

AC Line Conducted Emissions (Data List)

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

Results of Conducted Emission

DTNC

Date 2018-05-11

Order No. DTNC1804-02797
Model No. 14HK701G
Serial No.
Test Condition 5.7GHz

Reference No.
Power Supply
Temp/Humi. 23/45
Operator S.G.LEE

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	0.16769	47.95	40.00	9.97	57.92	49.97	65.07	55.07	7.15	5.10	N
2	0.32349	19.11	13.54	9.96	29.07	23.50	59.62	49.62	30.55	26.12	N
3	0.53160	21.92	15.76	9.99	31.91	25.75	56.00	46.00	24.09	20.25	N
4	1.45680	9.93	5.76	10.01	19.94	15.77	56.00	46.00	36.06	30.23	N
5	13.41400	26.60	21.53	10.27	36.87	31.80	60.00	50.00	23.13	18.20	N
6	14.84020	25.28	21.01	10.31	35.59	31.32	60.00	50.00	24.41	18.68	N
7	0.16424	47.39	39.47	9.98	57.37	49.45	65.25	55.25	7.88	5.80	L1
8	0.31207	19.63	13.44	9.96	29.59	23.40	59.92	49.92	30.33	26.52	L1
9	0.52350	21.52	14.86	9.99	31.51	24.85	56.00	46.00	24.49	21.15	L1
10	3.38560	9.89	4.95	10.06	19.95	15.01	56.00	46.00	36.05	30.99	L1
11	13.19880	27.26	21.70	10.27	37.53	31.97	60.00	50.00	22.47	18.03	L1
12	26.18740	5.07	-0.42	10.48	15.55	10.06	60.00	50.00	44.45	39.94	L1

9. LIST OF TEST EQUIPMENT

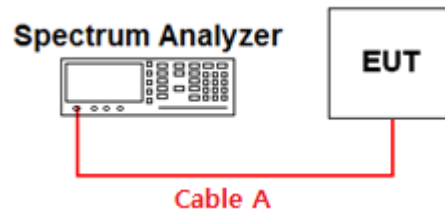
Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	17/07/12	18/07/12	MY46471601
Spectrum Analyzer	Agilent Technologies	N9020A	17/09/05	18/09/05	MY46471251
Spectrum Analyzer	Agilent Technologies	N9030A	17/09/07	18/09/07	MY53310140
DC Power Supply	Agilent Technologies	66332A	17/09/05	18/09/05	MY43000211
Multimeter	FLUKE	17B	17/12/26	18/12/26	26030065WS
Signal Generator	Rohde Schwarz	SMBV100A	17/12/27	18/12/27	255571
Signal Generator	Rohde Schwarz	SMF100A	17/12/27	18/12/27	102341
Thermohygrometer	BODYCOM	BJ5478	18/01/03	19/01/03	120612-2
HYGROMETER	TESTO	608-H1	18/02/10	19/02/10	34862883
Thermohygrometer	BODYCOM	BJ5478	18/01/03	19/01/03	120612-1
Loop Antenna	Schwarzbeck	FMZB1513	18/01/30	20/01/30	1513-128
BILOG ANTENNA	Schwarzbeck	VULB 9160	16/08/05	18/08/05	9160-3362
HORN ANT	ETS	3115	18/01/30	20/01/30	6419
HORN ANT	A.H.Systems	SAS-574	17/07/31	19/07/31	155
PreAmplifier	Agilent Technologies	8449B	17/09/05	18/09/05	3008A02108
PreAmplifier	TSJ	MLA-010K01-B01-27	18/03/05	19/03/05	1844539
PreAmplifier	A.H.Systems Inc.	PAM-1840VH	17/09/17	18/09/17	163
EMI Test Receiver	Rohde Schwarz	ESR7	18/02/13	19/02/13	101061
High-pass filter	Wainwright	WHKX12-2580-3000-18000-80SS	17/09/05	18/09/05	3
High-pass filter	Wainwright	WHNX6-6320-8000-26500-40CC	17/09/05	18/09/05	1
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2490A	17/12/27	18/12/27	1306053 1249303
Attenuator	SMAJK	SMAJK-50-10	17/09/06	18/09/06	15081903
EMI Test Receiver	Rohde Schwarz	ESC17	18/02/12	19/02/12	100910
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	17/09/29	18/09/29	101333
LISN	Schwarzbeck	NNLK 8121	18/03/20	19/03/20	06183
CABLE	DTNC	CABLE	17/06/22	18/06/22	C-016-4
CABLE	DTNC	CABLE	17/06/22	18/06/22	RF-81
CABLE	Radiall	TESTPRO3	17/06/22	18/06/22	RF-74
CABLE	HUBER+SUHNER	SUCOFLEX103	18/02/28	19/02/28	RF-75
CABLE	Radiall	TESTPRO3	18/02/28	19/02/28	RF-66
CABLE	DTNC	CABLE	17/06/22	18/06/22	RF-82

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



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	2.06	2.17	95.07	0.22	24.22

Duty cycle: SDM

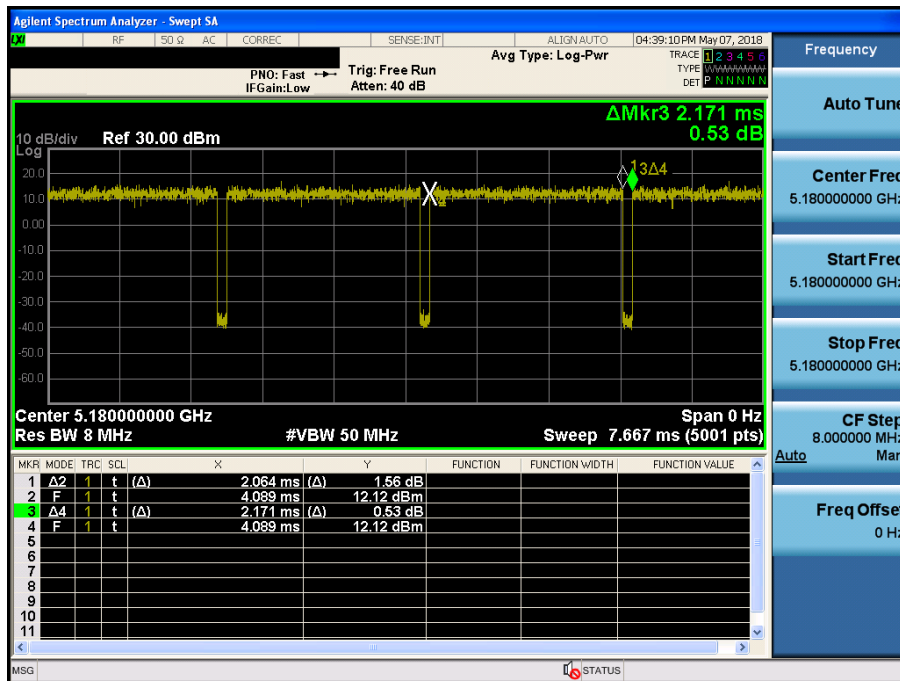
Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (x) = On / (On+Off)			Duty Cycle Correction Factor [dB]	50/ T [kHz]
			On Time [ms]	(On+Off) Time [ms]	x		
802.11n (HT20)	MCS8	5180	0.98	1.01	97.42	0.12	50.86
802.11ac (VHT40)	MCS0	5190	0.50	0.53	94.33	0.26	100.08
802.11ac (VHT80)	MCS0	5210	0.26	0.29	89.67	0.48	195.47

Test Plot:

CDD Mode

Duty Cycle

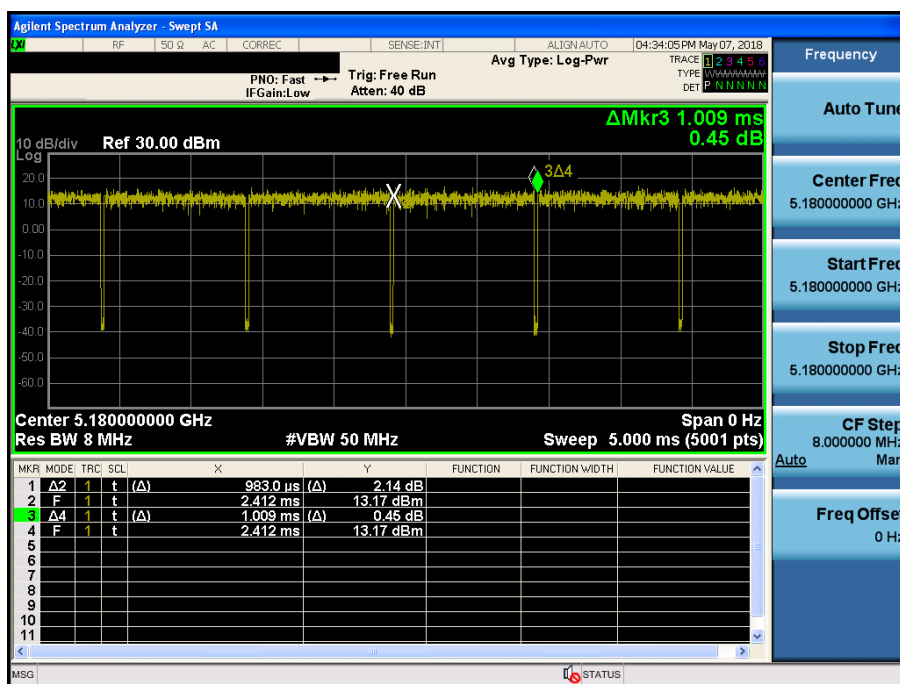
Test Mode: 802.11a & Ch.36



SDM Mode

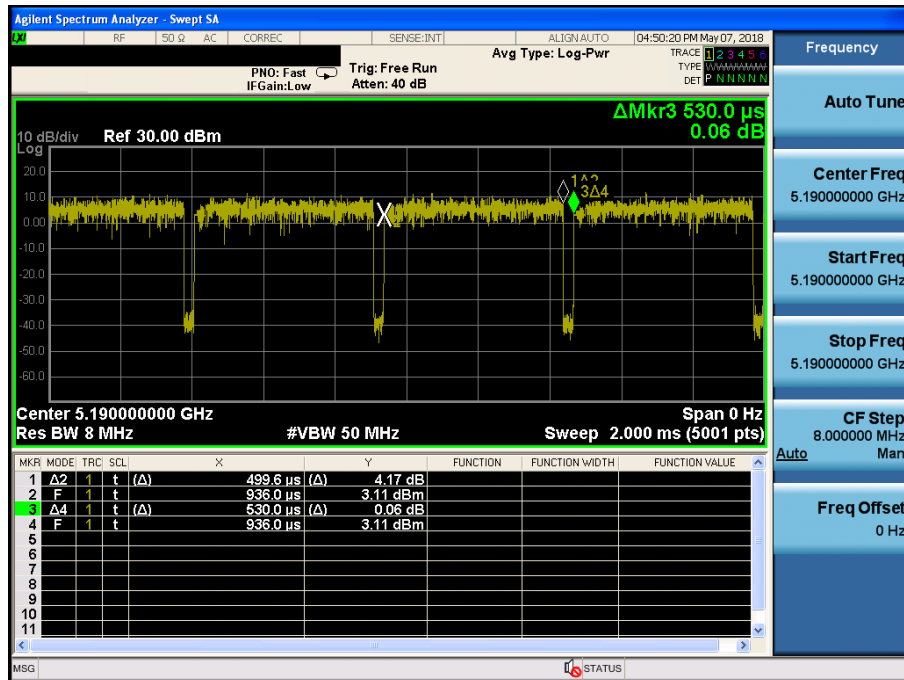
Duty Cycle

Test Mode: 802.11n HT20 & Ch.36



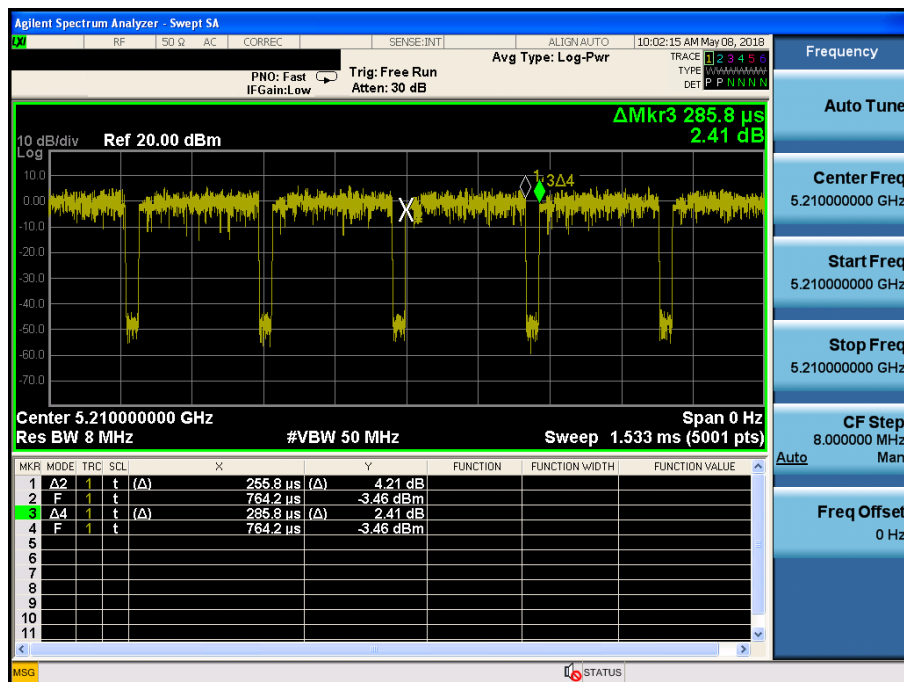
Duty Cycle

Test Mode: 802.11ac VHT40 & Ch.38



Duty Cycle

Test Mode: 802.11ac VHT80 & Ch.42

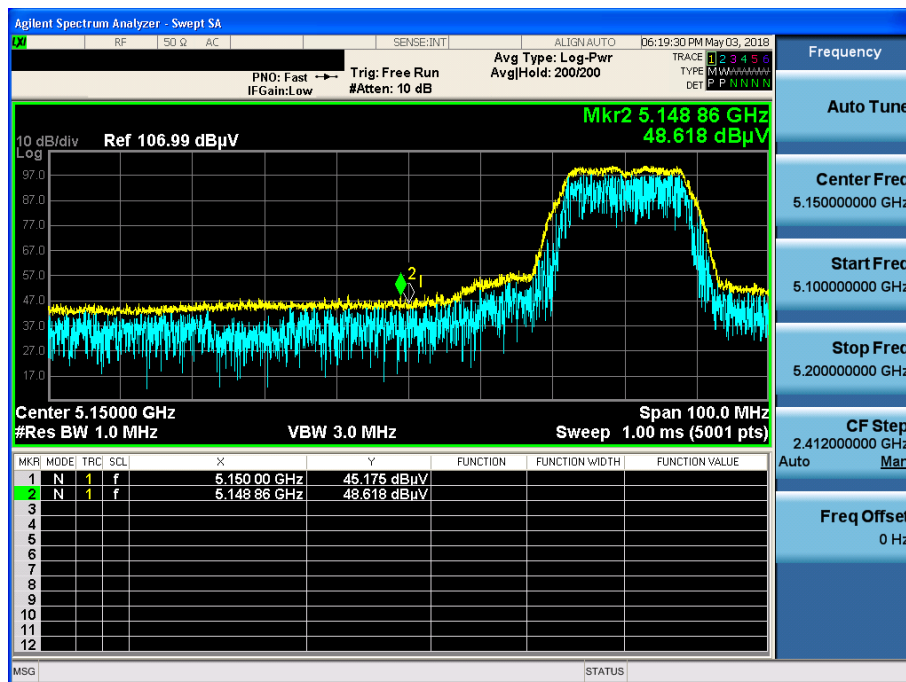


APPENDIX III

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

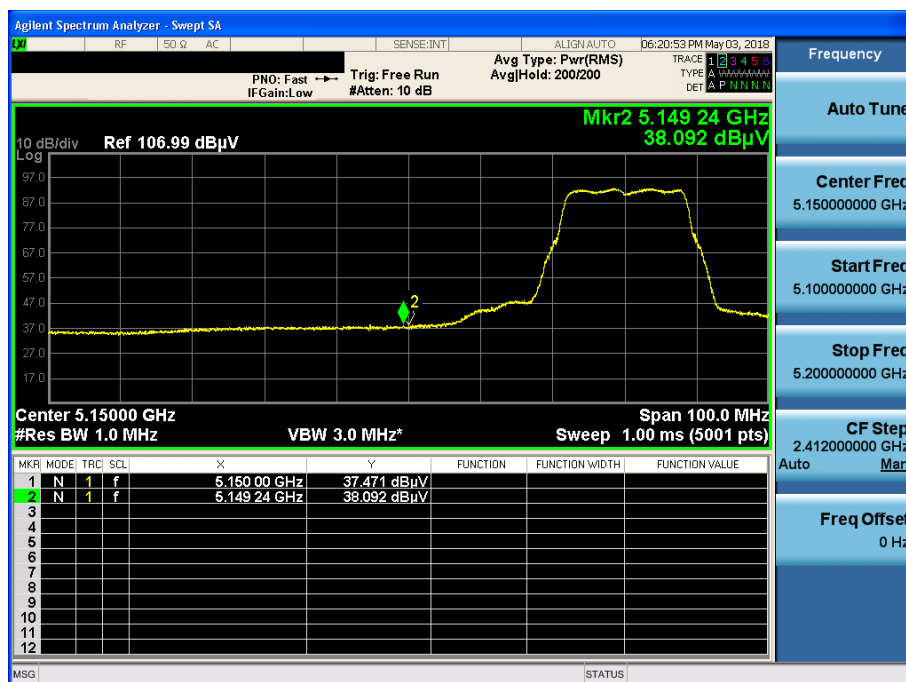
802.11a & U-NII 1 & Ch.36 & X axis & Ver

Detector Mode : PK

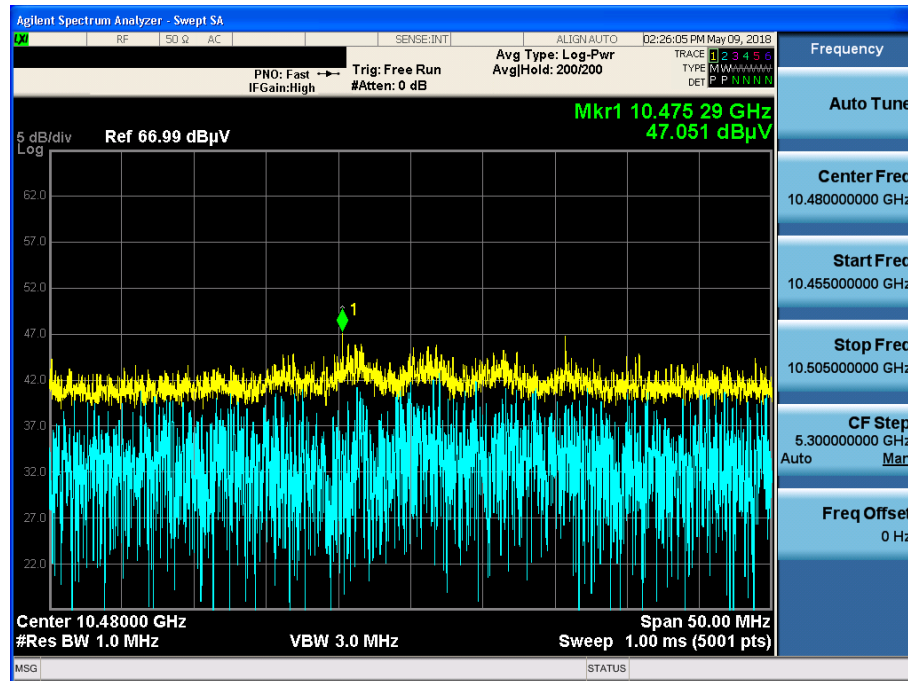


802.11a & U-NII 1 & Ch.36 & X axis & Ver

Detector Mode : AV

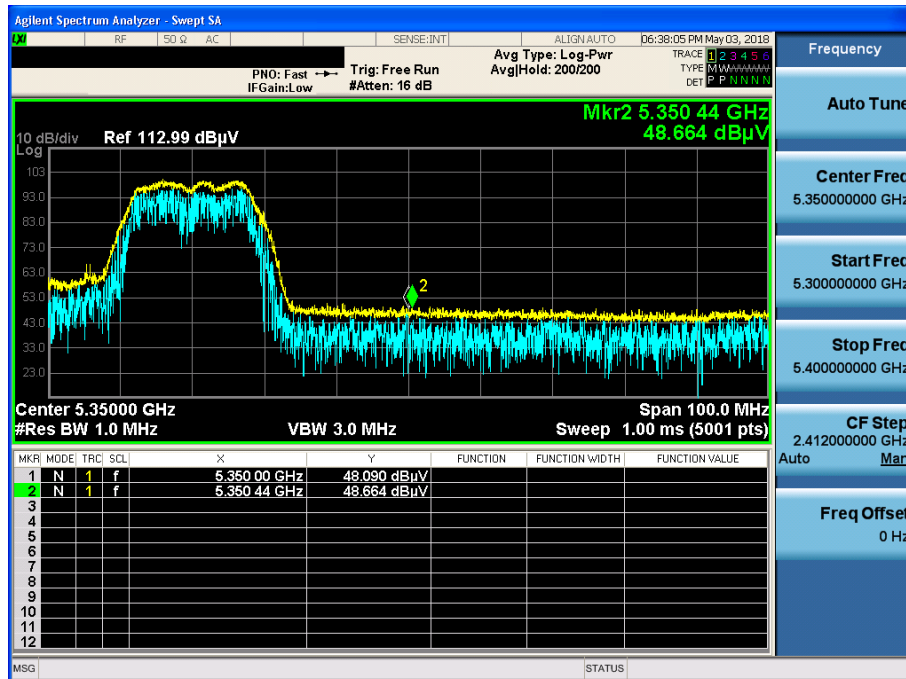


Detector Mode : PK



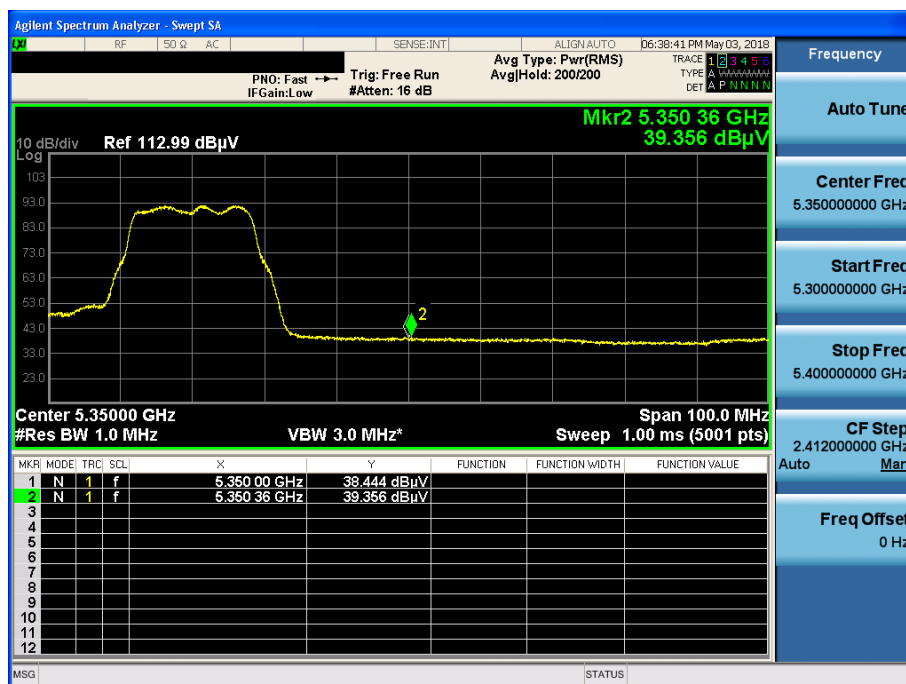
802.11a & U-NII 2A & Ch.64 & Z axis & Ver

Detector Mode : PK



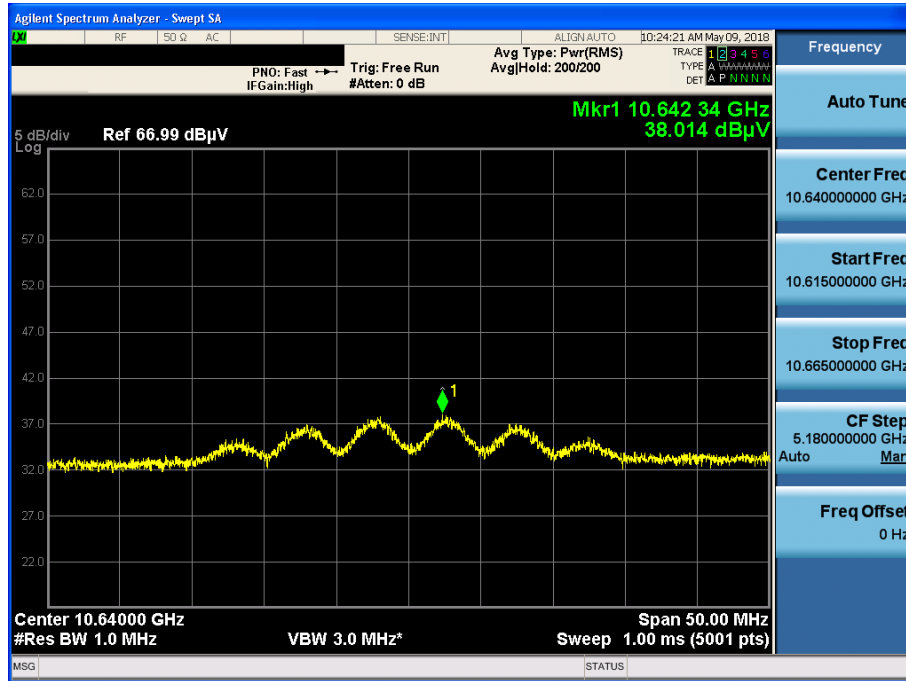
802.11a & U-NII 2A & Ch.64 & Z axis & Ver

Detector Mode : AV



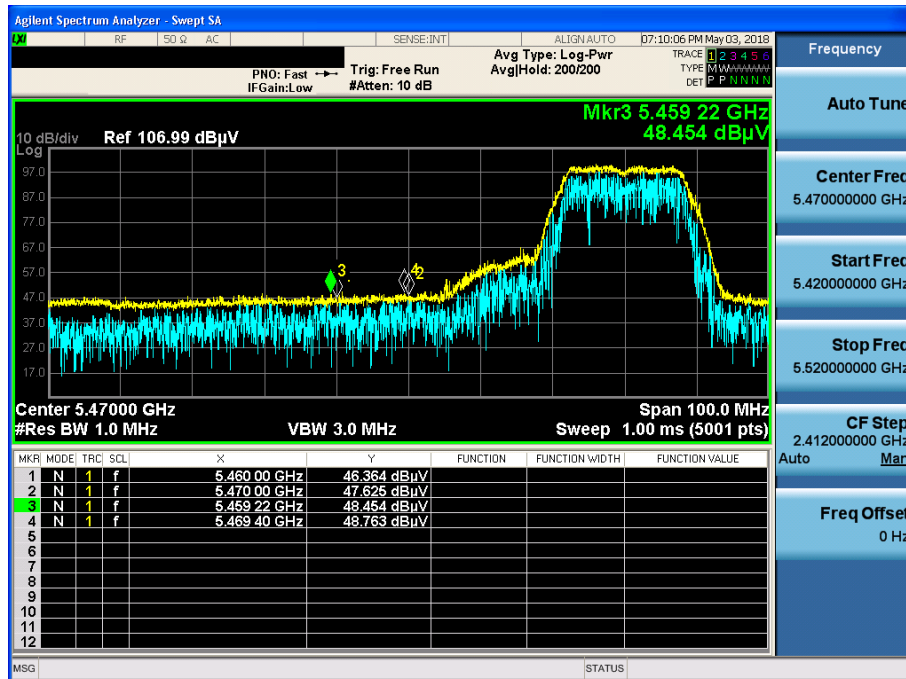
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Detector Mode : AV



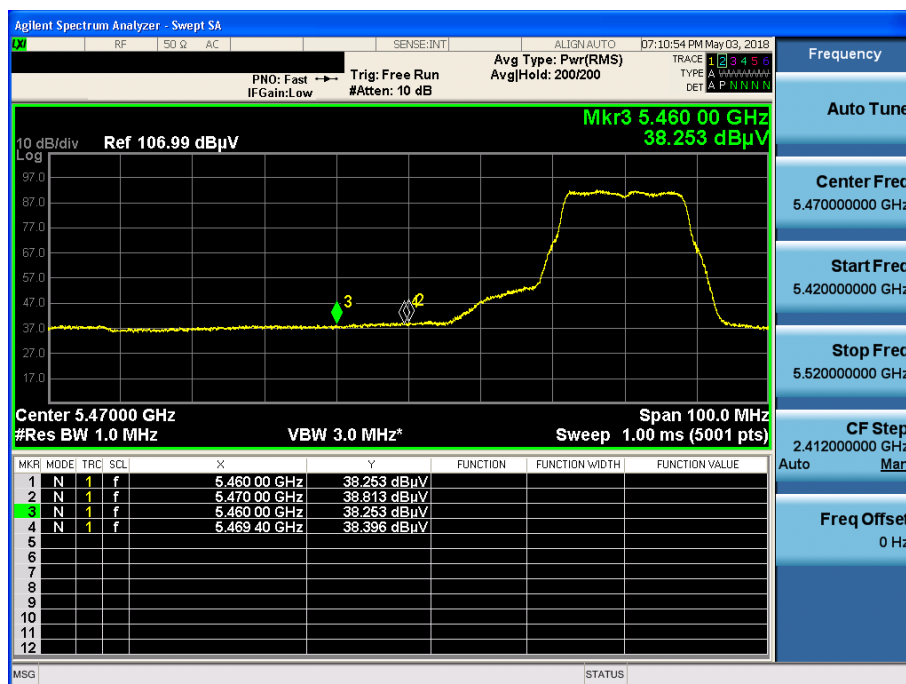
802.11a & U-NII 2C & Ch.100 & Z axis & Ver

Detector Mode : PK



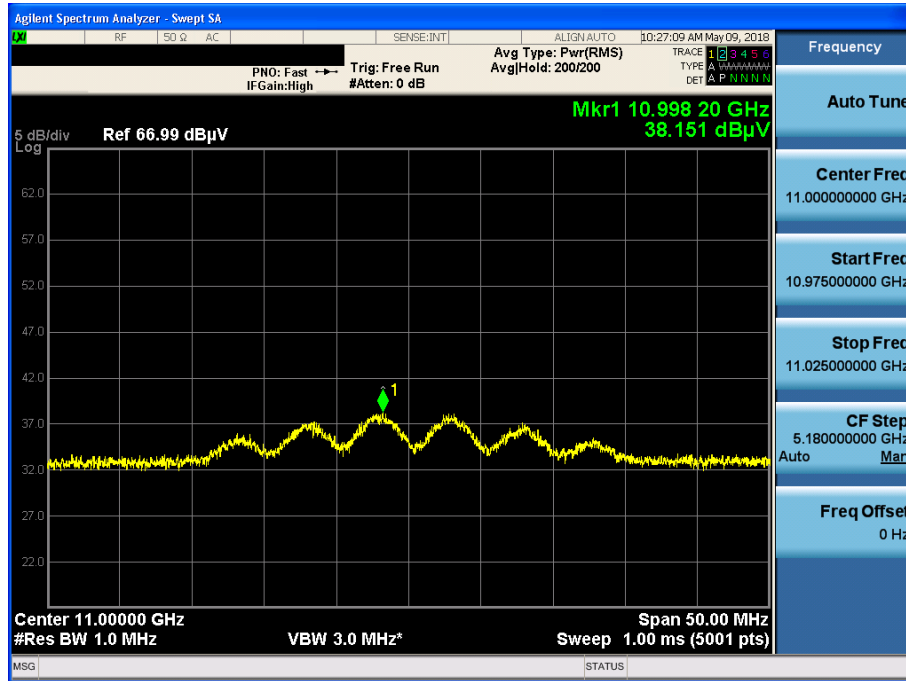
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Detector Mode : AV



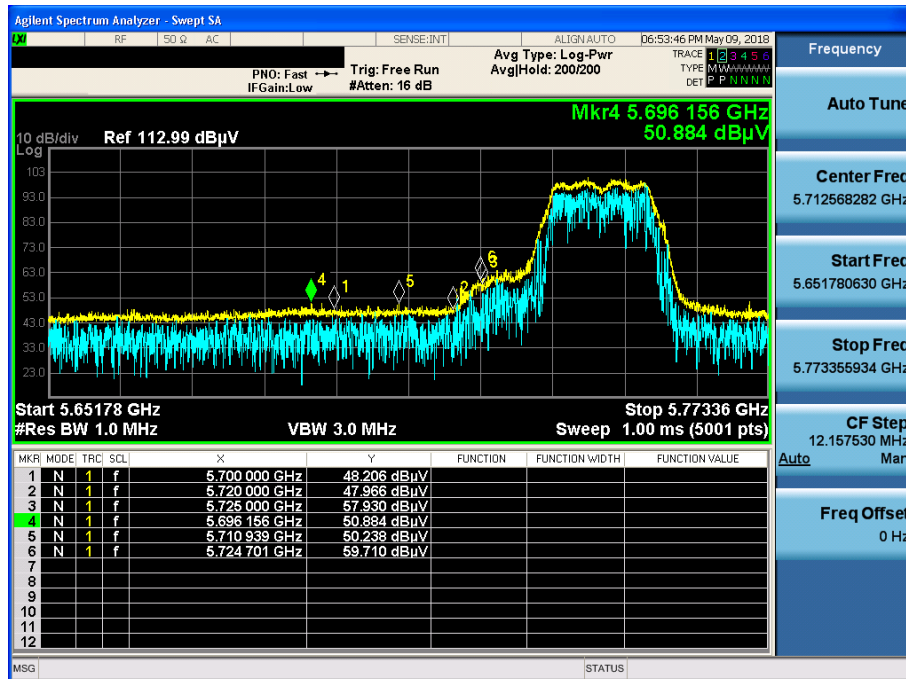
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Detector Mode : AV



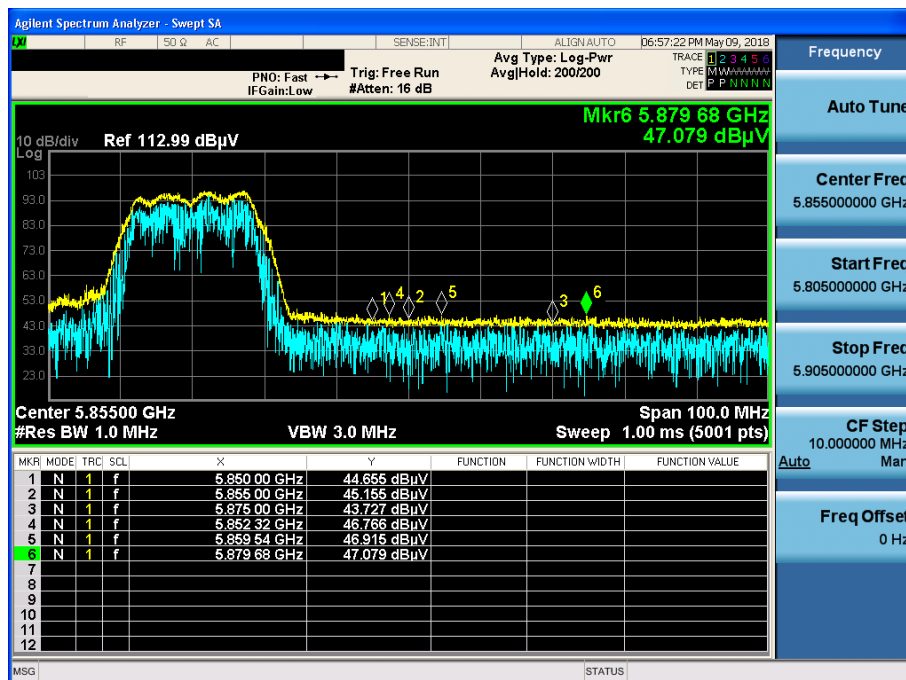
802.11a & U-NII 3 & Ch.149 & Z axis & Ver

Detector Mode : PK



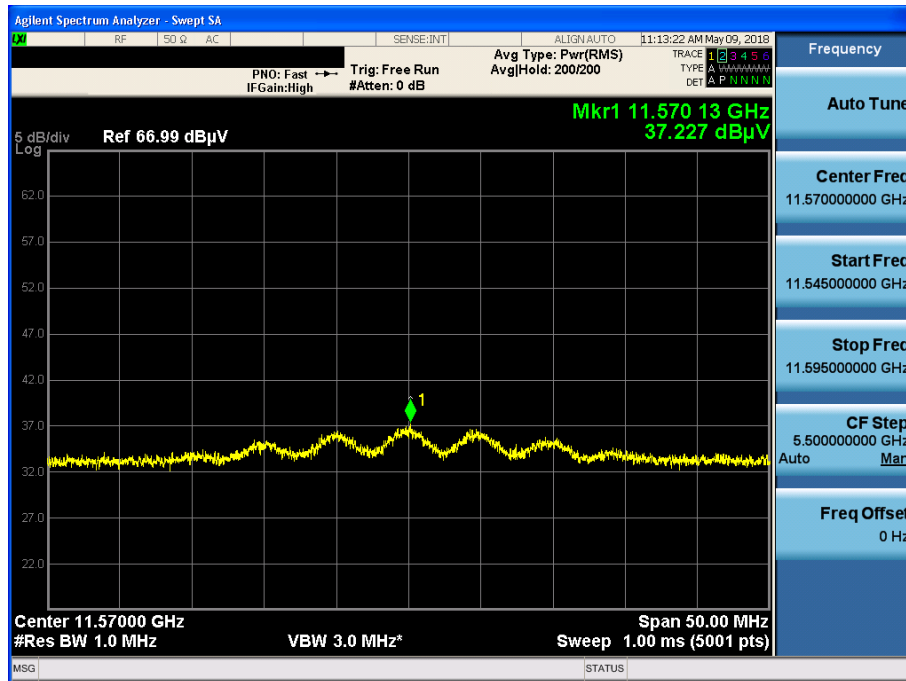
802.11a & U-NII 3 & Ch.165 & Z axis & Ver

Detector Mode : PK



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

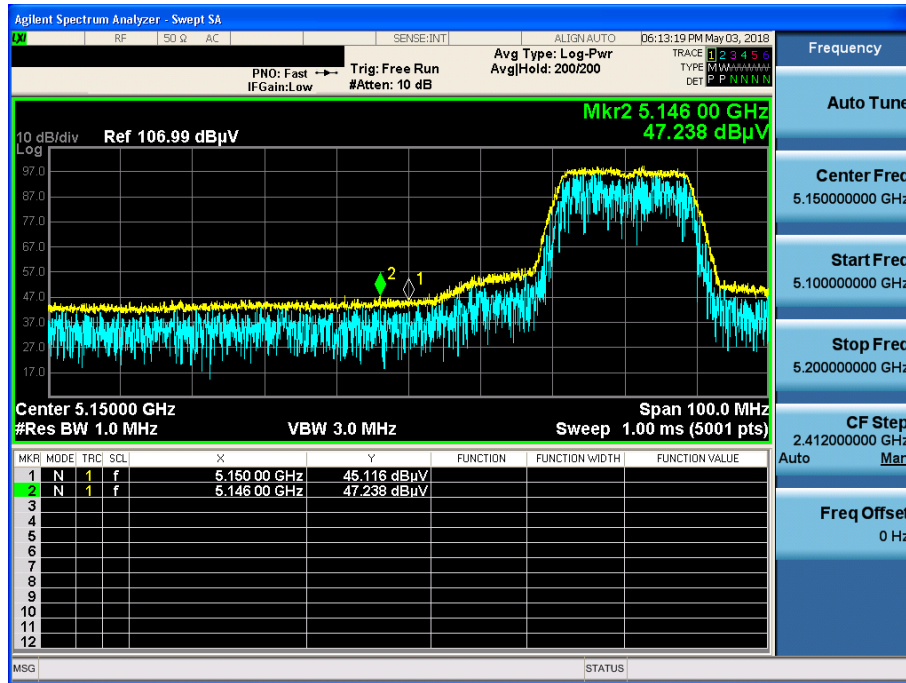
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Unwanted Emissions (Radiated) Test Plot : MIMO(SDM)

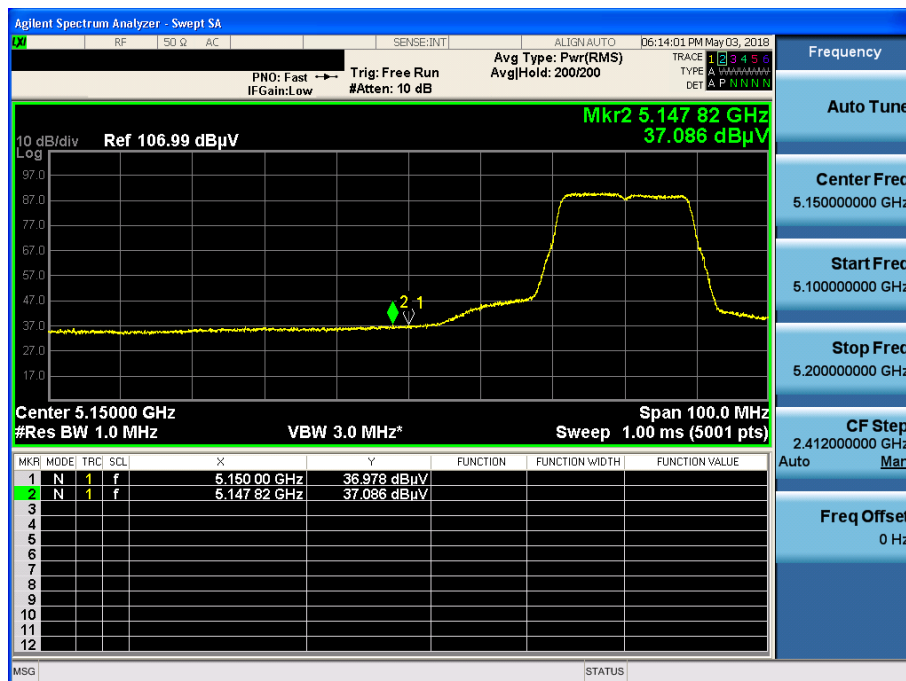
802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Ver

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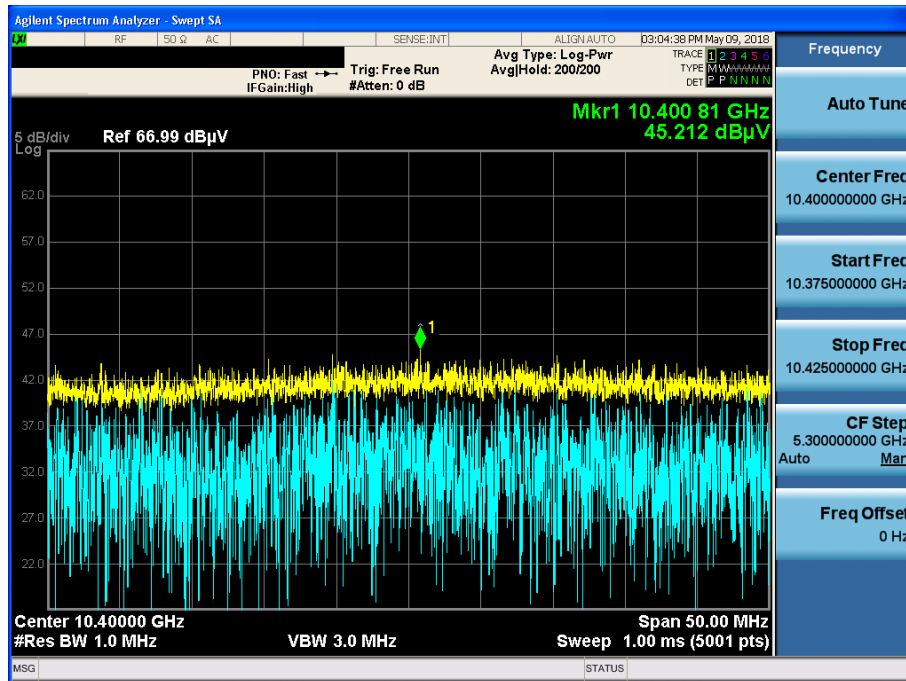


802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Ver

Detector Mode : AV

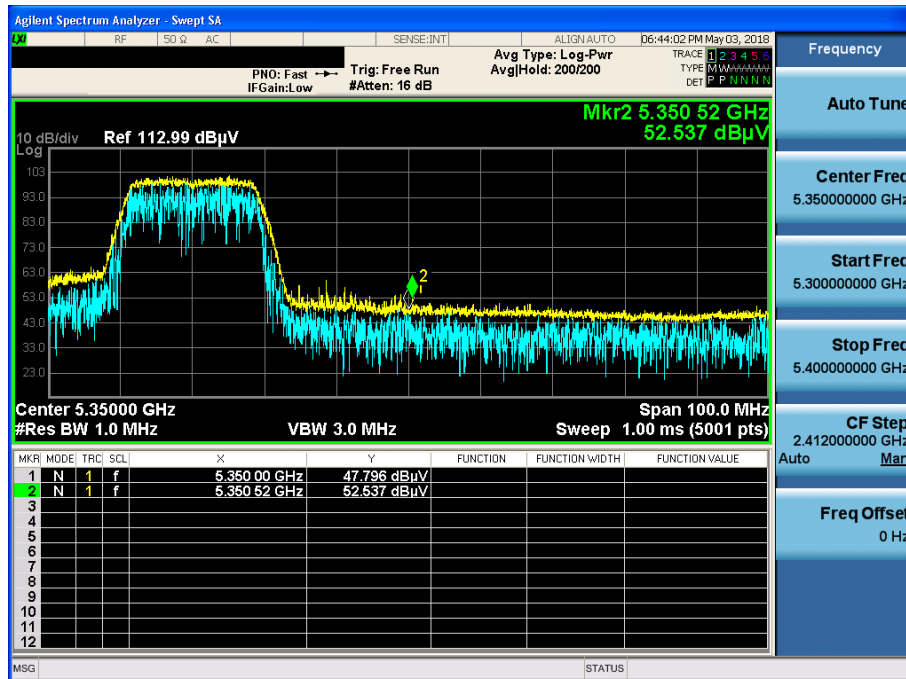


Detector Mode : PK



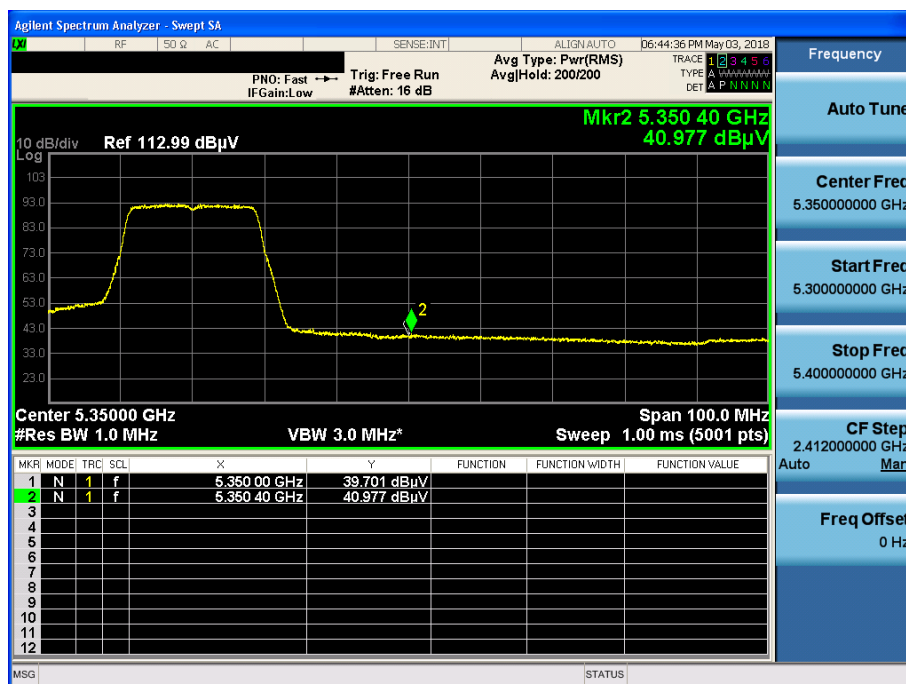
802.11n(HT20) & U-NII 2A & Ch.64 & Z axis & Ver

Detector Mode : PK



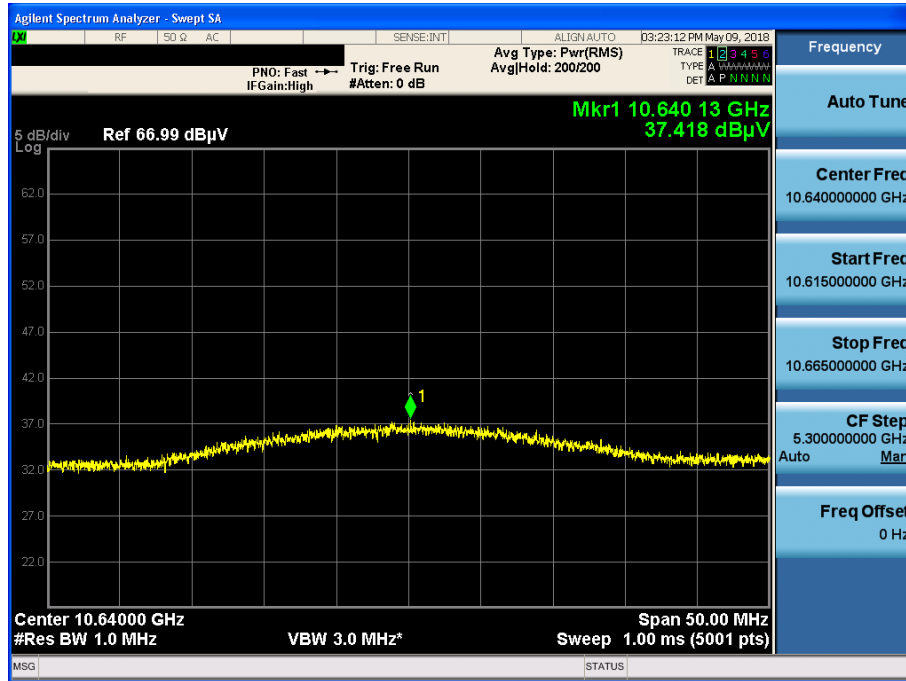
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Detector Mode : AV



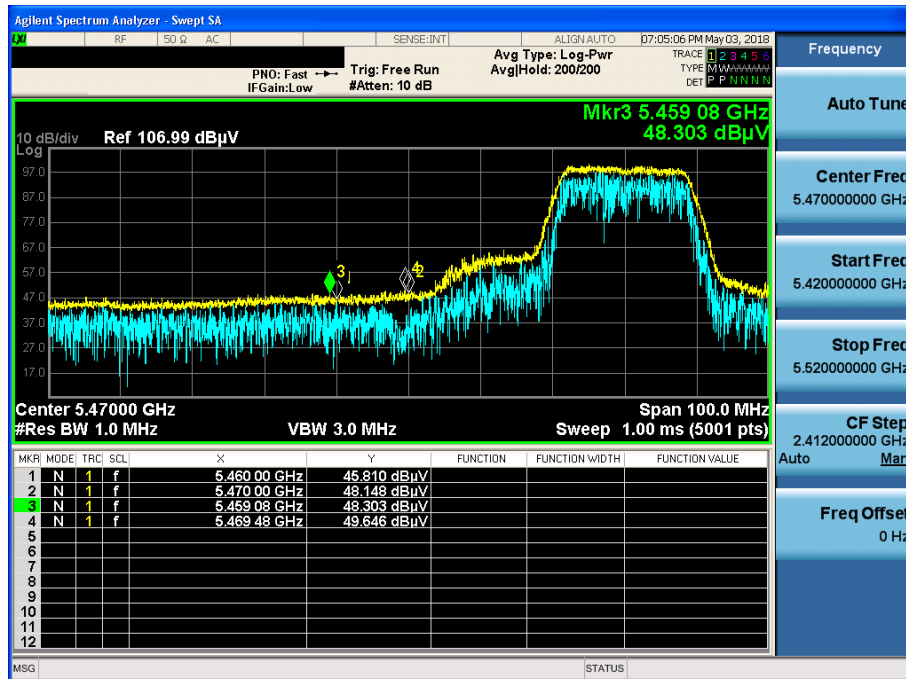
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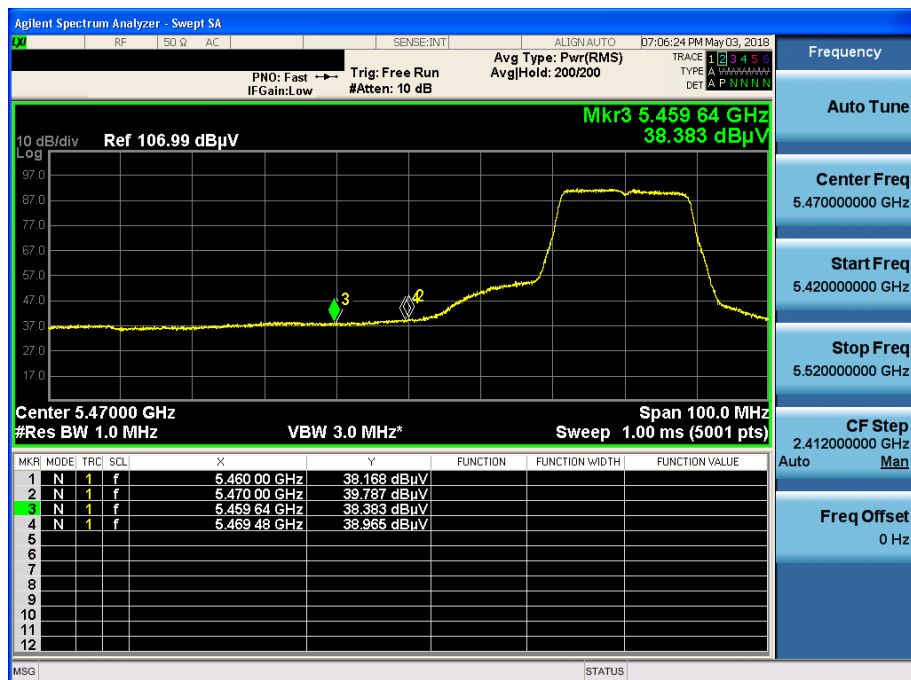
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Detector Mode : PK



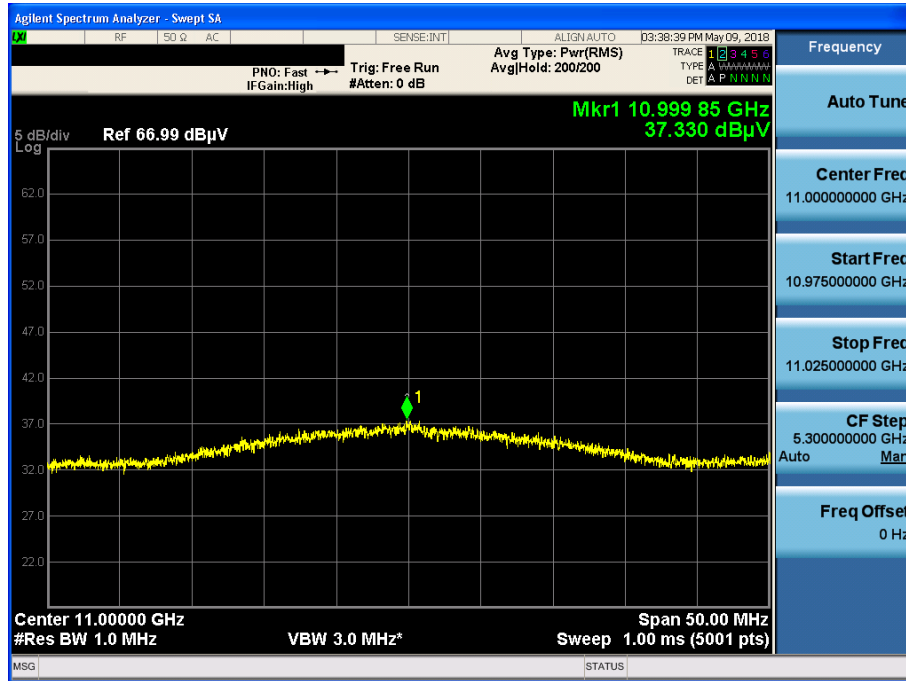
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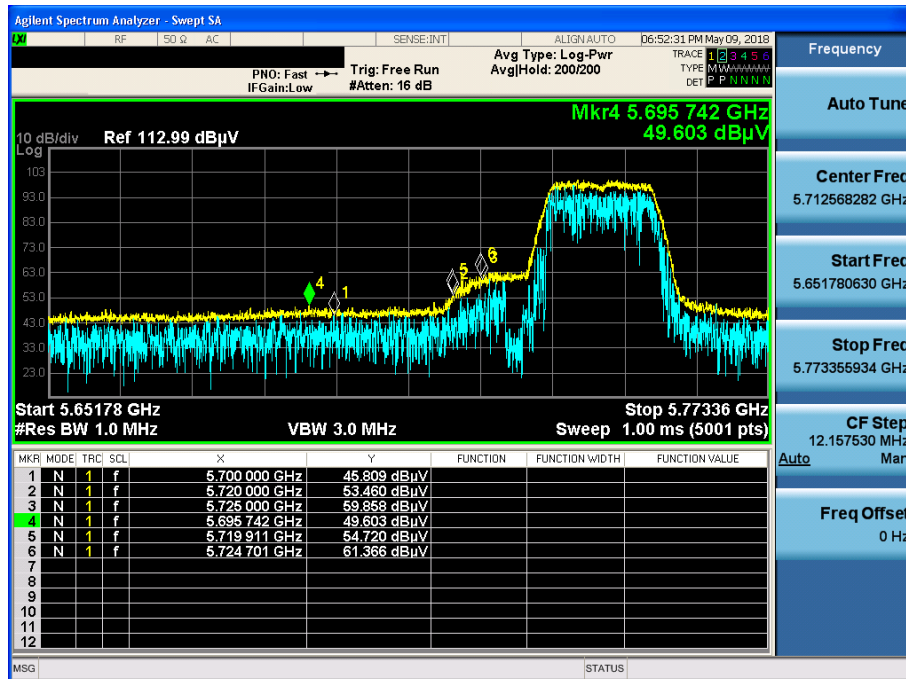
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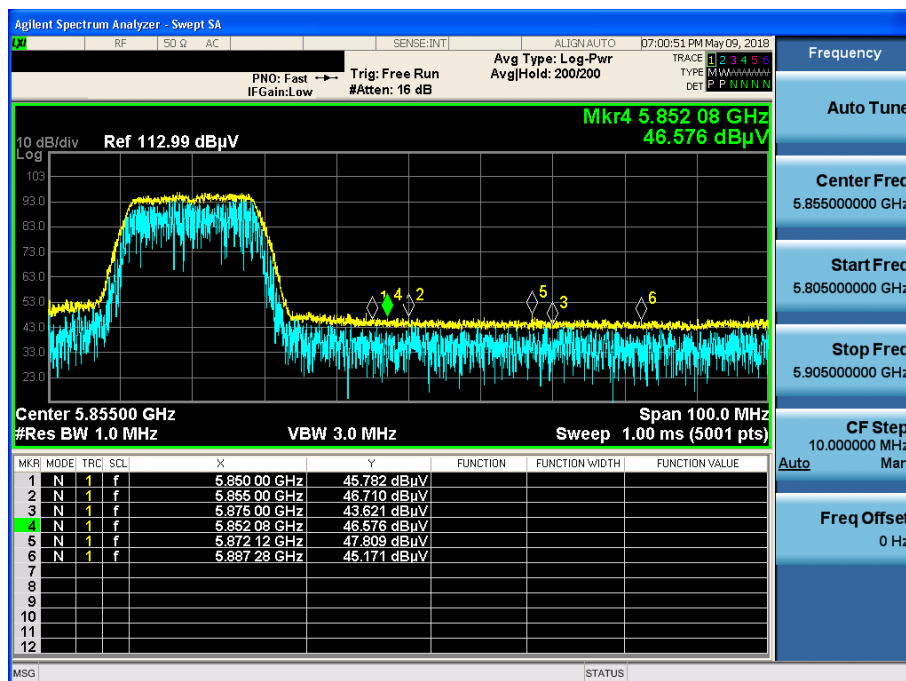
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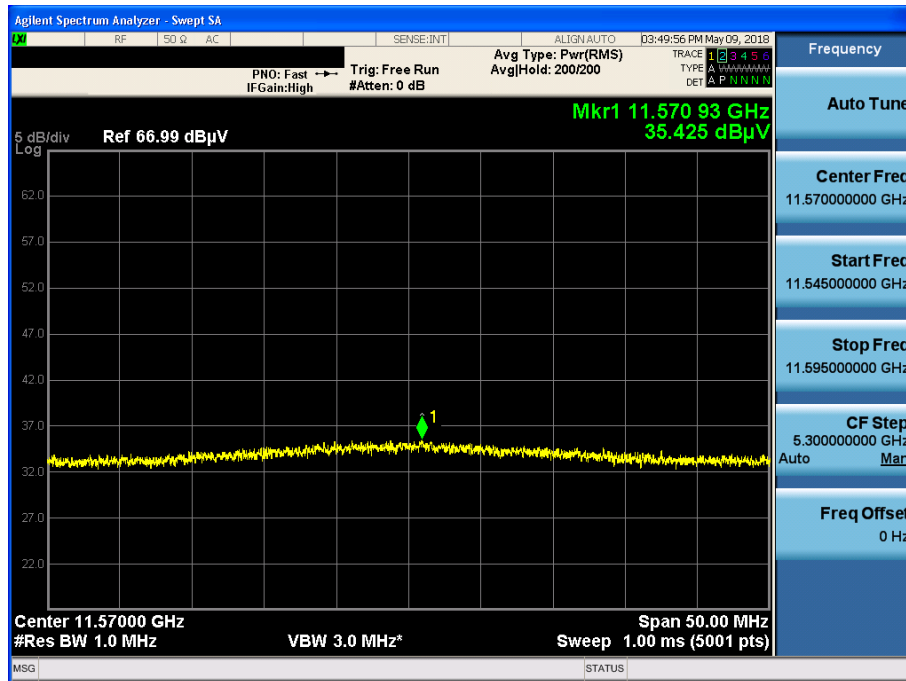
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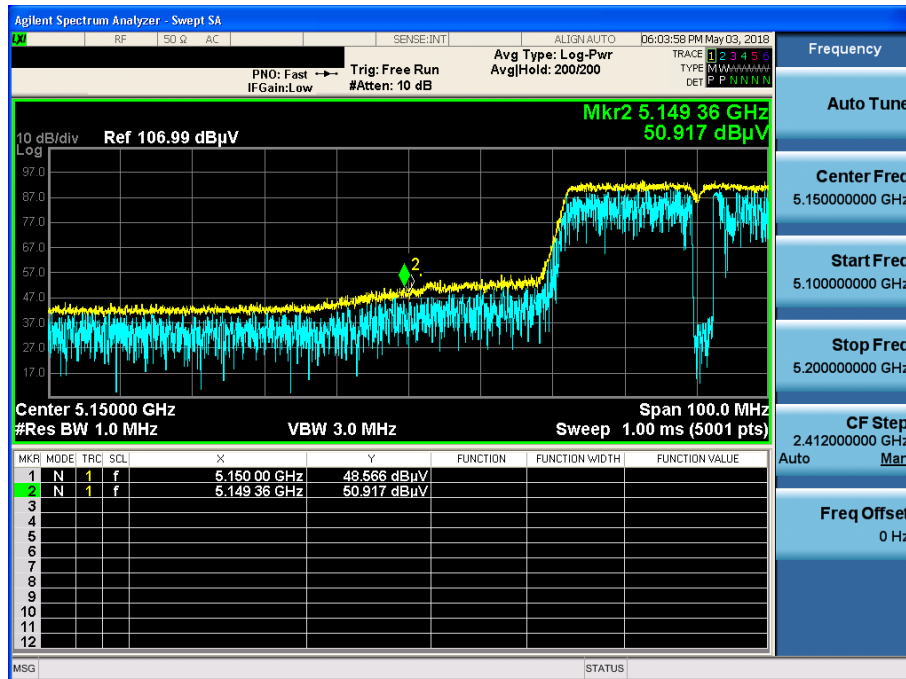
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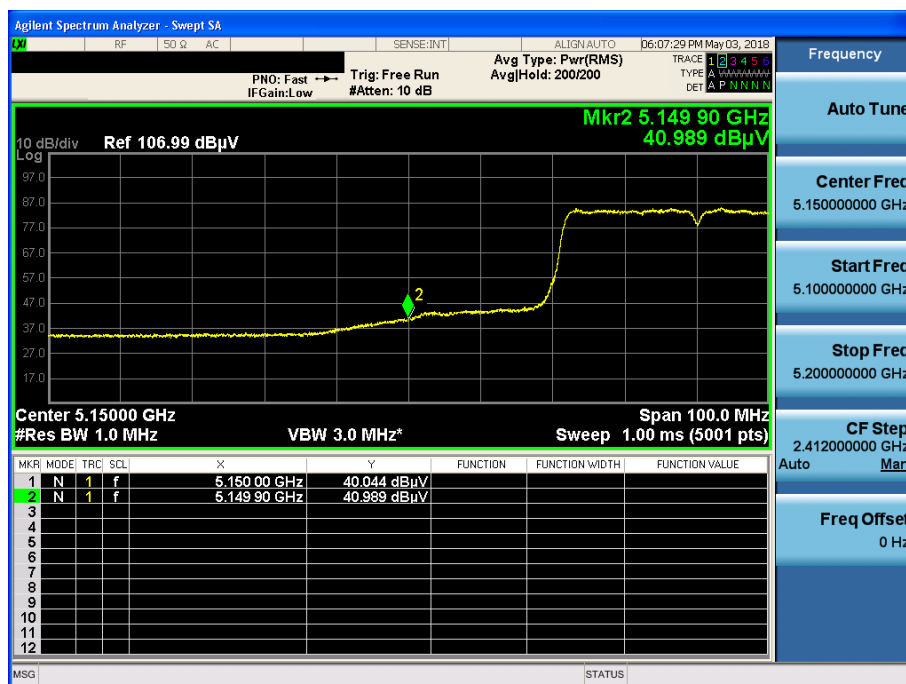
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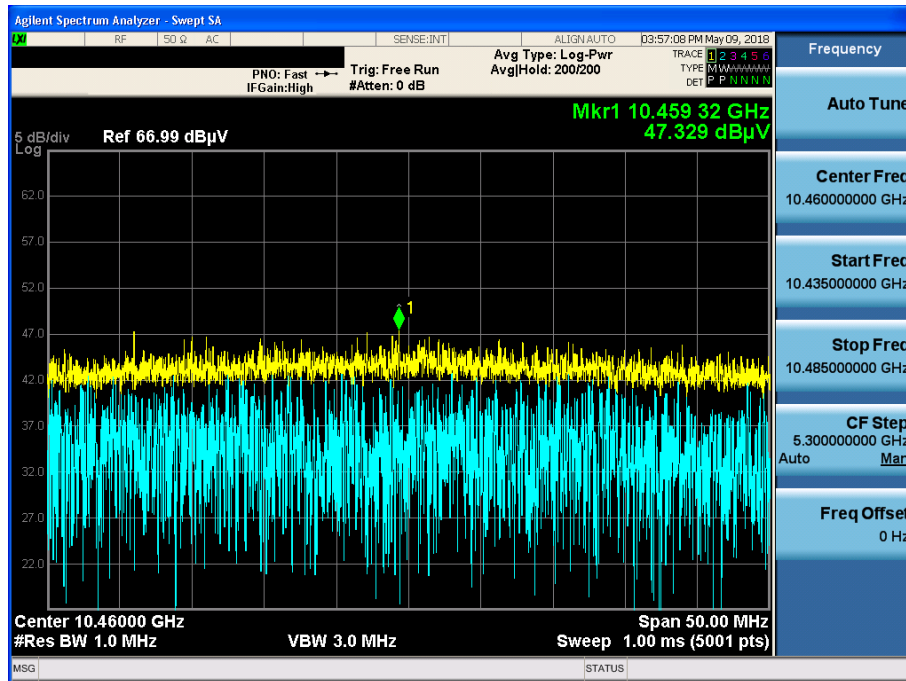
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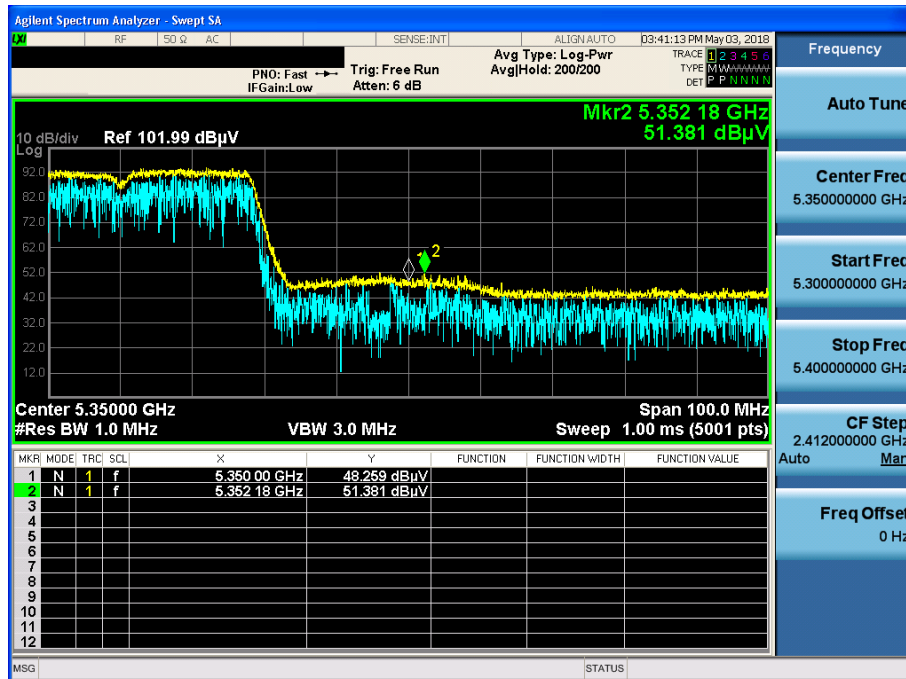
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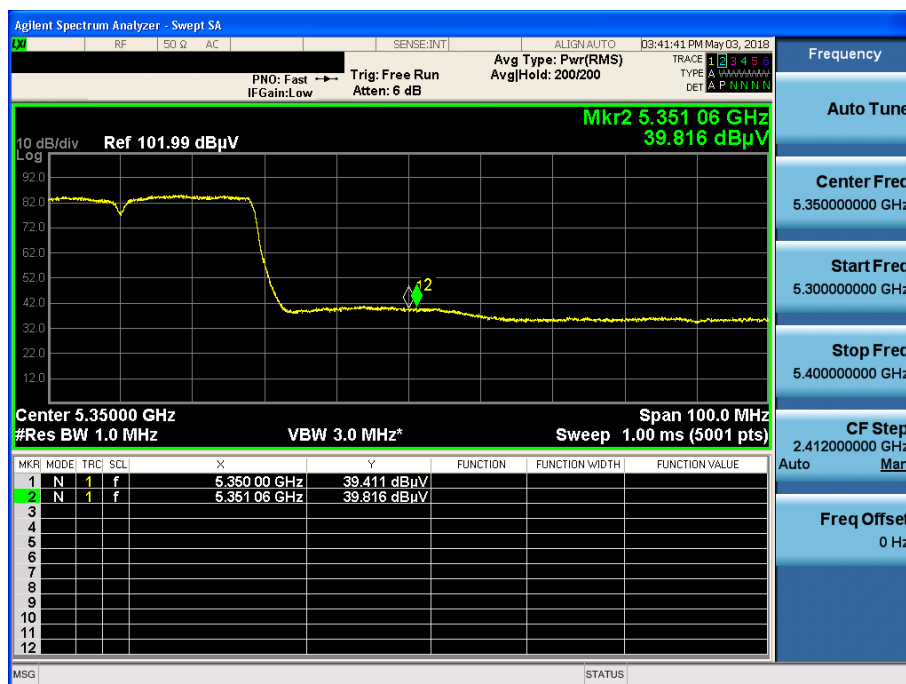
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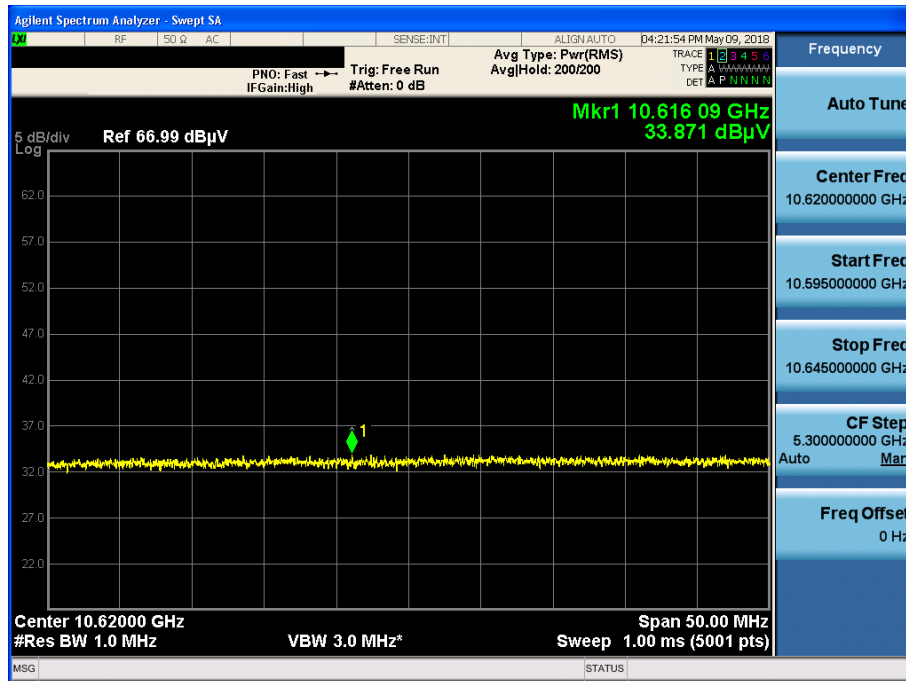
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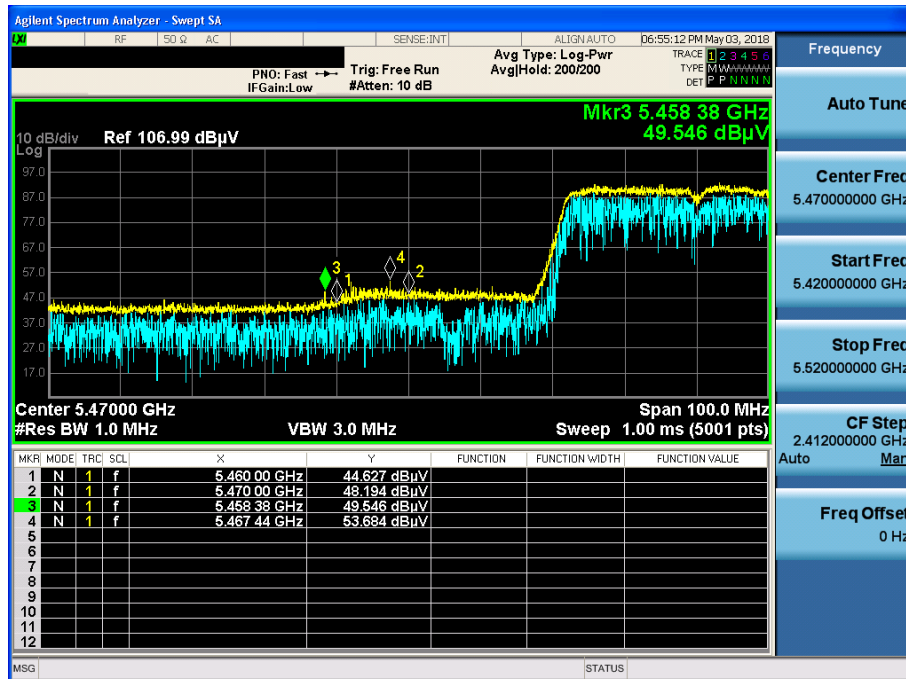
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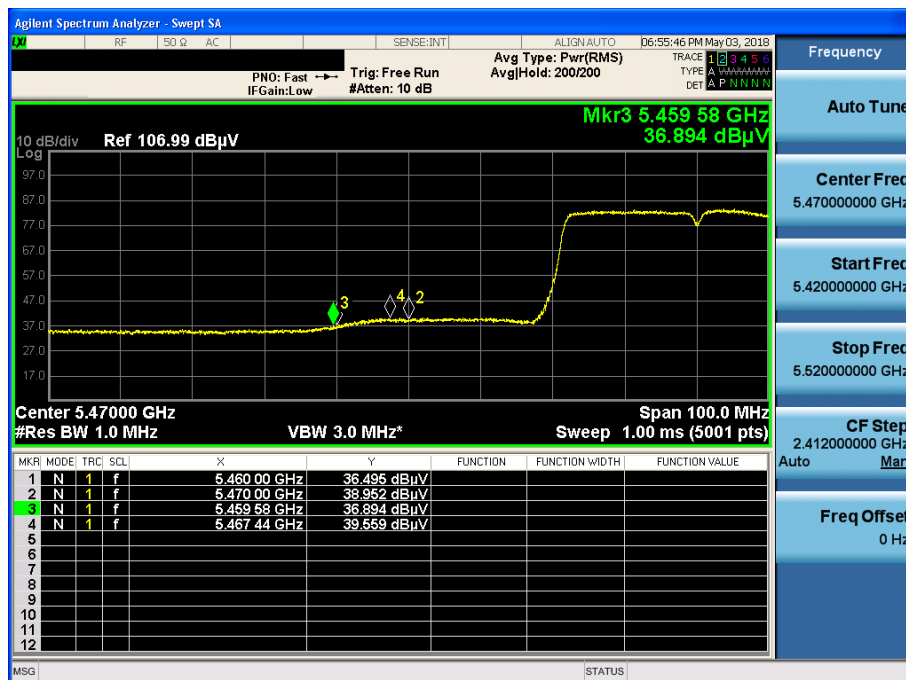
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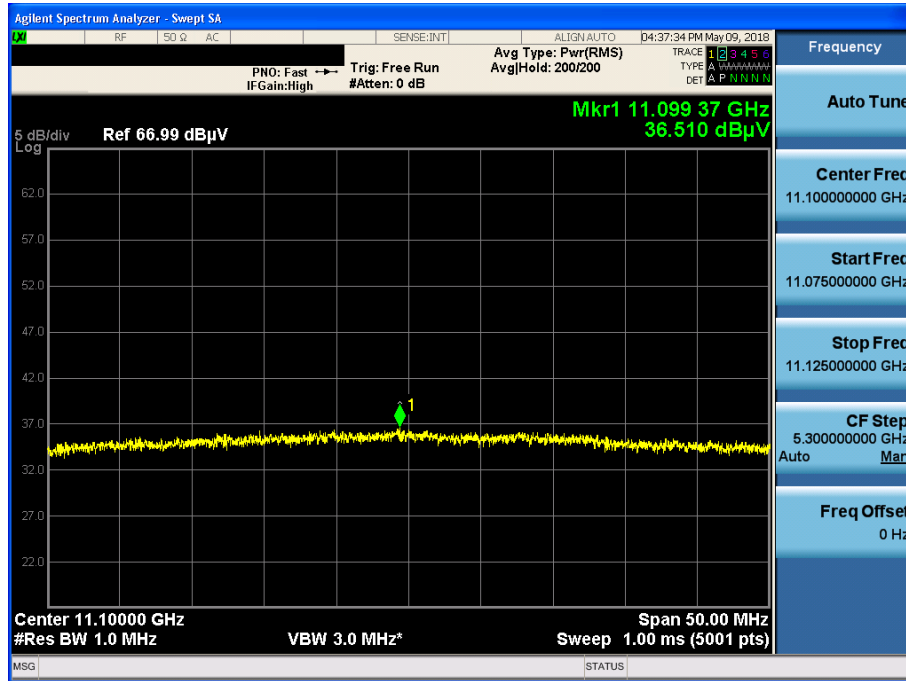
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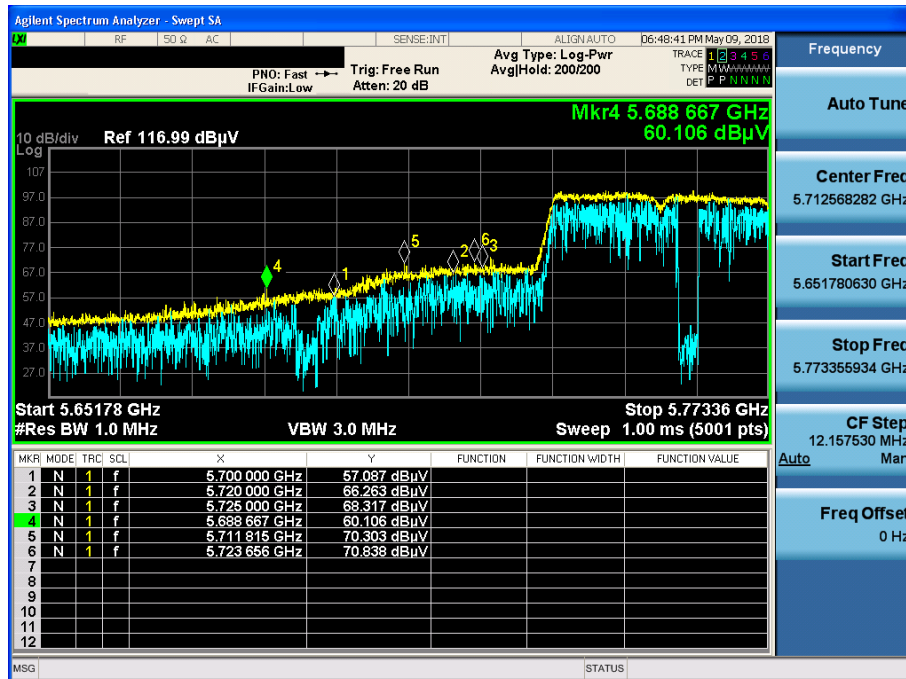
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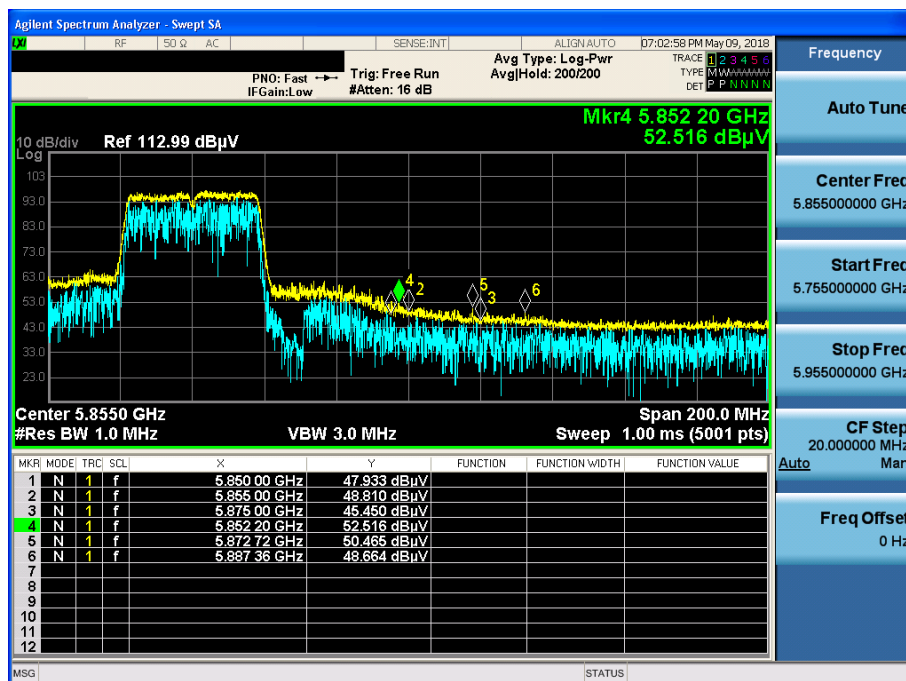
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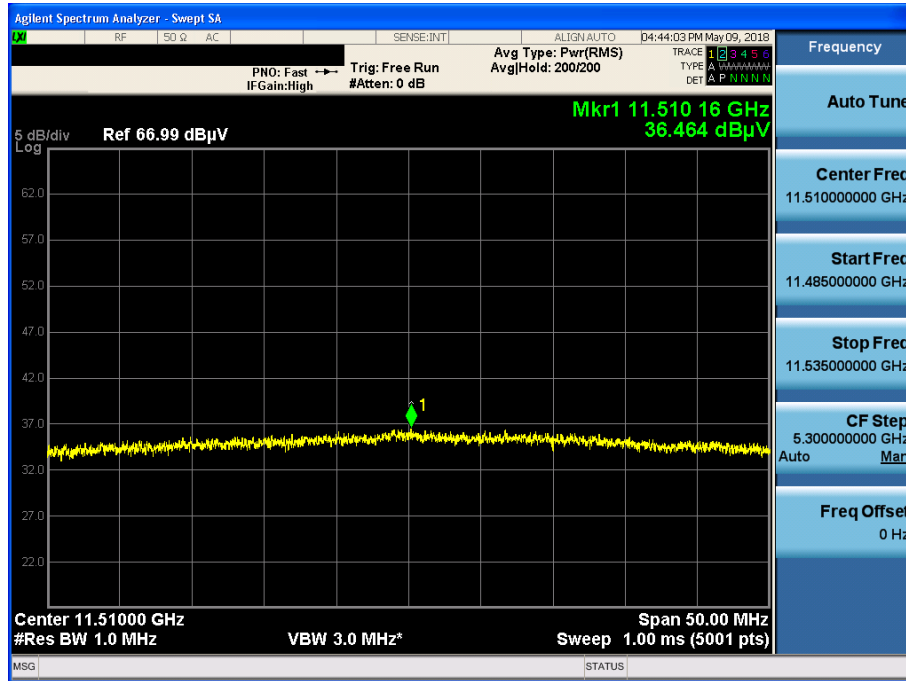
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Detector Mode : PK



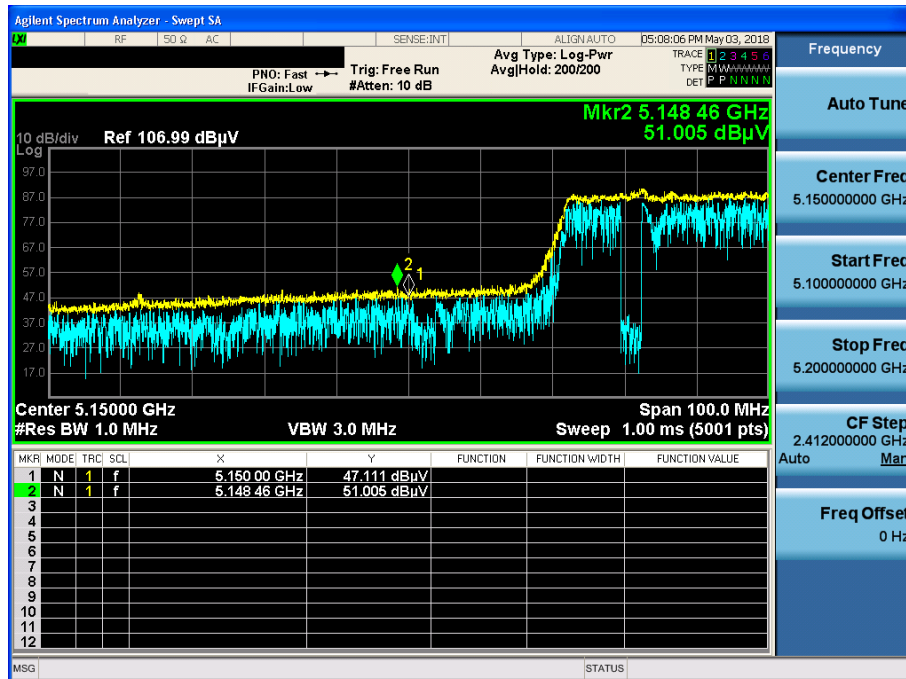
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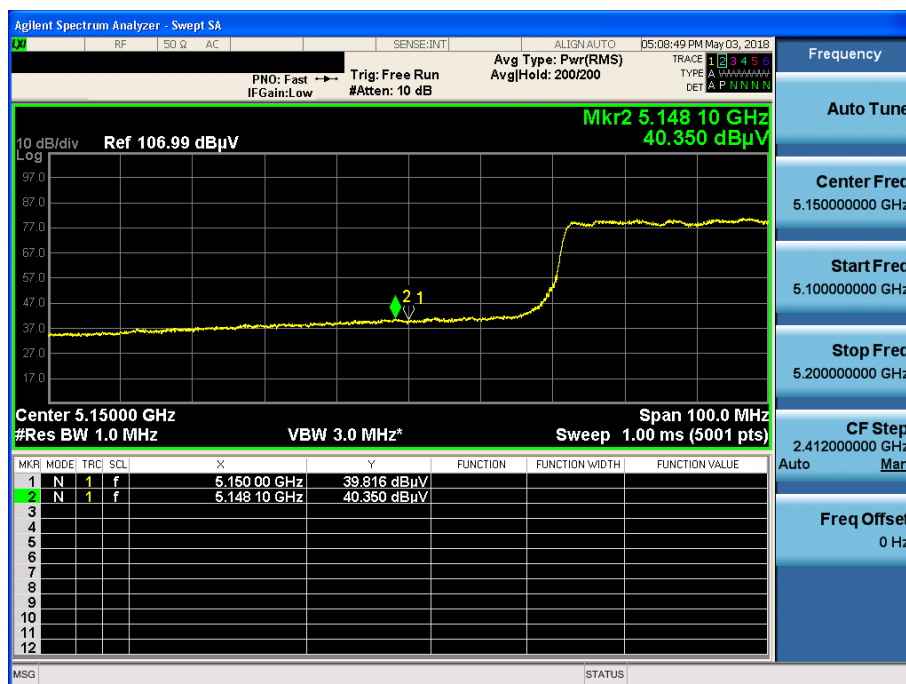
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Detector Mode : PK



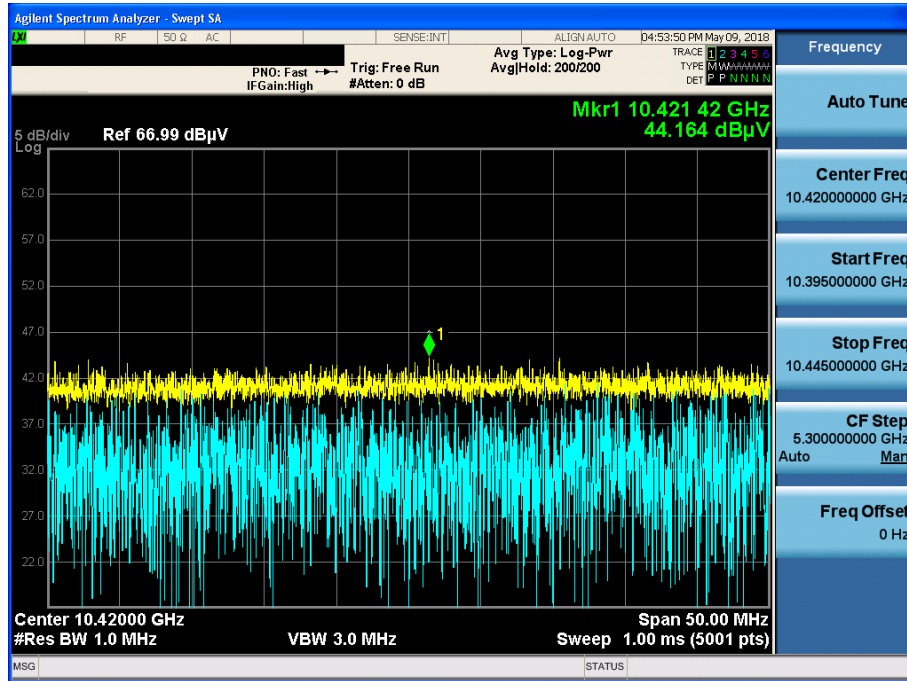
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Detector Mode : AV



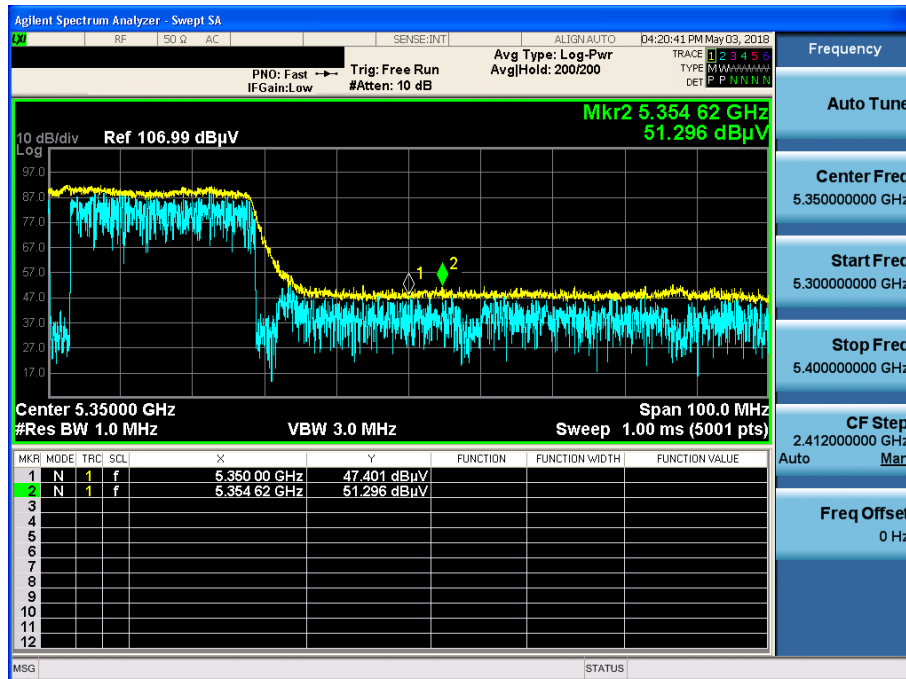
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Detector Mode : PK



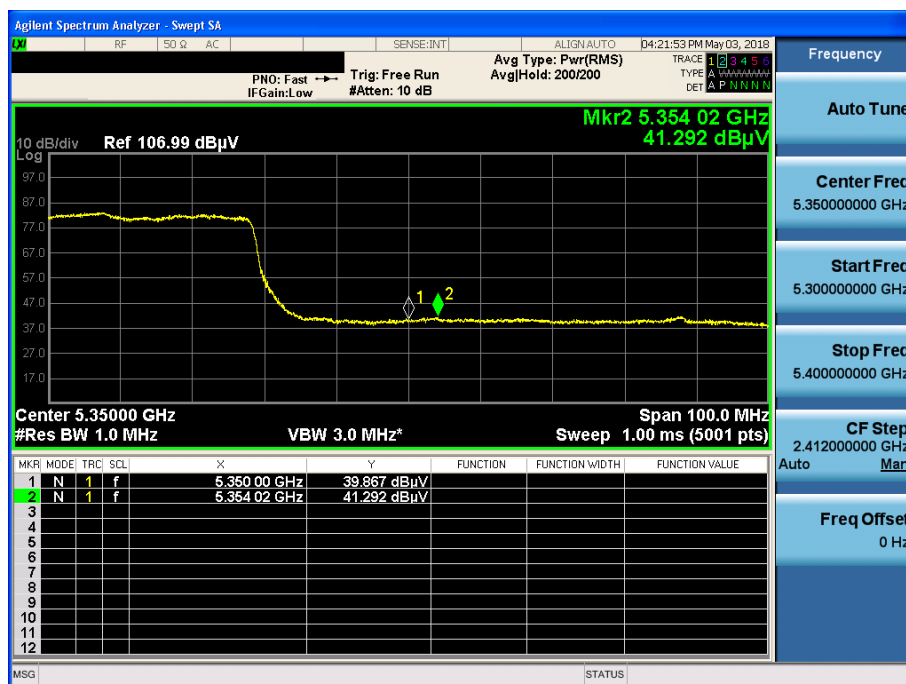
802.11ac(VHT80) & U-NII 2A & Ch.58 & Z axis & Ver

Detector Mode : PK

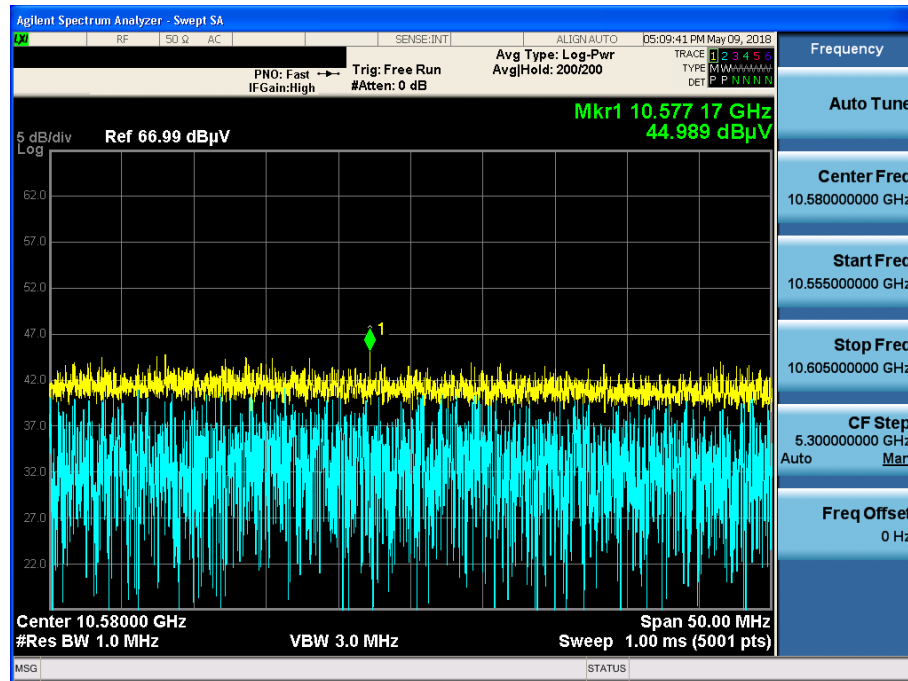


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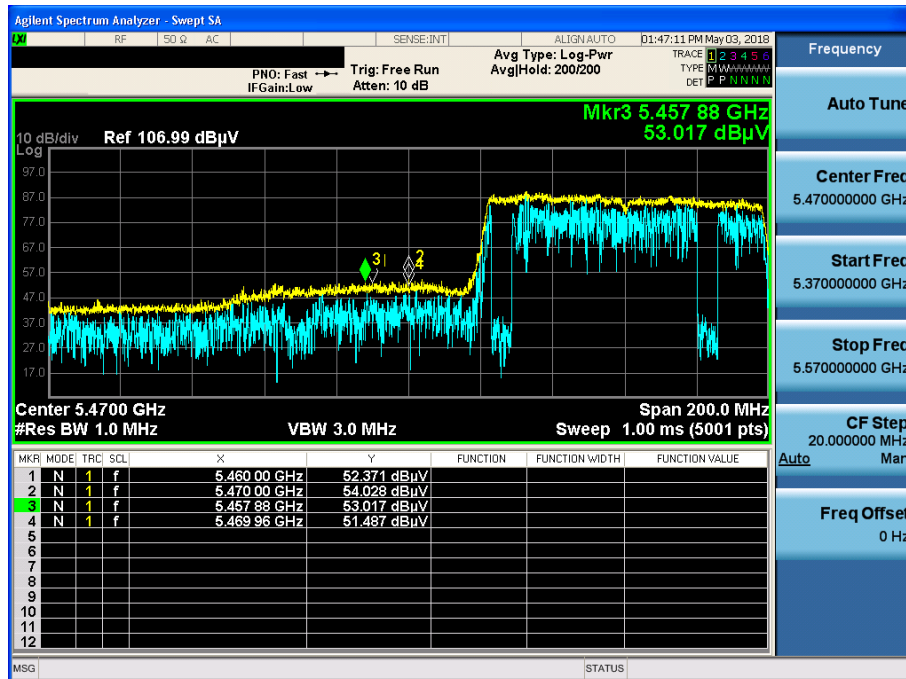


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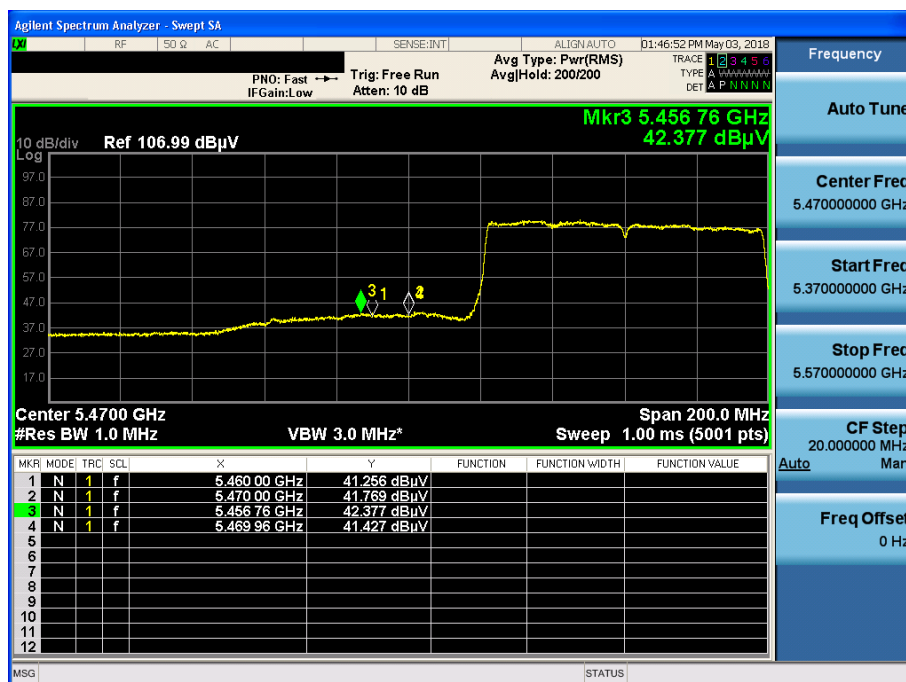
802.11ac(VHT80) & U-NII 2C & Ch.106 & Z axis & Ver

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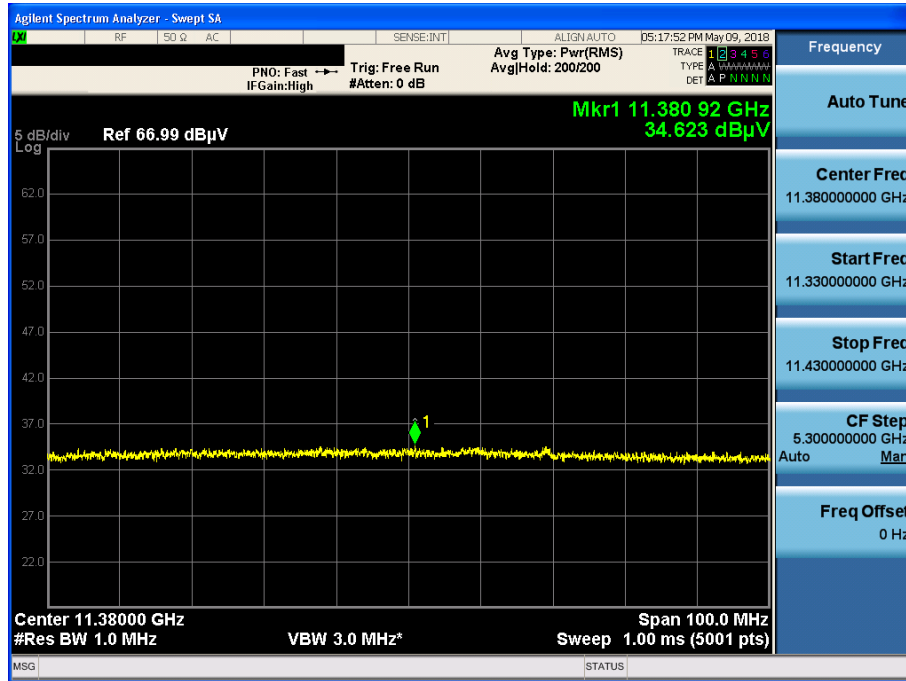
802.11ac(VHT80) & U-NII 2C & Ch.106 & Z axis & Ver

Detector Mode : AV



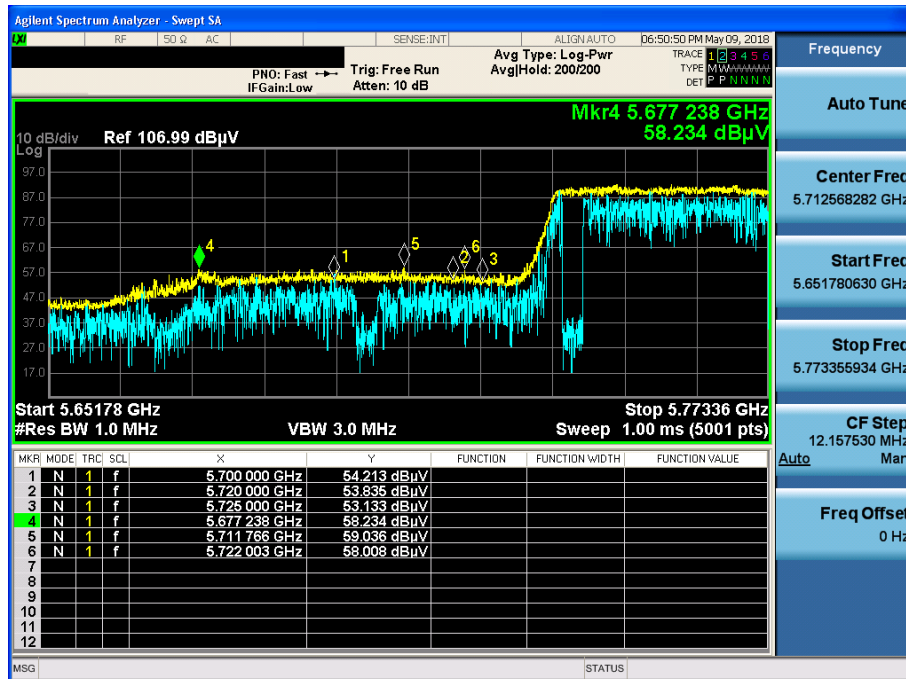
802.11ac(VHT80) & U-NII 2C & Ch.138 & X axis & Ver

Detector Mode : AV



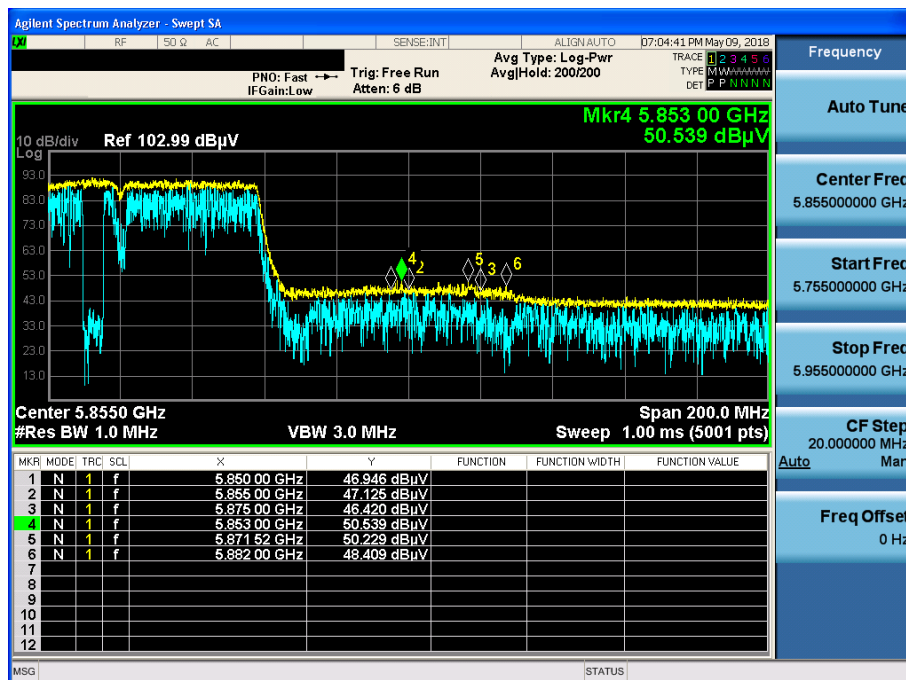
802.11ac(VHT80) & U-NII 3 & Ch.155 & Z axis & Ver

Detector Mode : PK



802.11ac(VHT80) & U-NII 3 & Ch.155 & Z axis & Ver

Detector Mode : PK



802.11ac(VHT80) & U-NII 3 & Ch.155 & X axis & Ver

Detector Mode : AV

