InnoComm Mobile Technology Corp.

TEST REPORT

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191000218TWN-001

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DOCUMENT CONTROL NUMBER

Radio Spectrum
TEST REPORT

Applicant:	**InnoComm Mobile Technology Corp.** **3F, No.6, Hsin Ann Rd., Hsinchu Science Park, Hsinchu 30078, Taiwan**
Product:	**SOM module**
Model No.:	**SB30**
Brand Name:	**InnoComm**
FCC ID:	**YAISB30**
Test Method/ Standard:	**47 CFR FCC Part 15.407** **KDB 789033 D02 v02r01** **ANSI C63.10 2013** **KDB 662911 D01 v02r01**
Test By:	**Intertek Testing Services Taiwan Ltd.,** **Hsinchu Laboratory** **No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,** **Shiang-Shan District, Hsinchu City, Taiwan**

Testing Laboratory
0597

Prepared and Checked by:

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Engineer

Revision History

Report No.	Issue Date	Revision Summary
191000218TWN-001	Dec. 11, 2019	Original report

Table of Contents

Summary of Test Data

Test Requirement	Applicable Rule (Section 15.407)	Result
Maximum Conducted Output Power	15.407 (a)(1)/(2)/(3) KDB 789033 D02 v02r01	Pass
Power Spectrum Density	15.407 (a)(1)/(2)/(3) KDB 789033 D02 v02r01	Pass
Minimum Emission Bandwidth	15.407(a)(5), 15.407(e) KDB 789033 D02 v02r01	Pass
Emissions In Restricted Frequency Bands (Radiated emission measurements)	15.407(b), 15.209	Pass
Emission on The Band Edge	15.407(b), 15.209	Pass
Dynamic Frequency Selection (DFS)	15.407(h)(2)	Pass
AC Line Conducted Emission	15.407(b)(6) 15.207	Pass
Antenna requirement	15.203	Pass

Note: Please note that the test results with statement of conformity, the decision rules which are based on: Safety Testing: the specification, standard or IEC Guide 115.
Other Testing: the specification, standard and not taking into account the measurement uncertainty.

1. General Information

1.1 Identification of the EUT

Product:	SOM module			
Model No.:	SB30			
Operating Frequency Range & Number of Channels:	**Band**	**Mode**	**Frequency Range (MHz)**	**Number of Channels**
	UNII-I	IEEE 802.11a	5180 - 5240	4 Channels
		IEEE 802.11ac (VHT20) mode	5180 - 5240	4 Channels
		IEEE 802.11ac (VHT40) mode	5190 – 5230	2 Channels
		IEEE 802.11ac (VHT80) mode	5210	1 Channels
	UNII-2A	IEEE 802.11a	5260 - 5320	4 Channels
		IEEE 802.11ac (VHT20) mode	5260 - 5320	4 Channels
		IEEE 802.11ac (VHT40) mode	5270 - 5310	2 Channels
		IEEE 802.11ac (VHT80) mode	5290	1 Channels
	UNI-2C	IEEE 802.11a	5500 - 5700	11 Channels
		IEEE 802.11ac (VHT20) mode	5500 - 5700	11 Channels
		IEEE 802.11ac (VHT40) mode	5510 - 5670	5 Channels
		IEEE 802.11ac (VHT80) mode	5530 - 5610	2 Channels
	UNII Band IV	IEEE 802.11a	5745 - 5825	5 Channels
		IEEE 802.11ac (VHT20) mode	5745 - 5825	5 Channels
		IEEE 802.11ac (VHT40) mode	5755 - 5795	2 Channels
		IEEE 802.11ac (VHT80) mode	5775	1 Channels
Access scheme:	OFDM			
Rated Power:	DC 2.7V ~ 5.5V			
Power Cord:	N/A			
Sample receiving	Oct. 16, 2019			
Sample condition:	Workable			
Test Date(s):	Oct. 25, 2019 ~ Nov. 12, 2019			

1.2 Antenna description

Antenna 1

Antenna Gain : 5 dBi / 2dBi
Antenna Type : Dipole antenna
Connector Type : I-Pex

Antenna 2

Antenna Gain : 5 dBi / 2dBi
Antenna Type : Dipole antenna
Connector Type : I-Pex

1.3 Peripherals equipment

No.	Model no.	Specification
Adapter	EA10681G-120	I/P: 100-240V~, 2.0A, 50-60Hz O/P: 12V, 4.16A

Peripherals	Brand	Model No.	Serial No.	Data cable
Notebook PC	HP	HSTNN-Q96C	5CD8021S9H	Micro USB Cable 0.8 meter × 1
Carrier Board	InnoComm	SB30 carrier Board	N/A	N/A

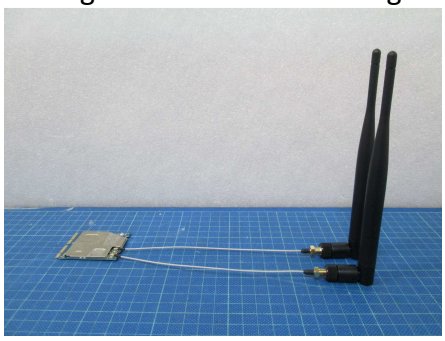
1.4 Operation mode

The EUT was supplied with DC 5 V from Carrier Board (Test voltage: 120Vac, 60Hz).

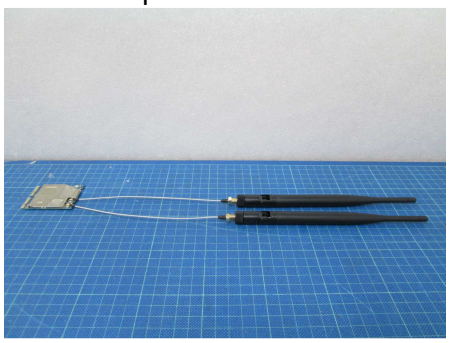
Connected to Notebook via USB Cable, executing “CMD” and enter command to select different frequency and modulation.

With individual verifying, the maximum output power were found out 6 Mbps data rate for 802.11a mode, 6.5 Mbps data rate for 802.11ac(VHT20) mode, 13.5 Mbps data rate for 802.11ac(VHT40) mode , 29.3 Mbps data rate for 802.11ac(VHT80) mode, the final tests were executed under these conditions recorded in this report individually.

The signal is maximized through rotation and placement in the two orthogonal axes.



X axis



Y axis

After verifying three axes, we found the maximum electromagnetic field was occurred at X axis. The final test data was executed under this configuration.

Modulation mode	Transmit path	
	Chain 0	Chain 1
802.11 a	V	V
802.11 ac (VHT20)	V	V
802.11 ac (VHT40)	V	V
802.11 ac (VHT80)	V	V

2. Maximum Conducted Output Power

2.1 Operating environment

Temperature:	21	℃
Relative Humidity:	61	%

2.2 Limit for maximum output power

Operating Frequency (MHz)	Conducted output power limit
5150~5725	< 0.25 W (24 dBm)
5725~5850	< 1 W (30 dBm)

Operating Frequency (MHz)	Maximum E.I.R.P. limit
5150~5725	< 1 W (30 dBm)
5725~5850	< 4 W (36 dBm)

2.3 Measuring instrument setting

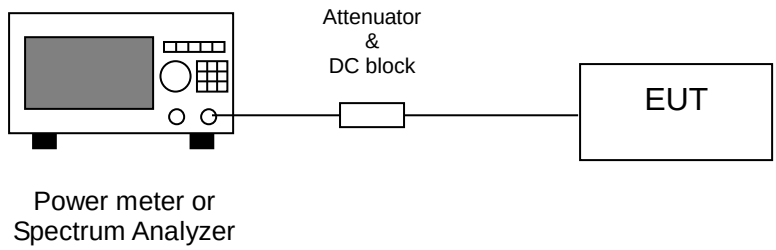
Power meter for Nominal Bandwidth less than 65MHz	
Power meter	**Setting**
Bandwidth	65MHz bandwidth is greater than the EUT emission bandwidth
Detector	Average

2.4 Test procedure

Test procedures refer to clause E) 3) b) measurement using a gated RF average power meter of KDB 789033 D02 v02r01

Test procedures refer to clause E) 2) b) Method SA-1 of KDB 789033 D02 v02r01

2.5 Test diagram



2.6 Test results

Mode	Ch	Fre. (MHz)	Output Power (AV)		Total Power (AV)		Ant0 Gain (dBi)	Ant1 Gain (dBi)	E.I.R.P. (dBm)	Limit of Conducted Power (dBm)	Margin (dB)	Limit of E.I.R.P. (dBm)	Margin (dB)
			Chain 0	Chain 1									
			dBm	dBm	mW	dBm							
802.11a	36	5180	12.23	10.47	27.85	14.45	5	5	19.45	24.00	-9.55	30.00	-10.55
	44	5220	12.45	10.48	28.75	14.59	5	5	19.59	24.00	-9.41	30.00	-10.41
	48	5240	13.14	11.22	33.85	15.30	5	5	20.30	24.00	-8.70	30.00	-9.70
	52	5260	12.57	10.84	30.21	14.80	5	5	19.80	24.00	-9.20	30.00	-10.20
	60	5300	12.79	10.81	31.06	14.92	5	5	19.92	24.00	-9.08	30.00	-10.08
	64	5320	13.52	11.58	36.88	15.67	5	5	20.67	24.00	-8.33	30.00	-9.33
	100	5500	16.29	14.61	71.47	18.54	5	5	23.54	24.00	-5.46	30.00	-6.46
	120	5600	15.14	14.32	59.70	17.76	5	5	22.76	24.00	-6.24	30.00	-7.24
	140	5700	14.18	13.88	50.62	17.04	5	5	22.04	24.00	-6.96	30.00	-7.96
	149	5745	15.45	14.91	66.05	18.20	5	5	23.20	30.00	-11.80	36.00	-12.80
	157	5785	15.63	14.93	67.68	18.30	5	5	23.30	30.00	-11.70	36.00	-12.70
	165	5825	16.62	15.43	80.83	19.08	5	5	24.08	30.00	-10.92	36.00	-11.92
802.11ac (VHT20)	36	5180	12.63	11.15	31.35	14.96	5	5	19.96	24.00	-9.04	30.00	-10.04
	44	5220	12.42	10.76	29.37	14.68	5	5	19.68	24.00	-9.32	30.00	-10.32
	48	5240	13.38	11.68	36.50	15.62	5	5	20.62	24.00	-8.38	30.00	-9.38
	52	5260	13.29	11.72	36.19	15.59	5	5	20.59	24.00	-8.41	30.00	-9.41
	60	5300	14.35	13.15	47.88	16.80	5	5	21.80	24.00	-7.20	30.00	-8.20
	64	5320	14.31	13.06	47.21	16.74	5	5	21.74	24.00	-7.26	30.00	-8.26
	100	5500	17.23	15.57	88.90	19.49	5	5	24.49	24.00	-4.51	30.00	-5.51
	120	5600	16.12	15.37	75.36	18.77	5	5	23.77	24.00	-5.23	30.00	-6.23
	140	5700	15.10	14.96	63.69	18.04	5	5	23.04	24.00	-5.96	30.00	-6.96
	149	5745	15.71	15.46	72.40	18.60	5	5	23.60	30.00	-11.40	36.00	-12.40
	157	5785	16.11	15.45	75.91	18.80	5	5	23.80	30.00	-11.20	36.00	-12.20
	165	5825	17.27	16.01	93.24	19.70	5	5	24.70	30.00	-10.30	36.00	-11.30

Mode	Ch	Fre. (MHz)	Output Power (AV)		Total Power (AV)		Ant0 Gain (dBi)	Ant1 Gain (dBi)	E.I.R.P. (dBm)	Limit of Conducted Power (dBm)	Margin (dB)	Limit of E.I.R.P. (dBm)	Margin (dB)
			Chain 0	Chain 1									
			dBm	dBm	mW	dBm							
802.11ac (VHT40)	38	5190	10.25	9.39	19.28	12.85	5	5	17.85	24.00	-11.15	30.00	-12.15
	46	5230	12.45	11.64	32.17	15.07	5	5	20.07	24.00	-8.93	30.00	-9.93
	54	5270	13.29	13.10	41.75	16.21	5	5	21.21	24.00	-7.79	30.00	-8.79
	62	5310	13.73	13.35	45.23	16.55	5	5	21.55	24.00	-7.45	30.00	-8.45
	102	5510	15.54	14.52	64.12	18.07	5	5	23.07	24.00	-5.93	30.00	-6.93
	118	5590	14.81	14.32	57.31	17.58	5	5	22.58	24.00	-6.42	30.00	-7.42
	134	5670	13.92	14.53	53.04	17.25	5	5	22.25	24.00	-6.75	30.00	-7.75
	151	5755	13.75	14.33	50.82	17.06	5	5	22.06	30.00	-12.94	36.00	-13.94
	159	5795	14.56	14.64	57.68	17.61	5	5	22.61	30.00	-12.39	36.00	-13.39
802.11ac (VHT80)	42	5210	7.41	5.91	9.41	9.73	5	5	14.73	24.00	-14.27	30.00	-15.27
	58	5290	14.06	13.91	50.07	17.00	5	5	22.00	24.00	-7.00	30.00	-8.00
	106	5530	15.15	13.74	56.39	17.51	5	5	22.51	24.00	-6.49	30.00	-7.49
	122	5610	13.91	13.27	45.84	16.61	5	5	21.61	24.00	-7.39	30.00	-8.39
	155	5775	13.47	13.63	45.30	16.56	5	5	21.56	30.00	-13.44	36.00	-14.44

3. Power Spectrum Density

3.1 Operating environment

Temperature:	20	℃
Relative Humidity:	58	%

3.2 Limit for power spectrum density

Operating Frequency (MHz)	Power density limit
5150~5725	< 11 dBm/1MHz
5725~5850	< 30 dBm/500kHz

3.3 Measuring instrument setting

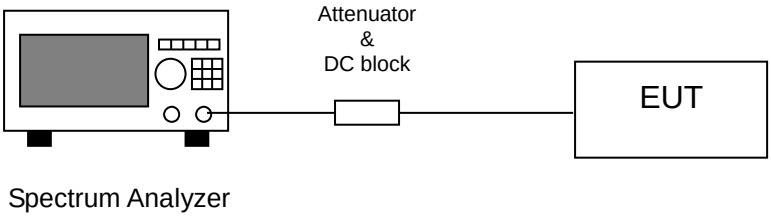
Spectrum analyzer settings (5150~5725MHz)	
Spectrum Analyzer function	**Setting**
Detector	RMS
RBW	=1MHz
VBW	≧3 MHz
Sweep	Auto couple
Trace	Average
Span	Encompass the 26 dB EBW
Attenuation	Auto
Sweep point	≥ 2 Span / RBW

Spectrum analyzer settings (5725~5850MHz)	
Spectrum Analyzer function	**Setting**
Detector	RMS
RBW	=100kHz
VBW	≧300 kHz
Sweep	Auto couple
Trace	Average
Span	Encompass the 6 dB EBW
Attenuation	Auto
Sweep point	≥ 2 Span / RBW

3.4 Test procedure

Set relevant parameter according to clause 4.3.
Trace average at least 100 traces in power averaging mode.
Compute power by integrating the spectrum across the 26 dB or 6dB EBW of the signal using the instrument's band power measurement function with band limits set equal to the EBW band edges.
If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement. The RBW is 100 kHz. So, we will add 6.989 to the results.

3.5 Test diagram



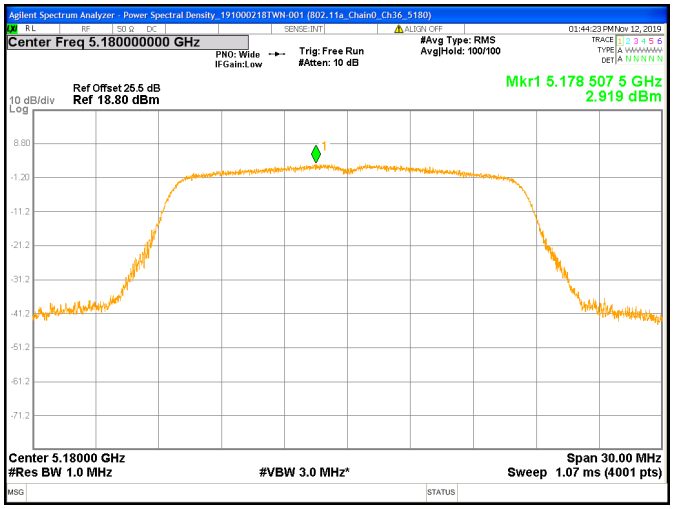
3.6 Test results

Mode	Channel	Frequency (MHz)	PSD (dBm)		Total PSD		Result	Limit (dBm)	Margin (dB)
			chain0	chain1	mW	dBm			
802.11a	36	5180	2.92	1.33	3.32	5.21	5.21	11.00	-5.79
	44	5220	3.06	1.45	3.42	5.34	5.34	11.00	-5.66
	48	5240	3.65	1.76	3.82	5.82	5.82	11.00	-5.18
	52	5260	2.73	1.36	3.24	5.11	5.11	11.00	-5.89
	60	5300	2.99	1.39	3.37	5.27	5.27	11.00	-5.73
	64	5320	3.70	2.37	4.07	6.10	6.10	11.00	-4.90
	100	5500	6.82	5.43	8.30	9.19	9.19	11.00	-1.81
	120	5600	5.26	4.75	6.34	8.02	8.02	11.00	-2.98
	140	5700	5.34	4.87	6.49	8.12	8.12	11.00	-2.88
	149	5745	3.69	3.07	4.37	6.40	13.39	30.00	-16.61
	157	5785	3.49	3.02	4.24	6.27	13.26	30.00	-16.74
	165	5825	4.67	3.82	5.34	7.28	14.27	30.00	-15.73
802.11ac (VHT20)	36	5180	2.99	1.69	3.47	5.40	5.40	11.00	-5.60
	44	5220	2.75	1.09	3.17	5.01	5.01	11.00	-5.99
	48	5240	3.63	2.44	4.06	6.09	6.09	11.00	-4.91
	52	5260	3.29	2.78	4.03	6.05	6.05	11.00	-4.95
	60	5300	4.49	3.64	5.12	7.10	7.10	11.00	-3.90
	64	5320	4.32	3.72	5.06	7.04	7.04	11.00	-3.96
	100	5500	7.50	6.44	10.03	10.01	10.01	11.00	-0.99
	120	5600	6.11	6.20	8.25	9.17	9.17	11.00	-1.83
	140	5700	5.93	5.76	7.68	8.86	8.86	11.00	-2.14
	149	5745	4.40	4.50	5.57	7.46	14.45	30.00	-15.55
	157	5785	3.72	4.28	5.03	7.02	14.01	30.00	-15.99
	165	5825	4.94	4.84	6.17	7.90	14.89	30.00	-15.11
802.11ac (VHT40)	38	5190	-2.37	-3.51	1.03	0.11	0.11	11.00	-10.89
	46	5230	0.57	-1.56	1.84	2.64	2.64	11.00	-8.36
	54	5270	1.02	0.23	2.32	3.65	3.65	11.00	-7.35
	62	5310	1.22	0.42	2.43	3.85	3.85	11.00	-7.15
	102	5510	3.46	1.71	3.70	5.68	5.68	11.00	-5.32
	118	5590	1.88	1.70	3.02	4.80	4.80	11.00	-6.20
	134	5670	1.45	1.12	2.69	4.30	4.30	11.00	-6.70
	151	5755	0.47	0.15	2.15	3.32	10.31	30.00	-19.69
	159	5795	0.18	-0.05	2.03	3.08	10.07	30.00	-19.93

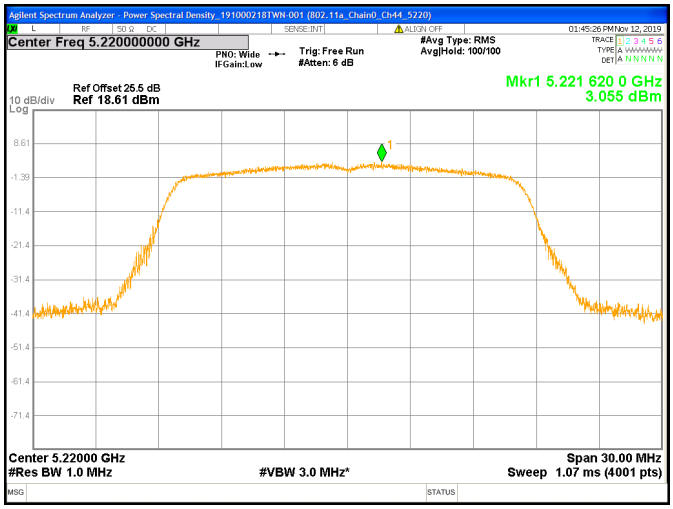
Mode	Channel	Frequency (MHz)	PSD (dBm)		Total PSD		Result	Limit (dBm)	Margin (dB)
			chain0	chain1	mW	dBm			
802.11ac (VHT80)	42	5210	-8.46	-9.41	0.26	-5.90	-5.90	11.00	-16.90
	58	5290	-1.77	-2.31	1.25	0.98	0.98	11.00	-10.02
	106	5530	-0.75	-2.17	1.45	1.61	1.61	11.00	-9.39
	122	5610	-1.68	-2.27	1.27	1.05	1.05	11.00	-9.95
	155	5775	-3.54	-3.56	0.88	-0.54	6.45	30.00	-23.55

Note : RBW Correction in 5725~5850MHz : 10log(500kHz/100kHz)

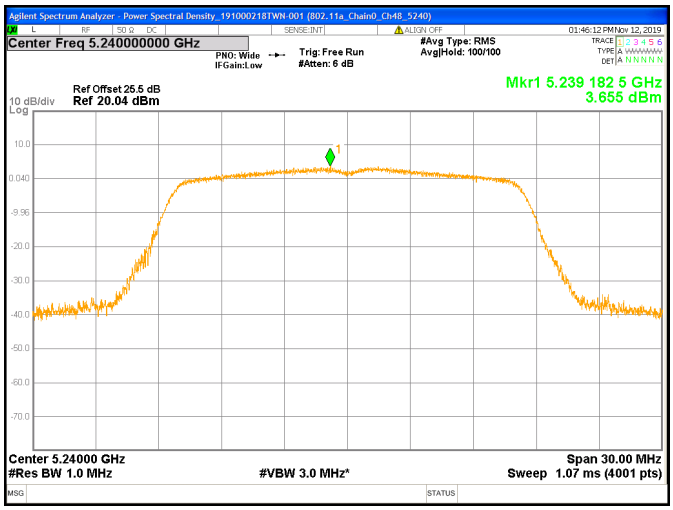
Chain0 : Power Spectral Density @ 802.11a Mode Ch36



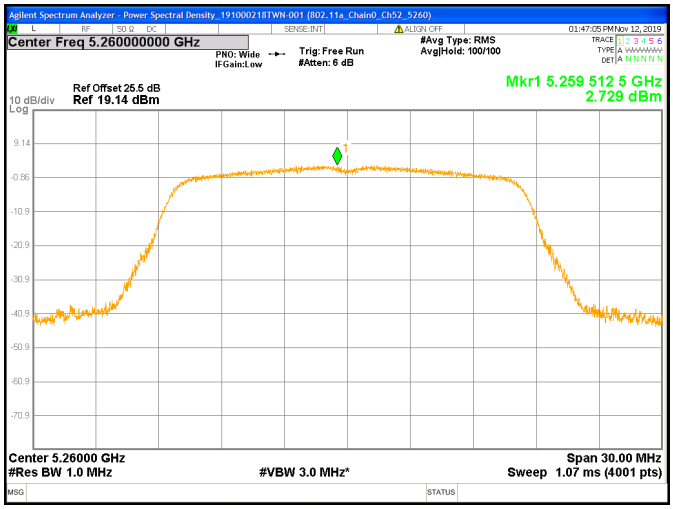
Chain0 : Power Spectral Density @ 802.11a Mode Ch44



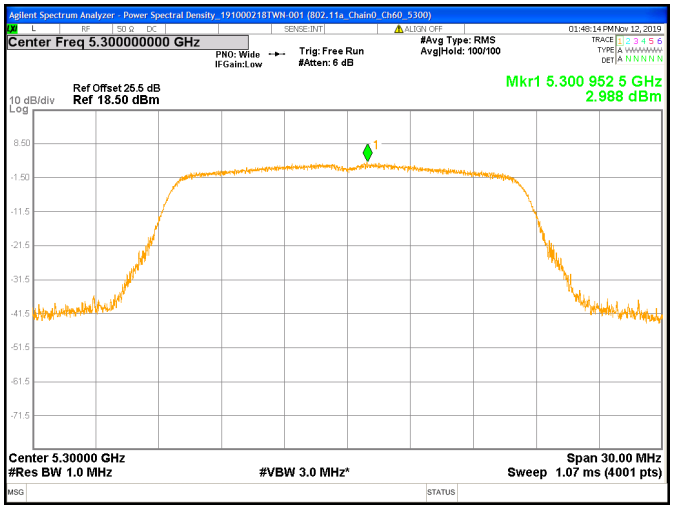
Chain0 : Power Spectral Density @ 802.11a Mode Ch48



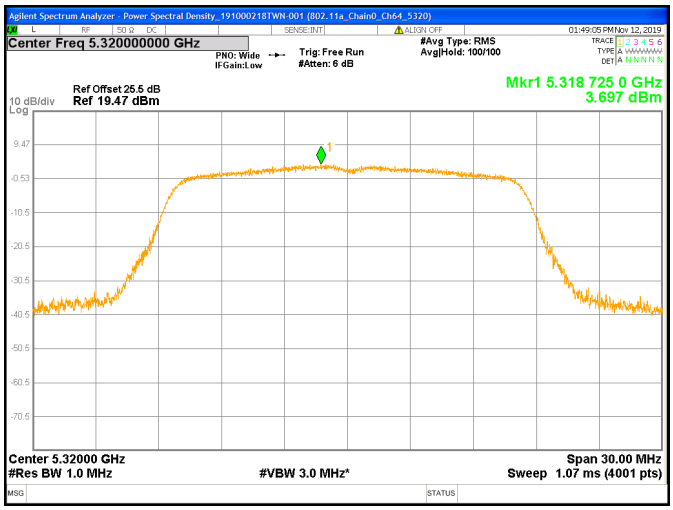
Chain0 : Power Spectral Density @ 802.11a Mode Ch52



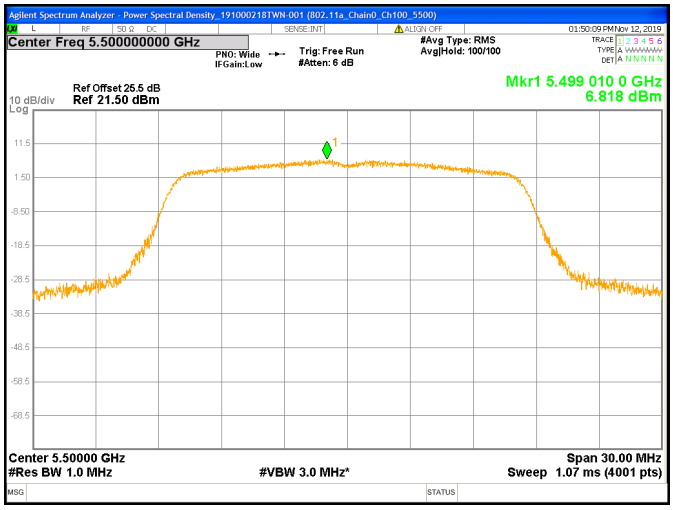
Chain0 : Power Spectral Density @ 802.11a Mode Ch60



Chain0 : Power Spectral Density @ 802.11a Mode Ch64



Chain0 : Power Spectral Density @ 802.11a Mode Ch100



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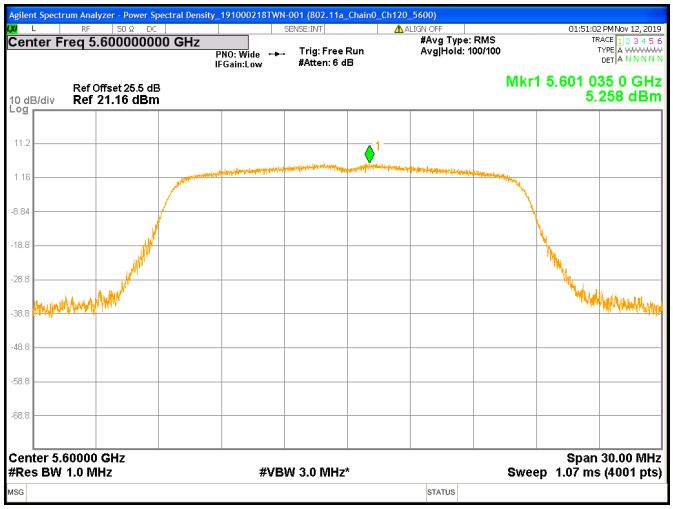
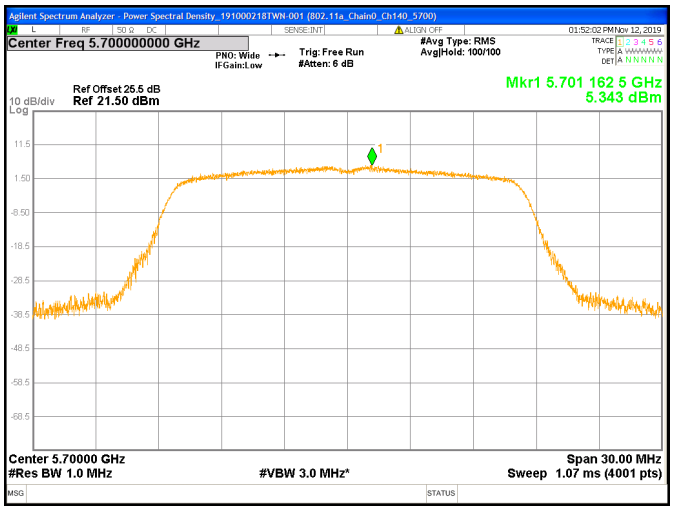
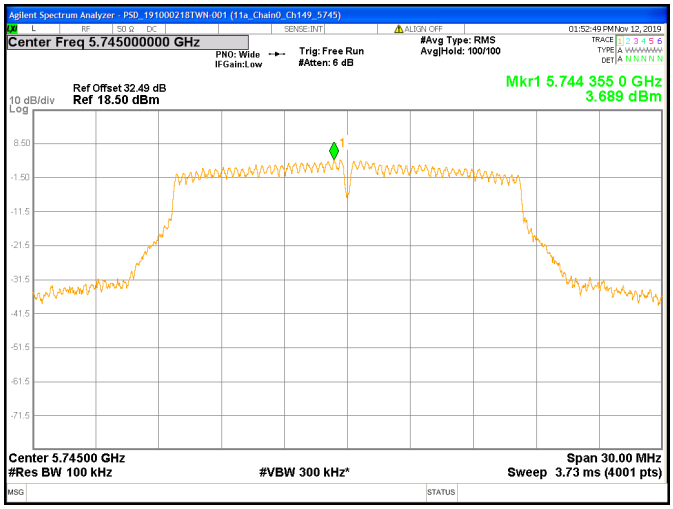


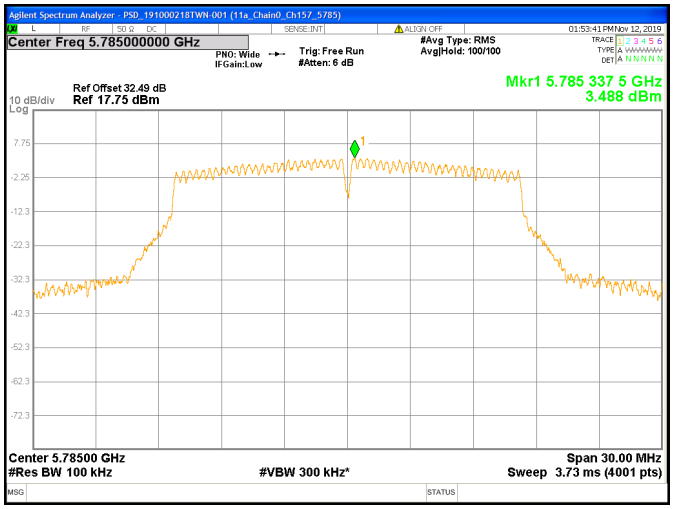
Chain0 : Power Spectral Density @ 802.11a Mode Ch140



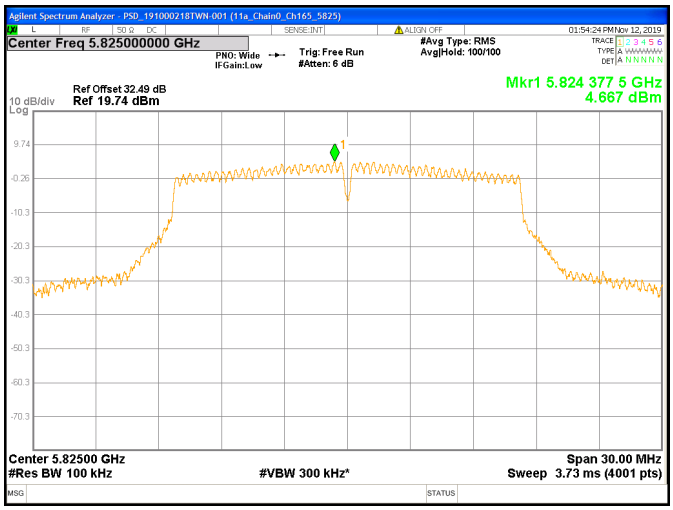
Chain0 : Power Spectral Density @ 802.11a Mode Ch149



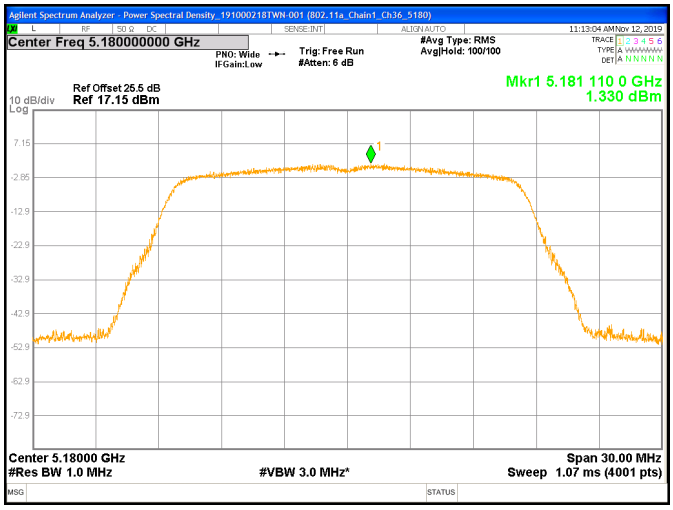
Chain0 : Power Spectral Density @ 802.11a Mode Ch157



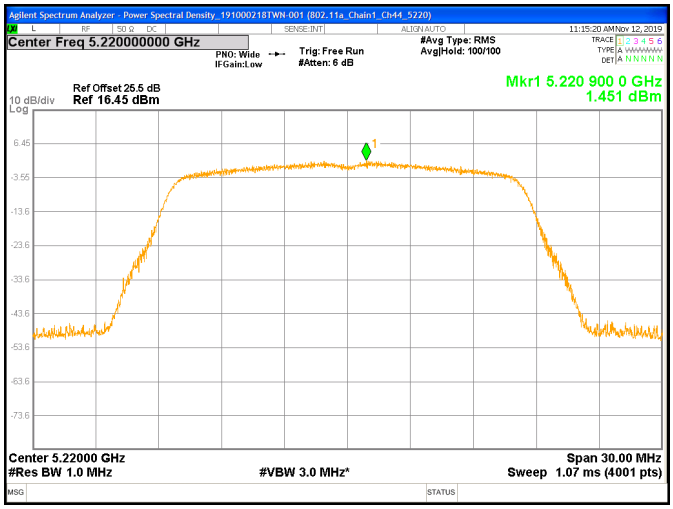
Chain0 : Power Spectral Density @ 802.11a Mode Ch165



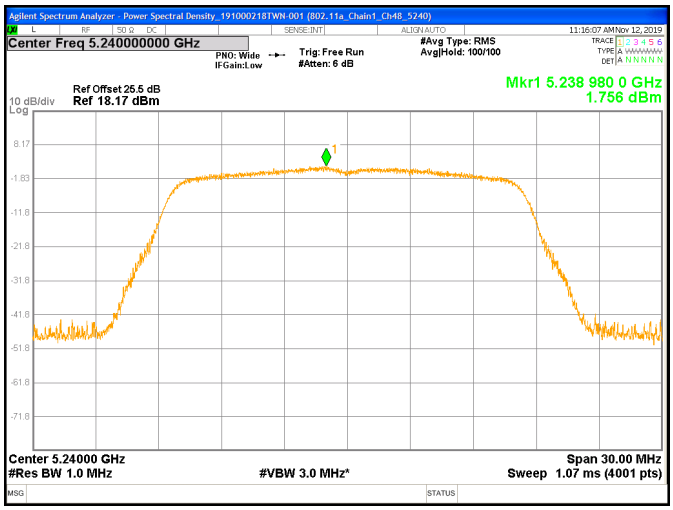
Chain1 : Power Spectral Density @ 802.11a Mode Ch36



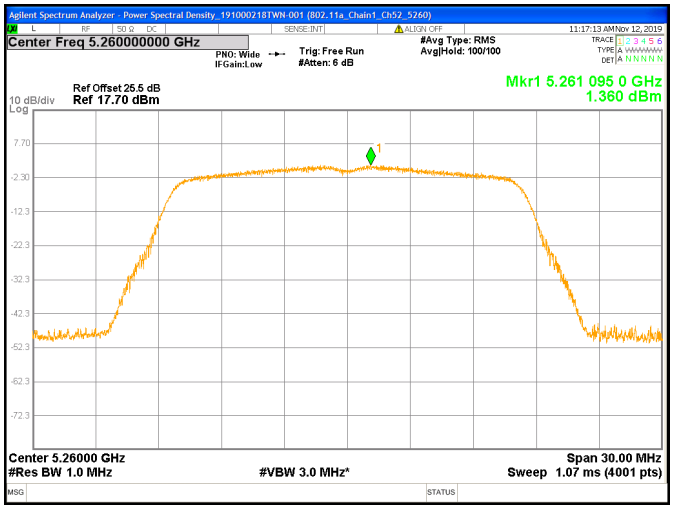
Chain1 : Power Spectral Density @ 802.11a Mode Ch44



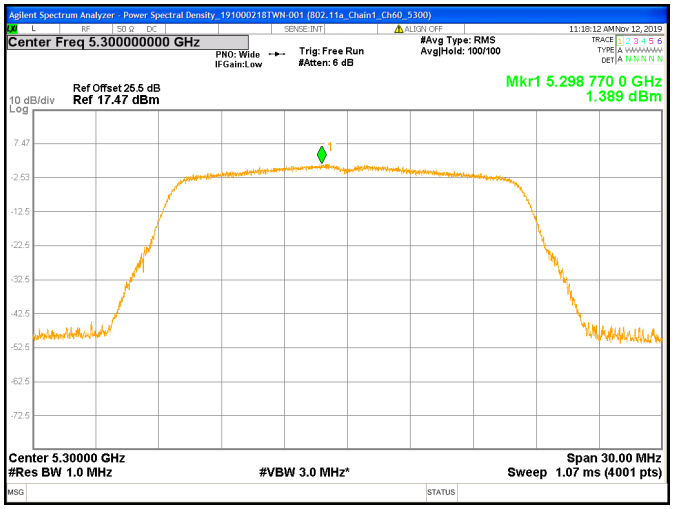
Chain1 : Power Spectral Density @ 802.11a Mode Ch48



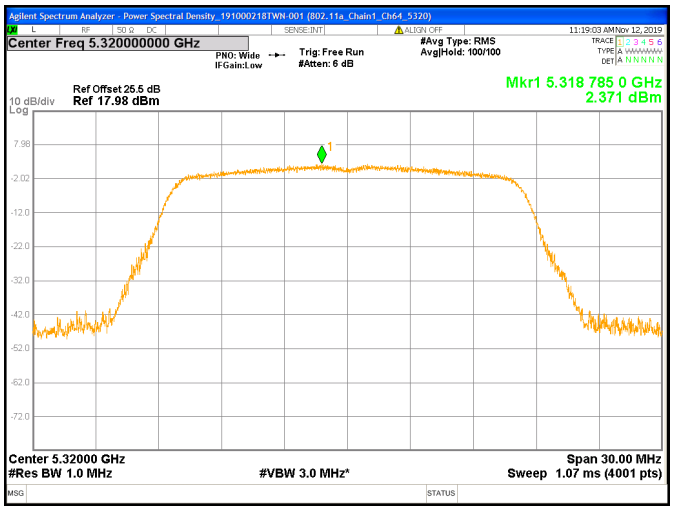
Chain1 : Power Spectral Density @ 802.11a Mode Ch52



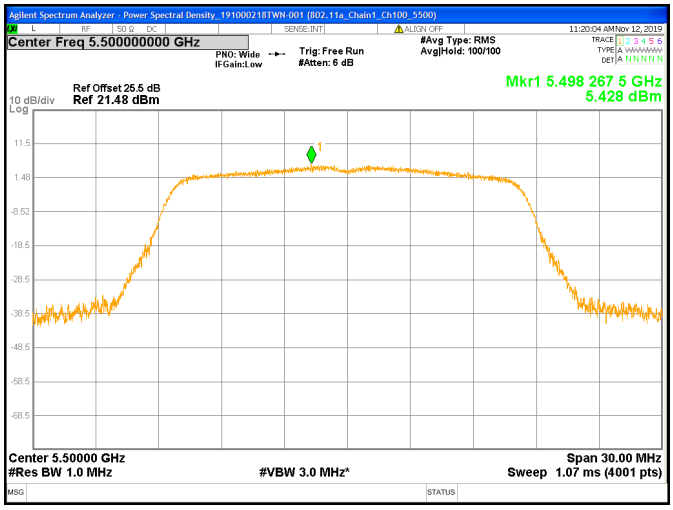
Chain1 : Power Spectral Density @ 802.11a Mode Ch60



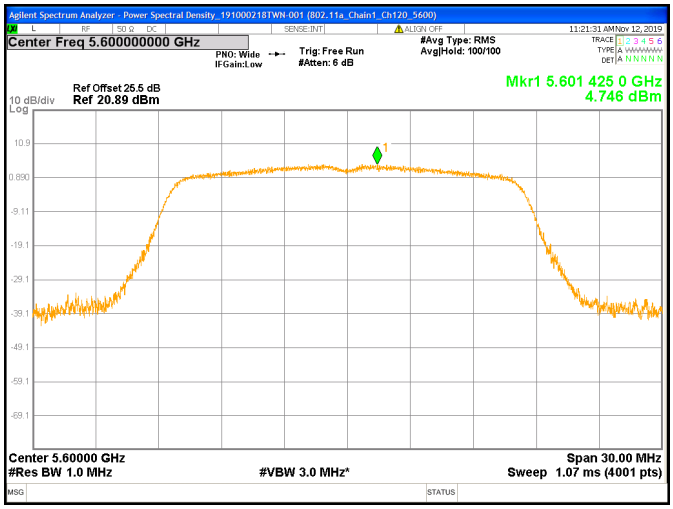
Chain1 : Power Spectral Density @ 802.11a Mode Ch64



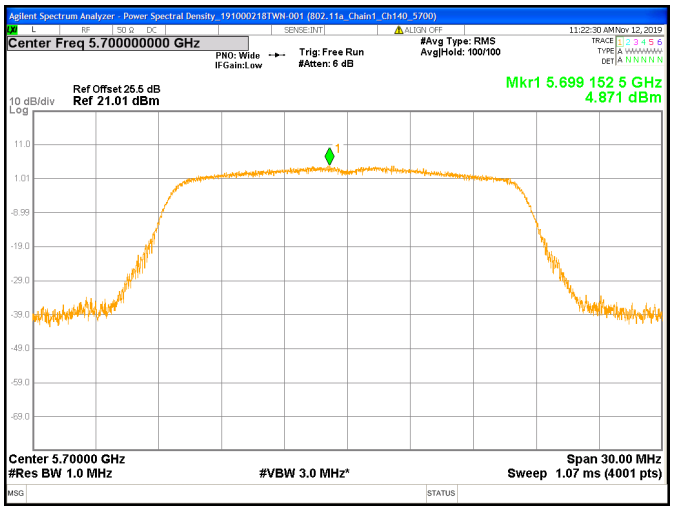
Chain1 : Power Spectral Density @ 802.11a Mode Ch100



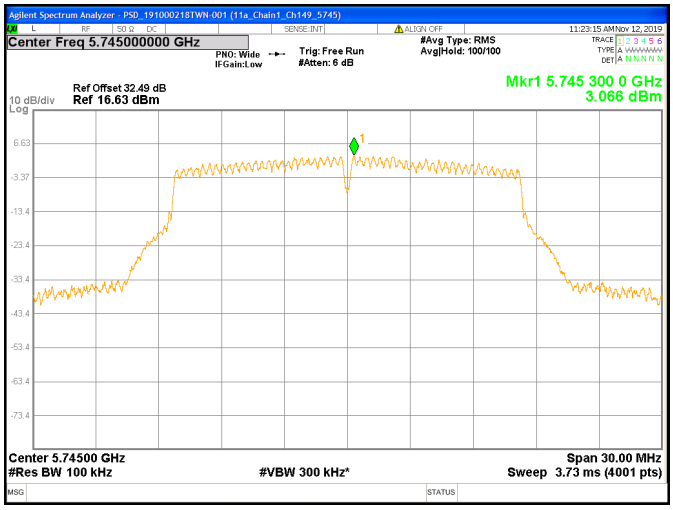
Chain1 : Power Spectral Density @ 802.11a Mode Ch120



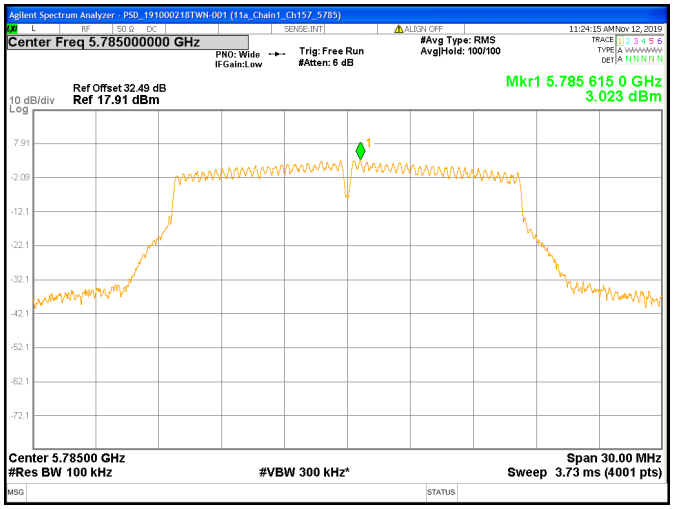
Chain1 : Power Spectral Density @ 802.11a Mode Ch140



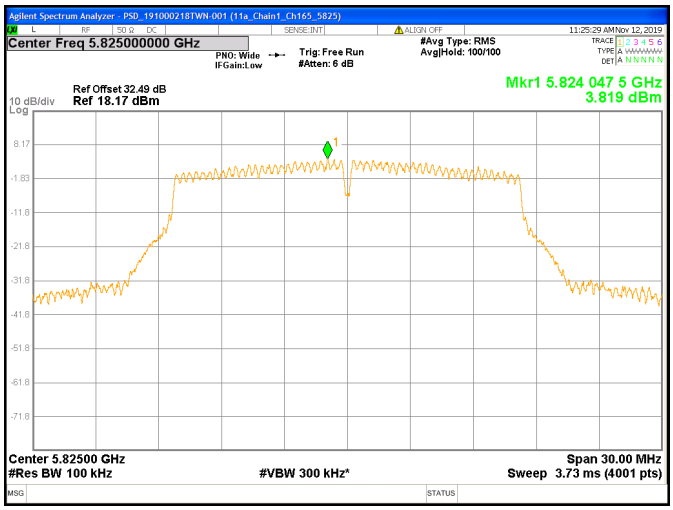
Chain1 : Power Spectral Density @ 802.11a Mode Ch149



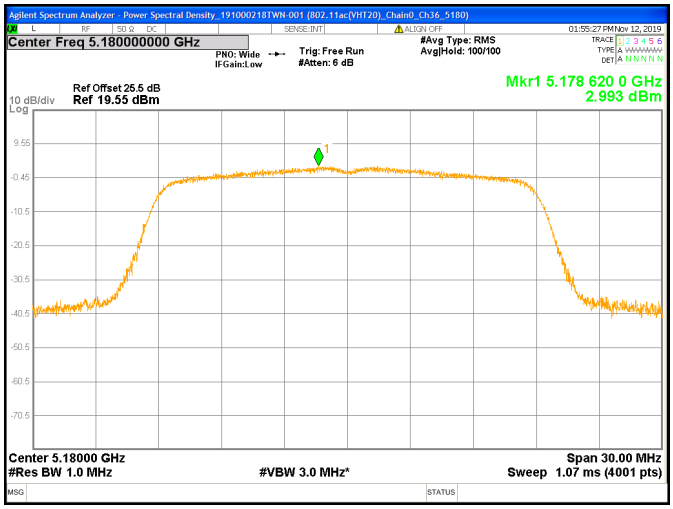
Chain1 : Power Spectral Density @ 802.11a Mode Ch157



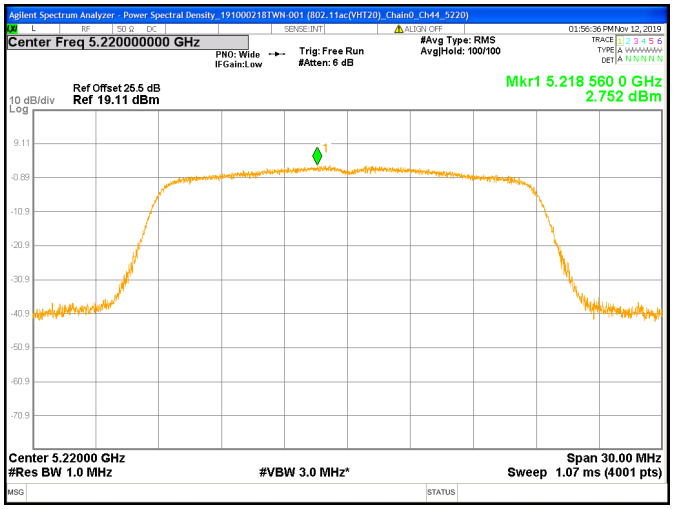
Chain1 : Power Spectral Density @ 802.11a Mode Ch165



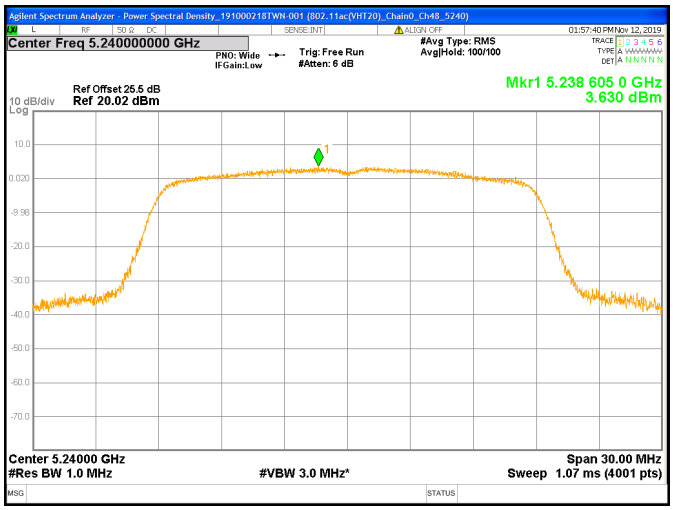
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch36



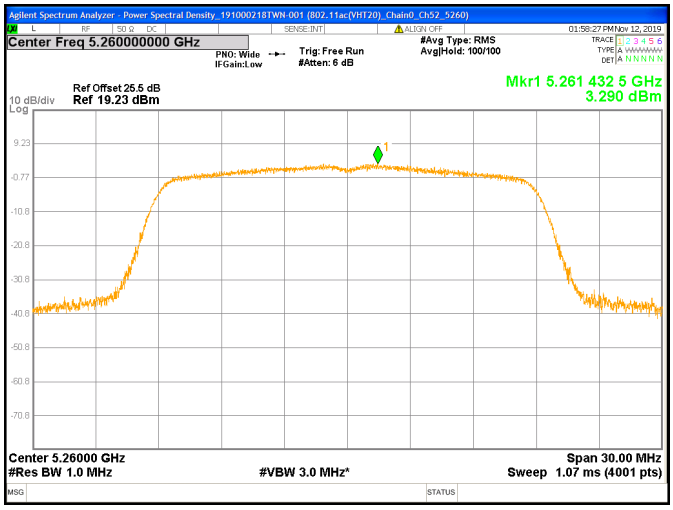
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch44



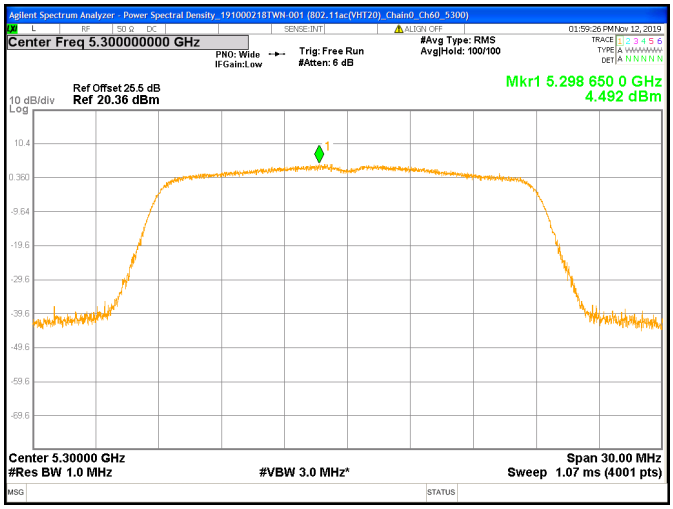
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch48



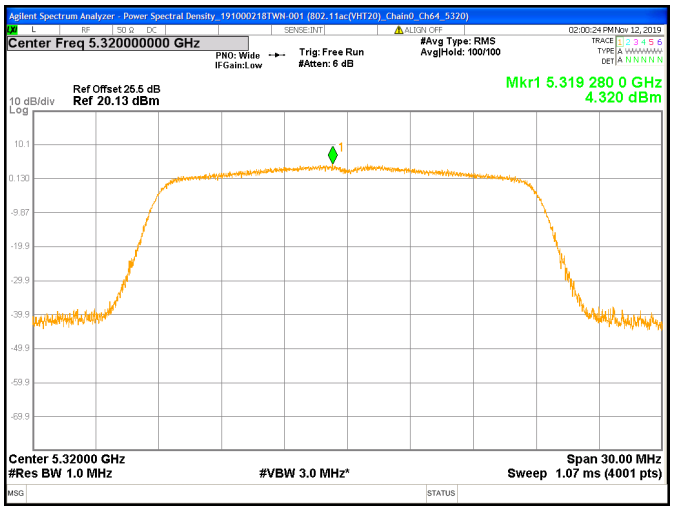
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch52



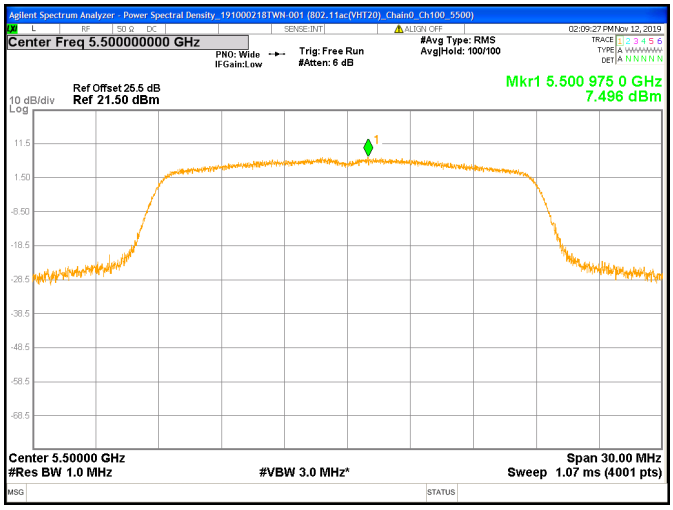
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch60



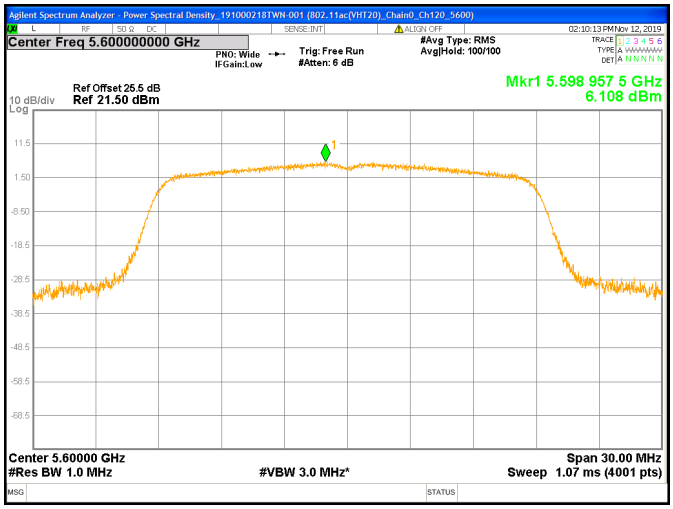
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch64



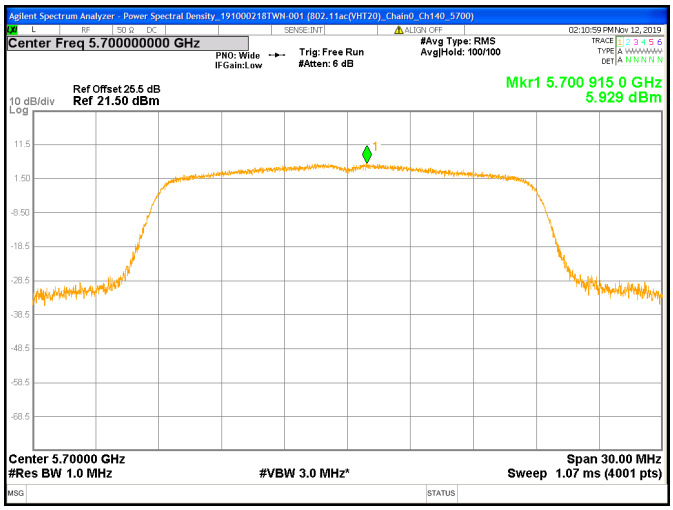
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch100



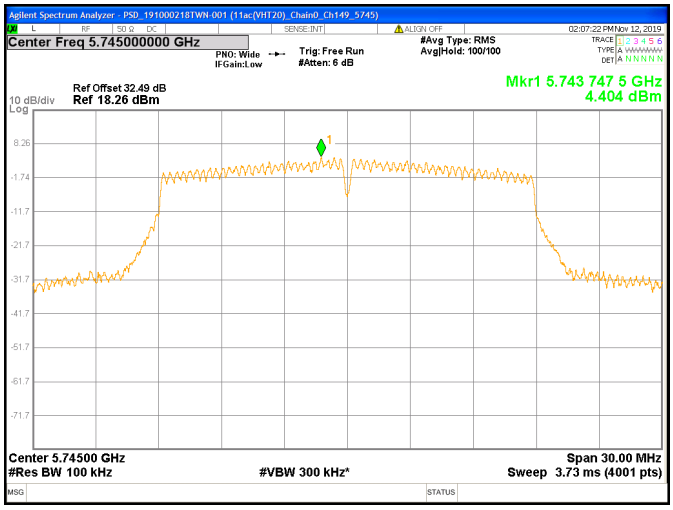
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch120



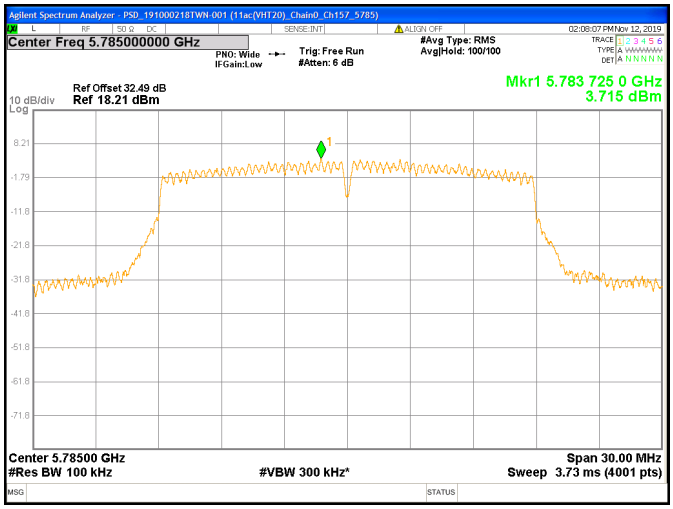
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch140



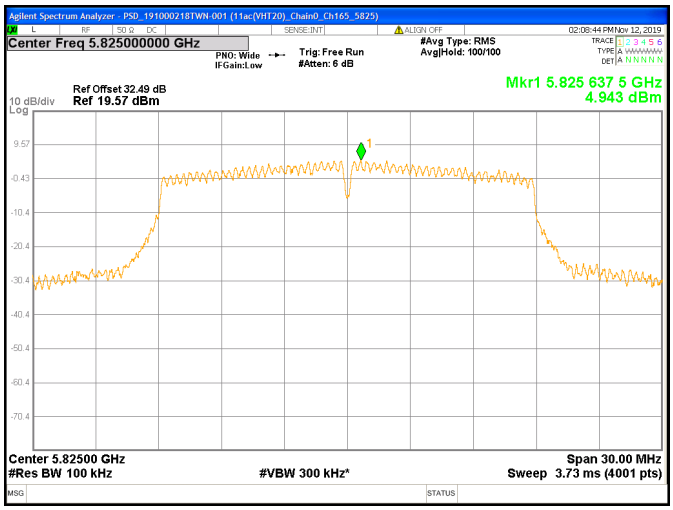
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch149



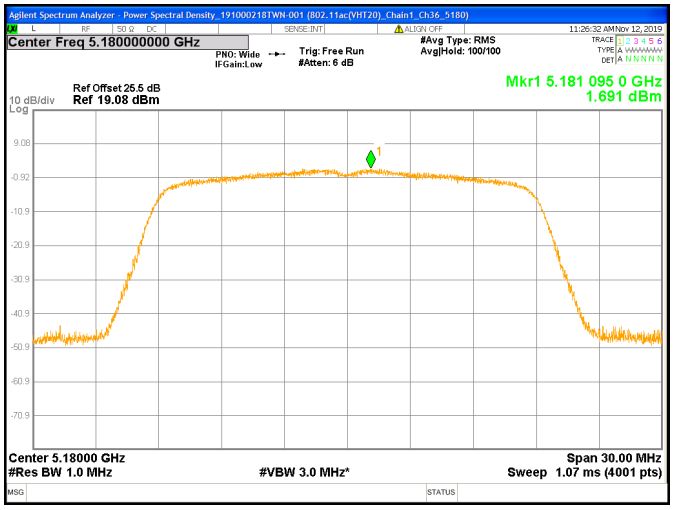
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch157



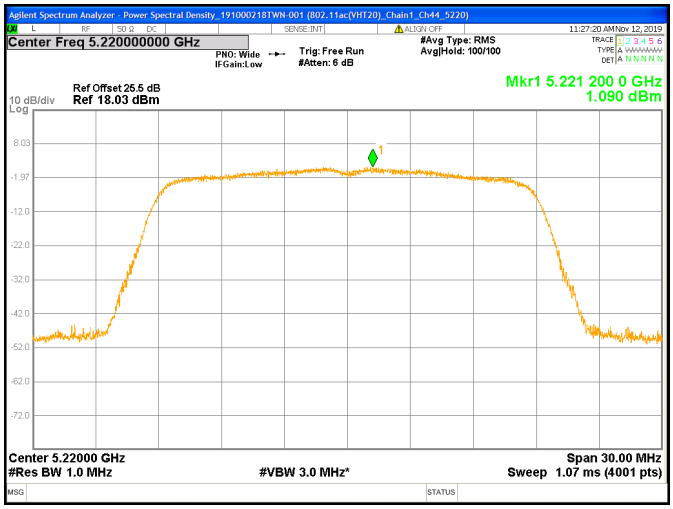
Chain0 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch165



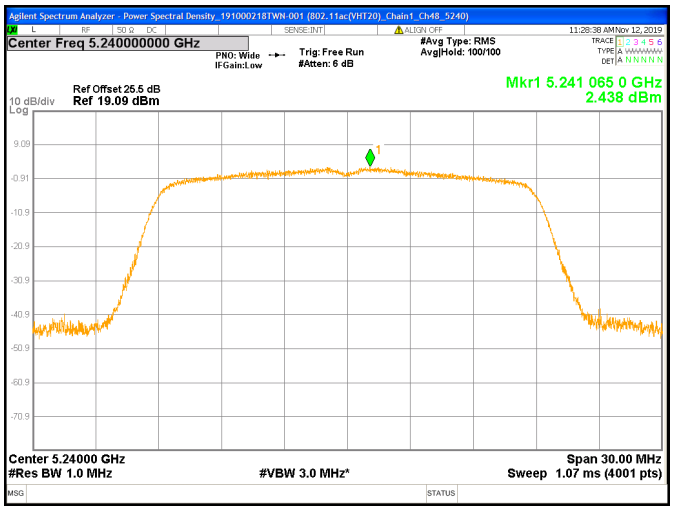
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch36



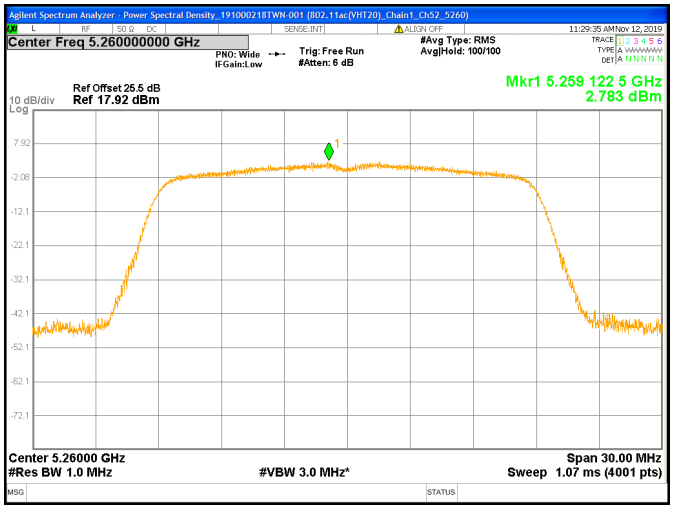
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch44



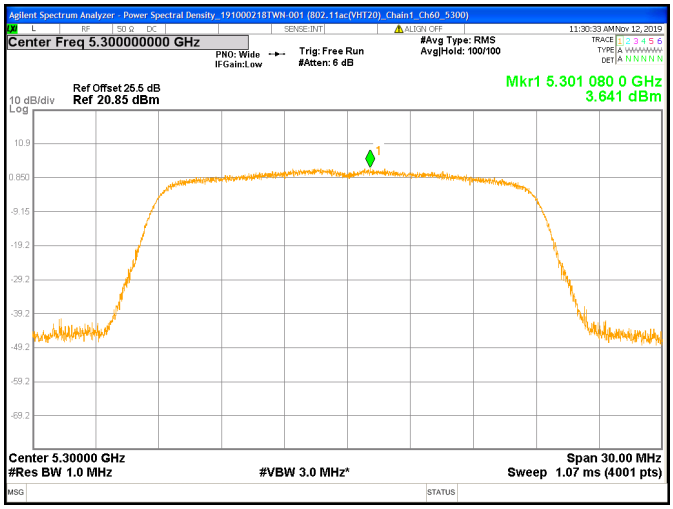
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch48



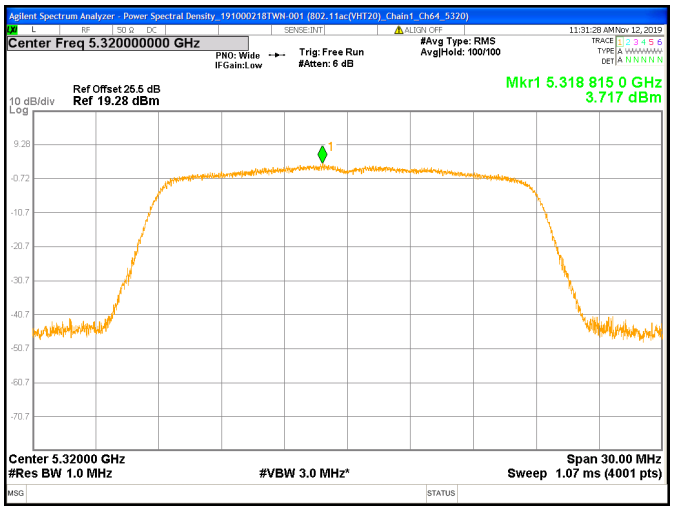
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch52



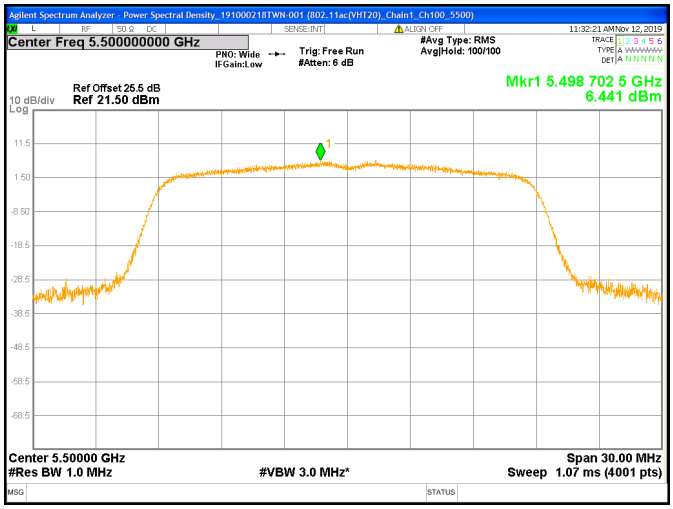
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch60



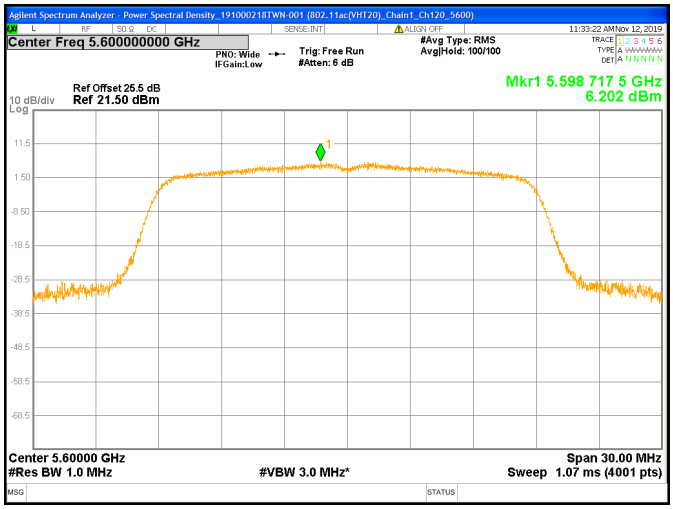
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch64



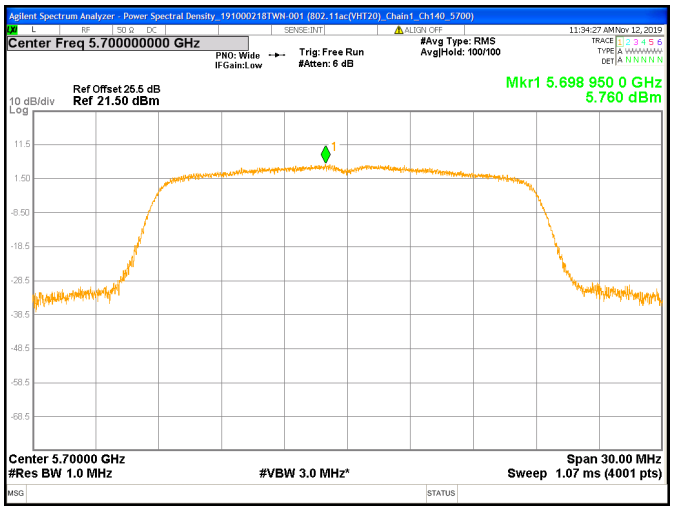
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch100



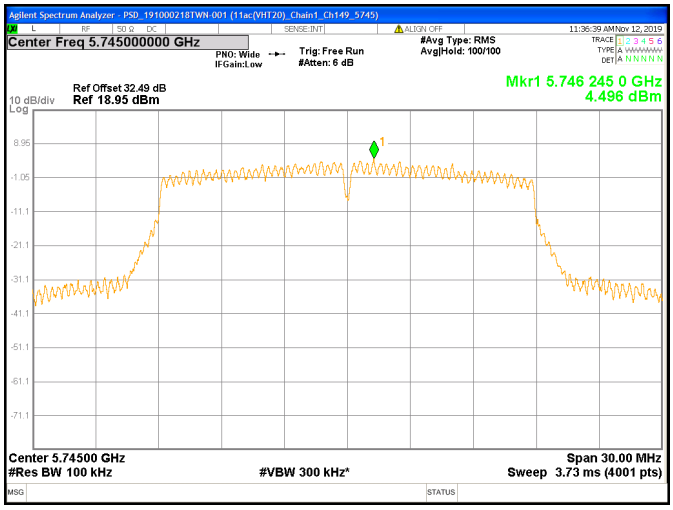
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch120



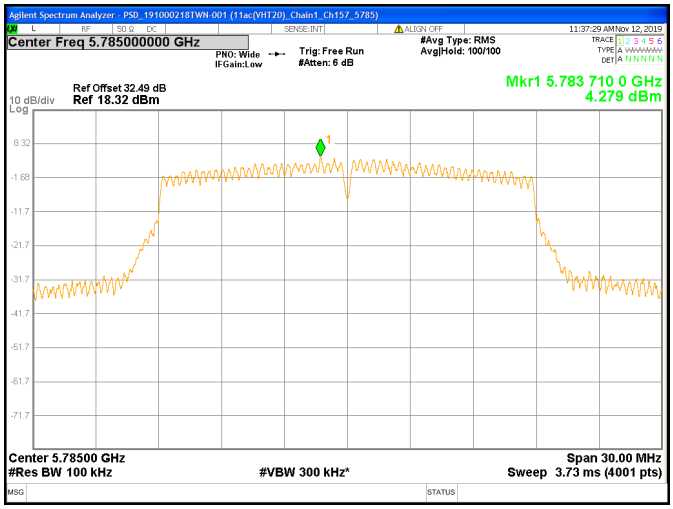
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch140



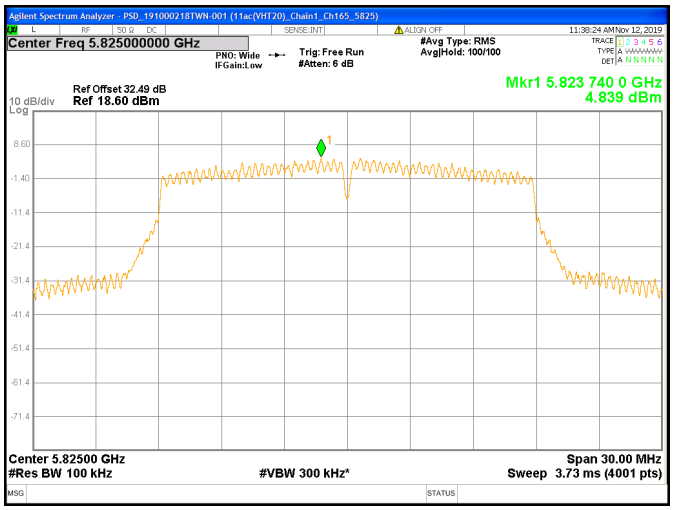
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch149



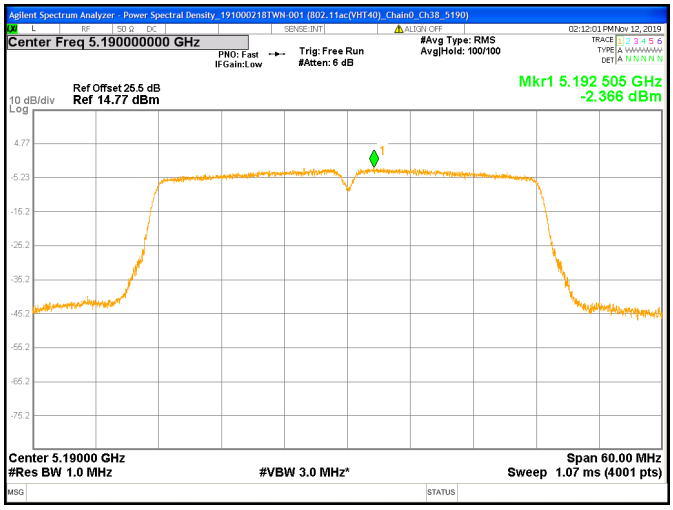
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch157



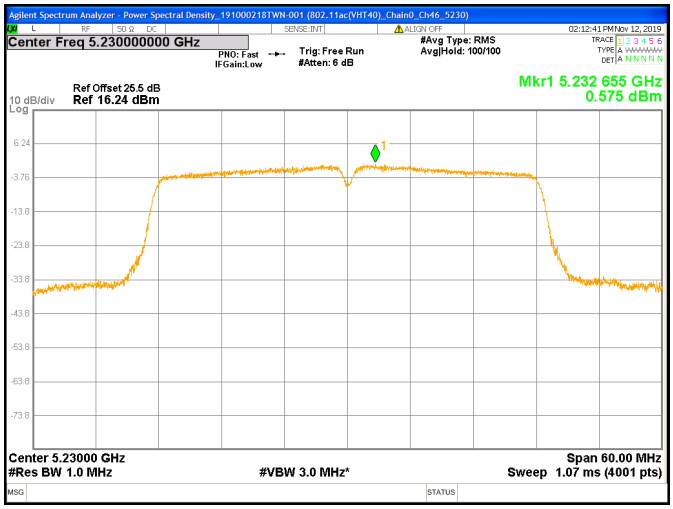
Chain1 : Power Spectral Density @ 802.11ac(VHT20) Mode Ch165



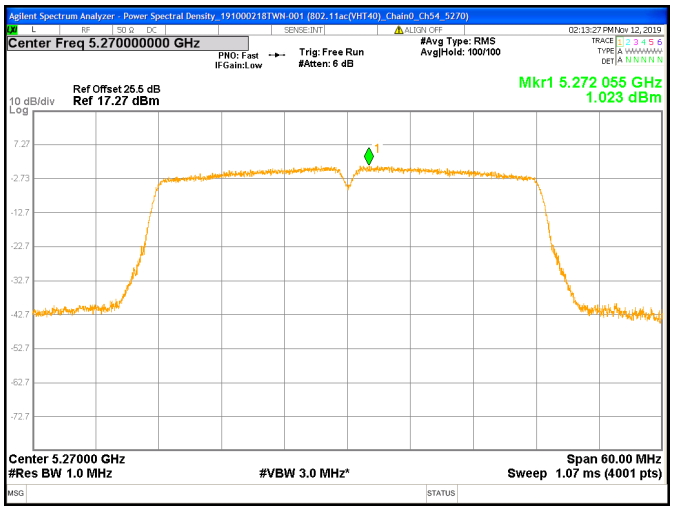
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch38



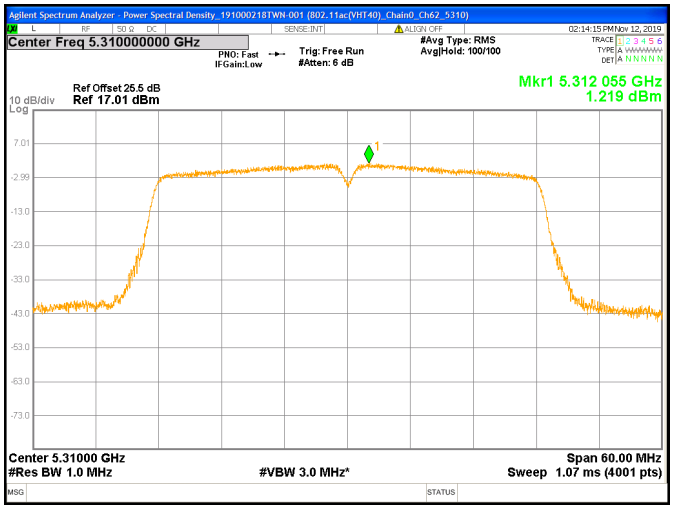
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch46



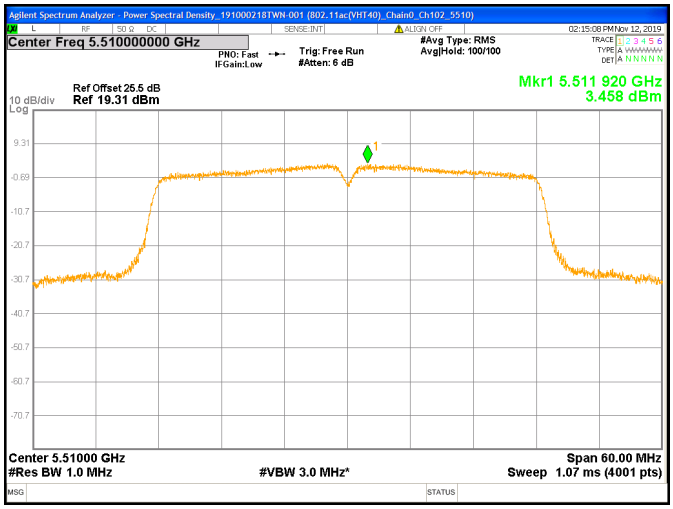
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch54



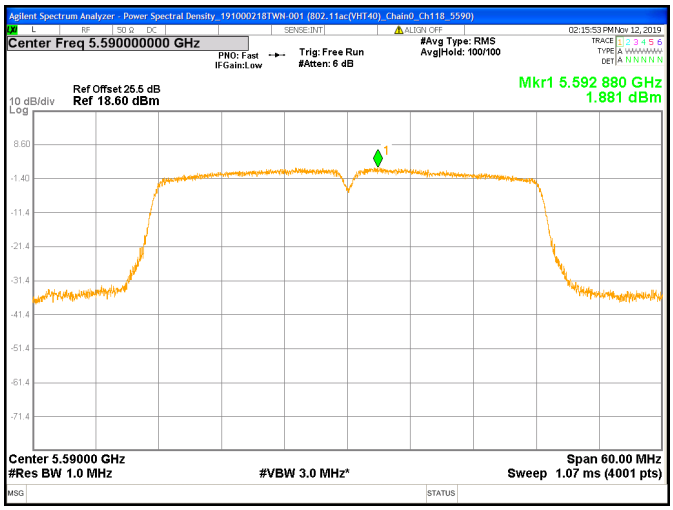
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch62



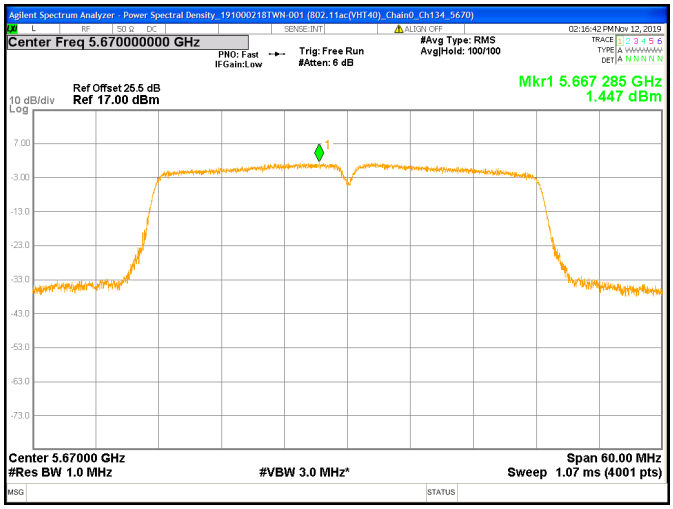
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch102



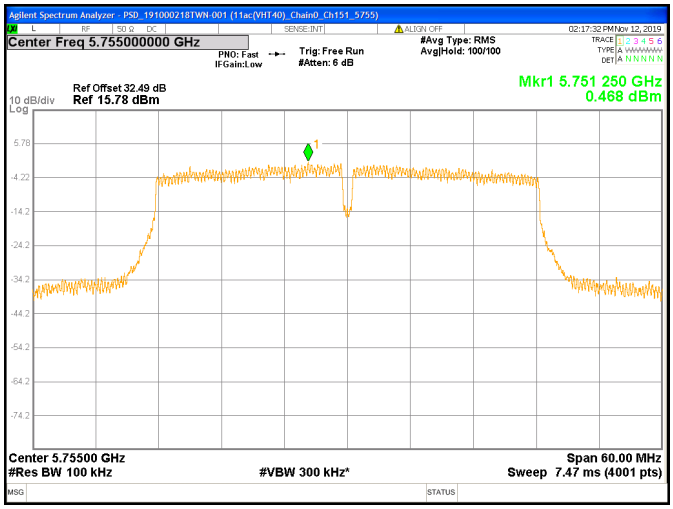
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch118



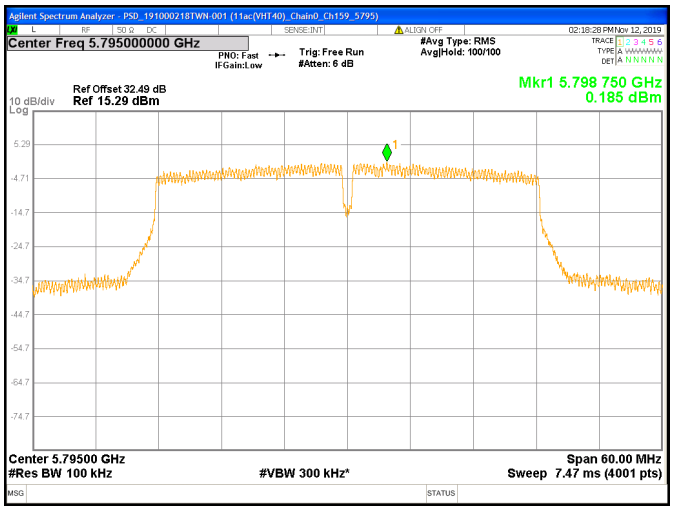
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch134



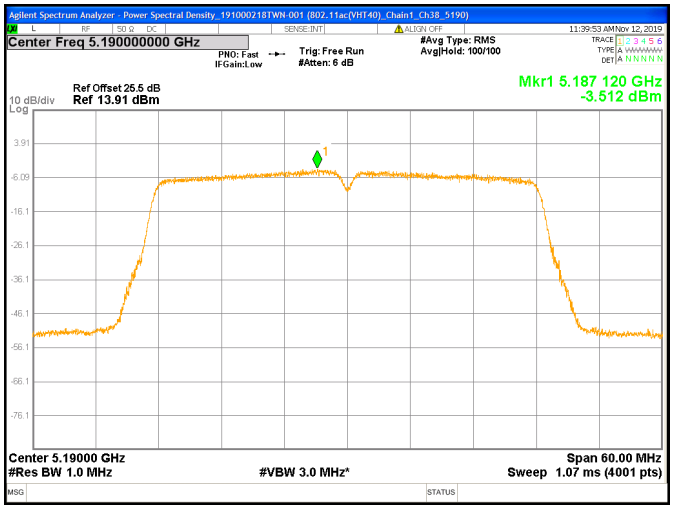
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch151



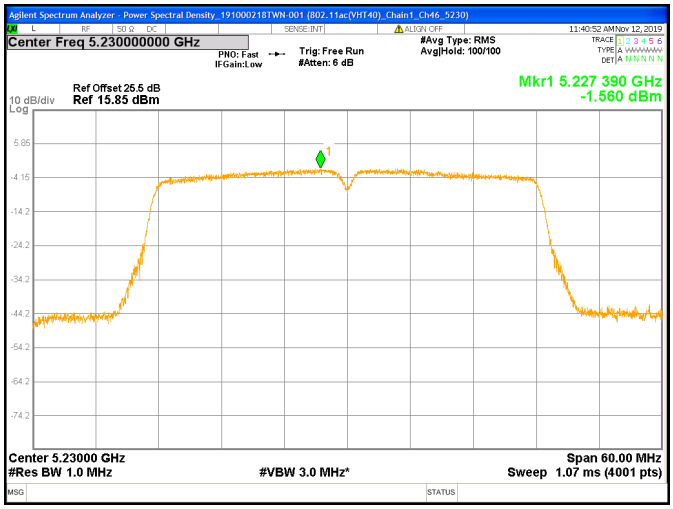
Chain0 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch159



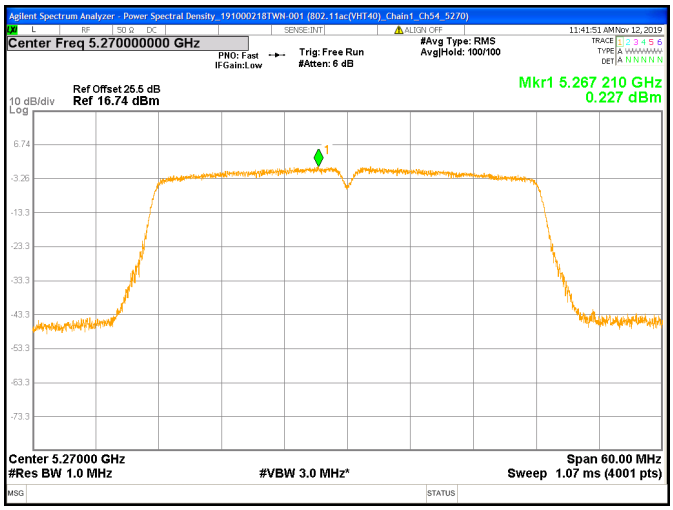
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch38



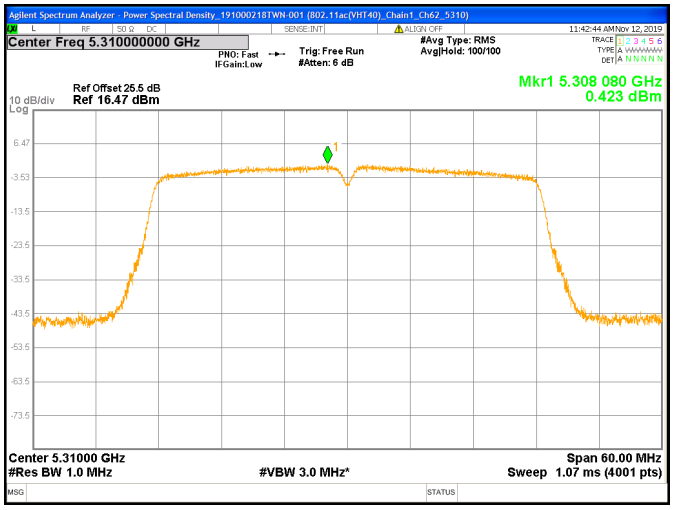
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch46



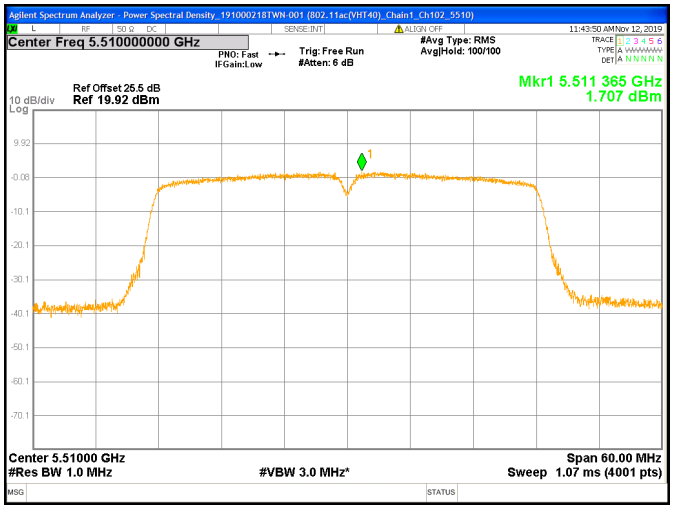
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch54



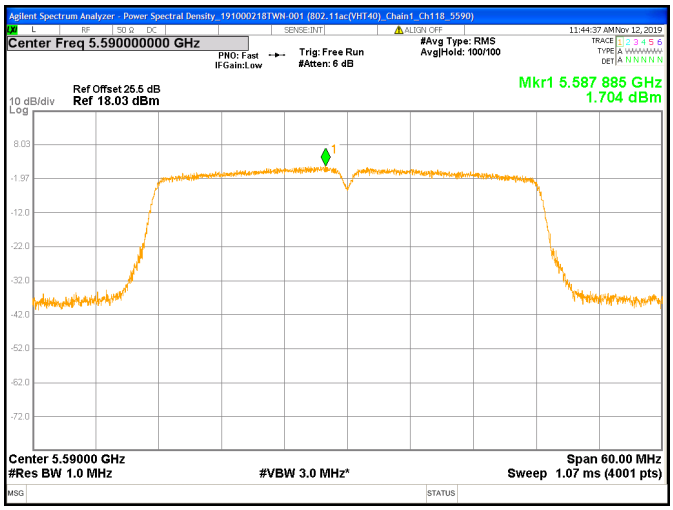
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch62



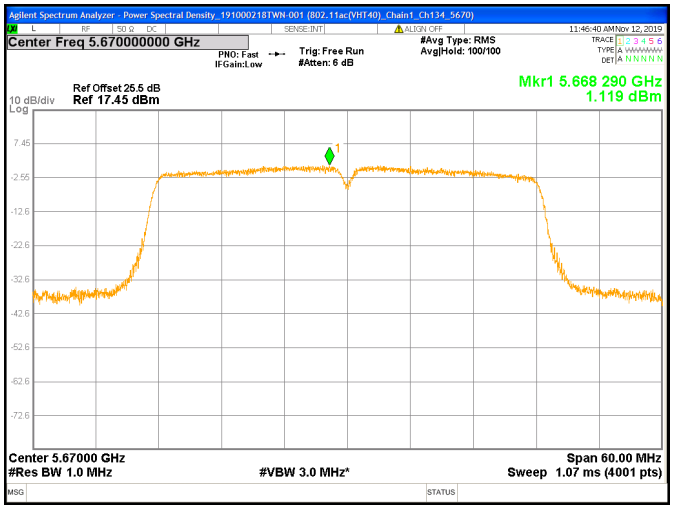
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch102



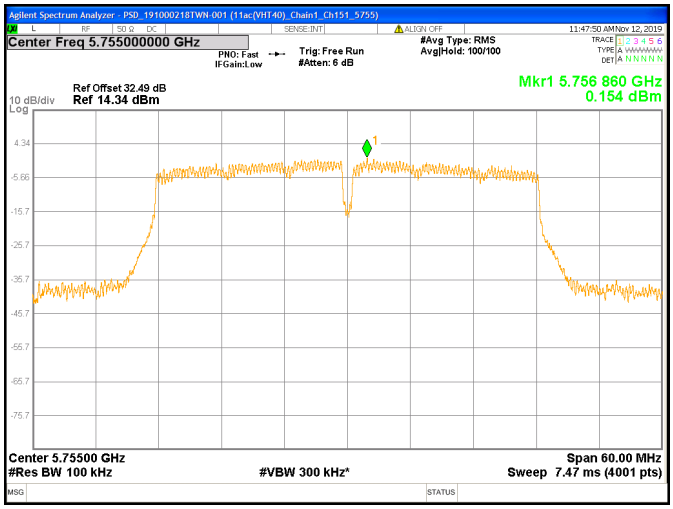
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch118



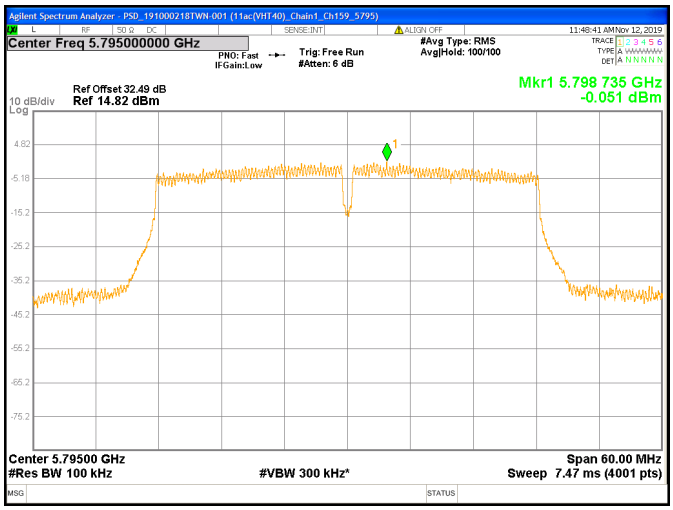
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch134



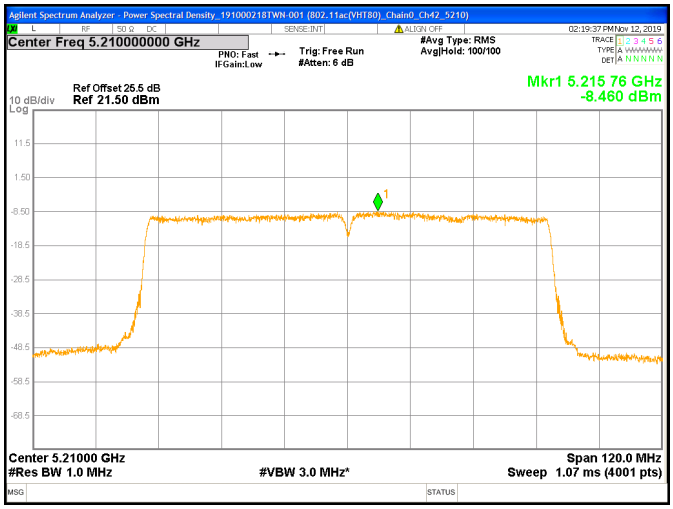
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch151



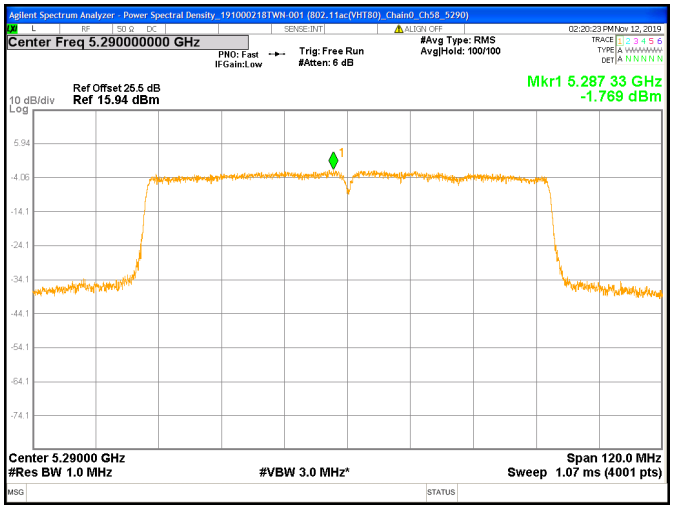
Chain1 : Power Spectral Density @ 802.11ac(VHT40) Mode Ch159



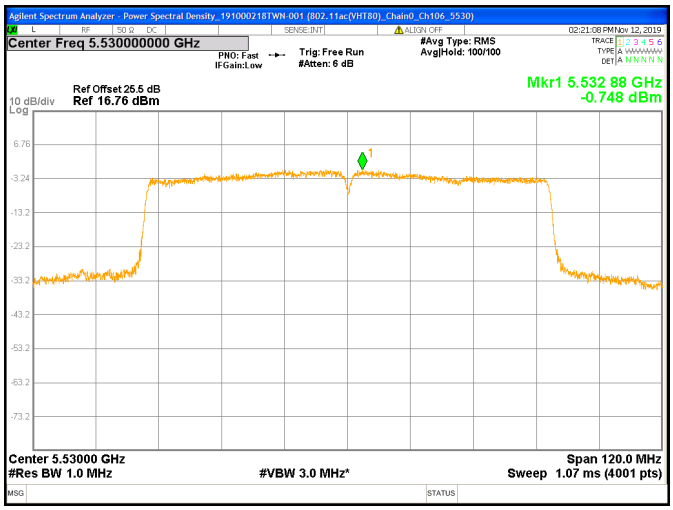
Chain0 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch42



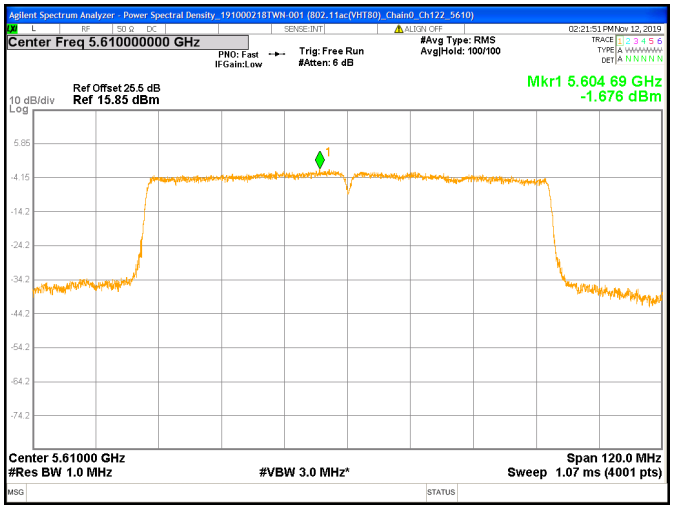
Chain0 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch58



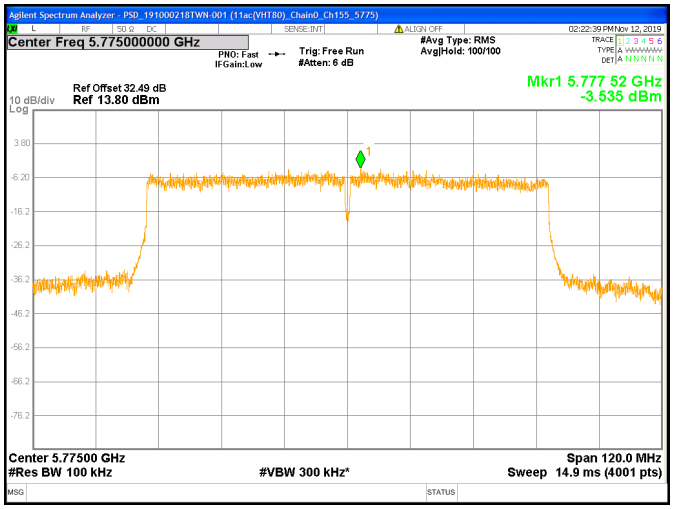
Chain0 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch106



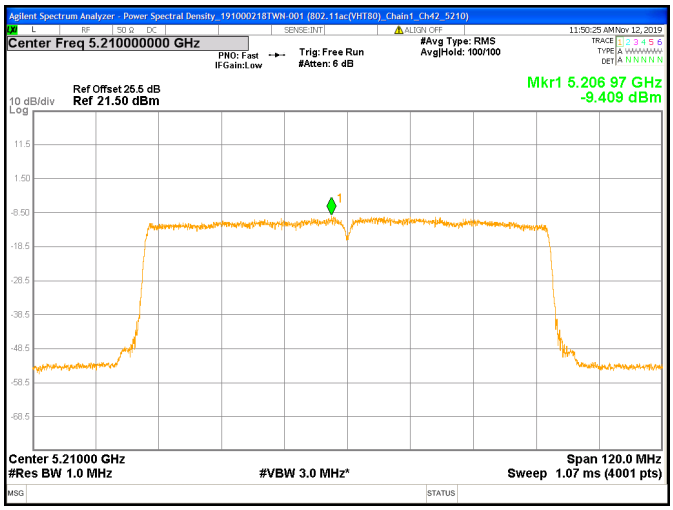
Chain0 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch122



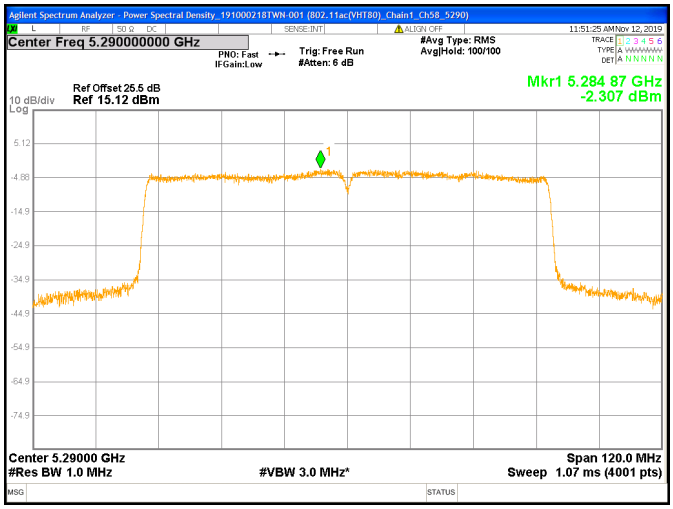
Chain0 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch155



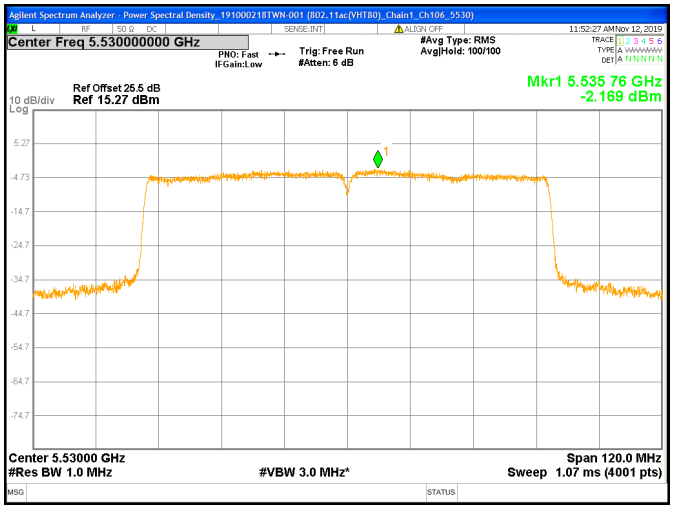
Chain1 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch42



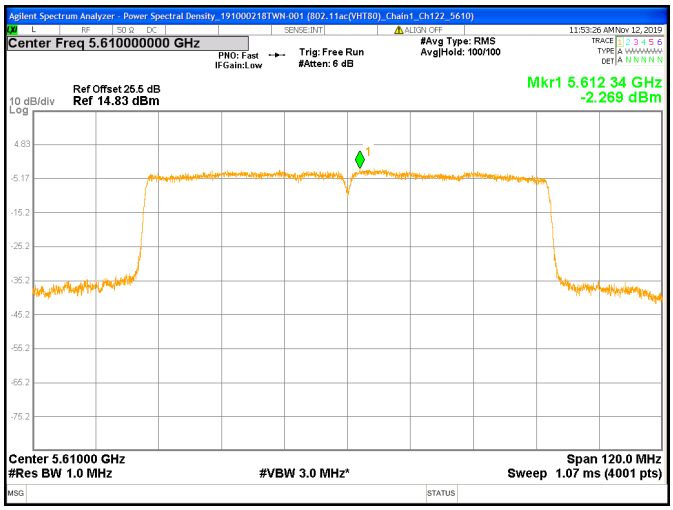
Chain1 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch58



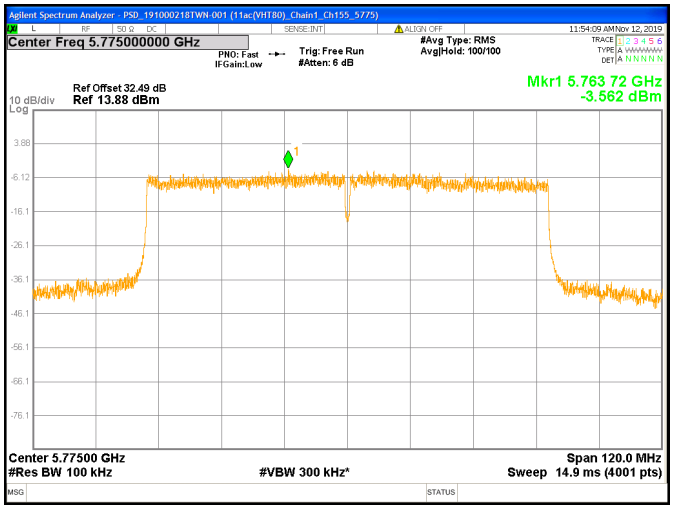
Chain1 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch106



Chain1 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch122



Chain1 : Power Spectral Density @ 802.11ac(VHT80) Mode Ch155



4. Minimum Bandwidth

4.1 Operating environment

Temperature:	24	℃
Relative Humidity:	55	%
Requirement & Test method	15.407(a)(5) 15.407(e) KDB 789033 D02 v02r01	

4.2 Limit for minimum emission bandwidth.

Within the 5.15-5.725 GHz, the 26 dB bandwidth is for reporting purpose only.
Within the 5.725-5.85 GHz, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

4.3 Measuring instrument setting

For 5.15-5.25 GHz

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	Approximately 1% of the EBW
VBW	> RBW
Trace mode	Max hold

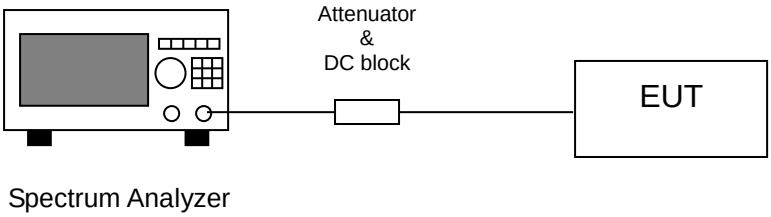
For 5.725-5.85 GHz

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	100kHz
VBW	≧3 x RBW
Sweep	Auto couple
Trace mode	Max hold

4.4 Test procedure

1. The transmitter output was connected to the spectrum analyzer.
2. Test was performed in accordance with section C of KDB 789033 D02 v02r01.
3. For the 5.725-5.85 GHz, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
4. For the 5.15-5.25 GHz and 5.725-5.85 GHz, measure the maximum width of the emission that is 26 dB down from the maximum of the emission.

4.5 Test diagram



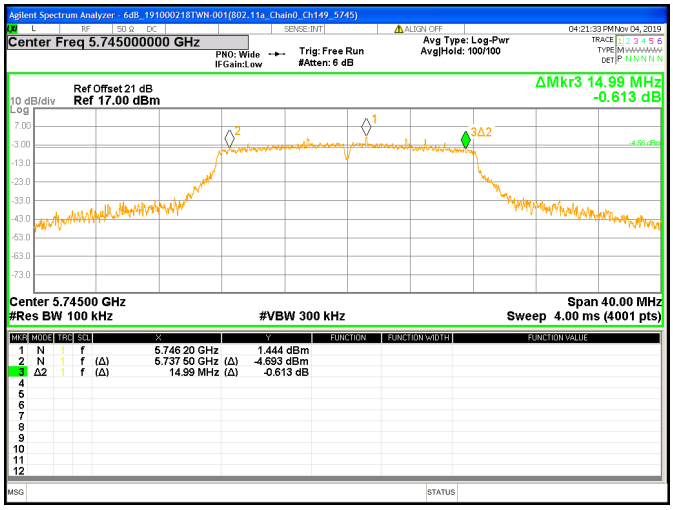
4.6 Test results

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Result
802.11a Chain0	36	5180		20.26	N/A	Pass
	44	5220		20.16		Pass
	48	5240		20.29		Pass
	52	5260		20.28		Pass
	60	5300		20.49		Pass
	64	5320		20.44		Pass
	100	5500		22.60		Pass
	120	5600		20.12		Pass
	140	5700		20.16		Pass
	149	5745	14.99		>0.5	Pass
	157	5785	16.30			Pass
	165	5825	15.76			Pass
802.11a Chain1	36	5180		20.05	N/A	Pass
	44	5220		20.03		Pass
	48	5240		19.93		Pass
	52	5260		20.12		Pass
	60	5300		20.04		Pass
	64	5320		20.15		Pass
	100	5500		20.55		Pass
	120	5600		20.00		Pass
	140	5700		19.99		Pass
	149	5745	15.65		>0.5	Pass
	157	5785	15.02			Pass
	165	5825	15.05			Pass
802.11ac (VHT20) Chain0	36	5180		20.71	N/A	Pass
	44	5220		20.76		Pass
	48	5240		20.60		Pass
	52	5260		20.65		Pass
	60	5300		20.73		Pass
	64	5320		21.24		Pass
	100	5500		30.31		Pass
	120	5600		21.25		Pass
	140	5700		21.24		Pass
	149	5745	15.03		>0.5	Pass
	157	5785	14.97			Pass
	165	5825	15.47			Pass

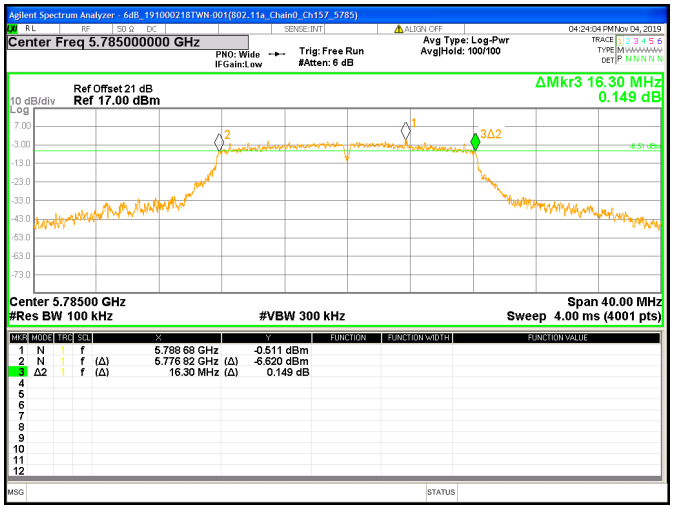
Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Result
802.11ac (VHT20) Chain1	36	5180		20.22	N/A	Pass
	44	5220		20.35		Pass
	48	5240		20.20		Pass
	52	5260		20.25		Pass
	60	5300		20.14		Pass
	64	5320		20.14		Pass
	100	5500		24.16		Pass
	120	5600		20.71		Pass
	140	5700		20.95		Pass
	149	5745	14.83		>0.5	Pass
	157	5785	15.03			Pass
	165	5825	15.07			Pass
802.11ac (VHT40) Chain0	38	5190		41.17	N/A	Pass
	46	5230		41.23		Pass
	54	5270		41.35		Pass
	62	5310		41.14		Pass
	102	5510		49.79		Pass
	118	5590		41.16		Pass
	134	5670		41.30		Pass
	151	5755	35.08		>0.5	Pass
	159	5795	33.82			Pass
802.11ac (VHT40) Chain1	38	5190		41.33	N/A	Pass
	46	5230		40.83		Pass
	54	5270		41.28		Pass
	62	5310		40.98		Pass
	102	5510		42.85		Pass
	118	5590		41.44		Pass
	134	5670		41.30		Pass
	151	5755	35.90		>0.5	Pass
	159	5795	35.02			Pass
802.11ac (VHT80) Chain0	42	5210		81.03	N/A	Pass
	58	5290		81.22		Pass
	106	5530		96.00		Pass
	122	5610		80.72		Pass
	155	5775	75.39		>0.5	Pass

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Result
802.11ac (VHT80) Chain1	42	5210		79.32	N/A	Pass
	58	5290		80.56		Pass
	106	5530		98.86		Pass
	122	5610		95.73		Pass
	155	5775	75.74		>0.5	Pass

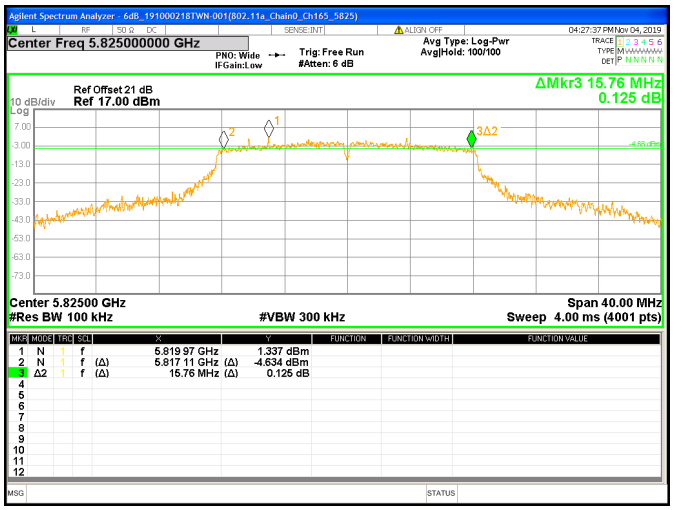
Chain0 : 6dB Bandwidth @ 802.11a Mode Ch149



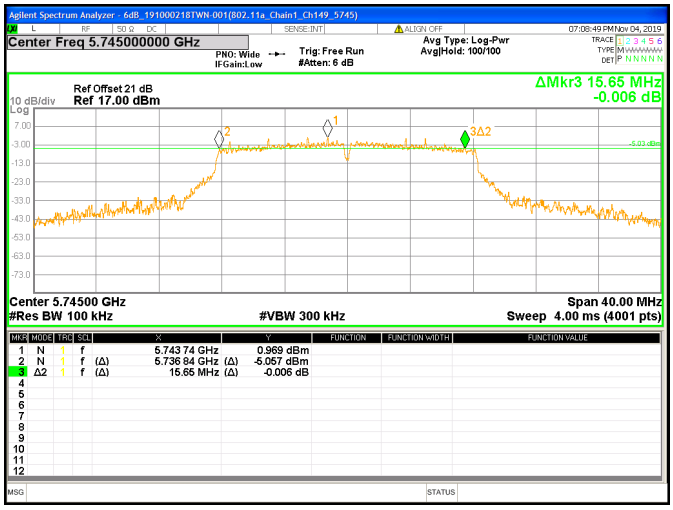
Chain0 : 6dB Bandwidth @ 802.11a Mode Ch157



Chain0 : 6dB Bandwidth @ 802.11a Mode Ch165



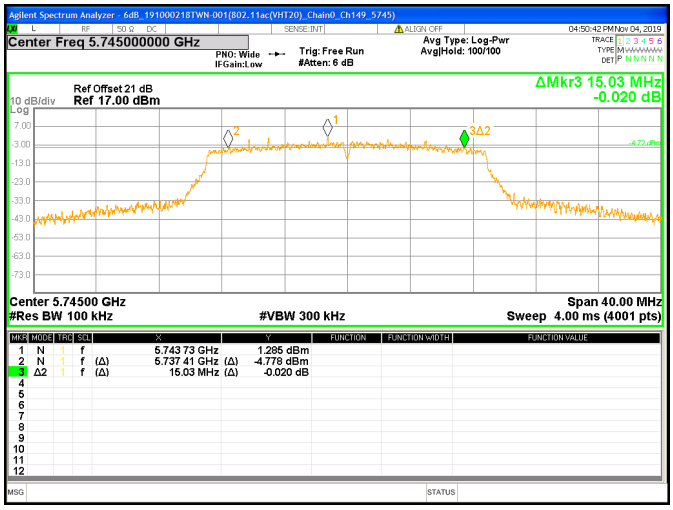
Chain1 : 6dB Bandwidth @ 802.11a Mode Ch149



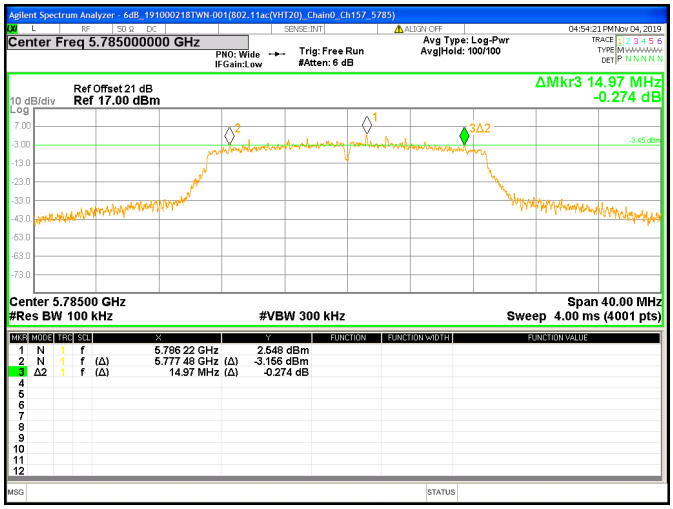
Chain1 : 6dB Bandwidth @ 802.11a Mode Ch157

Chain1 : 6dB Bandwidth @ 802.11a Mode Ch165

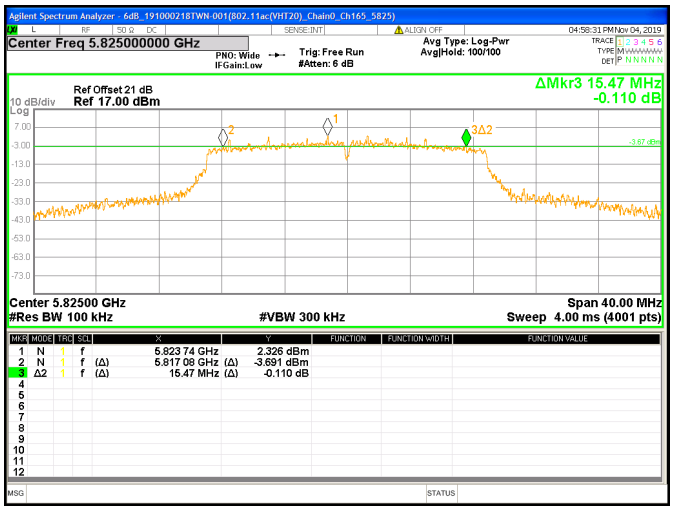
Chain0 : 6dB Bandwidth @ 802.11ac(VHT20) Mode Ch149



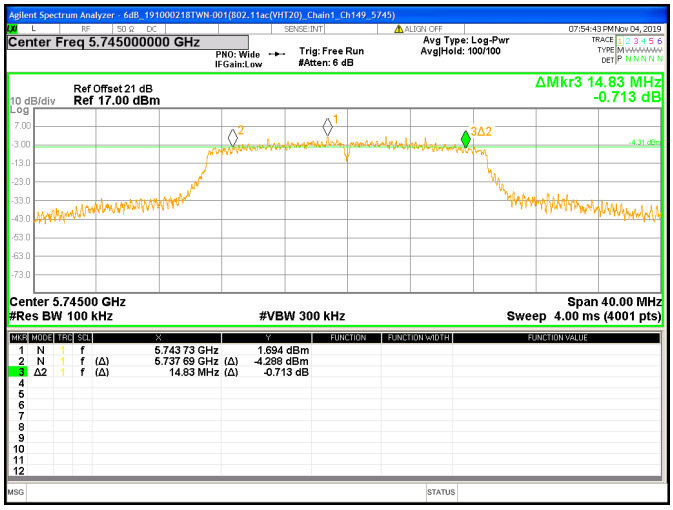
Chain0 : 6dB Bandwidth @ 802.11ac(VHT20) Mode Ch157



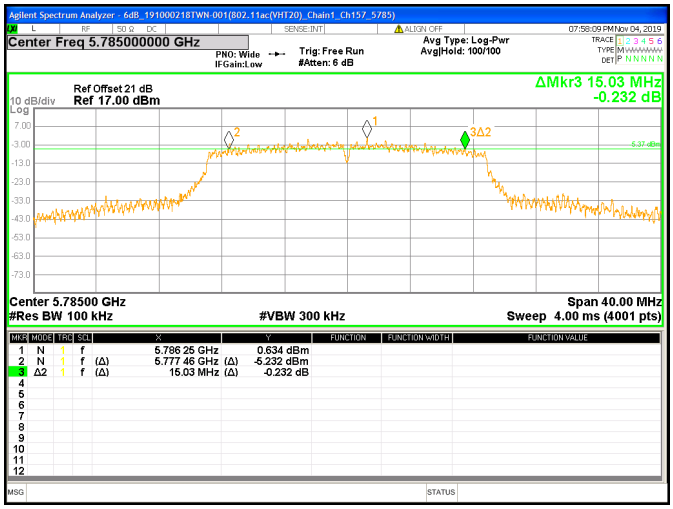
Chain0 : 6dB Bandwidth @ 802.11ac(VHT20) Mode Ch165



Chain1 : 6dB Bandwidth @ 802.11ac(VHT20) Mode Ch149

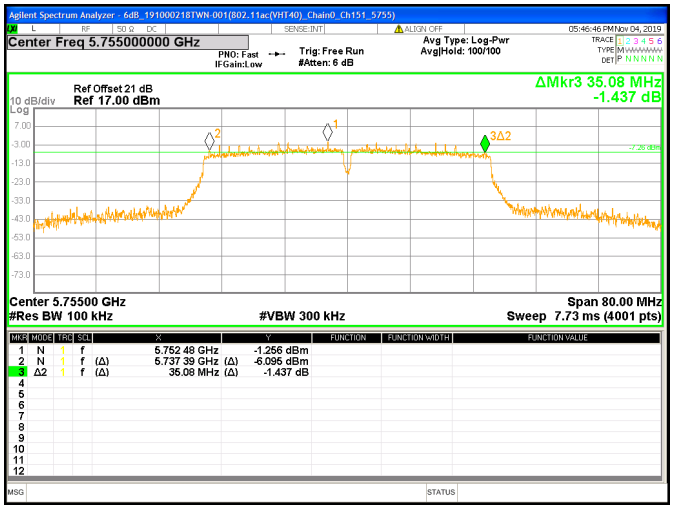


Chain1 : 6dB Bandwidth @ 802.11ac(VHT20) Mode Ch157

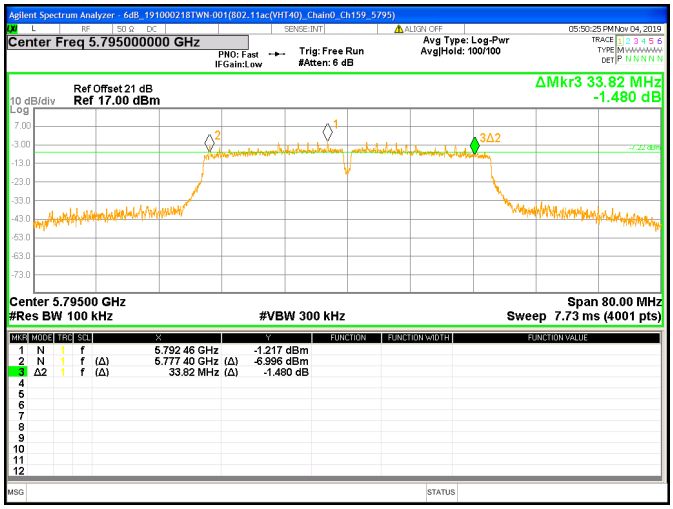


Chain1 : 6dB Bandwidth @ 802.11ac(VHT20) Mode Ch165

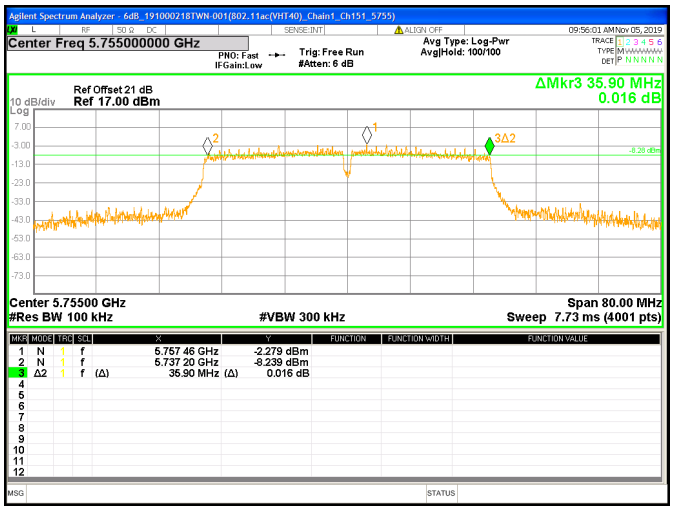
Chain0 : 6dB Bandwidth @ 802.11ac(VHT40) Mode Ch151



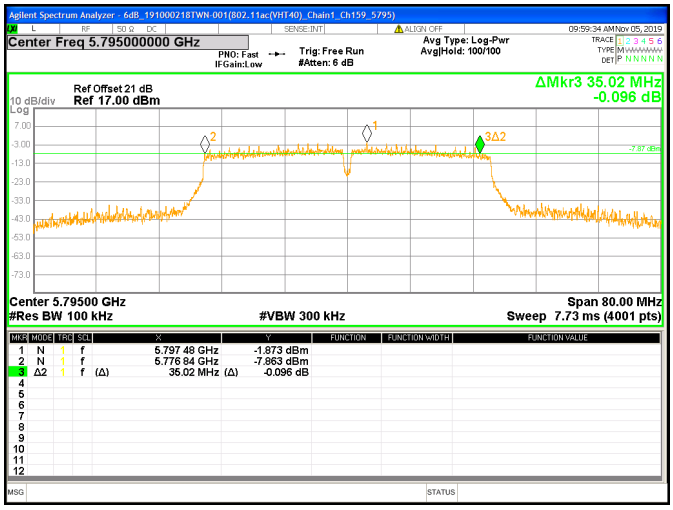
Chain0 : 6dB Bandwidth @ 802.11ac(VHT40) Mode Ch159



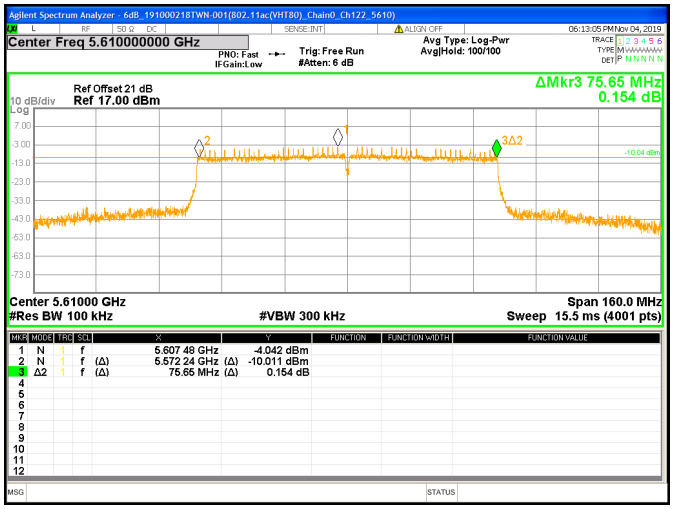
Chain1 : 6dB Bandwidth @ 802.11ac(VHT40) Mode Ch151



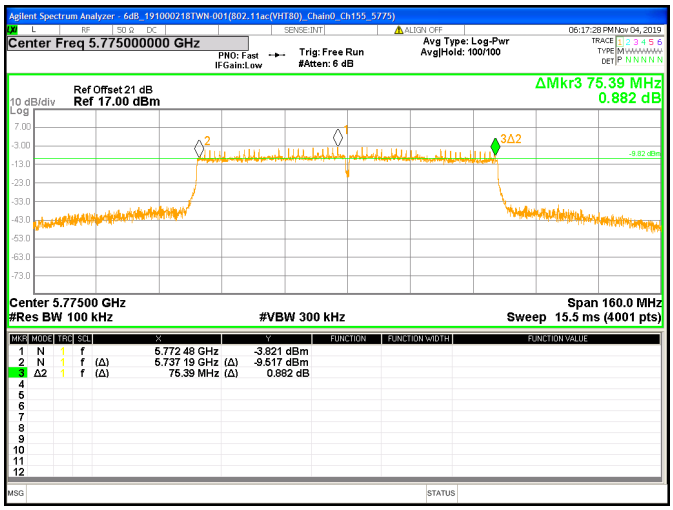
Chain1 : 6dB Bandwidth @ 802.11ac(VHT40) Mode Ch159



Chain0 : 6dB Bandwidth @ 802.11ac(VHT80) Mode Ch122

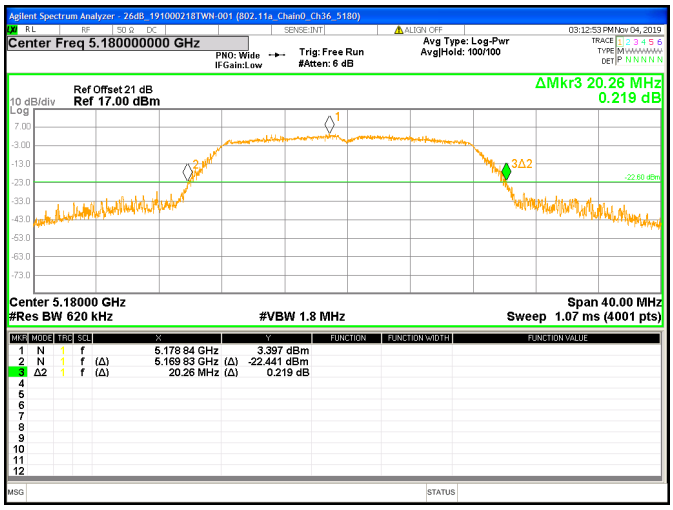


Chain0 : 6dB Bandwidth @ 802.11ac(VHT80) Mode Ch155



Chain1 : 6dB Bandwidth @ 802.11ac(VHT80) Mode Ch155

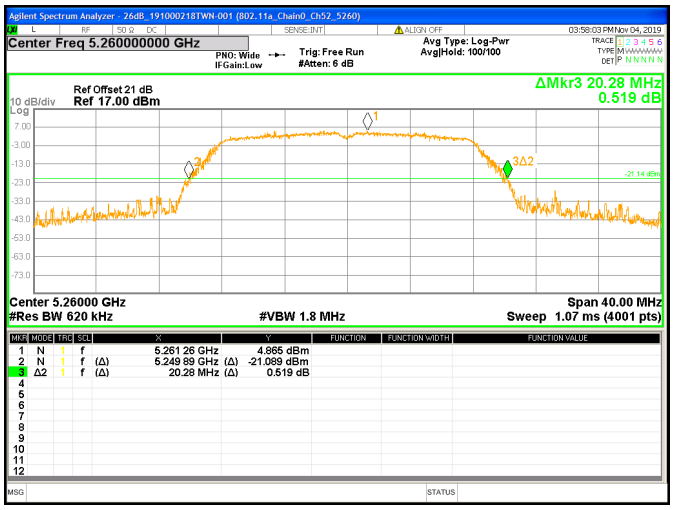
Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch36



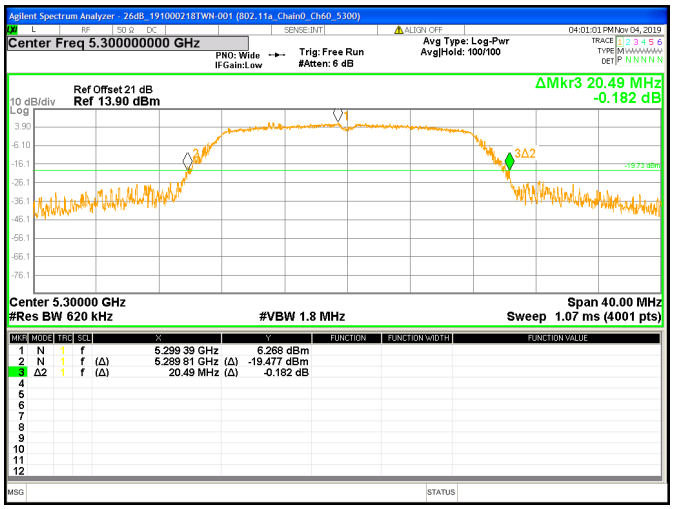
Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch44

Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch48

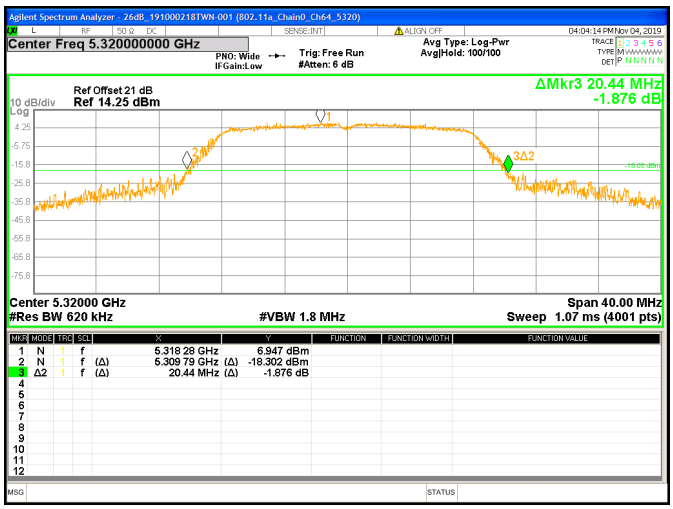
Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch52



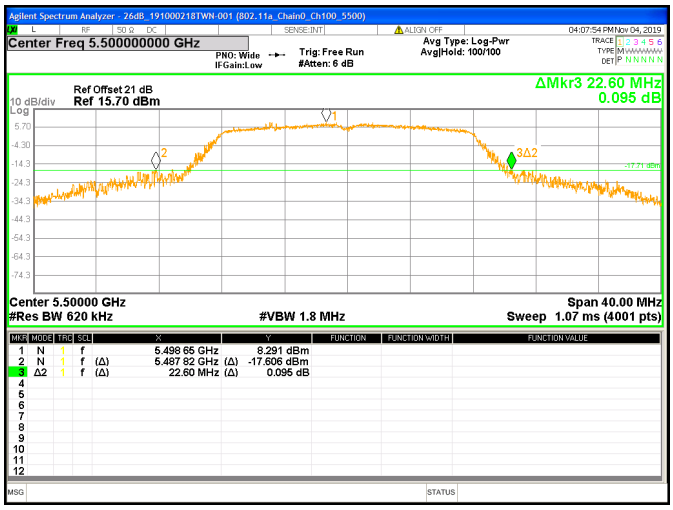
Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch60



Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch64

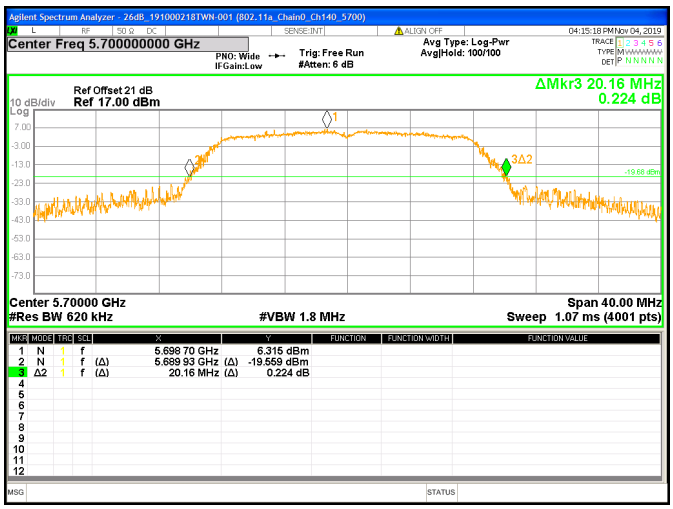


Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch100

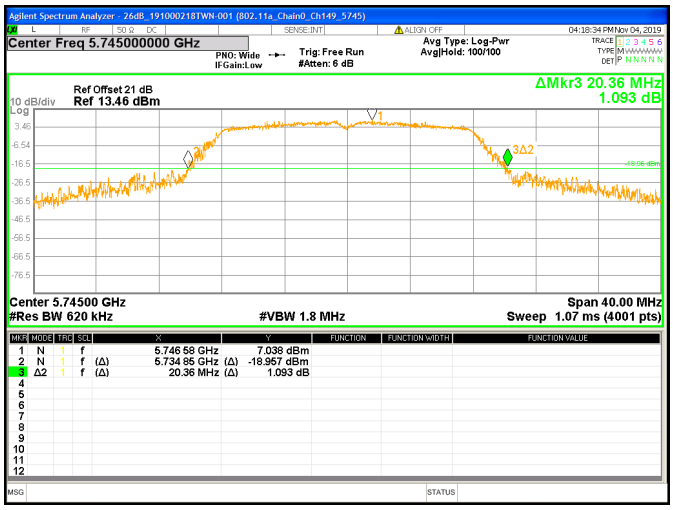


Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch120

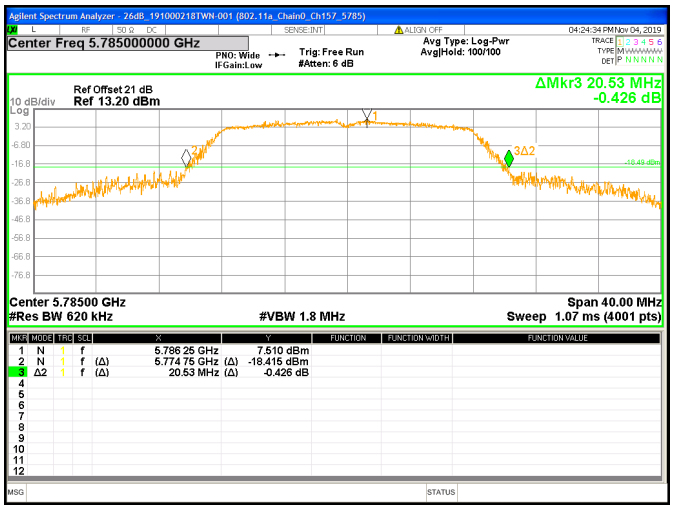
Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch140



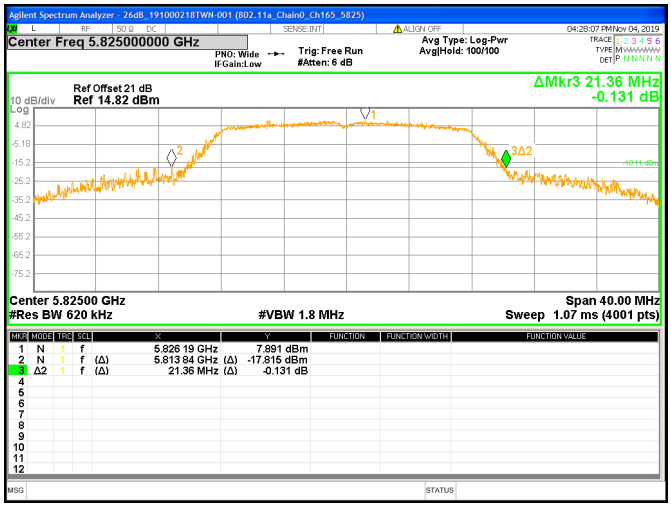
Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch149



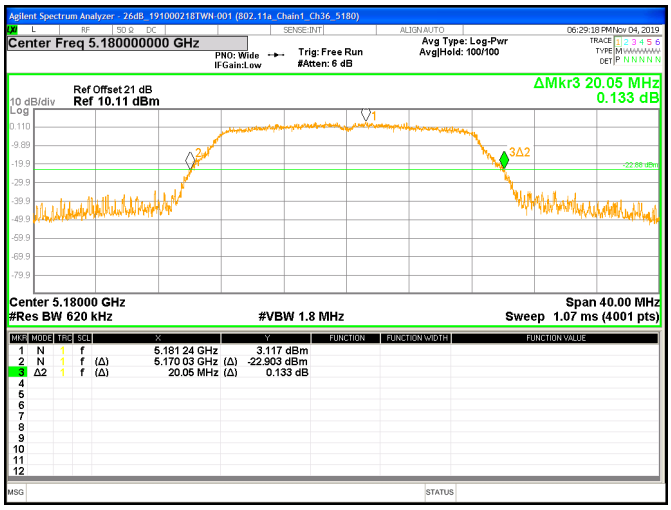
Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch157



Chain0 : Emission Bandwidth-26dB @ 802.11a Mode Ch165

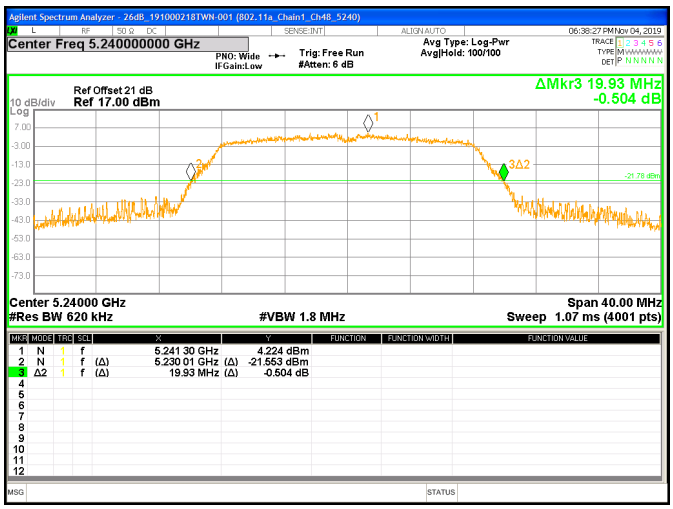


Chain1 : Emission Bandwidth-26dB @ 802.11a Mode Ch36



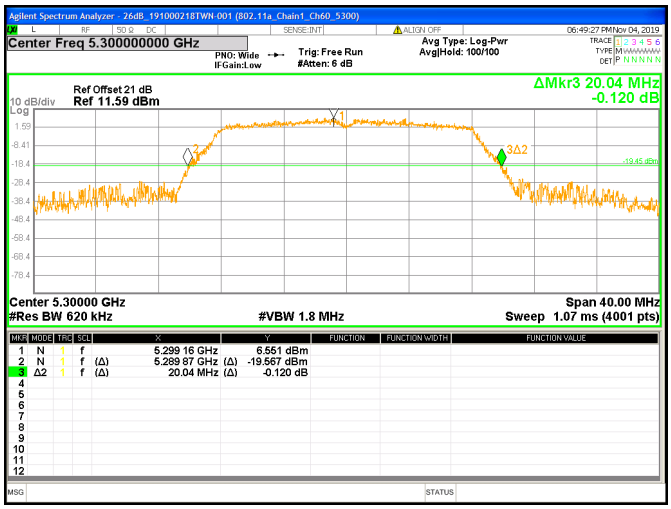
Chain1 : Emission Bandwidth-26dB @ 802.11a Mode Ch44

Chain1 : Emission Bandwidth-26dB @ 802.11a Mode Ch48



Chain1 : Emission Bandwidth-26dB @ 802.11a Mode Ch52

Chain1 : Emission Bandwidth-26dB @ 802.11a Mode Ch60



Chain1 : Emission Bandwidth-26dB @ 802.11a Mode Ch64