

Formal Radio Test Report

FCC ID: LDK-ETHIK2360

C9124AXE-B

Cisco Catalyst C9124AX Series 802.11ax Access Point 5 GHz Auxiliary Radio

5470-5725 MHz

Against the following Specifications:

CFR47 Part 15.407



Cisco Systems 170 West Tasman Drive San Jose, CA 95134

| J.J.L. | Shuff |
|---|----------------------------------|
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| Tested By: Johanna Knudsen, Julian Land, & Mathew | Title: Manager, Radio Compliance |
| Blackburn | Revision: 1 |

This report replaces any previously entered test report under EDCS – 22608366. This test report has been electronically authorized and archived using the CISCO Engineering Document Control system. Test Report Template EDCS# 11644124.

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Section 1: Overview

The samples were assessed against the tests detailed in section 3 under the requirements of the following specifications:

Specifications:

CFR47 Part 15.407

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Section 2: Assessment Information

2.1: General

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on the samples submitted. The testing was performed by and for the use of Cisco systems Inc:

With regard to this assessment, the following points should be noted:

- a) The results contained in this report relate only to the items tested and were obtained in the period between the date of the initial assessment and the date of issue of the report. Manufactured products will not necessarily give identical results due to production and measurement tolerances.
- b) The apparatus was set up and exercised using the configuration and modes of operation defined in this report only.
- c) Where relevant, the apparatus was only assessed using the susceptibility criteria defined in this report and the Test Assessment Plan (TAP).
- d) All testing was performed under the following environmental conditions:

| Temperature | 15 °C to 35 °C (54 °F to 95 °F) |
|----------------------|--|
| Atmospheric Pressure | 860 mbar to 1060 mbar (25.4" to 31.3") |
| Humidity | 10% to 75*% |

e) All AC testing was performed at one or more of the following supply voltages:

110V 60 Hz (+/-20%)

Units of Measurement

The units of measurements defined in the appendices are reported in specific terms, which are test dependent. Where radiated measurements are concerned these are defined at a particular distance. Basic voltage measurements are defined in units of [dBuV]

As an example, the basic calculation for all measurements is as follows:

Emission level [dBuV] = Indicated voltage level [dBuV] + Cable Loss [dB] + Other correction factors [dB]

The combinations of correction factors are dependent upon the exact test configurations [see test equipment lists for further details] and may include:

Antenna Factors, Pre-Amplifier Gain, LISN Loss, Pulse Limiter Loss and Filter Insertion Loss

Note: To convert the results from dBuV/m to uV/m use the following formula:

Level in uV/m = Common Antilogarithm [(X dBuV/m)/20] = Y uV/m

Measurement Uncertainty Values

| voltage and power measurements | ± 2 dB |
|-----------------------------------|------------|
| conducted EIRP measurements | ± 1.4 dB |
| radiated measurements | ± 3.2 dB |
| frequency measurements | ± 2.4 10-7 |
| temperature measurements | ± 0.54° |
| humidity measurements | ± 2.3% |
| DC and low frequency measurements | ± 2.5% |

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Where relevant measurement uncertainty levels have been estimated for tests performed on the apparatus. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Radiated emissions (expanded uncertainty, confidence interval 95%)

| 30 MHz – 300 MHz | ± 3.8 dB |
|--------------------|----------|
| 300 MHz – 1000 MHz | ± 4.3 dB |
| 1 GHz – 10 GHz | ± 4.0 dB |
| 10 GHz – 18GHz | ± 8.2 dB |
| 18GHz – 26.5GHz | ± 4.1 dB |
| 26.5GHz – 40GHz | ± 3.9 dB |

Conducted emissions (expanded uncertainty, confidence interval 95%)

30 MHz - 40 GHz ± 0.38 dB

A product is considered to comply with a requirement if the nominal measured value is below the limit line. The product is considered to not be in compliance in case the nominal measured value is above the limit line.

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2.2: Date of testing

30-JUL-2021 to 31-JUL-2021; 03-AUG-2021

2.3: Report Issue Date

13-OCT-2021

Cisco uses an electronic system to issue, store and control the revision of test reports. This system is called the Engineering Document Control System (EDCS). The actual report issue date is embedded into the original file on EDCS. Any copies of this report, either electronic or paper, that are not on EDCS must be considered uncontrolled.

2.4: Testing facilities

This assessment was performed by:

Testing Laboratory Cisco Systems, Inc. 125 West Tasman Drive (Building P) San Jose, CA 95134 USA

Headquarters Cisco Systems, Inc., 170 West Tasman Drive San Jose, CA 95134, USA

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| Cisco System Site | Address | Site Identifier |
|-------------------------|----------------------------|--------------------|
| Building P, 10m Chamber | 125 West Tasman Dr | Company #: 2461N-2 |
| | San Jose, CA 95134 | |
| Building P, 5m Chamber | 125 West Tasman Dr | Company #: 2461N-1 |
| | San Jose, CA 95134 | |
| Building 7, 5m Chamber | 425 E. Tasman Drive | Company #: 2461N-3 |
| | San Jose, California 95134 | |
| | United States | |

Registration Numbers for Industry Canada

Test Engineers:

Johanna Knudsen, Julian Land, Mathew Blackburn

2.5: Equipment Assessed (EUT)

C9124AXE

2.6: EUT Description

The Cisco Catalyst 9124AX Series outdoor access points are next-generation Wi-Fi 6 access points encased in a rugged and robust design that service providers and enterprises can easily deploy.

The radio supports the following modes of operation. The modes are further defined in the radio Theory of Operation. The modes included in this report represent the worst-case data for all modes.

802.11a - Non HT20, One Antenna, 6 to 54 Mbps, 1ss

The following antennas are supported by this product series. Please note, the antenna information has been provided by the customer (the Cisco business unit). The data included in this report represent the worst-case data for all antennas.

| Frequency | Antenna Name | | Antenna Gain |
|-----------|-----------------------|-----------|---------------------------|
| | 5 GHz TX/RX: External | Antenna 1 | 7 dBi (Side Lobe: -1 dBi) |
| 5 GHz 1 | | Antenna 2 | 8 dBi (Side Lobe: 5 dBi) |
| | TA/RA. External | Antenna 3 | 13 dBi (Side Lobe: 2 dBi) |
| | | Antenna 4 | 14 dBi (Side Lobe: 5 dBi) |

Section 3: Result Summary

3.1: Results Summary Table

Conducted emissions

| Basic Standard | Technical Requirements / Details | Result |
|--|--|--------|
| FCC 15.407 | 99% & 26 dB Bandwidth: The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. There is no limit for 99% OBW. The 26 dB emission is the width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission. | Pass |
| FCC 15.407 | Output Power: 15.407 (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. | Pass |
| FCC 15.407 | Power Spectral Density: 15.407 (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bandsthe maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. | Pass |
| FCC 15.407 | Conducted Spurious Emissions / Band-Edge: 15.407 (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. | Pass |
| FCC 15.407 FCC 15.209 FCC 15.205 | Restricted band: Unwanted emissions falling within the restricted bands, as defined in FCC 15.205 (a) must also comply with the radiated emission limits specified in FCC 15.209 (a). | Pass |

Radiated Emissions (General requirements)

| Basic Standard | Technical Requirements / Details | |
|--------------------------|--|---|
| FCC 15.209 FCC 15.205 | TX Spurious Emissions: Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the filed strength limits table in this section. | Not covered by the scope of this report |
| FCC 15.207 | AC conducted Emissions: Except when the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply, either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table in these sections. The more stringent limit applies at the frequency range boundaries. | Not covered by the scope of this report |

Section 4: Sample Details

Note: Each sample was evaluated to ensure that its condition was suitable to be used as a test sample prior to the commencement of testing.

4.1: Sample Details

| Sample | Equipment | Manufacturer | Hardware | Serial |
|--------|--------------------------------|------------------------|----------|-------------|
| No. | Details | | Rev. | Number |
| S01 | C9124AXE-B (Used in Rack 9) | Foxconn (For Cisco) | PP | FOC25220CP1 |

4.2: System Details

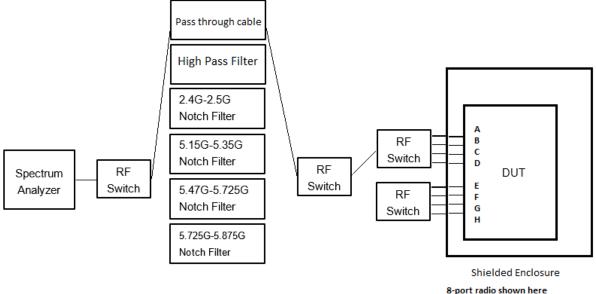
| System # | Description | Samples |
|----------|----------------------|---------|
| 1 | EUT (used in Rack 9) | S01 |

4.3: Mode of Operation Details

| Mode# | Description | Comments |
|-------|---|---|
| 1 | Continuously Transmitting Testing using Rack 9 | AP Running Image: 8.8.1.10 Cisco AP Software, (ap1g6a), [cheetah- build9:/san1/BUILD/workspace/c176_throttle_mfg/label/mfg-ap1g6a] Compiled Wed Jul 14 22:18:33 GMT 2021 |

Appendix A: Emission Test Results

Conducted Test Setup Diagram



8-port radio shown here Some radios will fewer transmit paths

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A.1: Duty Cycle

Duty Cycle Test Requirement

From KDB 789033 D02 General UNII Test Procedures New Rules v02r01

B. Duty Cycle (x), Transmission Duration (T), and Maximum Power Control Level

1. All measurements are to be performed with the EUT transmitting at 100 percent duty cycle at its maximum power control level; however, if 100 percent duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation.

Duty Cycle Test Method

From KDB 789033 D02 General UNII Test Procedures New Rules v02r01:

B. Duty Cycle (x), Transmission Duration (T), and Maximum Power Control Level

The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW \ge EBW if possible; otherwise, set RBW to the largest available value. Set VBW \ge RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in section II.B.1.a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T \le 16.7 microseconds.)

Duty Cycle Test Information

| Tested By: | Date of testing: |
|--|----------------------------|
| Johanna Knudsen, Julian Land, Mathew Blackburn | 30-JUL-2021 to 31-JUL-2021 |
| Test Result: PASS | |

Test Equipment

See Appendix C for list of test equipment

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Duty Cycle Data Table

Duty Cycle table and screen captures are shown below for Power/PSD modes. Results shown are representative for all antenna gains.

| Frequency (MHz) | Mode | Data Rate (Mbps) | Duty Cycle (dB) |
|--------------------|------------------------|---------------------|--------------------|
| | | | |
| 5500 | Non HT20, 6 to 54 Mbps | 6.0 | 0.13094 |
| | | | |
| 5560 | Non HT20, 6 to 54 Mbps | 6.0 | 0.13094 |
| | | | |
| 5700 | Non HT20, 6 to 54 Mbps | 6.0 | 0.13094 |
| | | | |
| 5720 | Non HT20, 6 to 54 Mbps | 6.0 | 0.13094 |

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | | | | | | - ¢ 🔀 |
|---|---|---|--------------|-----------|--------------------|---|
| IXI RF 50 Ω CORREC Center Freq 5.500000000 GHz | SENSE:IN | Avg Type | e: Log-Pwr | | 1 2 3 4 5 6 | Frequency |
| NFE PNO: Fast IFGain:Low | ↔ Trig: Free Ru #Atten: 28 dB | | : 1/1 | DE | | Auto Tune |
| 10 dB/div Ref 15.00 dBm 5.00 000 000 000 000 000 000 000 000 000 | 2 | when the second s | (Aborated a | | | Center Freq 5.50000000 GHz |
| -15.0 | | | | | | Start Freq 5.50000000 GHz |
| -55.0 | | | | | | Stop Freq 5.50000000 GHz |
| | 3W 100 kHz | | Sweep 1. | 000 ms (1 | | CF Step 3.000000 MHz <u>Auto</u> Man |
| MKR MODE TRC SCL X 1 N 1 f 5.488 GHz 2 N 1 f 10.995 GHz 3 N 1 f 5.117 GHz 4 N 1 f 5.333 GHz 5 - - - - - 6 - - - - - | Y -58.633 dBm -70.497 dBm -60.195 dBm -53.576 dBm | FUNCTION FUI | NCTION WIDTH | FUNCTIO | | Freq Offset 0 Hz |
| 7 8 9 10 11 | | | | | | Scale Type |
| MSG | 97.03, 0.13 | | STATUS | | • | |

Antenna A

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A.2: 99% and 26dB Bandwidth

99% and 26dB Bandwidth Test Requirement

There is no requirement for the value of bandwidth. However, the 26dB BW (EBW) is used to calculate the power limits in 15.407 (a) (2). Power measurements are made using the 99% Bandwidth as the integration bandwidth.

Band-crossing emissions:

For an emission that crosses the boundary between two adjacent U-NII bands, the boundary frequency between the bands serves as one edge for defining the portion of the EBW that falls within a particular U-NII band. However, the -26 dB points are measured relative to the highest point on the contiguous segment—regardless of which band contains that highest point (Figure 4).

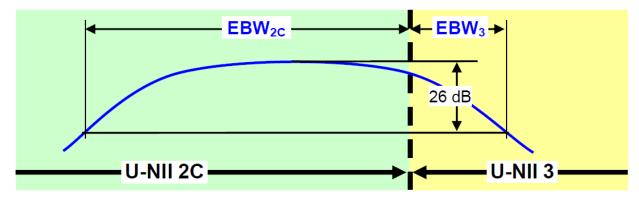


Figure 3. Emission Bandwidth (EBW) within a Band for Band-Crossing Signals

99% and 26dB Bandwidth Test Procedure

ANSI C63.10: 2013 Section 6.9.3 Ref. KDB 789033 Section D. 99 Percent Occupied Bandwidth KDB 662911

99% BW

Test Parameters

- 1. Set center frequency to the nominal EUT channel center frequency.
- 2. Set span = 1.5 times to 5.0 times the OBW.
- 3. Set RBW = 1 % to 5 % of the OBW

4. Set VBW ≥ 3 · RBW

5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

6. Use the 99 % power bandwidth function of the instrument (if available).

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Ref KDB 789033 in Section C. Measurement Bandwidth, Section 1

| 26 BW | |
|---|---|
| Test parameters | |
| X dB BW = -26dB (using the OBW function | n of the spectrum analyzer) |
| Emission Bandwidth (EBW) | |
| a) Set RBW = approximately 1% of the em | ission bandwidth. |
| b) Set the VBW > RBW. | |
| c) Detector = Peak. | |
| d) Trace mode = max hold. | |
| e) Measure the maximum width of the em | ission that is 26 dB down from the maximum of the emission. Compare |
| 5 | Readjust RBW and repeat measurement as needed until the RBW/EBW |
| ratio is approximately 1%. | |
| | |
| Teated Dec | Data of testinger |

| Tested By: | Date of testing: |
|--|---|
| Johanna Knudsen, Julian Land, Mathew Blackburn | 30-JUL-2021 to 31-JUL-2021; 03-AUG-2021 |
| Test Result: PASS | |

Test Equipment

See Appendix C for list of test equipment

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99% and 26dB Bandwidth Table

Results shown are representative for all antenna gains.

| Frequency (MHz) | Mode | Data Rate (Mbps) | 26dB BW (MHz) | 99% BW (MHz) |
|--------------------|------------------------|---------------------|---------------------|-----------------|
| | | | | |
| 5500 | Non HT20, 6 to 54 Mbps | 6.0 | 21.9 | 16.512 |
| | | | | |
| 5560 | Non HT20, 6 to 54 Mbps | 6.0 | 21.6 | 16.509 |
| | | | | |
| 5700 | Non HT20, 6 to 54 Mbps | 6.0 | 22.3 | 16.529 |
| | | | | |
| 5720 | Non HT20, 6 to 54 Mbps | 6.0 | 16.0 | 13.331 |

Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Occupied B | | | | | |
|---|------------------------------|--------------------------------------|------------------|----------------------|---------------------------------|
| RL RF 50 Ω DC Center Freg 5.695000000 | | SENSE:INT r Freq: 5.695000000 GHz | Radio Std: | None | Frequency |
| NFE | | Free Run n: 22 dB | Radio Devi | ce: BTS | |
| | | | | | |
| 10 dB/div Ref 22.20 dBr | n | | | | |
| 12.2 | | | | | Center Freq |
| 2.20 | | | Marthadardortada | water | 5.695000000 GHz |
| -7.80 | | | | | |
| -17.8 | | | | | |
| -27.8 | | www.www. | | | |
| -37.8 | and a second when the second | w M V V V | | | |
| -47.8 | | | | | |
| -67.8 | | | | | |
| | | | | | |
| Center 5.69500 GHz #Res BW 200 kHz | # | VBW 620 kHz | | 0.00 MHz veep 5 s | CF Step |
| | | | | | 6.000000 MHz <u>Auto</u> Man |
| Occupied Bandwid | | Total Power | 23.9 dBm | | |
| 1 | 3.331 MHz | | | | Freq Offset |
| Transmit Freq Error | 23.298 MHz | % of OBW Powe | r 99.00 % | | 0 Hz |
| x dB Bandwidth | 15.98 MHz | x dB | -26.00 dB | | |
| | | | | | |
| | | | | | |
| | | | | | |
| MSG | | | STATUS | | |

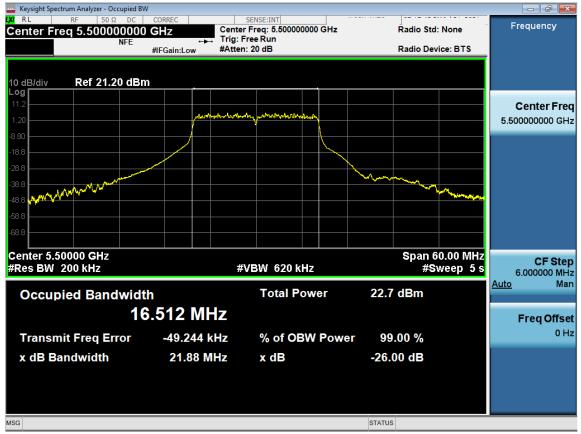
Antenna A

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Antenna A

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Antenna A

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A.3: Maximum Conducted Output Power

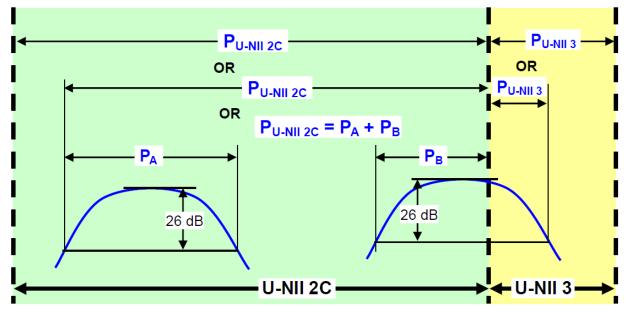
Maximum Conducted Output Power Test Requirement

15.407:

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. ... If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Band-Crossing Signals:

When measuring the portion of the maximum conducted output power within a single U-NII band, the power shall be integrated across only the portion of the EBW that falls within that band. That is, if an EBW extends across the boundary between two adjacent bands, the boundary frequency between the bands serves as one edge of the frequency range to be integrated. Integration across an entire U-NII band without regard to 26 dB points is also acceptable for determining conducted output power within that band.



Conducted output power within a U-NII band: Integrate over the band or integrate over a span including the 26 dB EBWs of transmission segments within the band or integrate over 26 dB EBW of each transmission segment in the band and sum.

Figure 4. Conducted Output Power Measurement Examples

Maximum Conducted Output Power Test Procedure

ANSI C63.10: 2013

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v02r01

| Maximum Conducted Output Power |
|---|
| Test Procedure |
| 1. Set the radio in the continuous transmitting mode at full power |
| 2. Compute power by integrating the spectrum across the EBW (or alternatively entire 99% OBW) of the signal using |
| the instrument's band power measurement function. The integration shall be performed using the spectrum analyzer |
| band-power measurement function with band limits set equal to the EBW or the OBW band edges. |
| Capture graphs and record pertinent measurement data. |

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Ref. KDB 789033 D02 General UNII Test Procedures New Rules v02r01

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA), (d) Method SA-2

Maximum Conducted Output Power Test parameters

Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction). (i) Measure the duty cycle, x, of the transmitter output signal as described in section II.B.

(ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(iii) Set RBW = 1 MHz.

(iv) Set VBW ≥ 3 MHz.

(v) Number of points in sweep \geq 2 Span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)

(vi) Sweep time = auto.

(vii) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(viii) Do not use sweep triggering. Allow the sweep to "free run".

(ix) Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.

(x) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth)

The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. ANSI C63.10 section 14.3.2.2

| Tested By: Johanna Knudsen, Julian Land, Mathew Blackburn | Date of testing: 30-JUL-2021 to 31-JUL-2021; 03-AUG-2021 |
|---|---|
| Test Result: PASS | |

Test Equipment

See Appendix C for list of test equipment

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A.3.1: 7 dBi

Maximum Output Power

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | 16.1 | 0.13 | 16.2 | 23 | 6.81 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | 17.4 | 0.13 | 17.6 | 23 | 5.43 |

Frequency 5700 MHz

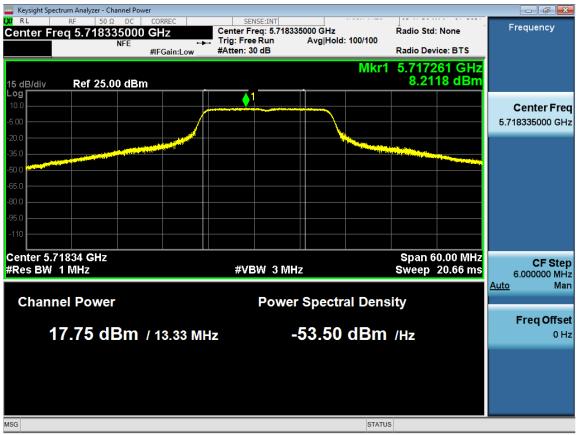
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | 13.6 | 0.13 | 13.7 | 23 | 9.29 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | 17.7 | 0.13 | 17.9 | 23 | 5.12 |

Data Screenshots

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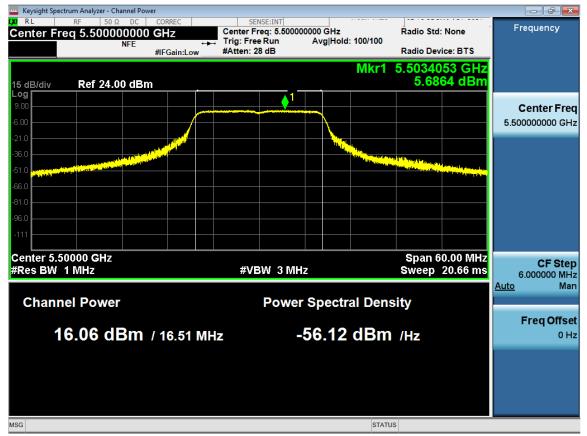
Antenna A

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Antenna A

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Antenna A

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A.3.2: 8 dBi

Maximum Output Power

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | 16.0 | 0.13 | 16.2 | 22 | 5.85 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | 17.4 | 0.13 | 17.6 | 22 | 4.43 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | 13.6 | 0.13 | 13.7 | 22 | 8.29 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | 17.7 | 0.13 | 17.9 | 22 | 4.12 |

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Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps



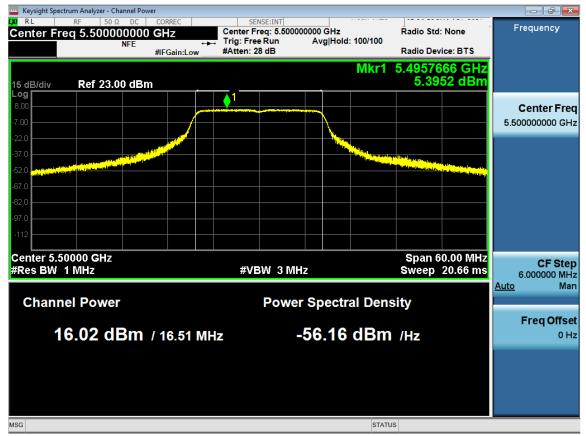
Antenna A

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Antenna A

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Antenna A

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A.3.3: 13 dBi

Maximum Output Power

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | 13.9 | 0.13 | 14.0 | 17 | 3.01 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | 13.8 | 0.13 | 13.9 | 17 | 3.09 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | 13.6 | 0.13 | 13.7 | 17 | 3.29 |

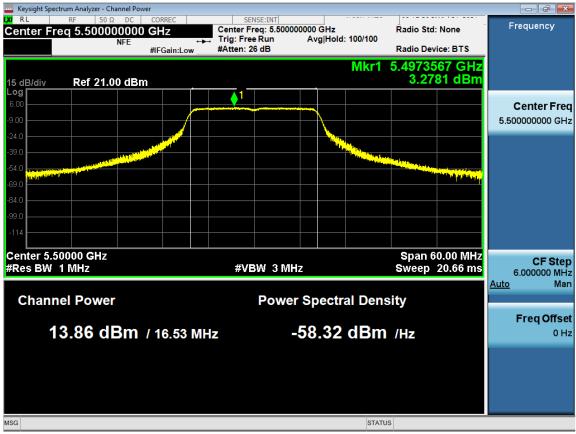
Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | 12.5 | 0.13 | 12.6 | 17 | 4.38 |

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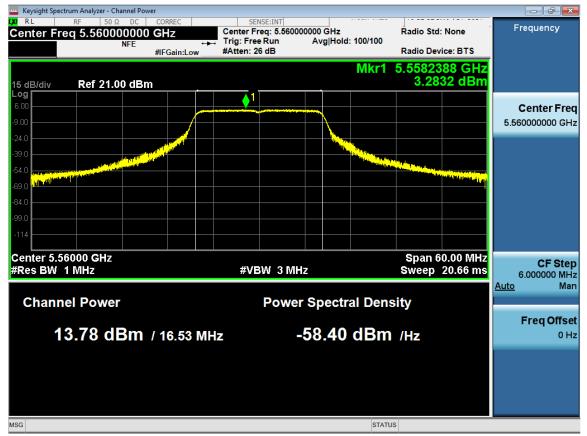
Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps



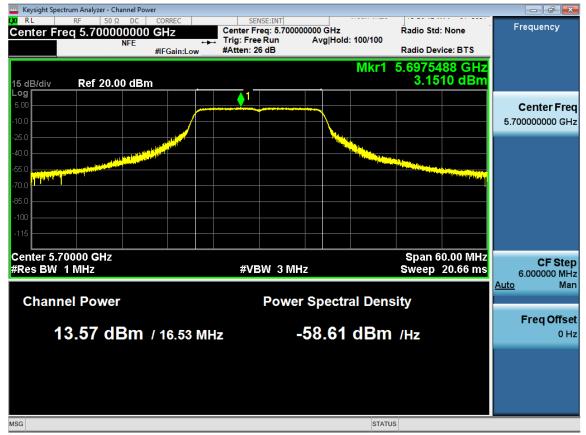
Antenna A

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Antenna A

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Antenna A

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A.3.4: 14 dBi

Maximum Output Power

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | 11.7 | 0.13 | 11.8 | 16 | 4.18 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | 11.7 | 0.13 | 11.8 | 16 | 4.19 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | 11.4 | 0.13 | 11.6 | 16 | 4.44 |

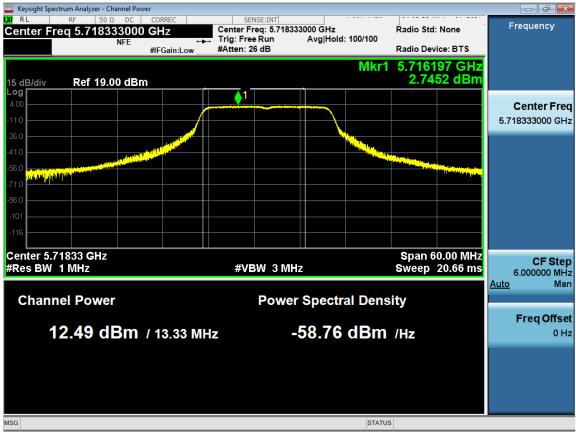
Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Duty Cycle (dB) | Total Tx Channel Power (dBm) | Limit (dBm) | Margin (dB) |
|------------------------|----------|----------------------------------|-------------------------|--------------------|---------------------------------|----------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | 12.5 | 0.13 | 12.6 | 16 | 3.38 |

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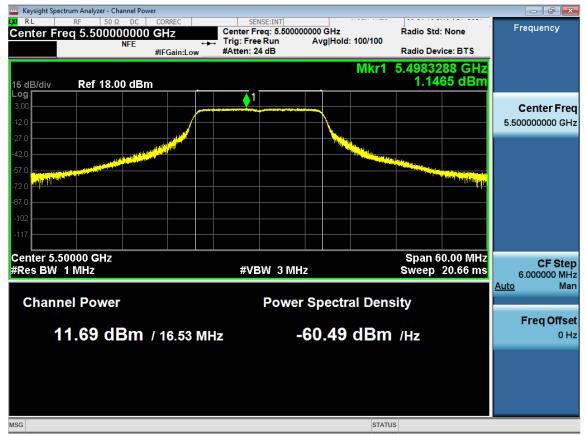
Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps



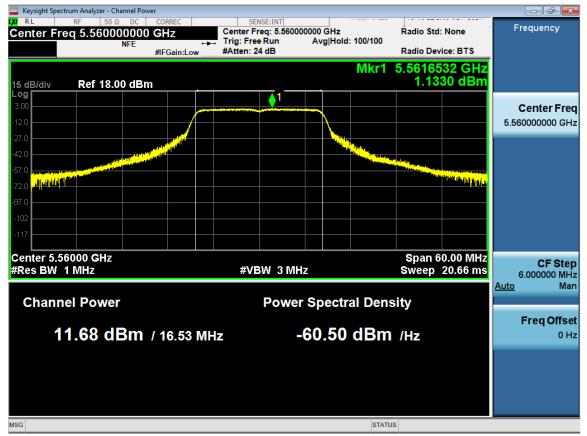
Antenna A

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Antenna A

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A.4: Power Spectral Density

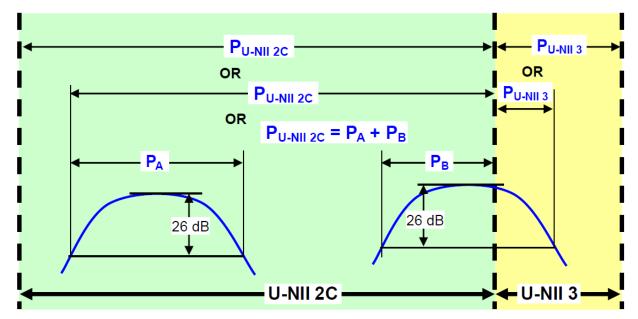
Power Spectral Density Test Requirement

15.407:

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Band-Crossing Signals:

When measuring the portion of the maximum conducted output power within a single U-NII band, the power shall be integrated across only the portion of the EBW that falls within that band. That is, if an EBW extends across the boundary between two adjacent bands, the boundary frequency between the bands serves as one edge of the frequency range to be integrated. Integration across an entire U-NII band without regard to 26 dB points is also acceptable for determining conducted output power within that band.



Conducted output power within a U-NII band: Integrate over the band or integrate over a span including the 26 dB EBWs of transmission segments within the band or integrate over 26 dB EBW of each transmission segment in the band and sum.

Figure 4. Conducted Output Power Measurement Examples

Power Spectral Density Test Procedure

ANSI C63.10: 2013 Peak Power Spectral Density 12.5, 12.3.2.4 Method SA-2

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v02r01, F. Maximum Power Spectral Density Power Spectral Density

Test Procedure

The rules requires "maximum power spectral density" measurements where the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission.

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...". (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)

2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.

3. Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add 10 $\log(1/x)$, where x is the duty cycle, to the peak of the spectrum.

b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.

4. The result is the Maximum PSD over 1 MHz reference bandwidth.

ANSI C63.10: 2013 Peak Power Spectral Density 12.5, 12.3.2.4 Method SA-2

Ref. KDB 789033 D02 General UNII Test Procedures New Rules v02r01, F. Maximum Power Spectral Density Power Spectral Density

| FOW | ei opeciia | Dens |
|------|------------|------|
| Test | parameters | 3 |

Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction). (i) Measure the duty cycle, x, of the transmitter output signal as described in section II.B.

(ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(iii) Set RBW = 1 MHz.

(iv) Set VBW ≥ 3 MHz.

(v) Number of points in sweep \geq 2 Span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)

(vi) Sweep time = auto.

(vii) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode. (viii) Do not use sweep triggering. Allow the sweep to "free run".

(ix) Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.

(x) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth)

F. Maximum Power Spectral Density (PSD)

2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.

3. Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum.

The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. ANSI C63.10 section 14.3.2.2.

| Tested By: | Date of testing: |
|--|--------------------------|
| Johanna Knudsen, Julian Land, Mathew Blackburn | 31-JUL-2021; 03-AUG-2021 |
| Test Result: PASS | |

Test Equipment

See Appendix C for list of test equipment

A.4.1: 7 dBi

Power Spectral Density

Frequency 5500 MHz

| Mode | Paths | rrelated Antenna Gain 3i) | 1 PSD 3m/MHz) | ty Cycle 3) | Total PSD (dBm/MHz) | nit 3m/MHz) | ırgin 3) |
|------------------------|--------|------------------------------|------------------|----------------|------------------------|----------------|----------------|
| | Tx Pat | Correl (dBi) | шĘ | Duty ((dB) | Total I (dBm/ | Limit (dBm/ | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 7 | 5.7 | 0.13 | 5.8 | 10 | 4.18 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | 7.3 | 0.13 | 7.5 | 10 | 2.53 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | 3.2 | 0.13 | 3.3 | 10 | 6.72 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | 8.2 | 0.13 | 8.3 | 10 | 1.66 |

Data Screenshots

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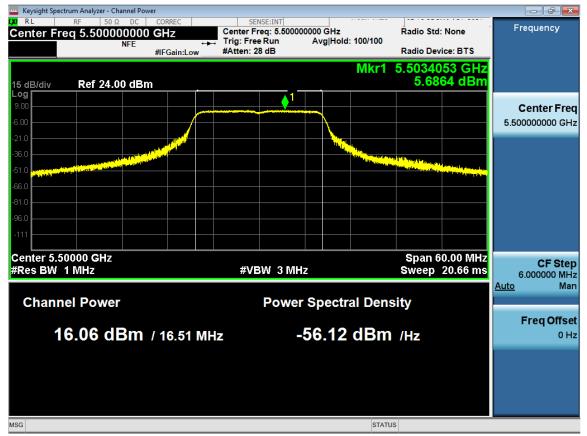
Antenna A

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Antenna A

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Antenna A

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A.4.2: 8 dBi

Power Spectral Density

Frequency 5500 MHz

| Mode | Paths | orrelated Antenna Gain Bi) | (1 PSD Bm/MHz) | ıty Cycle B) | Total PSD (dBm/MHz) | mit Bm/MHz) | argin B) |
|------------------------|-------|-------------------------------|-------------------|-----------------|------------------------|----------------|----------------|
| | Tx Pa | Corre (dBi) | Tx 1 (dBm | Duty (dB) | Total (dBm | Limit (dBm | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 8 | 5.4 | 0.13 | 5.5 | 9 | 3.47 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | T× 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | 7.3 | 0.13 | 7.5 | 9 | 1.53 |

Frequency 5700 MHz

| Mode | | | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|----------------|---------|---|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to | 54 Mbps | 1 | 1 | 8 | 3.2 | 0.13 | 3.3 | 9 | 5.72 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | 8.2 | 0.13 | 8.3 | 9 | 0.66 |

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Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps



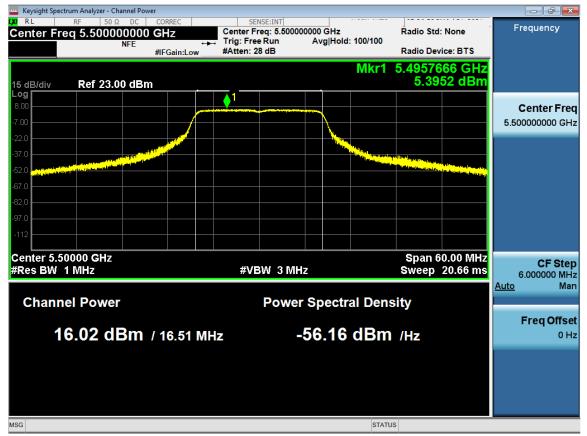
Antenna A

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Antenna A

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Antenna A

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A.4.3: 13 dBi

Power Spectral Density

Frequency 5500 MHz

| | 1 | | 1 | 1 | | | |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 13 | 3.3 | 0.13 | 3.4 | 4 | 0.59 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | T× 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | 3.3 | 0.13 | 3.4 | 4 | 0.59 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | 3.2 | 0.13 | 3.3 | 4 | 0.72 |

Frequency 5720 MHz

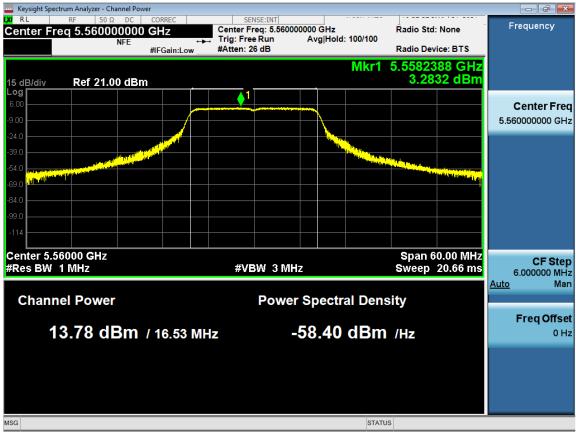
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | 3.0 | 0.13 | 3.1 | 4 | 0.88 |

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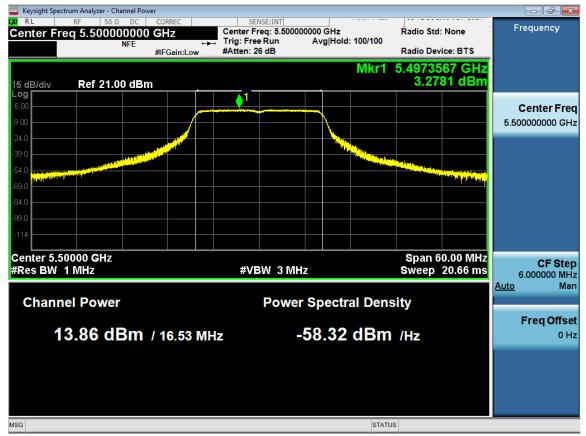
Data Screenshots

5560 MHz: Non HT20, 6 to 54 Mbps



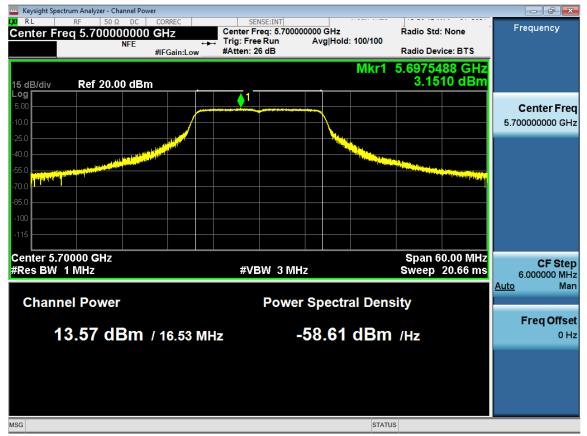
Antenna A

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Antenna A

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Antenna A

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A.4.4: 14 dBi

Power Spectral Density

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | 1.1 | 0.13 | 1.3 | 3 | 1.72 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | T× 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | 1.1 | 0.13 | 1.3 | 3 | 1.74 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | 1.1 | 0.13 | 1.3 | 3 | 1.74 |

Frequency 5720 MHz

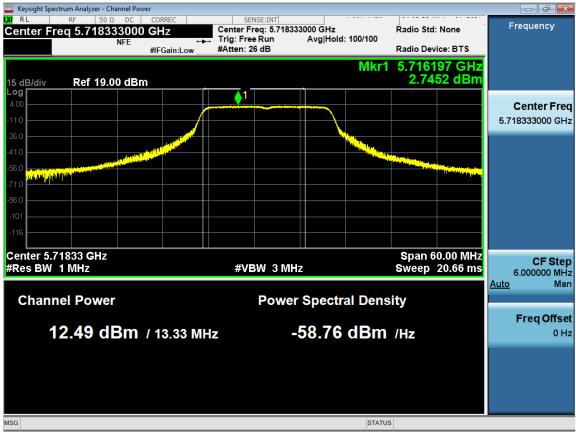
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 PSD (dBm/MHz) | Duty Cycle (dB) | Total PSD (dBm/MHz) | Limit (dBm/MHz) | Margin (dB) |
|------------------------|----------|----------------------------------|-----------------------|--------------------|------------------------|--------------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | 2.7 | 0.13 | 2.9 | 3 | 0.12 |

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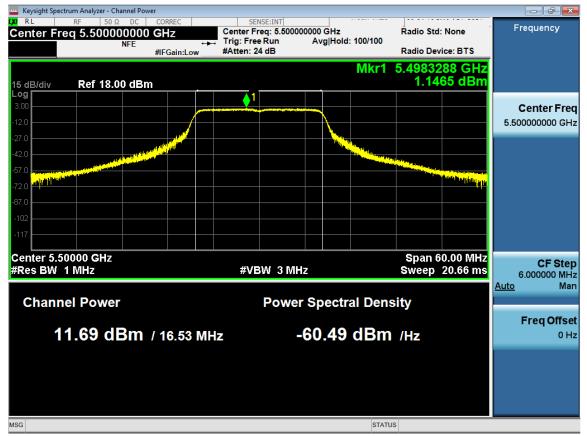
Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps



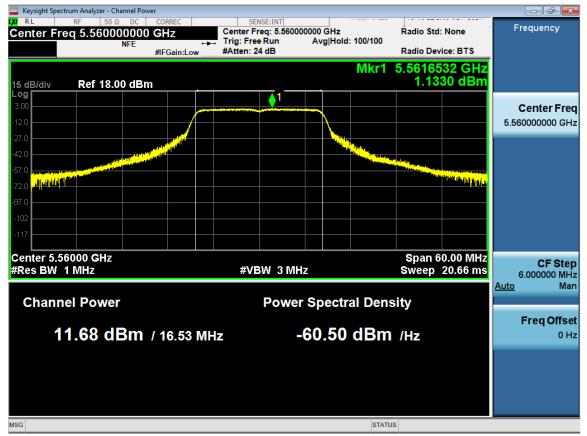
Antenna A

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Antenna A

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A.5: Conducted Spurious Emissions

Conducted Spurious Emissions Test Requirement

15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits

15.205 | 15.209

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Use formula below to substitute conducted measurements in place of radiated measurements

 $E[dB\mu V/m] = EIRP[dBm] - 20 \log(d[meters]) + 104.77$, where E = field strength and d = 3 meter

1) Average Plot, Limit= -41.25 dBm eirp 2) Peak plot, Limit = -21.25 dBm eirp

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

2. Unwanted Emissions that fall Outside of the Restricted Bands

a) For all measurements, follow the requirements in II.G.3. *"General Requirements for Unwanted Emissions Measurements."*

b) At frequencies below 1000 MHz, use the procedure described in II.G.4. *"Procedure for Unwanted Emissions Measurements Below 1000 MHz."*

c) At frequencies above 1000 MHz, use the procedure for maximum emissions described in II.G.5., *"Procedure for Unwanted Emissions Measurements Above 1000 MHz."*

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.

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Conducted Spurious Emissions Test Procedure

Ref. ANSI C63.10: 2013

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Conducted Spurious Emissions

Test Procedure

1. Connect the antenna port(s) to the spectrum analyzer input.

2. Place the radio in continuous transmit mode

3. Configure Spectrum analyzer as per test parameters below (be sure to enter all losses between the transmitter output and the spectrum analyzer).

4. Use the peak marker function to determine the maximum spurs amplitude level.

5. The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measureand-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. The worst case output is recorded. (see ANSI C63.10:2013 section 14.3.2.2)

6. Capture graphs and record pertinent measurement data.

Ref. ANSI C63.10: 2013 section 12.7.6 (Peak) and 12.7.7.2 (Average)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Sec. 5 (Peak), Sec. 6 (Average Method AD)

| Test parameters | |
|-------------------|-----------------|
| Peak | Average |
| RBW = 1 MHz | RBW = 1 MHz |
| VBW ≥ 3 MHz | VBW ≥ 3 MHz |
| Sweep = Auto | Sweep = Auto |
| Detector = Peak | Detector = RMS |
| Trace = Max Hold. | Power Averaging |

Add the max antenna gain + ground reflection factor (4.7 dB for frequencies between 30 MHz and 1000 MHz, and 0 dB for frequencies > 1000 MHz).

| Tested By: | Date of testing: |
|--|---|
| Johanna Knudsen, Julian Land, Mathew Blackburn | 30-JUL-2021 to 31-JUL-2021; 03-AUG-2021 |
| Test Result: PASS | |

Test Equipment

See Appendix C for list of test equipment

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A.5.1: 7 dBi

Conducted Spurious Average Upper Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -71.8 | 0.13 | -64.7 | -41 | 23.41 |

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | | | | | |
|--|---------------------------------------|--|-------------------------------------|---------------------------------------|---|
| ⊠ RL RF 50Ω DC Center Freq 26.00000000 | | SENSE:INT | #Avg Type: RMS Avg Hold: 125/125 | TRACE 1 2 3 4 5 6 | Frequency |
| 10 dB/div Ref -10.00 dBm | | #Atten: 0 dB | | Ikr4 34.512 GHz -71.788 dBm | Auto Tune |
| -20.0 -30.0 -40.0 | | | | | Center Freq 26.00000000 GHz |
| -50.0 -60.0 1 | | | | 4 | Start Freq 12.000000000 GHz |
| -80.0 Z -90.0 K -100 | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | Stop Freq 40.000000000 GHz |
| Start 12.00 GHz #Res BW 1.0 MHz | #VBW 3 | | | Stop 40.00 GHz 46.87 ms (1001 pts) | CF Step 2.80000000 GHz <u>Auto</u> Man |
| 2 N 1 f 1 | 5.500 GHz 1.000 GHz 4.512 GHz - | dBm dBm 71.788 dBm | | | Freq Offset 0 Hz |
| 7 8 9 9 9 10 10 11 11 11 11 11 11 11 11 11 11 11 | | | | • | Scale Type |
| MSG | | III | STATU | JS | |

Antenna A

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Conducted Spurious Emissions Peak Upper Table

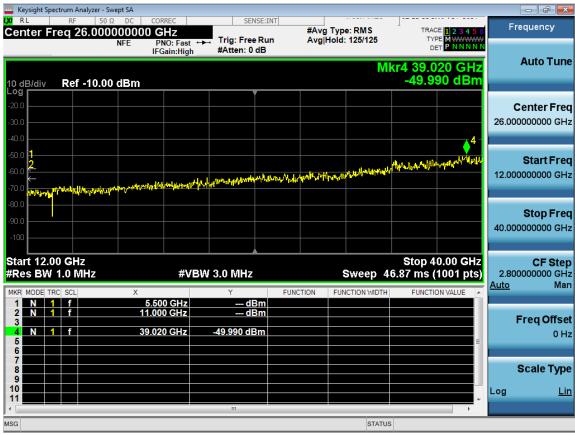
| Frequency 5500 MHz | | |
|--------------------|--|--|
| | | |
| | | |
| | | |
| | | |
| | | |

| Mode | Tx Paths | Correlated Antenn (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Fotal Conducted S (dBm) | Limit (dB) | Margin (dB) | |
|------------------------|----------|----------------------------|--------------------------|--------------------|----------------------------|---------------|----------------|--|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -50.0 | 0.13 | -42.9 | -21 | 21.61 | |

a Gain

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps



Antenna A

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Conducted Spurious Average Table

Frequency 5500 MHz

| Mode | Tx Paths | ^I Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | hMargin (dB) |
|------------------------|----------|---|--------------------------|--------------------|-------------------------------|---------------|-----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -63.8 | 0.13 | -56.7 | -41 | 15.42 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -69.0 | 0.13 | -61.9 | -41 | 20.62 |

Frequency 5700 MHz

| | | | 1 | | | | |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 7 | -60.6 | 0.13 | -53.5 | -41 | 12.22 |

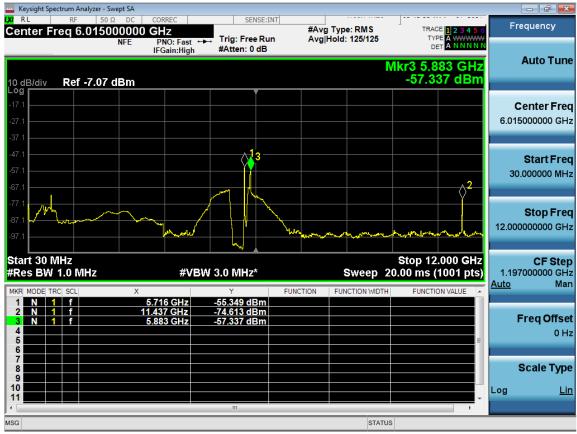
Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -57.3 | 0.13 | -50.2 | -41 | 8.92 |

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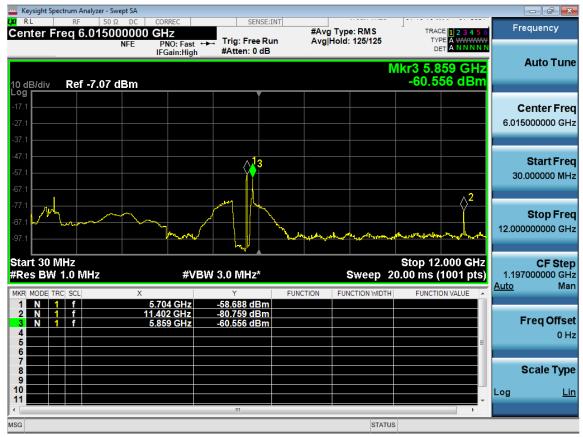
Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps



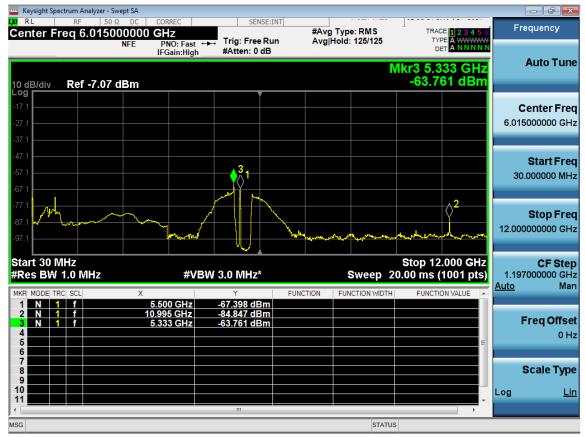
Antenna A

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Antenna A

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Antenna A

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Conducted Spurious Emissions Peak Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -60.2 | 0.13 | -53.1 | -27 | 26.07 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -59.9 | 0.13 | -52.8 | -27 | 25.77 |

Frequency 5700 MHz

| | | | r | | | | |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 7 | -63.4 | 0.13 | -56.3 | -27 | 29.27 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -58.5 | 0.13 | -51.4 | -27 | 24.37 |

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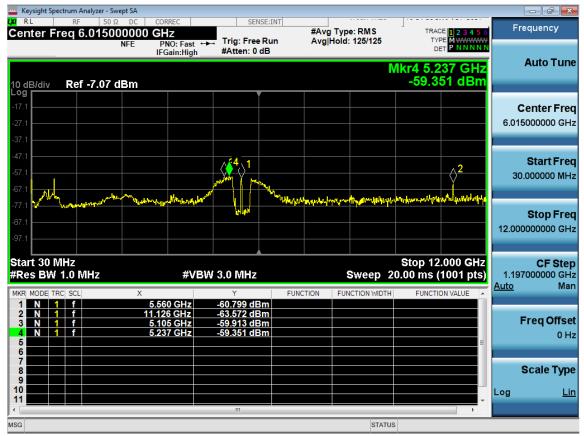
Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | | | | - ¢ 🔀 |
|---|--|--|-------------------------|---------------------|
| RL RF 50 Ω DC Center Freq 6.015000000 | CORREC SENSE:IN | #Avg Type: RMS | TRACE 1 2 3 4 5 6 | Frequency |
| NFE | PNO: Fast +++ Trig: Free Run IFGain:High #Atten: 0 dB | n Avg Hold: 125/125 | TYPE MWWW DET PNNNNN | |
| | | N | lkr4 5.883 GHz | Auto Tune |
| 10 dB/div Ref -7.07 dBm | | | -48.234 dBm | |
| -17.1 | | | | Center Freq |
| -27.1 | | | | 6.015000000 GHz |
| -37.1 | ————— <mark></mark> 4— | | | |
| -47.1 | | | <u>م2</u> | Start Freq |
| -57.1 | | | | 30.000000 MHz |
| -67.1 | may the start the second | where we want the ward and the state of the second state of the se | echowskip provide whe | |
| -87.1 | Ψ η | | | Stop Freq |
| -97.1 | | | | 12.00000000 GHz |
| Start 30 MHz | | | Stop 12.000 GHz | CF Step |
| #Res BW 1.0 MHz | #VBW 3.0 MHz | Sweep 20 | 0.00 ms (1001 pts) | 1.197000000 GHz |
| MKR MODE TRC SCL X | Ý | FUNCTION FUNCTION WIDTH | FUNCTION VALUE | <u>Auto</u> Man |
| 1 N 1 f 2 N 1 f 1 | 5.716 GHz -46.143 dBm 1.437 GHz -63.350 dBm | | | |
| | 5.081 GHz -58.539 dBm 5.883 GHz -48.234 dBm | | | Freq Offset 0 Hz |
| 5 | | | Ξ | OT IL |
| 7 | | | | Scale Type |
| 9 | | | | |
| | | | | Log <u>Lin</u> |
| MSG | | STATUS | | |
| | | 314103 | | |

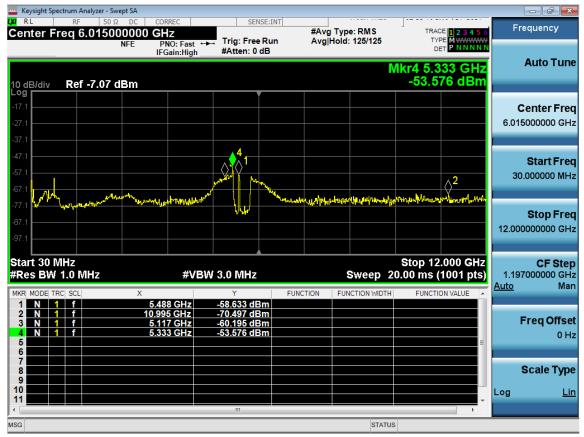
Antenna A

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Antenna A

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Antenna A

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A.5.2: 8 dBi

Conducted Spurious Average Upper Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -71.8 | 0.13 | -63.7 | -41 | 22.41 |

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | | | | | |
|--|---------------------------------------|--|-------------------------------------|---------------------------------------|---|
| ⊠ RL RF 50Ω DC Center Freq 26.00000000 | | SENSE:INT | #Avg Type: RMS Avg Hold: 125/125 | TRACE 1 2 3 4 5 6 | Frequency |
| 10 dB/div Ref -10.00 dBm | | #Atten: 0 dB | | Ikr4 34.512 GHz -71.788 dBm | Auto Tune |
| -20.0 -30.0 -40.0 | | | | | Center Freq 26.00000000 GHz |
| -50.0 -60.0 1 | | | | 4 | Start Freq 12.000000000 GHz |
| -80.0 Z -90.0 K -100 | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | Stop Freq 40.000000000 GHz |
| Start 12.00 GHz #Res BW 1.0 MHz | #VBW 3 | | | Stop 40.00 GHz 46.87 ms (1001 pts) | CF Step 2.80000000 GHz <u>Auto</u> Man |
| 2 N 1 f 1 | 5.500 GHz 1.000 GHz 4.512 GHz - | dBm dBm 71.788 dBm | | | Freq Offset 0 Hz |
| 7 8 9 9 9 10 10 11 11 11 11 11 11 11 11 11 11 11 | | | | • | Scale Type |
| MSG | | III | STATU | JS | |

Antenna A

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Conducted Spurious Emissions Peak Upper Table

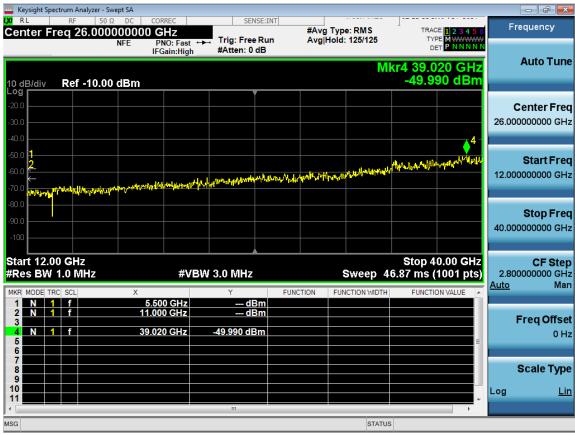
| requency 5500 MHz | |
|-------------------|--|
| | |
| | |
| | |

| Mode | Tx Paths | Correlated Antenna Gai (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|---------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -50.0 | 0.13 | -41.9 | -21 | 20.61 |

L L

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps



Antenna A

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Conducted Spurious Average Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | .Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|-----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -63.5 | 0.13 | -55.4 | -41 | 14.12 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -69.0 | 0.13 | -60.9 | -41 | 19.62 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -60.6 | 0.13 | -52.5 | -41 | 11.22 |

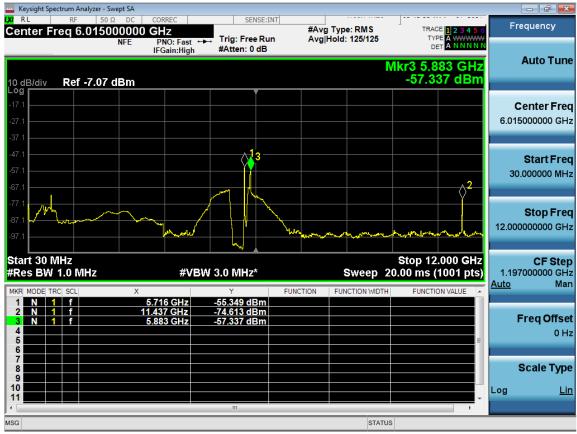
Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -57.3 | 0.13 | -49.2 | -41 | 7.92 |

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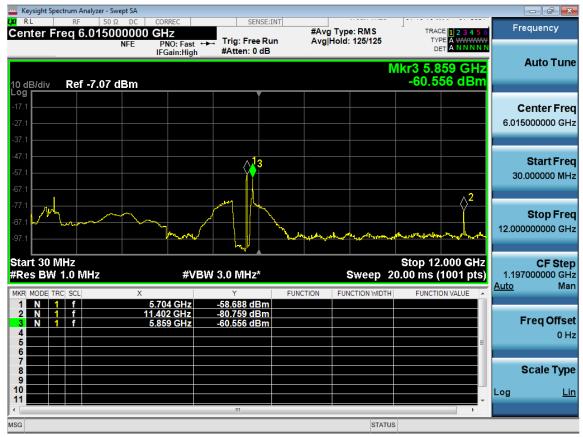
Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps



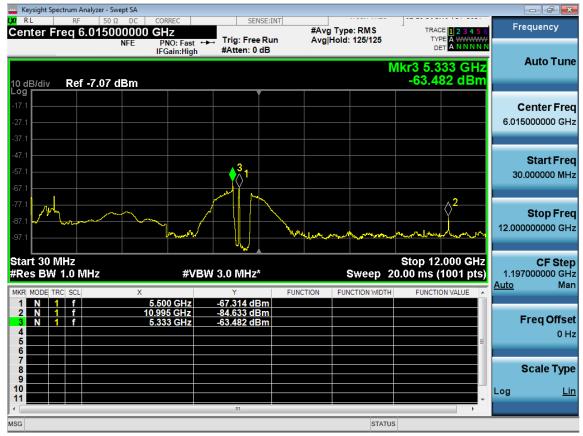
Antenna A

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Antenna A

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Antenna A

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Conducted Spurious Emissions Peak Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -59.8 | 0.13 | -51.7 | -27 | 24.67 |

Frequency 5560 MHz

| Mode | k Paths | orrelated Antenna Gain Bi) | k 1 Spur Power Bm) | uty Cycle B) | otal Conducted Spur Bm) | mit B) | argin B) |
|------------------------|---------|-------------------------------|-----------------------|-----------------|----------------------------|--------------|--------------|
| | Т× F | Cori (dBi | Tx 1 (dBr | Dut) (dB) | Tota (dBr | Limi (dB) | Març (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 8 | -59.9 | 0.13 | -51.8 | -27 | 24.77 |

Frequency 5700 MHz

| | | 1 | 1 | 1 | 1 | 1 | 1 |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 8 | -63.4 | 0.13 | -55.3 | -27 | 28.27 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -58.5 | 0.13 | -50.4 | -27 | 23.37 |

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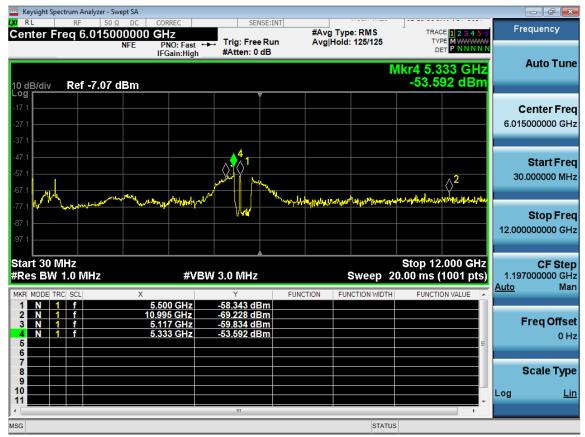
Data Screenshots

5720 MHz: Non HT20, 6 to 54 Mbps

| Exercise Sectrum Analyzer - Swept SA | |
|--|-----------------------------------|
| X RL RF 50 Ω CORREC SENSE:INT Address of the sense: Center Freq 6.015000000 GHz #Avg Type: RMS | TRACE 1 2 3 4 5 6 TYPE M WWWWW |
| NFE PNO: Fast ↔ Trig: Free Run Avg Hold: 125/125 IFGain:High #Atten: 0 dB | DET |
| Mkr4 | 5.883 GHz Auto Tune |
| 10 dB/div Ref -7.07 dBm -4 | 8.234 dBm |
| -17.1 | Center Freq |
| -27.1 | 6.015000000 GHz |
| -37.1 | |
| -47.1 | ∧2 Start Freq |
| -57.1 | 30.000000 MHz |
| 77.1 May man and a second and a | Nortowattan and |
| -87.1 | Stop Freq |
| -97.1 | 12.00000000 GHz |
| Start 30 MHz Sto | p 12.000 GHz CF Step |
| #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 20.00 | ms (1001 pts) 1.197000000 GHz |
| | UNCTION VALUE |
| 1 N 1 f 5.716 GHz -46.143 dBm 2 N 1 f 11.437 GHz -63.350 dBm | Freq Offset |
| 3 N 1 f 5.081 GHz -58.539 dBm 4 N 1 f 5.883 GHz -48.234 dBm | 0 Hz |
| | |
| 7 8 | Scale Type |
| 9 10 | Log Lin |
| | |
| MSG STATUS | |

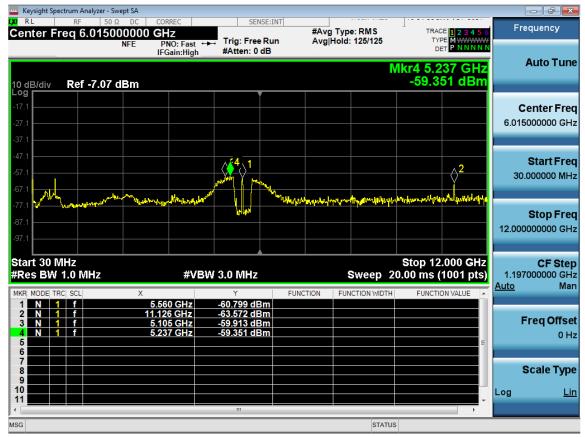
Antenna A

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Antenna A

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Antenna A

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A.5.3: 13 dBi

Conducted Spurious Average Upper Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -71.8 | 0.13 | -58.7 | -41 | 17.41 |

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps

| weysight Spectrum Analyzer - Swept SA | | | | | | | - 6 × |
|--|-------------------------------------|----------------------------------|----------|--|--------------------|--|--|
| ⊠ RL RF 50 Ω DC Center Freq 26.00000000 | | SENSE:IN | #Avg T | ype: RMS | TRAC | E 1 2 3 4 5 6 | Frequency |
| NFE | PNO: Fast ↔ IFGain:High | . Trig: Free Rur #Atten: 0 dB | n Avgino | old: 125/125 | kr4 34.5 -71.78 | | Auto Tune |
| -20.0 -30.0 -40.0 | | | | | | | Center Freq 26.00000000 GHz |
| -50.0 -60.0 1 -70.0 C | | | | | 4 | - L AMOTOR | Start Freq 12.000000000 GHz |
| -80.0 2 -90.0 (-100 | | Jun Anna | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | han a la han | all and a second se | Stop Freq 40.000000000 GHz |
| Start 12.00 GHz #Res BW 1.0 MHz | #VBW | 3.0 MHz* | FUNCTION | Sweep 4 | 6.87 ms (| 0.00 GHz 1001 pts) | CF Step 2.800000000 GHz <u>Auto</u> Man |
| 1 N 1 f 2 N 1 f 3 J 4 N 1 f 3 J 5 J | 5.500 GHz 1.000 GHz 4.512 GHz | dBm dBm -71.788 dBm | | | | E | Freq Offset 0 Hz |
| 6 7 8 9 10 | | | | | | | Scale Type Log <u>Lin</u> |
| MSG | | m | | STATUS | 3 | | |

Antenna A

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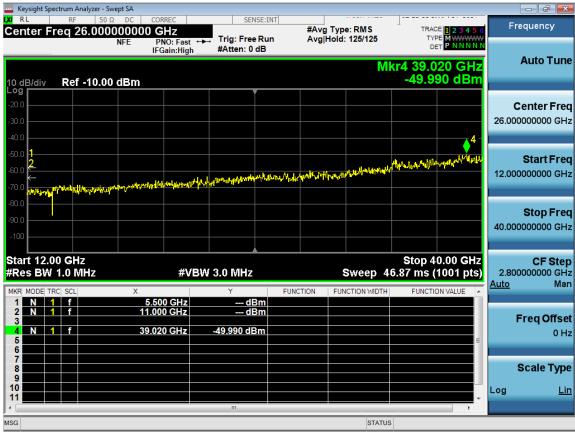
Conducted Spurious Emissions Peak Upper Table

| Frequency 5500 MHz |
|--------------------|
|--------------------|

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -50.0 | 0.13 | -36.9 | -21 | 15.61 |

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps



Antenna A

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Conducted Spurious Average Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | k Margin S(dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|-------------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -65.8 | 0.13 | -52.7 | -41 | 11.42 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -71.8 | 0.13 | -58.7 | -41 | 17.42 |

Frequency 5700 MHz

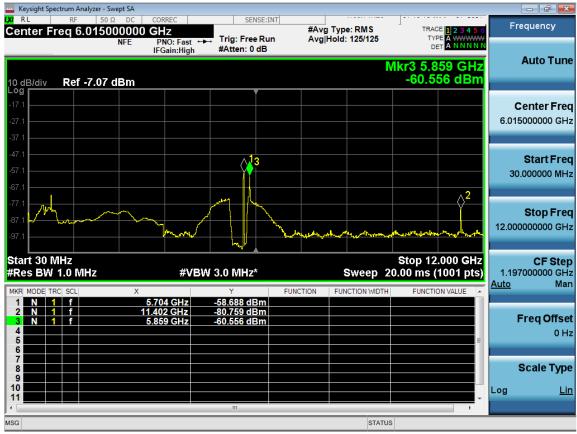
| | | r | 1 | r | 1 | | |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 13 | -60.6 | 0.13 | -47.5 | -41 | 6.22 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -62.4 | 0.13 | -49.3 | -41 | 8.02 |

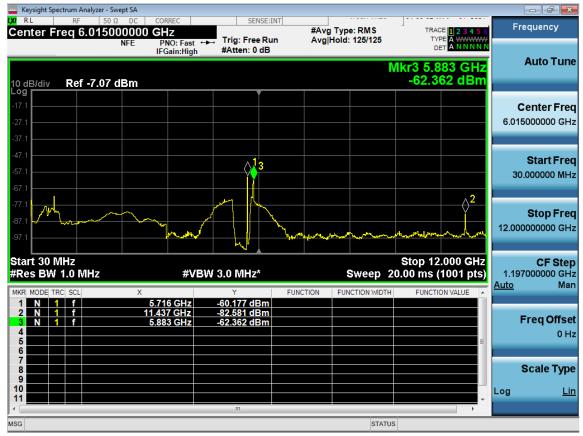
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5700 MHz: Non HT20, 6 to 54 Mbps



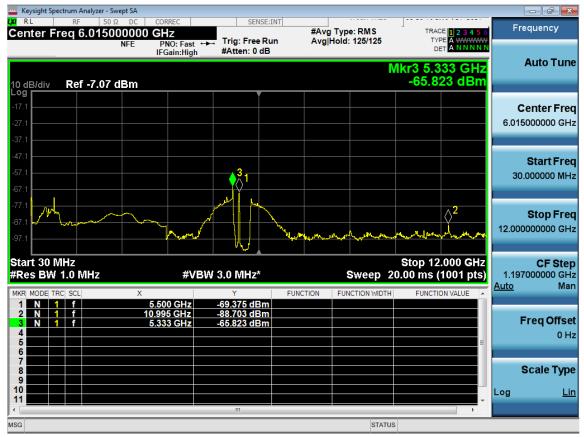
Antenna A

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Antenna A

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Antenna A

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Conducted Spurious Emissions Peak Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -62.5 | 0.13 | -49.4 | -27 | 22.37 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -63.2 | 0.13 | -50.1 | -27 | 23.07 |

Frequency 5700 MHz

| | | | 1 | 1 | 1 | 1 | 1 |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 13 | -63.4 | 0.13 | -50.3 | -27 | 23.27 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -61.6 | 0.13 | -48.5 | -27 | 21.47 |

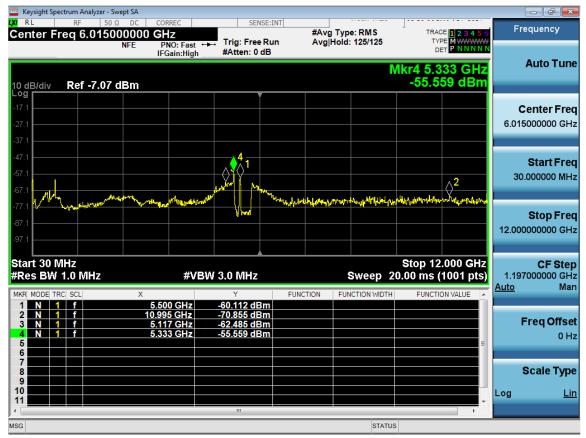
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5720 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | |
|--|----------------------|
| | 4 5 6 Frequency |
| NFE PNO: Fast →→ Trig: Free Run Avg Hold: 125/125 TYPE MWW IFGain:High #Atten: 0 dB DET PNN | NNN |
| Mkr4 5.883 G | Hz Auto Tune |
| 10 dB/div Ref -7.07 dBm -52.197 dB | Bm |
| -17.1 | Center Freq |
| -27.1 | 6.015000000 GHz |
| -37.1 | |
| | Start Freq |
| -57.1 -67.1 | 2 30.000000 MHz |
| 77 1 V May a longer and a far and a second a secon | UAN |
| -87.1 | Stop Freq |
| .97.1 | 12.000000000 GHz |
| Start 30 MHz Stop 12.000 C | Hz CF Step |
| #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 20.00 ms (1001 | ots) 1.197000000 GHz |
| MKR MODE TRC SCL X Y FUNCTION WIDTH FUNCTION VALUE | <u>Auto</u> Man |
| 1 N 1 f 5.716 GHz -50.711 dBm 2 N 1 f 11.437 GHz -69.467 dBm | Eren Offect |
| 3 N 1 f 5.117 GHz -61.553 dBm 4 N 1 f 5.883 GHz -52.197 dBm | Freq Offset |
| | E |
| | Scale Type |
| 9 10 10 10 10 10 10 10 10 10 10 10 10 10 | Log Lin |
| | |
| MSG STATUS | |

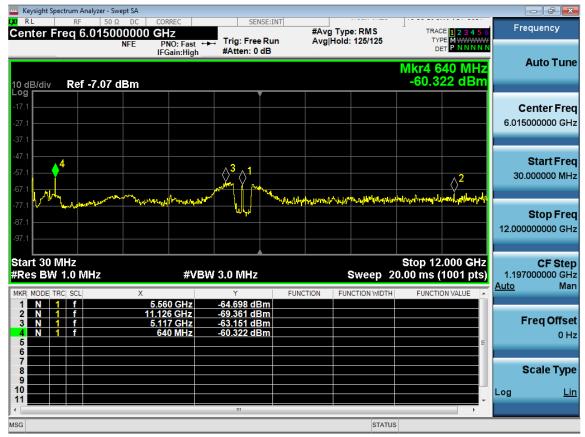
Antenna A

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Antenna A

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Antenna A

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A.5.4: 14 dBi

Conducted Spurious Average Upper Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -71.8 | 0.13 | -57.7 | -41 | 16.41 |

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps

| weysight Spectrum Analyzer - Swept SA | | | | | | | - 6 × |
|--|-------------------------------------|----------------------------------|----------|--|--------------------|--|--|
| ⊠ RL RF 50 Ω DC Center Freq 26.00000000 | | SENSE:IN | #Avg T | ype: RMS | TRAC | E 1 2 3 4 5 6 | Frequency |
| NFE | PNO: Fast ↔ IFGain:High | . Trig: Free Rur #Atten: 0 dB | n Avgino | old: 125/125 | kr4 34.5 -71.78 | | Auto Tune |
| -20.0 -30.0 -40.0 | | | | | | | Center Freq 26.00000000 GHz |
| -50.0 -60.0 1 | | | | | 4 | - L AMOTOR | Start Freq 12.000000000 GHz |
| -80.0 2 -90.0 (-100 | | Jun Anna | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | har a la har | all and a second se | Stop Freq 40.000000000 GHz |
| Start 12.00 GHz #Res BW 1.0 MHz | #VBW | 3.0 MHz* | FUNCTION | Sweep 4 | 6.87 ms (| 0.00 GHz 1001 pts) | CF Step 2.800000000 GHz <u>Auto</u> Man |
| 1 N 1 f 2 N 1 f 3 J 4 N 1 f 3 J 5 J | 5.500 GHz 1.000 GHz 4.512 GHz | dBm dBm -71.788 dBm | | | | E | Freq Offset 0 Hz |
| 6 7 8 9 10 | | | | | | | Scale Type Log <u>Lin</u> |
| MSG | | m | | STATUS | 3 | | |

Antenna A

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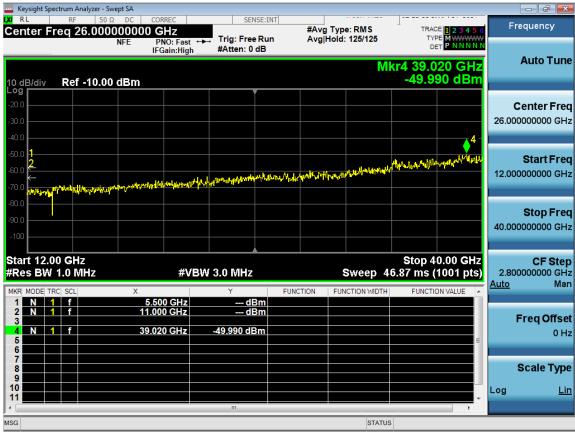
Conducted Spurious Emissions Peak Upper Table

| Frequency | 5500 | MHz | |
|-----------|------|-----|--|
| | | | |

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -50.0 | 0.13 | -35.9 | -21 | 14.61 |

Data Screenshots

5500 MHz: Non HT20, 6 to 54 Mbps



Antenna A

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Conducted Spurious Average Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -68.1 | 0.13 | -54.0 | -41 | 12.72 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -71.9 | 0.13 | -57.8 | -41 | 16.52 |

Frequency 5700 MHz

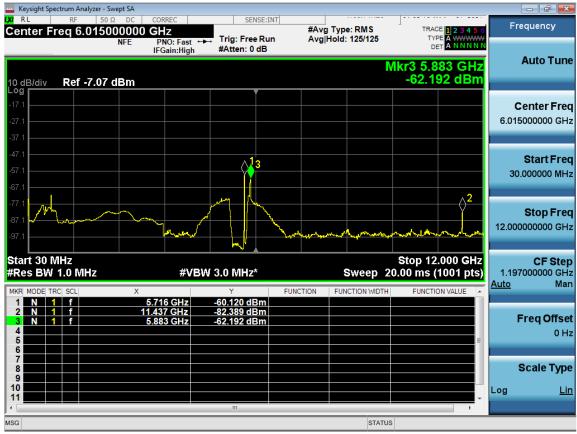
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -62.6 | 0.13 | -48.5 | -41 | 7.22 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -62.2 | 0.13 | -48.1 | -41 | 6.82 |

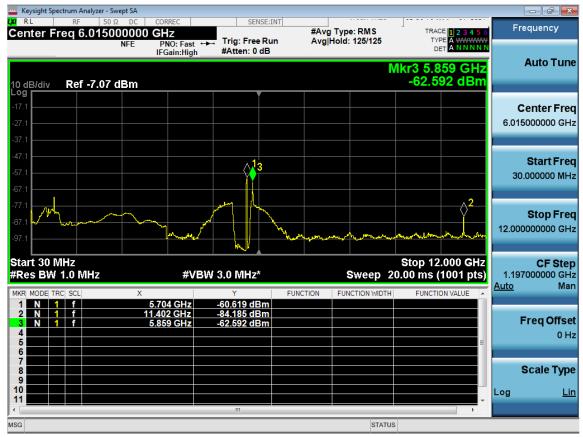
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5720 MHz: Non HT20, 6 to 54 Mbps



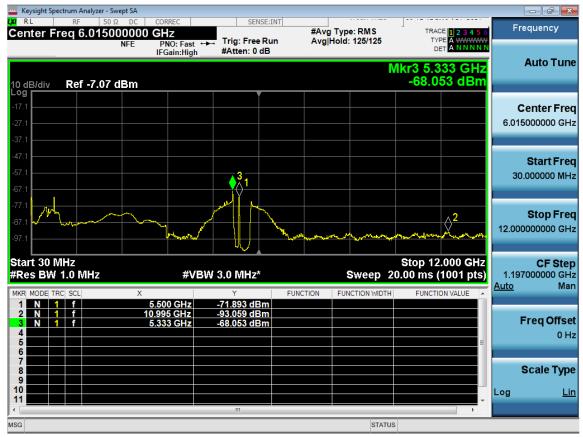
Antenna A

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Antenna A

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Antenna A

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Conducted Spurious Emissions Peak Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -62.7 | 0.13 | -48.6 | -27 | 21.57 |

Frequency 5560 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -64.0 | 0.13 | -49.9 | -27 | 22.87 |

Frequency 5700 MHz

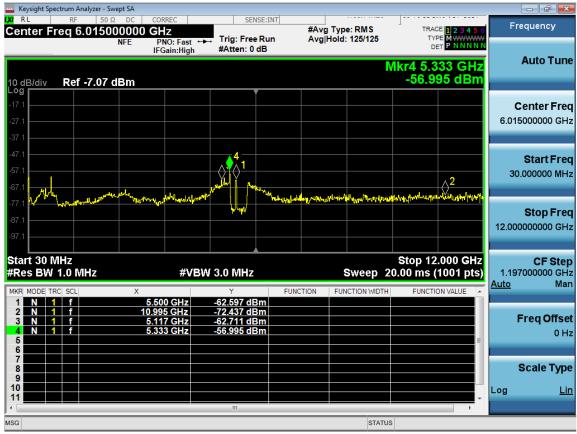
| | | 1 | | | | | |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 14 | -62.9 | 0.13 | -48.8 | -27 | 21.77 |

Frequency 5720 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Duty Cycle (dB) | Total Conducted Spur (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|--------------------------|--------------------|-------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -62.8 | 0.13 | -48.7 | -27 | 21.67 |

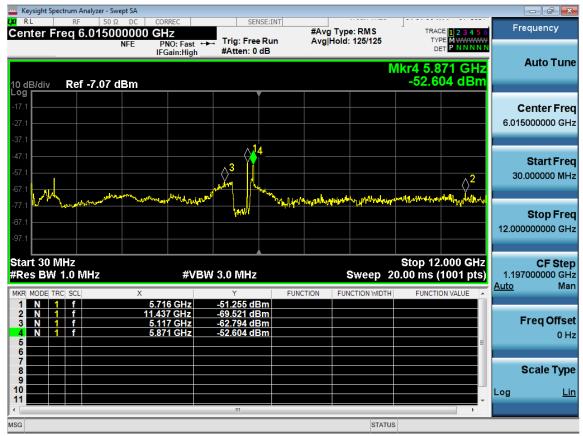
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5500 MHz: Non HT20, 6 to 54 Mbps



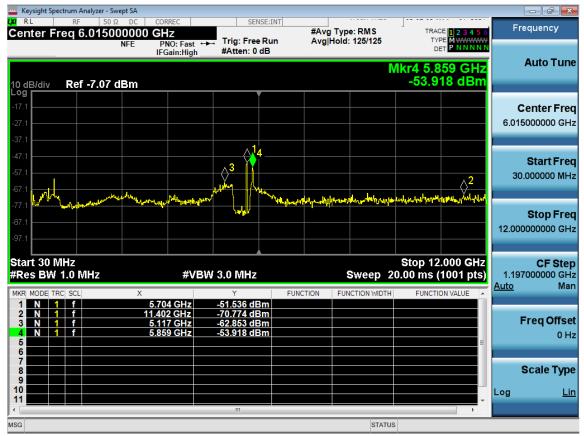
Antenna A

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A.6: Conducted Bandedge

15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits

15.205 | 15.209

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Use formula below to substitute conducted measurements in place of radiated measurements

 $E[dB\mu V/m] = EIRP[dBm] - 20 \log(d[meters]) + 104.77$, where E = field strength and d = 3 meter

1) Average Plot, Limit= -41.25 dBm eirp

2) Peak plot, Limit = -21.25 dBm eirp

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

2. Unwanted Emissions that fall Outside of the Restricted Bands

a) For all measurements, follow the requirements in II.G.3. *"General Requirements for Unwanted Emissions Measurements."*

b) At frequencies below 1000 MHz, use the procedure described in II.G.4. *"Procedure for Unwanted Emissions Measurements Below 1000 MHz."*

c) At frequencies above 1000 MHz, use the procedure for maximum emissions described in II.G.5., *"Procedure for Unwanted Emissions Measurements Above 1000 MHz."*

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.

Conducted Band Edge Test Procedure

Ref. ANSI C63.10: 2013

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Conducted Spurious Emissions

Test Procedure

1. Connect the antenna port(s) to the spectrum analyzer input.

2. Place the radio in continuous transmit mode

3. Configure Spectrum analyzer as per test parameters below (be sure to enter all losses between the transmitter output and the spectrum analyzer).

4. Use the peak marker function to determine the maximum spurs amplitude level.

5. The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measureand-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. The worst-case output is recorded. (See ANSI C63.10:2013 section 14.3.2.2)

6. Capture graphs and record pertinent measurement data.

Ref. ANSI C63.10: 2013 section 12.7.6 (Peak) and 12.7.7.2 (Average)

| KDB 789033 D02 General UNII T | | New Rules | Sec. 5 (Peak), | Sec. 6 (Average M | ethod |
|-------------------------------|--|-----------|----------------|-------------------|-------|
| AD) | | | | | |

| Conducted Spurious Emissions | |
|------------------------------|------------------|
| Test parameters | |
| Peak | Average |
| RBW = 1 MHz | RBW = 1 MHz |
| VBW ≥ 3 MHz | VBW ≥ 3 MHz |
| Sweep = Auto | Sweep = Auto |
| Detector = Peak | Detector = RMS |
| Trace = Max Hold. | Power Averaging |
| | |
| Tested By: | Date of testing: |
| | |

| Johanna Knudsen, Julian Land, Mathew Blackburn | 30-JUL-2021 to 31-JUL-2021; 03-AUG-2021 |
|--|---|
| Test Result: PASS | |

Test Equipment

See Appendix C for list of test equipment

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A.6.1: 7 dBi

Conducted Bandedge Average Table

Frequency 5500 MHz

| | | | | | | 1 | |
|------------------------|----------|----------------------------------|------------------------------|--------------------|----------------------------------|---------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Duty Cycle (dB) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 7 | -51.2 | 0.13 | -44.1 | -41 | 2.82 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Duty Cycle (dB) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|--------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -57.1 | 0.13 | -50.0 | -41 | 8.72 |

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5500 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | | | | |
|---|--|--|--|--------------------------|
| RL RF 50 Ω DC Center Freq 5.425000000 50 Ω DC DC <t< td=""><td>CORREC SENSE:I</td><td>#Avg Type: RMS</td><td>TRACE 1 2 3 4 5 6</td><td>Frequency</td></t<> | CORREC SENSE:I | #Avg Type: RMS | TRACE 1 2 3 4 5 6 | Frequency |
| PASS | PNO: Fast +++ Trig: Free Ru IFGain:Low #Atten: 28 dE | | DET A WWWWW | |
| | | Mkr | 2 5.469 13 GHz | Auto Tune |
| 10 dB/div Ref 22.00 dBm | | | -51.220 dBm | |
| 12.0 Trace 1 Pass | | | | Center Freq |
| 2.00 | | | | 5.425000000 GHz |
| -8.00 | | | | |
| -18.0 | | | | Start Freq |
| -28.0 | | | | 5.350000000 GHz |
| -38.0 | | | 2 | |
| -48.0 | | and the second sec | And the second sec | Stop Freq |
| -58.0 -68.0 - 144 (144) (144) (144) (144) (144) | net a litelati kana da daki ka bing di kana bina ang bing da ang | WWWWWWWWW | | 5.500000000 GHz |
| | | | -150.00 üDni | |
| Start 5.35000 GHz | #\/D\\/ 2 0 MU-* | C | Stop 5.50000 GHz | CF Step 15.000000 MHz |
| #Res BW 1.0 MHz | #VBW 3.0 MHz* | | .066 ms (4000 pts) | Auto Man |
| | 470 00 GHz -51.841 dBm | FUNCTION FUNCTION WIDTH | FUNCTION VALUE | |
| 2 N 1 f 5.4 | 169 13 GHz -51.220 dBm | | | Freq Offset |
| 4 5 | | | = | 0 Hz |
| 6 | | | | |
| 8 | | | | Scale Type |
| 10 | | | | Log <u>Lin</u> |
| | m | | • • | |
| MSG | | STATU | S | |

Antenna A

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| weysight Spectrum Analyzer - Swept SA | | | | - 6 - |
|--|--|----------------------|--|--------------------------------|
| X RL RF 50 Ω DC CORREC | SENSE:INT | #Avg Type: RMS | TRACE 1 2 3 4 5 6 | Frequency |
| | st ↔ Trig: Free Run w #Atten: 18 dB | Avg Hold: 125/125 | DET A NNNN | |
| | | M | (r2 5.854 8 GHz | Auto Tune |
| 10 dB/div Ref 17.50 dBm | | | -57.757 dBm | |
| Log 7.50 Trace 1 Pass | Ĭ | | | Contor From |
| -2.50 | | | | Center Freq 6.725000000 GHz |
| -12.5 | | | | 0.720000000 0112 |
| -22.5 | | | | |
| -32.5 | | | | Start Freq 5.70000000 GHz |
| -42.5 | | | | 5.70000000 GH2 |
| -52.5 | | | | |
| -62.5 | | | | Stop Freq |
| -72.5 | tell it se likeliket at som det bestellt at som det tellt at som | | alte state in the local data in the state of the second state of t | 7.750000000 GHz |
| and a spatial state of the spa | <mark>r i a poli a dela constitución de la constitución de la constitución de la constitución de la constitución de la Constitución de la constitución de l</mark> | | A HITLE HIT HIS SOUDLAN | |
| Start 5.700 GHz #Res BW 1.0 MHz # | VBW 3.0 MHz* | Sweep 3 | Stop 7.750 GHz 466 ms (4000 pts) | CF Step 205.000000 MHz |
| | | CTION FUNCTION WIDTH | FUNCTION VALUE | <u>Auto</u> Man |
| 1 N 1 f 5.725 0 GH | z -57.118 dBm | | | |
| 2 N 1 f 5.854 8 GH | z -57.757 dBm | | | Freq Offset |
| 4 | | | = | 0 Hz |
| 6 | | | | |
| 8 | | | | Scale Type |
| 9 10 | | | | Log Lin |
| | | | | |
| MSG | | STATU | 5 | |

Antenna A

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Conducted Bandedge Peak Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -34.7 | -27.6 | -27 | 0.57 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 7 | -44.8 | -37.7 | -27 | 10.67 |

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5500 MHz: Non HT20, 6 to 54 Mbps

| 🔤 Keysight Spectrum Analyzer - Swept | t SA | | | | | |
|--|---|---|------------------------------------|-------------------------|--------------------|---------------------------|
| M RL RF 50 Ω Center Freq 5.425000 | DC CORREC | SENSE:IN | #Avg Ty | /pe: Log-Pwr | TRACE 1 2 3 4 5 6 | Frequency |
| PASS | PNO: Fast • IFGain:Low | Trig: Free Run #Atten: 28 dB | n Avg Hol | d: 100/100 | DET PNNNN | |
| | | | | Mkr | 2 5.468 91 GHz | Auto Tune |
| 10 dB/div Ref 22.00 df | Bm | | | | -34.744 dBm | |
| Log 12.0 Trace 1 Pass | | | | | petiting the | Center Freq |
| 2.00 | | | | | | 5.425000000 GHz |
| -8.00 | | | | | | |
| -18.0 | | | | | | Start Freq |
| -28.0 | | | | • | 2 | 5.35000000 GHz |
| -38.0 | | | | I | | |
| -48.0 March Adaptor Contraction and Adaptor | arta dia ana <mark>ny fahabasa a</mark> | er dage versteren die tereten der heter | ne-tashihi yani filansi kulapatahi | No. of Concession, Name | | Stop Freq |
| -58.0 | | | | | | 5.500000000 GHz |
| -68.0 | | | | | -150.00 dBm | |
| Start 5.35000 GHz | 1 | | | | Stop 5.50000 GHz | CF Step |
| #Res BW 1.0 MHz | #VB | W 3.0 MHz | | Sweep 1. | .066 ms (4000 pts) | 15.000000 MHz Auto Man |
| MKR MODE TRC SCL | × 5.470 00 GHz | , -39.301 dBm | FUNCTION F | UNCTION WIDTH | FUNCTION VALUE | |
| 2 N 1 f | 5.468 91 GHz | -34.744 dBm | | | | Freq Offset |
| 4 | | | | | | 0 Hz |
| 5 6 | | | | | E | |
| 8 | | | | | | Scale Type |
| 9 | | | | | | Log Lin |
| | | | | | | |
| MSG | | | | STATUS | | |
| | | | | | | |

Antenna A

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| | | | | | | - 6 💌 |
|---|-------------------------------------|---------------------------------|----------|-------------------------------|------------------------------------|---|
| RL RF 50 Ω DC Center Freq 6.7250000 6.7250000 C <thc< th=""> <thc< th=""> <thc< th=""></thc<></thc<></thc<> | | SENSE:IN | #Avg | Type: Log-Pwr old: 100/100 | TRACE 1 2 3 4 5 TYPE M | Frequency |
| PASS | IFGain:Low | #Atten: 18 dB | | | DET PNNNN | |
| 10 dB/div Ref 17.50 dBn | n | | | Mk | r2 5.728 7 GH: -44.795 dBn | 2 |
| Log Trace 1 Pass 7.50 -2.50 -12.5 | | | | | | Center Freq 6.725000000 GHz |
| -22.5 | | | | | | Start Freq 5.700000000 GHz |
| -52.5 | , teo cal ative to take to be a set | | | | -150.00 dB | Stop Freq 7.750000000 GHz |
| Start 5.700 GHz #Res BW 1.0 MHz | | W 3.0 MHz | | | Stop 7.750 GH: 466 ms (4000 pts | CF Step 205.000000 MHz <u>Auto</u> Man |
| MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 4 6 6 | × 5.725 0 GHz 5.728 7 GHz | Y -48.240 dBm -44.795 dBm | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | Freq Offset 0 Hz |
| 7 8 9 9 9 10 11 11 11 11 11 11 11 11 11 11 11 11 | | | | | | Scale Type |
| MSG | | | | STATUS | 4 | |

Antenna A

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A.6.2: 8 dBi

Conducted Bandedge Average Table

Frequency 5500 MHz

| | | 1 | | 1 | | | |
|------------------------|----------|----------------------------------|------------------------------|--------------------|----------------------------------|---------------|----------------|
| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Duty Cycle (dB) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
| Non HT20, 6 to 54 Mbps | 1 | 8 | -51.5 | 0.13 | -43.4 | -41 | 2.12 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Duty Cycle (dB) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|--------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -57.1 | 0.13 | -49.0 | -41 | 7.72 |

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5500 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | | | | |
|---------------------------------------|--|-------------------------|-------------------------------|------------------------------|
| Center Freq 5.425000000 | CORREC SENSE:IN CHZ PNO: East | #Avg Type: RMS | TRACE 1 2 3 4 5 6 | Frequency |
| PASS | PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 28 dB | - | DETANNNN | Auto Tune |
| | | Mkr | 2 5.468 16 GHz -51.467 dBm | Auto Tune |
| 10 dB/div Ref 21.00 dBm | | | -01.407 0.511 | |
| 11.0 | | | | Center Freq |
| -9.00 | | | | 5.425000000 GHz |
| -9.00 | | | | |
| -29.0 | | | / | Start Freq 5.35000000 GHz |
| -39.0 | | | 2 | 3.330000000 3112 |
| -49.0 | | | 2 1 | Stop Freq |
| | (hope of the provident of | | | 5.50000000 GHz |
| | dd militar i dd far 'n taan 'n trefferant op te | | -150.00 dBm | |
| Start 5.35000 GHz | | | Stop 5.50000 GHz | CF Step |
| #Res BW 1.0 MHz | #VBW 3.0 MHz* | - | .066 ms (4000 pts) | 15.000000 MHz Auto Man |
| MKR MODE TRC SCL X | Y 0 00 GHz -53.270 dBm | FUNCTION FUNCTION WIDTH | FUNCTION VALUE | |
| | 8 16 GHz -51.467 dBm | | | Freq Offset |
| 4 | | | = | 0 Hz |
| 6 | | | | |
| 8 | | | | Scale Type |
| 10 11 | | | | Log <u>Lin</u> |
| | III | | • • | |
| MSG | | STATUS | | |

Antenna A

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| 🚾 Keysight Spectrum Analyzer - Swept SA | | | | | | - 6 |
|--|---|---------------------------------|-----------------|--------------------|--|--------------------------------|
| KE RF 50 Ω DC Center Freq 6.72500000 | | SENSE:IN | #Avg | Type: RMS | TRACE 1 2 3 4 5 6 | Frequency |
| PASS | PNO: Fast ++ | Trig: Free Rur #Atten: 18 dB | n Avg∣H | lold: 125/125 | DET A NNNN | |
| | I Guilleow | | | Mk | r2 5.854 8 GHz | Auto Tune |
| 10 dB/div Ref 17.50 dBm | 1 | | | | -57.757 dBm | |
| Log 7,50 Trace 1 Pass | | Ĭ | | | | Contor From |
| -2.50 | | | | | | Center Freq 6.725000000 GHz |
| -12.5 | | | | | | 0.720000000 6112 |
| -22.5 | | | | | | |
| -32.5 | | | | | | Start Freq |
| -42.5 | | | | | | 5.70000000 GHz |
| -52.5 | | | | | | |
| -62.5 | | | | | | Stop Freq |
| TO T | and the state of the | ere all he like al her floren | in te accelette | alland Basteriller | . In the state of the state of the state of the | 7.75000000 GHz |
| | | | | | a la presidente de la companya de l Na companya de la comp | |
| Start 5.700 GHz #Res BW 1.0 MHz | -#1 (D14) | () O MILI-* | | O | Stop 7.750 GHz | CF Step 205.000000 MHz |
| | | / 3.0 MHz* | | | 466 ms (4000 pts) | Auto Man |
| MKR MODE TRC SCL | 5.725 0 GHz | Y -57.118 dBm | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | |
| 2 N 1 f | 5.854 8 GHz | -57.757 dBm | | | | Freq Offset |
| 4 | | | | | | 0 Hz |
| 5 | | | | | E | |
| 7 | | | | | | Scale Type |
| 9 | | | | | | Could Type |
| 10 | | | | | - | Log <u>Lin</u> |
| | | m | | | • | |
| MSG | | | | STATUS | | |

Antenna A

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Conducted Bandedge Peak Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -35.3 | -27.2 | -27 | 0.17 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 8 | -44.8 | -36.7 | -27 | 9.67 |

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5500 MHz: Non HT20, 6 to 54 Mbps

| 🔤 Keysight Spectrum Analyzer - Swept SA | | | | |
|--|---|------------------|--|---------------------------|
| RL RF 50 Ω DC Center Freq 5.425000000 | | | RACE 1 2 3 4 5 6 | Frequency |
| PASS | PNO: Fast +++ Trig: Fre IFGain:Low #Atten: 2 | : 100/100 | | |
| | in Guilleon | Mkr2 5.46 | 9 17 GHz | Auto Tune |
| 10 dB/div Ref 21.00 dBm | | -35 | .275 dBm | |
| Log 11.0 Trace 1 Pass | | | | Center Freq |
| 1.00 | | | | 5.425000000 GHz |
| -9.00 | | | | |
| -19.0 | | | | Start Freq |
| -29.0 | | 2 | , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 5.35000000 GHz |
| -39.0 | | A LANDARD HILL | | |
| -49.0 Million Despires and International Activity | al na shight an | | | Stop Freq |
| -59.0 | | | | 5.50000000 GHz |
| -69.0 | | | -150.00 dBm | |
| Start 5.35000 GHz | | Stop 5 | .50000 GHz | CF Step |
| #Res BW 1.0 MHz | #VBW 3.0 MHz | Sweep 1.066 m | | 15.000000 MHz Auto Man |
| MKR MODE TRC SCL X | 70 00 GHz -38.521 d | NCTION WIDTH FUN | CTION VALUE | |
| | 69 17 GHz -35.275 d | | | Freq Offset |
| 4 | | | | 0 Hz |
| 6 | | | = | |
| 7 8 8 | | | | Scale Type |
| 9 | | | | Log Lin |
| 11 | | | | |
| MSG | | STATUS | | |

Antenna A

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| Keysight Spectrum Analyzer - Swept SA | CORREC | CENCE | -7817 | | | | |
|---------------------------------------|----------------------------|----------------------------|----------|--|----------------------|---|------------------------------------|
| Center Freq 6.725000000 | GHz | SENSE | #Av | g Type: Log-Pwr Hold: 100/100 | | 1 2 3 4 5 6 E M WWWW | Frequency |
| PASS | PNO: Fast ++ IFGain:Low | #Atten: 18 d | | | | PNNNN | Auto Tuno |
| 10 dB/div Ref 17.50 dBm | | | | Mk | r2 5.728 -44.79 | 7 GHz 95 dBm | Auto Tune |
| Log 7.50 Trace 1 Pass | | <u> </u> | | | | | Center Freq |
| -2.50 | | | | | | | 6.725000000 GHz |
| -12.5 | | | | | | | |
| -22.5 | | | | | | | Start Freq |
| -42.5 | | | | | | | 5.70000000 GHz |
| | aluniosi di kishiri dada a | | | n (^j elja nestrija jeljeljeljeljeljeljelje | | un polantino de analasia | |
| -62.5 | | | | | | | Stop Freq 7.75000000 GHz |
| -72.5 | | | | | | -150.00 dBm | |
| Start 5.700 GHz #Res BW 1.0 MHz | #VBM | / 3.0 MHz | | Sweep 3 | Stop 7. 466 ms (4 | 750 GHz | CF Step 205.000000 MHz |
| MKR MODE TRC SCL X | | Y | FUNCTION | FUNCTION WIDTH | FUNCTIO | | <u>Auto</u> Man |
| | 725 0 GHz 728 7 GHz | -48.240 dBm -44.795 dBm | | | | | |
| 3 4 | | | | | | | Freq Offset 0 Hz |
| 5 | | | | | | E | |
| 7 8 | | | | | | | Scale Type |
| 9 10 | | | | | | | Log Lin |
| 11 < | | III | | | | | |
| MSG | | | | STATUS | 3 | | |

Antenna A

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A.6.3: 13 dBi

Conducted Bandedge Average Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Duty Cycle (dB) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|--------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -56.0 | 0.13 | -42.9 | -41 | 1.62 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Duty Cycle (dB) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|--------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -57.1 | 0.13 | -44.0 | -41 | 2.72 |

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5500 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | | | | - F × |
|---|--|---|--|-----------------------------|
| RL RF 50 Ω DC Center Freq 5.425000000 | CORREC SENSE:INT | #Avg Type: RMS | TRACE 1 2 3 4 5 6 | Frequency |
| PASS | PNO: Fast +++ Trig: Free Run IFGain:Low #Atten: 26 dB | Avg Hold: 125/125 | | |
| | | Mkr2 | 5.468 83 GHz | Auto Tune |
| 10 dB/div Ref 19.00 dBm | | | -55.982 dBm | |
| 9.00 Trace 1 Pass | | | | Center Freq |
| -1.00 | | | | 5.425000000 GHz |
| -11.0 | | | | |
| -21.0 | | | | Start Freq |
| -41.0 | | | J. Contraction of the second s | 5.35000000 GHz |
| -51.0 | | 2 | - All and a second s | |
| -61.0 | | to shaladad bila addada ing ang ang ang ang ang ang ang ang ang a | | Stop Freq 5.50000000 GHz |
| | <mark>H^andra Marina (</mark> Marina), ina ka | | | 3.50000000 GH2 |
| Start 5.35000 GHz | | St | op 5.50000 GHz | CF Step |
| #Res BW 1.0 MHz | #VBW 3.0 MHz* | Sweep 1.06 | 6 ms (4000 pts) | 15.000000 MHz uto Man |
| MKR MODE TRC SCL X | Y 70 00 GHz -58.302 dBm | FUNCTION FUNCTION WIDTH | FUNCTION VALUE | <u>uto</u> iviari |
| | 68 83 GHz -55.982 dBm | | | Freq Offset |
| 4 | | | | 0 Hz |
| 6 | | | | |
| 7 | | | | Scale Type |
| 9 | | | | og <u>Lin</u> |
| 11 · [| | | | |
| MSG | | STATUS | | |

Antenna A

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| Keysight Spectrum Analyzer - Swe | | or Nor J | | | | |
|------------------------------------|-----------------------------|---------------|-----------|---------------------------|--|---------------------------|
| Center Freq 6.72500 | 0000 GHz | SENSE:I | #Avg 1 | Гуре: RMS old: 125/125 | | Frequency |
| PASS | NFE PNO: Fast IFGain:Low | #Atten: 18 dB | | | | Auto Tune |
| 10 dB/div Ref 17.50 d | IBm | | | Mk | r2 5.854 8 GHz -57.757 dBm | Auto Tune |
| 7.50 Trace 1 Pass | | | | | | Center Freq |
| -2.50 | | | | | | 6.725000000 GHz |
| -12.5 | | | | | | |
| -22.5 | | | | | | Start Freq |
| -42.5 | | | | | | 5.70000000 GHz |
| -52.5 | | | | | | Stop Freq |
| -62.5 | de tra . | | | | | 7.75000000 GHz |
| -72.5 | | | | | la di bianka pili dia anta milan Ny fisia | |
| Start 5.700 GHz #Res BW 1.0 MHz | | 3W 3.0 MHz* | | | Stop 7.750 GHz 466 ms (4000 pts) | CF Step 205.000000 MHz |
| | X | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | Auto Man |
| 1 N 1 f | 5.725 0 GHz | -57.118 dBm | - Cherlon | | | |
| 3 | 5.854 8 GHz | -57.757 dBm | | | | Freq Offset |
| 4 5 | | | | | E | 0 Hz |
| 6 7 8 | | | | | | Scale Type |
| 9 | | | | | | |
| 11 | | | | | - | Log <u>Lin</u> |
| MSG | | | | STATUS | • | |
| | | | | | | |

Antenna A

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Conducted Bandedge Peak Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -42.5 | -29.4 | -27 | 2.37 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 13 | -44.8 | -31.7 | -27 | 4.67 |

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5500 MHz: Non HT20, 6 to 54 Mbps

| 🔤 Keysight Spectrum Analyzer - Swept SA | | | | | | |
|---|---|--|--------------------------|--|-------------------|---------------------------|
| Center Freq 5.4250000 | CORREC | SENSE:IN | #Avg Ty | pe: Log-Pwr | TRACE 1 2 3 4 5 6 | Frequency |
| PASS | PNO: Fast ↔ IFGain:Low | Trig: Free Rur #Atten: 26 dB | n Avg Hol | d: 100/100 | | |
| | in Galilleon | | | Mkr | 2 5.468 87 GHz | Auto Tune |
| 10 dB/div Ref 19.00 dBm | | | | | -42.517 dBm | |
| Log 9.00 Trace 1 Pass | | | | | Alder Ait | Center Freq |
| -1.00 | | | | | | 5.425000000 GHz |
| -11.0 | | | | | | |
| -21.0 | | | | | | Start Freq |
| -31.0 | | | | | 2 | 5.35000000 GHz |
| -41.0 | | | | t male a select | | |
| -51.0 million daw starting in structure and an an | un de la service de la factoria de l | relation and the second se | underskildeterkiltetyker | AN AN AND AN | | Stop Freq |
| -61.0 | | | | | | 5.50000000 GHz |
| -71.0 | | | | | -150.00 dBm | |
| Start 5.35000 GHz | | | | | Stop 5.50000 GHz | CF Step |
| #Res BW 1.0 MHz | #VB\ | N 3.0 MHz | | Sweep 1. | 066 ms (4000 pts) | 15.000000 MHz Auto Man |
| | < .470 00 GHz | Y -44.690 dBm | FUNCTION FI | JNCTION WIDTH | FUNCTION VALUE | |
| | 5.468 87 GHz | -42.517 dBm | | | | Freq Offset |
| 4 | | | | | | 0 Hz |
| 5 6 | | | | | E | |
| 7 8 | | | | | | Scale Type |
| 9 | | | | | | Log Lin |
| | | | | | | |
| MSG | | | | STATUS | | |
| | | | | | | |

Antenna A

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| Keysight Spectrum Analyzer - Swept SA | CORREC | CENCE | -7817 | | | | |
|---------------------------------------|--|----------------------------|----------|--|----------------------|---|------------------------------------|
| Center Freq 6.725000000 | GHz | SENSE | #Av | g Type: Log-Pwr Hold: 100/100 | | 1 2 3 4 5 6 E M WWWW | Frequency |
| PASS | PNO: Fast ++ IFGain:Low | #Atten: 18 d | | | | PNNNN | Auto Tuno |
| 10 dB/div Ref 17.50 dBm | | | | Mk | r2 5.728 -44.79 | 7 GHz 95 dBm | Auto Tune |
| Log 7.50 Trace 1 Pass | | <u> </u> | | | | | Center Freq |
| -2.50 | | | | | | | 6.725000000 GHz |
| -12.5 | | | | | | | |
| -22.5 | | | | | | | Start Freq |
| -42.5 | | | | | | | 5.70000000 GHz |
| | al where the state of the state | | | n (^j elja nestrija jeljeljeljeljeljeljelje | | un polantin di analata | |
| -62.5 | | | | | | | Stop Freq 7.75000000 GHz |
| -72.5 | | | | | | -150.00 dBm | |
| Start 5.700 GHz #Res BW 1.0 MHz | #VBM | / 3.0 MHz | | Sweep 3 | Stop 7. 466 ms (4 | 750 GHz | CF Step 205.000000 MHz |
| MKR MODE TRC SCL X | | Y | FUNCTION | FUNCTION WIDTH | FUNCTIO | | <u>Auto</u> Man |
| | 725 0 GHz 728 7 GHz | -48.240 dBm -44.795 dBm | | | | | |
| 3 4 | | | | | | | Freq Offset 0 Hz |
| 5 | | | | | | E | |
| 7 8 | | | | | | | Scale Type |
| 9 10 | | | | | | | Log Lin |
| 11 < | | III | | | | | |
| MSG | | | | STATUS | 3 | | |

Antenna A

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A.6.4: 14 dBi

Conducted Bandedge Average Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Duty Cycle (dB) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|--------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -59.1 | 0.13 | -45.0 | -41 | 3.72 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Duty Cycle (dB) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|--------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -59.1 | 0.13 | -45.0 | -41 | 3.72 |

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5500 MHz: Non HT20, 6 to 54 Mbps

| Keysight Spectrum Analyzer - Swept SA | | | | _ ¢ <mark>×</mark> |
|---|---|---|-------------------------|------------------------------------|
| ເ₩ RL RF 50 Ω DC Center Freq 5.425000000 | CORREC SENSE | #Avg Type: R | | 6 Frequency |
| PASS | PNO: Fast +++ Trig: Free F IFGain:Low #Atten: 24 c | | | |
| | | | Mkr2 5.467 22 GH | Auto Tune |
| 10 dB/div Ref 16.00 dBm | | | -59.056 dBn | |
| 6.00 Trace 1 Pass | | | | Center Freq |
| -4.00 | | | | 5.425000000 GHz |
| -14.0 | | | | |
| -24.0 | | | | Start Freq |
| -44.0 | | | | 5.350000000 GHz |
| -54.0 | | | 2 ² 1 | |
| -64.0 | anti bian di Jacober, ati pindiki ti militi bin di bili kati | daana) ahadhii ka dhada ah badhada hii ^h i | | Stop Freq 5.50000000 GHz |
| | <u>in te li che e contra l'il entre l'antre e contra e contra</u> | | -150.00 dB | |
| Start 5.35000 GHz | | | Stop 5.50000 GH | Z CF Step |
| #Res BW 1.0 MHz | #VBW 3.0 MHz* | Sw | eep 1.066 ms (4000 pts | 15.000000 MHz Auto Man |
| MKR MODE TRC SCL X | 470 00 GHz -61.556 dBn | | ON WIDTH FUNCTION VALUE | |
| | 467 22 GHz -59.056 dBn | | | Freq Offset |
| 4 | | | | 0 Hz |
| 6 | | | | |
| 8 | | | | Scale Type |
| 10 11 | | | | Log <u>Lin</u> |
| | | | • | |
| MSG | | | STATUS | |

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| Keysight Spectrum Analyzer - Swe | | | . mail | | | |
|--|---|---------------------------------|----------|--------------------------------------|---|------------------------------------|
| ເ <mark>೫</mark> RL RF 50 Ω Center Freq 6.72500 | | SENSE:IN | #Avg 1 | ype: RMS | TRACE 1 2 3 4 5 6 | Frequency |
| PASS | NFE PNO: Fast IFGain:Low | Trig: Free Rur #Atten: 16 dB | n Avgino | old: 125/125 | | |
| 10 dB/div Ref 15.50 d | Bm | | | Mk | r2 5.863 0 GHz -60.009 dBm | Auto Tune |
| Log 5.50 -4.50 -14.5 | | | | | | Center Freq 6.725000000 GHz |
| -24.5 | | | | | | Start Freq 5.700000000 GHz |
| -54.5 | 1997 A. | nd ha i rátha a tháith ha fa | | an ili a talaha talaha talaha talaha | n ta la seconda da la seconda da s Na seconda da condecembra da seconda da second | Stop Freq 7.75000000 GHz |
| Start 5.700 GHz #Res BW 1.0 MHz | #VE | SW 3.0 MHz* | | Sweep 3. | Stop 7.750 GHz 466 ms (4000 pts) | CF Step 205.000000 MHz |
| MKR MODE TRC SCL | × 5.725 0 GHz | Y -59.139 dBm | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | <u>Auto</u> Man |
| 2 N 1 f 3 4 5 6 | 5.863 0 GHz | -60.009 dBm | | | | Freq Offset 0 Hz |
| 7 8 9 9 10 11 | | | | | | Scale Type |
| | | III | | | Þ | |
| MSG | | | | STATUS | | |

Antenna A

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Conducted Bandedge Peak Table

Frequency 5500 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -45.2 | -31.1 | -27 | 4.07 |

Frequency 5700 MHz

| Mode | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dB) | Margin (dB) |
|------------------------|----------|----------------------------------|------------------------------|----------------------------------|---------------|----------------|
| Non HT20, 6 to 54 Mbps | 1 | 14 | -47.2 | -33.1 | -27 | 6.07 |

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5500 MHz: Non HT20, 6 to 54 Mbps

| RL RF 50 Ω DC Center Freq 5.425000000 | | SENSE:INT | #Avg Type: Log-Pw | | Frequency |
|---|----------------|--|---------------------------------------|---------------------|---------------------------|
| PASS | PNO: Fast | rig: Free Run Atten: 24 dB | Avg Hold: 100/100 | | |
| , | in Gamileon | | Mk | r2 5.467 44 GHz | Auto Tune |
| 10 dB/div Ref 16.00 dBm | | | | -45.199 dBm | |
| Log 6.00 Trace 1 Pass | | | | ,0110 MA | Center Freq |
| -4.00 | | | | | 5.425000000 GHz |
| -14.0 | | | | / | |
| -24.0 | | | | | Start Freq |
| -34.0 | | | | 2 | 5.35000000 GHz |
| -44.0 | | | and a kalitati a gamati sakati pakati | | |
| -54.0 | | an a | | | Stop Freq |
| -64.0 | | | | | 5.50000000 GHz |
| -74.0 | | | | -150.00 dBm | |
| Start 5.35000 GHz | | A | | Stop 5.50000 GHz | CF Step |
| #Res BW 1.0 MHz | #VBW 3.0 | 0 MHz | Sweep | 1.066 ms (4000 pts) | 15.000000 MHz Auto Man |
| MKR MODE TRC SCL X | 170 00 GHz -49 | Y FUI 9.226 dBm | CTION FUNCTION WIDT | H FUNCTION VALUE | Auto Man |
| 2 N 1 f 5.4 | | 5.199 dBm | | | Freq Offset |
| 3 | | | | | 0 Hz |
| 5 | | | | E | |
| 7 | | | | | Scale Type |
| 9 | | | | | |
| 11 | | | | - | Log <u>Lin</u> |
| MSG | | III | STAT | 19 | |
| Maa | | | STAT | | |

Antenna A

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| Keysight Spectrum Analyzer - Swept SA | CORREC | CENCE | THE | | | |
|--|--|-----------------------------|----------|--|---|---------------------------------------|
| Image: RL RF 50 Ω DC Center Freq 6.725000000 |) GHz | SENSE: | #Avg | Type: Log-Pwr Hold: 100/100 | TRACE 1 2 3 4 5 | 6 Frequency |
| PASS | PNO: Fast ← IFGain:Low | #Atten: 16 dl | | | DET | N |
| 10 dB/div Ref 15.50 dBm | | | | Mk | r2 5.727 7 GH: -47.803 dBn | Auto Tune |
| Log 5.50 Trace 1 Pass | | Ĭ | | | | Center Freq |
| -4.50 | | | | | | 6.725000000 GHz |
| -14.5 | | | | | | |
| -24.5 | | | | | | Start Freq |
| -44.5 | | | | | | 5.700000000 GHz |
| -54.5 | an a | teber di papa di patri di m | | . Na parte de la company d | ويستجمع والمتعاد والمراجع والمراجع والمحاوي | Stop Freq |
| -64.5 | | | | | | 7.750000000 GHz |
| -74.5 | | | | | -150.00 dBr | |
| Start 5.700 GHz #Res BW 1.0 MHz | #VB | W 3.0 MHz | | Sweep 3. | Stop 7.750 GH: 466 ms (4000 pts | CF Step 205.000000 MHz Auto Man |
| MKR MODE TRC SCL X | .725 0 GHz | ۲ -47.239 dBm | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | Auto Man |
| | .727 7 GHz | -47.803 dBm | | | | Freq Offset |
| 4 | | | | | | 0 Hz |
| 6 7 | | | | | | |
| 8 | | | | | | Scale Type |
| 10 | | | | | | Log <u>Lin</u> |
| € | | III | | STATUS | • | |
| mod | | | | 314103 | | |

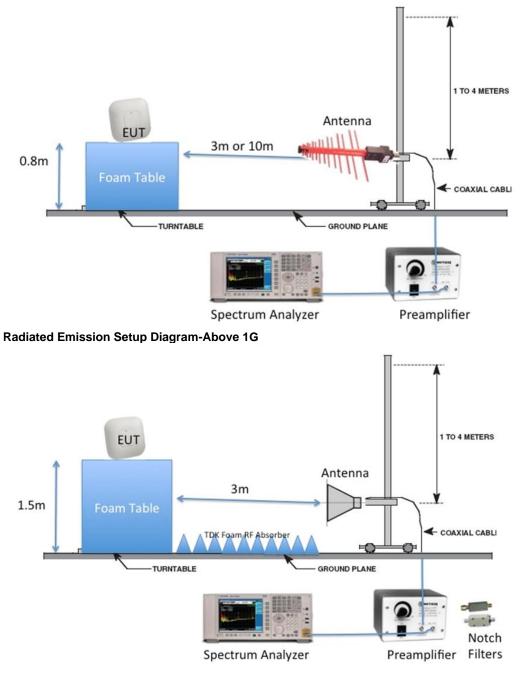
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Appendix B: Emission Test Results

Testing Laboratory: Cisco Systems, Inc., 125 West Tasman Drive, San Jose, CA 95134, USA

Radiated Emission Setup Diagram-Below 1G



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B.1: Radiated Spurious Emissions

FCC 15.205 | 15.407

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Not covered by the scope of this test report.

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B.2: Radiated Emissions 30MHz to 1GHz

FCC 15.209 | 15.205 | 15.407

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Ref. ANSI C63.10: 2013 section 6.5

Not covered by the scope of this test report.

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B.3: AC Conducted Emissions

FCC 15.207

Except when the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply, either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table in these sections. The more stringent limit applies at the frequency range boundaries.

Measurement Procedure:

Accordance with ANSI C63.10:2013 section 6.2

Not covered by the scope of this test report.

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| Equipment # | Manufacturer/ Model Description | | Last Cal | Next Due | | | |
|----------------|--|--|----------------------|----------------------|--|--|--|
| | Test Equipment used for conducted tests – Rack 9 | | | | | | |
| 58719 | Cisco/Automation Test Insertion Loss | Rack 9 | Verify Before Use | Verify Before Use | | | |
| 53614 | Keysight (Agilent/HP)/ N9030B-550 OPT LNP EP0 | PXA Signal Analyzer, 2Hz- 50GHz with Options LNP and EP0 | 1-Jul-21 | 1-Jul-22 | | | |
| 58231 | NATIONAL INSTRUMENTS / PXIe- 1062Q | CHASSIS | Cal Not Required | Cal Not Required | | | |
| 58232 | NATIONAL INSTRUMENTS / PXIe- 8840 | Up to 2.6 GHz Quad-Core PXI Express Controller | Cal Not Required | Cal Not Required | | | |
| 58234 | NATIONAL INSTRUMENTS / PXI-2796 | 40 GHz Dual 6x1 Multiplexer (SP6T) | Verify Before Use | Verify Before Use | | | |
| 58236 | NATIONAL INSTRUMENTS / PXI-2796 | 40 GHz Dual 6x1 Multiplexer (SP6T) | Verify Before Use | Verify Before Use | | | |
| 58237 | NATIONAL INSTRUMENTS / PXI-2799 | Switch 1x1 | Verify Before Use | Verify Before Use | | | |
| 54235 | PASTERNACK/ PE5019-1 | Torque Wrench | 9-Mar-21 | 9-Mar-22 | | | |
| 58256 | COMET/ T7611-4 | WEB SENSOR FOR REMOTE THERMOMETER HYGROMETER | 3-Feb-21 | 3-Feb-22 | | | |

Appendix C: List of Test Equipment Used to perform the test

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Appendix D: Abbreviation Key and Definitions

| Abbreviation | Description | Abbreviation | Description | | | | |
|--------------|---|------------------------|------------------------------------|--|--|--|--|
| EMC | Electro Magnetic Compatibility | °F Degrees Fahrenheit | | | | | |
| EMI | Electro Magnetic Interference | °C | Degrees Celsius | | | | |
| EUT | Equipment Under Test | Temp | Temperature | | | | |
| ITE | Information Technology Equipment | S/N | Serial Number | | | | |
| TAP | Test Assessment Schedule | Qty | Quantity | | | | |
| ESD | Electro Static Discharge | emf | Electromotive force | | | | |
| EFT | Electric Fast Transient | RMS | Root mean square | | | | |
| EDCS | Engineering Document Control System | Qp | Quasi Peak | | | | |
| Config | Configuration | Av | Average | | | | |
| CIS# | Cisco Number (unique identification number for Cisco test equipment) | Pk | Peak | | | | |
| Cal | Calibration | kHz | Kilohertz (1x10 ³) | | | | |
| EN | European Norm | MHz | MegaHertz (1x10 ⁶) | | | | |
| IEC | International Electro technical Commission | GHz | Gigahertz (1x10 ⁹) | | | | |
| CISPR | International Special Committee on Radio Interference | Н | Horizontal | | | | |
| CDN | Coupling/Decoupling Network | V | Vertical | | | | |
| LISN | Line Impedance Stabilization Network | dB | decibel | | | | |
| PE | Protective Earth | V | Volt | | | | |
| GND | Ground | kV | Kilovolt (1x10 ³) | | | | |
| L1 | Line 1 | μV | Microvolt (1x10 ⁻⁶) | | | | |
| L2 | Line2 | А | Amp | | | | |
| L3 | Line 3 | μA | Micro Amp (1x10 ⁻⁶) | | | | |
| DC | Direct Current | mS | Milli Second (1x10 ⁻³) | | | | |
| RAW | Uncorrected measurement value, as indicated by the measuring device | μS | Micro Second (1x10 ⁻⁶) | | | | |
| RF | Radio Frequency | μS | Micro Second (1x10 ⁻⁶) | | | | |
| SLCE | Signal Line Conducted Emissions | m | Meter | | | | |
| Meas dist | Measurement distance | Spec dist | Specification distance | | | | |
| N/A or NA | Not Applicable | SL | Signal Line (or Telecom Line) | | | | |
| Р | Power Line | L | Live Line | | | | |
| N | Neutral Line | R | Return | | | | |
| S | Supply | AC Alternating Current | | | | | |

The following table defines abbreviations used within this test report.

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Appendix E: Photographs of Test Setups

EUT Photos have been omitted from this test report. Photos can be found in the supplementary exhibit included in the submission and EDCS# 22609793.

Appendix F: Software Used to Perform Testing

Cisco Internal LabView Radio Test Automation Software:

RF Automation Main versions: 230 RF Domain Report Generation - version 3

Appendix G: Test Procedures

Measurements were made in accordance with:

- KDB Publication No. 789033 D02 General UNII Test Procedures New Rules v02r01
- KDB Publication No. 662911 MIMO
- ANSI C63.4 2014 Unintentional Radiators
- ANSI C63.10 2013 Intentional Radiators

Test procedures are summarized below:

| FCC 5GHz Test Procedures | EDCS # 1445048 |
|------------------------------|----------------|
| FCC 5GHz RSE Test Procedures | EDCS # 1511600 |

Appendix H: Scope of Accreditation (A2LA certificate number 1178-01)

The scope of accreditation of Cisco Systems, Inc. can be found on the A2LA web page at:

http://www.a2la.org/scopepdf/1178-01.pdf

Appendix I: Test Assessment Plan

Compliance Test Plan EDCS# 21468207 Target Power Tables (Excel) EDCS# EDCS-21389500

Appendix J: Worst Case Justification

N/A

End

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