

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2C & 802.11a & MIMO(CDD) & 5500 MHz

Results of Conducted Emission

DTNC

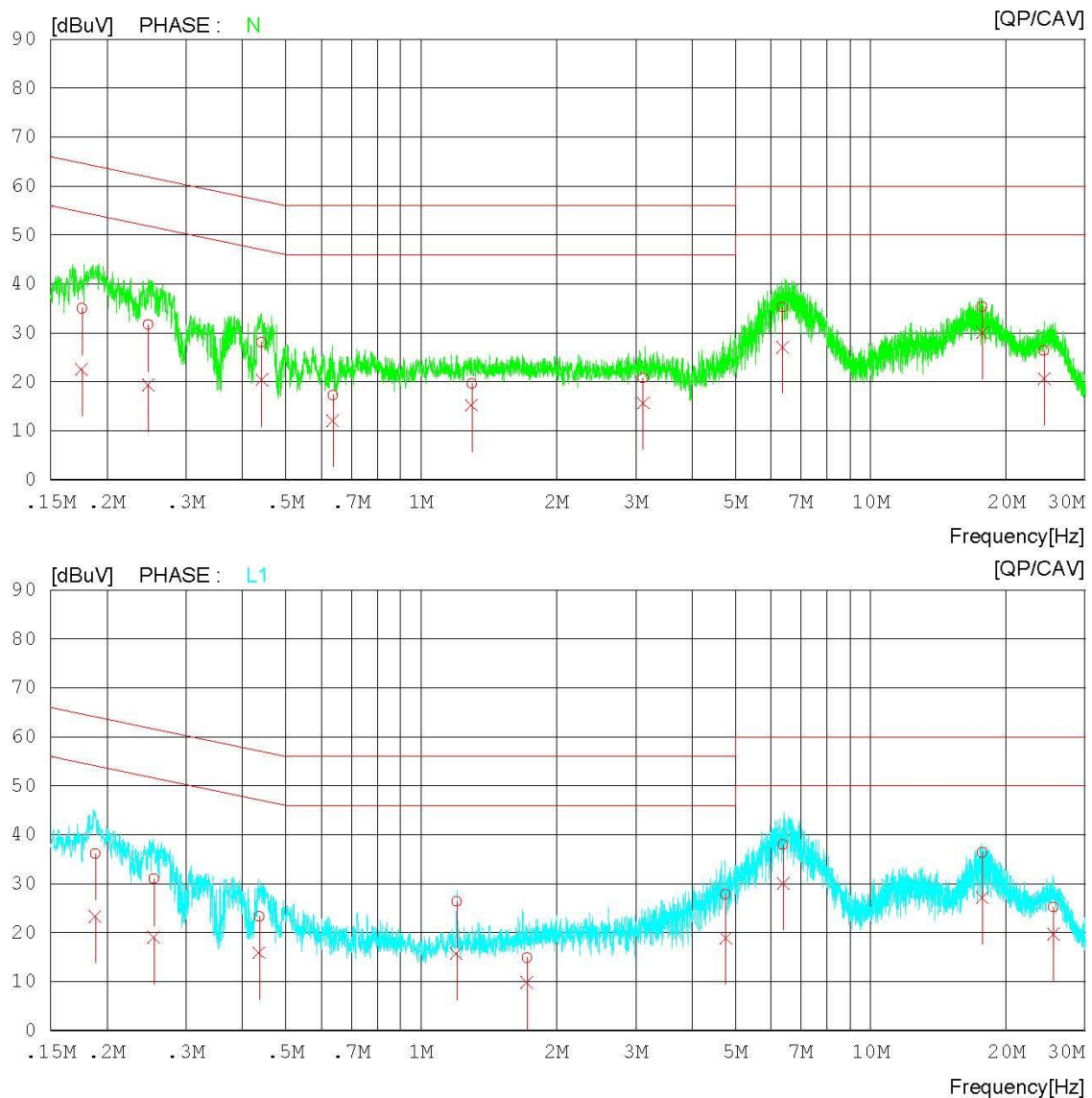
Date 2019-08-16

Order No.
Model No. KA1935
Serial No.
Test Condition 5.5G WLAN

Reference No.
Power Supply 120 V, 60 Hz
Temp/Humi. 23 'C / 35 %
Operator J. H. Bang

Memo

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



AC Line Conducted Emissions (Data List)

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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	0.17597	25.04	12.61	9.94	34.98	22.55	64.67	54.67	29.69	32.12	N
2	0.24723	21.74	9.42	9.94	31.68	19.36	61.85	51.85	30.17	32.49	N
3	0.44165	18.17	10.42	9.95	28.12	20.37	57.03	47.03	28.91	26.66	N
4	0.63564	7.32	2.17	9.96	17.28	12.13	56.00	46.00	38.72	33.87	N
5	1.29540	9.65	5.25	9.99	19.64	15.24	56.00	46.00	36.36	30.76	N
6	3.11600	10.74	5.61	10.07	20.81	15.68	56.00	46.00	35.19	30.32	N
7	6.36700	25.07	16.92	10.20	35.27	27.12	60.00	50.00	24.73	22.88	N
8	17.69960	24.83	19.51	10.53	35.36	30.04	60.00	50.00	24.64	19.96	N
9	24.30100	15.68	9.95	10.64	26.32	20.59	60.00	50.00	33.68	29.41	N
10	0.18828	26.21	13.33	9.94	36.15	23.27	64.11	54.11	27.96	30.84	L1
11	0.25411	21.02	9.00	9.94	30.96	18.94	61.62	51.62	30.66	32.68	L1
12	0.43627	13.32	5.91	9.95	23.27	15.86	57.13	47.13	33.86	31.27	L1
13	1.19840	16.34	5.72	9.98	26.32	15.70	56.00	46.00	29.68	30.30	L1
14	1.71800	4.87	-0.26	10.01	14.88	9.75	56.00	46.00	41.12	36.25	L1
15	4.75880	17.69	8.67	10.16	27.85	18.83	56.00	46.00	28.15	27.17	L1
16	6.38040	27.71	19.81	10.20	37.91	30.01	60.00	50.00	22.09	19.99	L1
17	17.69360	25.83	16.69	10.50	36.33	27.19	60.00	50.00	23.67	22.81	L1
18	25.49320	14.53	9.05	10.63	25.16	19.68	60.00	50.00	34.84	30.32	L1

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2C & 802.11a & MIMO(CDD) & 5785 MHz

Results of Conducted Emission

DTNC

Date 2019-08-16

Order No.
Model No.
Serial No.
Test Condition

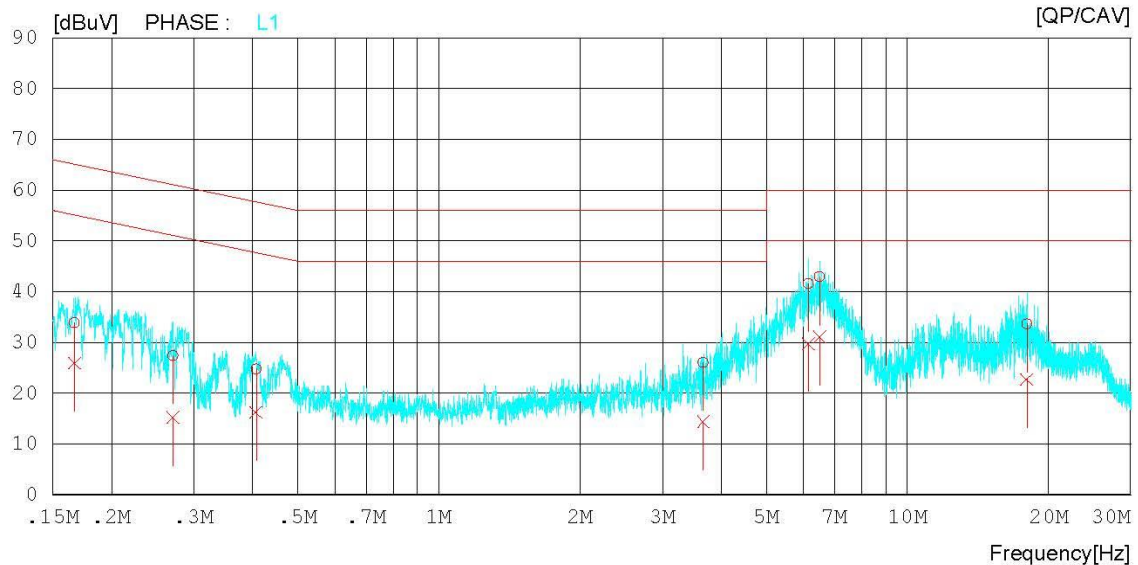
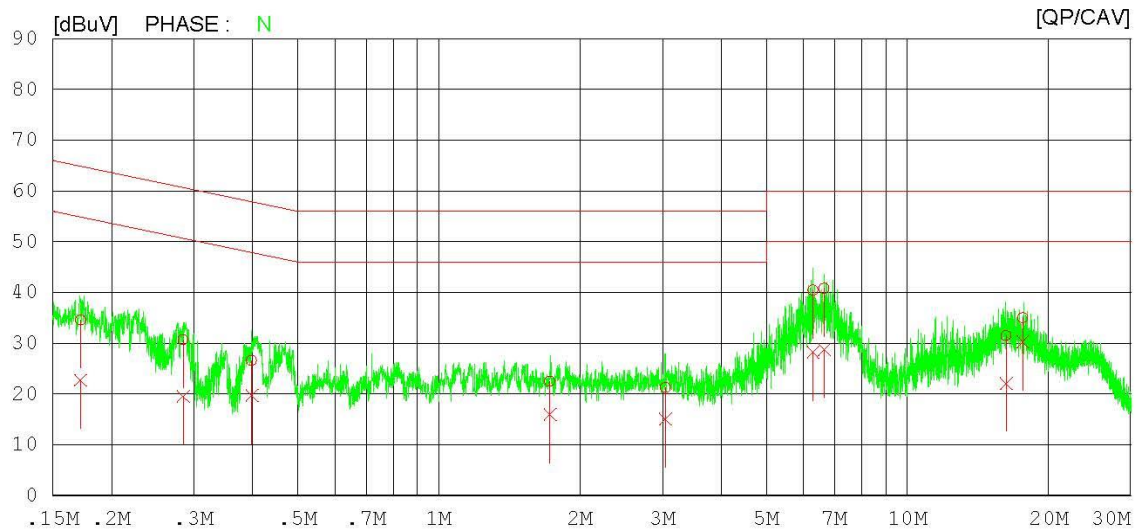
KA1935
5.7G WLAN

Reference No.
Power Supply
Temp/Humi.
Operator

120 V, 60 Hz
23 'C / 35 %
J. H. Bang

Memo

LIMIT : FCC P15.207 QP
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AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2C & 802.11a & MIMO(CDD) & 5785 MHz

Results of Conducted Emission

DTNC

Date 2019-08-16

Order No.
Model No. KA1935
Serial No.
Test Condition 5.7G WLAN

Reference No.
Power Supply 120 V, 60 Hz
Temp/Humi. 23 °C / 35 %
Operator J. H. Bang

Memo

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

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	0.17193	24.61	12.80	9.94	34.55	22.74	64.87	54.87	30.32	32.13	N
2	0.28465	20.77	9.60	9.94	30.71	19.54	60.68	50.68	29.97	31.14	N
3	0.39870	16.68	9.81	9.95	26.63	19.76	57.88	47.88	31.25	28.12	N
4	1.72660	12.47	5.96	10.01	22.48	15.97	56.00	46.00	33.52	30.03	N
5	3.04120	11.19	4.95	10.07	21.26	15.02	56.00	46.00	34.74	30.98	N
6	6.28800	30.29	18.00	10.20	40.49	28.20	60.00	50.00	19.51	21.80	N
7	6.64000	30.62	18.58	10.20	40.82	28.78	60.00	50.00	19.18	21.22	N
8	16.24980	21.00	11.64	10.50	31.50	22.14	60.00	50.00	28.50	27.86	N
9	17.63240	24.43	19.76	10.53	34.96	30.29	60.00	50.00	25.04	19.71	N
10	0.16673	23.86	15.92	9.94	33.80	25.86	65.12	55.12	31.32	29.26	L1
11	0.27081	17.39	5.32	9.94	27.33	15.26	61.09	51.09	33.76	35.83	L1
12	0.40705	14.83	6.25	9.95	24.78	16.20	57.71	47.71	32.93	31.51	L1
13	3.66440	15.88	4.20	10.09	25.97	14.29	56.00	46.00	30.03	31.71	L1
14	6.14620	31.36	19.53	10.20	41.56	29.73	60.00	50.00	18.44	20.27	L1
15	6.49460	32.68	20.83	10.20	42.88	31.03	60.00	50.00	17.12	18.97	L1
16	17.97320	23.10	12.19	10.50	33.60	22.69	60.00	50.00	26.40	27.31	L1

9. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	18/12/19	19/12/19	MY50410357
Spectrum Analyzer	Agilent Technologies	N9020A	18/12/19	19/12/19	MY48011700
Signal Analyzer	Rohde Schwarz	FSW67	19/07/11	20/07/11	104037
DC Power Supply	Agilent Technologies	66332A	19/06/25	20/06/25	MY43000211
Multimeter	FLUKE	17B	18/12/18	19/12/18	26030065WS
Signal Generator	Rohde Schwarz	SMBV100A	18/12/19	19/12/19	255571
Signal Generator	ANRITSU	MG3695C	18/12/10	19/12/10	173501
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-1
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-2
Thermohygrometer	BODYCOM	BJ5478	19/07/03	20/07/03	N/A
HYGROMETER	TESTO	608-H1	19/01/31	20/01/31	34862883
Loop Antenna	ETS	6502	19/03/21	21/03/21	3471
BILOG ANTENNA	Schwarzbeck	VULB 9160	18/07/13	20/07/13	3359
Horn Antenna	ETS-Lindgren	3115	19/01/11	21/01/11	9202-3820
Horn Antenna	Schwarzbeck	BBHA 9120C	17/12/04	19/12/04	9120C-561
Horn Antenna	A.H.Systems Inc.	SAS-574	19/07/03	21/07/03	155
PreAmplifier	tsj	MLA-0118-J01-45	18/12/19	19/12/19	17138
PreAmplifier	tsj	MLA-1840-J02-45	19/06/27	20/06/27	16966-10728
PreAmplifier	tsj	MLA-10K01-B01-27	19/06/24	20/06/24	2005354
Attenuator	SMAJK	SMAJK-2-3	19/06/27	20/06/27	3
Attenuator	Aeroflex/Weinschel	56-3	19/06/27	20/06/27	Y2370
Attenuator	SRTechnology	F01-B0606-01	19/06/27	20/06/27	13092403
Attenuator	Hefei Shunze	SS5T2.92-10-40	19/06/27	20/06/27	16012202
High Pass Filter	Wainwright Instruments	WHNX8.0/26.5-6SS	19/06/27	20/06/27	3
High Pass Filter	Wainwright Instruments	WHKX12-935-1000-15000-40SS	19/06/24	20/06/24	8
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300-18000-60SS	19/06/26	20/06/26	1
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2495A MA2490A	19/06/24	20/06/24	1306007 1249001
EMI Test Receiver	Rohde Schwarz	ESW44	19/07/30	20/07/30	101645
EMI Test Receiver	Rohde Schwarz	ESCi7	19/01/30	20/01/30	100910
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	18/09/27	19/09/27	101333
LISN	SCHWARZBECK	NNLK 8121	19/03/19	20/03/19	06183
Cable	DTNC	Cable	19/01/16	20/01/16	M-01
Cable	Junkosha	MWX315	19/01/16	20/01/16	M-05
Cable	Junkosha	MWX221	19/01/16	20/01/16	M-06
Cable	Junkosha	MWX241	19/01/14	20/01/14	G-04
Cable	Junkosha	MWX241	19/01/14	20/01/14	G-07
Cable	DT&C	Cable	19/01/14	20/01/14	G-13
Cable	DT&C	Cable	19/01/14	20/01/14	G-14
Cable	HUBER+SUHNER	SUCOFLEX 104	19/01/14	20/01/14	G-15

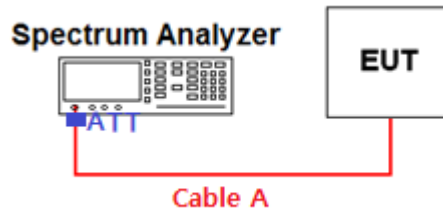
Note 1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017

Note 2: The cable is not a regular calibration item, so it has been calibrated by DT & C itself.

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)

■ Test Results:

Duty cycle: CDD

Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (x) = On / (On+Off)			Duty Cycle Correction Factor [dB]	50/ T [kHz]
			On Time [ms]	(On+Off) Time [ms]	x		
802.11a	6Mbps	5180	2.021	2.069	0.9768	0.10	24.74
802.11n (HT20)	MCS0	5180	1.883	1.931	0.9751	0.11	26.55
802.11n (HT40)	MCS0	5190	1.268	1.310	0.9679	0.14	39.43
802.11ac (VHT80)	MCS0	5210	1.168	1.212	0.9637	0.16	42.81

Duty cycle: SDM

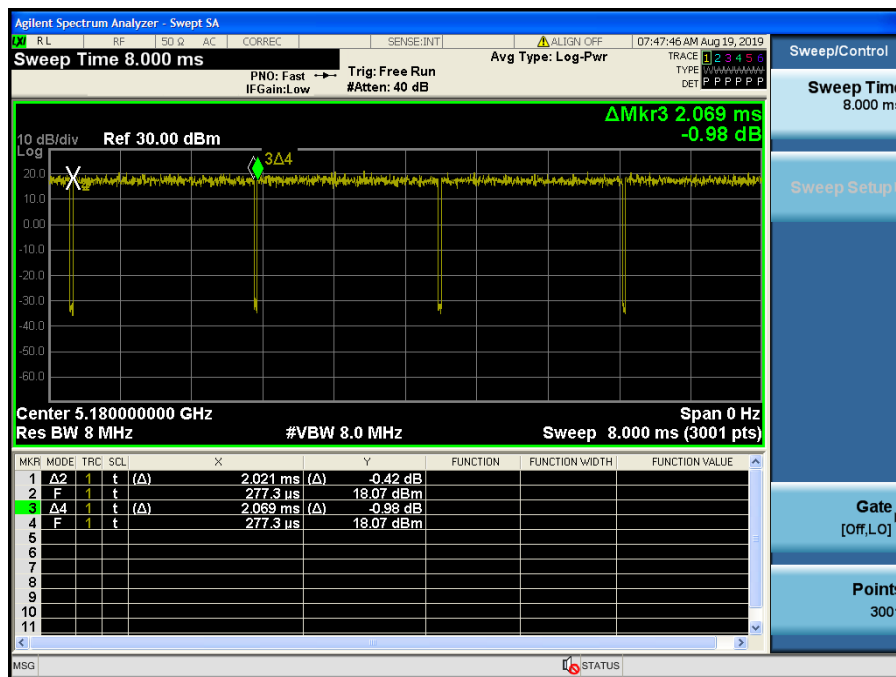
Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (x) = On / (On+Off)			Duty Cycle Correction Factor [dB]	50/ T [kHz]
			On Time [ms]	(On+Off) Time [ms]	x		
802.11n (HT20)	MCS8	5180	0.965	1.008	0.9576	0.19	51.80
802.11n (HT40)	MCS8	5190	0.660	0.698	0.9452	0.24	75.82
802.11ac (VHT80)	MCS0	5210	0.610	0.650	0.9386	0.28	81.95

■ Test Plot:

Single Transmit

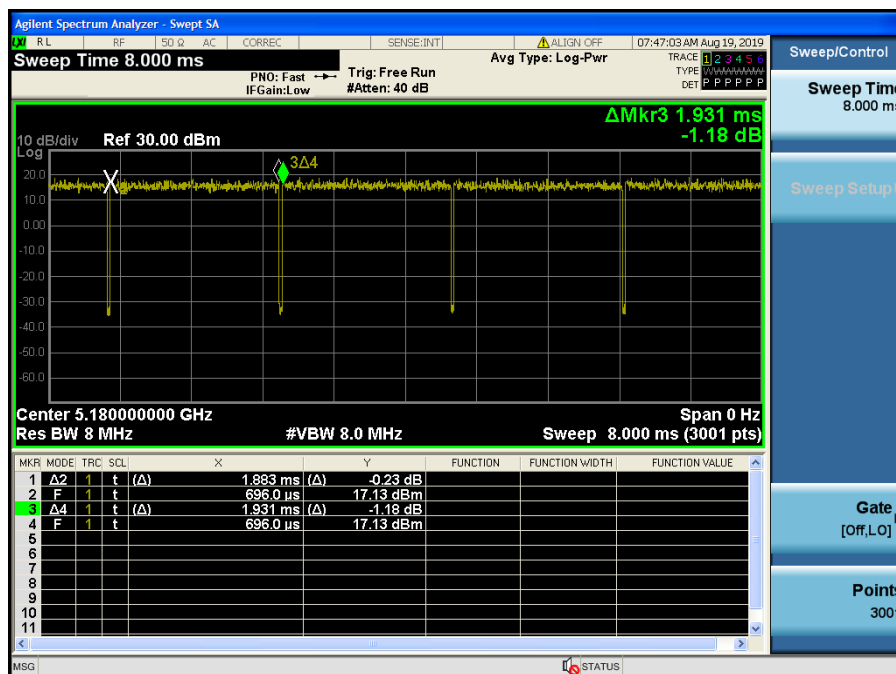
Duty Cycle

Test Mode: 802.11a & Ch.36



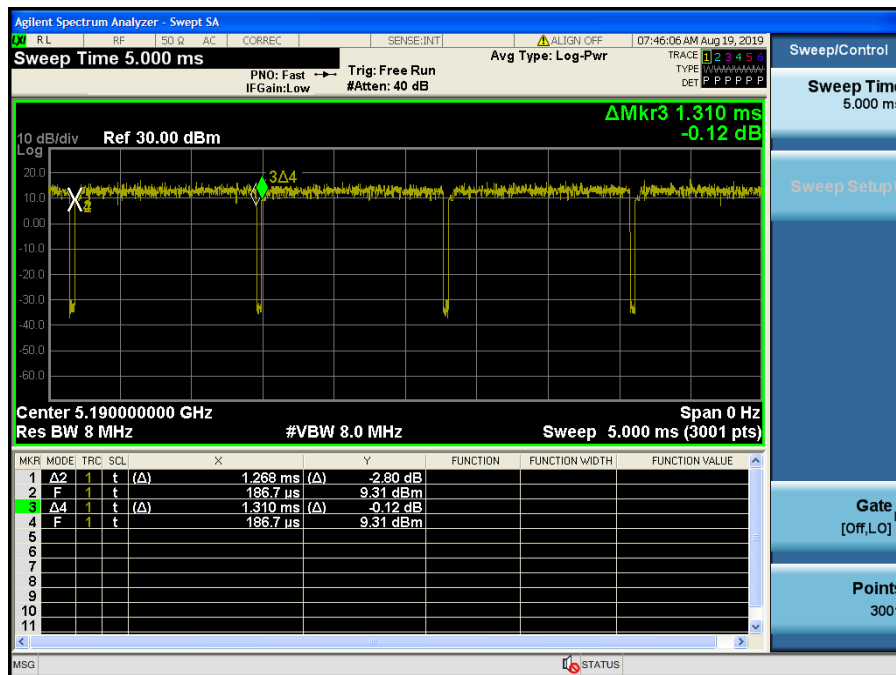
Duty Cycle

Test Mode: 802.11n HT20 & Ch.36



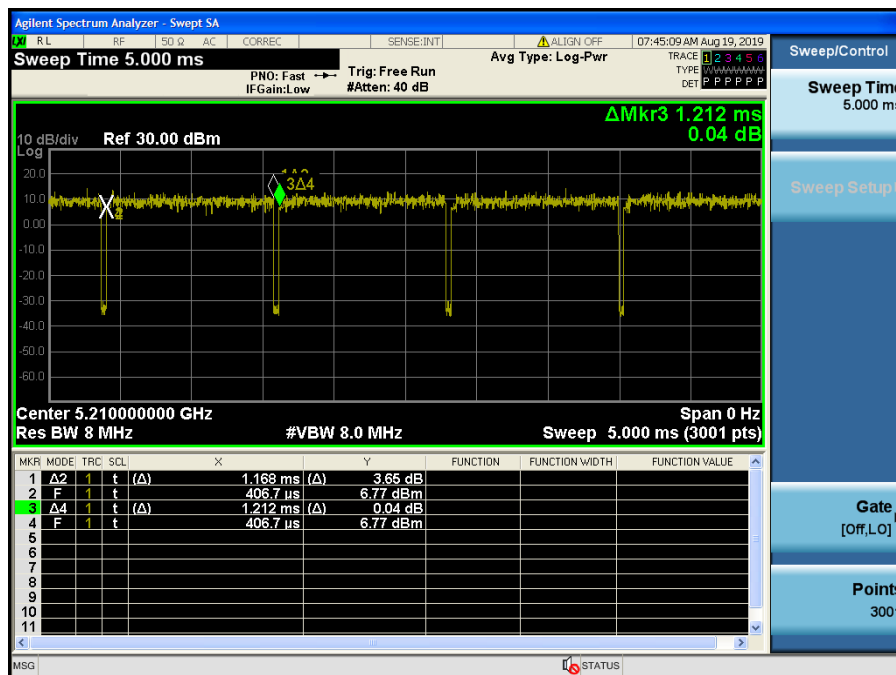
Duty Cycle

Test Mode: 802.11n HT40 & Ch.38



Duty Cycle

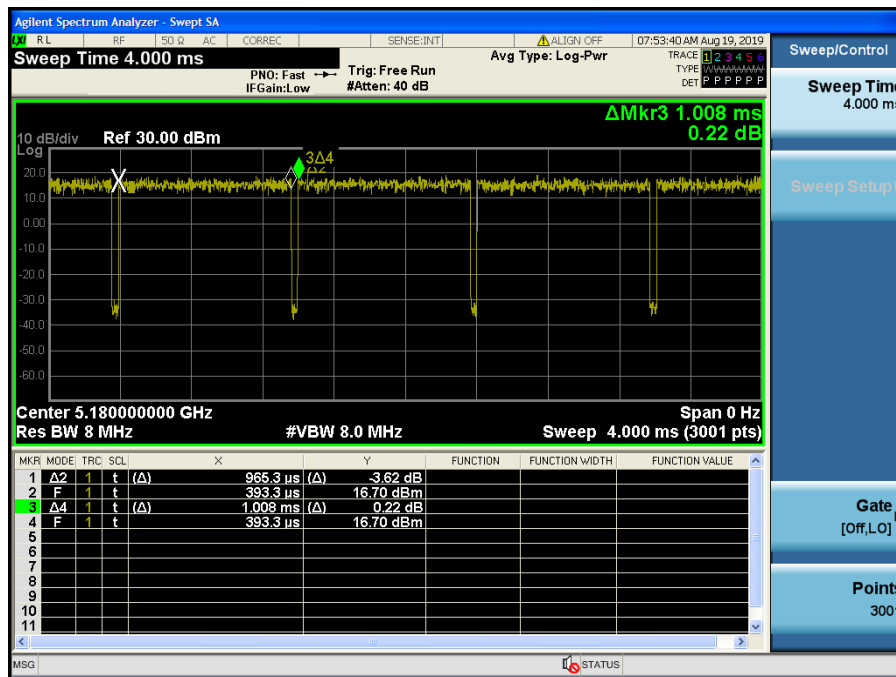
Test Mode: 802.11ac VHT80 & Ch.42



Multiple Transmit _ SDM

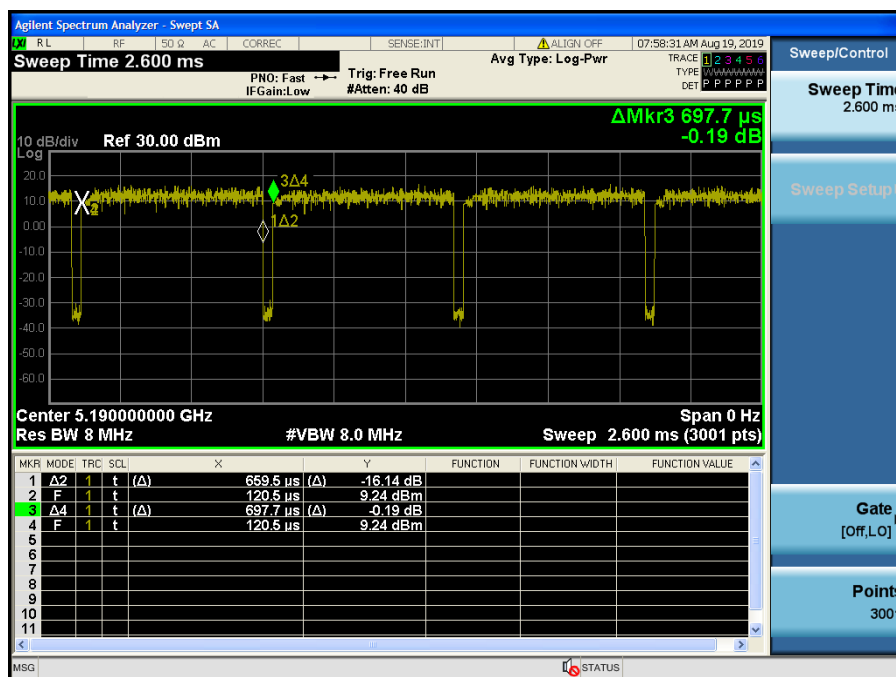
Duty Cycle

Test Mode: 802.11n HT20 & Ch.36



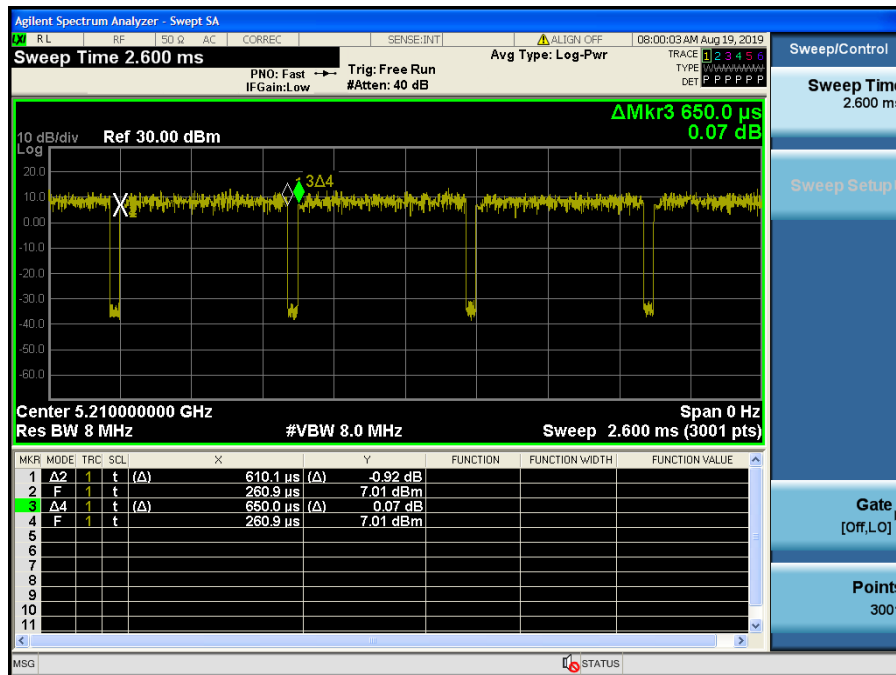
Duty Cycle

Test Mode: 802.11n HT40 & Ch.38



Duty Cycle

Test Mode: 802.11ac VHT80 & Ch.42

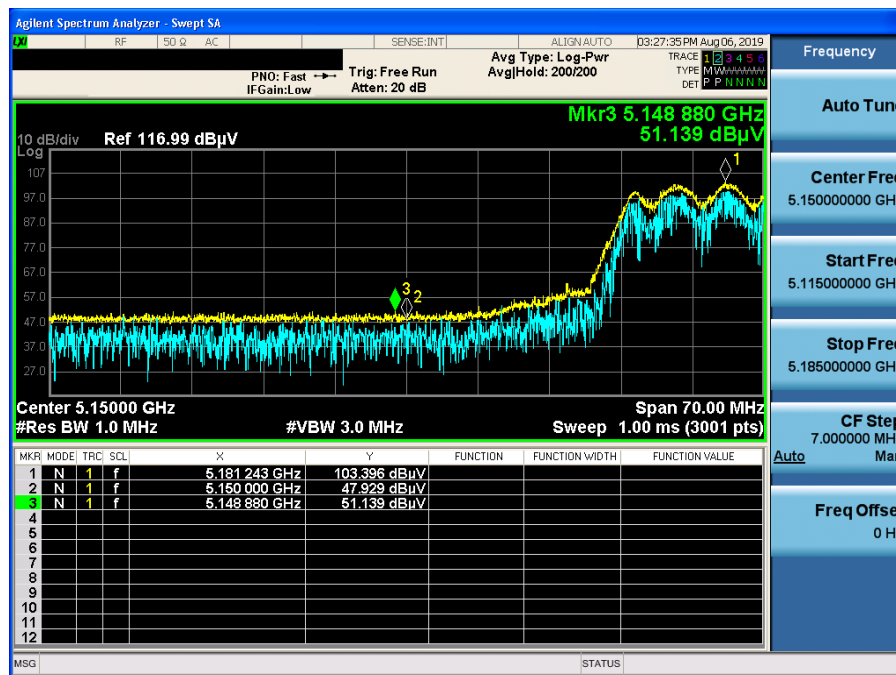


APPENDIX III

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

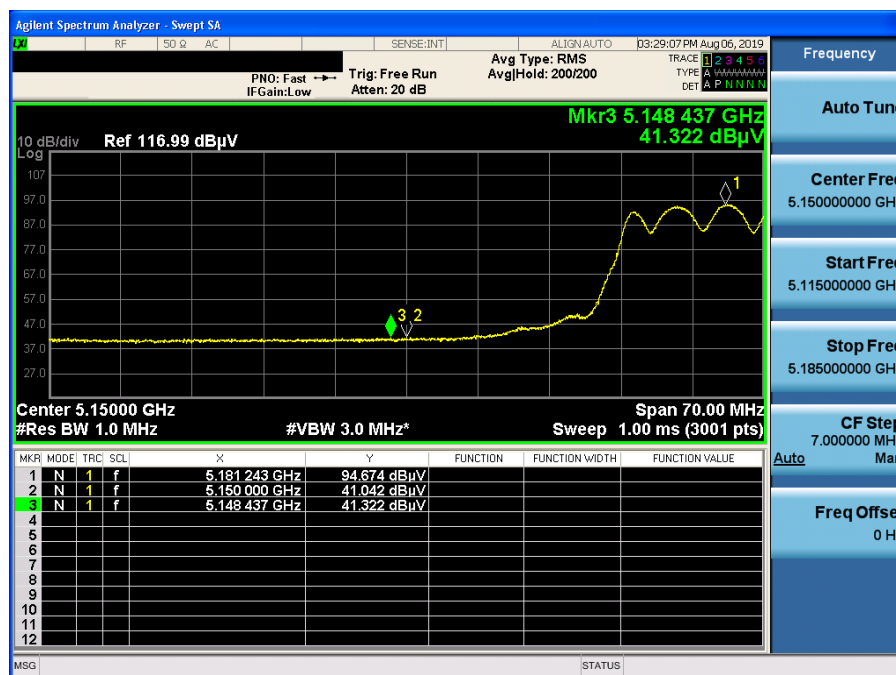
802.11a & U-NII 1 & Ch.36 & Z axis & Hor

Detector Mode : PK



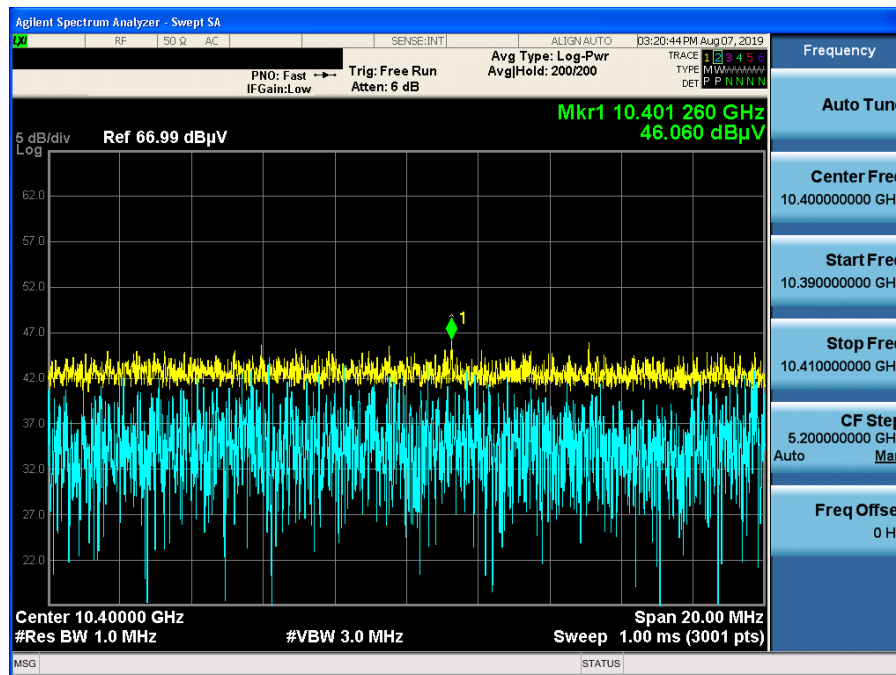
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Detector Mode : AV



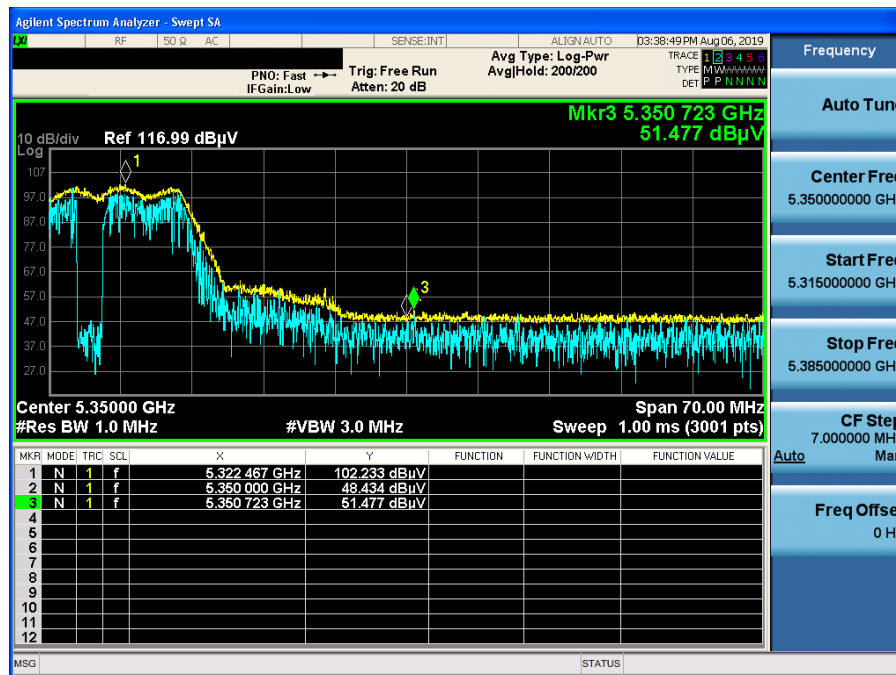
802.11a & U-NII 1 & Ch.40 & X axis & Hor

Detector Mode : PK



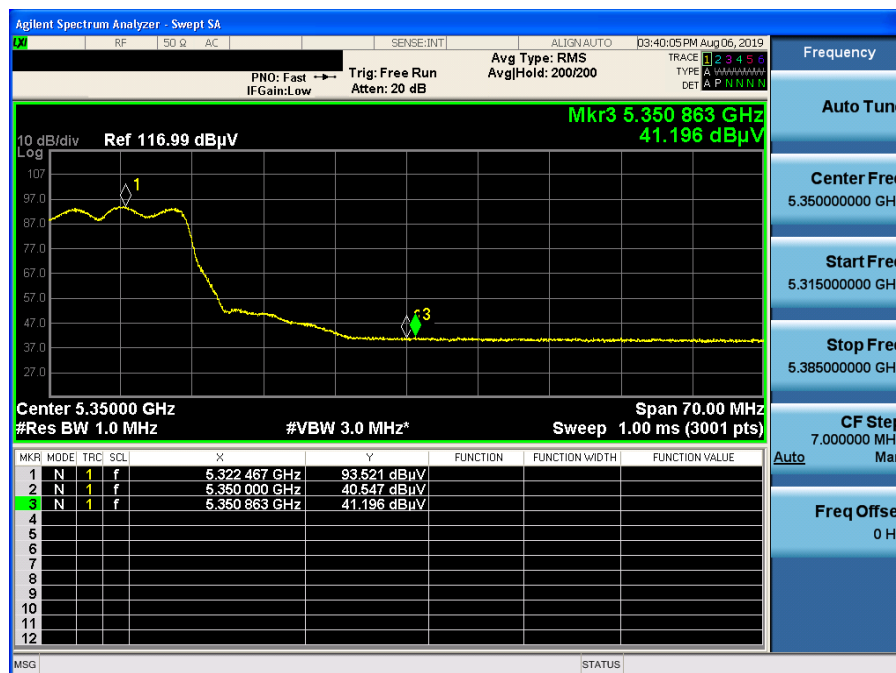
802.11a & U-NII 2A & Ch.64 & Z axis & Hor

Detector Mode : PK



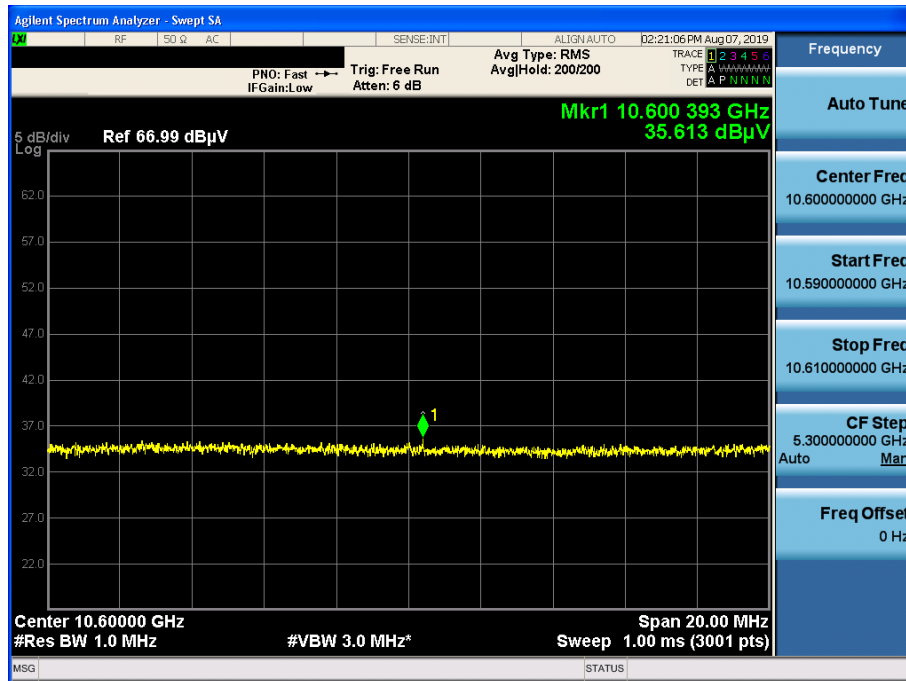
802.11a & U-NII 2A & Ch.64 & Z axis & Hor

Detector Mode : AV



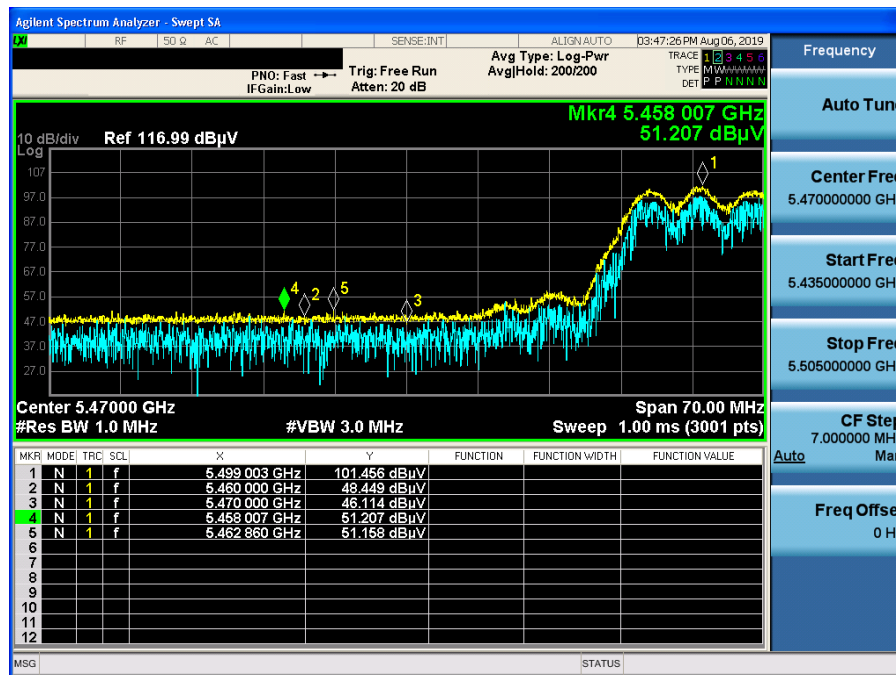
802.11a & U-NII 2A & Ch.60 & X axis & Hor

Detector Mode : AV



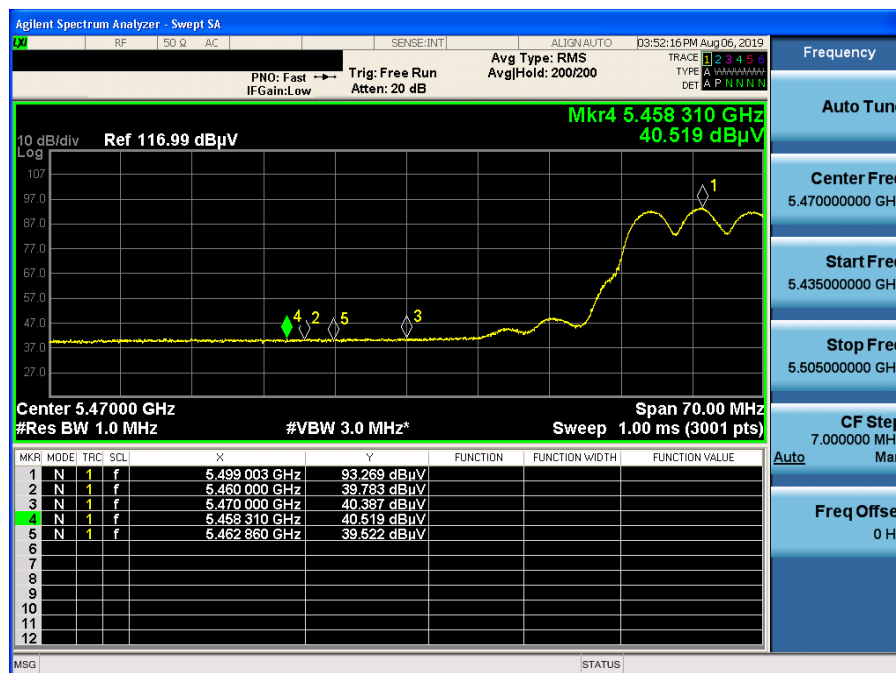
802.11a & U-NII 2C & Ch.100 & Z axis & Hor

Detector Mode : PK



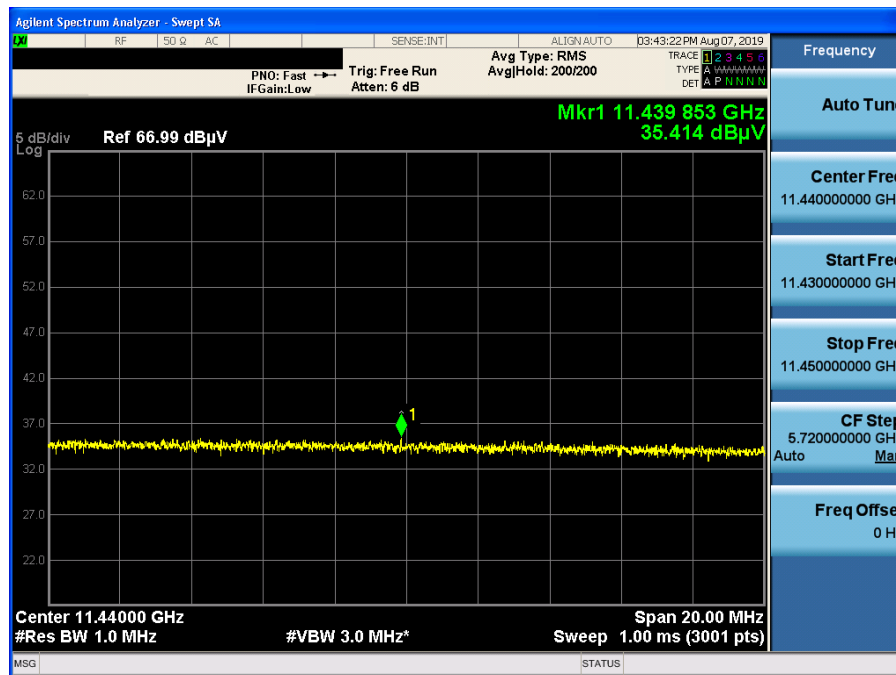
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Detector Mode : AV



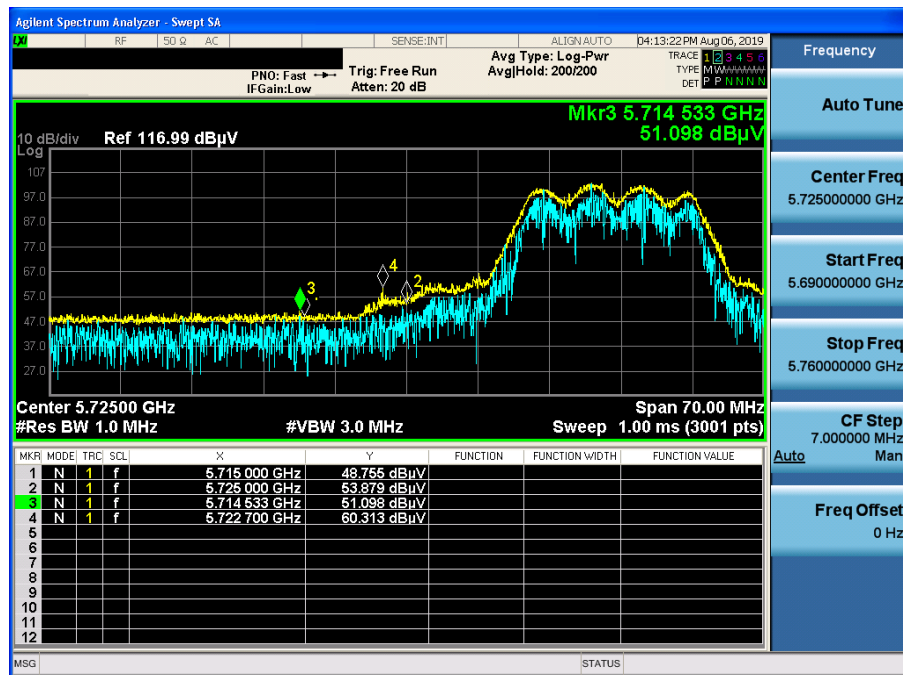
802.11a & U-NII 2C & Ch.144 & X axis & Hor

Detector Mode : AV



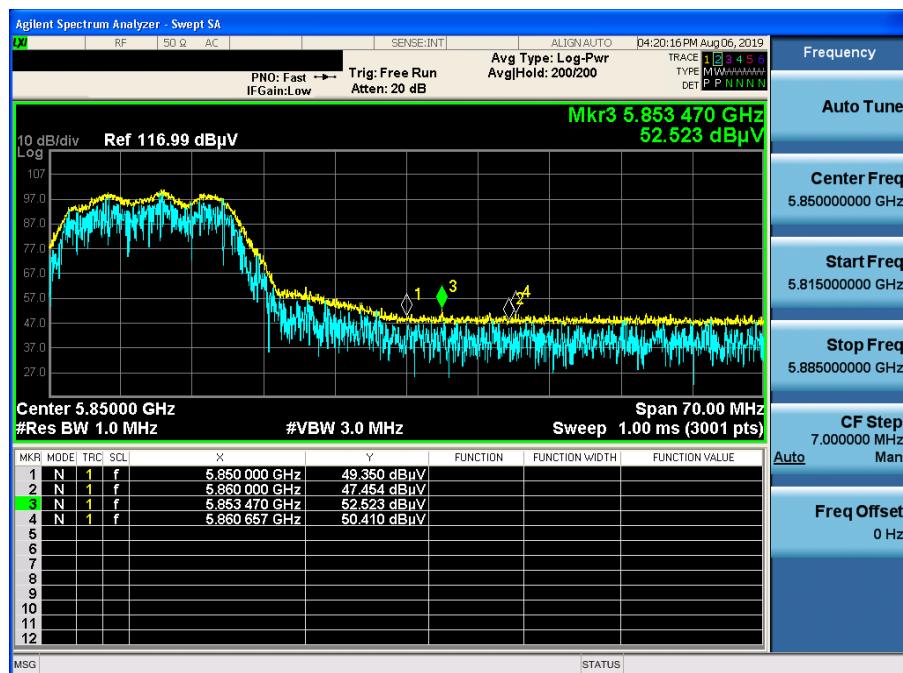
802.11a & U-NII 3 & Ch.149 & Z axis & Hor

Detector Mode : PK



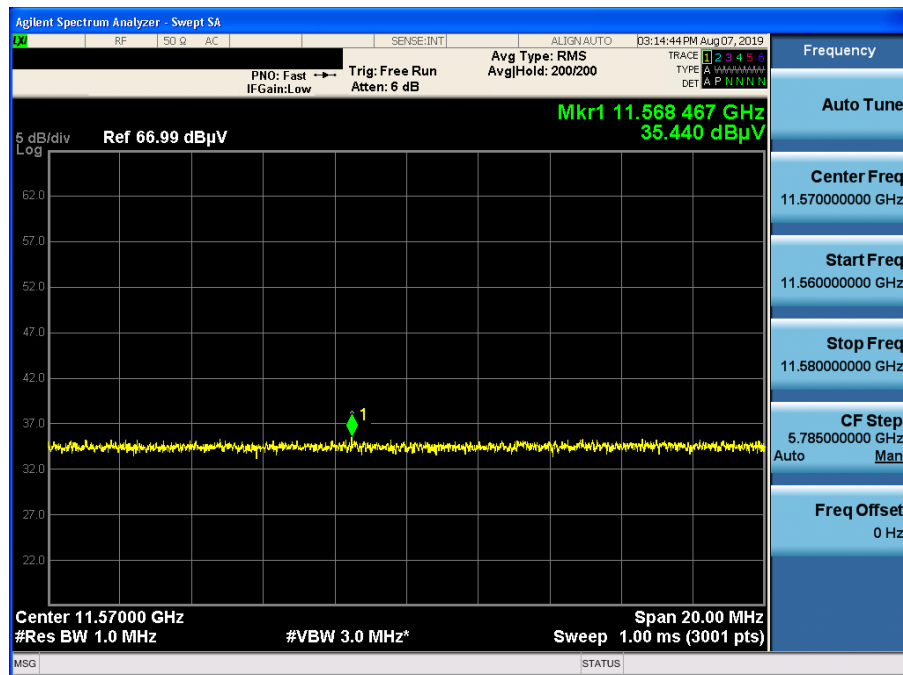
802.11a & U-NII 3 & Ch.165 & Z axis & Hor

Detector Mode : PK



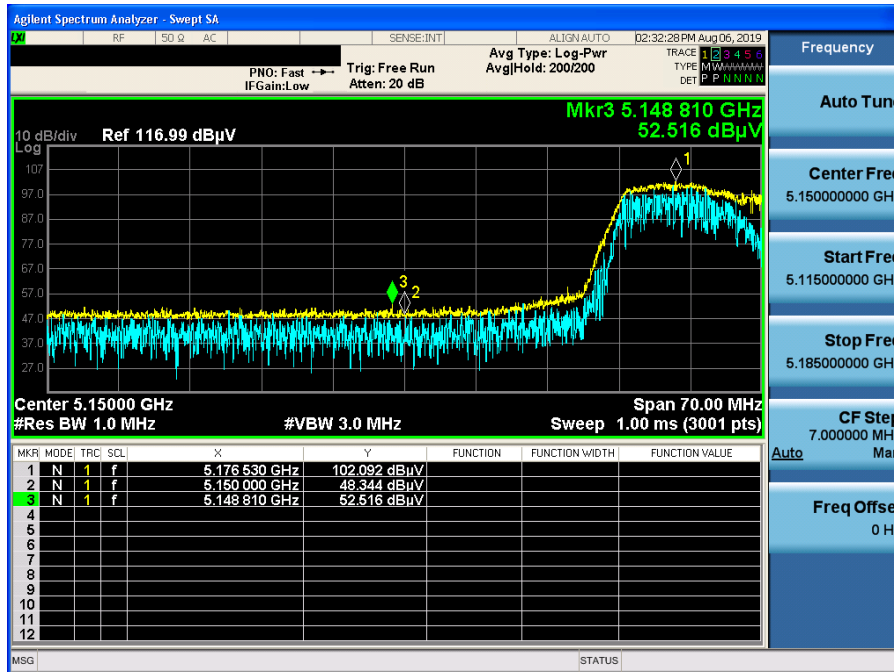
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Detector Mode : AV



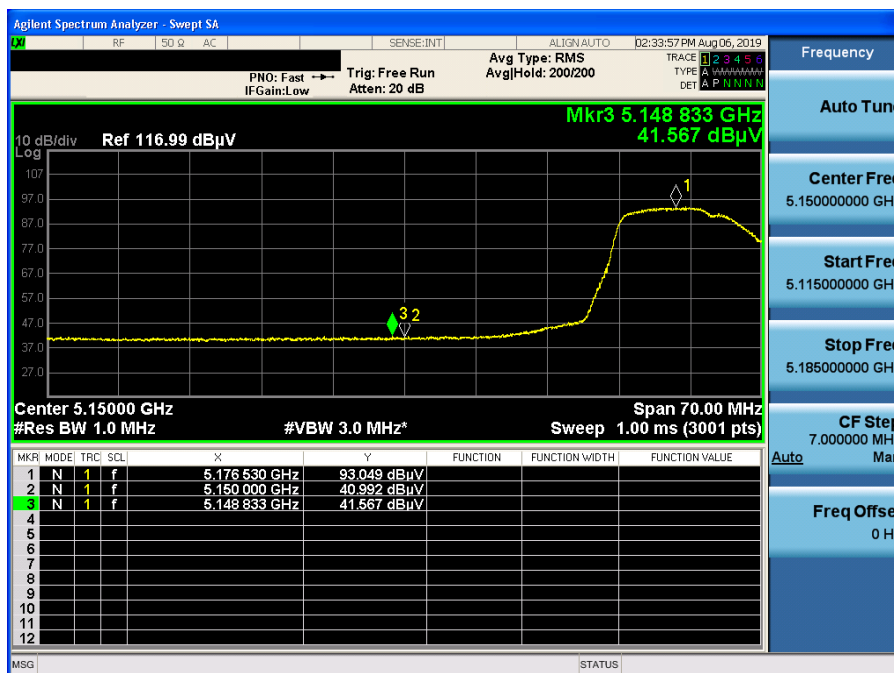
802.11n(HT20) & U-NII 1 & Ch.36 & Z axis & Hor

Detector Mode : PK



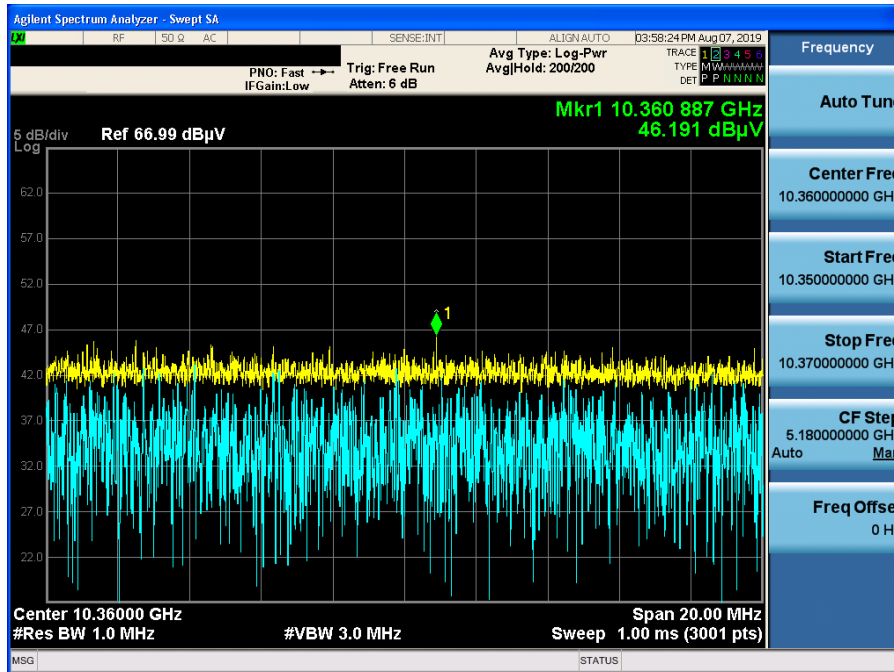
802.11n(HT20) & U-NII 1 & Ch.36 & Z axis & Hor

Detector Mode : AV



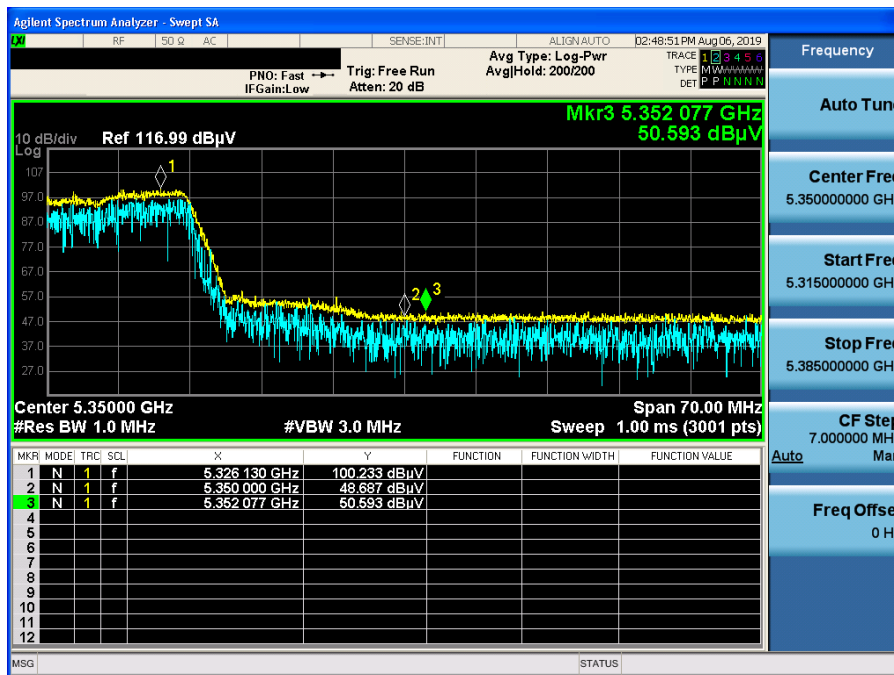
802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : PK



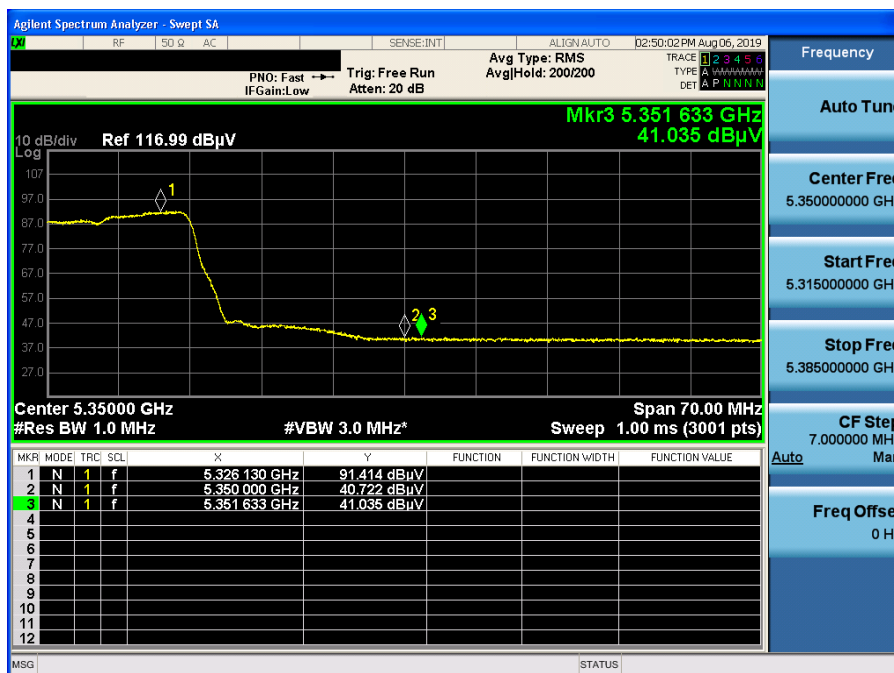
802.11n(HT20) & U-NII 2A & Ch.64 & Z axis & Hor

Detector Mode : PK



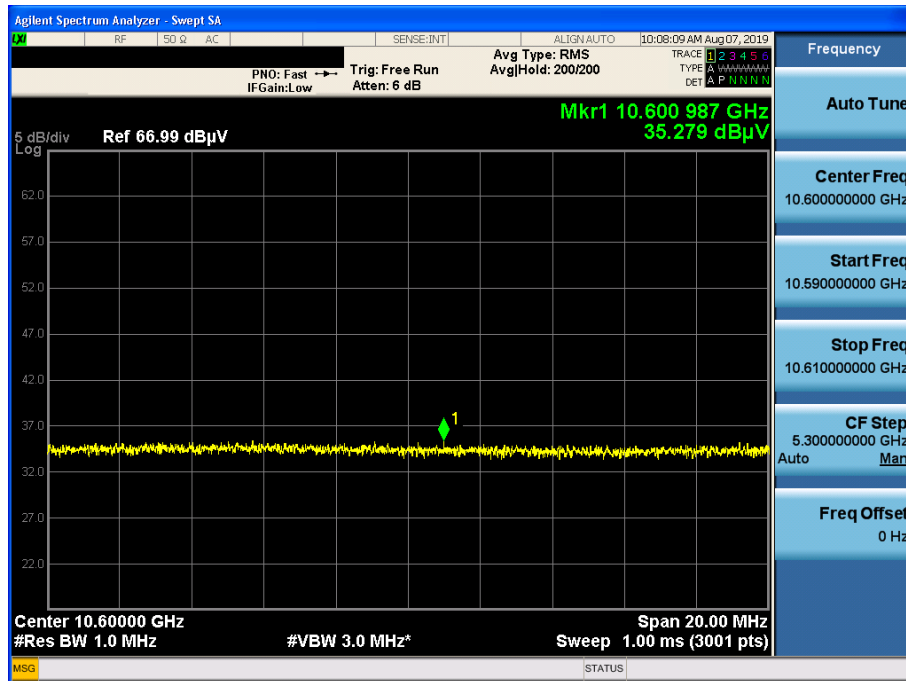
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Detector Mode : AV



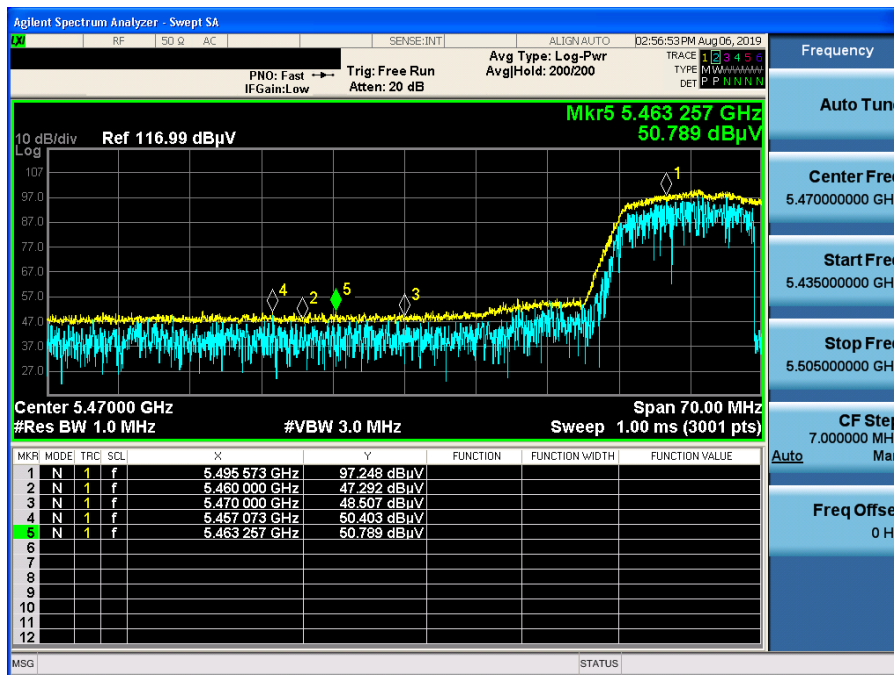
802.11n(HT20) & U-NII 2A & Ch.60 & X axis & Hor

Detector Mode : AV



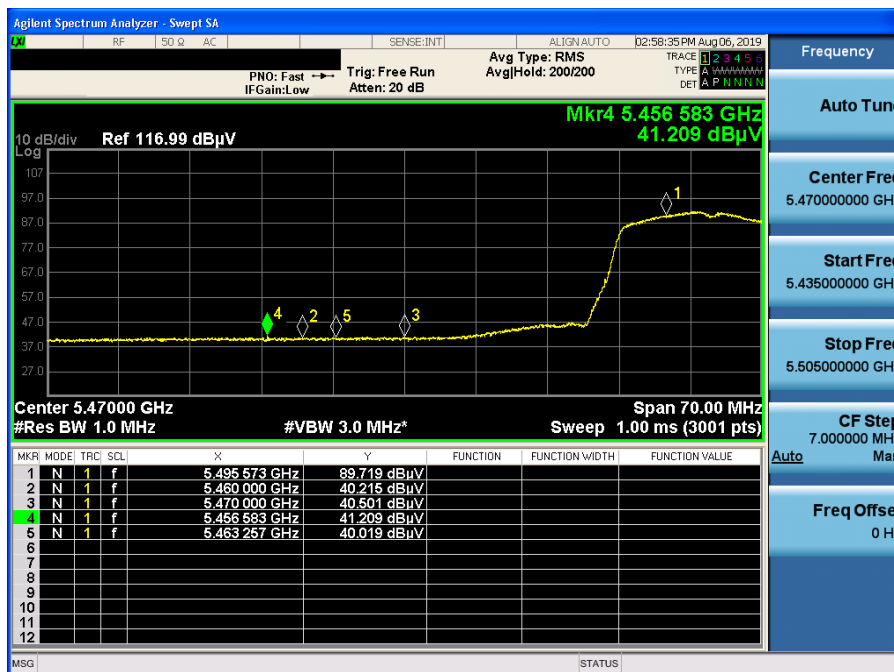
802.11n(HT20) & U-NII 2C & Ch.100 & Z axis & Hor

Detector Mode : PK



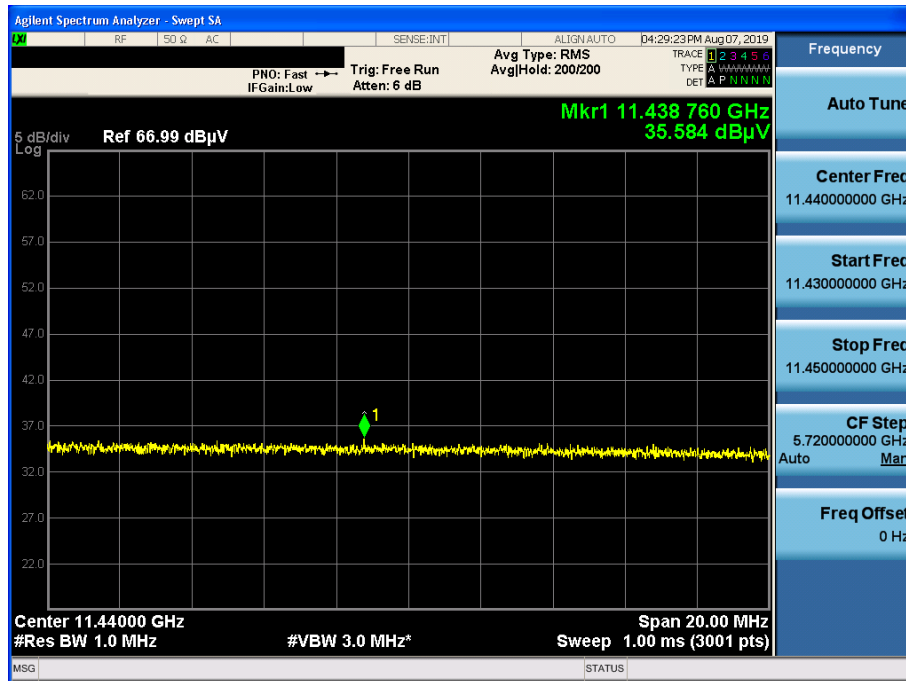
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Detector Mode : AV



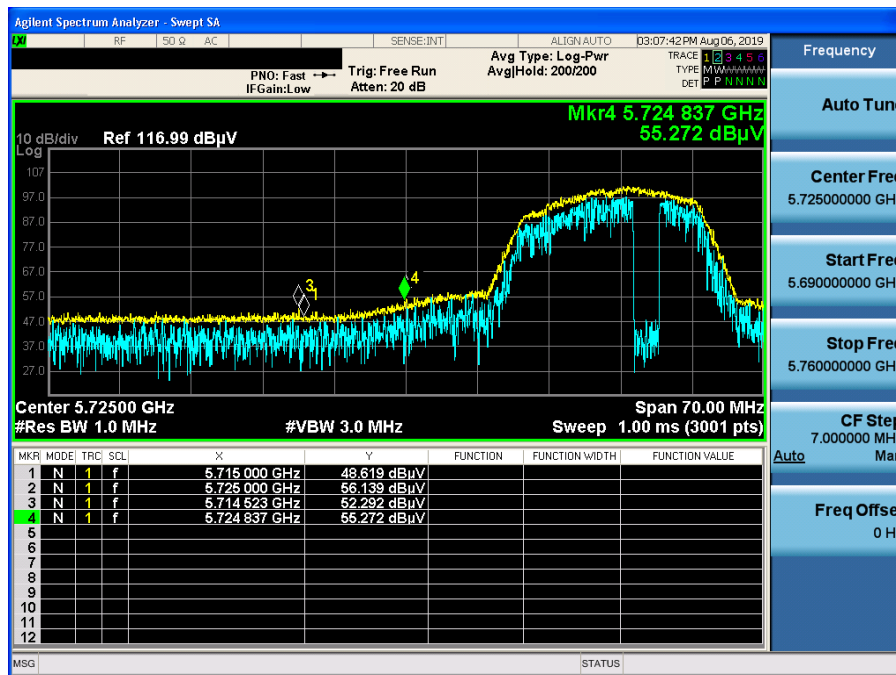
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Detector Mode : AV



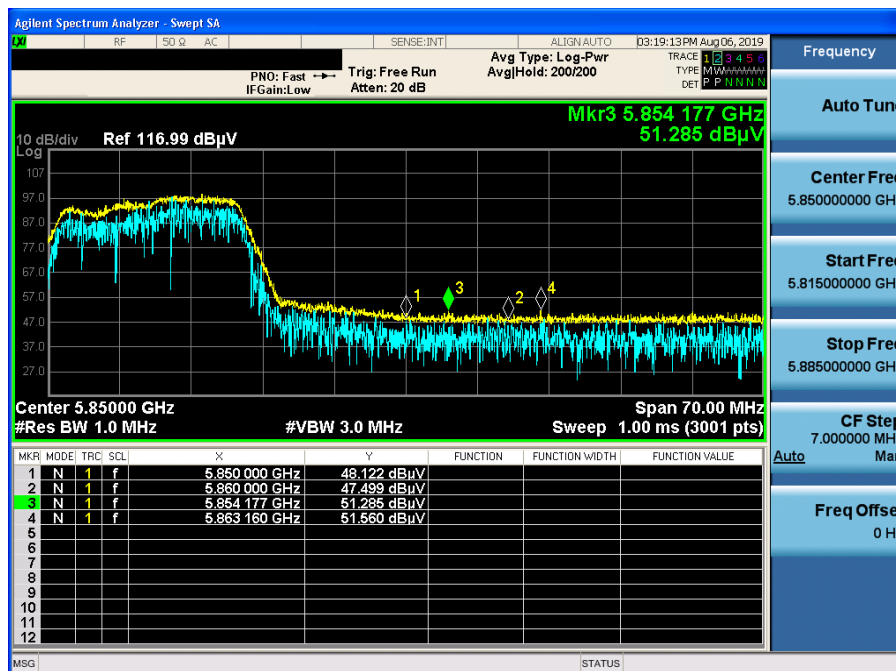
802.11n(HT20) & U-NII 3 & Ch.149 & Z axis & Hor

Detector Mode : PK



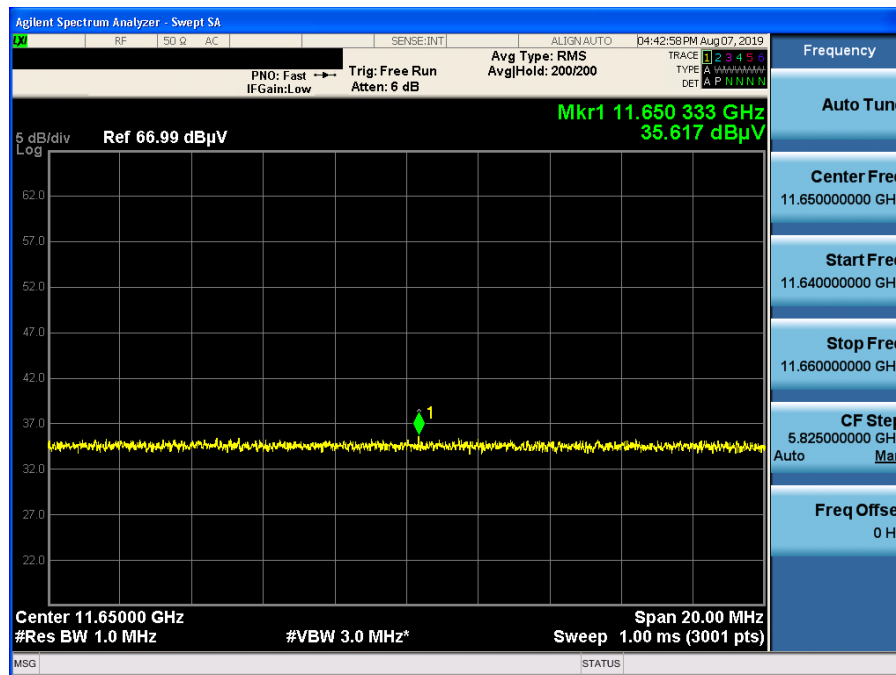
802.11n(HT20) & U-NII 3 & Ch.165 & Z axis & Hor

Detector Mode : PK



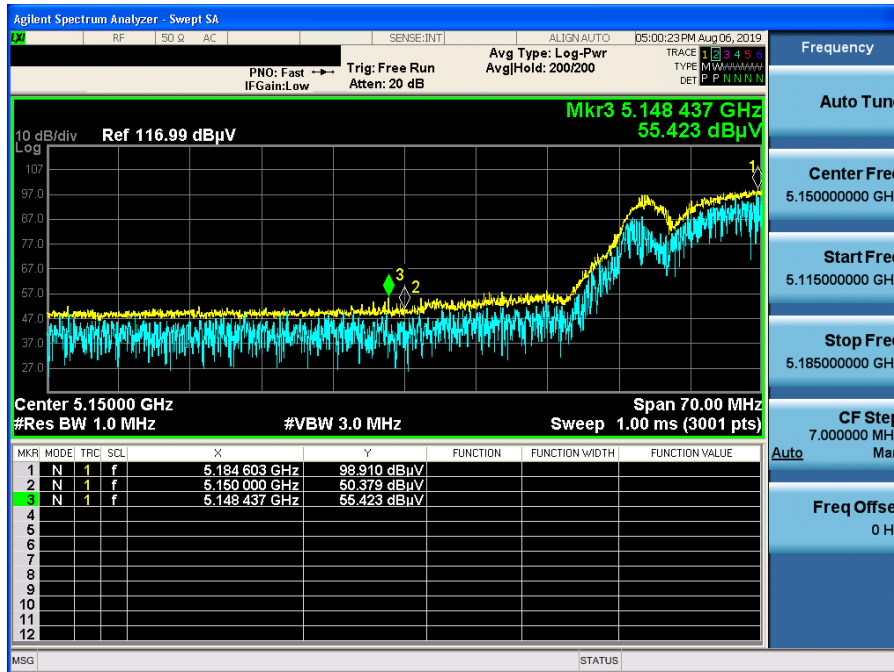
802.11n(HT20) & U-NII 3 & Ch.165 & X axis & Hor

Detector Mode : AV



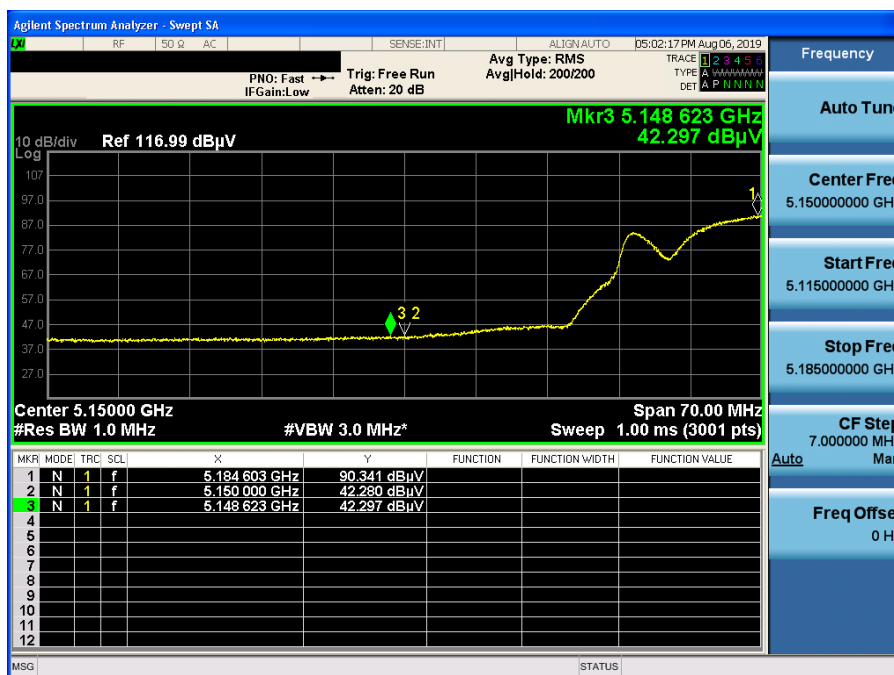
802.11n(HT40) & U-NII 1 & Ch.38 & Z axis & Hor

Detector Mode : PK



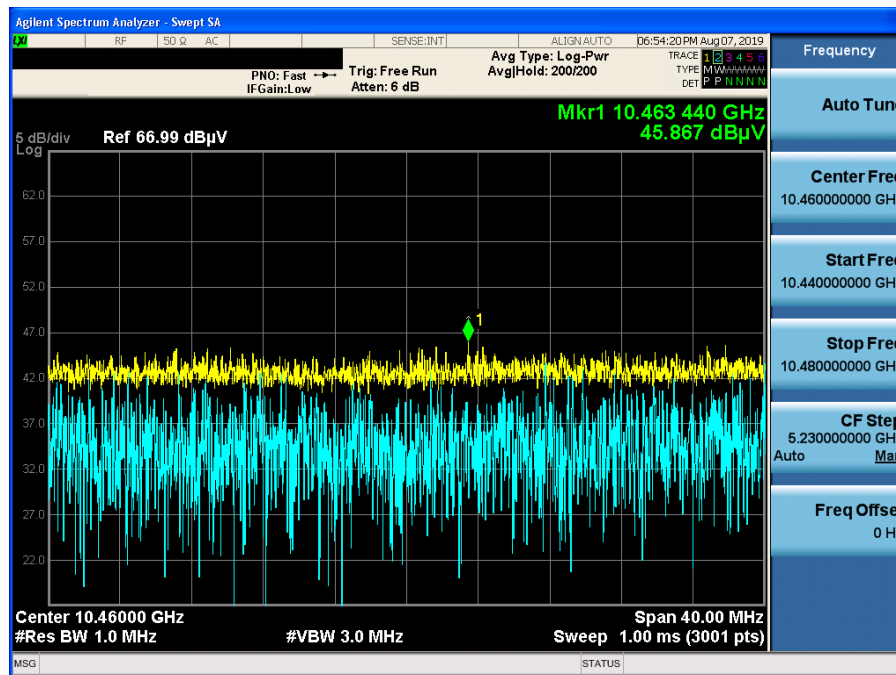
802.11n(HT40) & U-NII 1 & Ch.38 & Z axis & Hor

Detector Mode : AV



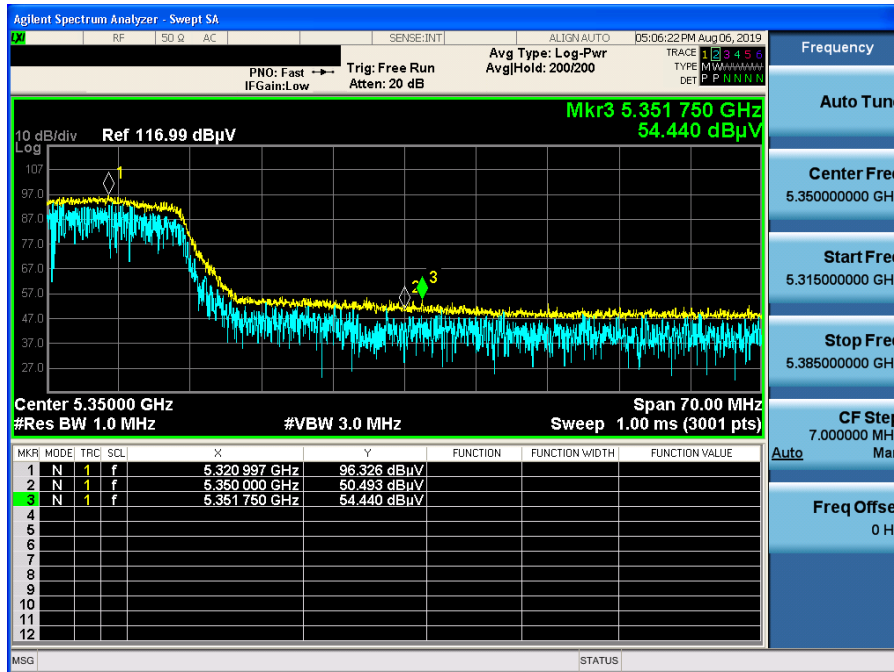
802.11n(HT40) & U-NII 1 & Ch.46 & X axis & Hor

Detector Mode : PK



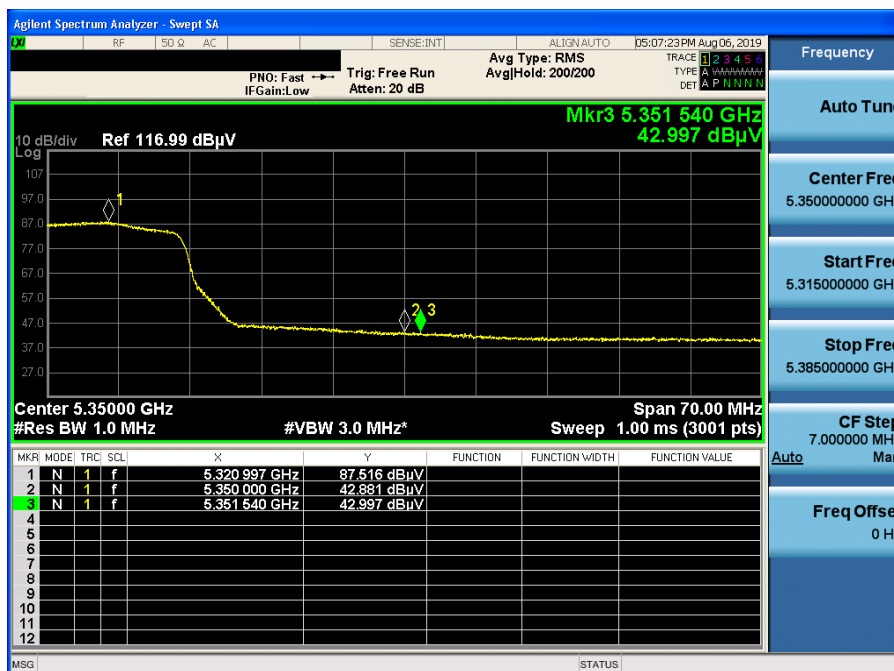
802.11n(HT40) & U-NII 2A & Ch.62 & Z axis & Hor

Detector Mode : PK



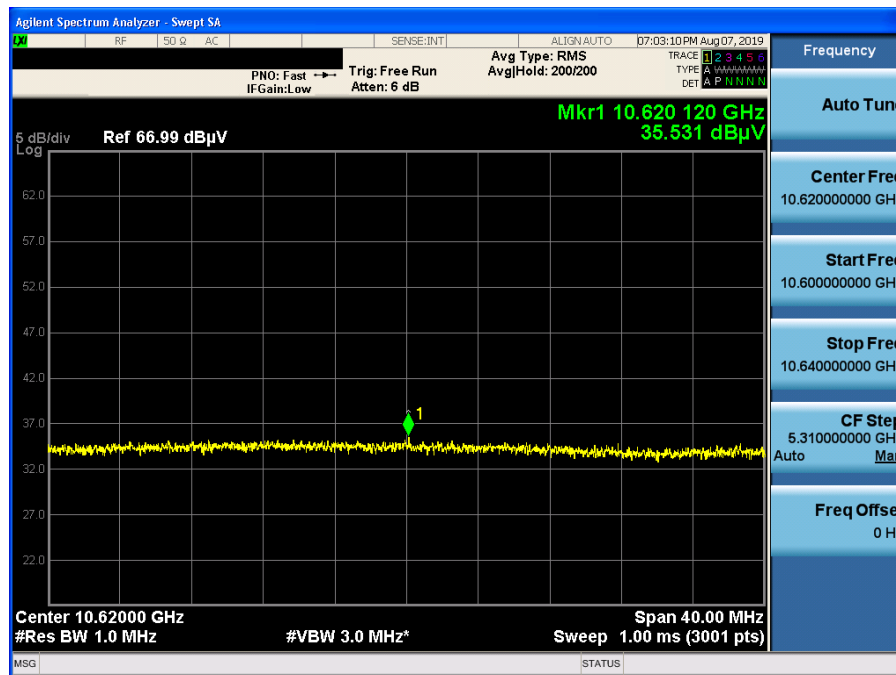
802.11n(HT40) & U-NII 2A & Ch.62 & Z axis & Hor

Detector Mode : AV



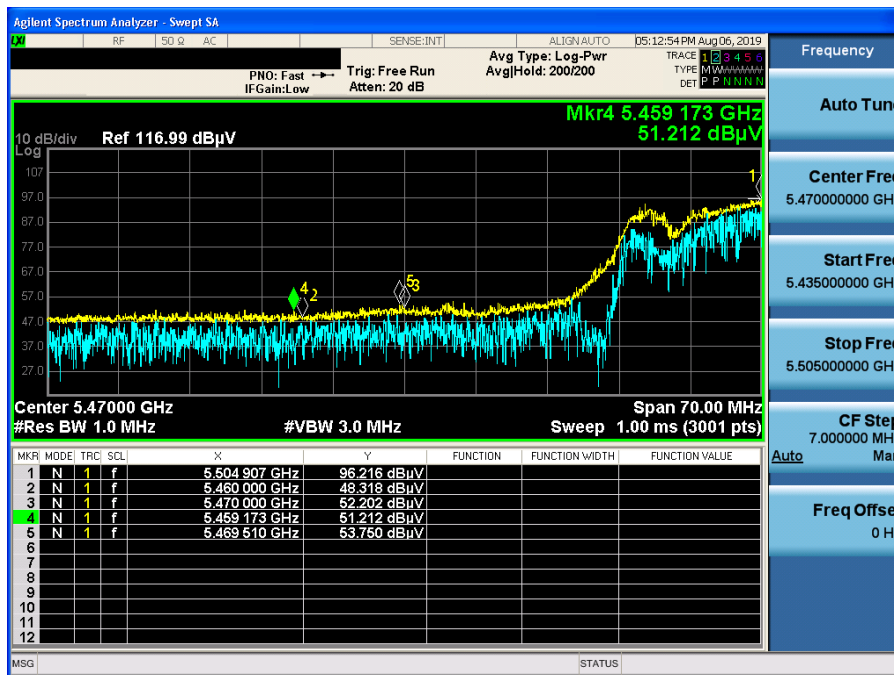
802.11n(HT40) & U-NII 2A & Ch.62 & X axis & Hor

Detector Mode : AV



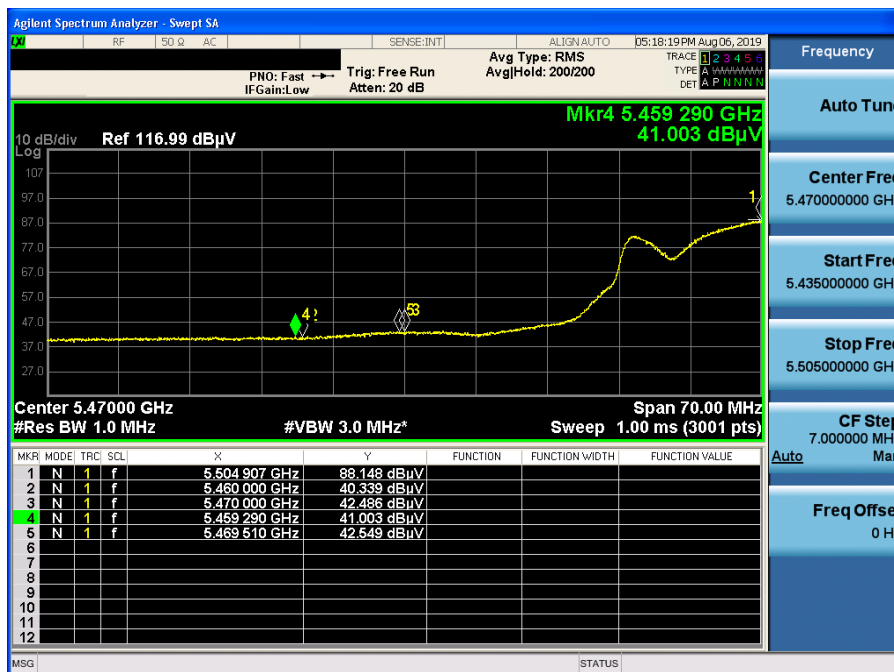
802.11n(HT40) & U-NII 2C & Ch.102 & Z axis & Hor

Detector Mode : PK



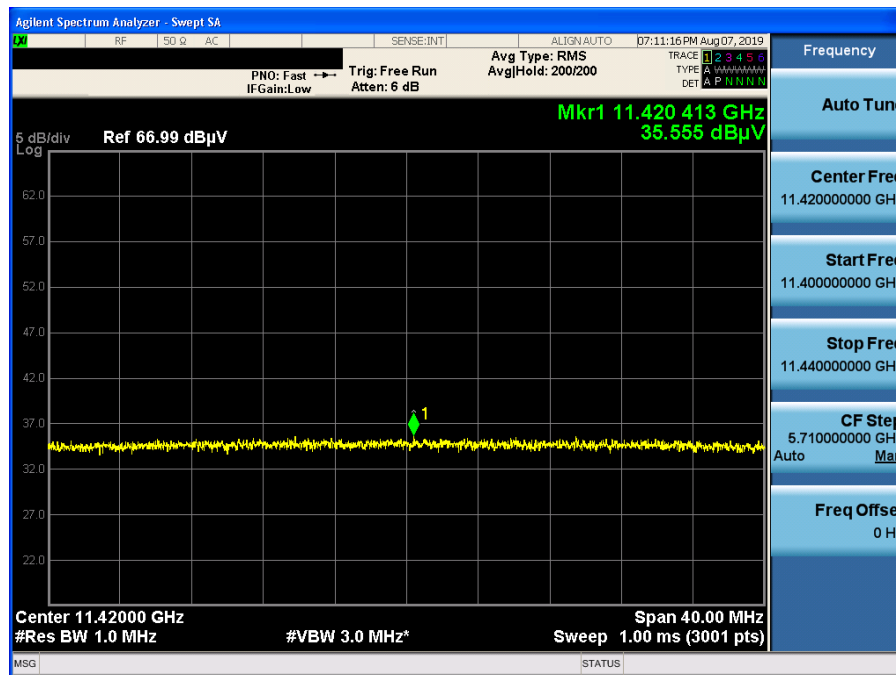
802.11n(HT40) & U-NII 2C & Ch.102 & Z axis & Hor

Detector Mode : AV



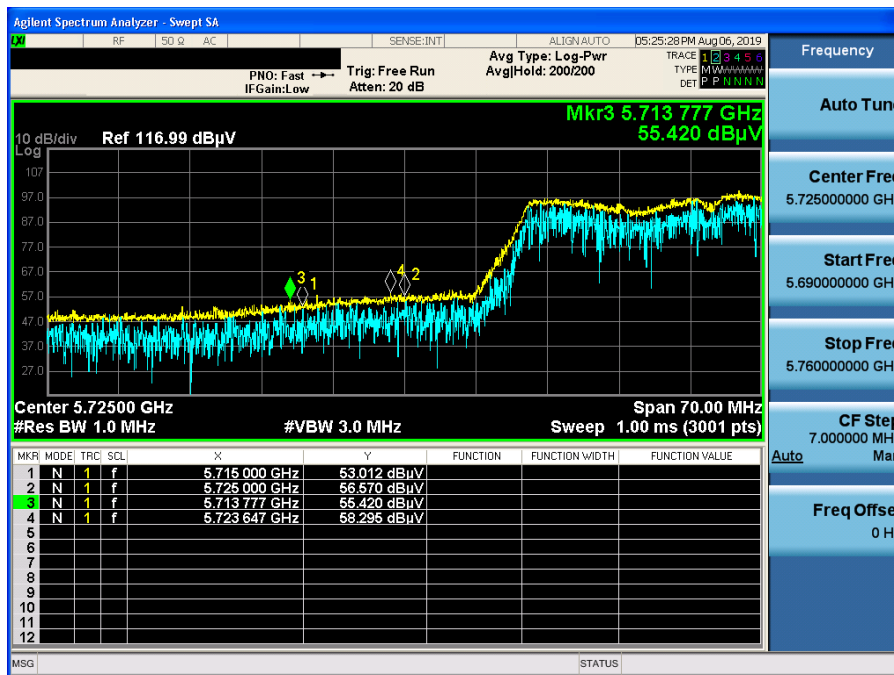
802.11n(HT40) & U-NII 2C & Ch.142 & X axis & Hor

Detector Mode : AV



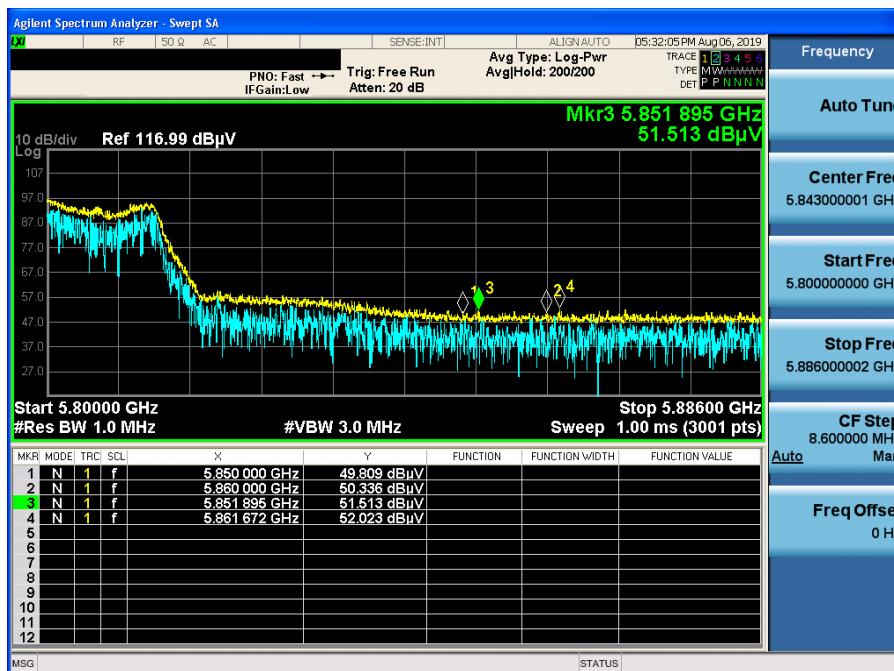
802.11n(HT40) & U-NII 3 & Ch.151 & Z axis & Hor

Detector Mode : PK

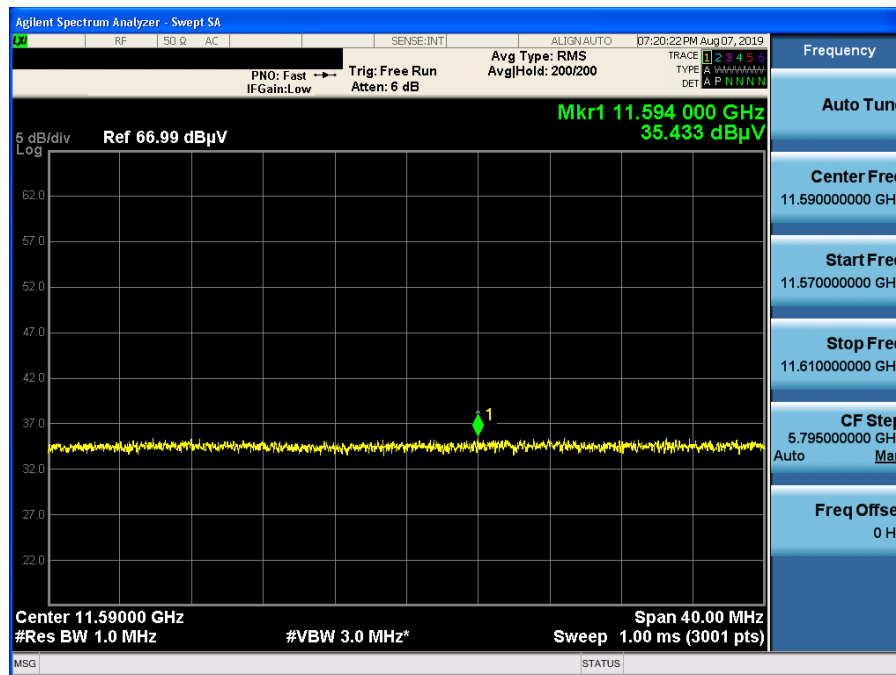


802.11n(HT40) & U-NII 3 & Ch.159 & Z axis & Hor

Detector Mode : PK

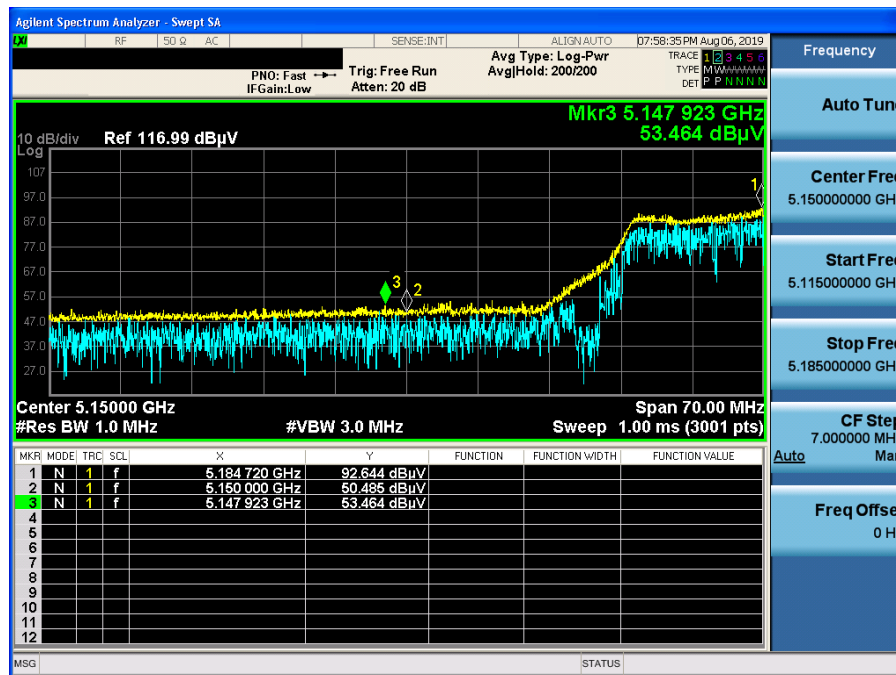


Detector Mode : AV



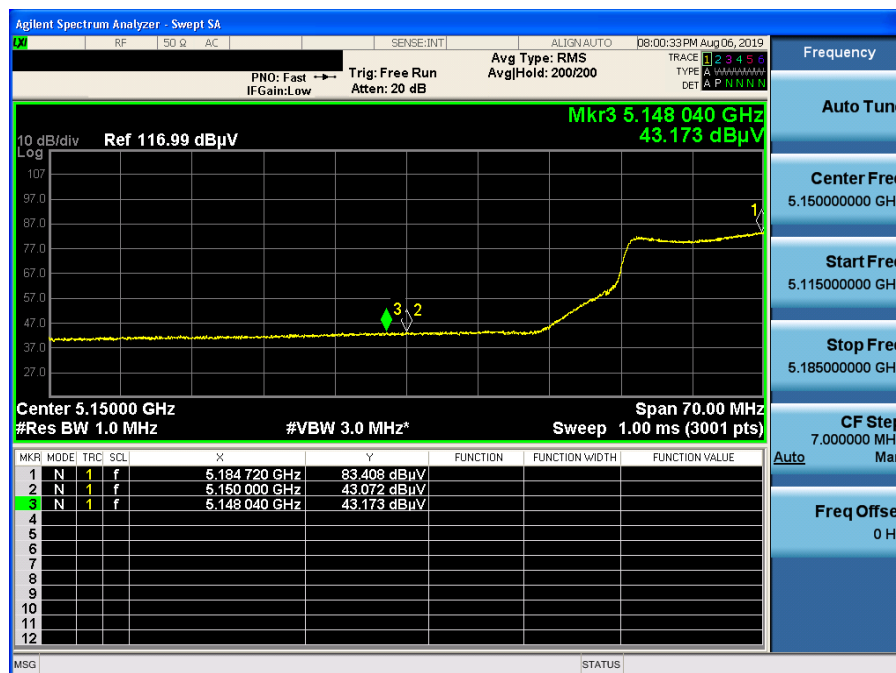
802.11ac(VHT80) & U-NII 1 & Ch.42 & Y axis & Ver

Detector Mode : PK



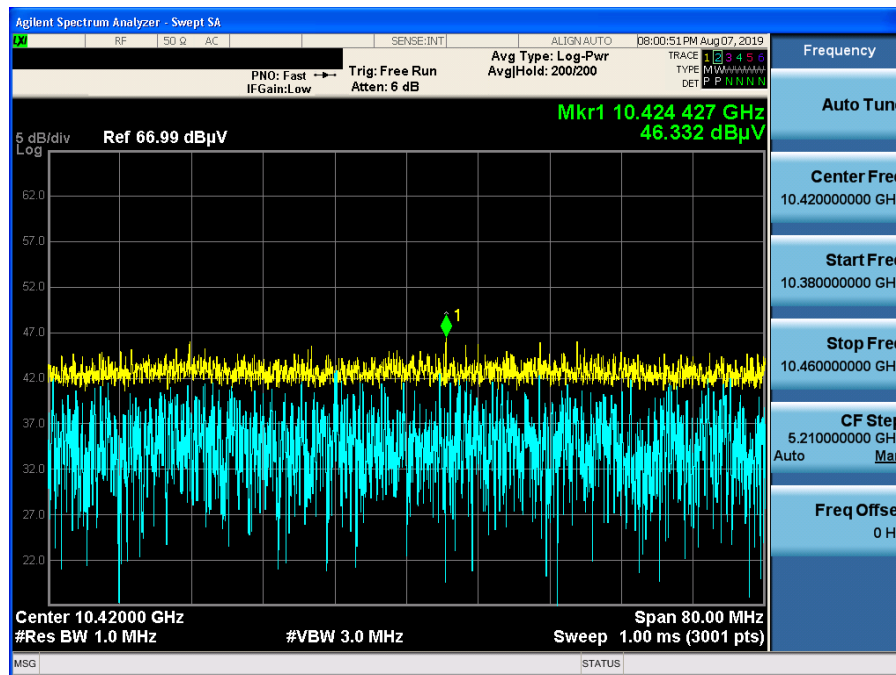
802.11ac(VHT80) & U-NII 1 & Ch.42 & Y axis & Ver

Detector Mode : AV



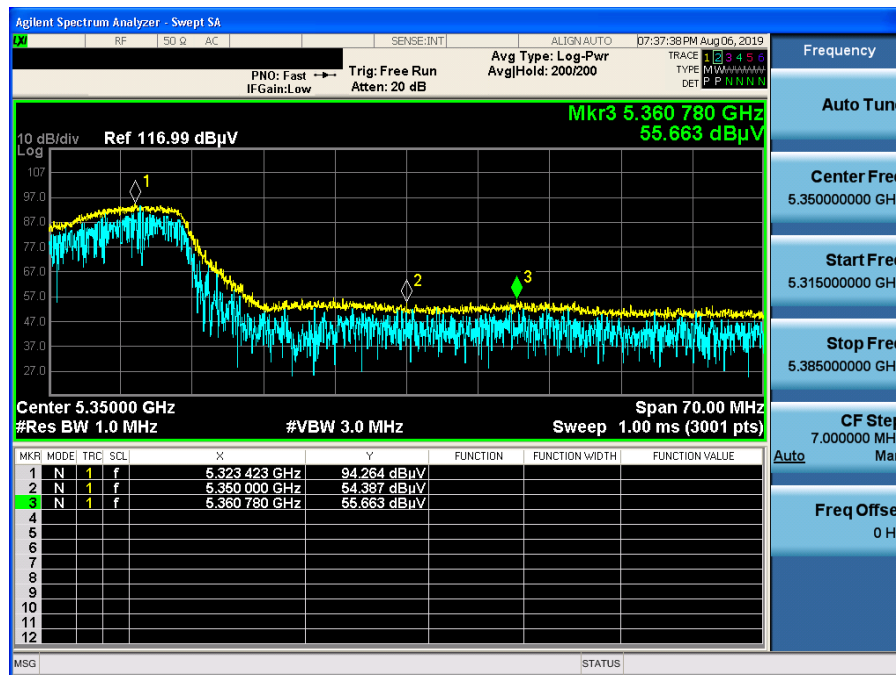
802.11ac(VHT80) & U-NII 1 & Ch.58 & X axis & Hor

Detector Mode : PK



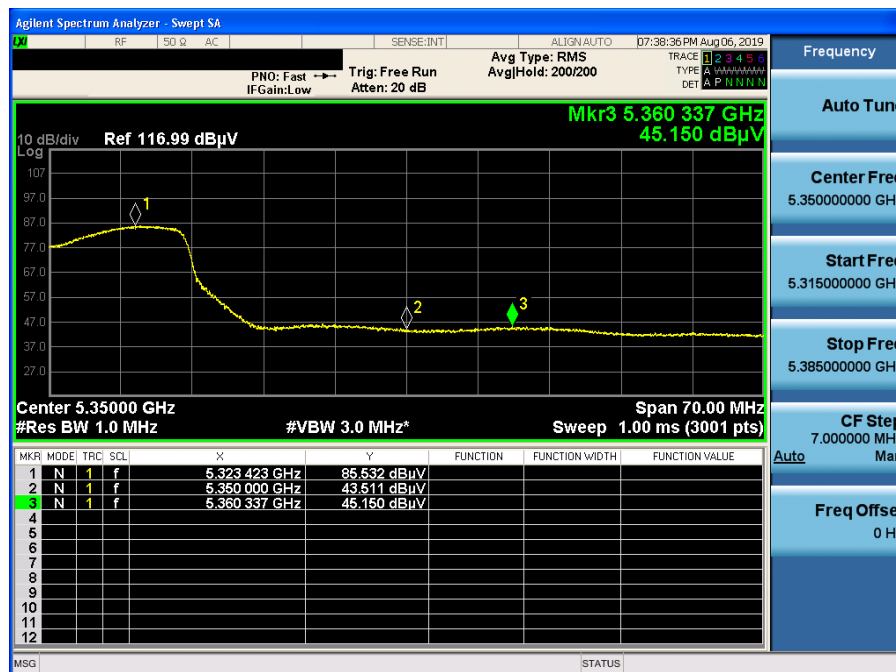
802.11ac(VHT80) & U-NII 3 & Ch.58 & Y axis & Ver

Detector Mode : PK



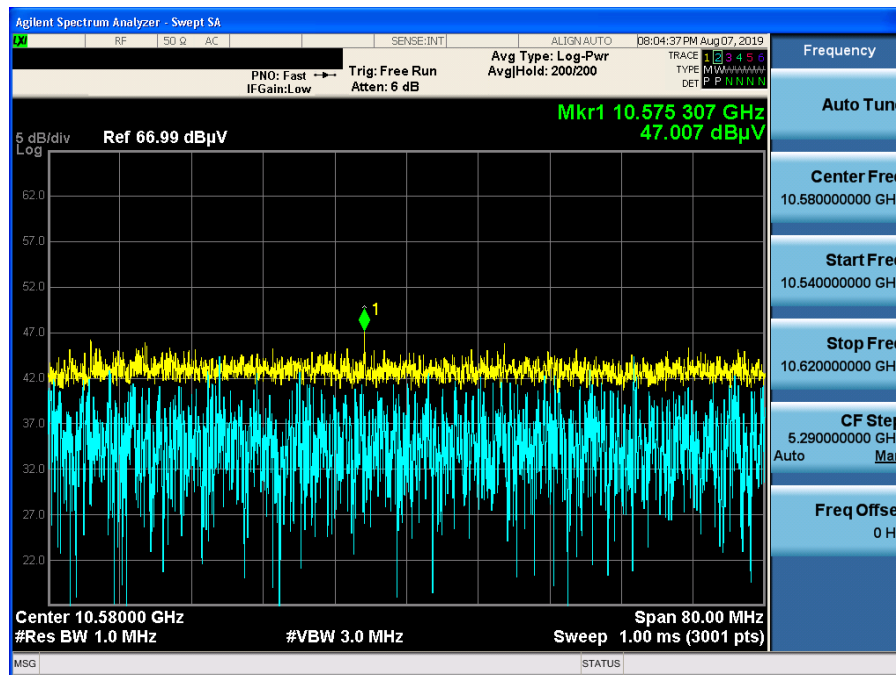
802.11ac(VHT80) & U-NII 3 & Ch.58 & Y axis & Ver

Detector Mode : PK



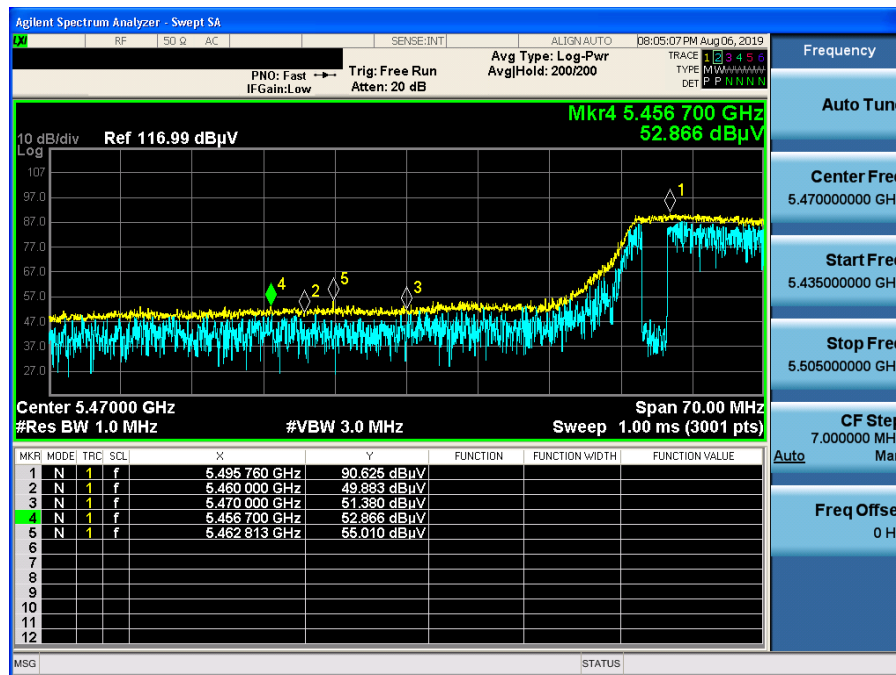
802.11ac(VHT80) & U-NII 3 & Ch.58 & X axis & Hor

Detector Mode : PK



802.11ac(VHT80) & U-NII 2A & Ch.106 & Y axis & Ver

Detector Mode : PK



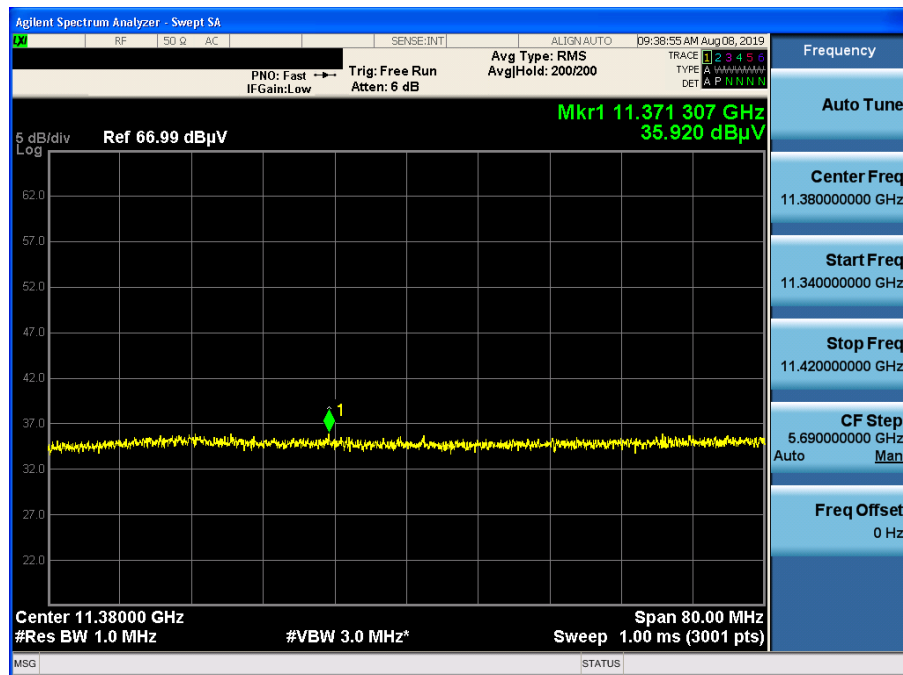
802.11ac(VHT80) & U-NII 2A & Ch.106 & Y axis & Ver

Detector Mode : AV



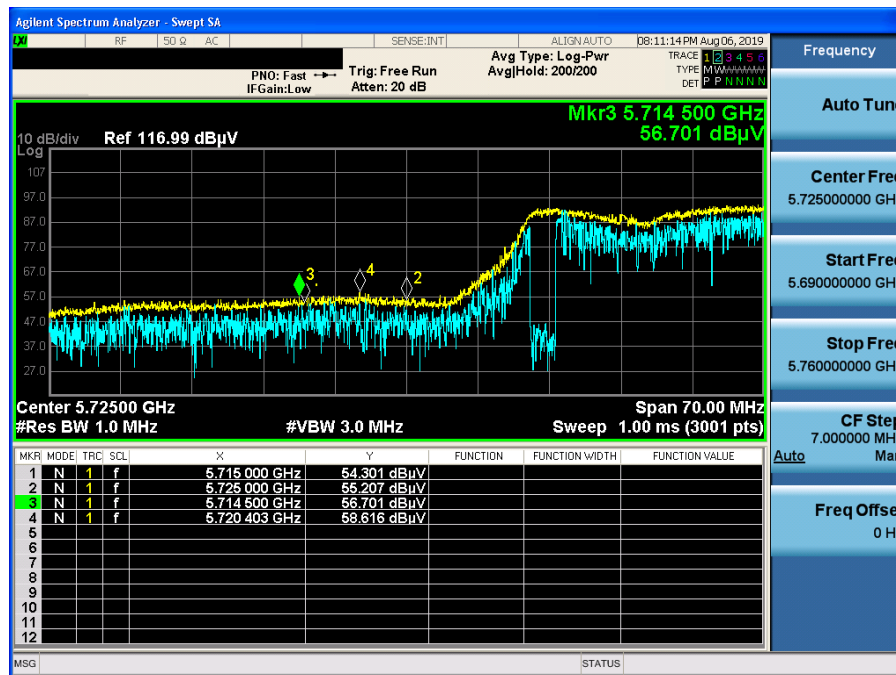
802.11ac(VHT80) & U-NII 2A & Ch.138 & X axis & Hor

Detector Mode : AV



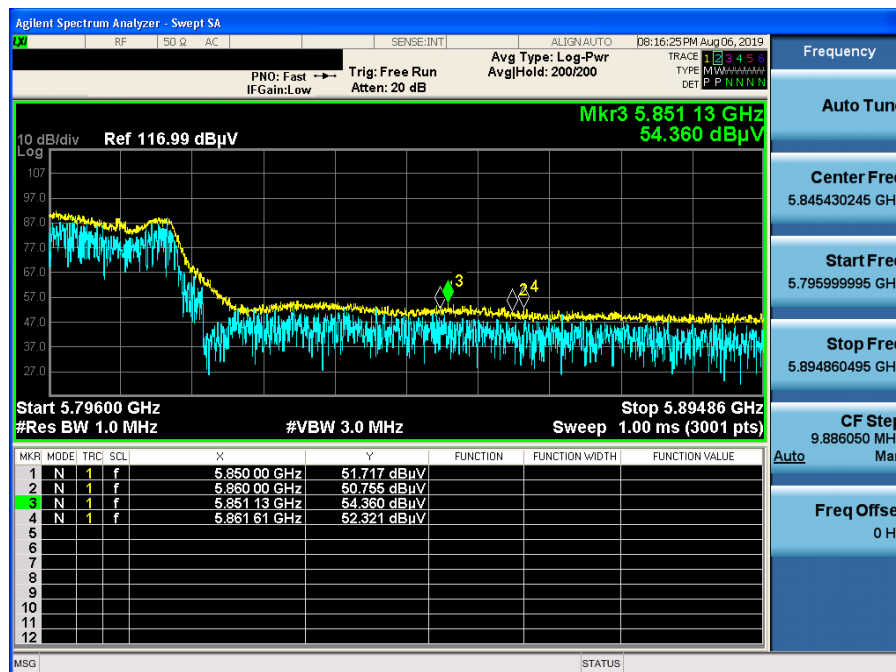
802.11ac(VHT80) & U-NII 2C & Ch.155 & Y axis & Ver

Detector Mode : PK



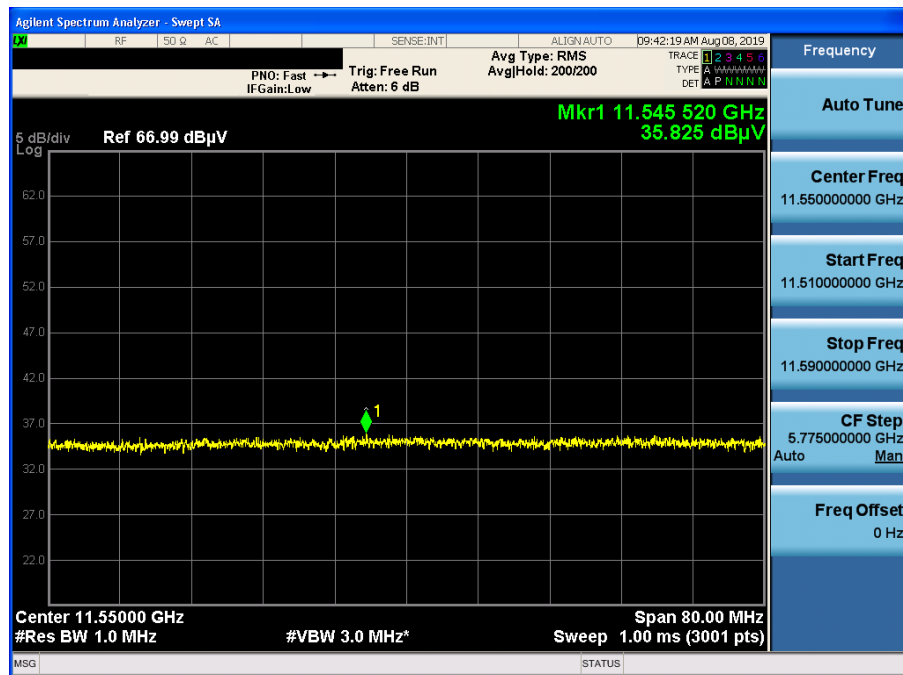
802.11ac(VHT80) & U-NII 2C & Ch.155 & Y axis & Ver

Detector Mode : PK



802.11ac(VHT80) & U-NII 2C & Ch.155 & X axis & Hor

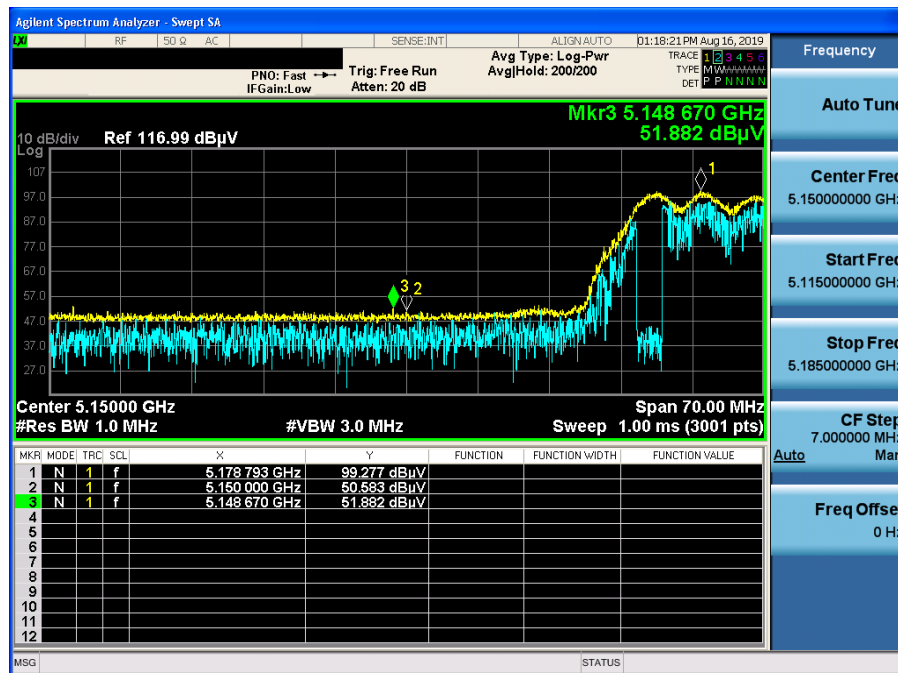
Detector Mode : AV



Unwanted Emissions (Radiated) Test Plot: MIMO(CDD)_ Wireless Charging

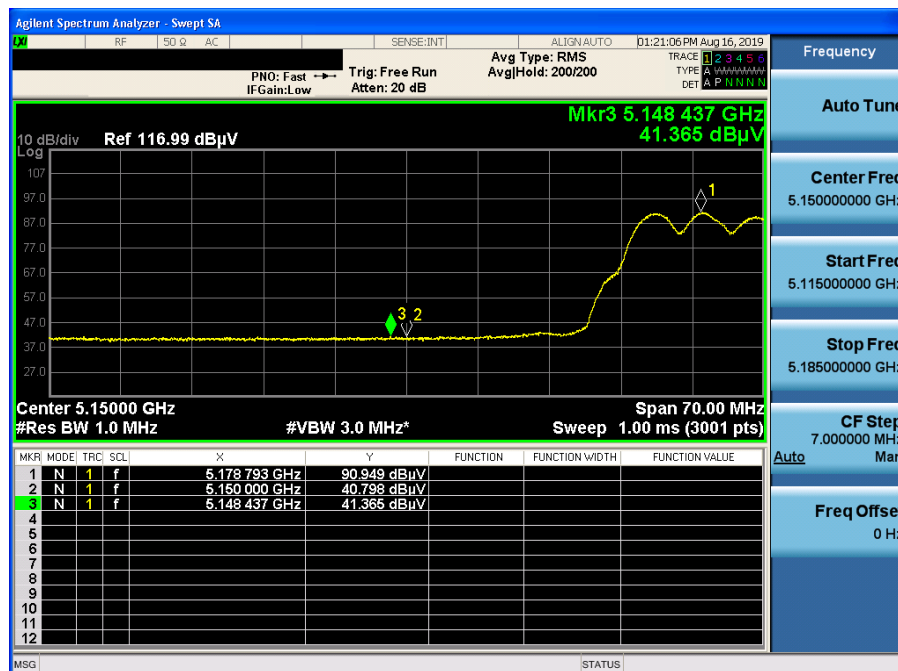
802.11a & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : PK



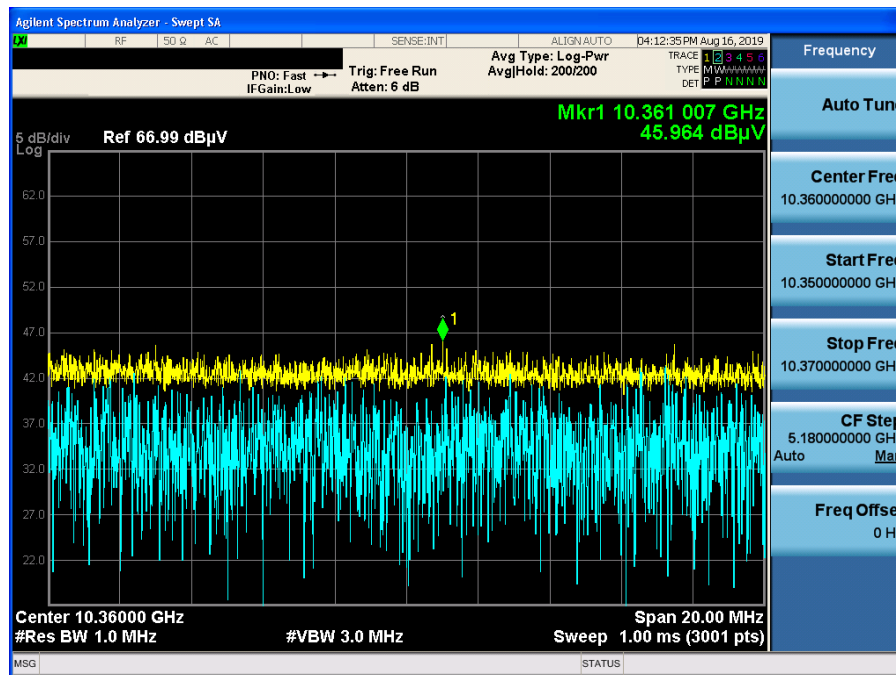
802.11a & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : AV



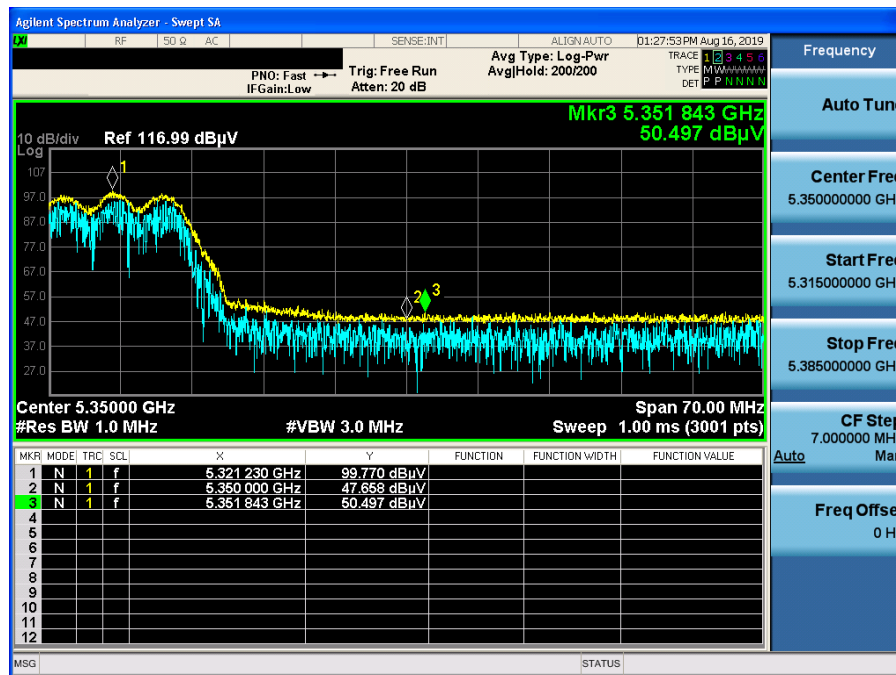
802.11a & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : PK



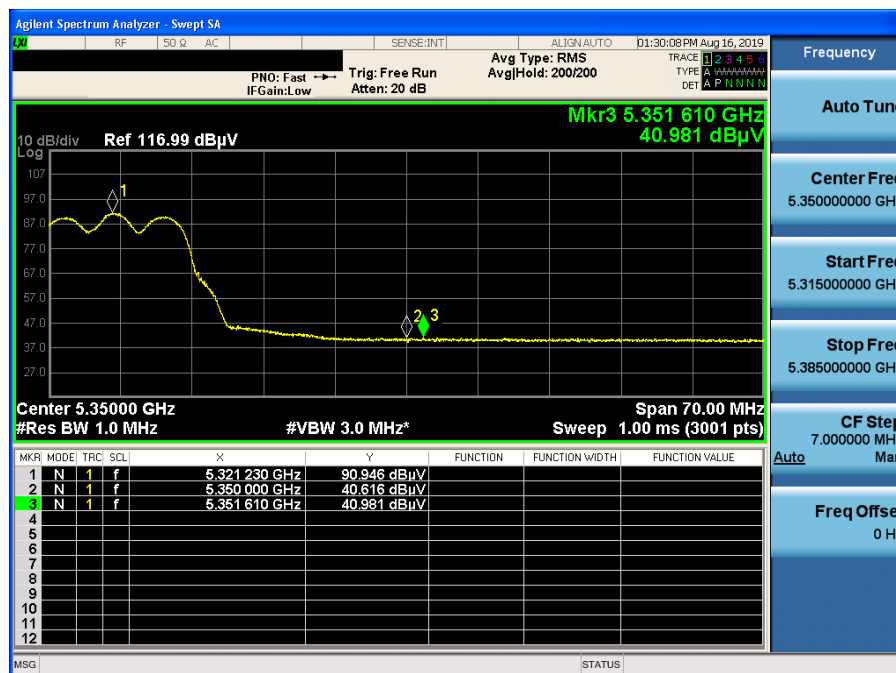
802.11a & U-NII 2A & Ch.64 & X axis & Hor

Detector Mode : PK



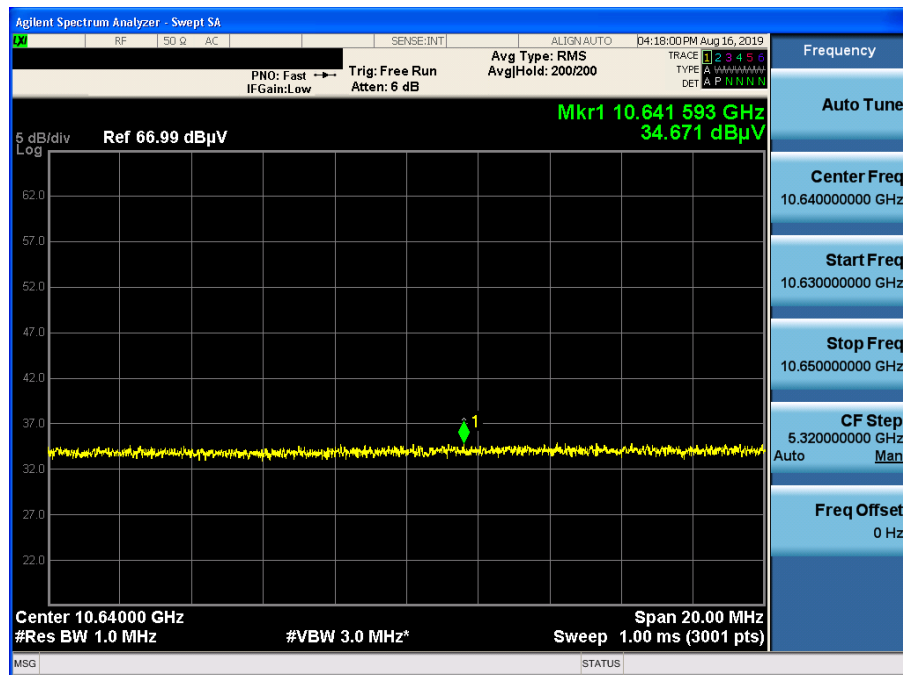
802.11a & U-NII 2A & Ch.64 & X axis & Hor

Detector Mode : AV



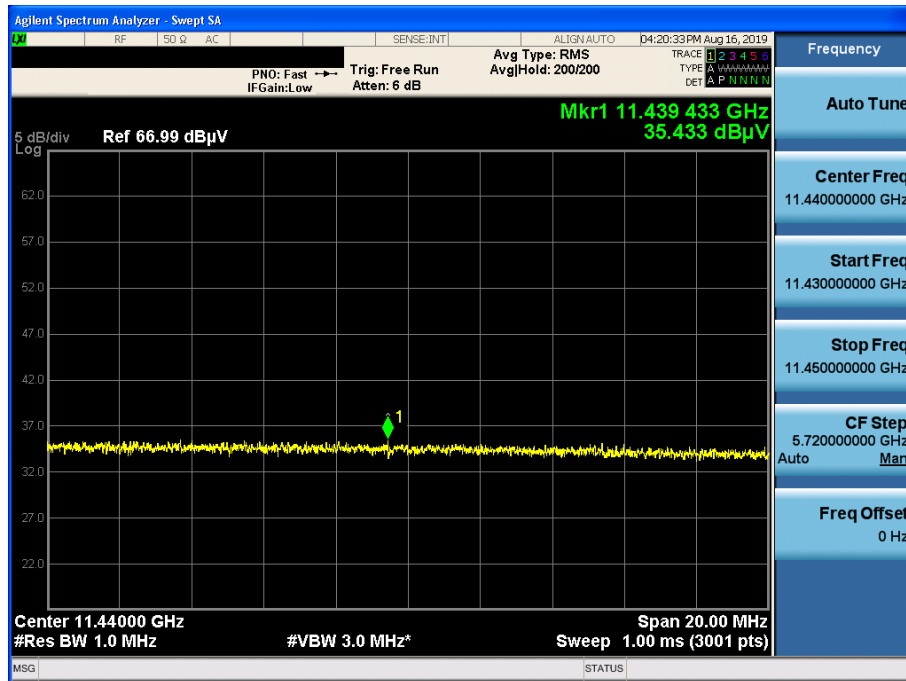
802.11a & U-NII 2A & Ch.64 & X axis & Hor

Detector Mode : AV



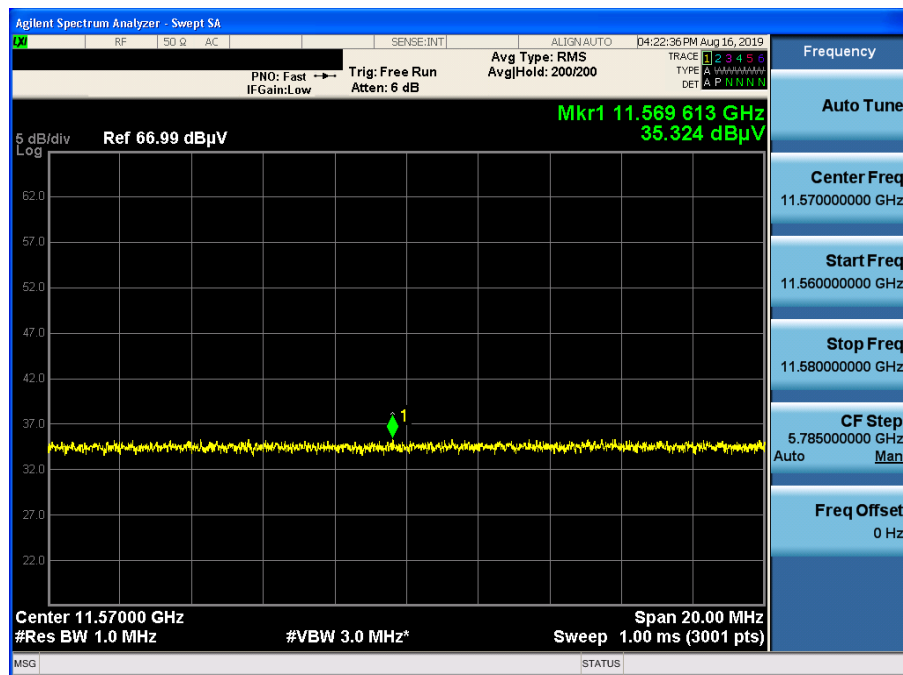
802.11a & U-NII 2C & Ch.144 & X axis & Hor

Detector Mode : AV



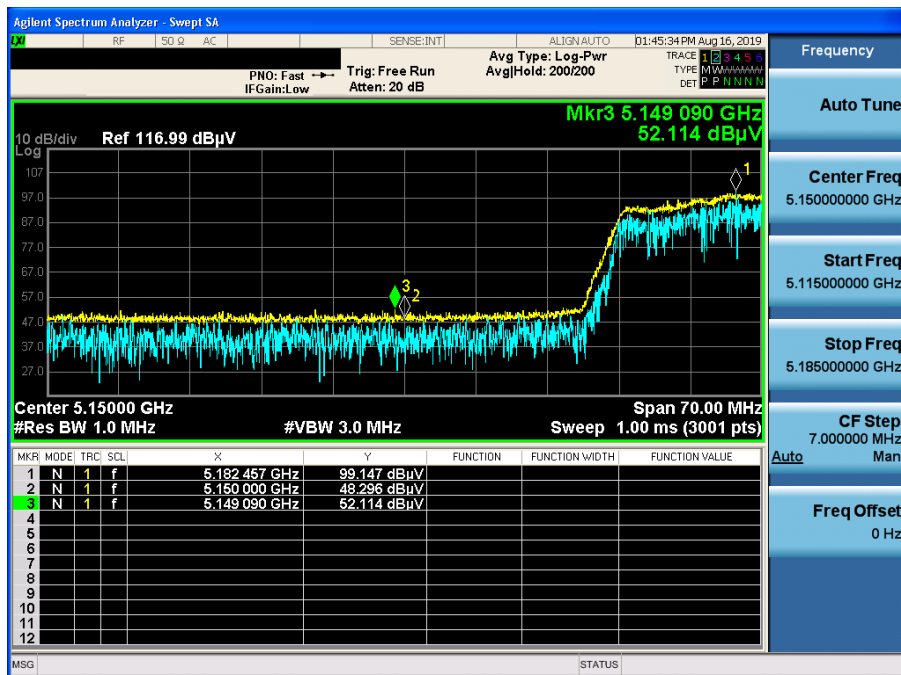
802.11a & U-NII 3 & Ch.157 & X axis & Hor

Detector Mode : AV



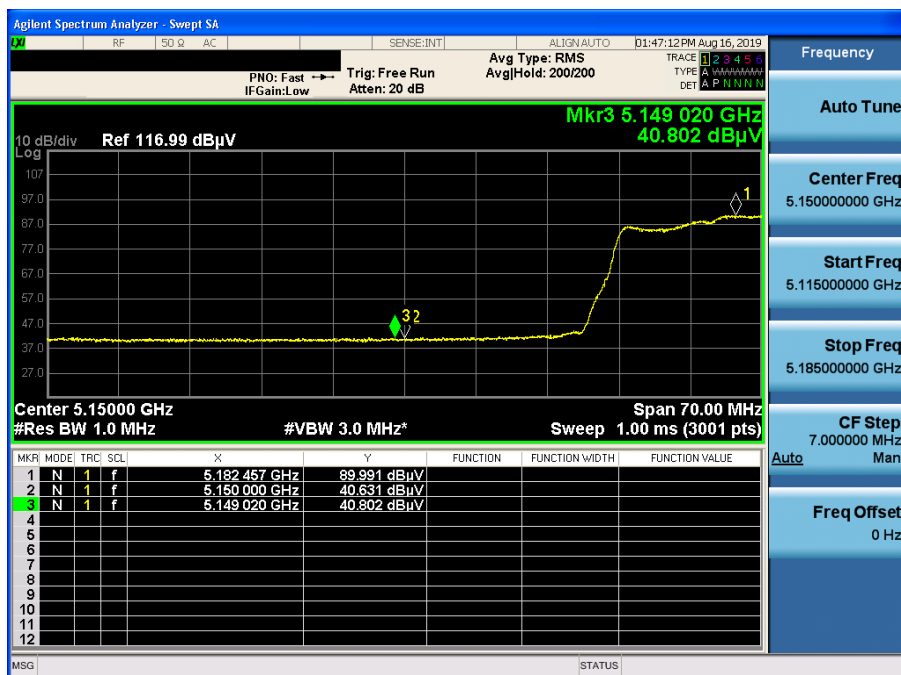
802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : PK

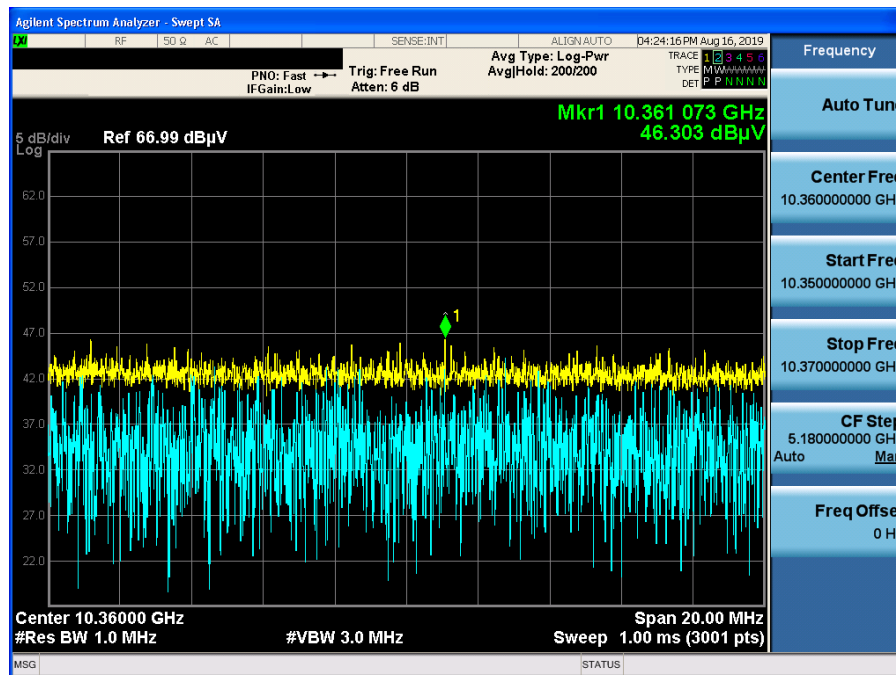


802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : AV

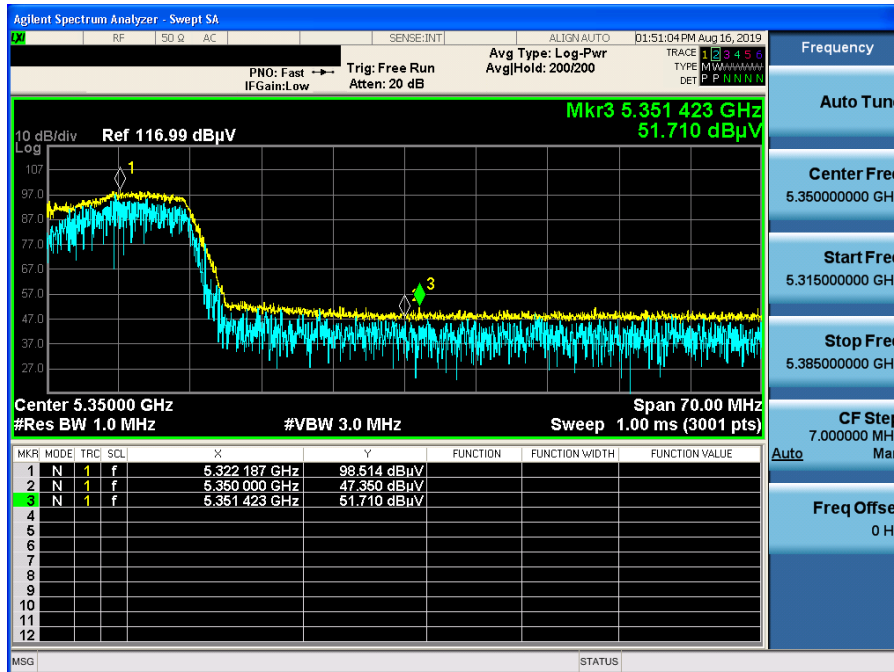


Detector Mode : PK



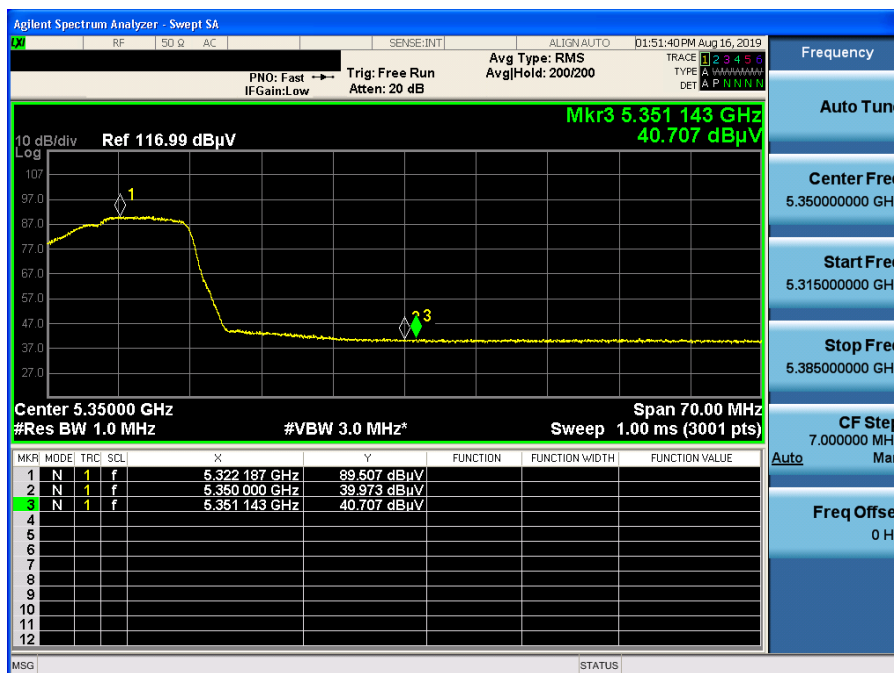
802.11n(HT20) & U-NII 2A & Ch.64 & X axis & Hor

Detector Mode : PK



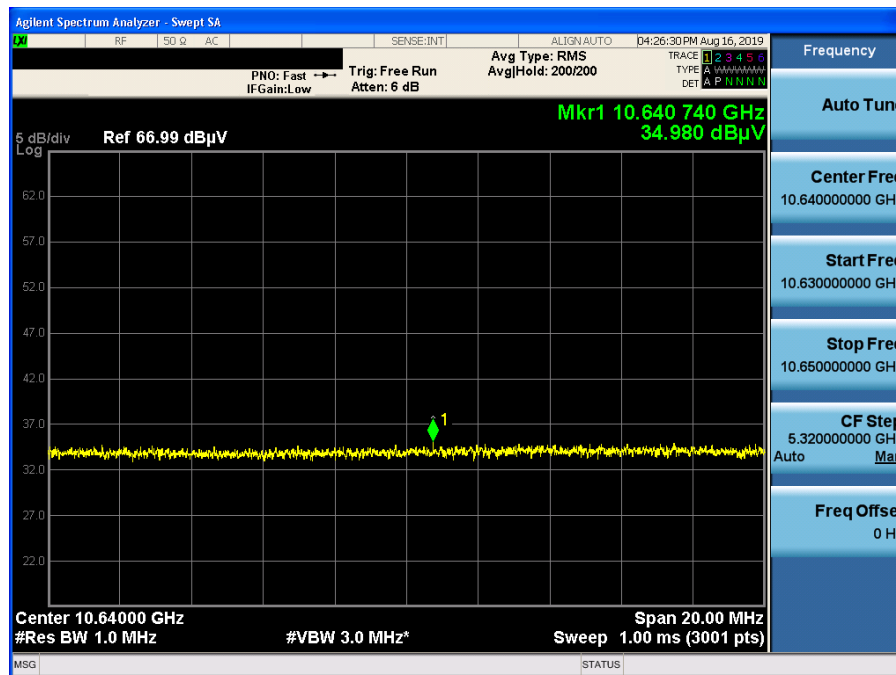
802.11n(HT20) & U-NII 2A & Ch.64 & X axis & Hor

Detector Mode : AV



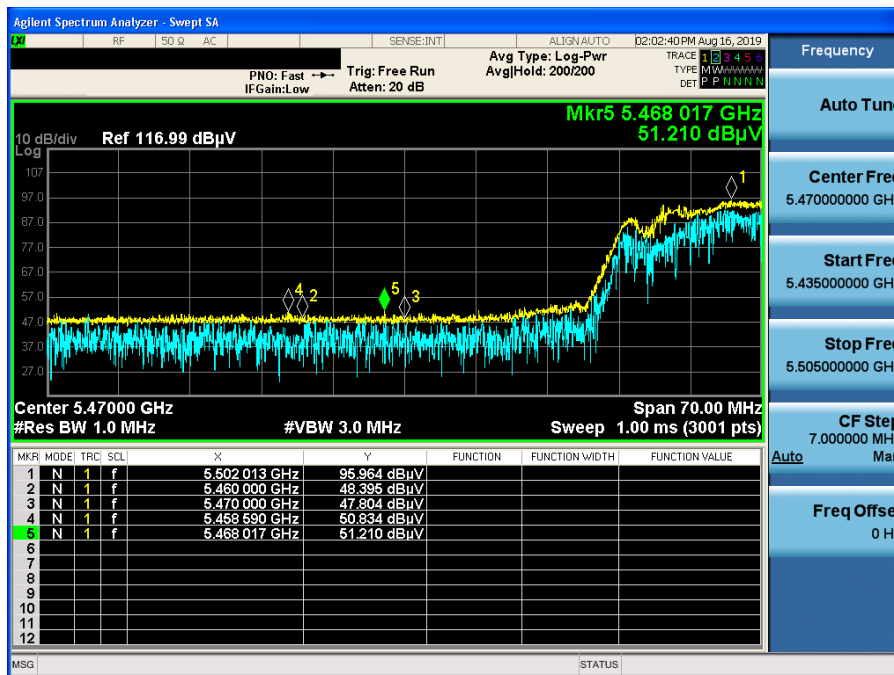
802.11n(HT20) & U-NII 2A & Ch.64 & X axis & Hor

Detector Mode : AV



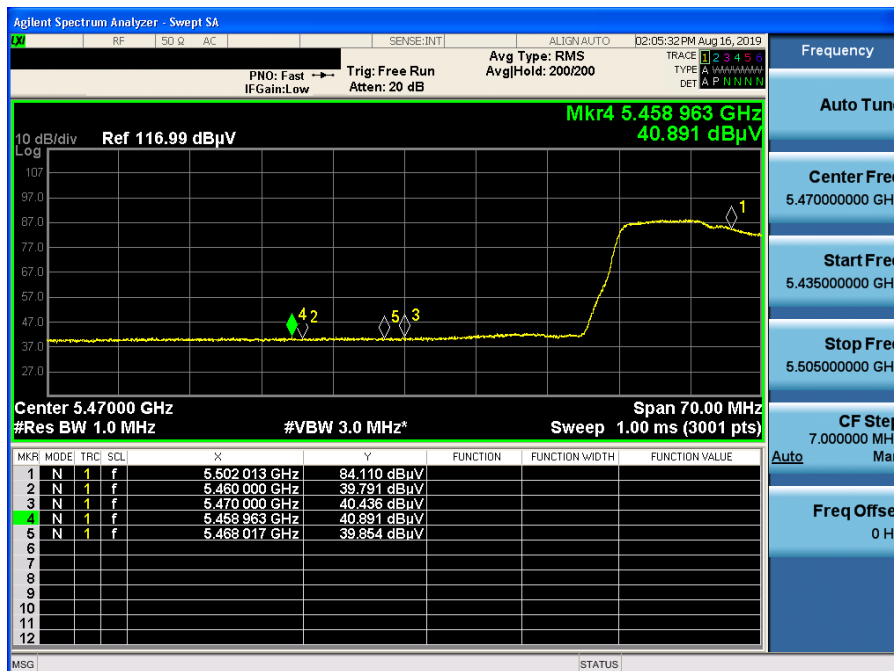
802.11n(HT20) & U-NII 2C & Ch.100 & X axis & Hor

Detector Mode : PK



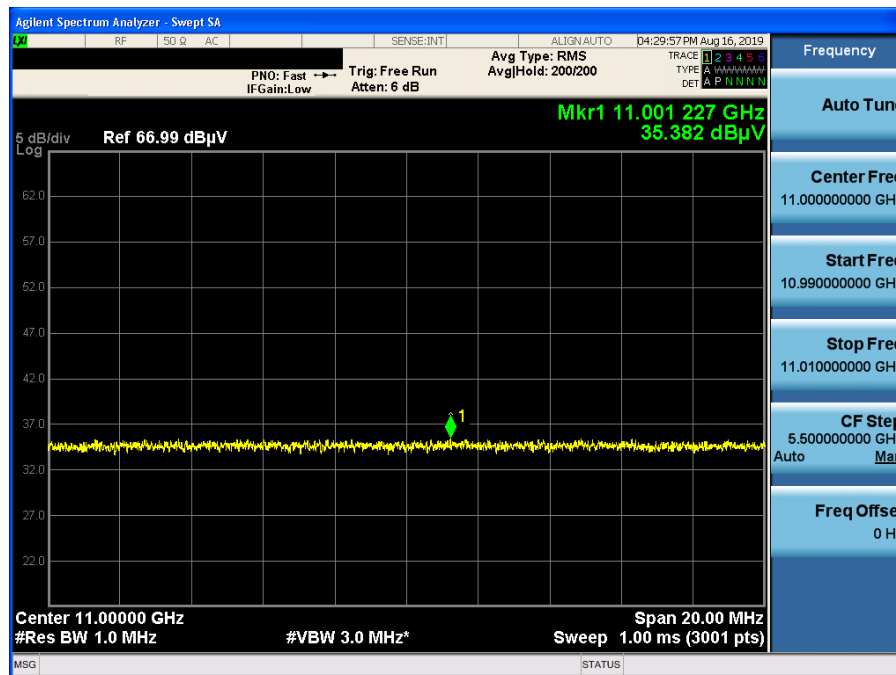
802.11n(HT20) & U-NII 2C & Ch.100 & X axis & Hor

Detector Mode : AV



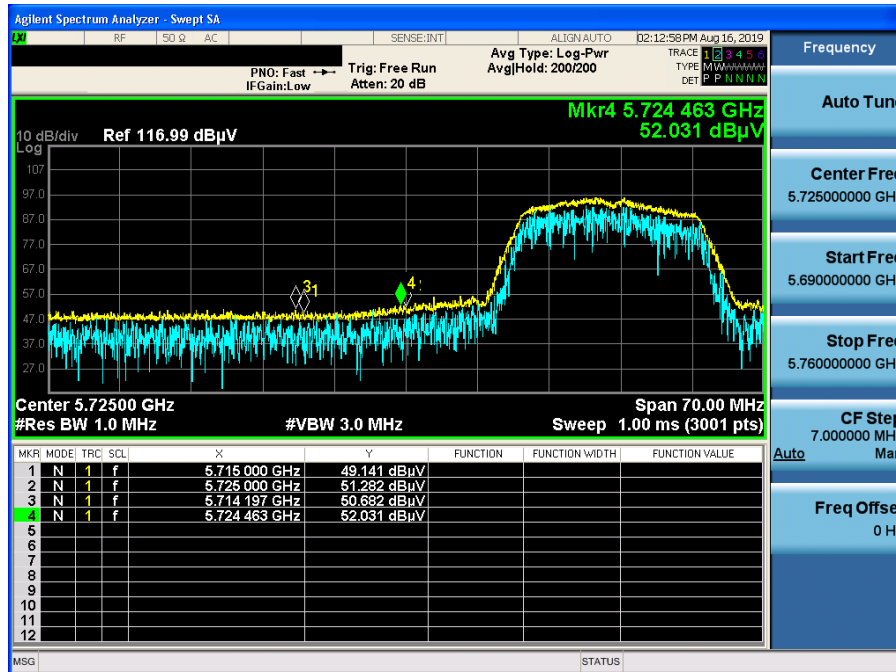
802.11n(HT20) & U-NII 2C & Ch.100 & X axis & Hor

Detector Mode : AV



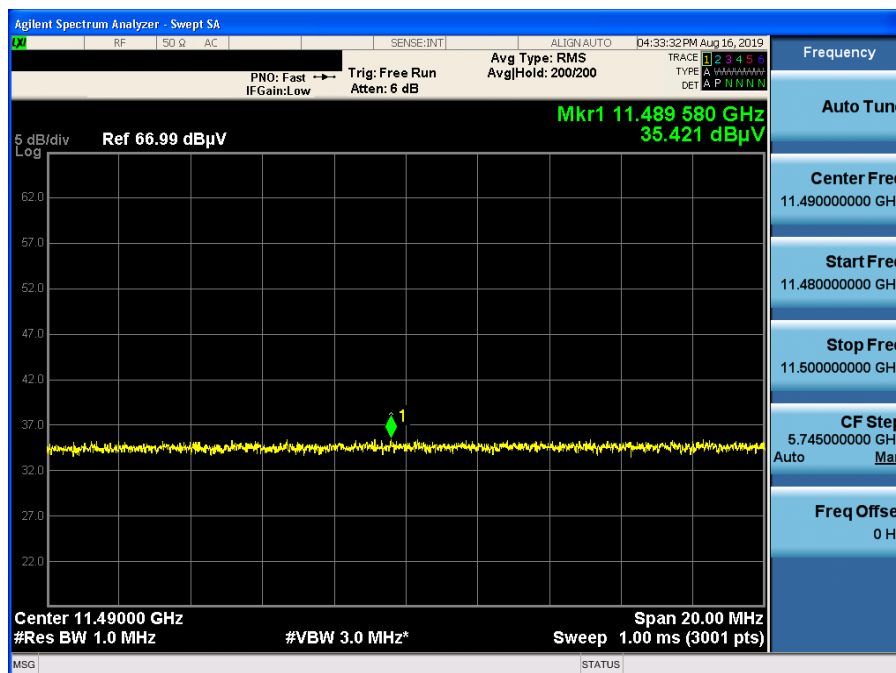
802.11n(HT20) & U-NII 3 & Ch.149 & X axis & Hor

Detector Mode : PK



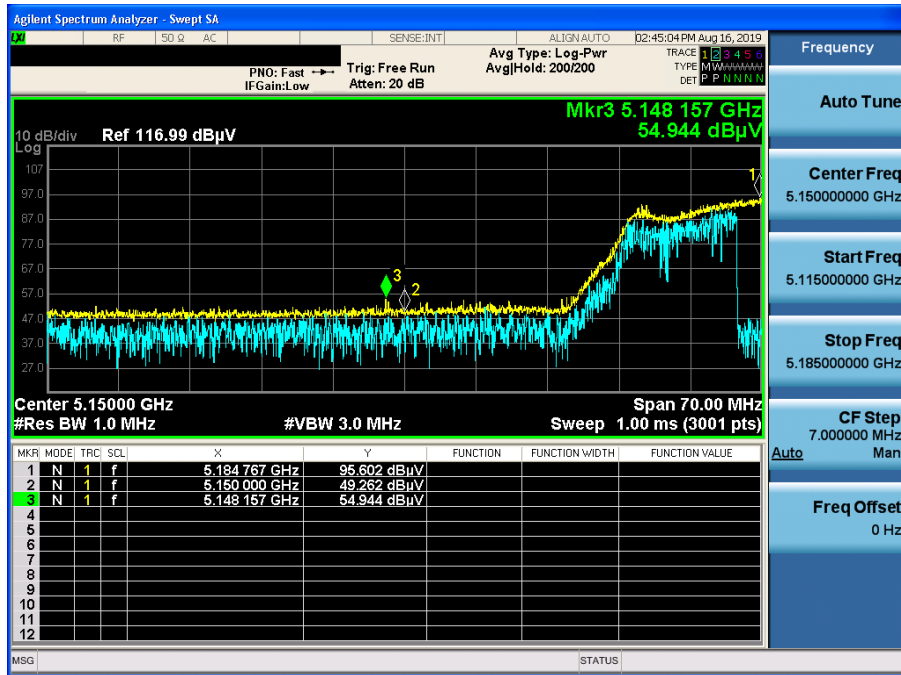
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Detector Mode : AV



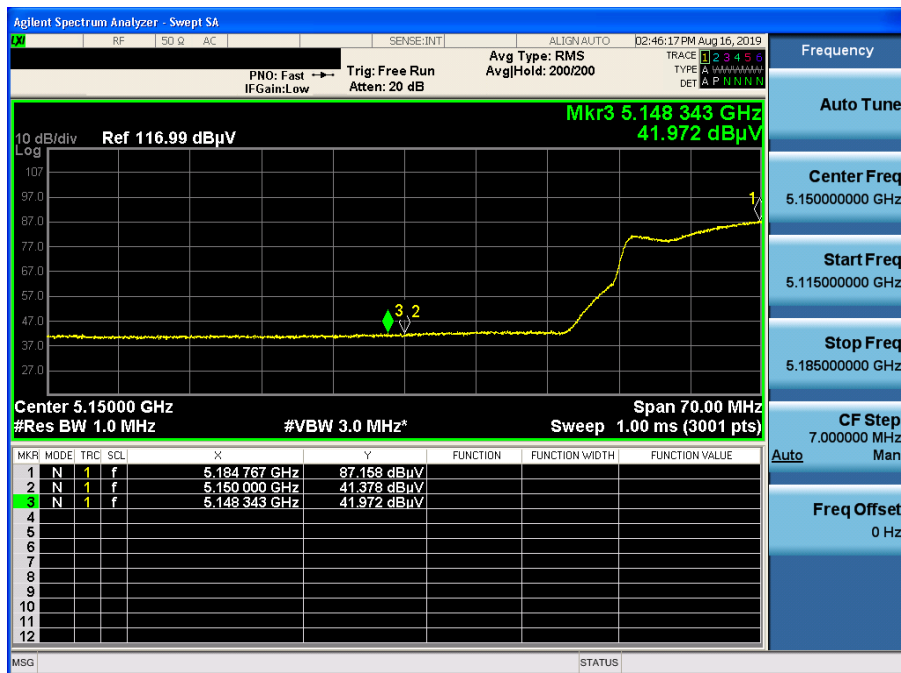
802.11n(HT40) & U-NII 1 & Ch.38 & X axis & Hor

Detector Mode : PK



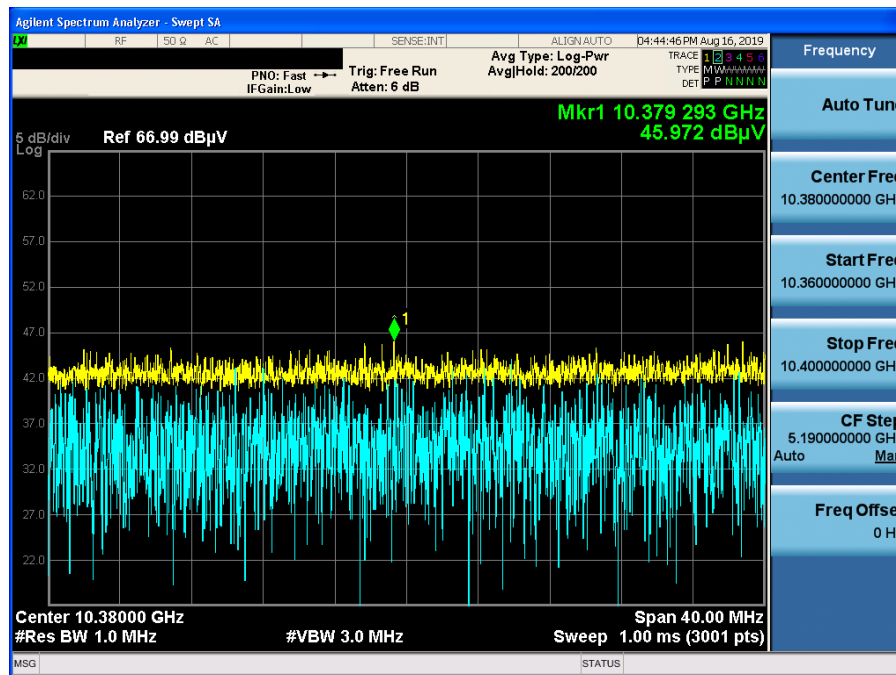
802.11n(HT40) & U-NII 1 & Ch.38 & X axis & Hor

Detector Mode : AV



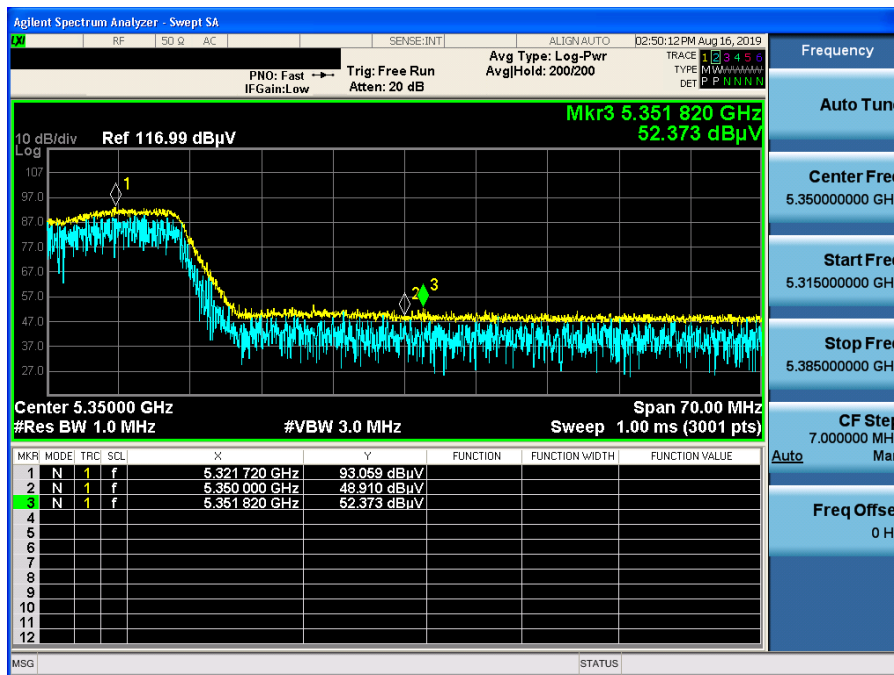
802.11n(HT40) & U-NII 1 & Ch.38 & X axis & Hor

Detector Mode : PK



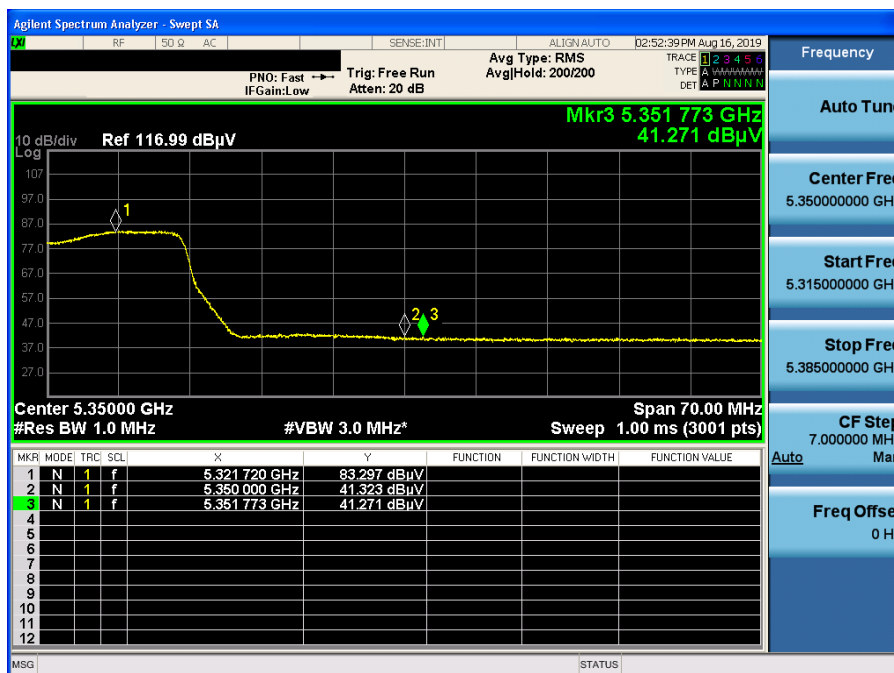
802.11n(HT40) & U-NII 2A & Ch.62 & X axis & Hor

Detector Mode : PK



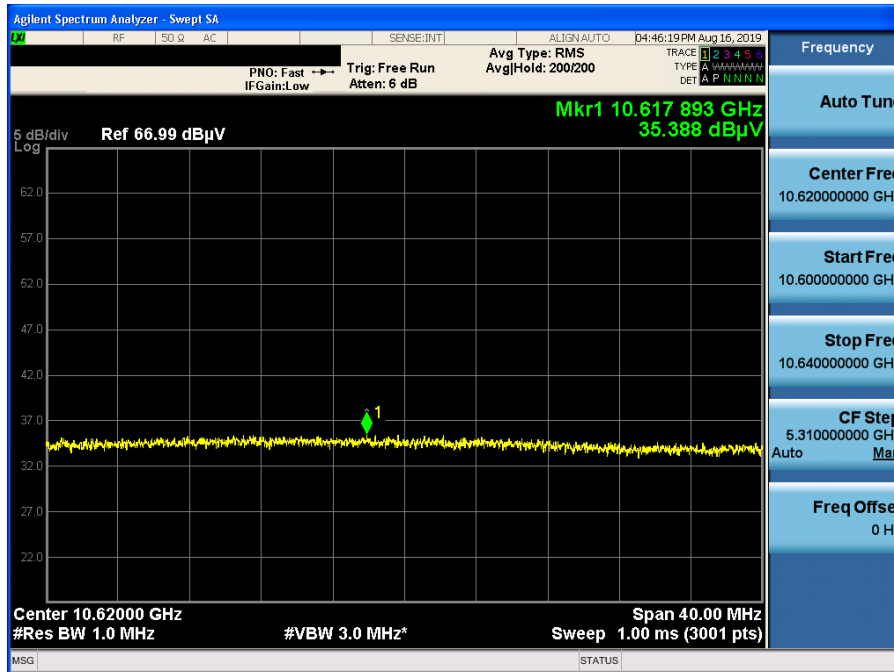
802.11n(HT40) & U-NII 2A & Ch.62 & X axis & Hor

Detector Mode : AV



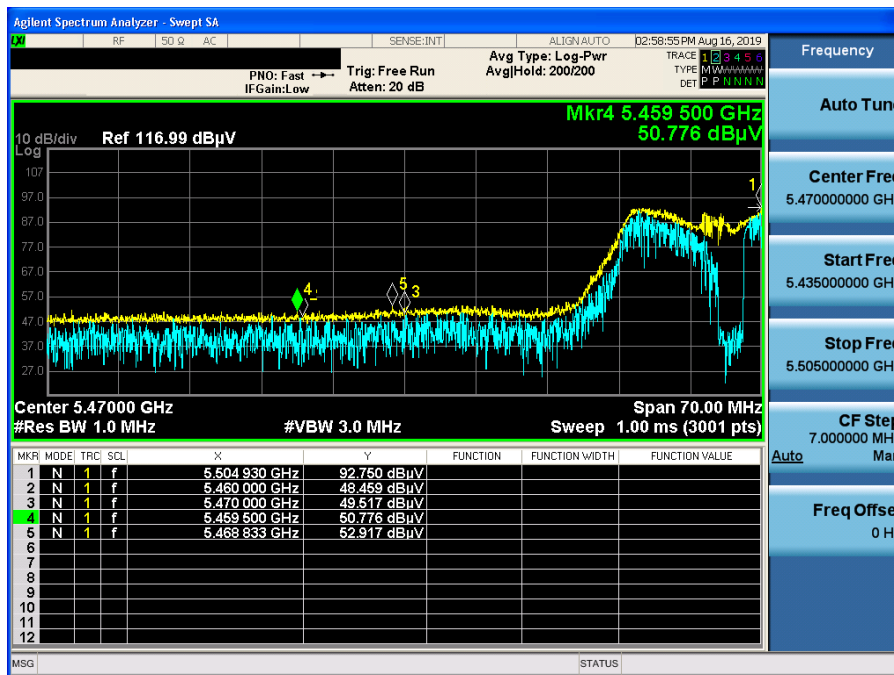
802.11n(HT40) & U-NII 2A & Ch.62 & X axis & Hor

Detector Mode : AV



802.11n(HT40) & U-NII 2C & Ch.102 & X axis & Hor

Detector Mode : PK



802.11n(HT40) & U-NII 2C & Ch.102 & X axis & Hor

Detector Mode : AV

