

5.5 Unwanted Emissions

■ Test Requirements

- Part 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:

- (1) For transmitters operating in the **5.15 GHz - 5.25 GHz band**: all emissions outside of the **5.15 GHz - 5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.
- (2) For transmitters operating in the **5.25 GHz - 5.35 GHz band**: all emissions outside of the **5.15 GHz - 5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.
- (3) For transmitters operating in the **5.47 GHz - 5.725 GHz band**: all emissions outside of the **5.47 GHz - 5.725 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.
- (4) For transmitters operating in the **5.725 GHz - 5.85 GHz band**: (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. 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.
- (5) Unwanted emissions **below 1 GHz** must comply with the general field strength limits set forth in **Section 15.209**.

Further, any U-NII devices using an **AC power line** are required to comply also with the conducted limits set forth in **Section 15.207**.

- Part 15.209: General requirements

Frequency (MHz)	FCC Limit (uV/m)	Measurement Distance (m)
0.009 – 0.490	2 400 / F (kHz)	300
0.490 – 1.705	24 000 / F (kHz)	30
1.705 – 30.0	30	30

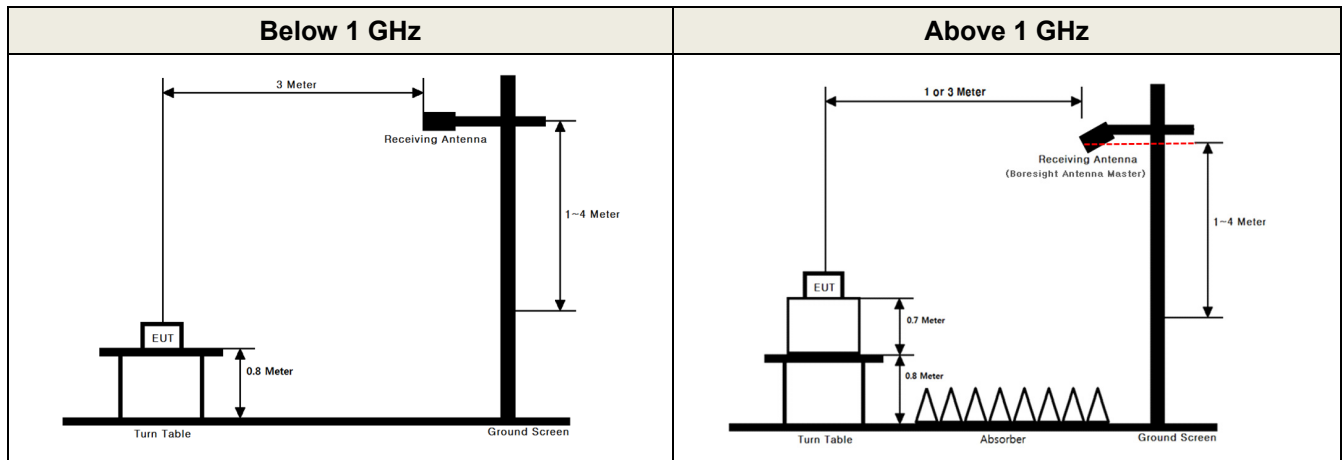
Frequency (MHz)	FCC Limit (uV/m)	Measurement Distance (m)
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

- Part 15.205(a): Restricted band of operation

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.414 25 ~ 8.414 75	108 ~ 121.94	1 300 ~ 1 427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1 435 ~ 1 626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.173 5 ~ 2.190 5	12.519 75 ~ 12.520 25	149.9 ~ 150.05	1 645.5 ~ 1 646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.576 75 ~ 12.577 25	156.524 75 ~ 156.525 25	1 660 ~ 1 710	8.025 ~ 8.5	22.01 ~ 23.12
4.177 25 ~ 4.177 75	13.36 ~ 13.41	156.7 ~ 156.9	1 718.8 ~ 1 722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.207 25 ~ 4.207 75	16.42 ~ 16.423	162.012 5 ~ 167.17	2 200 ~ 2 300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.694 75 ~ 16.695 25	167.72 ~ 173.2	2 310 ~ 2 390	10.6 ~ 12.7	36.43 ~ 36.5
6.267 75 ~ 6.268 25	16.804 25 ~ 16.804 75	240 ~ 285	2 483.5 ~ 2 500	13.25 ~ 13.4	Above 38.6
6.311 75 ~ 6.312 25	25.5 ~ 25.67	322 ~ 335.4	2 655 ~ 2 900		
8.291 ~ 8.294	37.5 ~ 38.25	399.90 ~ 410	3 260 ~ 3 267		
8.362 ~ 8.366	73 ~ 74.6	608 ~ 614	3 332 ~ 3 339		
8.376 25 ~ 8.386 75	74.8 ~ 75.2	960 ~ 1 240	3 345.8 ~ 3 358		
			3 600 ~ 4 400		

■ Test Configuration



■ Test Procedure

1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m.
2. The turn table shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 1 m or 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Radiated spurious emission measured using following Measurement Procedure of KDB789033 D02v02r01

► General Requirements for Unwanted Emissions Measurements

The following requirements apply to all unwanted emissions measurements, both in and outside of the restricted bands:

▪ EUT Duty Cycle

- (1) The EUT shall be configured or modified to **transmit continuously** except as stated in (ii), below. The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (**to no lower than 98 percent**) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.
- (2) If **continuous transmission (or at least 98 percent duty cycle) cannot be achieved** due to hardware limitations of the EUT (e.g., overheating), the following additions to the measurement and reporting procedures are required:
 - The EUT shall be configured to operate at the maximum achievable duty cycle.
 - Measure the duty cycle, x, of the transmitter output signal.
 - Adjustments to measurement procedures (e.g., increasing test time and number of traces averaged) shall be performed as described in the procedures below.
 - The test report shall include the following additional information:
 - The reason for the duty cycle limitation.
 - The duty cycle achieved for testing and the associated transmit duration and interval between transmissions.
 - The sweep time and the amount of time used for trace stabilization during max-hold measurements for peak emission measurements.
- (3) Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

► **Measurements below 1 000 MHz**

- a) Follow the requirements in section II.G.3, “General Requirements for Unwanted Emissions Measurements”.
- b) Compliance shall be demonstrated using **CISPR quasi-peak detection**; however, **peak detection** is permitted as an alternative to quasi-peak detection.

► **Measurements Above 1 000 MHz (Peak)**

- a) Follow the requirements in section II.G.3, “General Requirements for Unwanted Emissions Measurements”.
- b) Peak emission levels are measured by setting the analyzer as follows:
 - (i) **RBW = 1 MHz.**
 - (ii) **VBW ≥ 3 MHz.**
 - (iii) **Detector = Peak.**
 - (iv) Sweep time = Auto.
 - (v) Trace mode = Max hold.
 - (vi) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

► **Measurements Above 1000 MHz (Method AD)**

- (i) **RBW = 1 MHz.**
- (ii) **VBW ≥ 3 MHz.**
- (iii) **Detector = RMS**, if $\text{span} / (\# \text{ of points in sweep}) \leq \text{RBW} / 2$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, the detector mode shall be set to peak.
- (iv) Averaging type = power (i.e., RMS)
 - As an alternative, the detector and averaging type may be set for linear voltage averaging. Some analyzers require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
- (v) Sweep time = Auto.
- (vi) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, the number of traces shall be increased by a factor of 1/x, where x is the duty cycle. For example, with 50 percent duty cycle, at least 200 traces shall be averaged.
- (vii) If tests are performed with the EUT transmitting at a duty cycle less than 98 percent, a correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
 - **If power averaging (RMS) mode was used in step (iv) above, the correction factor is $10 \log(1/x)$, where x is the duty cycle.** For example, if the transmit duty cycle was 50 percent, then 3 dB must be added to the measured emission levels.
 - If linear voltage averaging mode was used in step (iv) above, the correction factor is $20 \log(1/x)$, where x is the duty cycle. For example, if the transmit duty cycle was 50 percent, then 6 dB must be added to the measured emission levels.
 - If a specific emission is demonstrated to be continuous (100 percent duty cycle) rather than turning on and off with the transmit cycle, no duty cycle correction is required for that emission.

Test Results

Test Notes

- The radiated emissions were investigated 9 kHz to 40 GHz. And no other spurious and harmonic emissions were found below listed frequencies.
- Information of Distance Correction Factor
For finding emissions, measurements may be performed at a distance closer than that specified in the regulations.
In this case, the distance factor is applied to the result.
- Calculation of distance correction factor
At frequencies below 30 MHz = $40 \log(\text{tested distance} / \text{specified distance})$
At frequencies at or above 30 MHz = $20 \log(\text{tested distance} / \text{specified distance})$
When distance factor is "N/A", the measurements were performed at the specified distance and distance factor is not applied.
- Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result} / \text{Result} = \text{Reading} + \text{TF} + \text{DCCF} + \text{DCF} / \text{TF} = \text{AF} + \text{CL} + \text{HL} + \text{AL} - \text{AG}$
Where, TF = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, HL = High pass filter Loss, AL = Attenuator Loss, DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
Please refer to the appendix II for duty cycle correction factor.
- The limit is converted to field strength.
 $E(\text{dBuV/m}) = \text{EIRP}(\text{dBm}) + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11ax HE20

Band	Tested Frequency (MHz)	Tone	RU	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	5 180	26	0	5 137.04	H	X	PK	51.00	2.64	N/A	N/A	53.64	74.00	20.36
		26	0	5 136.84	H	X	AV	41.25	2.64	0.02	N/A	43.91	54.00	10.09
		26	0	6 906.64	H	X	PK	60.07	5.88	N/A	N/A	65.95	68.20	2.25
		26	4	10 360.02	V	X	PK	43.40	8.48	N/A	N/A	51.88	68.20	16.32
		242	61	5 149.41	H	X	PK	52.03	2.67	N/A	N/A	54.70	74.00	19.30
		242	61	5 149.90	H	X	AV	41.24	2.67	0.02	N/A	43.93	54.00	10.07
		SU	NA	5 149.48	H	X	PK	51.60	2.67	N/A	N/A	54.27	74.00	19.73
		SU	NA	5 149.85	H	X	AV	41.98	2.67	0.01	N/A	44.66	54.00	9.34
		SU	NA	10 359.48	H	X	PK	42.55	8.48	N/A	N/A	51.03	68.20	17.17
	5 200	26	4	10 399.85	V	X	PK	43.76	8.44	N/A	N/A	52.20	68.20	16.00
		242	61	6 933.29	H	X	PK	59.11	6.11	N/A	N/A	65.22	68.20	2.98
		SU	NA	10 400.64	H	X	PK	43.37	8.44	N/A	N/A	51.81	68.20	16.39
	5 240	26	0	6 986.48	H	X	PK	58.55	6.64	N/A	N/A	65.19	68.20	3.01
		26	4	10 479.33	V	X	PK	43.87	8.56	N/A	N/A	52.43	68.20	15.77
		SU	NA	10 479.03	H	X	PK	43.34	8.56	N/A	N/A	51.90	68.20	16.30
U-NII 2A	5 260	26	0	7 013.23	H	X	PK	59.76	6.67	N/A	N/A	66.43	68.20	1.77
		26	4	10 519.25	V	X	PK	43.69	8.62	N/A	N/A	52.31	68.20	15.89
		SU	NA	10 520.27	H	X	PK	43.28	8.62	N/A	N/A	51.90	68.20	16.30
	5 300	26	0	7 066.68	H	X	PK	59.36	6.28	N/A	N/A	65.64	68.20	2.56
		26	4	10 599.95	V	X	PK	43.74	8.53	N/A	N/A	52.27	68.20	15.93
		26	4	10 601.50	V	X	AV	33.93	8.53	0.02	N/A	42.48	54.00	11.52
		SU	NA	10 598.50	H	X	PK	44.54	8.53	N/A	N/A	53.07	68.20	15.13
		SU	NA	10 600.97	H	X	AV	34.13	8.53	0.01	N/A	42.67	54.00	11.33
	5 320	26	8	5 351.82	H	X	PK	50.80	2.82	N/A	N/A	53.62	74.00	20.38
		26	8	5 352.46	H	X	AV	40.83	2.82	0.02	N/A	43.67	54.00	10.33
		26	4	10 639.94	V	X	PK	43.88	8.46	N/A	N/A	52.34	74.00	21.66
		26	4	10 639.24	V	X	AV	33.75	8.46	0.02	N/A	42.23	54.00	11.77
		242	61	5 351.88	H	X	PK	50.83	2.82	N/A	N/A	53.65	74.00	20.35
		242	61	5 351.37	H	X	AV	41.14	2.81	0.02	N/A	43.97	54.00	10.03
		242	61	7 093.27	H	X	PK	59.46	6.12	N/A	N/A	65.58	68.20	2.62
		SU	NA	5 350.76	H	X	PK	52.13	2.81	N/A	N/A	54.94	74.00	19.06
		SU	NA	5 351.13	H	X	AV	41.52	2.81	0.01	N/A	44.34	54.00	9.66
		SU	NA	10 639.35	H	X	PK	43.98	8.46	N/A	N/A	52.44	74.00	21.56
		SU	NA	10 639.97	H	X	AV	33.56	8.46	0.01	N/A	42.03	54.00	11.97

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11ax HE20

Band	Tested Frequency (MHz)	Tone	RU	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	5 500	26	0	5 459.08	H	X	PK	50.63	3.03	N/A	N/A	53.66	74.00	20.34
		26	0	5 459.33	H	X	AV	40.95	3.03	0.02	N/A	44.00	54.00	10.00
		26	0	5 468.12	H	X	PK	50.87	3.05	N/A	N/A	53.92	68.20	14.28
		26	0	7 691.34	H	X	PK	51.30	8.28	N/A	N/A	59.58	74.00	14.42
		26	0	7 691.41	H	X	AV	42.21	8.28	0.02	N/A	50.51	54.00	3.49
		26	4	11 000.11	V	X	PK	45.93	8.08	N/A	N/A	54.01	74.00	19.99
		26	4	11 000.23	V	X	AV	34.90	8.08	0.02	N/A	43.00	54.00	11.00
		242	61	5 457.79	H	X	PK	51.26	3.02	N/A	N/A	54.28	74.00	19.72
		242	61	5 458.25	H	X	AV	41.32	3.03	0.02	N/A	44.37	54.00	9.63
		242	61	5 460.63	H	X	PK	51.47	3.03	N/A	N/A	54.50	68.20	13.70
		SU	NA	5 456.18	H	X	PK	51.10	3.02	N/A	N/A	54.12	74.00	19.88
		SU	NA	5 455.52	H	X	AV	41.08	3.02	0.01	N/A	44.11	54.00	9.89
		SU	NA	5 469.92	H	X	PK	51.21	3.06	N/A	N/A	54.27	68.20	13.93
		SU	NA	11 000.46	H	X	PK	44.57	8.08	N/A	N/A	52.65	74.00	21.35
		SU	NA	11 000.43	H	X	AV	34.40	8.08	0.01	N/A	42.49	54.00	11.51
	5 600	26	4	11 199.20	V	X	PK	45.06	8.26	N/A	N/A	53.32	74.00	20.68
		26	4	11 199.42	V	X	AV	34.66	8.26	0.02	N/A	42.94	54.00	11.06
		SU	NA	11 199.67	H	X	PK	44.85	8.26	N/A	N/A	53.11	74.00	20.89
		SU	NA	11 199.79	H	X	AV	34.28	8.26	0.01	N/A	42.55	54.00	11.45
	5 720	26	4	11 439.54	V	X	PK	45.52	8.46	N/A	N/A	53.98	74.00	20.02
		26	4	11 439.69	V	X	AV	35.24	8.46	0.02	N/A	43.72	54.00	10.28
		SU	NA	11 439.04	H	X	PK	44.69	8.46	N/A	N/A	53.15	74.00	20.85
		SU	NA	11 439.32	H	X	AV	34.60	8.46	0.01	N/A	43.07	54.00	10.93
U-NII 3	5 745	26	0	5 639.30	H	X	PK	52.10	3.23	N/A	N/A	55.33	68.20	12.87
		26	0	5 667.19	H	X	PK	51.48	3.24	N/A	N/A	54.72	80.92	26.20
		26	4	11 489.67	V	X	PK	45.50	8.56	N/A	N/A	54.06	74.00	19.94
		26	4	11 489.93	V	X	AV	35.41	8.56	0.02	N/A	43.99	54.00	10.01
		242	61	5 649.93	H	X	PK	50.85	3.23	N/A	N/A	54.08	68.20	14.12
		242	61	5 688.00	H	X	PK	51.90	3.24	N/A	N/A	55.14	96.32	41.18
		SU	NA	5 644.73	H	X	PK	51.34	3.23	N/A	N/A	54.57	68.20	13.63
		SU	NA	5 690.68	H	X	PK	50.92	3.24	N/A	N/A	54.16	98.30	44.14
		SU	NA	11 489.46	H	X	PK	45.31	8.55	N/A	N/A	53.86	74.00	20.14
		SU	NA	11 489.90	H	X	AV	34.88	8.56	0.01	N/A	43.45	54.00	10.55
	5 785	26	4	11 569.58	V	X	PK	44.06	8.60	N/A	N/A	52.66	74.00	21.34
		26	4	11 569.80	V	X	AV	34.38	8.60	0.02	N/A	43.00	54.00	11.00
		SU	NA	11 569.75	H	X	PK	44.09	8.60	N/A	N/A	52.69	74.00	21.31
		SU	NA	11 569.19	H	X	AV	33.88	8.60	0.01	N/A	42.49	54.00	11.51
	5 825	26	8	5 885.66	H	X	PK	51.24	3.40	N/A	N/A	54.64	97.31	42.67
		26	8	5 980.74	H	X	PK	51.10	4.20	N/A	N/A	55.30	68.20	12.90
		26	4	11 649.59	V	X	PK	45.91	8.84	N/A	N/A	54.75	74.00	19.25
		26	4	11 649.77	V	X	AV	35.66	8.84	0.02	N/A	44.52	54.00	9.48
		242	61	5 900.03	H	X	PK	51.69	3.52	N/A	N/A	55.21	86.68	31.47
		242	61	5 966.81	H	X	PK	51.09	4.08	N/A	N/A	55.17	68.20	13.03
		SU	NA	5 901.86	H	X	PK	51.19	3.54	N/A	N/A	54.73	85.32	30.59
		SU	NA	5 980.49	H	X	PK	51.24	4.20	N/A	N/A	55.44	68.20	12.76
		SU	NA	11 649.83	H	X	PK	44.84	8.84	N/A	N/A	53.68	74.00	20.32
		SU	NA	11 649.95	H	X	AV	34.66	8.84	0.01	N/A	43.51	54.00	10.49

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11ax(HE40)

Band	Tested Frequency (MHz)	Tone	RU	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	5 190	26	0	5 126.70	H	X	PK	51.58	2.62	N/A	N/A	54.20	74.00	19.80
		26	0	5 126.80	H	X	AV	41.22	2.62	0.02	N/A	43.86	54.00	10.14
		26	0	6 919.81	H	X	PK	59.39	5.99	N/A	N/A	65.38	68.20	2.82
		26	8	10 379.91	V	X	PK	43.68	8.46	N/A	N/A	52.14	68.20	16.06
		484	65	5 144.93	H	X	PK	54.35	2.66	N/A	N/A	57.01	74.00	16.99
		484	65	5 145.87	H	X	AV	43.04	2.66	0.03	N/A	45.73	54.00	8.27
		SU	NA	5 149.83	H	X	PK	55.97	2.67	N/A	N/A	58.64	74.00	15.36
		SU	NA	5 149.86	H	X	AV	44.89	2.67	0.02	N/A	47.58	54.00	6.42
	SU	NA	10 379.67	H	X	PK	42.86	8.46	N/A	N/A	51.32	68.20	16.88	
	5 230	26	8	10 459.28	V	X	PK	44.81	8.50	N/A	N/A	53.31	68.20	14.89
		484	65	6 973.31	H	X	PK	58.97	6.50	N/A	N/A	65.47	68.20	2.73
		SU	NA	10 461.47	H	X	PK	44.44	8.51	N/A	N/A	52.95	68.20	15.25
U-NII 2A	5 270	26	0	7 026.62	H	X	PK	58.64	6.57	N/A	N/A	65.21	68.20	2.99
		26	8	10 539.45	V	X	PK	43.75	8.62	N/A	N/A	52.37	68.20	15.83
		SU	NA	10 540.59	H	X	PK	43.70	8.62	N/A	N/A	52.32	68.20	15.88
	5 310	26	17	5 350.39	H	X	PK	51.94	2.81	N/A	N/A	54.75	74.00	19.25
		26	17	5 350.63	H	X	AV	40.96	2.81	0.02	N/A	43.79	54.00	10.21
		26	8	10 619.26	V	X	PK	44.07	8.50	N/A	N/A	52.57	74.00	21.43
		26	8	10 619.15	V	X	AV	33.69	8.50	0.02	N/A	42.21	54.00	11.79
		484	65	5 350.35	H	X	PK	53.81	2.81	N/A	N/A	56.62	74.00	17.38
		484	65	5 350.03	H	X	AV	43.89	2.81	0.03	N/A	46.73	54.00	7.27
		484	65	7 080.03	H	X	PK	59.38	6.20	N/A	N/A	65.58	68.20	2.62
		SU	NA	5 350.98	H	X	PK	54.60	2.81	N/A	N/A	57.41	74.00	16.59
		SU	NA	5 350.63	H	X	AV	43.87	2.81	0.02	N/A	46.70	54.00	7.30
		SU	NA	10 618.14	H	X	PK	44.06	8.50	N/A	N/A	52.56	74.00	21.44
		SU	NA	10 617.96	H	X	AV	33.55	8.50	0.02	N/A	42.07	54.00	11.93
		U-NII 2C	5 510	26	0	5 458.06	H	X	PK	51.32	3.03	N/A	N/A	54.35
26	0			5 458.34	H	X	AV	40.99	3.03	0.02	N/A	44.04	54.00	9.96
26	0			5 461.47	H	X	PK	51.32	3.04	N/A	N/A	54.36	68.20	13.84
26	8			11 019.80	V	X	PK	44.94	8.09	N/A	N/A	53.03	74.00	20.97
26	8			11 019.79	V	X	AV	34.46	8.09	0.02	N/A	42.57	54.00	11.43
484	65			5 457.12	H	X	PK	51.10	3.02	N/A	N/A	54.12	74.00	19.88
484	65			5 456.35	H	X	AV	41.14	3.02	0.03	N/A	44.19	54.00	9.81
484	65			5 467.54	H	X	PK	52.35	3.05	N/A	N/A	55.40	68.20	12.80
SU	NA			5 457.92	H	X	PK	50.82	3.02	N/A	N/A	53.84	74.00	20.16
SU	NA			5 458.30	H	X	PK	41.06	3.03	N/A	N/A	44.09	74.00	29.91
SU	NA			5 468.99	H	X	PK	53.41	3.06	N/A	N/A	56.47	68.20	11.73
SU	NA			11 019.72	H	X	PK	44.55	8.09	N/A	N/A	52.64	74.00	21.36
SU	NA			11 019.48	H	X	PK	34.32	8.09	0.02	N/A	42.43	54.00	11.57
5 590	26		8	11 179.35	V	X	PK	44.84	8.25	N/A	N/A	53.09	74.00	20.91
	26		8	11 179.78	V	X	AV	34.71	8.25	0.02	N/A	42.98	54.00	11.02
	SU		NA	11 179.48	H	X	PK	45.28	8.25	N/A	N/A	53.53	74.00	20.47
	SU		NA	11 179.64	H	X	AV	34.52	8.25	0.02	N/A	42.79	54.00	11.21
	5 710		26	8	11 420.30	V	X	PK	45.06	8.45	N/A	N/A	53.51	74.00
26		8	11 420.17	V	X	AV	34.68	8.45	0.02	N/A	43.15	54.00	10.85	
SU		NA	11 419.37	H	X	PK	44.57	8.45	N/A	N/A	53.02	74.00	20.98	
SU		NA	11 419.46	H	X	AV	34.17	8.45	0.02	N/A	42.64	54.00	11.36	

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11ax(HE40)

Band	Tested Frequency (MHz)	Tone	RU	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 3	5 755	26	0	5 641.65	H	X	PK	50.90	3.23	N/A	N/A	54.13	68.20	14.07
		26	0	5 678.73	H	X	PK	51.41	3.24	N/A	N/A	54.65	89.46	34.81
		26	8	11 509.91	H	X	PK	46.05	8.58	N/A	N/A	54.63	74.00	19.37
		26	8	11 509.75	H	X	AV	35.22	8.58	0.02	N/A	43.82	54.00	10.18
		484	65	5 646.10	H	X	PK	51.21	3.23	N/A	N/A	54.44	68.20	13.76
		484	65	5 654.30	H	X	PK	51.69	3.24	N/A	N/A	54.93	71.38	16.45
		SU	NA	5 646.68	H	X	PK	52.16	3.23	N/A	N/A	55.39	68.20	12.81
		SU	NA	5 663.03	H	X	PK	52.40	3.24	N/A	N/A	55.64	77.84	22.20
		SU	NA	11 509.42	H	X	PK	45.09	8.58	N/A	N/A	53.67	74.00	20.33
		SU	NA	11 509.86	H	X	AV	34.65	8.58	0.02	N/A	43.25	54.00	10.75
	5 795	26	17	5 919.28	H	X	PK	51.64	3.69	N/A	N/A	55.33	72.43	17.10
		26	17	5 940.72	H	X	PK	51.54	3.87	N/A	N/A	55.41	68.20	12.79
		26	8	11 589.43	V	X	PK	45.00	8.64	N/A	N/A	53.64	74.00	20.36
		26	8	11 589.79	V	X	AV	34.47	8.64	0.02	N/A	43.13	54.00	10.87
		484	65	5 879.08	H	X	PK	51.89	3.35	N/A	N/A	55.24	102.18	46.94
		484	65	5 982.68	H	X	PK	51.52	4.22	N/A	N/A	55.74	68.20	12.46
		SU	NA	5 903.44	H	X	PK	51.29	3.55	N/A	N/A	54.84	84.15	29.31
		SU	NA	5 938.76	H	X	PK	50.83	3.85	N/A	N/A	54.68	68.20	13.52
		SU	NA	11 589.67	H	X	PK	43.93	8.64	N/A	N/A	52.57	74.00	21.43
		SU	NA	11 590.38	H	X	AV	33.73	8.64	0.02	N/A	42.39	54.00	11.61

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11ax(HE80)

Band	Tested Frequency (MHz)	Tone	RU	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	5 210	26	0	5 149.65	H	X	PK	52.70	2.67	N/A	N/A	55.37	74.00	18.63
		26	0	5 149.57	H	X	AV	41.31	2.67	0.01	N/A	43.99	54.00	10.01
		26	0	6 946.72	H	X	PK	60.80	6.22	N/A	N/A	67.02	68.20	1.18
		26	18	10 419.46	V	X	PK	44.49	8.45	N/A	N/A	52.94	68.20	15.26
		996	67	5 149.10	H	X	PK	57.34	2.67	N/A	N/A	60.01	74.00	13.99
		996	67	5 149.58	H	X	AV	47.53	2.67	0.06	N/A	50.26	54.00	3.74
		SU	NA	5 149.86	H	X	PK	56.74	2.67	N/A	N/A	59.41	74.00	14.59
		SU	NA	5 149.66	H	X	AV	45.91	2.67	0.03	N/A	48.61	54.00	5.39
		SU	NA	10 419.72	H	X	PK	43.73	8.45	N/A	N/A	52.18	68.20	16.02
U-NII 2A	5 290	26	36	5 350.66	H	X	PK	53.20	2.81	N/A	N/A	56.01	74.00	17.99
		26	36	5 350.25	H	X	AV	41.48	2.81	0.01	N/A	44.30	54.00	9.70
		26	18	10 580.94	V	X	PK	44.46	8.57	N/A	N/A	53.03	68.20	15.17
		996	67	5 350.73	H	X	PK	57.31	2.81	N/A	N/A	60.12	74.00	13.88
		996	67	5 350.69	H	X	AV	47.20	2.81	0.06	N/A	50.07	54.00	3.93
		996	67	7 053.37	H	X	PK	59.72	6.36	N/A	N/A	66.08	68.20	2.12
		SU	NA	5 350.22	H	X	PK	56.99	2.81	N/A	N/A	59.80	74.00	14.20
		SU	NA	5 350.06	H	X	AV	45.74	2.81	0.03	N/A	48.58	54.00	5.42
		SU	NA	10 580.92	H	X	PK	43.91	8.57	N/A	N/A	52.48	68.20	15.72
U-NII 2C	5 530	26	0	5 457.27	H	X	PK	50.90	3.02	N/A	N/A	53.92	74.00	20.08
		26	0	5 457.89	H	X	AV	41.15	3.02	0.01	N/A	44.18	54.00	9.82
		26	0	5 464.06	H	X	PK	51.70	3.04	N/A	N/A	54.74	68.20	13.46
		26	0	7 703.92	H	X	PK	51.39	8.32	N/A	N/A	59.71	74.00	14.29
		26	0	7 704.07	H	X	AV	42.89	8.32	0.01	N/A	51.22	54.00	2.78
		26	18	11 059.49	H	X	PK	44.56	8.10	N/A	N/A	52.66	74.00	21.34
		26	18	11 059.77	H	X	AV	33.99	8.10	0.01	N/A	42.10	54.00	11.90
		996	67	5 456.50	H	X	PK	52.97	3.02	N/A	N/A	55.99	74.00	18.01
		996	67	5 457.40	H	X	AV	42.29	3.02	0.06	N/A	45.37	54.00	8.63
		996	67	5 465.18	H	X	PK	53.32	3.05	N/A	N/A	56.37	68.20	11.83
		SU	NA	5 459.88	H	X	PK	52.33	3.03	N/A	N/A	55.36	74.00	18.64
		SU	NA	5 459.33	H	X	AV	42.21	3.03	0.03	N/A	45.27	54.00	8.73
		SU	NA	5 467.45	H	X	PK	53.46	3.05	N/A	N/A	56.51	68.20	11.69
		SU	NA	11 059.16	H	X	PK	44.96	8.10	N/A	N/A	53.06	74.00	20.94
		SU	NA	11 059.72	H	X	AV	34.39	8.10	0.03	N/A	42.52	54.00	11.48
	5 610	26	18	11 220.15	H	X	PK	44.82	8.31	N/A	N/A	53.13	74.00	20.87
		26	18	11 220.04	H	X	AV	34.55	8.31	0.01	N/A	42.87	54.00	11.13
		SU	NA	11 219.06	H	X	PK	44.57	8.31	N/A	N/A	52.88	74.00	21.12
		SU	NA	11 219.30	H	X	AV	34.32	8.31	0.03	N/A	42.66	54.00	11.34
	5 690	26	18	11 379.79	H	X	PK	44.32	8.43	N/A	N/A	52.75	74.00	21.25
		26	18	11 379.96	H	X	AV	34.35	8.43	0.01	N/A	42.79	54.00	11.21
		SU	NA	11 379.04	H	X	PK	44.21	8.43	N/A	N/A	52.64	74.00	21.36
		SU	NA	11 379.38	H	X	AV	33.94	8.43	0.03	N/A	42.40	54.00	11.60

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11ax(HE80)

Band	Tested Frequency (MHz)	Tone	RU	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 3	5 775	26	0	5 645.60	H	X	PK	51.84	3.23	N/A	N/A	55.07	68.20	13.13
		26	0	5 658.58	H	X	PK	53.42	3.24	N/A	N/A	56.66	74.55	17.89
		26	36	5 896.16	H	X	PK	51.82	3.49	N/A	N/A	55.31	89.54	34.23
		26	36	5 925.12	H	X	PK	51.40	3.73	N/A	N/A	55.13	68.20	13.07
		26	18	11 550.70	V	X	PK	44.59	8.57	N/A	N/A	53.16	74.00	20.84
		26	18	11 550.14	V	X	AV	34.46	8.57	0.01	N/A	43.04	54.00	10.96
		996	67	5 639.55	H	X	PK	50.95	3.23	N/A	N/A	54.18	68.20	14.02
		996	67	5 661.33	H	X	PK	52.73	3.24	N/A	N/A	55.97	76.58	20.61
		996	67	5 881.24	H	X	PK	50.79	3.36	N/A	N/A	54.15	100.58	46.43
		996	67	5 964.04	H	X	PK	50.98	4.06	N/A	N/A	55.04	68.20	13.16
		SU	NA	5 638.88	H	X	PK	51.44	3.23	N/A	N/A	54.67	68.20	13.53
		SU	NA	5 694.48	H	X	PK	52.54	3.24	N/A	N/A	55.78	101.12	45.34
		SU	NA	5 881.56	H	X	PK	48.24	3.37	N/A	N/A	51.61	100.35	48.74
		SU	NA	5 974.80	H	X	PK	51.63	4.15	N/A	N/A	55.78	68.20	12.42
		SU	NA	11 549.68	H	X	PK	44.24	8.57	N/A	N/A	52.81	74.00	21.19
		SU	NA	11 549.82	H	X	AV	33.56	8.57	0.03	N/A	42.16	54.00	11.84

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11ax(HE160)

Band	Tested Frequency (MHz)	Tone	RU	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1, 2A	5 250	26	0L	5 126.09	H	X	PK	52.55	2.62	N/A	N/A	55.17	74.00	18.83
		26	0L	5 125.40	H	X	AV	41.15	2.62	0.04	N/A	43.81	54.00	10.19
		26	36U	5 350.08	H	X	PK	51.92	2.81	N/A	N/A	54.73	74.00	19.27
		26	36U	5 350.36	H	X	AV	40.98	2.81	0.04	N/A	43.83	54.00	10.17
		26	0U	10 498.83	V	X	PK	43.66	8.62	N/A	N/A	52.28	68.20	15.92
		996	67L	5 122.38	H	X	PK	65.89	2.61	N/A	N/A	68.50	74.00	5.50
		996	67L	5 121.69	H	X	AV	47.39	2.61	0.06	N/A	50.06	54.00	3.94
		996	67U	5 378.41	H	X	PK	59.44	2.89	N/A	N/A	62.33	74.00	11.67
		996	67U	5 378.97	H	X	AV	46.33	2.89	0.06	N/A	49.28	54.00	4.72
		996	67L	6 999.90	H	X	PK	58.81	6.78	N/A	N/A	65.59	68.20	2.61
		2x996	68	5 122.70	H	X	PK	63.87	2.62	N/A	N/A	66.49	74.00	7.51
		2x996	68	5 122.59	H	X	AV	48.01	2.62	0.11	N/A	50.74	54.00	3.26
		2x996	68	5 382.35	H	X	PK	62.30	2.90	N/A	N/A	65.20	74.00	8.80
		2x996	68	5 382.06	H	X	AV	47.75	2.90	0.11	N/A	50.76	54.00	3.24
		SU	NA	5 148.33	H	X	PK	58.53	2.67	N/A	N/A	61.20	74.00	12.80
		SU	NA	5 149.19	H	X	AV	47.80	2.67	0.03	N/A	50.50	54.00	3.50
		SU	NA	5 378.90	H	X	PK	58.84	2.89	N/A	N/A	61.73	74.00	12.27
		SU	NA	5 378.90	H	X	AV	48.09	2.89	0.03	N/A	51.01	54.00	2.99
		SU	NA	10 499.34	H	X	PK	43.16	8.62	N/A	N/A	51.78	68.20	16.42
U-NII 2C	5 570	26	0L	5 441.54	H	X	PK	52.56	2.99	N/A	N/A	55.55	74.00	18.45
		26	0L	5 440.82	H	X	AV	40.41	2.99	0.04	N/A	43.44	54.00	10.56
		26	0L	5 465.74	H	X	PK	50.84	3.05	N/A	N/A	53.89	68.20	14.31
		26	0U	11 139.77	V	X	PK	45.49	8.22	N/A	N/A	53.71	74.00	20.29
		26	0U	11 139.83	V	X	AV	34.98	8.22	0.04	N/A	43.24	54.00	10.76
		26	0L	7 719.84	H	X	PK	50.82	8.37	N/A	N/A	59.19	74.00	14.81
		26	0L	7 720.01	H	X	AV	42.50	8.38	0.04	N/A	50.92	54.00	3.08
		106	53L	5 438.81	H	X	PK	64.85	2.99	N/A	N/A	67.84	74.00	6.16
		106	53L	5 439.30	H	X	AV	44.68	2.99	0.02	N/A	47.69	54.00	6.31
		106	53L	5 464.34	H	X	PK	61.08	3.04	N/A	N/A	64.12	68.20	4.08
		106	60U	5 729.06	H	X	PK	61.26	3.35	N/A	N/A	64.61	68.20	3.59
		242	61L	5 443.65	H	X	PK	65.37	3.00	N/A	N/A	68.37	74.00	5.63
		242	61L	5 443.34	H	X	AV	45.35	3.00	0.01	N/A	48.36	54.00	5.64
		242	61L	5 468.70	H	X	PK	61.49	3.06	N/A	N/A	64.55	68.20	3.65
		242	64U	5 725.28	H	X	PK	61.16	3.23	N/A	N/A	64.39	68.20	3.81
		484	65L	5 445.19	H	X	PK	59.88	3.00	N/A	N/A	62.88	74.00	11.12
		484	65L	5 444.86	H	X	AV	41.61	3.00	0.03	N/A	44.64	54.00	9.36
		484	65L	5 460.37	H	X	PK	54.17	3.03	N/A	N/A	57.20	68.20	11.00
		484	66U	5 728.46	H	X	PK	58.36	3.33	N/A	N/A	61.69	68.20	6.51
		996	67L	5 438.85	H	X	PK	61.72	2.99	N/A	N/A	64.71	74.00	9.29
		996	67L	5 438.56	H	X	AV	43.39	2.99	0.06	N/A	46.44	54.00	7.56
		996	67L	5 464.34	H	X	PK	56.22	3.04	N/A	N/A	59.26	68.20	8.94
		996	67U	5 728.54	H	X	PK	60.95	3.33	N/A	N/A	64.28	68.20	3.92
		2x996	68	5 438.74	H	X	PK	61.77	2.99	N/A	N/A	64.76	74.00	9.24
		2x996	68	5 438.88	H	X	AV	45.34	2.99	0.11	N/A	48.44	54.00	5.56
		2x996	68	5 464.54	H	X	PK	59.15	3.04	N/A	N/A	62.19	68.20	6.01
		2x996	68	5 728.53	H	X	PK	61.71	3.33	N/A	N/A	65.04	68.20	3.16
		SU	NA	5 458.21	H	X	PK	57.16	3.03	N/A	N/A	60.19	74.00	13.81
		SU	NA	5 457.96	H	X	AV	47.07	3.02	0.03	N/A	50.12	54.00	3.88
		SU	NA	5 463.87	H	X	PK	56.49	3.04	N/A	N/A	59.53	68.20	8.67
		SU	NA	5 728.78	H	X	PK	55.51	3.34	N/A	N/A	58.85	68.20	9.35
		SU	NA	11 139.10	H	X	PK	45.48	8.21	N/A	N/A	53.69	74.00	20.31
		SU	NA	11 138.70	H	X	AV	34.88	8.21	0.03	N/A	43.12	54.00	10.88

5.6 AC Power-Line Conducted Emissions

■ Test Requirements, §15.207

An intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network (LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5.0	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

■ Test Configuration

See test photographs for the actual connections between EUT and support equipment.

■ Test Procedure

Conducted emissions from the EUT were measured according to the ANSI C63.10-2013.

1. The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

■ Test Results: **Comply**

Refer to the next page. The worst case data was reported.

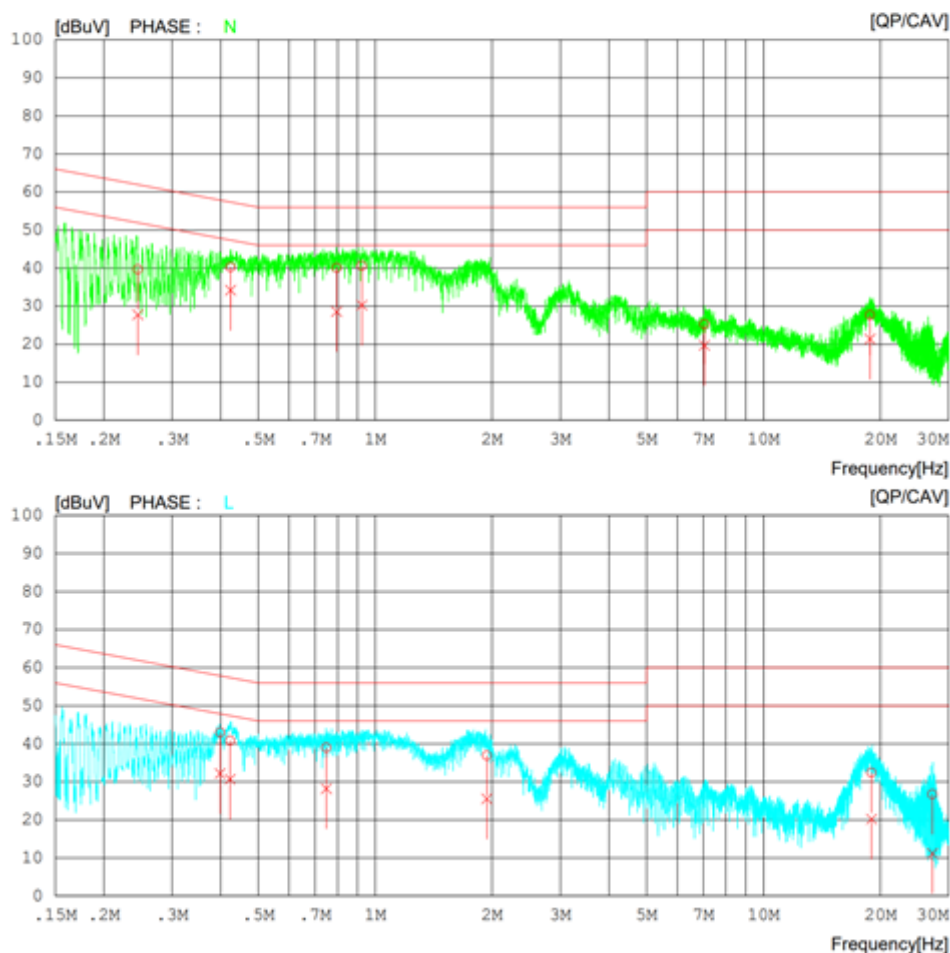
AC Line Conducted Emissions (Graph)

Test Mode: U-NII 1 & 802.11ax HE20 & MIMO(CDD) & 5 180 MHz & 26 Tone 0RU

Results of Conducted Emission

Date 2024-04-29

Order No.		Reference No.	
Model No.	PM95	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 °C / 41 %
Test Condition	UNII_1	Operator	S.M.GIL
Memo	ax20_5180		

LIMIT : FCC P15.207 AV
FCC P15.207 QPLisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1 LISN TO RECIVER_2023-12-11
Pulse Limiter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

AC Line Conducted Emissions (Data List)

Test Mode: U-NII 1 & 802.11ax HE20 & MIMO(CDD) & 5 180 MHz & 26 Tone 0RU

Results of Conducted Emission

Date 2024-04-29

Order No.		Reference No.	
Model No.	PM95	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 °C / 41 %
Test Condition	UNII_1	Operator	S.M.GIL
Memo	ax20_5180		

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor

1. NSLK 8128 RC-387_N_23.10.26

2. NSLK 8128 RC-387_L1_23.10.26

Cable Loss

1. C1_LISN TO RECIVER_2023-12-11

Pulse Lmitter

1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.24469	29.69	17.75	9.99	39.68	27.74	61.94	51.94	22.26	24.20	N
2	0.42396	30.25	24.20	10.00	40.25	34.20	57.37	47.37	17.12	13.17	N
3	0.79592	30.05	18.56	10.01	40.06	28.57	56.00	46.00	15.94	17.43	N
4	0.92413	30.60	20.21	10.02	40.62	30.23	56.00	46.00	15.38	15.77	N
5	7.04620	15.04	9.42	10.26	25.30	19.69	60.00	50.00	34.70	30.32	N
6	18.80520	17.10	10.83	10.55	27.65	21.38	60.00	50.00	32.35	28.62	N
7	0.39857	32.99	22.19	10.00	42.99	32.19	57.88	47.88	14.89	15.69	L
8	0.42314	30.83	20.68	10.00	40.83	30.68	57.39	47.39	16.56	16.71	L
9	0.74880	28.90	18.10	10.11	39.01	28.21	56.00	46.00	16.99	17.79	L
10	1.93900	26.74	15.36	10.16	36.90	25.52	56.00	46.00	19.10	20.48	L
11	18.98360	21.86	9.64	10.57	32.43	20.21	60.00	50.00	27.57	29.79	L
12	27.24500	16.09	0.51	10.67	26.76	11.18	60.00	50.00	33.24	38.82	L

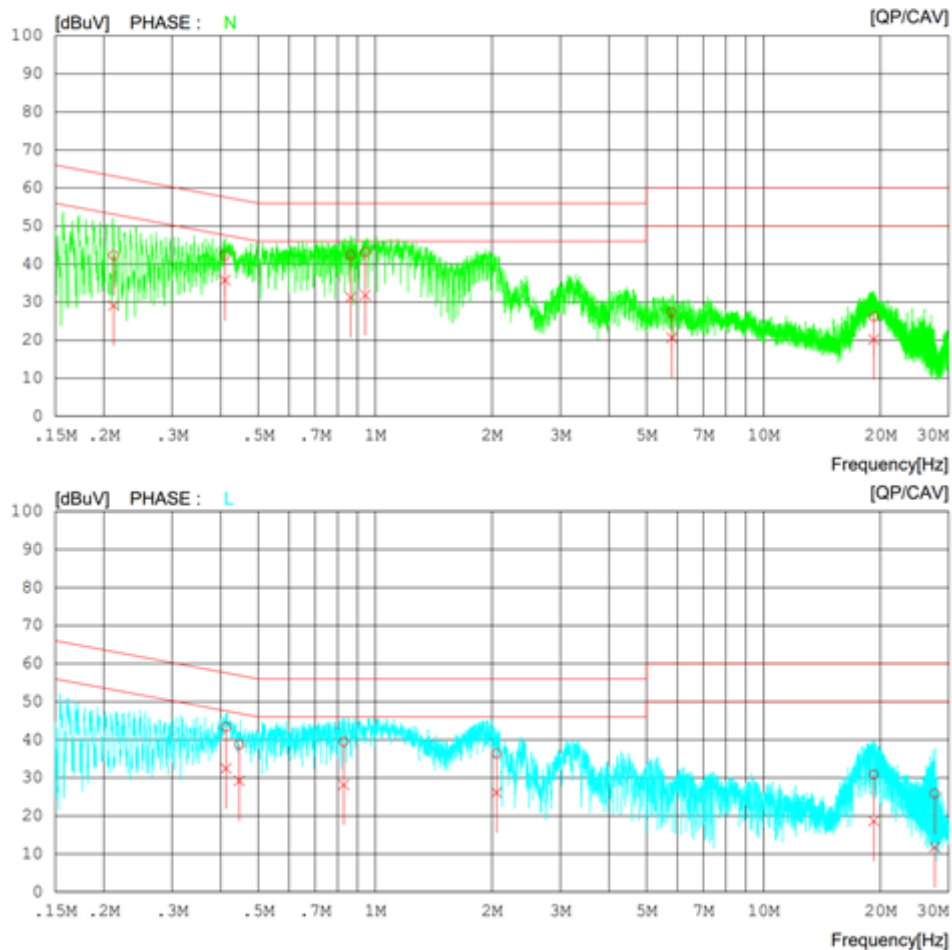
AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2A & 802.11ax HE20 & MIMO(CDD) & 5 260 MHz & 26 Tone 0RU

Results of Conducted Emission

Date 2024-04-29

Order No.		Reference No.	
Model No.	PM95	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 'C / 41 %
Test Condition	UNII_2A	Operator	S.M.GIL
Memo	ax20_5260		

LIMIT : FCC P15.207 AV
FCC P15.207 QPLisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Limiter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2A & 802.11ax HE20 & MIMO(CDD) & 5 260 MHz & 26 Tone 0RU

Results of Conducted Emission

Date 2024-04-29

Order No.
Model No. PM95
Serial No.
Test Condition UNII_2A
Memo ax20_5260

Reference No.
Power Supply 120 V, 60 Hz
Temp/Humi. 23 'C / 41 %
Operator S.M.GIL

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor

1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26

Cable Loss

1. C1_LISN TO RECIVER_2023-12-11

Pulse Limiter

1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.21176	32.33	19.12	9.99	42.32	29.11	63.14	53.14	20.82	24.03	N
2	0.41031	32.22	25.77	10.00	42.22	35.77	57.64	47.64	15.42	11.87	N
3	0.86472	32.37	21.23	10.02	42.39	31.25	56.00	46.00	13.61	14.75	N
4	0.94300	33.12	21.82	10.02	43.14	31.84	56.00	46.00	12.86	14.16	N
5	5.80760	17.14	10.44	10.23	27.37	20.67	60.00	50.00	32.63	29.33	N
6	19.23320	15.59	9.62	10.56	26.15	20.18	60.00	50.00	33.85	29.82	N
7	0.41274	33.36	22.44	10.00	43.36	32.44	57.59	47.59	14.23	15.15	L
8	0.44673	28.71	19.24	10.00	38.71	29.24	56.94	46.94	18.23	17.70	L
9	0.82950	29.34	18.09	10.11	39.45	28.20	56.00	46.00	16.55	17.80	L
10	2.05340	26.23	15.98	10.16	36.39	26.14	56.00	46.00	19.61	19.86	L
11	19.22720	20.25	8.10	10.58	30.83	18.68	60.00	50.00	29.17	31.32	L
12	27.59480	15.16	1.09	10.68	25.84	11.77	60.00	50.00	34.16	38.23	L

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2C & 802.11ax HE20 & MIMO(CDD) & 5 500 MHz 26 Tone 0RU

Results of Conducted Emission

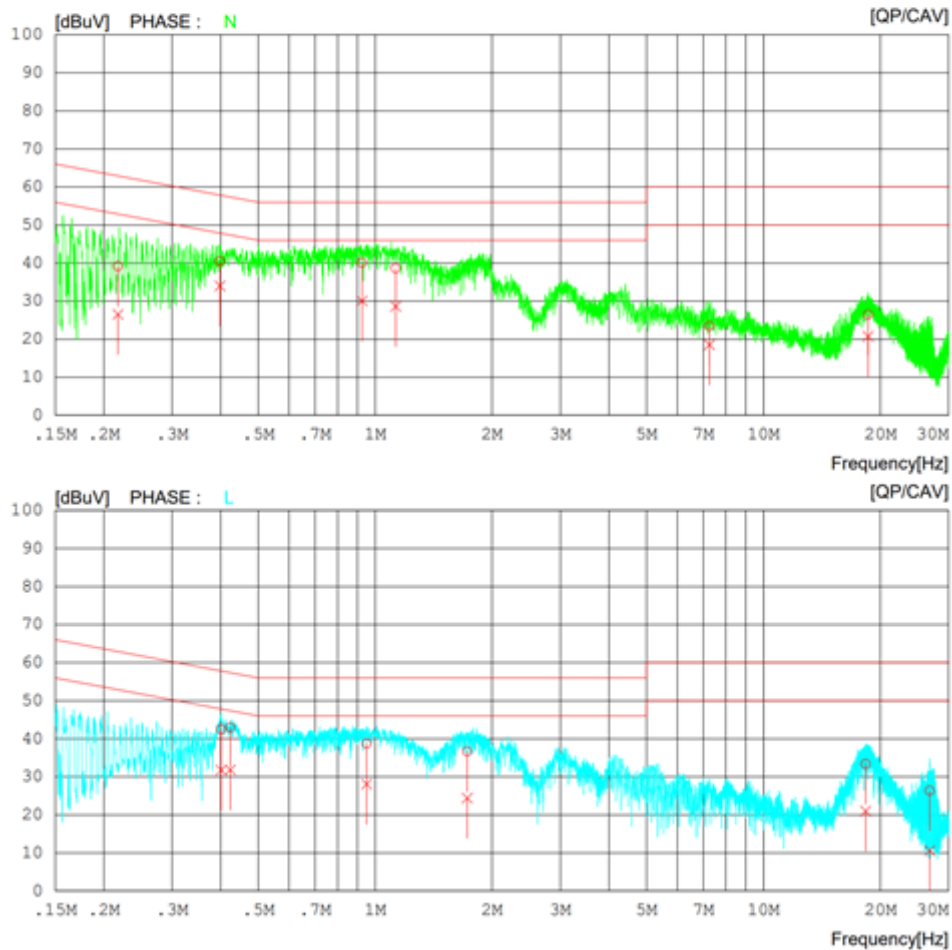
Date 2024-04-29

Order No.
Model No. PM95
Serial No.
Test Condition UNII_2C
Memo ax20_5500

Reference No.
Power Supply 120 V, 60 Hz
Temp/Humi. 23 'C / 41 %
Operator S.M.GIL

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Limiter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21



AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2C & 802.11ax HE20 & MIMO(CDD) & 5 500 MHz 26 Tone 0RU

Results of Conducted Emission

Date 2024-04-29

Order No.		Reference No.	
Model No.	PM95	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 'C / 41 %
Test Condition	UNII_2C	Operator	S.M.GIL
Memo	ax20_5500		

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor

1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26

Cable Loss

1. C1_LISN TO RECIVER_2023-12-11

Pulse Lmitter

1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.21754	29.17	16.51	9.99	39.16	26.50	62.91	52.91	23.75	26.41	N
2	0.39811	30.49	23.98	10.00	40.49	33.98	57.89	47.89	17.40	13.91	N
3	0.92420	30.02	20.03	10.02	40.04	30.05	56.00	46.00	15.96	15.95	N
4	1.12960	28.59	18.62	10.02	38.61	28.64	56.00	46.00	17.39	17.36	N
5	7.25900	13.20	8.26	10.27	23.47	18.53	60.00	50.00	36.53	31.47	N
6	18.59080	15.87	10.22	10.55	26.42	20.77	60.00	50.00	33.58	29.23	N
7	0.40135	32.45	21.76	10.00	42.45	31.76	57.83	47.83	15.38	16.07	L
8	0.42362	32.99	21.81	10.00	42.99	31.81	57.38	47.38	14.39	15.57	L
9	0.95054	28.59	17.92	10.12	38.71	28.04	56.00	46.00	17.29	17.96	L
10	1.72660	26.49	14.27	10.15	36.64	24.42	56.00	46.00	19.36	21.58	L
11	18.34200	22.82	10.40	10.57	33.39	20.97	60.00	50.00	26.61	29.03	L
12	26.78640	15.67	-0.07	10.67	26.34	10.60	60.00	50.00	33.66	39.40	L

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 3 & 802.11ax HE20 & MIMO(CDD) & 5745 MHz 26 Tone 0RU

Results of Conducted Emission

Date 2024-04-29

Order No.	PM95	Reference No.	
Model No.		Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 °C / 41 %
Test Condition	UNII_3	Operator	S.M.GIL
Memo	ax20_5745		

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor

1. NSLK 8128 RC-387_N_23.10.26

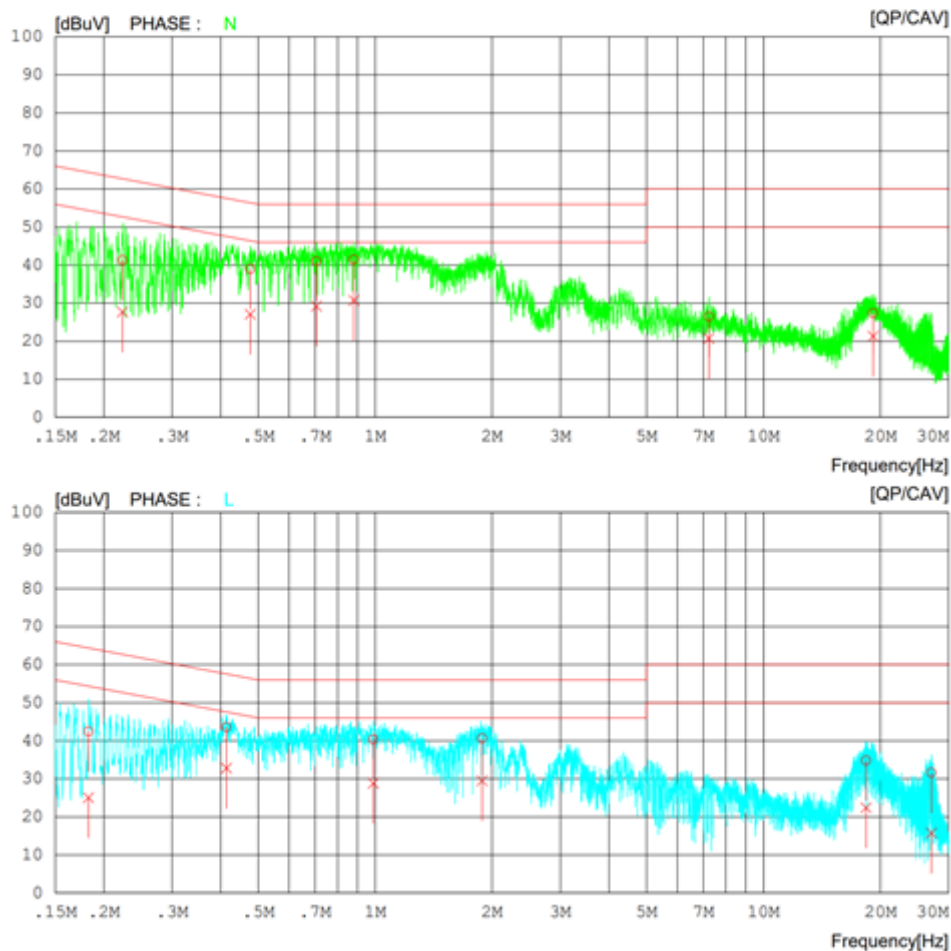
2. NSLK 8128 RC-387_LT_23.10.26

Cable Loss

1. C1_LISN TO RECIVER_2023-12-11

Pulse Limiter

1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21



AC Line Conducted Emissions (Data List)

Test Mode: U-NII 3 & 802.11ax HE20 & MIMO(CDD) & 5 745 MHz 26 Tone 0RU

Results of Conducted Emission

Date 2024-04-29

Order No.		Reference No.	
Model No.	PM95	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 °C / 41 %
Test Condition	UNII_3	Operator	S.M.GIL
Memo	ax20_5745		

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor

1. NSLK 8128 RC-387_N_23.10.26

2. NSLK 8128 RC-387_L1_23.10.26

Cable Loss

1. C1_LISN TO RECIVER_2023-12-11

Pulse Limiter

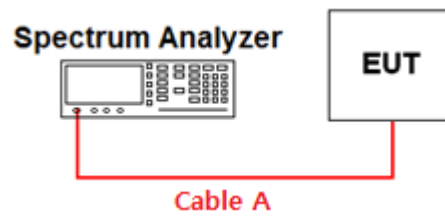
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.22348	31.29	17.71	9.99	41.28	27.70	62.69	52.69	21.41	24.99	N
2	0.47659	28.96	17.07	10.00	38.96	27.07	56.40	46.40	17.44	19.33	N
3	0.70576	31.02	19.20	10.01	41.03	29.21	56.00	46.00	14.97	16.79	N
4	0.88149	31.42	20.70	10.02	41.44	30.72	56.00	46.00	14.56	15.28	N
5	7.23160	16.17	10.46	10.27	26.44	20.73	60.00	50.00	33.56	29.27	N
6	19.15640	16.80	10.78	10.55	27.35	21.33	60.00	50.00	32.65	28.67	N
7	0.18254	32.48	15.07	9.99	42.47	25.06	64.37	54.37	21.90	29.31	L
8	0.41410	33.58	22.79	10.00	43.58	32.79	57.57	47.57	13.99	14.78	L
9	0.98871	30.18	18.72	10.12	40.30	28.84	56.00	46.00	15.70	17.16	L
10	1.88440	30.47	19.38	10.16	40.63	29.54	56.00	46.00	15.37	16.46	L
11	18.37640	24.27	11.84	10.57	34.84	22.41	60.00	50.00	25.16	27.59	L
12	27.06700	20.93	5.06	10.67	31.60	15.73	60.00	50.00	28.40	34.27	L

APPENDIX I

Conducted Test set up Diagram

- Conducted Measurement



APPENDIX II

Duty Cycle Information

■ Test Procedure

Duty Cycle [$X = \text{On Time} / (\text{On} + \text{Off time})$] is measured using Measurement Procedure of **KDB789033 D02v02r01**

1. Set the center frequency of the spectrum analyzer to the center frequency of the transmission.
2. Set RBW $\geq$ EBW if possible; otherwise, set RBW to the largest available value.
3. Set VBW $\geq$ RBW. Set detector = peak.
4. Note : 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 $T \leq 16.7$ microseconds.)

T : The minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

($T = \text{On time}$ of the above table since the EUT operates with above fixed Duty Cycle and it is the minimum On time)

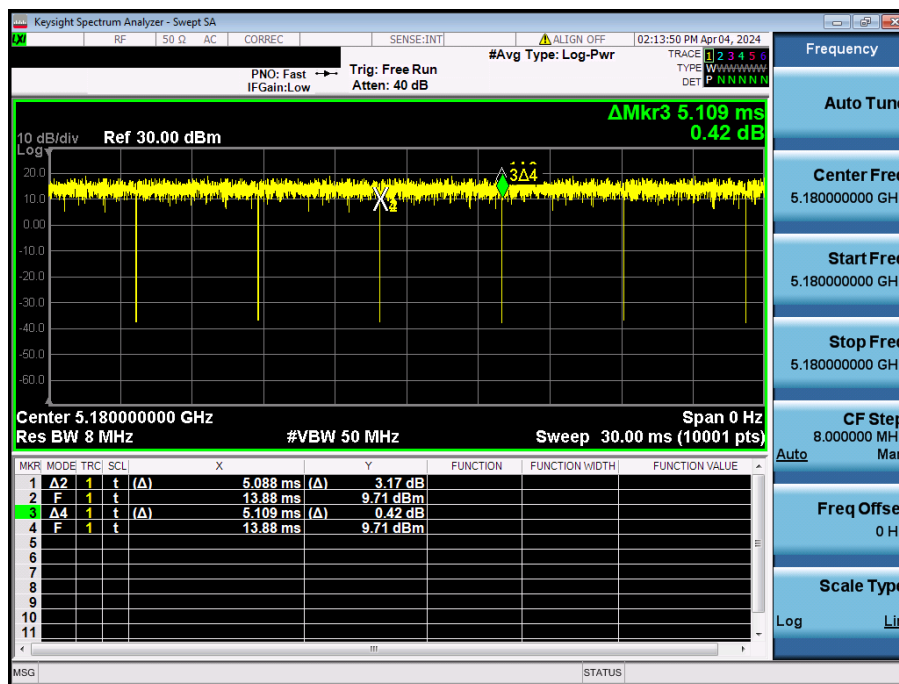
Duty Cycle Correction factor

Test Mode	Tone	Date rate	$T_{\text{on}}(\text{ms})$	$T_{\text{on+off}}(\text{ms})$	$x = T_{\text{on}} / (T_{\text{on+off}})$	DCCF = $10 \log(1/x)$ (dB)	1/T (kHz)
802.11ax(20)	26T	MCS 0	5.088	5.109	0.996	0.02	0.197
802.11ax(20)	52T	MCS 0	5.076	5.091	0.997	0.01	0.197
802.11ax(20)	106T	MCS 0	4.767	4.785	0.996	0.02	0.210
802.11ax(20)	242T	MCS 0	4.338	4.356	0.996	0.02	0.231
802.11ax(20)	SU	MCS 0	5.418	5.436	0.997	0.01	0.185
802.11ax(40)	26T	MCS 0	5.085	5.103	0.996	0.02	0.197
802.11ax(40)	52T	MCS 0	5.076	5.091	0.997	0.01	0.197
802.11ax(40)	106T	MCS 0	4.770	4.785	0.997	0.01	0.210
802.11ax(40)	242T	MCS 0	4.347	4.365	0.996	0.02	0.230
802.11ax(40)	484T	MCS 0	2.240	2.257	0.992	0.03	0.446
802.11ax(40)	SU	MCS 0	4.101	4.119	0.996	0.02	0.244
802.11ax(80)	26T	MCS 0	5.088	5.103	0.997	0.01	0.197
802.11ax(80)	52T	MCS 0	5.076	5.091	0.997	0.01	0.197
802.11ax(80)	106T	MCS 0	4.770	4.785	0.997	0.01	0.210
802.11ax(80)	242T	MCS 0	4.347	4.362	0.997	0.01	0.230
802.11ax(80)	484T	MCS 0	2.213	2.228	0.993	0.03	0.452
802.11ax(80)	996T	MCS 0	1.136	1.153	0.985	0.06	0.880
802.11ax(80)	SU	MCS 0	2.219	2.234	0.993	0.03	0.451
802.11ax(160)	26T	MCS 0	5.070	5.115	0.991	0.04	0.197
802.11ax(160)	52T	MCS 0	5.076	5.088	0.998	0.01	0.197
802.11ax(160)	106T	MCS 0	4.767	4.785	0.996	0.02	0.210
802.11ax(160)	242T	MCS 0	4.344	4.359	0.997	0.01	0.230
802.11ax(160)	484T	MCS 0	2.211	2.228	0.992	0.03	0.452
802.11ax(160)	996T	MCS 0	1.096	1.111	0.986	0.06	0.912
802.11ax(160)	2x996T	MCS 0	0.584	0.599	0.974	0.11	1.712
802.11ax(160)	SU	MCS 0	2.153	2.170	0.992	0.03	0.464

Note1: Where, T = Transmission duration / x = Duty cycle

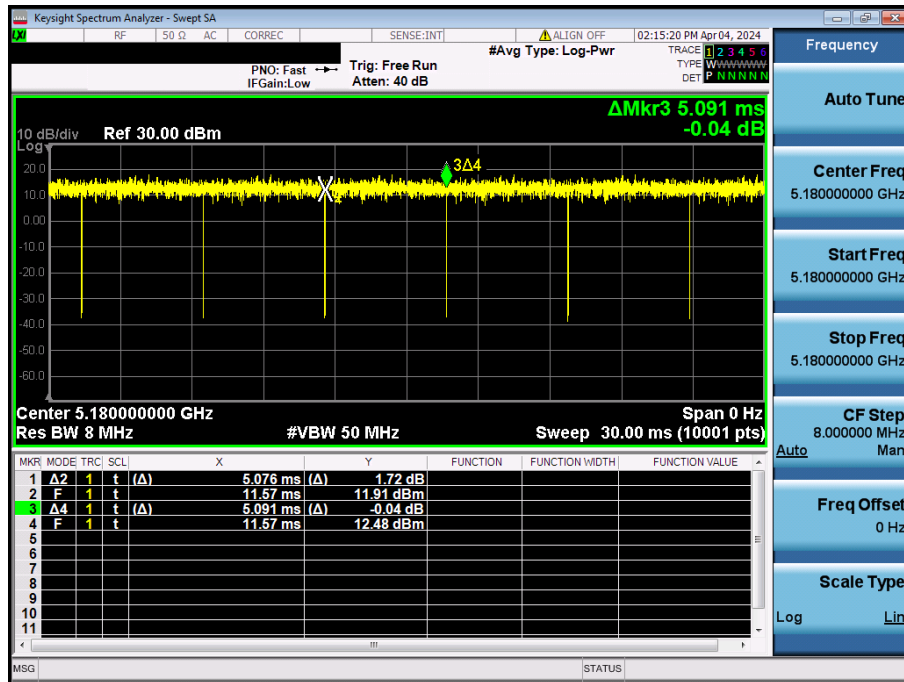
Duty Cycle

802.11ax HE20 & MIMO & 5 180 MHz & MCS 0 & 26 Tone



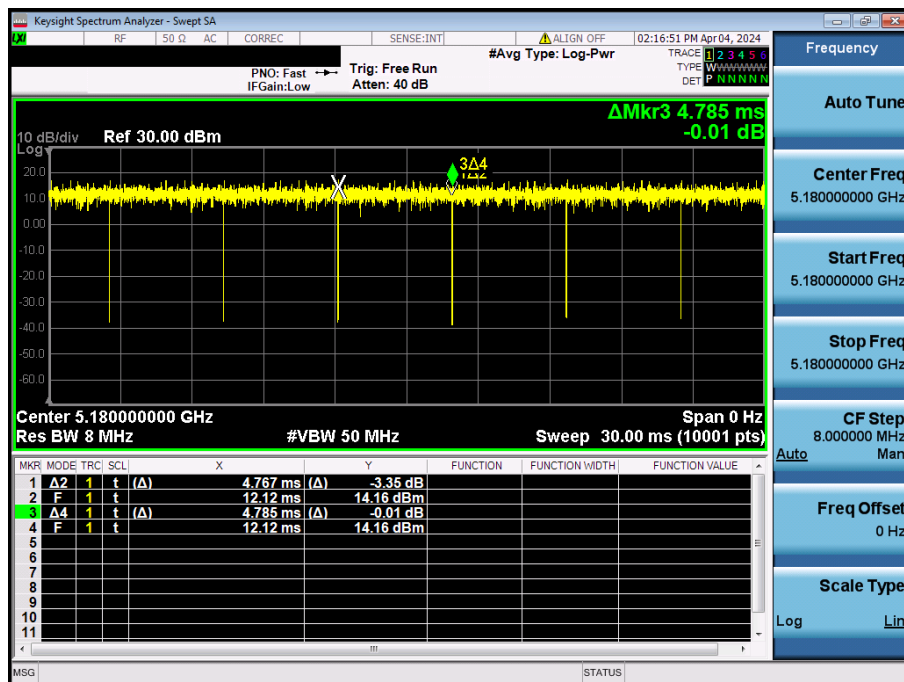
Duty Cycle

802.11ax HE20 & MIMO & 5 180 MHz & & MCS 0 & 52 Tone



Duty Cycle

802.11ax HE20 & MIMO & 5 180 MHz & & MCS 0 & 106 Tone

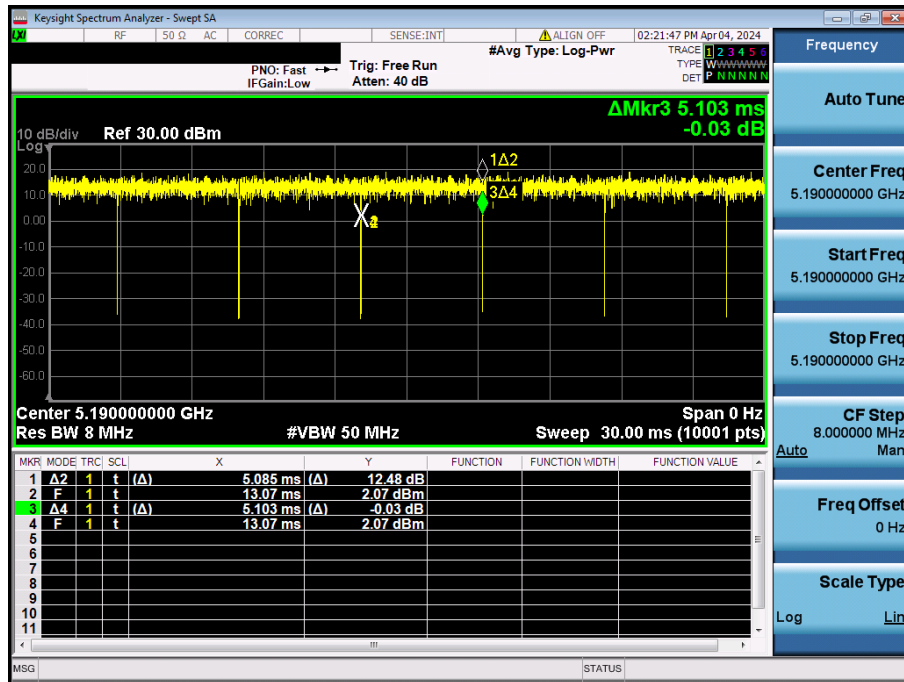


802.11ax HE20 & MIMO & 5 180 MHz & & MCS 0 & 242 Tone

802.11ax HE20 & MIMO & 5 180 MHz & & MCS 0 & SU

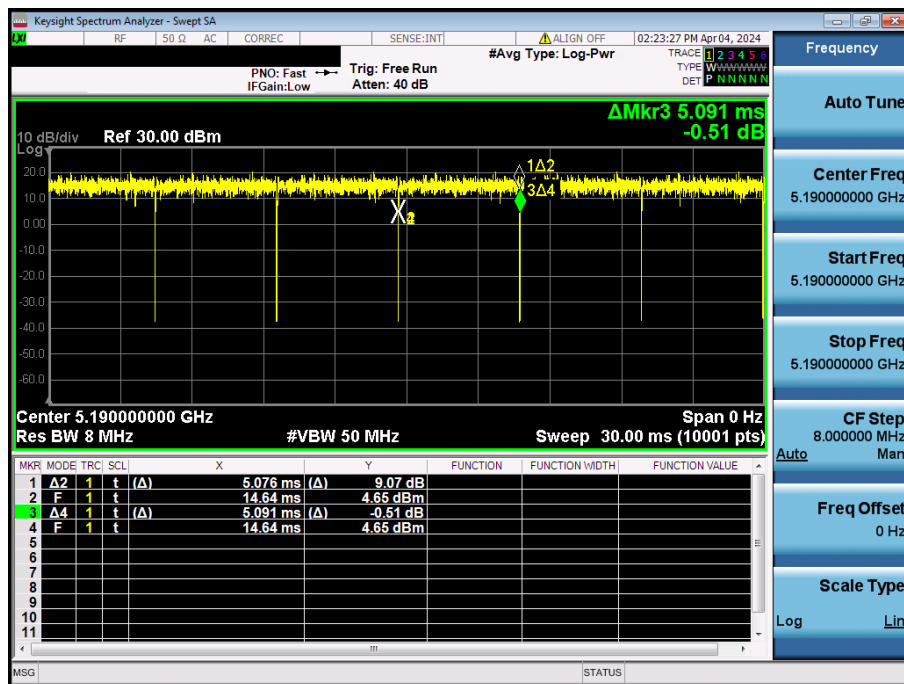
Duty Cycle

802.11ax HE40 & MIMO & 5 190 MHz & MCS 0 & 26 Tone



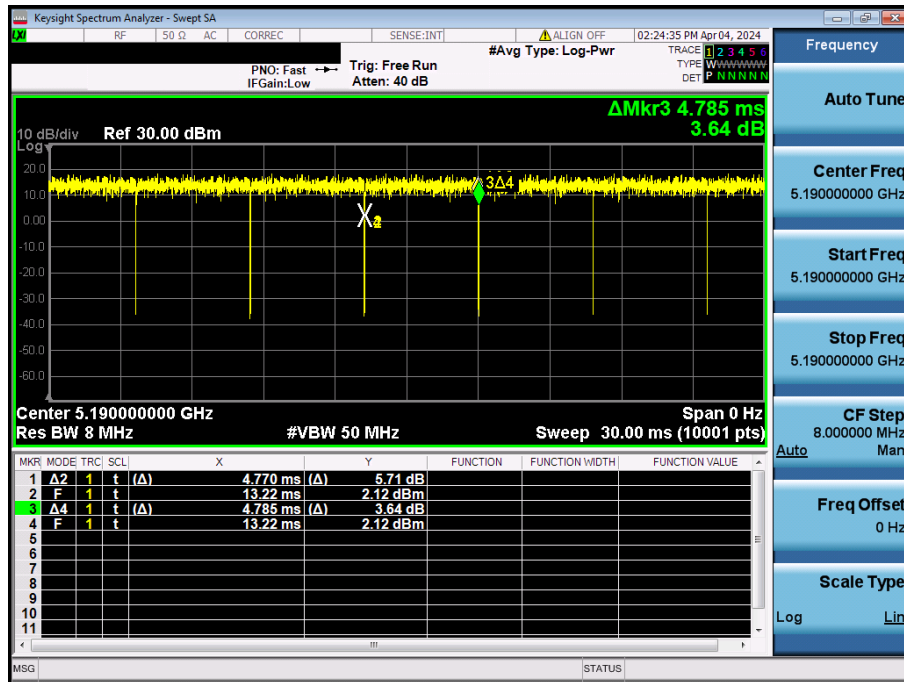
Duty Cycle

802.11ax HE40 & MIMO & 5 190 MHz & MCS 0 & 52 Tone



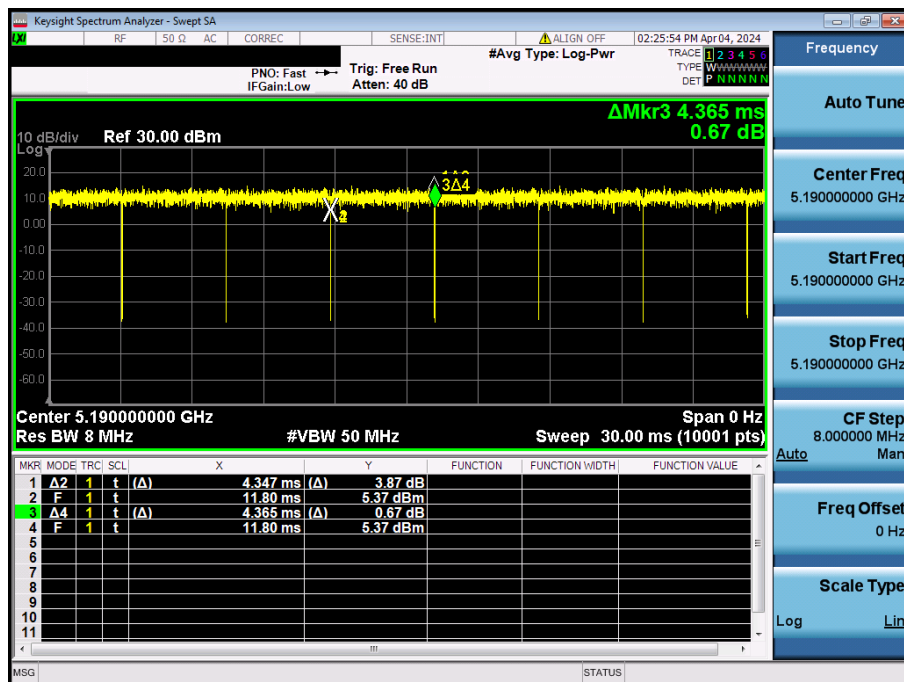
Duty Cycle

802.11ax HE40 & MIMO & 5 190 MHz & MCS 0 & 106 Tone



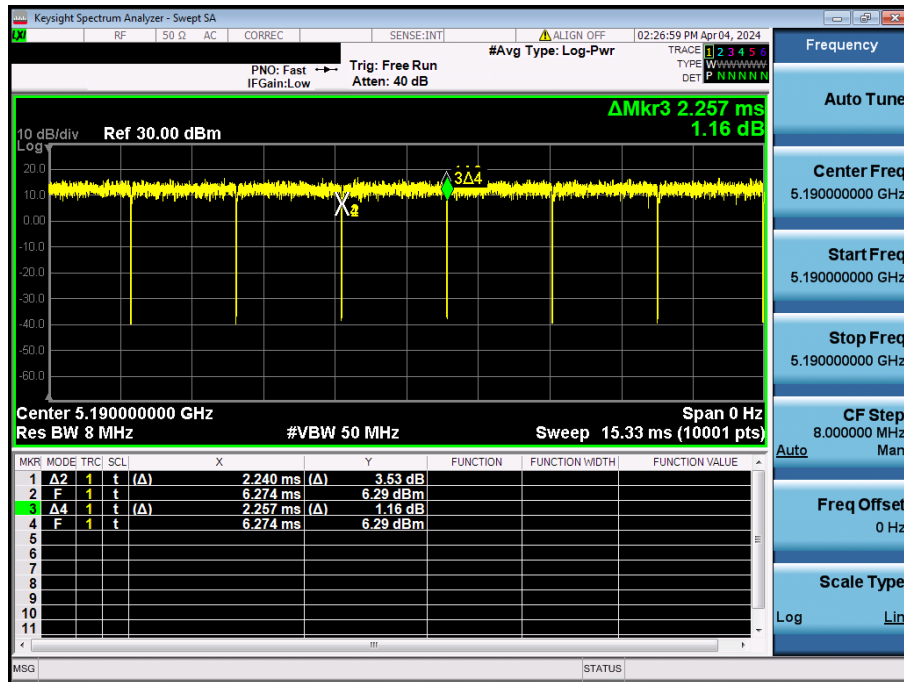
Duty Cycle

802.11ax HE40 & MIMO & 5 190 MHz & MCS 0 & 242 Tone



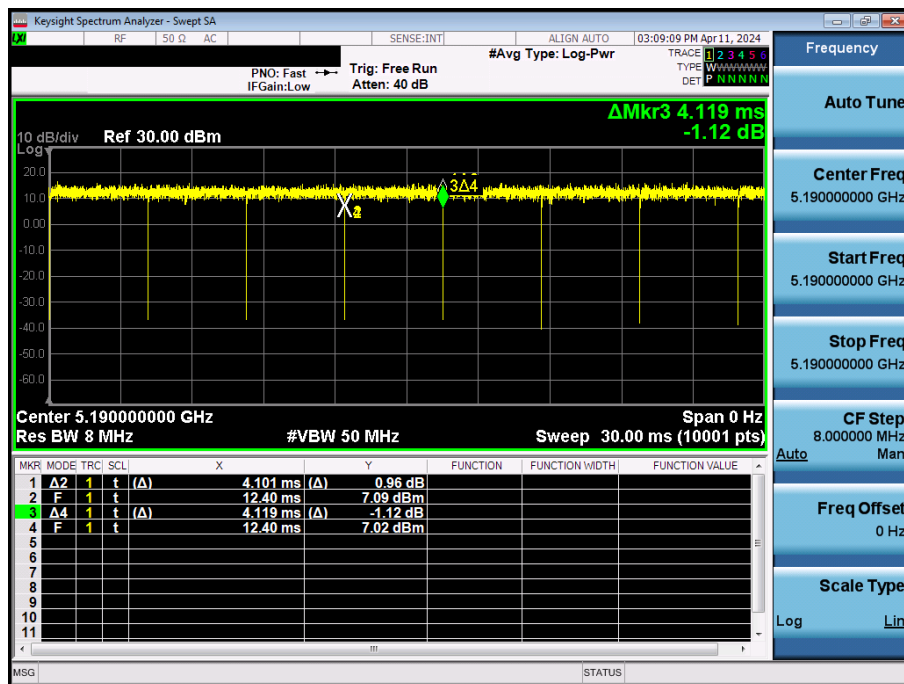
Duty Cycle

802.11ax HE40 & MIMO & 5 190 MHz & & MCS 0 & 484 Tone



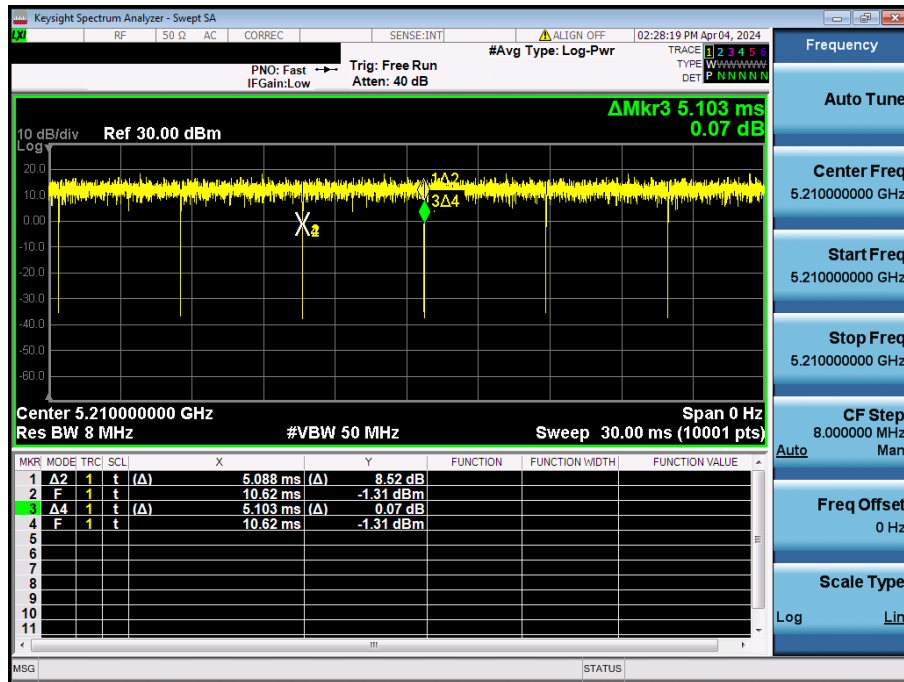
Duty Cycle

802.11ax HE40 & MIMO & 5 190 MHz & & MCS 0 & SU



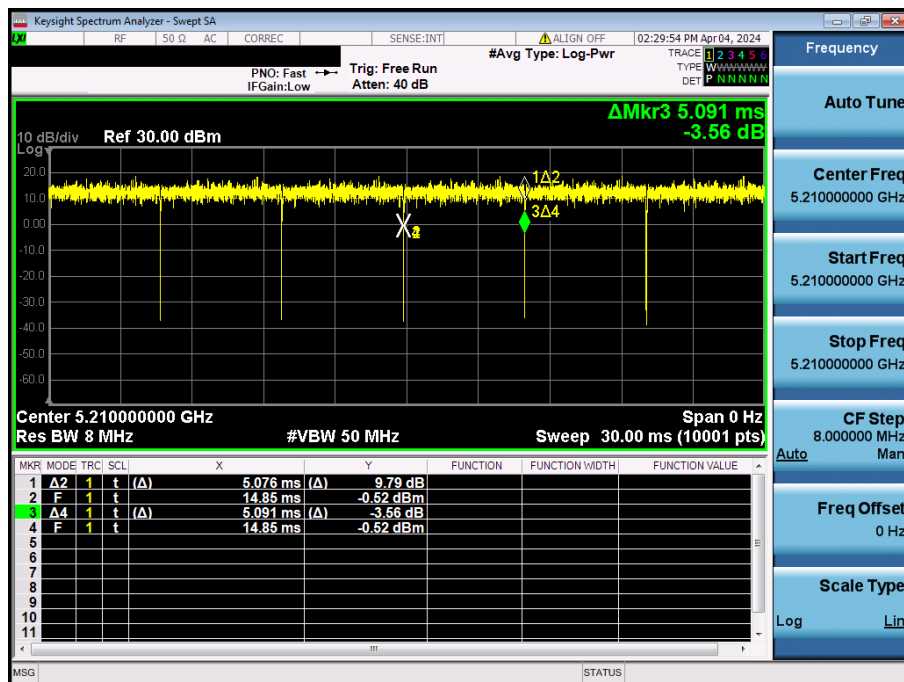
Duty Cycle

802.11ax HE80 & MIMO & 5 210 MHz & MCS 0 & 26 Tone



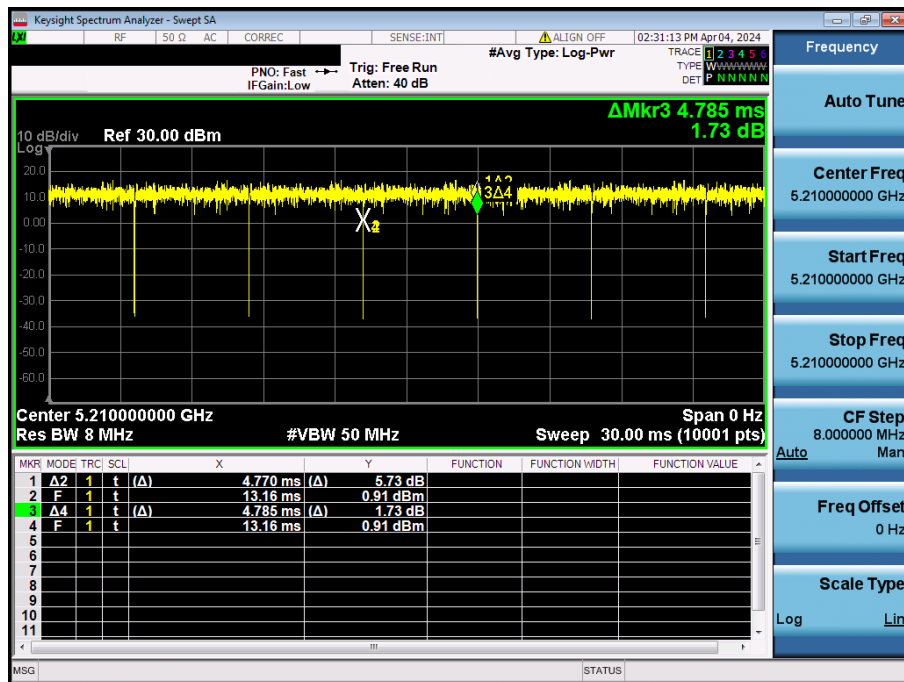
Duty Cycle

802.11ax HE80 & MIMO & 5 210 MHz & MCS 0 & 52 Tone



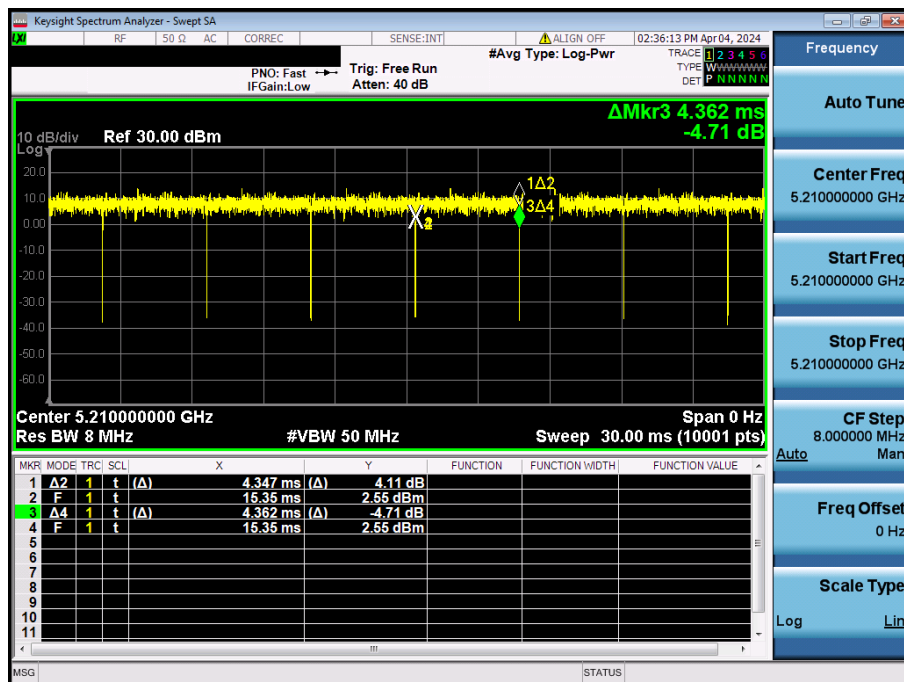
Duty Cycle

802.11ax HE80 & MIMO & 5 210 MHz & & MCS 0 & 106 Tone



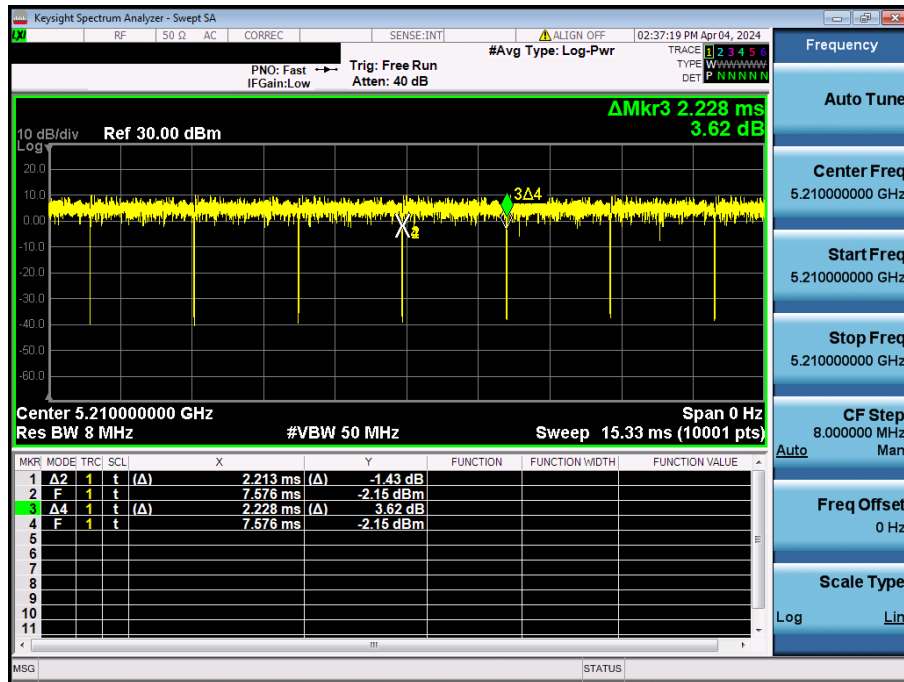
Duty Cycle

802.11ax HE80 & MIMO & 5 210 MHz & & MCS 0 & 242 Tone



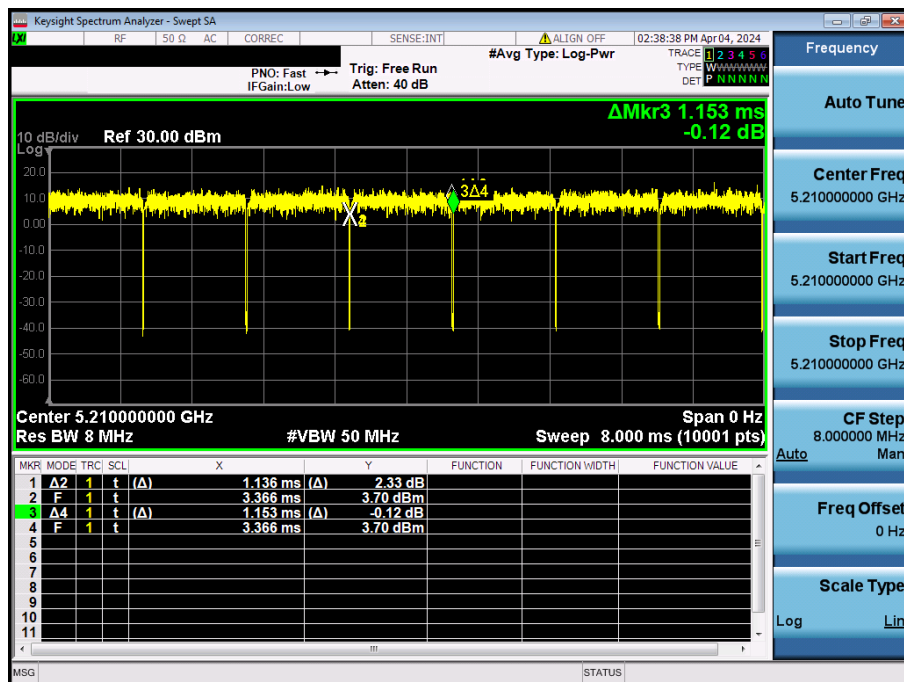
Duty Cycle

802.11ax HE80 & MIMO & 5 210 MHz & & MCS 0 & 484 Tone



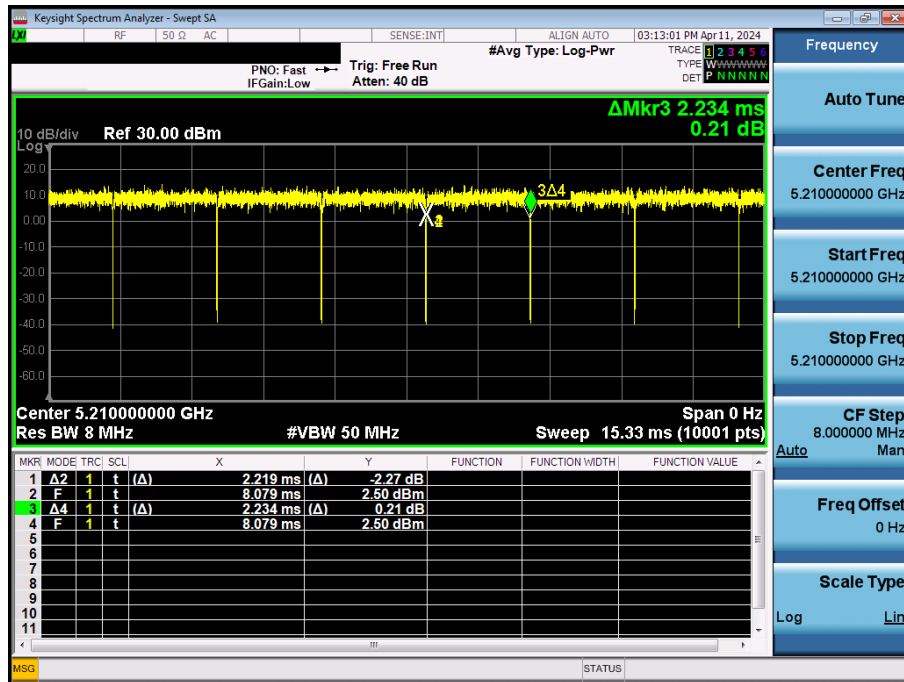
Duty Cycle

802.11ax HE80 & MIMO & 5 210 MHz & & MCS 0 & 996 Tone



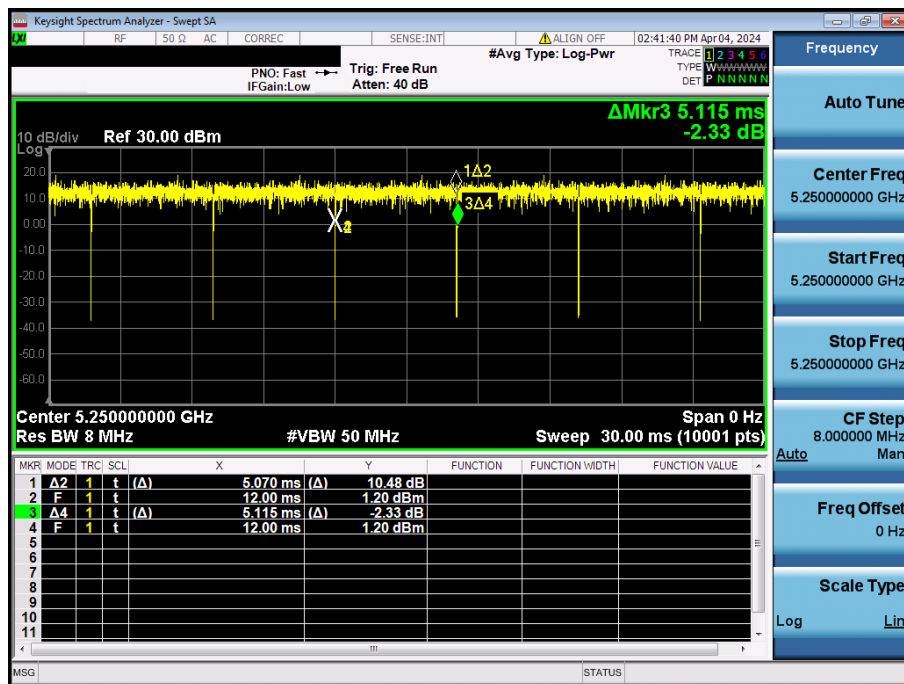
Duty Cycle

802.11ax HE80 & MIMO & 5 210 MHz & & MCS 0 & SU



Duty Cycle

802.11ax HE160 & MIMO & 5 250 MHz & & MCS 0 & 26 Tone

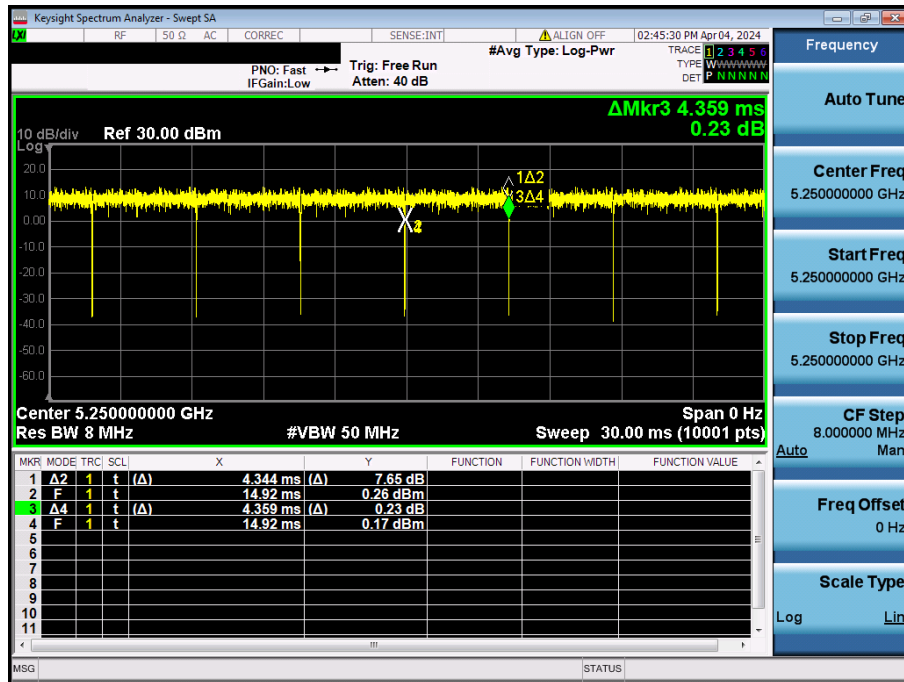


802.11ax HE160 & MIMO & 5 250 MHz & & MCS 0 & 52 Tone

802.11ax HE160 & MIMO & 5 250 MHz & & MCS 0 & 106 Tone

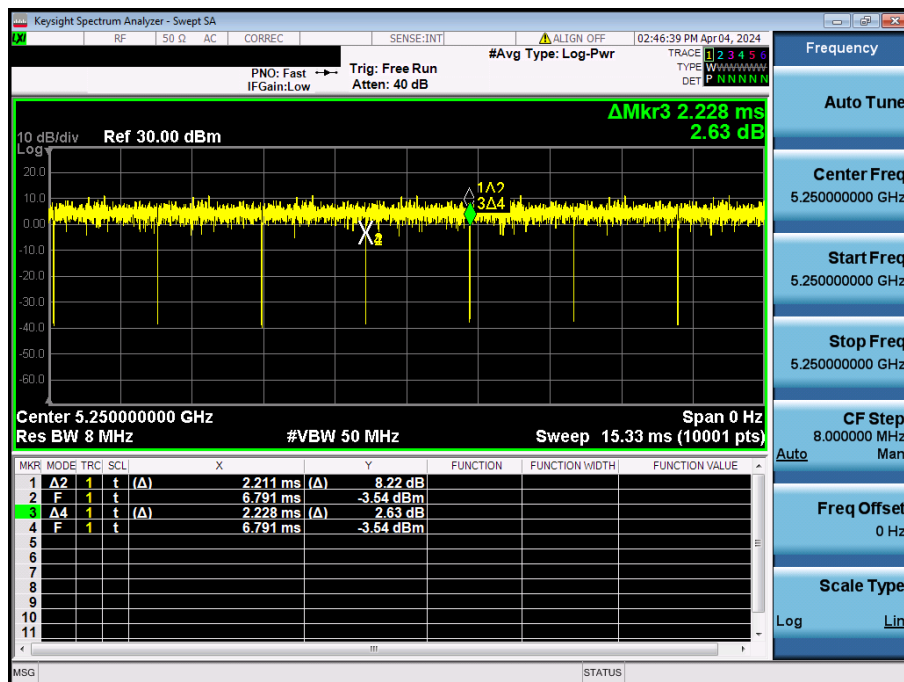
Duty Cycle

802.11ax HE160 & MIMO & 5 250 MHz & & MCS 0 & 242 Tone



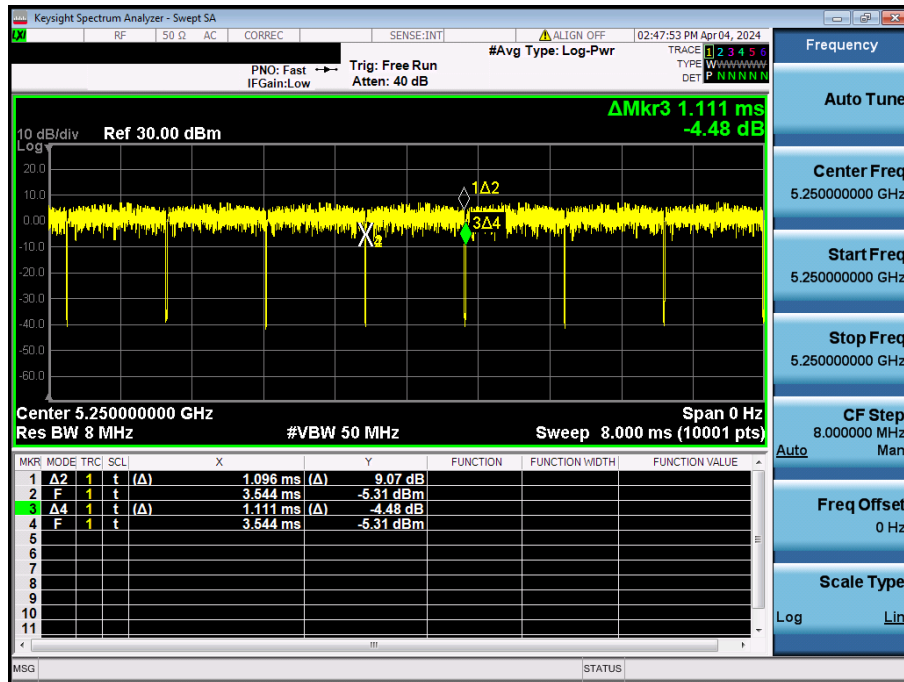
Duty Cycle

802.11ax HE160 & MIMO & 5 250 MHz & & MCS 0 & 484 Tone



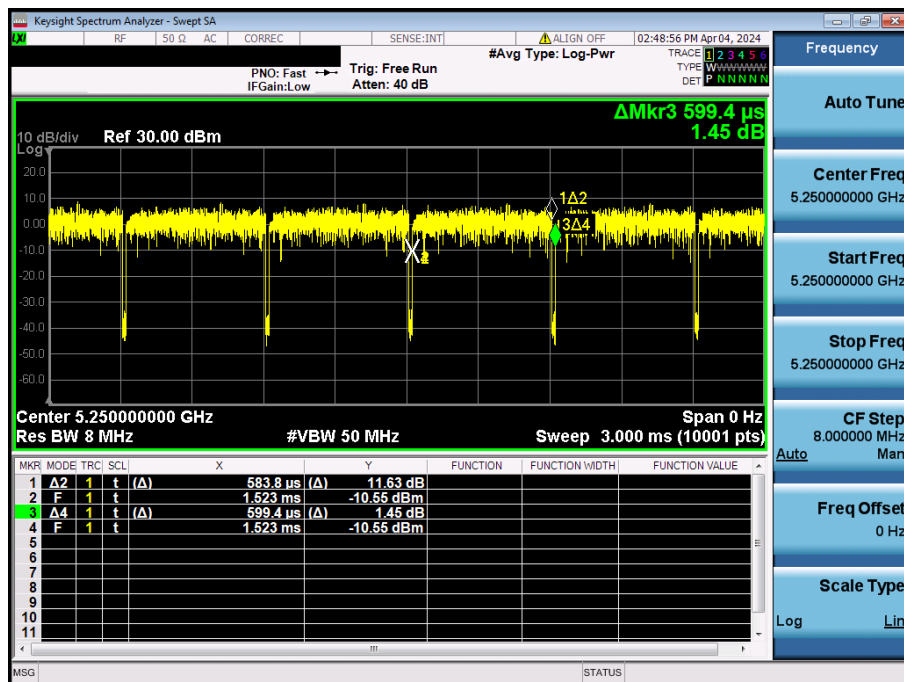
Duty Cycle

802.11ax HE160 & MIMO & 5 250 MHz & & MCS 0 & 996 Tone



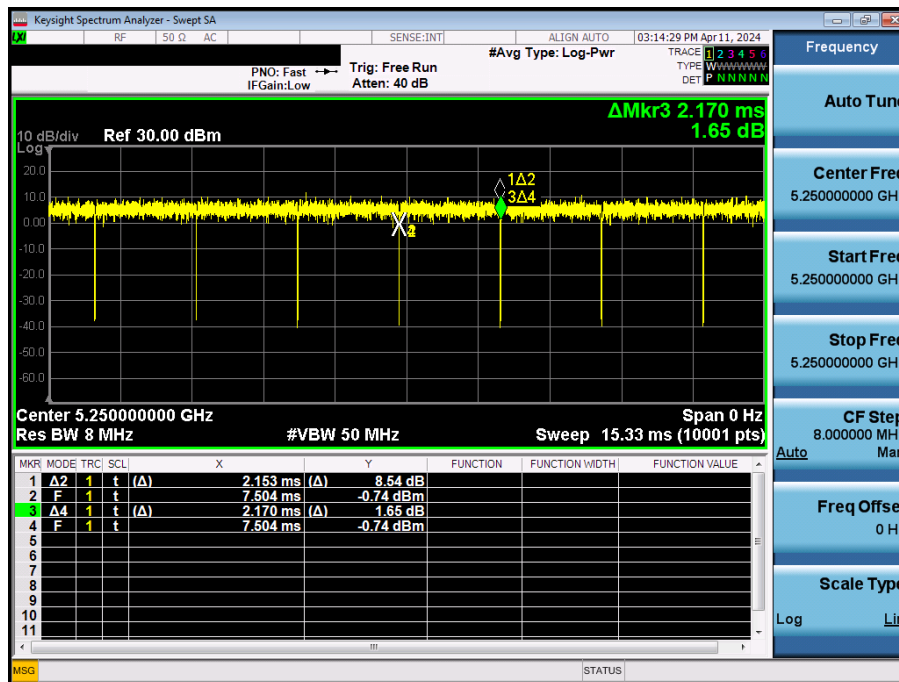
Duty Cycle

802.11ax HE160 & MIMO & 5 250 MHz & & MCS 0 & 2x996 Tone

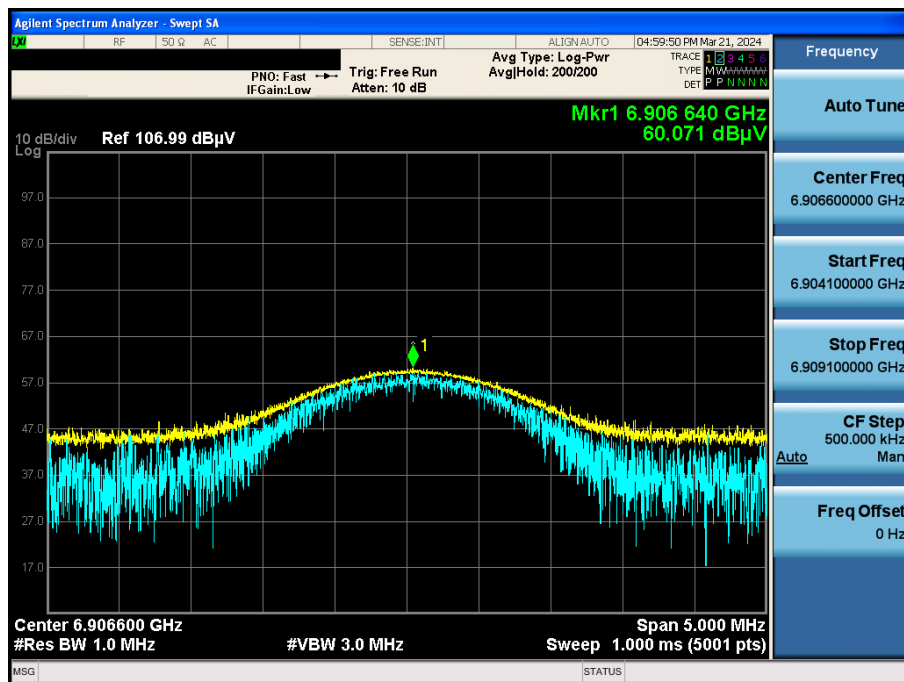


Duty Cycle

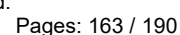
802.11ax HE160 & MIMO & 5 250 MHz & MCS 0 & SU



Detector Mode : PK

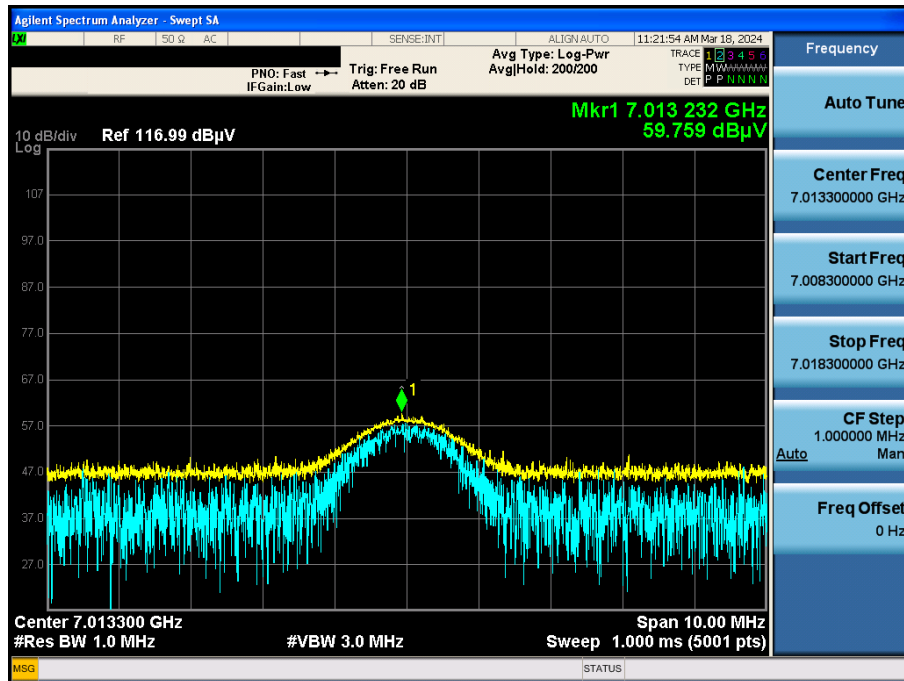


Detector Mode : PK



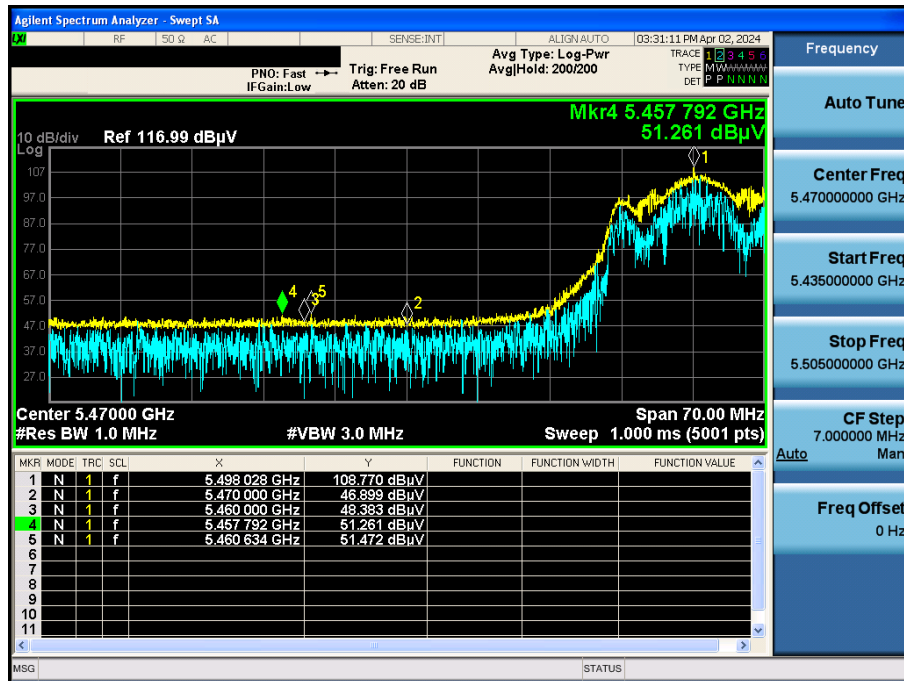
802.11ax HE20 & U-NII 2A & Ch.52 & X axis & Hor & 26 Tone & 0 RU

Detector Mode : PK



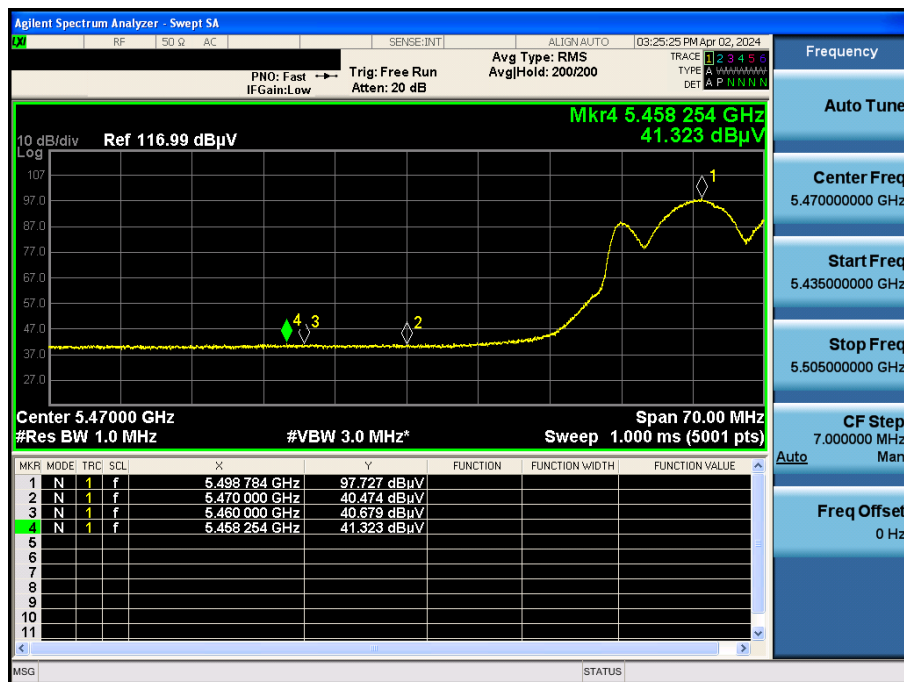
802.11ax HE20 & U-NII 2C & Ch.100 & X axis & Hor & 242 Tone & 61 RU

Detector Mode : PK



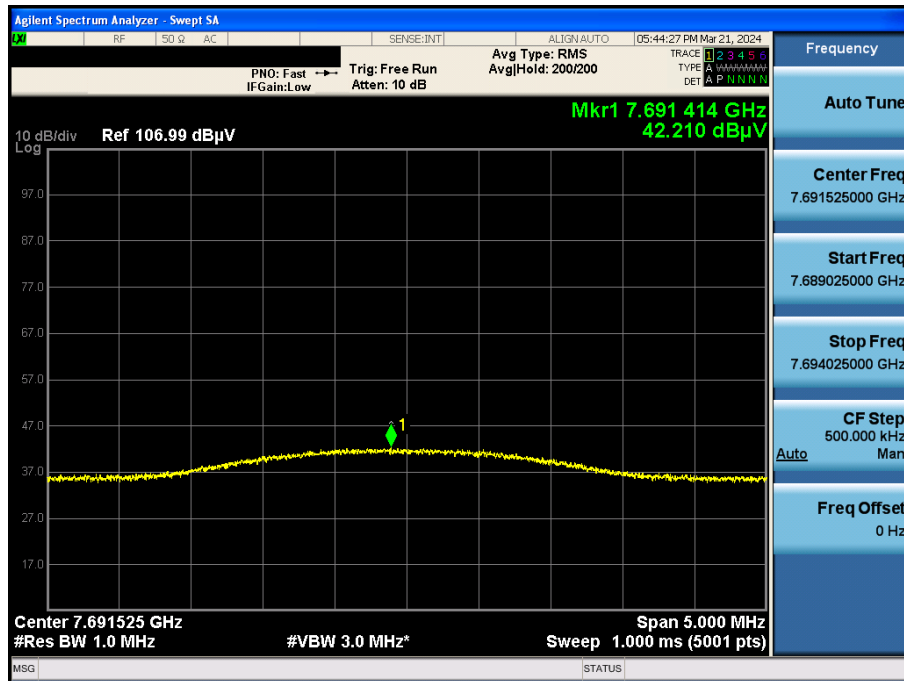
802.11ax HE20 & U-NII 2C & Ch.100 & X axis & Hor & 242 Tone & 61 RU

Detector Mode : AV



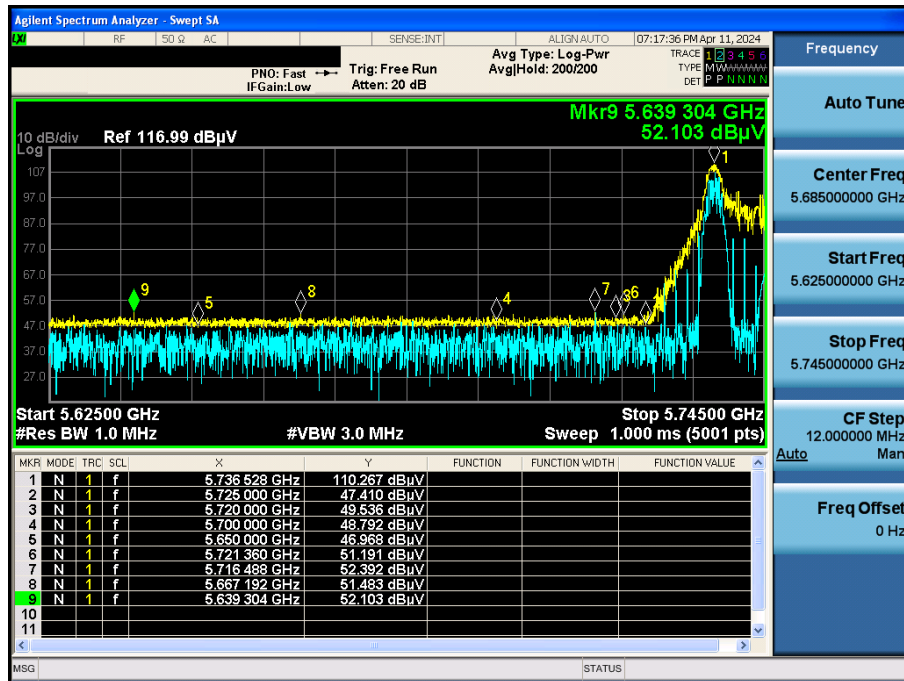
802.11ax HE20 & U-NII 2C & Ch.100 & X axis & Hor & 26 Tone & 0 RU

Detector Mode : AV



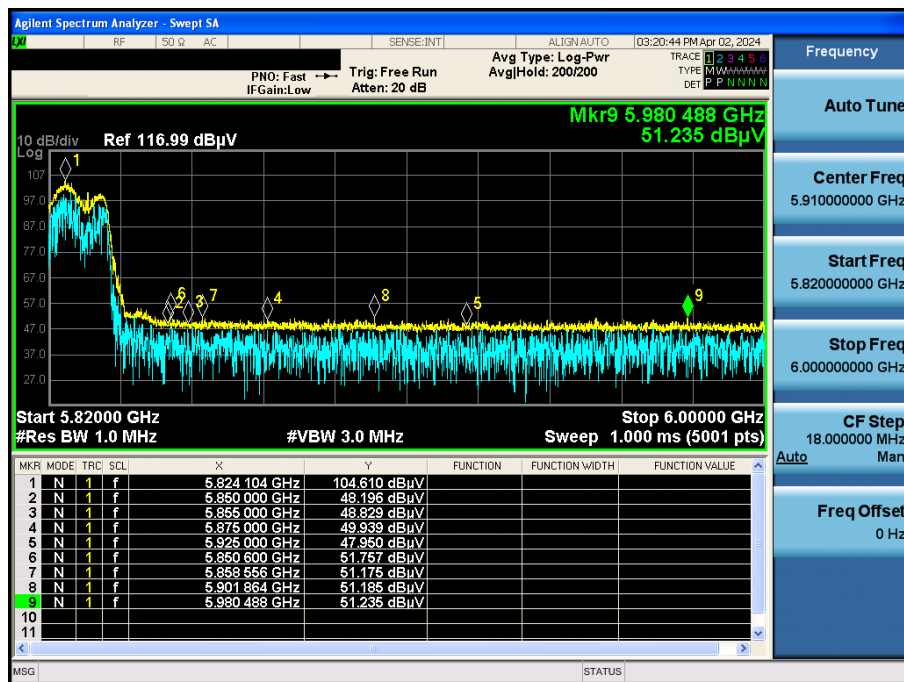
802.11ax HE20 & U-NII 3 & Ch.149 & X axis & Hor & 26 Tone & 0 RU

Detector Mode : PK



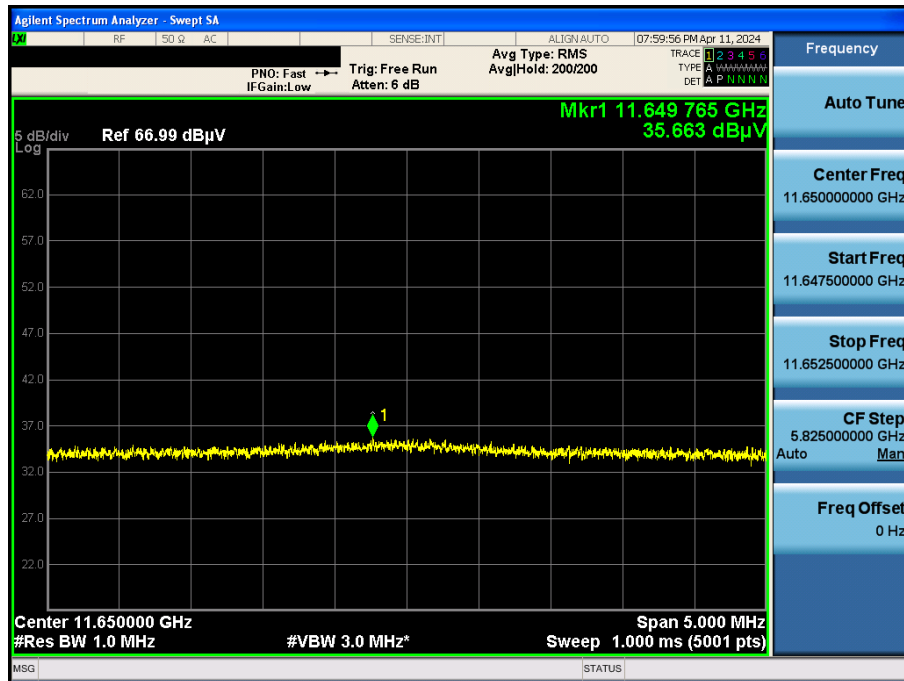
802.11ax HE20 & U-NII 3 & Ch.165 & X axis & Hor & SU

Detector Mode : PK



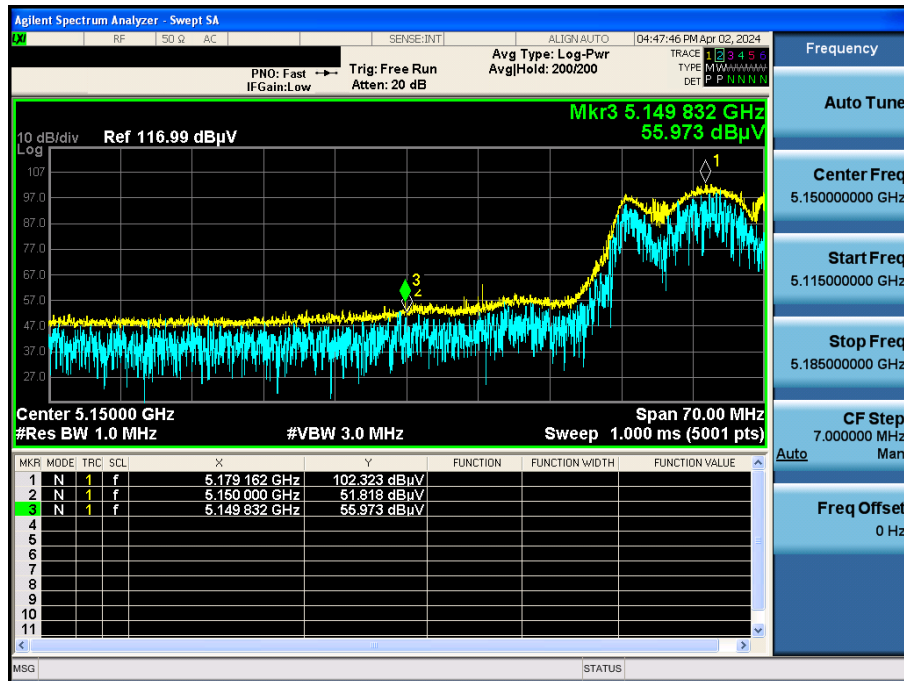
802.11ax HE20 & U-NII 3 & Ch.165 & X axis & Hor & 26 Tone & 4 RU

Detector Mode : AV



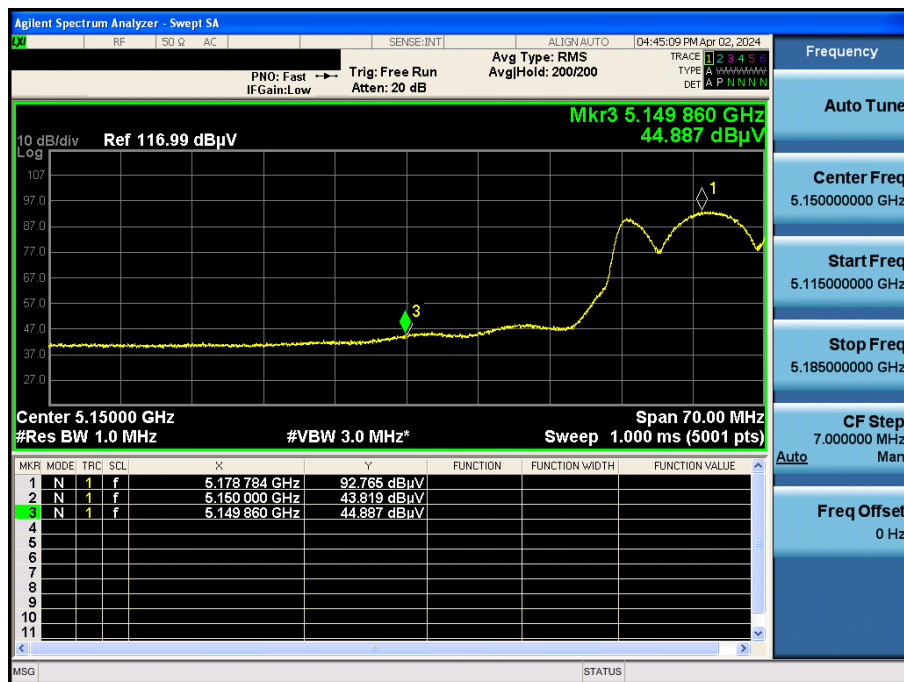
802.11ax HE40 & U-NII 1 & Ch.38 & X axis & Hor & SU

Detector Mode : PK

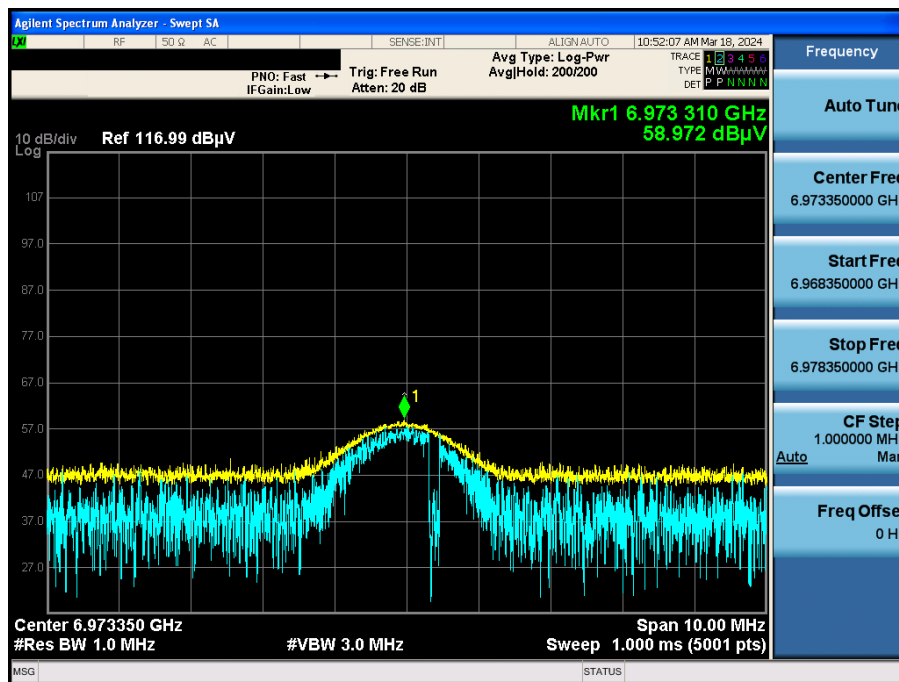


802.11ax HE40 & U-NII 1 & Ch.38 & X axis & Hor & SU

Detector Mode : AV

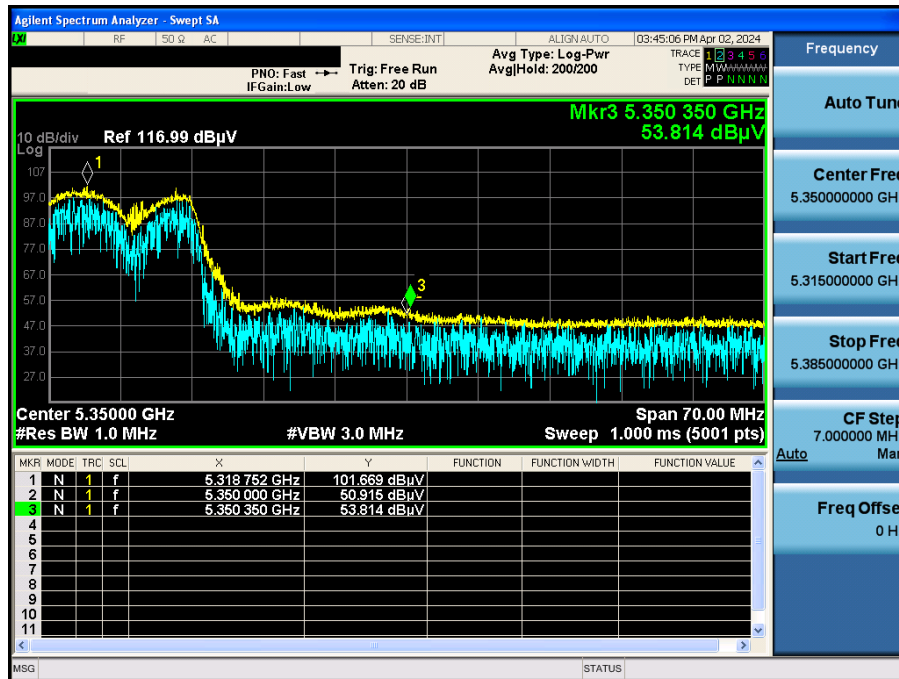


Detector Mode : PK



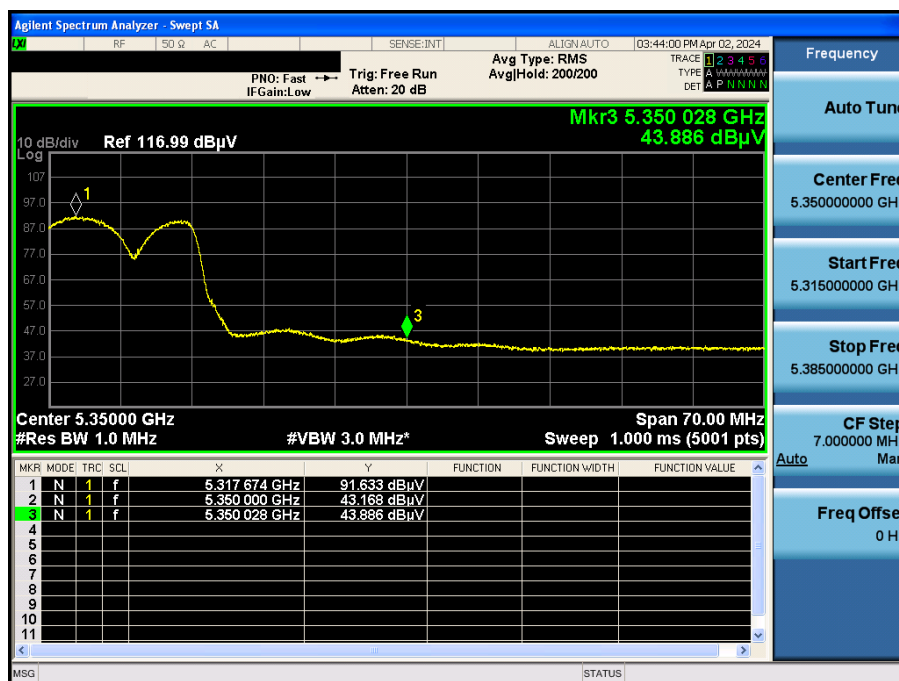
802.11ax HE40 & U-NII 2A & Ch.62 & X axis & Hor & 484 Tone & 65 RU

Detector Mode : PK



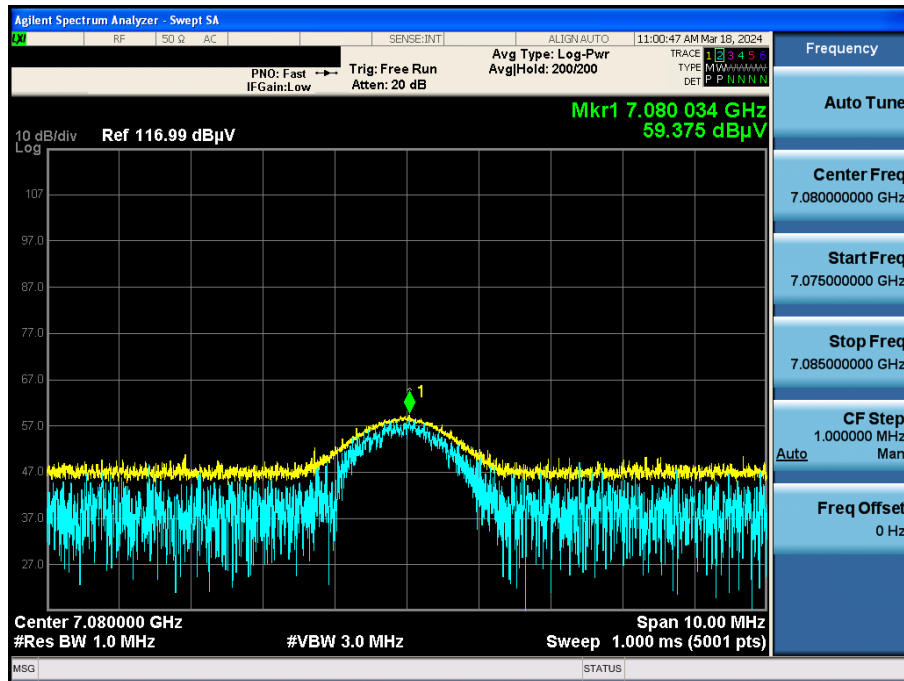
802.11ax HE40 & U-NII 2A & Ch.62 & X axis & Hor & 484 Tone & 65 RU

Detector Mode : AV



802.11ax HE40 & U-NII 2A & Ch.62 & X axis & Hor & 484 Tone & 65 RU

Detector Mode : PK

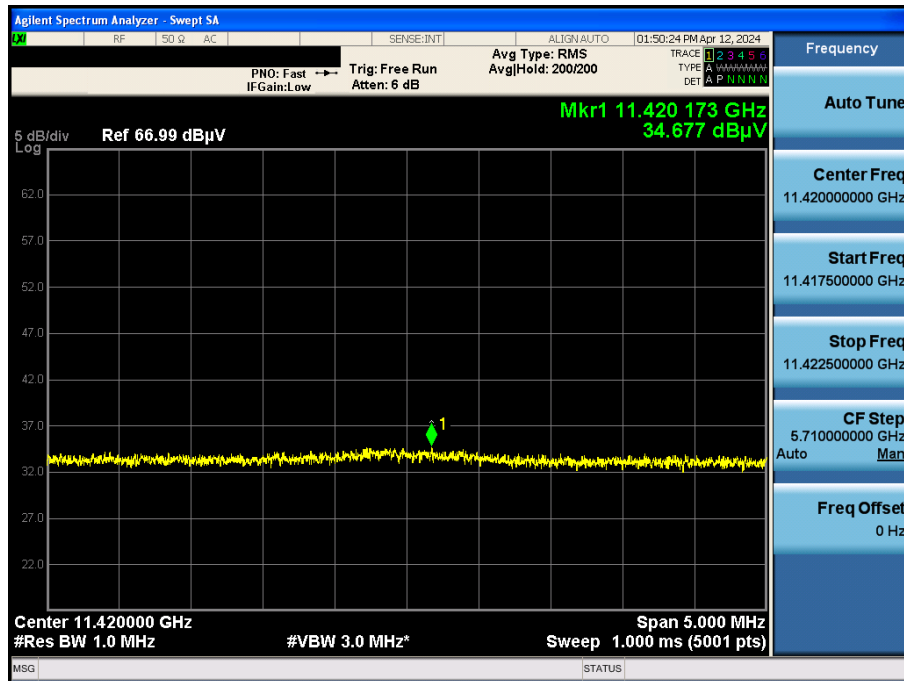


Detector Mode : PK



802.11ax HE40 & U-NII 2C & Ch.142 & X axis & Ver & 26 Tone & 8 RU

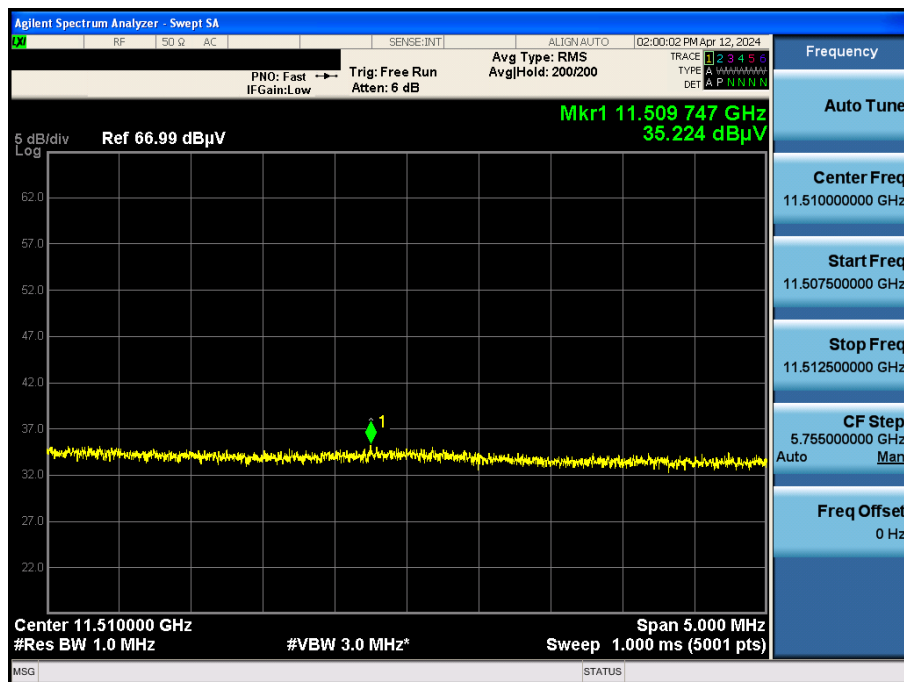
Detector Mode : AV



Detector Mode : PK

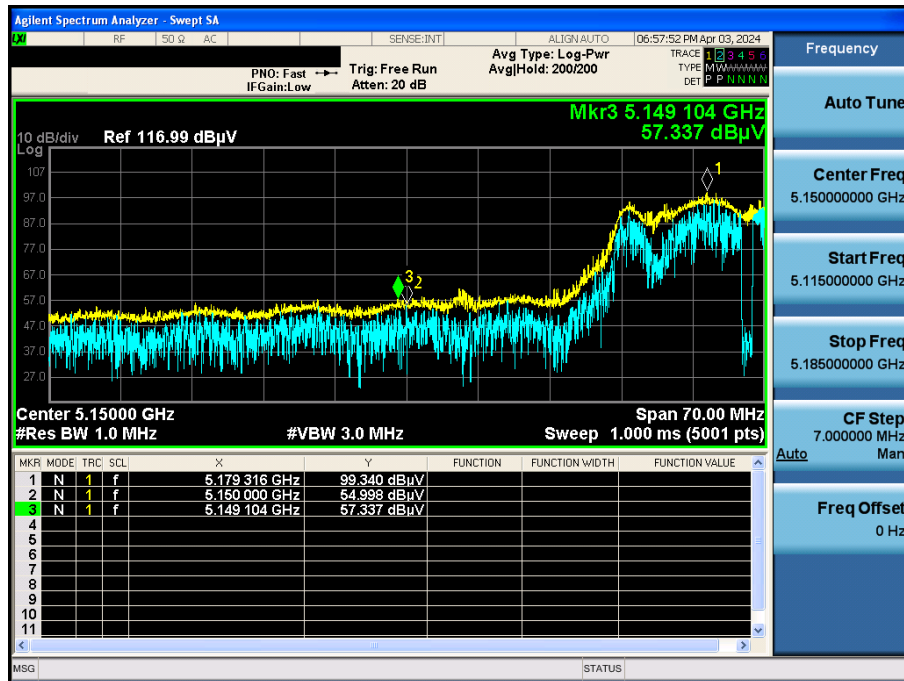


Detector Mode : AV



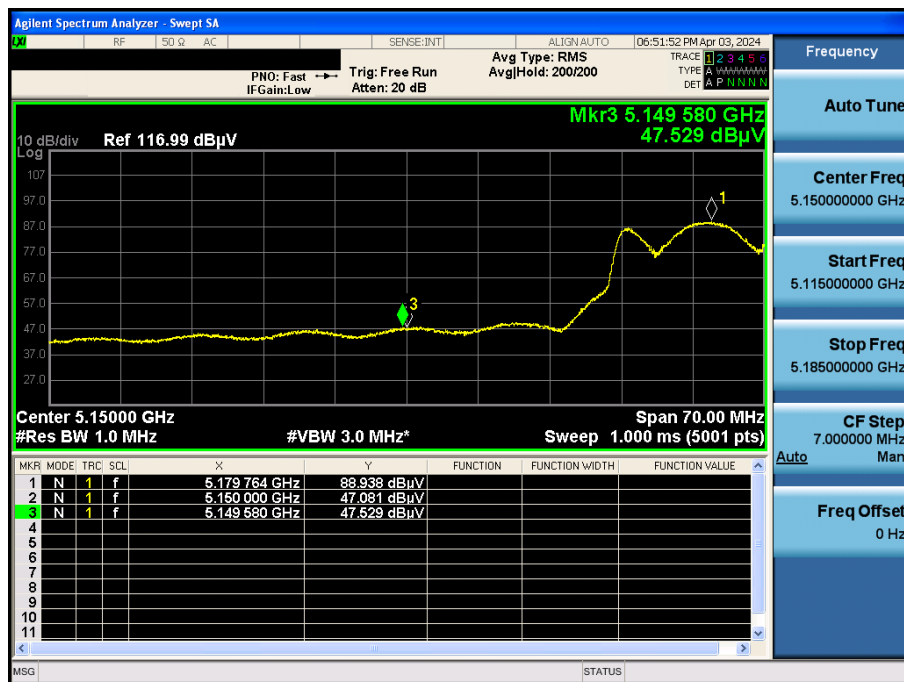
802.11ax HE80 & U-NII 1 & Ch.42 & X axis & Hor & 996 Tone & 67 RU

Detector Mode : PK



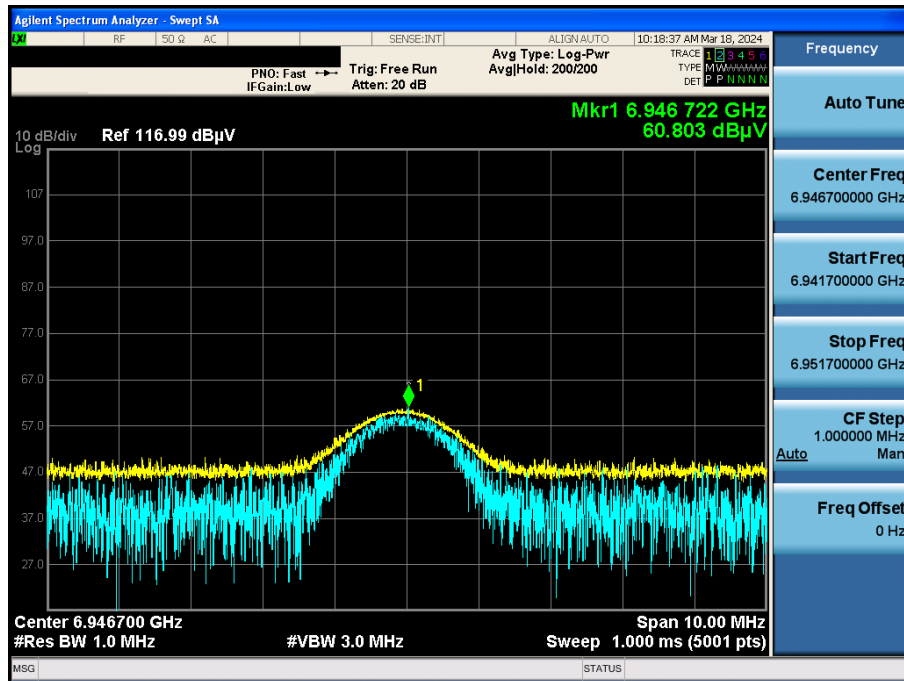
802.11ax HE80 & U-NII 1 & Ch.42 & X axis & Hor & 996 Tone & 67 RU

Detector Mode : AV



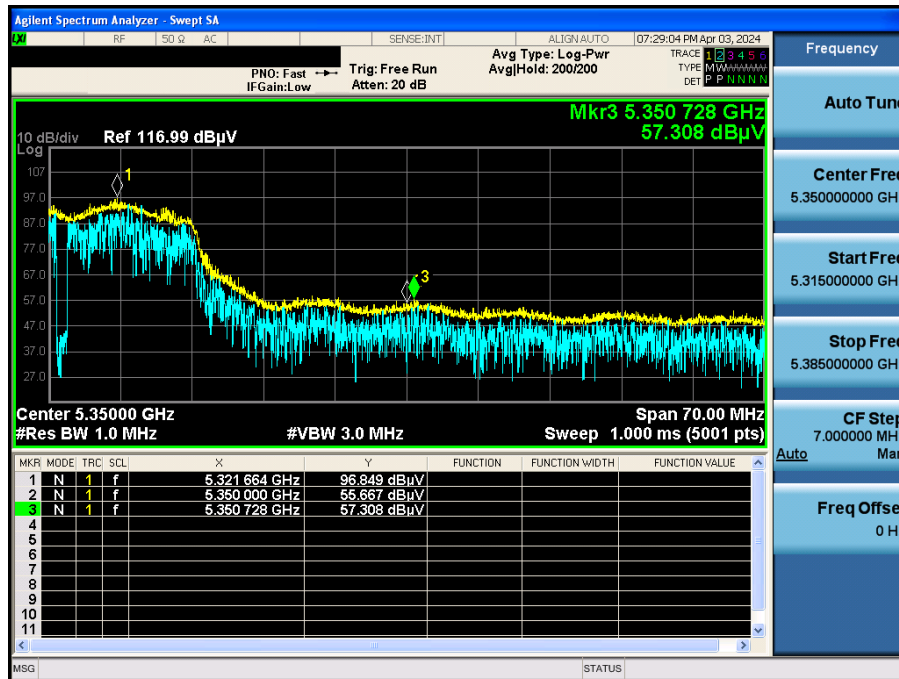
802.11ax HE80 & U-NII 1 & Ch.42 & X axis & Hor & 26 Tone & 0 RU

Detector Mode : PK



802.11ax HE80 & U-NII 2A & Ch.58 & X axis & Hor & 996 Tone & 67 RU

Detector Mode : PK

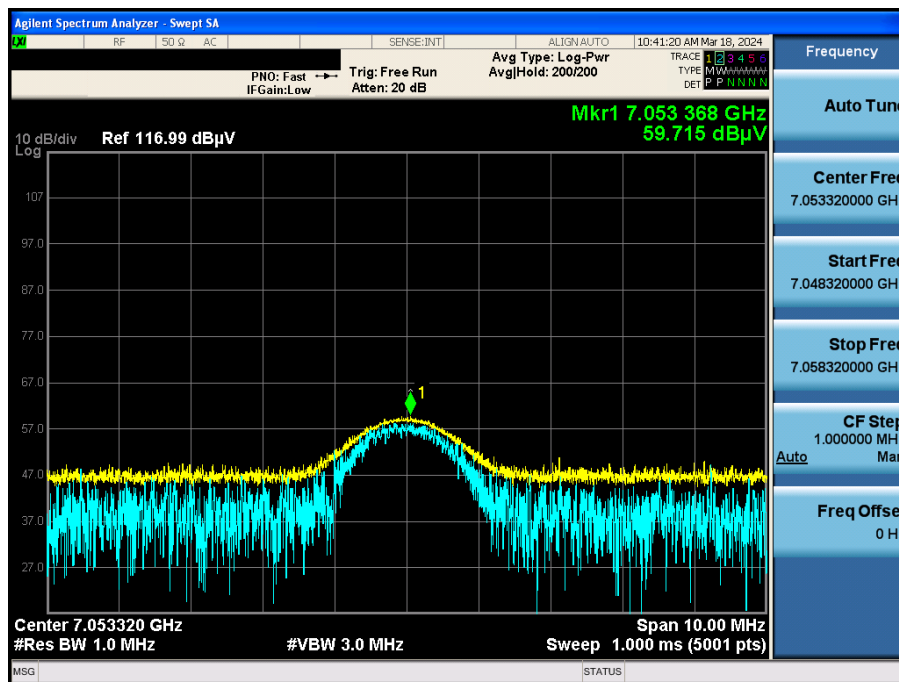


802.11ax HE80 & U-NII 2A & Ch.58 & X axis & Hor & 996 Tone & 67 RU

Detector Mode : AV

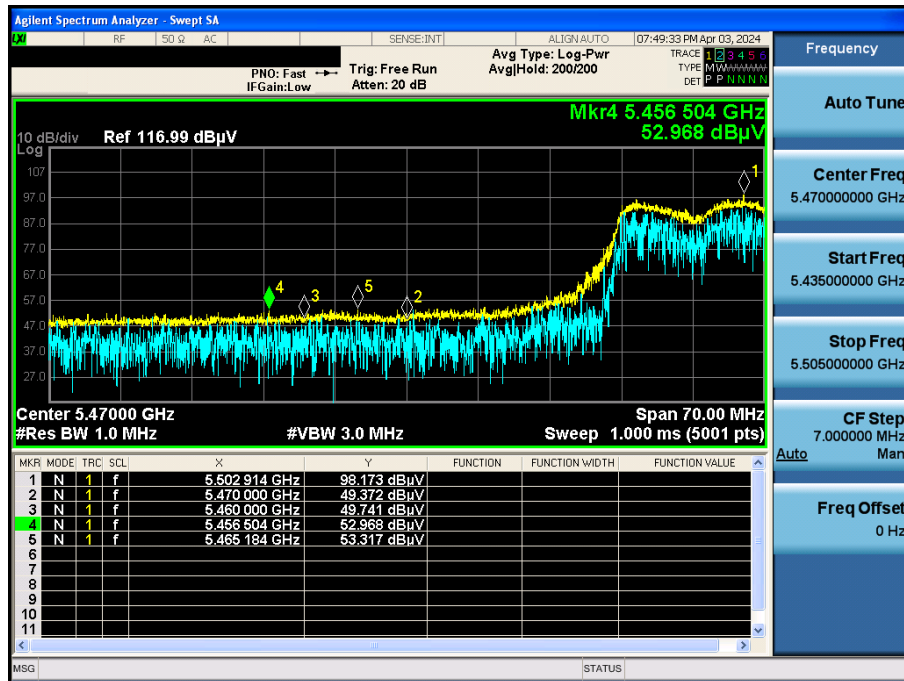


Detector Mode : PK



802.11ax HE80 & U-NII 2C & Ch.106 & X axis & Hor & 996 Tone & 67 RU

Detector Mode : PK

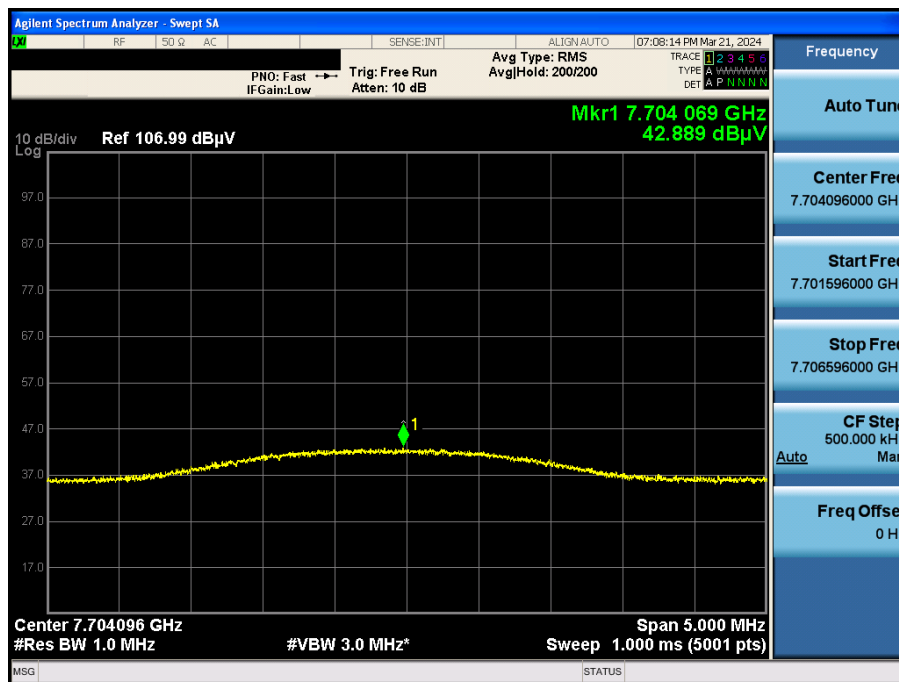


802.11ax HE80 & U-NII 2C & Ch.106 & X axis & Hor & 996 Tone & 67 RU

Detector Mode : AV

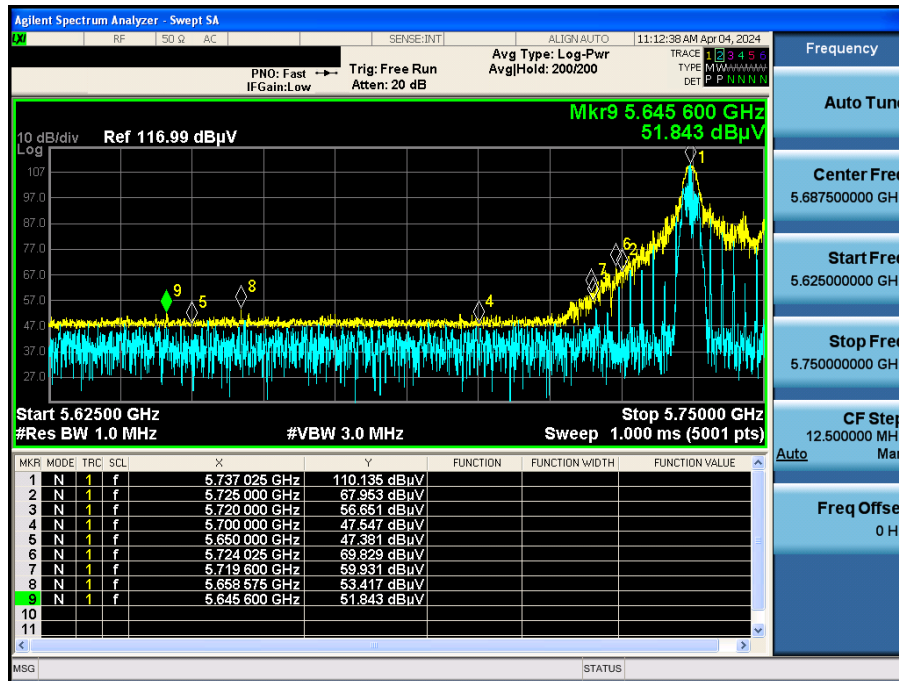


Detector Mode : AV



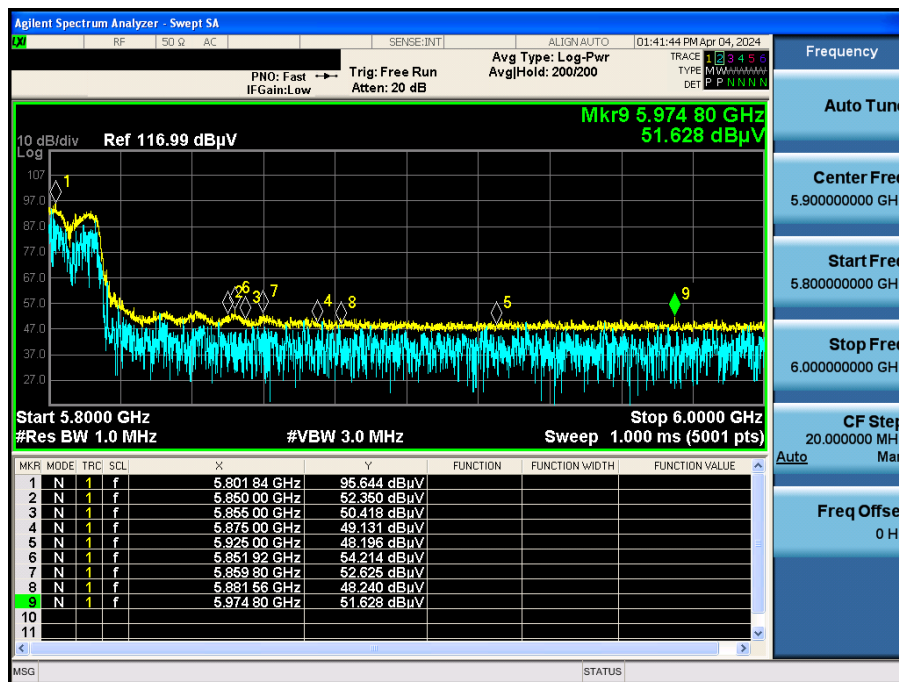
802.11ax HE80 & U-NII 3 & Ch.155 & X axis & Hor & 26 Tone & 0 RU

Detector Mode : PK

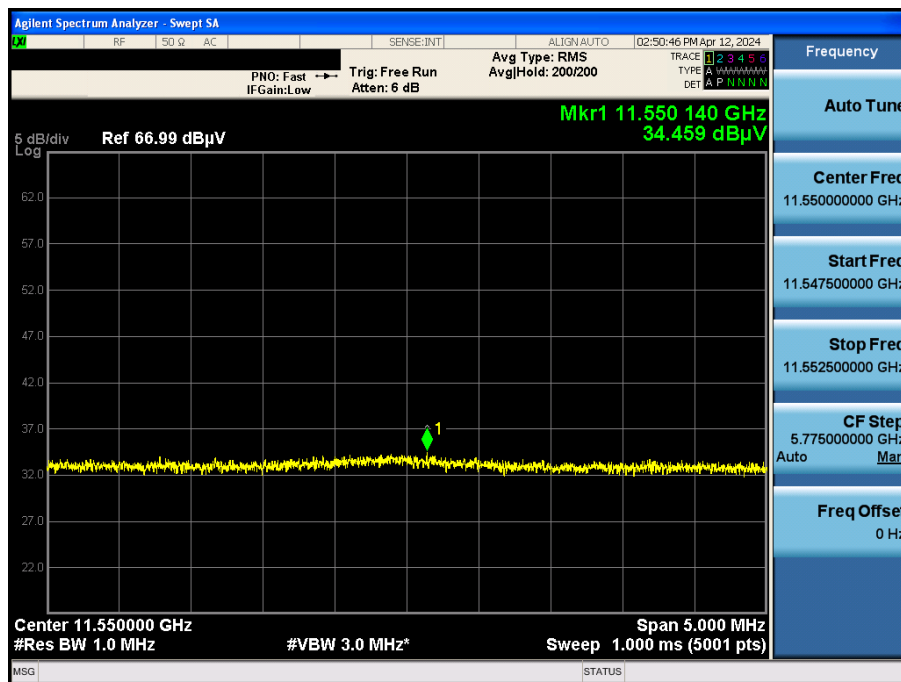


802.11ax HE80 & U-NII 3 & Ch.155 & X axis & Hor & SU

Detector Mode : PK

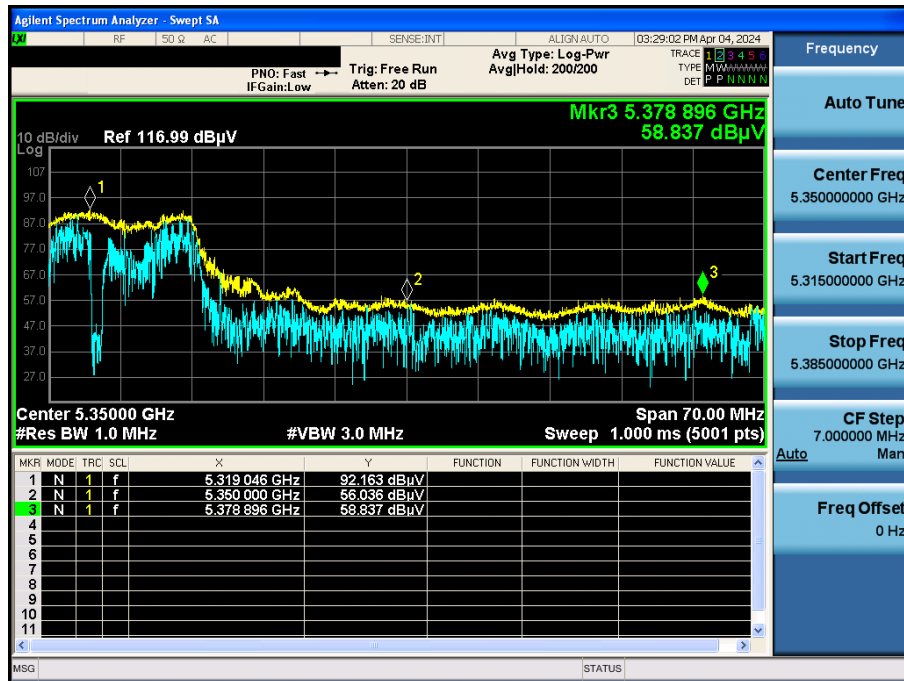


Detector Mode : AV



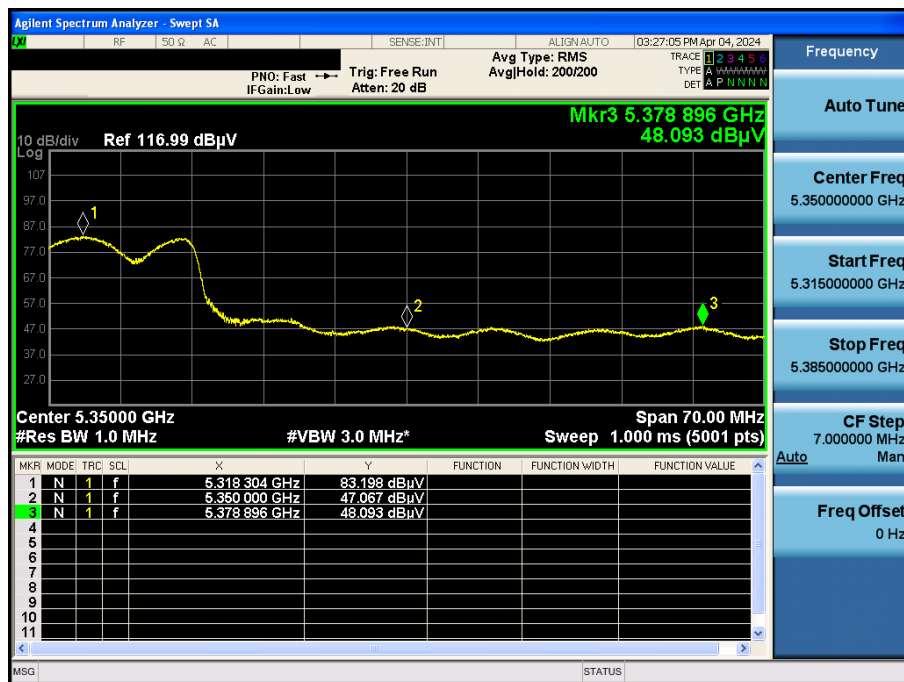
802.11ax HE160 & U-NII 1,2A & Ch.50 & X axis & Hor & SU

Detector Mode : PK

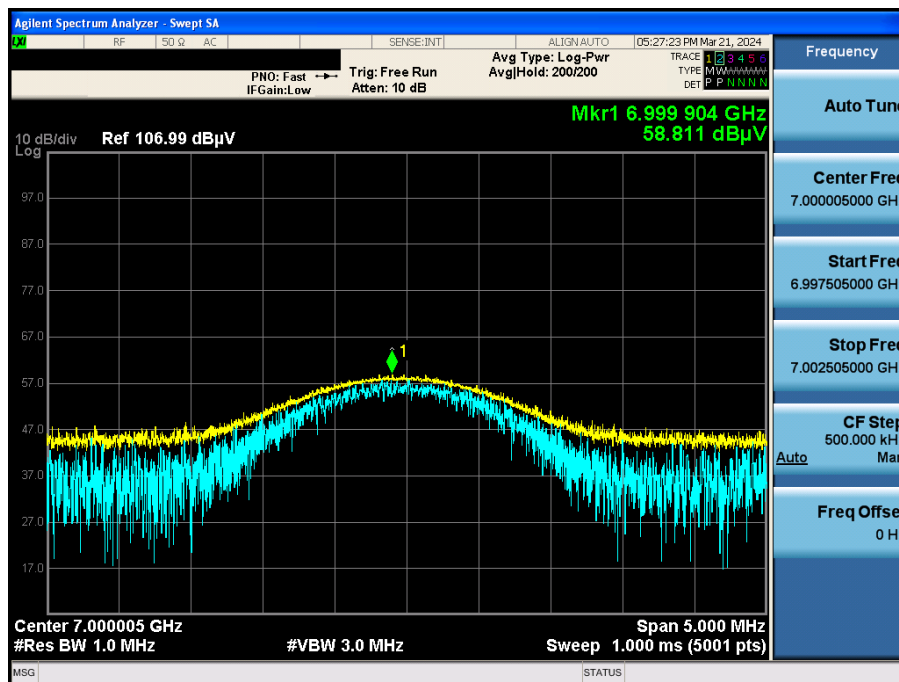


802.11ax HE160 & U-NII 1,2A & Ch.50 & X axis & Hor & SU

Detector Mode : AV



Detector Mode : PK

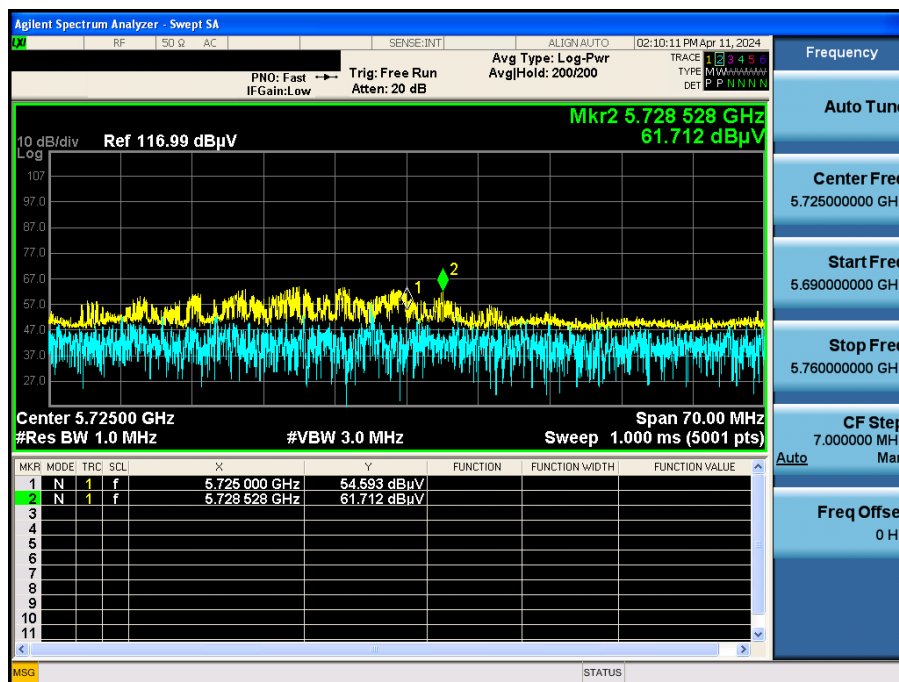
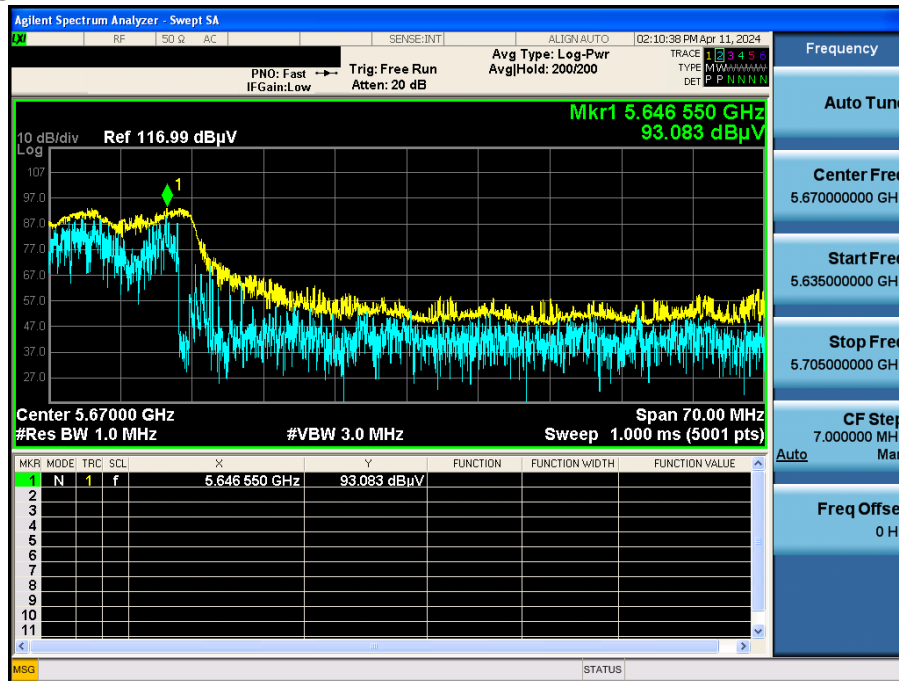


Detector Mode : PK



802.11ax HE160 & U-NII 2C & Ch.114 & X axis & Hor &
2x996 Tone & 68 RU

Detector Mode : PK



802.11ax HE160 & U-NII 2C & Ch.114 & X axis & Hor & 26 Tone & 0L RU

Detector Mode : AV

