

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2A & 802.11a & MIMO(CDD) & 5300 MHz

Results of Conducted Emission

DTNC

Date 2017-10-13

Order No.
Model No.
Serial No.
Test Condition

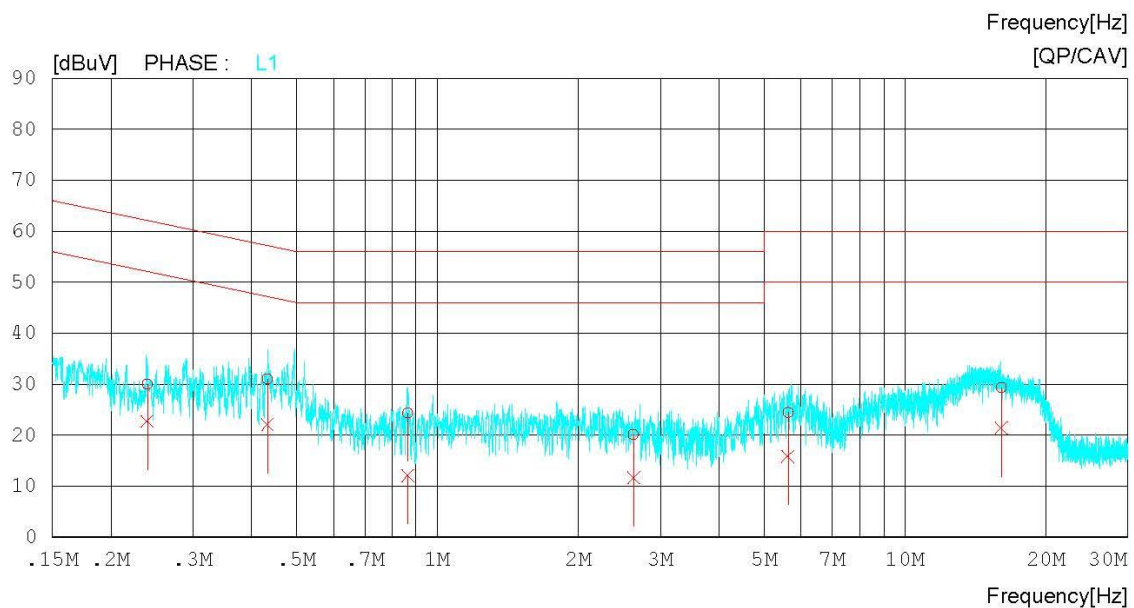
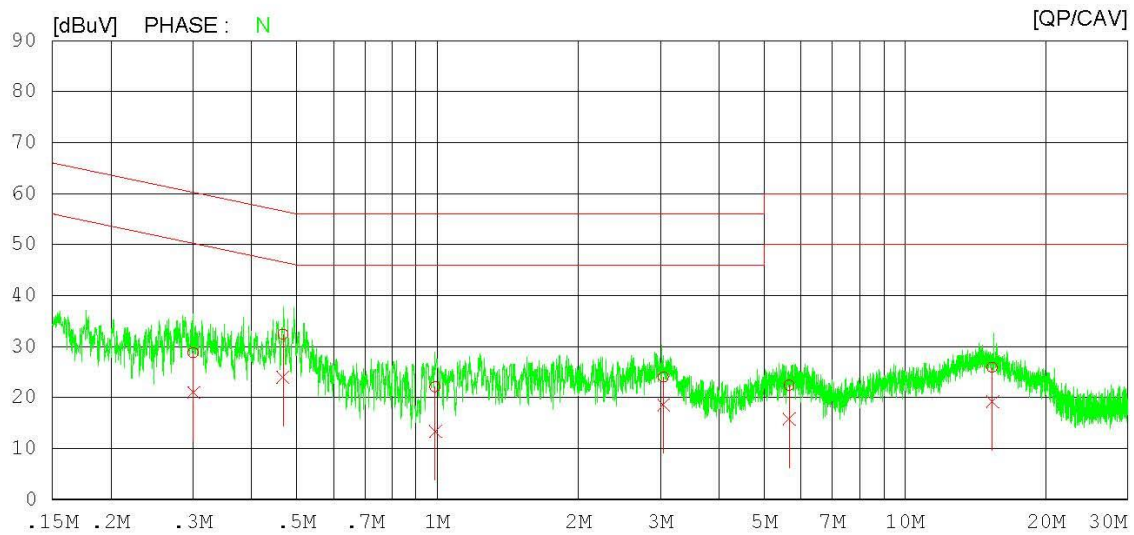
DTNC1709-06811
DS1704

Reference No.
Power Supply
Temp/Humi.
Operator

120V/60Hz
22/45
S.G LEE

Memo 5.3G

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



AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2A & 802.11a & MIMO(CDD) & 5300 MHz

Results of Conducted Emission

DTNC

Date 2017-10-13

Order No. DTNC1709-06811
Model No. DS1704
Serial No.
Test Condition

Reference No.
Power Supply 120V/60Hz
Temp/Humi. 22/45
Operator S.G LEE

Memo 5.3G

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	0.30039	18.86	11.14	9.90	28.76	21.04	60.23	50.23	31.47	29.19	N
2	0.46701	22.49	14.03	9.90	32.39	23.93	56.57	46.57	24.18	22.64	N
3	0.98868	12.16	3.41	9.93	22.09	13.34	56.00	46.00	33.91	32.66	N
4	3.04400	14.00	8.61	9.98	23.98	18.59	56.00	46.00	32.02	27.41	N
5	5.65720	12.27	5.69	10.06	22.33	15.75	60.00	50.00	37.67	34.25	N
6	15.39520	15.70	8.87	10.24	25.94	19.11	60.00	50.00	34.06	30.89	N
7	0.23940	20.01	12.78	9.90	29.91	22.68	62.12	52.12	32.21	29.44	L1
8	0.43283	21.06	12.13	9.90	30.96	22.03	57.20	47.20	26.24	25.17	L1
9	0.86365	14.39	2.10	9.93	24.32	12.03	56.00	46.00	31.68	33.97	L1
10	2.62440	10.08	1.65	9.96	20.04	11.61	56.00	46.00	35.96	34.39	L1
11	5.62360	14.36	5.71	10.06	24.42	15.77	60.00	50.00	35.58	34.23	L1
12	16.08680	18.97	11.14	10.25	29.22	21.39	60.00	50.00	30.78	28.61	L1

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2C & 802.11a & MIMO(CDD) & 5580 MHz

Results of Conducted Emission

DTNC

Date 2017-10-13

Order No.
Model No.
Serial No.
Test Condition

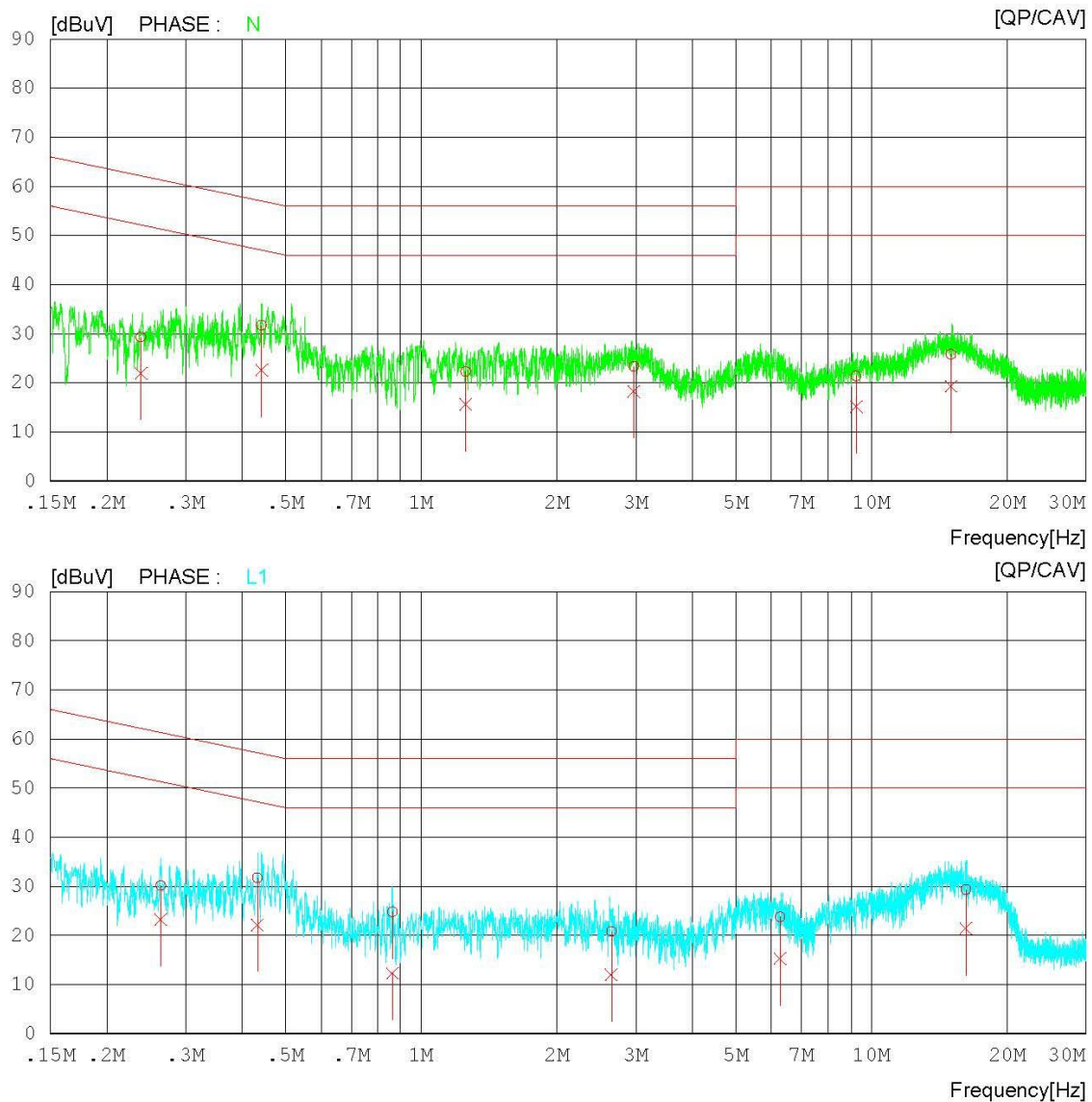
DTNC1709-06811
DS1704

Reference No.
Power Supply
Temp/Humi.
Operator

120V/60Hz
22/45
S.G LEE

Memo 5.5G

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



AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2C & 802.11a & MIMO(CDD) & 5580 MHz

Results of Conducted Emission

DTNC

Date 2017-10-13

Order No. DTNC1709-06811
Model No. DS1704
Serial No.
Test Condition

Reference No.
Power Supply 120V/60Hz
Temp/Humi. 22/45
Operator S.G LEE

Memo 5.5G

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	0.23849	19.48	12.09	9.90	29.38	21.99	62.15	52.15	32.77	30.16	N
2	0.44188	21.83	12.67	9.90	31.73	22.57	57.03	47.03	25.30	24.46	N
3	1.25420	12.32	5.70	9.93	22.25	15.63	56.00	46.00	33.75	30.37	N
4	2.96440	13.38	8.29	9.98	23.36	18.27	56.00	46.00	32.64	27.73	N
5	9.24920	11.16	5.02	10.15	21.31	15.17	60.00	50.00	38.69	34.83	N
6	15.02640	15.55	9.08	10.24	25.79	19.32	60.00	50.00	34.21	30.68	N
7	0.26364	20.20	13.29	9.90	30.10	23.19	61.32	51.32	31.22	28.13	L1
8	0.43255	21.78	12.19	9.90	31.68	22.09	57.20	47.20	25.52	25.11	L1
9	0.86342	14.80	2.29	9.93	24.73	12.22	56.00	46.00	31.27	33.78	L1
10	2.64360	10.78	1.98	9.97	20.75	11.95	56.00	46.00	35.25	34.05	L1
11	6.26640	13.66	5.19	10.05	23.71	15.24	60.00	50.00	36.29	34.76	L1
12	16.22080	19.04	11.11	10.25	29.29	21.36	60.00	50.00	30.71	28.64	L1

AC Line Conducted Emissions (Graph)

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

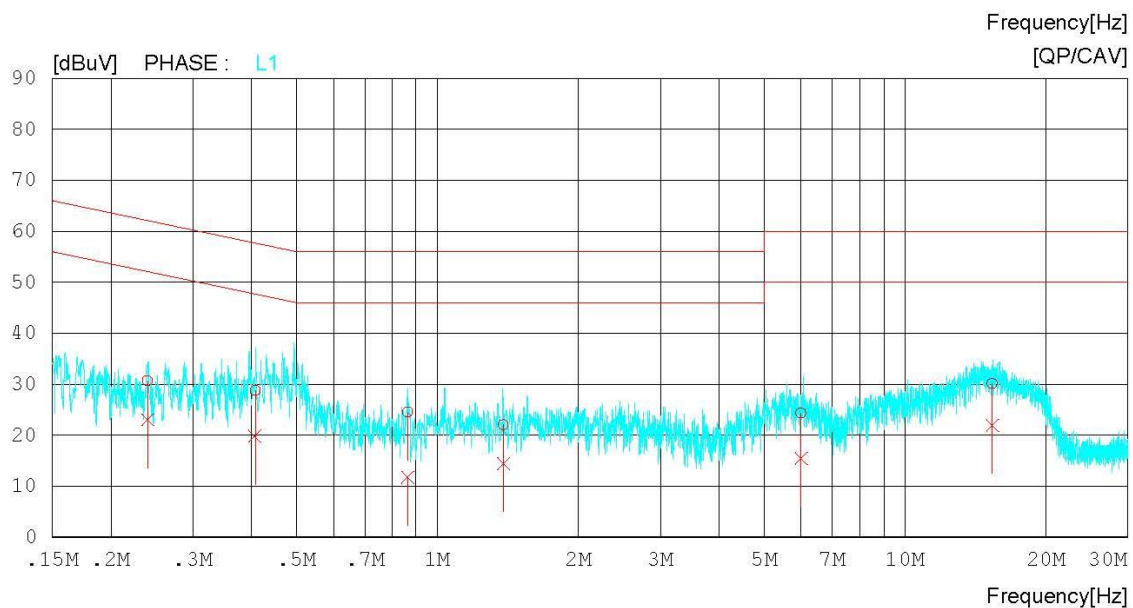
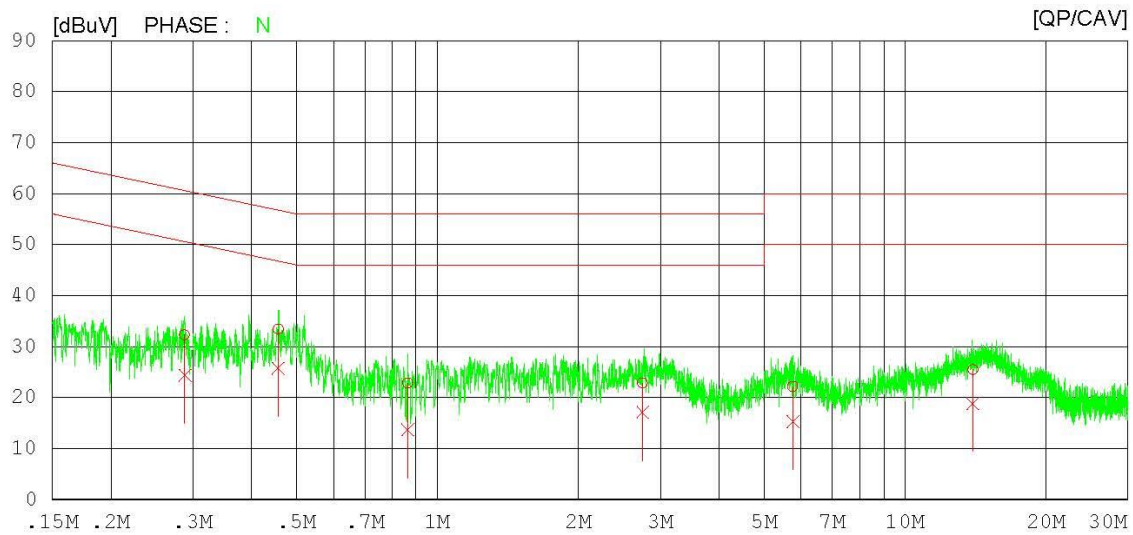
Results of Conducted Emission

DTNC

Date 2017-10-13

Order No.
Model No.
Serial No.
Test ConditionDTNC1709-06811
DS1704Reference No.
Power Supply
Temp/Humi.
Operator120V/60Hz
22/45
S.G LEE

Memo 5.7G

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

AC Line Conducted Emissions (Data List)

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

Results of Conducted Emission

DTNC

Date 2017-10-13

Order No. DTNC1709-06811
Model No. DS1704
Serial No.
Test Condition

Reference No.
Power Supply 120V/60Hz
Temp/Humi. 22/45
Operator S.G LEE

Memo 5.7G

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	0.28793	22.38	14.48	9.90	32.28	24.38	60.58	50.58	28.30	26.20	N
2	0.45636	23.56	15.85	9.90	33.46	25.75	56.76	46.76	23.30	21.01	N
3	0.86336	12.89	3.76	9.93	22.82	13.69	56.00	46.00	33.18	32.31	N
4	2.74640	12.86	7.17	9.97	22.83	17.14	56.00	46.00	33.17	28.86	N
5	5.76140	12.10	5.28	10.05	22.15	15.33	60.00	50.00	37.85	34.67	N
6	13.97700	15.22	8.65	10.20	25.42	18.85	60.00	50.00	34.58	31.15	N
7	0.23994	20.75	13.11	9.90	30.65	23.01	62.10	52.10	31.45	29.09	L1
8	0.40719	18.80	9.89	9.90	28.70	19.79	57.71	47.71	29.01	27.92	L1
9	0.86284	14.61	1.77	9.93	24.54	11.70	56.00	46.00	31.46	34.30	L1
10	1.38440	12.13	4.51	9.93	22.06	14.44	56.00	46.00	33.94	31.56	L1
11	5.99680	14.23	5.39	10.05	24.28	15.44	60.00	50.00	35.72	34.56	L1
12	15.38800	19.85	11.72	10.24	30.09	21.96	60.00	50.00	29.91	28.04	L1

9. LIST OF TEST EQUIPMENT

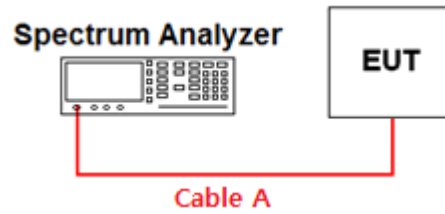
Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	17/07/12	18/07/12	MY46471601
Spectrum Analyzer	Agilent Technologies	N9020A	17/09/05	18/09/05	MY46471251
Spectrum Analyzer	Agilent Technologies	N9030A	17/09/07	18/09/07	MY53310140
Multimeter	FLUKE	17B	17/04/12	18/04/12	26030065WS
DC Power Supply	Agilent	66332A	17/01/11	18/01/11	US37473831
Signal Generator	Rohde Schwarz	SMBV100A	17/01/04	18/01/04	255571
Signal Generator	Rohde Schwarz	SMF100A	17/04/21	18/04/21	102341
Thermohygrometer	BODYCOM	BJ5478	17/04/11	18/04/11	120612-2
Temp & Humi Test Chamber	SJ Science	SJ-TH-S50	17/01/25	18/01/25	SJ-TH-S50-120203
50W 10dB ATT	SMAJK	SMAJK-50-10	17/09/06	18/09/06	2-50-10
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2411B	17/04/11	18/04/11	1338004 1306053
EMI Test Receiver	Rohde Schwarz	ESR7	17/02/16	18/02/16	101061
Loop Antenna	Schwarzbeck	FMZB1513	16/04/22	18/04/22	1513-128
BILOG ANTENNA	Schwarzbeck	VULB 9160	16/05/13	18/05/13	3358
Horn Antenna	ETS-LINDGREN	3117	16/05/03	18/05/03	00140394
Horn Antenna	A.H.Systems Inc.	SAS-574	17/07/31	19/07/31	155
PreAmplifier	TSJ	MLA-010K01- B01-27	17/03/06	18/03/06	1844539
PreAmplifier	Agilent	8449B	17/09/05	18/09/05	3008A02108
PreAmplifier	Rohde Schwarz	NA	17/01/02	18/01/02	1333556
PreAmplifier	A.H.Systems Inc.	PAM-1840VH	16/12/04	17/12/04	163
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
EMI Test Receiver	R&S	ESCI	17/02/26	18/02/16	100364
SINGLE-PHASE MASTER	NF	4420	17/09/01	18/09/01	3049354420023
LISN	SCHWARZBECK	NNLK 8121	17/04/03	18/04/03	6182

Note: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2006.

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 D02v01r04**

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: Single & CDD

Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle ($x = \text{On} / (\text{On} + \text{Off})$)			Duty Cycle Correction Factor [dB]	50/ T [kHz]
			On Time [ms]	(On+Off) Time [ms]	x		
802.11a	6Mbps	5180	2.03	2.06	98.21	0.08	24.64
802.11n (HT20)	MCS0	5180	1.89	1.93	98.08	0.09	26.53
802.11n (HT40)	MCS0	5190	1.27	1.31	97.25	0.13	39.31
802.11ac (VHT80)	MCS0	5210	1.17	1.21	97.02	0.14	42.74

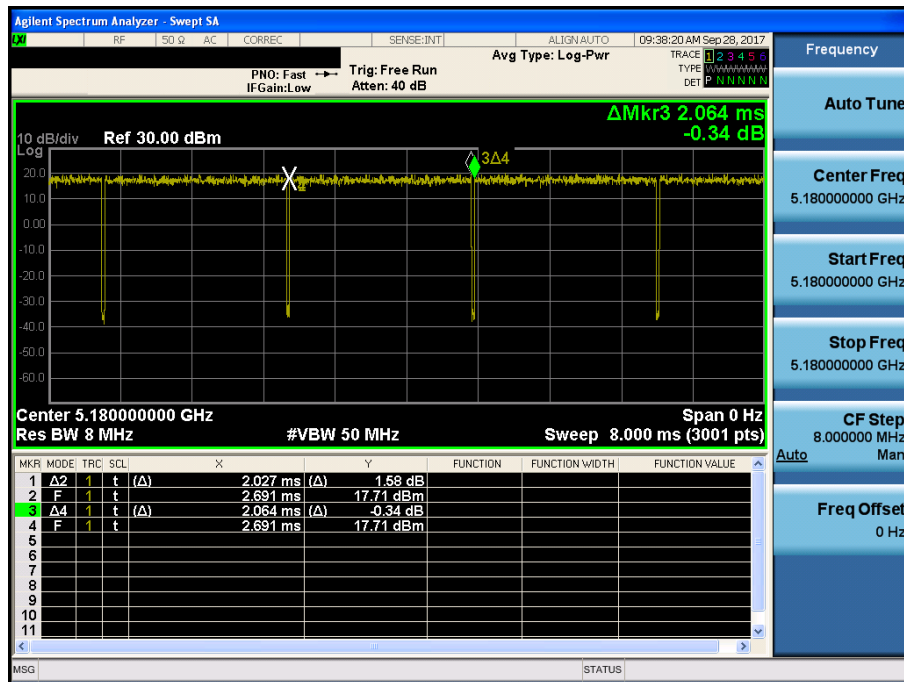
Duty cycle: SDM

Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle ($x = \text{On} / (\text{On} + \text{Off})$)			Duty Cycle Correction Factor [dB]	50/ T [kHz]
			On Time [ms]	(On+Off) Time [ms]	x		
802.11n (HT20)	MCS8	5180	0.97	1.01	96.32	0.17	51.65
802.11n (HT40)	MCS8	5190	0.66	0.70	94.83	0.24	75.76
802.11ac (VHT80)	MCS0	5210	0.61	0.65	94.44	0.25	81.70

Single Transmit

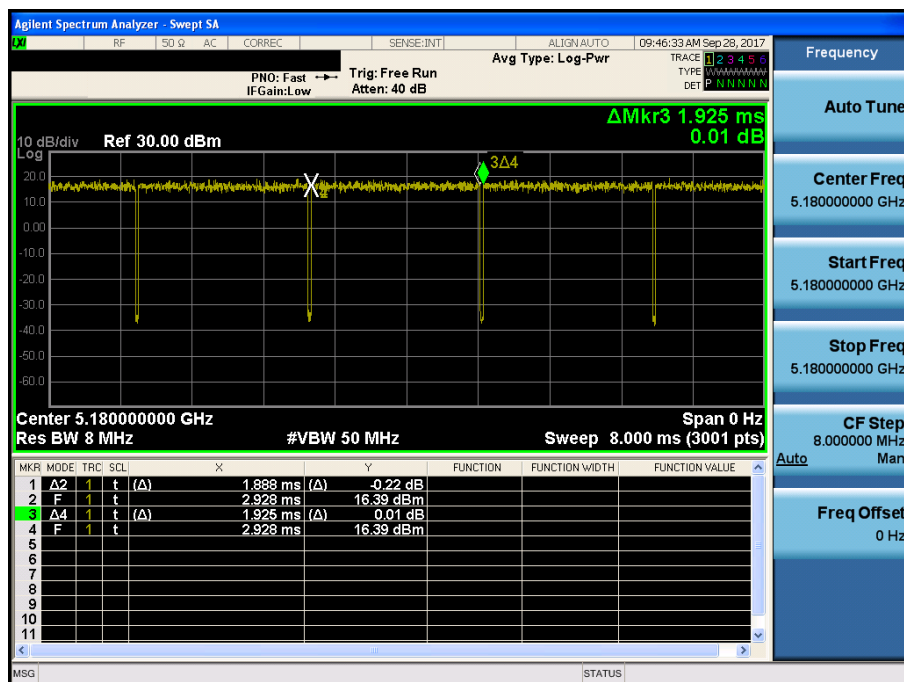
Duty Cycle

Test Mode: 802.11a & Ch.36



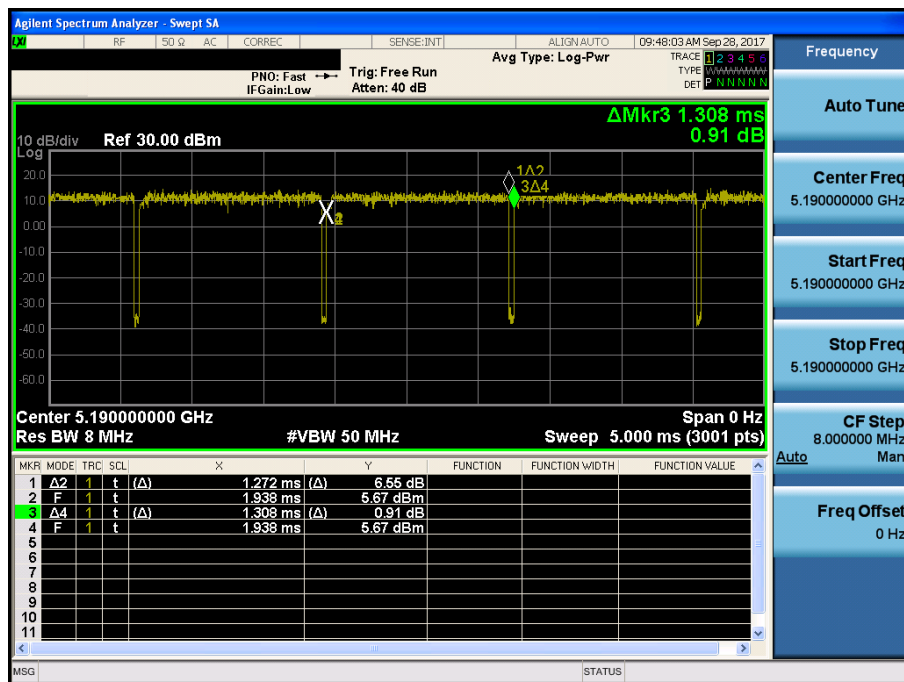
Duty Cycle

Test Mode: 802.11n(HT20) & Ch.36



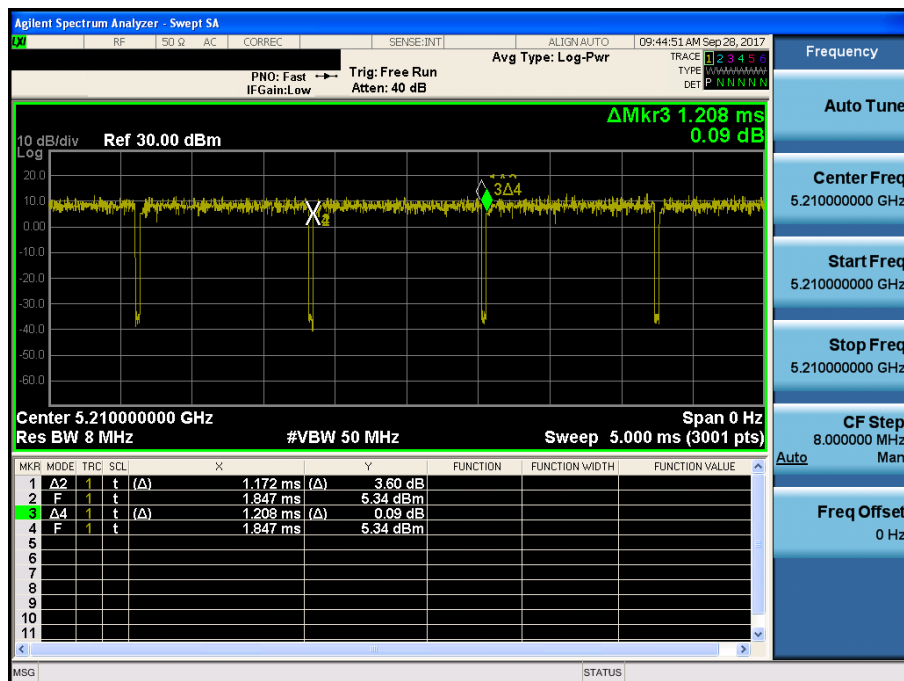
Duty Cycle

Test Mode: 802.11n HT40 & Ch.38



Duty Cycle

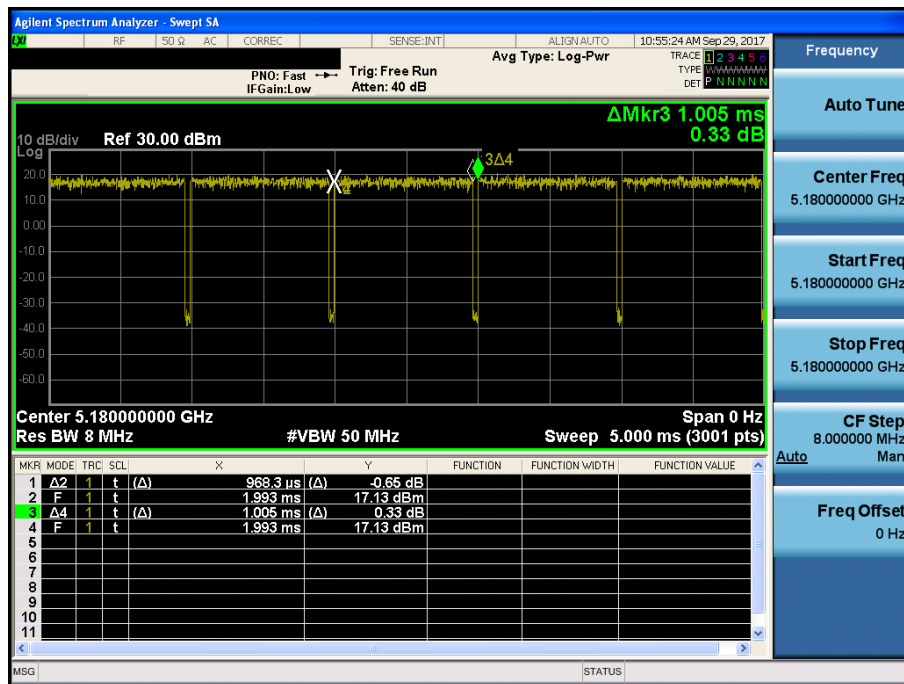
Test Mode: 802.11ac VHT80 & Ch.42



Multiple Transmit _ SDM

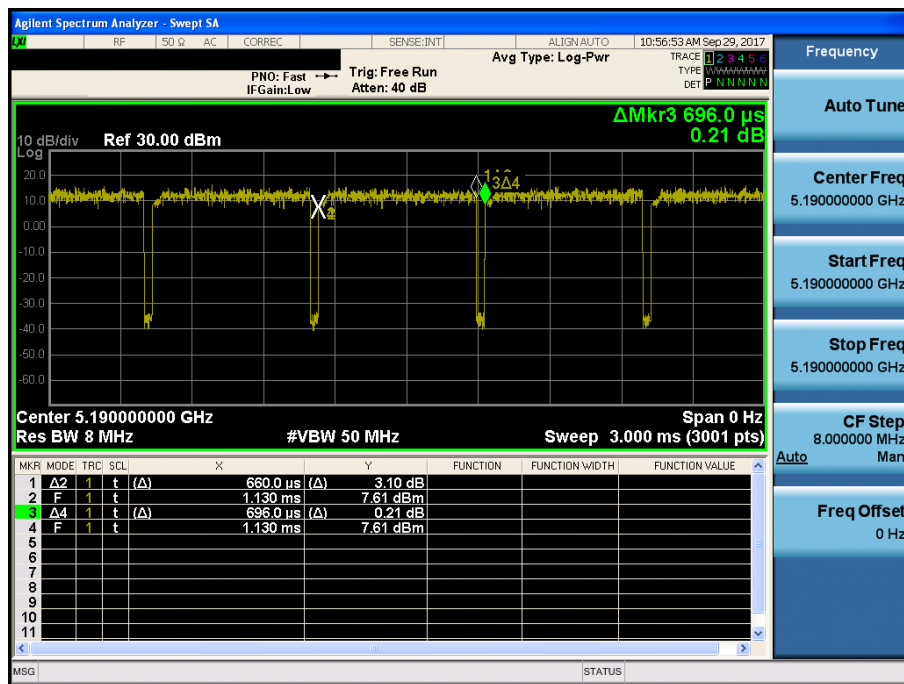
Duty Cycle

Test Mode: 802.11n HT20 & Ch.36



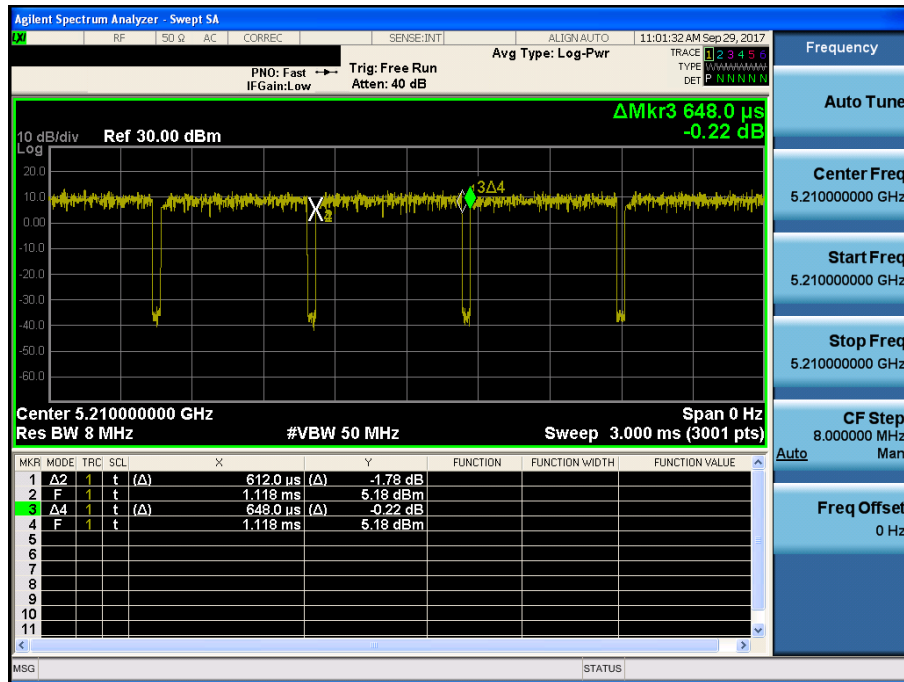
Duty Cycle

Test Mode: 802.11n HT40 & Ch.38



Duty Cycle

Test Mode: 802.11ac VHT80 & Ch.42

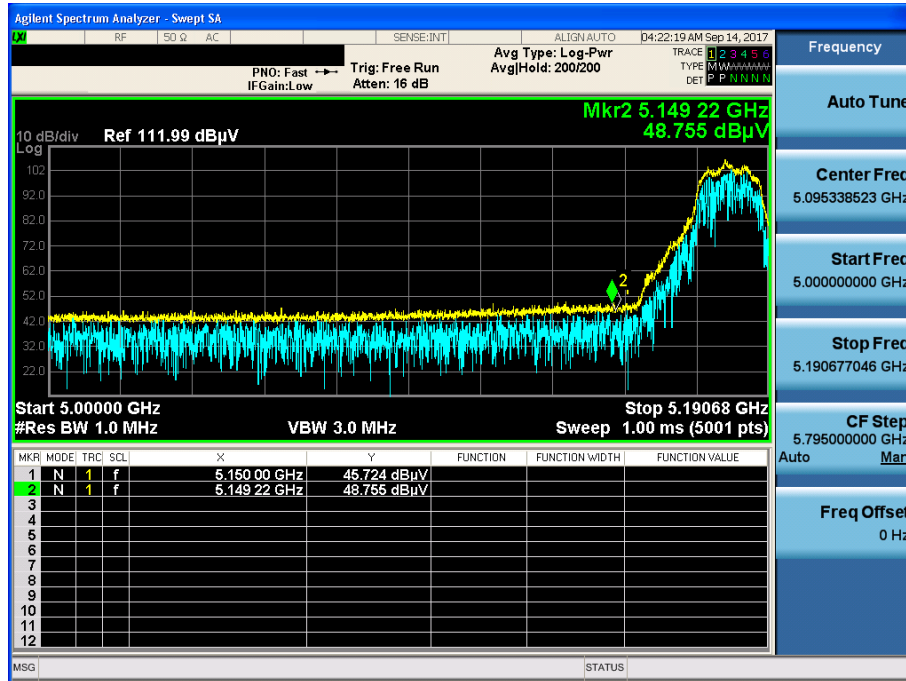


APPENDIX III

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

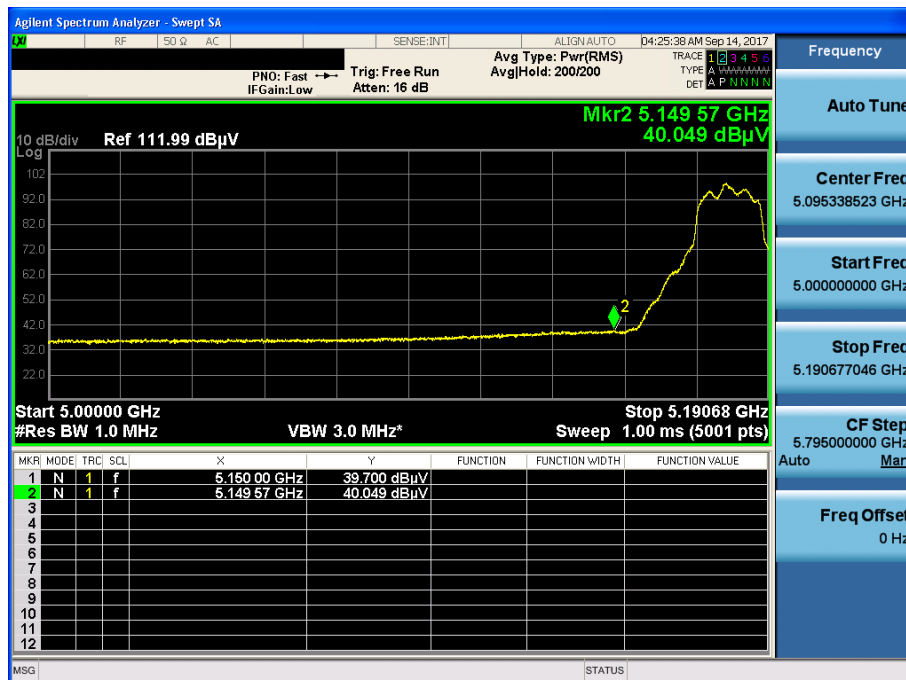
802.11a & U-NII 1 & Ch.36 & Y axis & Hor

Detector Mode : PK



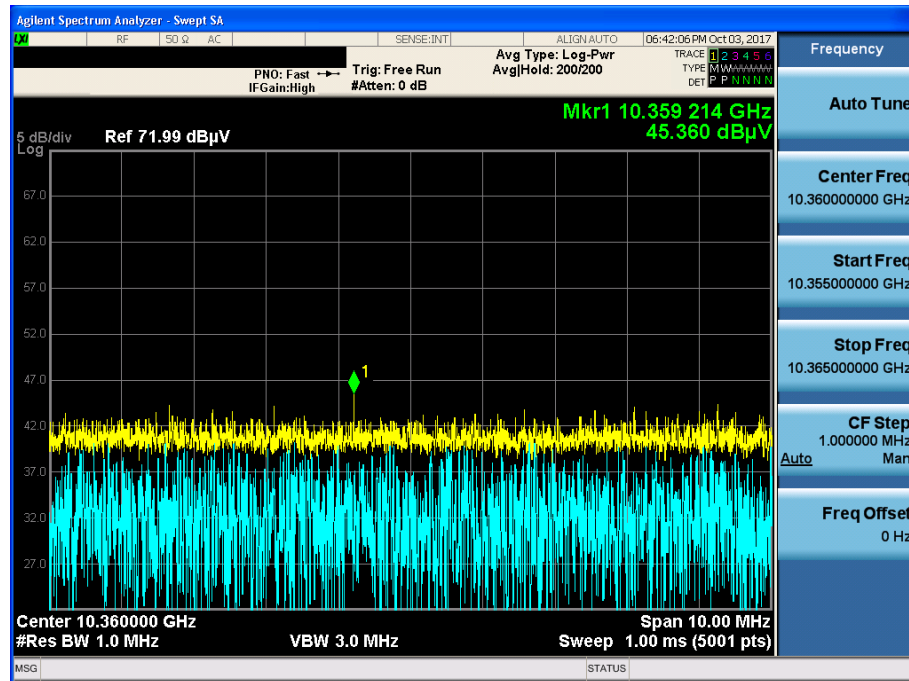
802.11a & U-NII 1 & Ch.36 & Y axis & Hor

Detector Mode : AV



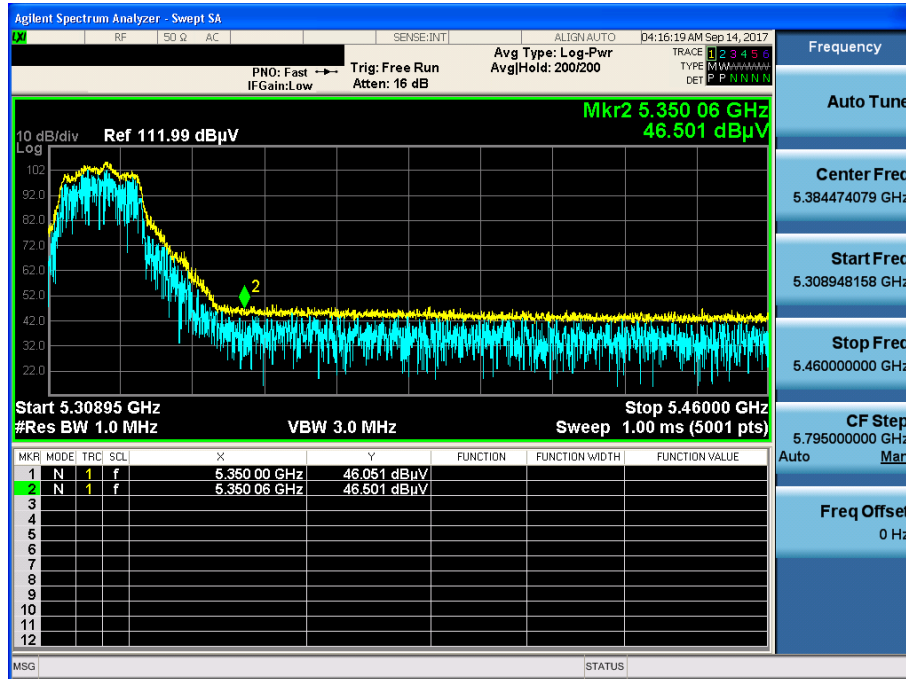
802.11a & U-NII 1 & Ch.36 & Z axis & Hor

Detector Mode : PK



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

Detector Mode : PK



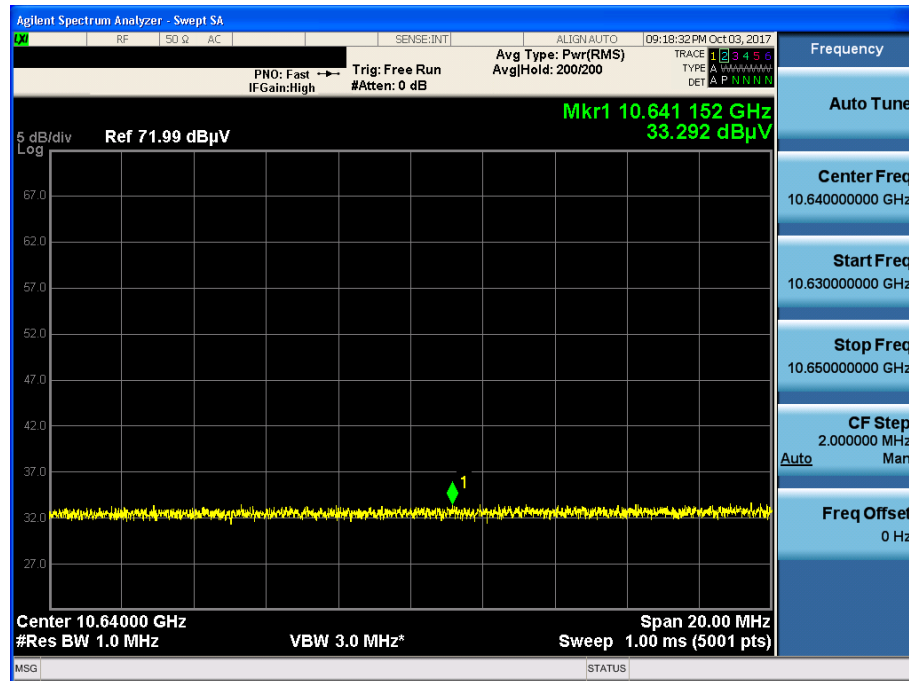
802.11a & U-NII 2A & Ch.64 & Y axis & Hor

Detector Mode : AV



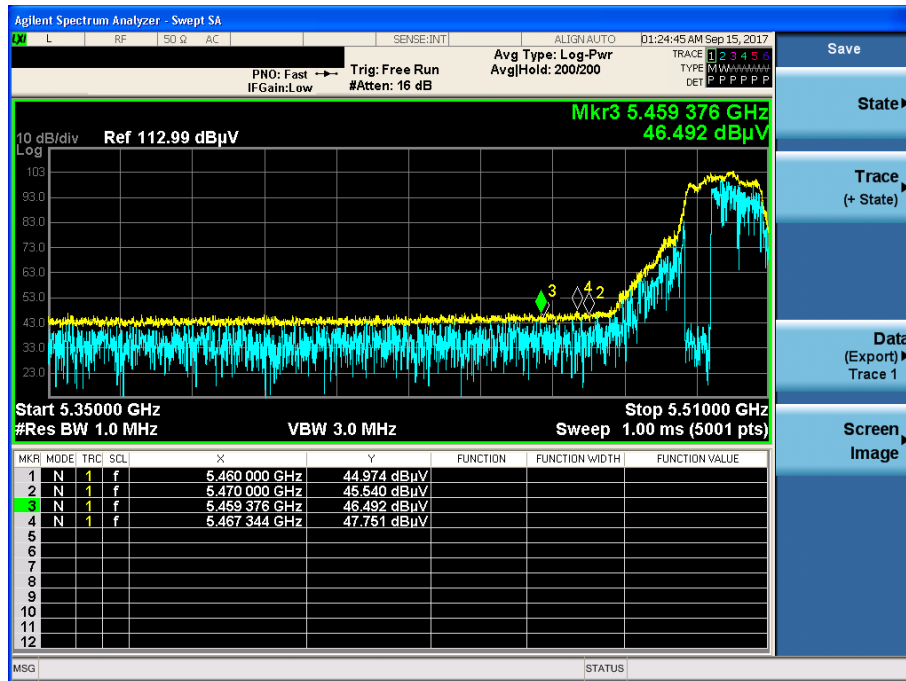
802.11a & U-NII 2A & Ch.64 & Z axis & Hor

Detector Mode : AV



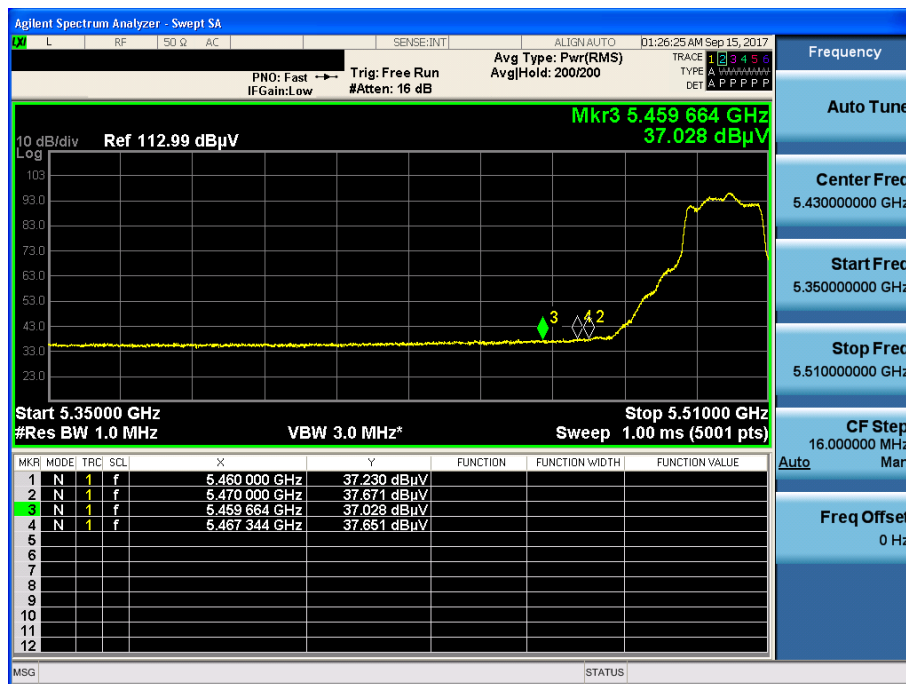
802.11a & U-NII 2C & Ch.100 & Y axis & Hor

Detector Mode : PK



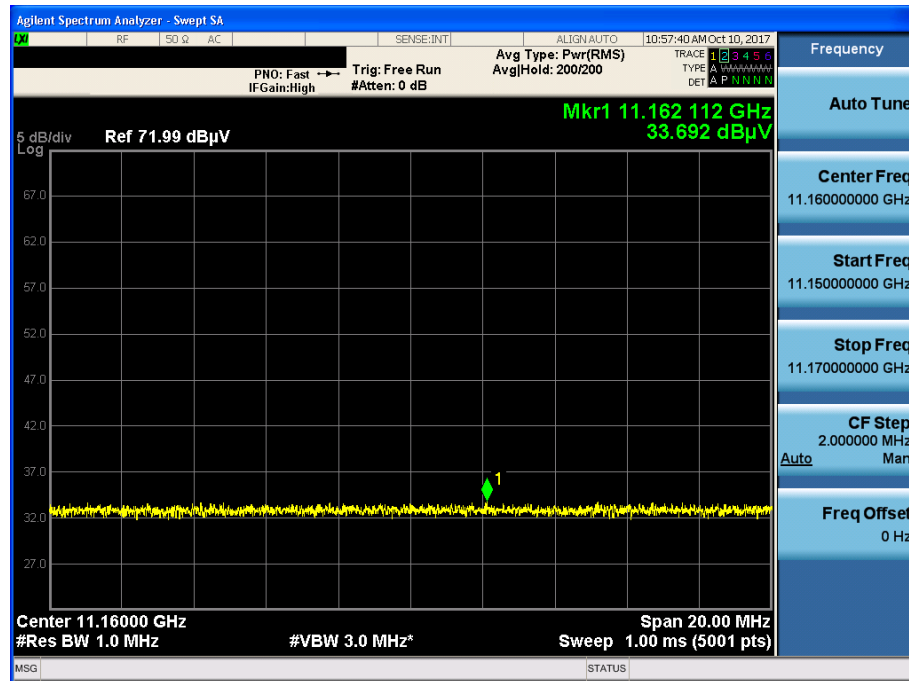
802.11a & U-NII 2C & Ch.100 & Y axis & Hor

Detector Mode : AV



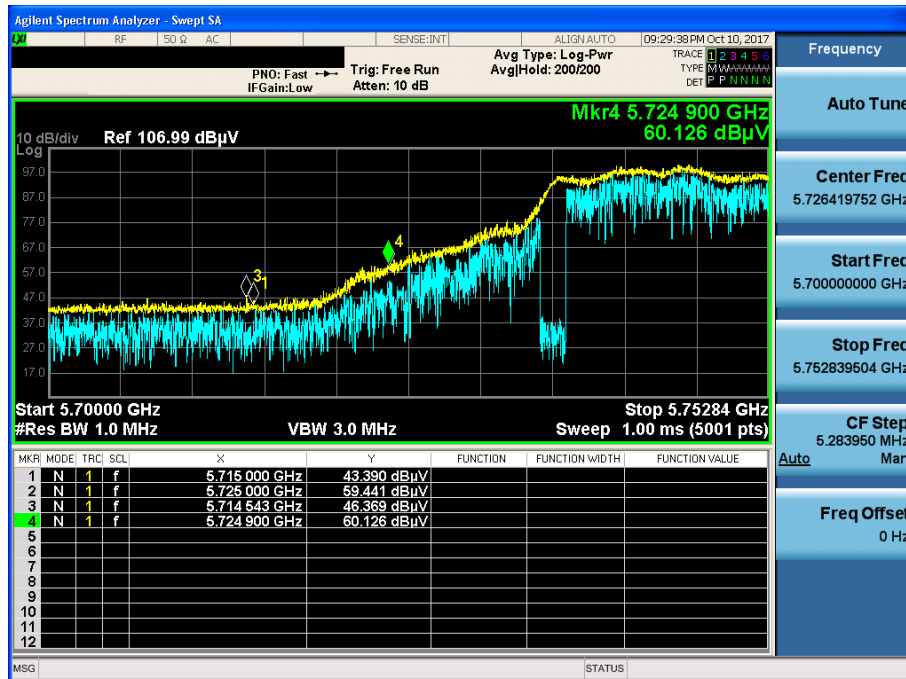
802.11a & U-NII 2C & Ch.116 & Z axis & Hor

Detector Mode : AV



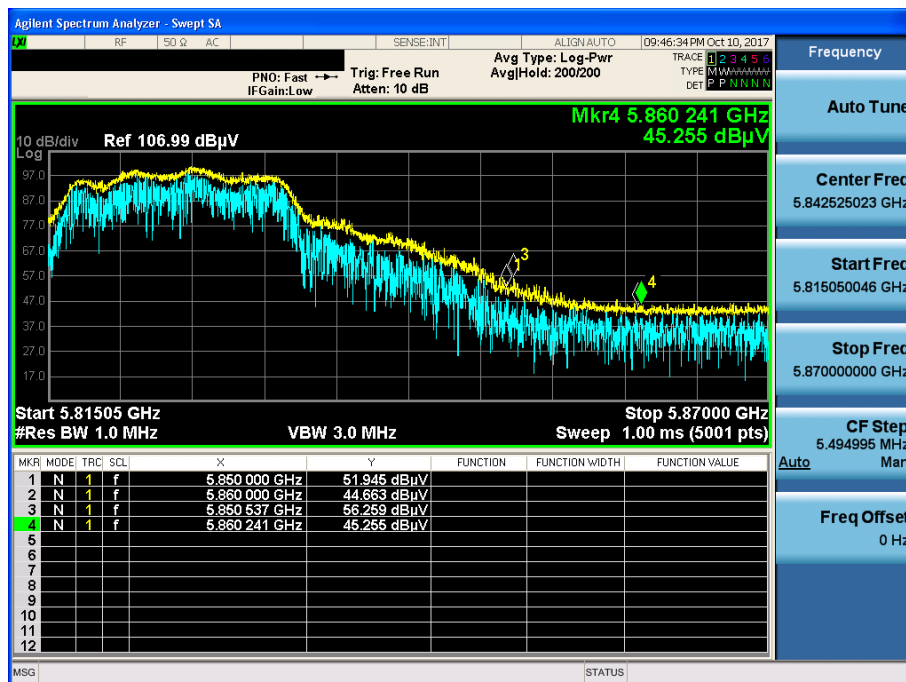
802.11a & U-NII 3 & Ch.149 & Y axis & Hor

Detector Mode : PK



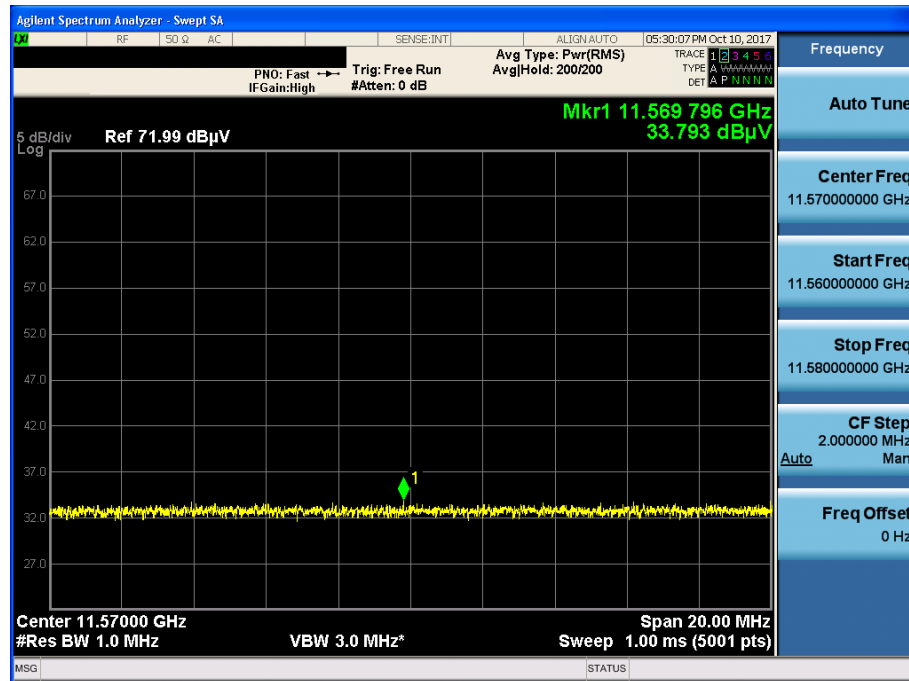
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Detector Mode : PK



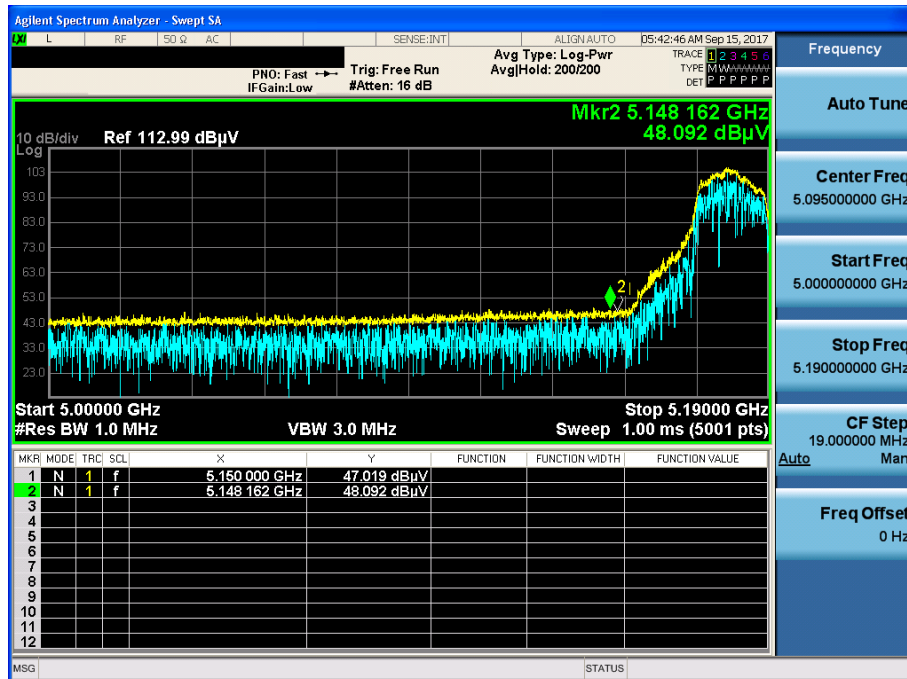
802.11a & U-NII 3 & Ch.157 & Z axis & Hor

Detector Mode : AV



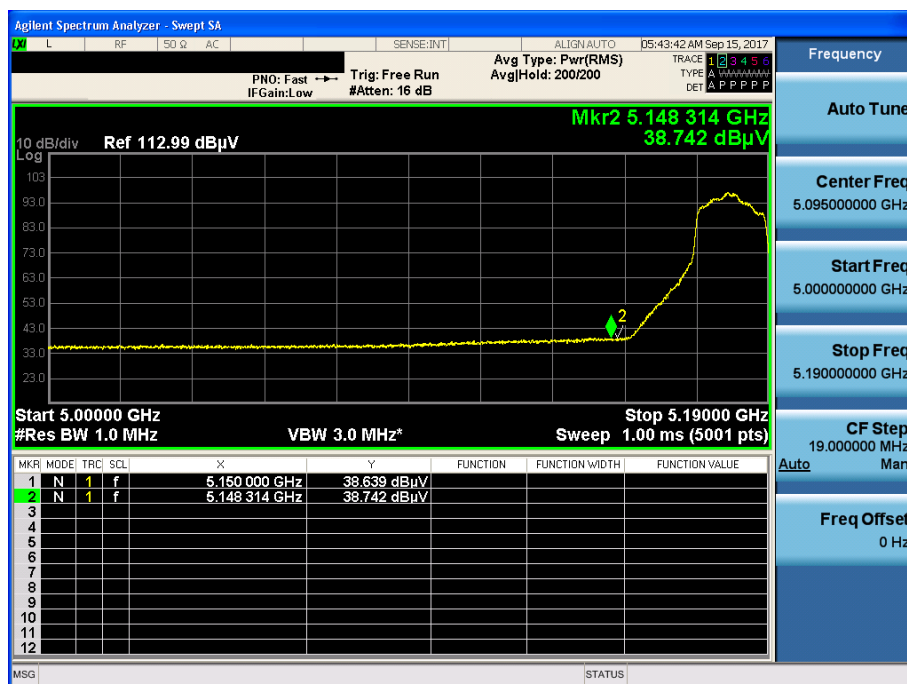
802.11n(HT20) & U-NII 1 & Ch.36 & Y axis & Hor

Detector Mode : PK



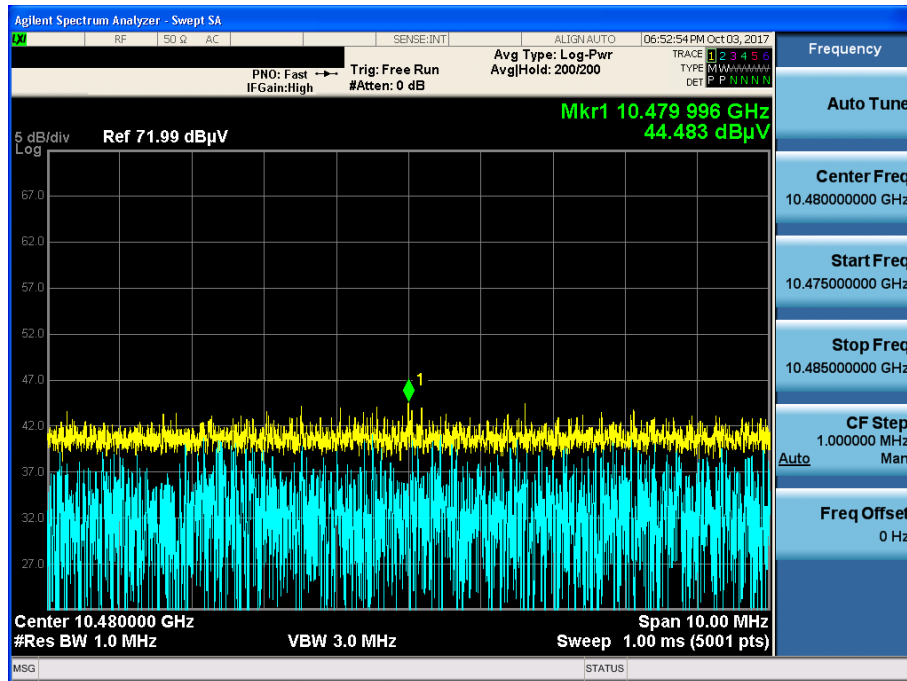
802.11n(HT20) & U-NII 1 & Ch.36 & Y axis & Hor

Detector Mode : AV

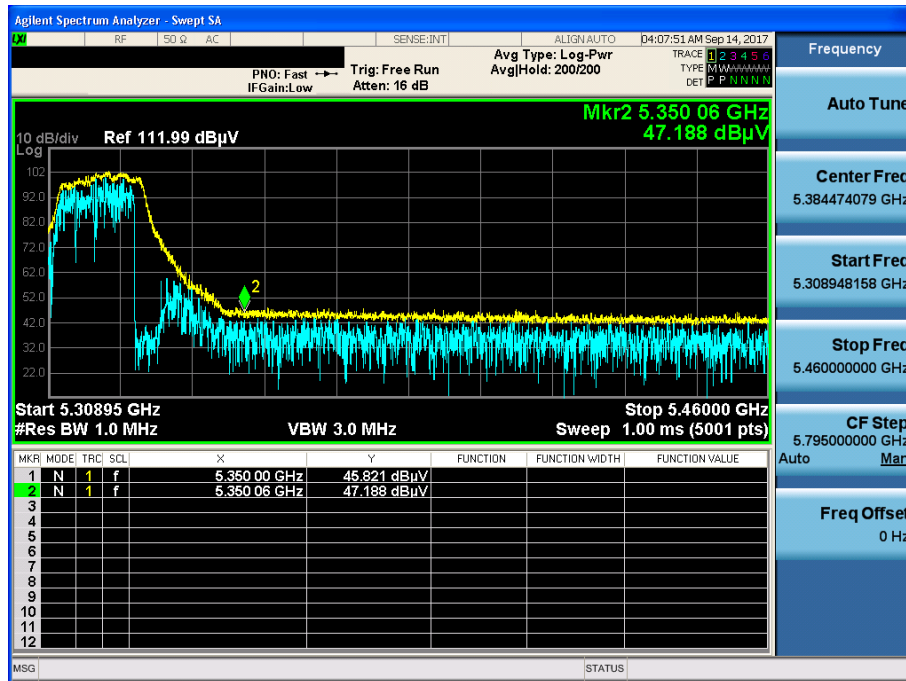


802.11n(HT20) & U-NII 1 & Ch.48 & Z axis & Hor

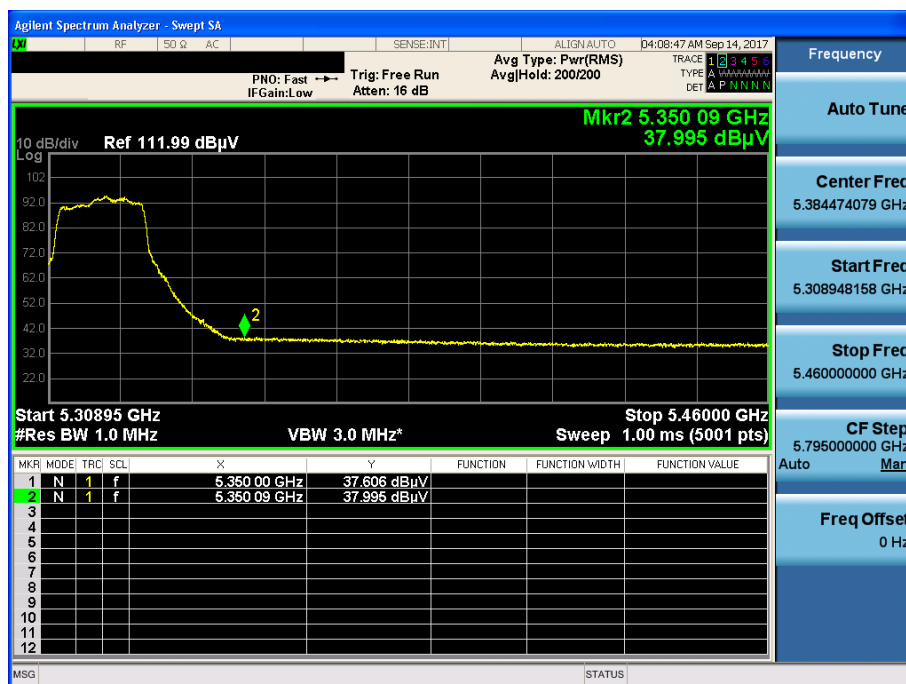
Detector Mode : PK



Detector Mode : PK

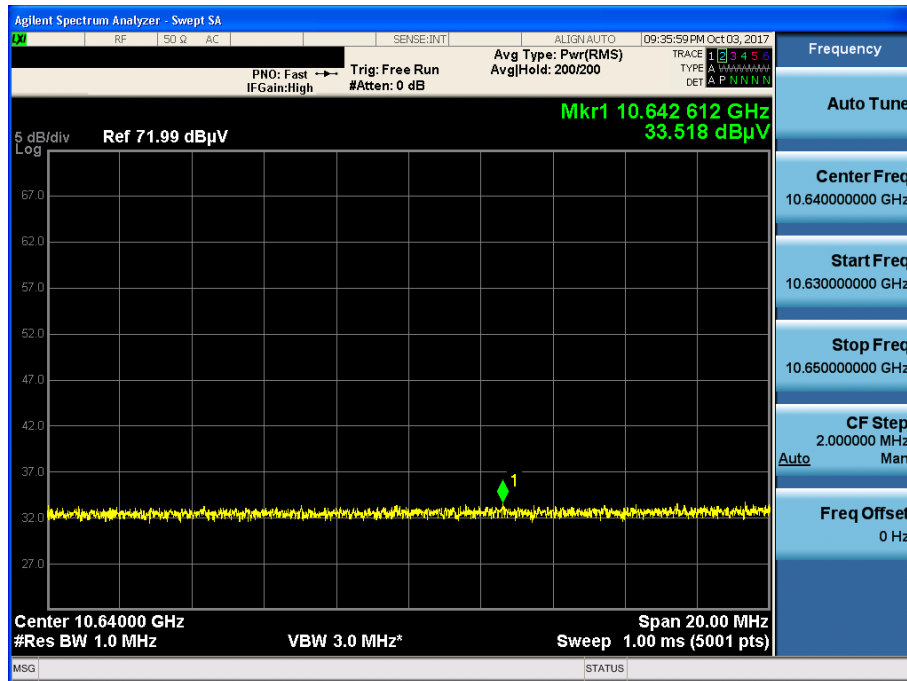


Detector Mode : AV



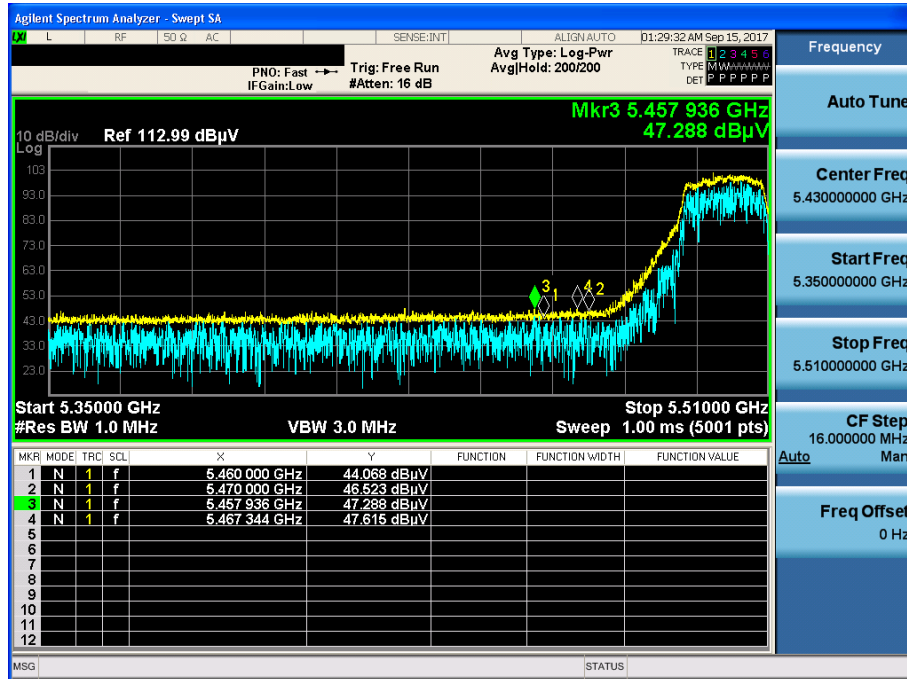
802.11n(HT20) & U-NII 2A & Ch.64 & Z axis & Hor

Detector Mode : AV



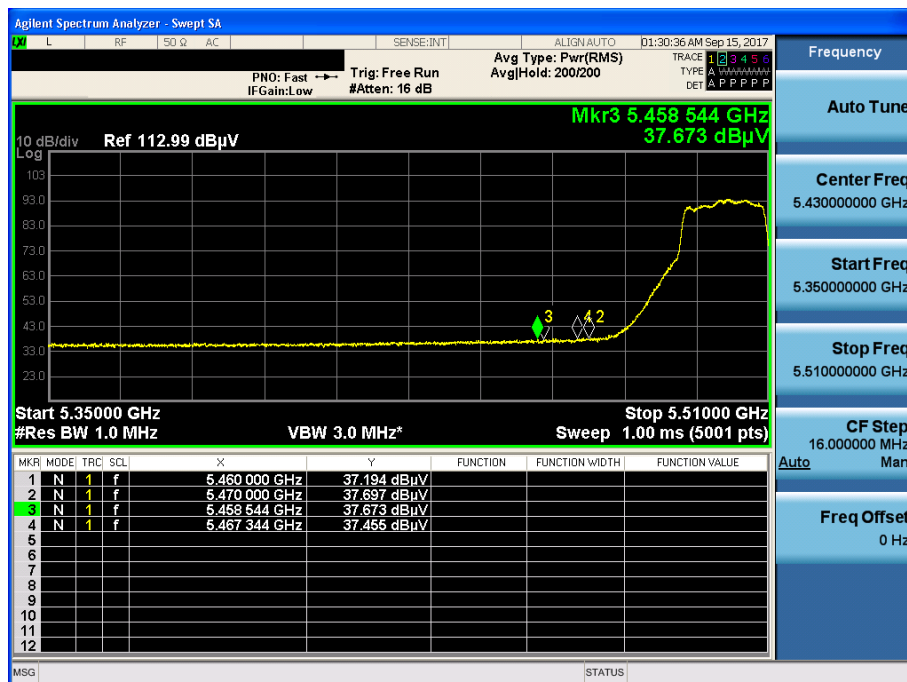
802.11n(HT20) & U-NII 2C & Ch.100 & Y axis & Hor

Detector Mode : PK



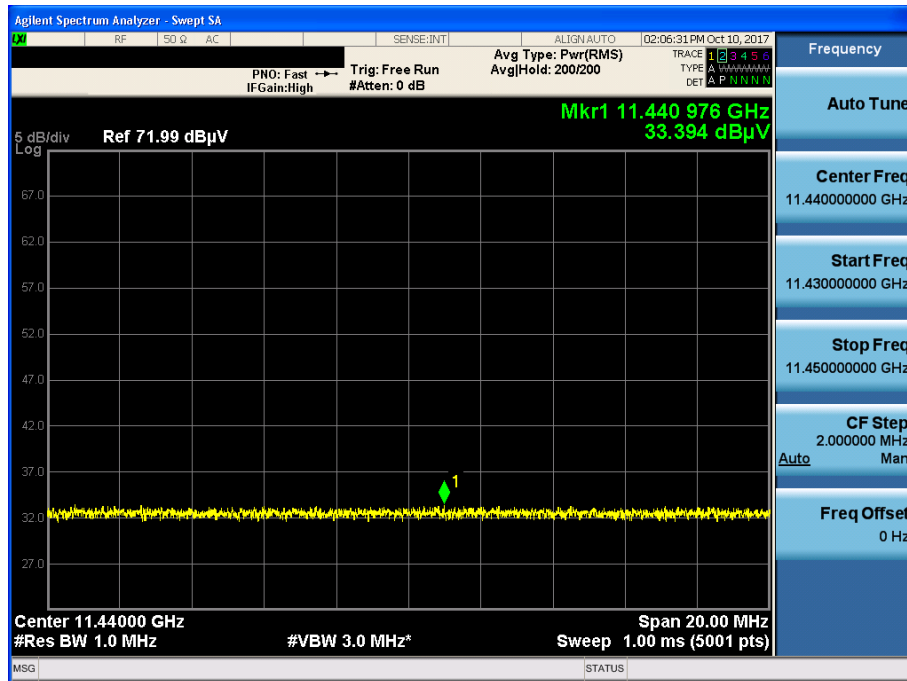
802.11n(HT20) & U-NII 2C & Ch.100 & Y axis & Hor

Detector Mode : AV



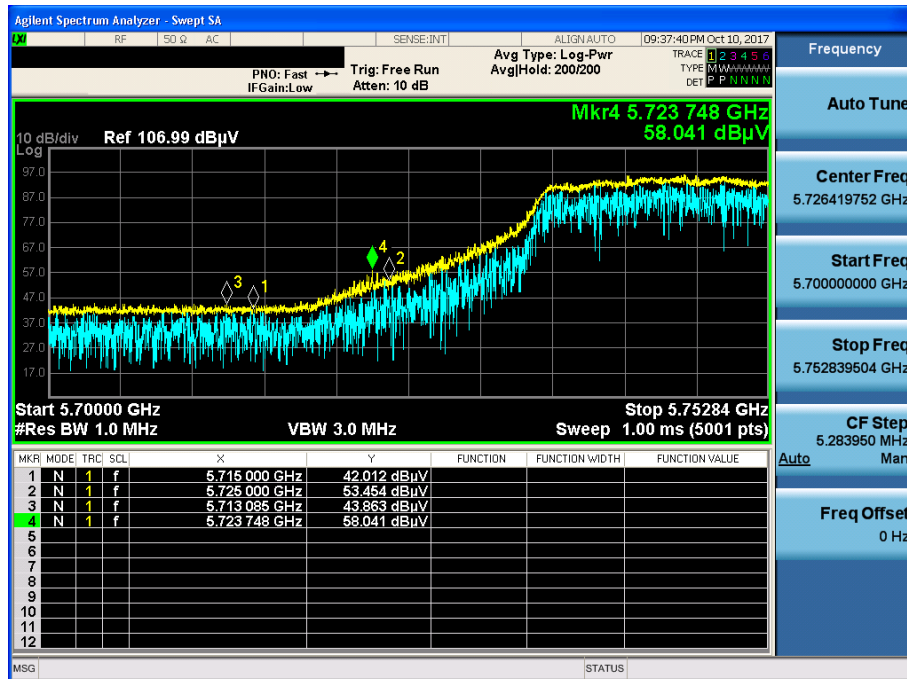
802.11n(HT20) & U-NII 2C & Ch.144 & Z axis & Hor

Detector Mode : AV



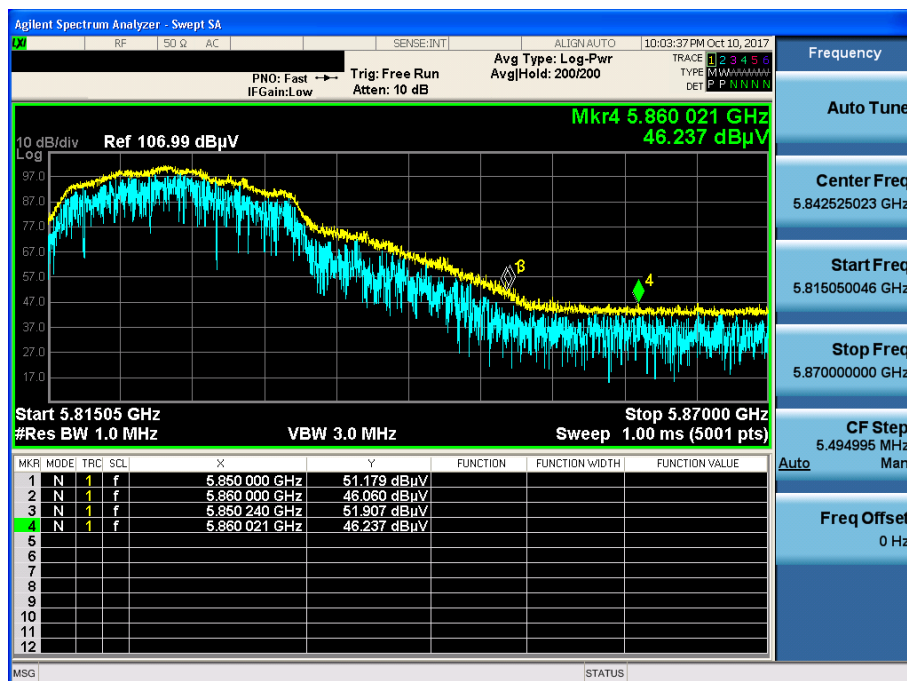
802.11n(HT20) & U-NII 3 & Ch.149 & Y axis & Hor

Detector Mode : PK



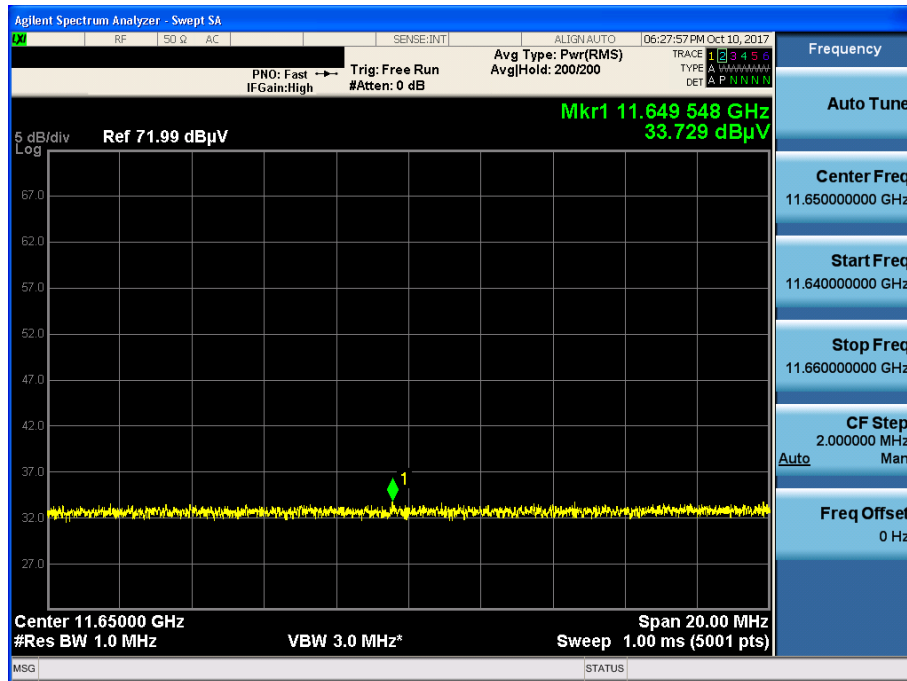
802.11n(HT20) & U-NII 3 & Ch.165 & Y axis & Hor

Detector Mode : PK



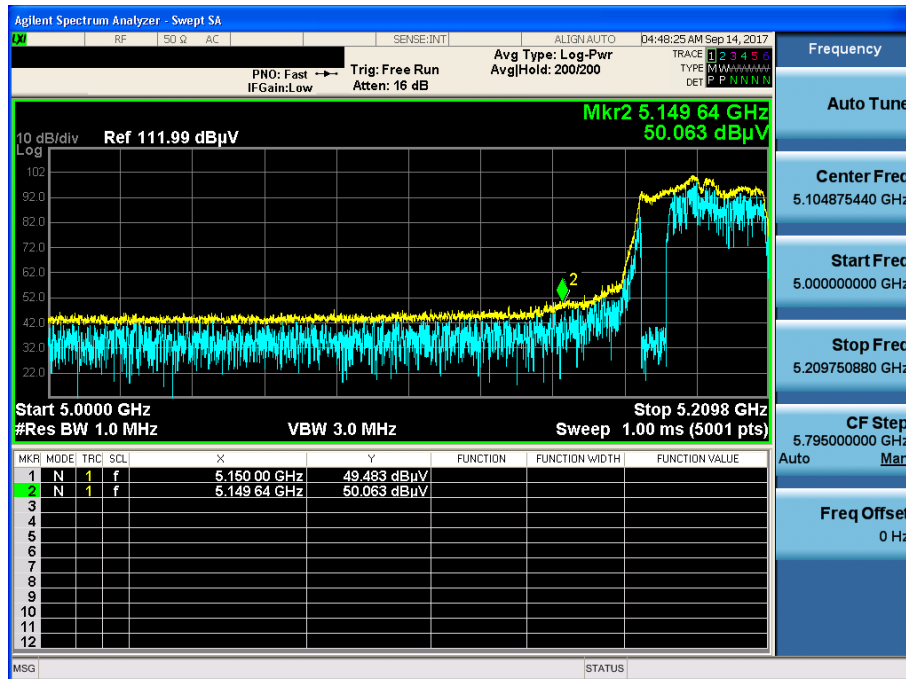
802.11n(HT20) & U-NII 3 & Ch.165 & Z axis & Hor

Detector Mode : AV



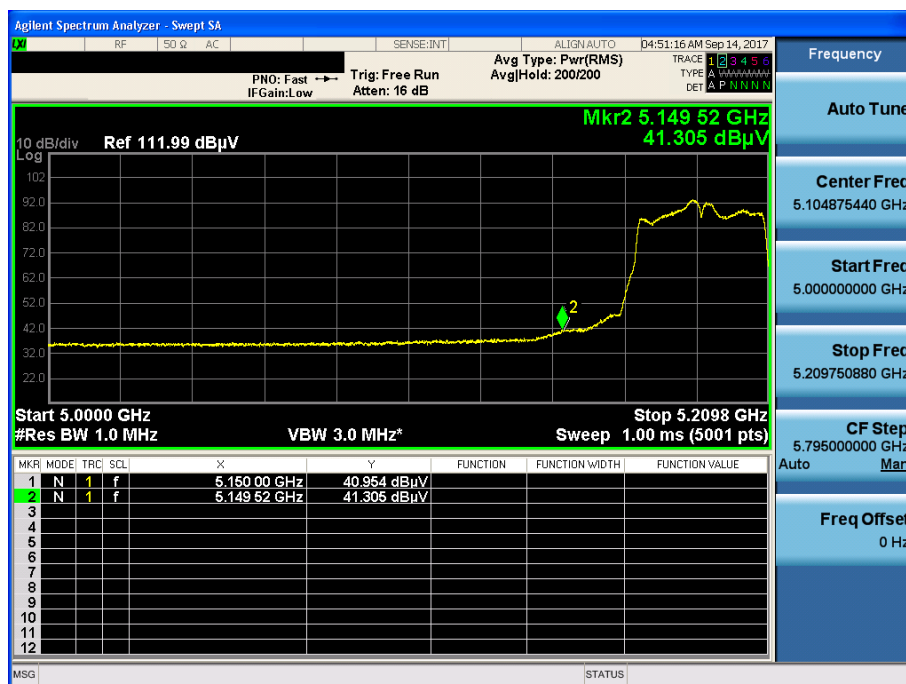
802.11n(HT40) & U-NII 1 & Ch.38 & Y axis & Ver

Detector Mode : PK



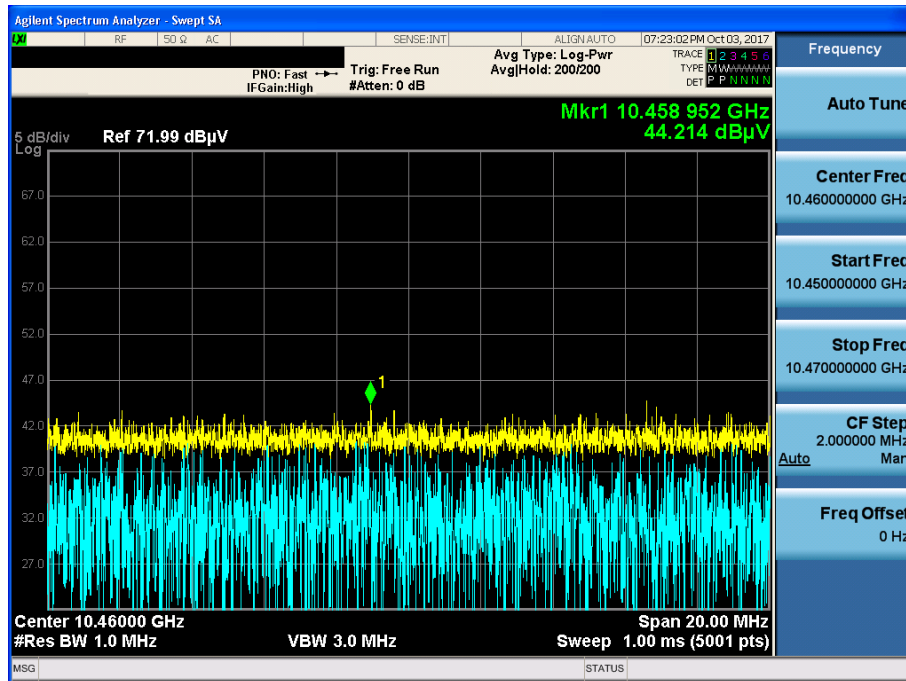
802.11n(HT40) & U-NII 1 & Ch.38 & Y axis & Ver

Detector Mode : AV



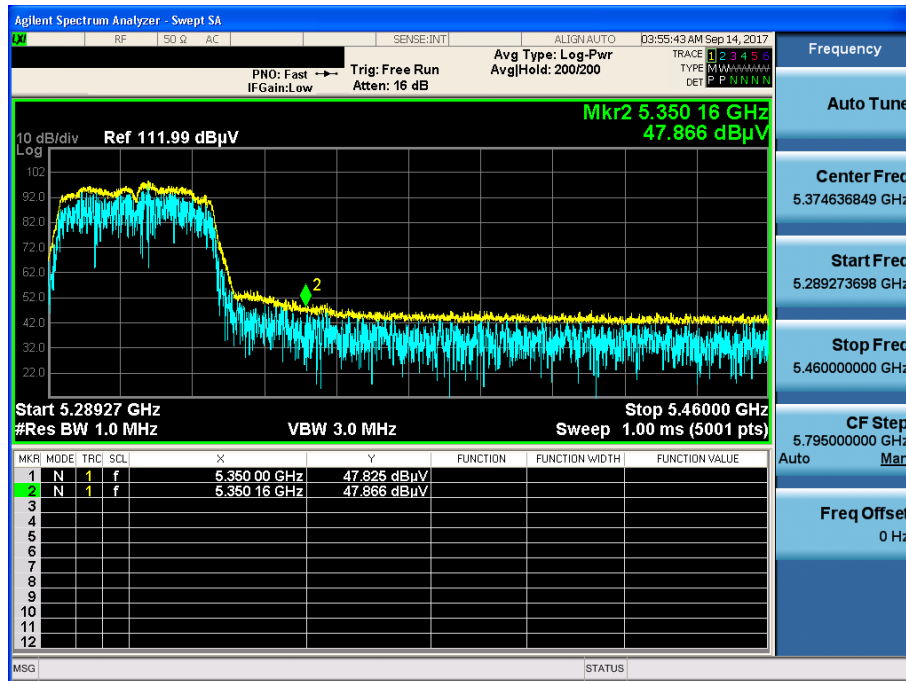
802.11n(HT40) & U-NII 1 & Ch.46 & Z axis & Hor

Detector Mode : PK



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

Detector Mode : PK



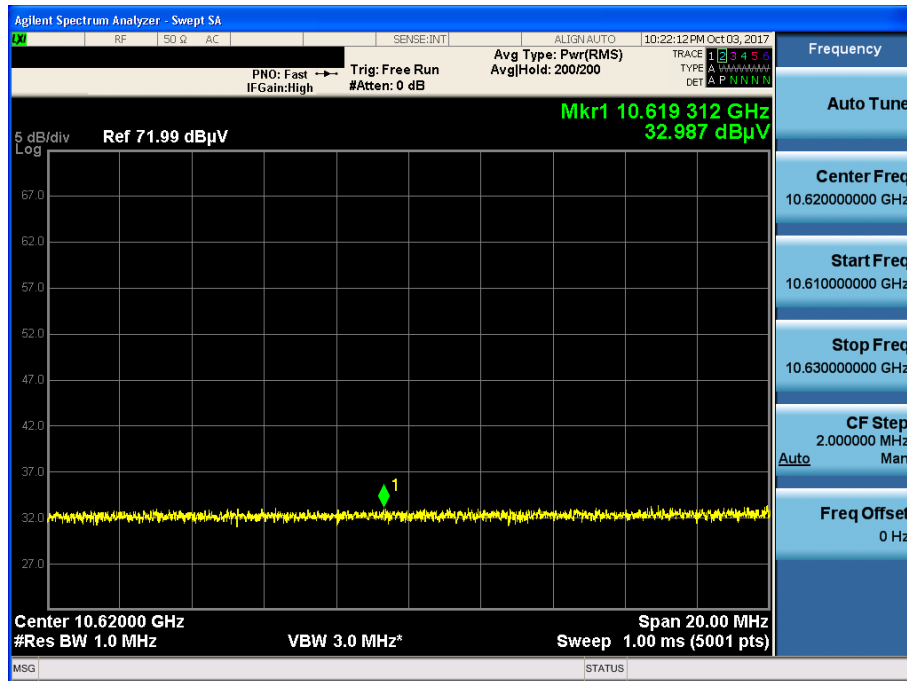
802.11n(HT40) & U-NII 2A & Ch.62 & Y axis & Hor

Detector Mode : AV



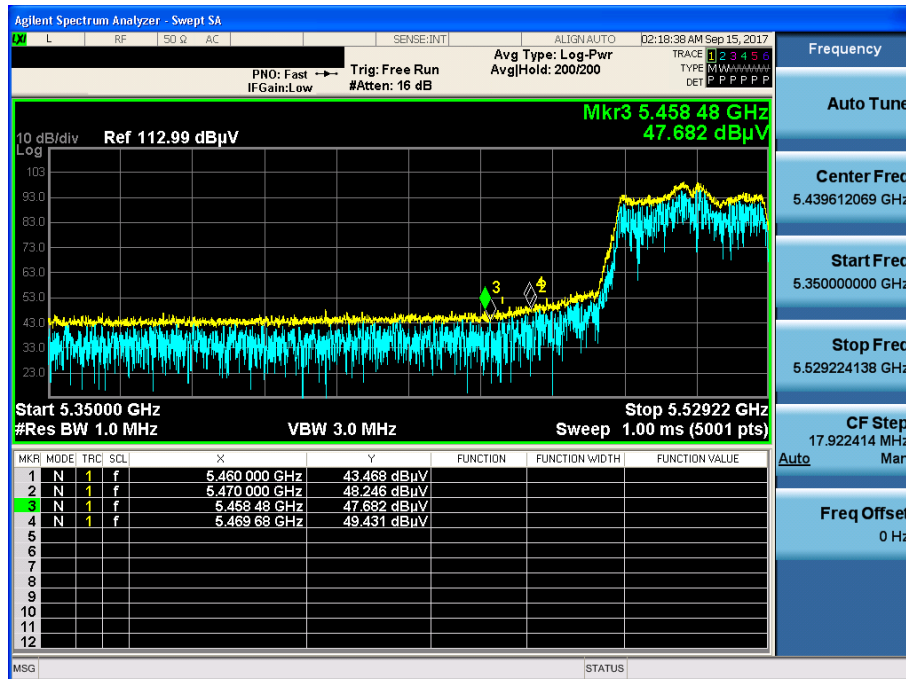
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Detector Mode : AV



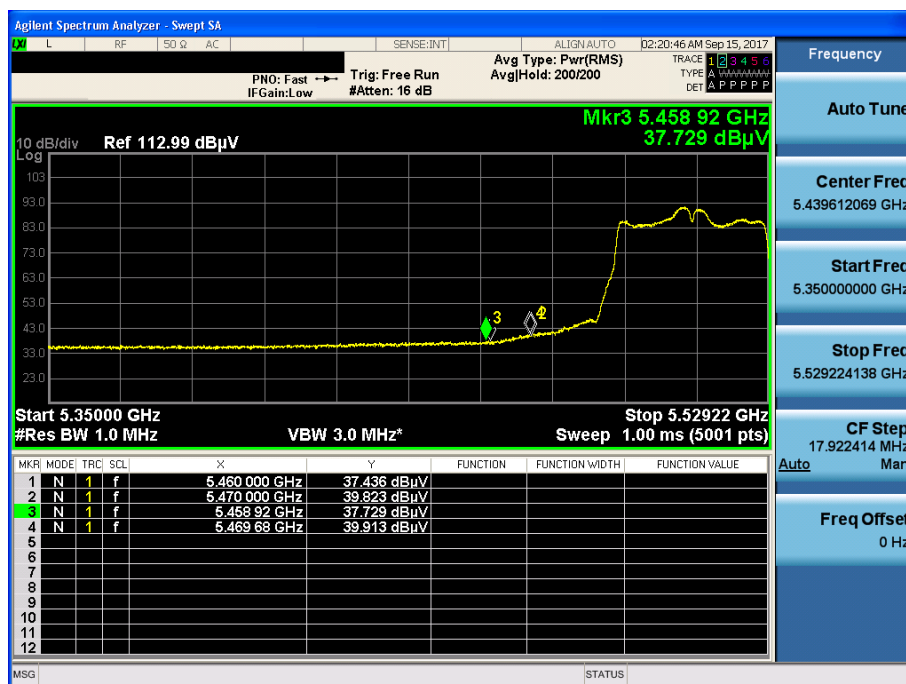
802.11n(HT40) & U-NII 2C & Ch.102 & Y axis & Hor

Detector Mode : PK



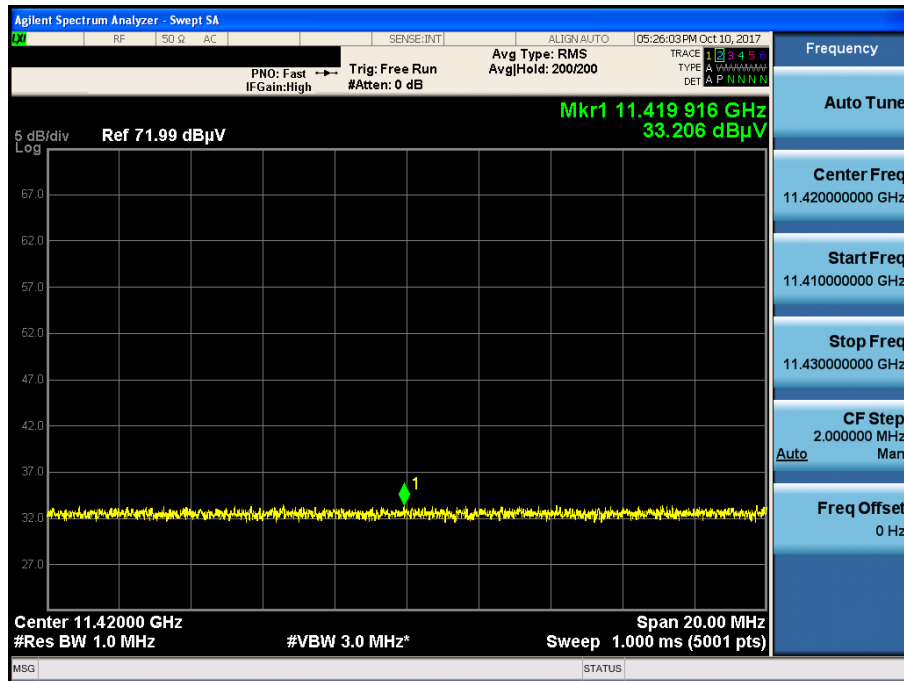
802.11n(HT40) & U-NII 2C & Ch.102 & Y axis & Hor

Detector Mode : AV

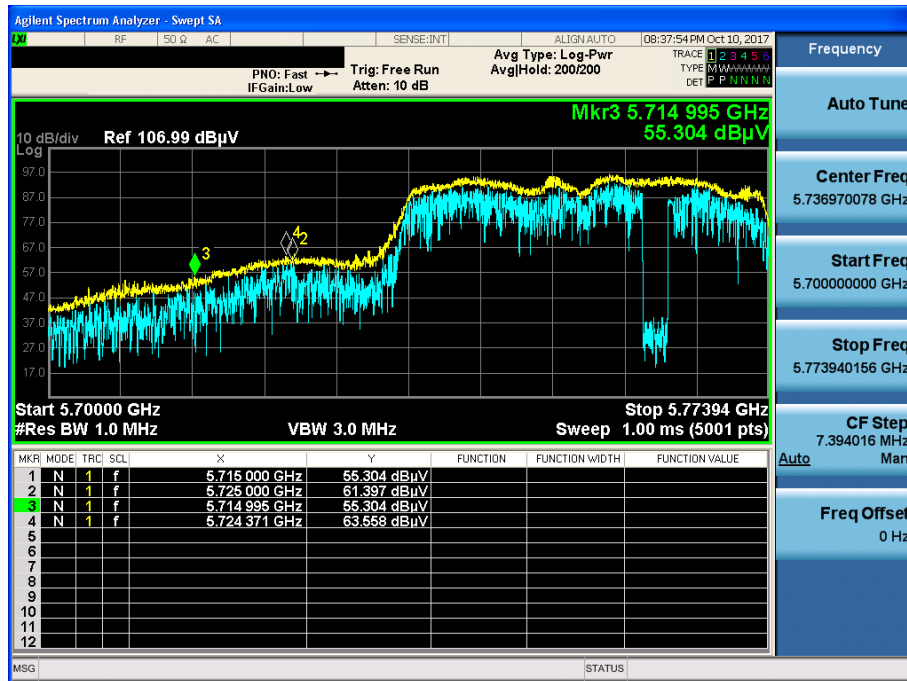


802.11n(HT40) & U-NII 2C & Ch.142 & Z axis & Hor

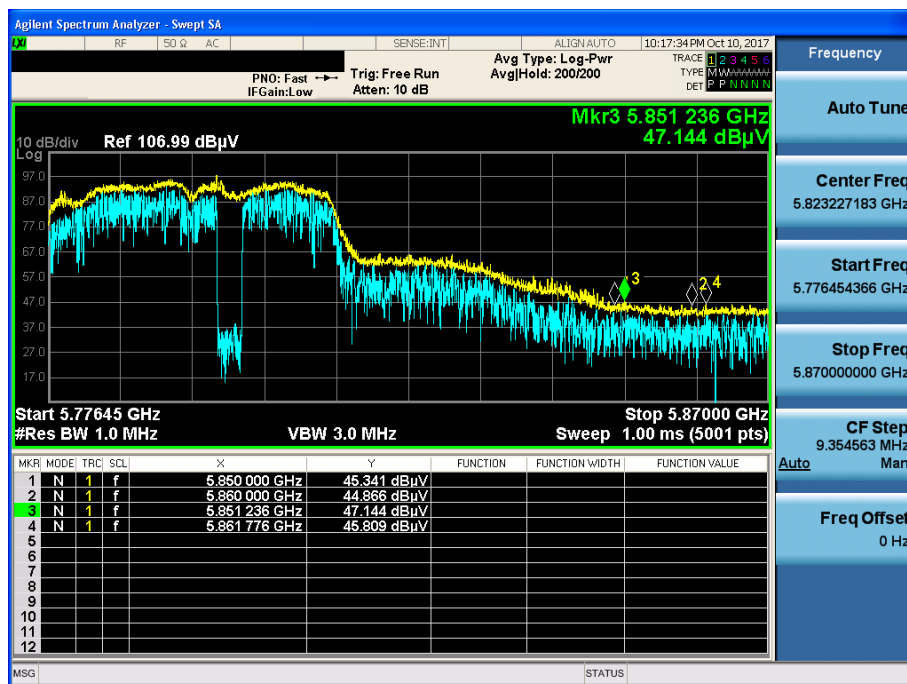
Detector Mode : AV



Detector Mode : PK

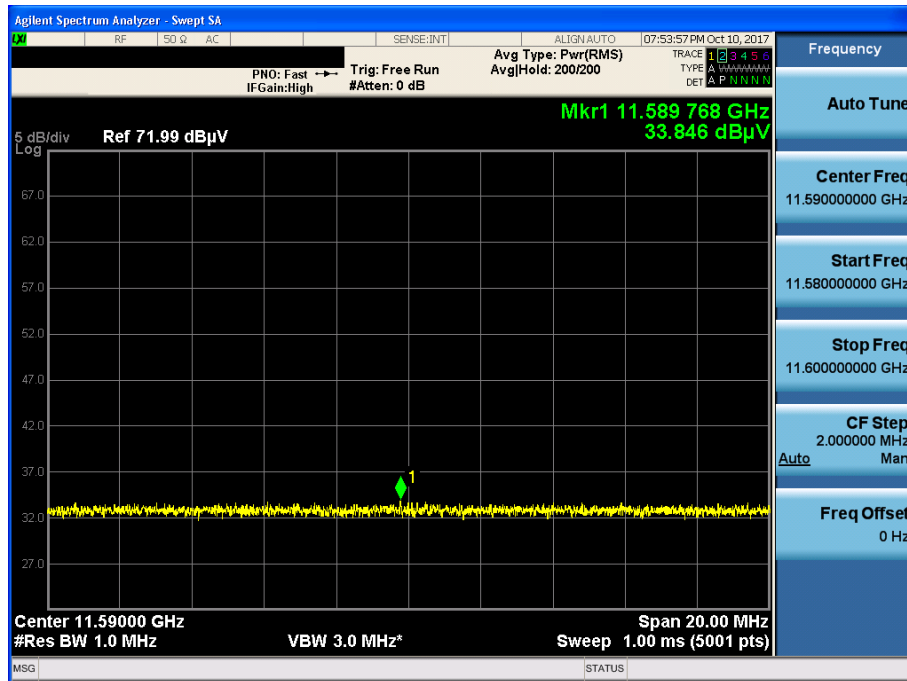


Detector Mode : PK

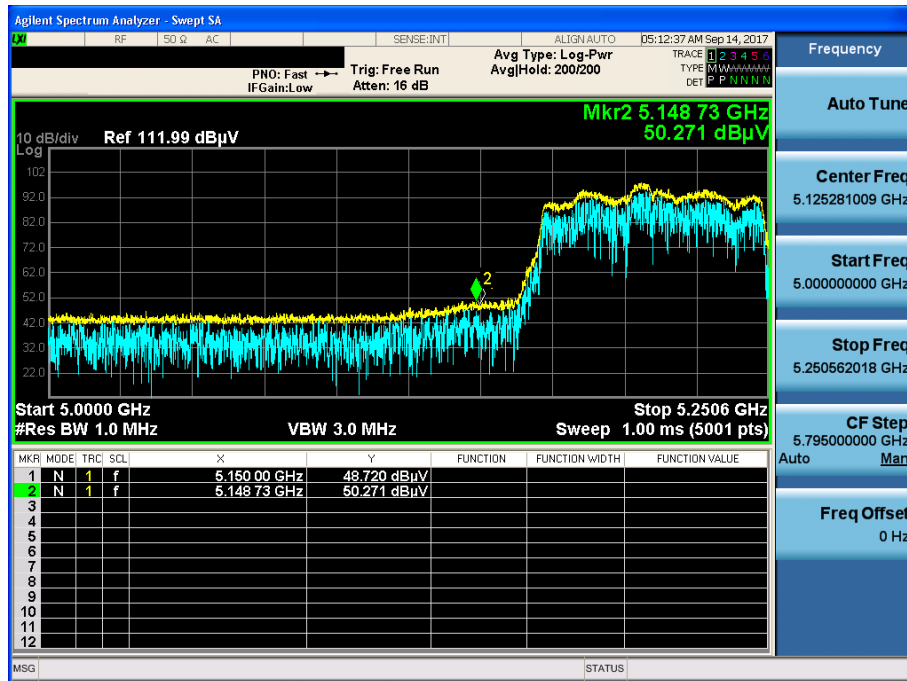


802.11n(HT40) & U-NII 3 & Ch.159 & Z axis & Hor

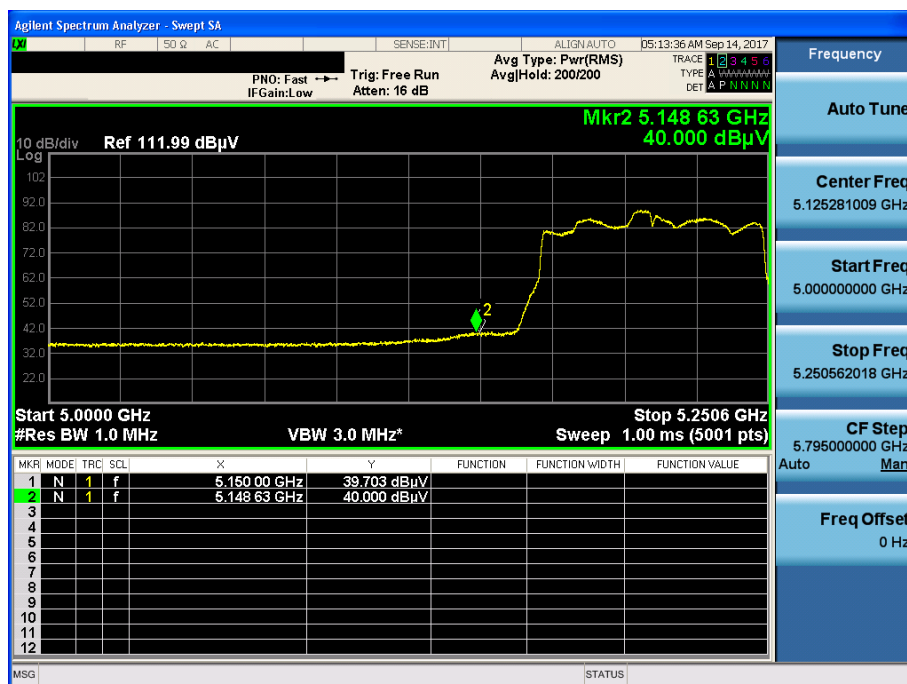
Detector Mode : AV



Detector Mode : PK

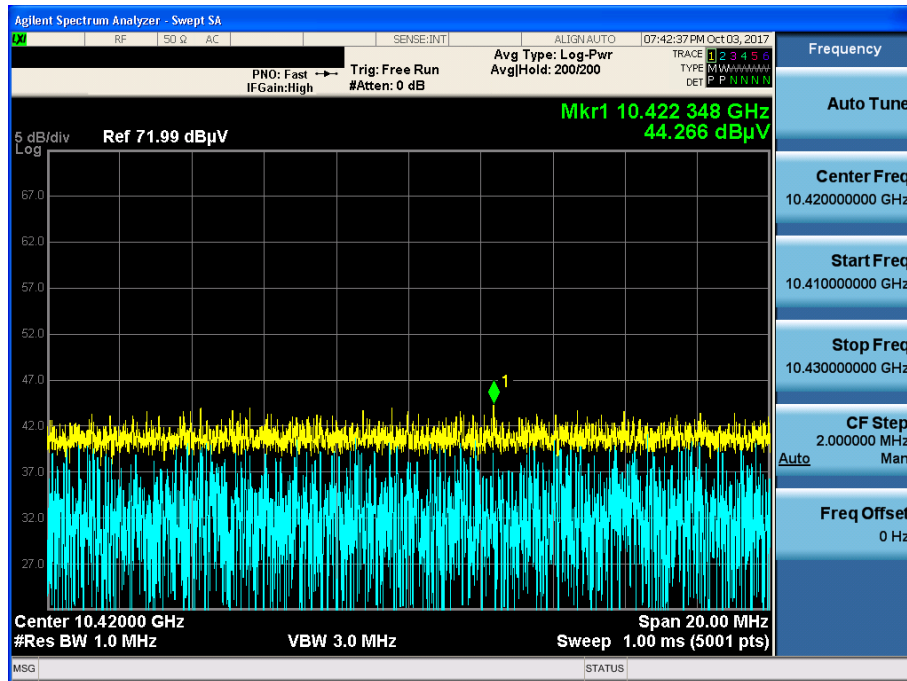


Detector Mode : AV



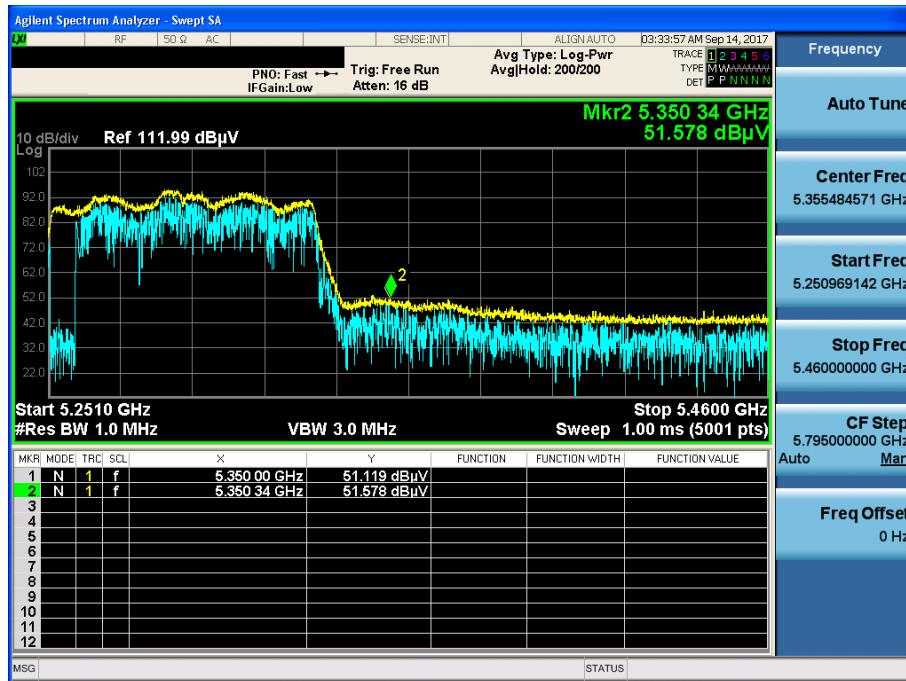
802.11ac(VHT80) & U-NII 1 & Ch.42 & Z axis & Hor

Detector Mode : PK



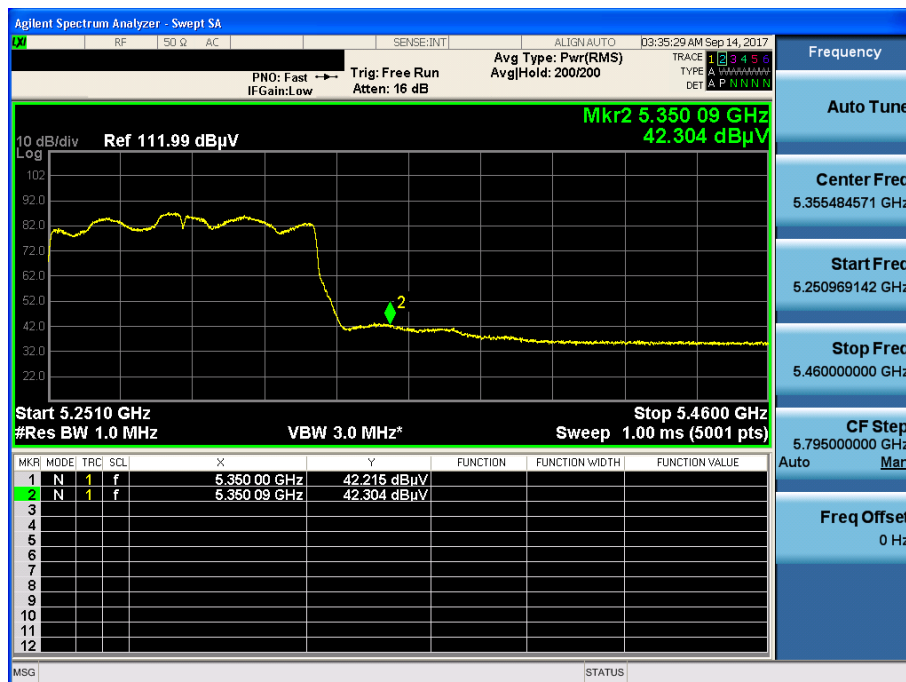
802.11ac(VHT80) & U-NII 2A & Ch.58 & Y axis & Hor

Detector Mode : PK



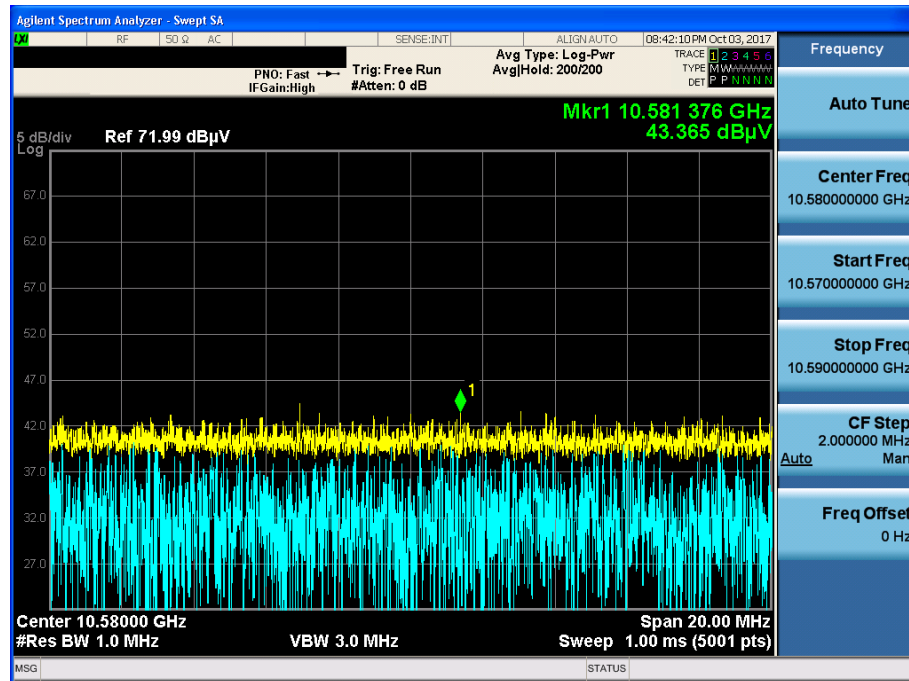
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Detector Mode : AV



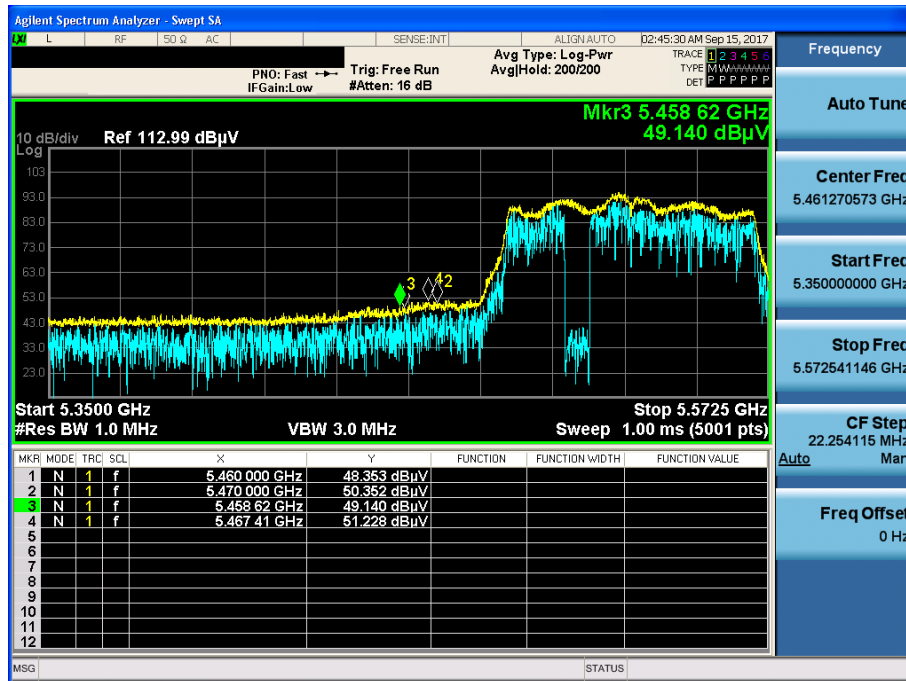
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Detector Mode : PK



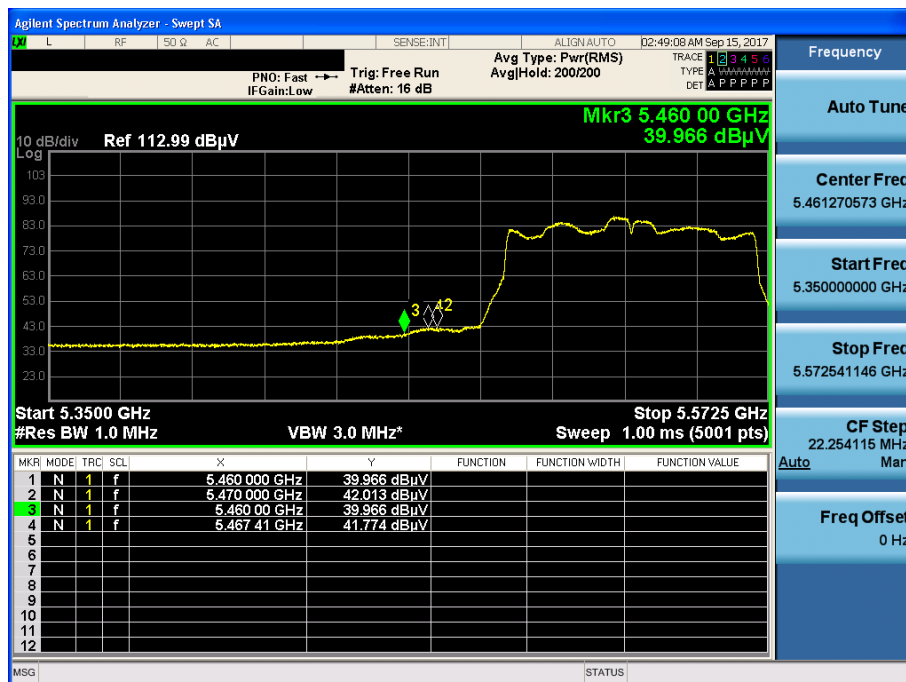
802.11ac(VHT80) & U-NII 2C & Ch.106 & Y axis & Hor

Detector Mode : PK



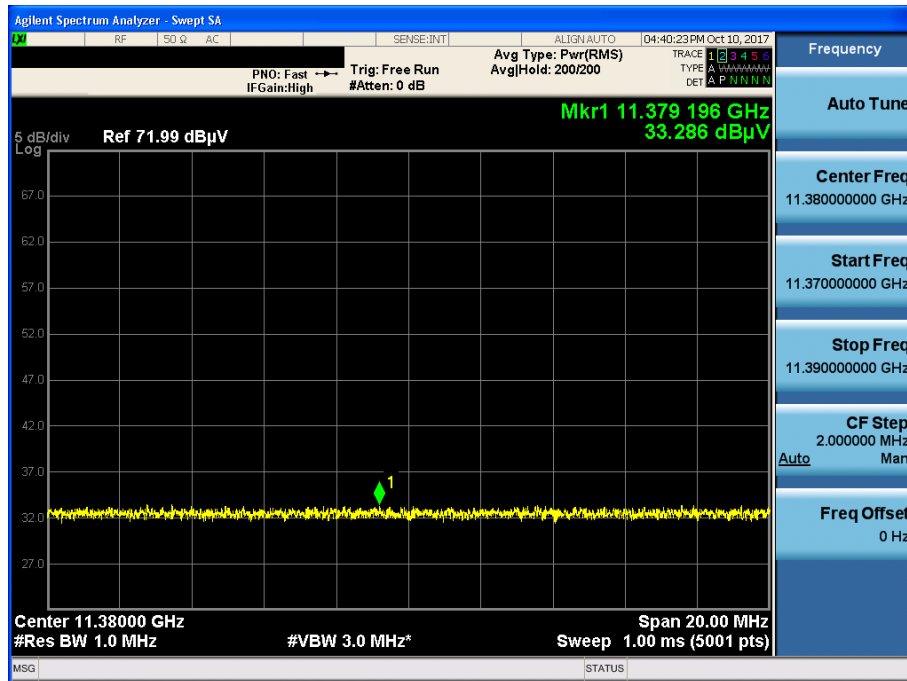
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Detector Mode : AV



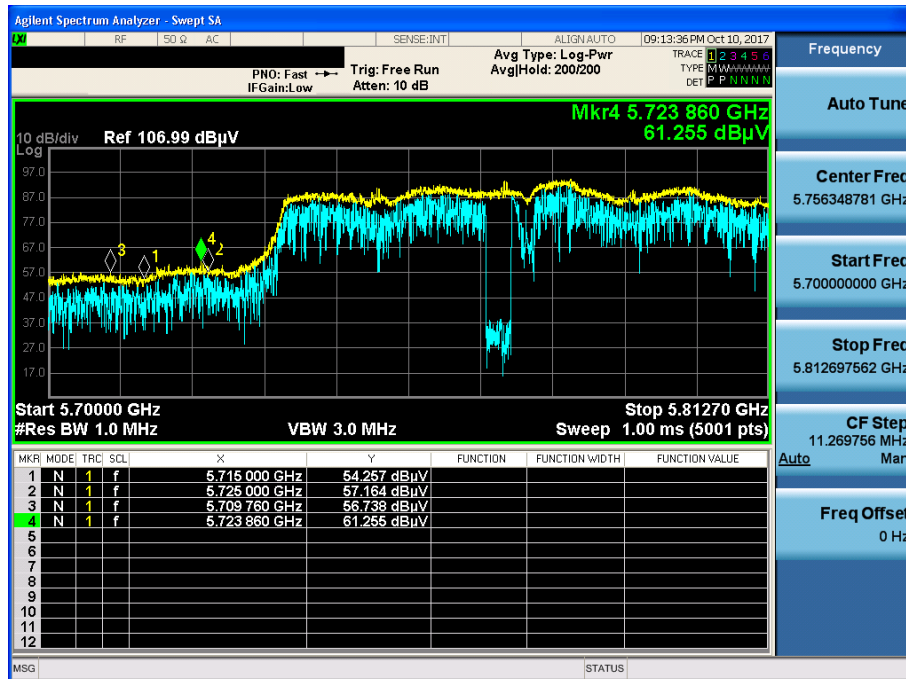
802.11ac(VHT80) & U-NII 2C & Ch.138 & Z axis & Hor

Detector Mode : AV



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

Detector Mode : PK



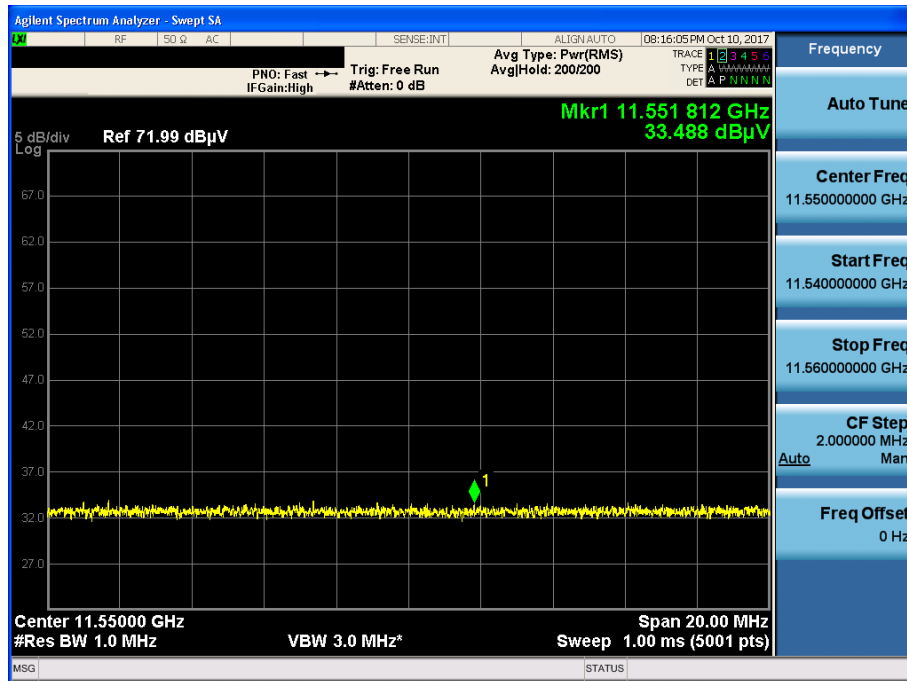
802.11ac(VHT80) & U-NII 3 & Ch.155 & Y axis & Hor

Detector Mode : PK



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

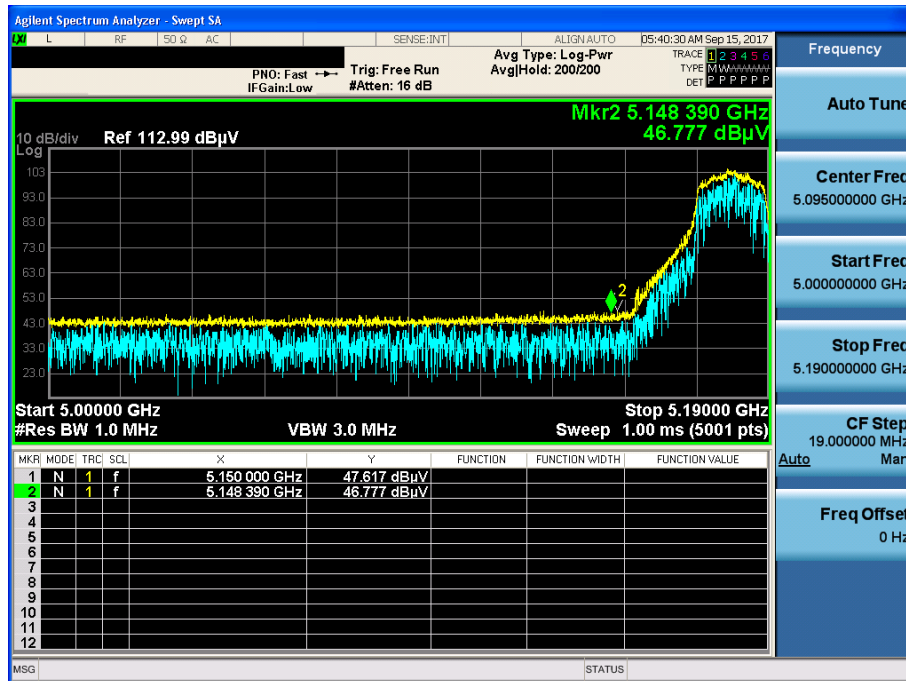
Detector Mode : AV



Unwanted Emissions (Radiated) Test Plot : SDM _ Normal

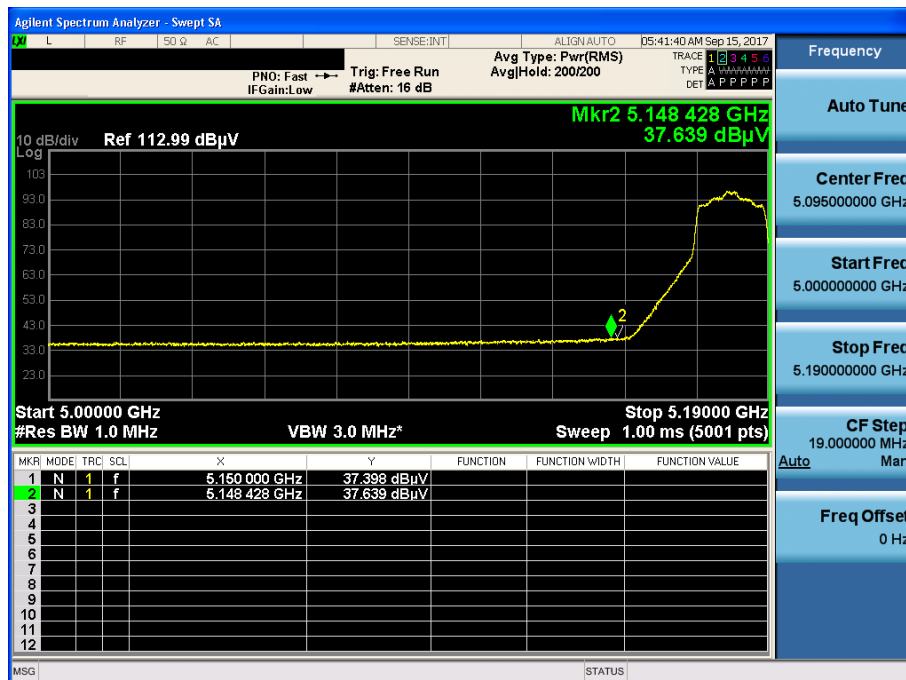
802.11n(HT20) & U-NII 1 & Ch.36 & Y axis & Hor

Detector Mode : PK



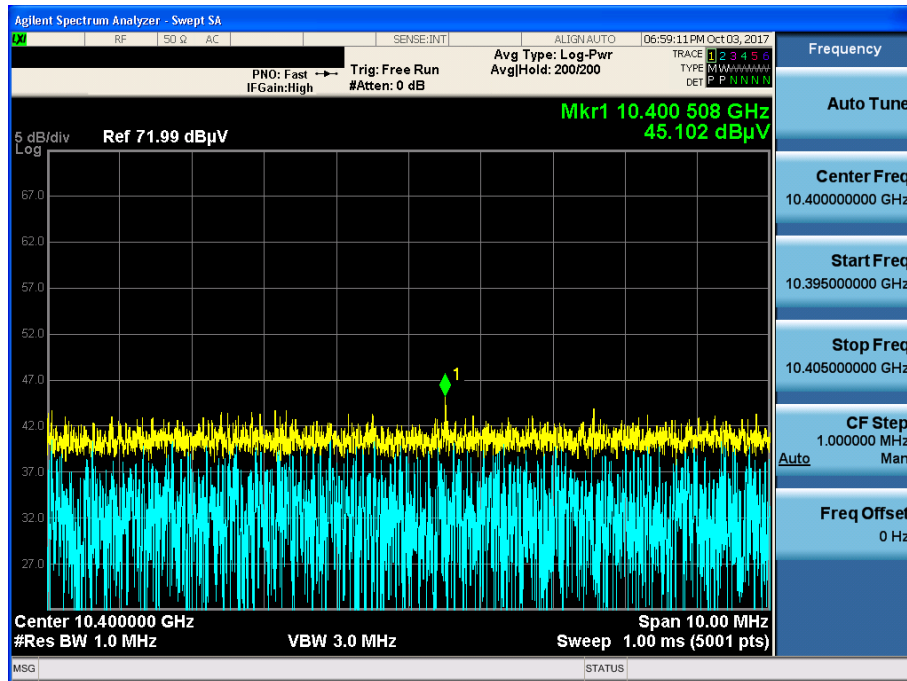
802.11n(HT20) & U-NII 1 & Ch.36 & Y axis & Hor

Detector Mode : AV



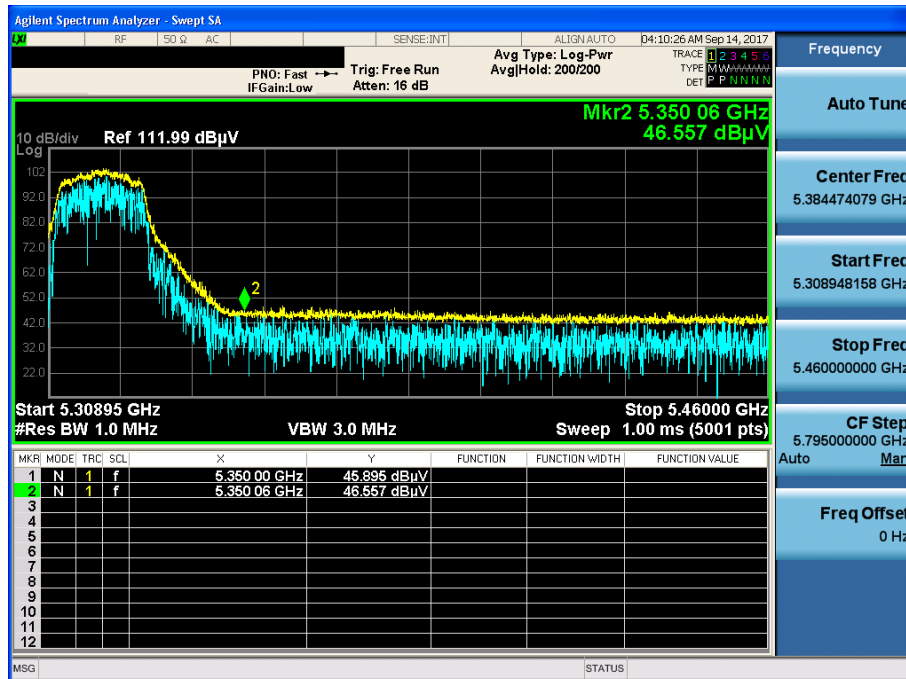
802.11n(HT20) & U-NII 1 & Ch.48 & Z axis & Hor

Detector Mode : PK



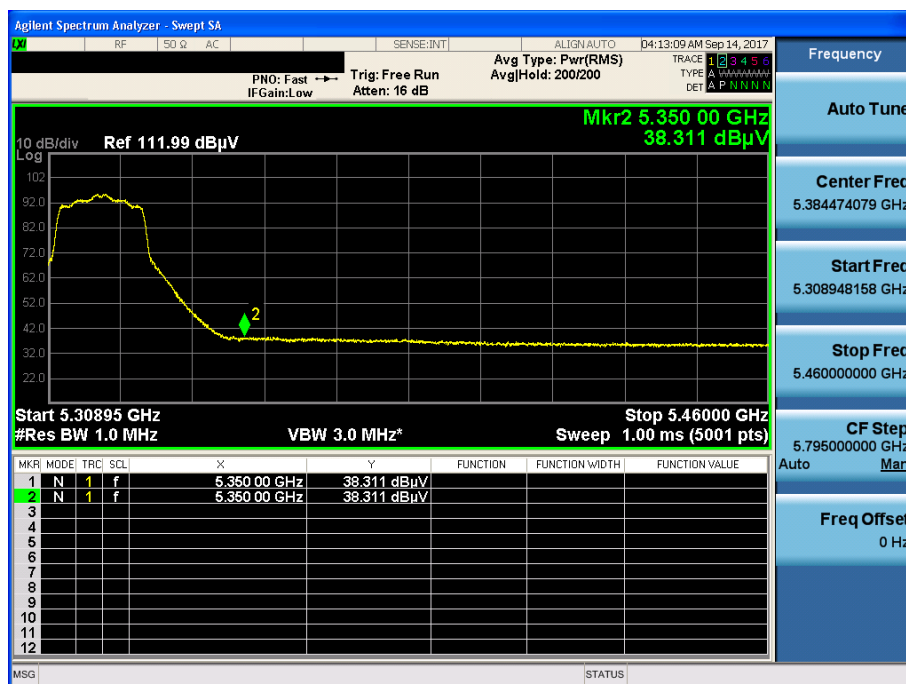
802.11n(HT20) & U-NII 2A & Ch.64 & Y axis & Hor

Detector Mode : PK



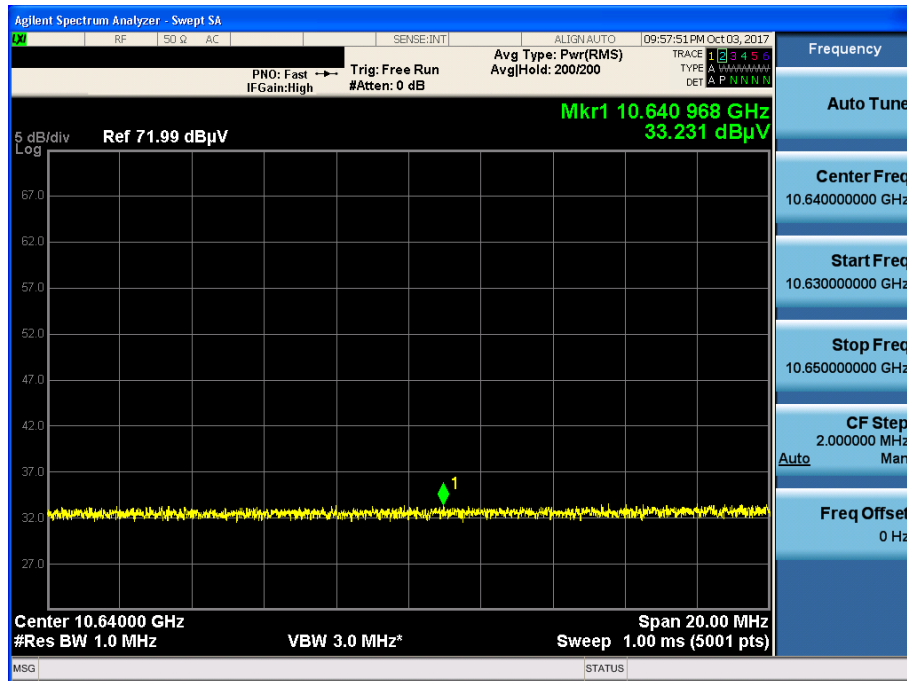
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Detector Mode : AV



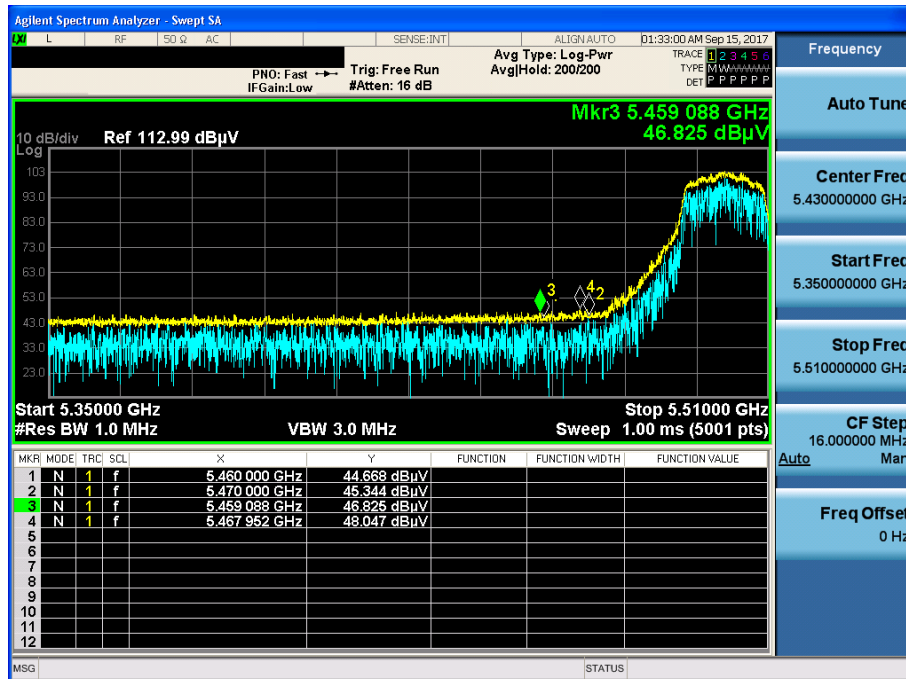
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Detector Mode : AV



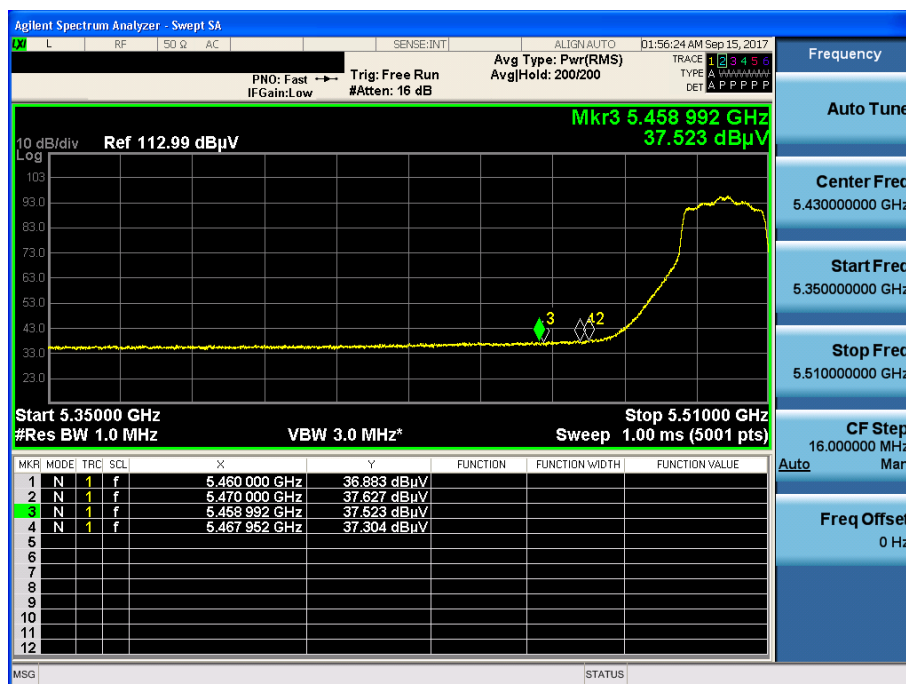
802.11n(HT20) & U-NII 2C & Ch.100 & Y axis & Hor

Detector Mode : PK



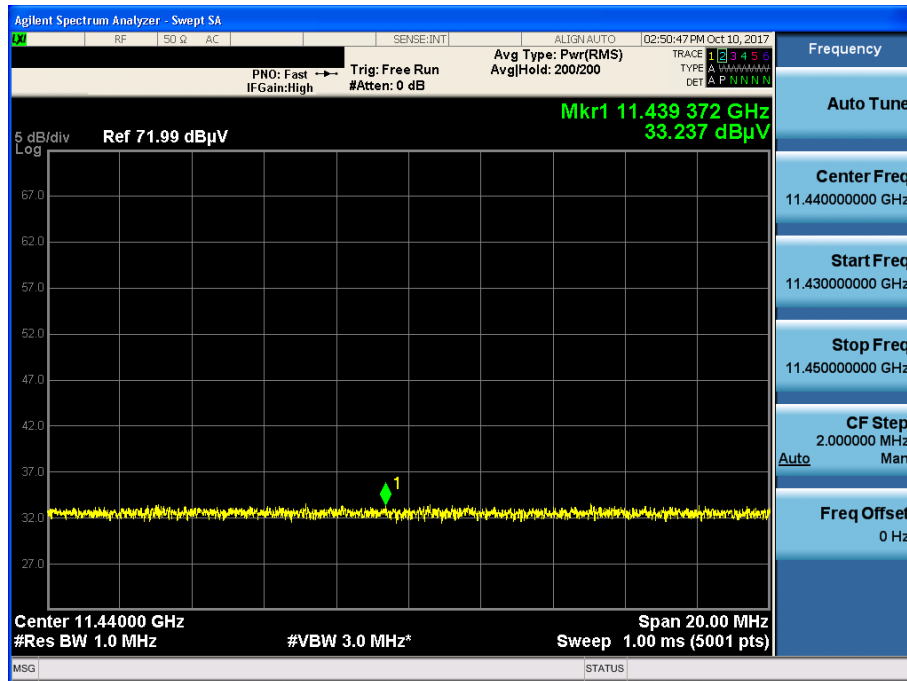
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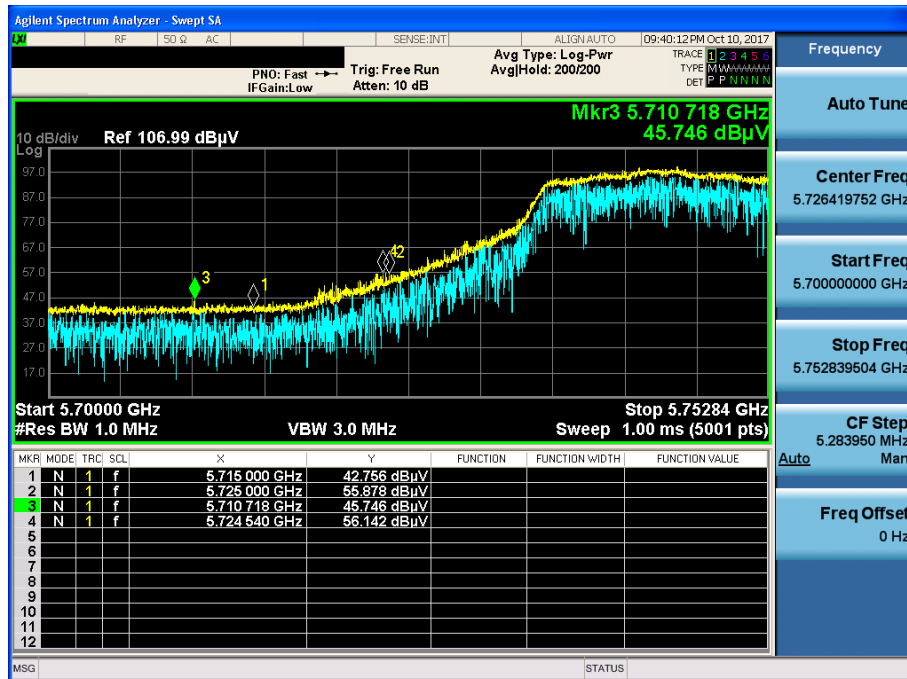
802.11n(HT20) & U-NII 2C & Ch.144 & Z axis & Hor

Detector Mode : AV



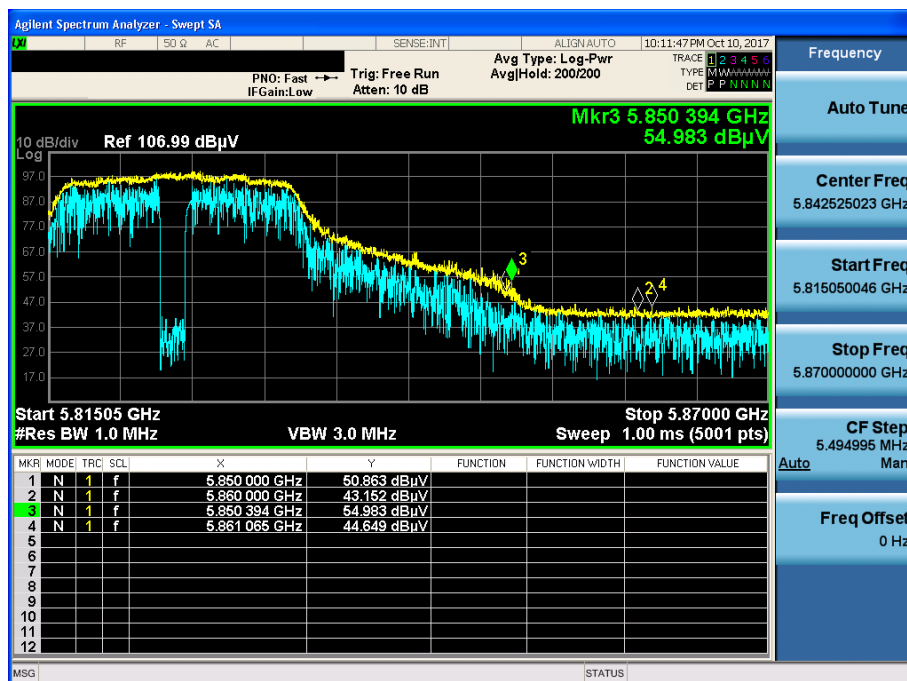
802.11n(HT20) & U-NII 3 & Ch.149 & Y axis & Hor

Detector Mode : PK



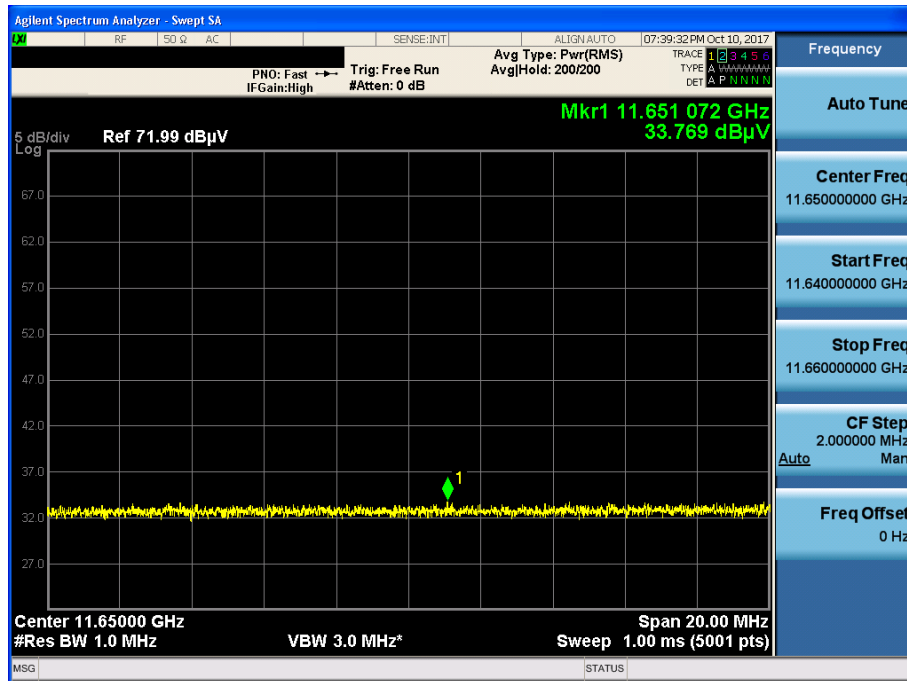
802.11n(HT20) & U-NII 3 & Ch.165 & Y axis & Hor

Detector Mode : PK

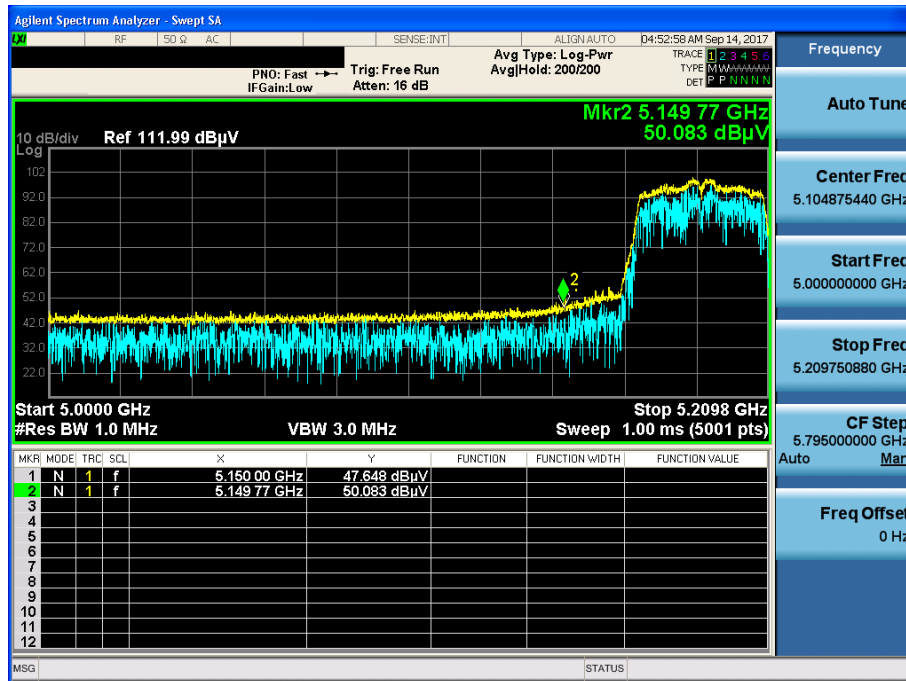


802.11n(HT20) & U-NII 3 & Ch.157 & Z axis & Hor

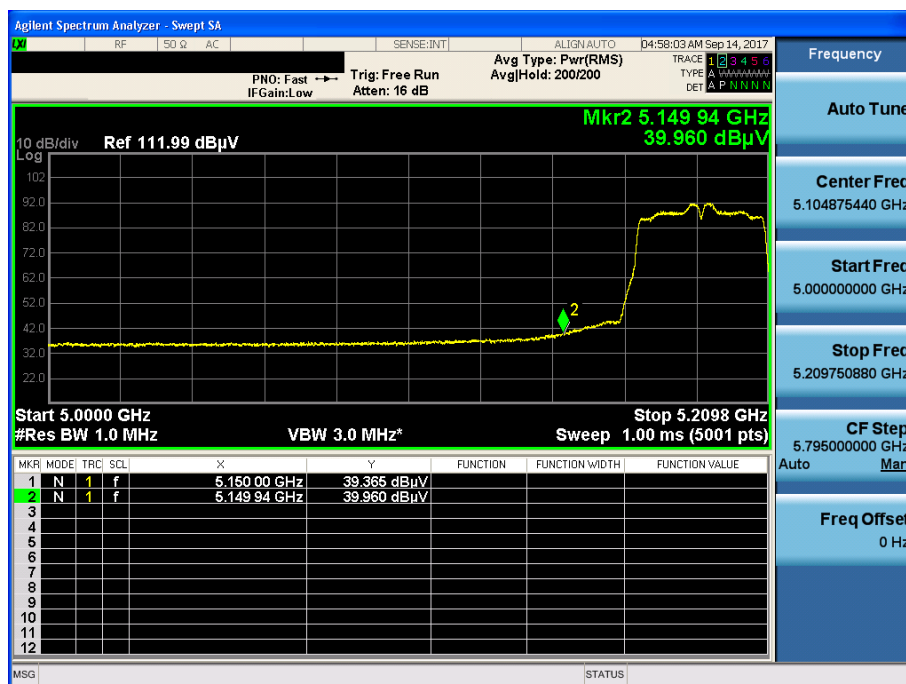
Detector Mode : AV



Detector Mode : PK



Detector Mode : AV



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

Detector Mode : PK

