Maximum Transmit Power > 30º - Antenna gain 7dBi (-4dBi) – 160MHz.

6665 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Max Power (dBm)	Tx 2 Max Power (dBm)	Duty Cycle (dB)	Total Channel Power (dBm)	EIRP Limit (dBm)	Margin (dB)
HE160, M0 to M11 1ss	1	-4.00	16.30		0.24	12.59	21.00	8.41
HE160, M0 to M11 1ss	2	-4.00	16.30	16.70	0.24	15.76	21.00	5.24
HE160, M0 to M11 2ss	2	-4.00	16.30	16.70	0.24	15.76	21.00	5.24
HE160 Beam Forming, M0 to M11 1ss	2	-1.00	16.30	16.70	0.24	18.76	21.00	2.24
HE160 Beam Forming, M0 to M11 2ss	2	-4.00	16.30	16.70	0.24	15.76	21.00	5.24
HE160 STBC, M0 to M11 2ss	2	-4.00	16.30	16.70	0.24	15.76	21.00	5.24

6825 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Max Power (dBm)	Tx 2 Max Power (dBm)	Duty Cycle (dB)	Total Channel Power (dBm)	EIRP Limit (dBm)	Margin (dB)
HE160, M0 to M11 1ss	1	-4.00	16.80		0.24	13.00	21.00	8.00
HE160, M0 to M11 1ss	2	-4.00	16.80	17.10	0.24	16.20	21.00	4.80
HE160, M0 to M11 2ss	2	-4.00	16.80	17.10	0.24	16.20	21.00	4.80
HE160 Beam Forming, M0 to M11 1ss	**2**	**-1.00**	**16.80**	**17.10**	**0.24**	**19.20**	**21.00**	**1.80**
HE160 Beam Forming, M0 to M11 2ss	2	-4.00	16.80	17.10	0.24	16.20	21.00	4.80
HE160 STBC, M0 to M11 2ss	2	-4.00	16.80	17.10	0.24	16.20	21.00	4.80

A.4: Power Spectral Density

Power Spectral Density Test Requirement

15.407 General technical requirements, (a) *Power spectral density limits:* (4) For the bands 5.**925–6.425 GHz and 6.525–6.875 GHz bands.**

For a standard power access point and fixed client device operating in the 5.925–6.425 GHz and 6.525–6.875 GHz bands, the maximum power spectral density must not exceed 23 dBm e.i.r.p in any 1-megahertz band.

Power Spectral Density Test Procedure - 987594 D02 U-NII 6 GHz EMC Measurement v02r01 Clause II (E).

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

Power Spectral Density Test Procedure
The rules require “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.

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

Power Spectral Density 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 ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ 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.

Tested By: Ronak Patel	**Date of testing: 12/01/2023 – 12/21/2023**
Test Result: PASS	

Test Equipment
See Appendix C for list of test equipment.

Power Spectral Density EIRP – Antenna gain 7dBi – 20MHz.

6535 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	4.60		1.03	12.64	23.00	10.36
HE20, M0 to M11 1ss	2	10.00	4.60	4.40	1.03	18.54	23.00	4.46
HE20, M0 to M11 2ss	2	7.00	4.60	4.40	1.03	15.54	23.00	7.46
HE20 Beam Forming, M0 to M11 1ss	2	10.00	4.60	4.40	1.03	18.54	23.00	4.46
HE20 Beam Forming, M0 to M11 2ss	2	7.00	4.60	4.40	1.03	15.54	23.00	7.46
HE20 STBC, M0 to M11 2ss	2	7.00	4.60	4.40	1.03	15.54	23.00	7.46

6695 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	4.80		1.03	12.83	23.00	10.17
HE20, M0 to M11 1ss	2	10.00	4.80	4.90	1.03	18.87	23.00	4.13
HE20, M0 to M11 2ss	2	7.00	4.80	4.90	1.03	15.87	23.00	7.13
HE20 Beam Forming, M0 to M11 1ss	2	10.00	4.80	4.90	1.03	18.87	23.00	4.13
HE20 Beam Forming, M0 to M11 2ss	2	7.00	4.80	4.90	1.03	15.87	23.00	7.13
HE20 STBC, M0 to M11 2ss	2	7.00	4.80	4.90	1.03	15.87	23.00	7.13

6855 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	4.90		1.03	12.96	23.00	10.04
HE20, M0 to M11 1ss	**2**	**10.00**	**4.90**	**5.00**	**1.03**	**19.01**	**23.00**	**3.99**
HE20, M0 to M11 2ss	2	7.00	4.90	5.00	1.03	16.01	23.00	6.99
HE20 Beam Forming, M0 to M11 1ss	**2**	**10.00**	**4.90**	**5.00**	**1.03**	**19.01**	**23.00**	**3.99**
HE20 Beam Forming, M0 to M11 2ss	2	7.00	4.90	5.00	1.03	16.01	23.00	6.99
HE20 STBC, M0 to M11 2ss	2	7.00	4.90	5.00	1.03	16.01	23.00	6.99

Power Spectral Density EIRP – Antenna gain 7dBi – 40MHz.

6565 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	2.20		0.13	9.32	23.00	13.68
HE40, M0 to M11 1ss	2	10.00	2.20	2.70	0.13	15.60	23.00	7.40
HE40, M0 to M11 2ss	2	7.00	2.20	2.70	0.13	12.60	23.00	10.40
HE40 Beam Forming, M0 to M11 1ss	2	10.00	2.20	2.70	0.13	15.60	23.00	7.40
HE40 Beam Forming, M0 to M11 2ss	2	7.00	2.20	2.70	0.13	12.60	23.00	10.40
HE40 STBC, M0 to M11 2ss	2	7.00	2.20	2.70	0.13	12.60	23.00	10.40

6685 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	2.00		0.13	9.15	23.00	13.85
HE40, M0 to M11 1ss	2	10.00	2.00	2.20	0.13	15.25	23.00	7.75
HE40, M0 to M11 2ss	2	7.00	2.00	2.20	0.13	12.25	23.00	10.75
HE40 Beam Forming, M0 to M11 1ss	**2**	10.00	2.00	2.20	0.13	15.25	23.00	7.75
HE40 Beam Forming, M0 to M11 2ss	2	7.00	2.00	2.20	0.13	12.25	23.00	10.75
HE40 STBC, M0 to M11 2ss	2	7.00	2.00	2.20	0.13	12.25	23.00	10.75

6845 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	2.10		0.13	9.26	23.00	13.74
HE40, M0 to M11 1ss	2	10.00	2.10	2.20	0.13	15.31	23.00	7.69
HE40, M0 to M11 2ss	2	7.00	2.10	2.20	0.13	12.31	23.00	10.69
HE40 Beam Forming, M0 to M11 1ss	2	10.00	2.10	2.20	0.13	15.31	23.00	7.69
HE40 Beam Forming, M0 to M11 2ss	2	7.00	2.10	2.20	0.13	12.31	23.00	10.69
HE40 STBC, M0 to M11 2ss	2	7.00	2.10	2.20	0.13	12.31	23.00	10.69

Power Spectral Density EIRP – Antenna gain 7dBi – 80MHz.

6625 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Max Power (dBm)	Tx 2 Max Power (dBm)	Duty Cycle (dB)	Total Channel Power (dBm)	Limit (dBm)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-0.90		0.23	6.35	23.00	16.65
HE80, M0 to M11 1ss	2	10.00	-0.90	-0.60	0.23	12.48	23.00	10.52
HE80, M0 to M11 2ss	2	7.00	-0.90	-0.60	0.23	9.48	23.00	13.52
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-0.90	-0.60	0.23	12.48	23.00	10.52
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-0.90	-0.60	0.23	9.48	23.00	13.52
HE80 STBC, M0 to M11 2ss	2	7.00	-0.90	-0.60	0.23	9.48	23.00	13.52

6705 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-0.80		0.23	6.39	23.00	16.61
HE80, M0 to M11 1ss	2	10.00	-0.80	-0.50	0.23	12.56	23.00	10.44
HE80, M0 to M11 2ss	2	7.00	-0.80	-0.50	0.23	9.56	23.00	13.44
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-0.80	-0.50	0.23	12.56	23.00	10.44
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-0.80	-0.50	0.23	9.56	23.00	13.44
HE80 STBC, M0 to M11 2ss	2	7.00	-0.80	-0.50	0.23	9.56	23.00	13.44

6865 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-0.80		0.23	6.45	23.00	16.55
HE80, M0 to M11 1ss	2	10.00	-0.80	-0.70	0.23	12.48	23.00	10.52
HE80, M0 to M11 2ss	2	7.00	-0.80	-0.70	0.23	9.48	23.00	13.52
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-0.80	-0.70	0.23	12.48	23.00	10.52
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-0.80	-0.70	0.23	9.48	23.00	13.52
HE80 STBC, M0 to M11 2ss	2	7.00	-0.80	-0.70	0.23	9.48	23.00	13.52

Power Spectral Density EIRP – Antenna gain 7dBi – 160MHz.

6665 MHz

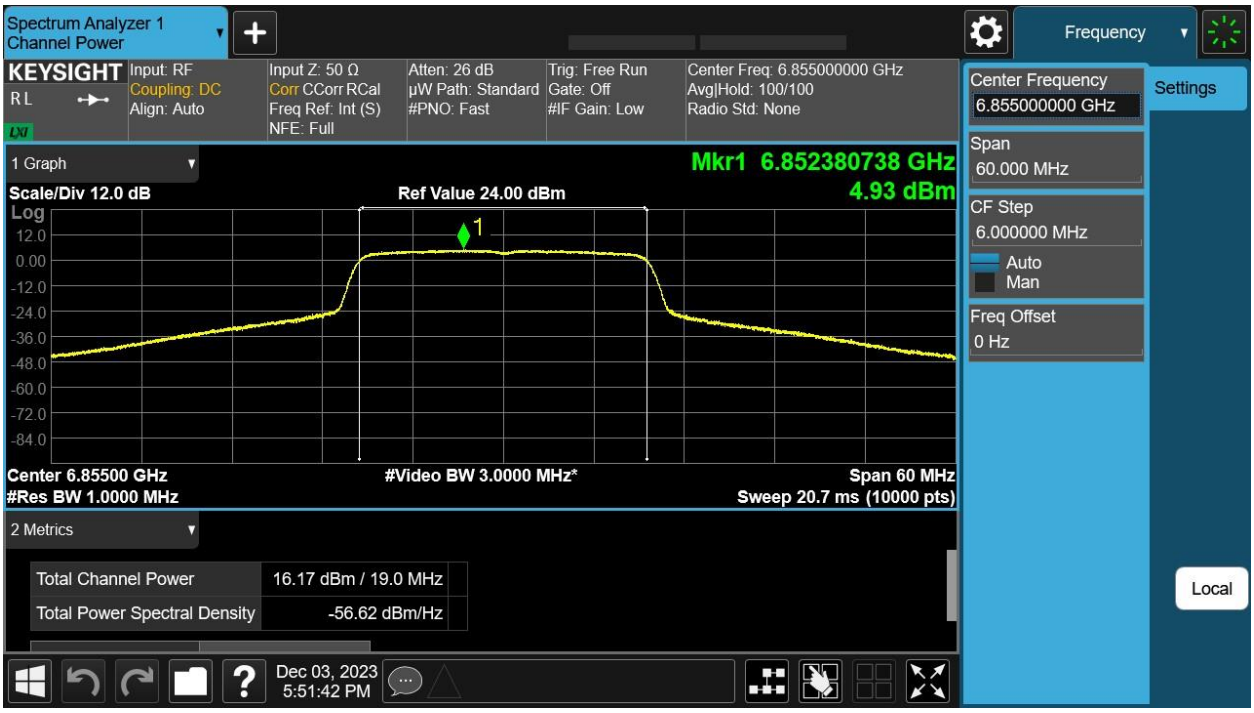
Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE160, M0 to M11 1ss	1	7.00	-3.70		0.24	3.50	23.00	19.50
HE160, M0 to M11 1ss	2	10.00	-3.70	-3.20	0.24	9.78	23.00	13.22
HE160, M0 to M11 2ss	2	7.00	-3.70	-3.20	0.24	6.78	23.00	16.22
HE160 Beam Forming, M0 to M11 1ss	2	10.00	-3.70	-3.20	0.24	9.78	23.00	13.22
HE160 Beam Forming, M0 to M11 2ss	2	7.00	-3.70	-3.20	0.24	6.78	23.00	16.22
HE160 STBC, M0 to M11 2ss	2	7.00	-3.70	-3.20	0.24	6.78	23.00	16.22

6825 MHz

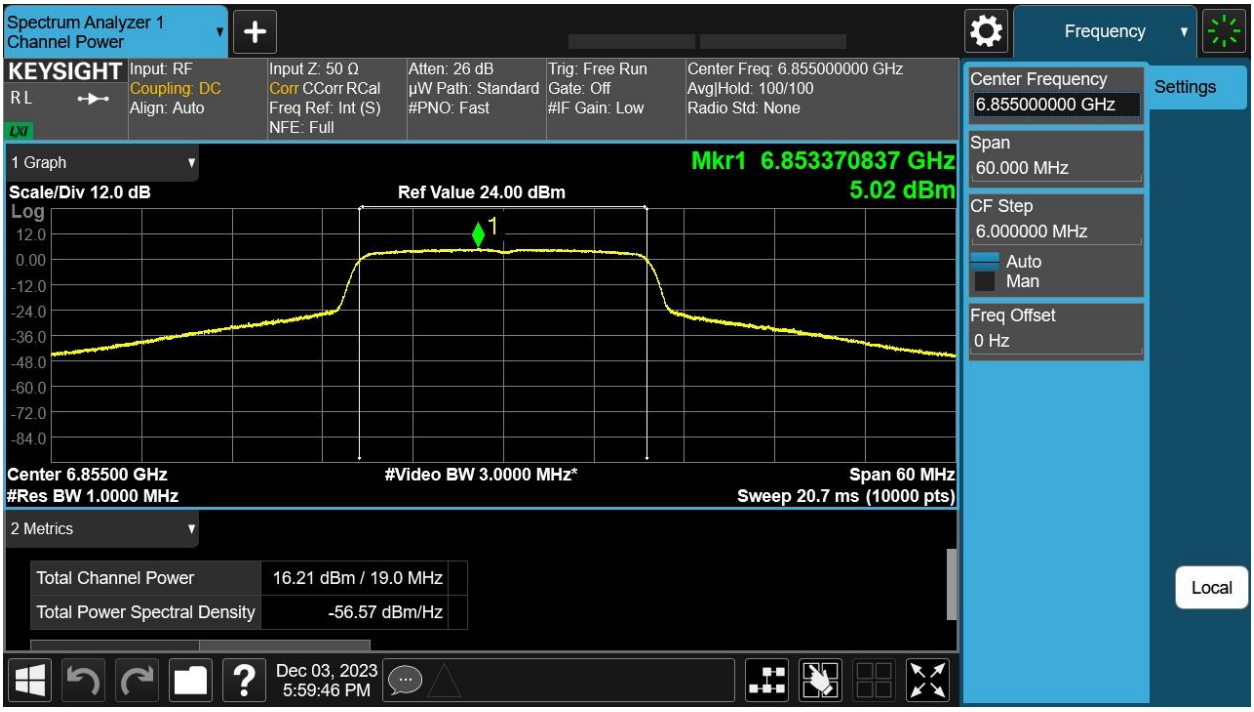
Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE160, M0 to M11 1ss	1	7.00	-3.00		0.24	4.26	23.00	18.74
HE160, M0 to M11 1ss	2	10.00	-3.00	-2.60	0.24	10.45	23.00	12.55
HE160, M0 to M11 2ss	2	7.00	-3.00	-2.60	0.24	7.45	23.00	15.55
HE160 Beam Forming, M0 to M11 1ss	2	10.00	-3.00	-2.60	0.24	10.45	23.00	12.55
HE160 Beam Forming, M0 to M11 2ss	2	7.00	-3.00	-2.60	0.24	7.45	23.00	15.55
HE160 STBC, M0 to M11 2ss	2	7.00	-3.00	-2.60	0.24	7.45	23.00	15.55

Power spectral density Data Screenshots – Antenna gain 7dBi – 20MHz.

6855 MHz: HE20 Beam Forming, M0 to M11 1ss – Antenna A



6855 MHz: HE20 Beam Forming, M0 to M11 1ss – Antenna B



A.5: Conducted Spurious Emissions

Conducted Spurious Emissions Test Requirement

15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(6) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(6) For transmitters operating within the 5.925–7.125 GHz band: Any emissions outside of the 5.925–7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

(8) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

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

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

(11) 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.

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[dBµV/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

987594 D02 U-NII 6 GHz EMC Measurement II (G)

Use guidance in KDB 789033 for measurements below 1000 MHz and above 1000 MHz Unwanted emissions outside of restricted bands are measured with a RMS detector. In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit.

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 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 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. 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)

Conducted Spurious Emissions Test parameters	
Peak RBW = 1 MHz VBW ≥ 3 MHz Sweep = Auto Detector = Peak Trace = Max Hold.	**Average** RBW = 1 MHz VBW ≥ 3 MHz Sweep = Auto Detector = RMS 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: Ronak Patel	**Date of testing: 12/01/2023 – 12/21/2023**
Test Result: PASS	

Test Equipment
See Appendix C for list of test equipment.

Note:
1. Although 100kHz RBW is required for emissions below 1GHz, 1MHz RBW was used to show compliance under worst-case setting
2. Emissions above 12GHz are only noise floor and that data can be additionally shown in radiated report

Conducted Spurious emissions Average – Antenna gain 7dBi – 20MHz BW.

6535 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	-62.80		1.03	-54.77	-41.25	13.52
HE20, M0 to M11 1ss	2	7.00	-62.80	-64.10	1.03	-52.37	-41.25	11.12
HE20, M0 to M11 2ss	2	7.00	-62.80	-64.10	1.03	-52.37	-41.25	11.12
HE20 Beam Forming, M0 to M11 1ss	**2**	**10.00**	**-62.80**	**-64.10**	**1.03**	**-49.37**	**-41.25**	**8.12**
HE20 Beam Forming, M0 to M11 2ss	2	7.00	-62.80	-64.10	1.03	-52.37	-41.25	11.12
HE20 STBC, M0 to M11 2ss	2	7.00	-62.80	-64.10	1.03	-52.37	-41.25	11.12

6695 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	-67.90		1.03	-59.87	-41.25	18.62
HE20, M0 to M11 1ss	2	7.00	-67.90	-68.20	1.03	-57.01	-41.25	15.76
HE20, M0 to M11 2ss	2	7.00	-67.90	-68.20	1.03	-57.01	-41.25	15.76
HE20 Beam Forming, M0 to M11 1ss	2	10.00	-67.90	-68.20	1.03	-54.01	-41.25	12.76
HE20 Beam Forming, M0 to M11 2ss	2	7.00	-67.90	-68.20	1.03	-57.01	-41.25	15.76
HE20 STBC, M0 to M11 2ss	2	7.00	-67.90	-68.20	1.03	-57.01	-41.25	15.76

6855 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	-63.00		1.03	-54.97	-41.25	13.72
HE20, M0 to M11 1ss	2	7.00	-63.00	-68.00	1.03	-53.78	-41.25	12.53
HE20, M0 to M11 2ss	2	7.00	-63.00	-68.00	1.03	-53.78	-41.25	12.53
HE20 Beam Forming, M0 to M11 1ss	2	10.00	-63.00	-68.00	1.03	-50.78	-41.25	9.53
HE20 Beam Forming, M0 to M11 2ss	2	7.00	-63.00	-68.00	1.03	-53.78	-41.25	12.53
HE20 STBC, M0 to M11 2ss	2	7.00	-63.00	-68.00	1.03	-53.78	-41.25	12.53

Conducted Spurious emissions Average – Antenna gain 7dBi – 40MHz BW.

6565 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	-65.00		0.13	-57.87	-41.25	16.62
HE40, M0 to M11 1ss	2	7.00	-65.00	-64.70	0.13	-54.70	-41.25	13.45
HE40, M0 to M11 2ss	2	7.00	-65.00	-64.70	0.13	-54.70	-41.25	13.45
HE40 Beam Forming, M0 to M11 1ss	2	10.00	-65.00	-64.70	0.13	-51.70	-41.25	10.45
HE40 Beam Forming, M0 to M11 2ss	2	7.00	-65.00	-64.70	0.13	-54.70	-41.25	13.45
HE40 STBC, M0 to M11 2ss	2	7.00	-65.00	-64.70	0.13	-54.70	-41.25	13.45

6685 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	-68.00		0.13	-60.87	-41.25	19.62
HE40, M0 to M11 1ss	2	7.00	-68.00	-68.30	0.13	-58.00	-41.25	16.75
HE40, M0 to M11 2ss	2	7.00	-68.00	-68.30	0.13	-58.00	-41.25	16.75
HE40 Beam Forming, M0 to M11 1ss	2	10.00	-68.00	-68.30	0.13	-55.00	-41.25	13.75
HE40 Beam Forming, M0 to M11 2ss	2	7.00	-68.00	-68.30	0.13	-58.00	-41.25	16.75
HE40 STBC, M0 to M11 2ss	2	7.00	-68.00	-68.30	0.13	-58.00	-41.25	16.75

6845 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 PSD (dBm/MHz)	Tx 2 PSD (dBm/MHz)	Duty Cycle (dB)	Total PSD (dBm/MHz)	EIRP Limits (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	-65.40		0.13	-58.27	-41.25	17.02
HE40, M0 to M11 1ss	2	7.00	-65.40	-68.10	0.13	-56.40	-41.25	15.15
HE40, M0 to M11 2ss	2	7.00	-65.40	-68.10	0.13	-56.40	-41.25	15.15
HE40 Beam Forming, M0 to M11 1ss	2	10.00	-65.40	-68.10	0.13	-53.40	-41.25	12.15
HE40 Beam Forming, M0 to M11 2ss	2	7.00	-65.40	-68.10	0.13	-56.40	-41.25	15.15
HE40 STBC, M0 to M11 2ss	2	7.00	-65.40	-68.10	0.13	-56.40	-41.25	15.15

Conducted Spurious emissions Average – Antenna gain 7dBi – 80MHz BW.

6625 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-67.10		0.23	-59.87	-41.25	18.62
HE80, M0 to M11 1ss	2	7.00	-67.10	-66.70	0.23	-56.65	-41.25	15.40
HE80, M0 to M11 2ss	2	7.00	-67.10	-66.70	0.23	-56.65	-41.25	15.40
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-67.10	-66.70	0.23	-53.65	-41.25	12.40
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-67.10	-66.70	0.23	-56.65	-41.25	15.40
HE80 STBC, M0 to M11 2ss	2	7.00	-67.10	-66.70	0.23	-56.65	-41.25	15.40

6705 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-67.50		0.23	-60.27	-41.25	19.02
HE80, M0 to M11 1ss	2	7.00	-67.50	-66.40	0.23	-56.67	-41.25	15.42
HE80, M0 to M11 2ss	2	7.00	-67.50	-66.40	0.23	-56.67	-41.25	15.42
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-67.50	-66.40	0.23	-53.67	-41.25	12.42
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-67.50	-66.40	0.23	-56.67	-41.25	15.42
HE80 STBC, M0 to M11 2ss	2	7.00	-67.50	-66.40	0.23	-56.67	-41.25	15.42

6865 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-63.70		0.23	-56.47	-41.25	15.22
HE80, M0 to M11 1ss	2	7.00	-63.70	-66.30	0.23	-54.57	-41.25	13.32
HE80, M0 to M11 2ss	2	7.00	-63.70	-66.30	0.23	-54.57	-41.25	13.32
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-63.70	-66.30	0.23	-51.57	-41.25	10.32
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-63.70	-66.30	0.23	-54.57	-41.25	13.32
HE80 STBC, M0 to M11 2ss	2	7.00	-63.70	-66.30	0.23	-54.57	-41.25	13.32

Conducted Spurious emissions Average – Antenna gain 7dBi – 160MHz BW.

6665 MHz

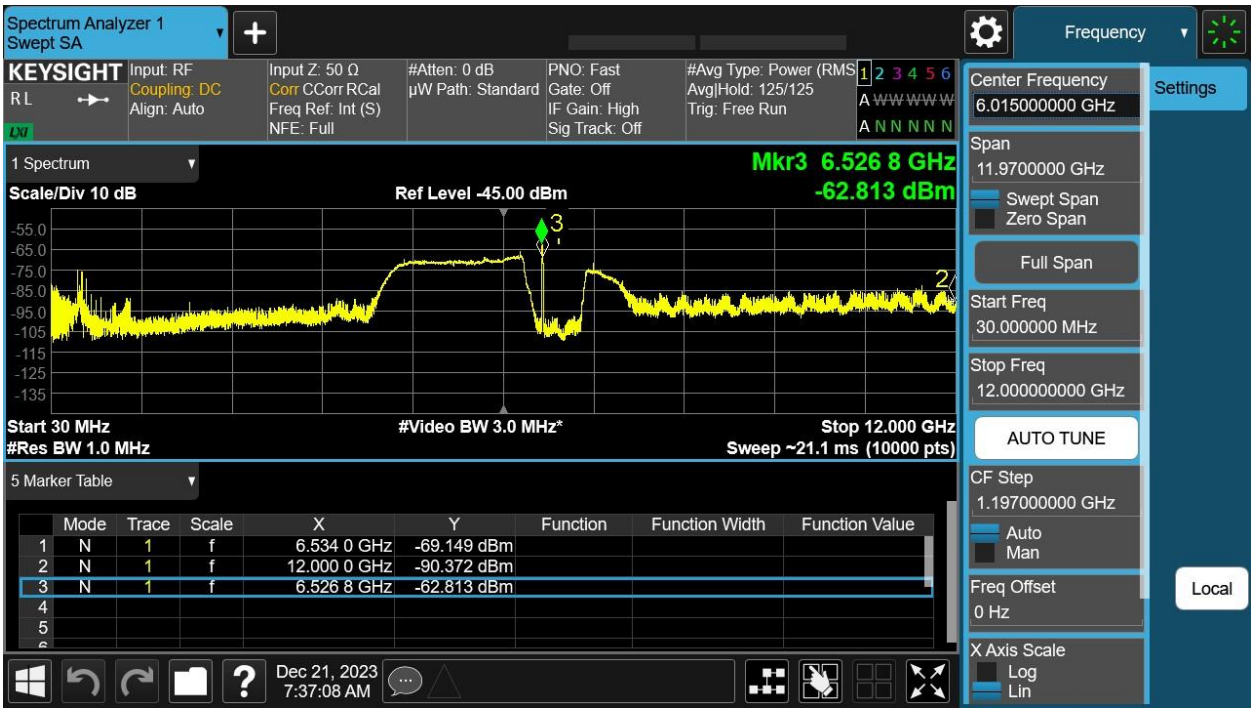
Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE160, M0 to M11 1ss	1	7.00	-64.40		0.24	-57.16	-41.25	15.91
HE160, M0 to M11 1ss	2	7.00	-64.40	-64.50	0.24	-54.19	-41.25	12.94
HE160, M0 to M11 2ss	2	7.00	-64.40	-64.50	0.24	-54.19	-41.25	12.94
HE160 Beam Forming, M0 to M11 1ss	2	10.00	-64.40	-64.50	0.24	-51.19	-41.25	9.94
HE160 Beam Forming, M0 to M11 2ss	2	7.00	-64.40	-64.50	0.24	-54.19	-41.25	12.94
HE160 STBC, M0 to M11 2ss	2	7.00	-64.40	-64.50	0.24	-54.19	-41.25	12.94

6825 MHz

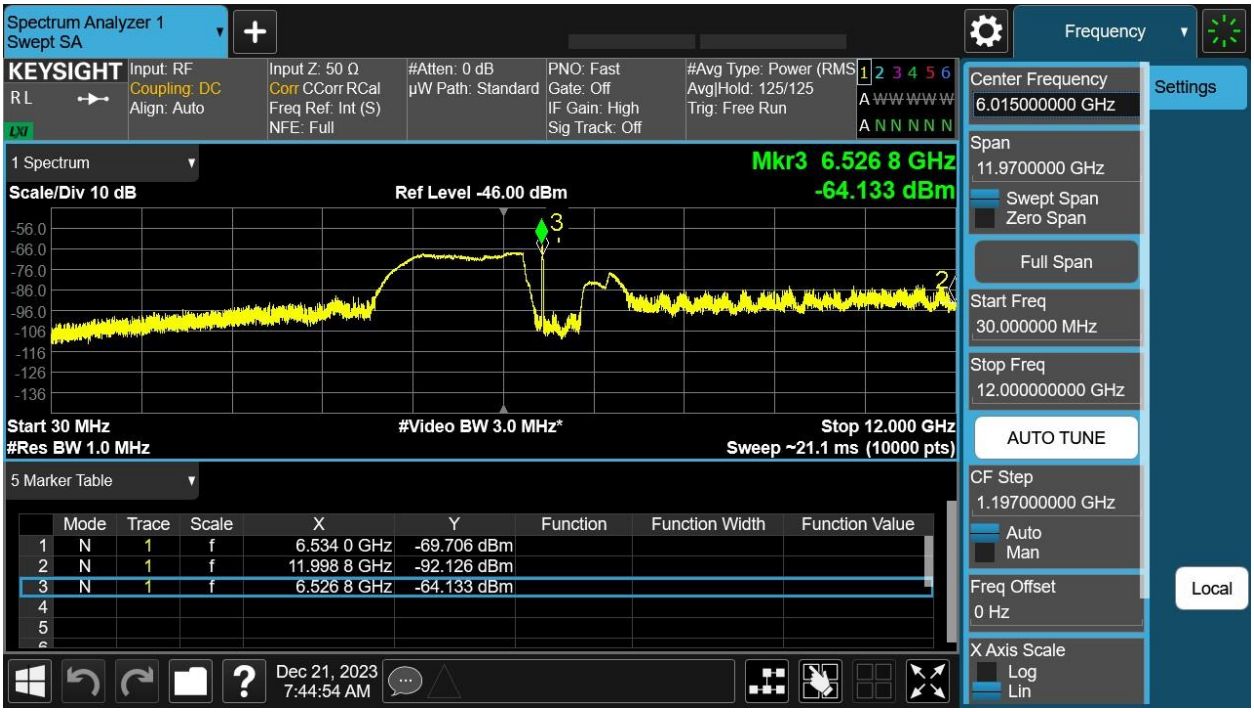
Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE160, M0 to M11 1ss	1	7.00	-55.40		0.24	-48.16	-41.25	6.91
HE160, M0 to M11 1ss	2	7.00	-55.40	-62.00	0.24	-47.30	-41.25	6.05
HE160, M0 to M11 2ss	2	7.00	-55.40	-62.00	0.24	-47.30	-41.25	6.05
HE160 Beam Forming, M0 to M11 1ss	**2**	**10.00**	**-55.40**	**-62.00**	**0.24**	**-44.30**	**-41.25**	**3.05**
HE160 Beam Forming, M0 to M11 2ss	2	7.00	-55.40	-62.00	0.24	-47.30	-41.25	6.05
HE160 STBC, M0 to M11 2ss	2	7.00	-55.40	-62.00	0.24	-47.30	-41.25	6.05

Conducted spurious emissions - Antenna gain 7dBi – 30MHz – 12GHz (Average)

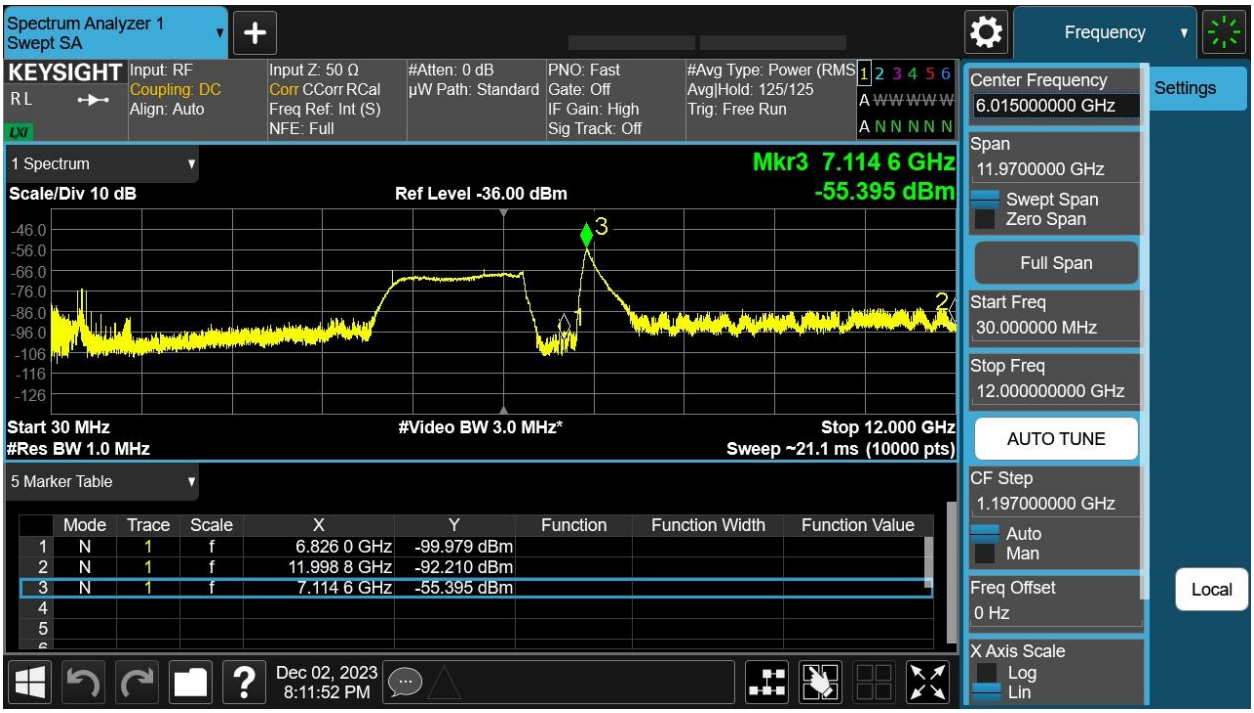
6535 MHz: HE20 Beam Forming, M0 to M11 1ss – Antenna A



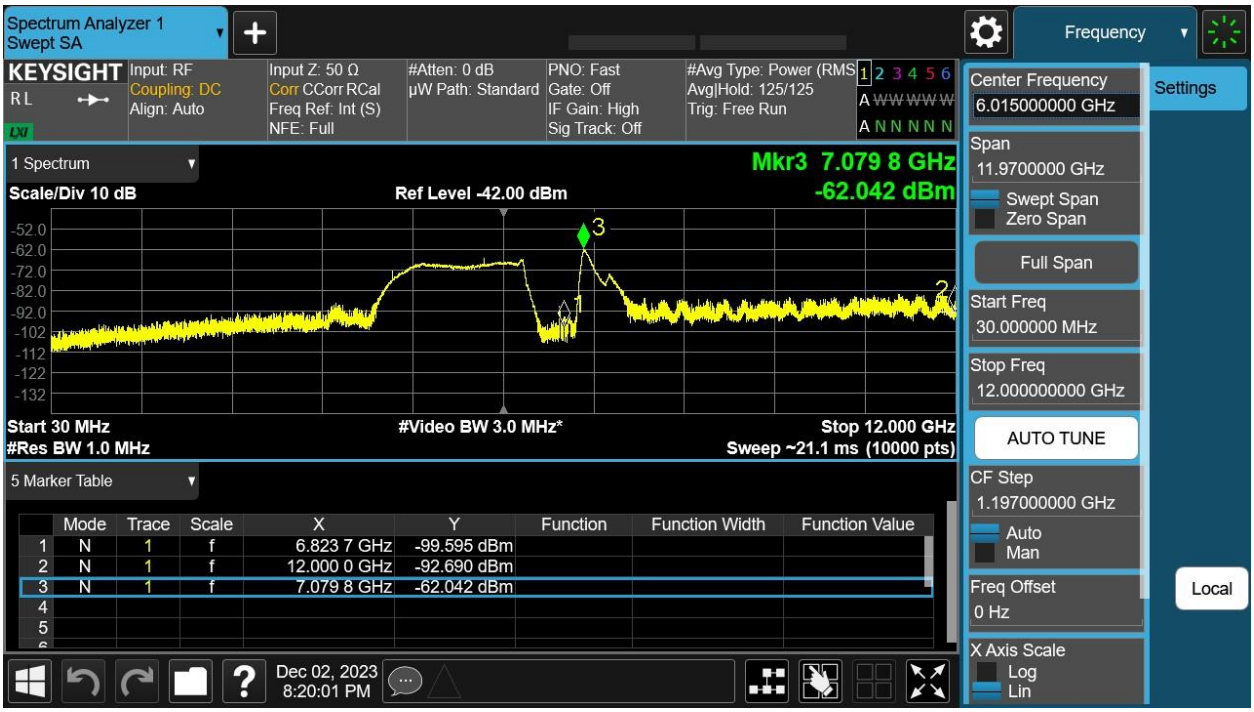
6535 MHz: HE20 Beam Forming, M0 to M11 1ss – Antenna B



6825 MHz: HE160 Beam Forming, M0 to M11 1ss – Antenna A



6825 MHz: HE160 Beam Forming, M0 to M11 1ss – Antenna B



Conducted Spurious emissions Peak – Antenna gain 7dBi – 20MHz BW.

6535 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	-57.80		1.03	-49.77	-27.00	22.77
HE20, M0 to M11 1ss	2	7.00	-57.80	-55.70	1.03	-45.59	-27.00	18.59
HE20, M0 to M11 2ss	2	7.00	-57.80	-55.70	1.03	-45.59	-27.00	18.59
HE20 Beam Forming, M0 to M11 1ss	**2**	**10.00**	**-57.80**	**-55.70**	**1.03**	**-42.59**	**-27.00**	**15.59**
HE20 Beam Forming, M0 to M11 2ss	2	7.00	-57.80	-55.70	1.03	-45.59	-27.00	18.59
HE20 STBC, M0 to M11 2ss	2	7.00	-57.80	-55.70	1.03	-45.59	-27.00	18.59

6695 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	-59.10		1.03	-51.07	-27.00	24.07
HE20, M0 to M11 1ss	2	7.00	-59.10	-58.20	1.03	-47.59	-27.00	20.59
HE20, M0 to M11 2ss	2	7.00	-59.10	-58.20	1.03	-47.59	-27.00	20.59
HE20 Beam Forming, M0 to M11 1ss	2	10.00	-59.10	-58.20	1.03	-44.59	-27.00	17.59
HE20 Beam Forming, M0 to M11 2ss	2	7.00	-59.10	-58.20	1.03	-47.59	-27.00	20.59
HE20 STBC, M0 to M11 2ss	2	7.00	-59.10	-58.20	1.03	-47.59	-27.00	20.59

6855 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE20, M0 to M11 1ss	1	7.00	-57.70		1.03	-49.67	-27.00	22.67
HE20, M0 to M11 1ss	2	7.00	-57.70	-58.20	1.03	-46.91	-27.00	19.91
HE20, M0 to M11 2ss	2	7.00	-57.70	-58.20	1.03	-46.91	-27.00	19.91
HE20 Beam Forming, M0 to M11 1ss	2	10.00	-57.70	-58.20	1.03	-43.91	-27.00	16.91
HE20 Beam Forming, M0 to M11 2ss	2	7.00	-57.70	-58.20	1.03	-46.91	-27.00	19.91
HE20 STBC, M0 to M11 2ss	2	7.00	-57.70	-58.20	1.03	-46.91	-27.00	19.91

Conducted Spurious emissions Peak – Antenna gain 7dBi – 40MHz BW.

6565 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	-57.90		0.13	-50.77	-27.00	23.77
HE40, M0 to M11 1ss	2	7.00	-57.90	-57.30	0.13	-47.45	-27.00	20.45
HE40, M0 to M11 2ss	2	7.00	-57.90	-57.30	0.13	-47.45	-27.00	20.45
HE40 Beam Forming, M0 to M11 1ss	2	10.00	-57.90	-57.30	0.13	-44.45	-27.00	17.45
HE40 Beam Forming, M0 to M11 2ss	2	7.00	-57.90	-57.30	0.13	-47.45	-27.00	20.45
HE40 STBC, M0 to M11 2ss	2	7.00	-57.90	-57.30	0.13	-47.45	-27.00	20.45

6685 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	-58.50		0.13	-51.37	-27.00	24.37
HE40, M0 to M11 1ss	2	7.00	-58.50	-58.10	0.13	-48.15	-27.00	21.15
HE40, M0 to M11 2ss	2	7.00	-58.50	-58.10	0.13	-48.15	-27.00	21.15
HE40 Beam Forming, M0 to M11 1ss	2	10.00	-58.50	-58.10	0.13	-45.15	-27.00	18.15
HE40 Beam Forming, M0 to M11 2ss	2	7.00	-58.50	-58.10	0.13	-48.15	-27.00	21.15
HE40 STBC, M0 to M11 2ss	2	7.00	-58.50	-58.10	0.13	-48.15	-27.00	21.15

6845 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE40, M0 to M11 1ss	1	7.00	-57.60		0.13	-50.47	-27.00	23.47
HE40, M0 to M11 1ss	2	7.00	-57.60	-57.40	0.13	-47.35	-27.00	20.35
HE40, M0 to M11 2ss	2	7.00	-57.60	-57.40	0.13	-47.35	-27.00	20.35
HE40 Beam Forming, M0 to M11 1ss	2	10.00	-57.60	-57.40	0.13	-44.35	-27.00	17.35
HE40 Beam Forming, M0 to M11 2ss	2	7.00	-57.60	-57.40	0.13	-47.35	-27.00	20.35
HE40 STBC, M0 to M11 2ss	2	7.00	-57.60	-57.40	0.13	-47.35	-27.00	20.35

Conducted Spurious emissions Peak – Antenna gain 7dBi – 80MHz BW.

6625 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-58.70		0.23	-51.47	-27.00	24.47
HE80, M0 to M11 1ss	2	7.00	-58.70	-58.30	0.23	-48.25	-27.00	21.25
HE80, M0 to M11 2ss	2	7.00	-58.70	-58.30	0.23	-48.25	-27.00	21.25
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-58.70	-58.30	0.23	-45.25	-27.00	18.25
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-58.70	-58.30	0.23	-48.25	-27.00	21.25
HE80 STBC, M0 to M11 2ss	2	7.00	-58.70	-58.30	0.23	-48.25	-27.00	21.25

6705 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-58.80		0.23	-51.57	-27.00	24.57
HE80, M0 to M11 1ss	2	7.00	-58.80	-57.90	0.23	-48.08	-27.00	21.08
HE80, M0 to M11 2ss	2	7.00	-58.80	-57.90	0.23	-48.08	-27.00	21.08
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-58.80	-57.90	0.23	-45.08	-27.00	18.08
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-58.80	-57.90	0.23	-48.08	-27.00	21.08
HE80 STBC, M0 to M11 2ss	2	7.00	-58.80	-57.90	0.23	-48.08	-27.00	21.08

6865 MHz

Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE80, M0 to M11 1ss	1	7.00	-56.80		0.23	-49.57	-27.00	22.57
HE80, M0 to M11 1ss	2	7.00	-56.80	-57.60	0.23	-46.94	-27.00	19.94
HE80, M0 to M11 2ss	2	7.00	-56.80	-57.60	0.23	-46.94	-27.00	19.94
HE80 Beam Forming, M0 to M11 1ss	2	10.00	-56.80	-57.60	0.23	-43.94	-27.00	16.94
HE80 Beam Forming, M0 to M11 2ss	2	7.00	-56.80	-57.60	0.23	-46.94	-27.00	19.94
HE80 STBC, M0 to M11 2ss	2	7.00	-56.80	-57.60	0.23	-46.94	-27.00	19.94

Conducted Spurious emissions Peak – Antenna gain 7dBi – 160MHz BW.

6665 MHz

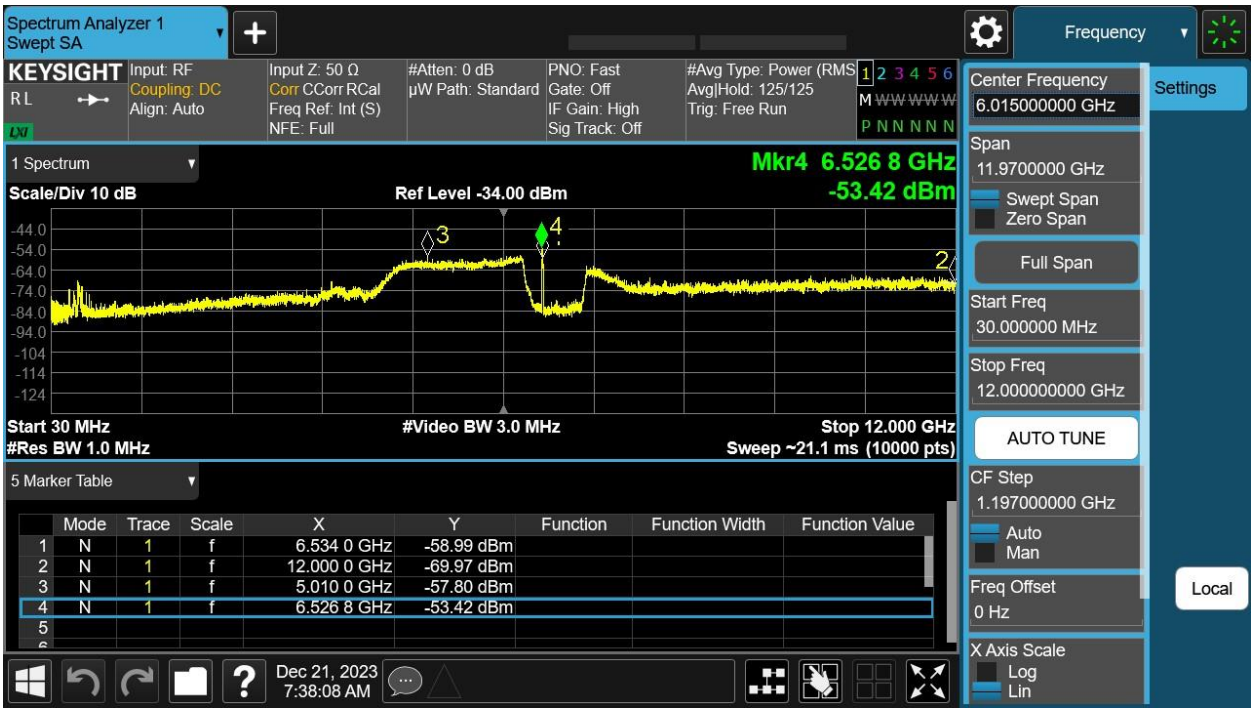
Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE160, M0 to M11 1ss	1	7.00	-58.20		0.24	-50.96	-27.00	23.96
HE160, M0 to M11 1ss	2	7.00	-58.20	-58.00	0.24	-47.84	-27.00	20.84
HE160, M0 to M11 2ss	2	7.00	-58.20	-58.00	0.24	-47.84	-27.00	20.84
HE160 Beam Forming, M0 to M11 1ss	2	10.00	-58.20	-58.00	0.24	-44.84	-27.00	17.84
HE160 Beam Forming, M0 to M11 2ss	2	7.00	-58.20	-58.00	0.24	-47.84	-27.00	20.84
HE160 STBC, M0 to M11 2ss	2	7.00	-58.20	-58.00	0.24	-47.84	-27.00	20.84

6825 MHz

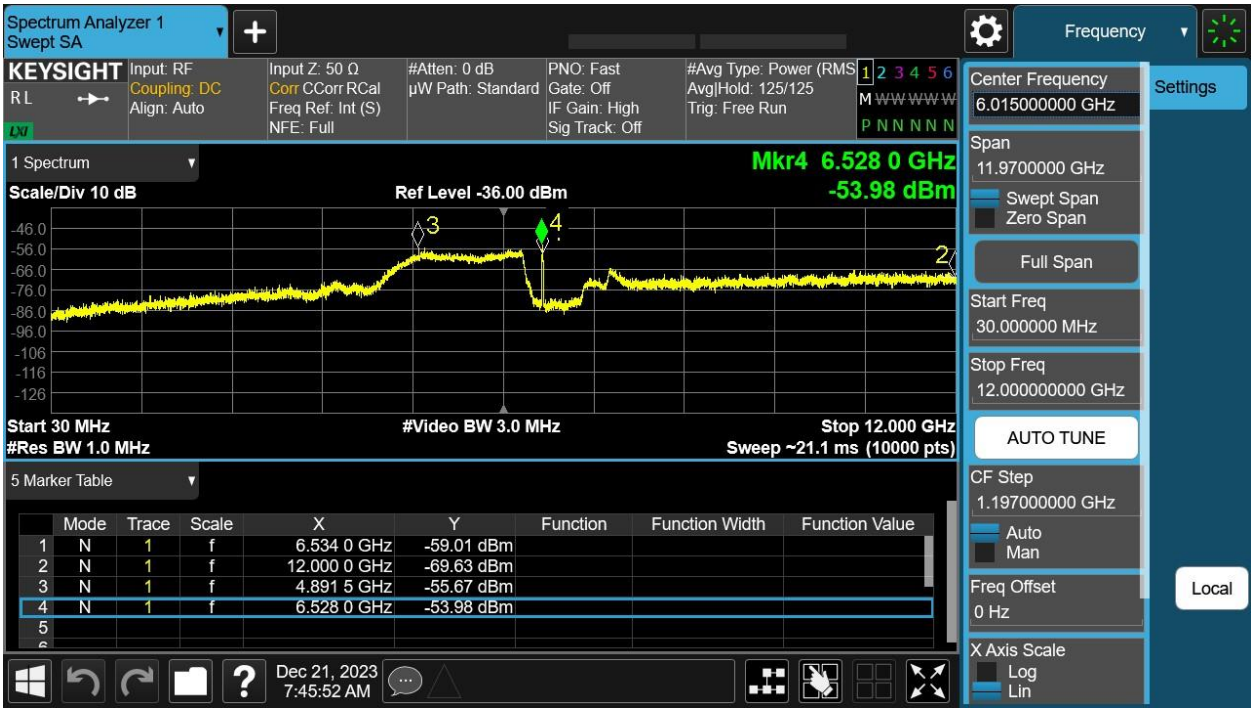
Mode	Tx Paths	Correlated Antenna Gain (dBi)	Tx 1 Spur Power (dBm/MHz)	Tx 2 Spur Power (dBm/MHz)	Duty Cycle (dB)	Total Spur (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)
HE160, M0 to M11 1ss	1	7.00	-54.40		0.24	-47.16	-27.00	20.16
HE160, M0 to M11 1ss	2	7.00	-54.40	-57.60	0.24	-45.46	-27.00	18.46
HE160, M0 to M11 2ss	2	7.00	-54.40	-57.60	0.24	-45.46	-27.00	18.46
HE160 Beam Forming, M0 to M11 1ss	**2**	**10.00**	**-54.40**	**-57.60**	**0.24**	**-42.46**	**-27.00**	**15.46**
HE160 Beam Forming, M0 to M11 2ss	2	7.00	-54.40	-57.60	0.24	-45.46	-27.00	18.46
HE160 STBC, M0 to M11 2ss	2	7.00	-54.40	-57.60	0.24	-45.46	-27.00	18.46

Conducted spurious emissions - Antenna gain 7dBi – 30MHz – 12GHz (Peak)

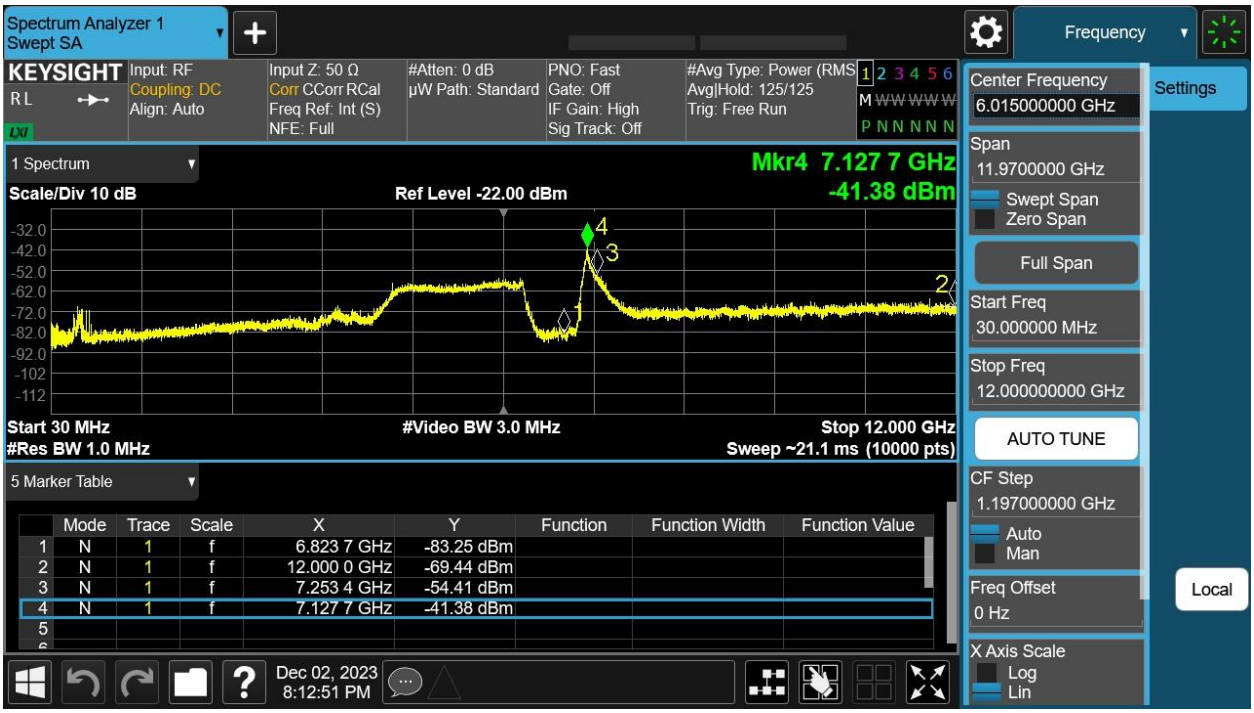
6535 MHz: HE20 Beam Forming, M0 to M11 1ss – Antenna A.



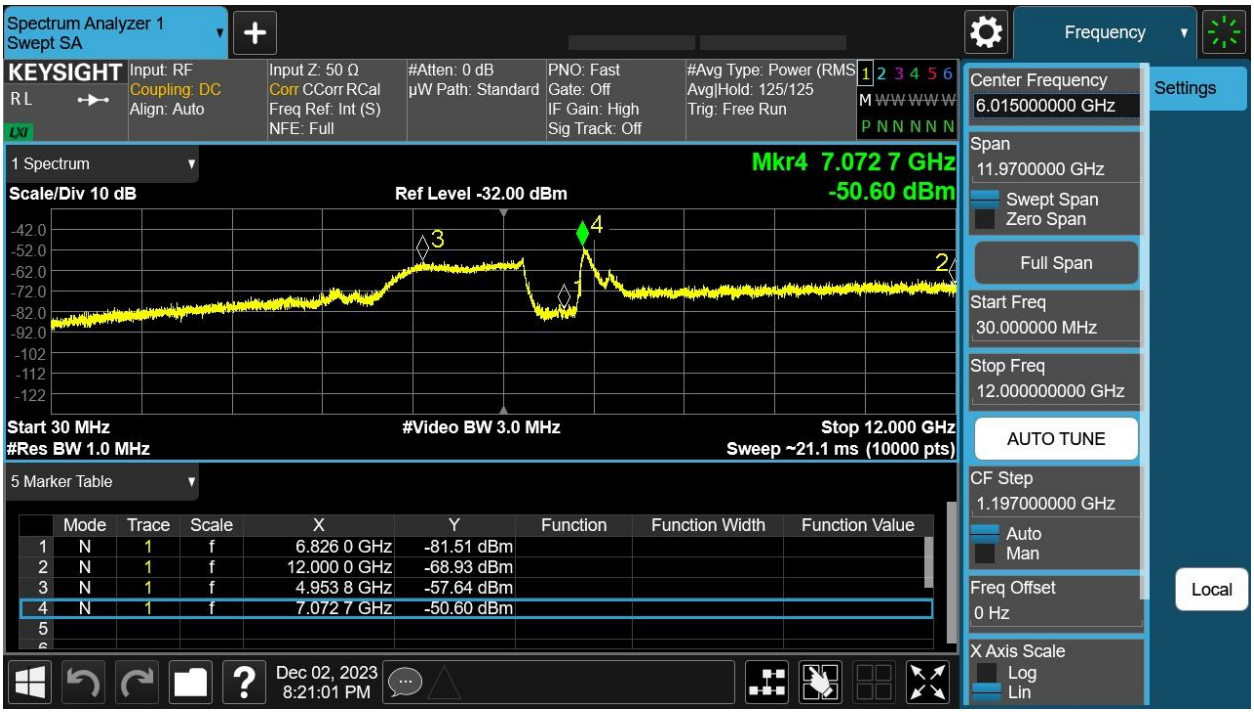
6535 MHz: HE20 Beam Forming, M0 to M11 1ss – Antenna B.



6825 MHz, HE160 Beam Forming, M0 to M11 1ss – Antenna A.



6825 MHz, HE160 Beam Forming, M0 to M11 1ss – Antenna B.



A.6: Conducted Band Edge (In-band emissions)

Conducted Band Edge Test Requirement

15.407((b)(7)
For transmitters operating within the 5.925–7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

987594 D02 U-NII 6 GHz EMC Measurement II (G)

Use guidance in KDB 789033 for measurements below 1000 MHz and above 1000 MHz Unwanted emissions outside of restricted bands are measured with a RMS detector. In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit.

1. Connect output of the antenna port to a spectrum analyzer or EMI receiver, with appropriate attenuation, as to not damage the instrumentation.
2. Set the reference level of the measuring equipment in accordance with procedure 4.1.5.2 of ANSI C63.10-2013.
3. Measure the 26 dB EBW using the test procedure 12.4.1 of ANSI C63.10-2013. (This will be used to determine the channel edge.)
4. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:
   a) Set the span to encompass the entire 26 dB EBW of the signal.
   b) Set RBW = same RBW used for 26 dB EBW measurement.
   c) Set VBW ≥ 3 X RBW
   d) Number of points in sweep ≥ [2 X span / RBW].
   e) Sweep time = auto.
   f) Detector = RMS (i.e., power averaging)
   g) Trace average at least 100 traces in power averaging (rms) mode.
   h) Use the peak search function on the instrument to find the peak of the spectrum.
5. For the purposes of developing the emission mask, the channel bandwidth is defined as the 26 dB EBW or 99% of the occupied bandwidth.
6. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:

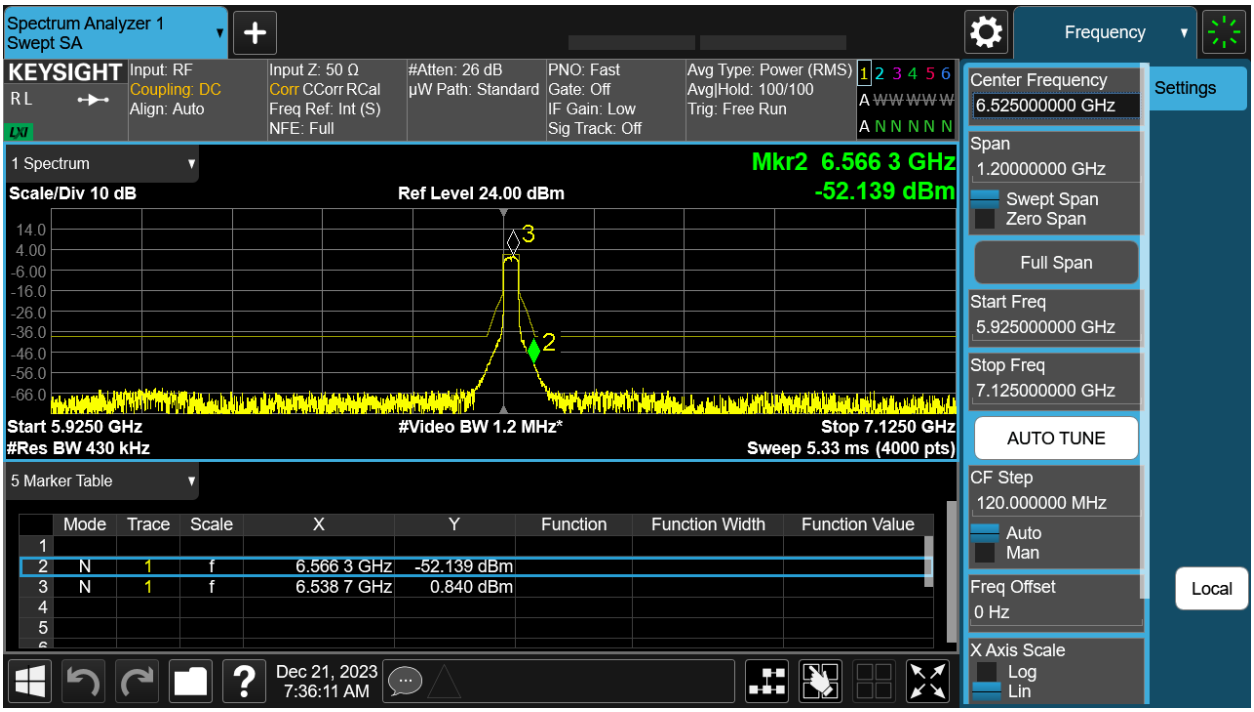
   a) Suppressed by 20 dB at 1 MHz outside of the channel edge. (The channel edge is defined as the 26-dB point on either side of the carrier center frequency.)
   b) Suppressed by 28 dB at one channel bandwidth from the channel center.
   c) Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
7. Adjust the span to encompass the entire mask as necessary.
8. Clear trace.
9. Trace average at least 100 traces in power averaging (rms) mode.
10. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

Tested By: Ronak Patel	**Date of testing: 12/01/2023 – 12/21/2023**
Test Result: PASS	

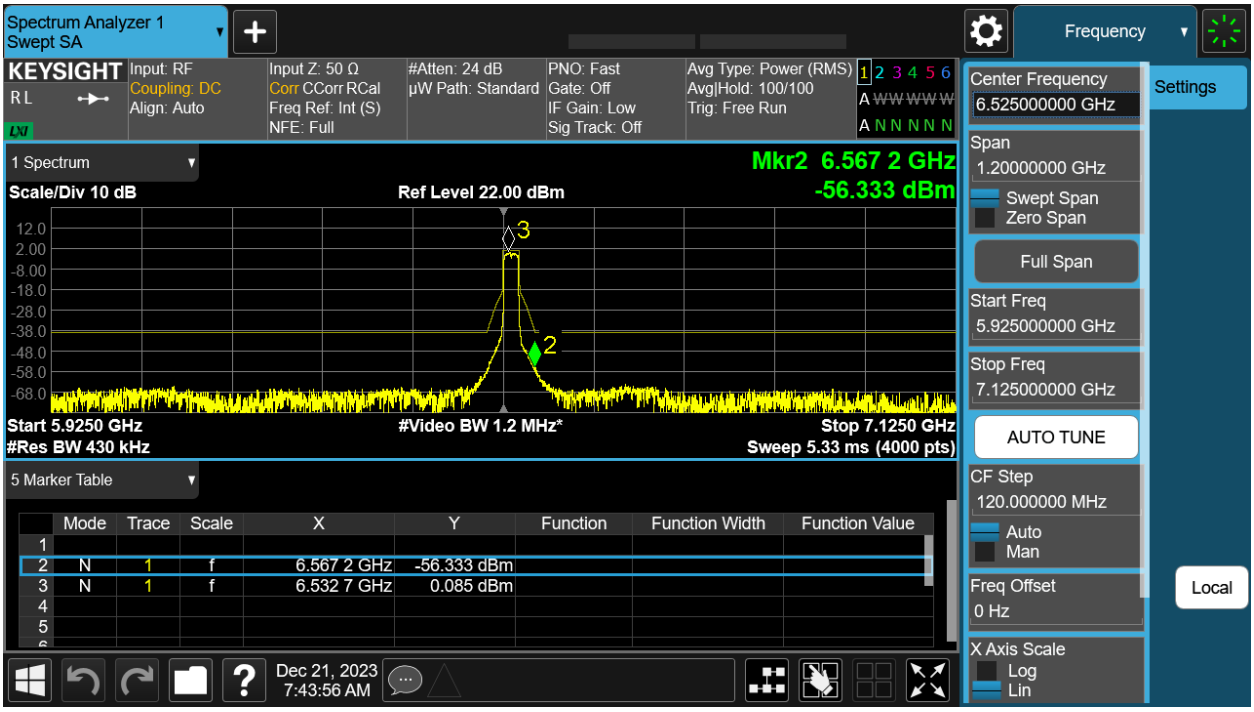
Test Equipment
See Appendix C for list of test equipment.

Band Edge Data Screenshots – Antenna gain 7dBi (Average) – Zoom out.

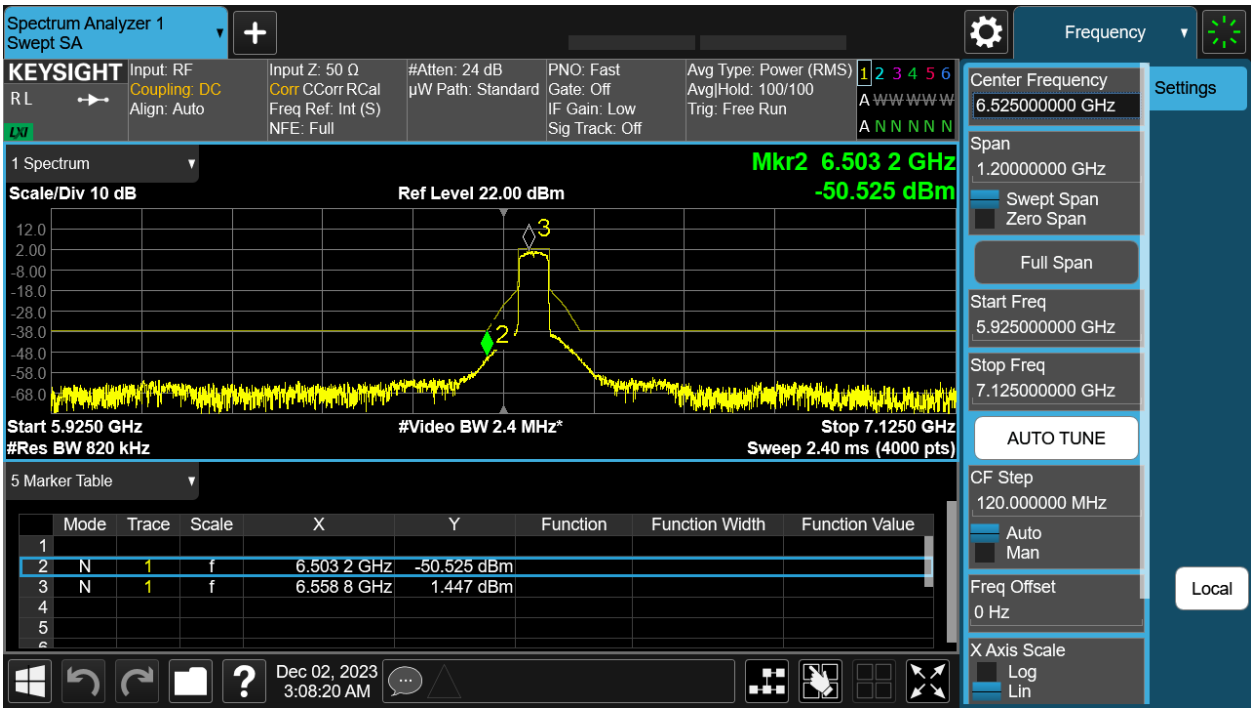
6535MHz: HE20, M0 to M11 1ss – Antenna A



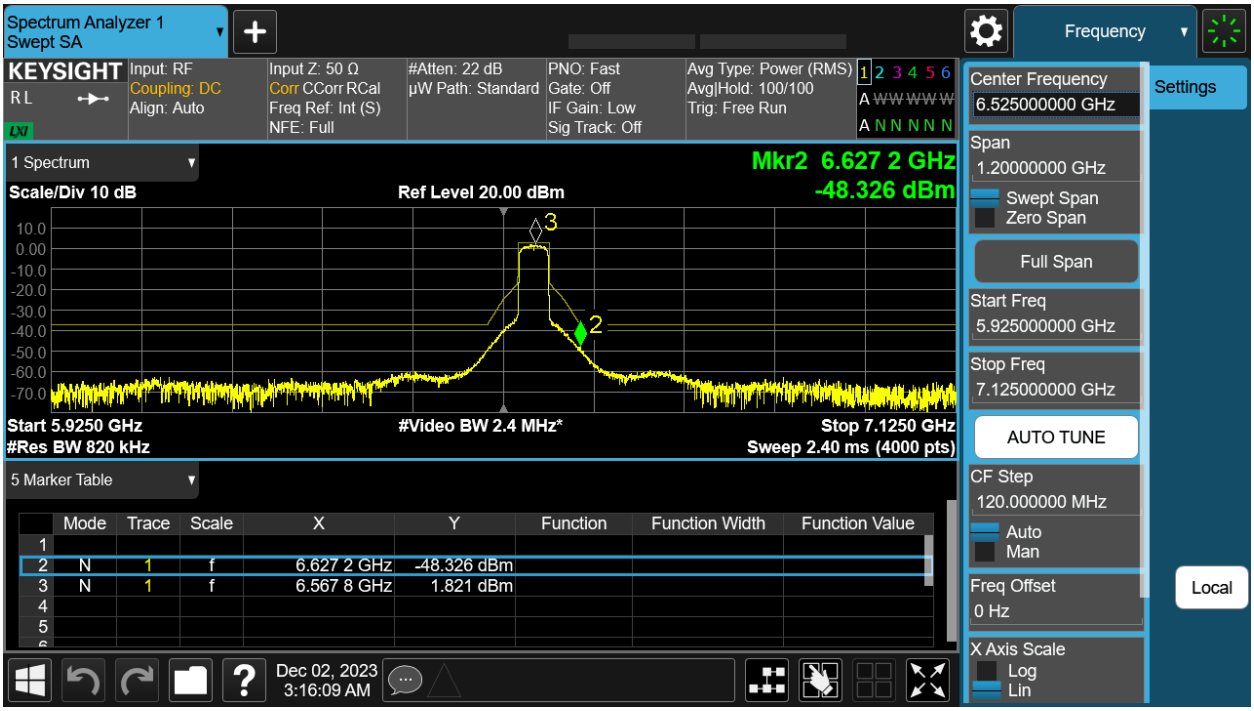
6535MHz: HE20, M0 to M11 1ss – Antenna B



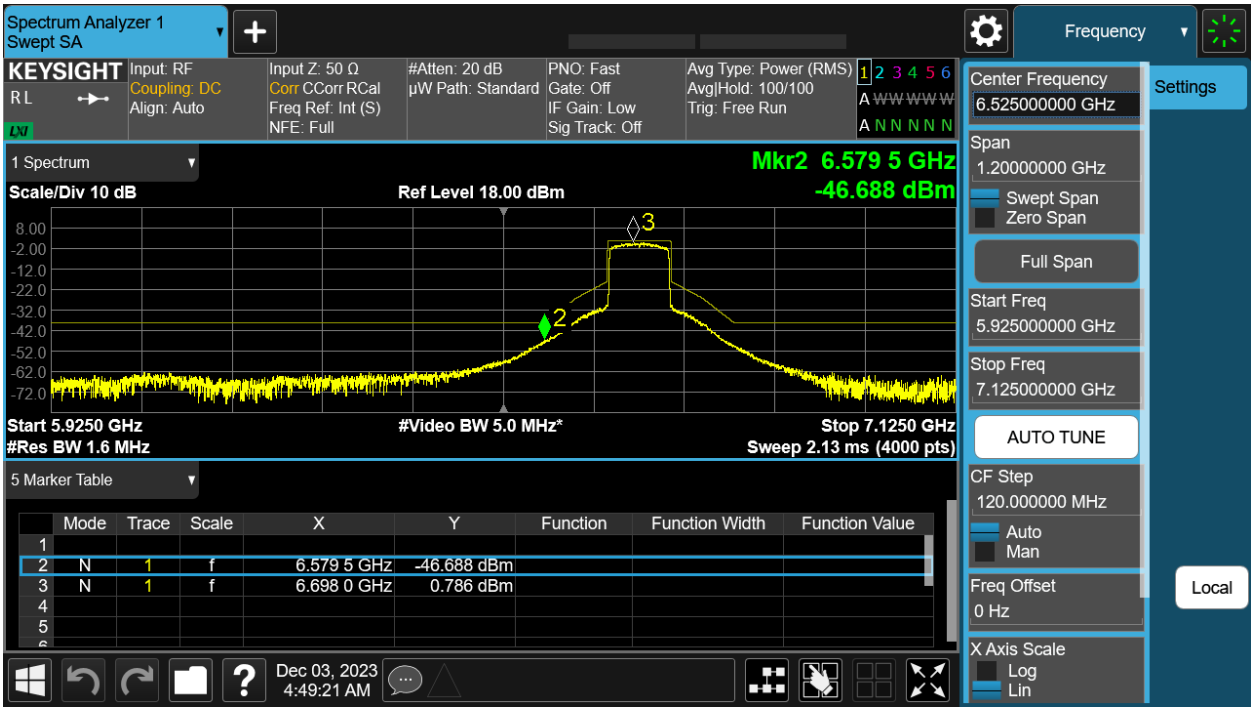
6565MHz: HE40, M0 to M11 1ss – Antenna A



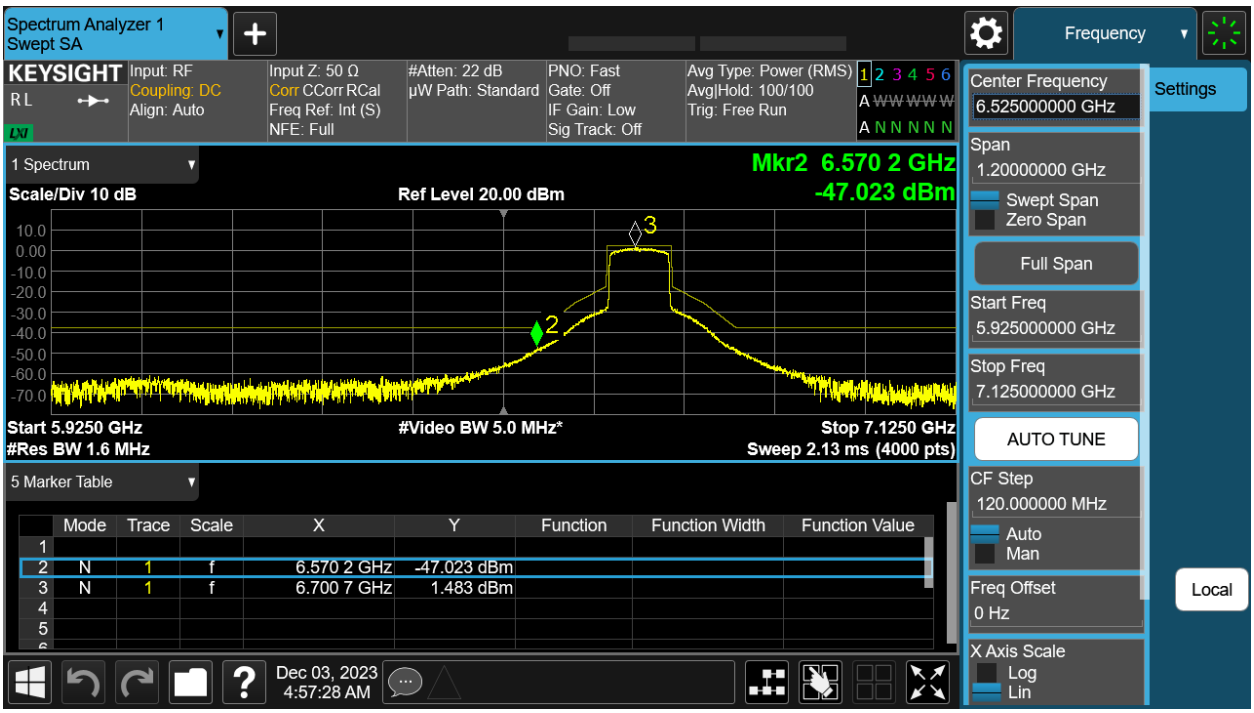
6565MHz: HE40, M0 to M11 1ss – Antenna B



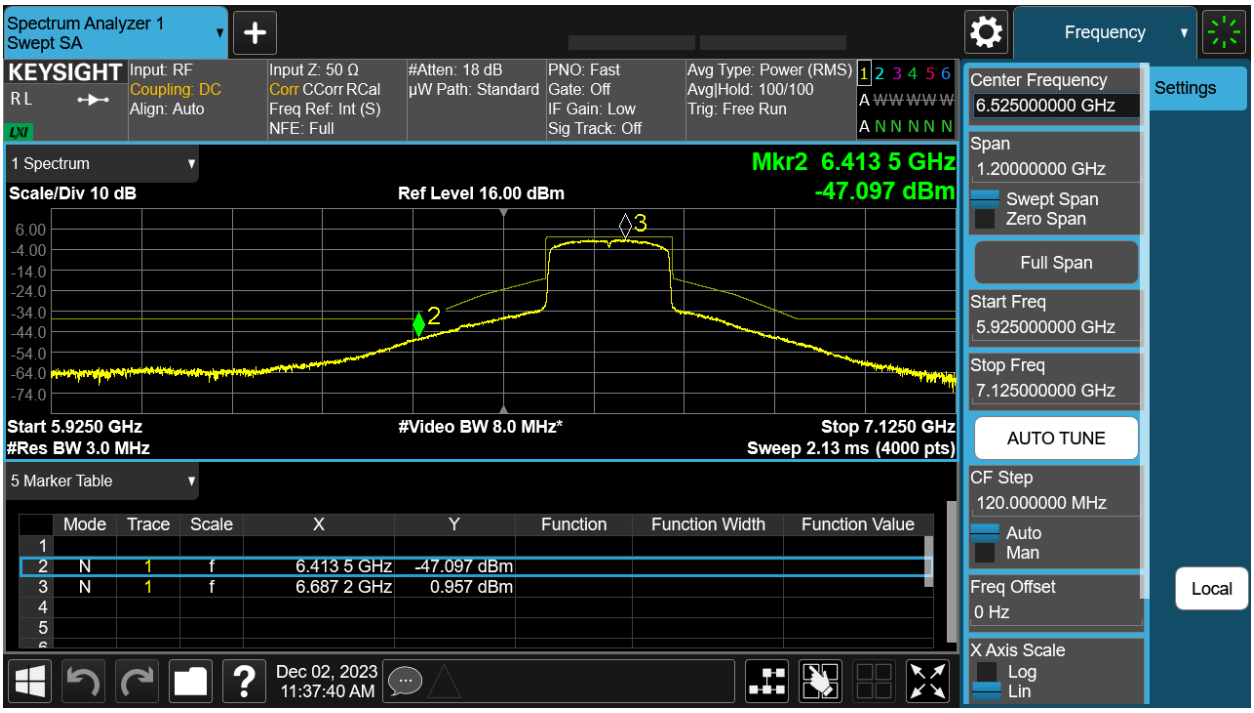
6705MHz: HE80, M0 to M11 1ss – Antenna A



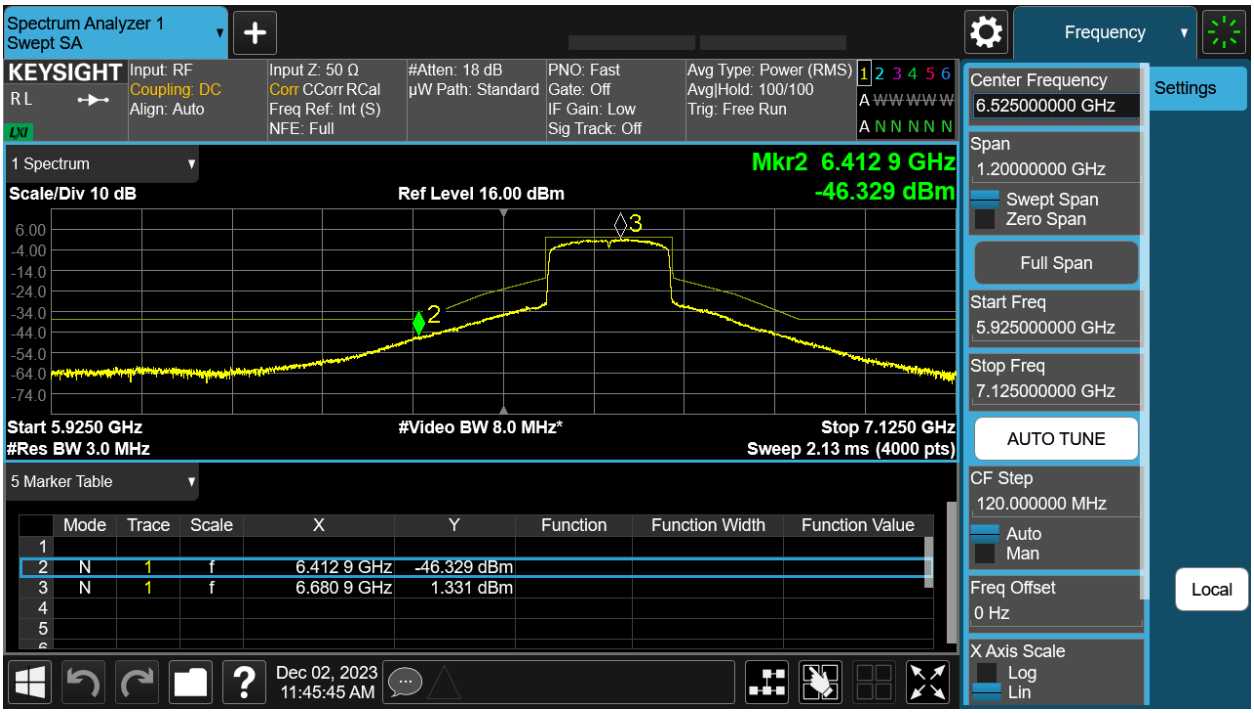
6705MHz: HE80, M0 to M11 1ss – Antenna B



6665 MHz: HE160, M0 to M11 1ss – Antenna A



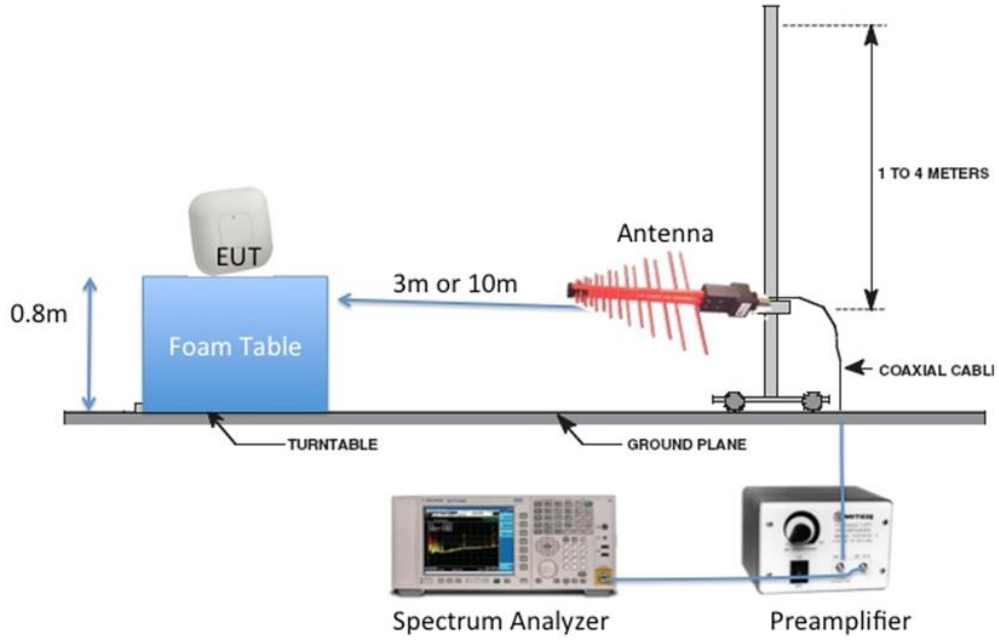
6665 MHz: HE160, M0 to M11 1ss – Antenna B



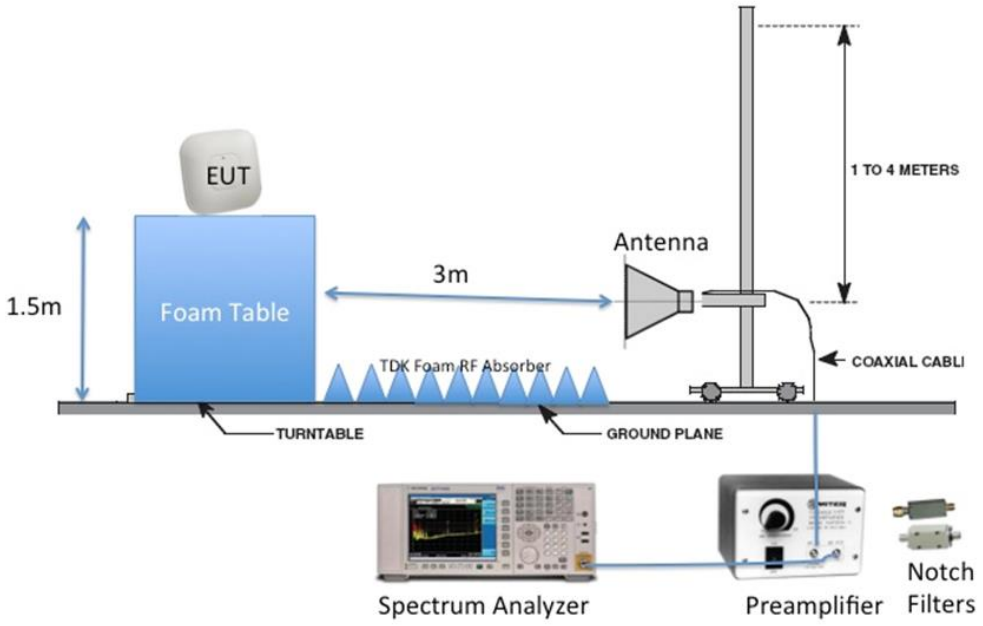
Appendix B: Emission Test Results

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

Radiated Emission Setup Diagram-Below 1G.



Radiated Emission Setup Diagram-Above 1G



B.1: Radiated Spurious Emissions

FCC 15.205 | 15.407 | LP0002 (2018-01-10) (3.6)

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)).

Radiated Spurious emissions results are covered in **EDCS # 24733402**

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)) and RSS-Gen §8.9.

Ref. ANSI C63.10: 2013 section 6.5

Radiated Spurious emissions results are covered in **EDCS # 24733402**

B.3: AC Conducted Emissions

FCC 15.207 | LP0002 (2020-07-01) (3.3)

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

Section 1 : Test Case Details

Test Case ID: 5088 **Test Type: Conducted Emissions**			
Product Standard	**Port Type**	**Test Details**	**Comments**
15.207	DC (Indoor)	Start Freq: 0.15MHz - Stop Freq: 30MHz Power: DC Range : 150KHz to 30MHz. Class: N/A Measure: Voltage(dBuV) Detector(s): Quasi-Peak and Average 150kHz - 500kHz - 89dBuV (QP) 76(AV) 500kHz - 30MHz - 83dBuV (QP) 70(AV)	ANSI C63.4.
Overall Result	Pass		
Deviation	NA		

Section 2:

Subtest Details

Subtest Number: 5088-1 Subtest Date : 5/31/2023	
Engineer	Evelyn Preza
Lab Information	Bldg. P - Shield Room 1
Subtest Results	
Subtest Title	5088-1
Port Reference	[J] DC Input
Measured Voltage	48.1VDC
Transducer	LISN
Subtest Result	Pass
Comments on the above Test Results	EUT powered by 48VDC. DC Input unit is under test. Test results verified by Jose Huamani.
Environmental Conditions	
Temperature: (59 to 95)ºF	70.6
Humidity: (10 to 75)%	60

Test Result File	**Start Freq[MHz]**	**Stop Freq[MHz]**
plce_48vdc_return [26-5-2023 10.23]	.15	30
plce_48vdc_supply [26-5-2023 10.23]	.15	30

Section 3:

Operation Mode

Mode#	Title	Description
1	Formal Test	EUT is set to auto-boot with Linux version 4.4.60 (root@137067b22dab) (gcc version 5.2.0 (OpenWrt GCC 5.2.0 c17576669+r49254)) #41 SMP PREEMPT Tue Oct 25 15:03:29 UTC 2022

Section 4:

Hardware Configuration

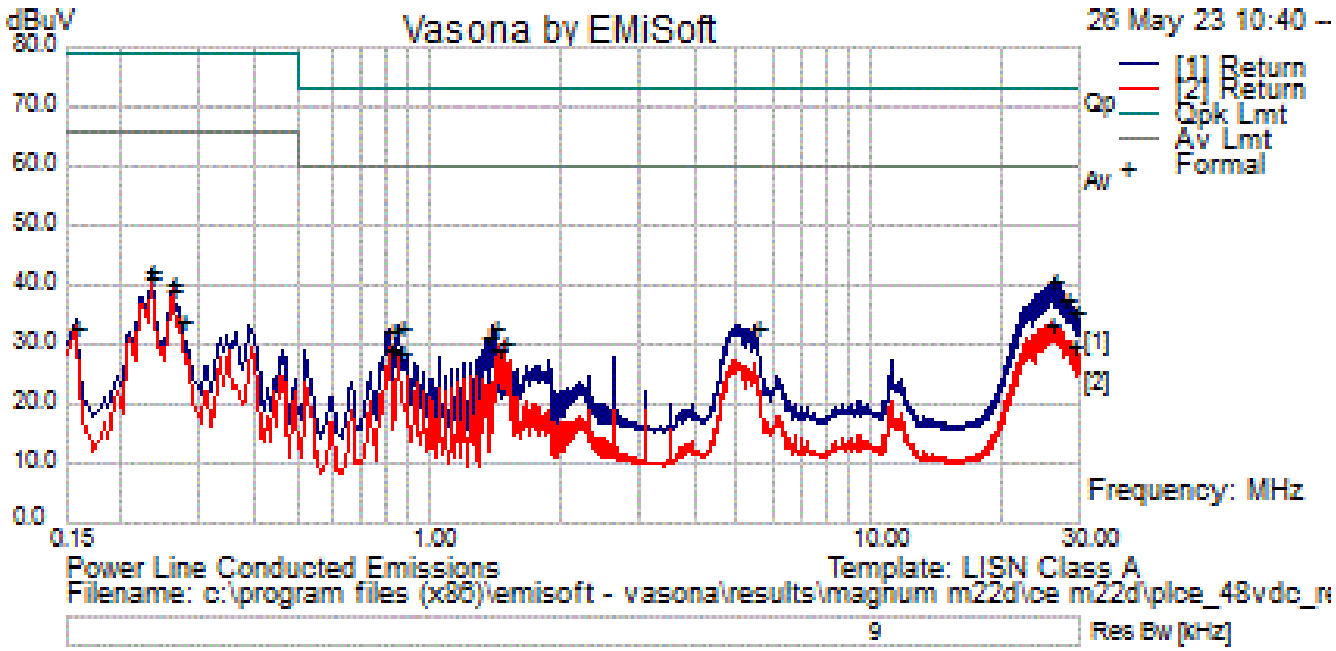
Config#	Title	Description
1	Mode-1 (DC Generator without M12)	Configuration 1: M22D powered up through DC Generator, without M12

Section 5:

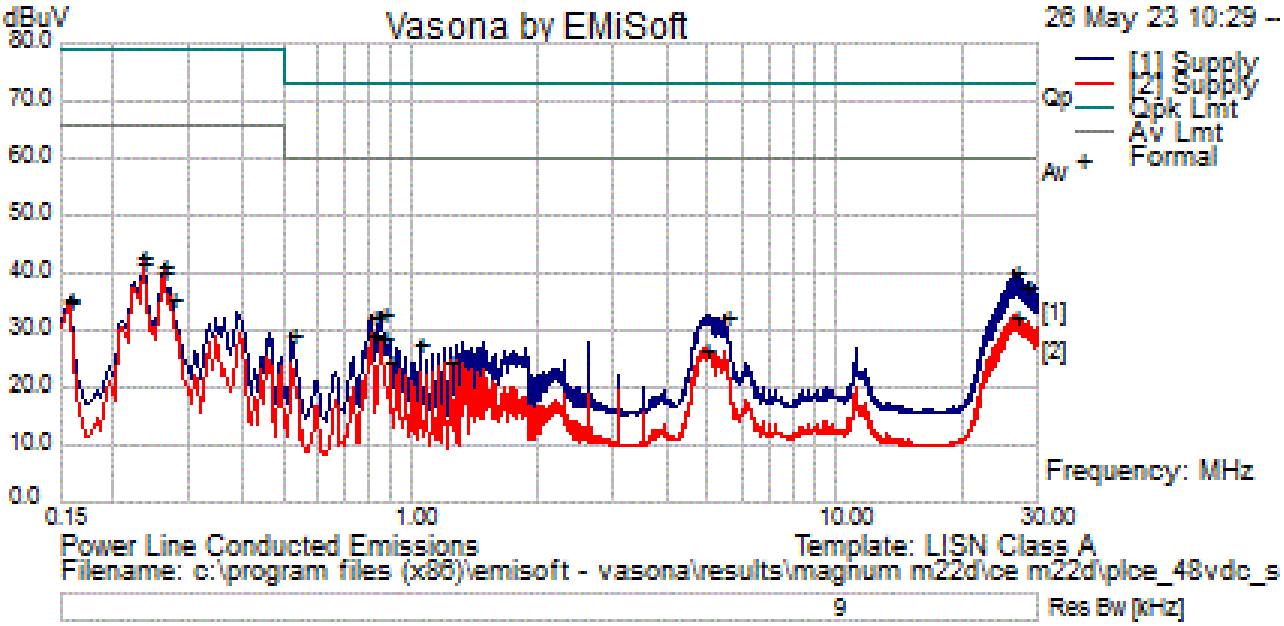
Systems Details

System Number	Description	Samples	System under Test
5	IXIA Traffic Generator (Support)	1, 3, 2	No
3	Support: 2.4GHz & 5GHz Clients, Switch, and Laptop	4, 5, 8, 9	No
1	EUT - Configuration 1: M22D powered up through DC Generator, without M12	2	Yes

Section 6: Test Results Details



Formal Data											
No	**Frequency MHz**	**Raw dBuV**	**Cable Loss**	**Factors dB**	**Level dBuV**	**Measurement Type**	**Line**	**Limit dBuV**	**Margin dB**	**Pass /Fail**	**Comments**
1	.233	21.3	19.9	.0	41.2	Average	Return	66.0	-24.8	Pass	
2	25.865	12.6	20.5	.3	33.5	Average	Return	60.0	-26.5	Pass	
3	.260	19.4	19.9	.0	39.3	Average	Return	66.0	-26.7	Pass	
4	1.478	10.4	19.9	.0	30.3	Average	Return	60.0	-29.7	Pass	
5	28.646	8.6	20.6	.4	29.6	Average	Return	60.0	-30.4	Pass	
6	1.433	9.4	19.9	.0	29.3	Average	Return	60.0	-30.7	Pass	
7	.814	9.4	19.9	.0	29.3	Average	Return	60.0	-30.7	Pass	
8	.852	9.1	19.9	.0	29.0	Average	Return	60.0	-31.0	Pass	
9	.272	14.4	19.8	.0	34.3	Average	Return	66.0	-31.7	Pass	
10	26.140	20.2	20.5	.3	41.1	Quasi Peak	Return	73.0	-31.9	Pass	
11	.157	12.3	20.9	.1	33.3	Average	Return	66.0	-32.7	Pass	
12	27.825	17.0	20.6	.4	37.9	Quasi Peak	Return	73.0	-35.1	Pass	
13	.233	22.6	19.9	.0	42.5	Quasi Peak	Return	79.0	-36.5	Pass	
14	29.528	14.5	20.6	.4	35.5	Quasi Peak	Return	73.0	-37.5	Pass	
15	.260	20.6	19.9	.0	40.5	Quasi Peak	Return	79.0	-38.5	Pass	
16	1.392	13.3	19.9	.0	33.2	Quasi Peak	Return	73.0	-39.8	Pass	
17	.852	13.3	19.9	.0	33.2	Quasi Peak	Return	73.0	-39.8	Pass	
18	5.498	13.1	20.0	.1	33.1	Quasi Peak	Return	73.0	-39.9	Pass	
19	.814	12.7	19.9	.0	32.6	Quasi Peak	Return	73.0	-40.4	Pass	
20	1.352	11.3	19.9	.0	31.2	Quasi Peak	Return	73.0	-41.8	Pass	



No	Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
1	.233	22.2	19.9	.0	42.1	Average	Supply	66.0	-23.9	Pass	
2	.260	20.6	19.9	.0	40.4	Average	Supply	66.0	-25.6	Pass	
3	26.529	11.6	20.5	.3	32.5	Average	Supply	60.0	-27.5	Pass	
4	.272	16.0	19.8	.0	35.9	Average	Supply	66.0	-30.1	Pass	
5	.157	14.3	20.9	.1	35.2	Average	Supply	66.0	-30.8	Pass	
6	.814	9.2	19.9	.0	29.1	Average	Supply	60.0	-30.9	Pass	
7	.852	9.1	19.9	.0	29.0	Average	Supply	60.0	-31.0	Pass	
8	26.507	19.5	20.5	.3	40.4	Quasi Peak	Supply	73.0	-32.6	Pass	
9	4.954	6.8	20.0	.1	26.9	Average	Supply	60.0	-33.1	Pass	
10	28.460	16.9	20.6	.4	37.9	Quasi Peak	Supply	73.0	-35.1	Pass	
11	.890	4.7	19.9	.0	24.6	Average	Supply	60.0	-35.4	Pass	
12	1.239	4.5	19.9	.0	24.4	Average	Supply	60.0	-35.6	Pass	
13	.233	23.1	19.9	.0	43.0	Quasi Peak	Supply	79.0	-36.0	Pass	
14	.260	21.4	19.9	.0	41.3	Quasi Peak	Supply	79.0	-37.7	Pass	
15	.852	13.3	19.9	.0	33.2	Quasi Peak	Supply	73.0	-39.8	Pass	

16	5.498	12.7	20.0	.1	32.8	Quasi Peak	Supply	73.0	-40.2	Pass	
17	.814	12.7	19.9	.0	32.6	Quasi Peak	Supply	73.0	-40.4	Pass	
18	.157	14.9	20.9	.1	35.9	Quasi Peak	Supply	79.0	-43.1	Pass	
19	.524	9.6	19.9	.0	29.5	Quasi Peak	Supply	73.0	-43.5	Pass	
20	1.048	7.9	19.9	.0	27.8	Quasi Peak	Supply	73.0	-45.2	Pass	

Section 7: Questions & Answers

The category of cable simulated by the AAN, where emissions from wired network ports are measured using an AAN. See Table EN55032 C.2	N/A

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

Equipment #	Manufacturer/ Model	Description	Last Cal	Next Due	Test Item
Test Equipment used for conducted tests – Rack 11					
58721	Cisco/Automation Test Insertion Loss	Rack 11	Verify Before Use	Verify Before Use	A.1-A.6
58776	Keysight (Agilent/HP)/ N9030B-550 OPT LNP EP0	PXA Signal Analyzer, 2Hz-50GHz with Options LNP and EP0	1st Sep 2023	1st Sep 2024	A.1-A.6
58803	NATIONAL INSTRUMENTS / PXIe-1085	CHASSIS	Cal Not Required	Cal Not Required	A.1-A.6
58787	NATIONAL INSTRUMENTS / PXIe-8840	Up to 2.6 GHz Quad-Core PXI Express Controller	Cal Not Required	Cal Not Required	A.1-A.6
58788	NATIONAL INSTRUMENTS / PXI-2796	40 GHz Dual 6x1 Multiplexer (SP6T)	Verify Before Use	Verify Before Use	A.1-A.6
58789	NATIONAL INSTRUMENTS / PXI-2796	40 GHz Dual 6x1 Multiplexer (SP6T)	Verify Before Use	Verify Before Use	A.1-A.6
58786	NATIONAL INSTRUMENTS / PXI-2799	Switch 1x1	Verify Before Use	Verify Before Use	A.1-A.6
54235	PASTERNACK/ PE5019-1	Torque Wrench	23rd March 2023	23rd March 2024	A.1-A.6
58256	COMET/ T7611-4	WEB SENSOR FOR REMOTE THERMOMETER HYGROMETER	2nd Feb 2023	2nd Feb 2024	A.1-A.6
56122	PASTERNACK/PE6072	SMA 50 Ohm Termination	1st Sep 2023	1st Sep 2024	A.1-A.6
56127	PASTERNACK/PE6072	SMA 50 Ohm Termination	1st Sep 2023	1st Sep 2024	A.1-A.6

Test Equipment used for AC line Conducted emissions.

Cis-Id	Manufacturer	Model	Description	Calibrated Date	Calibration Due Date
004003	Fischer Custom Communications	FCC-801-M2-32A	CDN, 2-LINE, 32A	11/30/2022	11/30/2023
008496	Fischer Custom Communications	FCC-450B-2.4-N	Instrumentation Limiter	2/14/2023	2/14/2024
018960	York	CNE V	Comparison Noise Emitter, 30 - 1000MHz	NA	NA
045435	Hefley	PAT 50A	EFT Attenuator	7/22/2022	7/22/2023
046002	Fischer Custom Communications	F-090527-1009-1	Line Impedance Stabilization Network	12/20/2022	12/20/2023
046003	Fischer Custom Communications	F-090527-1009-2	LISN Adapter	12/19/2022	12/19/2023
049534	TTE	H785-150K-50-21378	150kHz HI Pass Filter	2/13/2023	2/13/2024
058276	ROHDE & SCHWARZ	ESR3	EMI Receiver	7/29/2022	7/29/2023
058758	Coleman	RG-223	RF Coaxial Cable to 1GHz, 7.6m	8/2/2022	8/2/2023

Appendix D: Abbreviation Key and Definitions

The following table defines abbreviations used within this test report.

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	H	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	A	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)
P	Power Line	L	Live Line
N	Neutral Line	R	Return
S	Supply	AC	Alternating Current

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# 24670123

Appendix F: Software Used to Perform Testing

Cisco Internal LabView Radio Test Automation Software:

RF Automation Main versions: 316

Appendix G: Test Procedures

Measurements were made in accordance with:

- LP0002 (2020-07-01)
- 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 (Excel) EDCS# 24733406
Target Power Tables EDCS# 23074232

Appendix J: Worst Case Justification

N/A

End