 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.01 | 54.00 | -10.99 | 37.04 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 57.08 | 74.00 | -16.92 | 51.11 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.63 | 54.00 | -10.37 | 37.51 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 57.06 | 74.00 | -16.94 | 50.94 | 6.12 | Peak | --- | --- |
| 5 | 11650.00 | 52.93 | 54.00 | -1.07 | 38.24 | 14.69 | Average | --- | --- |
| 6 | 11650.00 | 68.25 | 74.00 | -5.75 | 53.56 | 14.69 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5825 |
| **Operating Mode** | 1 | **Polarization** | H |

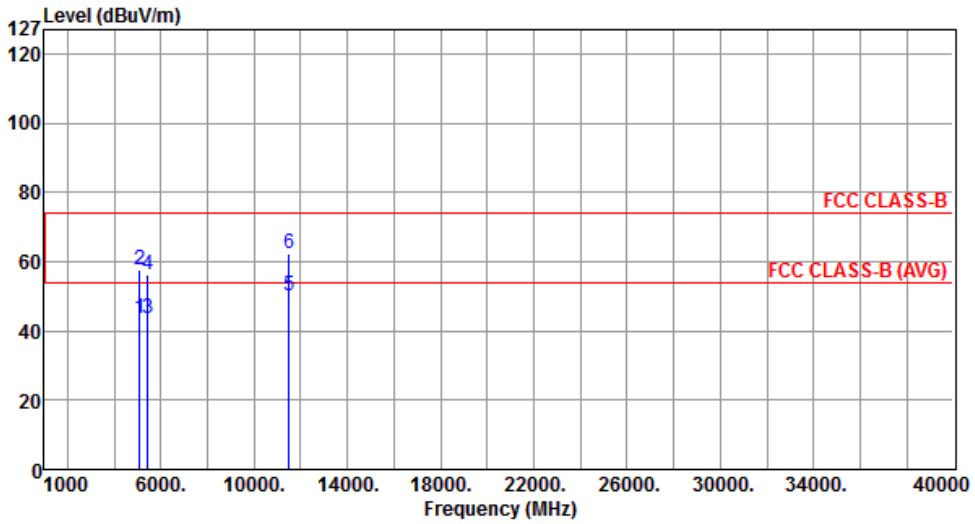



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.27 | 54.00 | -10.73 | 37.30 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.55 | 74.00 | -17.45 | 50.58 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.74 | 54.00 | -10.26 | 37.62 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 57.25 | 74.00 | -16.75 | 51.13 | 6.12 | Peak | --- | --- |
| 5 | 11650.00 | 50.92 | 54.00 | -3.08 | 36.23 | 14.69 | Average | --- | --- |
| 6 | 11650.00 | 65.46 | 74.00 | -8.54 | 50.77 | 14.69 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

### 3.6.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT40

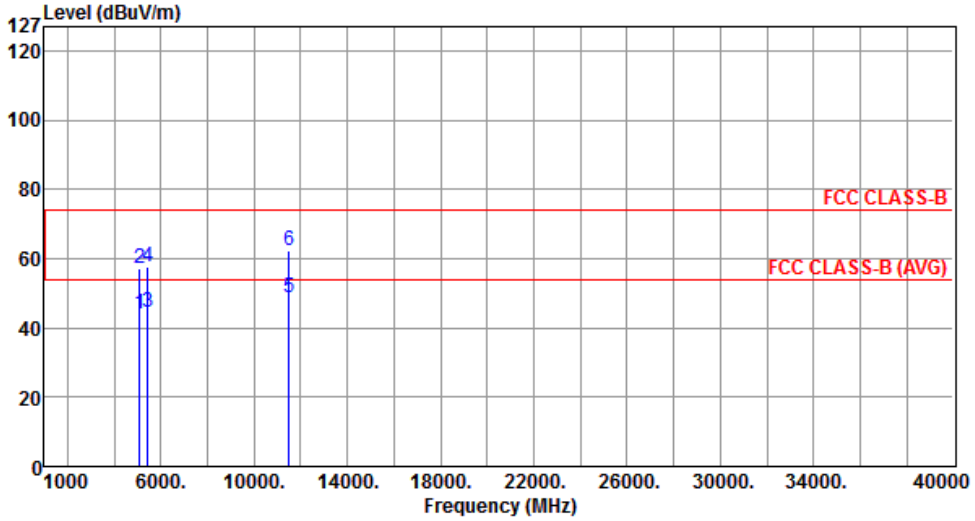
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5755 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.71 | 54.00 | -10.29 | 37.74 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 57.43 | 74.00 | -16.57 | 51.46 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.72 | 54.00 | -10.28 | 37.60 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 56.45 | 74.00 | -17.55 | 50.33 | 6.12 | Peak | --- | --- |
| 5 | 11510.00 | 50.12 | 54.00 | -3.88 | 35.27 | 14.85 | Average | --- | --- |
| 6 | 11510.00 | 62.28 | 74.00 | -11.72 | 47.43 | 14.85 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

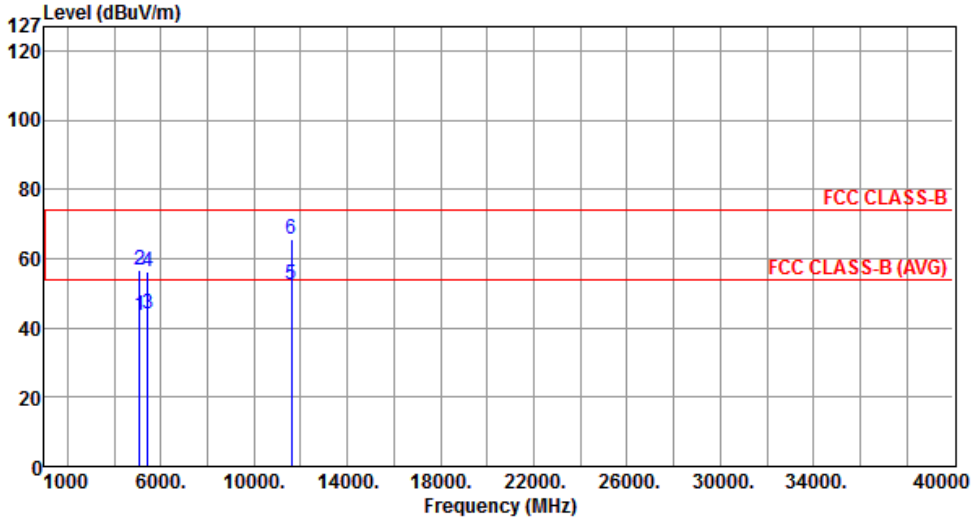
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5755 |
| **Operating Mode** | 1 | **Polarization** | H |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.96 | 54.00 | -10.04 | 37.99 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.94 | 74.00 | -17.06 | 50.97 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 44.33 | 54.00 | -9.67 | 38.21 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 57.59 | 74.00 | -16.41 | 51.47 | 6.12 | Peak | --- | --- |
| 5 | 11510.00 | 48.86 | 54.00 | -5.14 | 34.01 | 14.85 | Average | --- | --- |
| 6 | 11510.00 | 62.11 | 74.00 | -11.89 | 47.26 | 14.85 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

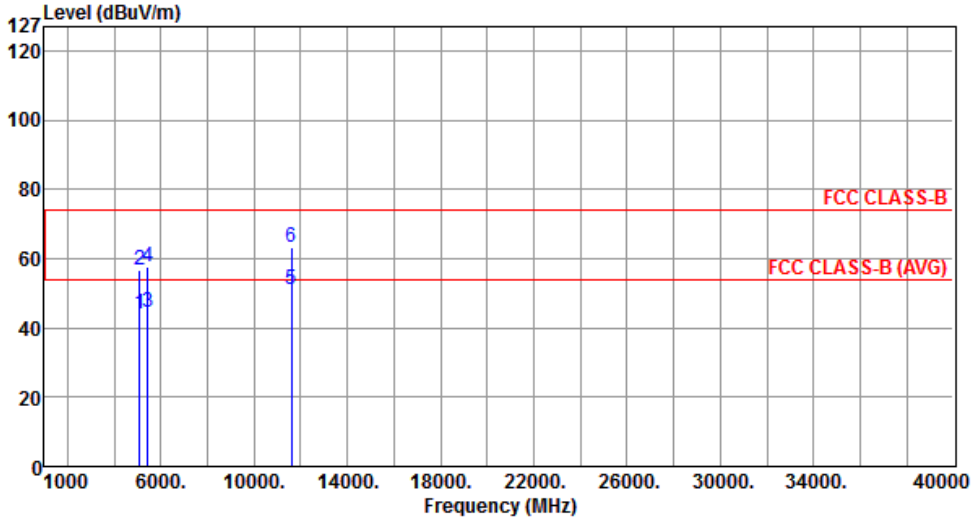
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5795 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.63 | 54.00 | -10.37 | 37.66 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.49 | 74.00 | -17.51 | 50.52 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 43.95 | 54.00 | -10.05 | 37.83 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 56.28 | 74.00 | -17.72 | 50.16 | 6.12 | Peak | --- | --- |
| 5 | 11590.00 | 52.65 | 54.00 | -1.35 | 37.90 | 14.75 | Average | --- | --- |
| 6 | 11590.00 | 65.61 | 74.00 | -8.39 | 50.86 | 14.75 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5795 |
| **Operating Mode** | 1 | **Polarization** | H |

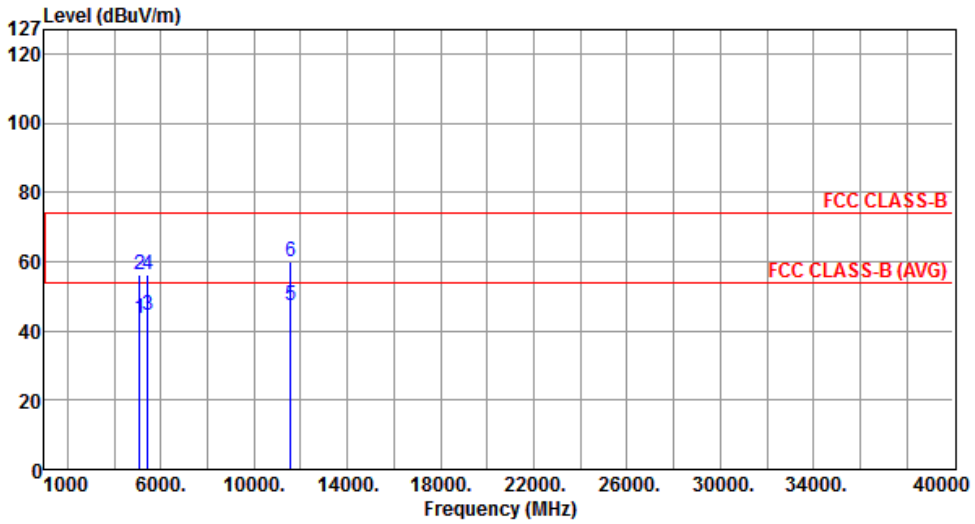



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.82 | 54.00 | -10.18 | 37.85 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.64 | 74.00 | -17.36 | 50.67 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 44.66 | 54.00 | -9.34 | 38.54 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 57.49 | 74.00 | -16.51 | 51.37 | 6.12 | Peak | --- | --- |
| 5 | 11590.00 | 51.21 | 54.00 | -2.79 | 36.46 | 14.75 | Average | --- | --- |
| 6 | 11590.00 | 63.28 | 74.00 | -10.72 | 48.53 | 14.75 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

### 3.6.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT80

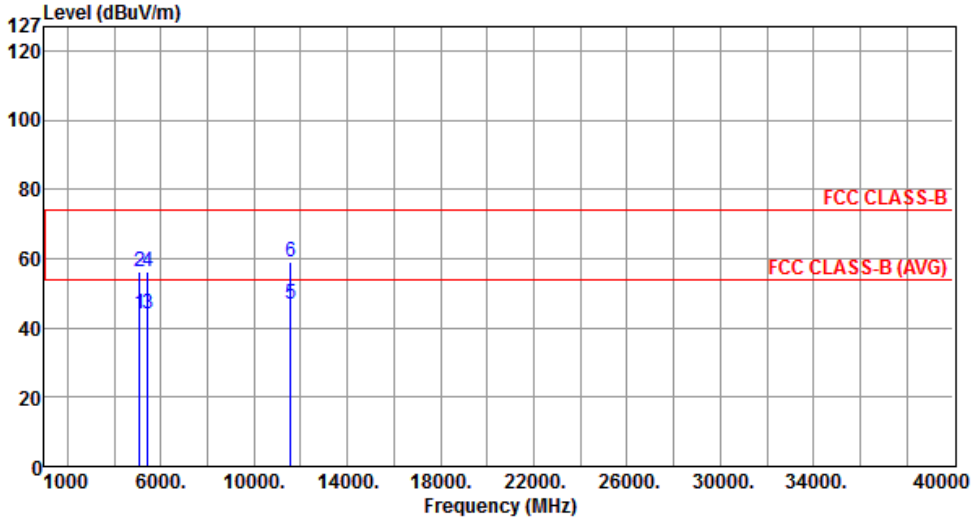
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT80 | **Test Freq. (MHz)** | 5775 |
| **Operating Mode** | 1 | **Polarization** | V |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.78 | 54.00 | -10.22 | 37.81 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.10 | 74.00 | -17.90 | 50.13 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 44.32 | 54.00 | -9.68 | 38.20 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 56.41 | 74.00 | -17.59 | 50.29 | 6.12 | Peak | --- | --- |
| 5 | 11550.00 | 47.40 | 54.00 | -6.60 | 32.60 | 14.80 | Average | --- | --- |
| 6 | 11550.00 | 60.21 | 74.00 | -13.79 | 45.41 | 14.80 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT80 | **Test Freq. (MHz)** | 5775 |
| **Operating Mode** | 1 | **Polarization** | H |




| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5097.00 | 43.96 | 54.00 | -10.04 | 37.99 | 5.97 | Average | --- | --- |
| 2 | 5097.00 | 56.25 | 74.00 | -17.75 | 50.28 | 5.97 | Peak | --- | --- |
| 3 | 5427.00 | 44.05 | 54.00 | -9.95 | 37.93 | 6.12 | Average | --- | --- |
| 4 | 5427.00 | 56.20 | 74.00 | -17.80 | 50.08 | 6.12 | Peak | --- | --- |
| 5 | 11550.00 | 46.86 | 54.00 | -7.14 | 32.06 | 14.80 | Average | --- | --- |
| 6 | 11550.00 | 59.01 | 74.00 | -14.99 | 44.21 | 14.80 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

# 4 Test Equipment and Calibration Data

| Test Item | Conducted Emission | | | | |
|---|---|---|---|---|---|
| Test Site | Conduction room 1 / (CO01-WS) | | | | |
| **Instrument** | **Manufacturer** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| EMC Receiver | R&S | ESCS 30 | 100169 | Oct. 15, 2013 | Oct. 14, 2014 |
| LISN | SCHWARZBECK | Schwarzbeck 8127 | 8127-667 | Nov. 23, 2013 | Nov. 22, 2014 |
| LISN (Support Unit) | SCHWARZBECK | Schwarzbeck 8127 | 8127-666 | Dec. 04, 2013 | Dec. 03, 2014 |
| RF Cable-CON | Woken | CFD200-NL | CFD200-NL-001 | Apr. 24, 2013 | Apr. 23, 2014 |
| 50 ohm terminal (Support Unit) | NA | 50 | 04 | Apr. 22, 2013 | Apr. 21, 2014 |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | Radiated Emission | | | | |
|---|---|---|---|---|---|
| Test Site | 966 chamber1 / (03CH01-WS) | | | | |
| **Instrument** | **Manufacturer** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Spectrum Analyzer | R&S | FSV40 | 101498 | Jan. 25, 2014 | Jan. 24, 2015 |
| Receiver | R&S | ESR3 | 101658 | Jan. 10, 2014 | Jan. 09, 2015 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-522 | Jan. 02, 2014 | Jan. 01, 2015 |
| Horn Antenna 1G-18G | SCHWARZBECK | BBHA 9120D | BBHA 9120 D 1095 | Jan. 07, 2014 | Jan. 06, 2015 |
| Horn Antenna 18G-40G | SCHWARZBECK | BBHA 9170 | BBHA 9170517 | Dec. 27, 2013 | Dec. 26, 2014 |
| Preamplifier | Burgeon | BPA-530 | SN:100219 | Nov. 22, 2013 | Nov. 21, 2014 |
| Preamplifier | Agilent | 83017A | MY39501308 | Dec. 16, 2013 | Dec. 15, 2014 |
| RF Cable | HUBER+SUHNER | SUCOFLEX104 | MY16014/4 | Dec. 16, 2013 | Dec. 15, 2014 |
| RF Cable | HUBER+SUHNER | SUCOFLEX104 | MY16019/4 | Dec. 16, 2013 | Dec. 15, 2014 |
| RF Cable | HUBER+SUHNER | SUCOFLEX104 | MY16139/4 | Dec. 16, 2013 | Dec. 15, 2014 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-001 | Dec. 16, 2013 | Dec. 15, 2014 |
| LF cable 10M | Woken | CFD400NL-LW | CFD400NL-002 | Dec. 16, 2013 | Dec. 15, 2014 |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Loop Antenna | R&S | HFH2-Z2 | 100330 | Nov. 15, 2012 | Nov. 14, 2014 |
| Preamplifier | EM | EM18G40G | 060572 | Jun. 20, 2013 | Jun. 19, 2014 |
| Note: Calibration Interval of instruments listed above is two year. | | | | | |

| Test Item | RF Conducted | | | | |
|---|---|---|---|---|---|
| Test Site | TH01-HY | | | | |
| Instrument | Manufacturer | Model No. | Serial No. | Calibration Date | Calibration Until |
| Spectrum Analyzer | R&S | FSV 40 | 101013 | Jan. 25, 2014 | Jan. 24, 2015 |
| AC Power Source | G.W | APS-9102 | EL920581 | Jul. 16, 2013 | Jul. 15, 2014 |
| Temp. and Humidity Chamber | Giant Force | GTH-225-20-SP-SD | MAA1112-007 | Nov. 20, 2013 | Nov. 19, 2014 |
| Signal Generator | R&S | SMR40 | 100116 | Jun. 27, 2013 | Jun. 26, 2014 |
| Power Sensor | Anritsu | MA2411B | 0917017 | Jan. 28, 2014 | Jan. 27, 2015 |
| Power Meter | Anritsu | ML2495A | 0949003 | Jan. 28, 2014 | Jan. 27, 2015 |
| RF Cable-2m | HUBER+SUHNER | SUCOFLEX_104 | SN 345675/4 | Dec. 02, 2013 | Dec. 01, 2014 |
| RF Cable-3m | HUBER+SUHNER | SUCOFLEX_104 | SN 345669/4 | Dec. 02, 2013 | Dec. 01, 2014 |
| DC Power Source | G.W. | GPC-6030D | C671845 | Jun. 21, 2013 | Jun. 20, 2014 |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |