

Appendix E

RF Test Data for 5.8G WLAN (Conducted Measurement)

Product Name: KIDS WATCH

Test Model: BUBBLE

Environmental Conditions

Temperature:	24.1 ° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Wang Chuang

E.1 Duty Cycle

Test Mode	Test Frequency (MHz)	Duty Cycle (%)	10log(1/x) Factor (dB)	1/B Minimum VBW(KHz)
11A	5785	100	0.00	0.01
11N20 SISO	5785	100	0.00	0.01
11N40 SISO	5755	100	0.00	0.01

On Time and Duty Cycle

Agilent Spectrum Analyzer - Swept SA

Center Freq 5.785000000 GHz

Ref 20.00 dBm

10 dB/div

Log

Center 5.785000000 GHz

Res BW 8 MHz

#VBW 50 MHz*

Sweep 10.13 ms (8001 pts)

Span 0 Hz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq 5.785000000 GHz

Start Freq 5.785000000 GHz

Stop Freq 5.785000000 GHz

CF Step 8.000000 MHz

Freq Offset 0 Hz

IEEE 802.11a

Agilent Spectrum Analyzer - Swept SA

Center Freq 5.785000000 GHz

Ref 20.00 dBm

10 dB/div

Log

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Res BW 8 MHz

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MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1								
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Frequency

Auto Tune

Center Freq 5.785000000 GHz

Start Freq 5.785000000 GHz

Stop Freq 5.785000000 GHz

CF Step 8.000000 MHz

Freq Offset 0 Hz

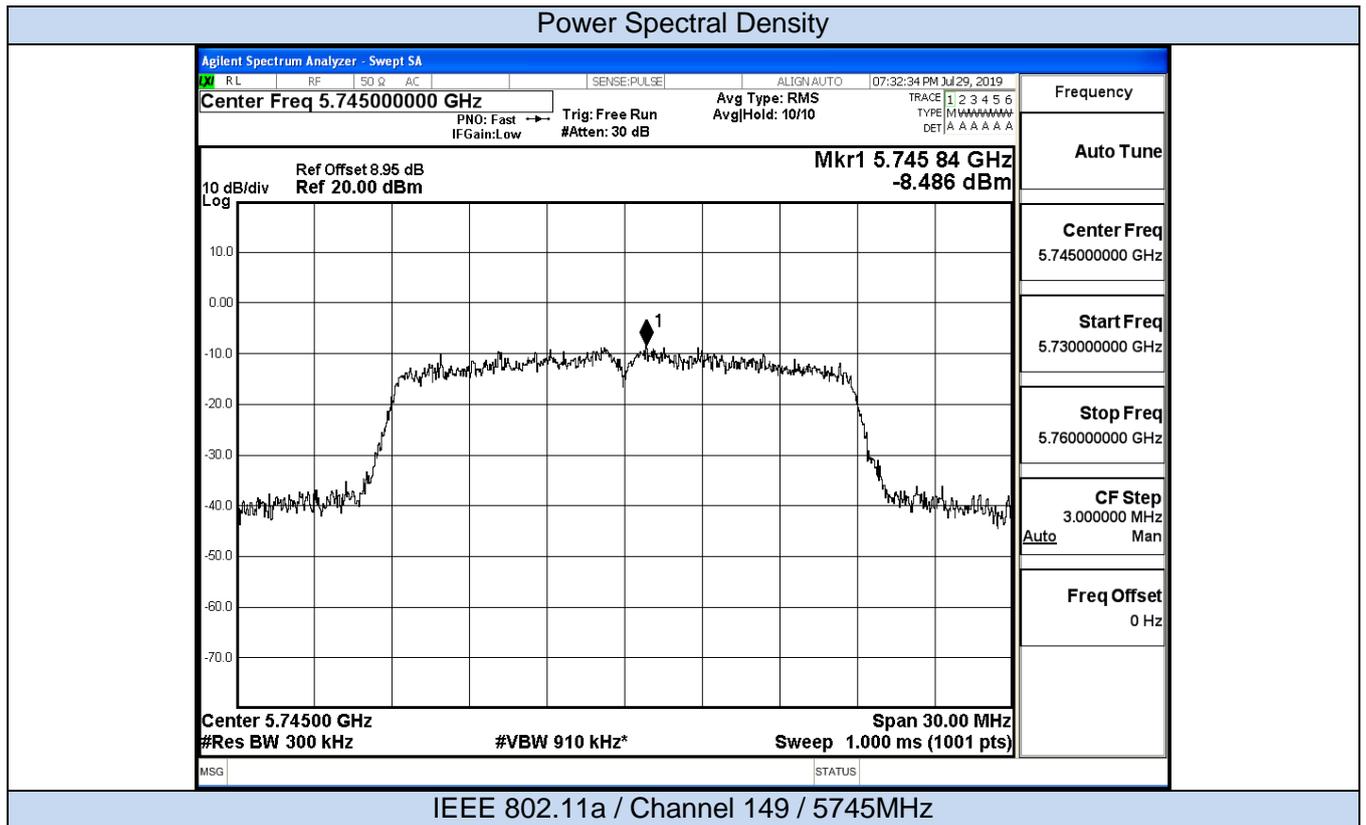
IEEE 802.11n HT20

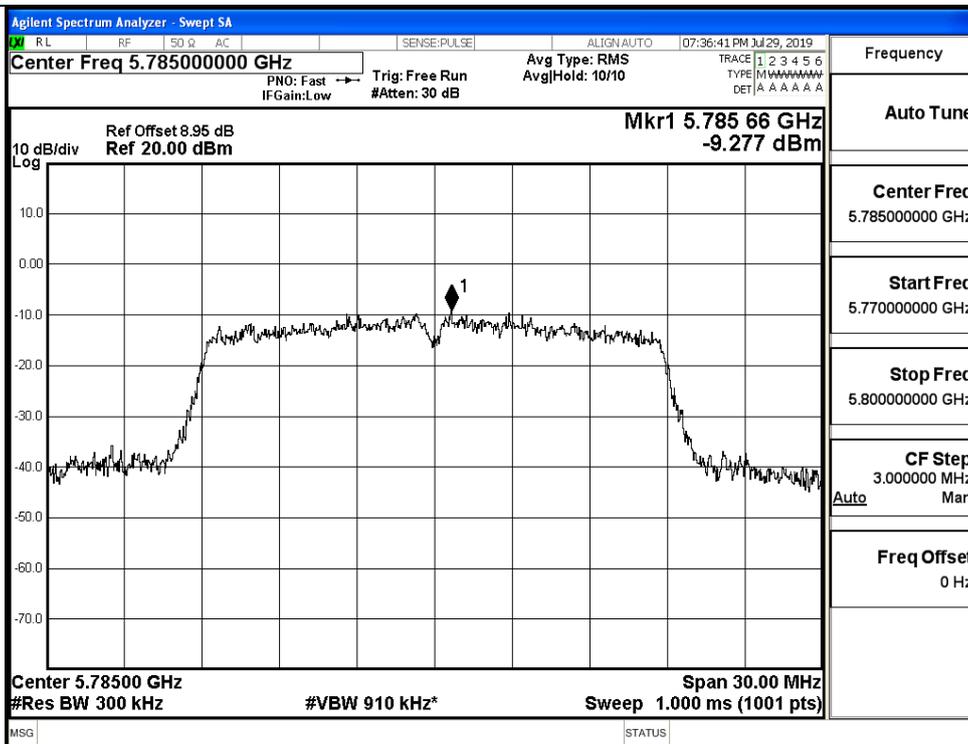
E.2 Maximum Conduct Output Power

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor(dB)	Report Conducted Power(dBm)	Limit (dBm)	Verdict
11A	149	5745	10.64	0	10.64	30	Pass
	157	5785	9.77	0	9.77		Pass
	165	5825	9.48	0	9.48		Pass
11N20 SISO	149	5745	11.92	0	11.92	30	Pass
	157	5785	12.12	0	12.12		Pass
	165	5825	11.73	0	11.73		Pass
11N40 SISO	151	5755	12.15	0	12.15	30	Pass
	159	5795	11.84	0	11.84		Pass

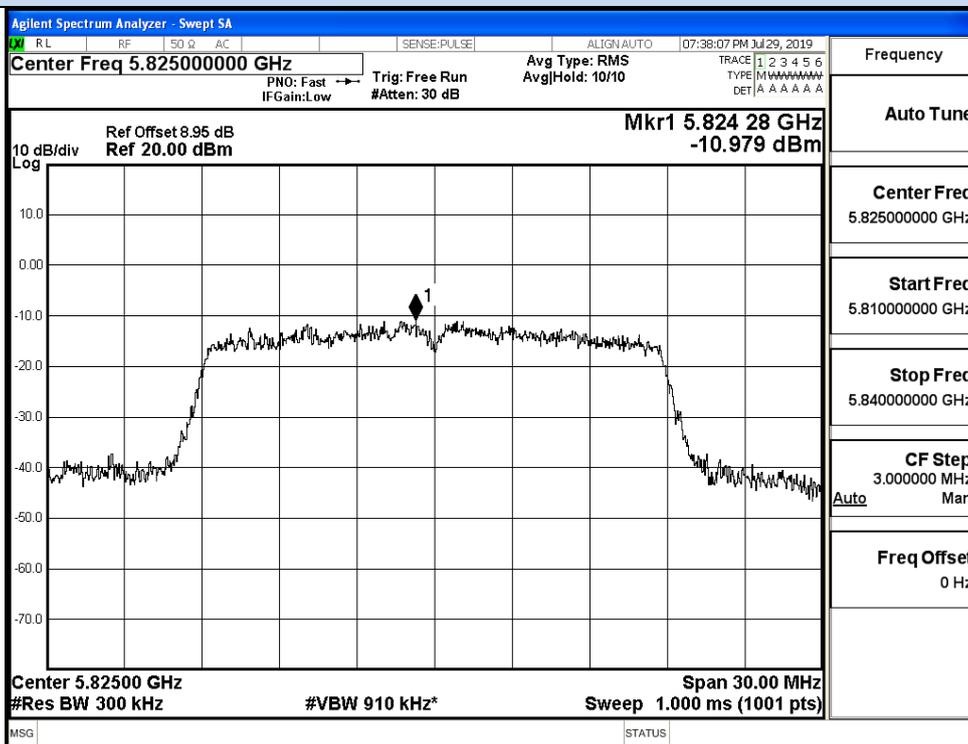
E.3 Power Spectral Density

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/300KHz)	Duty Cycle Factor (dB)	RBW Factor (dB)	Report Power Density (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
11A	149	5745	-8.49	0	2.218	-6.272	30	Pass
	157	5785	-9.28	0	2.218	-7.062		Pass
	165	5825	-10.98	0	2.218	-8.762		Pass
11N20 SISO	149	5745	-2.45	0	2.218	-0.232	30	Pass
	157	5785	-1.98	0	2.218	0.238		Pass
	165	5825	-1.91	0	2.218	0.308		Pass
11N40 SISO	151	5755	-5.34	0	2.218	-3.122	30	Pass
	159	5795	-5.46	0	2.218	-3.242		Pass



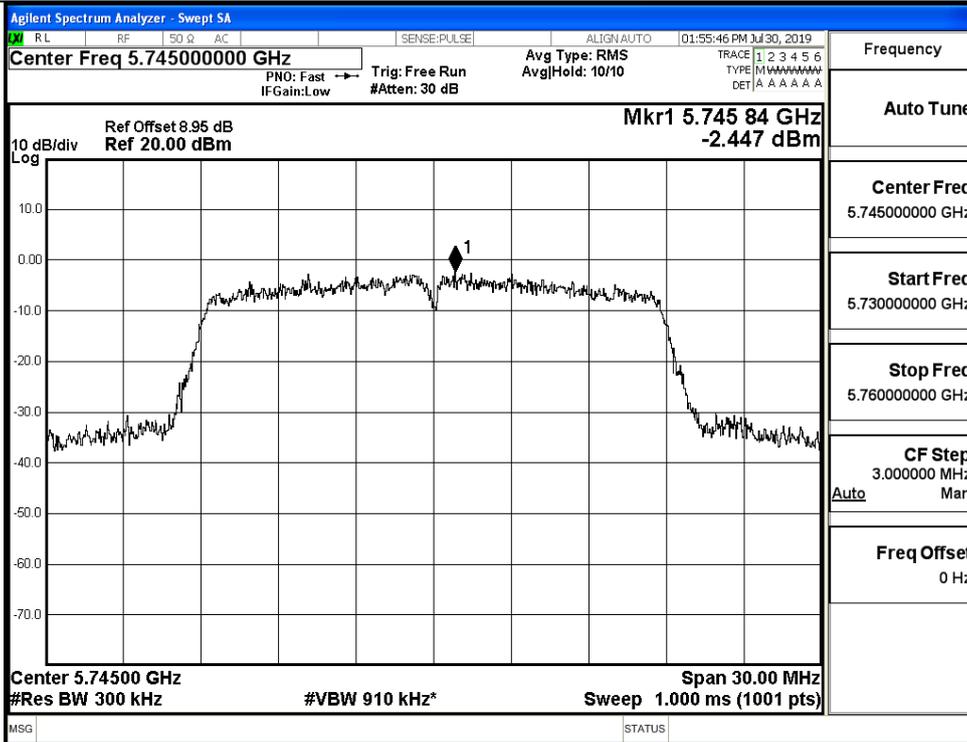


IEEE 802.11a / Channel 157 / 5785MHz

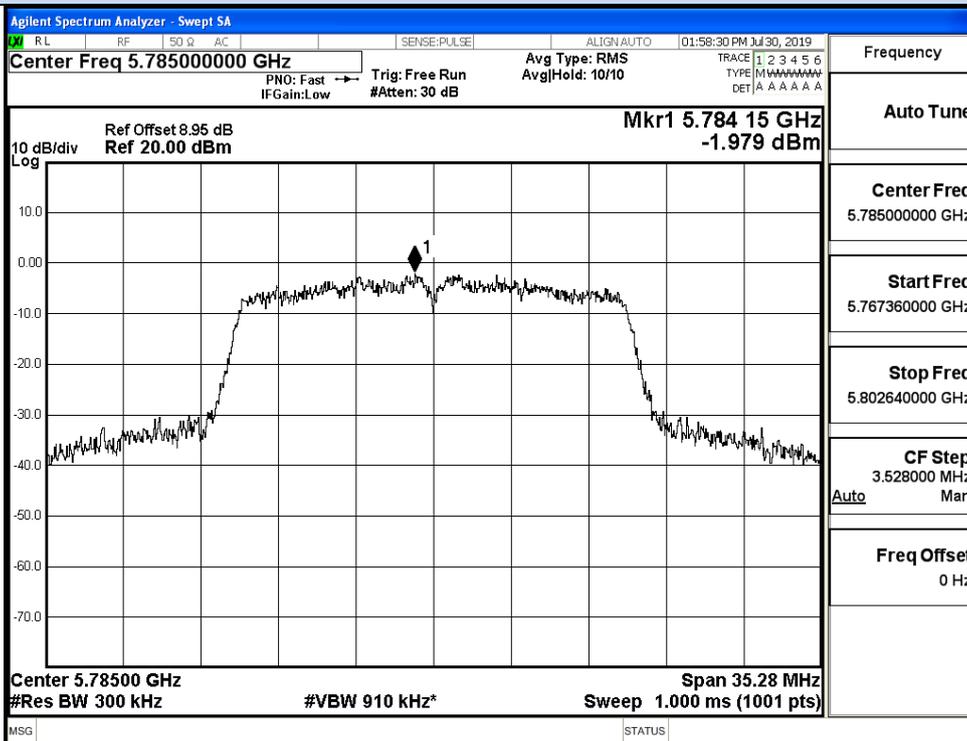


IEEE 802.11a / Channel 165 / 5825MHz

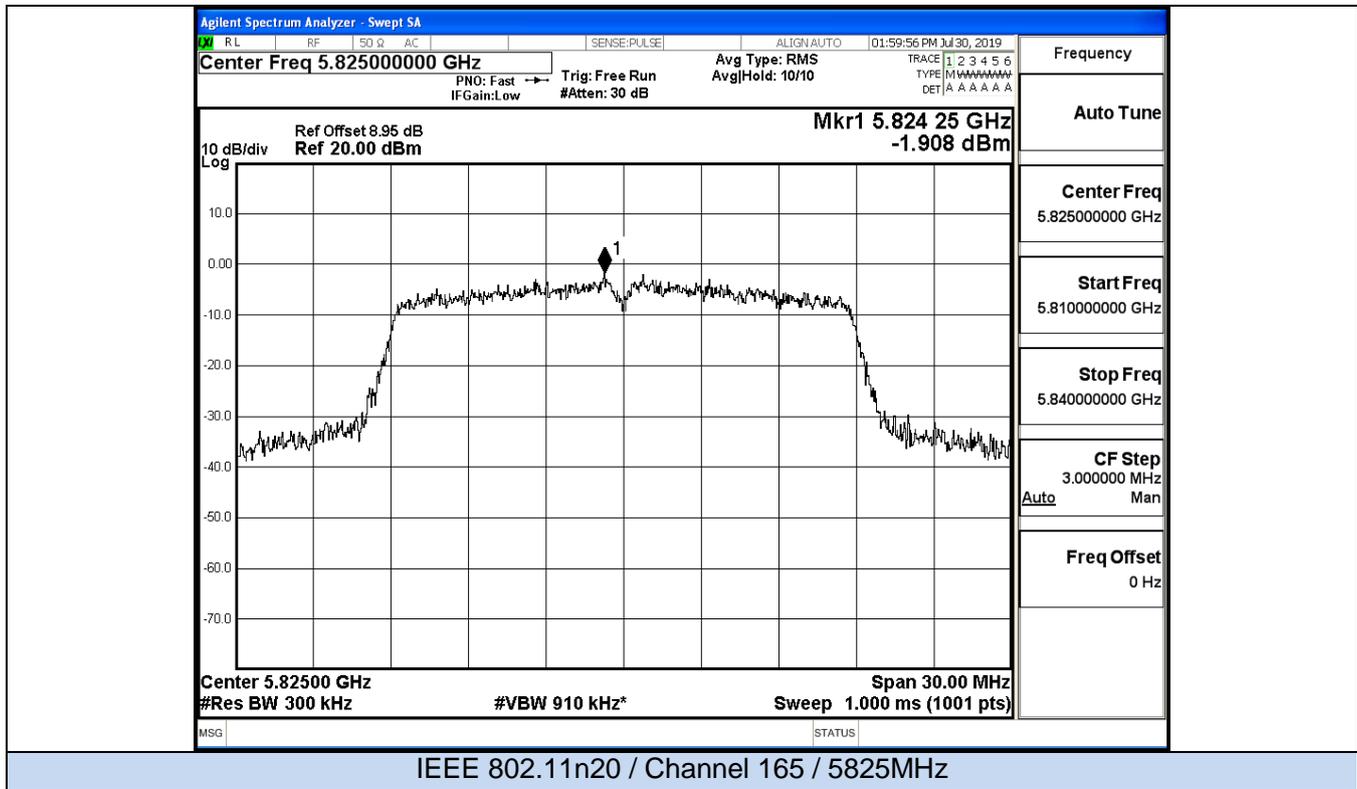
Power Spectral Density



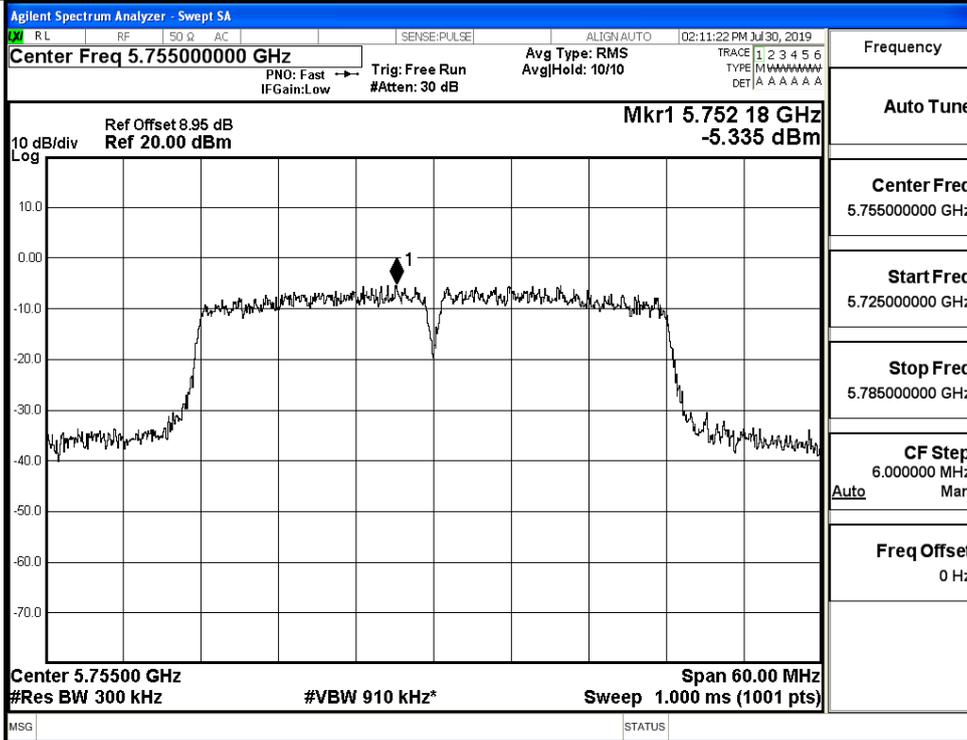
IEEE 802.11n20 / Channel 149 / 5745MHz



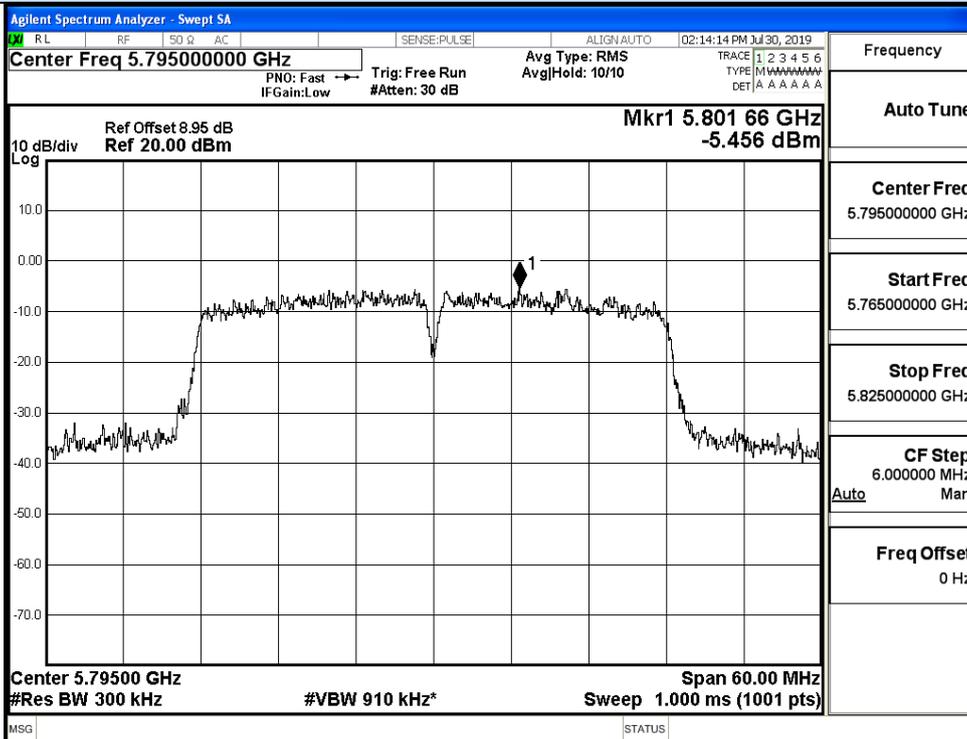
IEEE 802.11n20 / Channel 157 / 5785MHz



Power Spectral Density



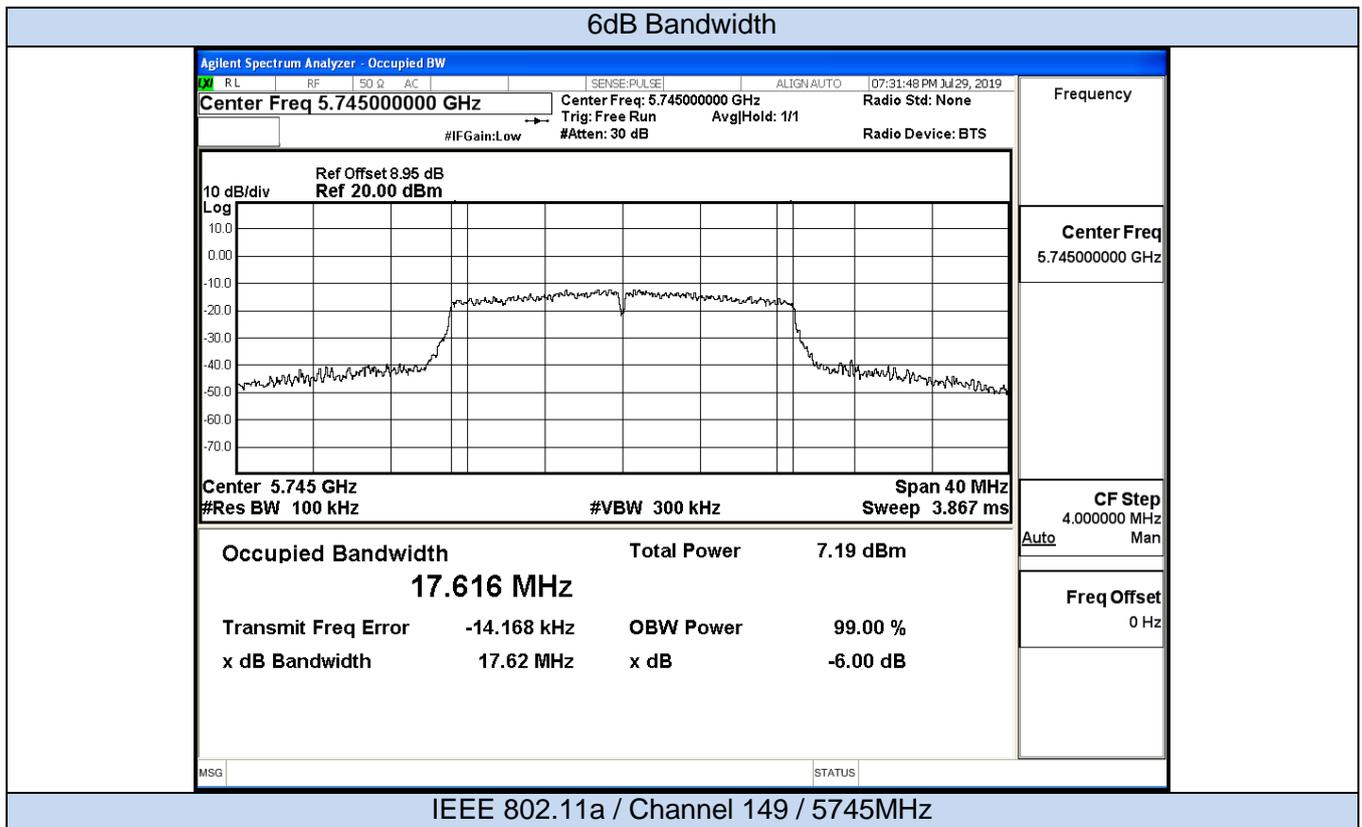
IEEE 802.11n40 / Channel 151 / 5755MHz

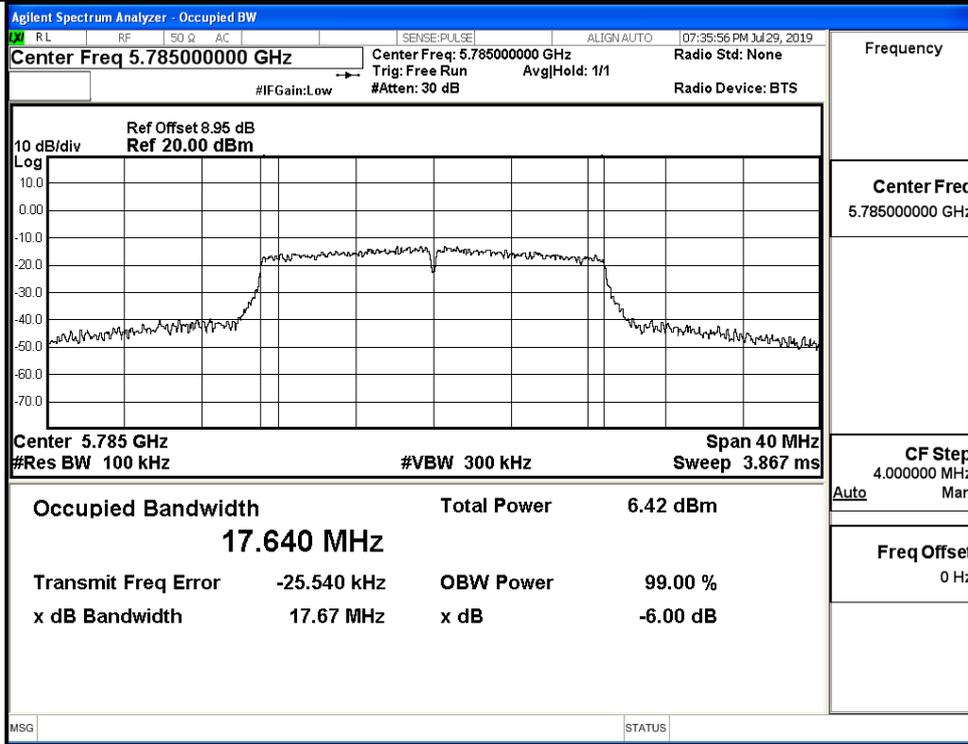


IEEE 802.11n40 / Channel 159 / 5795MHz

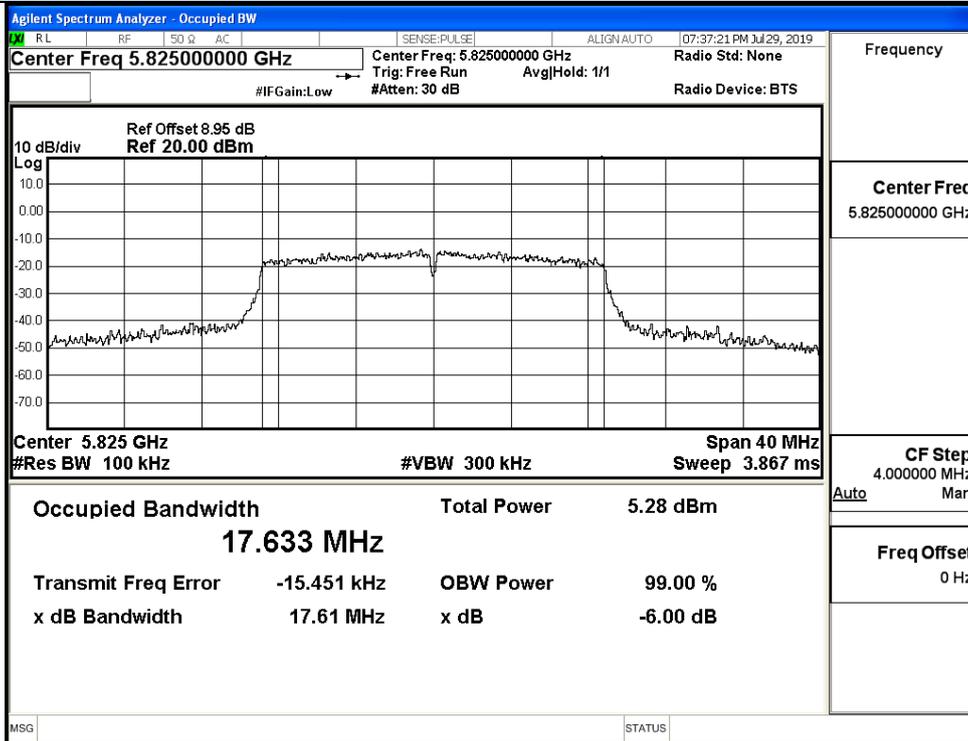
E.4 Emission Bandwidth

Test Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Verdict
11A	149	5745	17.62	>=0.5	Pass
	157	5785	17.67		Pass
	165	5825	17.61		Pass
11N20 SISO	149	5745	17.62	>=0.5	Pass
	157	5785	17.64		Pass
	165	5825	17.63		Pass
11N40 SISO	151	5755	36.38	>=0.5	Pass
	159	5795	36.31		Pass



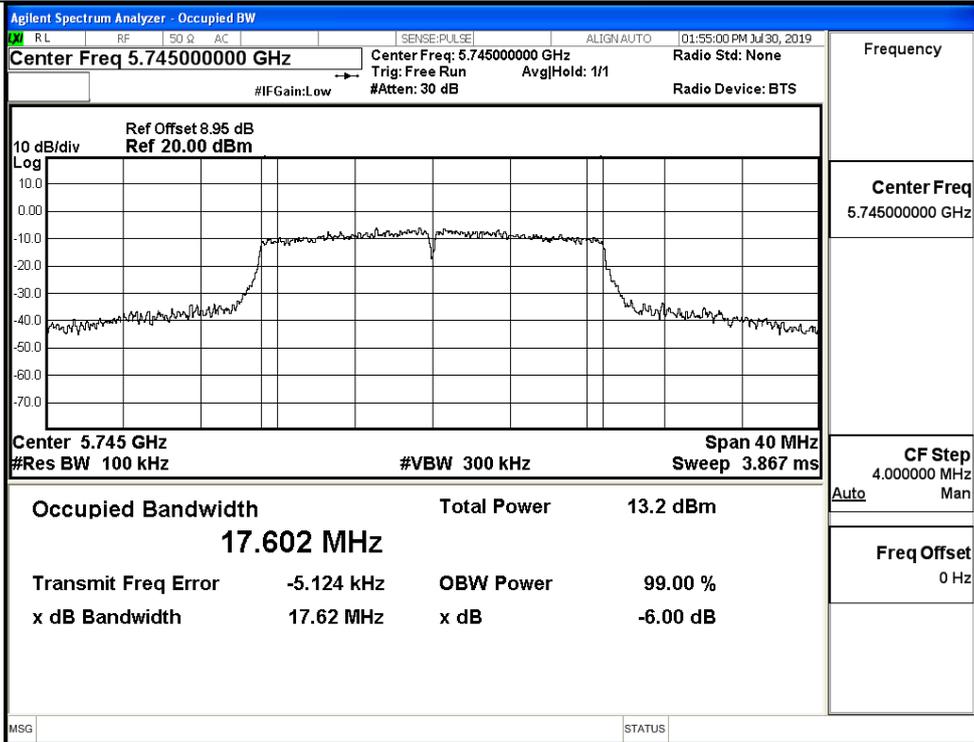


IEEE 802.11a / Channel 157 / 5785MHz

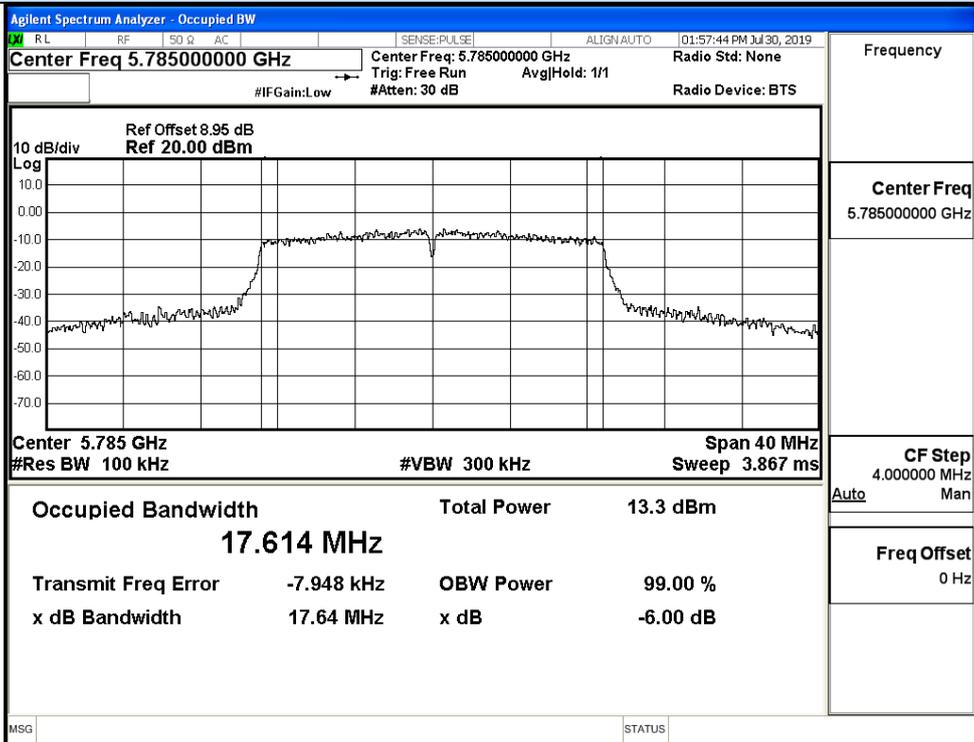


IEEE 802.11a / Channel 165 / 5825MHz

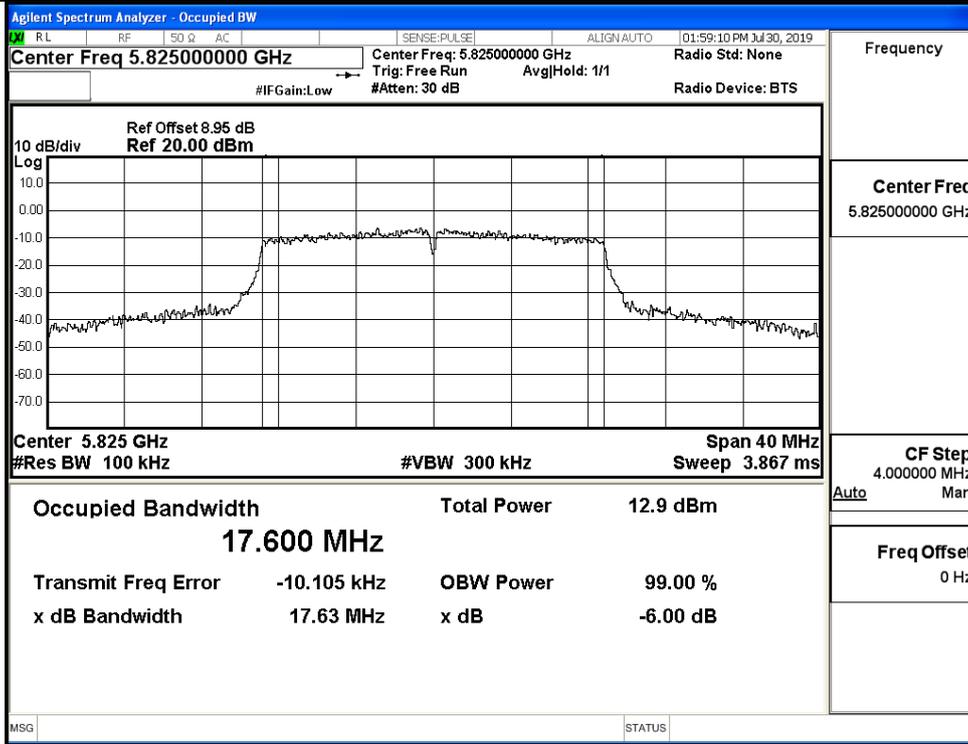
6dB Bandwidth



IEEE 802.11n20 / Channel 149 / 5745MHz



IEEE 802.11n20 / Channel 157 / 5785MHz



IEEE 802.11n20 / Channel 165 / 5825MHz

6dB Bandwidth

Agilent Spectrum Analyzer - Occupied BW

RL	RF	50 Ω	AC	SENSE:PULSE	ALIGN:AUTO	02:10:37 PM 11/30, 2019
Center Freq 5.755000000 GHz				Center Freq: 5.755000000 GHz	Trig: Free Run	Avg/Hold: 1/1
#IFGain:Low				#Atten: 30 dB	Radio Device: BTS	

Ref Offset 8.95 dB
Ref 20.00 dBm

Center 5.755 GHz Span 80 MHz
#Res BW 100 kHz #VBW 300 kHz Sweep 7.667 ms

Occupied Bandwidth	Total Power	13.7 dBm
36.030 MHz		
Transmit Freq Error	670 Hz	OBW Power 99.00 %
x dB Bandwidth	36.38 MHz	x dB -6.00 dB

MSG STATUS

IEEE 802.11n40 / Channel 151 / 5755MHz

Agilent Spectrum Analyzer - Occupied BW

RL	RF	50 Ω	AC	SENSE:PULSE	ALIGN:AUTO	02:13:29 PM 11/30, 2019
Center Freq 5.795000000 GHz				Center Freq: 5.795000000 GHz	Trig: Free Run	Avg/Hold: 1/1
#IFGain:Low				#Atten: 30 dB	Radio Device: BTS	

Ref Offset 8.95 dB
Ref 20.00 dBm

Center 5.795 GHz Span 80 MHz
#Res BW 100 kHz #VBW 300 kHz Sweep 7.667 ms

Occupied Bandwidth	Total Power	13.4 dBm
35.990 MHz		
Transmit Freq Error	-12.567 kHz	OBW Power 99.00 %
x dB Bandwidth	36.31 MHz	x dB -6.00 dB

MSG STATUS

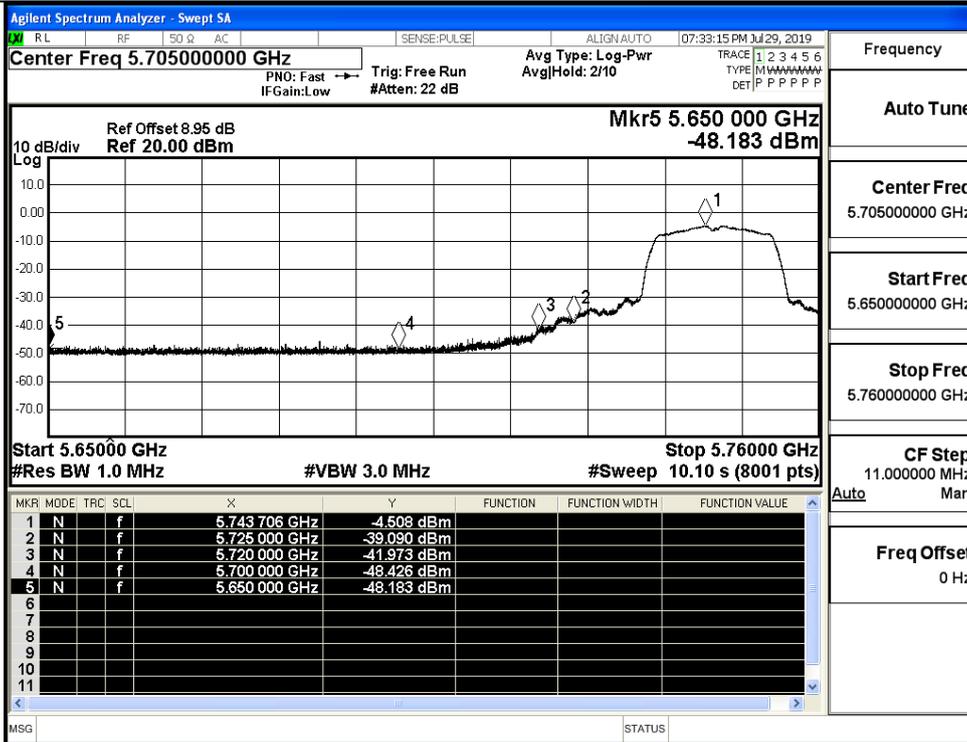
IEEE 802.11n40 / Channel 159 / 5795MHz

E.5 Undesirable Emissions Measurement

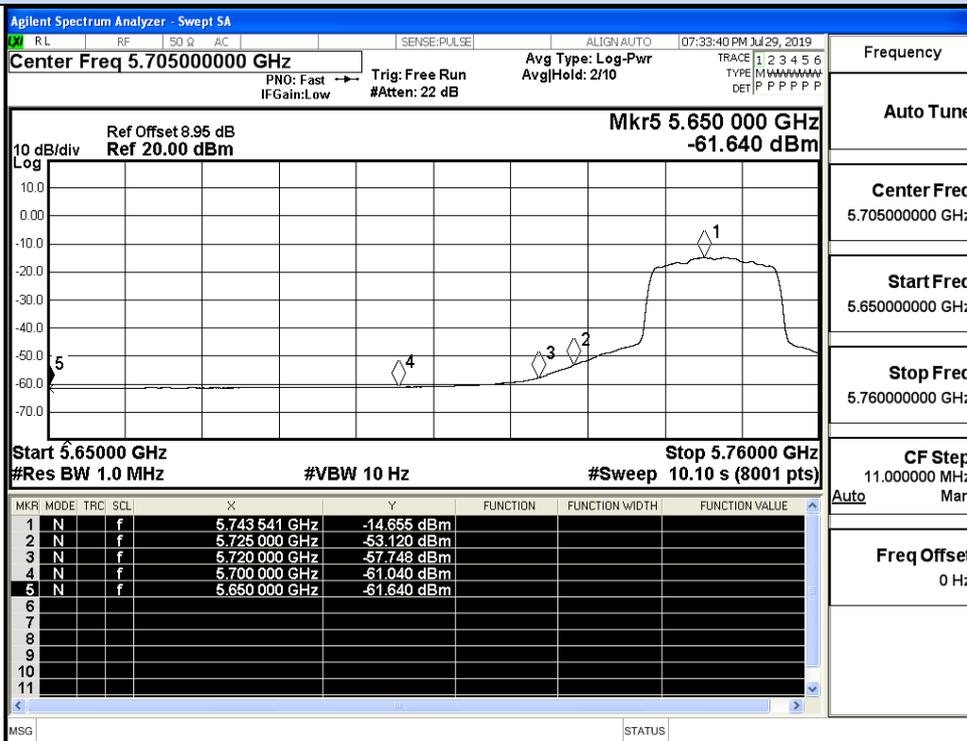
Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11A	149	5650.0	-48.18	2.00	-46.18	Peak	-27.0	Pass
		5650.0	-61.64	2.00	-59.64	Average	-27.0	Pass
		5700.0	-48.43	2.00	-46.43	Peak	10	Pass
		5700.0	-61.04	2.00	-59.04	Average	10	Pass
		5720.0	-41.97	2.00	-39.97	Peak	15.6	Pass
		5720.0	-57.75	2.00	-55.75	Average	15.6	Pass
		5725.0	-39.09	2.00	-37.09	Peak	27.0	Pass
	5725.0	-53.12	2.00	-51.12	Average	27.0	Pass	
	165	5850.0	-46.64	2.00	-44.64	Peak	27.0	Pass
		5850.0	-59.62	2.00	-57.62	Average	27.0	Pass
		5855.0	-48.17	2.00	-46.17	Peak	15.6	Pass
		5855.0	-60.56	2.00	-58.56	Average	15.6	Pass
		5875.0	-49.90	2.00	-47.90	Peak	10	Pass
		5875.0	-61.18	2.00	-59.18	Average	10	Pass
5925.0		-49.96	2.00	-47.96	Peak	-27.0	Pass	
5925.0	-61.49	2.00	-59.49	Average	-27.0	Pass		
11N20 SISO	149	5650.0	-50.983	2.00	-48.98	Peak	-27.0	Pass
		5650.0	-62.253	2.00	-60.25	Average	-27.0	Pass
		5700.0	-50.706	2.00	-48.71	Peak	10	Pass
		5700.0	-61.797	2.00	-59.80	Average	10	Pass
		5720.0	-50.823	2.00	-48.82	Peak	15.6	Pass
		5720.0	-61.566	2.00	-59.57	Average	15.6	Pass
		5725.0	-49.509	2.00	-47.51	Peak	27.0	Pass
	5725.0	-61.148	2.00	-59.15	Average	27.0	Pass	
	165	5850.0	-36.05	2.00	-34.05	Peak	27.0	Pass
		5850.0	-52.15	2.00	-50.15	Average	27.0	Pass
		5855.0	-40.04	2.00	-38.04	Peak	15.6	Pass
		5855.0	-55.01	2.00	-53.01	Average	15.6	Pass
		5875.0	-46.25	2.00	-44.25	Peak	10	Pass
		5875.0	-58.14	2.00	-56.14	Average	10	Pass
5925.0		-49.17	2.00	-47.17	Peak	-27.0	Pass	
5925.0	-60.52	2.00	-58.52	Average	-27.0	Pass		

Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11N40 SISO	151	5650.0	-50.195	2.00	-48.20	Peak	-27.0	Pass
		5650.0	-62.301	2.00	-60.30	Average	-27.0	Pass
		5700.0	-50.191	2.00	-48.19	Peak	10	Pass
		5700.0	-61.878	2.00	-59.88	Average	10	Pass
		5720.0	-49.228	2.00	-47.23	Peak	15.6	Pass
		5720.0	-61.528	2.00	-59.53	Average	15.6	Pass
		5725.0	-49.638	2.00	-47.64	Peak	27.0	Pass
	5725.0	-61.335	2.00	-59.34	Average	27.0	Pass	
	159	5850.0	-37.95	2.00	-35.95	Peak	27.0	Pass
		5850.0	-53.55	2.00	-51.55	Average	27.0	Pass
		5855.0	-41.30	2.00	-39.30	Peak	15.6	Pass
		5855.0	-54.70	2.00	-52.70	Average	15.6	Pass
		5875.0	-44.88	2.00	-42.88	Peak	10	Pass
		5875.0	-57.63	2.00	-55.63	Average	10	Pass
5925.0		-49.56	2.00	-47.56	Peak	-27.0	Pass	
5925.0	-60.61	2.00	-58.61	Average	-27.0	Pass		

Undesirable Emissions Measurement

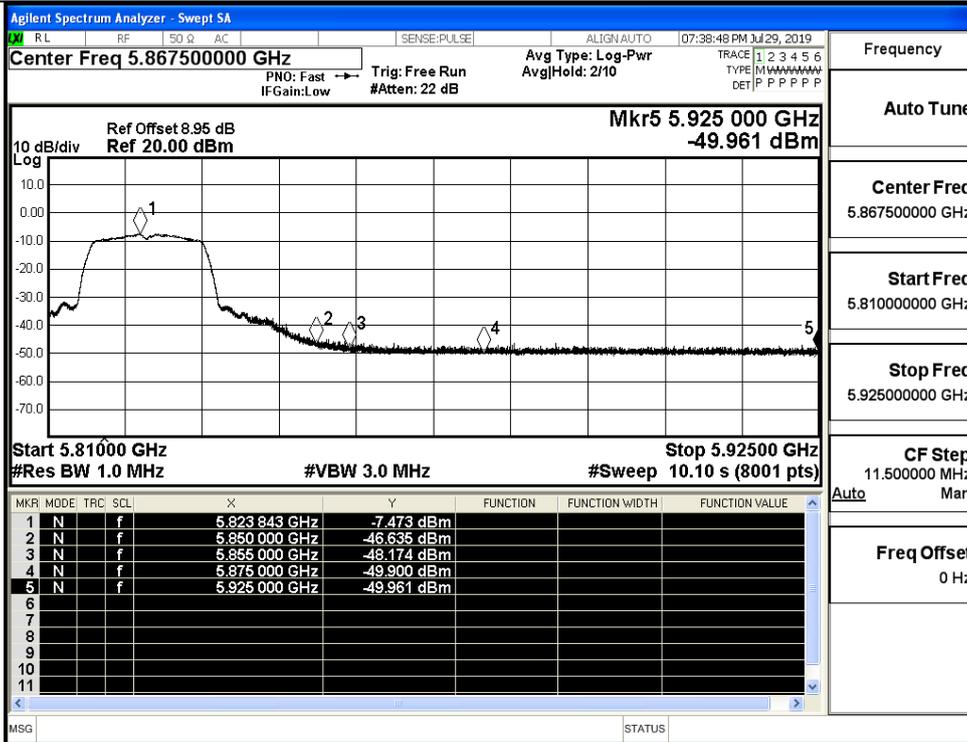


IEEE 802.11a / Channel 149 / 5745MHz / Peak

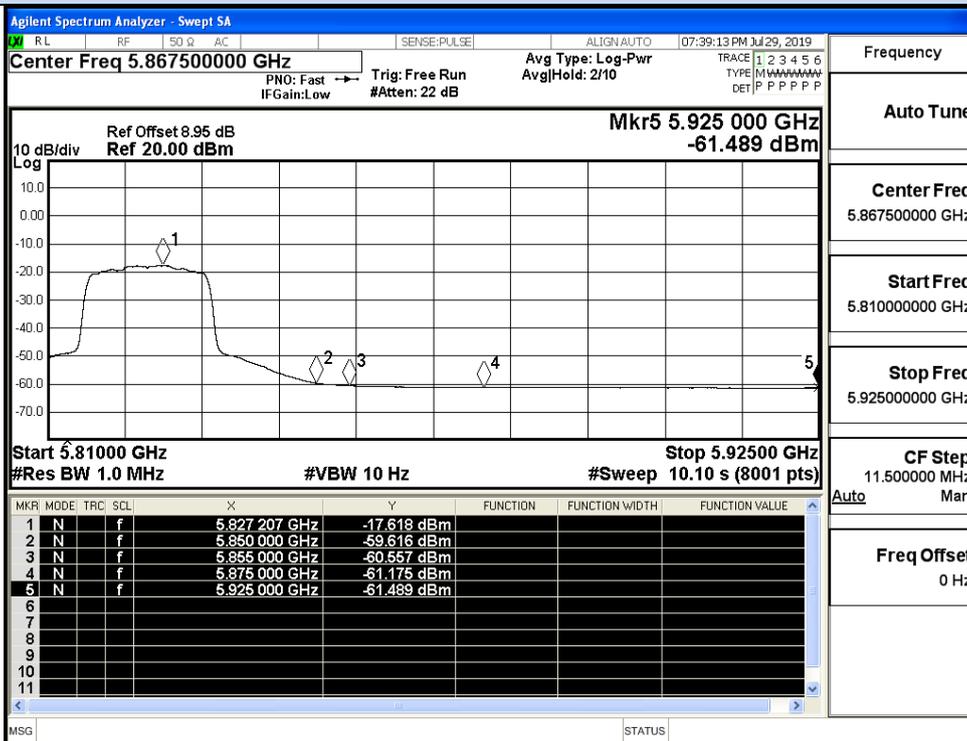


IEEE 802.11a / Channel 148 / 5745MHz / Average

Undesirable Emissions Measurement

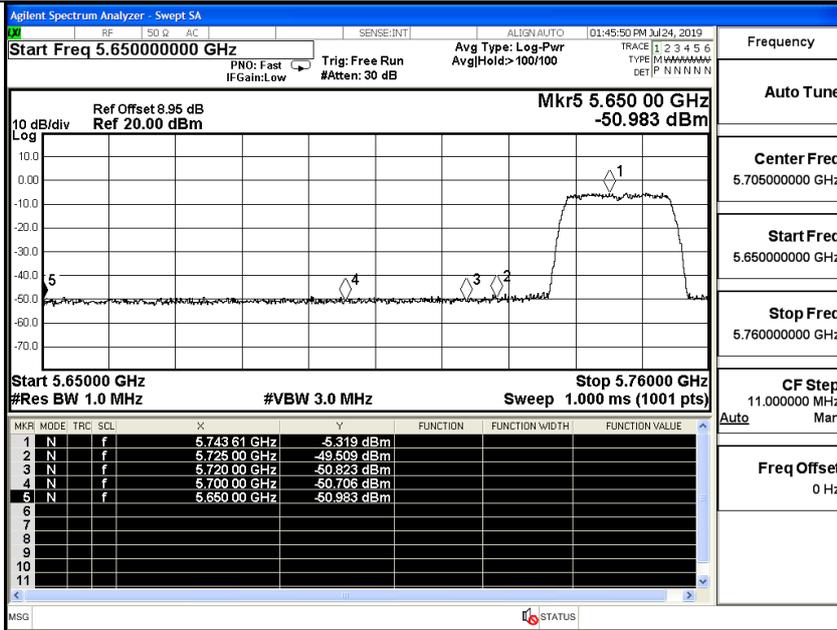


IEEE 802.11a / Channel 165 / 5825MHz / Peak

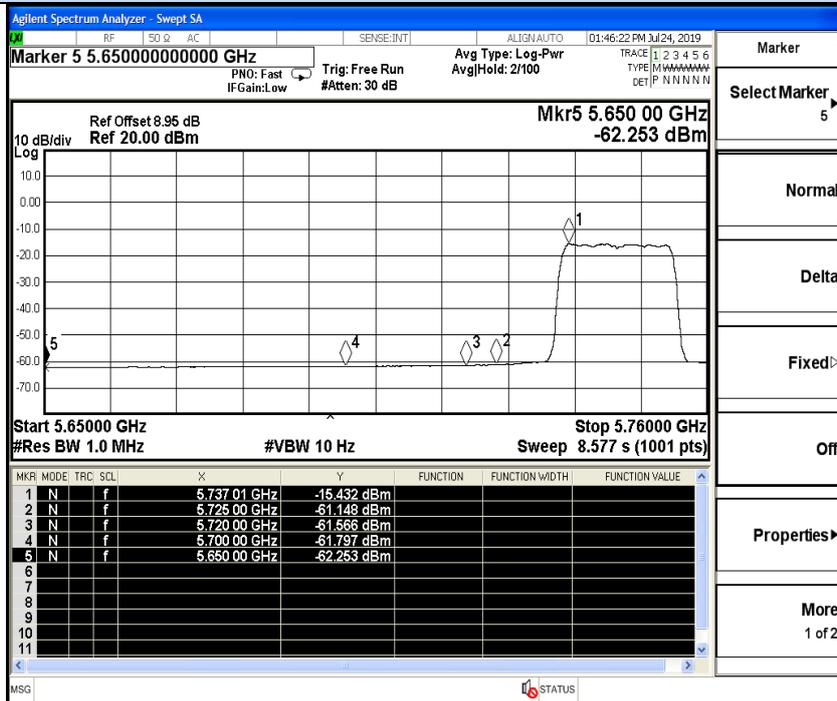


IEEE 802.11a / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

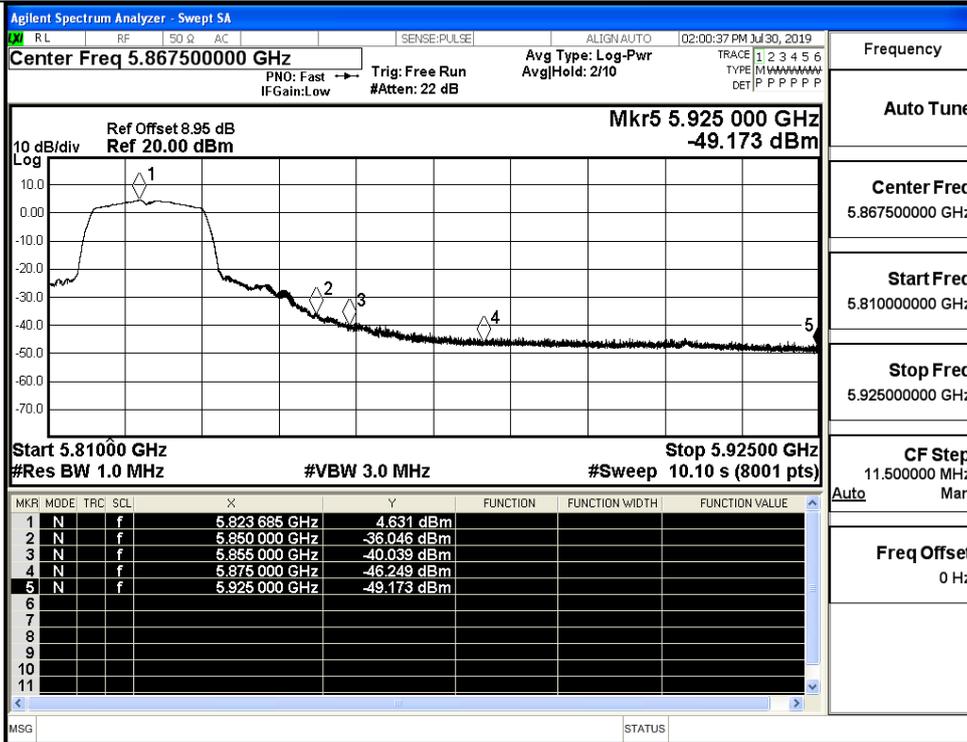


IEEE 802.11n20 / Channel 149 / 5745MHz / Peak

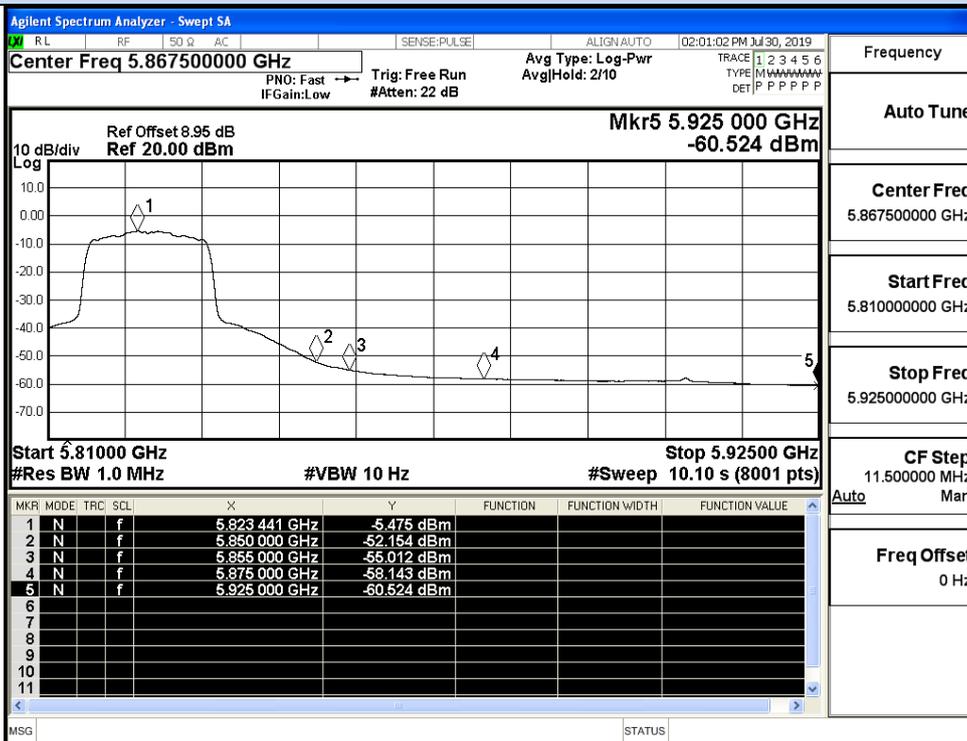


IEEE 802.11n20 / Channel 149 / 5745MHz / Average

Undesirable Emissions Measurement

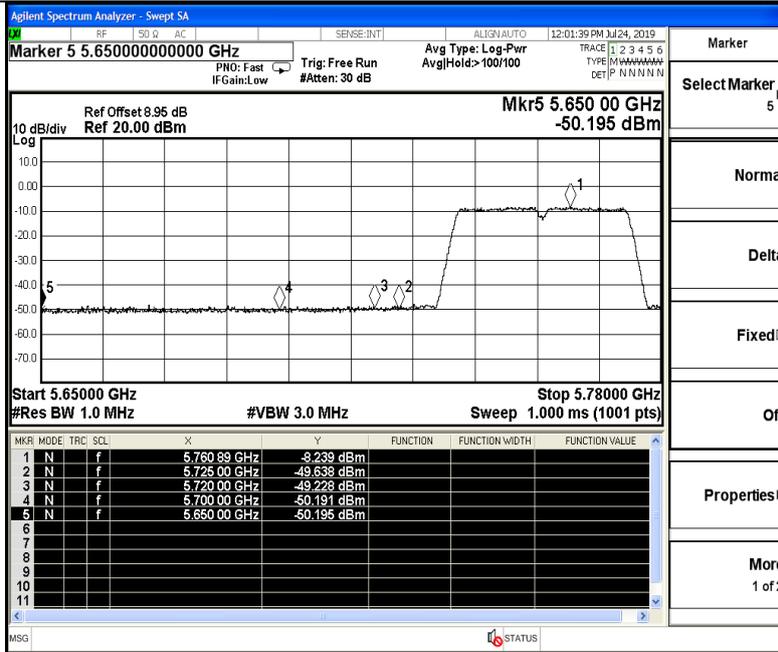


IEEE 802.11n20 / Channel 165 / 5825MHz / Peak

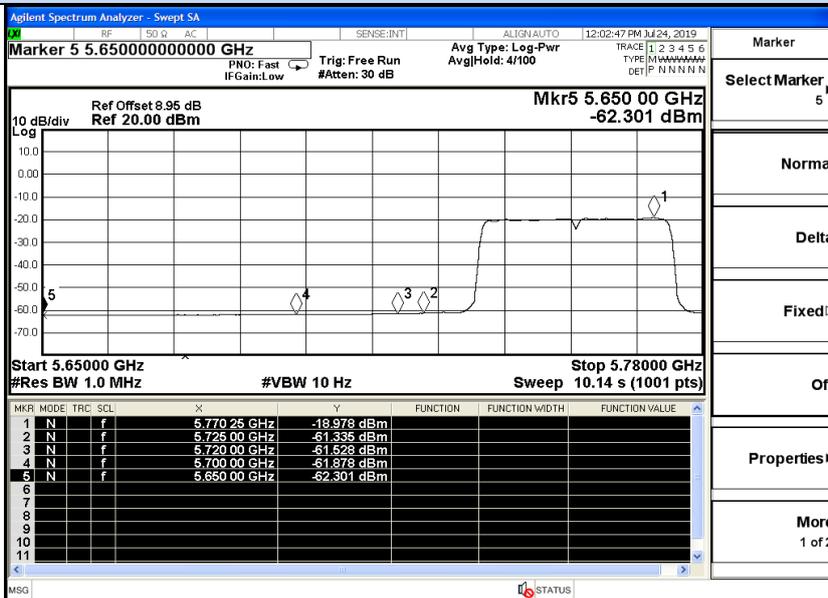


IEEE 802.11n20 / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

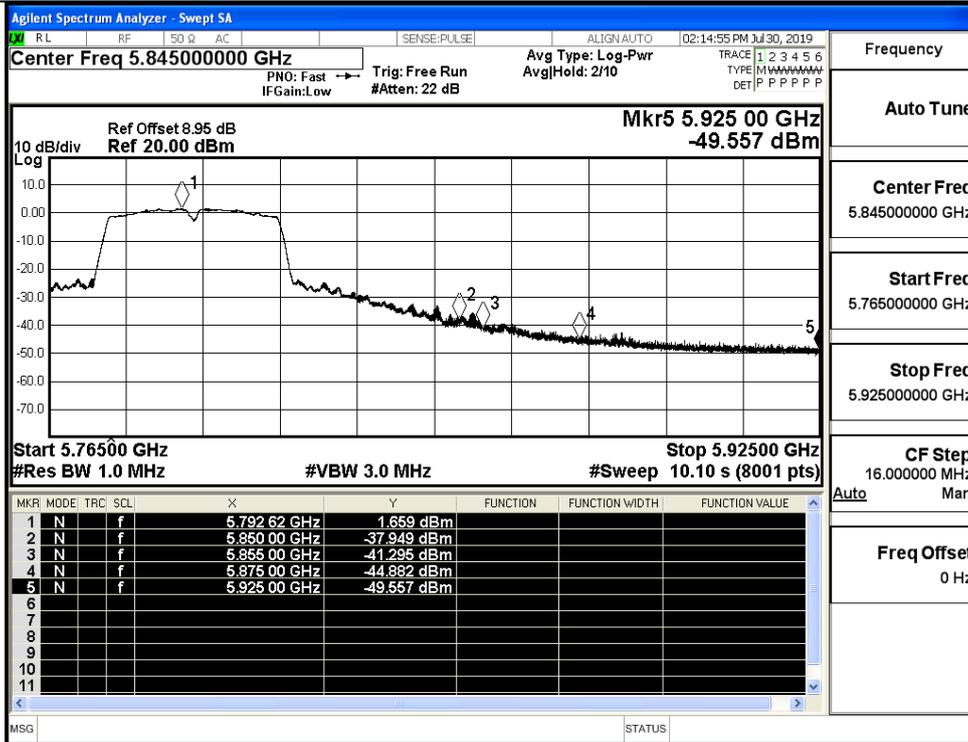


IEEE 802.11n40 / Channel 151 / 5755MHz / Peak



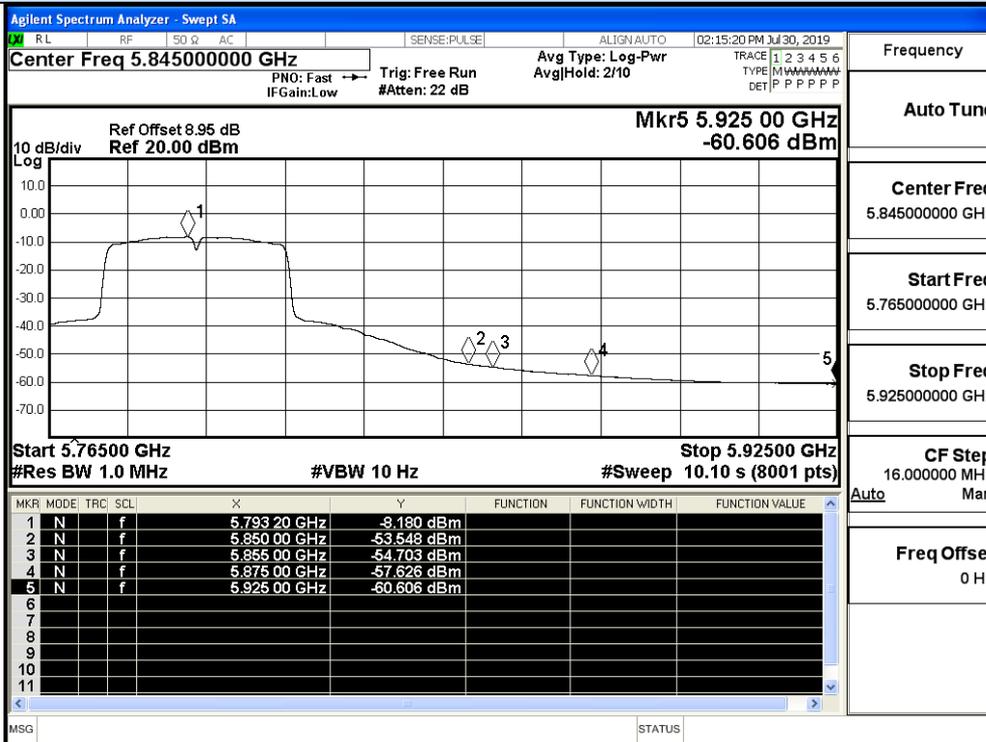
IEEE 802.11n40 / Channel 151 / 5755MHz / Average

Undesirable Emissions Measurement



Frequency	5.845000000 GHz
Auto Tune	
Center Freq	5.845000000 GHz
Start Freq	5.765000000 GHz
Stop Freq	5.925000000 GHz
CF Step	16.000000 MHz
Auto	Man
Freq Offset	0 Hz

IEEE 802.11n40 / Channel 159 / 5795MHz / Peak



Frequency	5.845000000 GHz
Auto Tune	
Center Freq	5.845000000 GHz
Start Freq	5.765000000 GHz
Stop Freq	5.925000000 GHz
CF Step	16.000000 MHz
Auto	Man
Freq Offset	0 Hz

IEEE 802.11n40 / Channel 159 / 5795MHz / Average