

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2A & 802.11n(HT20) & 5320 MHz

Results of Conducted Emission

DT&C

Date 2017-06-23

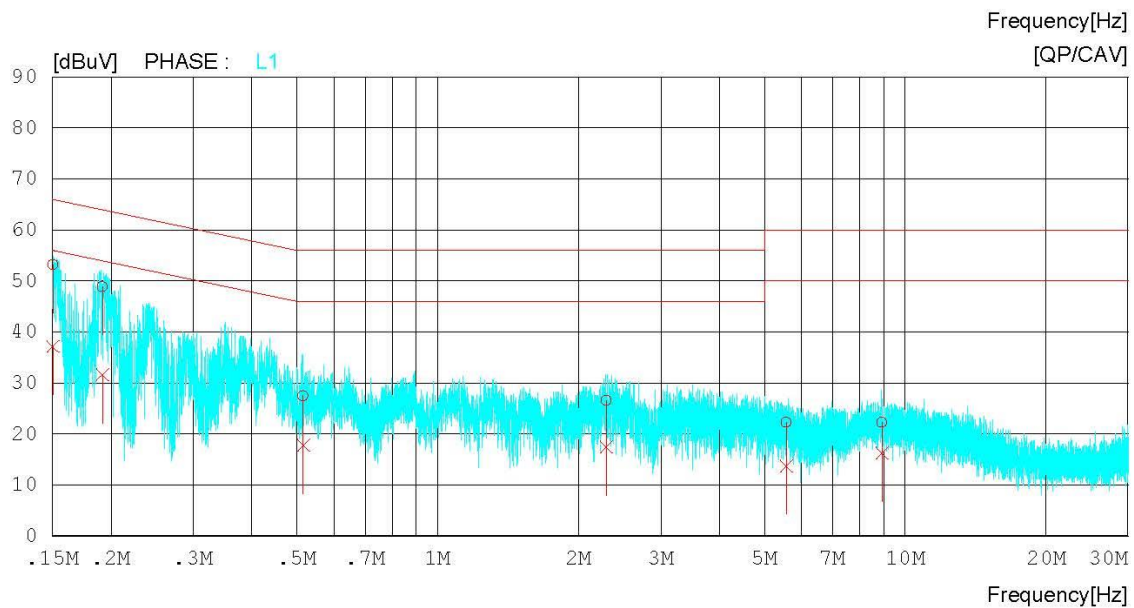
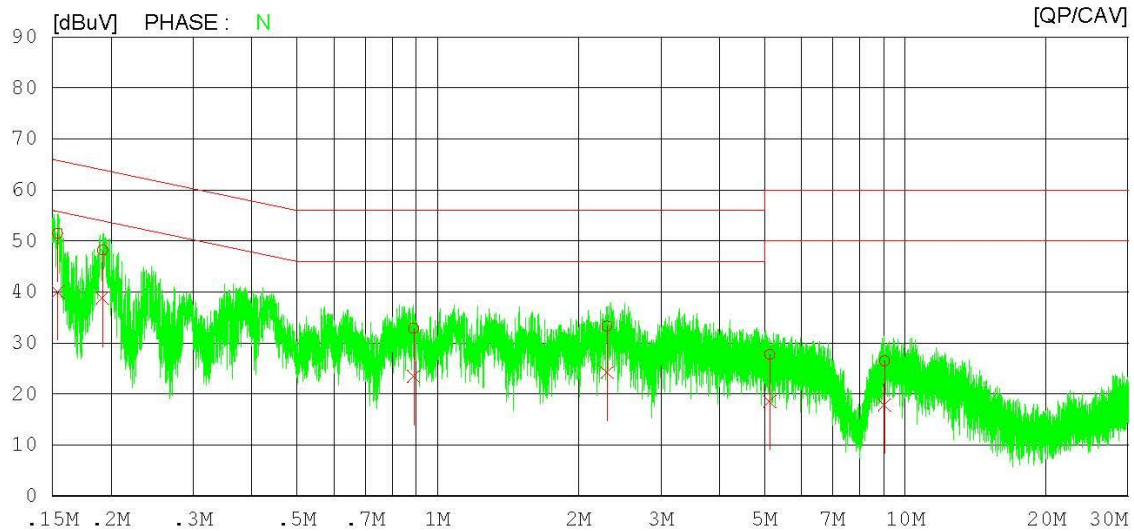
Model PM66
Function U-NII 2A
Mode 802.11a
Test condition

Temp/Humi.
Power Supply
Operator

23 'C 47 %
AC 120 V 60 Hz
J.W.KIM

Memo

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



AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2A & 802.11n(HT20) & 5320 MHz

Results of Conducted Emission

DT&C

Date 2017-06-23

Model PM66
Function U-NII 2A
Mode 802.11a
Test condition

Temp/Humi. 23 'C 47 %
Power Supply AC 120 V 60 Hz
Operator J.W.KIM

Memo

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

NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP	CAV		QP	CAV	QP	CAV	QP	CAV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15406	51.28	39.82	0.22	51.50	40.04	65.78	55.78	14.28	15.74	N
2	0.19212	47.98	38.58	0.20	48.18	38.78	63.94	53.94	15.76	15.16	N
3	0.88805	32.56	23.23	0.24	32.80	23.47	56.00	46.00	23.20	22.53	N
4	2.30280	33.03	23.89	0.32	33.35	24.21	56.00	46.00	22.65	21.79	N
5	5.13320	27.33	18.09	0.45	27.78	18.54	60.00	50.00	32.22	31.46	N
6	9.03240	25.78	17.25	0.66	26.44	17.91	60.00	50.00	33.56	32.09	N
7	0.15031	52.98	36.94	0.18	53.16	37.12	65.98	55.98	12.82	18.86	L1
8	0.19188	48.65	31.42	0.17	48.82	31.59	63.95	53.95	15.13	22.36	L1
9	0.51544	27.23	17.49	0.20	27.43	17.69	56.00	46.00	28.57	28.31	L1
10	2.29580	26.20	17.05	0.30	26.50	17.35	56.00	46.00	29.50	28.65	L1
11	5.57020	21.71	13.19	0.49	22.20	13.68	60.00	50.00	37.80	36.32	L1
12	8.92140	21.50	15.54	0.73	22.23	16.27	60.00	50.00	37.77	33.73	L1

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2C & 802.11n(HT20) & 5700 MHz

Results of Conducted Emission

DT&C

Date 2017-06-23

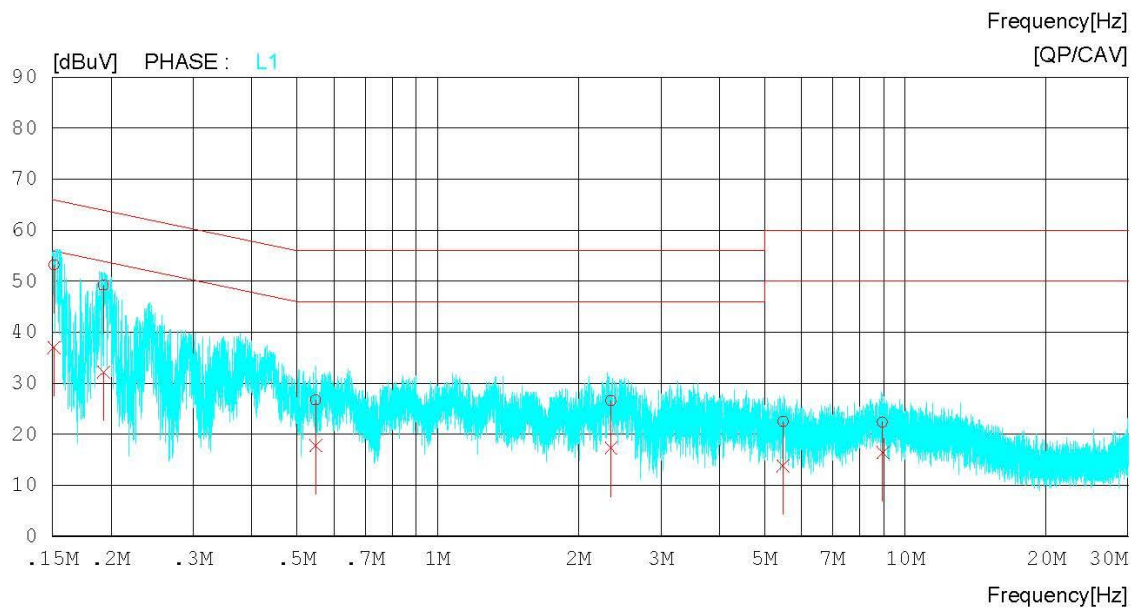
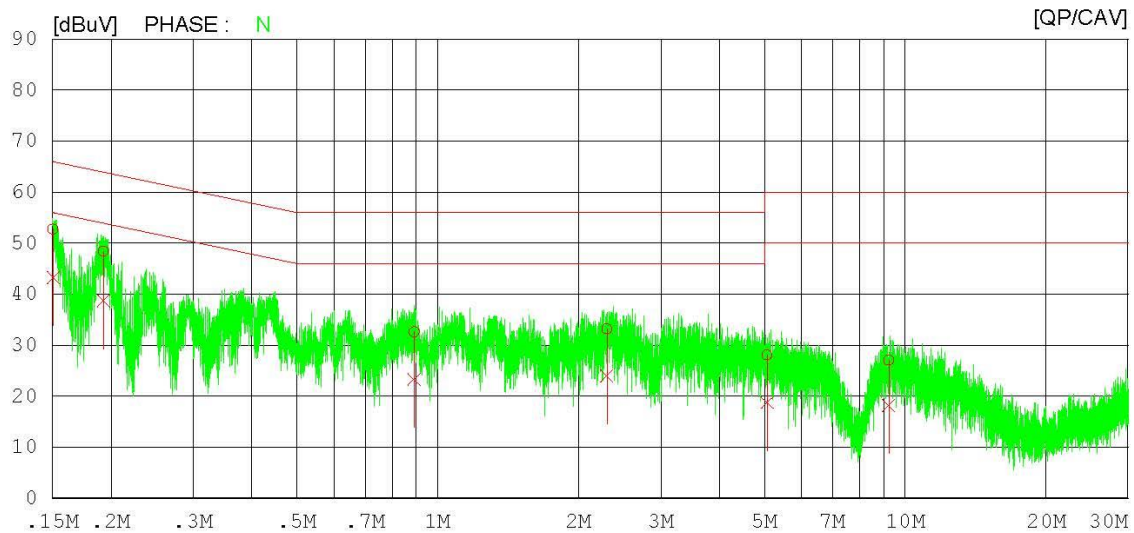
Model PM66
Function U-NII 2C
Mode 802.11a
Test condition

Temp/Humi.
Power Supply
Operator

23 'C 47 %
AC 120 V 60 Hz
J.W.KIM

Memo

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



AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2C & 802.11n(HT20) & 5700 MHz

Results of Conducted Emission

DT&C

Date 2017-06-23

Model PM66
Function U-NII 2C
Mode 802.11a
Test condition

Temp/Humi. 23 'C 47 %
Power Supply AC 120 V 60 Hz
Operator J.W.KIM

Memo

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

NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP	CAV		QP	CAV	QP	CAV	QP	CAV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15062	52.55	43.07	0.22	52.77	43.29	65.97	55.97	13.20	12.68	N
2	0.19298	48.21	38.52	0.20	48.41	38.72	63.91	53.91	15.50	15.19	N
3	0.89021	32.39	23.07	0.24	32.63	23.31	56.00	46.00	23.37	22.69	N
4	2.29960	32.84	23.75	0.32	33.16	24.07	56.00	46.00	22.84	21.93	N
5	5.06220	27.59	18.31	0.44	28.03	18.75	60.00	50.00	31.97	31.25	N
6	9.21920	26.36	17.60	0.67	27.03	18.27	60.00	50.00	32.97	31.73	N
7	0.15103	52.97	36.73	0.18	53.15	36.91	65.94	55.94	12.79	19.03	L1
8	0.19307	49.00	32.00	0.17	49.17	32.17	63.90	53.90	14.73	21.73	L1
9	0.54934	26.49	17.52	0.20	26.69	17.72	56.00	46.00	29.31	28.28	L1
10	2.34740	26.25	16.98	0.30	26.55	17.28	56.00	46.00	29.45	28.72	L1
11	5.47540	22.01	13.26	0.48	22.49	13.74	60.00	50.00	37.51	36.26	L1
12	8.94580	21.54	15.60	0.74	22.28	16.34	60.00	50.00	37.72	33.66	L1

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 3 & 802.11n(HT20) & 5825 MHz

Results of Conducted Emission

DT&C

Date 2017-06-23

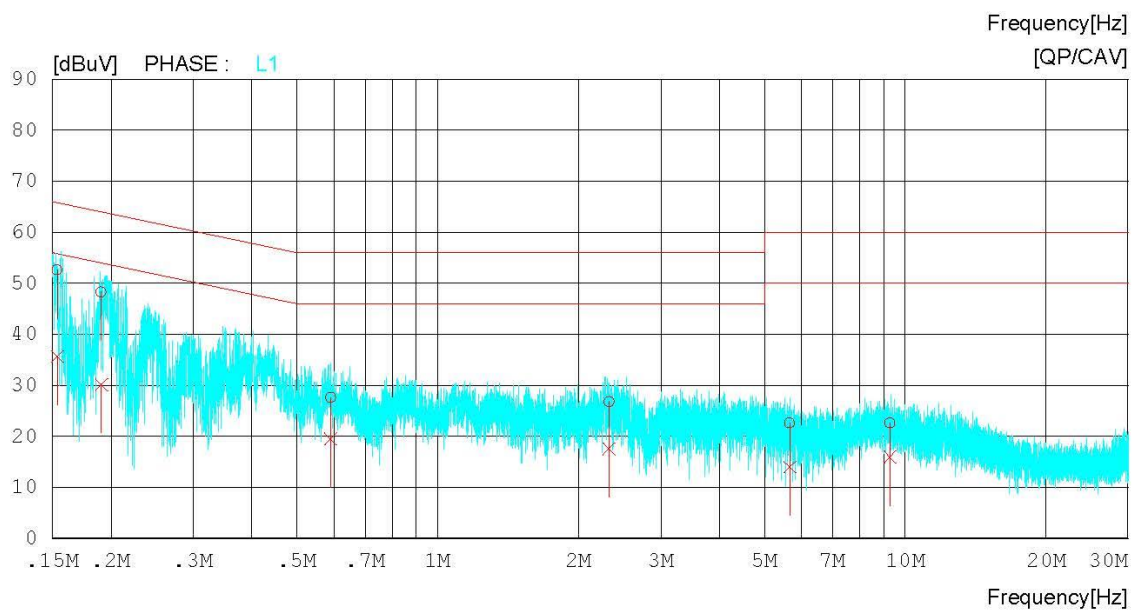
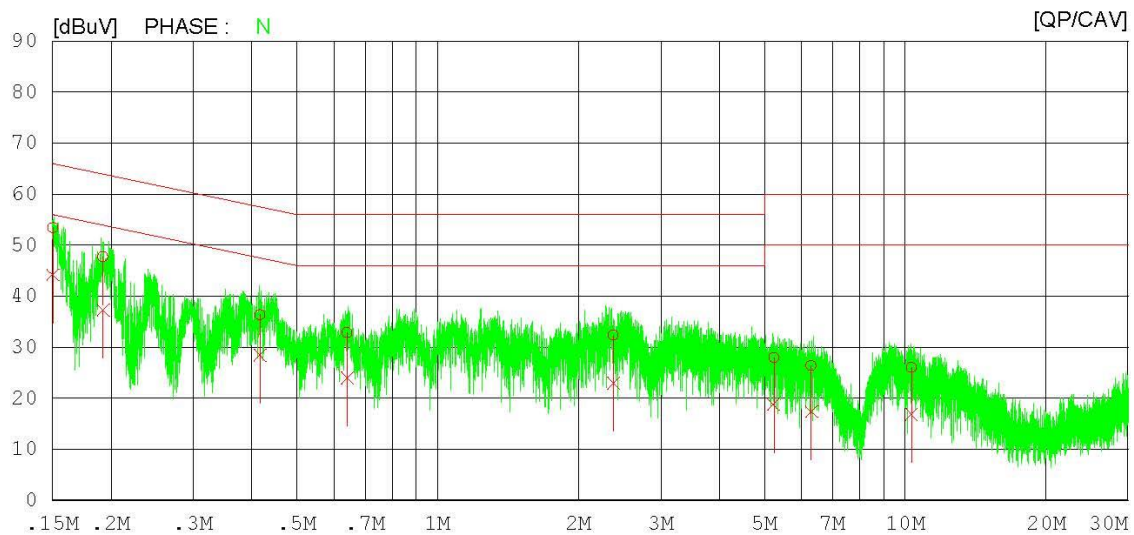
Model PM66
Function U-NII 3
Mode 802.11a
Test condition

Temp/Humi.
Power Supply
Operator

23 'C 47 %
AC 120 V 60 Hz
J.W.KIM

Memo

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



AC Line Conducted Emissions (Data List)

Test Mode: U-NII 3 & 802.11n(HT20) & 5825 MHz

Results of Conducted Emission

DT&C

Date 2017-06-23

Model PM66
Function U-NII 3
Mode 802.11a
Test condition

Temp/Humi. 23 'C 47 %
Power Supply AC 120 V 60 Hz
Operator J.W.KIM

Memo

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

NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP	CAV		QP	CAV	QP	CAV	QP	CAV	
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15025	53.16	44.00	0.22	53.38	44.22	65.99	55.99	12.61	11.77	N
2	0.19232	47.57	37.14	0.20	47.77	37.34	63.94	53.94	16.17	16.60	N
3	0.41697	36.17	28.31	0.21	36.38	28.52	57.51	47.51	21.13	18.99	N
4	0.64031	32.69	23.77	0.22	32.91	23.99	56.00	46.00	23.09	22.01	N
5	2.37500	32.10	22.66	0.33	32.43	22.99	56.00	46.00	23.57	23.01	N
6	5.23380	27.56	18.38	0.45	28.01	18.83	60.00	50.00	31.99	31.17	N
7	6.29420	25.81	16.88	0.51	26.32	17.39	60.00	50.00	33.68	32.61	N
8	10.31020	25.30	16.10	0.73	26.03	16.83	60.00	50.00	33.97	33.17	N
9	0.15350	52.36	35.47	0.18	52.54	35.65	65.81	55.81	13.27	20.16	L1
10	0.19088	48.14	29.98	0.17	48.31	30.15	64.00	54.00	15.69	23.85	L1
11	0.59046	27.37	19.22	0.21	27.58	19.43	56.00	46.00	28.42	26.57	L1
12	2.32560	26.47	17.23	0.30	26.77	17.53	56.00	46.00	29.23	28.47	L1
13	5.66300	22.04	13.43	0.50	22.54	13.93	60.00	50.00	37.46	36.07	L1
14	9.27200	21.78	15.18	0.76	22.54	15.94	60.00	50.00	37.46	34.06	L1

7.8 Occupied Bandwidth

■ Test Requirements, RSS-Gen[6.6]

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

■ Test Configuration

Refer to the APPENDIX I.

■ Test Procedure

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

■ Test Result : **Comply**

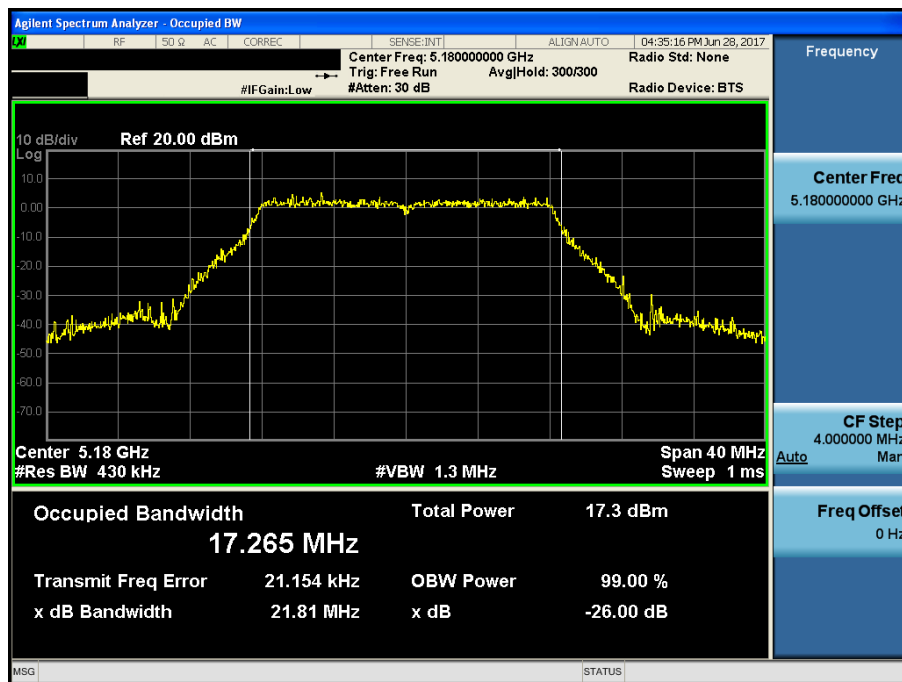
Multiple transmit

Mode	Bands	Channel	Frequency [MHz]	Test Result [MHz]
802.11a	U-NII 1	36	5180	17.265
		40	5200	17.331
		48	5240	17.345
	U-NII 2A	52	5260	17.332
		60	5300	17.276
		64	5320	17.292
	U-NII 2C	100	5500	17.292
		116	5580	17.346
		140	5700	17.346
	U-NII 3	149	5745	17.273
		157	5785	17.266
		165	5825	17.280
802.11n HT20	U-NII 1	36	5180	18.195
		40	5200	18.276
		48	5240	18.269
	U-NII 2A	52	5260	18.234
		60	5300	18.198
		64	5320	18.214
	U-NII 2C	100	5500	18.203
		116	5580	18.222
		140	5700	18.269
	U-NII 3	149	5745	18.205
		157	5785	18.166
		165	5825	18.272
802.11n HT40	U-NII 1	38	5190	36.289
		46	5230	36.320
	U-NII 2A	54	5270	36.321
		62	5310	36.220
	U-NII 2C	102	5510	36.274
		110	5550	36.393
		134	5670	36.181
	U-NII 3	151	5755	36.333
		159	5795	36.348

RESULT PLOTS

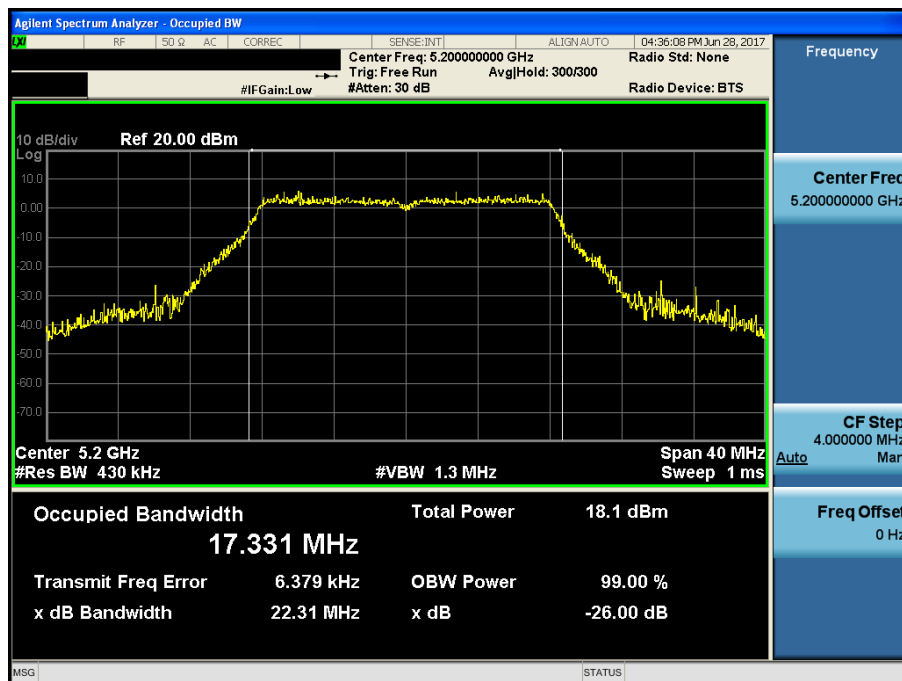
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.36



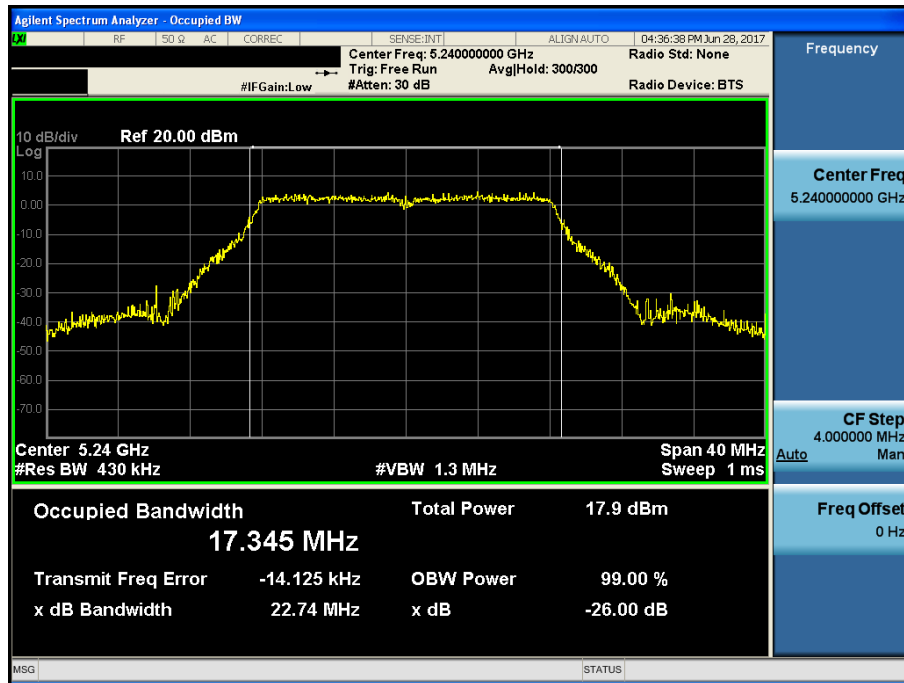
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.40



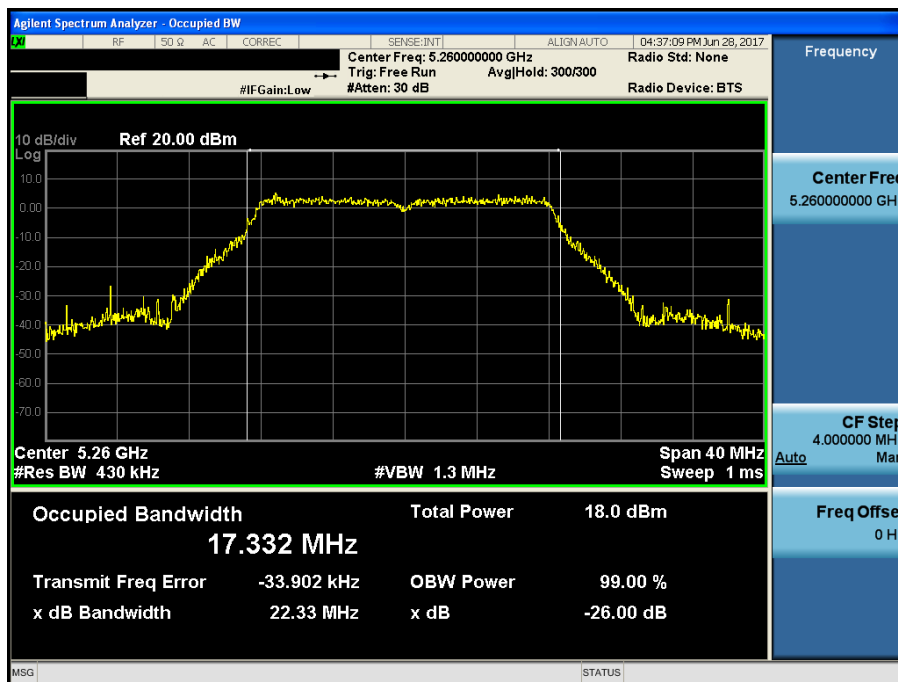
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.48



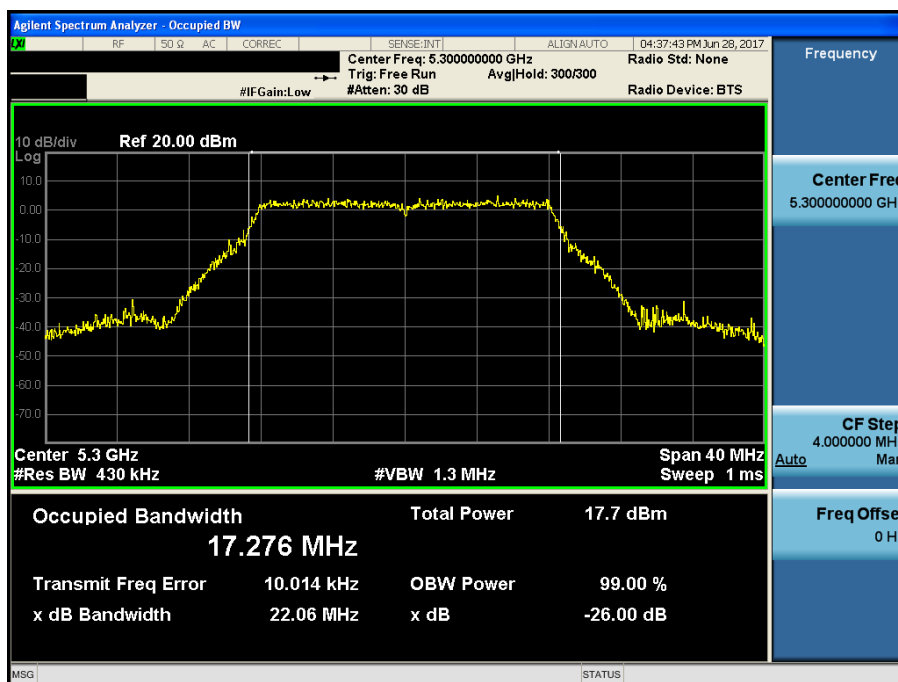
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.52



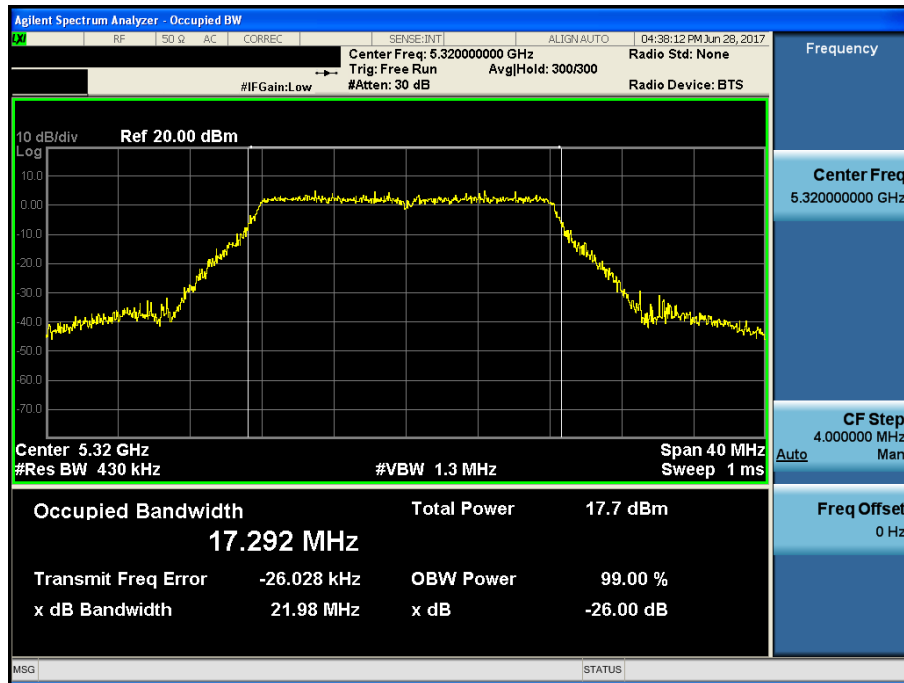
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.60



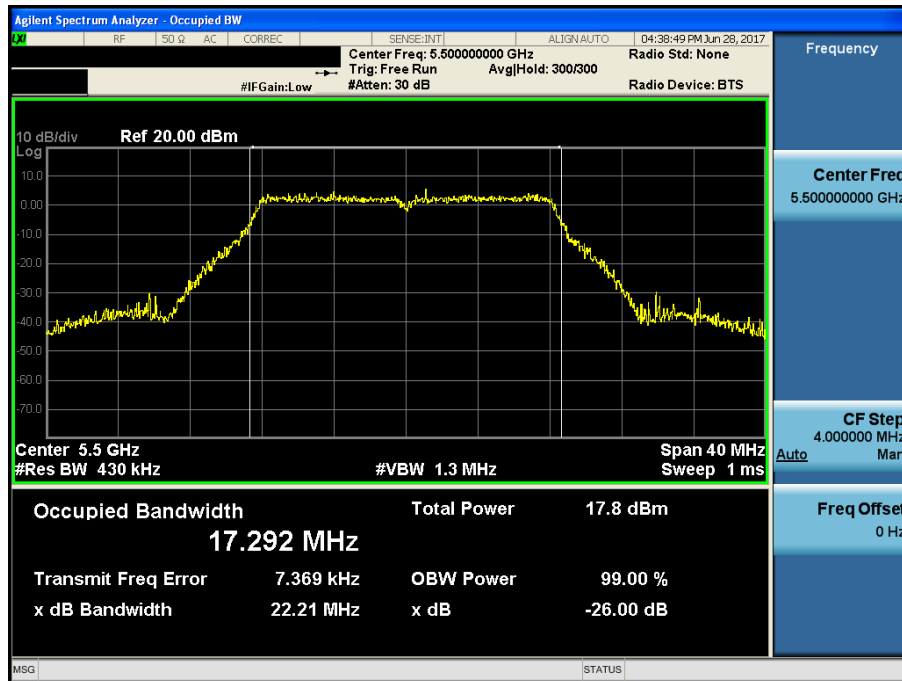
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.64



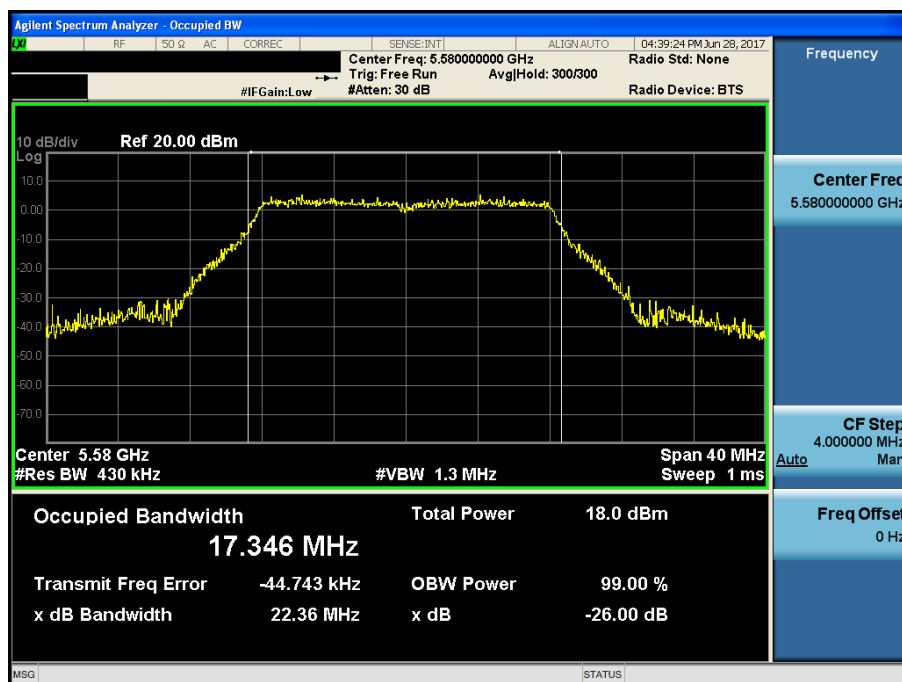
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.100



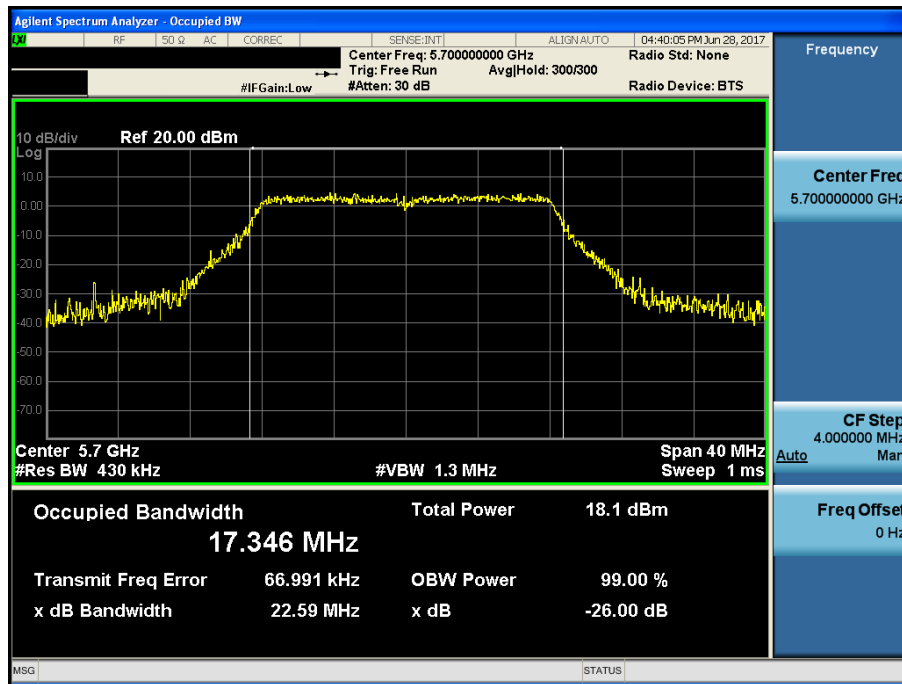
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.116



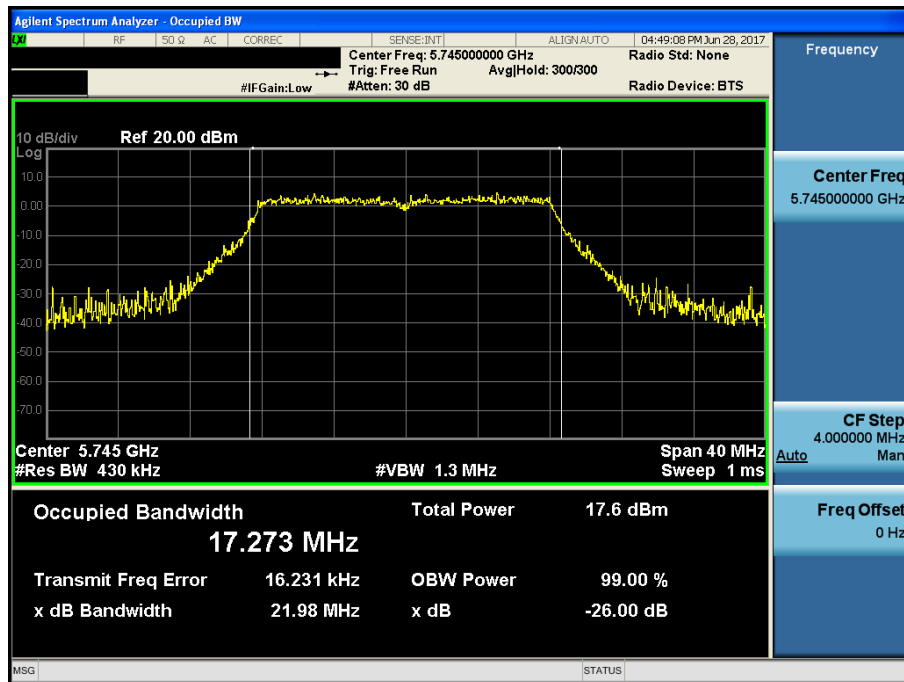
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.140



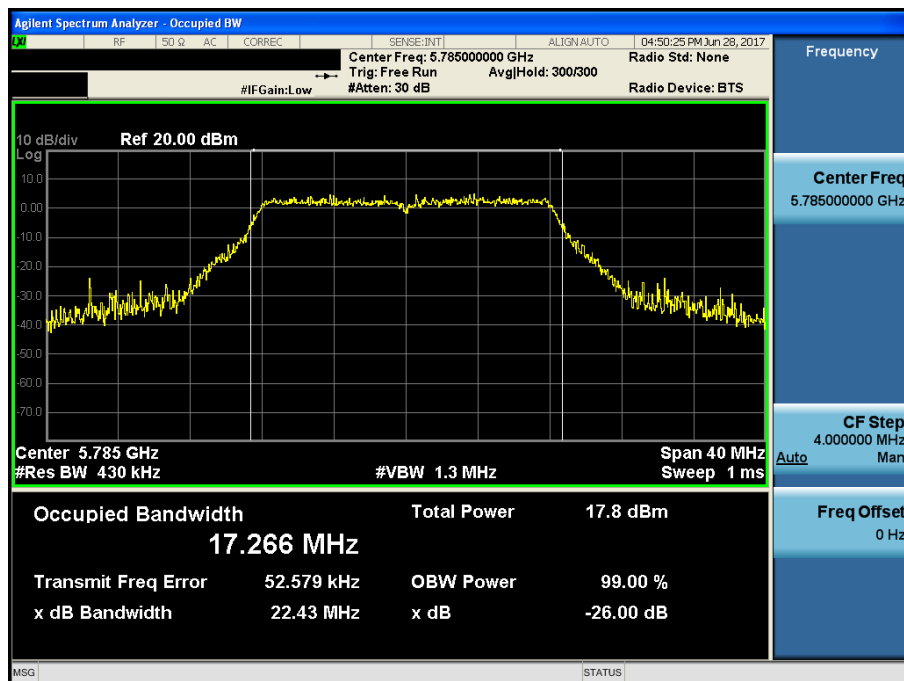
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.149



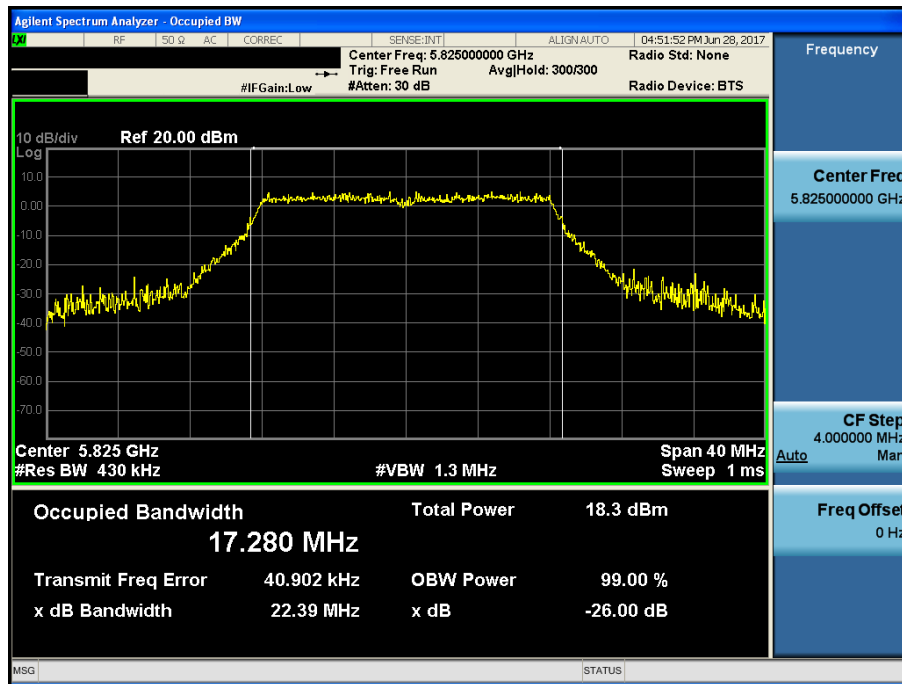
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.157



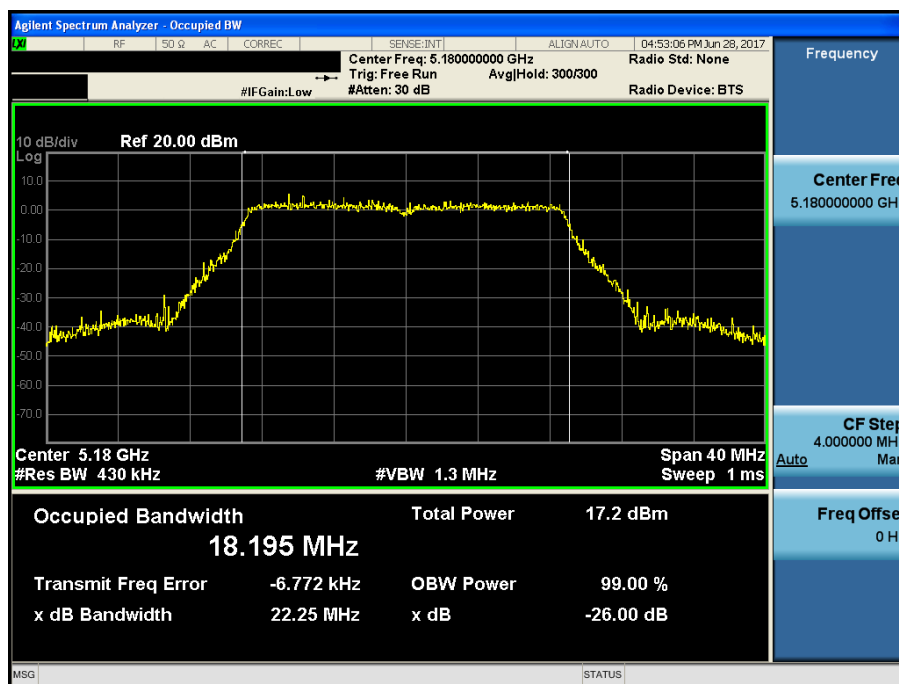
Occupied Bandwidth 99%

Test Mode: 802.11a & Ch.165



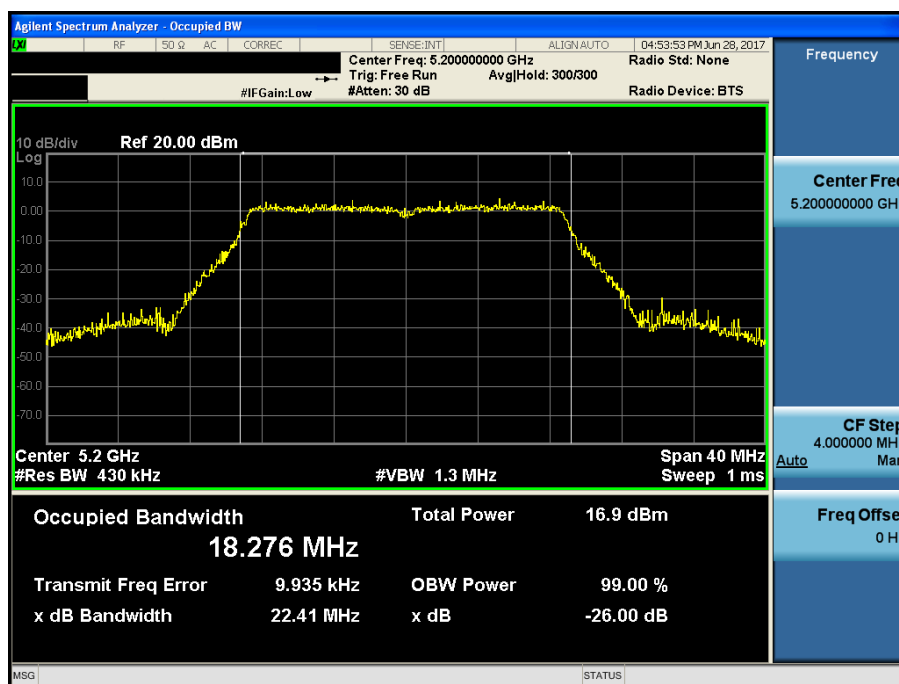
Occupied Bandwidth 99%

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



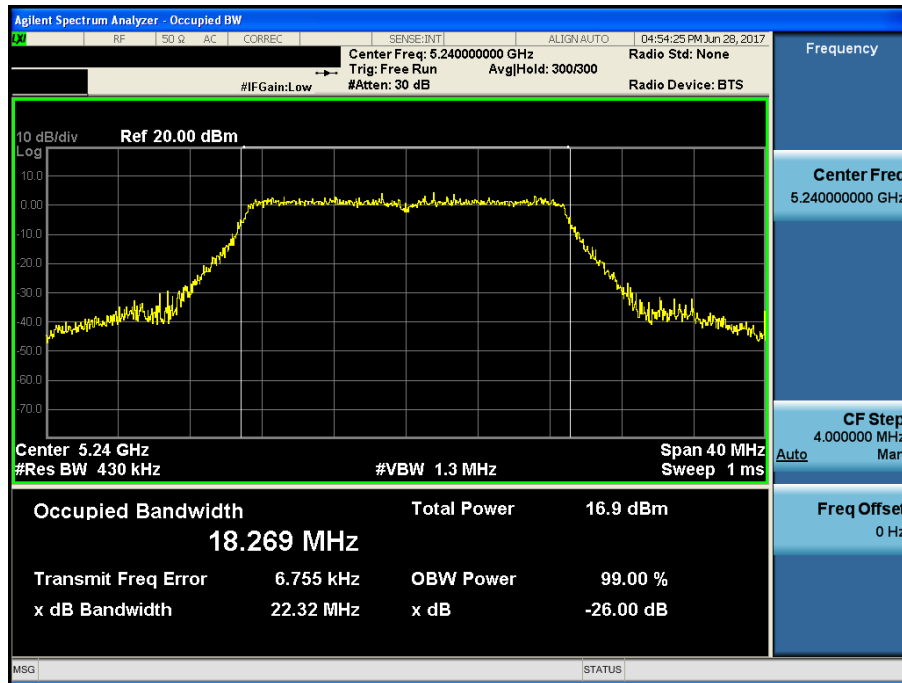
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.40



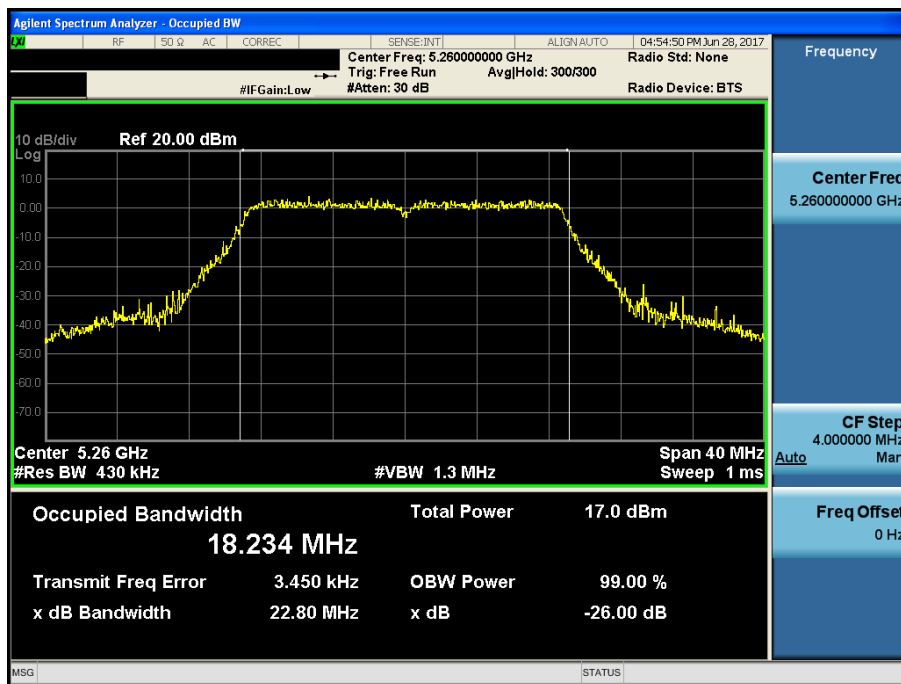
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.48



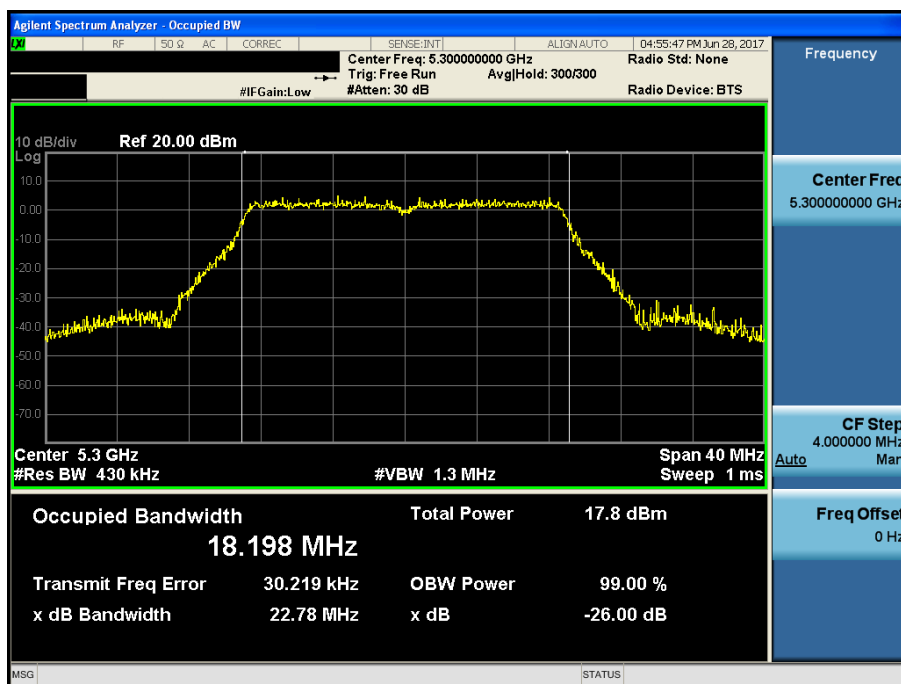
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.52



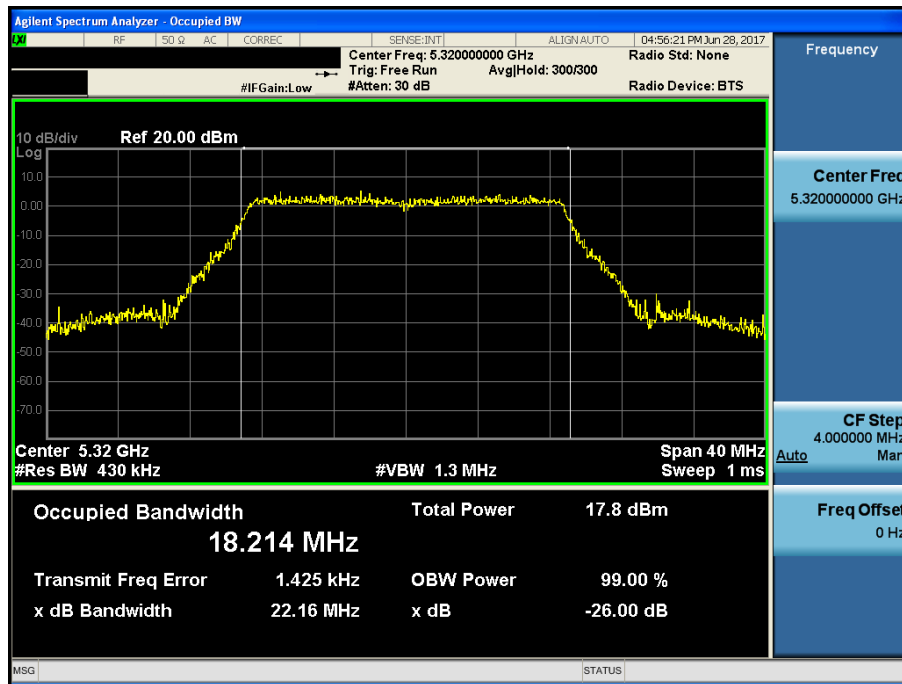
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & Ch.60



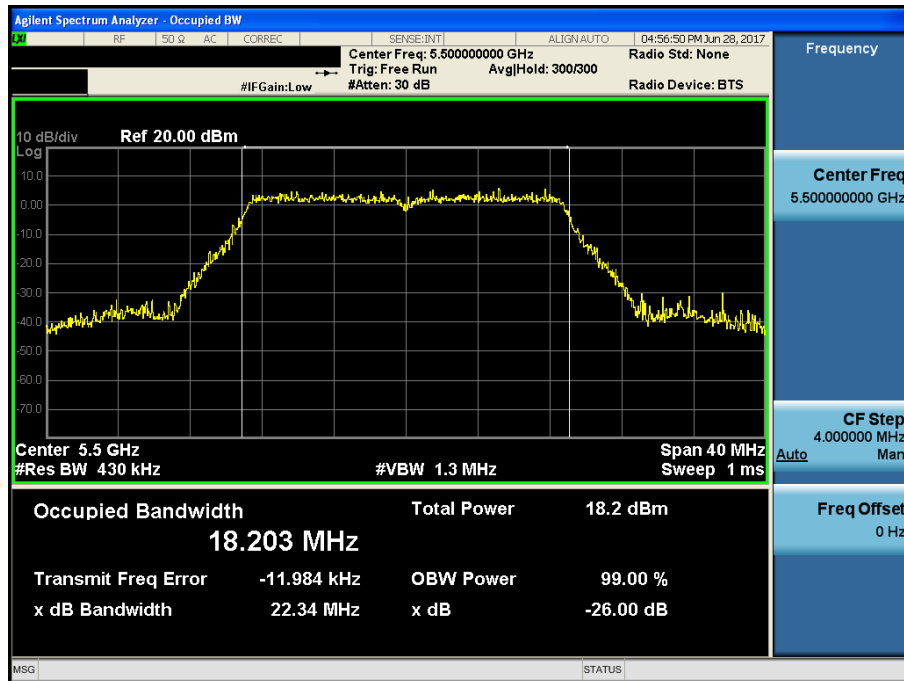
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.64



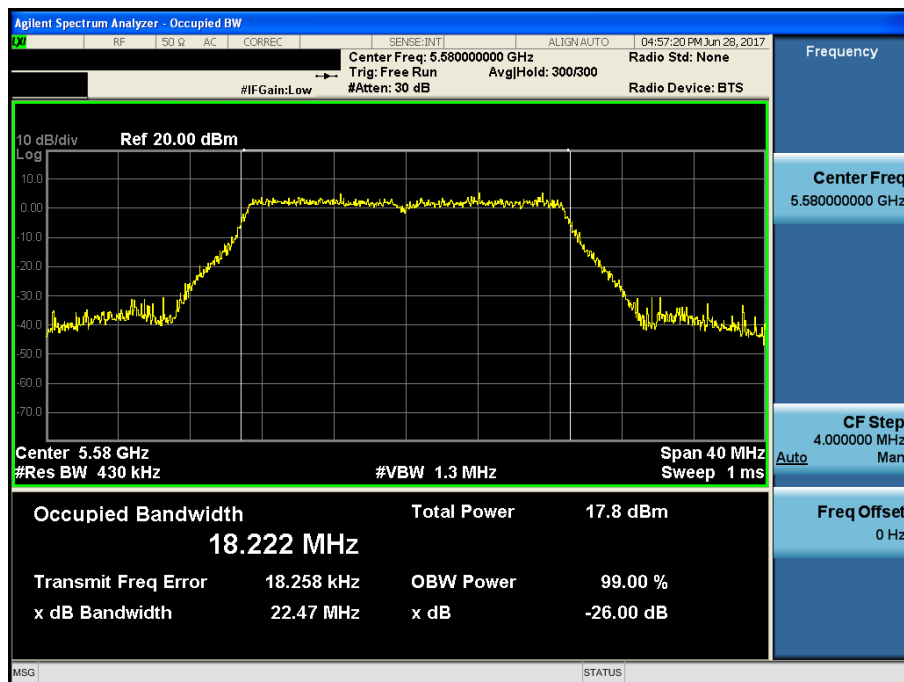
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.100



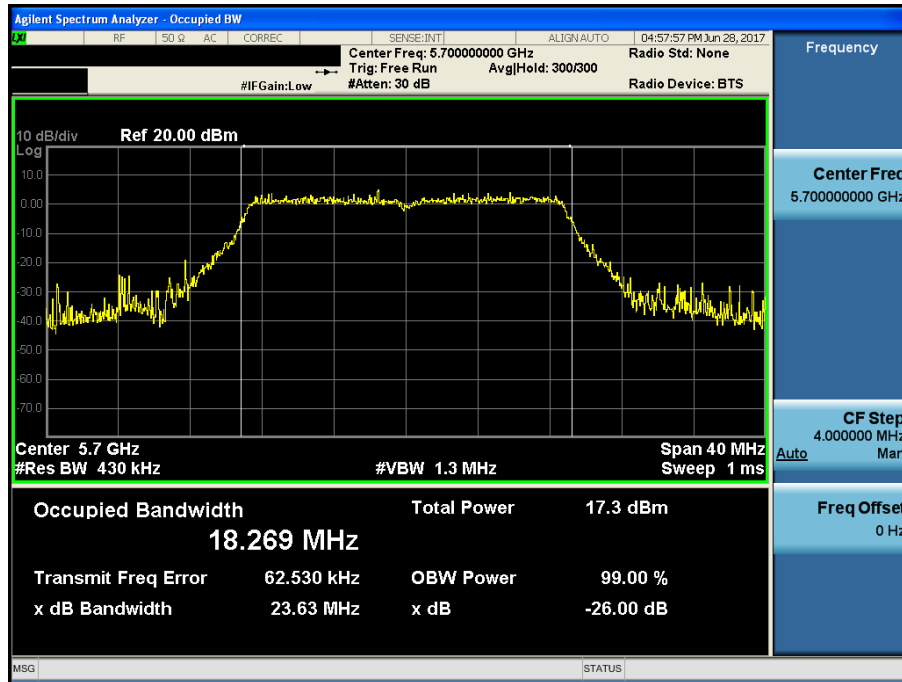
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.116



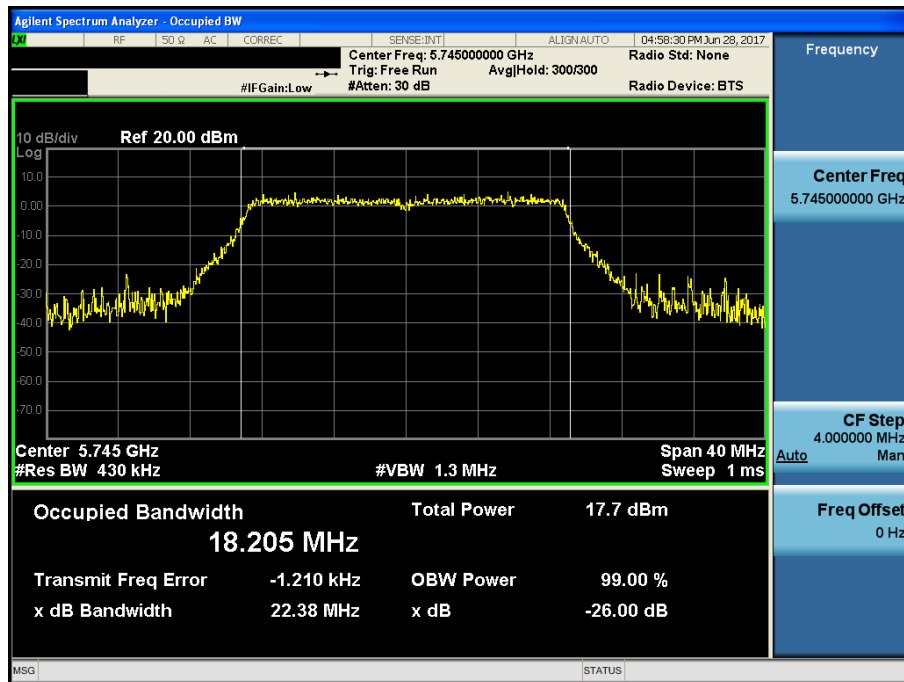
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.140



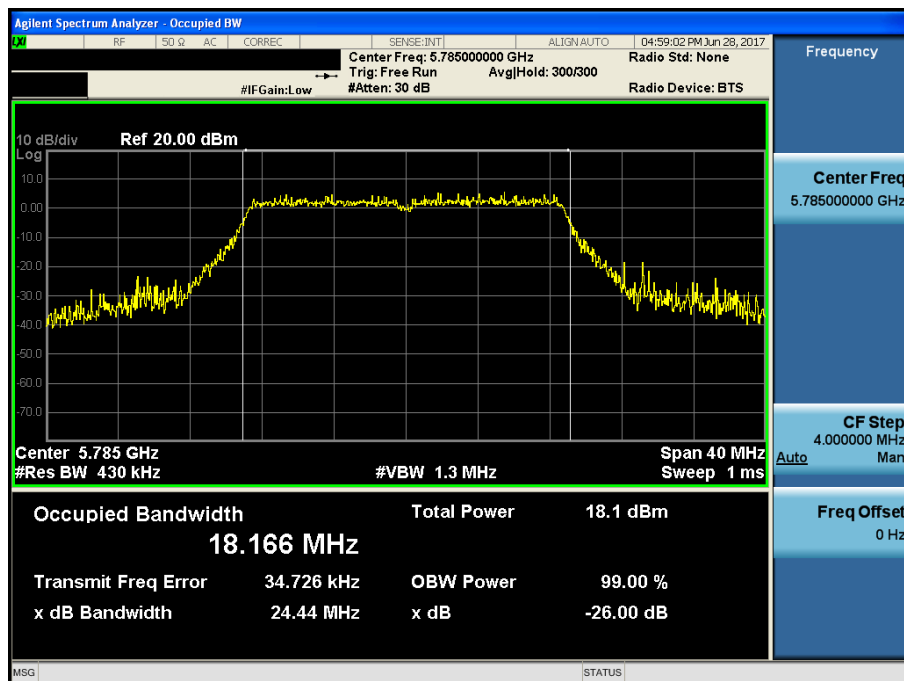
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.149



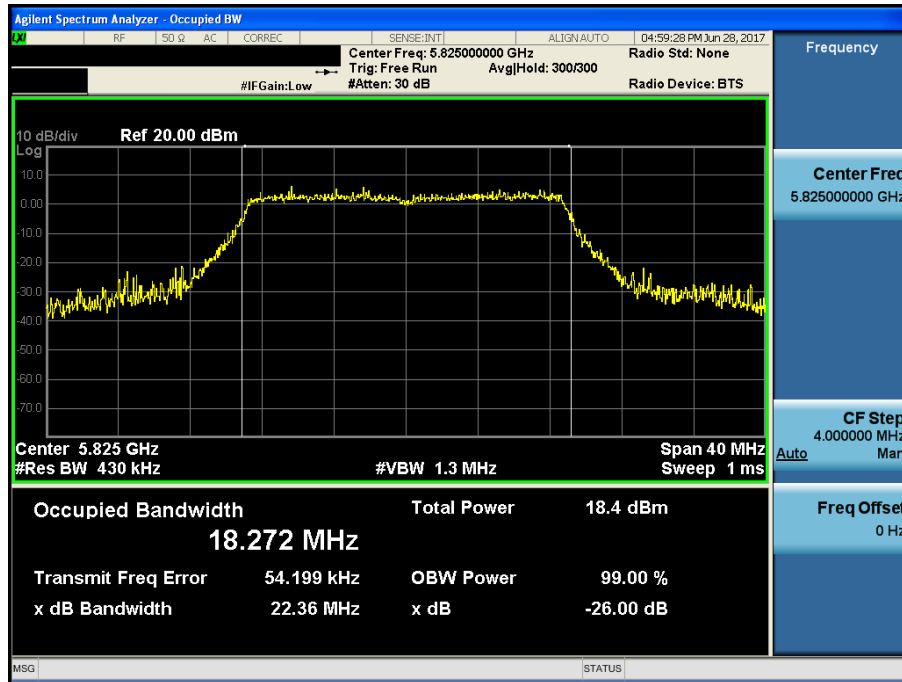
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.157



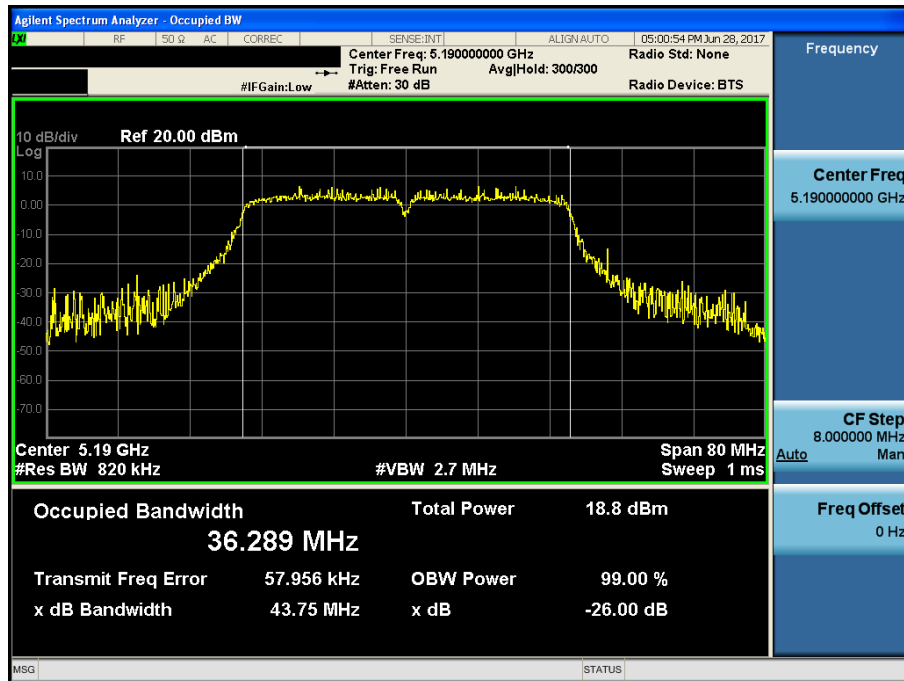
Occupied Bandwidth 99%

Test Mode: 802.11n(HT20) & Ch.165



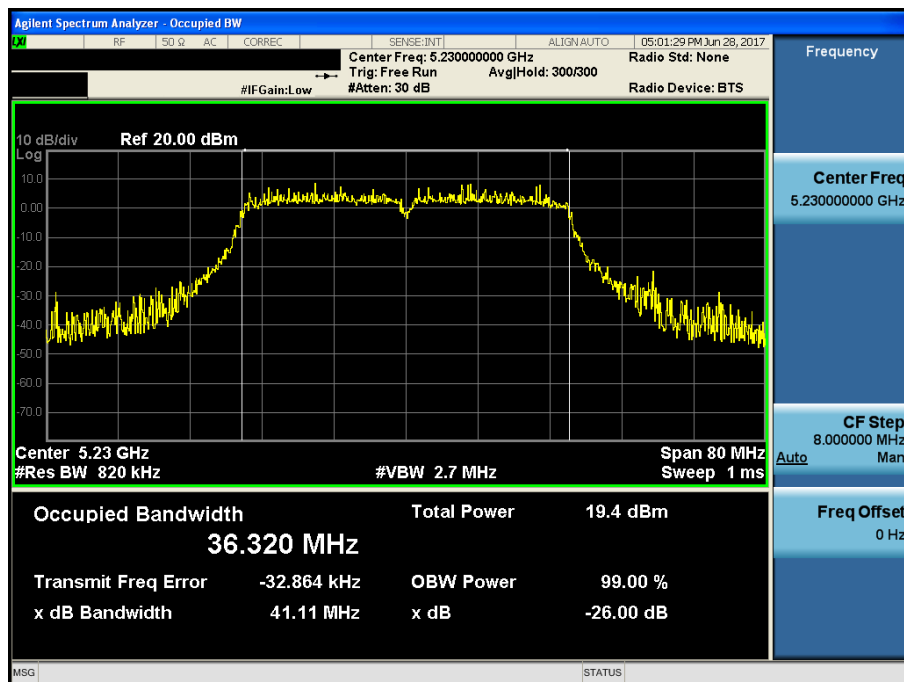
Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.38



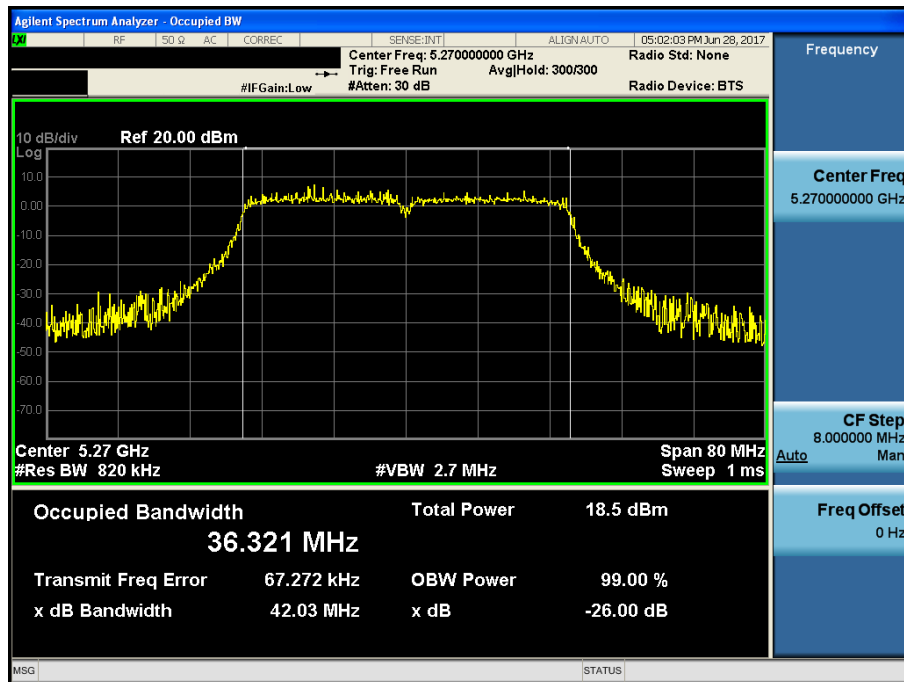
Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.46



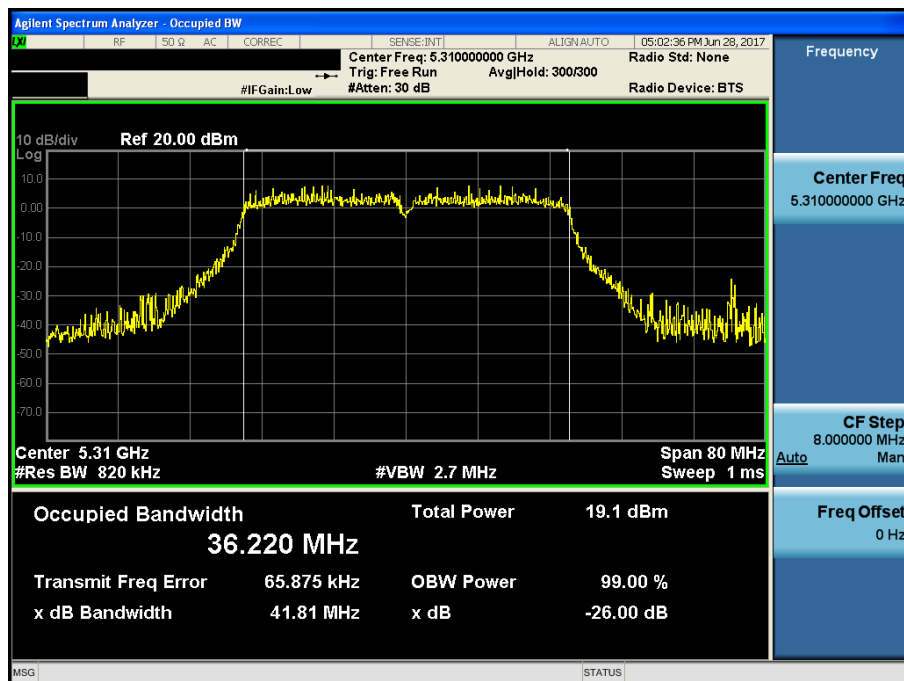
Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.54



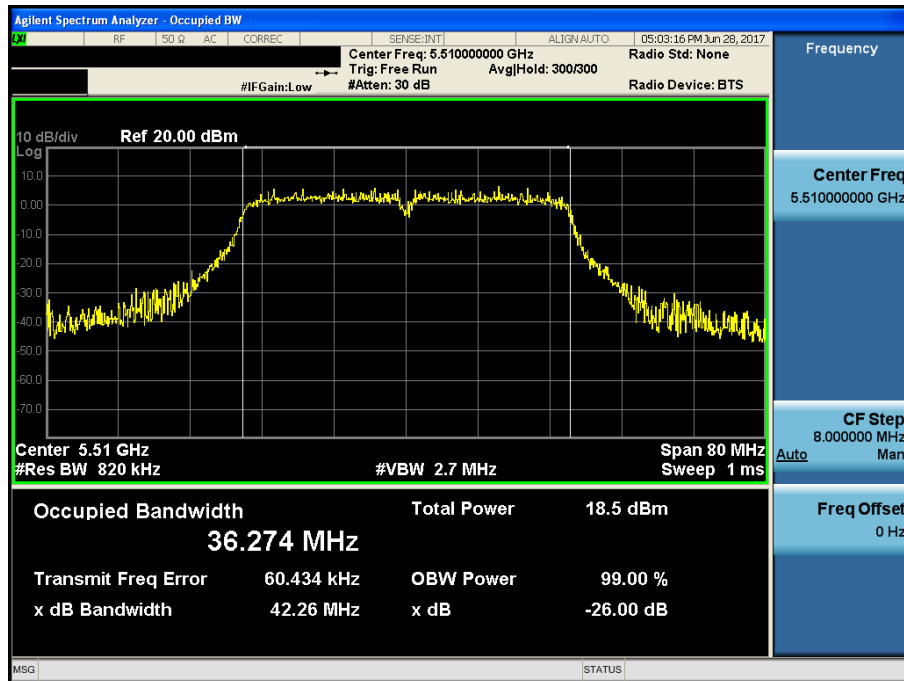
Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.62



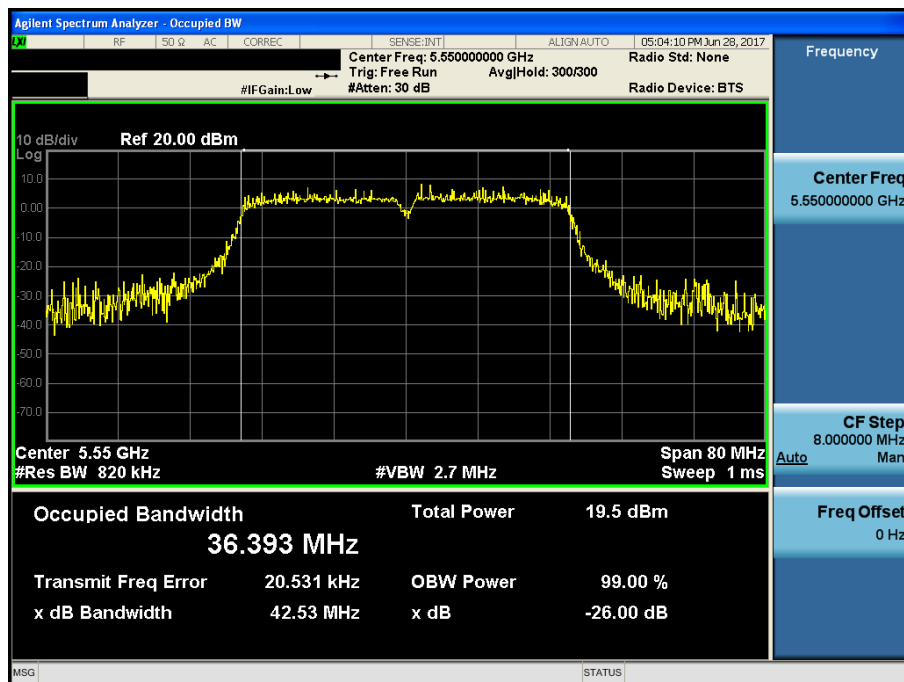
Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.102



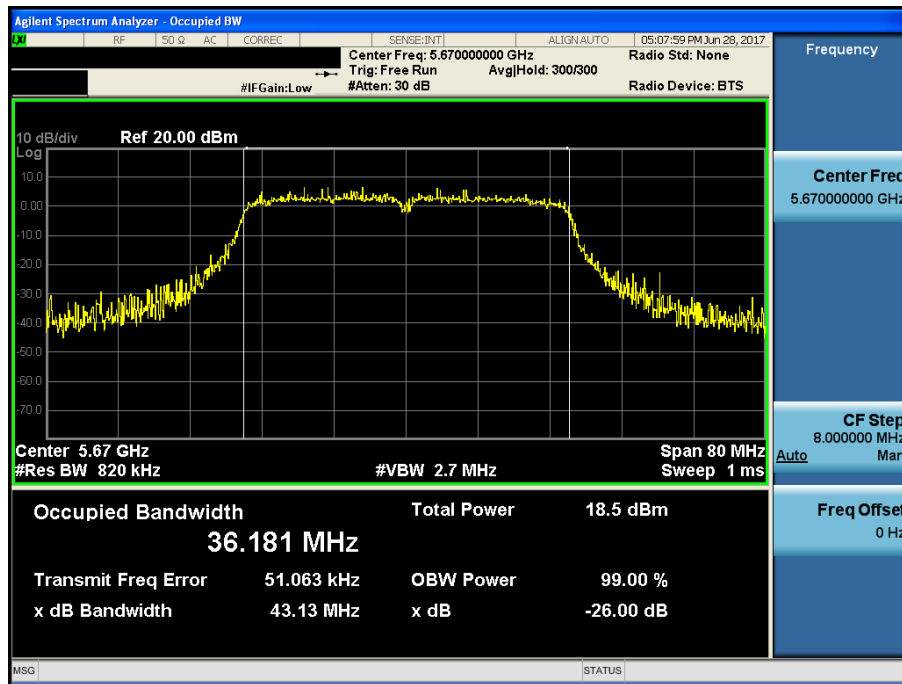
Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.110



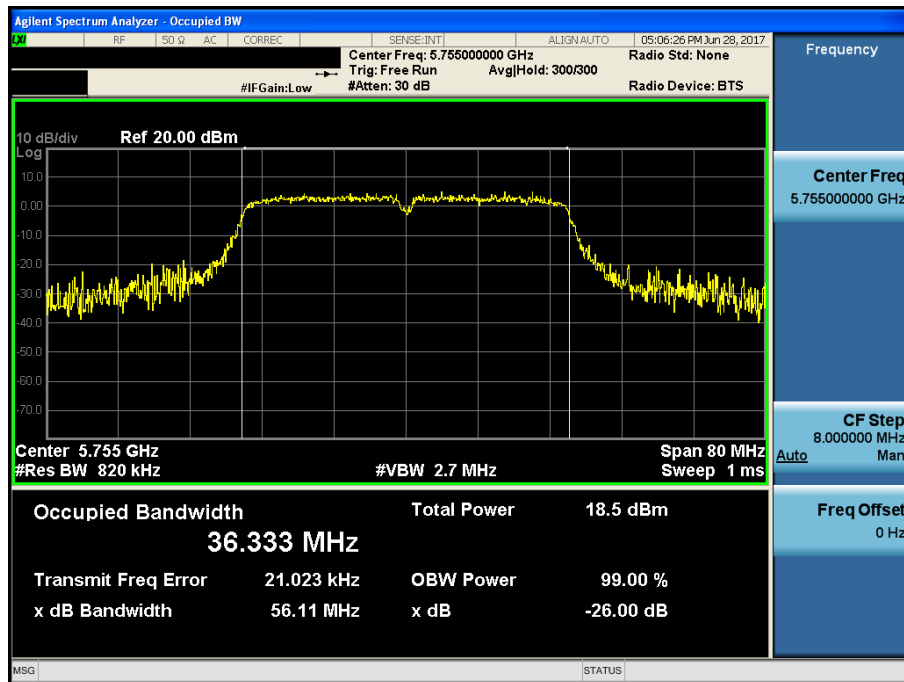
Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.134



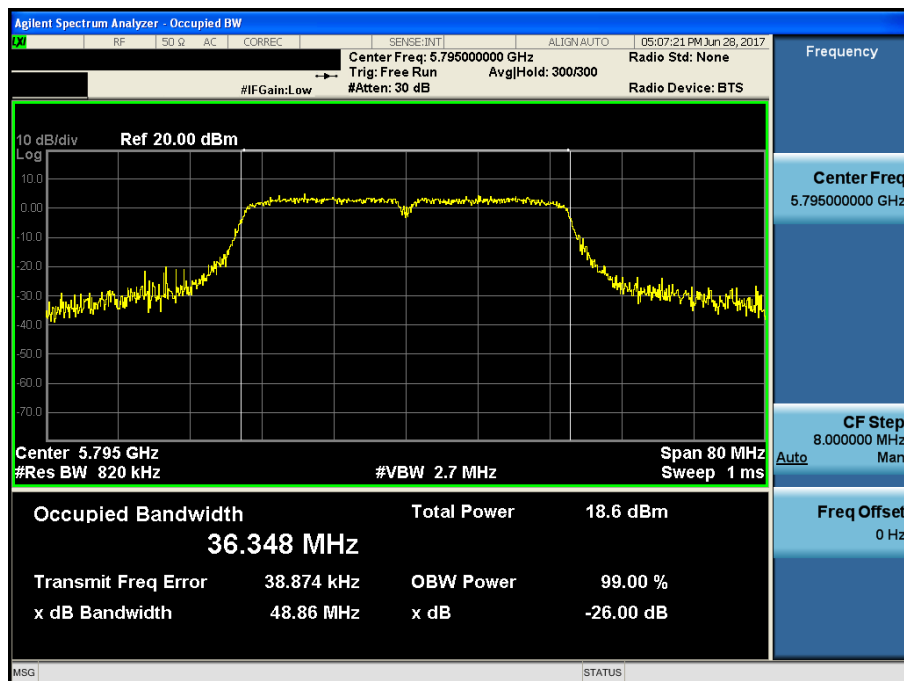
Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.151



Occupied Bandwidth 99%

Test Mode: 802.11n(HT40) & Ch.159



8. LIST OF TEST EQUIPMENT

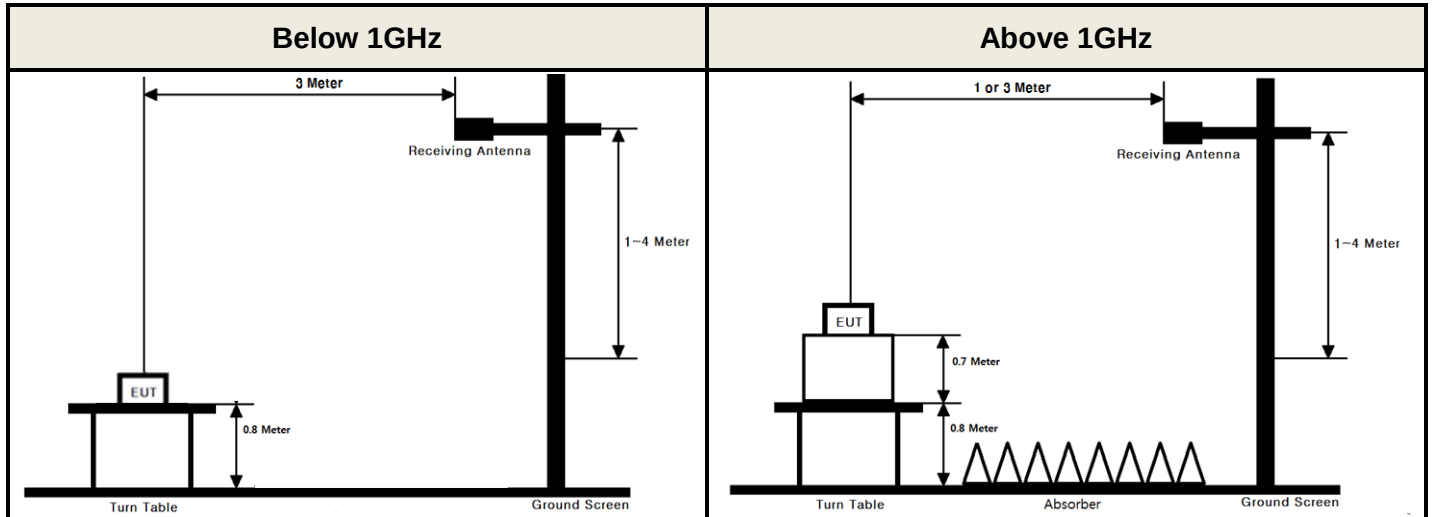
Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	16/09/09	17/09/09	MY50200834
Spectrum Analyzer	Agilent Technologies	N9030A	16/10/18	17/10/18	MY53310140
Digital Multimeter	Agilent Technologies	34401A	17/01/04	18/01/04	US36099541
DC Power Supply	Agilent Technologies	66332A	16/09/08	17/09/08	US37473305
Signal Generator	Rohde Schwarz	SMBV100A	17/01/04	18/01/04	255571
Signal Generator	Rohde Schwarz	SMF100A	17/04/21	18/04/21	102341
Attenuator(10dB)	Hefei Shunze	SS5T2.92-10-40	17/01/11	18/01/11	16012202
Thermohygrometer	BODYCOM	BJ5478	17/04/11	18/04/11	120612-2
Loop Antenna	Schwarzbeck	FMZB1513	16/04/22	18/04/22	1513-128
BILOG Antenna	SCHWARZBECK	VULB9160	16/11/11	18/11/11	3151
Horn Antenna	ETS-LINDGREN	3117	16/05/03	18/05/03	00140394
Horn Antenna	A.H.Systems Inc.	SAS-574	17/04/25	19/04/25	154
PreAmplifier	Agilent Technologies	8449B	16/10/19	17/10/19	3008A02108
PreAmplifier	A.H.Systems Inc.	PAM-1840VH	16/12/04	17/12/04	163
Temp & Humi Test Chamber	SJ Science	SJ-TH-S50	17/01/25	18/01/25	SJ-TH-S50-140205
Low Noise Pre Amplifier	tsj	MLA-010K01-B01-27	17/03/06	18/03/06	1844539
EMI TEST RECEIVER	Rohde Schwarz	ESR7	17/02/16	18/02/16	101061
EMI TEST RECEIVER	Rohde Schwarz	ESCI	17/02/18	18/02/18	100364
Highpass Filter	Wainwright Instruments	WHNX6-6320-8000-26500-40CC	16/09/13	17/09/13	1
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2495A	17/04/11	18/04/11	1306007
Power Meter & Wide Bandwidth Sensor	Anritsu	MA2490A	17/04/11	18/04/11	1249001
ARTIFICIAL MAINS NETWORK	ROHDE&SCHWARZ	ESH2-Z5	16/09/08	17/09/08	828739/006
SINGLE-PHASE MASTER	NF	4420	16/09/08	17/09/08	3049354420023

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

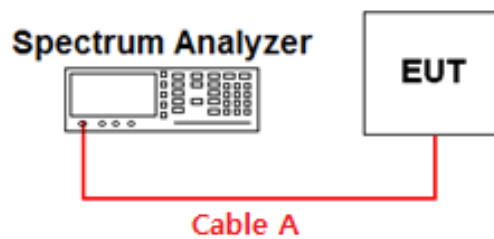
APPENDIX I

Test set up diagrams

▪ Radiated Measurement



▪ 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 D02 V01**

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.

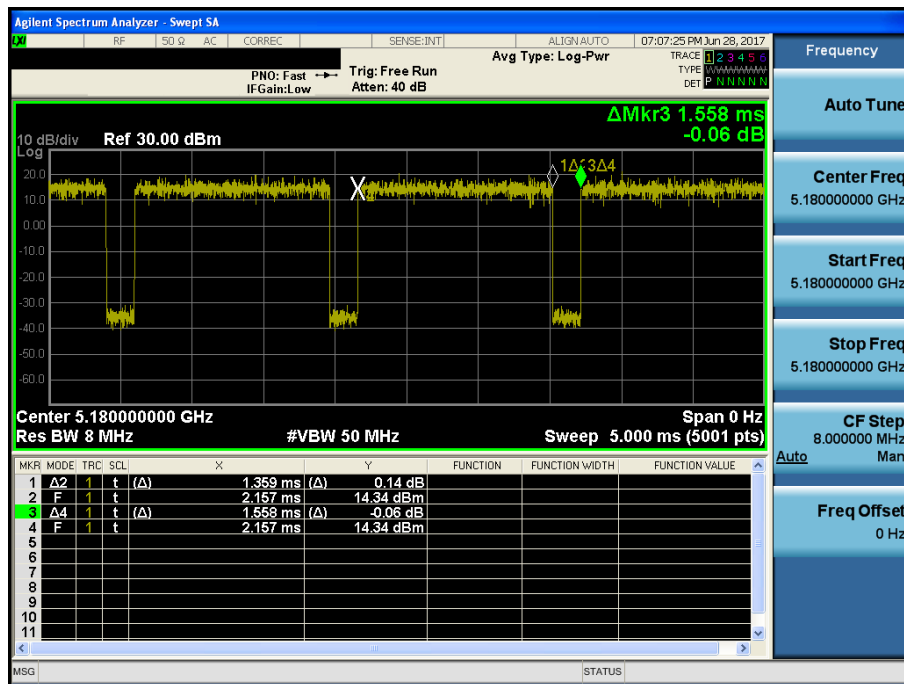
($T = \text{On time}$ of the above table since the EUT operates with above fixed Duty Cycle and it is the minimum On time)

■ Test Results:

Mode	Channel	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (x) = On / (On+Off)			Duty Cycle Correction Factor [dB]	1/T [Hz]
			On Time [ms]	On+OffTime [ms]	x		
802.11a	36	5180	1.359	1.558	0.87	0.61	735.84
802.11n (HT20)	36	5180	1.272	1.470	0.86	0.66	786.17
802.11n (HT40)	38	5190	0.631	0.832	0.75	1.25	1584.29

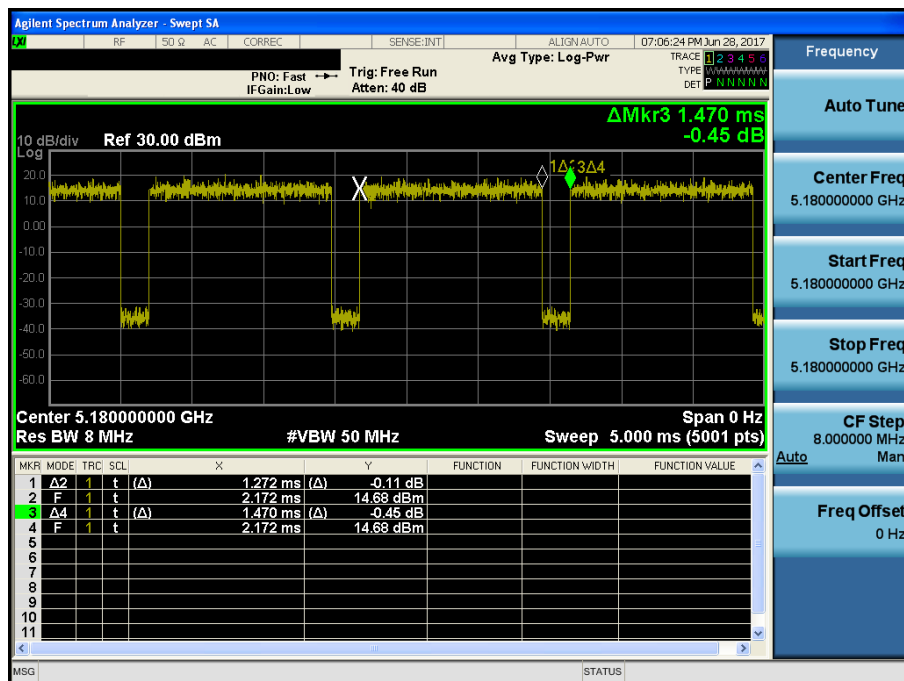
Duty Cycle

Test Mode: 802.11a & Ch.36



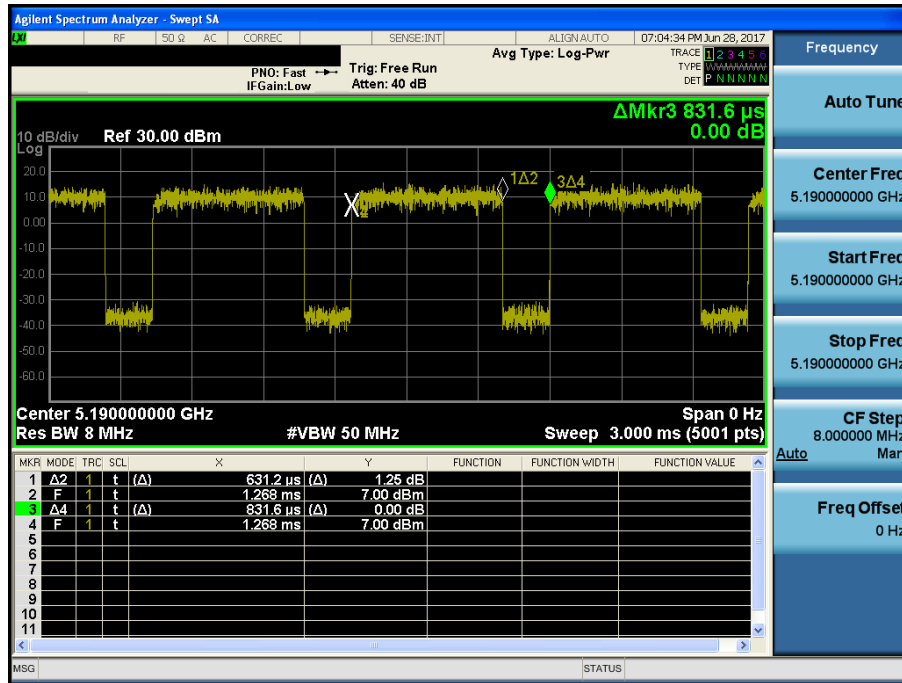
Duty Cycle

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



Duty Cycle

Test Mode: 802.11n(HT40) & Ch.38

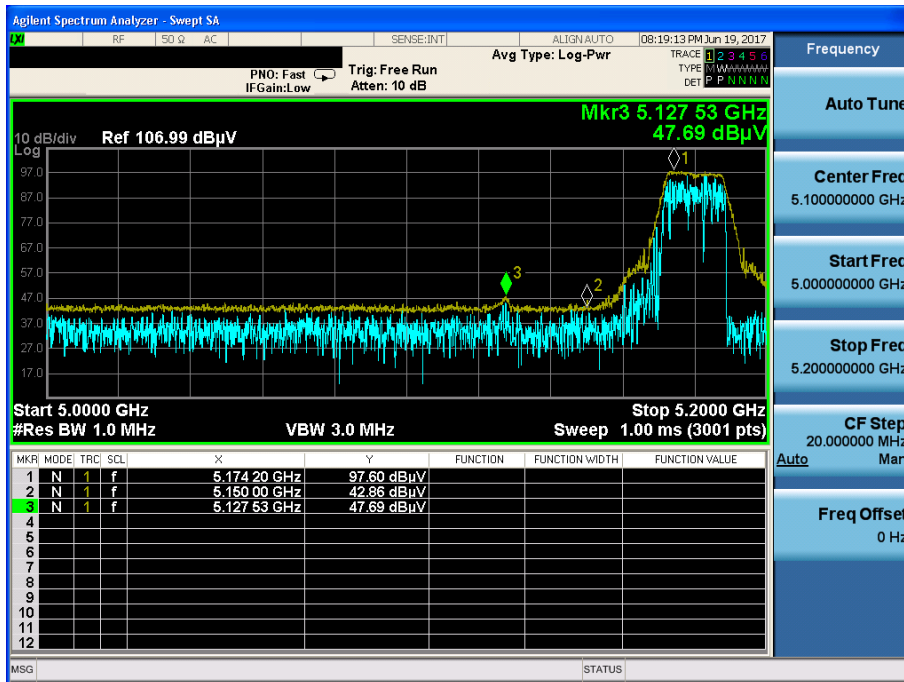


APPENDIX III

Unwanted Emissions (Radiated) Test Plot

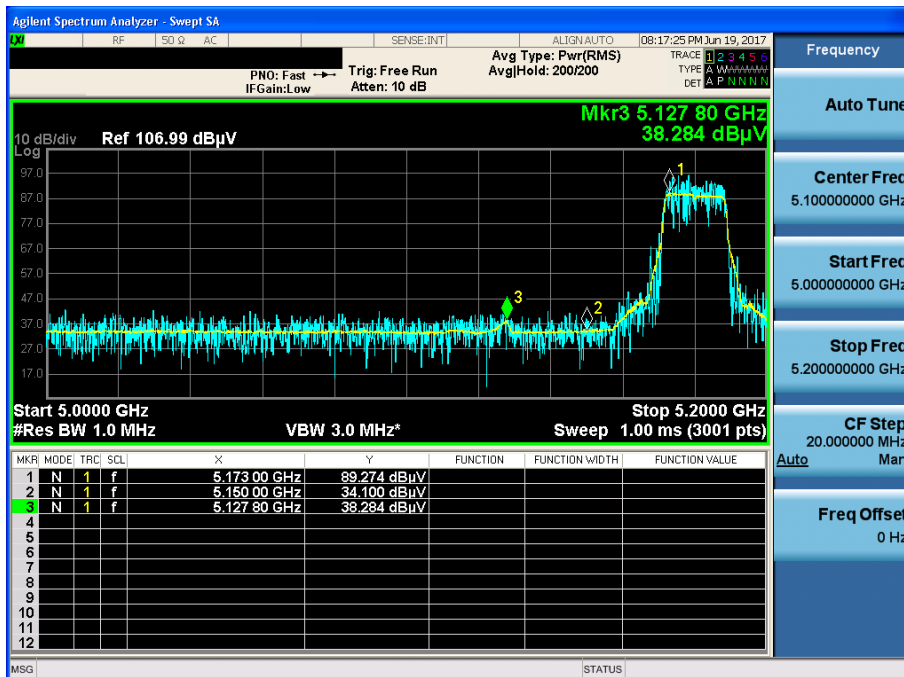
802.11a & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : PK



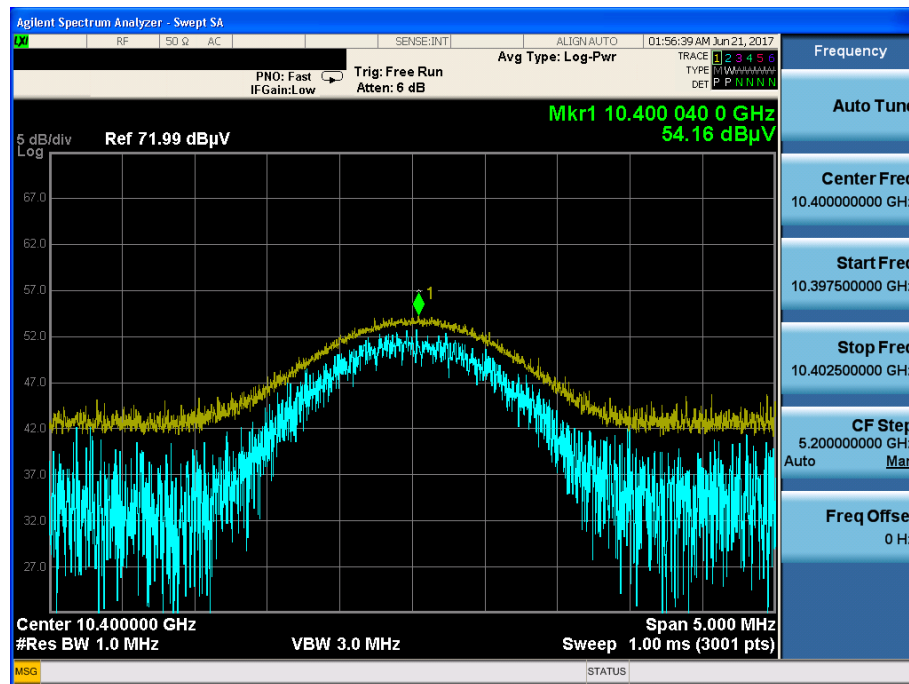
802.11a & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : AV

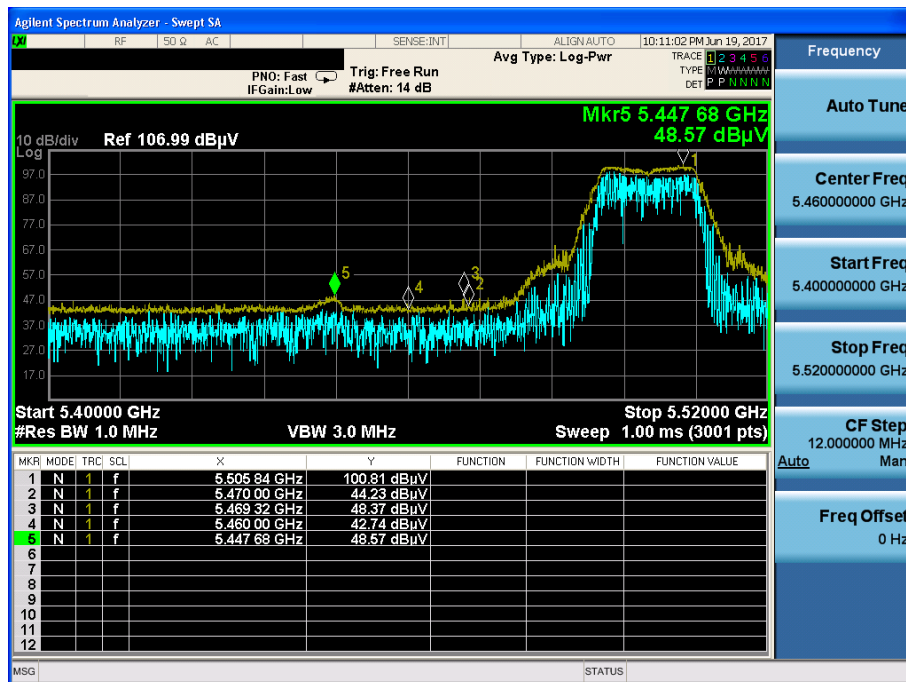


802.11a & U-NII 1 & Ch.40 & Z axis & Hor

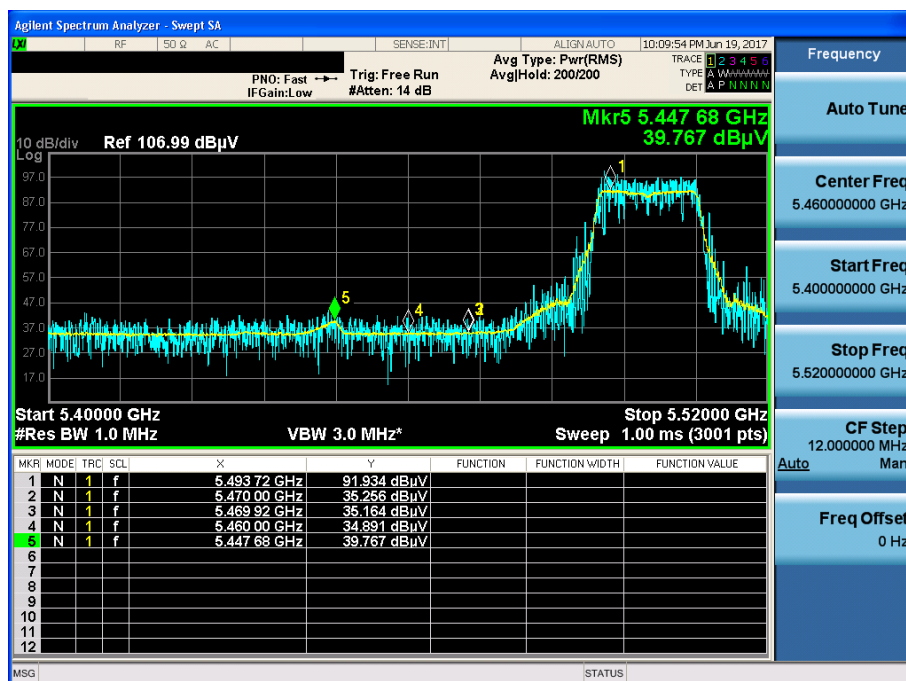
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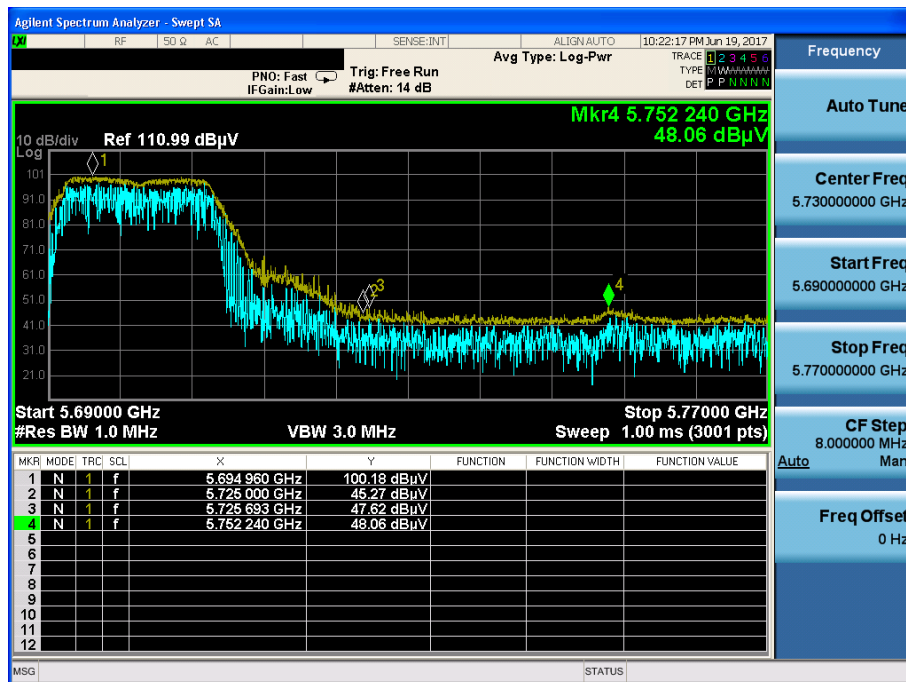
Detector Mode : PK



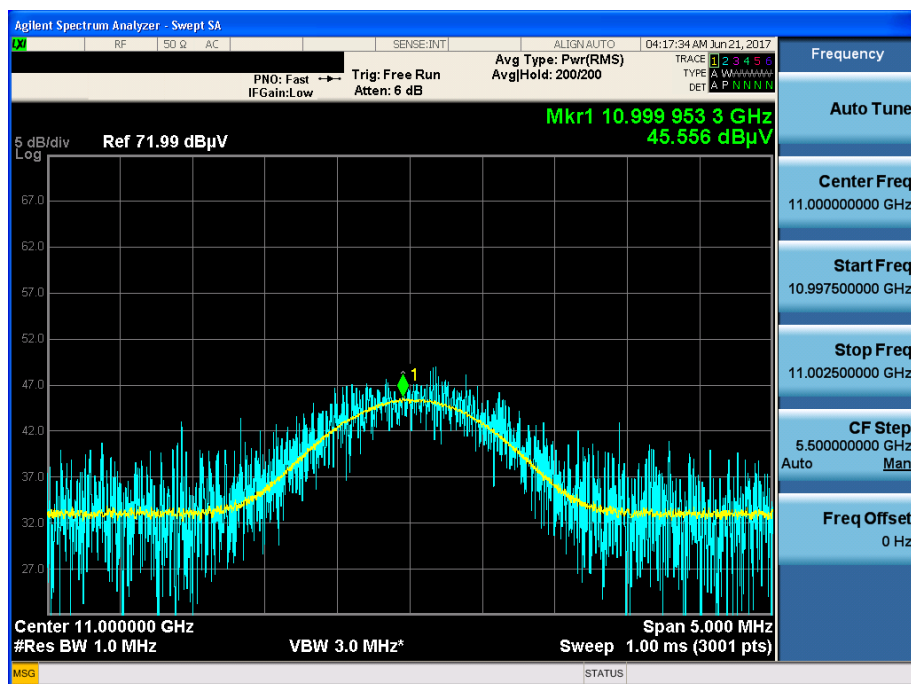
Detector Mode : AV



Detector Mode : PK

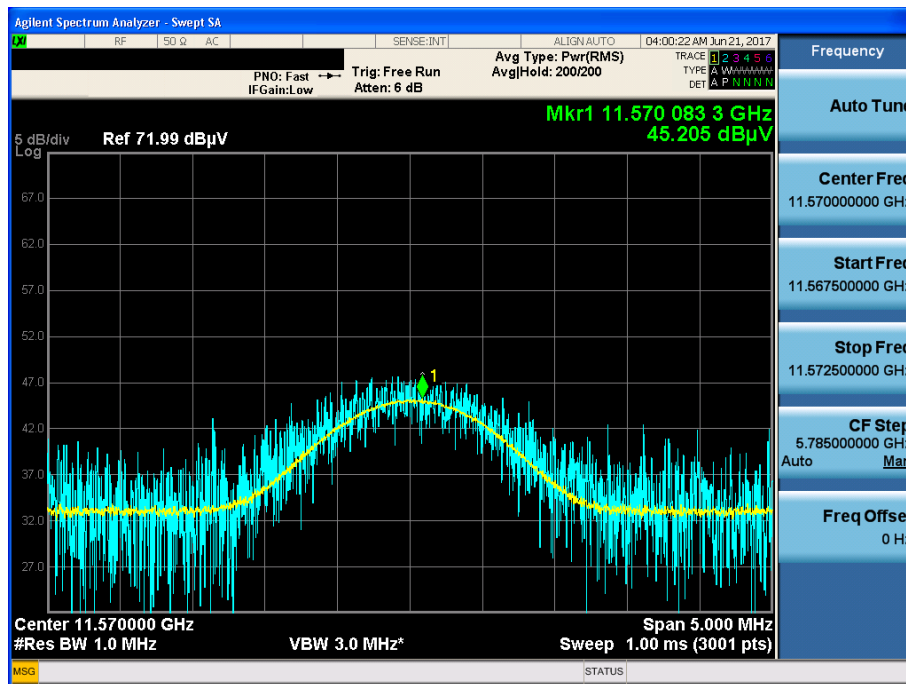


Detector Mode : AV



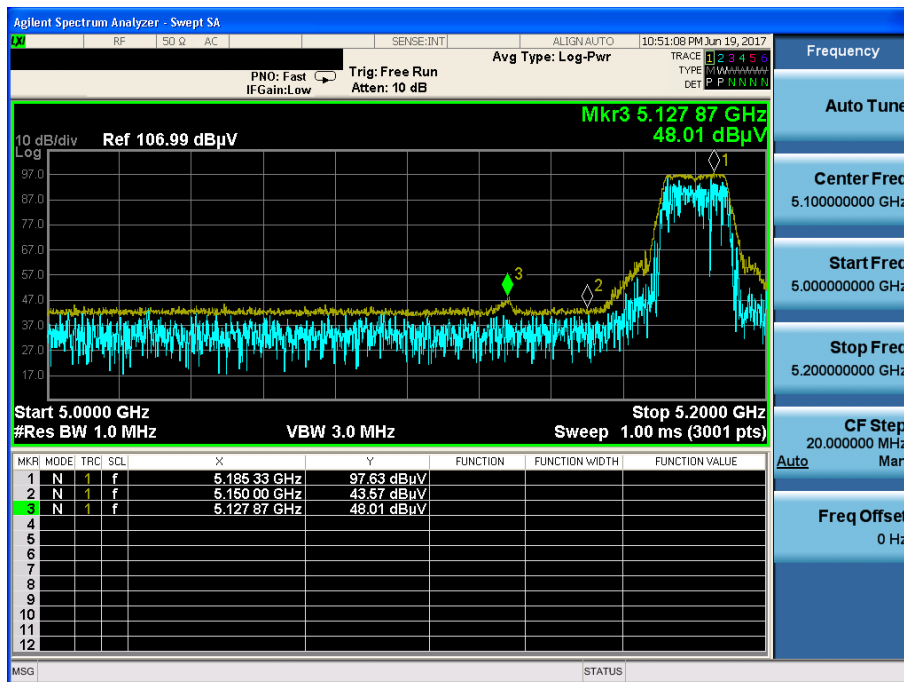
802.11a & U-NII 3 & Ch.157 & X axis & Hor

Detector Mode : AV



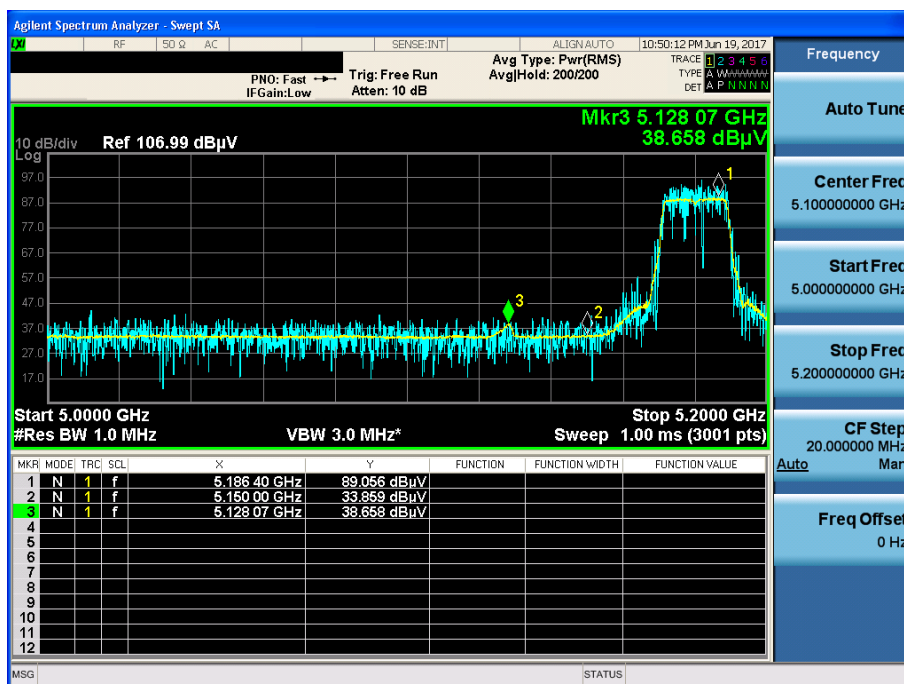
802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : PK



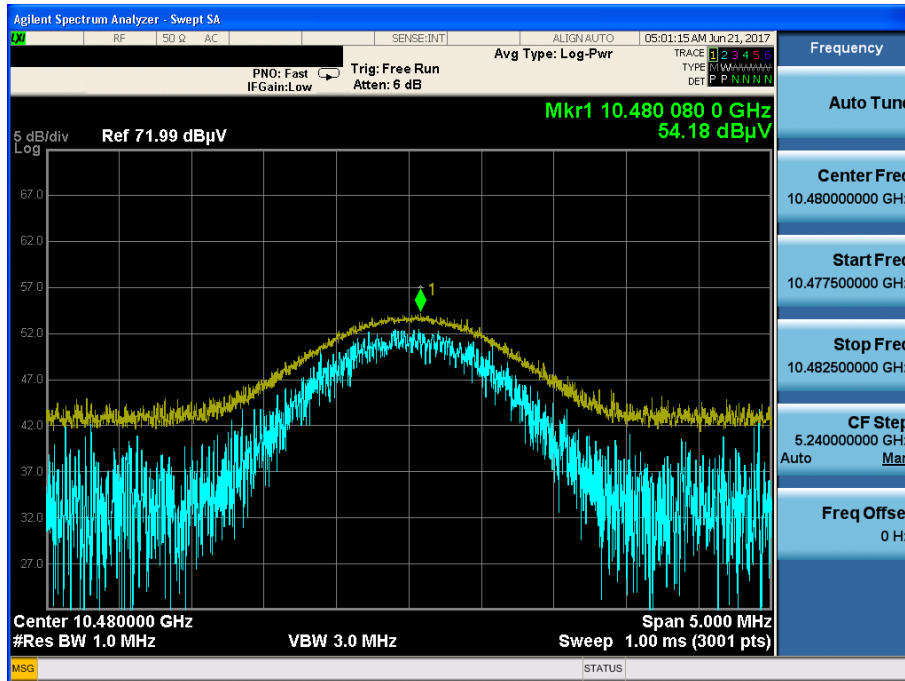
802.11n(HT20) & U-NII 1 & Ch.36 & X axis & Hor

Detector Mode : AV

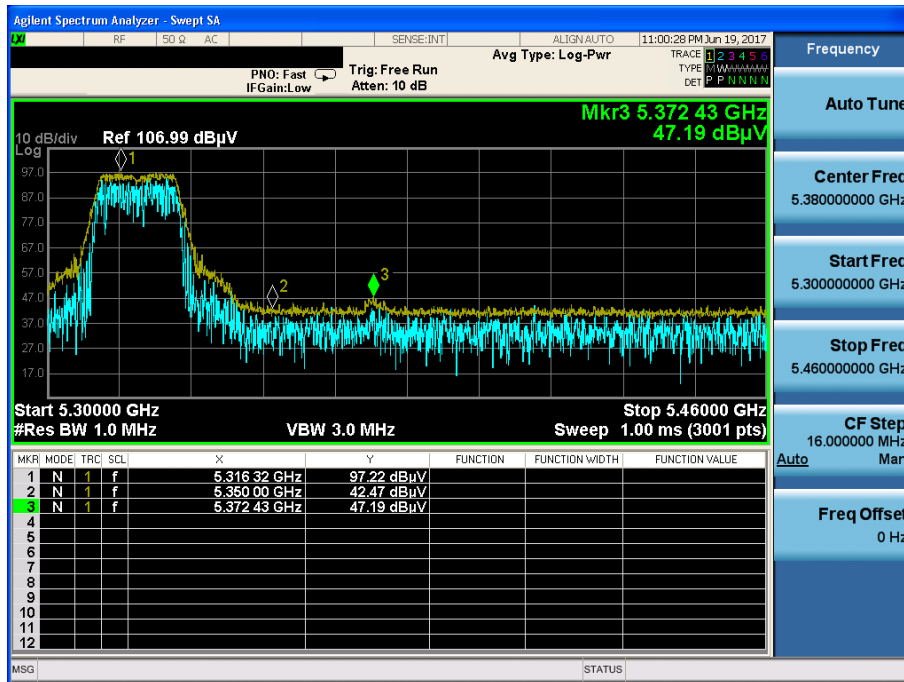


802.11n(HT20) & U-NII 1 & Ch.48 & Z axis & Hor

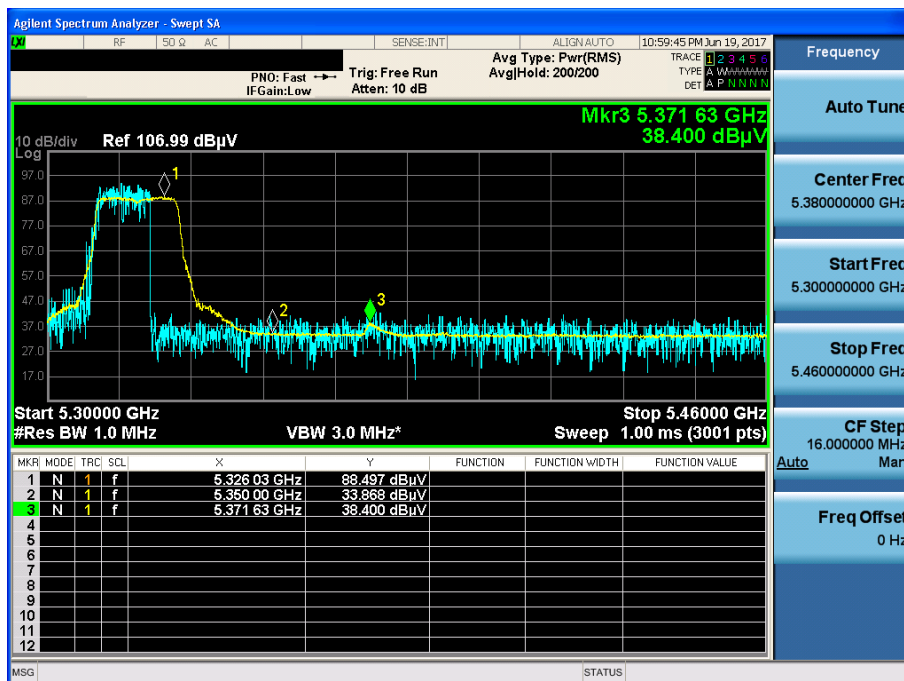
Detector Mode : PK



Detector Mode : PK

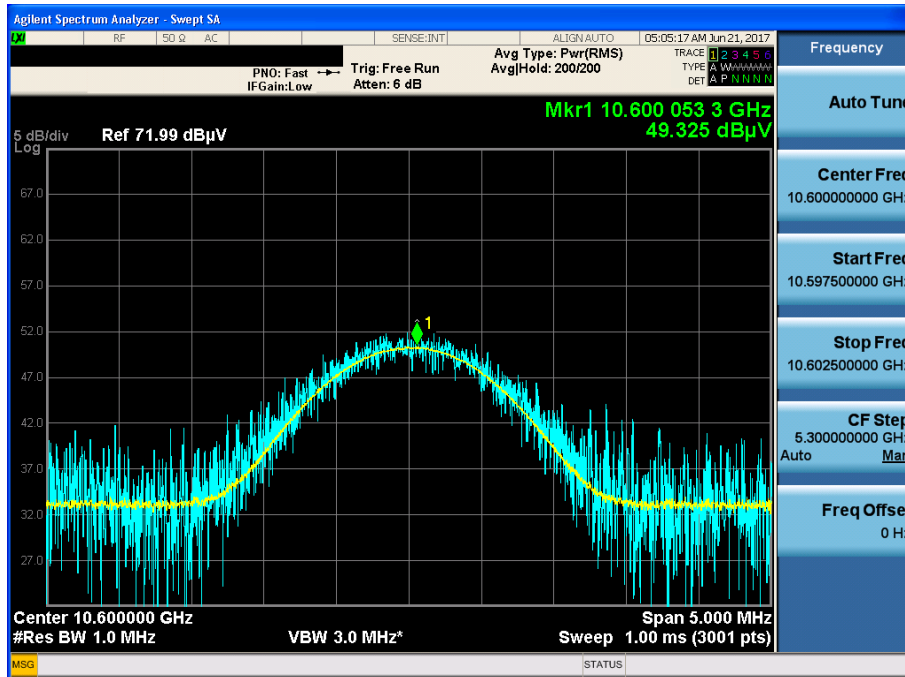


Detector Mode : AV



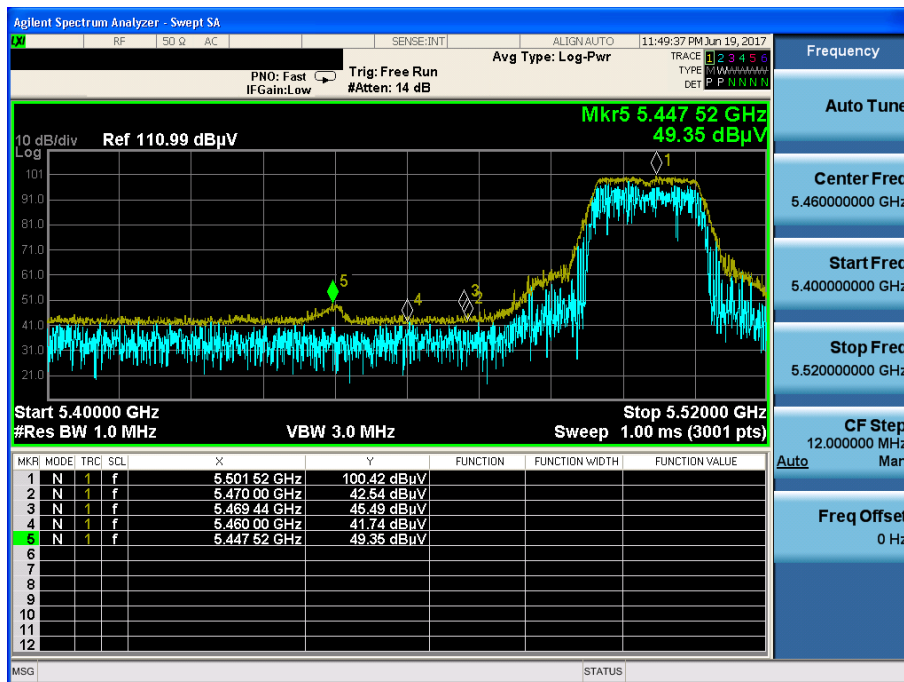
802.11n(HT20) & U-NII 2A & Ch.60 & Z axis & Hor

Detector Mode : AV



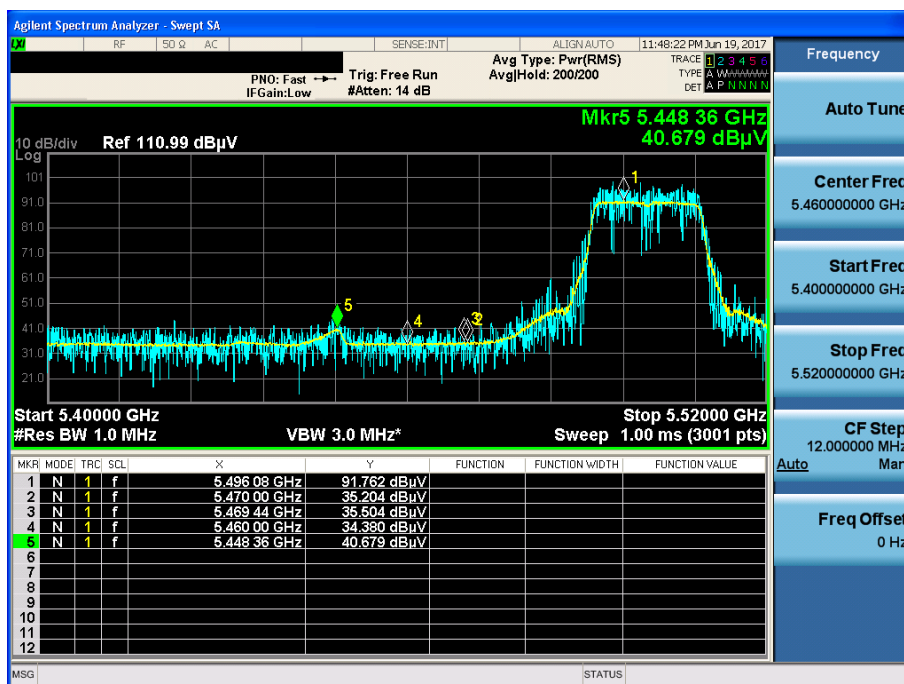
802.11n(HT20) & U-NII 2C & Ch.100 & Z axis & Ver

Detector Mode : PK



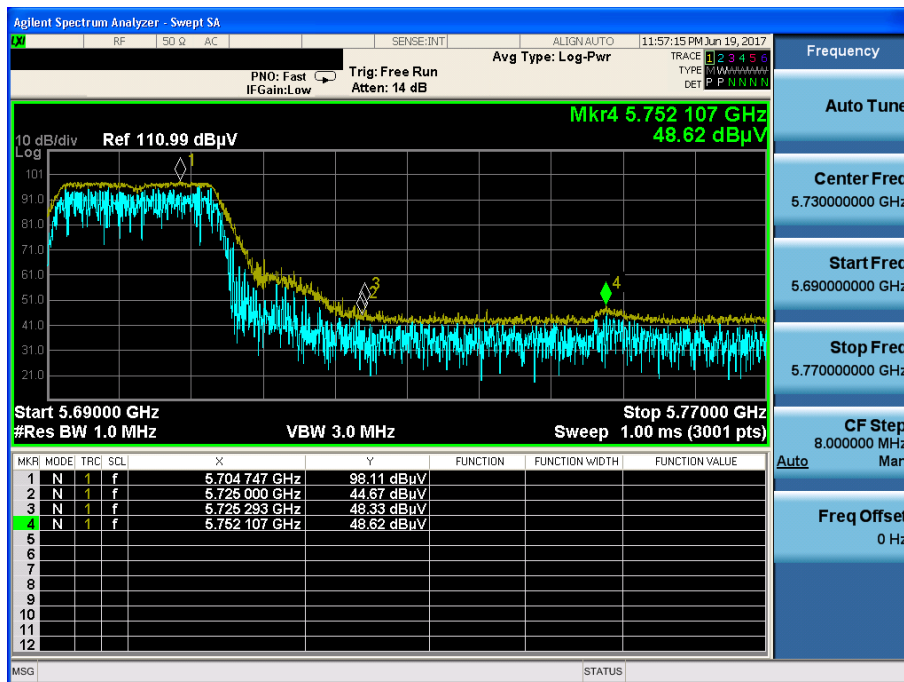
802.11n(HT20) & U-NII 2C & Ch.100 & Z axis & Ver

Detector Mode : AV



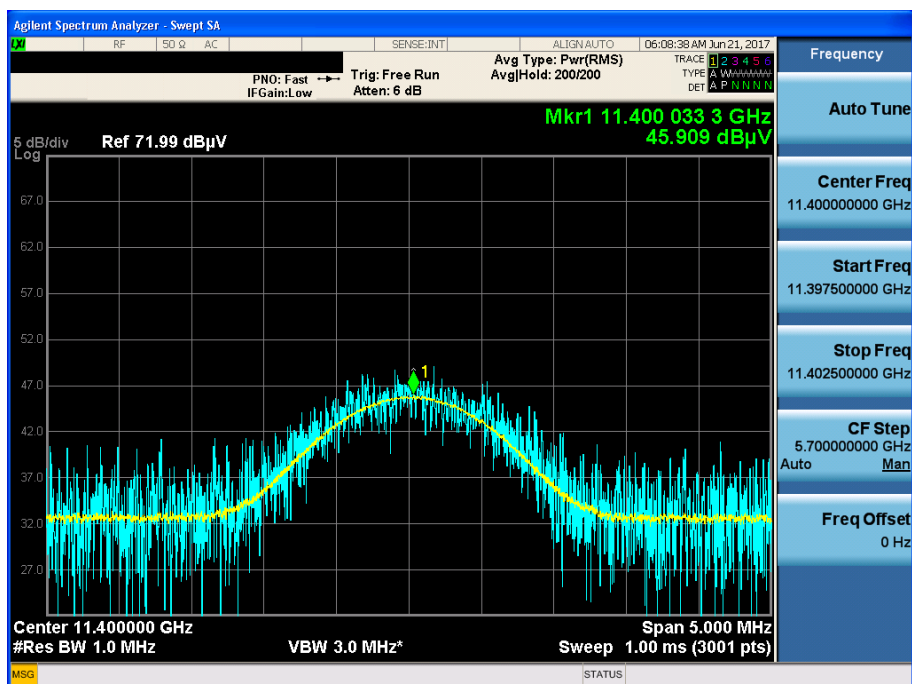
802.11n(HT20) & U-NII 2C & Ch.140 & Z axis & Ver

Detector Mode : PK

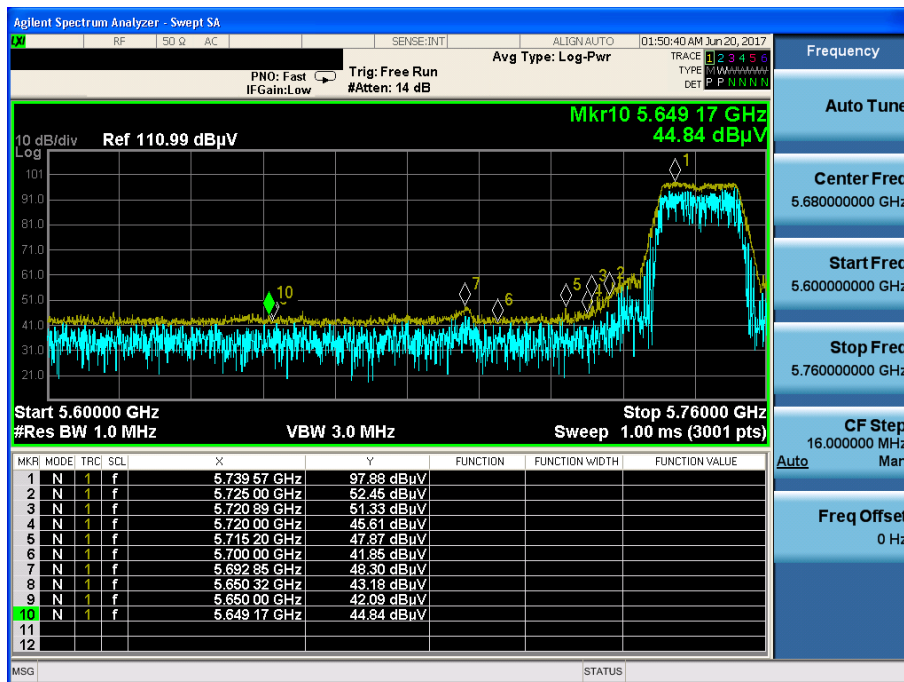


802.11n(HT20) & U-NII 2C & Ch.140 & X axis & Hor

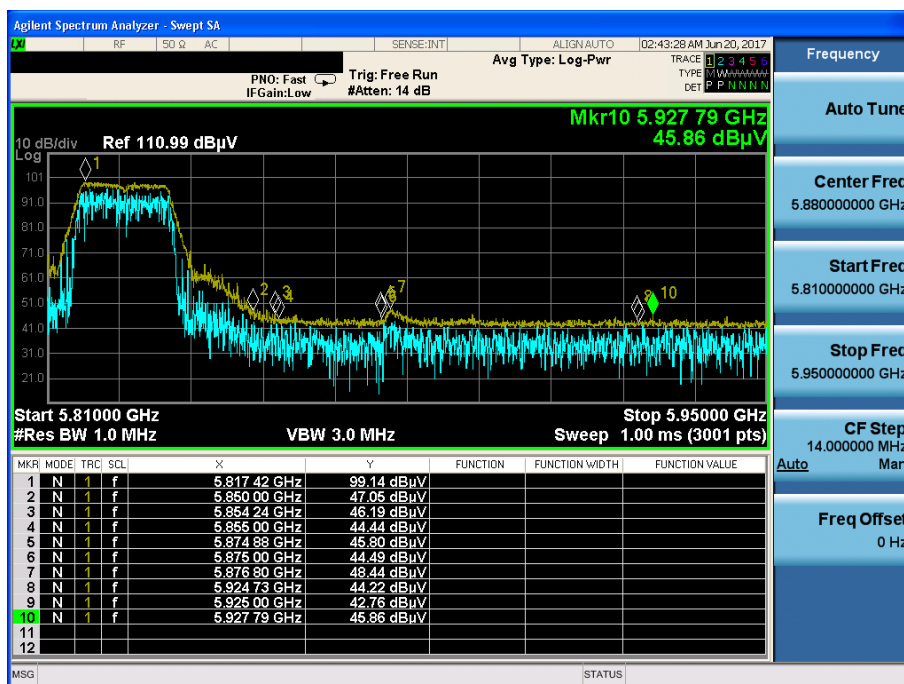
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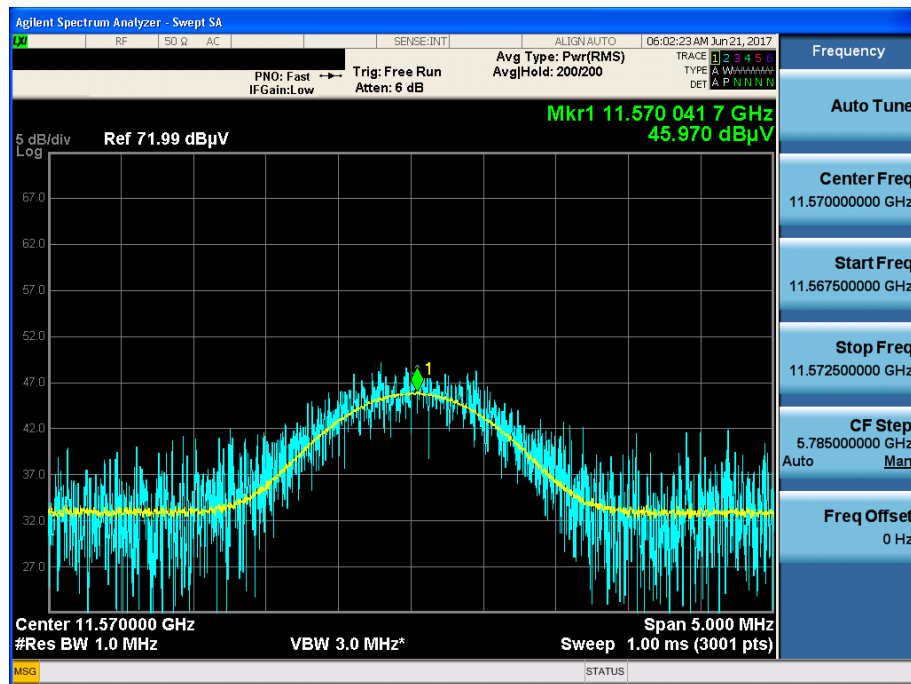
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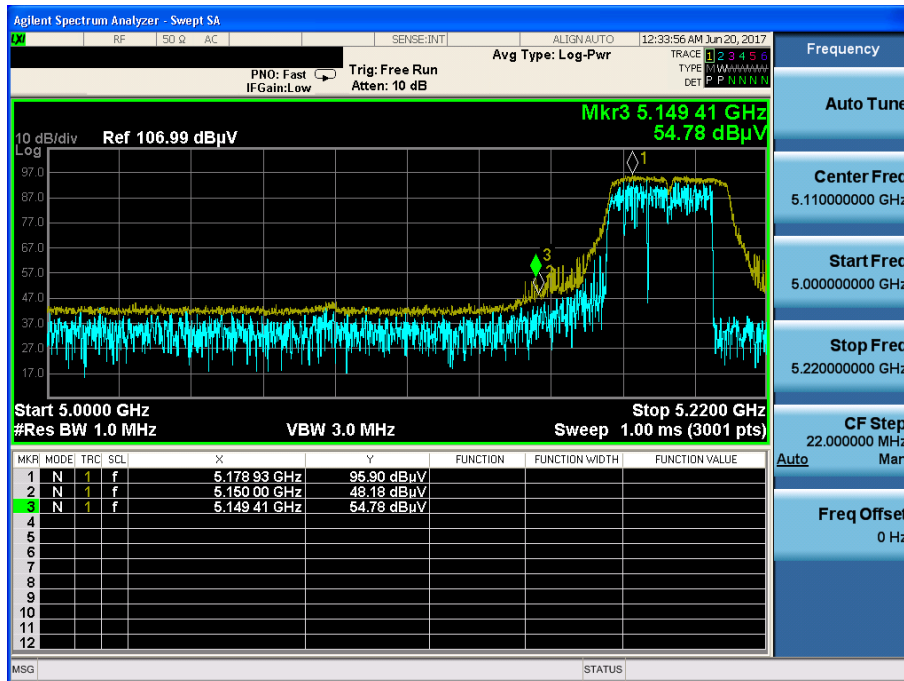
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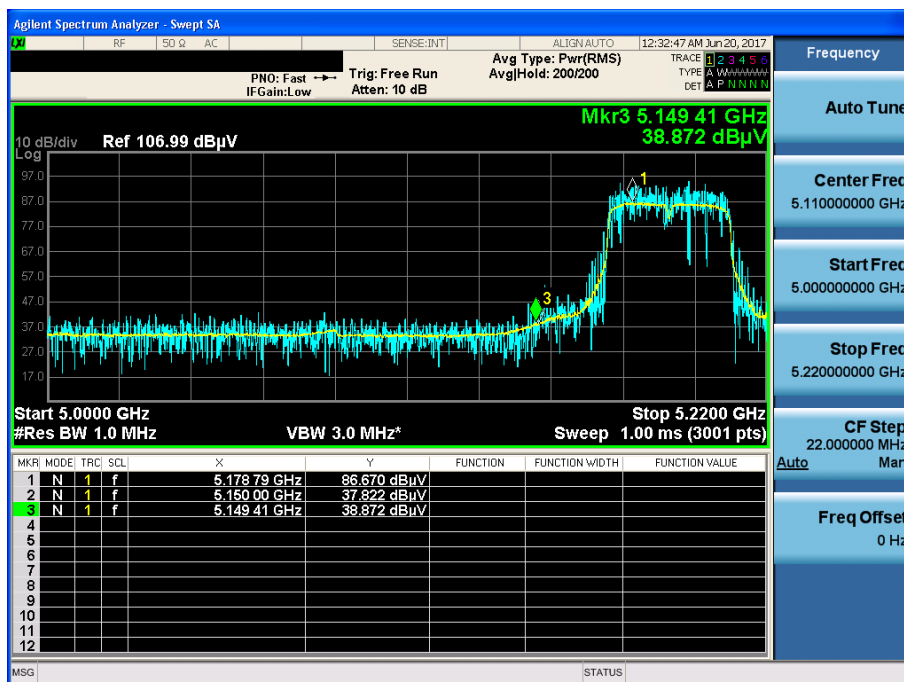
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Detector Mode : PK

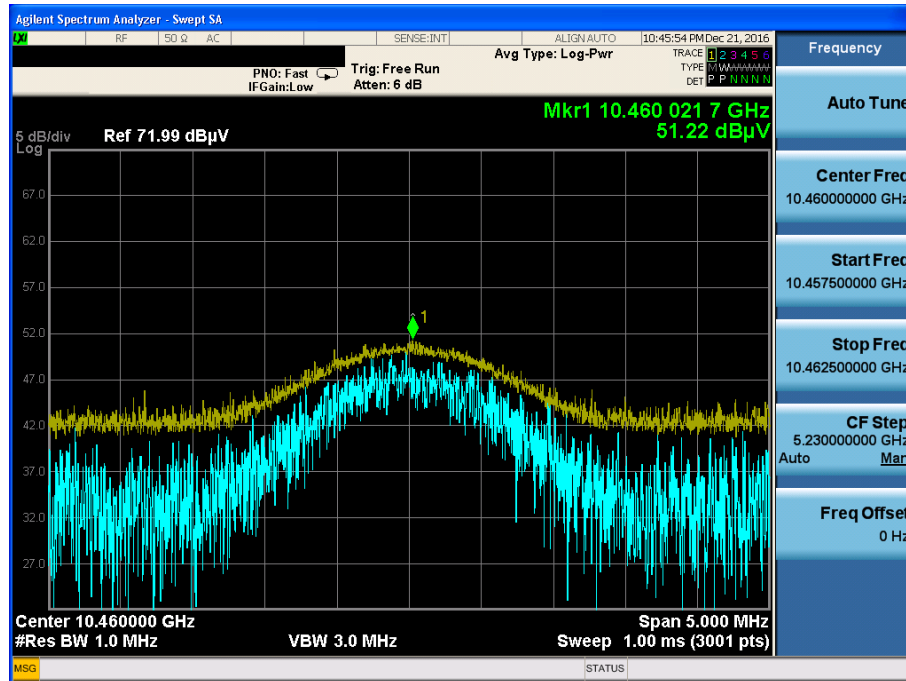


Detector Mode : AV



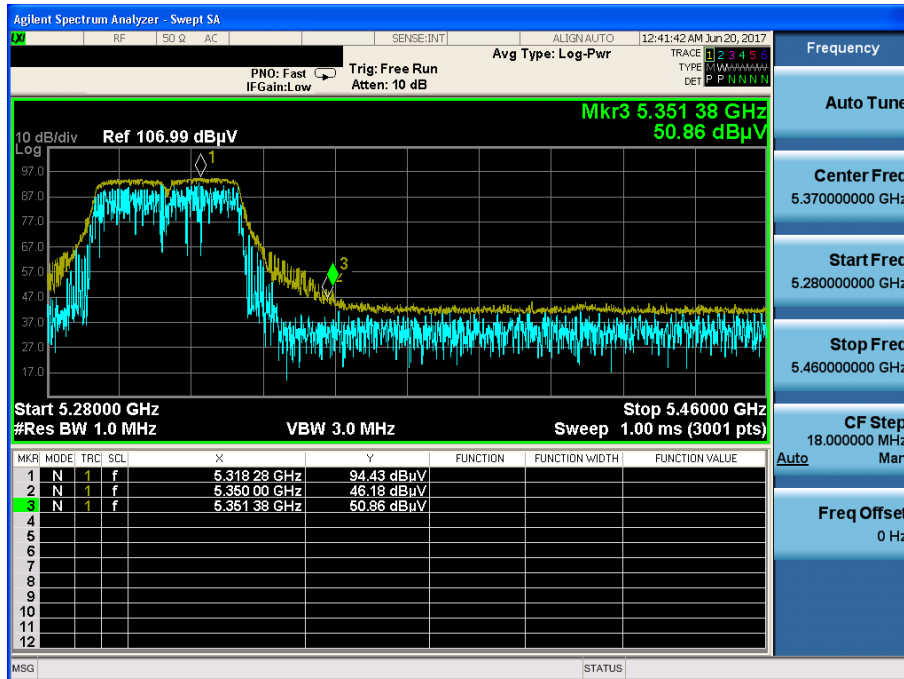
802.11n(HT40) & U-NII 1 & Ch.46 & Z axis & Hor

Detector Mode : PK



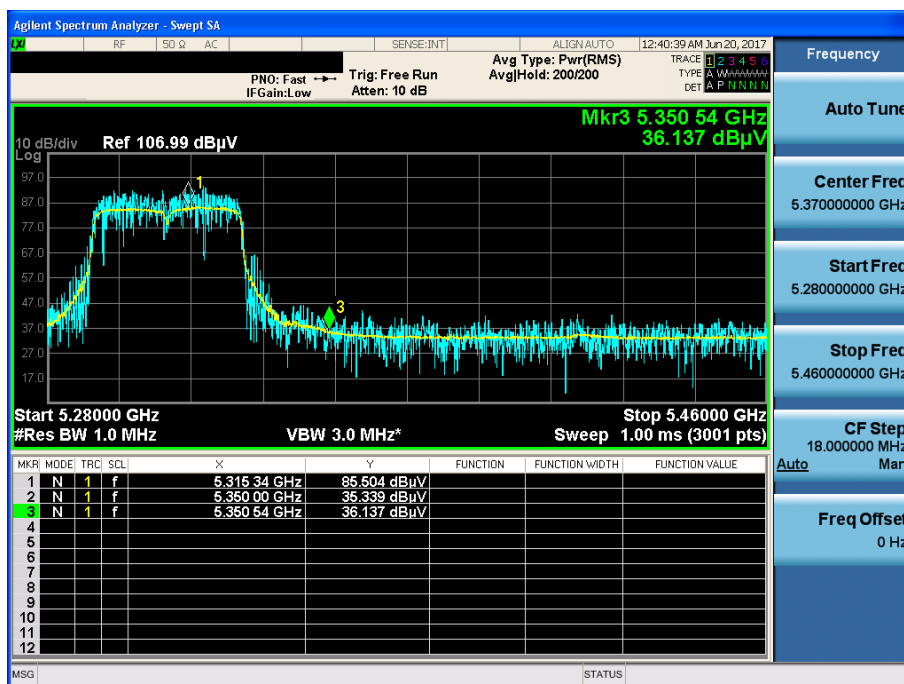
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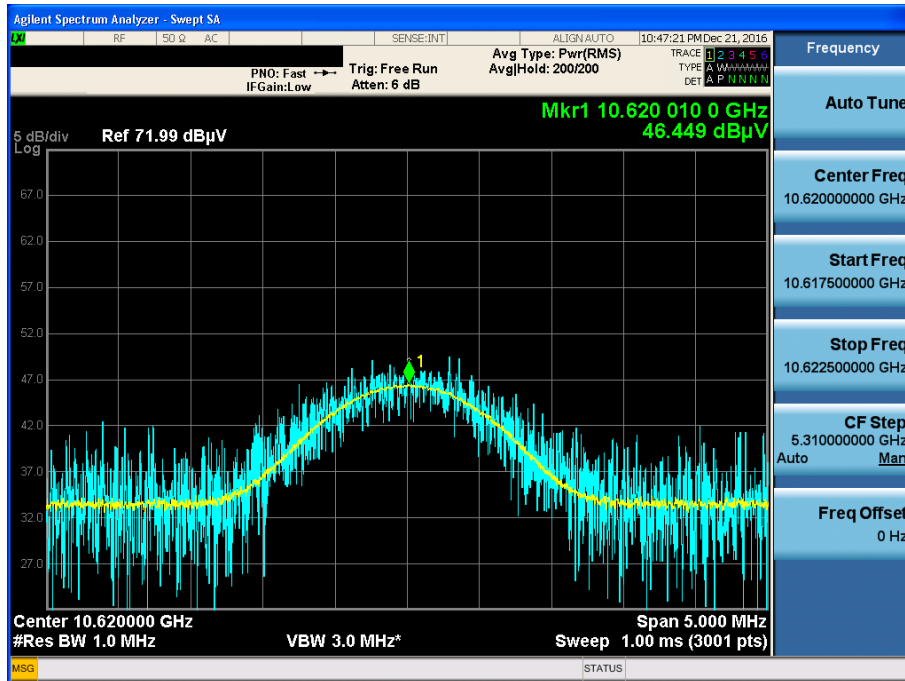
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Detector Mode : AV



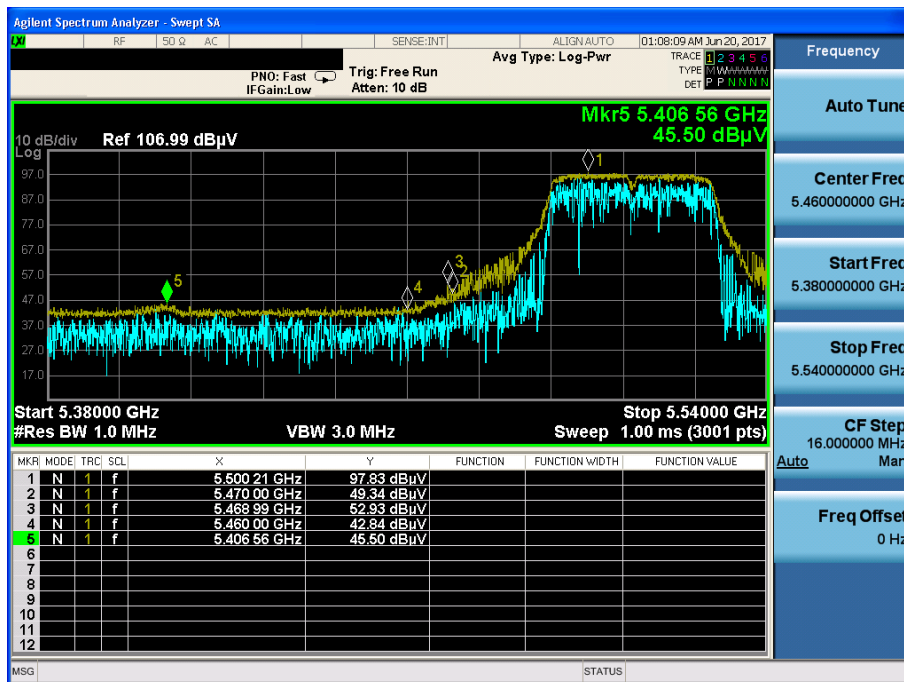
802.11n(HT40) & U-NII 2A & Ch.62 & Z axis & Hor

Detector Mode : AV



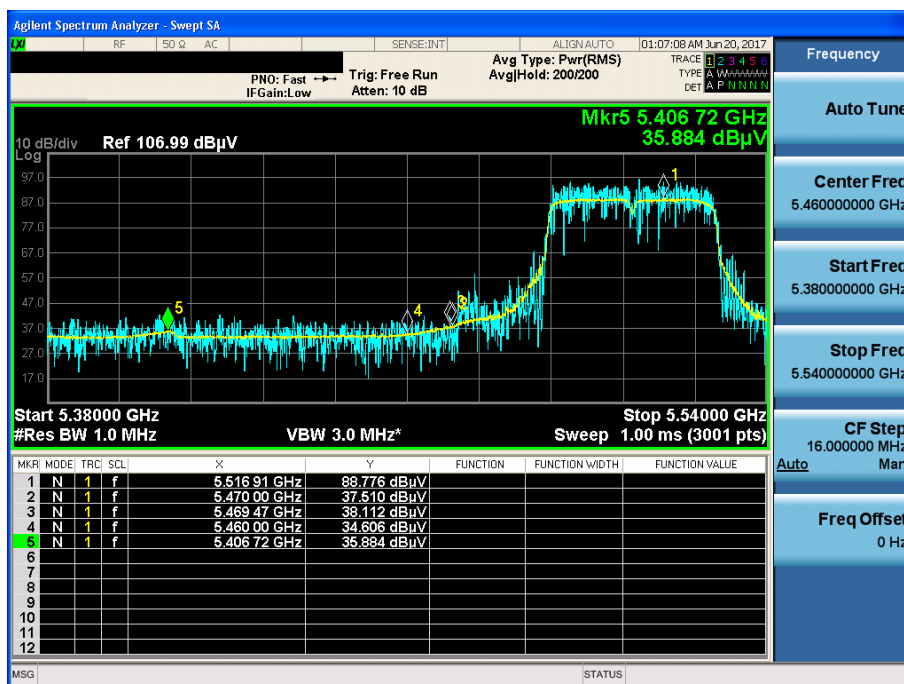
802.11n(HT40) & U-NII 2C & Ch.102 & Z axis & Ver

Detector Mode : PK



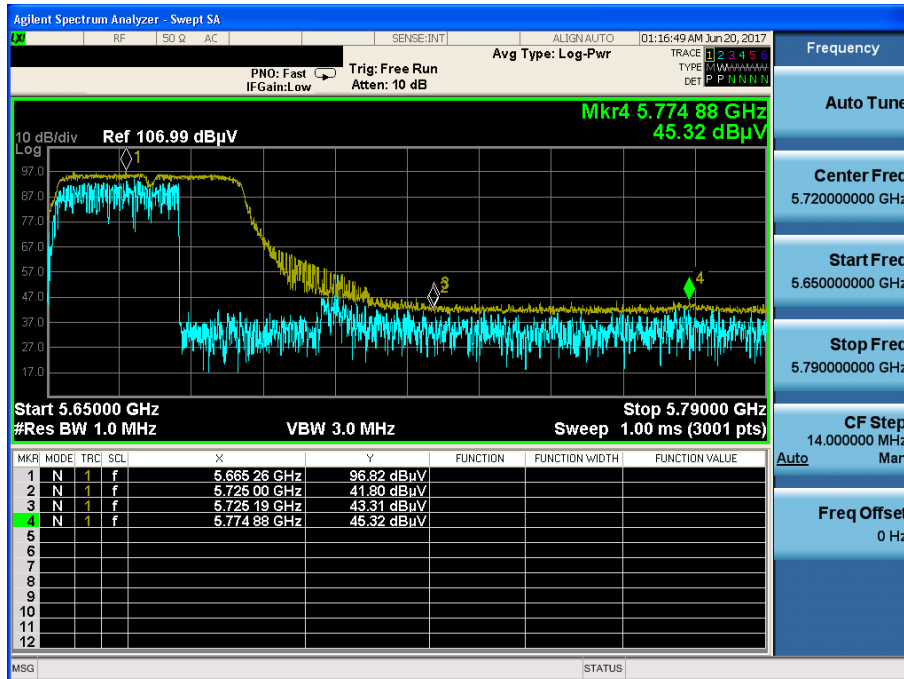
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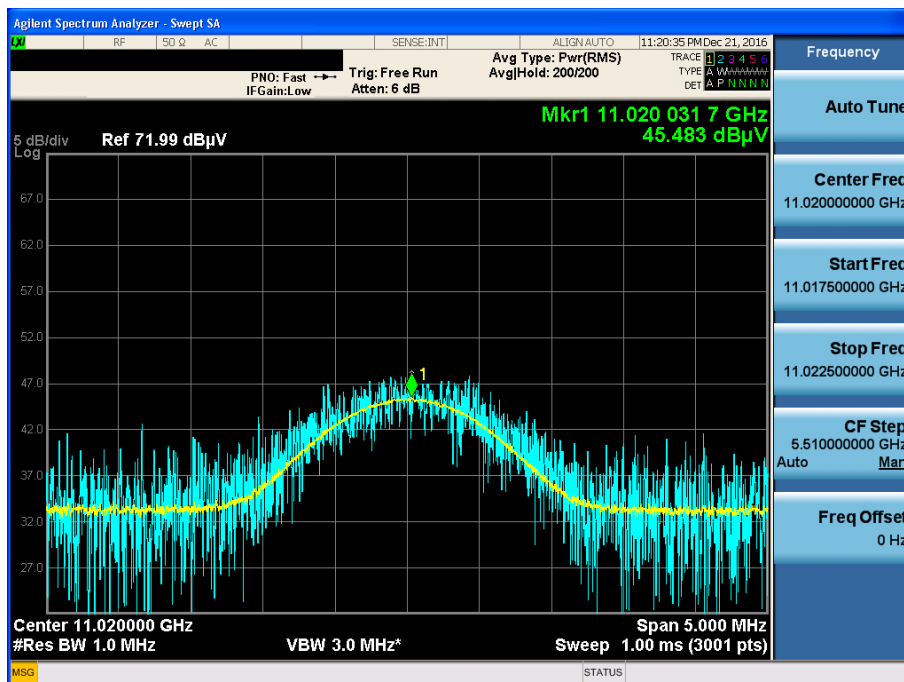
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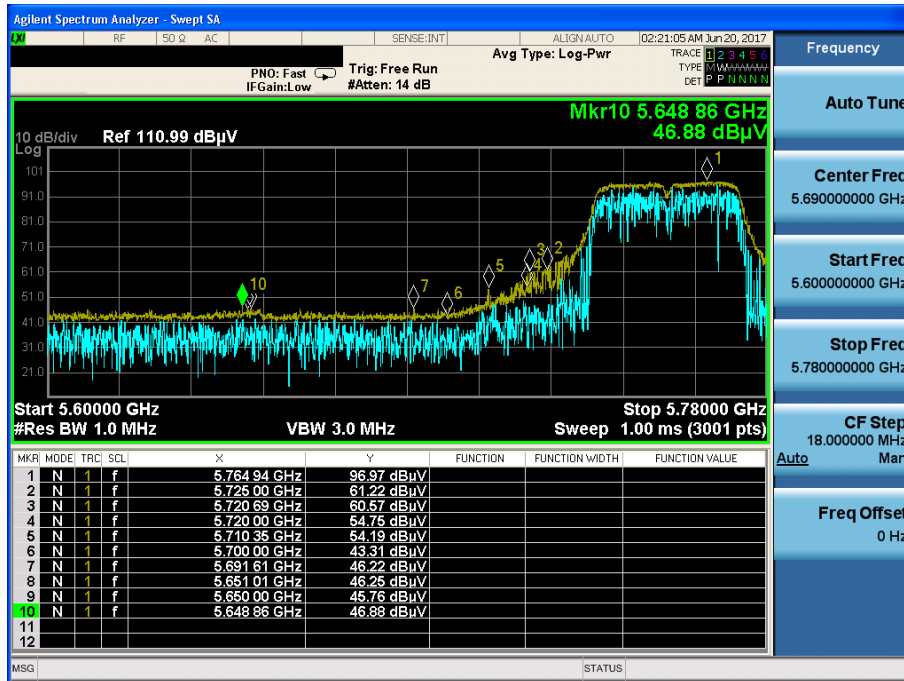


802.11n(HT40) & U-NII 2C & Ch.102 & X axis & Hor

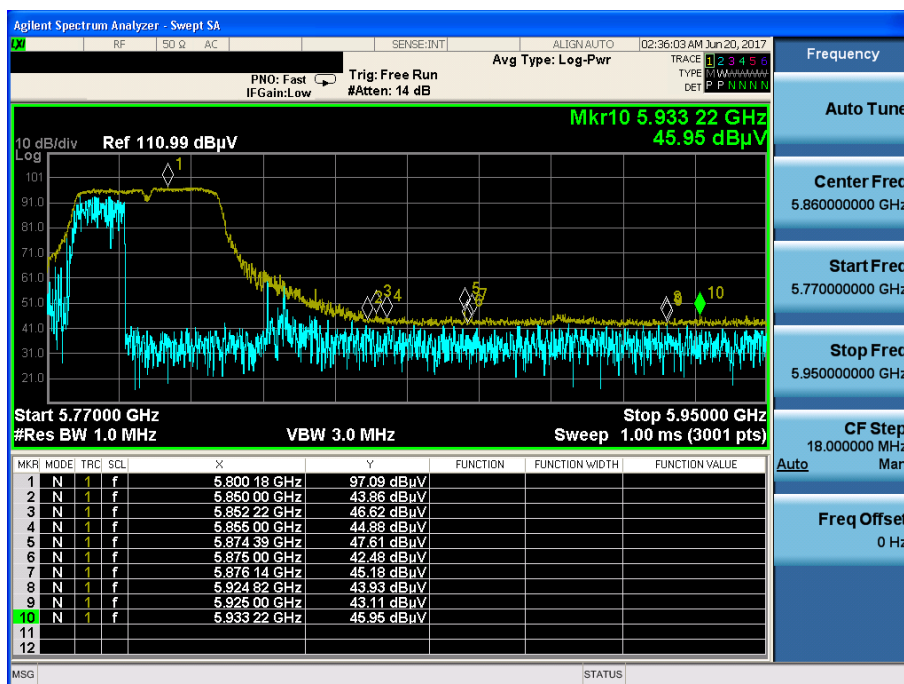
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Detector Mode : PK



Detector Mode : PK



Detector Mode : AV

