

8.7 AC Conducted Emissions

■ Test Procedure

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. Emissions closest to the limit are measured in the quasi-peak mode (QP) and average mode (AV) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

■ Measurement Data: **Comply**

Note 1: See next pages for actual measured spectrum plots and data for worst case result.

■ Minimum Standard: FCC Part 15.207(a)

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

AC Line Conducted Emissions (Graph)

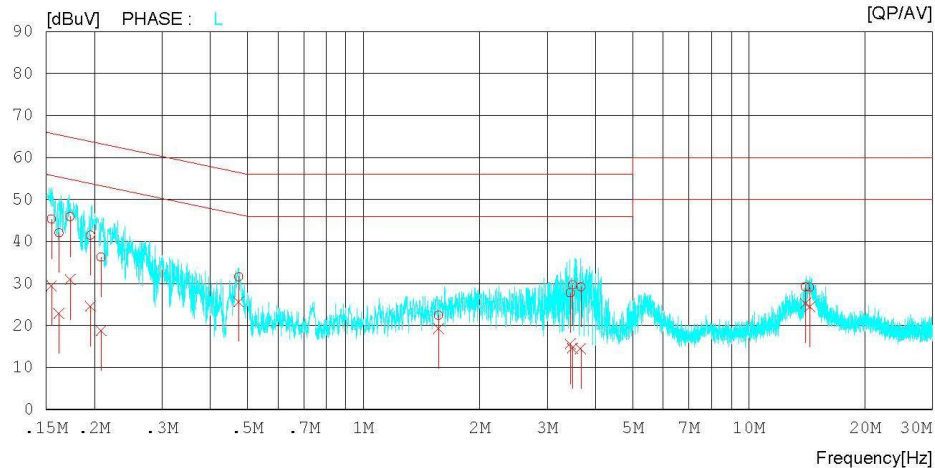
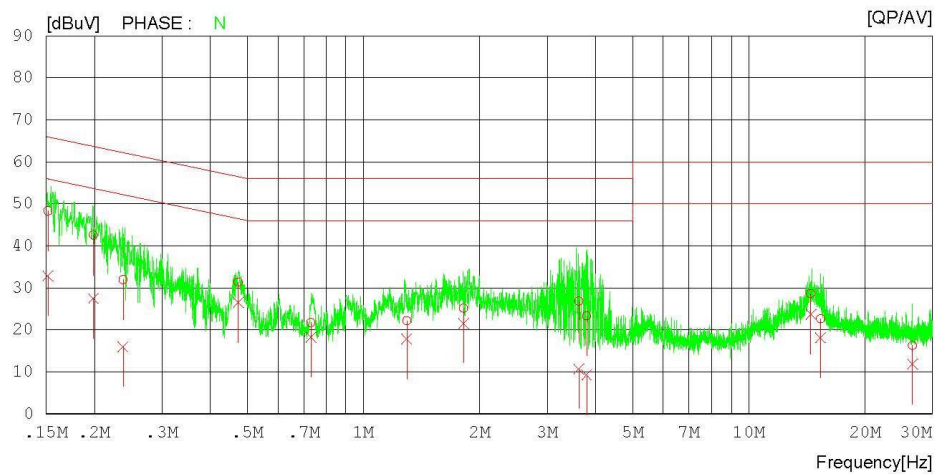
Test Mode: U-NII 3 & 802.11ac (VHT80) & ANT 1 & 5775 MHz

Results of Conducted Emission

DTNC

Date : 2016-05-05

Order No.	:		Reference No.	:	
Model No.	:	WEG720B	Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	24 °C 44 % R.H.
Test Condition	:	5.7GHz_802.11ac(VHT80)ANT1	Operator	:	H.P LEE
Memo	:	5775MHz_802.11ac(VHT80)ANT1			

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

AC Line Conducted Emissions (Data List)

Test Mode: U-NII 3 & 802.11ac (VHT80) & ANT 1 & 5775 MHz

Results of Conducted Emission

DTNC

Date : 2016-05-05

Order No.	:		Reference No.	:	
Model No.	:	WEG720B	Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	24 °C 44 % R.H.
Test Condition	:	5.7GHz_802.11ac(VHT80)ANT1	Operator	:	H.P LEE

Memo : 5775MHz_802.11ac(VHT80)ANT1

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

NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15150	38.2	22.8	10.1	48.3	32.9	65.9	55.9	17.6	23.0	N
2	0.19905	32.4	17.4	10.1	42.5	27.5	63.7	53.7	21.2	26.2	N
3	0.23735	21.8	5.9	10.1	31.9	16.0	62.2	52.2	30.3	36.2	N
4	0.47325	21.3	16.5	10.1	31.4	26.6	56.5	46.5	25.1	19.9	N
5	0.73077	11.6	8.1	10.1	21.7	18.2	56.0	46.0	34.3	27.8	N
6	1.29420	12.0	7.5	10.2	22.2	17.7	56.0	46.0	33.8	28.3	N
7	1.81860	14.9	11.4	10.2	25.1	21.6	56.0	46.0	30.9	24.4	N
8	3.62000	16.6	0.5	10.2	26.8	10.7	56.0	46.0	29.2	35.3	N
9	3.79440	13.1	-1.0	10.2	23.3	9.2	56.0	46.0	32.7	36.8	N
10	14.50260	18.0	13.1	10.6	28.6	23.7	60.0	50.0	31.4	26.3	N
11	15.35580	12.0	7.5	10.6	22.6	18.1	60.0	50.0	37.4	31.9	N
12	26.62280	5.4	1.1	10.8	16.2	11.9	60.0	50.0	43.8	38.1	N
13	0.15477	35.2	19.3	10.1	45.3	29.4	65.7	55.7	20.4	26.3	L
14	0.16190	32.0	12.8	10.1	42.1	22.9	65.4	55.4	23.3	32.5	L
15	0.17326	35.8	20.8	10.1	45.9	30.9	64.8	54.8	18.9	23.9	L
16	0.19531	31.3	14.5	10.1	41.4	24.6	63.8	53.8	22.4	29.2	L
17	0.20850	26.2	8.7	10.1	36.3	18.8	63.3	53.3	27.0	34.5	L
18	0.47347	21.4	15.5	10.1	31.5	25.6	56.5	46.5	25.0	20.9	L
19	1.56740	12.2	9.0	10.2	22.4	19.2	56.0	46.0	33.6	26.8	L
20	3.44200	17.5	5.4	10.2	27.7	15.6	56.0	46.0	28.3	30.4	L
21	3.48840	19.5	4.4	10.2	29.7	14.6	56.0	46.0	26.3	31.4	L
22	3.66320	18.9	4.2	10.2	29.1	14.4	56.0	46.0	26.9	31.6	L
23	14.02980	18.3	14.5	10.8	29.1	25.3	60.0	50.0	30.9	24.7	L
24	14.40880	18.2	13.6	10.8	29.0	24.4	60.0	50.0	31.0	25.6	L

AC Line Conducted Emissions (Graph)

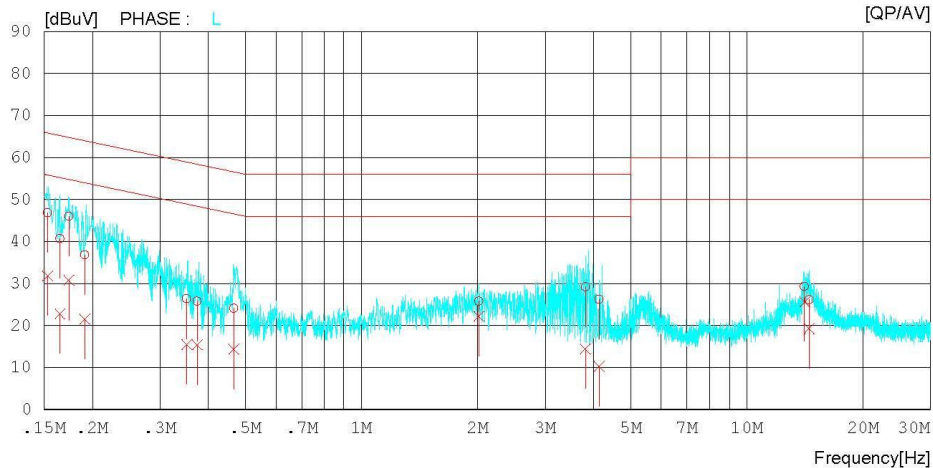
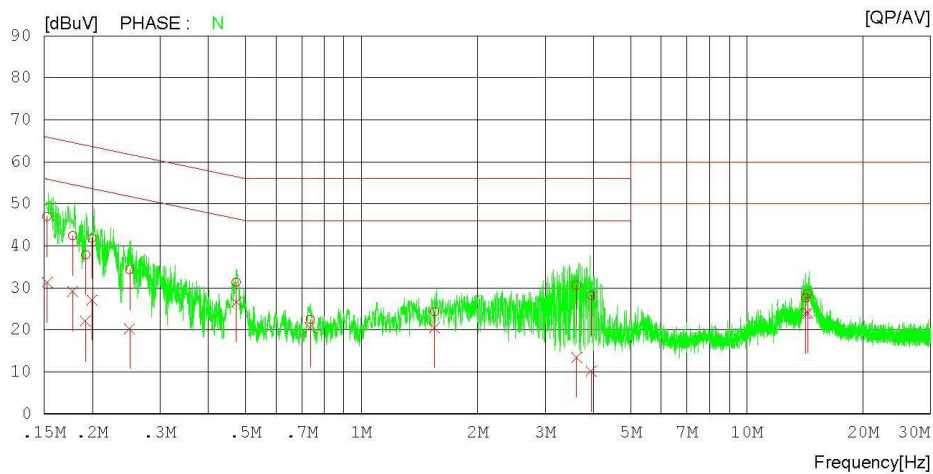
Test Mode: U-NII 3 & 802.11ac (VHT80) & ANT 2 & 5775 MHz

Results of Conducted Emission

DTNC

Date : 2016-05-05

Order No.	:		Reference No.	:	
Model No.	:	WEG720B	Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	24 °C 44 % R.H.
Test Condition	:	5.7GHz_802.11ac(VHT80)ANT2	Operator	:	H.P LEE
Memo	:	5775MHz_802.11ac(VHT80)ANT2			

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

AC Line Conducted Emissions (Data List)

Test Mode: U-NII 3 & 802.11ac (VHT80) & ANT 2 & 5775 MHz

Results of Conducted Emission

DTNC

Date : 2016-05-05

Order No.	:		Reference No.	:	
Model No.	:	WEG720B	Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	24 °C 44 % R.H.
Test Condition	:	5.7GHz_802.11ac(VHT80)ANT2	Operator	:	H.P LEE

Memo : 5775MHz_802.11ac(VHT80)ANT2

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

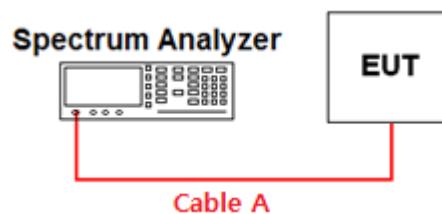
NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15273	36.9	21.2	10.1	47.0	31.3	65.9	55.9	18.9	24.6	N
2	0.17791	32.3	19.0	10.1	42.4	29.1	64.6	54.6	22.2	25.5	N
3	0.19218	27.8	12.0	10.1	37.9	22.1	63.9	53.9	26.0	31.8	N
4	0.19984	31.7	17.0	10.1	41.8	27.1	63.6	53.6	21.8	26.5	N
5	0.24989	24.2	10.1	10.1	34.3	20.2	61.8	51.8	27.5	31.6	N
6	0.47341	21.2	16.5	10.1	31.3	26.6	56.5	46.5	25.2	19.9	N
7	0.73591	12.4	10.5	10.1	22.5	20.6	56.0	46.0	33.5	25.4	N
8	1.54540	14.1	10.3	10.2	24.3	20.5	56.0	46.0	31.7	25.5	N
9	3.61600	20.4	3.3	10.2	30.6	13.5	56.0	46.0	25.4	32.5	N
10	3.94600	18.0	-0.1	10.2	28.2	10.1	56.0	46.0	27.8	35.9	N
11	14.21620	17.0	13.3	10.6	27.6	23.9	60.0	50.0	32.4	26.1	N
12	14.40740	18.1	13.4	10.6	28.7	24.0	60.0	50.0	31.3	26.0	N
13	0.15313	36.7	21.7	10.1	46.8	31.8	65.8	55.8	19.0	24.0	L
14	0.16482	30.6	12.7	10.1	40.7	22.8	65.2	55.2	24.5	32.4	L
15	0.17394	35.9	20.6	10.1	46.0	30.7	64.8	54.8	18.8	24.1	L
16	0.19102	26.7	11.4	10.1	36.8	21.5	64.0	54.0	27.2	32.5	L
17	0.35150	16.2	5.3	10.1	26.3	15.4	58.9	48.9	32.6	33.5	L
18	0.37461	15.7	5.3	10.1	25.8	15.4	58.4	48.4	32.6	33.0	L
19	0.46576	13.9	4.2	10.1	24.0	14.3	56.6	46.6	32.6	32.3	L
20	2.01800	15.5	11.9	10.2	25.7	22.1	56.0	46.0	30.3	23.9	L
21	3.81200	19.0	4.3	10.2	29.2	14.5	56.0	46.0	26.8	31.5	L
22	4.13560	16.0	0.0	10.2	26.2	10.2	56.0	46.0	29.8	35.8	L
23	14.12400	18.4	14.8	10.8	29.2	25.6	60.0	50.0	30.8	24.4	L
24	14.52380	15.3	8.4	10.8	26.1	19.2	60.0	50.0	33.9	30.8	L

8.8 Occupied Bandwidth

■ Test Requirements

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured

■ Test Configuration



■ Test Procedure :

- Procedure: RSS-Gen[6.6]

- 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**

Single transmit

Mode	Bands	Channel	Frequency [MHz]	Test Result [MHz]	
				ANT 1	ANT 2
802.11a	U-NII 3	149	5745	16.833	16.787
		157	5785	16.854	16.808
		165	5825	16.790	16.862
802.11n HT20	U-NII 3	149	5745	17.869	17.864
		157	5785	17.899	17.913
		165	5825	17.881	17.891
802.11ac VHT40	U-NII 3	151	5755	36.348	36.364
		159	5795	36.434	36.362
802.11ac VHT80	U-NII 3	155	5775	76.198	76.084

Multiple transmit

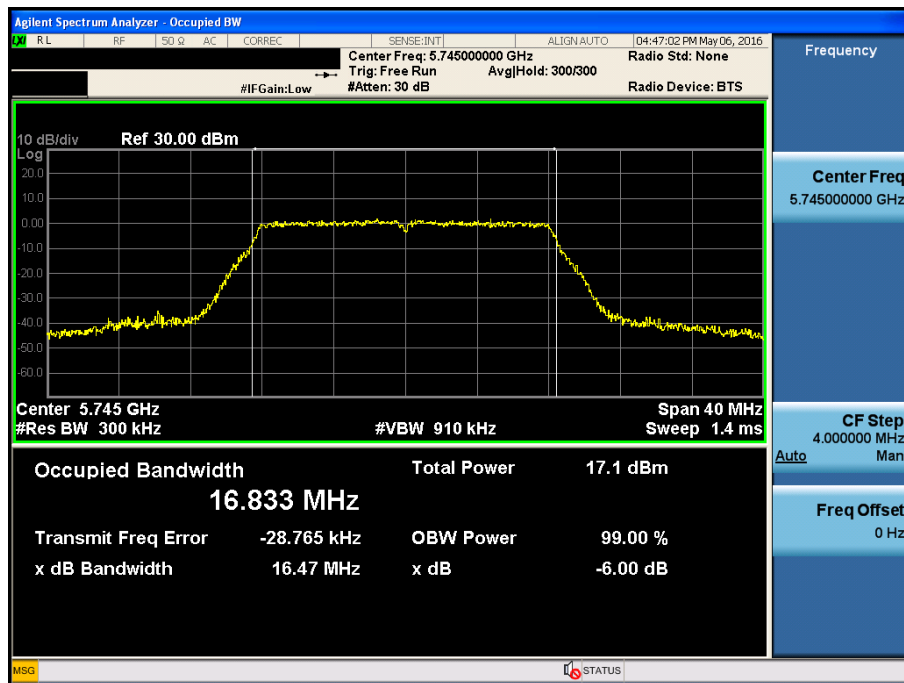
Mode	Bands	Channel	Frequency [MHz]	Test Result [MHz]	
				ANT 1	ANT 2
802.11n HT20	U-NII 3	149	5745	17.921	17.792
		157	5785	17.841	17.782
		165	5825	17.872	17.770
802.11ac VHT40	U-NII 3	151	5755	36.236	36.310
		159	5795	36.272	36.300
802.11ac VHT80	U-NII 3	155	5775	76.001	76.071

■ RESULT PLOTS

Single Transmit

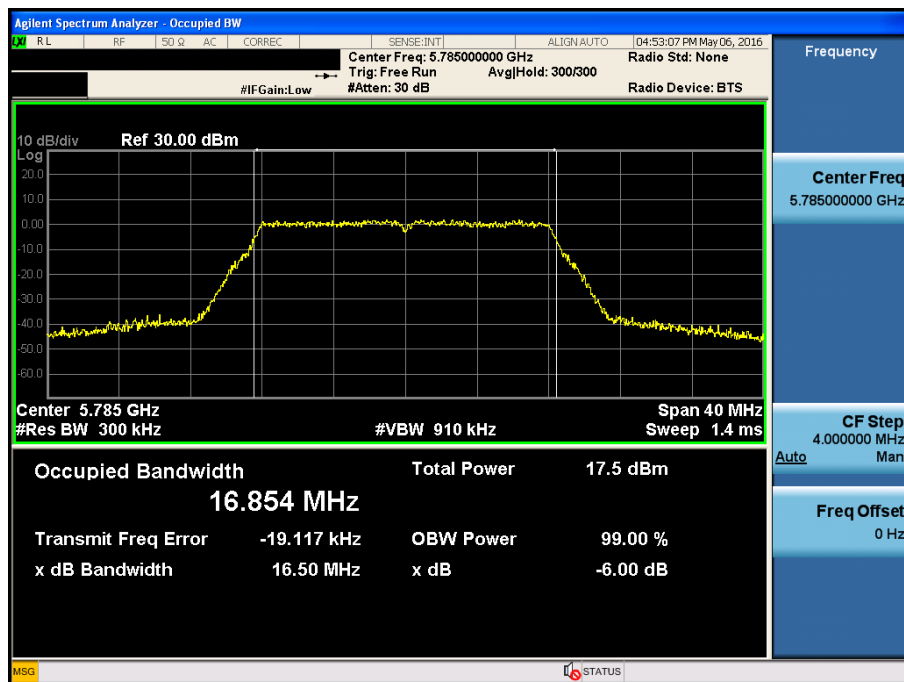
Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 1 & Ch.149



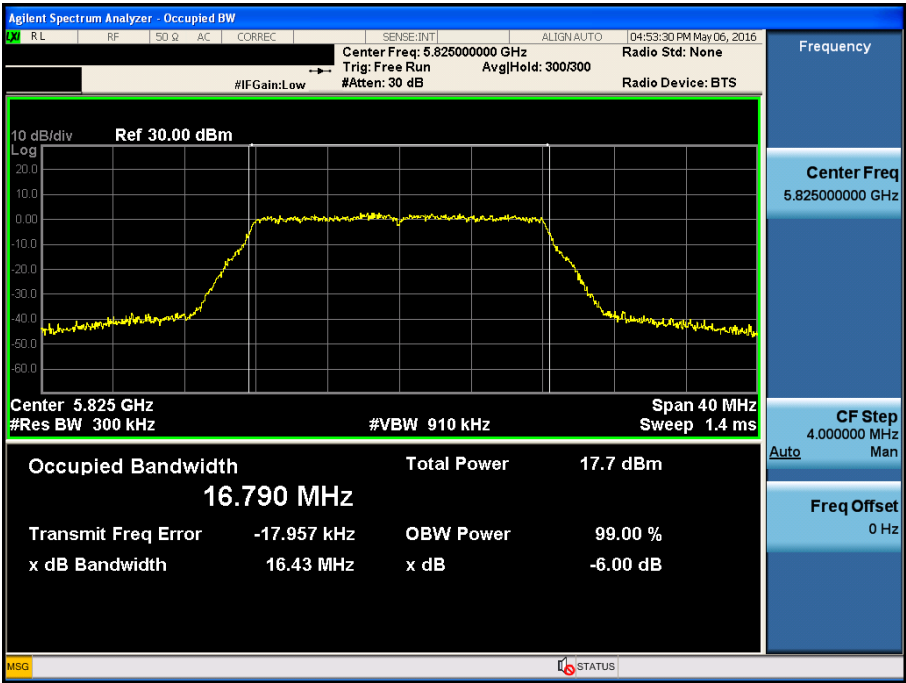
Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 1 & Ch.157



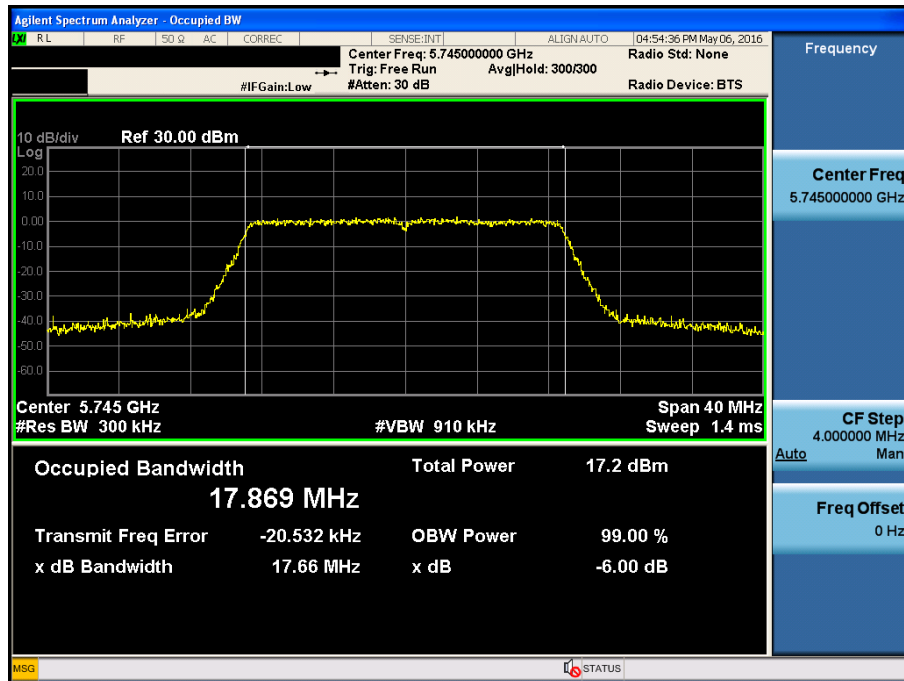
Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 1 & Ch.165



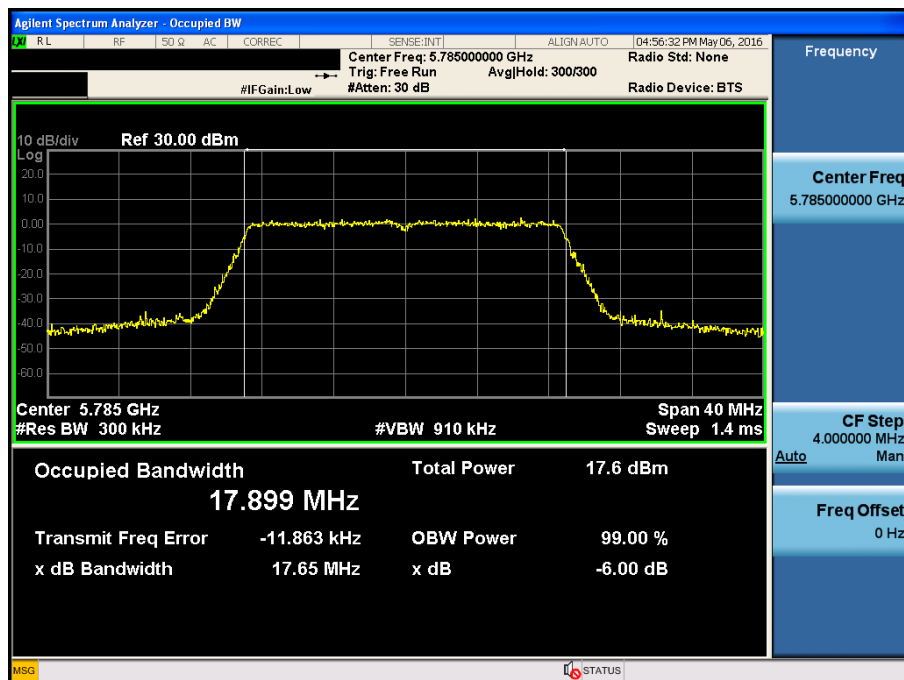
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.149



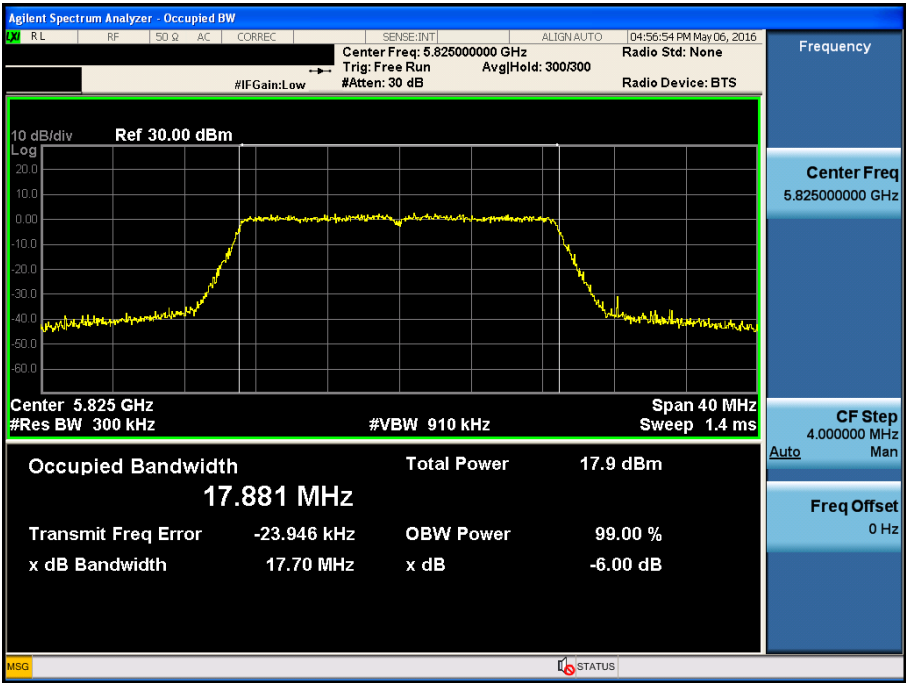
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.157



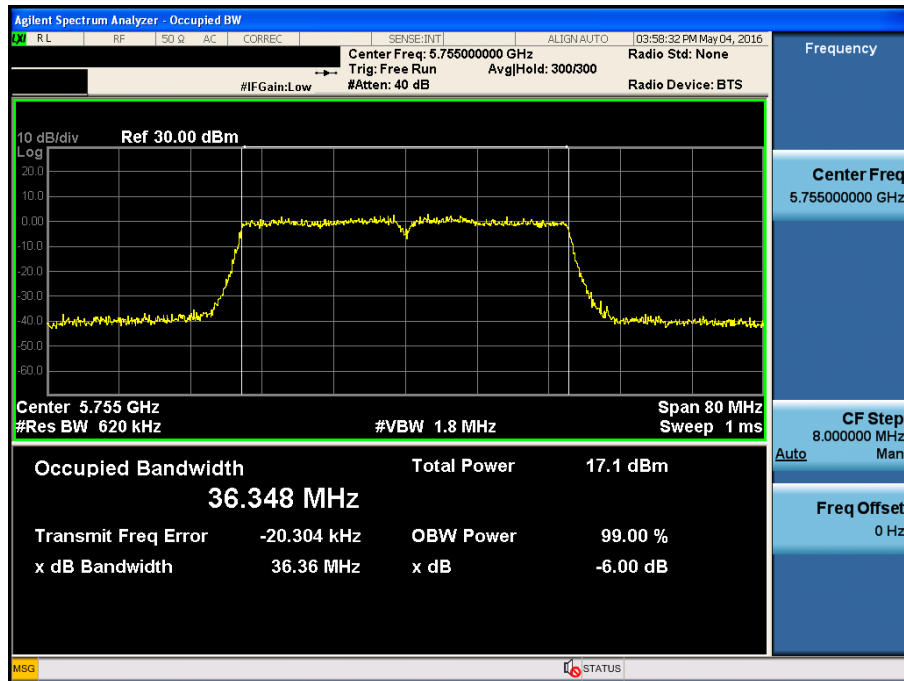
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.165



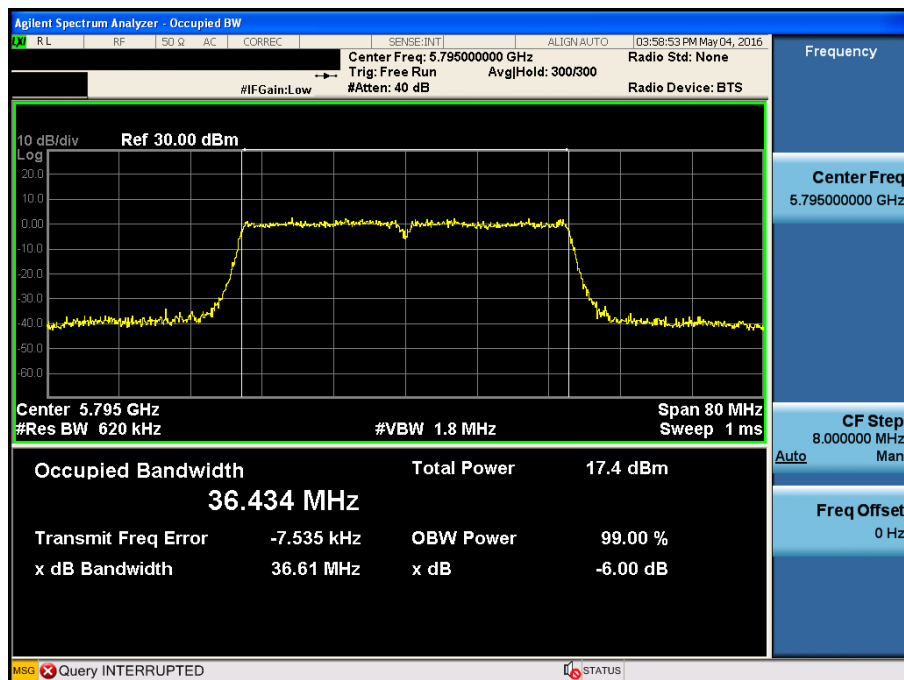
Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.151



Occupied Bandwidth 99%

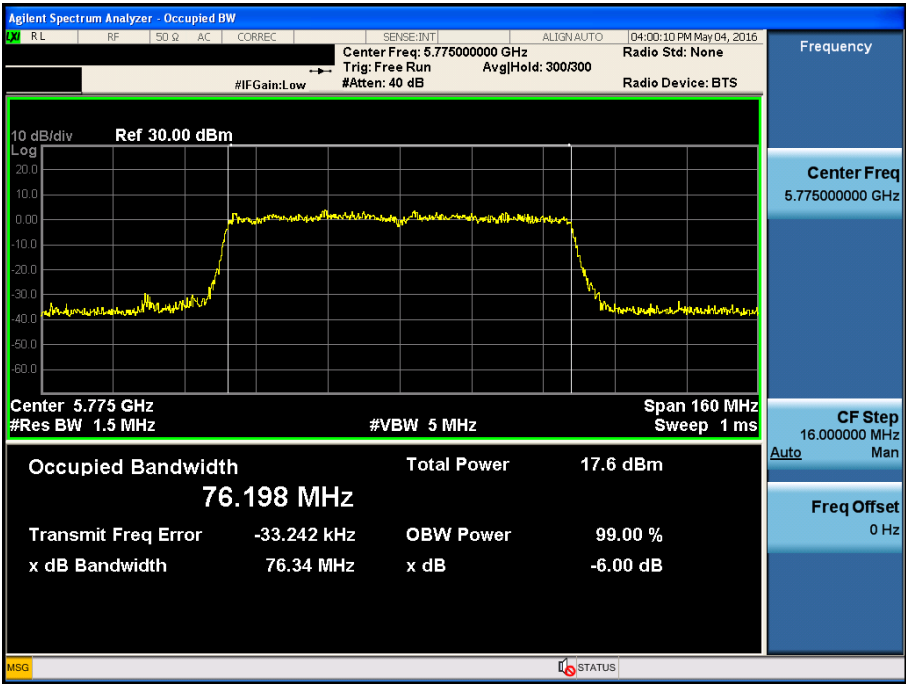
Test Mode: 802.11ac VHT40 & ANT 1 & Ch.159





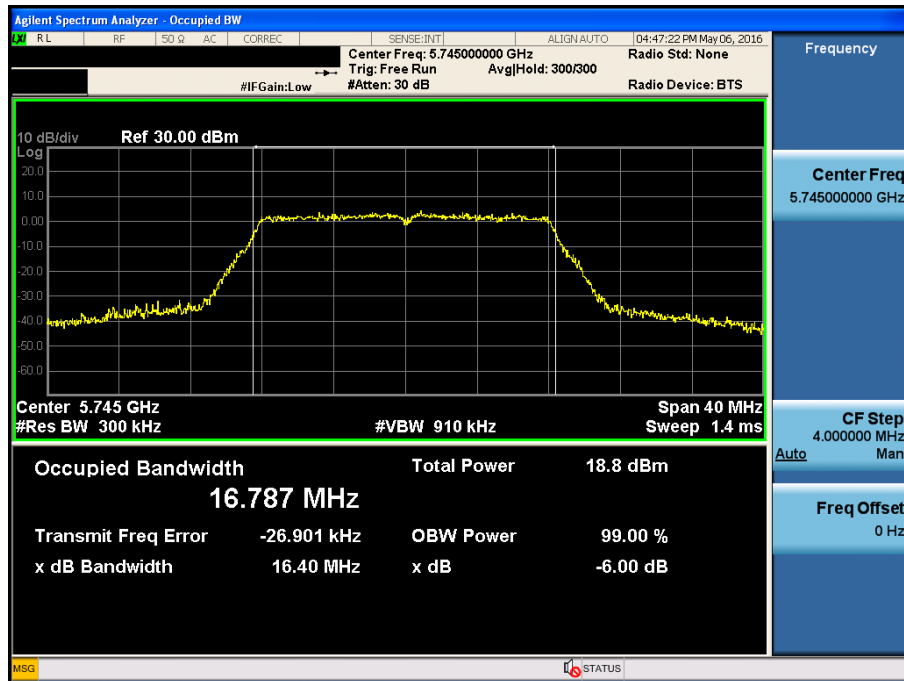
Occupied Bandwidth 99%

Test Mode: 802.11ac(VHT80) & ANT 1 & Ch.155



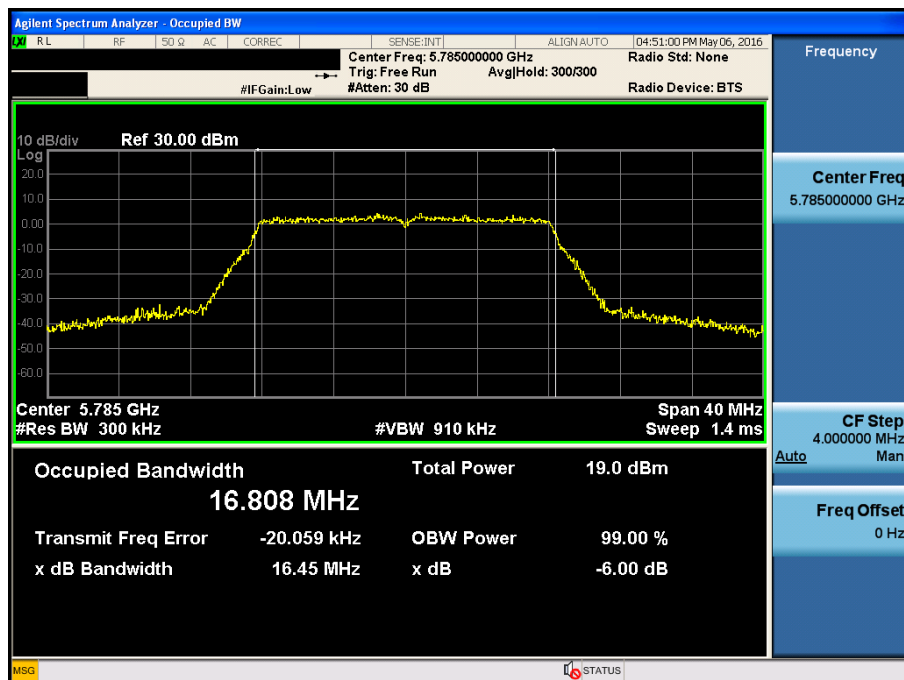
Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.149



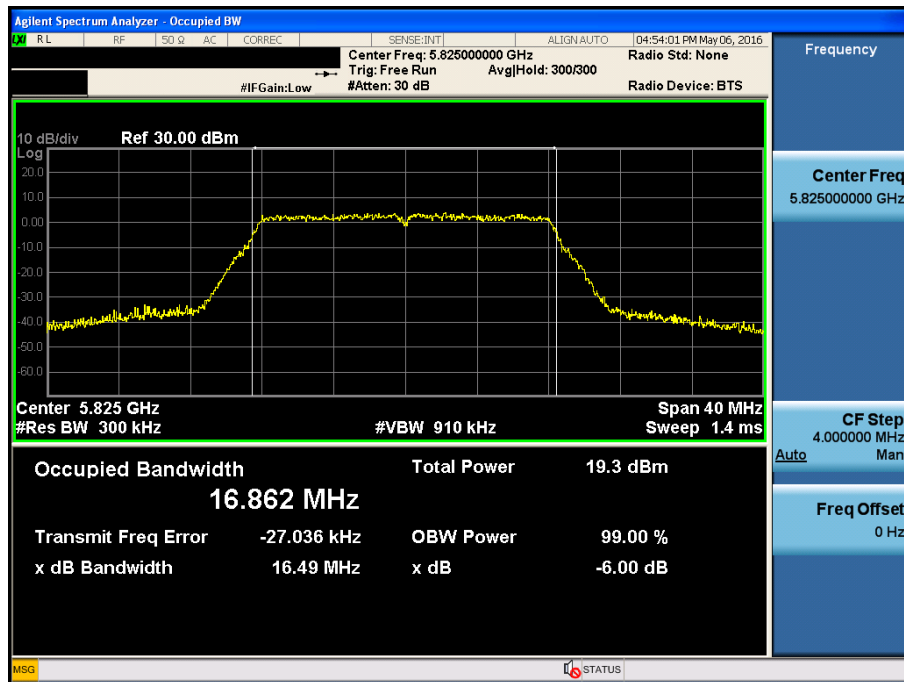
Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.157



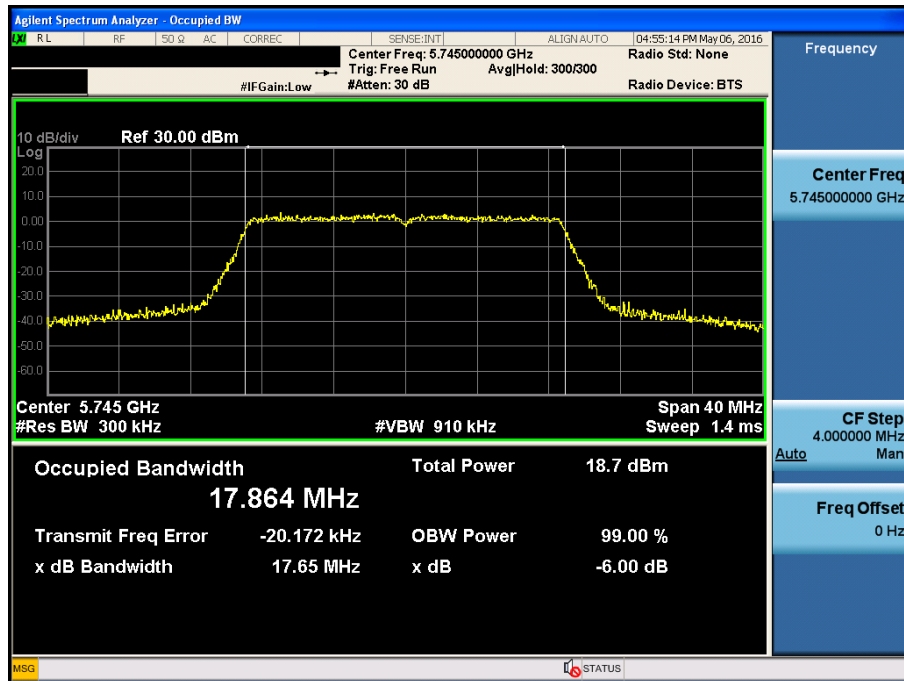
Occupied Bandwidth 99%

Test Mode: 802.11a & ANT 2 & Ch.165



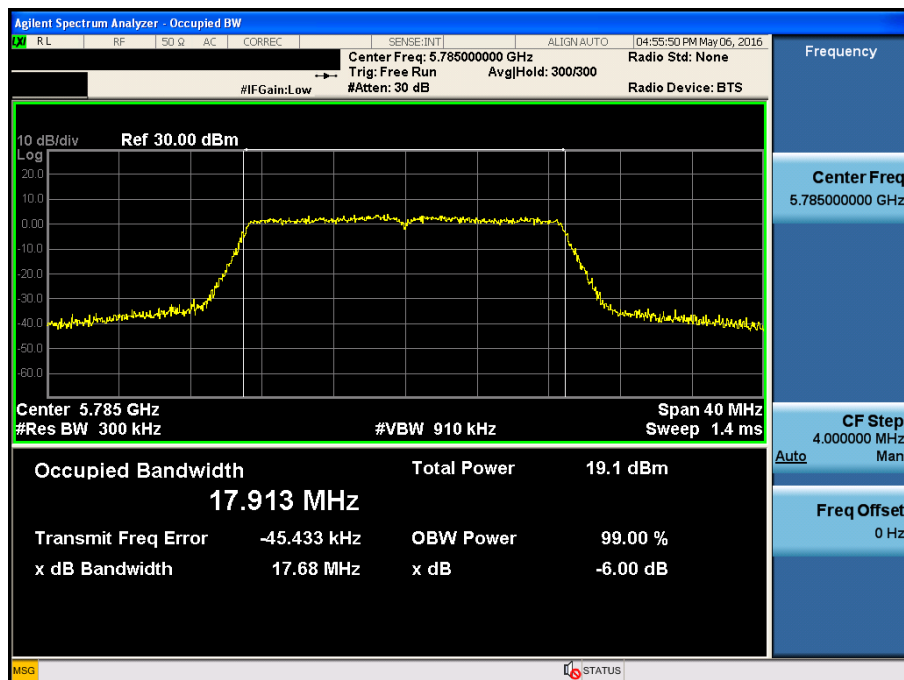
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.149



Occupied Bandwidth 99%

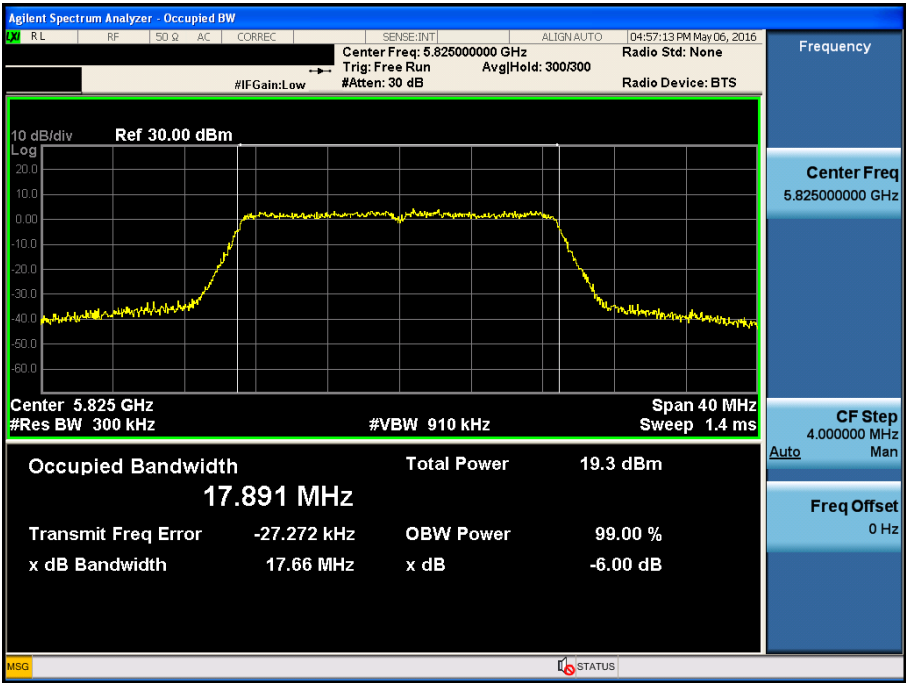
Test Mode: 802.11n HT20 & ANT 2 & Ch.157





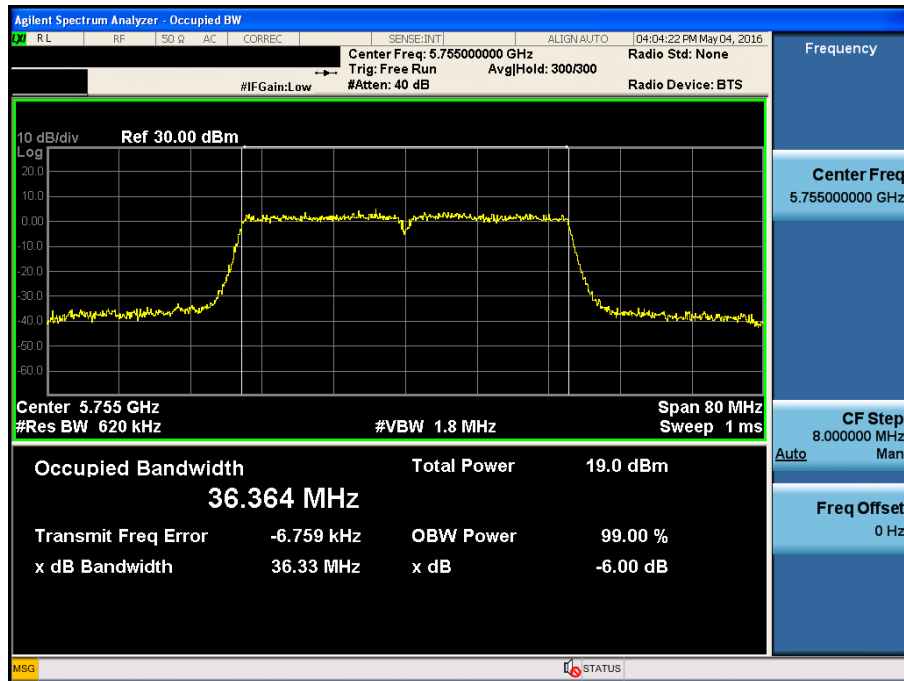
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Test Mode: 802.11n HT20 & ANT 2 & Ch.165



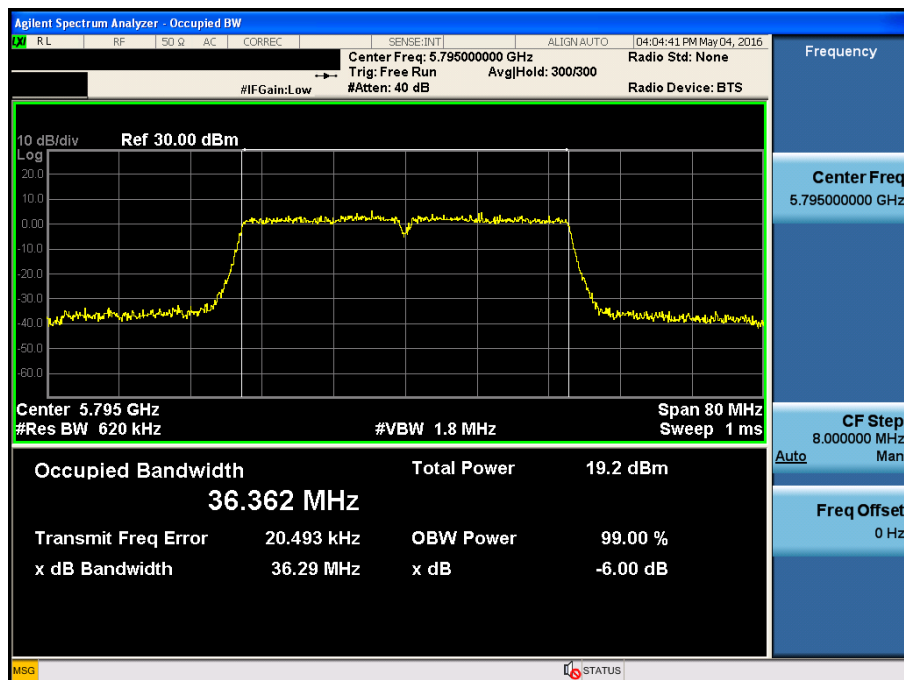
Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.151



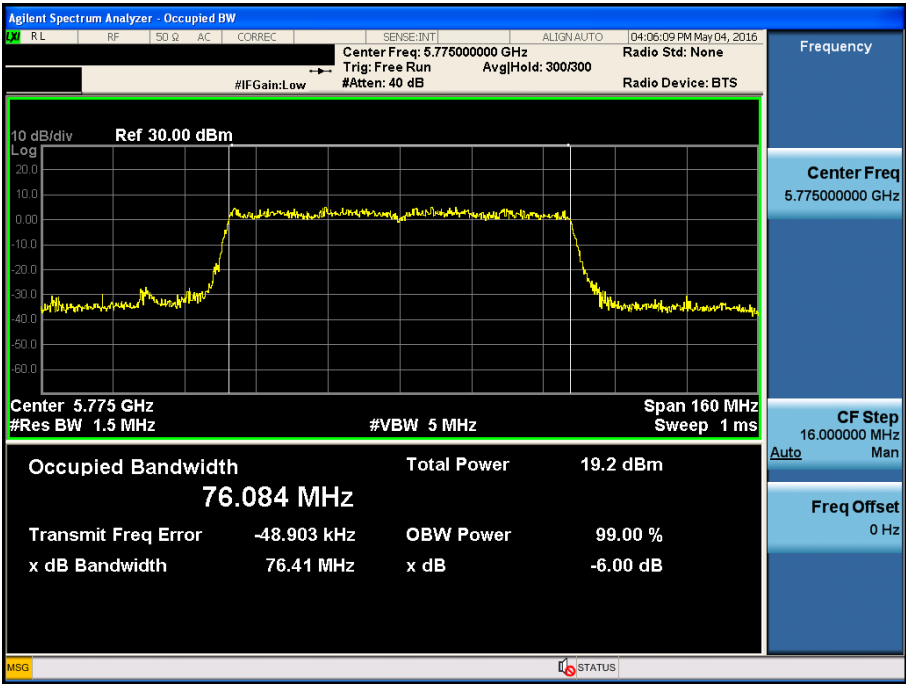
Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.159



Occupied Bandwidth 99%

Test Mode: 802.11ac(VHT80) & ANT 2 & Ch.155

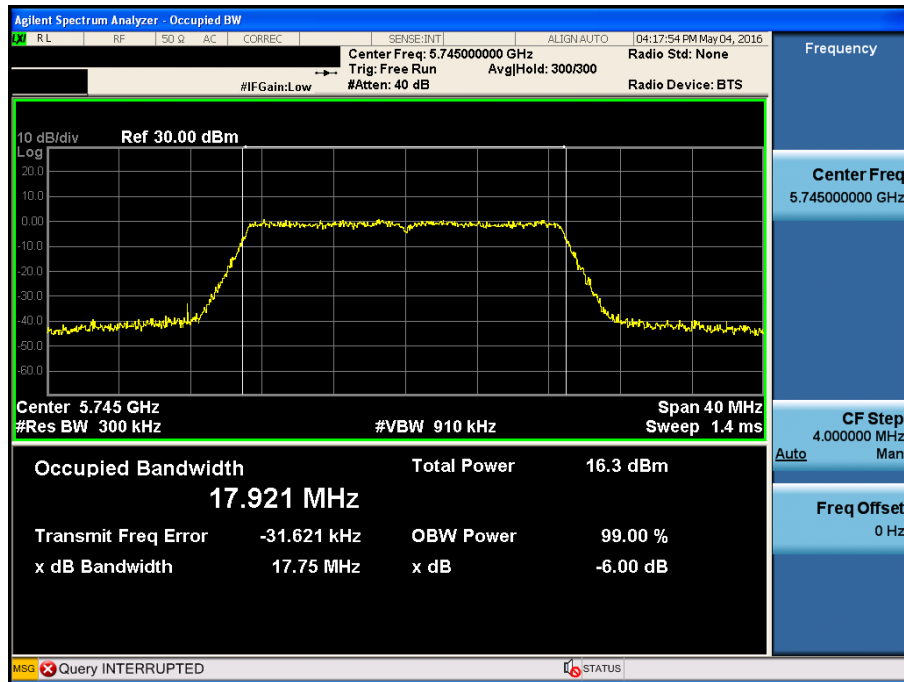


■ RESULT PLOTS

Multiple Transmit

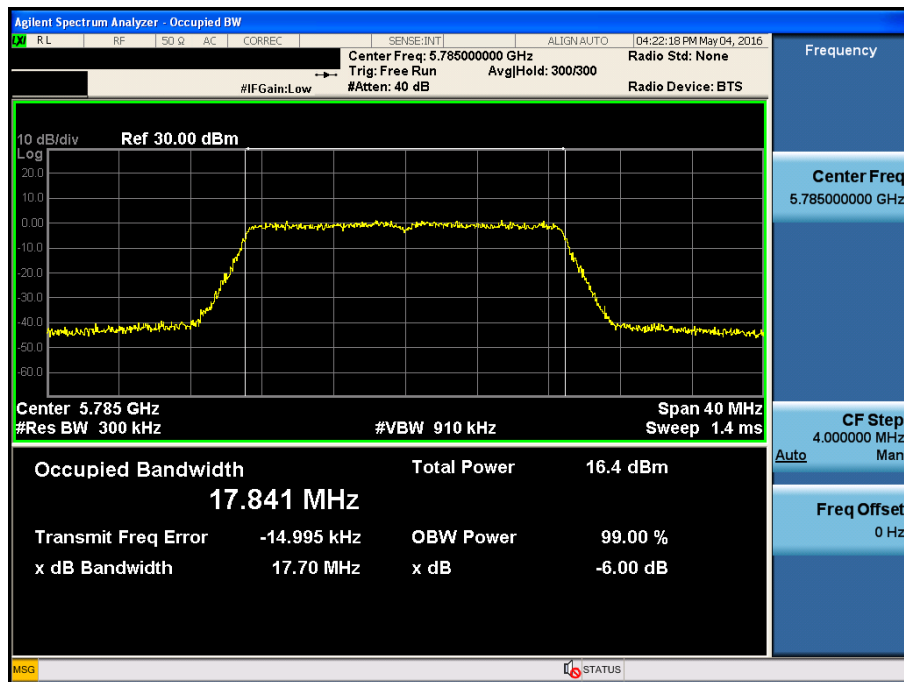
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.149



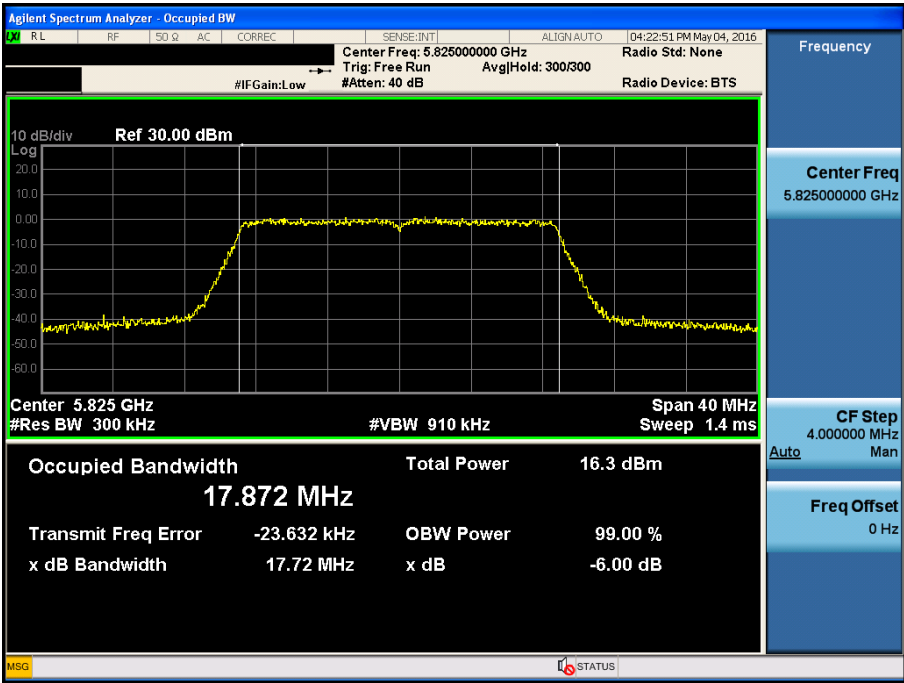
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.157



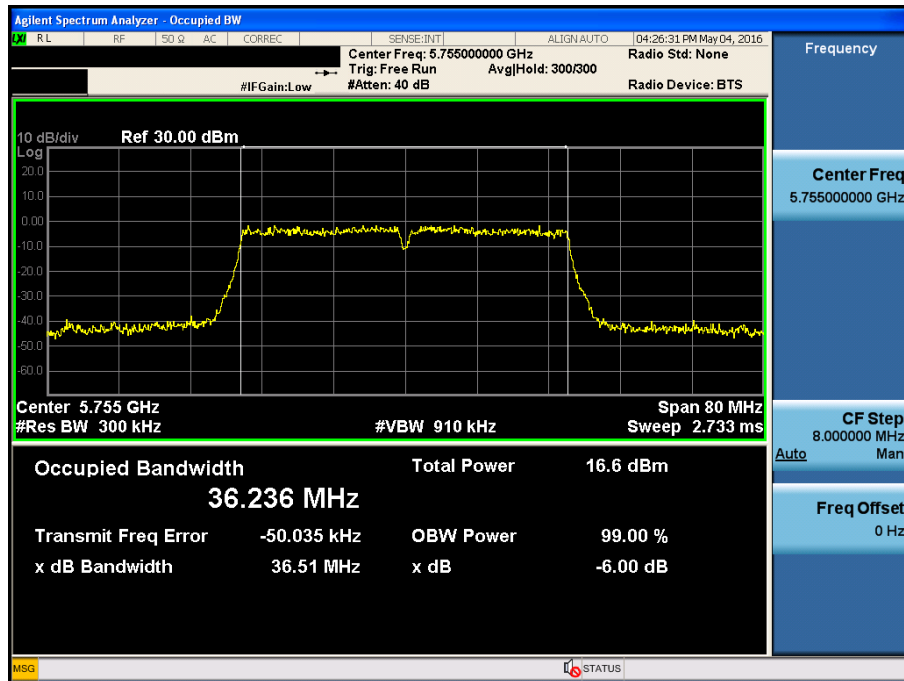
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 1 & Ch.165



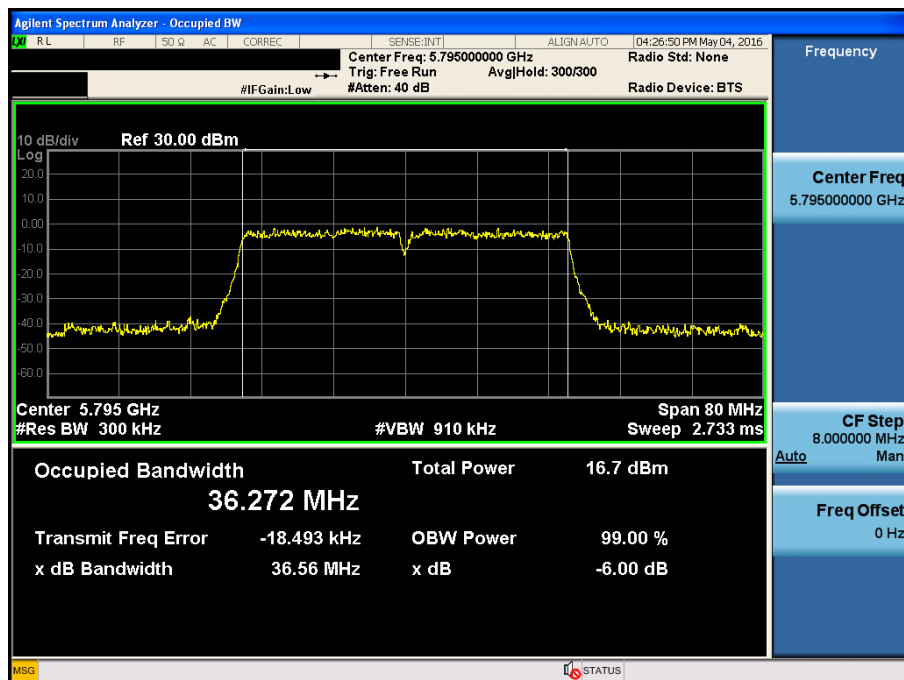
Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 1 & Ch.151



Occupied Bandwidth 99%

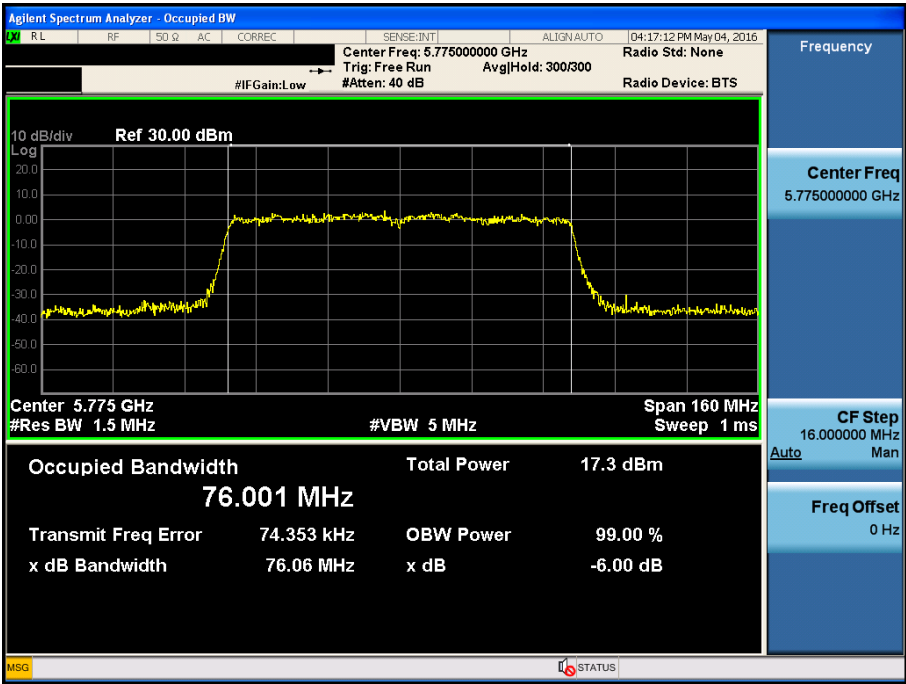
Test Mode: 802.11ac VHT40 & ANT 1 & Ch.159





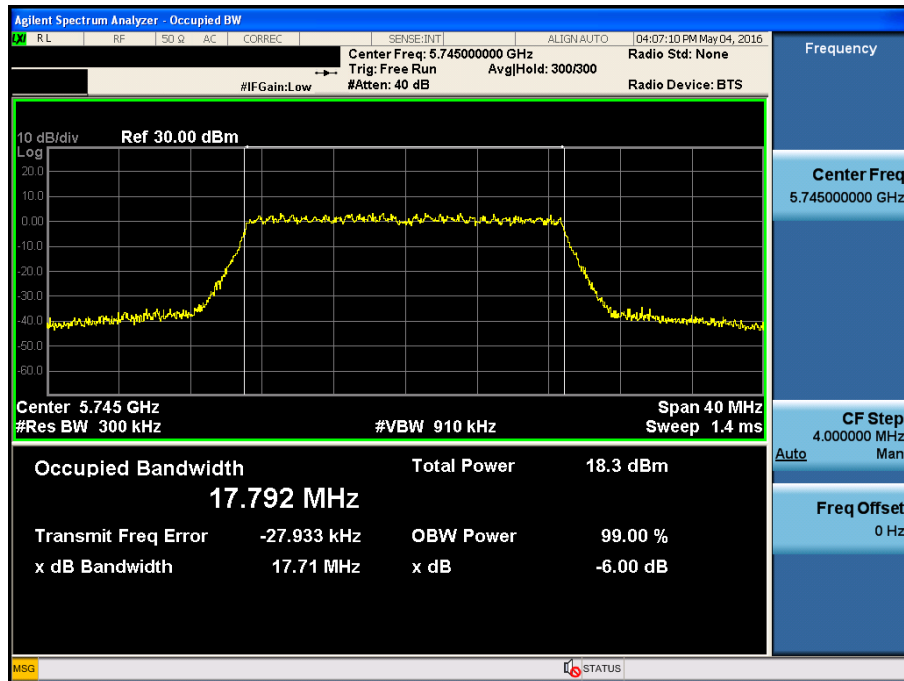
Occupied Bandwidth 99%

Test Mode: 802.11ac(VHT80) & ANT 1 & Ch.155



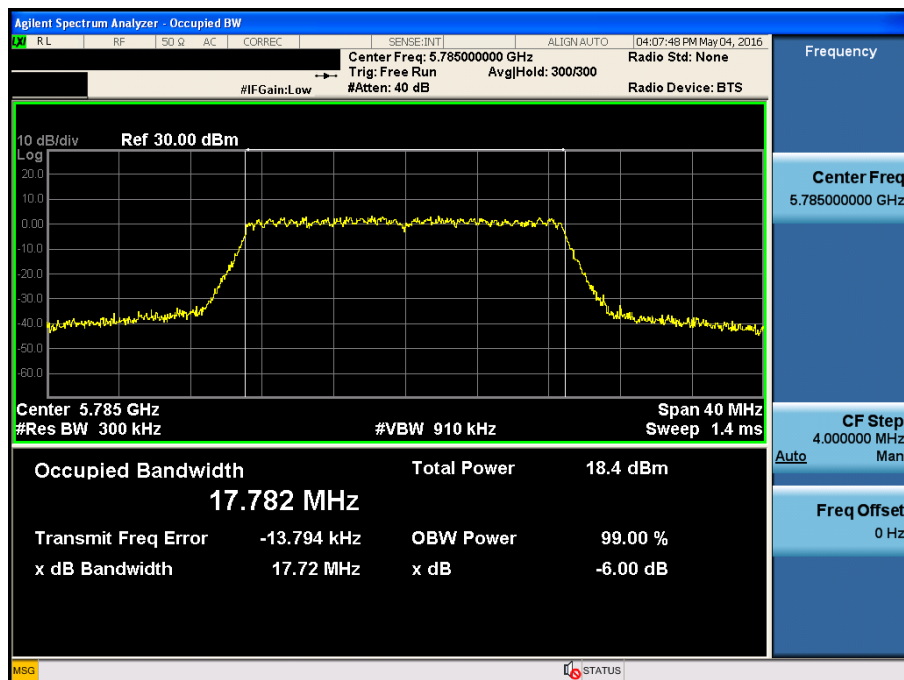
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.149



Occupied Bandwidth 99%

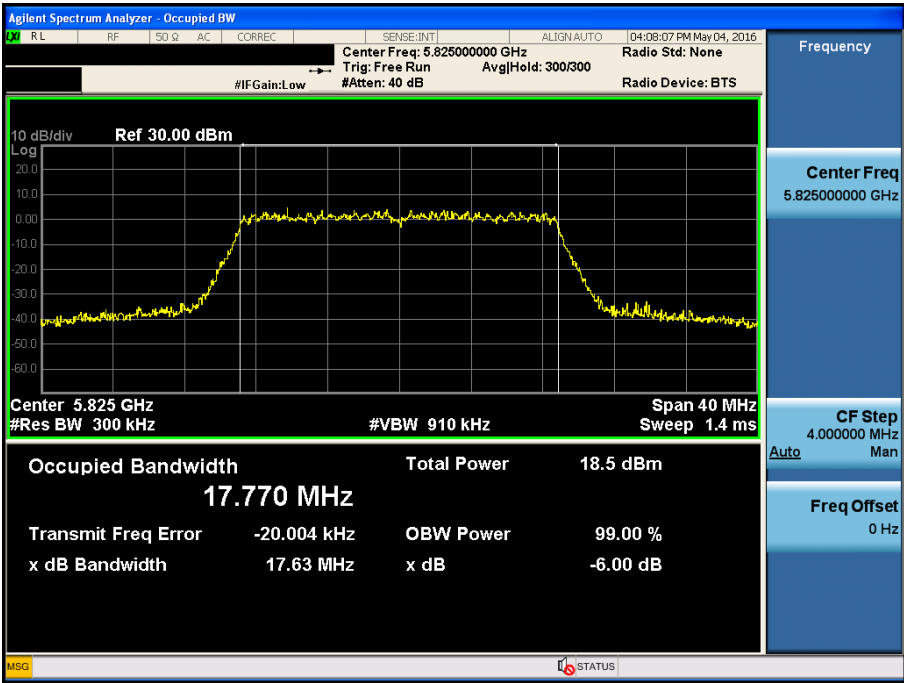
Test Mode: 802.11n HT20 & ANT 2 & Ch.157





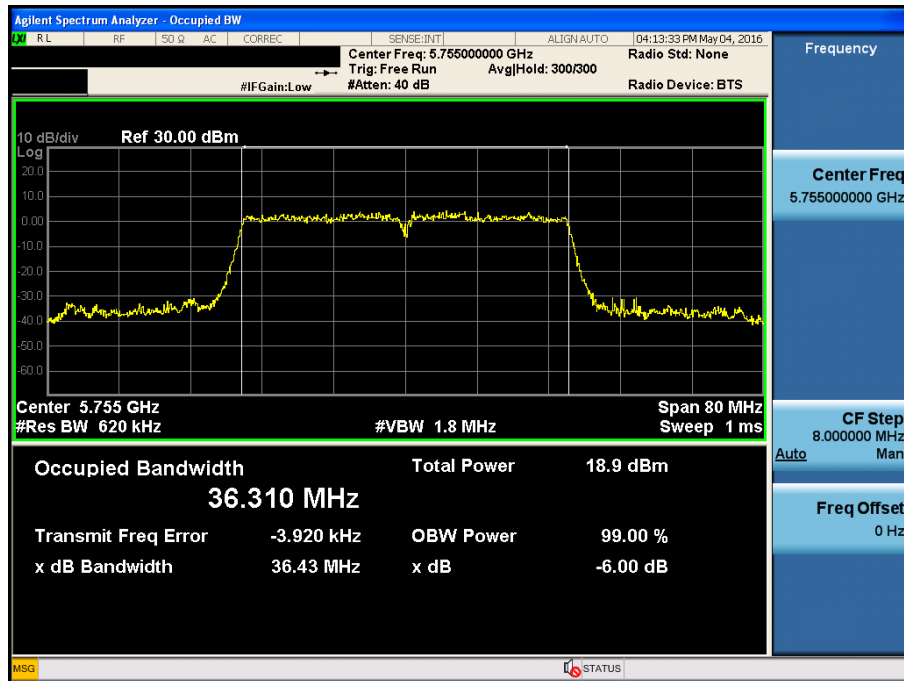
Occupied Bandwidth 99%

Test Mode: 802.11n HT20 & ANT 2 & Ch.165



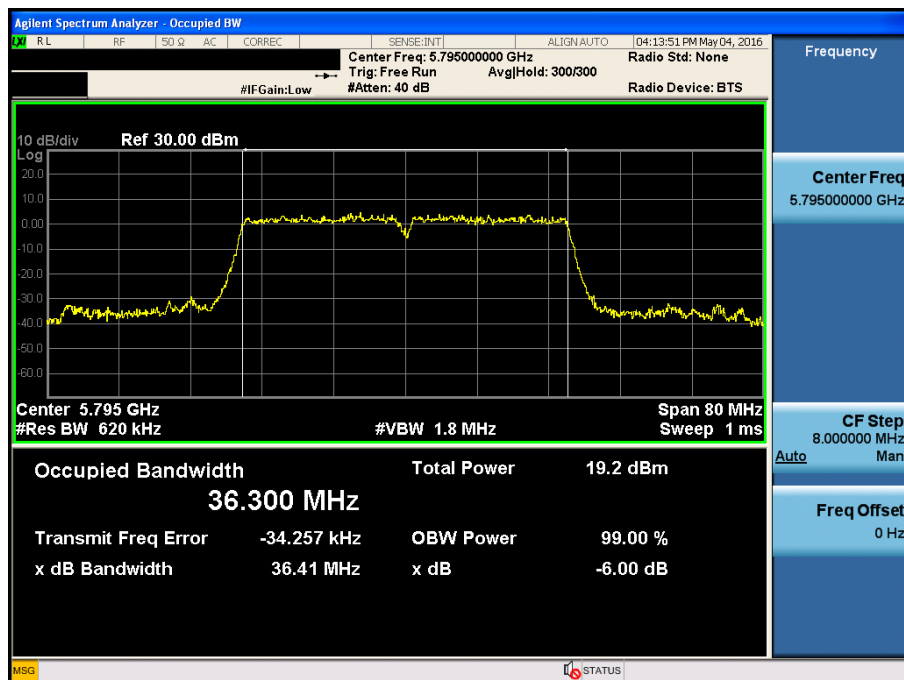
Occupied Bandwidth 99%

Test Mode: 802.11ac VHT40 & ANT 2 & Ch.151



Occupied Bandwidth 99%

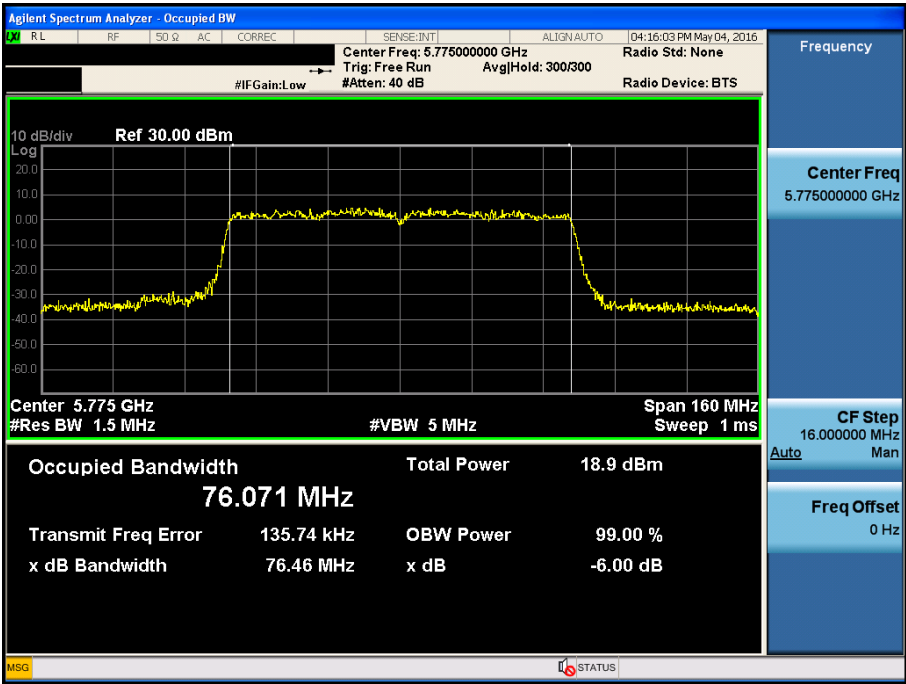
Test Mode: 802.11ac VHT40 & ANT 2 & Ch.159





Occupied Bandwidth 99%

Test Mode: 802.11ac(VHT80) & ANT 2 & Ch.155



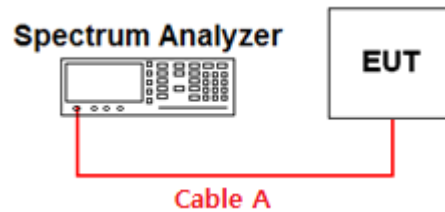
9. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	15/08/24	16/08/24	MY46471601
Spectrum Analyzer	Agilent Technologies	N9020A	16/01/06	17/01/06	MY46471096
Dynamic Measurement DC Source	Agilent Technologies	66332A	15/10/19	16/10/19	MY43000394
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2495A / MA2490A	15/10/20	16/10/20	1338003 / 1249304
Temp & Humi Test Chamber	JISICO	KR-100/J-RHC2	15/09/10	16/09/10	30604493/021031
10W 30dB Attenuator	SRTechnology	F01-D1230-01	15/10/21	16/10/21	13092401
Thermohygrometer	BODYCOM	BJ5478	16/04/22	17/04/22	120612-1
Signal Generator	Rohde Schwarz	SMF100A	15/06/29	16/06/29	102341
Digital Multimeter	HP	34401A	16/02/25	17/02/25	3146A13475
Loop Antenna	Schwarzbeck	FMZB1513	16/04/22	18/04/22	1513-128
TRILOG Broadband Test-Antenna	Schwarzbeck	VULB 9161	14/07/10	16/07/10	4070
Horn Antenna	ETS-Lindgren	3115	15/02/09	17/02/09	9202-3820
Horn Antenna	A.H.Systems Inc.	SAS-574	15/04/30	17/04/30	154
Highpass Filter	Wainwright Instruments	WHNX6-6320-8000-26500-40CC	15/09/23	16/09/23	1
PreAmplifier	TSJ	MLA-010K01-B01-27	16/03/10	17/03/10	1844539
PreAmplifier	Agilent	8449B	16/02/24	17/02/24	3008A00370
EMI Test Receiver	Rohde Schwarz	ESU	15/07/14	16/07/14	100469
EMI Test Receiver	Rohde Schwarz	ESCI	16/02/25	17/02/25	100364
Single-Phase Master	NF	4420	15/09/09	16/09/09	3049354420023
Artificial Mains Network	Narda S.T.S. / PMM	PMM L2-16B	15/06/26	16/06/26	000WX20305

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 D02**.

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 = On time of the above table since the EUT operates with above fixed Duty Cycle and it is the minimum On time)

■ Test Results:

Single Transmit

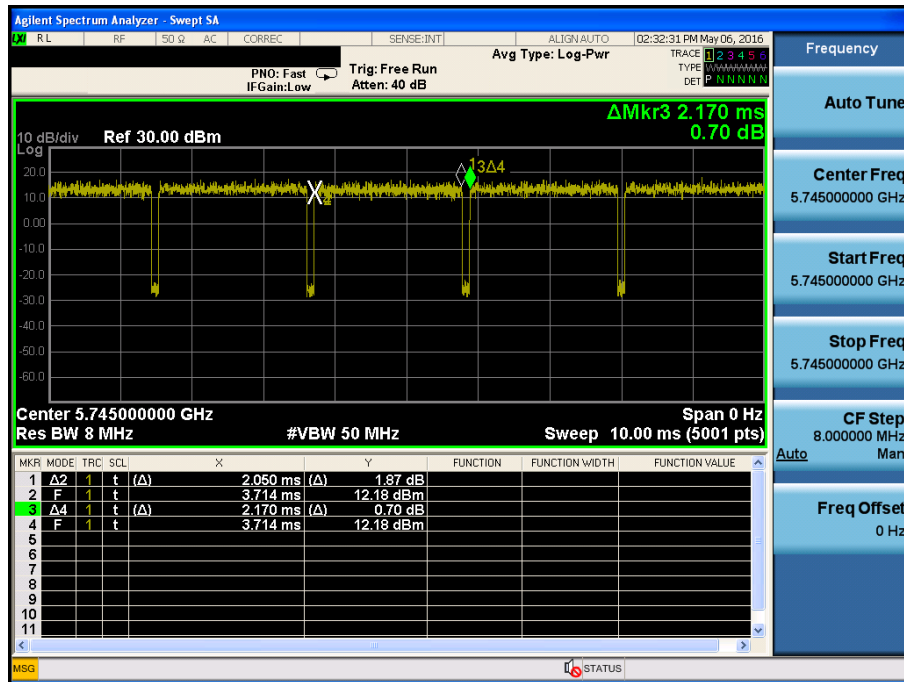
Mode	Channel	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (x) = On / (On+Off)			Duty Cycle Correction Factor [dB]	50/ T [kHz]
			On Time [ms]	On+OffTime [ms]	x		
802.11a	149	5745	2.05	2.17	94.47	0.25	24.39
802.11n (HT20)	149	5745	1.90	2.01	94.53	0.25	26.32
802.11ac (VHT40)	151	5755	0.12	0.14	80.42	0.95	416.67
802.11ac (VHT80)	155	5775	0.08	0.10	72.12	1.42	625.00

Multiple Transmit

Mode	Channel	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (x) = On / (On+Off)			Duty Cycle Correction Factor [dB]	50/ T [kHz]
			On Time [ms]	On+OffTime [ms]	x		
802.11n (HT20)	149	5745	0.98	1.09	89.91	0.47	51.02
802.11ac (VHT40)	151	5755	0.08	0.11	73.87	1.32	625.00
802.11ac (VHT80)	155	5775	0.06	0.09	69.23	1.60	833.33

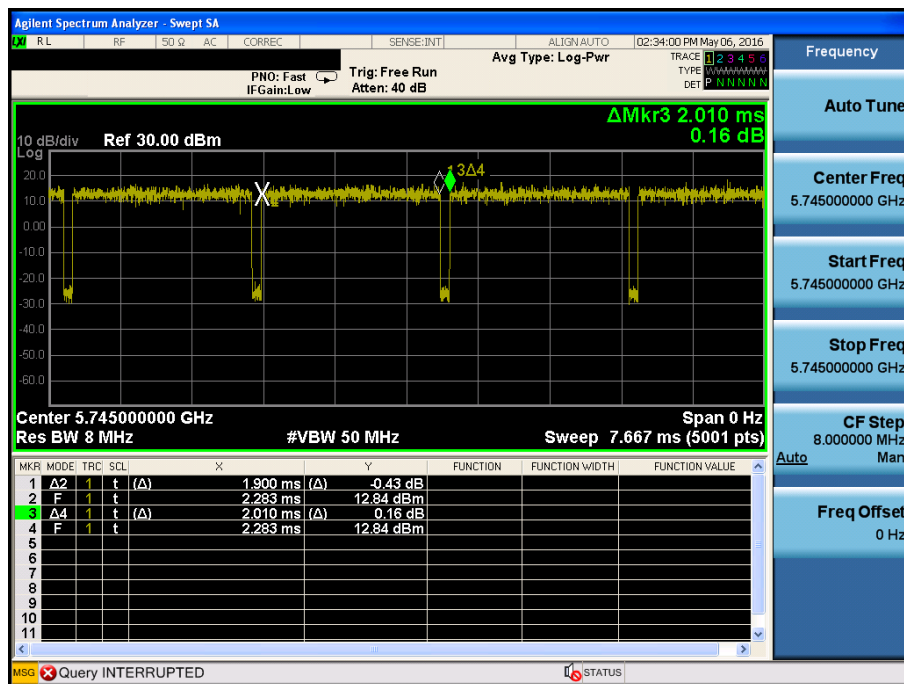
Single Transmit Duty Cycle

Test Mode: 802.11a & Ch.149



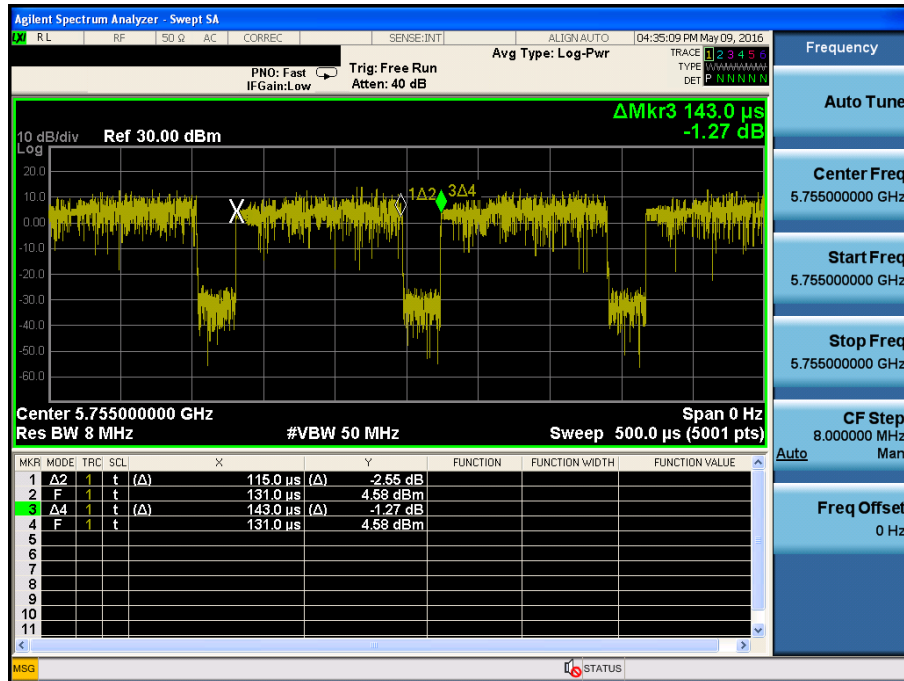
Duty Cycle

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



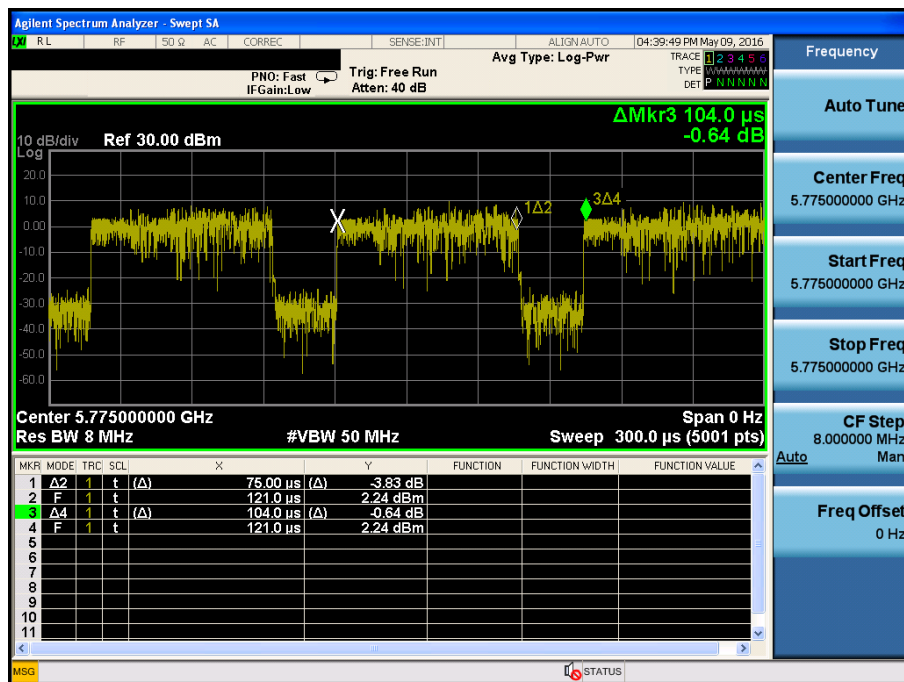
Duty Cycle

Test Mode: 802.11ac VHT40 & Ch.151



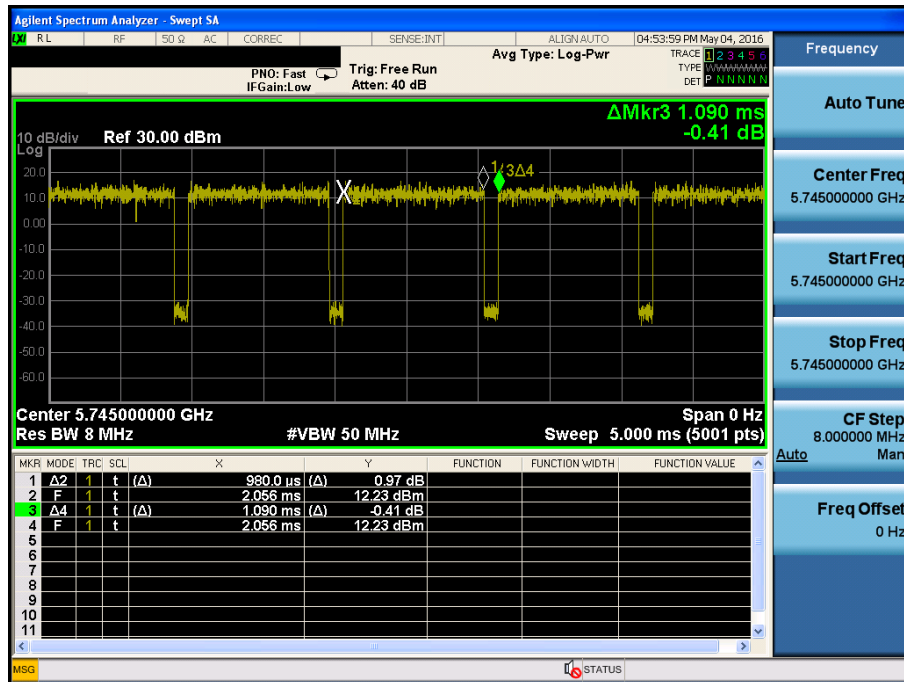
Duty Cycle

Test Mode: 802.11ac VHT80 & Ch.155



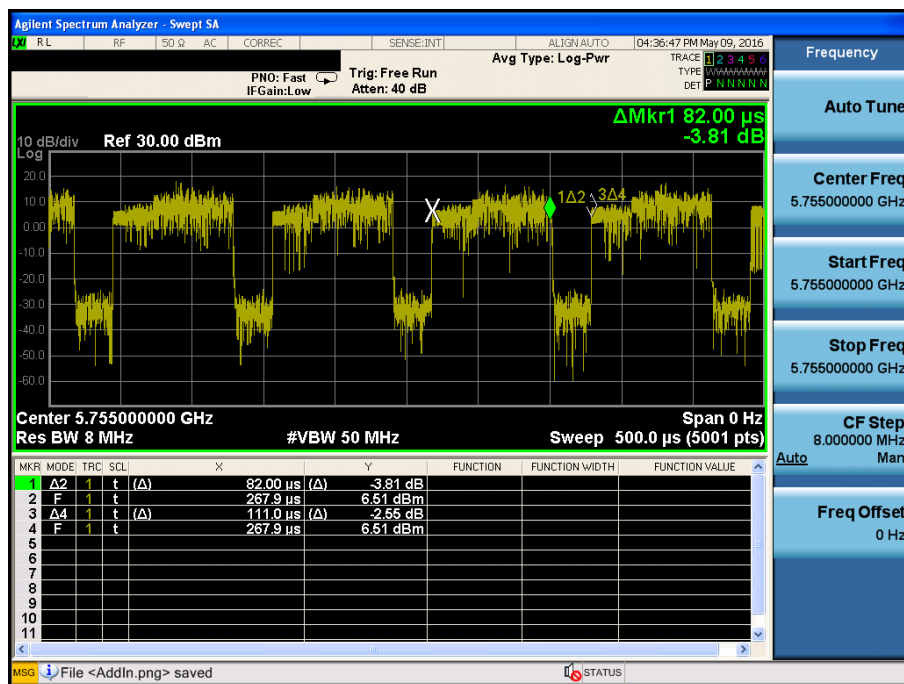
Multiple Transmit Duty Cycle

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



Duty Cycle

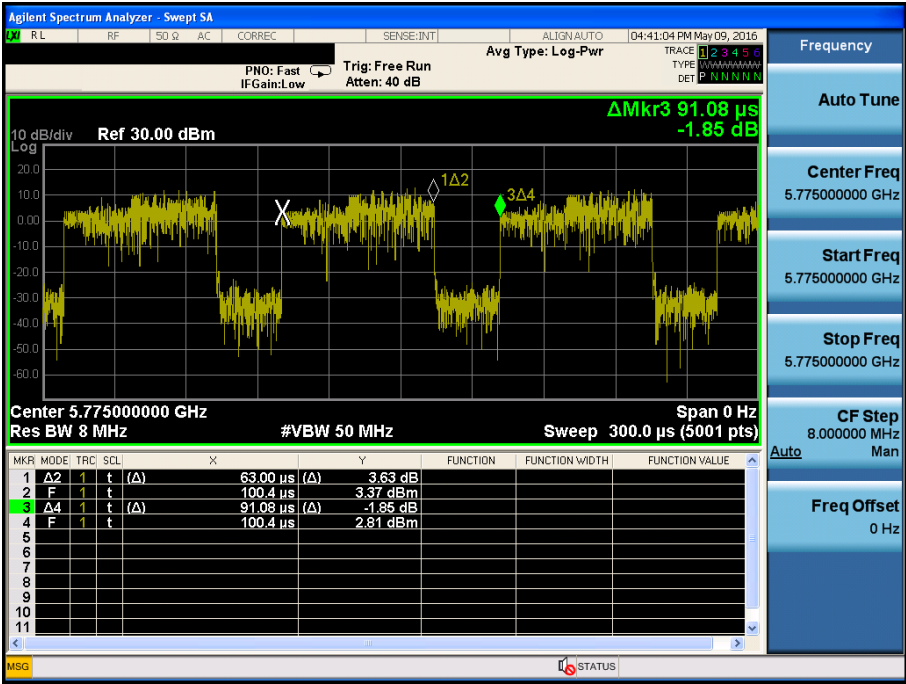
Test Mode: 802.11ac VHT40 & Ch.151





Duty Cycle

Test Mode: 802.11ac VHT80 & Ch.155

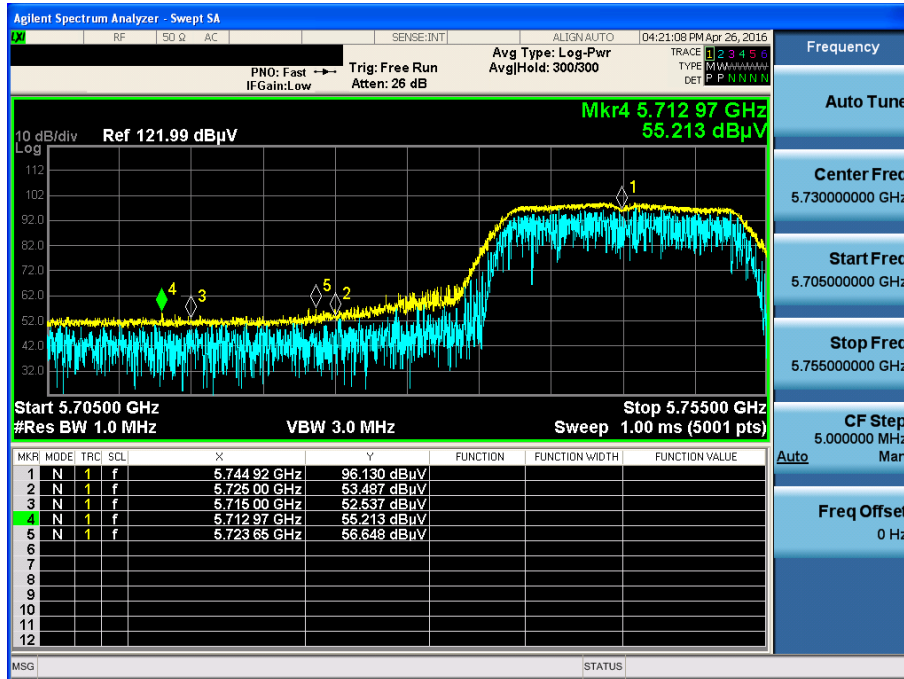


APPENDIX III

Unwanted Emissions (Radiated) Test Plot _ ANT 1

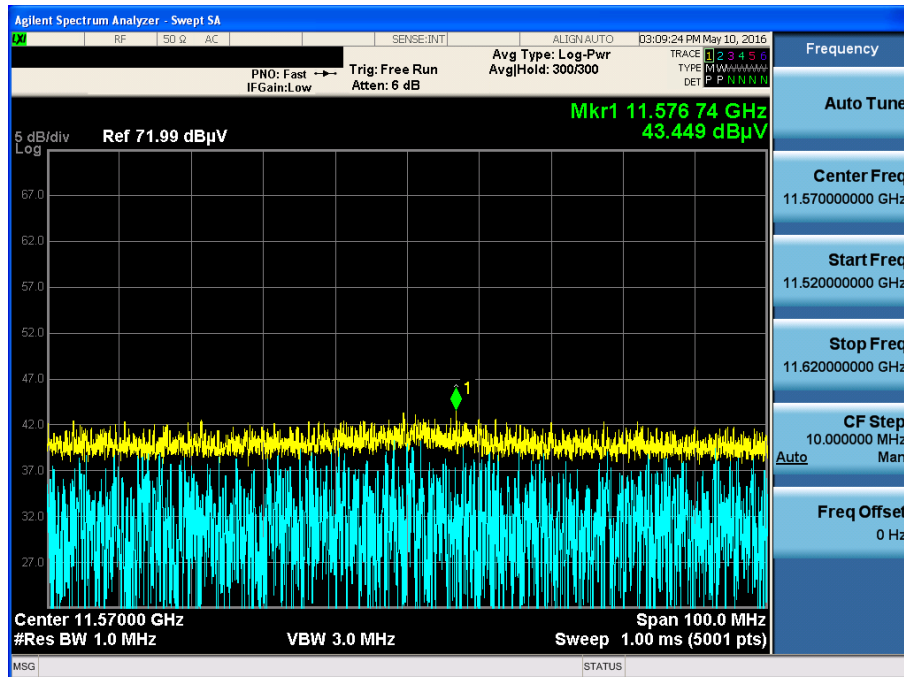
802.11a & U-NII 3 & Ch.149 & Y axis & Hor

Detector Mode : PK



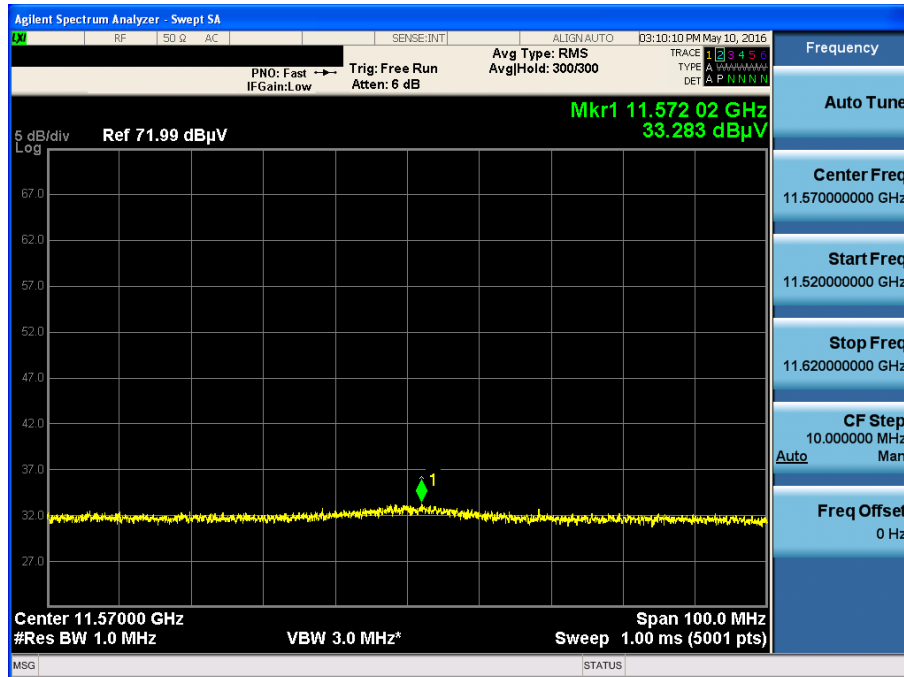
802.11a & U-NII 3 & Ch.157 & Z axis & Ver

Detector Mode : PK



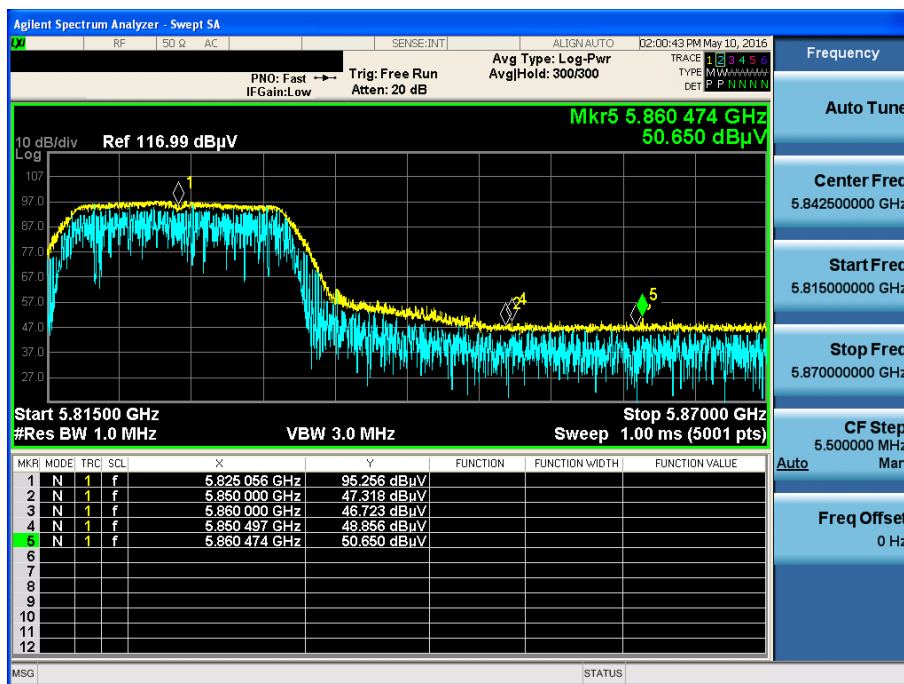
802.11a & U-NII 3 & Ch.157 & Z axis & Ver

Detector Mode : AV



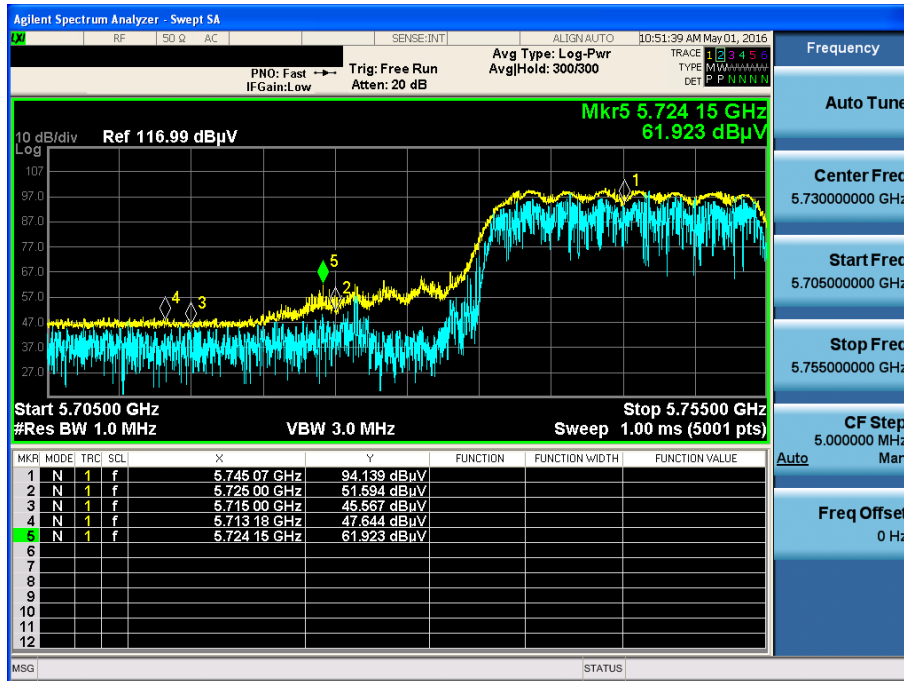
802.11a & U-NII 3 & Ch.165 & Y axis & Hor

Detector Mode : PK



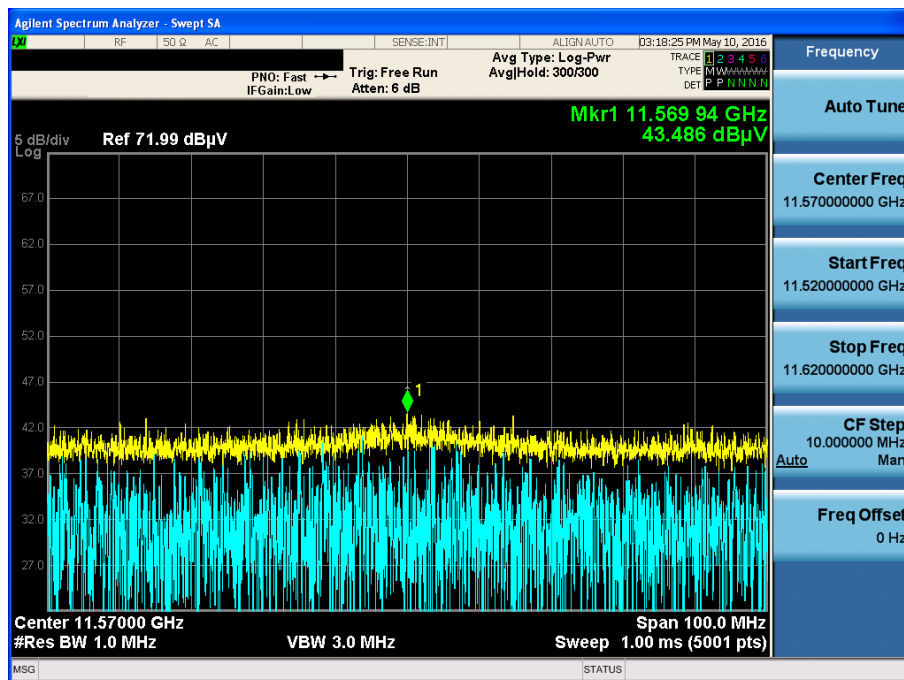
802.11n(HT20) & U-NII 3 & Ch.149 & X axis & Hor

Detector Mode : PK



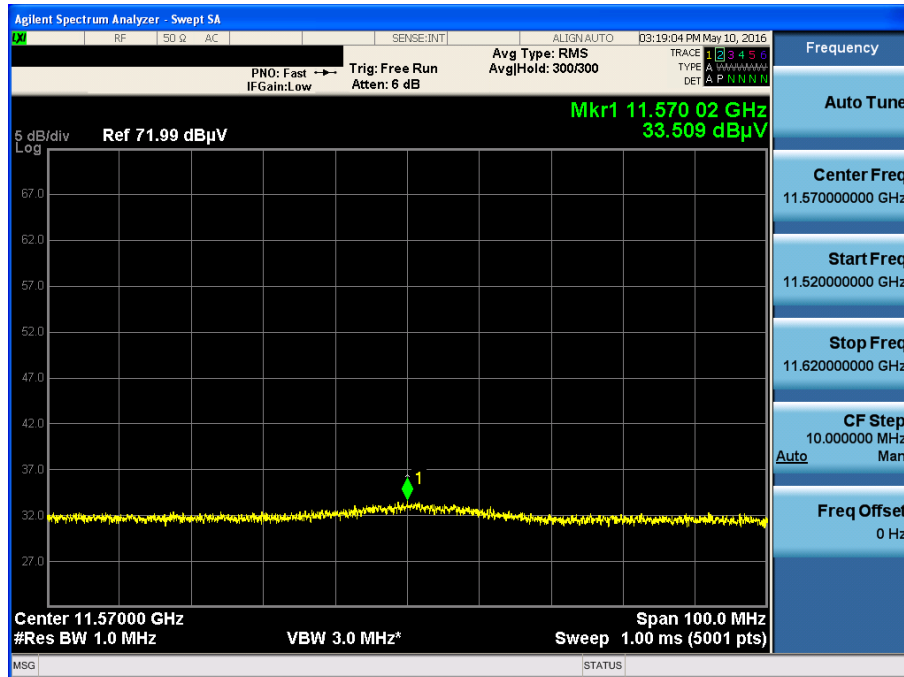
802.11n(HT20) & U-NII 3 & Ch.157 & X axis & Hor

Detector Mode : PK



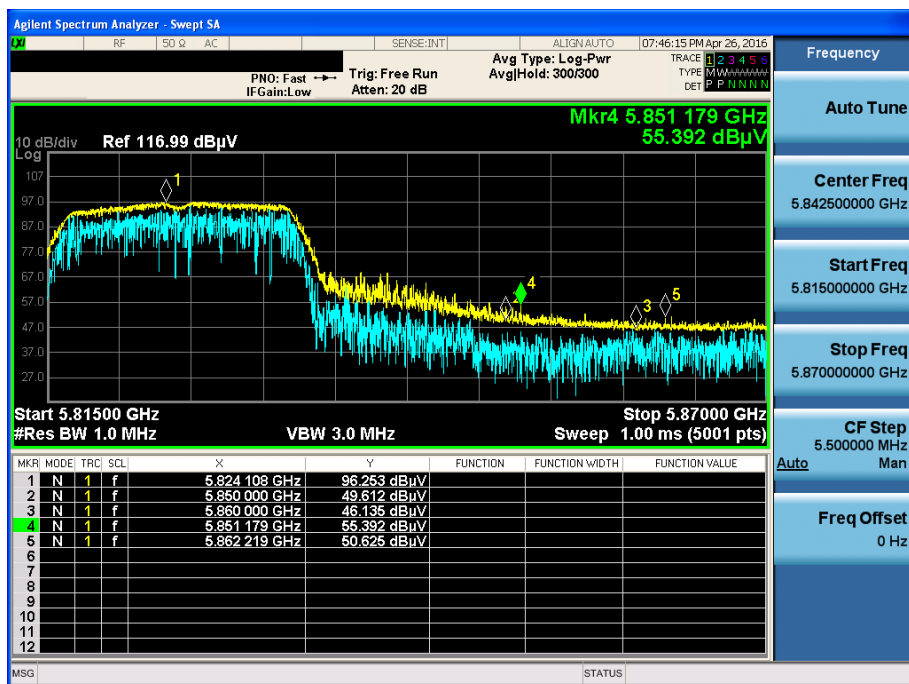
802.11n(HT20) & U-NII 3 & Ch.157 & X axis & Hor

Detector Mode : AV



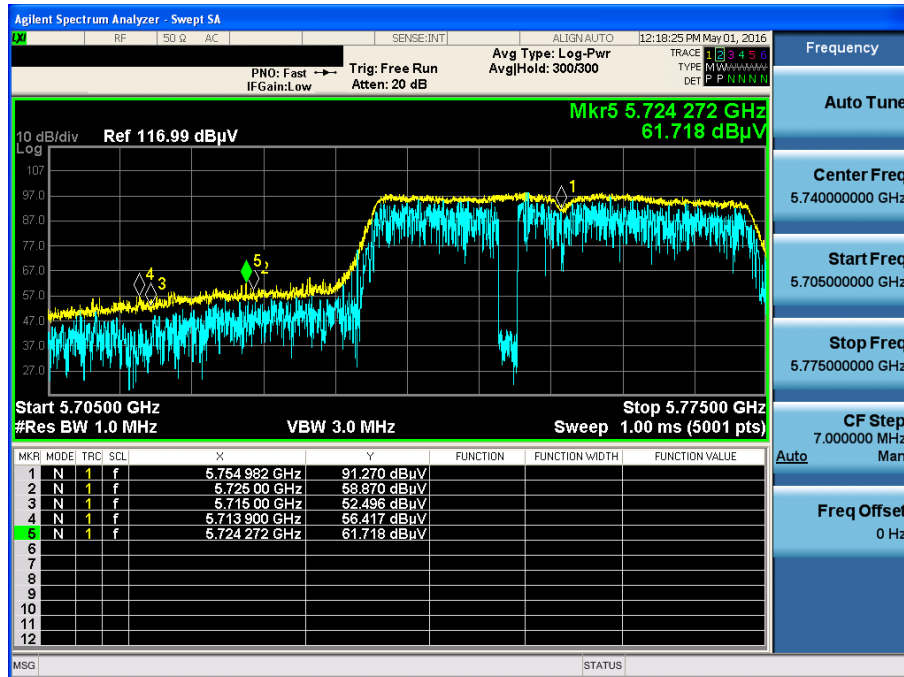
802.11n(HT20) & U-NII 3 & Ch.165 & Z axis & Ver

Detector Mode : PK



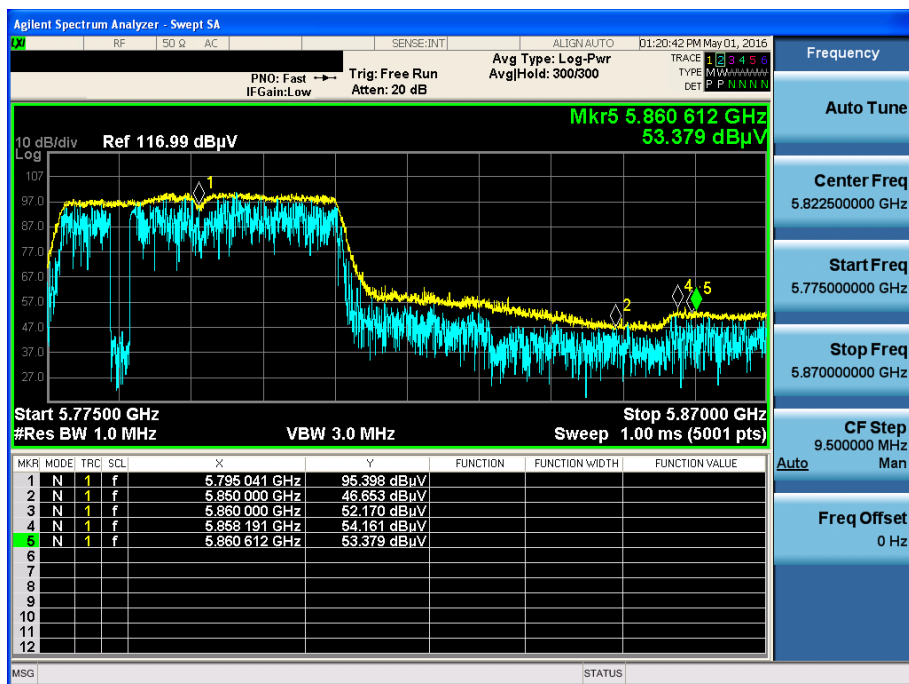
802.11ac(VHT40) & U-NII 3 & Ch.151 & X axis & Ver

Detector Mode : PK



802.11ac(VHT40) & U-NII 3 & Ch.159 & Y axis & Hor

Detector Mode : PK





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

