9. LIST OF TEST EQUIPMENT

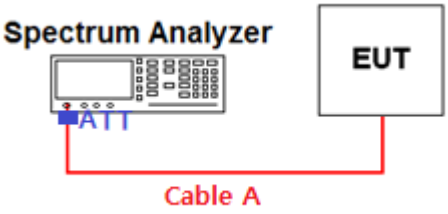
Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	19/06/26	20/06/26	US47360812
Spectrum Analyzer	Agilent Technologies	N9020A	18/12/19	19/12/19	MY48011700
Spectrum Analyzer	Agilent Technologies	N9030A	19/03/15	20/03/15	MY53310140
DC Power Supply	Agilent Technologies	66332A	18/12/18	19/12/18	US37473833
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	SATO	PC-5000TRH-II	18/07/18	19/07/18	N/A
			19/07/18	20/07/18	
Thermohygrometer	BODYCOM	BJ5478	19/07/03	20/07/03	N/A
HYGROMETER	TESTO	608-H1	19/01/31	20/01/31	34862883
Loop Antenna	Schwarzbeck	FMZB1513	18/01/30	20/01/30	1513-128
BILOG ANTENNA	Schwarzbeck	VULB 9160	18/07/13	20/07/13	3359
Horn Antenna	ETS-Lindgren	3115	18/01/30	20/01/30	6419
Horn Antenna	A.H.Systems Inc.	SAS-574	17/07/31	19/07/31	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	18/10/31	19/10/31	2005354
Attenuator	SMAJK	SMAJK-2-3	19/06/25	20/06/25	4
Attenuator	SMAJK	SMAJK-2-3	18/07/02	19/07/02	3
			19/0627	20/06/27	
Attenuator	SRTechnology	F01-B0606-01	18/07/02	19/07/02	13092403
			19/0627	20/06/27	
Attenuator	Hefei Shunze	SS5T2.92-10-40	18/07/03	19/07/03	16012202
			19/0627	20/06/27	
High Pass Filter	Wainwright Instruments	WHNX8.0/26.5-6SS	18/07/03	19/07/03	3
			19/06/27	20/06/27	
High Pass Filter	Wainwright Instruments	WHKX12-935-1000-15000-40SS	18/07/02	19/07/02	8
			19/06/26	20/06/26	
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300-18000-60SS	18/07/02	19/07/02	1
			19/06/26	20/06/26	
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2411B	18/12/19	19/12/19	1338004 1306053
Temp & Humi Test Chamber	SJ Science	SJ-TH-S50	18/12/20	19/12/20	SJ-TH-S50-140205
EMI Receiver	ROHDE&SCHWARZ	ESW44	18/08/06	19/08/06	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	HUBER+SUHNER	SUCOFLEX	18/12/21	19/12/21	C-1
Cable	HUBER+SUHNER	SUCOFLEX	18/12/21	19/12/21	C-2
Cable	HUBER+SUHNER	SUCOFLEX	18/12/21	19/12/21	C-3
Cable	HUBER+SUHNER	SUCOFLEX	18/12/21	19/12/21	C-4
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 = On Time / (On + 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 ≥ EBW if possible; otherwise, set RBW to the largest available value.
3. Set VBW ≥ 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* ≤ 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* = 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

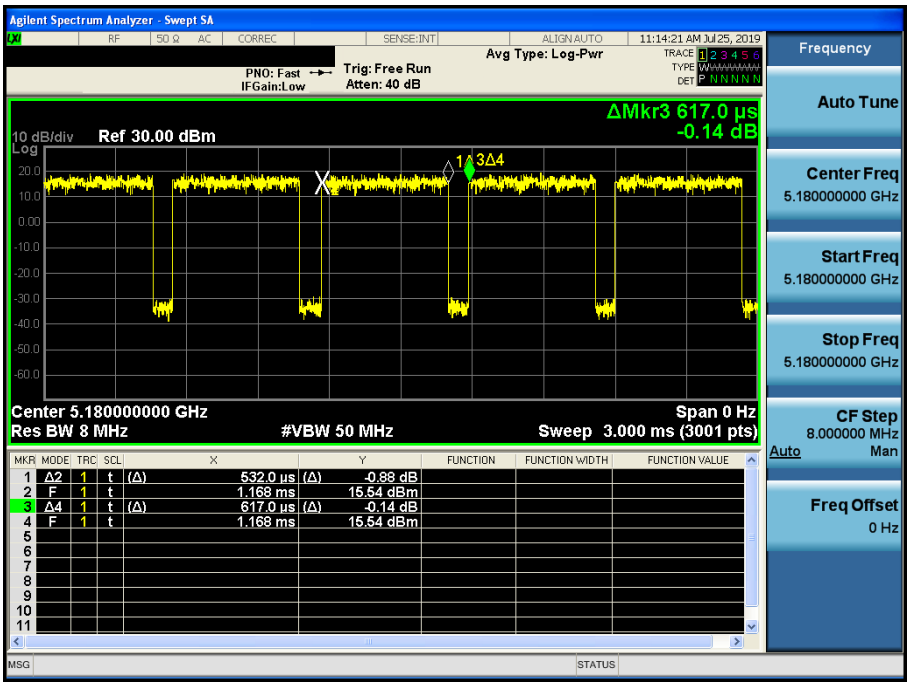
Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (*x*) = On / (On+Off)			DCCF= 10 log(1/x) [dB]	50/*T* [kHz]
			T=On Time [ms]	(On+Off) Time [ms]	*x*		
802.11a	24Mbps	5180	0.532	0.617	0.8622	0.64	93.98
802.11ac (VHT20)	MCS3 (1SS)	5180	0.515	0.599	0.8598	0.66	97.09
802.11ac (VHT40)	MCS0	5190	0.952	1.044	0.9119	0.40	52.52
802.11ac (VHT80)	MCS8 (1SS)	5210	0.075	0.158	0.4747	3.24	666.67

Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (*x*) = On / (On+Off)			DCCF= 10 log(1/x) [dB]	50/*T* [kHz]
			T=On Time [ms]	(On+Off) Time [ms]	*x*		
802.11ac (VHT20)	MCS3 (2SS)	5180	0.284	0.369	0.7683	1.14	176.37
802.11n (HT40)	MCS8	5190	0.496	0.579	0.8566	0.67	100.81
802.11ac (VHT80)	MCS5 (2SS)	5210	0.072	0.154	0.4649	3.33	698.32

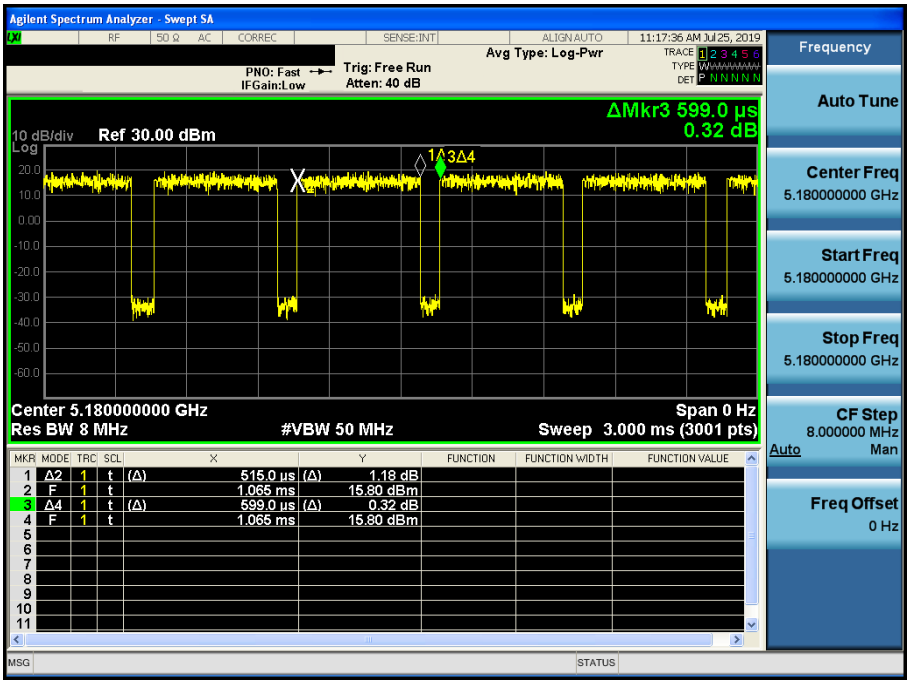
▣ Test Plot:

Single Transmit

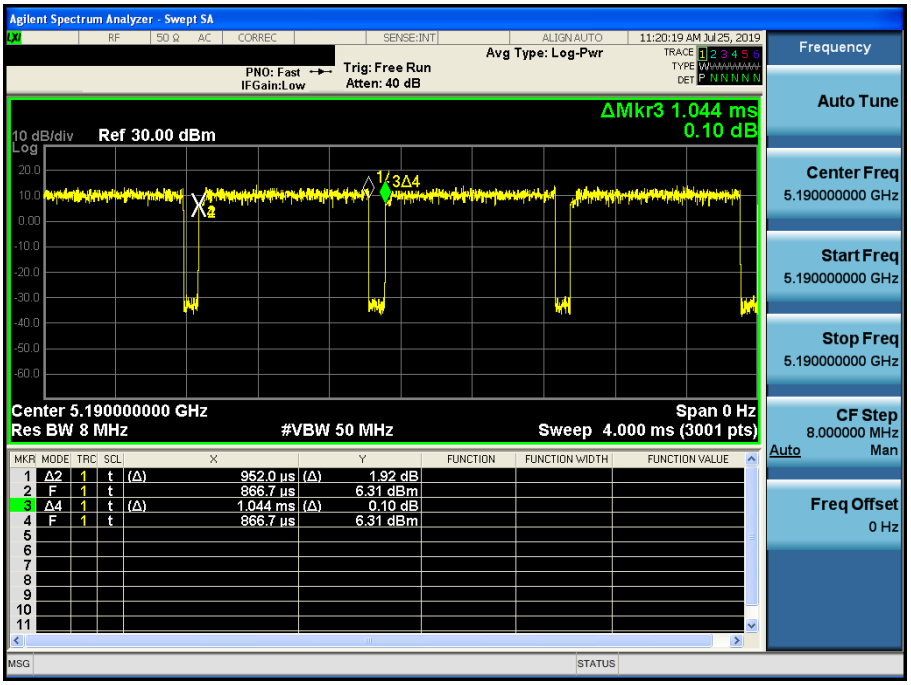
Duty Cycle Test Mode: 802.11a & Ch.36



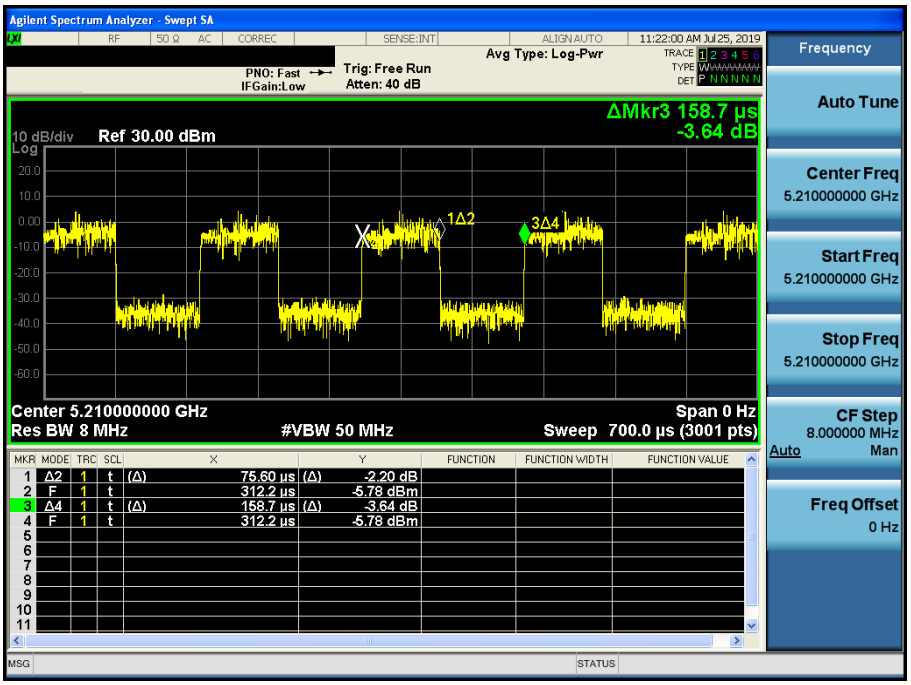
Duty Cycle Test Mode: 802.11ac VHT20 & Ch.36



Duty Cycle Test Mode: 802.11ac VHT40 & Ch.38



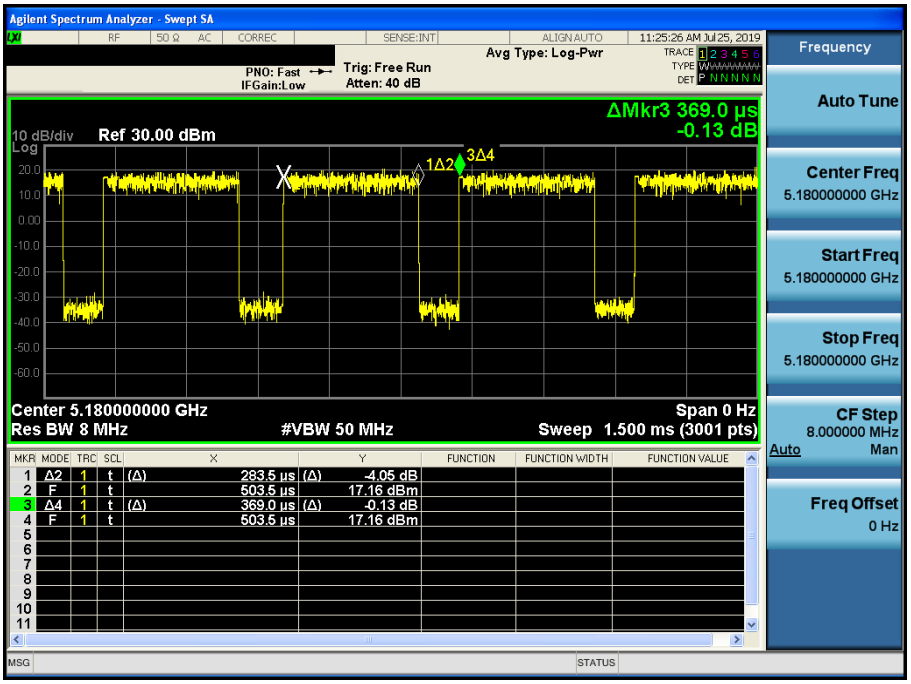
Duty Cycle Test Mode: 802.11ac VHT80 & Ch.42



Multiple Transmit _ SDM

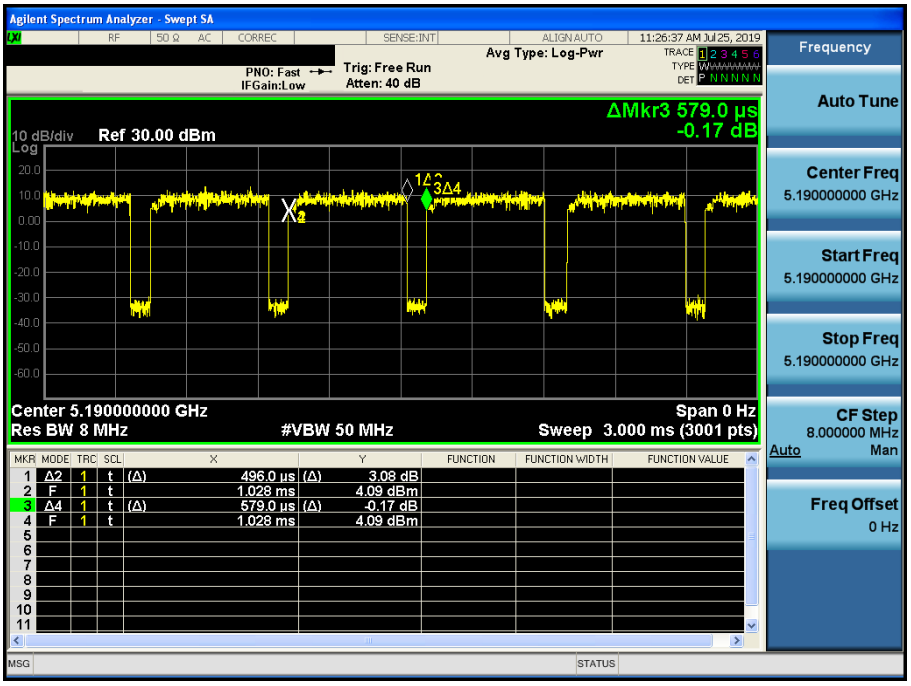
Duty Cycle

Test Mode: 802.11ac VHT20 & Ch.36

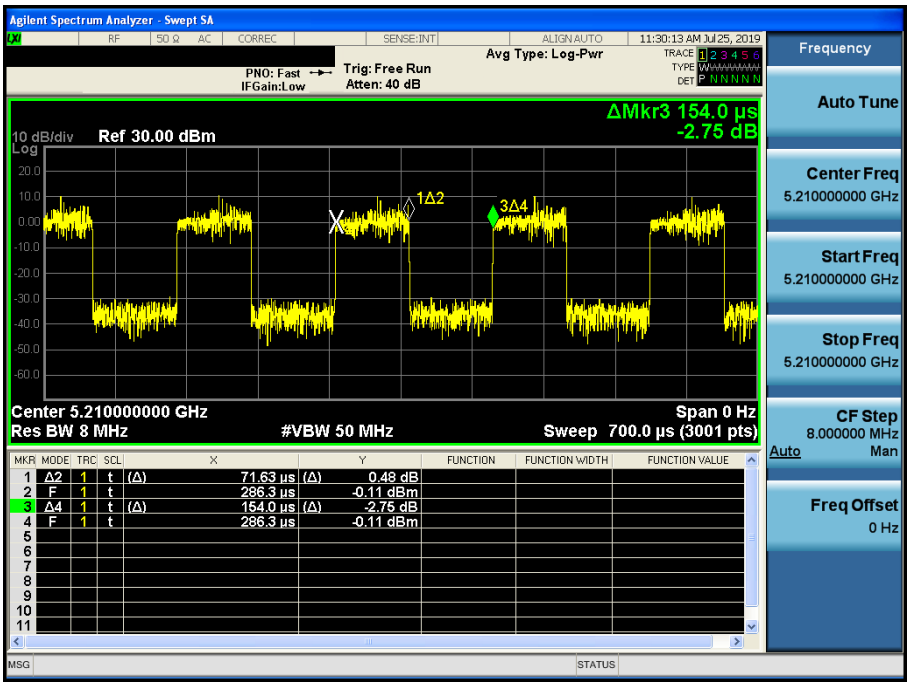


Duty Cycle

Test Mode: 802.11n HT40 & Ch.38



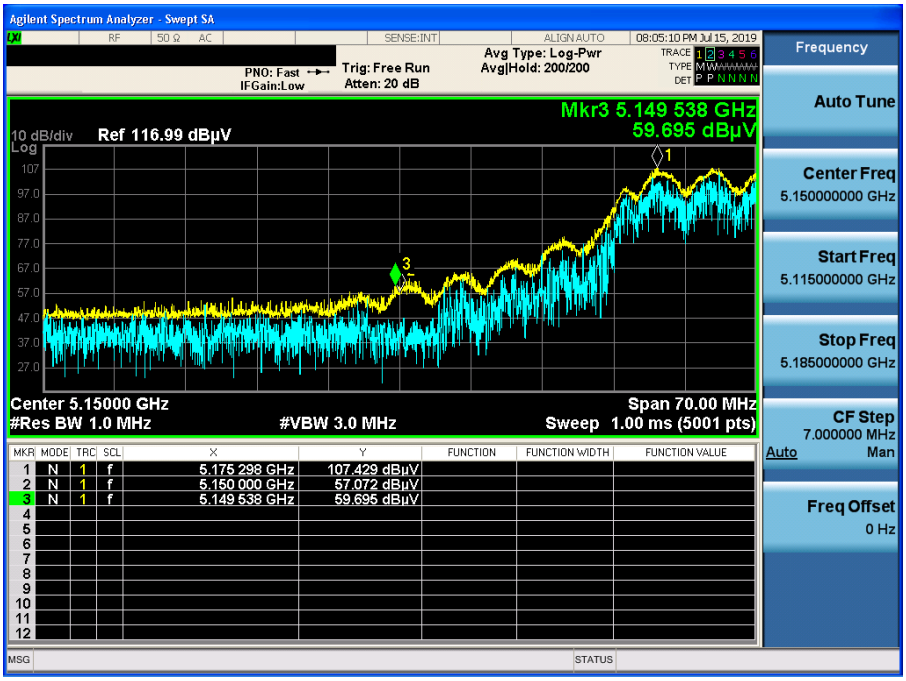
Duty Cycle Test Mode: 802.11ac VHT80 & Ch.42



APPENDIX III

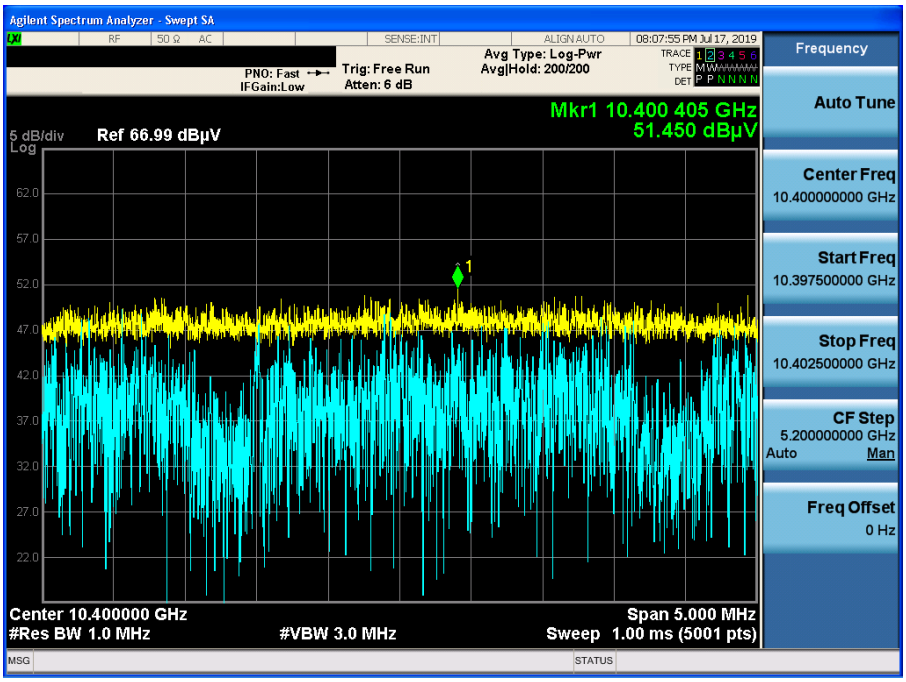
Unwanted Emissions (Radiated) Test Plot: MIMO(CDD)

802.11a & U-NII 1 & Ch.36 & Y axis & Ver **Detector Mode : PK**

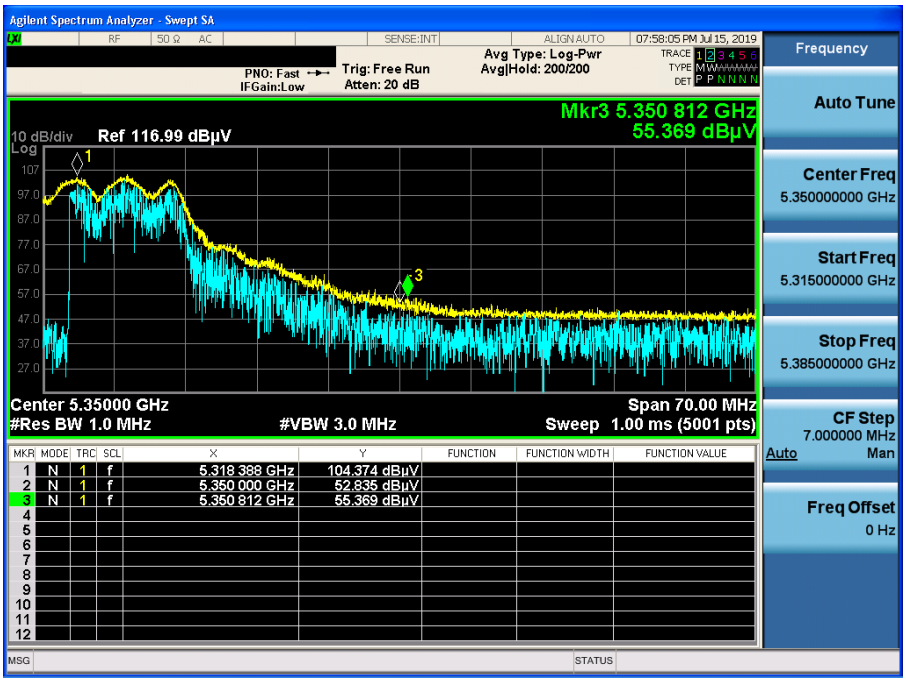


802.11a & U-NII 1 & Ch.36 & Y axis & Ver **Detector Mode : AV**

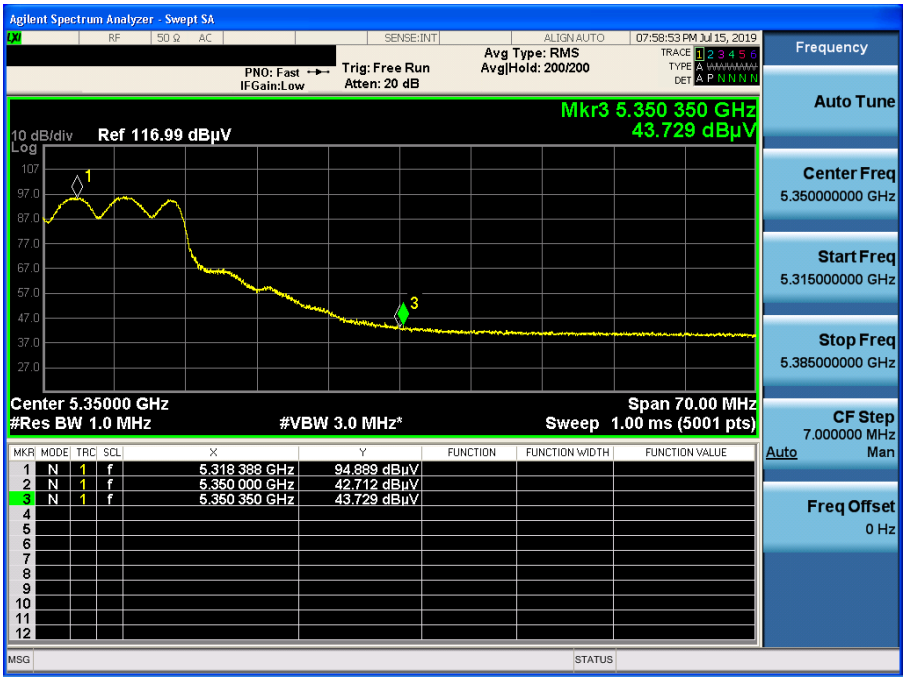
802.11a & U-NII 1 & Ch.40 & Y axis & Hor **Detector Mode : PK**



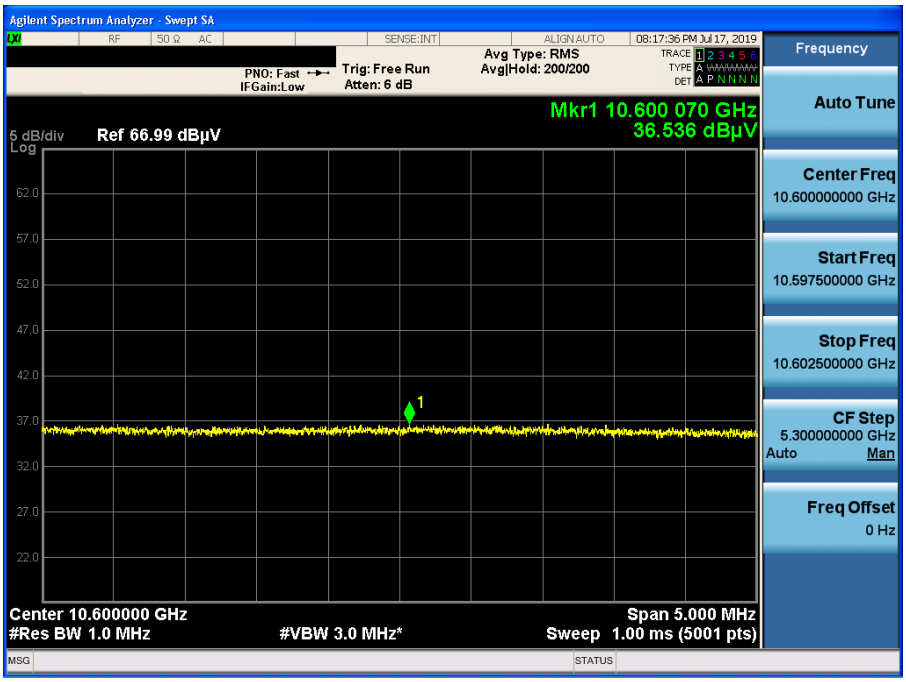
802.11a & U-NII 2A & Ch.64 & Y axis & Ver **Detector Mode : PK**



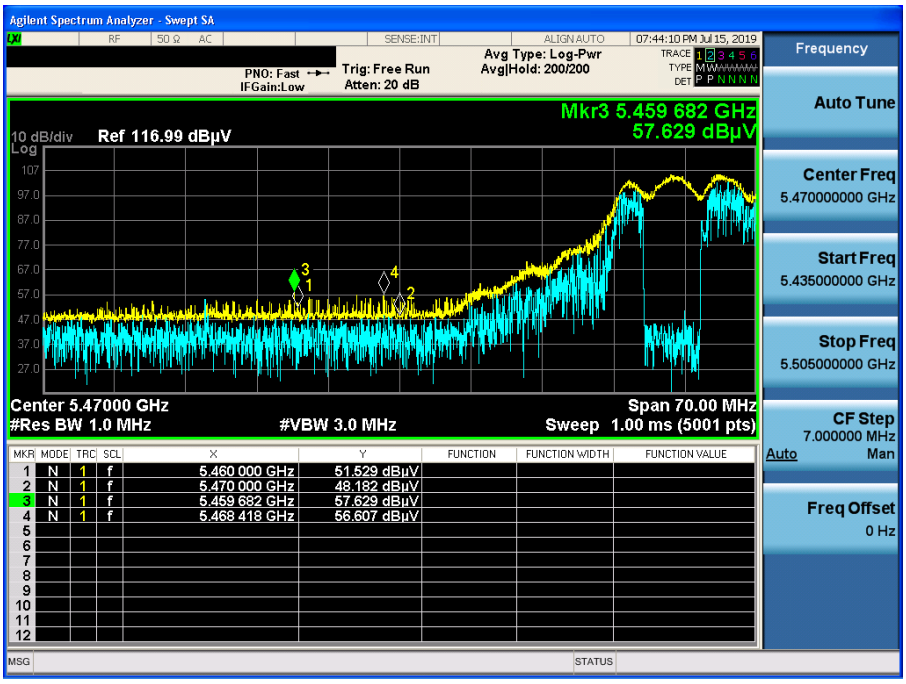
802.11a & U-NII 2A & Ch.64 & Y axis & Ver **Detector Mode : AV**



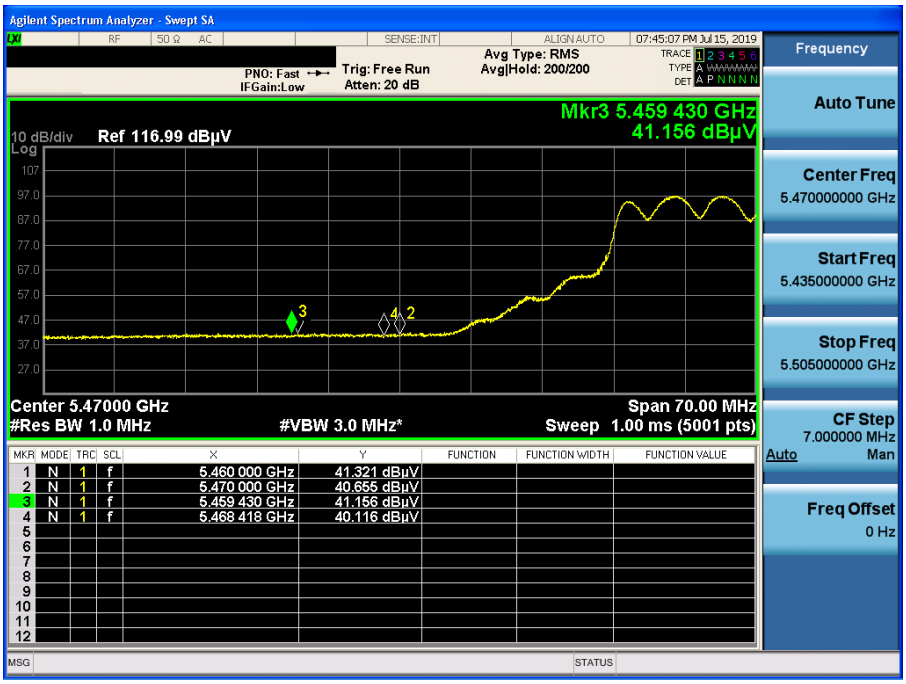
802.11a & U-NII 2A & Ch.60 & Y axis & Hor **Detector Mode : AV**



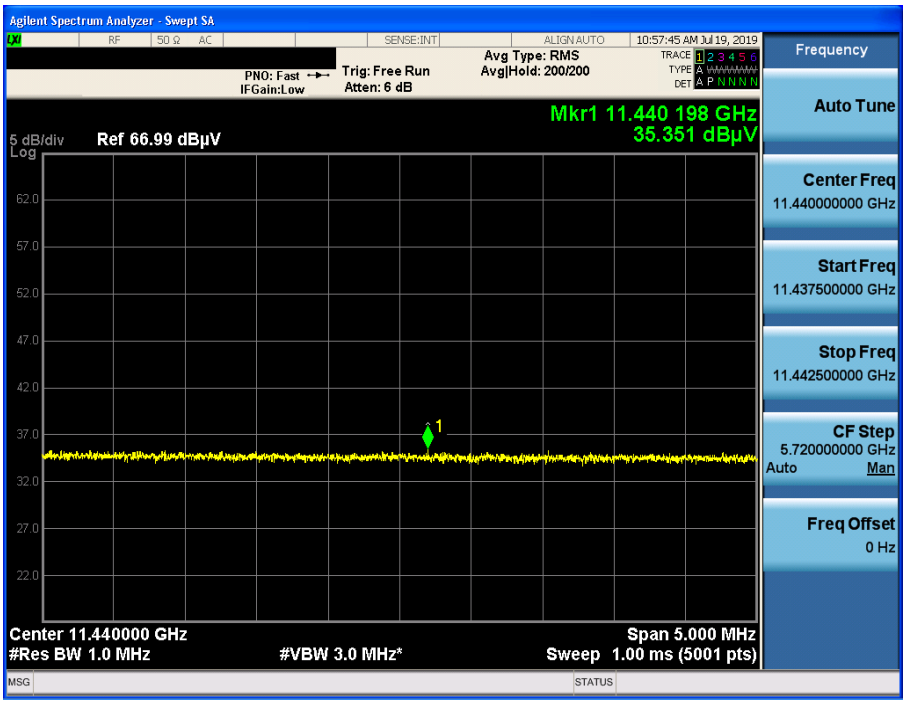
802.11a & U-NII 2C & Ch.100 & Y axis & Ver **Detector Mode : PK**



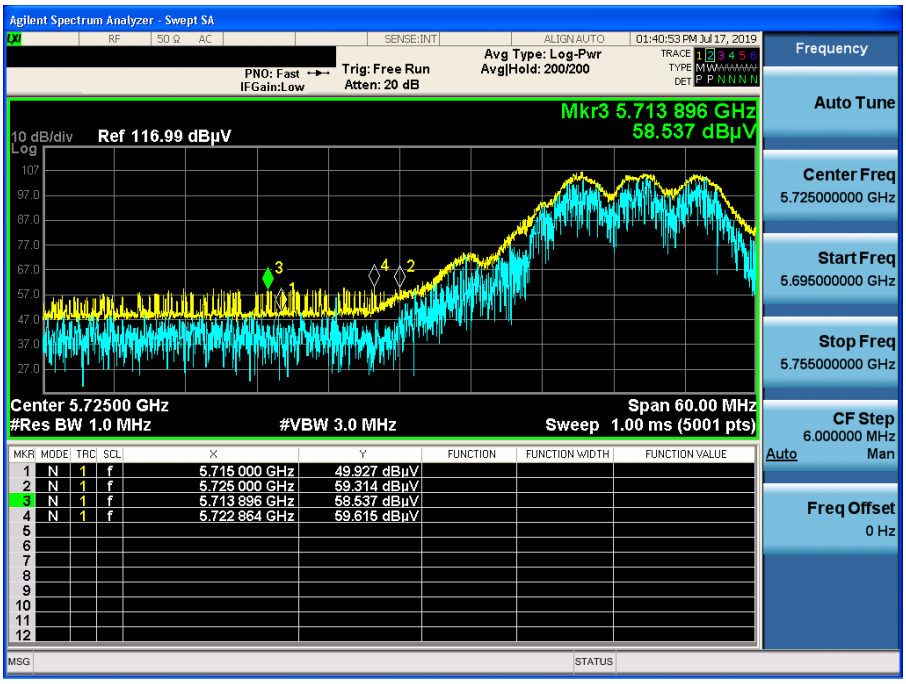
802.11a & U-NII 2C & Ch.100 & Y axis & Ver **Detector Mode : AV**



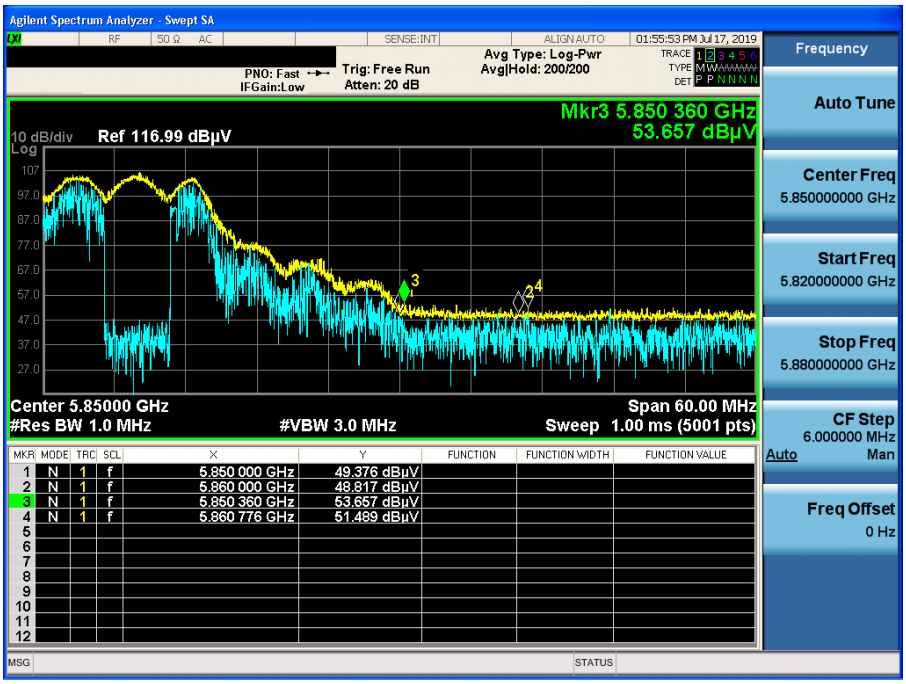
802.11a & U-NII 2C & Ch.144 & Y axis & Hor **Detector Mode : AV**



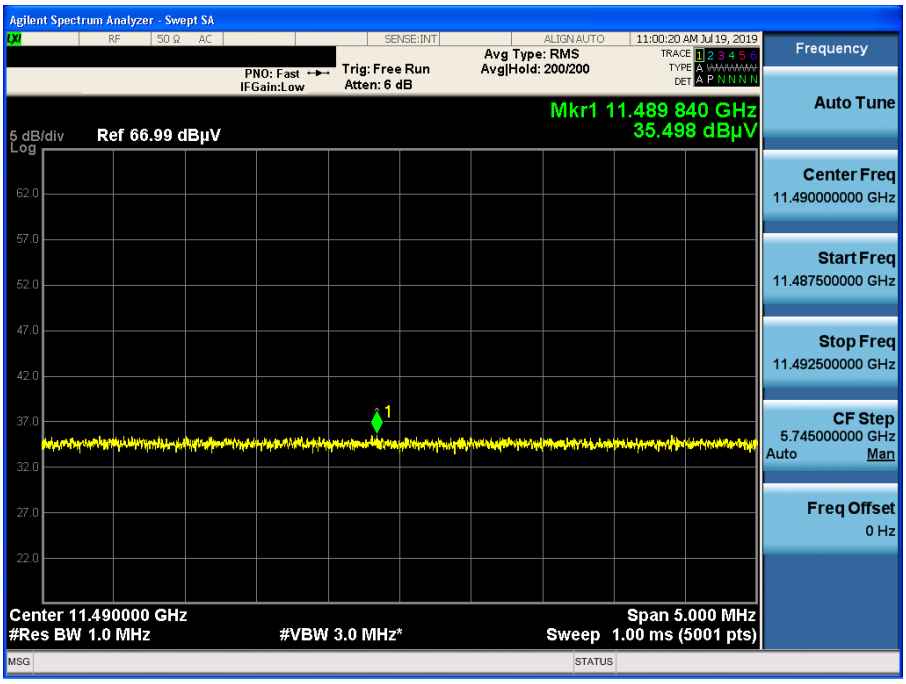
802.11a & U-NII 3 & Ch.149 & Y axis & Ver **Detector Mode : PK**



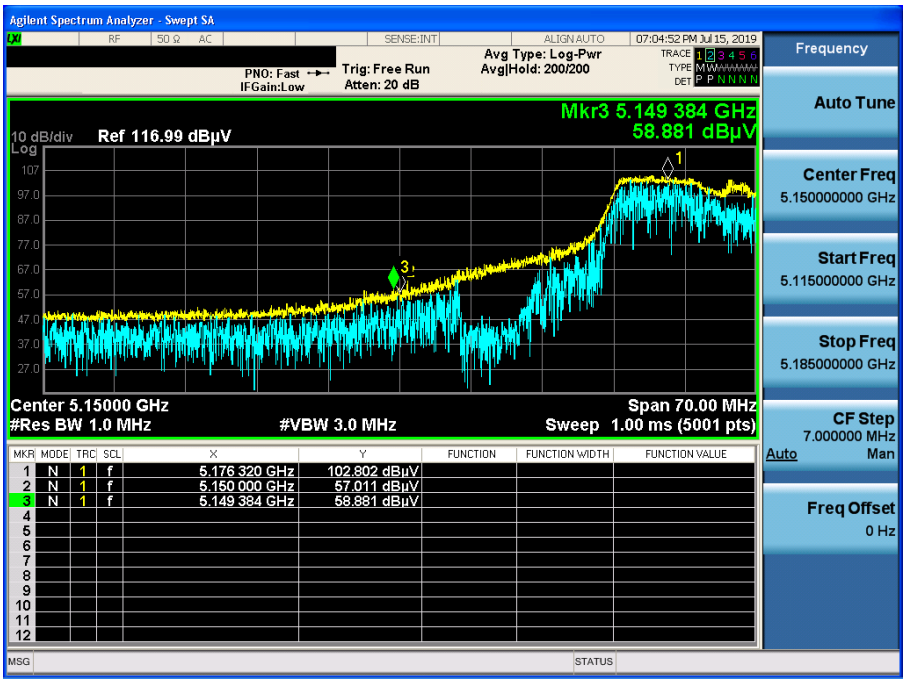
802.11a & U-NII 3 & Ch.165 & Y axis & Ver **Detector Mode : PK**



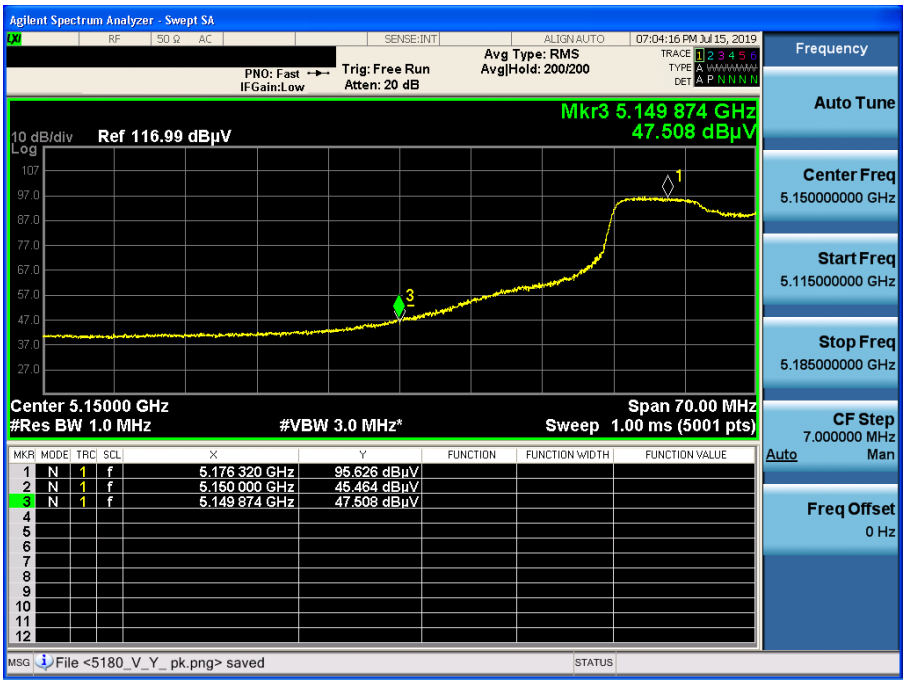
802.11a & U-NII 3 & Ch.149 & Y axis & Hor **Detector Mode : AV**



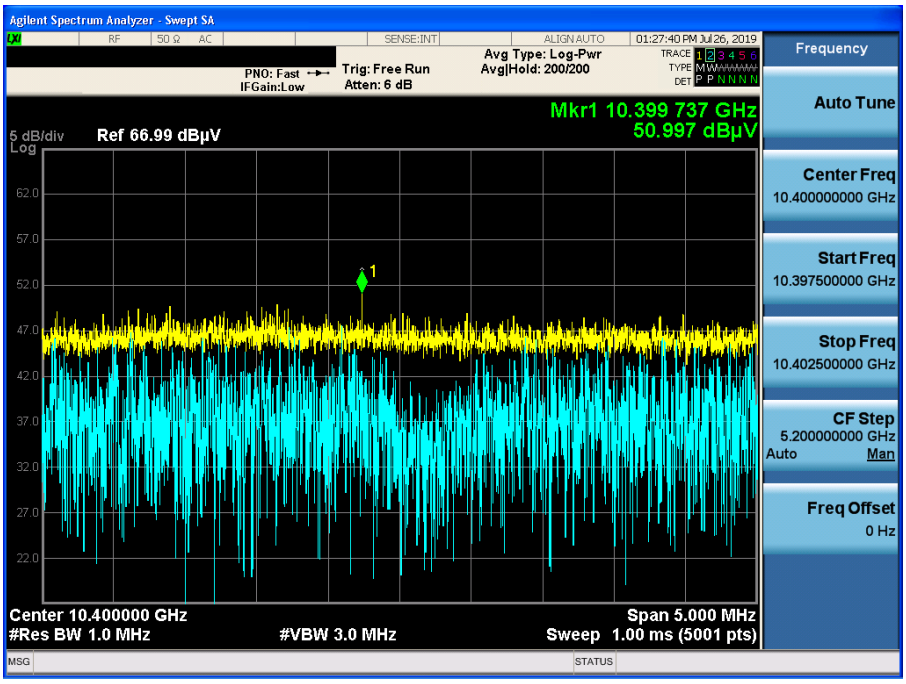
802.11ac(VHT20) & U-NII 1 & Ch.36 & Y axis & Ver Detector Mode : PK



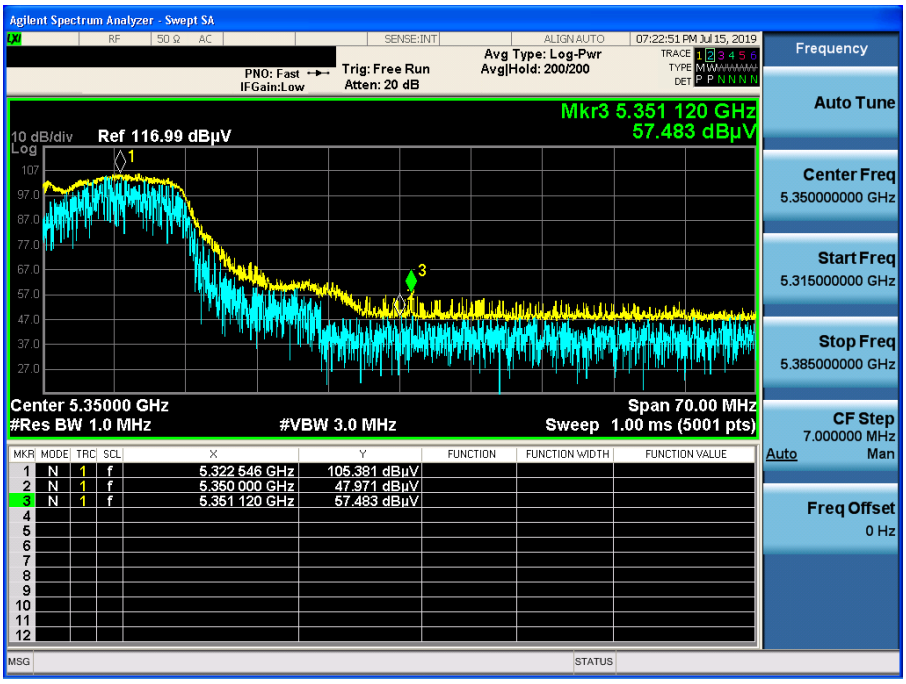
802.11ac(VHT20) & U-NII 1 & Ch.36 & Y axis & Ver Detector Mode : AV



802.11ac(VHT20) & U-NII 1 & Ch.40 & Y axis & Hor Detector Mode : PK



802.11ac(VHT20) & U-NII 2A & Ch.64 & Y axis & Ver Detector Mode : PK



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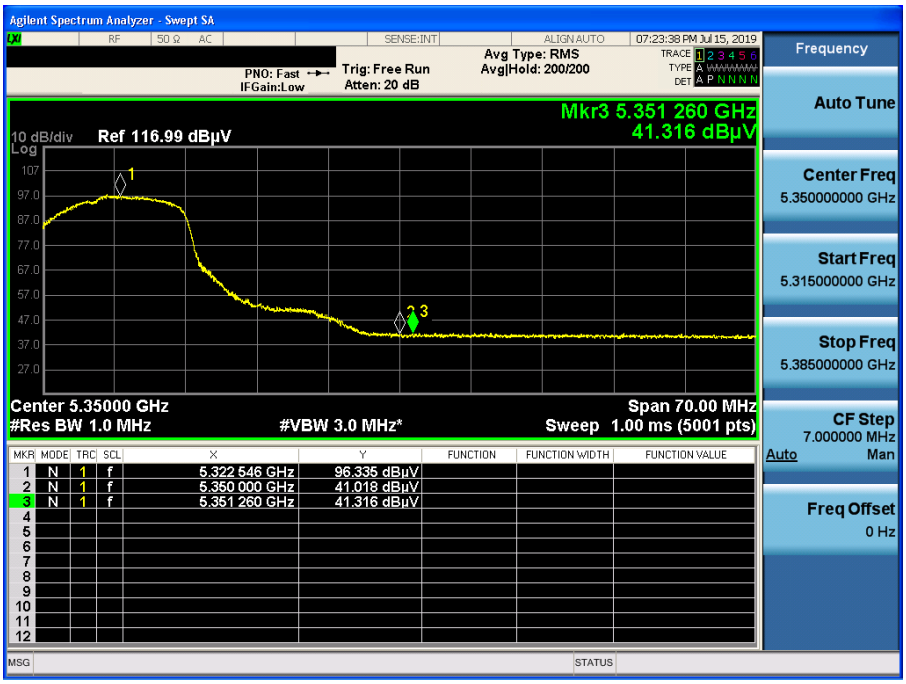
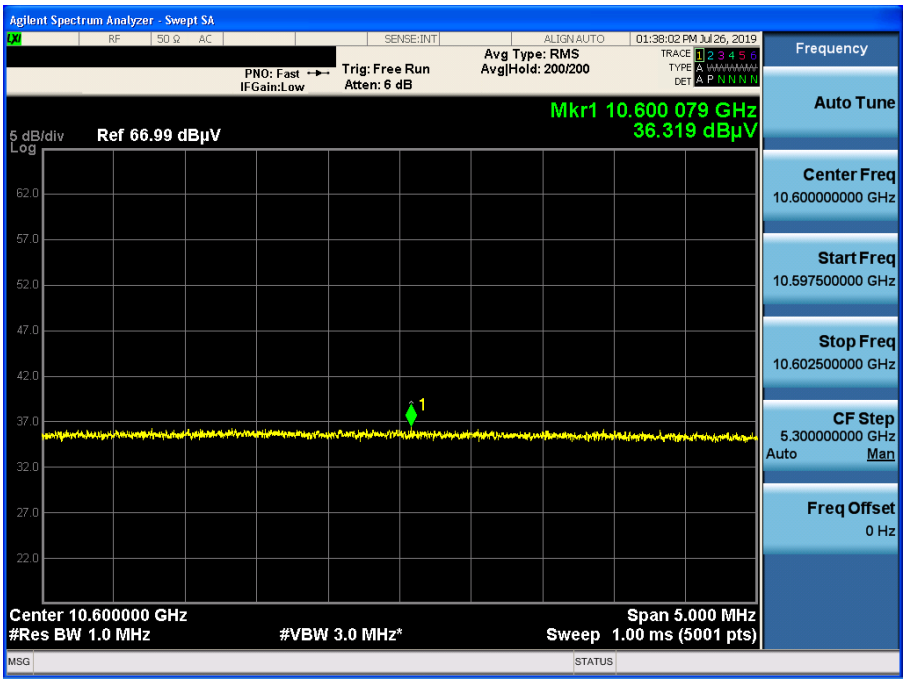
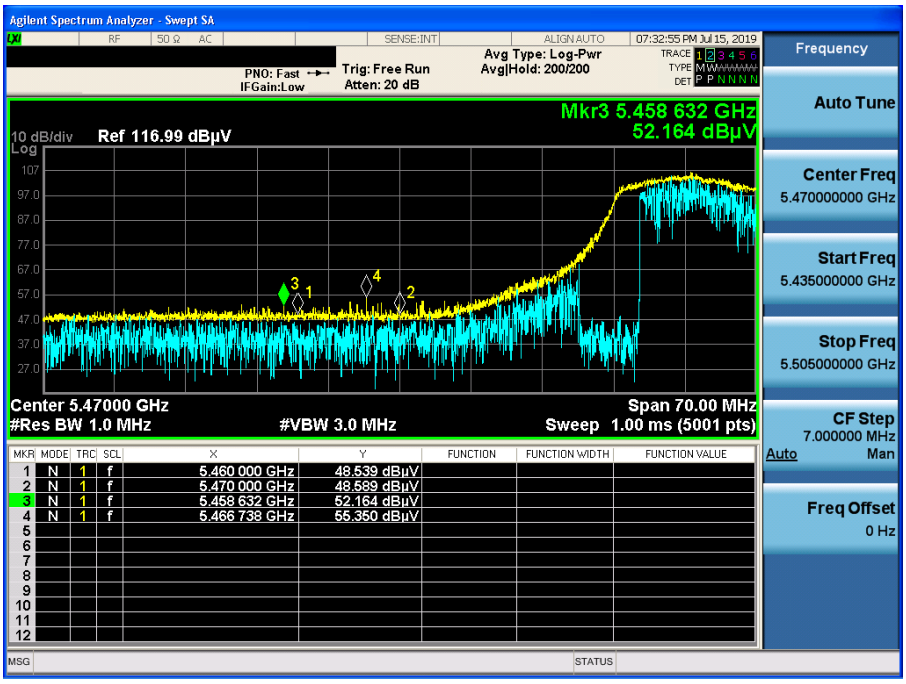


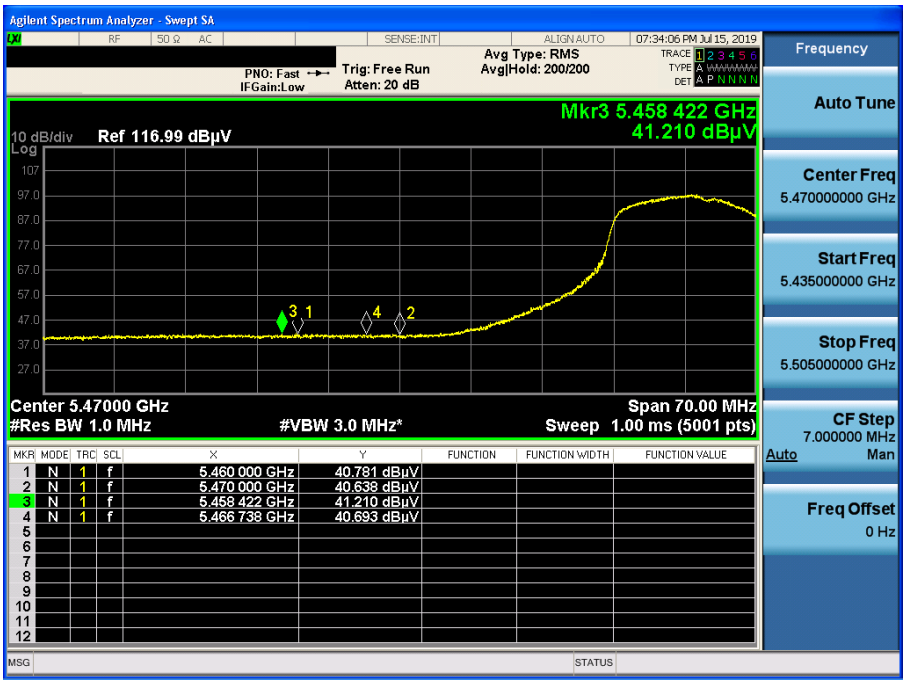
802.11ac(VHT20) & U-NII 2A & Ch.60 & Y axis & Hor Detector Mode : AV



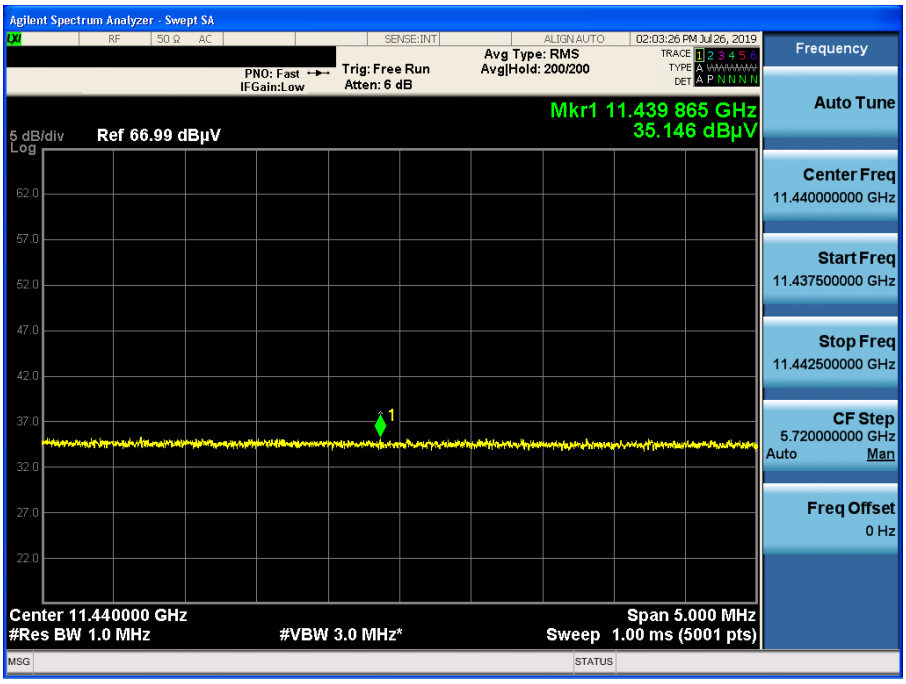
802.11ac(VHT20) & U-NII 2C & Ch.100 & Y axis & Ver Detector Mode : PK



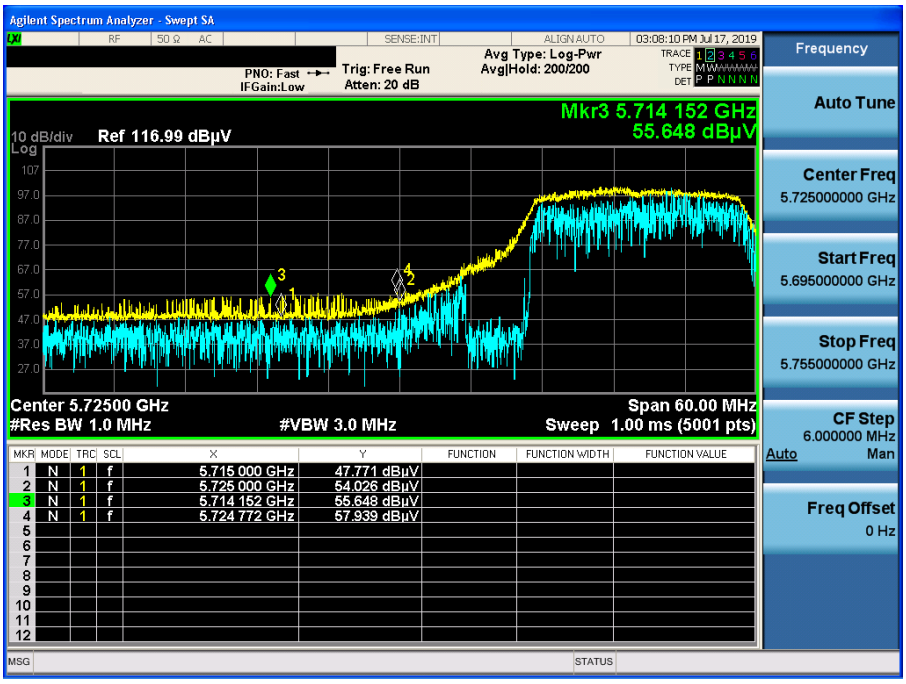
802.11ac(VHT20) & U-NII 2C & Ch.100 & Y axis & Ver Detector Mode : AV



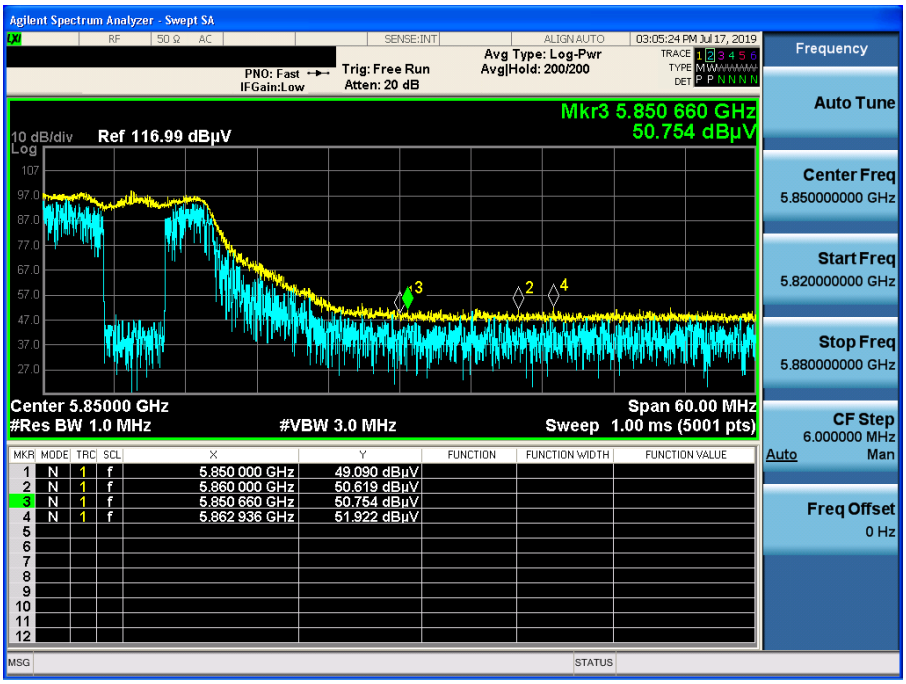
802.11ac(VHT20) & U-NII 2C & Ch.144 & Y axis & Hor Detector Mode : AV



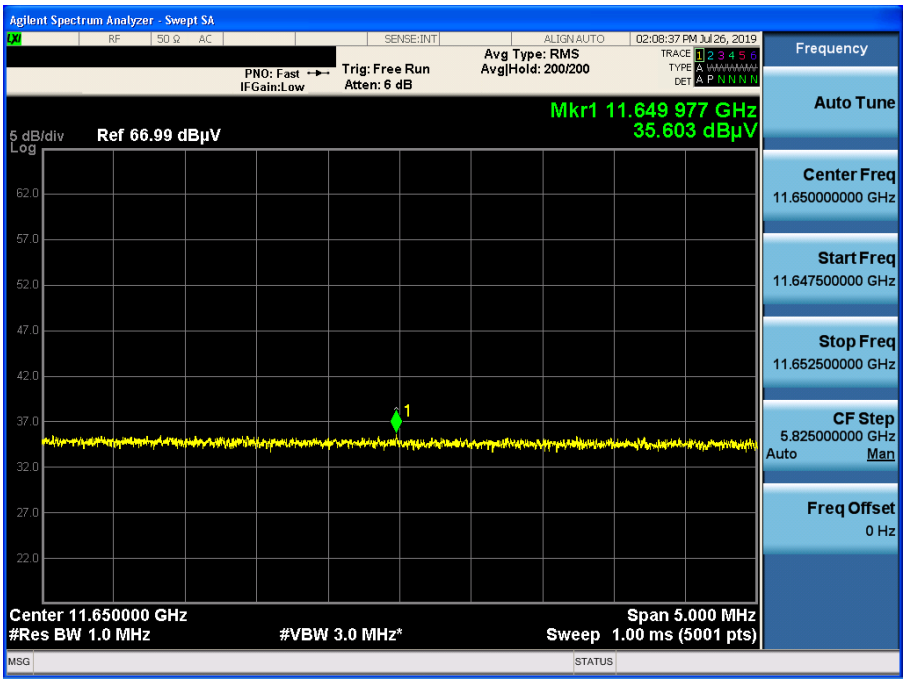
802.11ac(VHT20) & U-NII 3 & Ch.149 & Y axis & Ver Detector Mode : PK



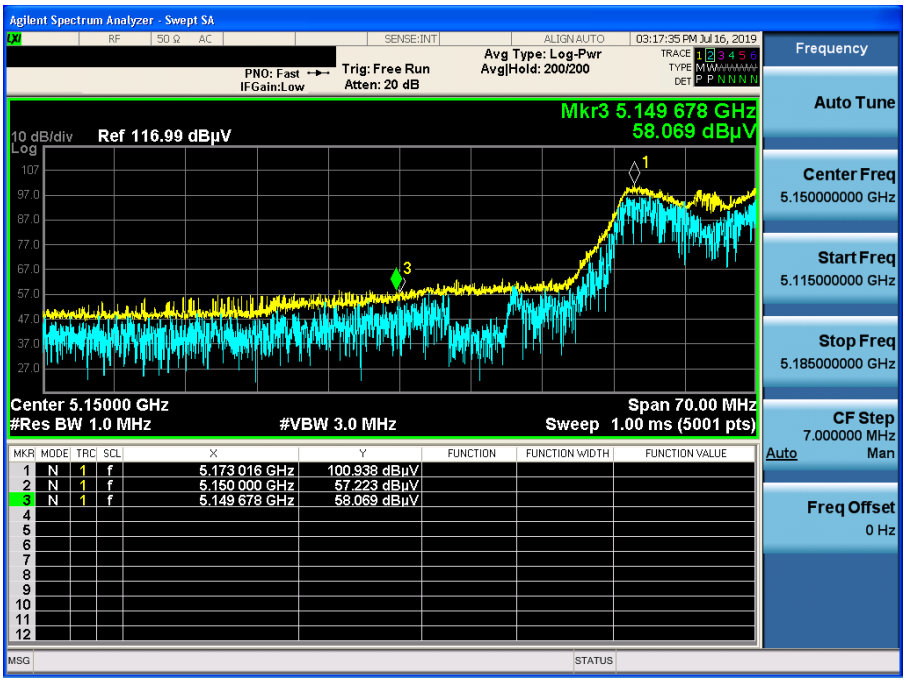
802.11ac(VHT20) & U-NII 3 & Ch.165 & Y axis & Ver Detector Mode : PK



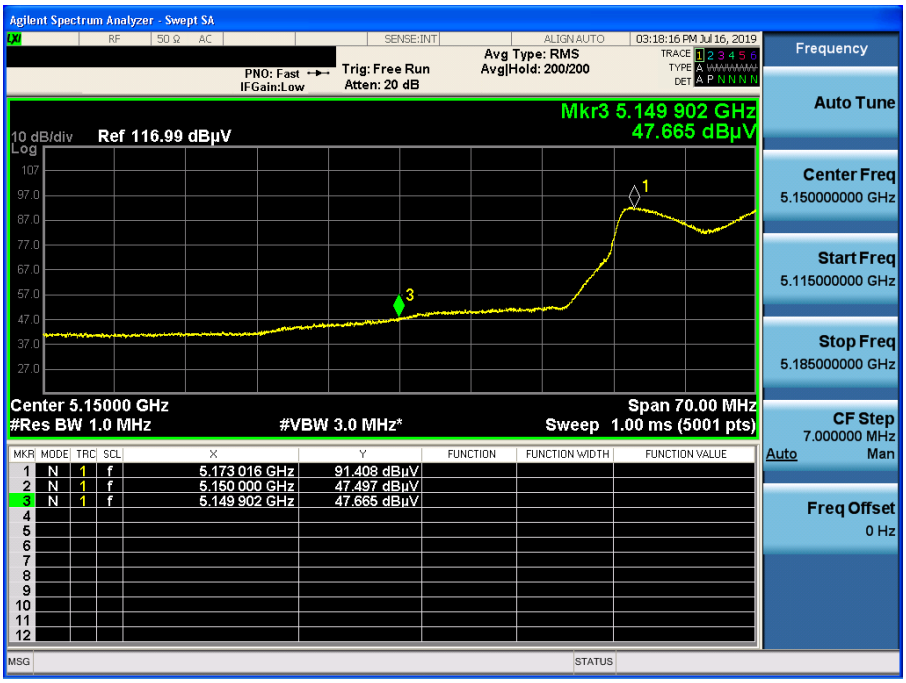
802.11ac(VHT20) & U-NII 3 & Ch.165 & Y axis & Hor Detector Mode : AV



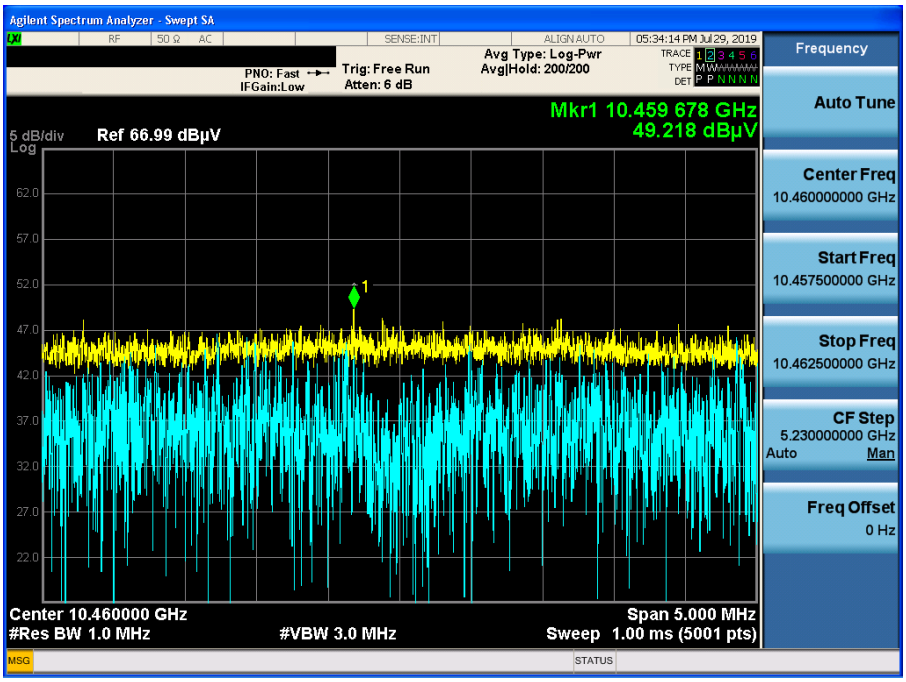
802.11ac(VHT40) & U-NII 1 & Ch.38 & Y axis & Ver Detector Mode : PK



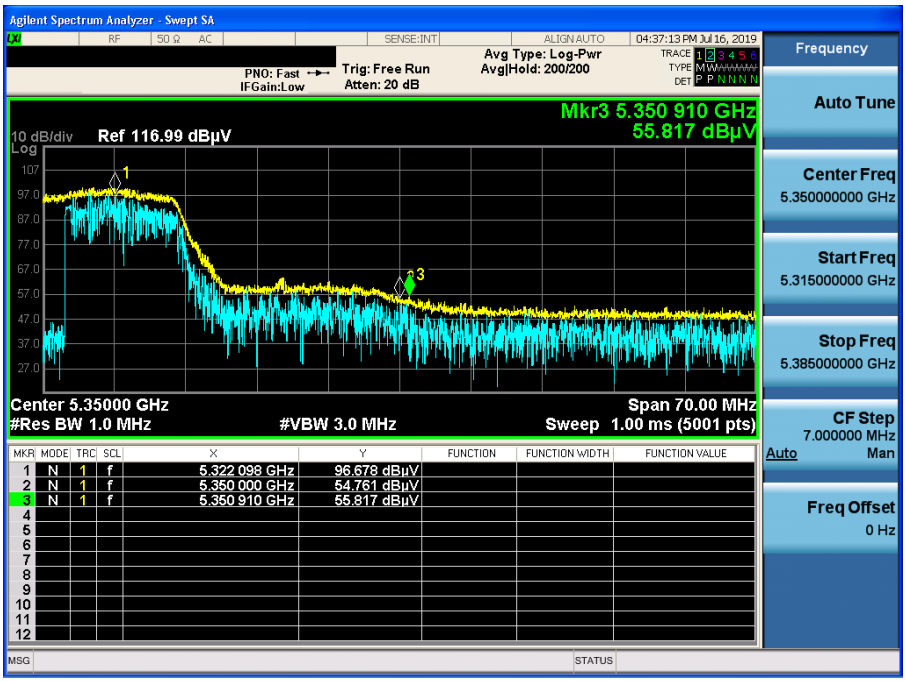
802.11ac(VHT40) & U-NII 1 & Ch.38 & Y axis & Ver Detector Mode : AV



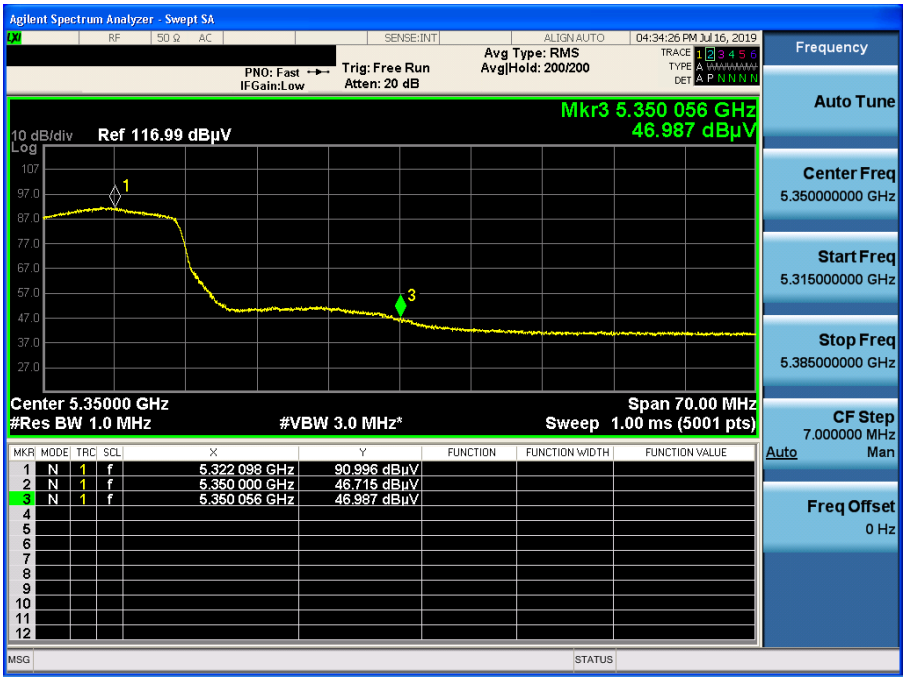
802.11ac(VHT40) & U-NII 1 & Ch.46 & Y axis & Hor Detector Mode : PK



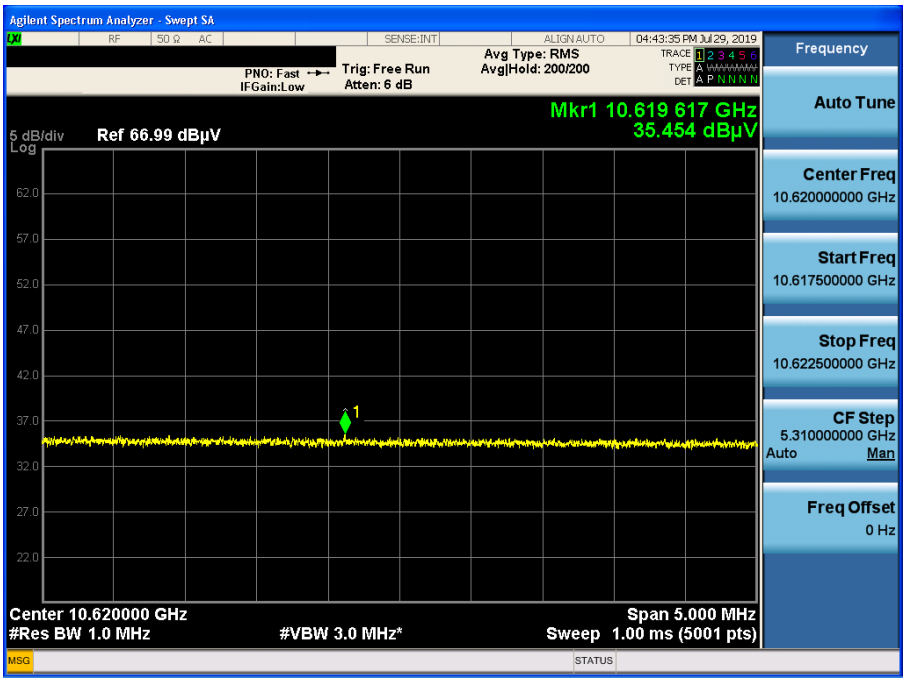
802.11ac(VHT40) & U-NII 2A & Ch.62 & Y axis & Ver Detector Mode : PK



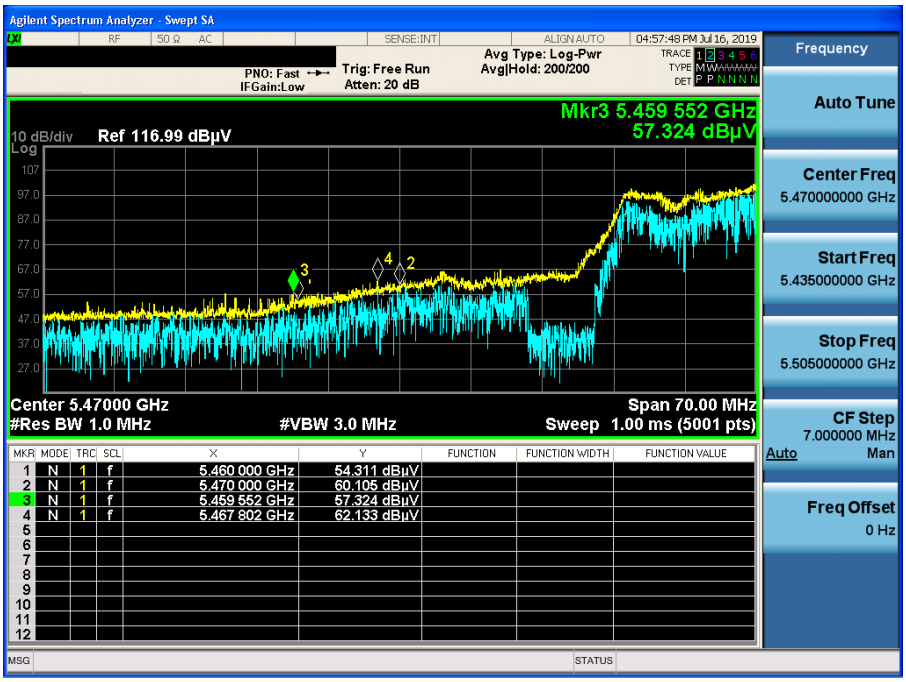
802.11ac(VHT40) & U-NII 2A & Ch.62 & Y axis & Ver Detector Mode : AV



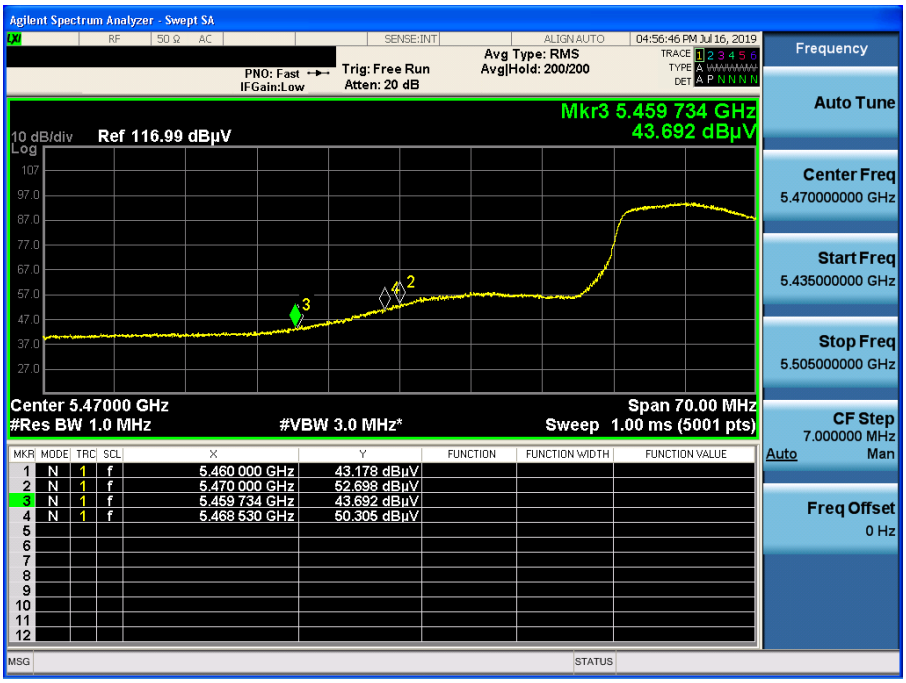
802.11ac(VHT40) & U-NII 2A & Ch.62 & Y axis & Hor Detector Mode : AV



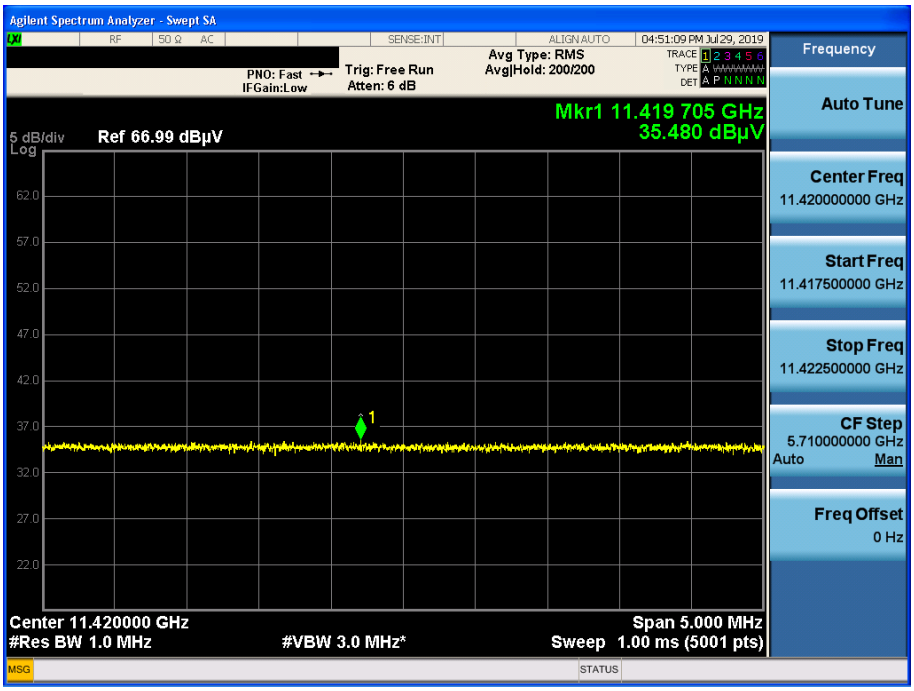
802.11ac(VHT40) & U-NII 2C & Ch.102 & Y axis & Ver Detector Mode : PK



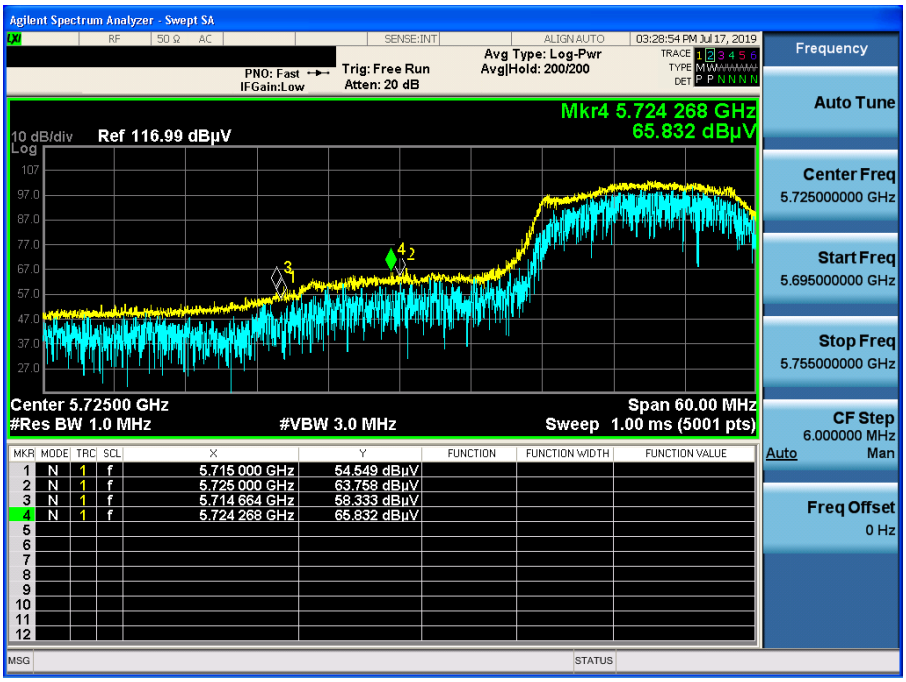
802.11ac(VHT40) & U-NII 2C & Ch.102 & Y axis & Ver Detector Mode : AV



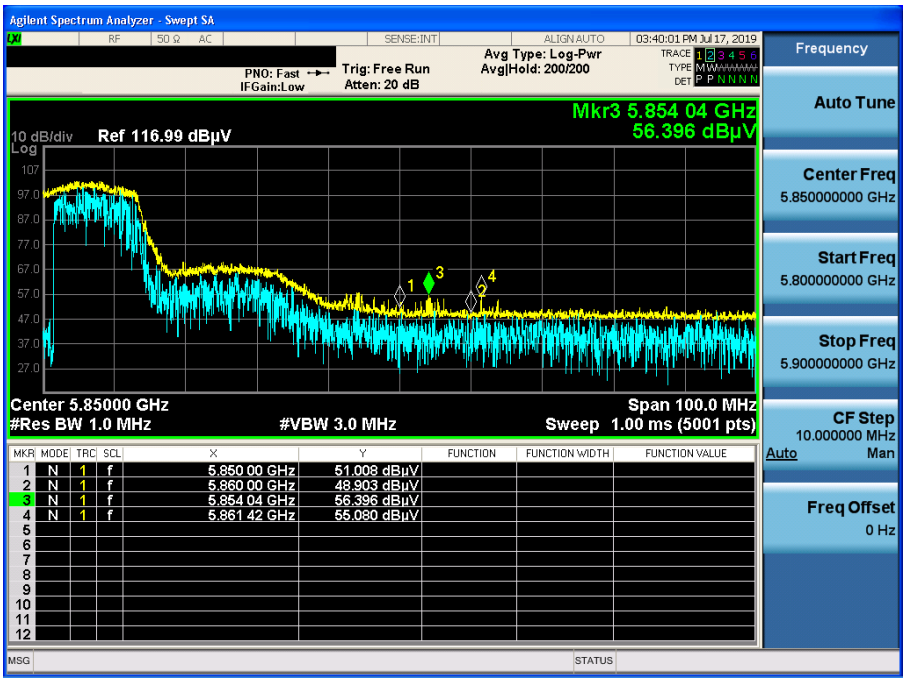
802.11ac(VHT40) & U-NII 2C & Ch.142 & Y axis & Hor Detector Mode : AV



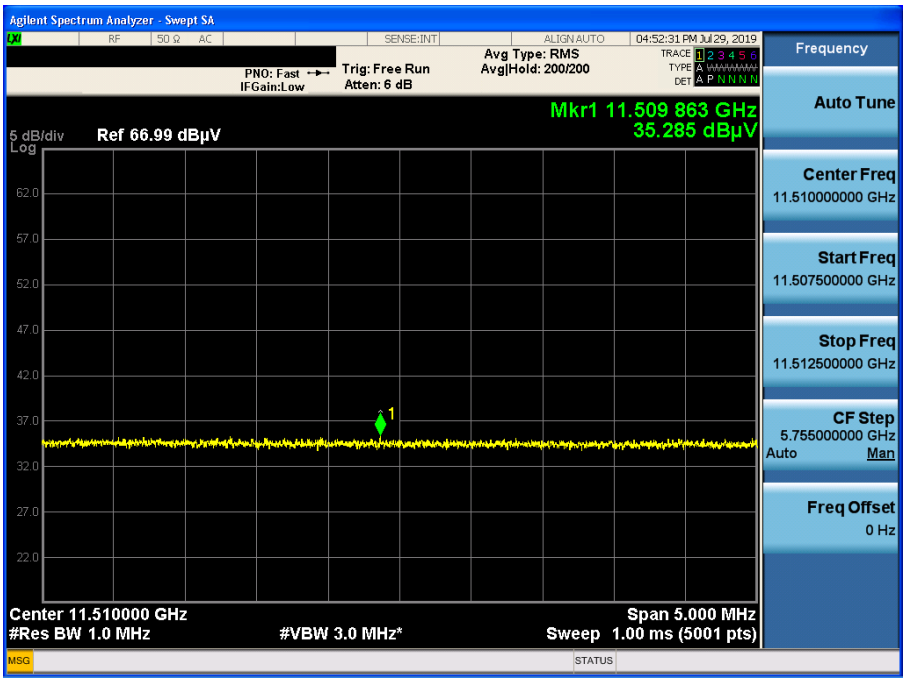
802.11ac(VHT40) & U-NII 3 & Ch.151 & Y axis & Ver Detector Mode : PK



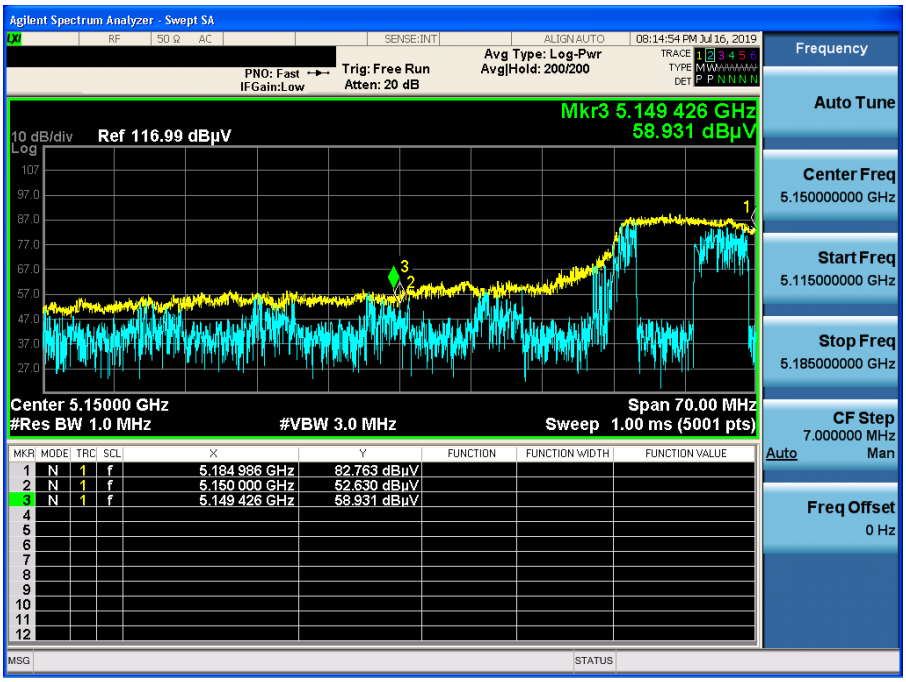
802.11ac(VHT40) & U-NII 3 & Ch.159 & Y axis & Ver Detector Mode : PK



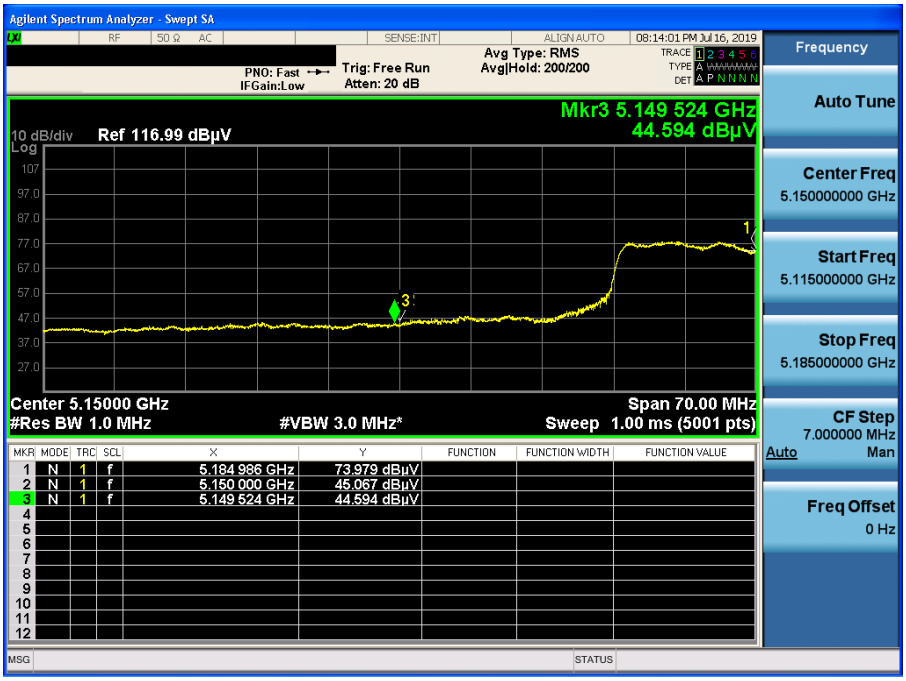
802.11ac(VHT40) & U-NII 3 & Ch.151 & Y axis & Hor Detector Mode : AV



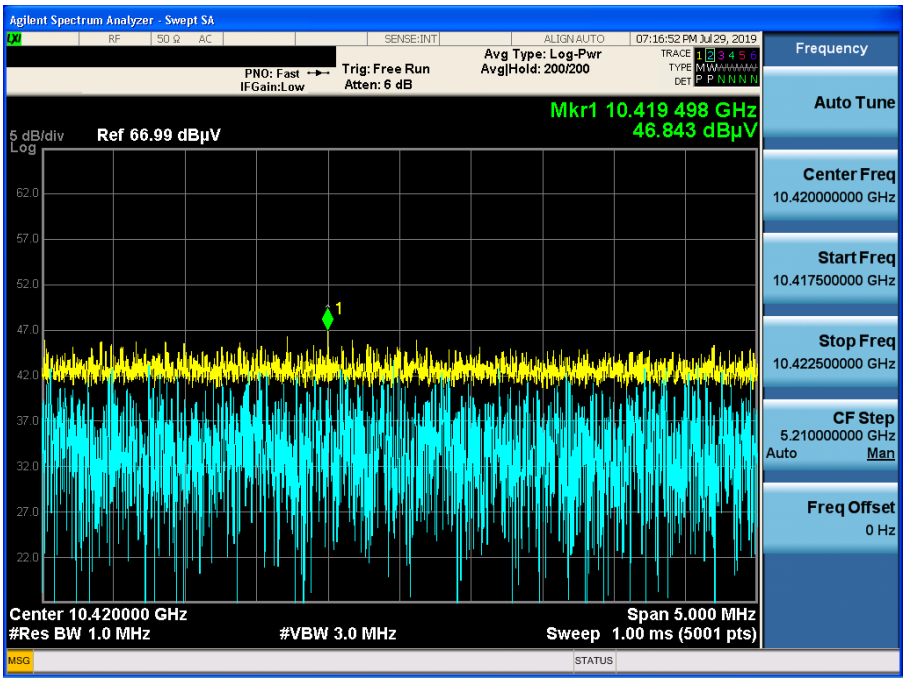
802.11ac(VHT80) & U-NII 1 & Ch.42 & Z axis & Hor **Detector Mode : PK**



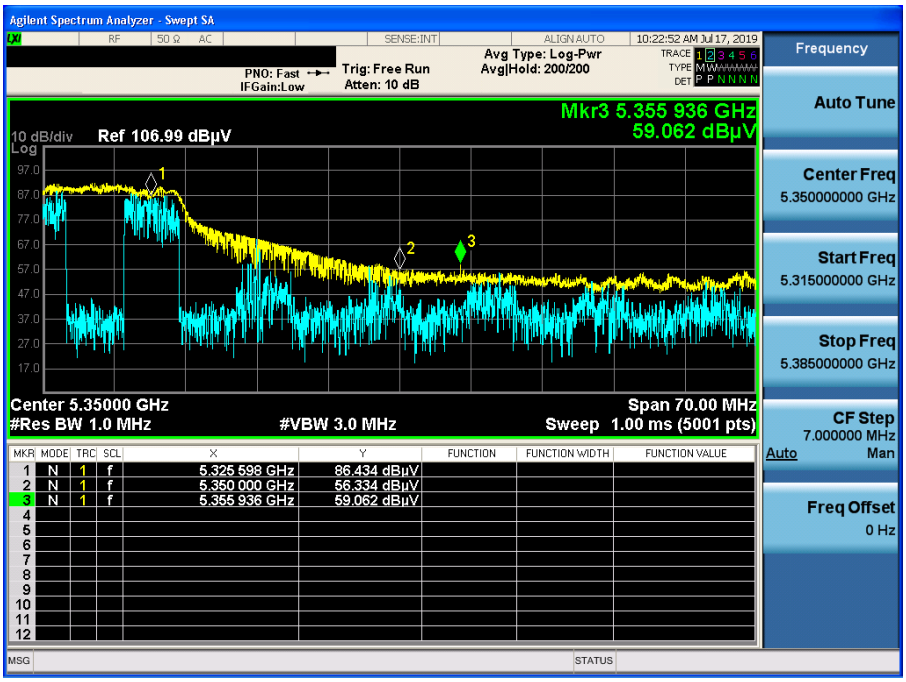
802.11ac(VHT80) & U-NII 1 & Ch.42 & Z axis & Hor **Detector Mode : AV**



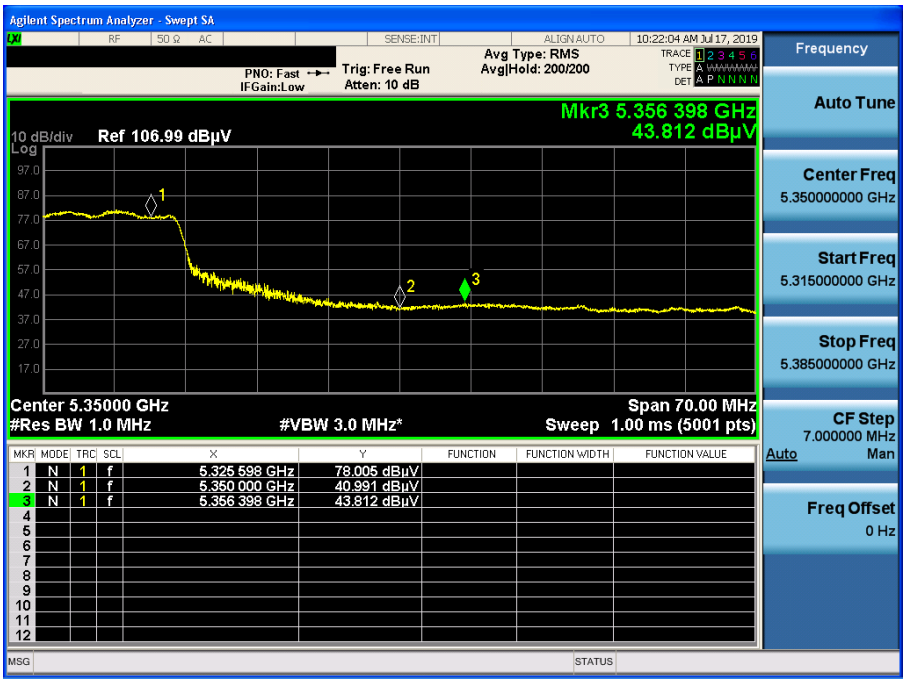
802.11ac(VHT80) & U-NII 1 & Ch.42 & Y axis & Hor Detector Mode : PK



802.11ac(VHT80) & U-NII 3 & Ch.58 & Z axis & Hor Detector Mode : PK



802.11ac(VHT80) & U-NII 3 & Ch.58 & Z axis & Hor Detector Mode : PK



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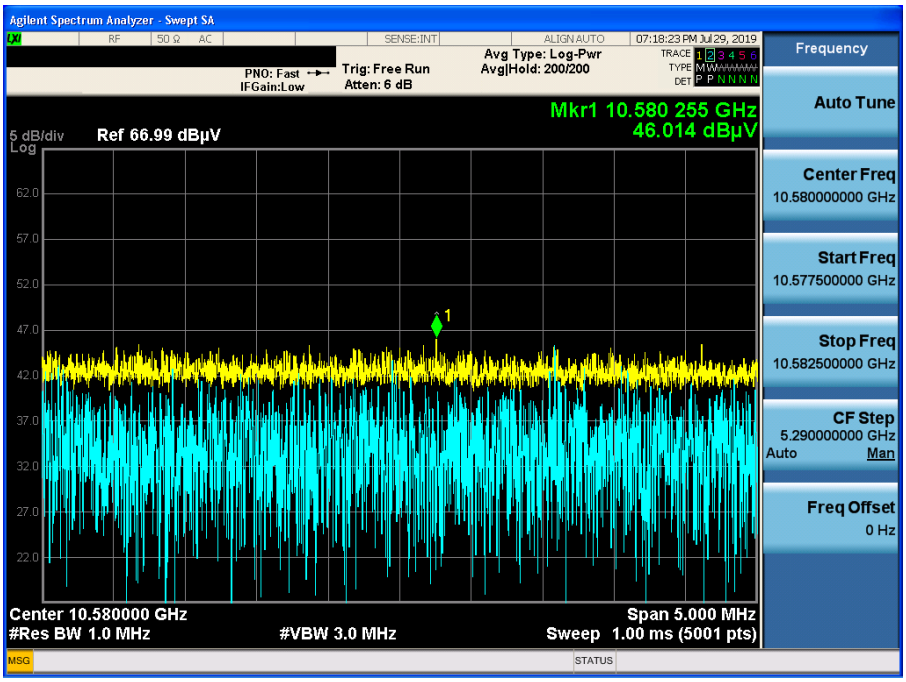
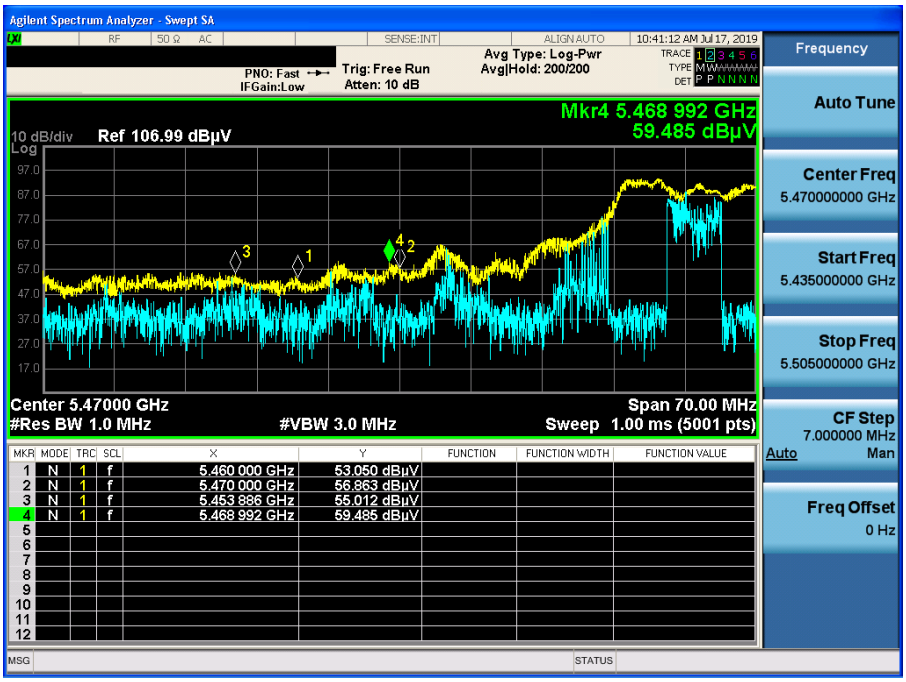
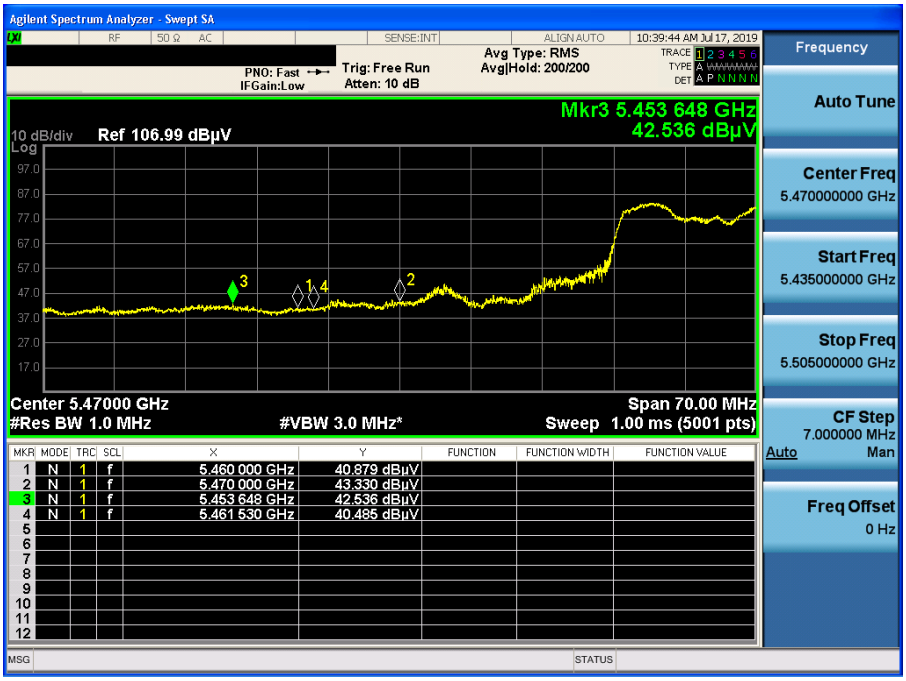


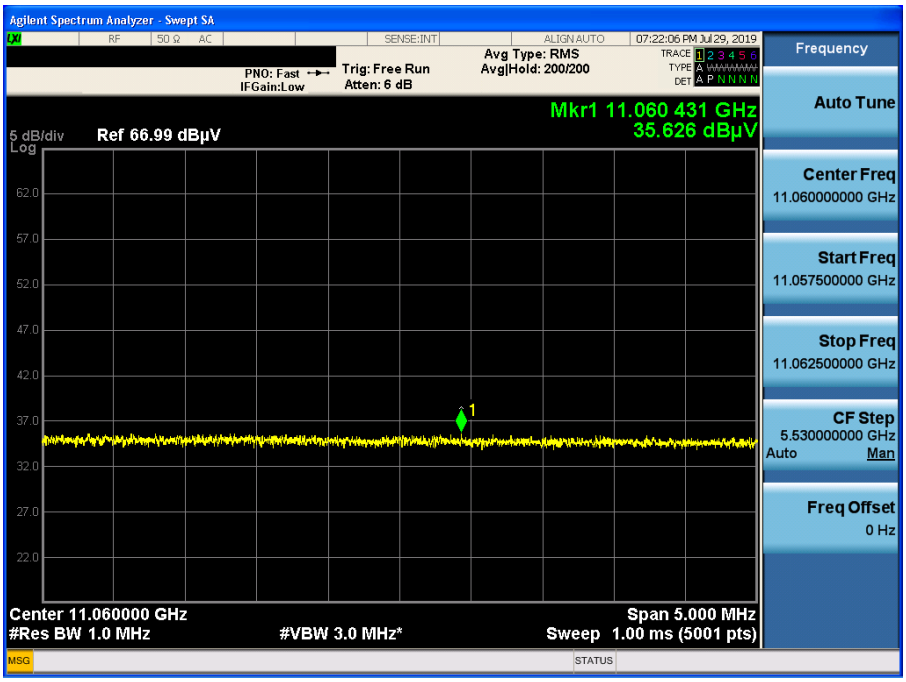
802.11ac(VHT80) & U-NII 2A & Ch.106 & Z axis & Hor Detector Mode : PK



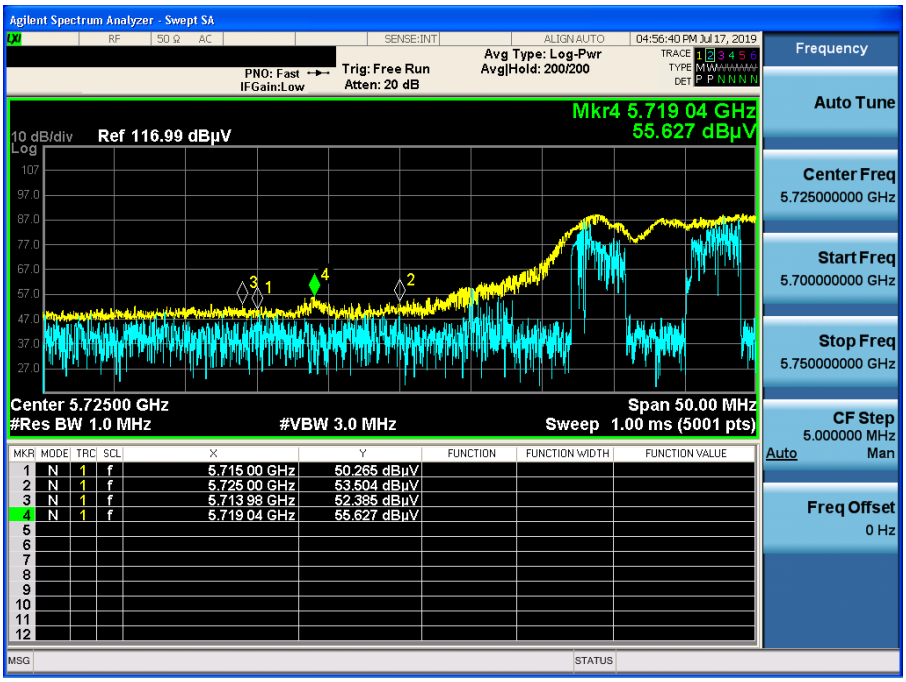
802.11ac(VHT80) & U-NII 2A & Ch.106 & Z axis & Hor Detector Mode : AV



802.11ac(VHT80) & U-NII 2A & Ch.106 & Y axis & Hor Detector Mode : AV



802.11ac(VHT80) & U-NII 2C & Ch.155 & Z axis & Hor Detector Mode : PK



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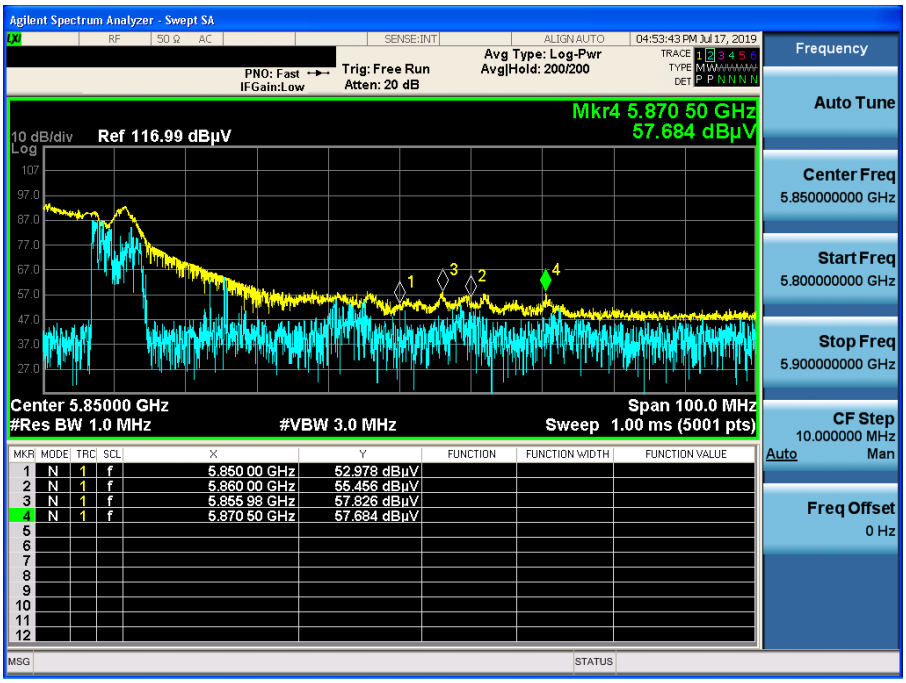
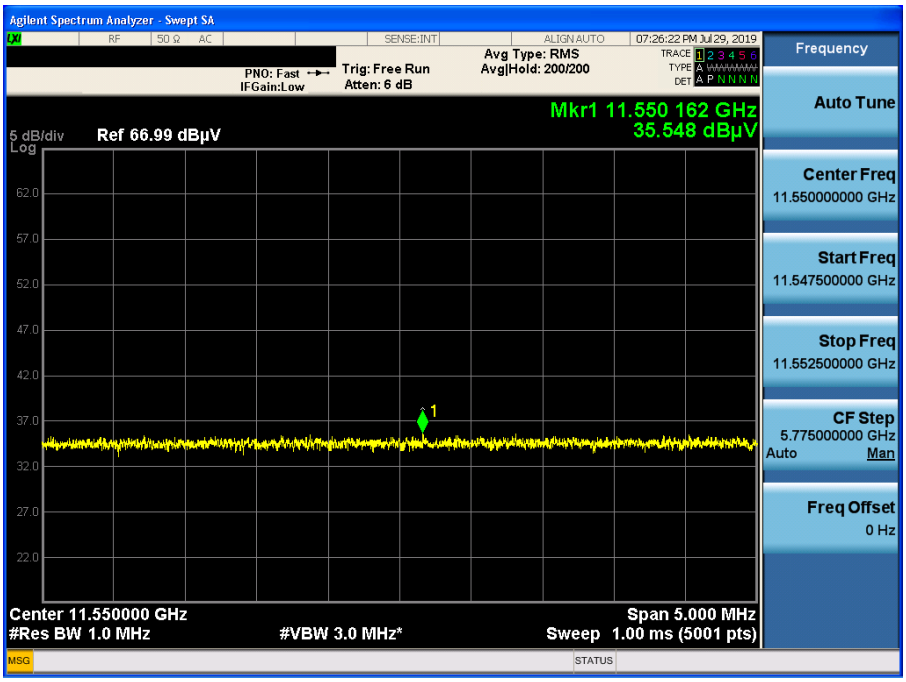
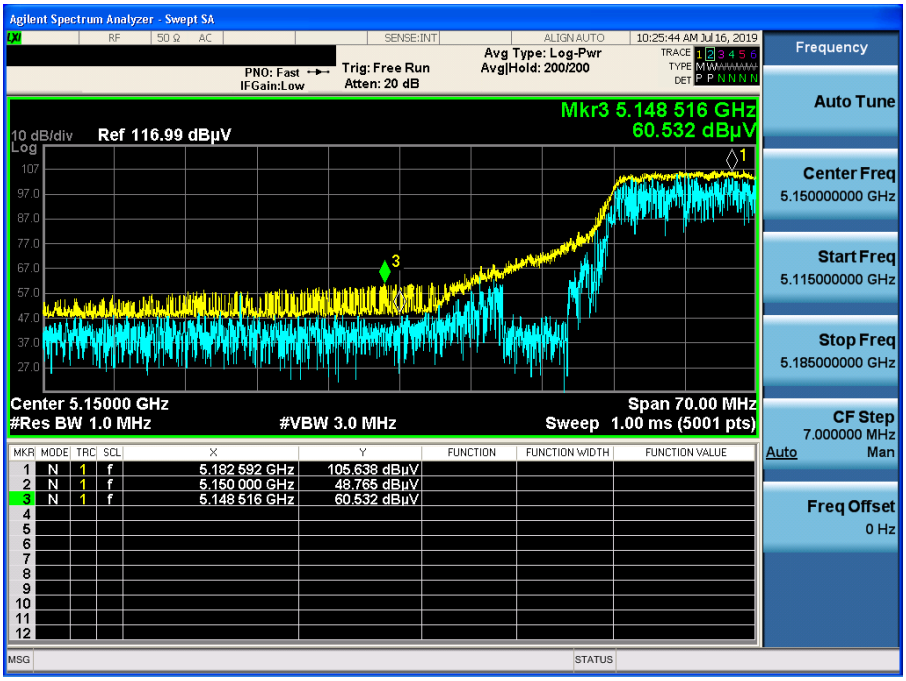


802.11ac(VHT80) & U-NII 2C & Ch.155 & Y axis & Hor Detector Mode : AV

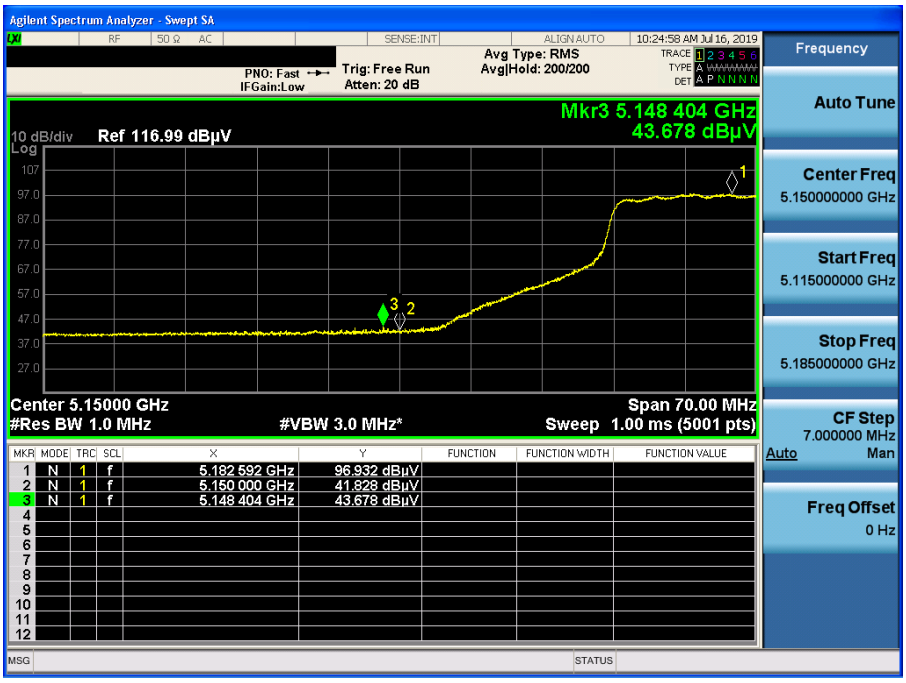


Unwanted Emissions (Radiated) Test Plot : SDM

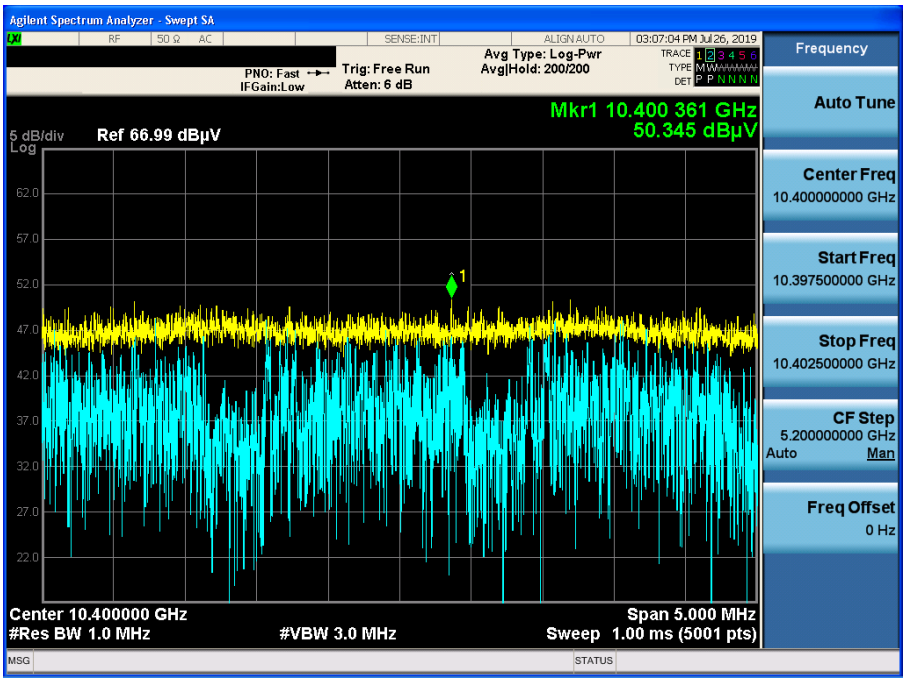
802.11ac(VHT20) & U-NII 1 & Ch.36 & Z axis & Ver Detector Mode : PK



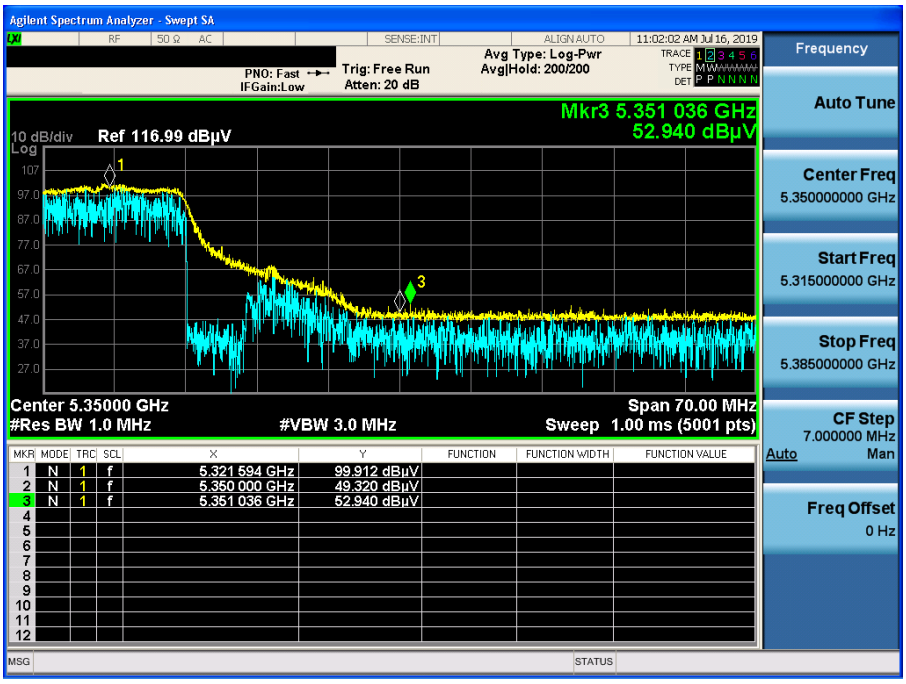
802.11ac(VHT20) & U-NII 1 & Ch.36 & Z axis & Ver Detector Mode : AV



802.11ac(VHT20) & U-NII 1 & Ch.40 & Y axis & Hor Detector Mode : PK



802.11ac(VHT20) & U-NII 2A & Ch.64 & Z axis & Ver Detector Mode : PK



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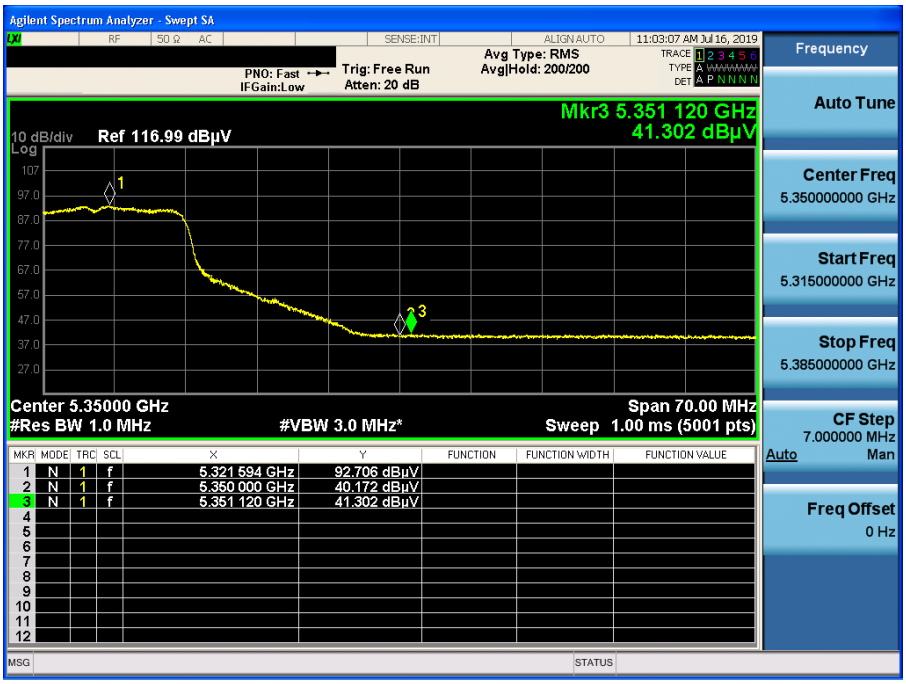
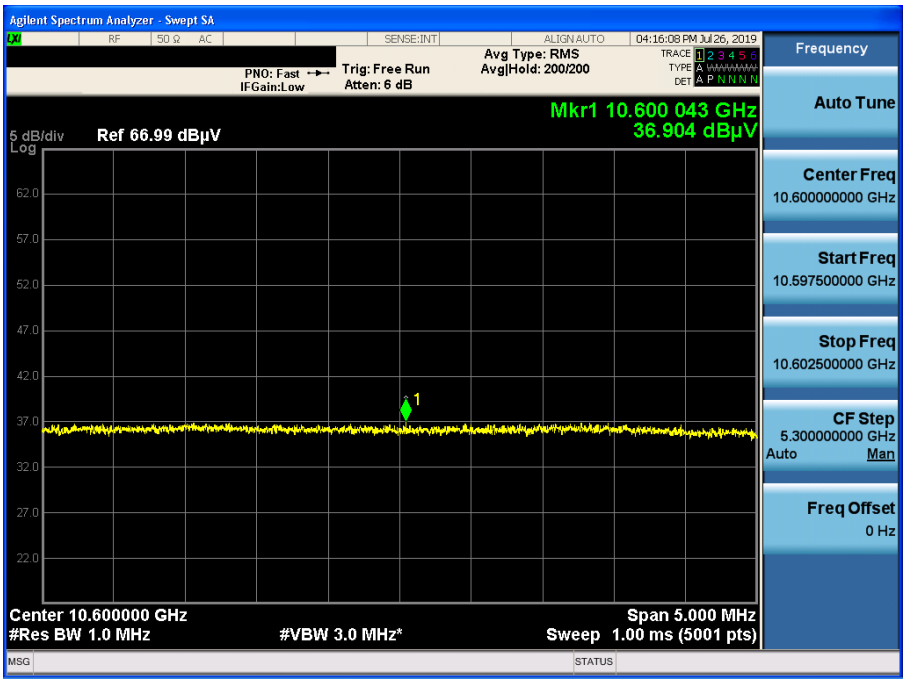
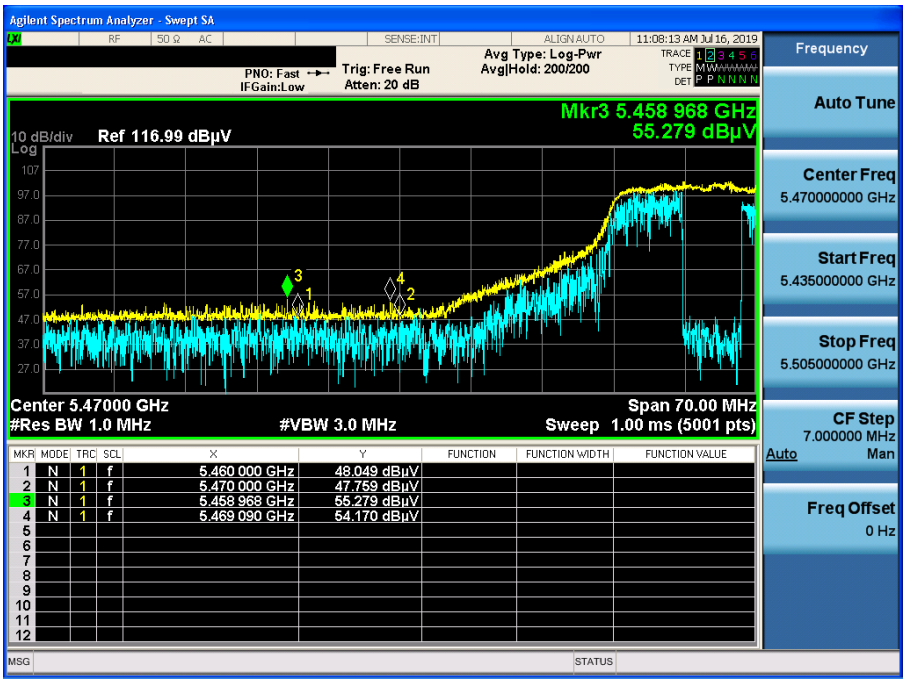


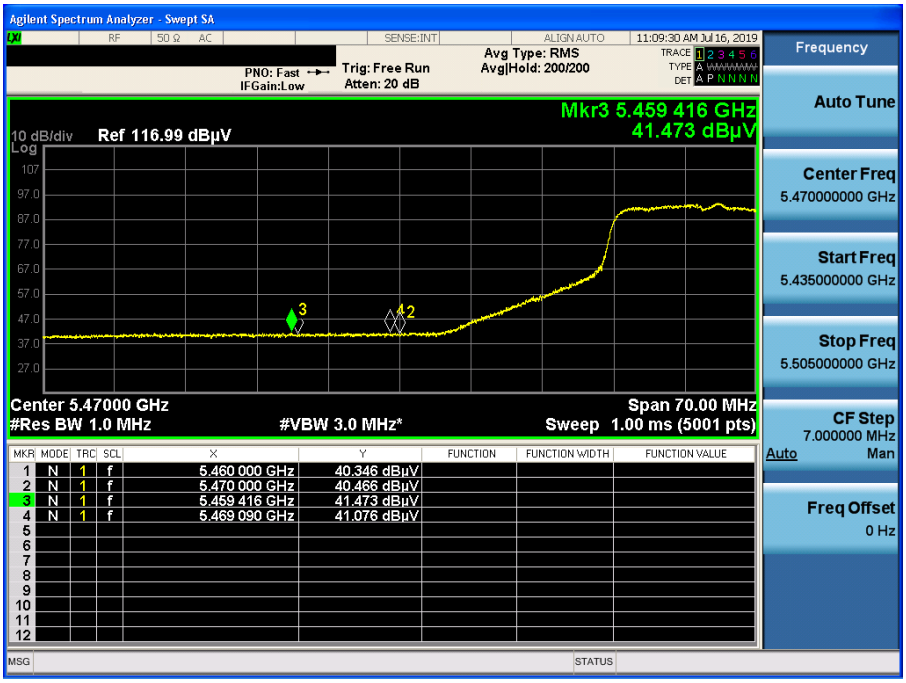
802.11ac(VHT20) & U-NII 2A & Ch.60 & Y axis & Hor Detector Mode : AV



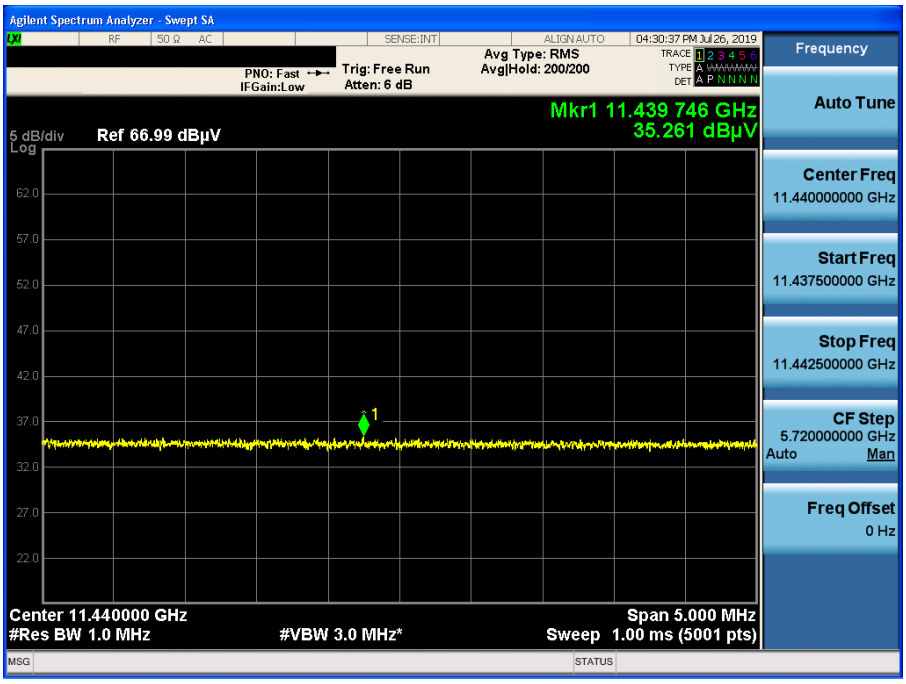
802.11ac(VHT20) & U-NII 2C & Ch.100 & Z axis & Ver **Detector Mode : PK**



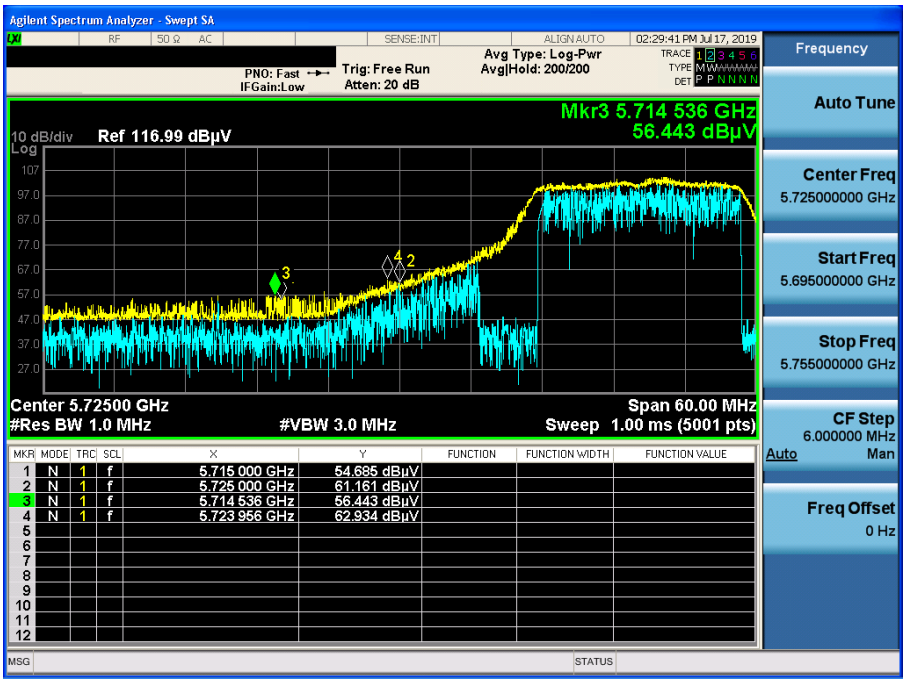
802.11ac(VHT20) & U-NII 2C & Ch.100 & Z axis & Ver **Detector Mode : AV**



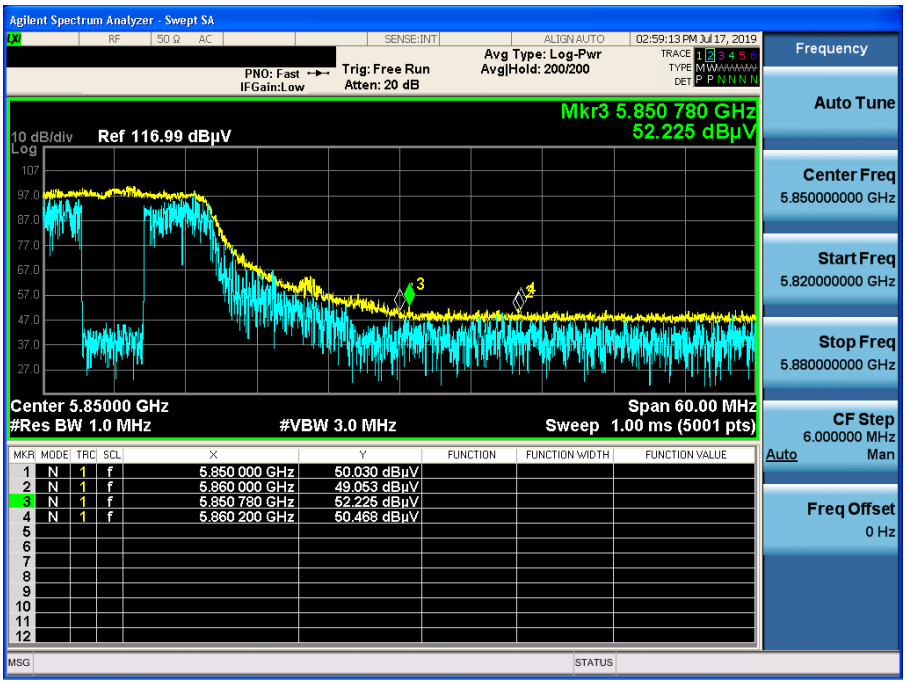
802.11ac(VHT20) & U-NII 2C & Ch.144 & Y axis & Hor Detector Mode : AV



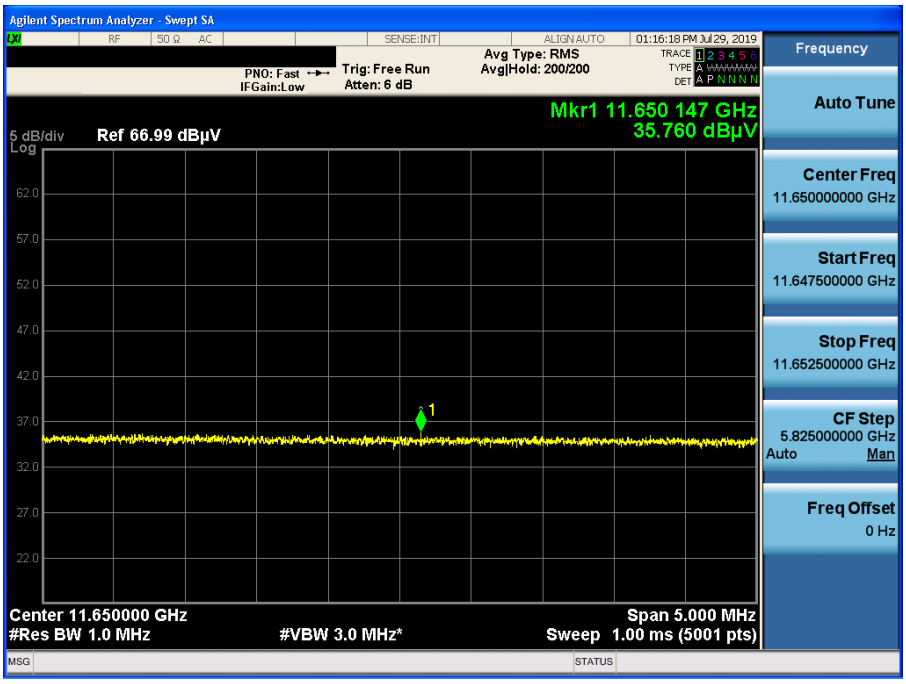
802.11ac(VHT20) & U-NII 3 & Ch.149 & Y axis & Ver Detector Mode : PK



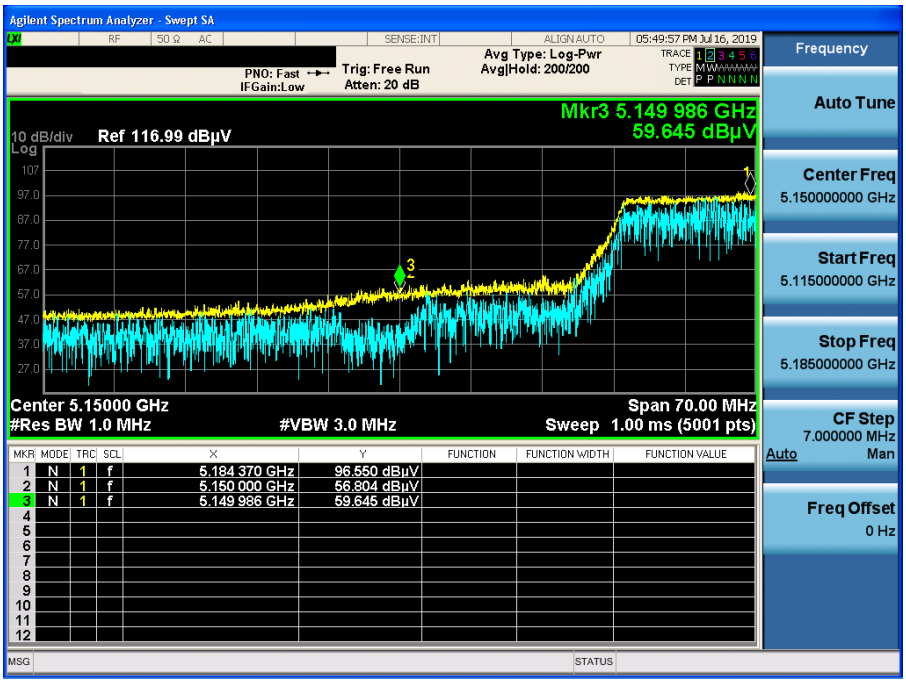
802.11ac(VHT20) & U-NII 3 & Ch.165 & Z axis & Ver Detector Mode : PK



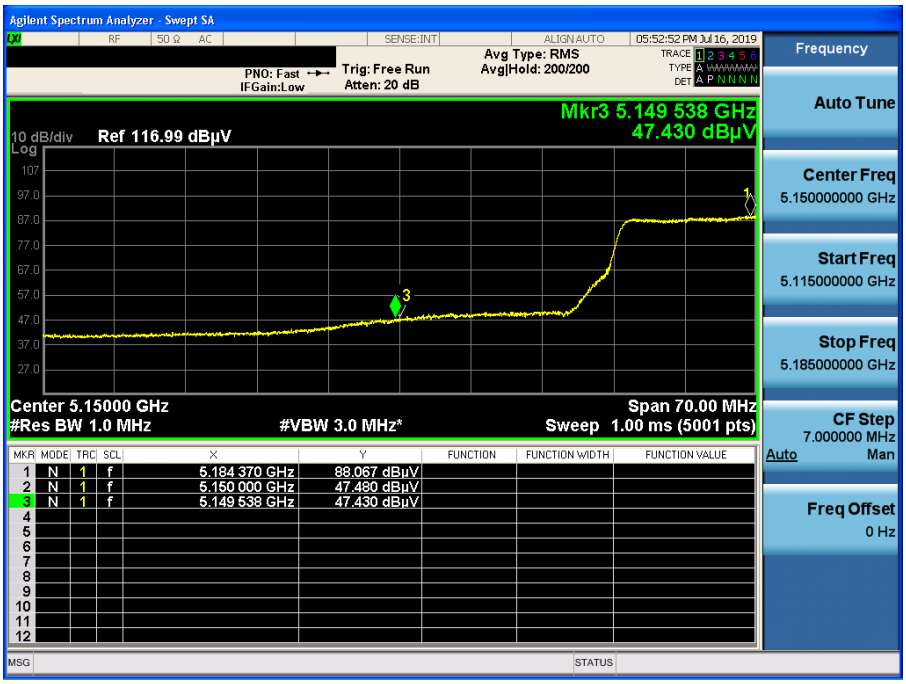
802.11ac(VHT20) & U-NII 3 & Ch.165 & Y axis & Hor Detector Mode : AV



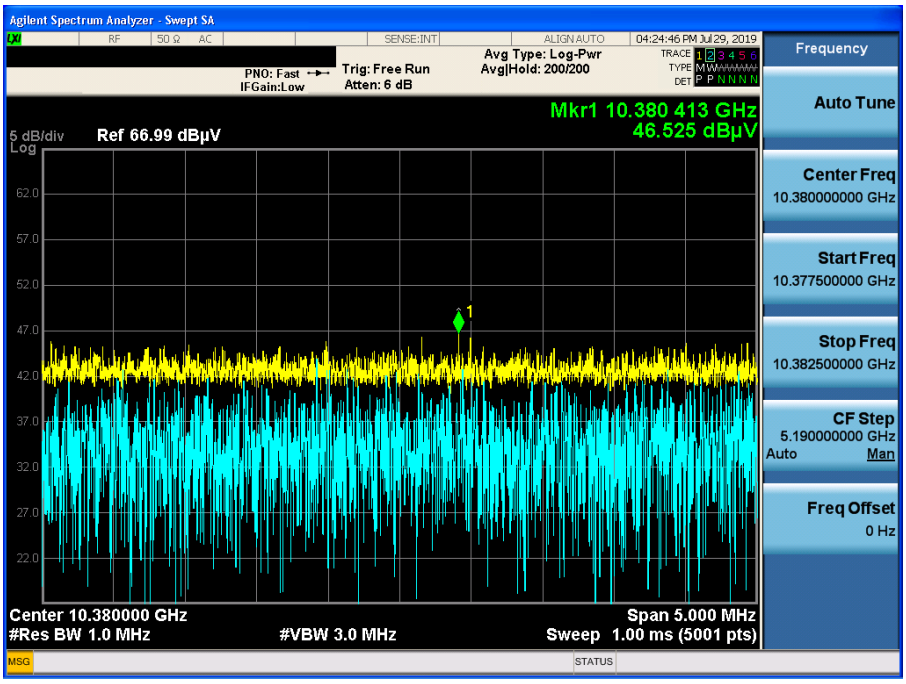
802.11n(HT40) & U-NII 1 & Ch.38 & Z axis & Hor **Detector Mode : PK**



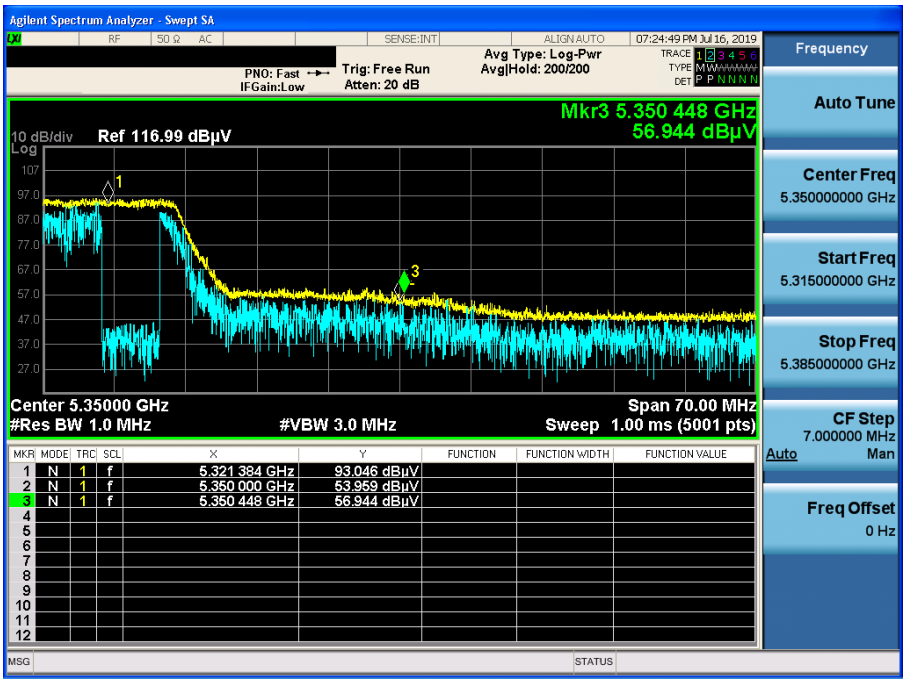
802.11n(HT40) & U-NII 1 & Ch.38 & Z axis & Hor **Detector Mode : AV**



802.11n(HT40) & U-NII 1 & Ch.38 & Y axis & Hor **Detector Mode : PK**

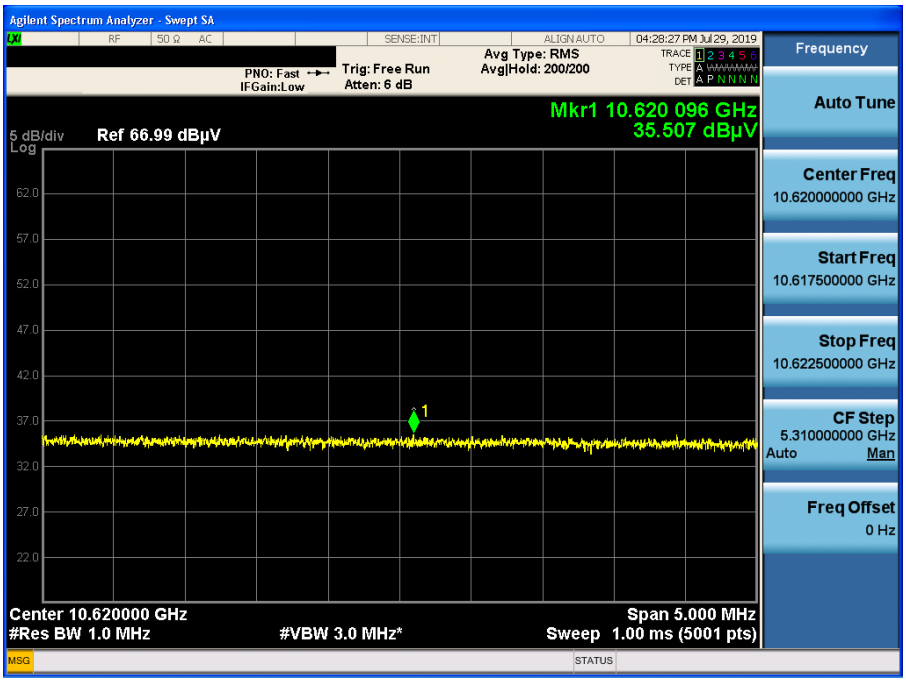


802.11n(HT40) & U-NII 2A & Ch.62 & Z axis & Hor **Detector Mode : PK**

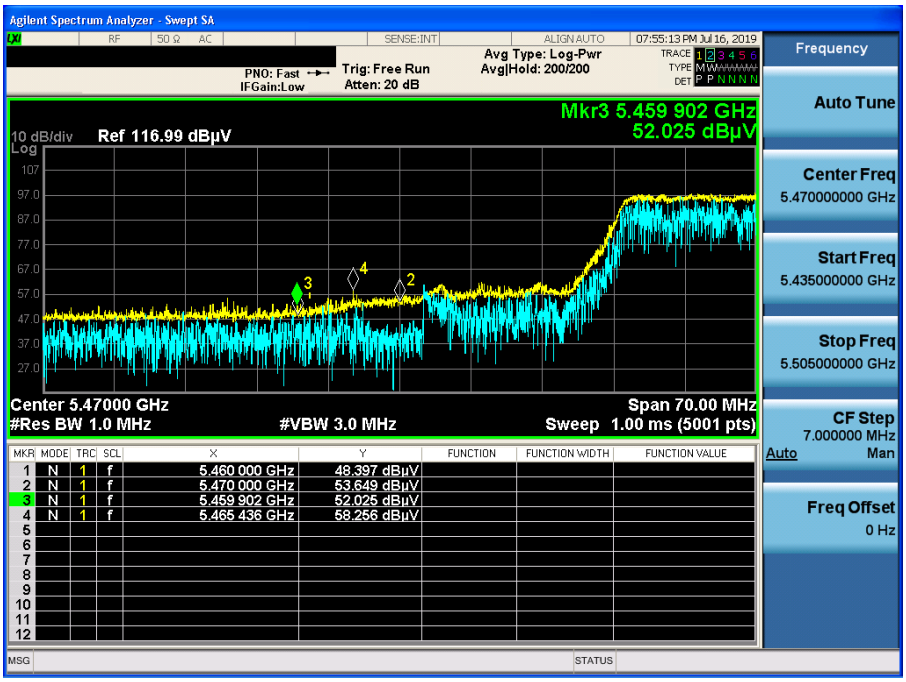


802.11n(HT40) & U-NII 2A & Ch.62 & Z axis & Hor **Detector Mode : AV**

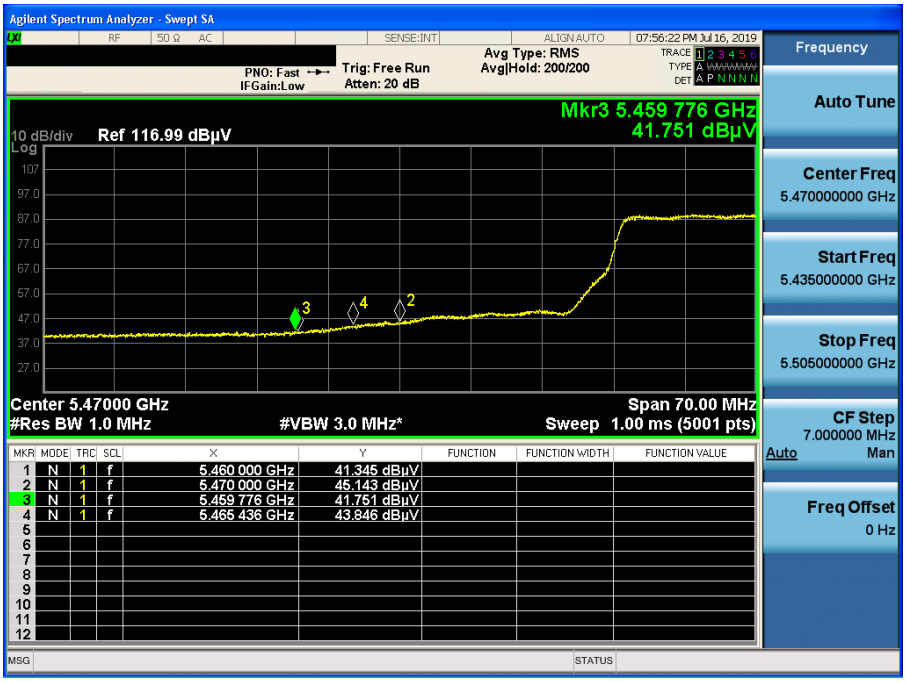
802.11n(HT40) & U-NII 2A & Ch.62 & Y axis & Hor Detector Mode : AV



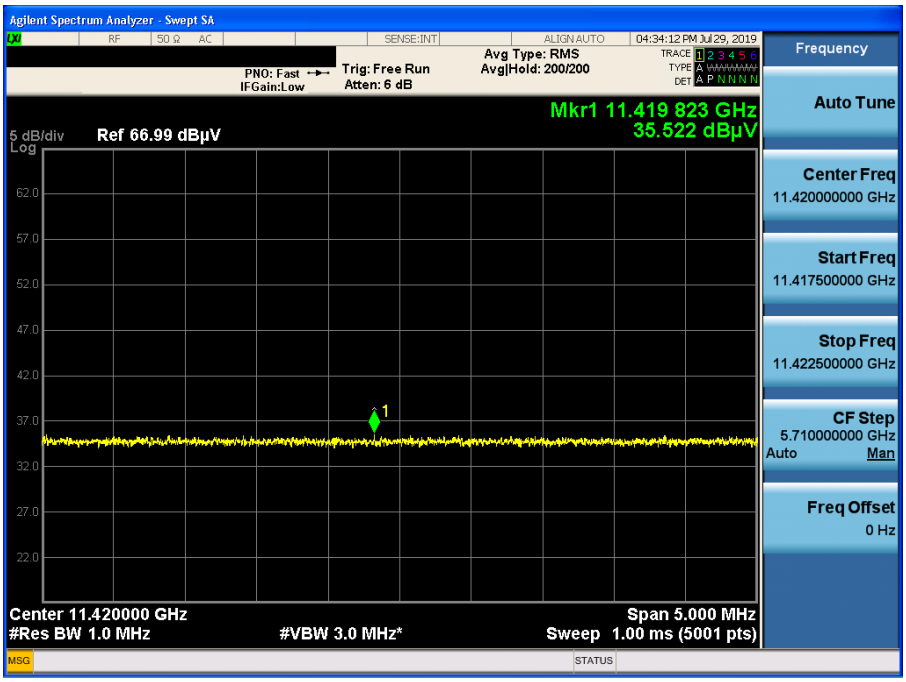
802.11n(HT40) & U-NII 2C & Ch.102 & Z axis & Hor Detector Mode : PK



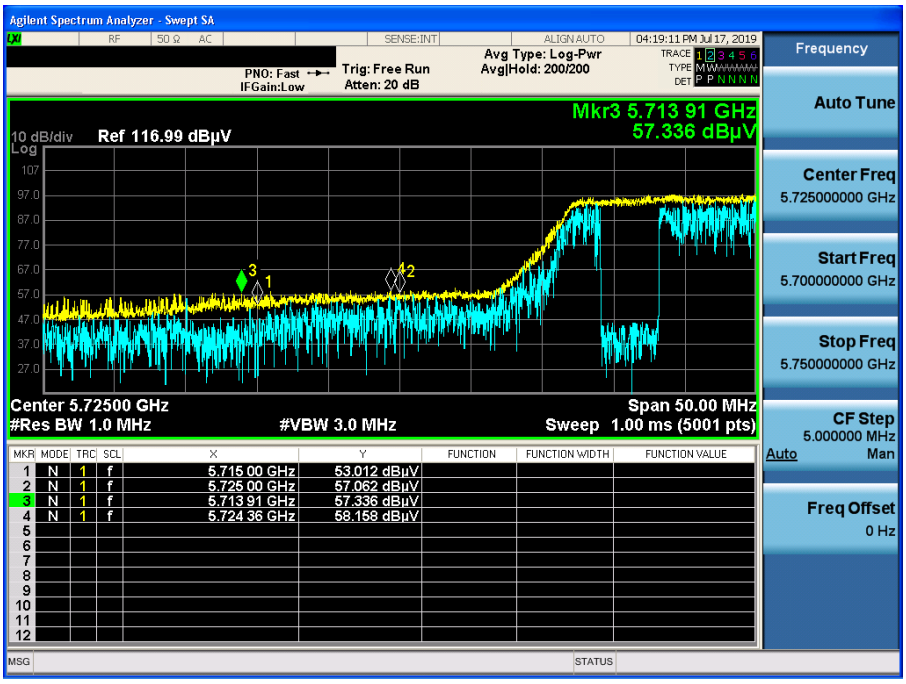
802.11n(HT40) & U-NII 2C & Ch.102 & Z axis & Hor Detector Mode : AV



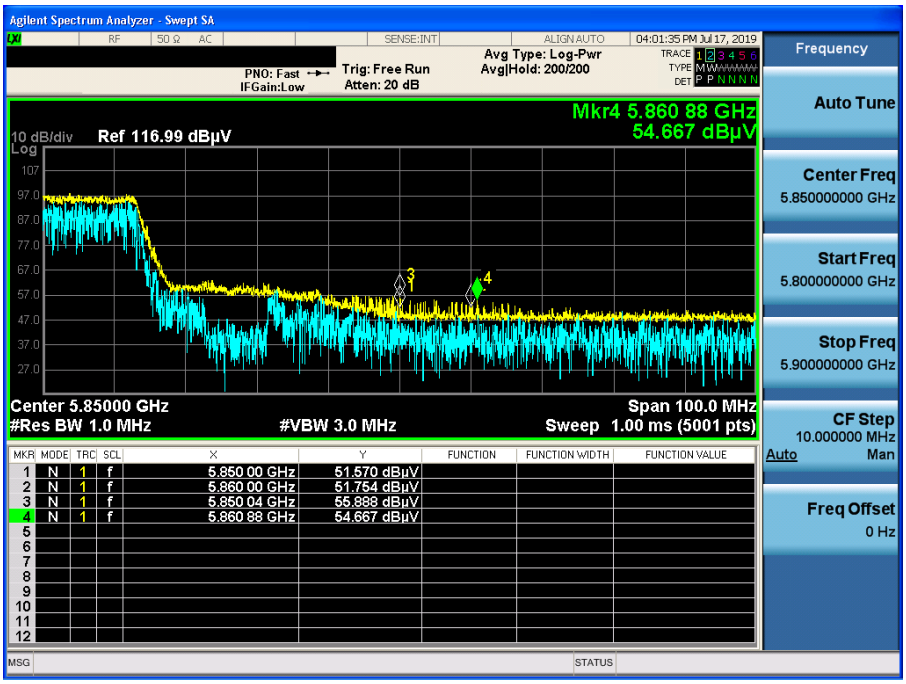
802.11n(HT40) & U-NII 2C & Ch.142 & Y axis & Hor Detector Mode : AV



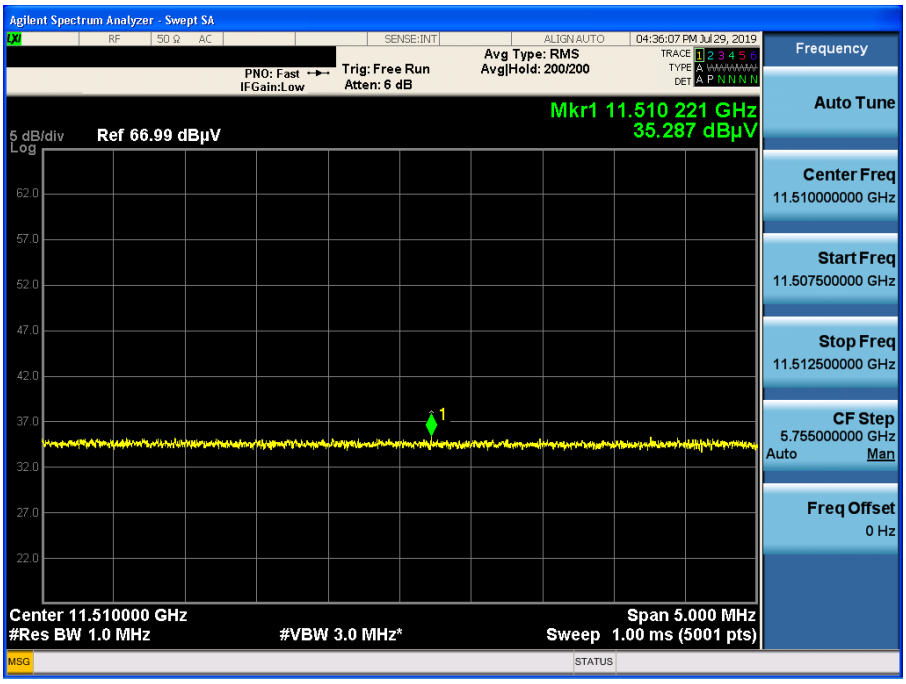
802.11n(HT40) & U-NII 3 & Ch.151 & Z axis & Hor **Detector Mode : PK**



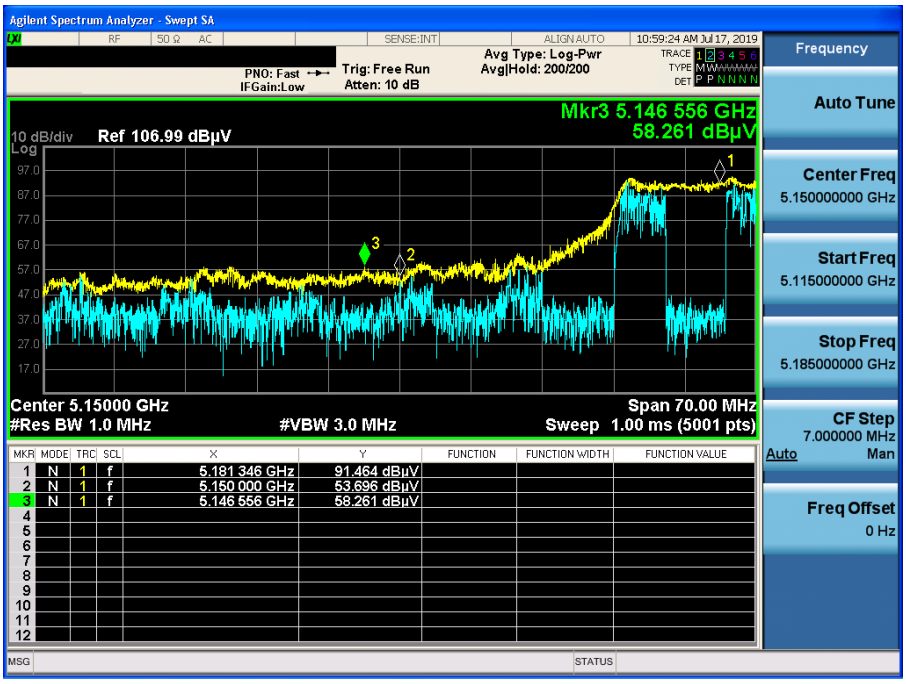
802.11n(HT40) & U-NII 3 & Ch.159 & Z axis & Hor **Detector Mode : PK**



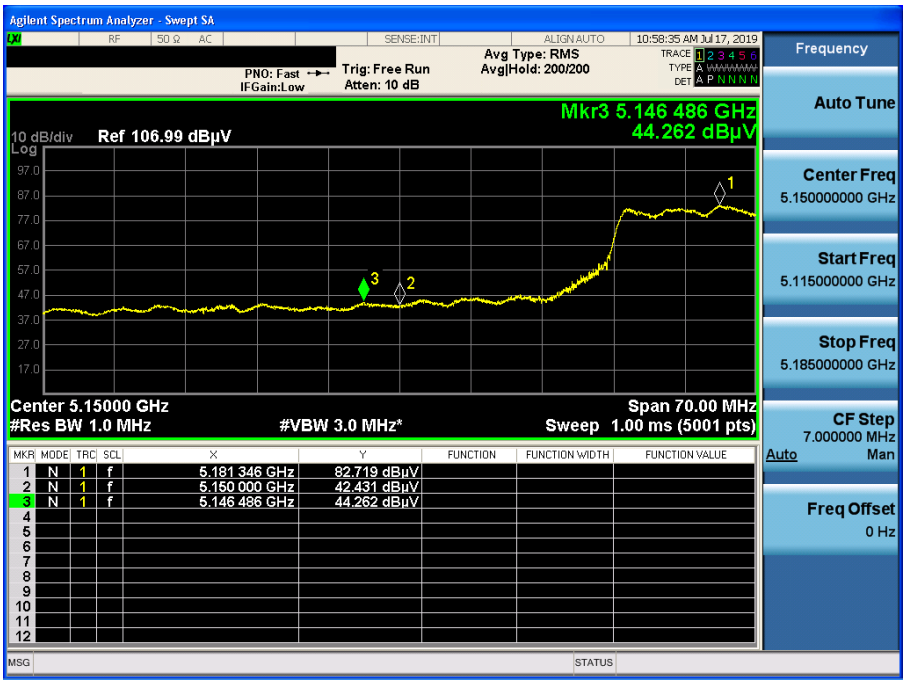
802.11n(HT40) & U-NII 3 & Ch.151 & Y axis & Hor Detector Mode : AV



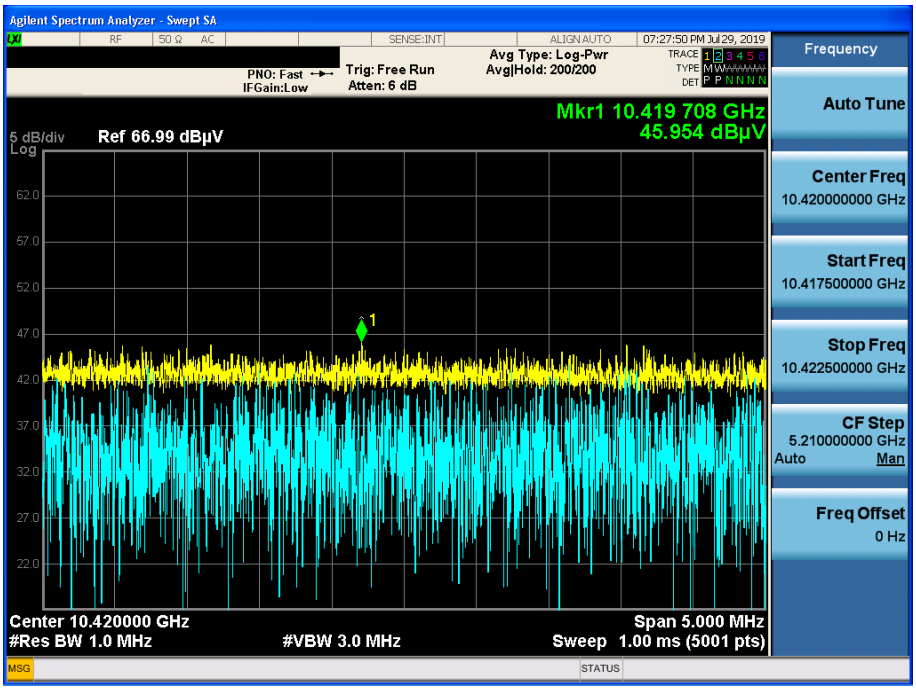
802.11ac(VHT80) & U-NII 1 & Ch.42 & Z axis & Hor Detector Mode : PK



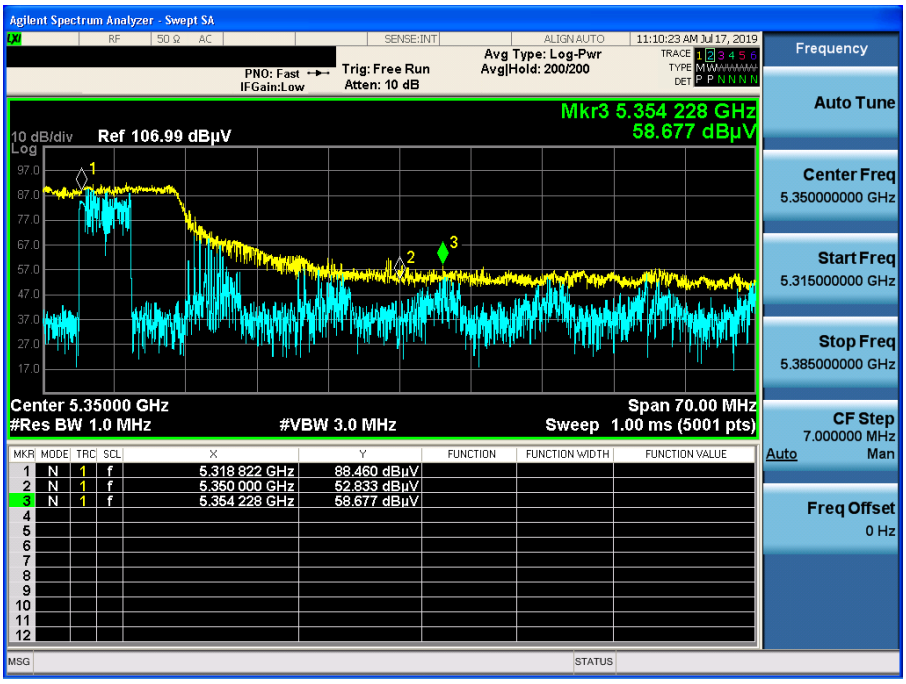
802.11ac(VHT80) & U-NII 1 & Ch.42 & Z axis & Hor Detector Mode : AV



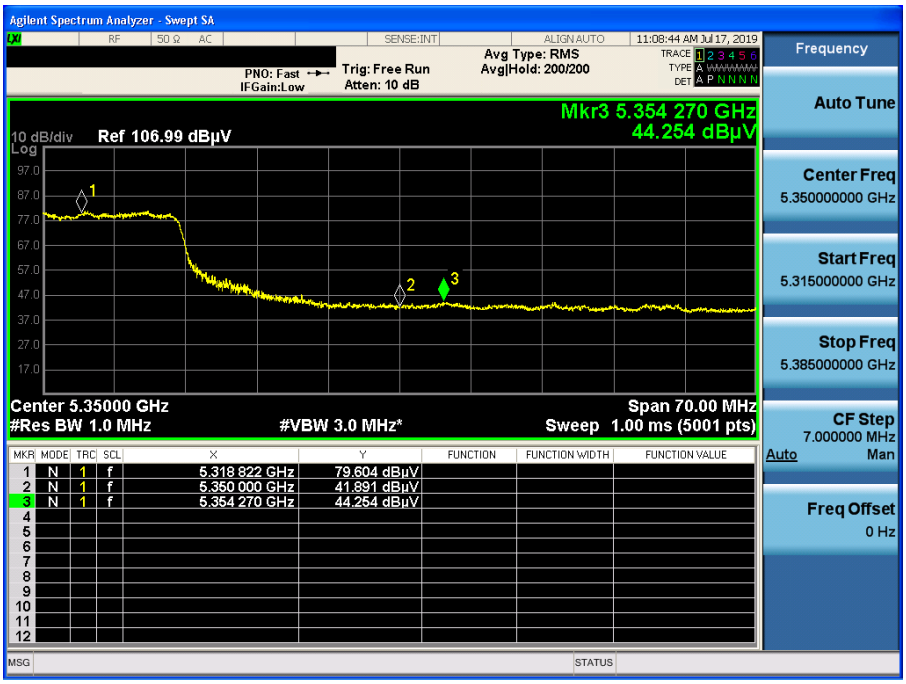
802.11ac(VHT80) & U-NII 1 & Ch.42 & Y axis & Hor Detector Mode : PK



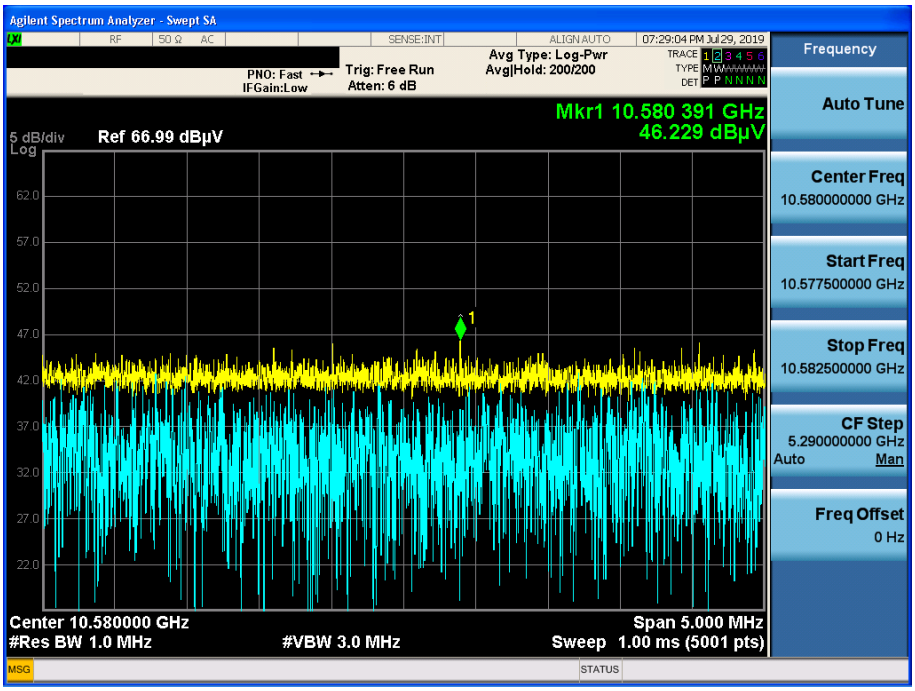
802.11ac(VHT80) & U-NII 2A & Ch.58 & Z axis & Hor Detector Mode : PK



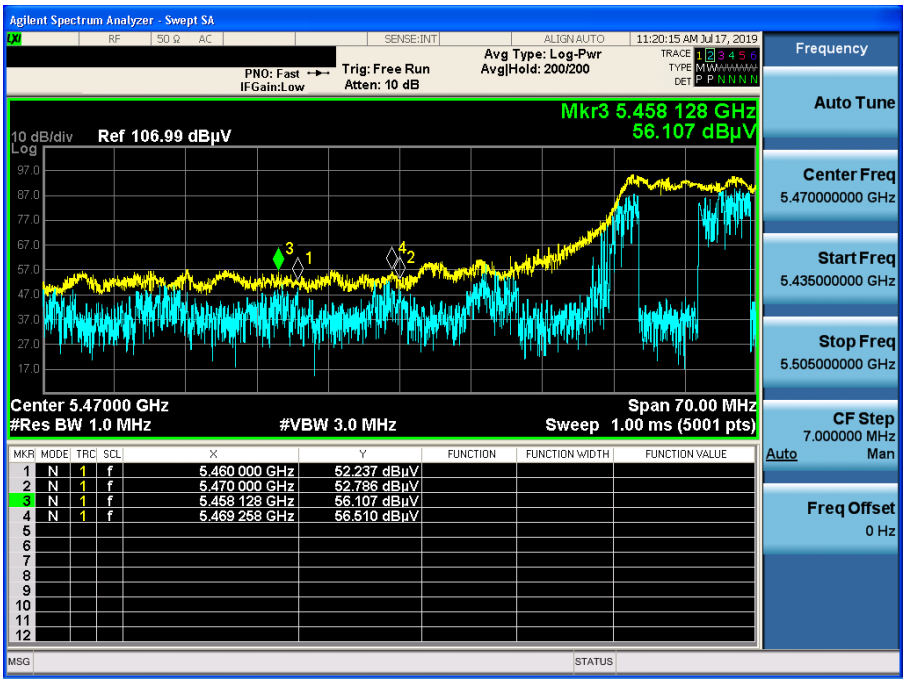
802.11ac(VHT80) & U-NII 2A & Ch.58 & Z axis & Hor Detector Mode : AV



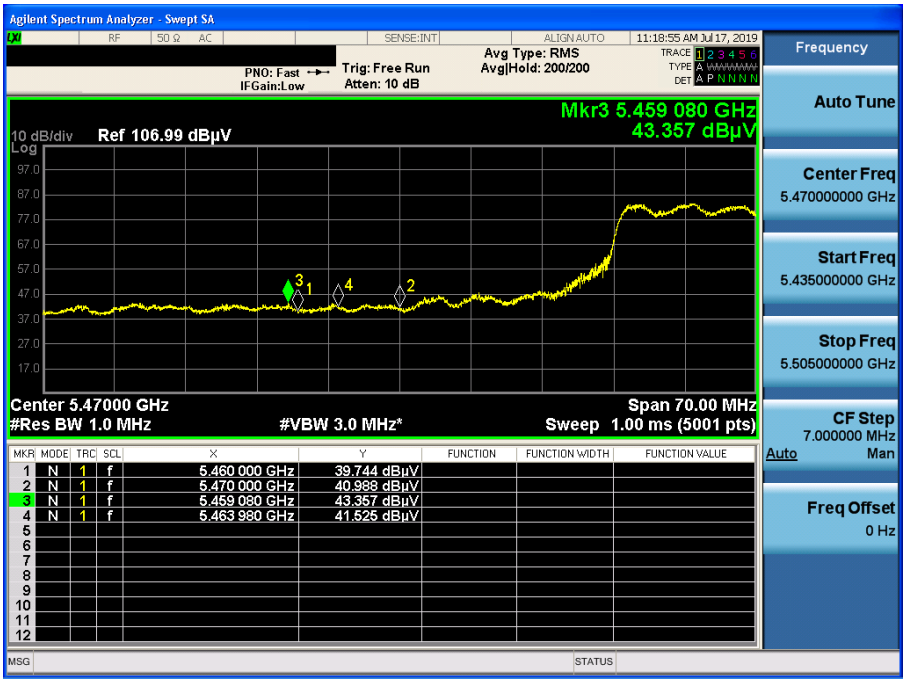
802.11ac(VHT80) & U-NII 2A & Ch.58 & Y axis & Hor Detector Mode : PK



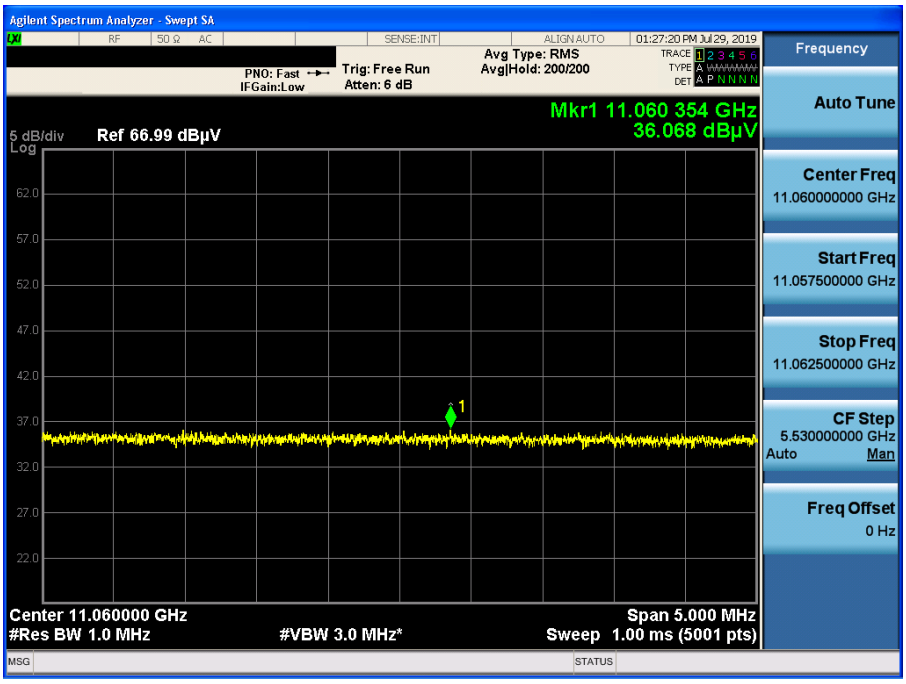
802.11ac(VHT80) & U-NII 2C & Ch.106 & Z axis & Hor Detector Mode : PK



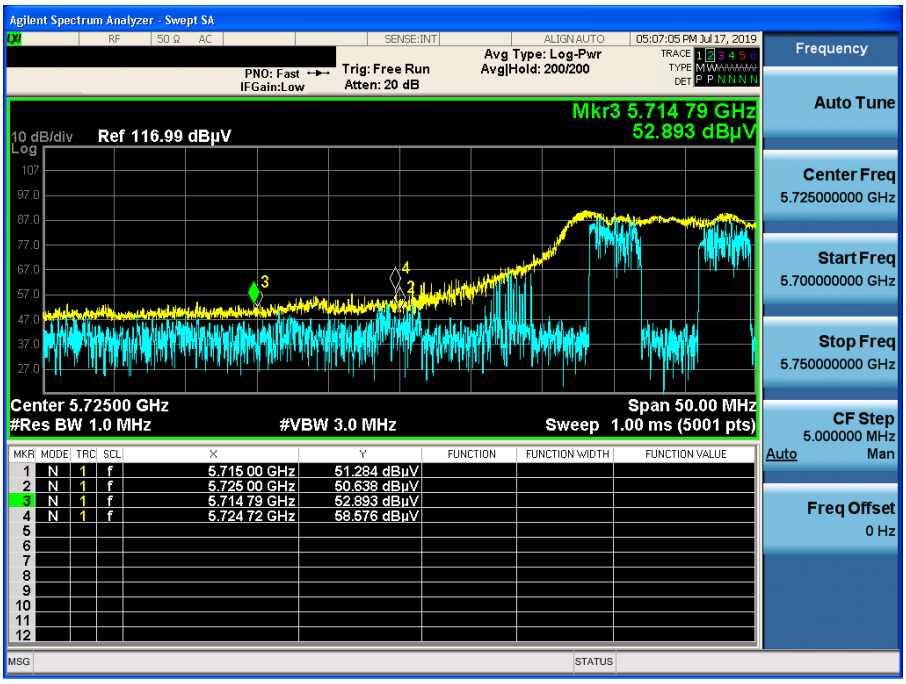
802.11ac(VHT80) & U-NII 2C & Ch.106 & Z axis & Hor Detector Mode : AV



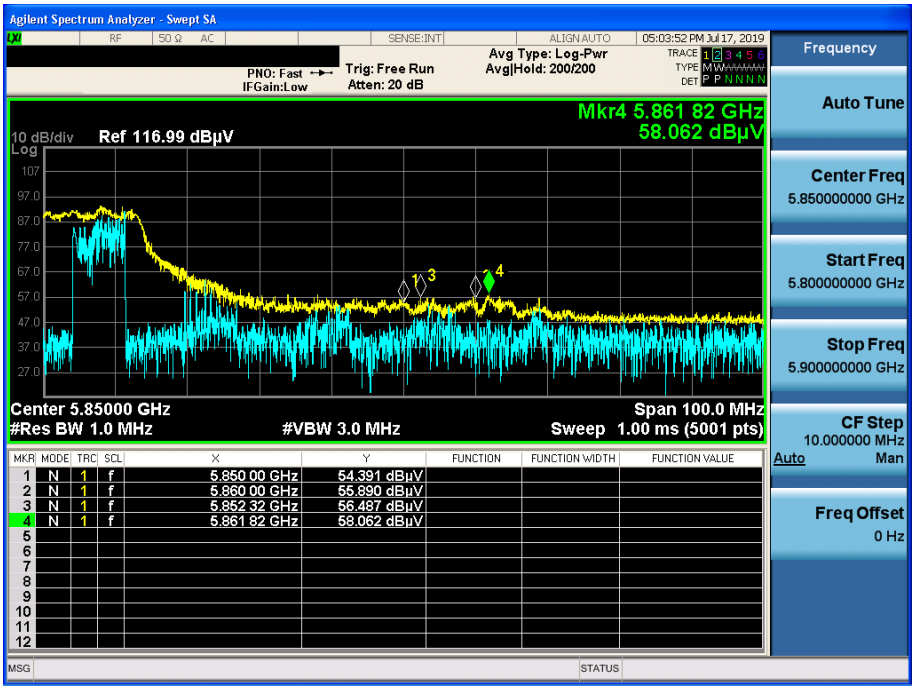
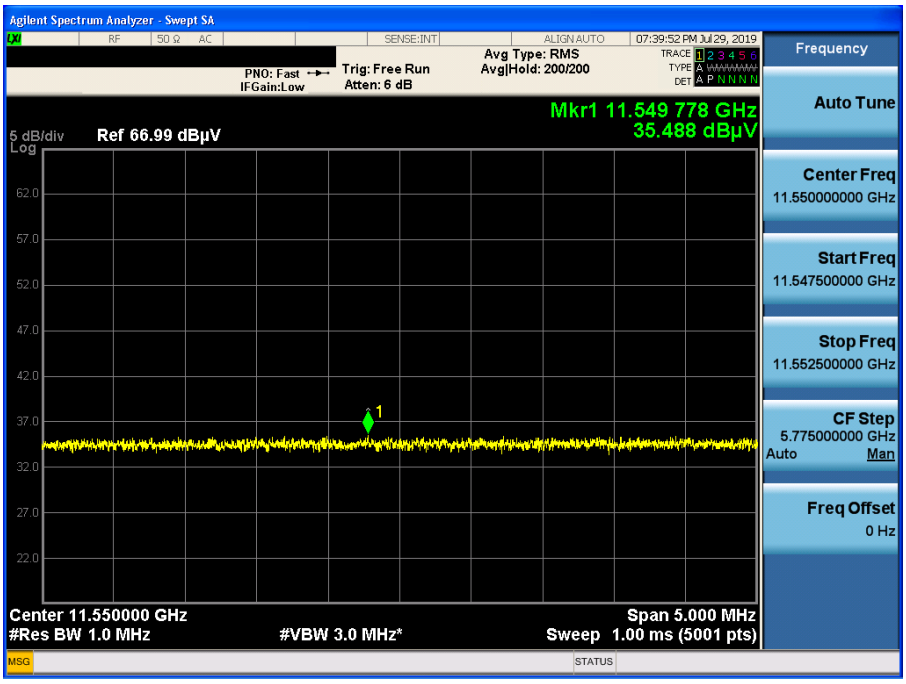
802.11ac(VHT80) & U-NII 2C & Ch.106 & Y axis & Hor Detector Mode : AV



802.11ac(VHT80) & U-NII 3 & Ch.155 & Z axis & Hor Detector Mode : PK



802.11ac(VHT80) & U-NII 3 & Ch.155 & Z axis & Hor Detector Mode : PK



802.11ac(VHT80) & U-NII 3 & Ch.155 & Y axis & Hor Detector Mode : AV