

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)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 3	5 775	26	0	5 629.45	H	X	PK	54.22	4.07	N/A	58.29	68.20	9.91
		26	0	5 698.63	H	X	PK	58.56	4.18	N/A	62.74	104.19	41.45
		26	36	5 916.96	H	X	PK	53.47	4.59	N/A	58.06	74.15	16.09
		26	36	5 965.71	H	X	PK	53.28	4.86	N/A	58.14	68.20	10.06
		26	18	11 548.73	H	X	PK	44.57	9.47	N/A	54.04	74.00	19.96
		26	18	11 548.09	H	X	AV	33.11	9.47	N/A	42.58	54.00	11.42
		996	67	5 641.55	H	X	PK	53.75	4.09	N/A	57.84	68.20	10.36
		996	67	5 695.43	H	X	PK	56.00	4.17	N/A	60.17	101.82	41.65
		996	67	5 879.56	H	X	PK	52.87	4.25	N/A	57.12	101.83	44.71
		996	67	5 958.55	H	X	PK	51.80	4.82	N/A	56.62	68.20	11.58
		SU	NA	5 641.23	H	X	PK	54.02	4.09	N/A	58.11	68.20	10.09
		SU	NA	5 696.65	H	X	PK	57.79	4.17	N/A	61.96	102.72	40.76
		SU	NA	5 880.36	H	X	PK	52.92	4.25	N/A	57.17	101.23	44.06
		SU	NA	5 965.83	H	X	PK	52.24	4.86	N/A	57.10	68.20	11.10
		SU	NA	11 550.11	H	X	PK	43.97	9.47	N/A	53.44	74.00	20.56
		SU	NA	11 549.22	H	X	AV	33.79	9.47	N/A	43.26	54.00	10.74

5.6 AC Power-Line Conducted Emissions

■ Test Requirements, §15.207 & RSS-Gen[8.8]

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

Results of Conducted Emission

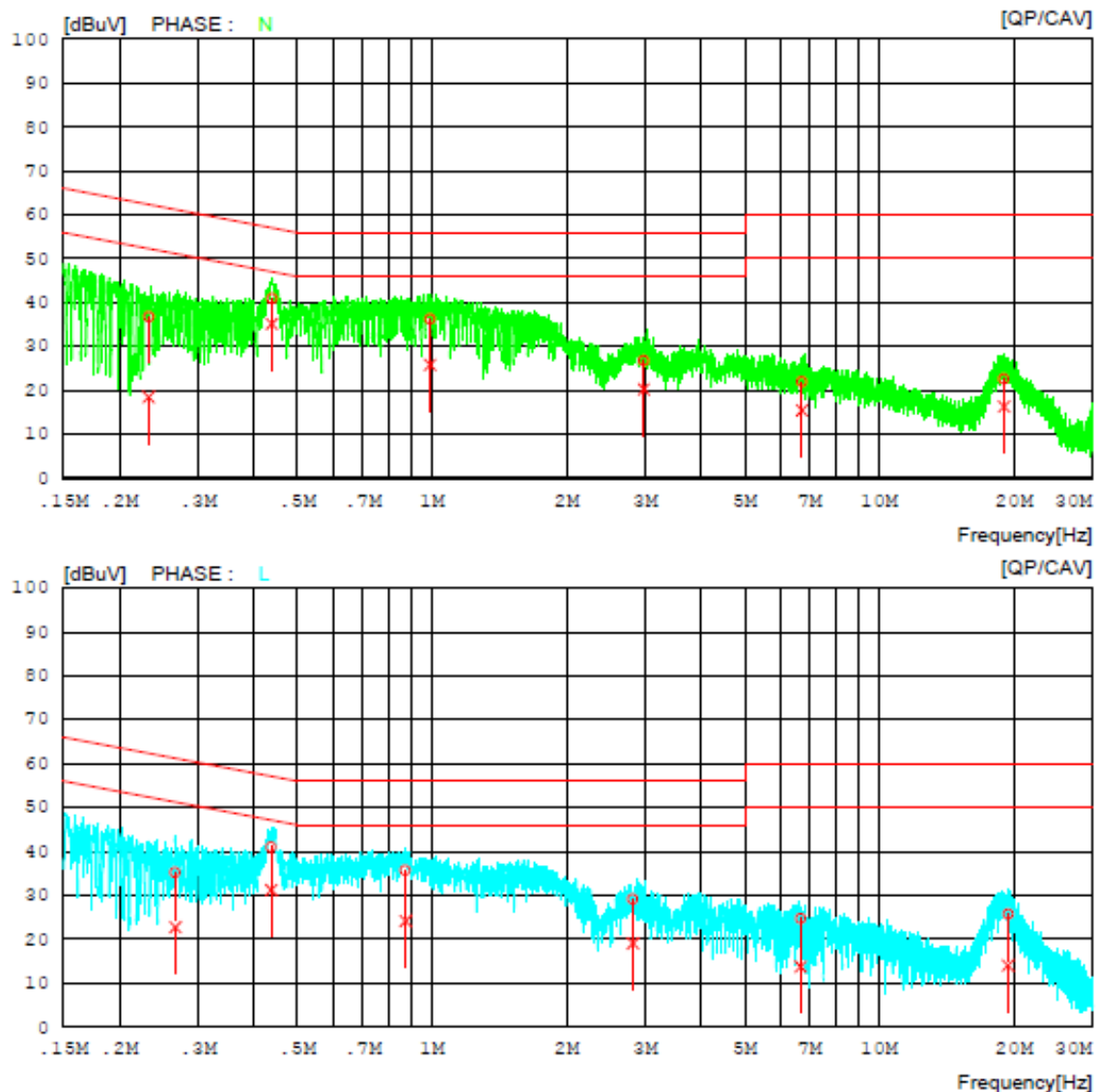
DTNC

Date 2023-05-12

Order No.
Model No. PM86
Serial No.
Test Condition WLAN 5.1G
Memo ax_5180

Reference No.
Power Supply
Temp/Humi. 21 °C / 41 %
Operator S.M.Gil

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



AC Line Conducted Emissions (Data List)

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

Results of Conducted Emission

DTNC

Date 2023-05-12

Order No.		Reference No.	
Model No.	PM86	Power Supply	
Serial No.		Temp/Humi.	21 'C / 41 %
Test Condition	WLAN 5.1G	Operator	S.M.Gil
Memo	ax_5180		

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

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	0.23267	26.81	8.51	9.98	36.79	18.49	62.35	52.35	25.56	33.86	N
2	0.43859	30.86	25.12	10.00	40.86	35.12	57.09	47.09	16.23	11.97	N
3	0.98971	26.23	15.79	10.01	36.24	25.80	56.00	46.00	19.76	20.20	N
4	2.97600	16.70	10.19	10.06	26.76	20.25	56.00	46.00	29.24	25.75	N
5	6.71900	11.79	5.27	10.24	22.03	15.51	60.00	50.00	37.97	34.49	N
6	19.00160	12.02	5.81	10.56	22.58	16.37	60.00	50.00	37.42	33.63	N
7	0.26670	25.29	12.83	9.88	35.17	22.71	61.22	51.22	26.05	28.51	L
8	0.43679	31.07	21.30	9.90	40.97	31.20	57.12	47.12	16.15	15.92	L
9	0.87246	25.73	14.19	9.90	35.63	24.09	56.00	46.00	20.37	21.91	L
10	2.81480	19.09	9.03	10.05	29.14	19.08	56.00	46.00	26.86	26.92	L
11	6.66880	14.51	3.62	10.14	24.65	13.76	60.00	50.00	35.35	36.24	L
12	19.41960	15.32	3.64	10.35	25.67	13.99	60.00	50.00	34.33	36.01	L

AC Line Conducted Emissions (Graph)

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

Results of Conducted Emission

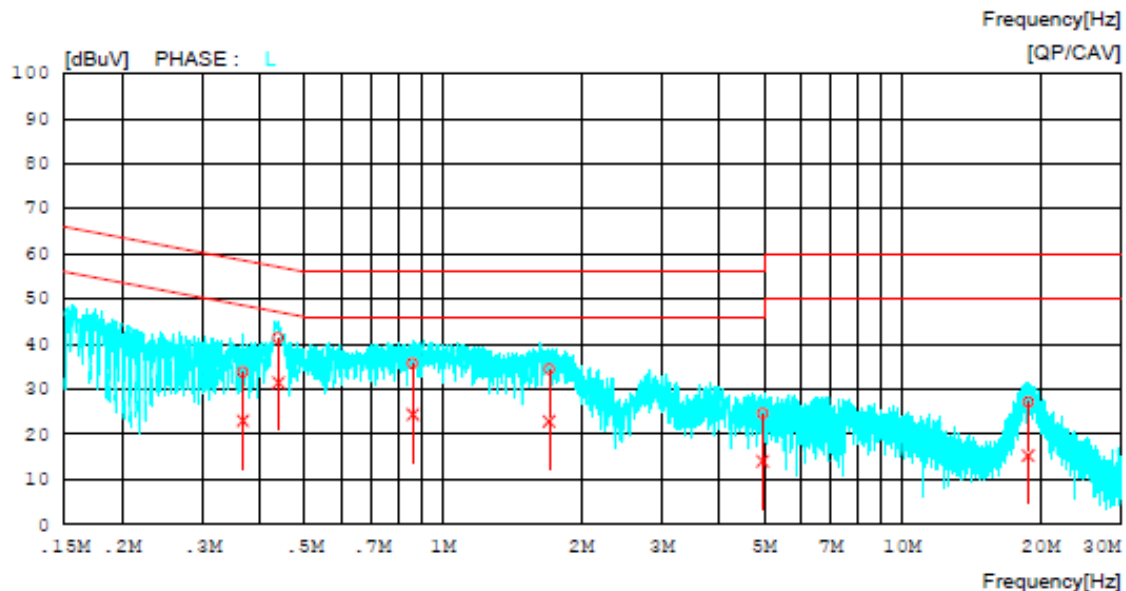
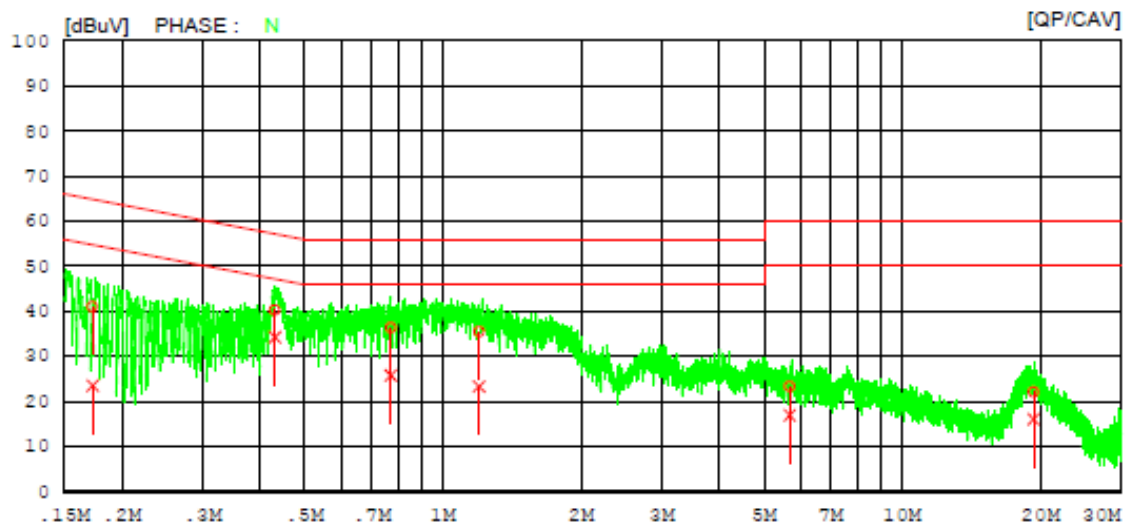
DTNC

Date 2023-05-12

Order No.
Model No. PM86
Serial No.
Test Condition WLAN 5.3G
Memo ax_5260

Reference No.
Power Supply
Temp/Humi. 21 'C / 41 %
Operator S.M.Gil

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



AC Line Conducted Emissions (Data List)

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

Results of Conducted Emission

DTNC

Date 2023-05-12

Order No.		Reference No.	
Model No.	PM86	Power Supply	
Serial No.		Temp/Humi.	21 °C / 41 %
Test Condition	WLAN 5.3G	Operator	S.M.Gil
Memo	ax_5260		

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

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	0.17262	31.05	13.51	10.00	41.05	23.51	64.83	54.83	23.78	31.32	N
2	0.43078	30.26	24.23	10.00	40.26	34.23	57.24	47.24	16.98	13.01	N
3	0.76965	26.40	15.87	9.99	36.39	25.86	56.00	46.00	19.61	20.14	N
4	1.19800	25.45	13.37	10.01	35.46	23.38	56.00	46.00	20.54	22.62	N
5	5.69120	13.15	6.80	10.21	23.36	17.01	60.00	50.00	36.64	32.99	N
6	19.32680	11.62	5.54	10.55	22.17	16.09	60.00	50.00	37.83	33.91	N
7	0.36665	23.90	13.08	9.89	33.79	22.97	58.58	48.58	24.79	25.61	L
8	0.43819	31.44	21.58	9.90	41.34	31.48	57.10	47.10	15.76	15.62	L
9	0.85972	25.76	14.51	9.90	35.66	24.41	56.00	46.00	20.34	21.59	L
10	1.70400	24.36	12.87	10.03	34.39	22.90	56.00	46.00	21.61	23.10	L
11	4.96920	14.50	3.94	10.10	24.60	14.04	56.00	46.00	31.40	31.96	L
12	18.81440	16.80	4.96	10.36	27.16	15.32	60.00	50.00	32.84	34.68	L

AC Line Conducted Emissions (Graph)

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

Results of Conducted Emission

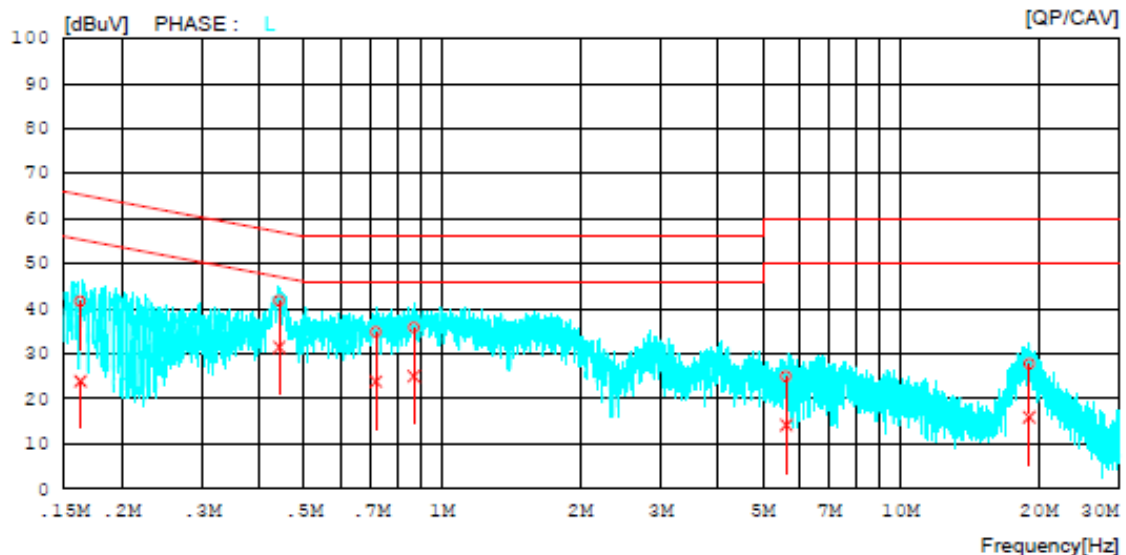
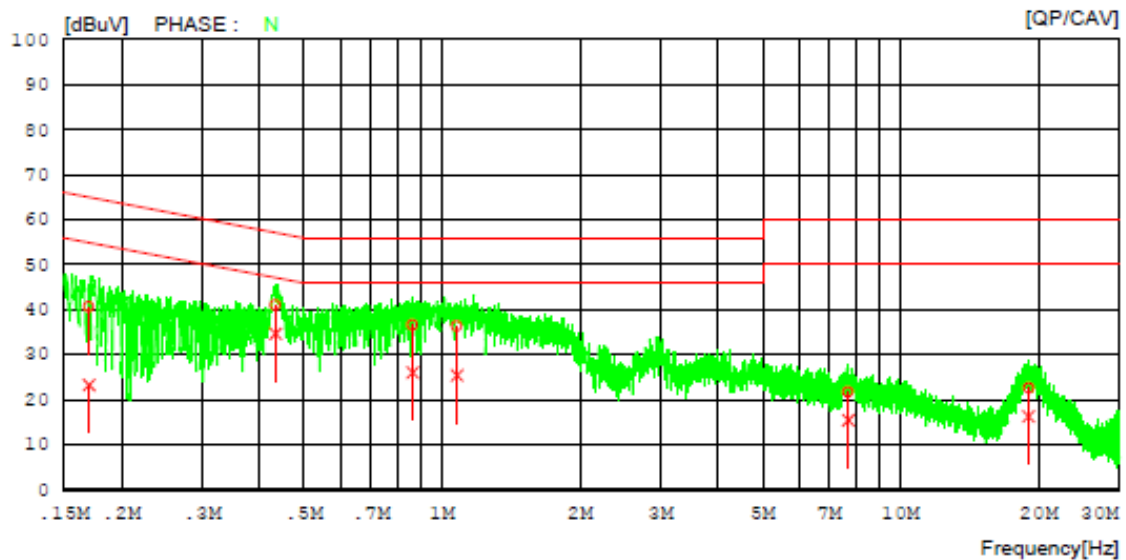
DTNC

Date 2023-05-12

Order No.
Model No. PM86
Serial No.
Test Condition WLAN 5.5G
Memo ax_5500

Reference No.
Power Supply
Temp/Humi. 21 °C / 41 %
Operator S.M.Gil

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



AC Line Conducted Emissions (Data List)

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

Results of Conducted Emission

DTNC

Date 2023-05-12

Order No.		Reference No.	
Model No.	PM86	Power Supply	
Serial No.		Temp/Humi.	21 °C / 41 %
Test Condition	WLAN 5.5G	Operator	S.M.Gil

Memo ax_5500

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

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	0.16972	30.66	13.29	10.00	40.66	23.29	64.97	54.97	24.31	31.68	N
2	0.43303	31.11	24.67	10.00	41.11	34.67	57.19	47.19	16.08	12.52	N
3	0.86186	26.66	16.05	10.00	36.66	26.05	56.00	46.00	19.34	19.95	N
4	1.07720	26.40	15.44	10.01	36.41	25.45	56.00	46.00	19.59	20.55	N
5	7.68200	11.41	5.24	10.25	21.66	15.49	60.00	50.00	38.34	34.51	N
6	19.04440	12.09	5.80	10.56	22.65	16.36	60.00	50.00	37.35	33.64	N
7	0.16255	31.70	14.02	9.90	41.60	23.92	65.33	55.33	23.73	31.41	L
8	0.44150	31.88	21.60	9.90	41.78	31.50	57.03	47.03	15.25	15.53	L
9	0.71759	24.88	13.93	9.89	34.77	23.82	56.00	46.00	21.23	22.18	L
10	0.86779	25.94	15.10	9.90	35.84	25.00	56.00	46.00	20.16	21.00	L
11	5.62980	14.86	4.01	10.11	24.97	14.12	60.00	50.00	35.03	35.88	L
12	19.08520	17.32	5.59	10.36	27.68	15.95	60.00	50.00	32.32	34.05	L

AC Line Conducted Emissions (Graph)

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

Results of Conducted Emission

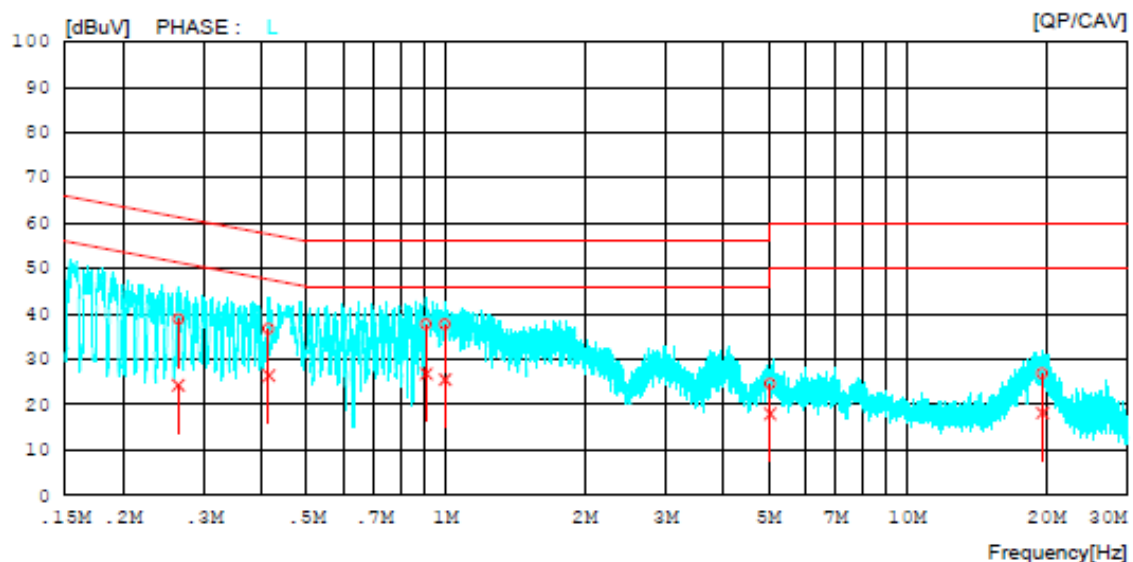
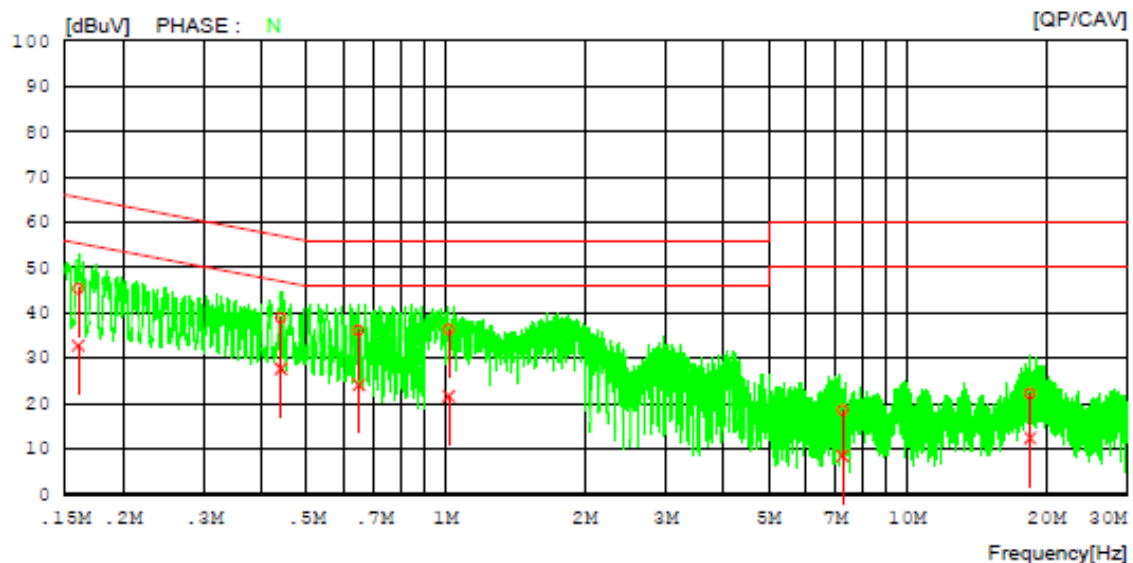
DTNC

Date 2023-05-26

Order No.
Model No. PM86
Serial No.
Test Condition WLAN 5.7G
Memo ax_5745

Reference No.
Power Supply
Temp/Humi. 21 °C / 41 %
Operator S.M.Gil

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



AC Line Conducted Emissions (Data List)

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

Results of Conducted Emission

DTNC

Date 2023-05-26

Order No.
Model No. PM86
Serial No.
Test Condition WLAN 5.7G

Reference No.
Power Supply
Temp/Humi. 21 'C / 41 %
Operator S.M.Gil

Memo ax_5745

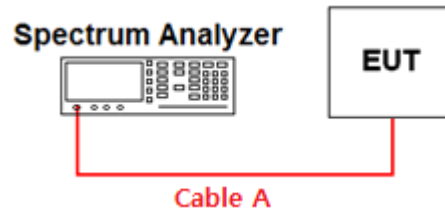
LIMIT : FCC P15.207 AV
FCC P15.207 QP

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	0.16001	35.40	22.84	10.00	45.40	32.84	65.46	55.46	20.06	22.62	N
2	0.44011	28.92	17.75	10.00	38.92	27.75	57.06	47.06	18.14	19.31	N
3	0.64790	26.12	14.13	9.99	36.11	24.12	56.00	46.00	19.89	21.88	N
4	1.01520	26.32	11.64	10.01	36.33	21.65	56.00	46.00	19.67	24.35	N
5	7.24760	8.28	-1.69	10.24	18.52	8.55	60.00	50.00	41.48	41.45	N
6	18.46400	11.72	1.85	10.55	22.27	12.40	60.00	50.00	37.73	37.60	N
7	0.26370	28.95	14.36	9.88	38.83	24.24	61.31	51.31	22.48	27.07	L
8	0.41371	26.84	16.53	9.89	36.73	26.42	57.57	47.57	20.84	21.15	L
9	0.90794	27.78	16.90	9.91	37.69	26.81	56.00	46.00	18.31	19.19	L
10	0.99729	27.66	15.53	10.01	37.67	25.54	56.00	46.00	18.33	20.46	L
11	5.04800	14.50	7.86	10.10	24.60	17.96	60.00	50.00	35.40	32.04	L
12	19.62240	16.52	7.78	10.36	26.88	18.14	60.00	50.00	33.12	31.86	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.)

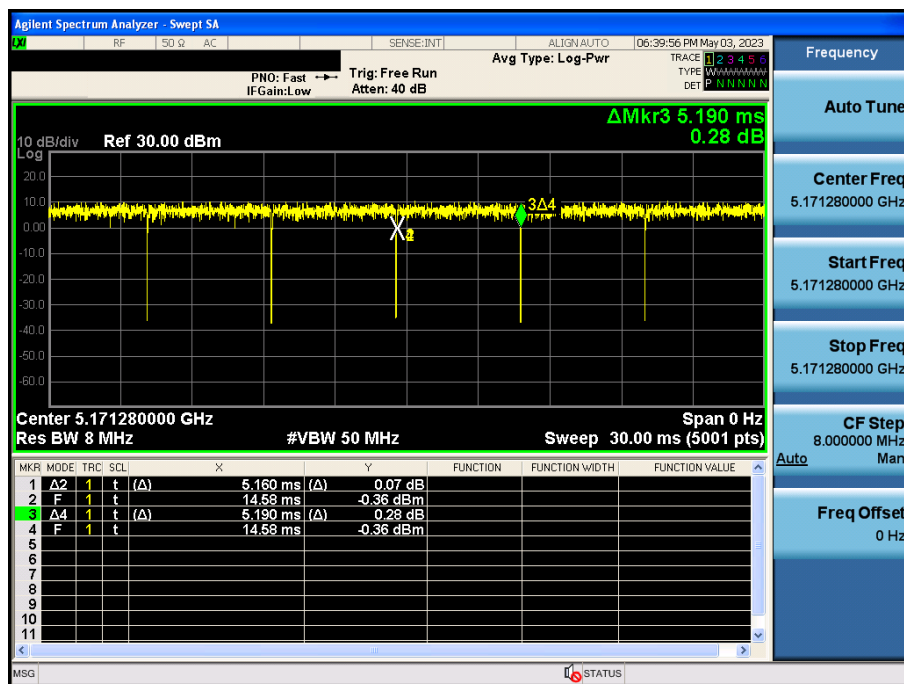
T : The minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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

■ T (On time)

Duty Cycle

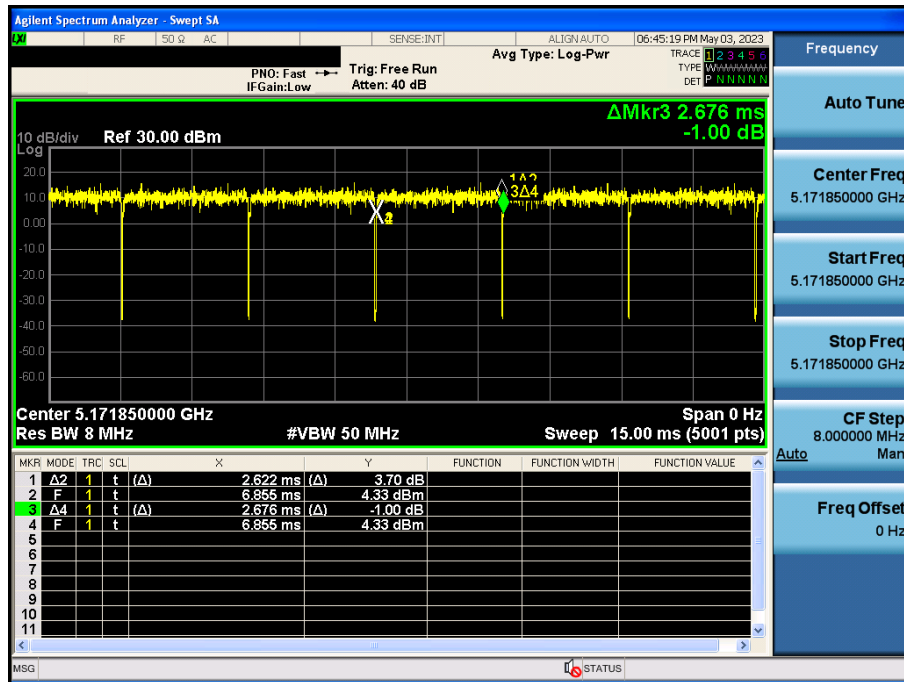
802.11ax HE20 & MIMO & 5 180 MHz & MCS 0 & 26 Tone



$T_{on}(ms)$	$1/T$ [kHz]	VBW
5.160	0.194	300 Hz

Duty Cycle

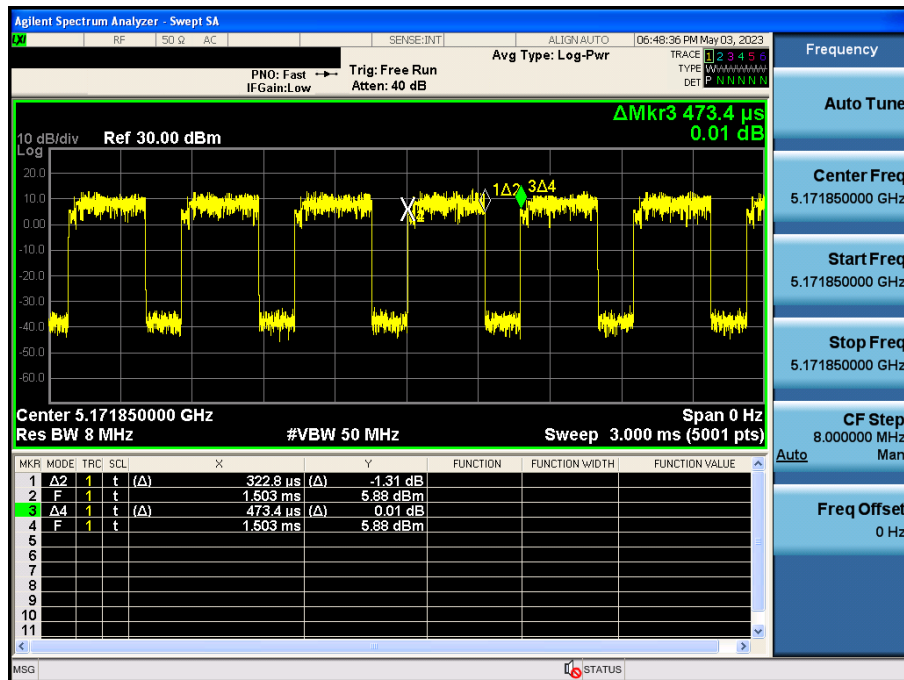
802.11ax HE20 & MIMO & 5 180 MHz & & MCS 0 & 52 Tone



Ton(ms)	1/T [kHz]	VBW
2.622	0.381	1 kHz

Duty Cycle

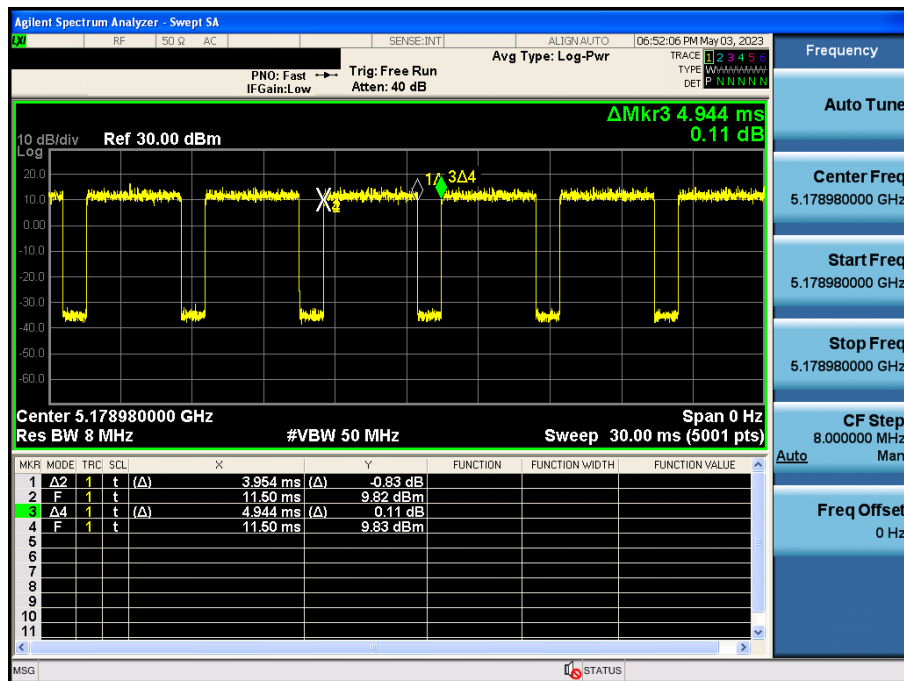
802.11ax HE20 & MIMO & 5 180 MHz & & MCS 0 & 106 Tone



Ton(ms)	1/T [kHz]	VBW
0.323	3.098	3.3 kHz

Duty Cycle

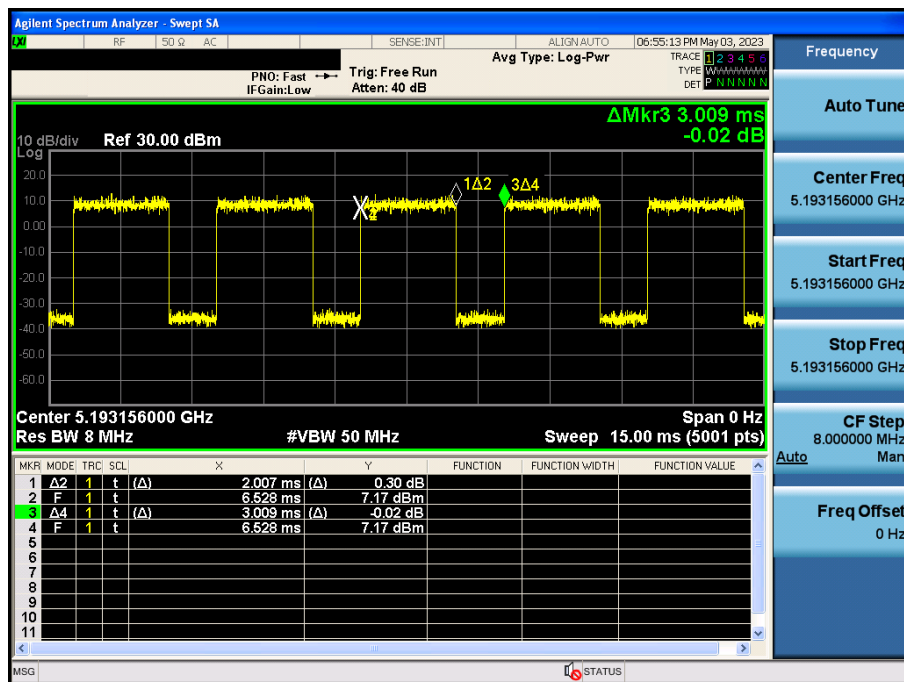
802.11ax HE20 & MIMO & 5 180 MHz & MCS 0 & 242 Tone



T _{on} (ms)	1/T [kHz]	VBW
3.954	0.253	300 Hz

Duty Cycle

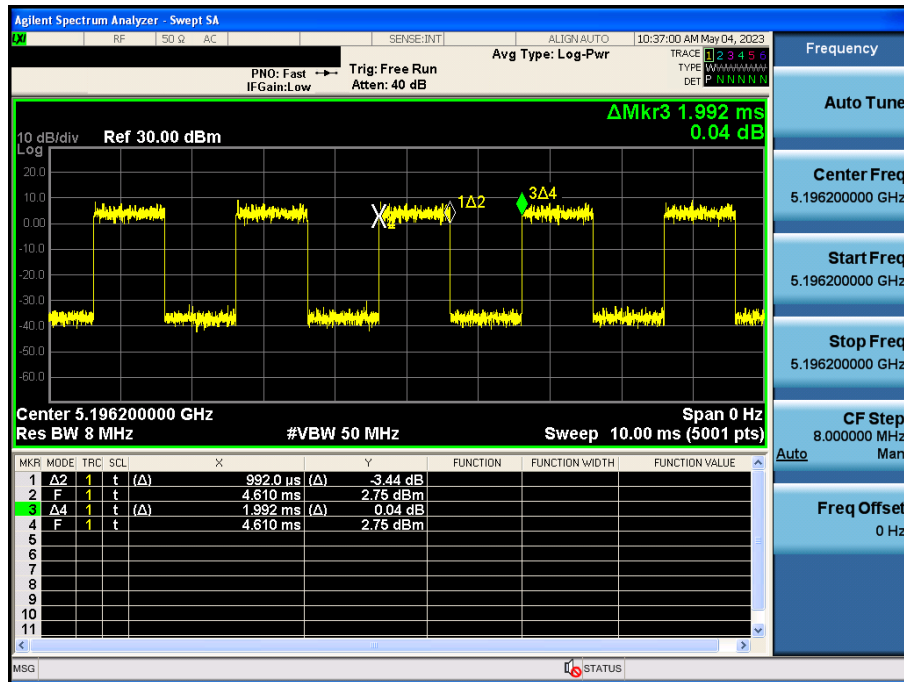
802.11ax HE40 & MIMO & 5 190 MHz & MCS 0 & 484 Tone



T _{on} (ms)	1/T [kHz]	VBW
2.007	0.498	510 Hz

Duty Cycle

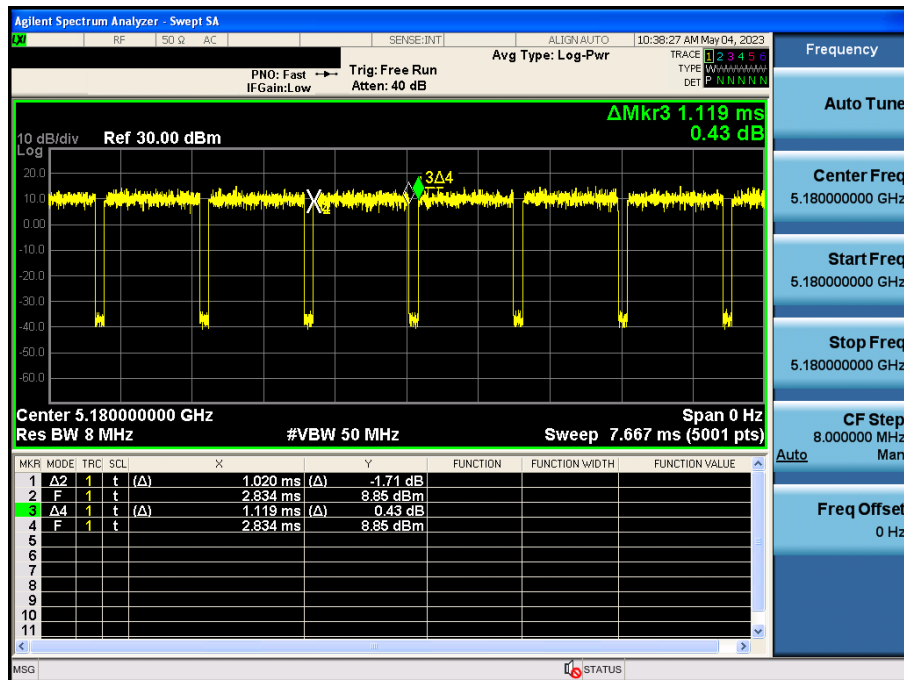
802.11ax HE80 & MIMO & 5 210 MHz & & MCS 0 & 996 Tone



Ton(ms)	1/T [kHz]	VBW
0.992	1.008	1.1 kHz

Duty Cycle

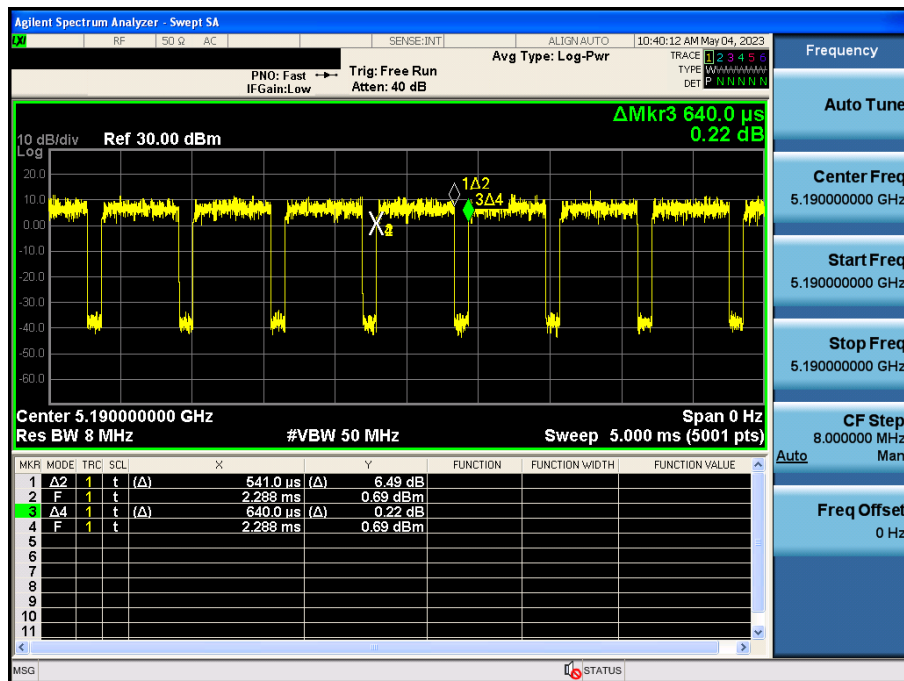
802.11ax HE20 & MIMO & 5 180 MHz & & MCS 0 & SU



Ton(ms)	1/T [kHz]	VBW
1.020	0.980	1 kHz

Duty Cycle

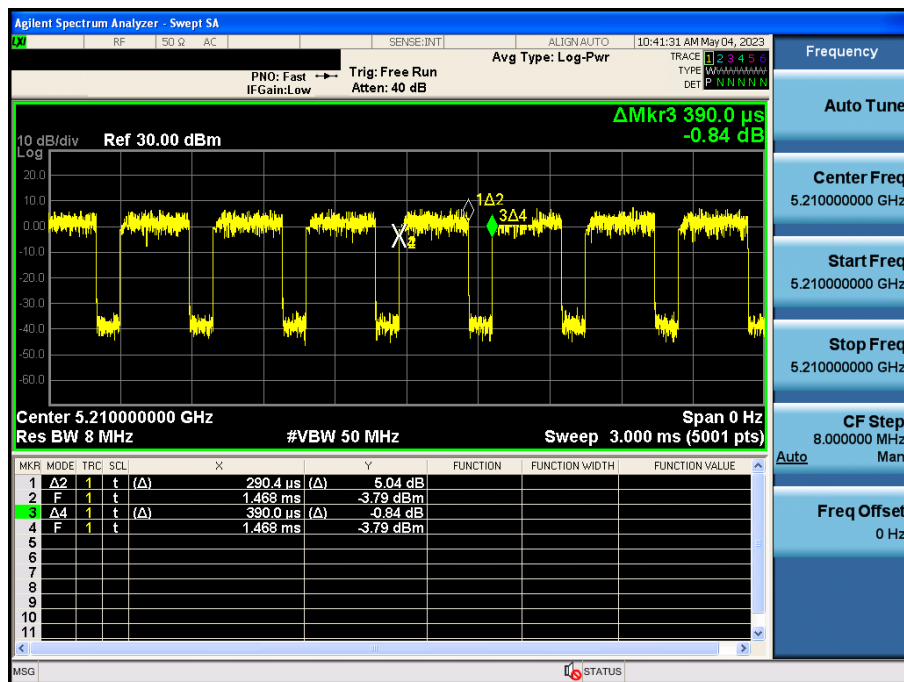
802.11ax HE40 & MIMO & 5 190 MHz & MCS 0 & SU



Ton(ms)	1/T [kHz]	VBW
0.541	1.848	2 kHz

Duty Cycle

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



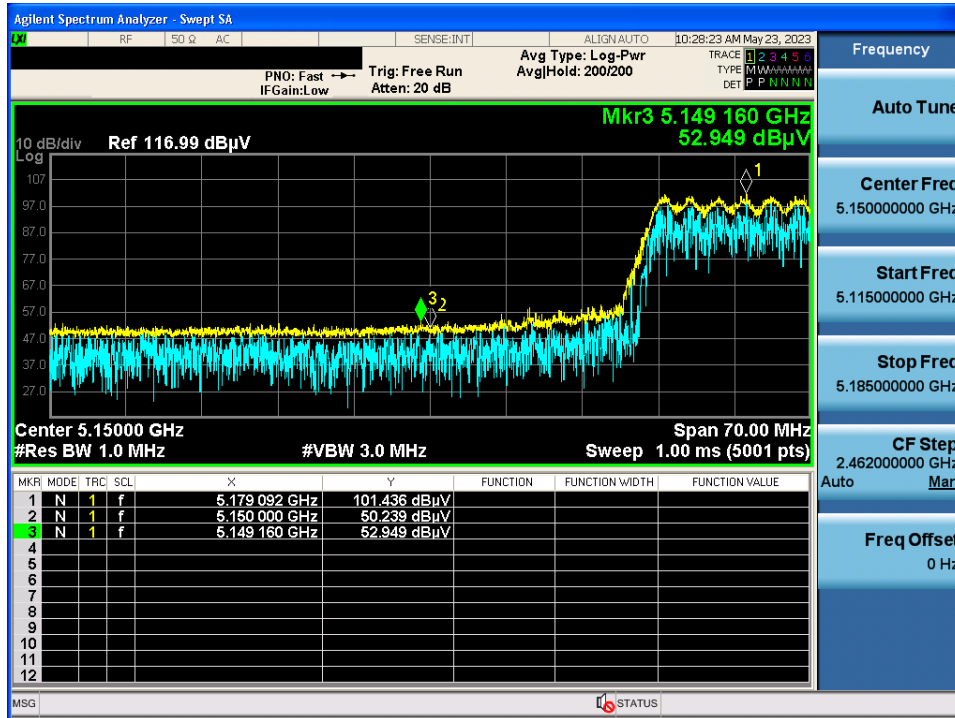
Ton(ms)	1/T [kHz]	VBW
0.290	3.444	3.6 kHz

APPENDIX III

Unwanted Emissions (Radiated) Test Plot: MIMO(CDD)

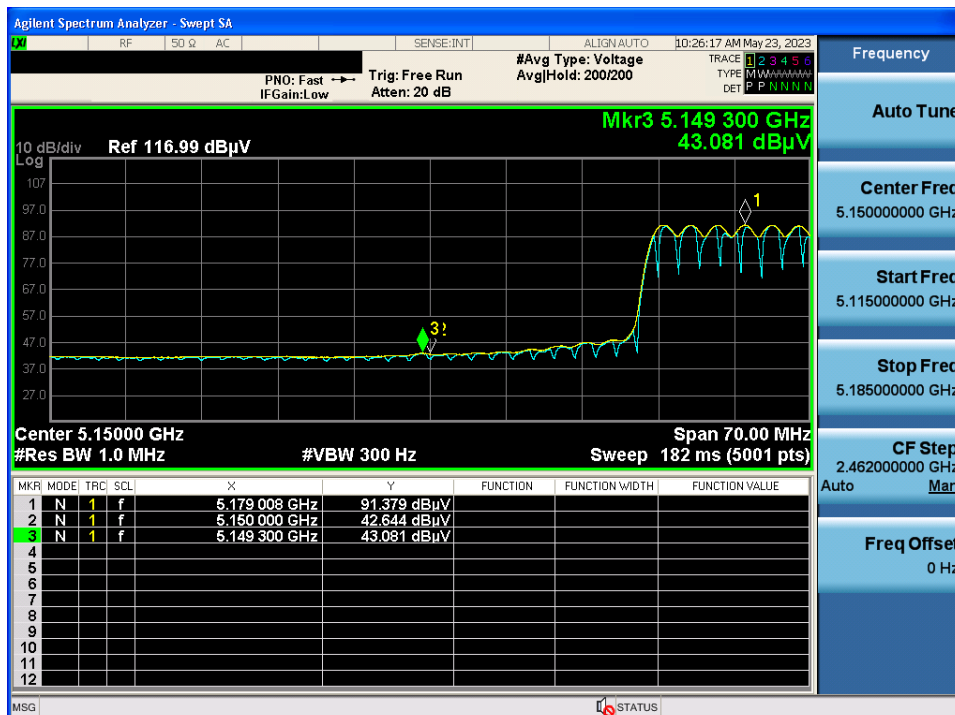
802.11ax HE20 & U-NII 1 & Ch.36 & X axis & Hor & 242 Tone & 61 RU

Detector Mode : PK

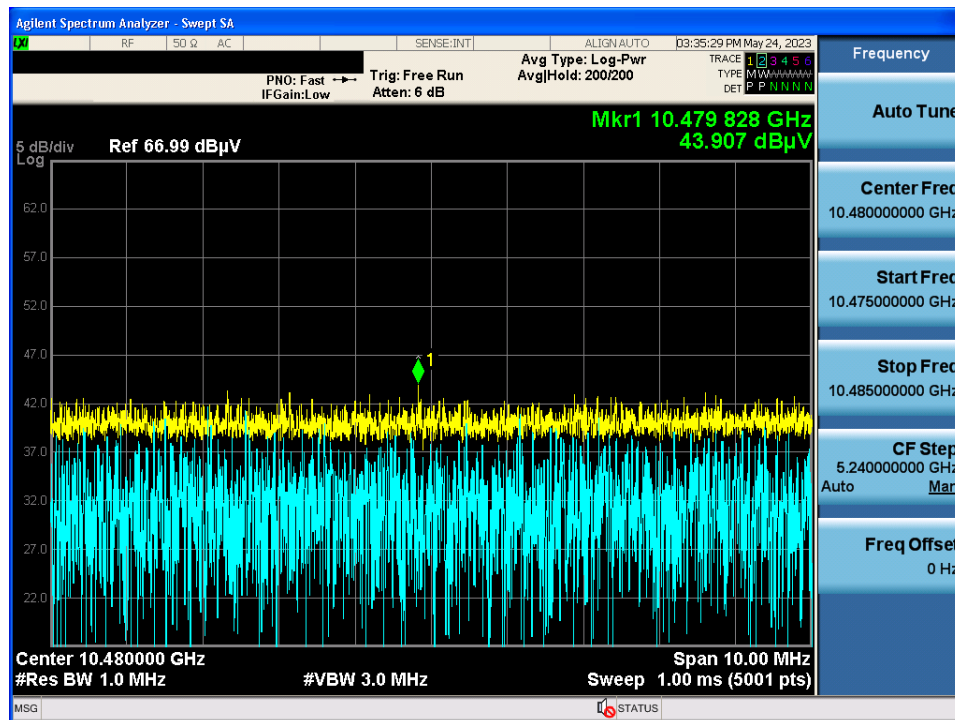


802.11ax HE20 & U-NII 1 & Ch.36 & X axis & Hor & 242 Tone & 61 RU

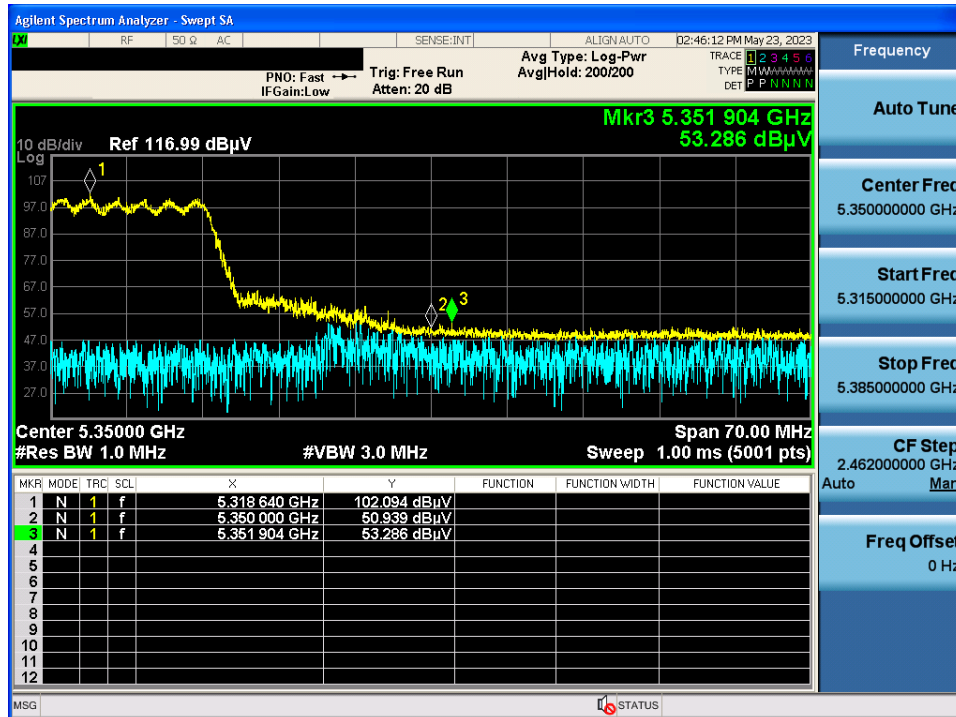
Detector Mode : AV



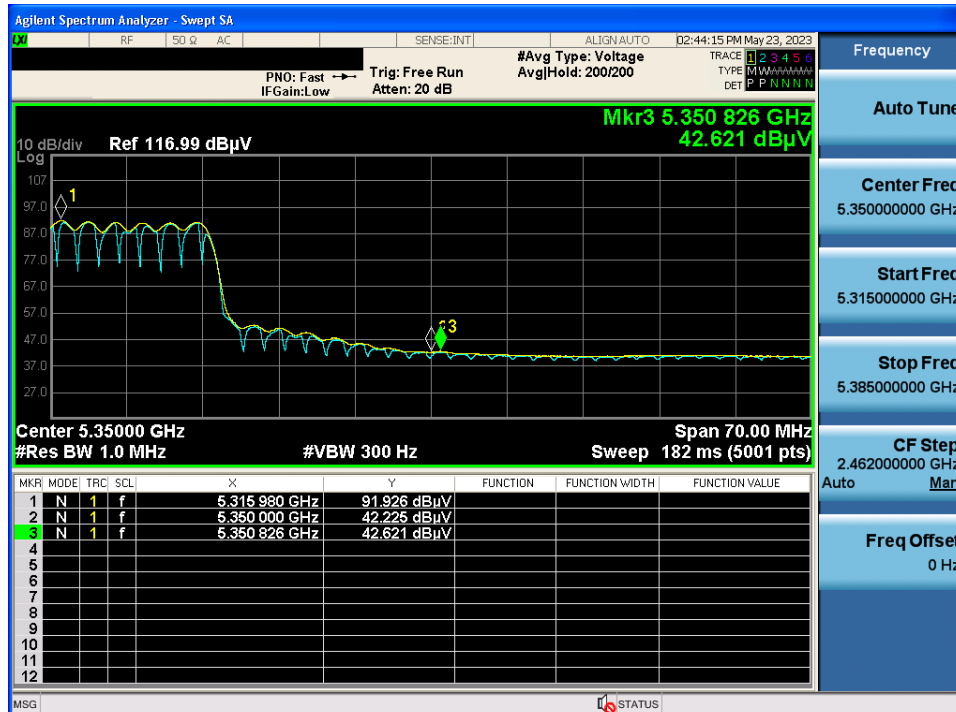
Detector Mode : PK



Detector Mode : PK



Detector Mode : AV



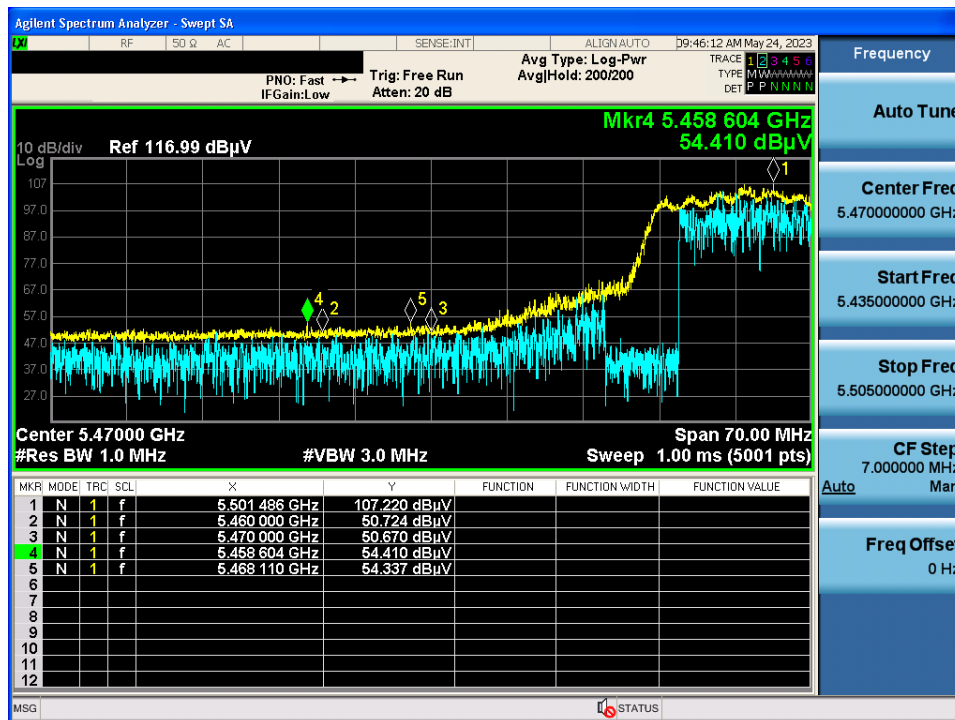
802.11ax HE20 & U-NII 2A & Ch.64 & X axis & Hor & SU

Detector Mode : AV



802.11ax HE20 & U-NII 2C & Ch.100 & X axis & Hor & SU

Detector Mode : PK



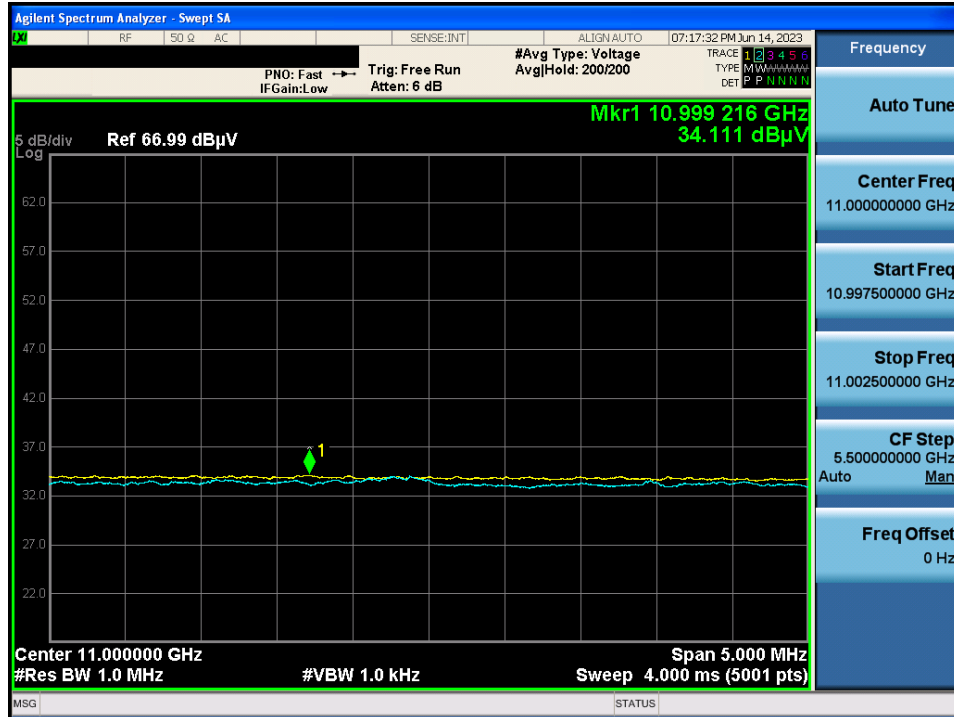
802.11ax HE20 & U-NII 2C & Ch.100 & X axis & Hor & SU

Detector Mode : AV



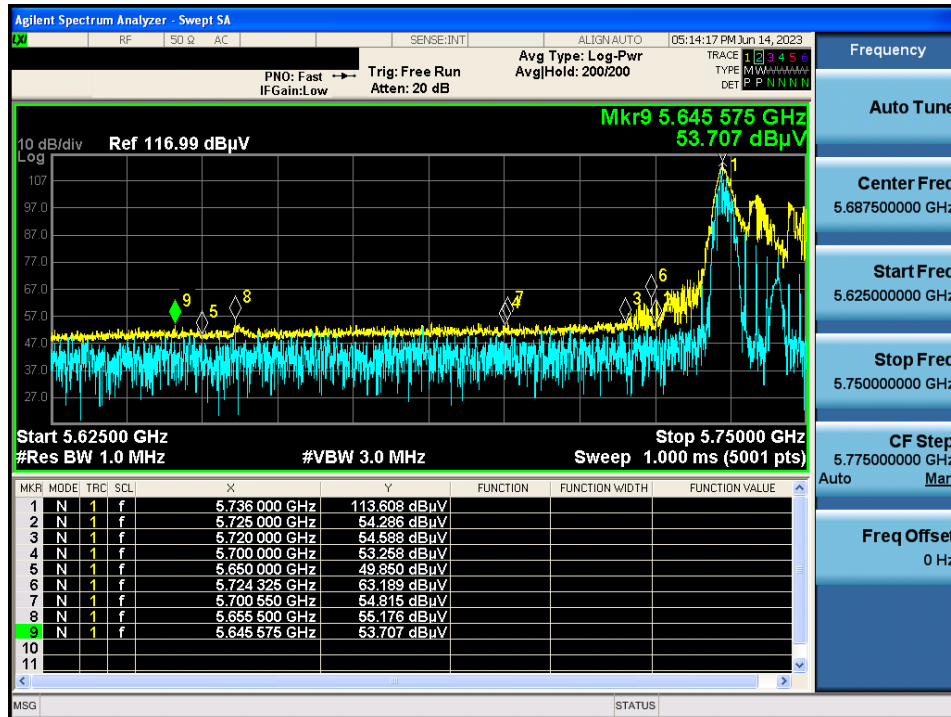
802.11ax HE20 & U-NII 2C & Ch.100 & X axis & Hor & SU

Detector Mode : AV



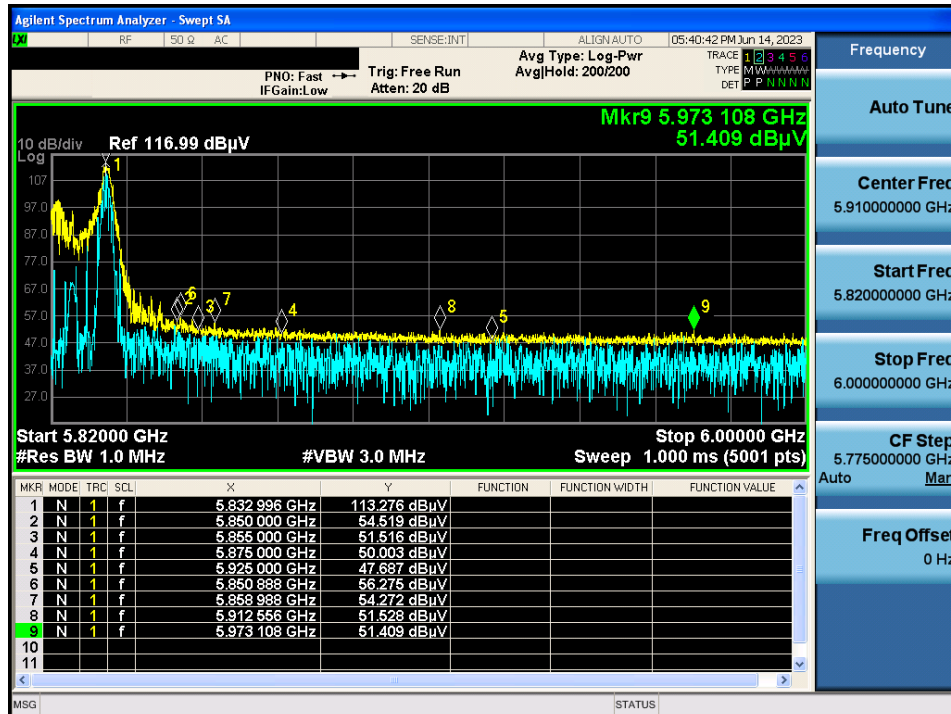
802.11ax HE20 & U-NII 3 & Ch.149 & X axis & Hor & 26 Tone & 0 RU

Detector Mode : PK



802.11ax HE20 & U-NII 3 & Ch.165 & X axis & Hor & 26 Tone & 8 RU

Detector Mode : PK



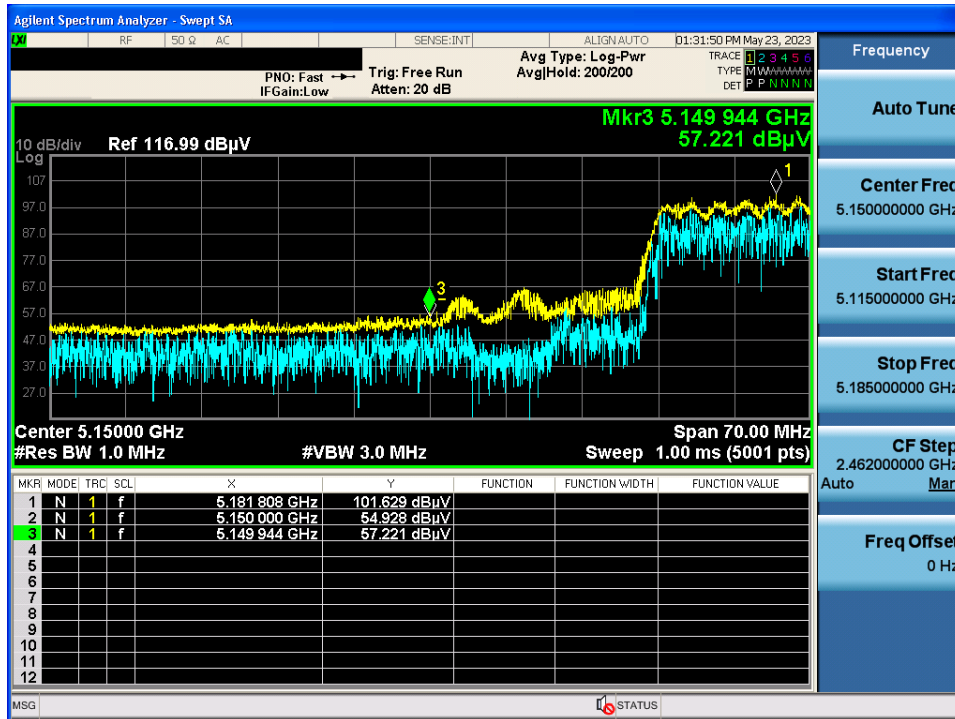
802.11ax HE20 & U-NII 3 & Ch.149 & X axis & Hor & SU

Detector Mode : AV



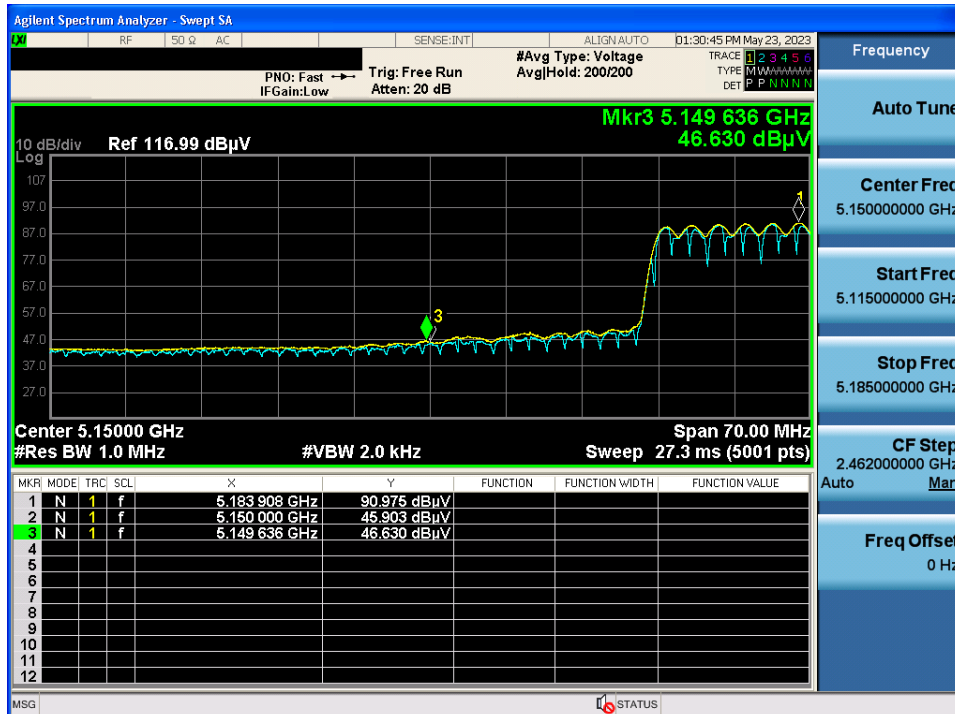
802.11ax HE40 & U-NII 1 & Ch.38 & X axis & Hor & SU

Detector Mode : PK

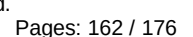


802.11ax HE40 & U-NII 1 & Ch.38 & X axis & Hor & SU

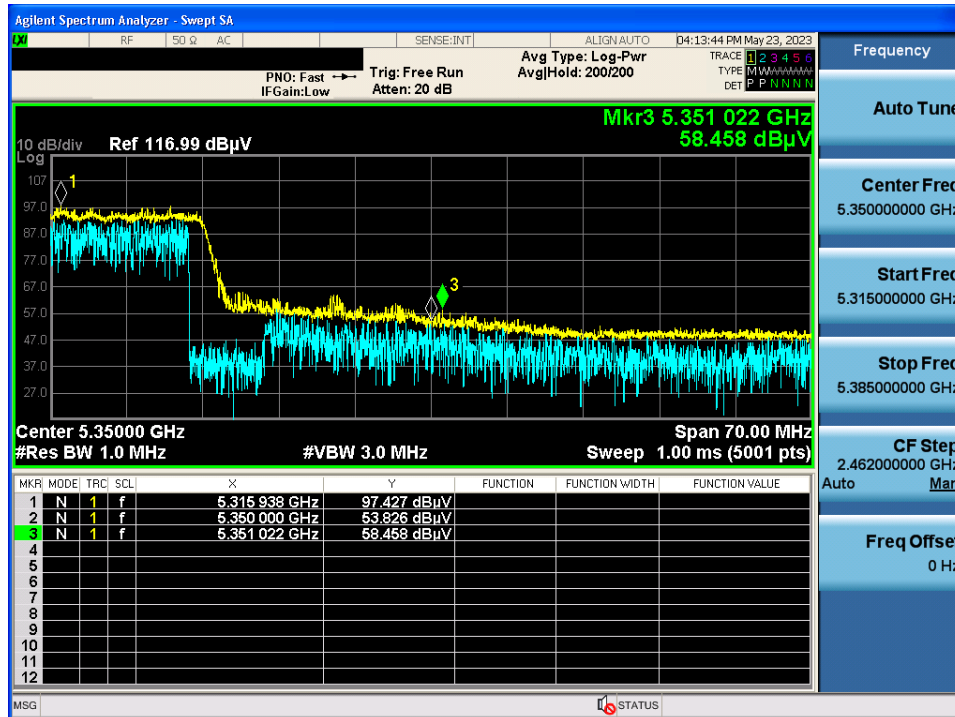
Detector Mode : AV



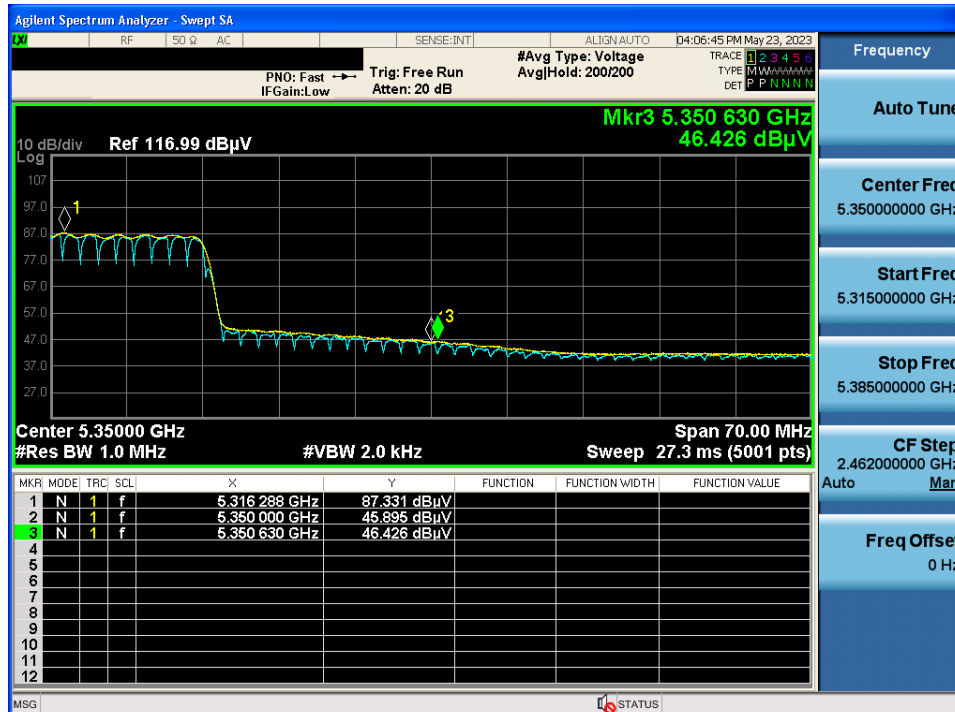
Detector Mode : PK



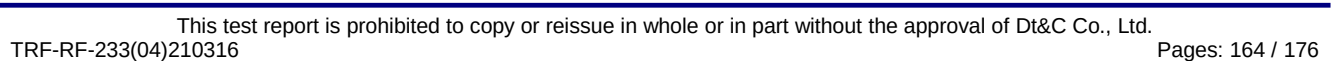
Detector Mode : PK



Detector Mode : AV

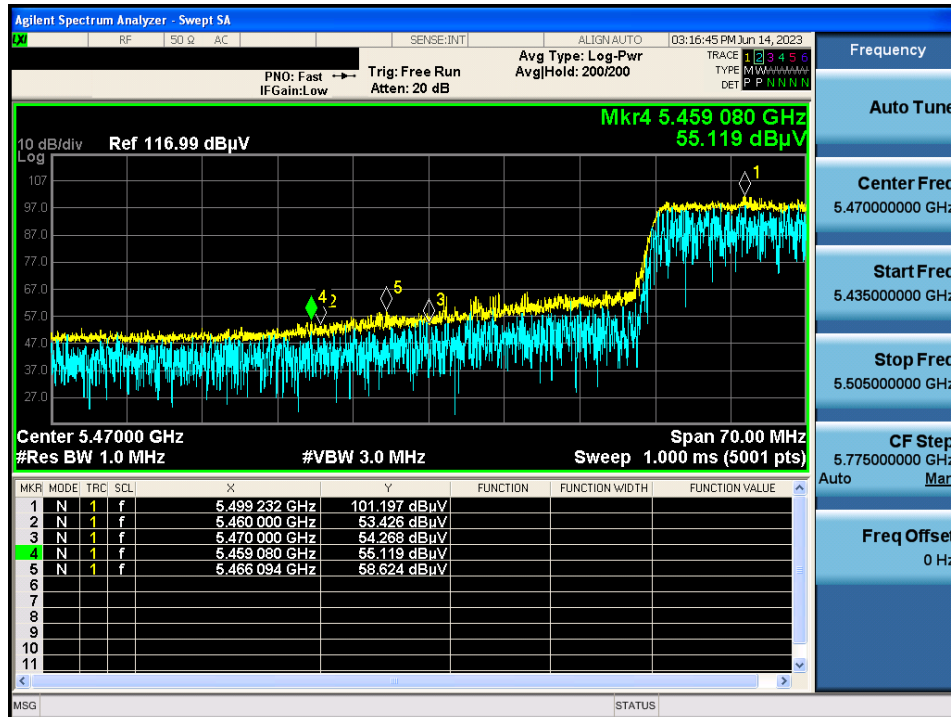


Detector Mode : AV



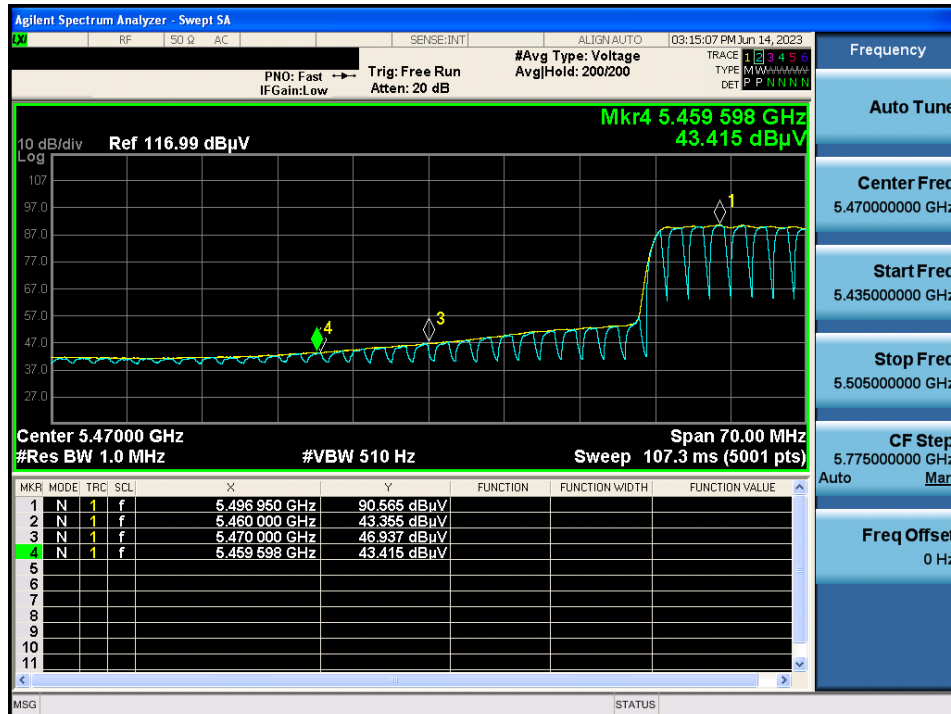
802.11ax HE40 & U-NII 2C & Ch.102 & X axis & Hor & 484 Tone & 65 RU

Detector Mode : PK



802.11ax HE20 & U-NII 2C & Ch.102 & X axis & Hor & 484 Tone & 65 RU

Detector Mode : AV



802.11ax HE40 & U-NII 2C & Ch.102 & X axis & Hor & SU

Detector Mode : AV

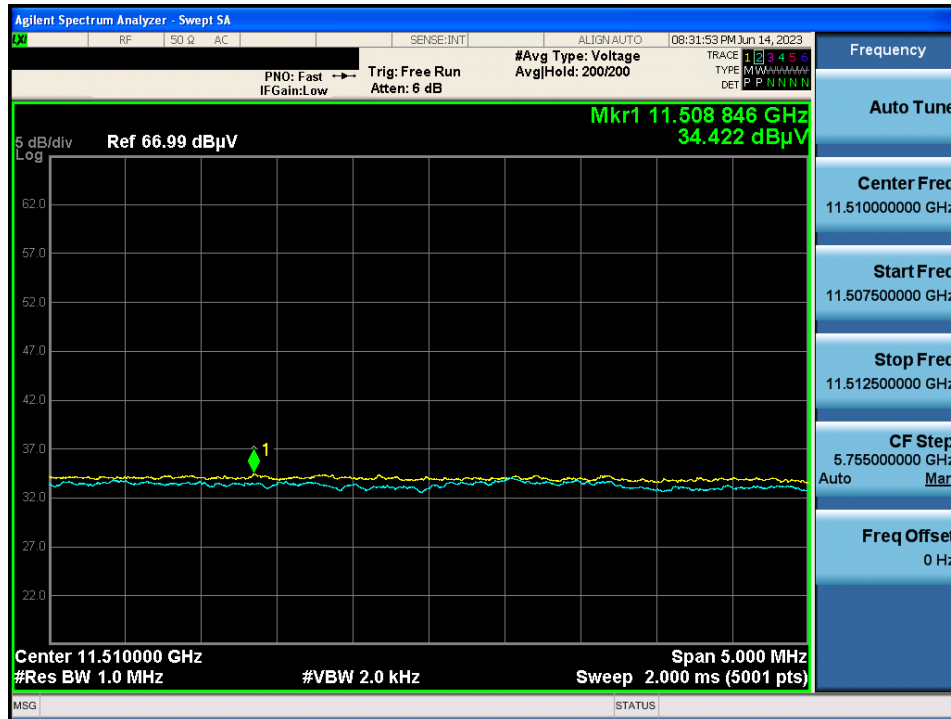


Detector Mode : PK



802.11ax HE40 & U-NII 3 & Ch.151 & X axis & Hor & SU

Detector Mode : AV

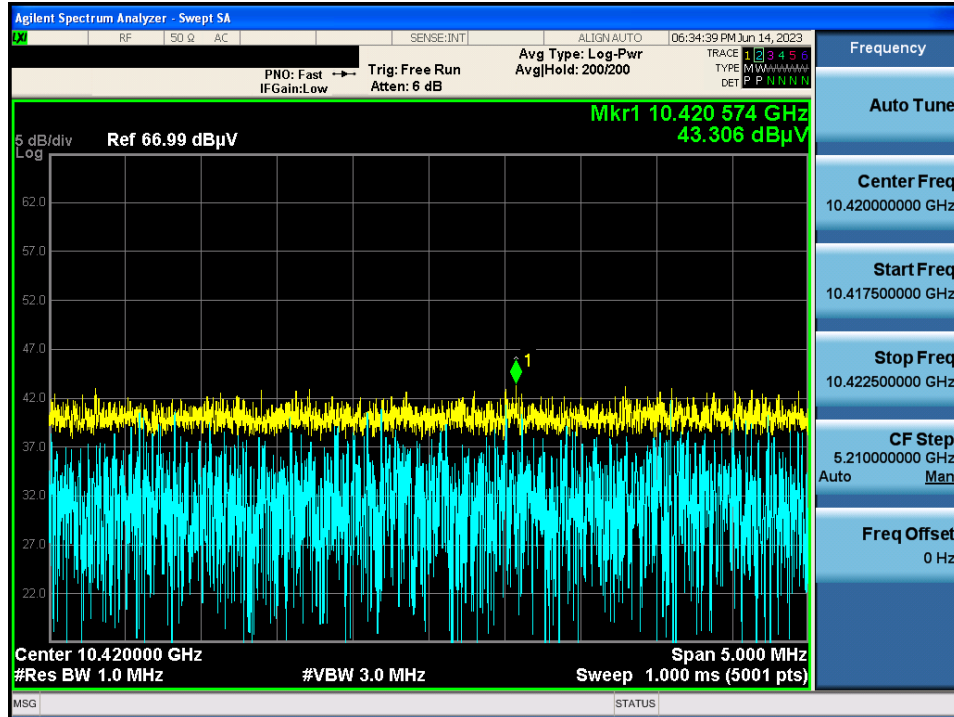


Detector Mode : PK



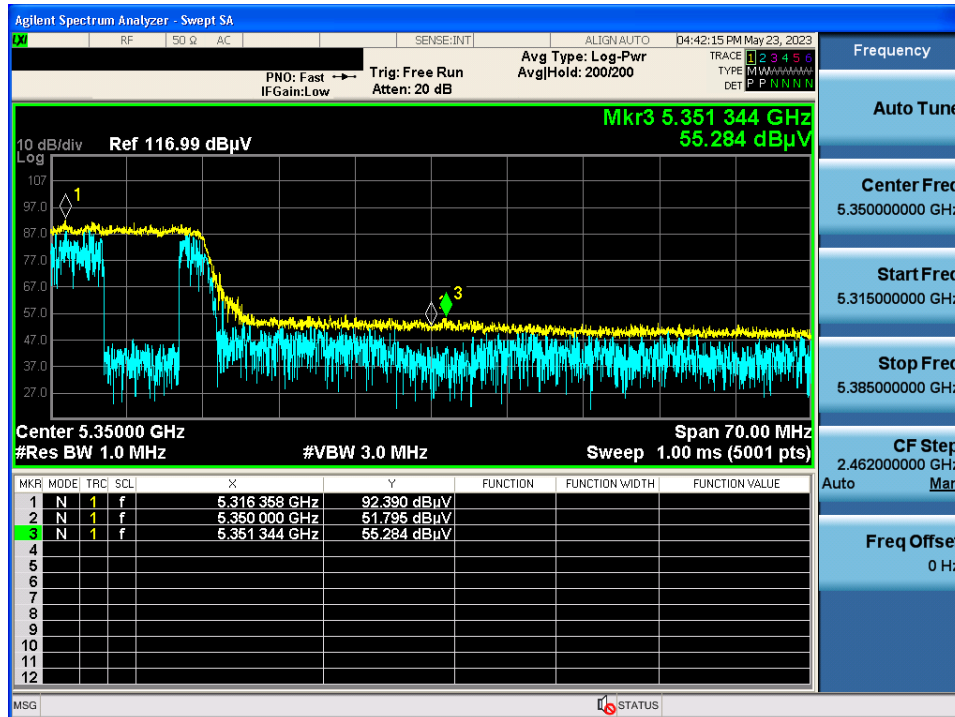
802.11ax HE80 & U-NII 1 & Ch.42 & X axis & Hor & SU

Detector Mode : PK



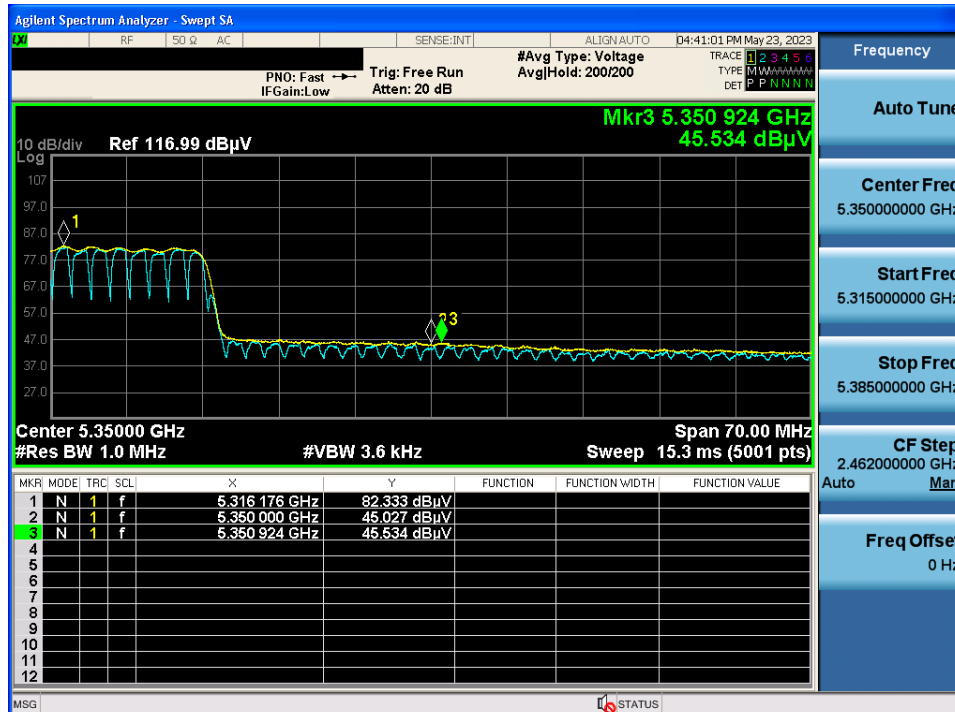
802.11ax HE80 & U-NII 2A & Ch.58 & X axis & Hor & SU

Detector Mode : PK

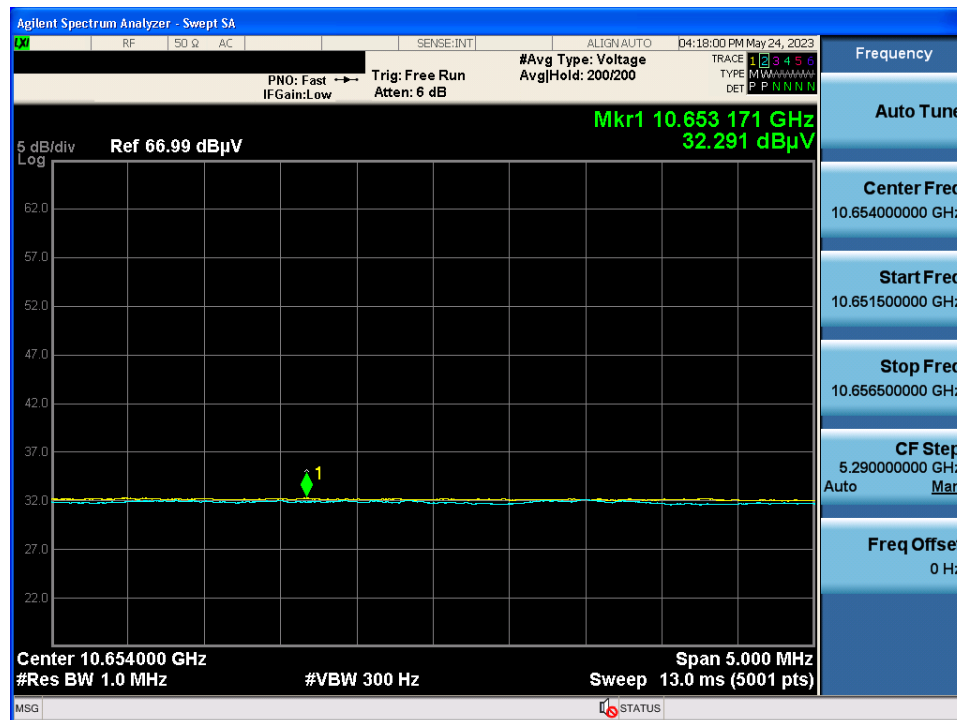


802.11ax HE80 & U-NII 2A & Ch.58 & X axis & Hor & SU

Detector Mode : AV

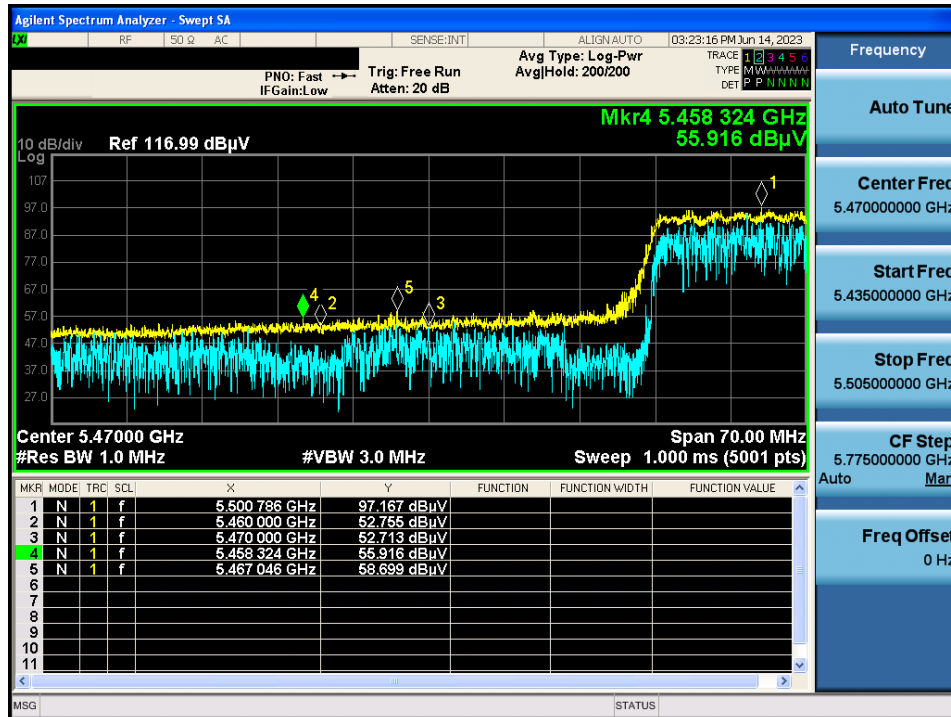


Detector Mode : AV



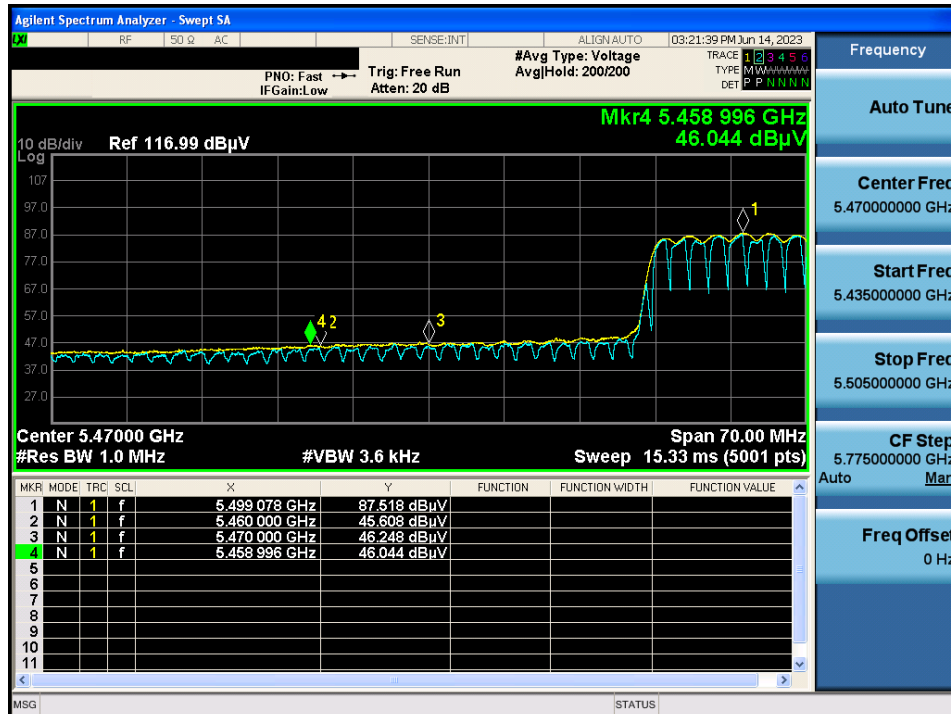
802.11ax HE80 & U-NII 2C & Ch.106 & X axis & Hor & SU

Detector Mode : PK



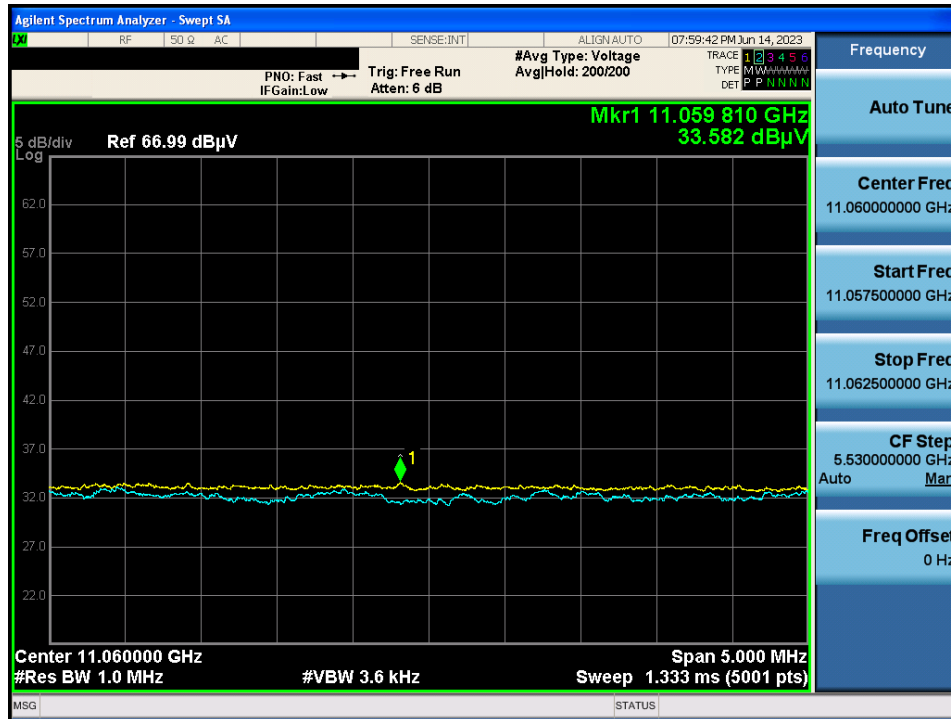
802.11ax HE80 & U-NII 2C & Ch.106 & X axis & Hor & SU

Detector Mode : AV



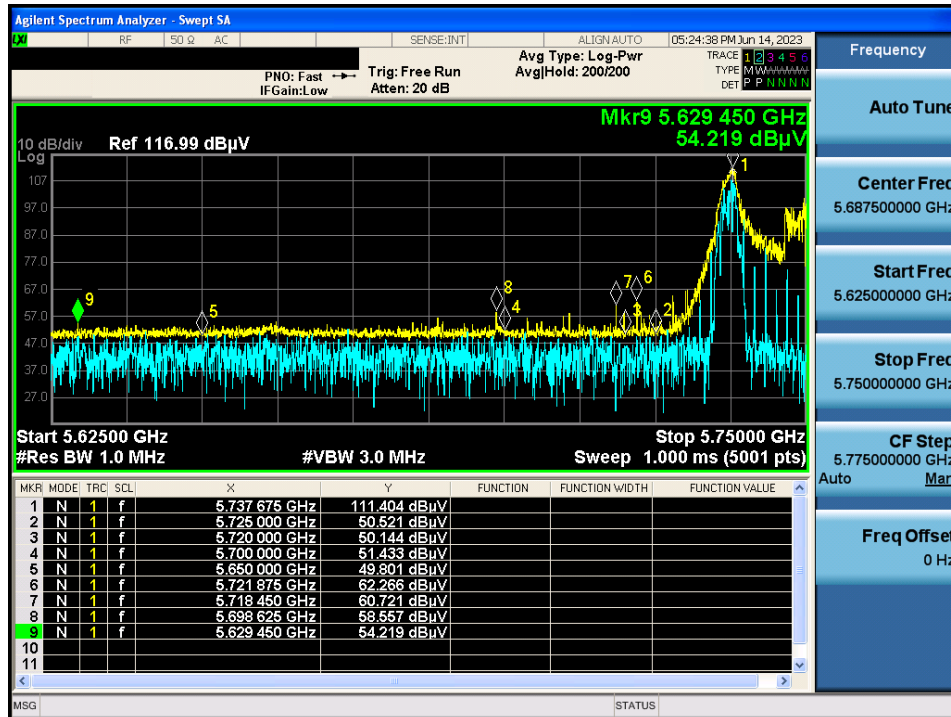
802.11ax HE80 & U-NII 2C & Ch.106 & X axis & Hor & SU

Detector Mode : AV



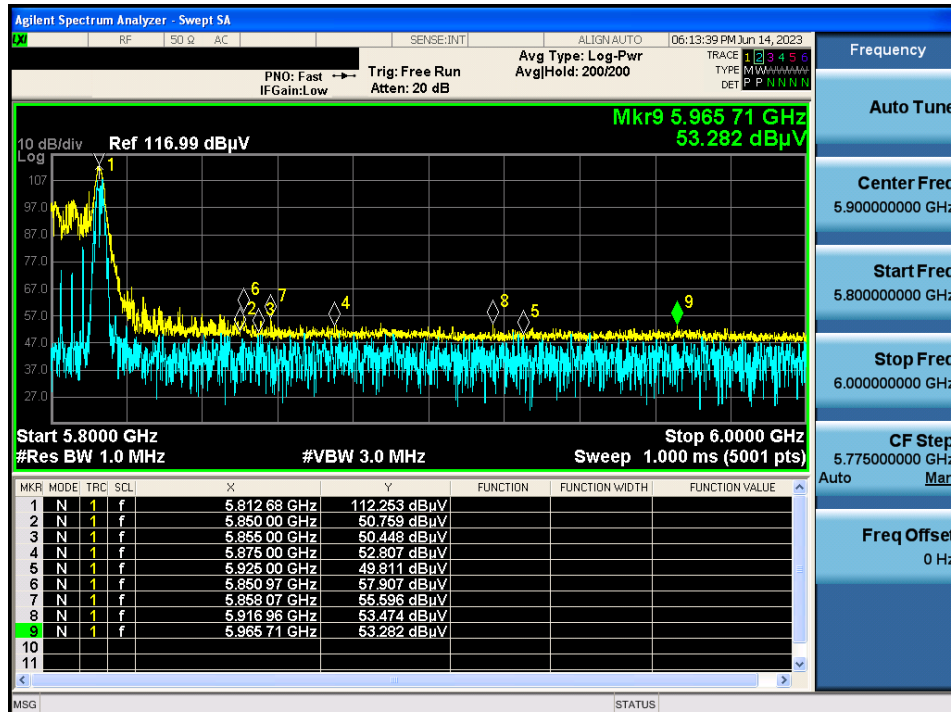
802.11ax HE80 & U-NII 3 & Ch.155 & X axis & Hor & 26 Tone & 0 RU

Detector Mode : PK



802.11ax HE80 & U-NII 3 & Ch.155 & X axis & Hor & 26 Tone & 36 RU

Detector Mode : PK



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

Detector Mode : AV

