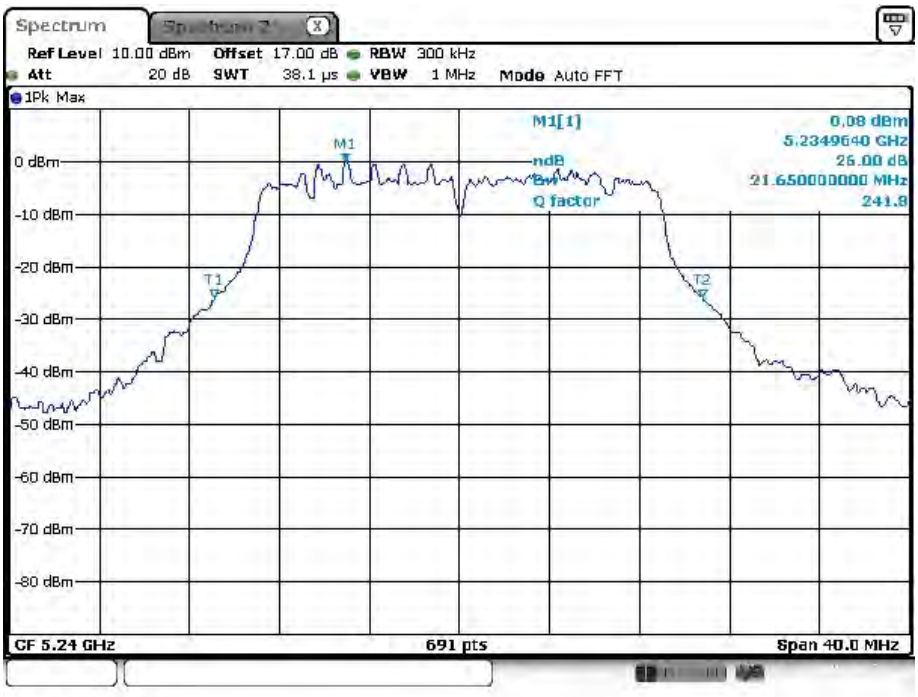
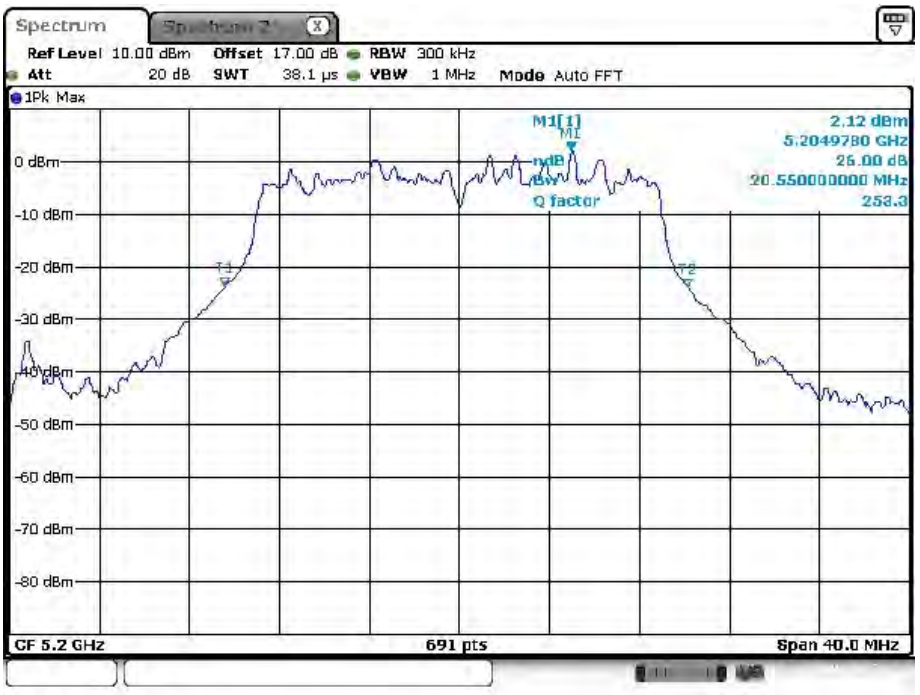
5240MHz



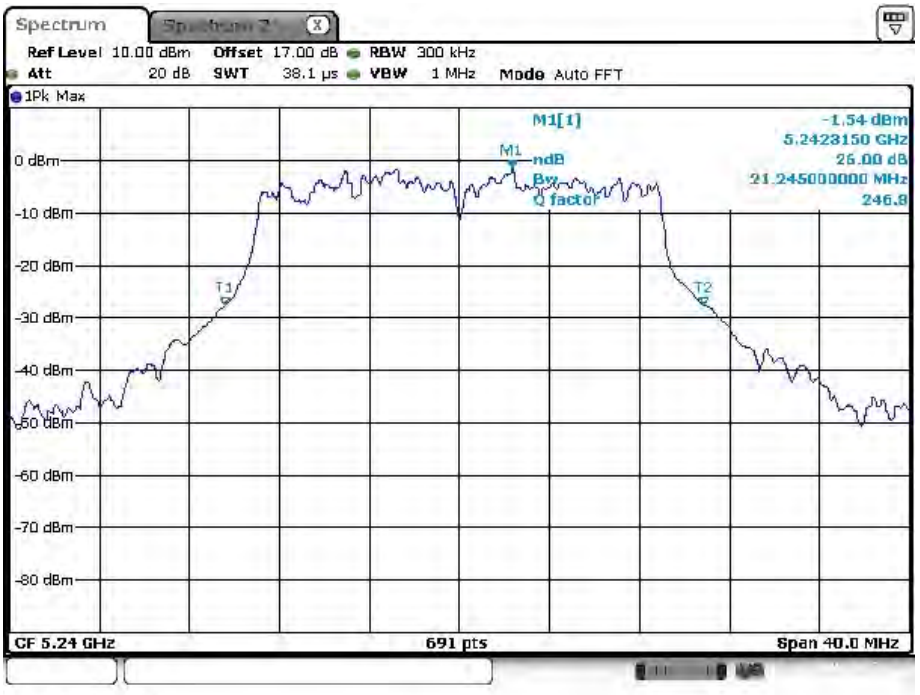
IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz(chain 3)

5180MHz

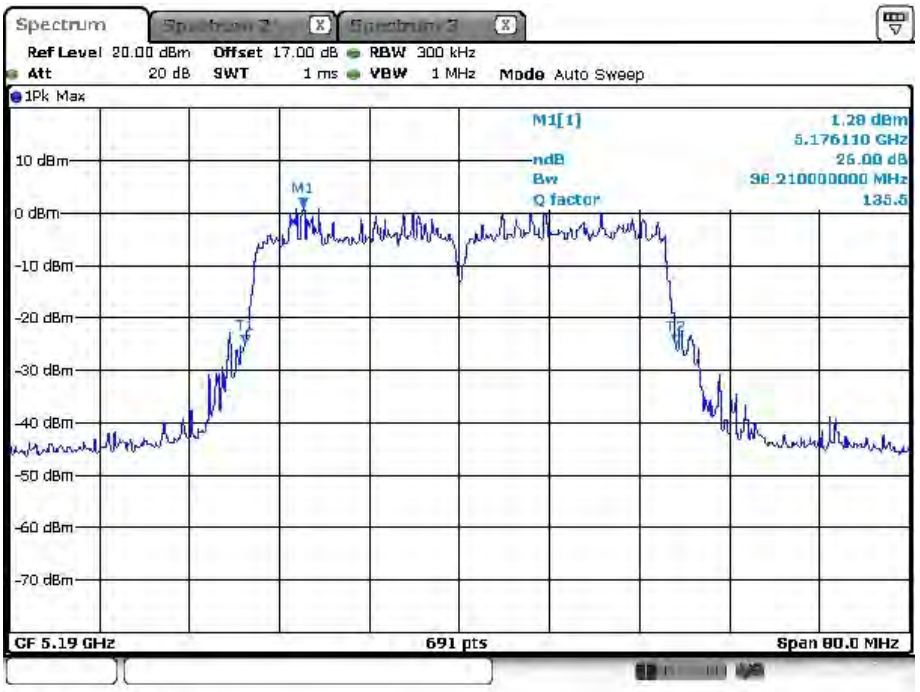
5200MHz



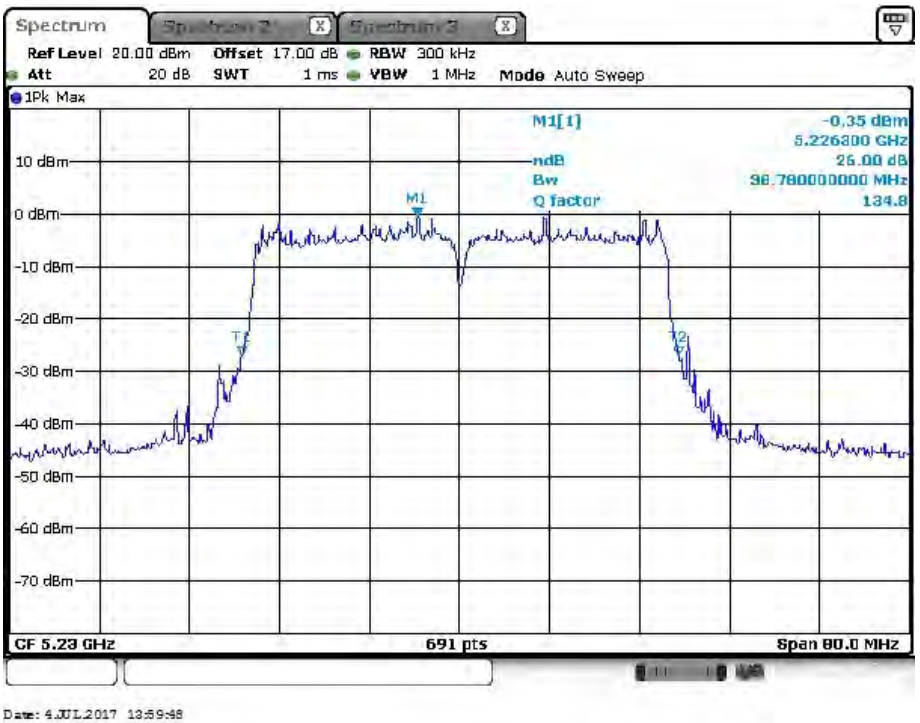
5240MHz



IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 0)
5190MHz



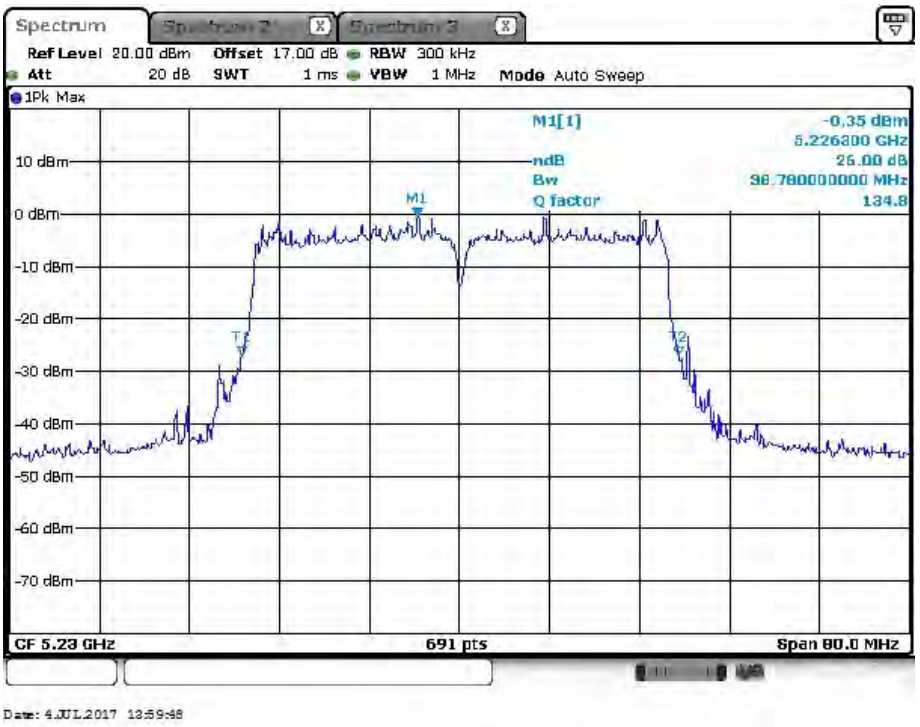
5230MHz



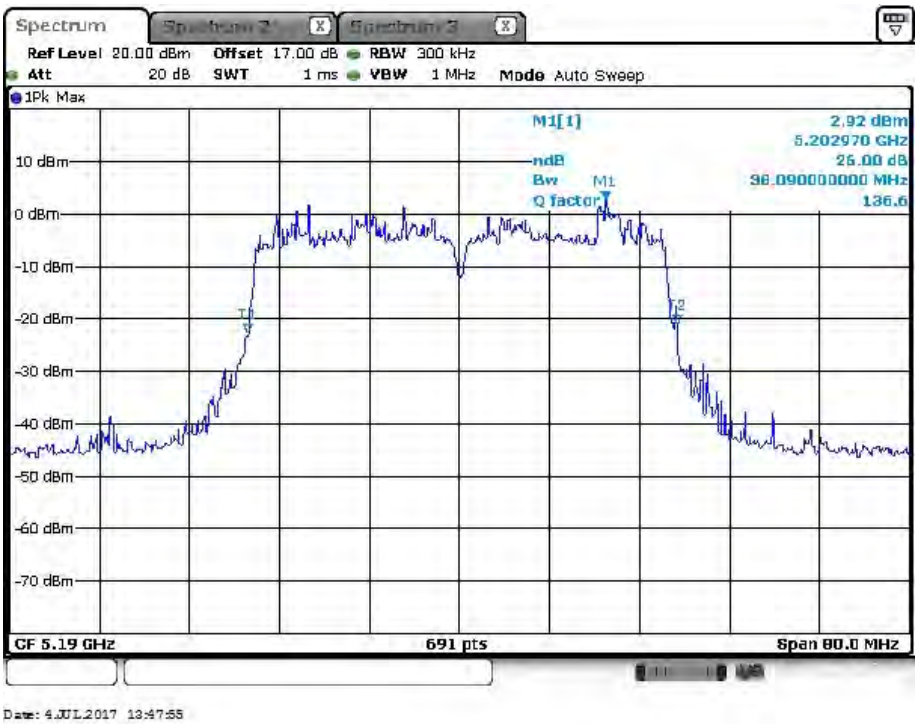
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 1)

5190MHz

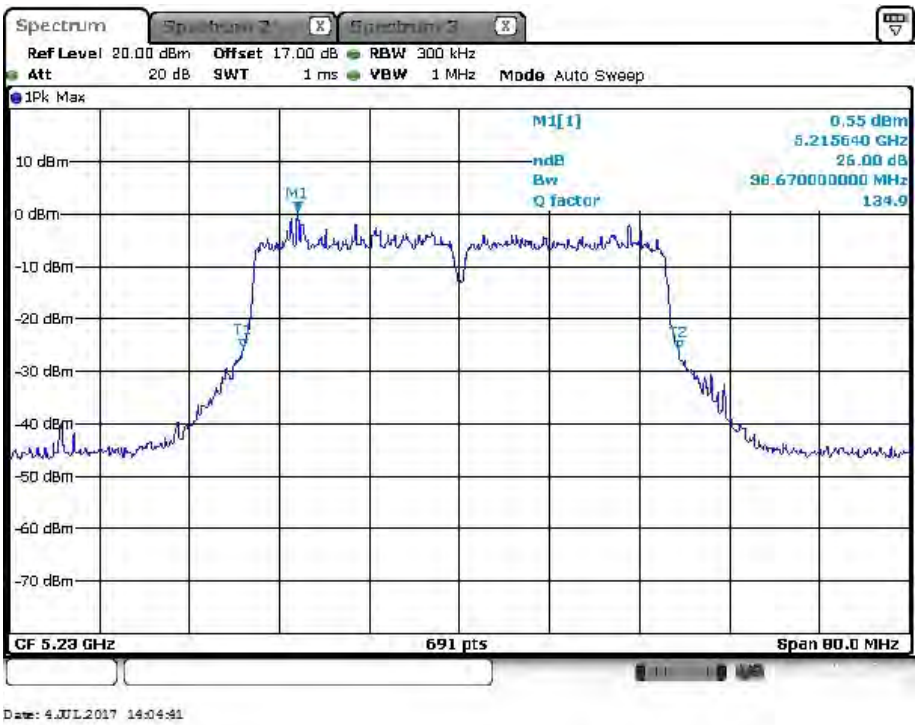
5230MHz



IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 2)
5190MHz

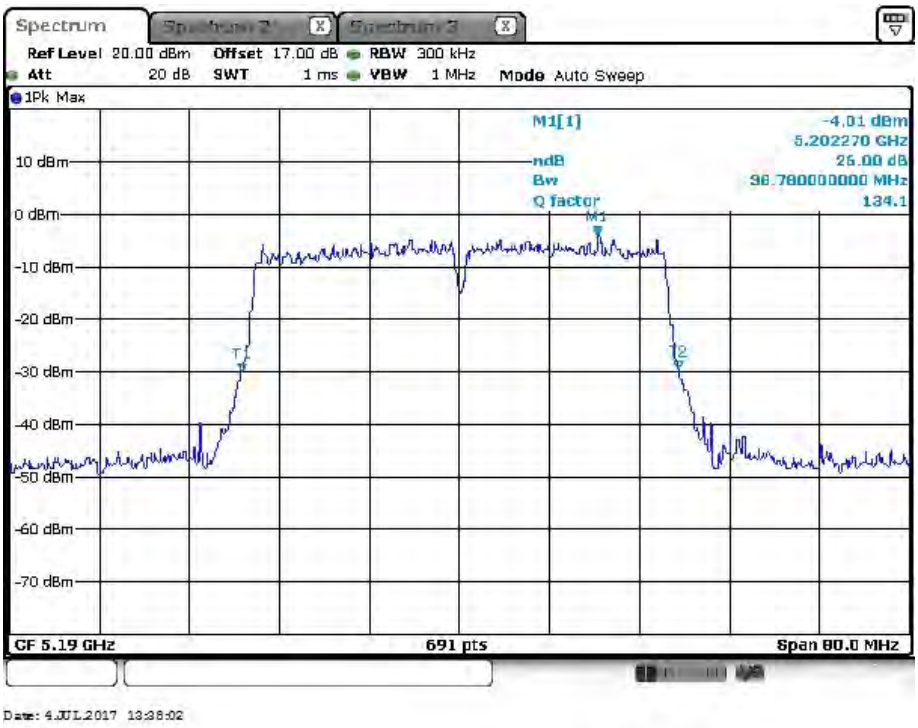


5230MHz

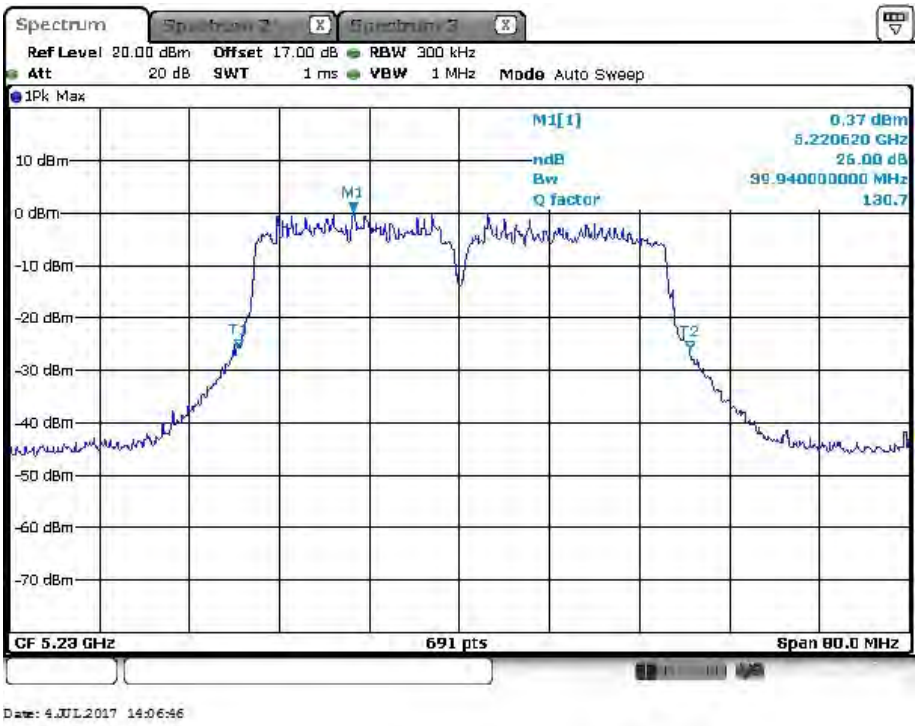


IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 3)

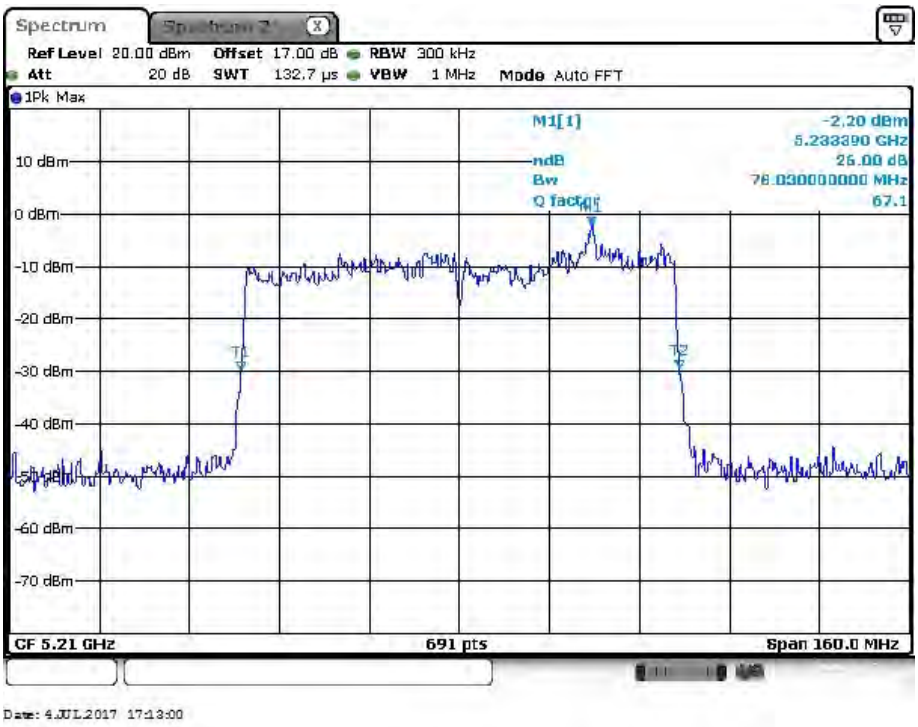
5190MHz



5230MHz

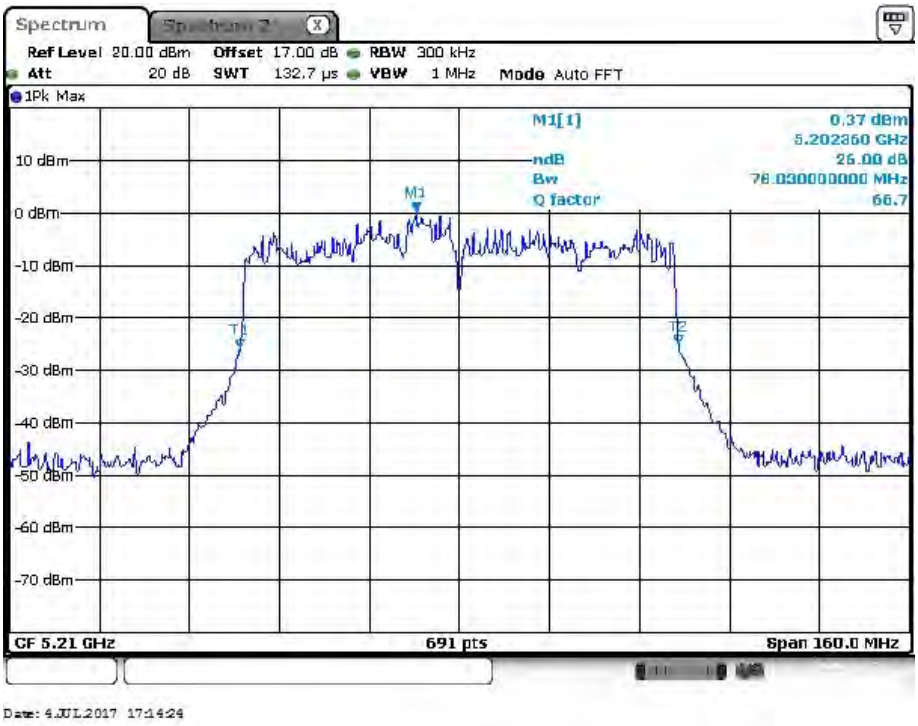


IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz(chain 0)
5210MHz

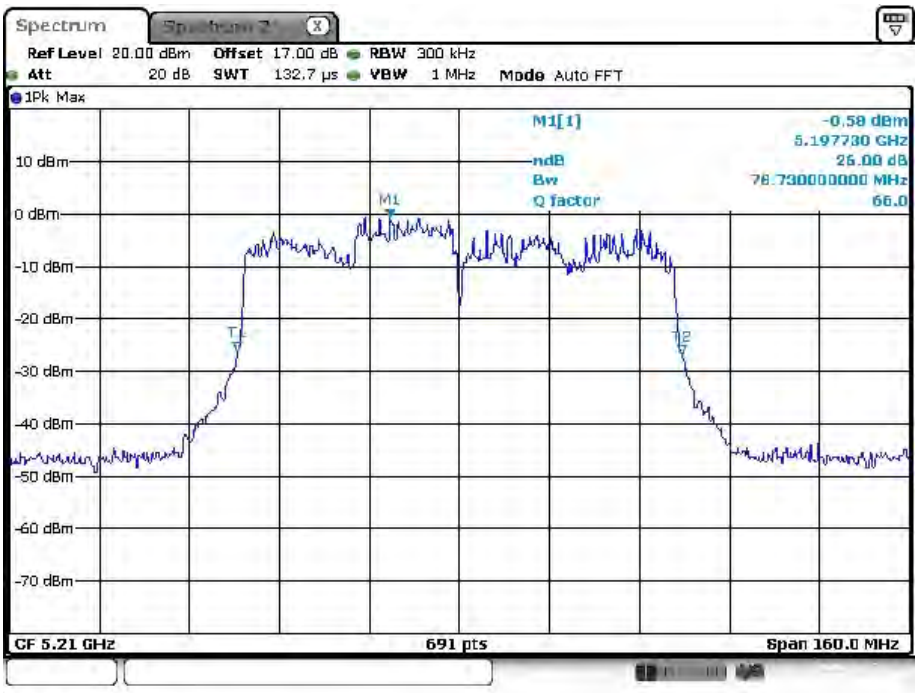


IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz(chain 1)

5210MHz

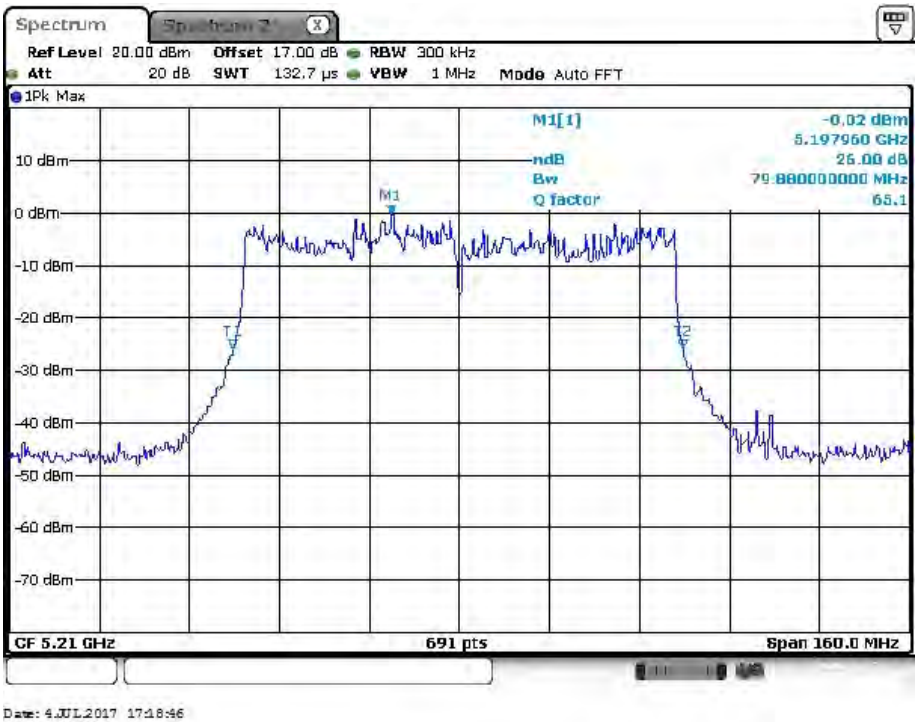


IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz(chain 2)
5210MHz



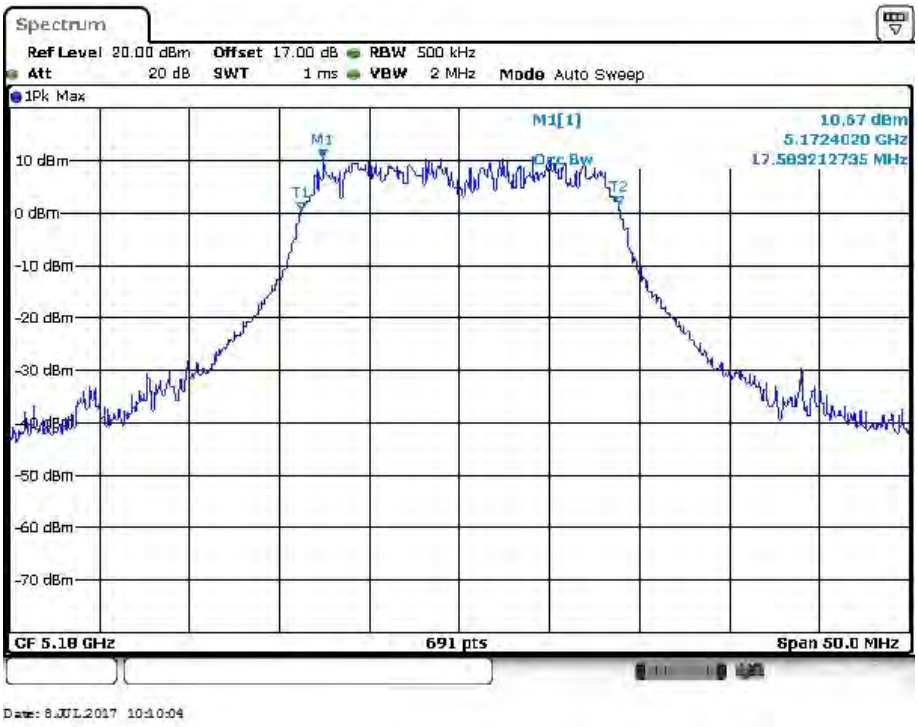
IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz(chain 3)

5210MHz

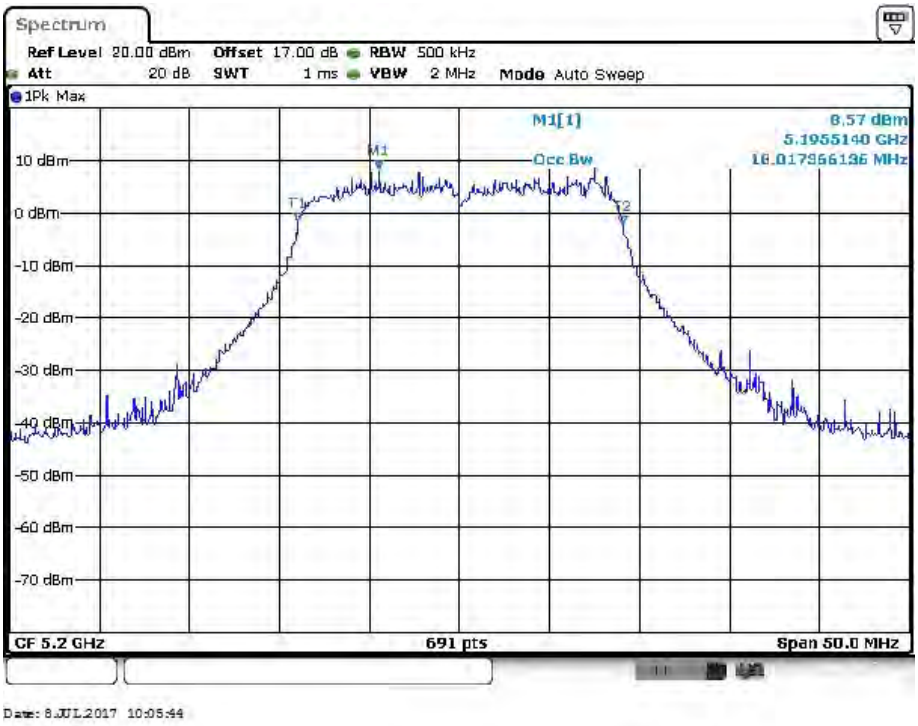


OBW99%
IEEE 802.11ac VHT20 mode / 5180 ~ 5250MHz (chain 0)

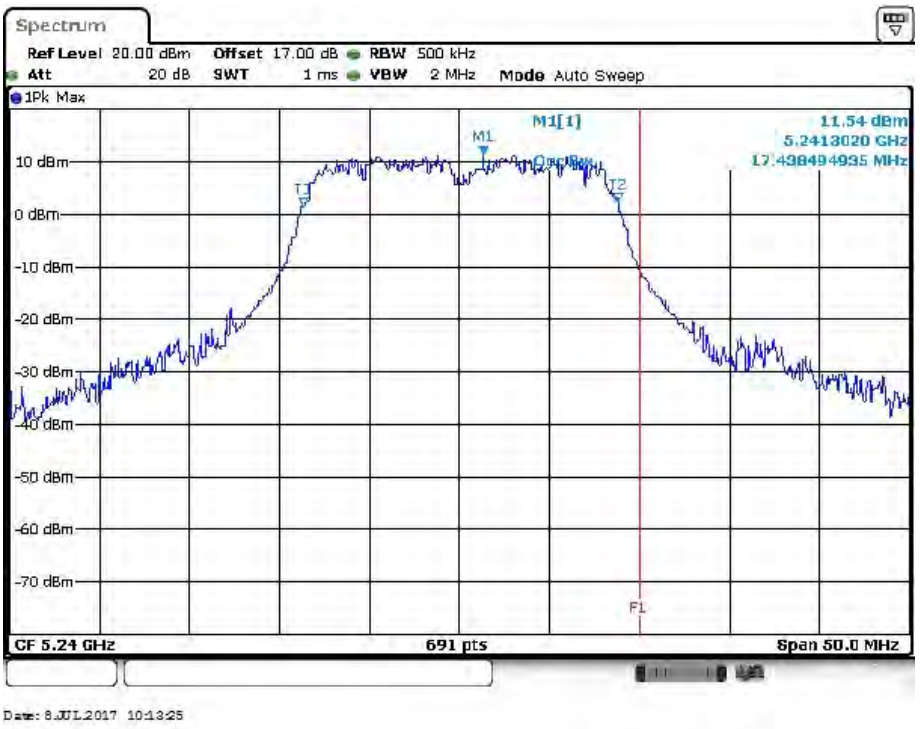
5180MHz



5200MHz

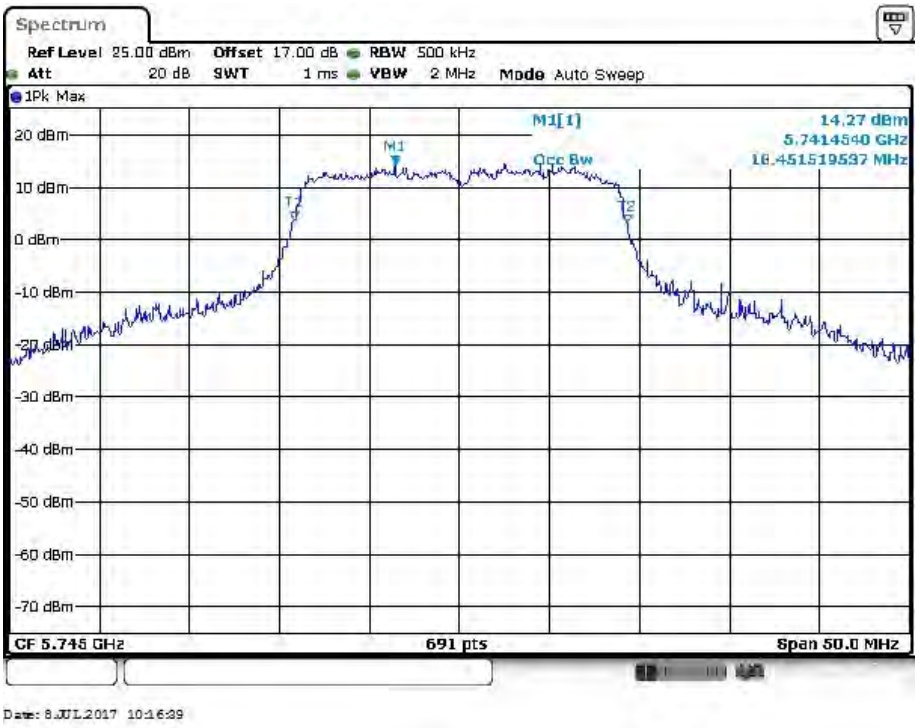


5240MHz

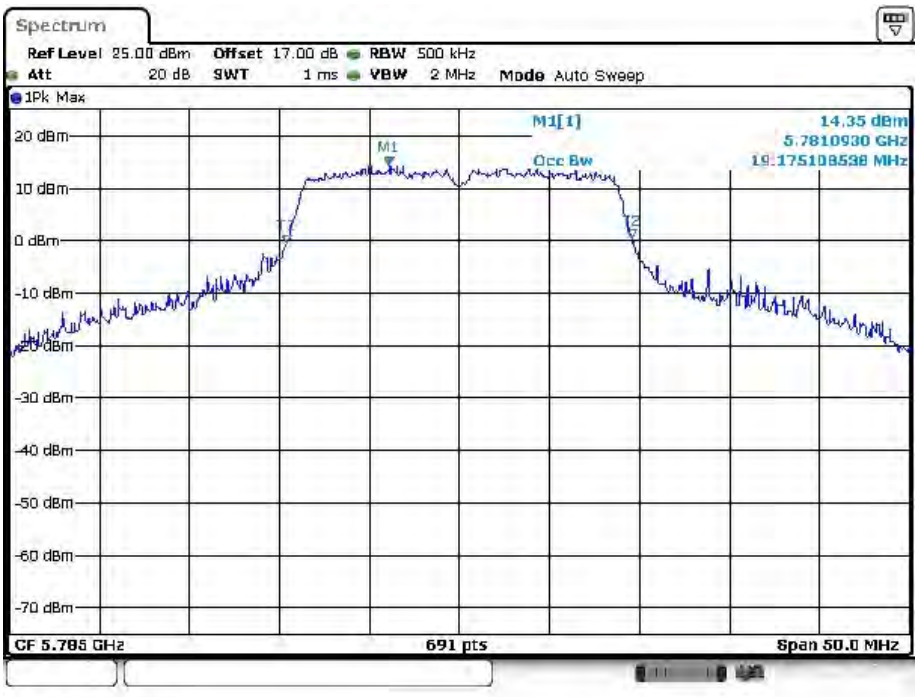


IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 0)

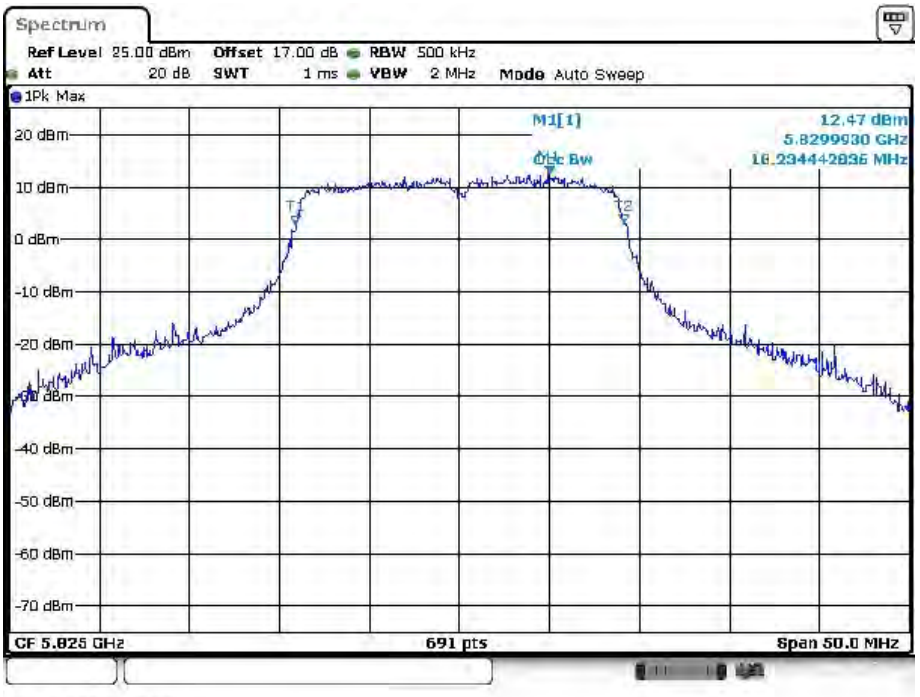
5745MHz



5785MHz

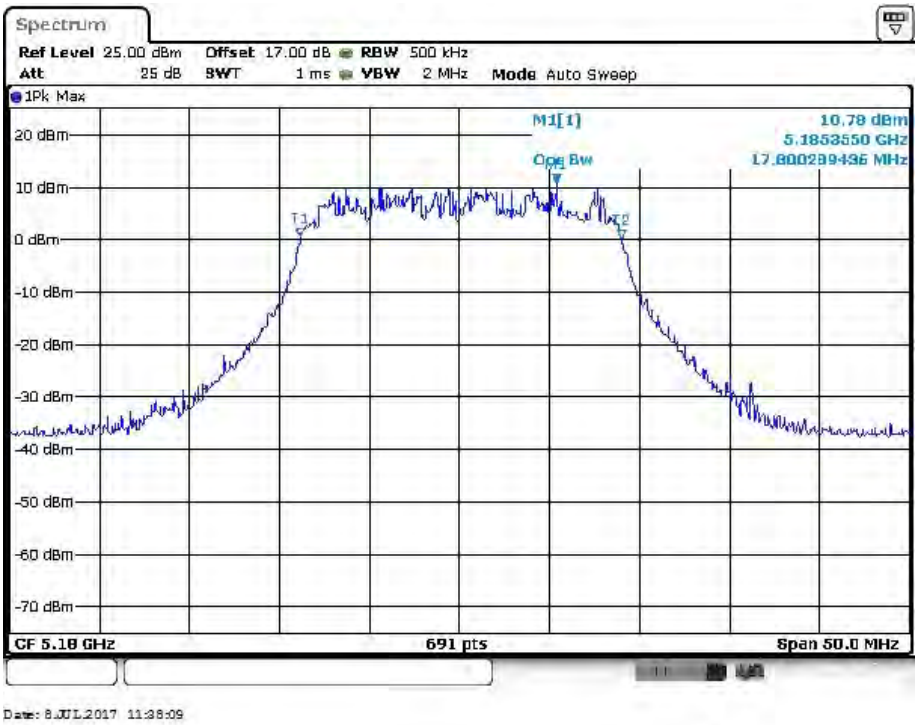


5825MHz

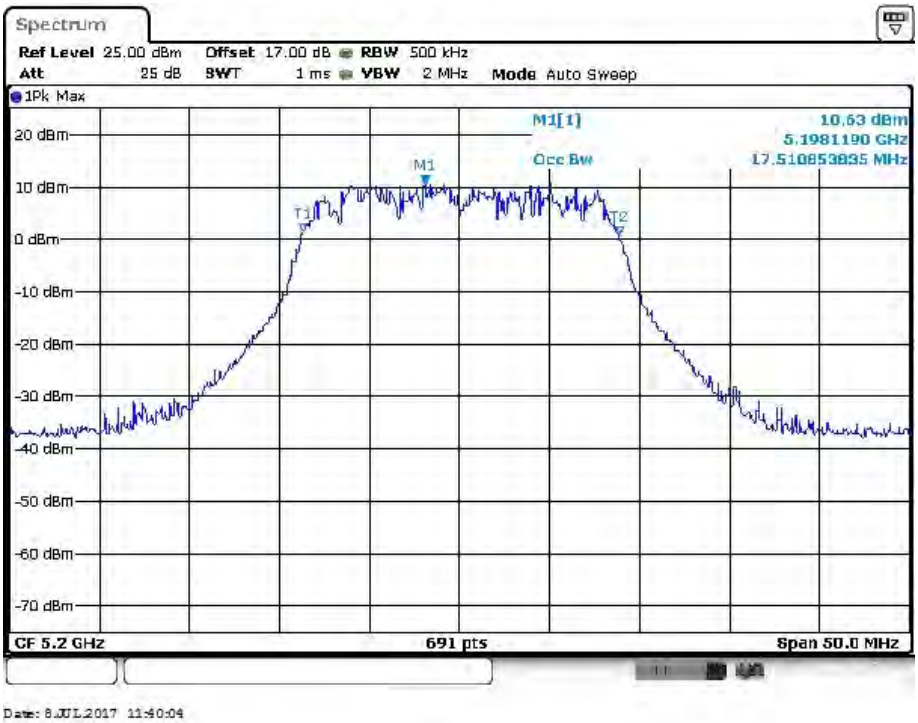


IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz(chain 1)

5180MHz



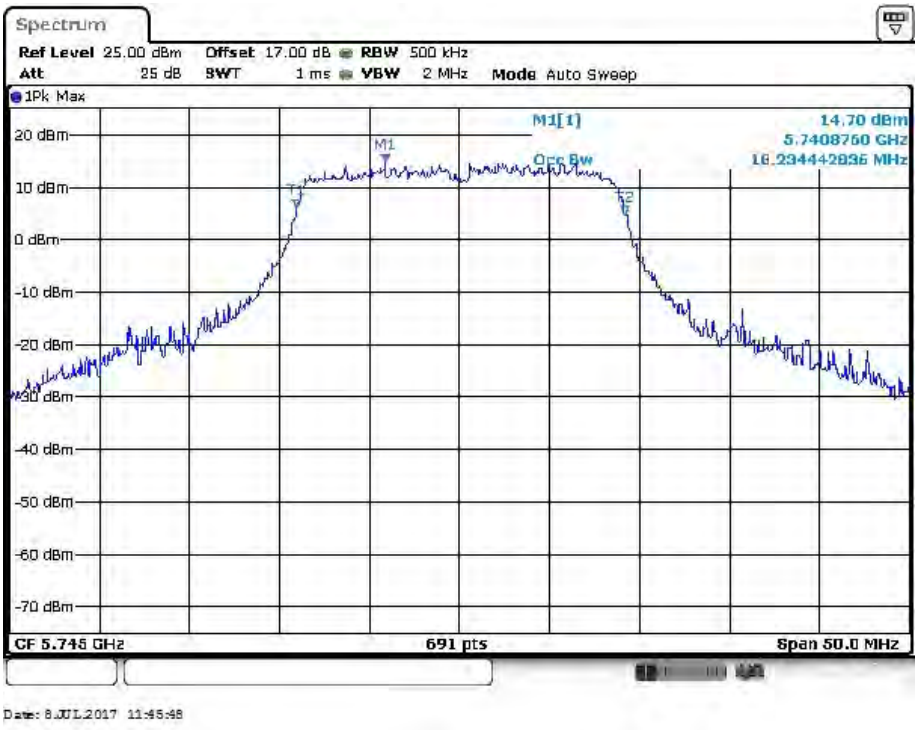
5200MHz



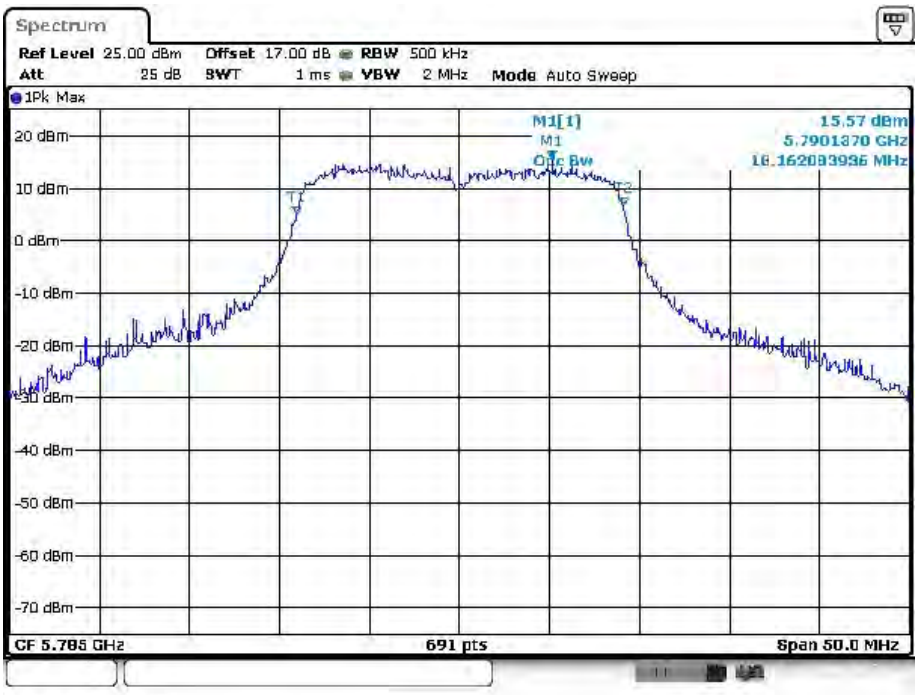
5240MHz

IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 1)

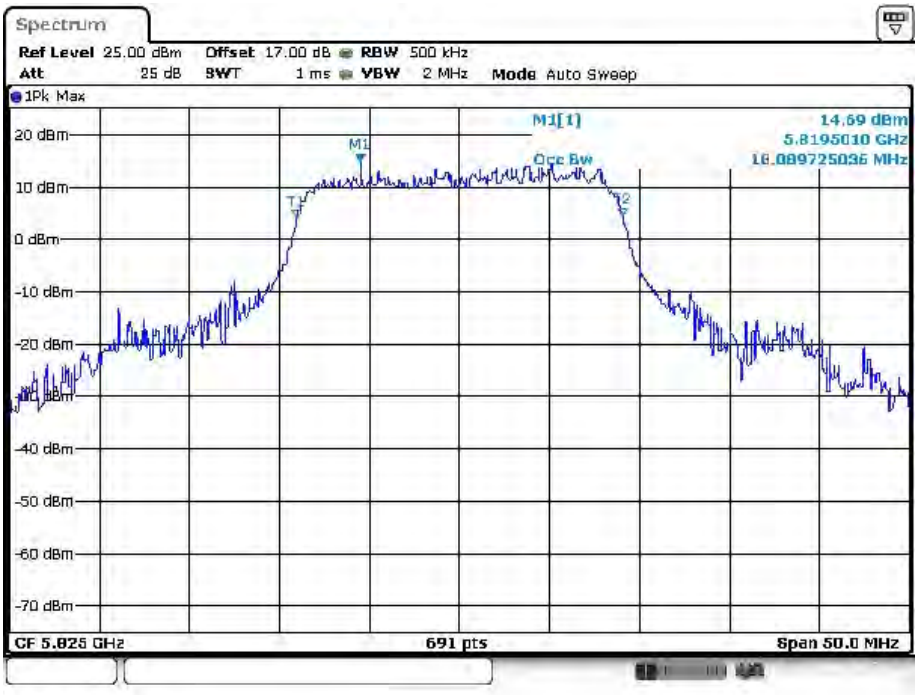
5745MHz



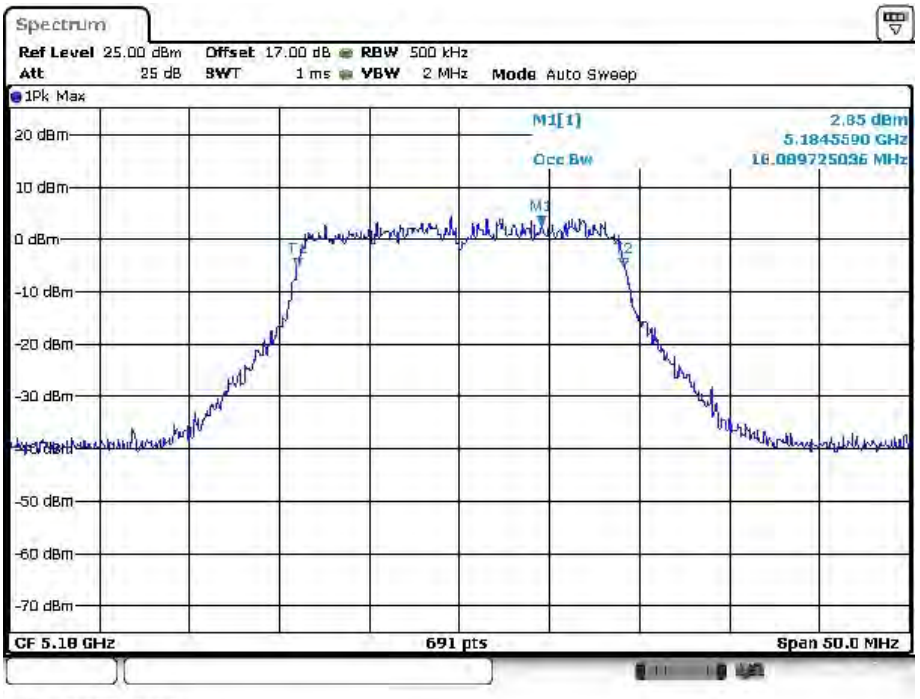
5785MHz



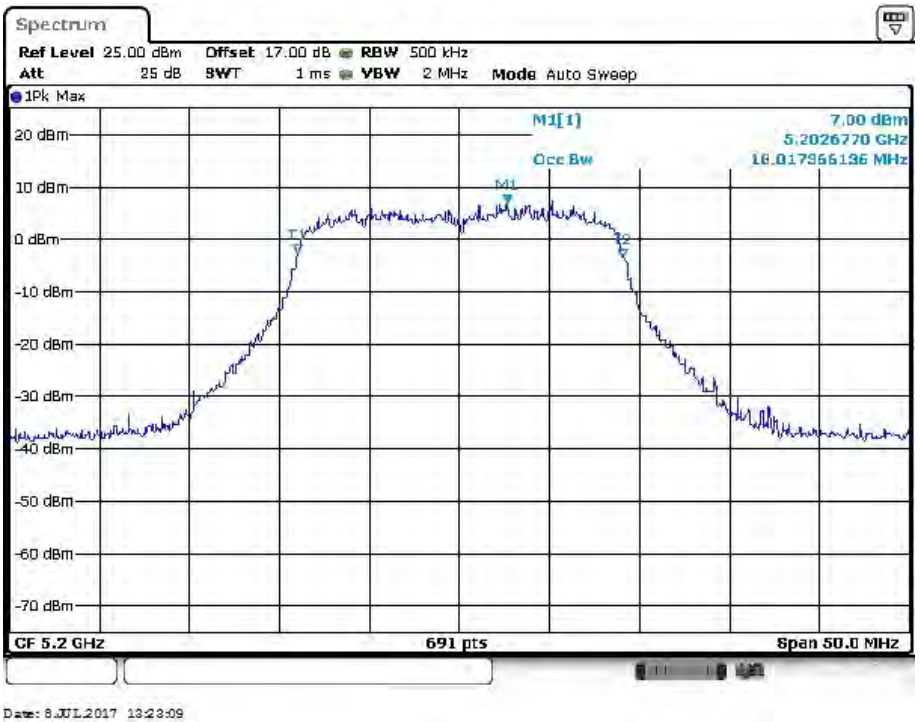
5825MHz



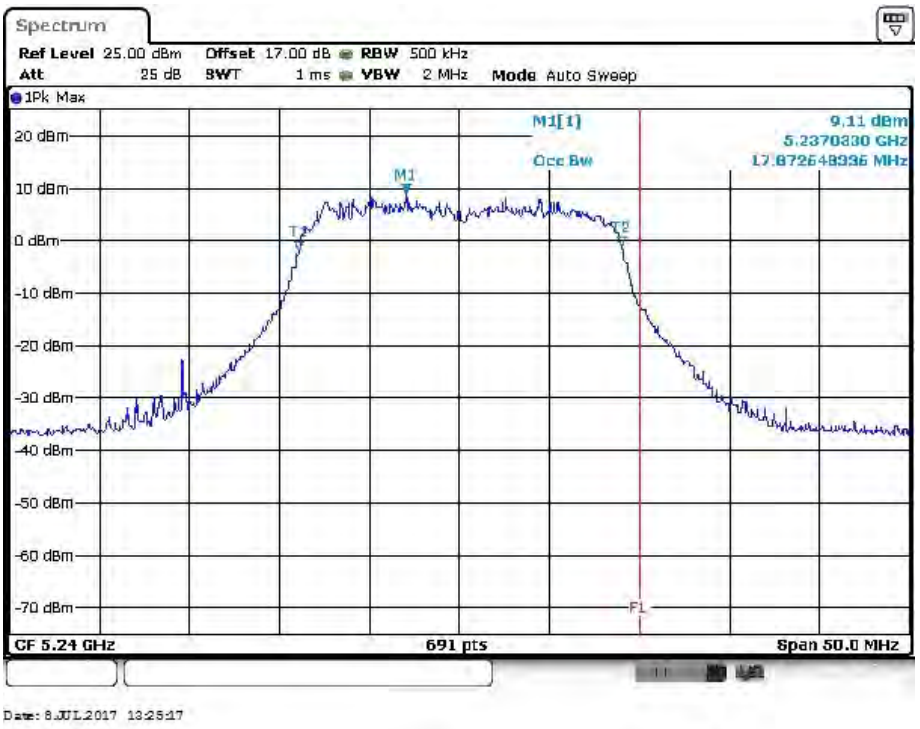
IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz(chain 2)
5180MHz



5200MHz

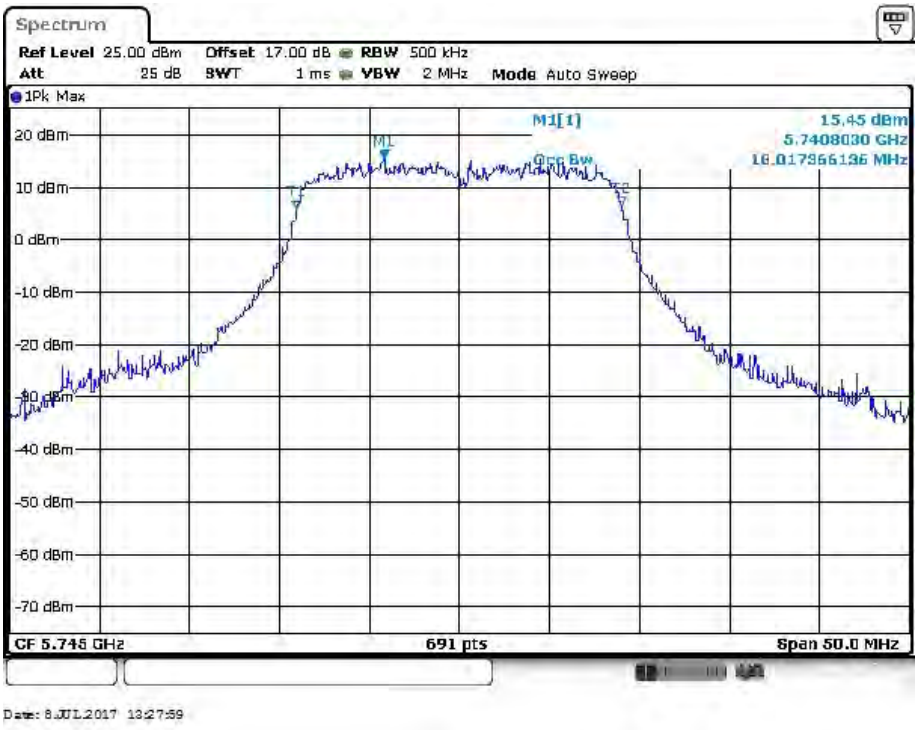


5240MHz

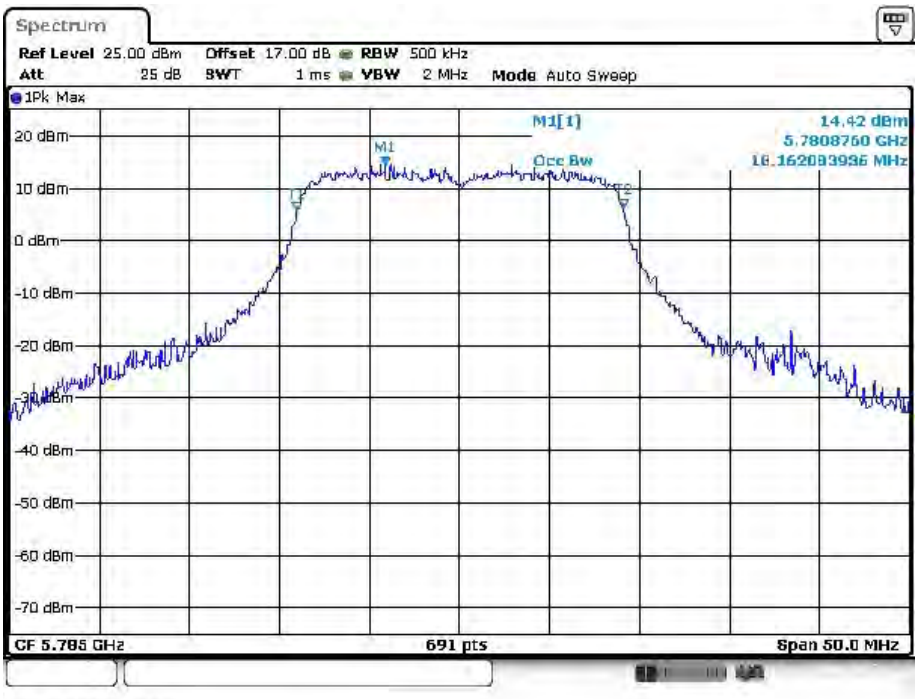


IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 2)

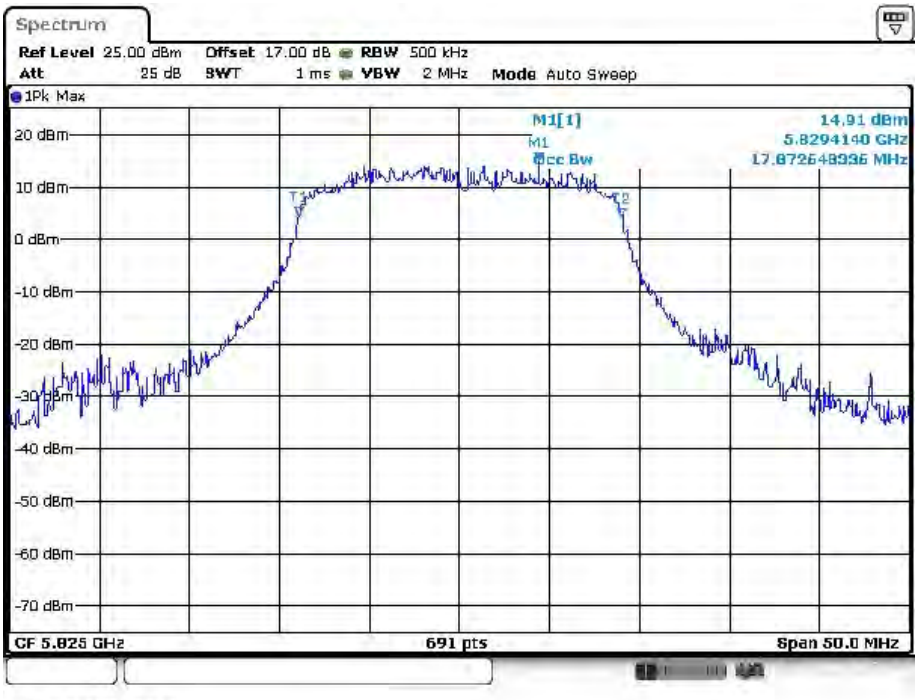
5745MHz



5785MHz

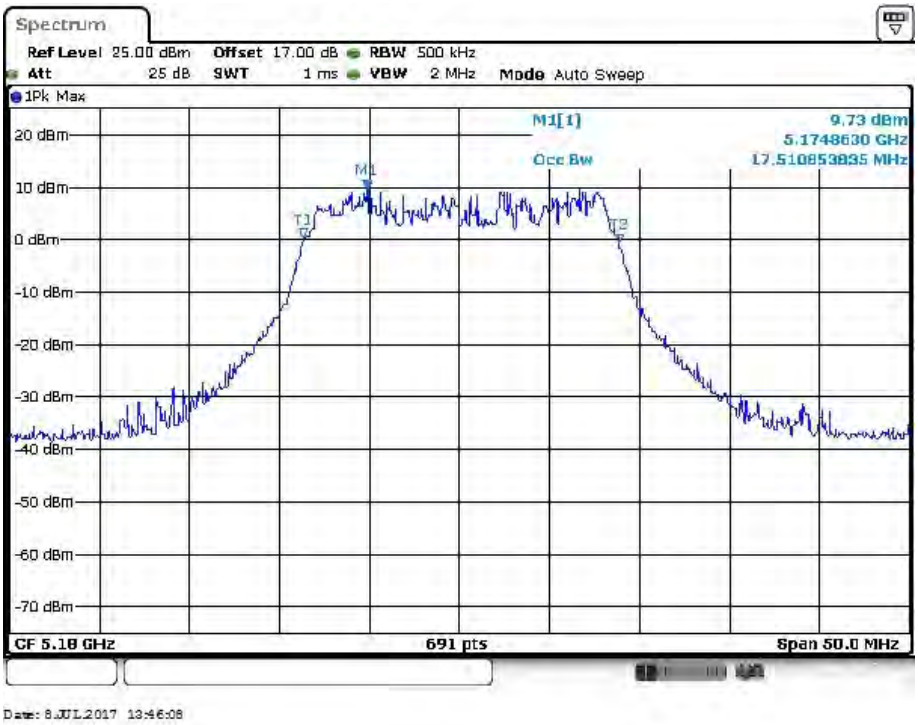


5825MHz

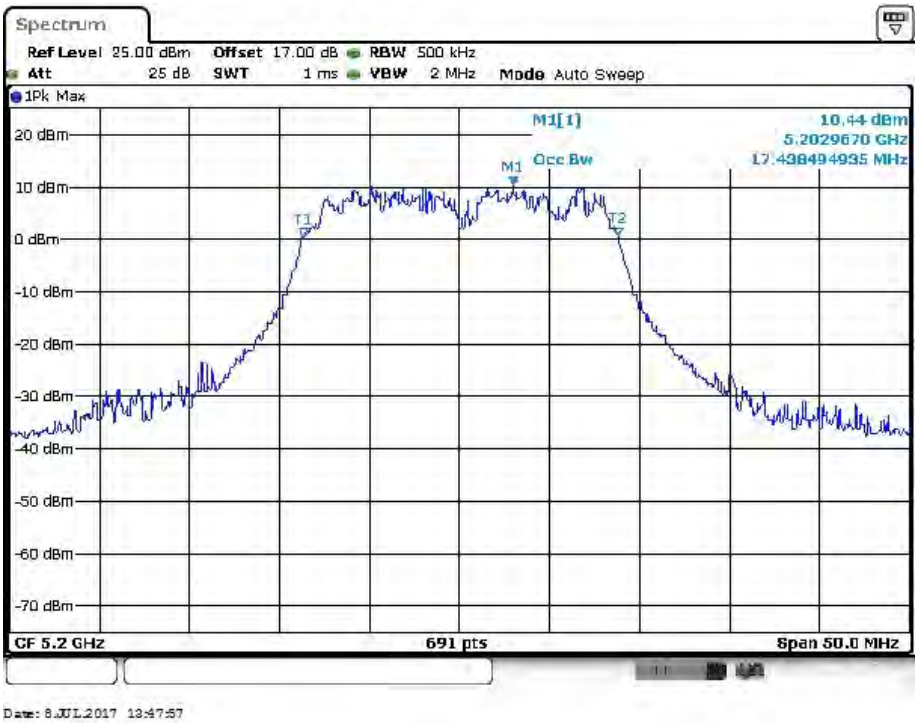


IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz(chain 3)

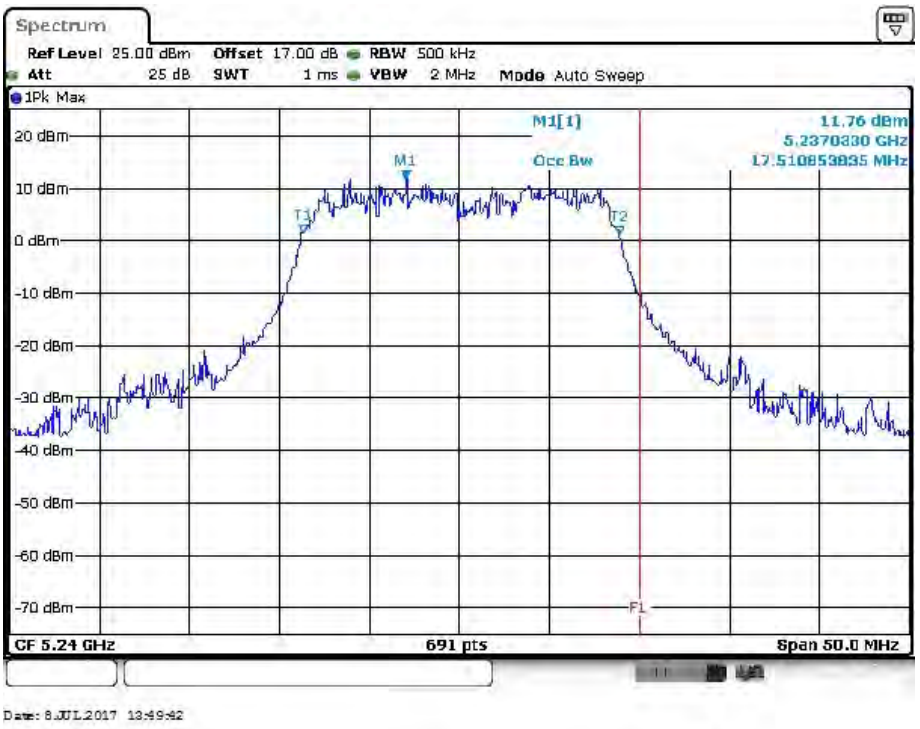
5180MHz



5200MHz

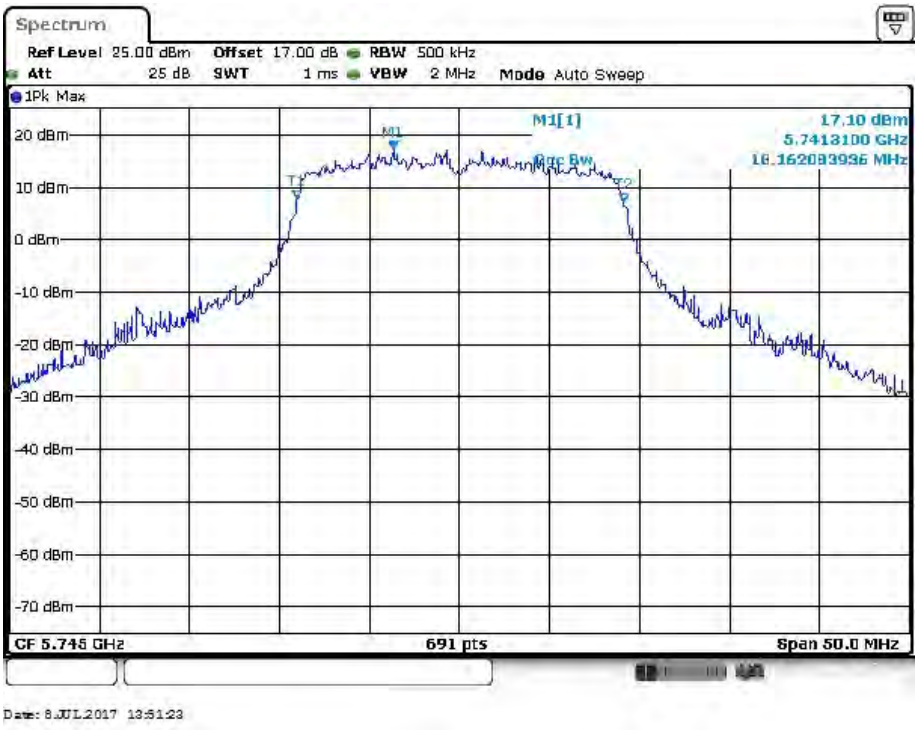


5240MHz

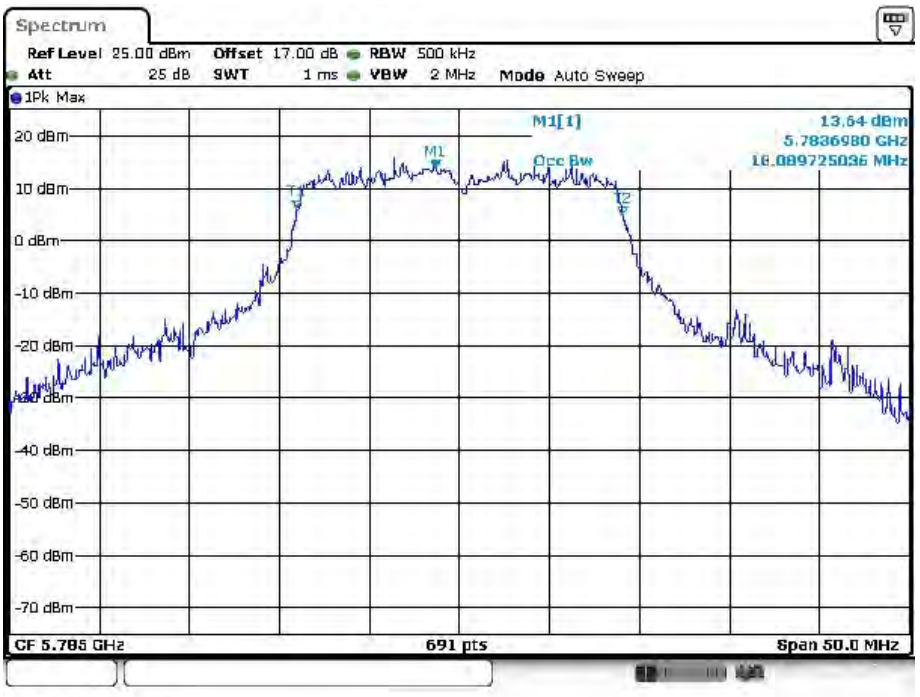


IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 3)

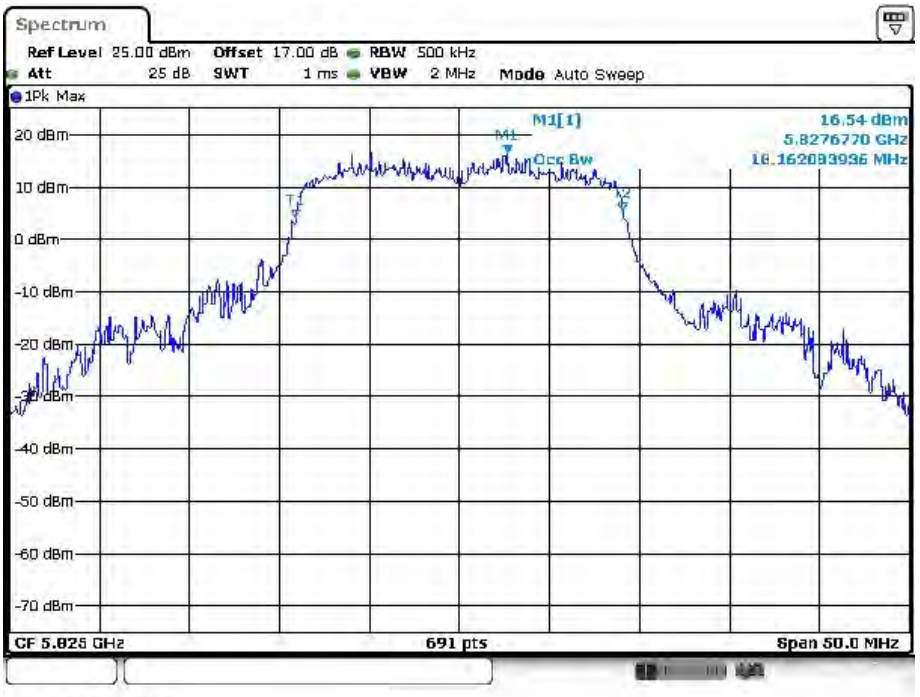
5745MHz



5785MHz

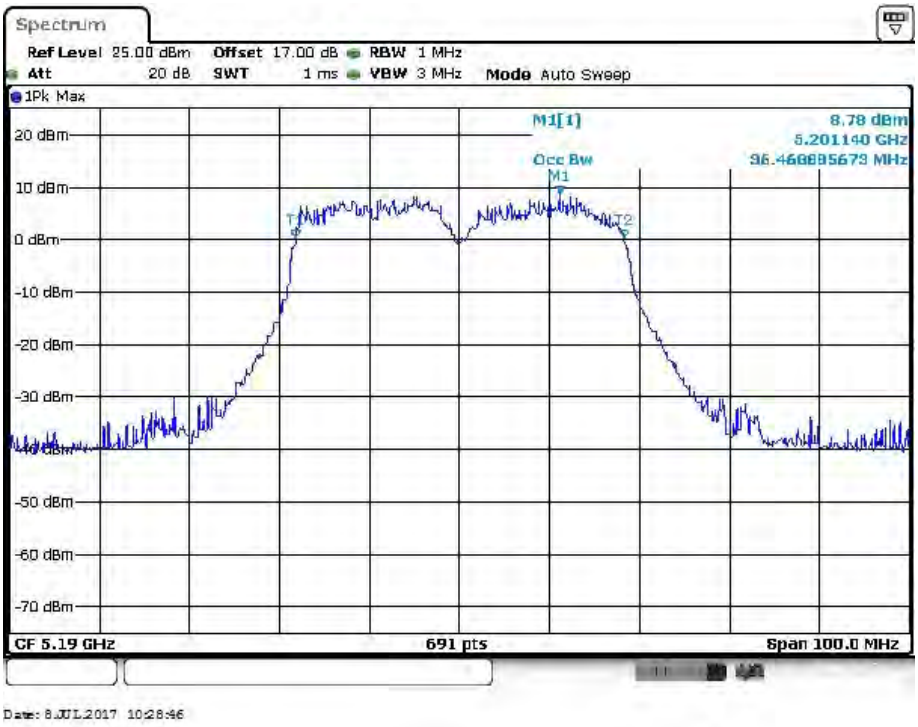


5825MHz

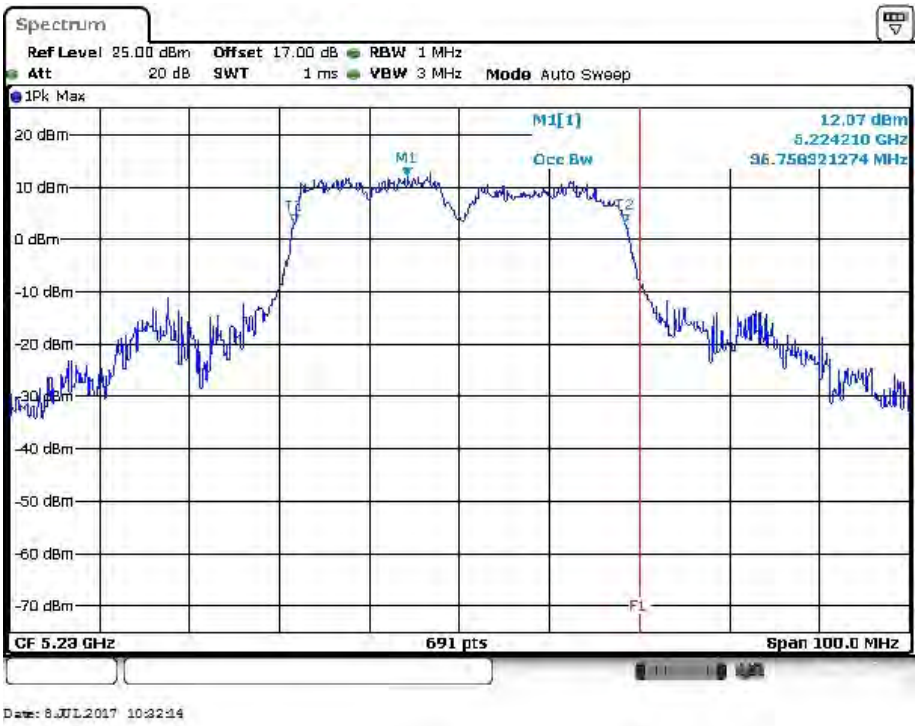


IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 0)

5190MHz

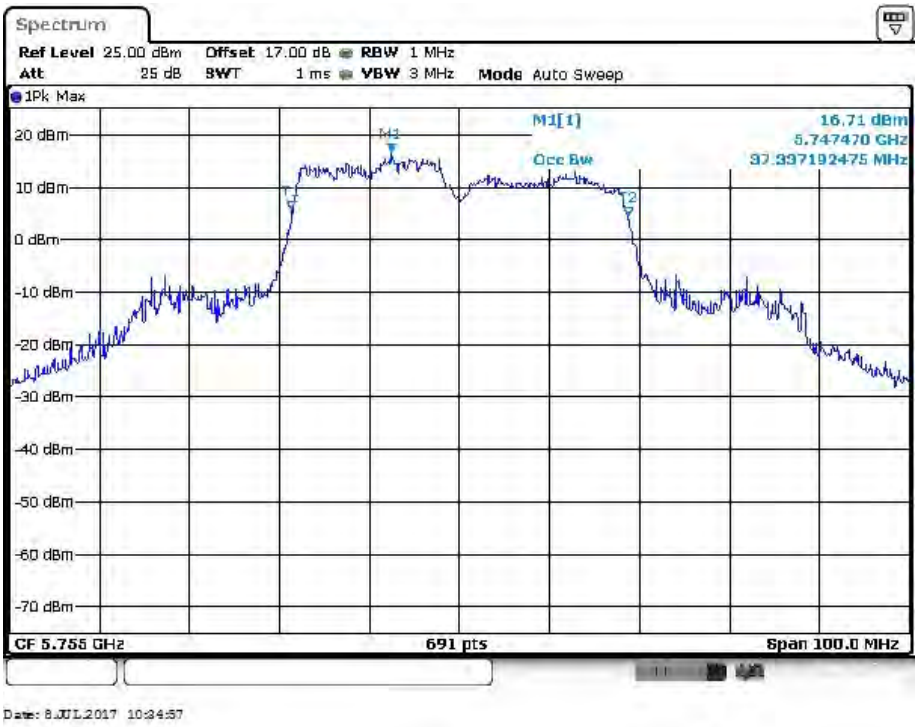


5230MHz

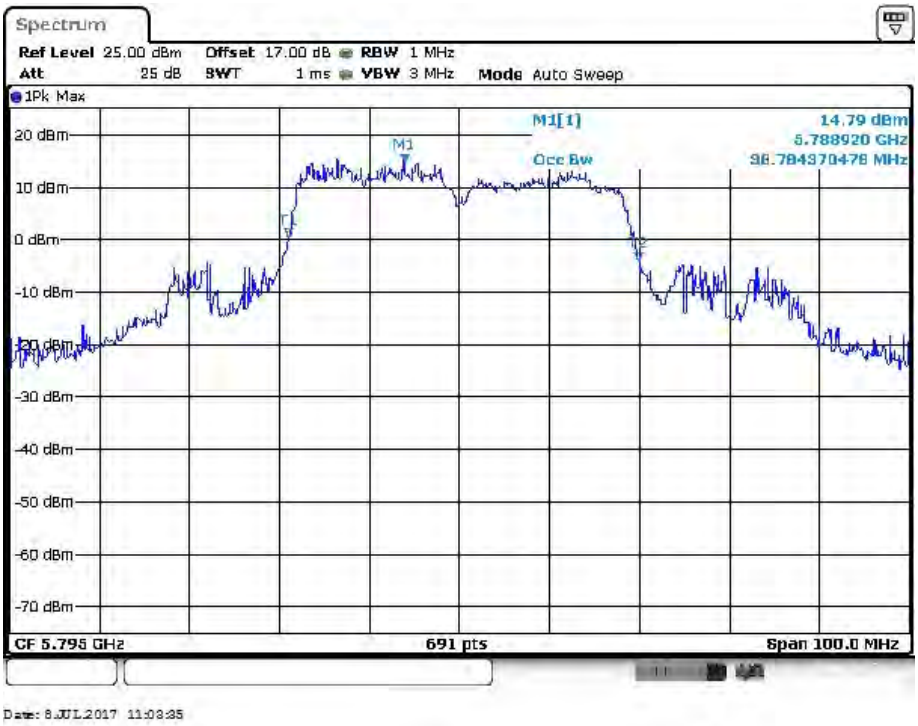


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 0)

5755MHz

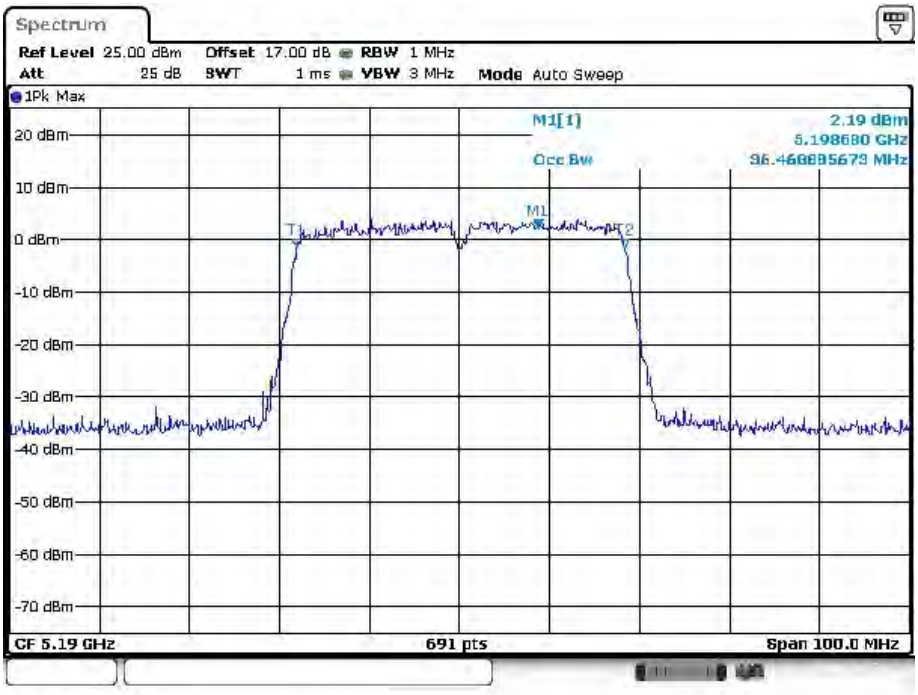


5795MHz

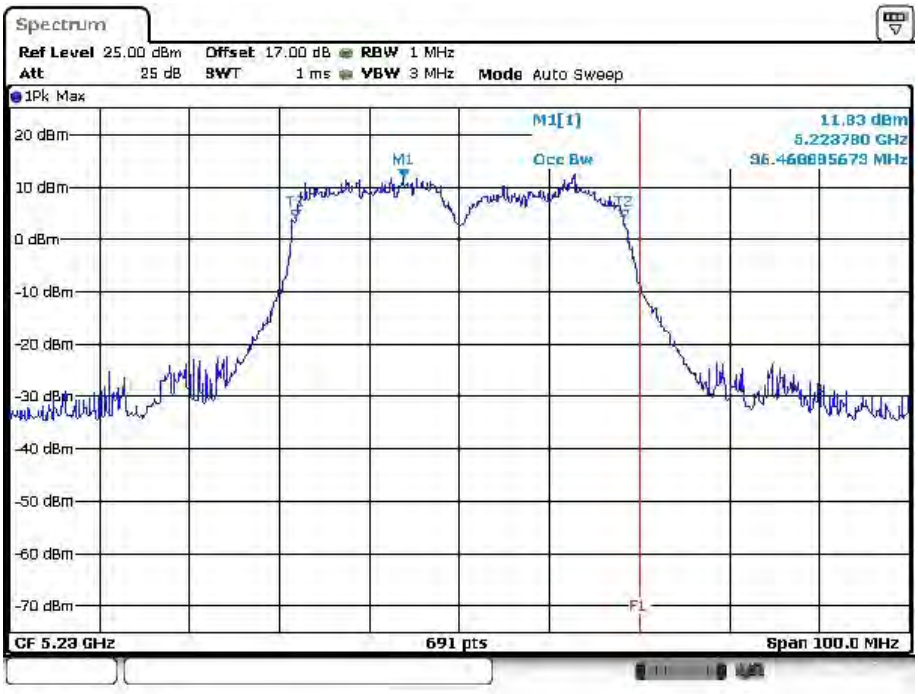


IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 1)

5190MHz

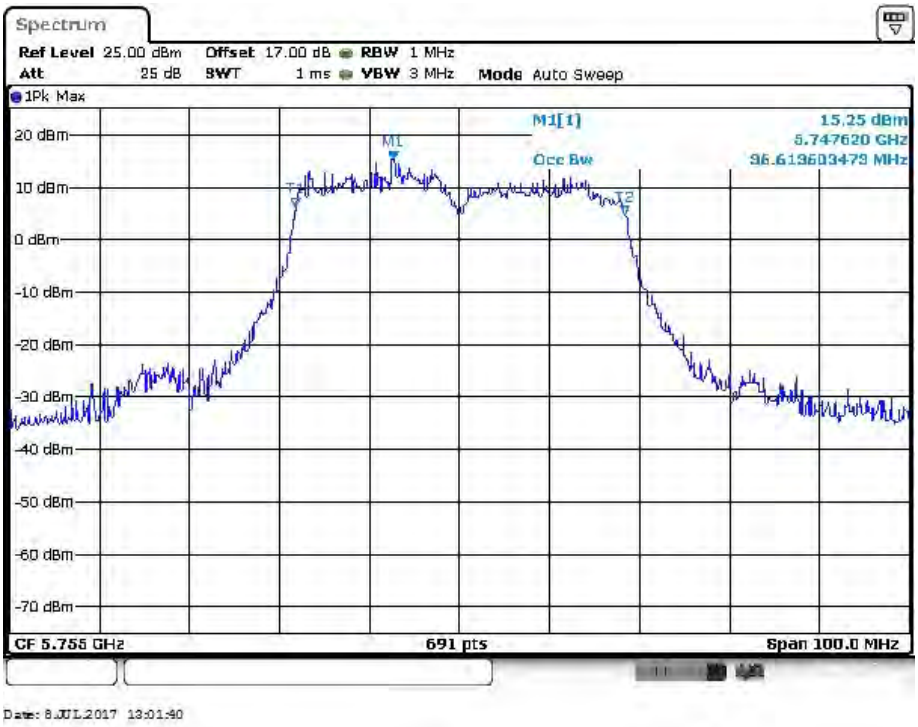


5230MHz

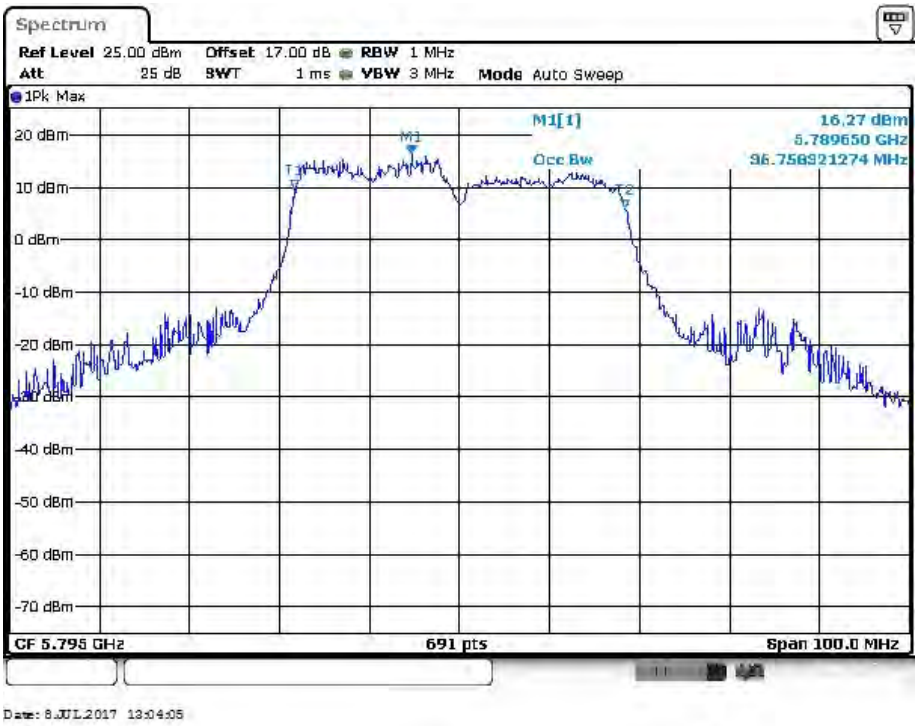


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 1)

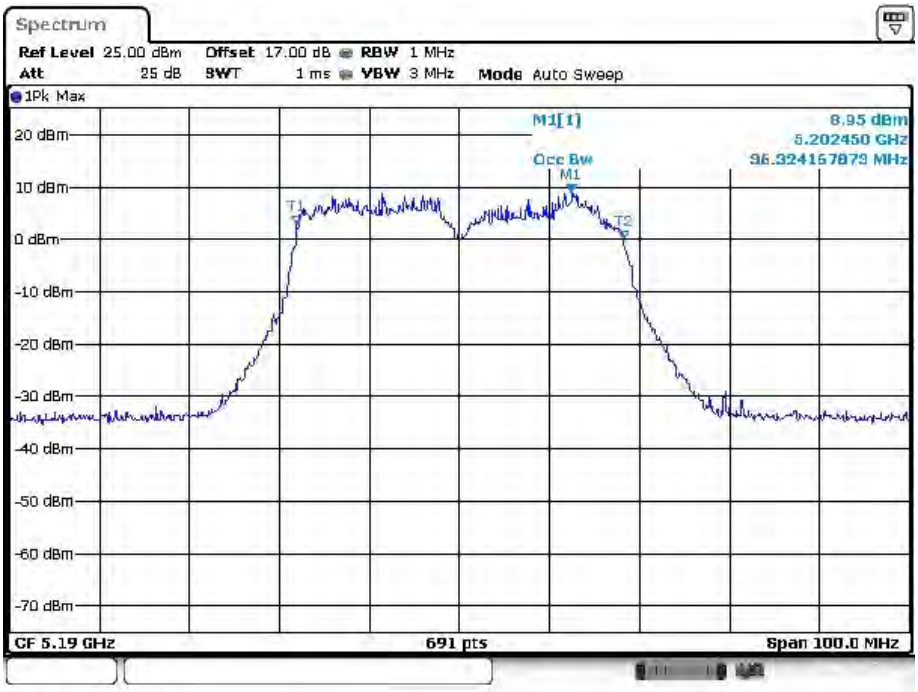
5755MHz



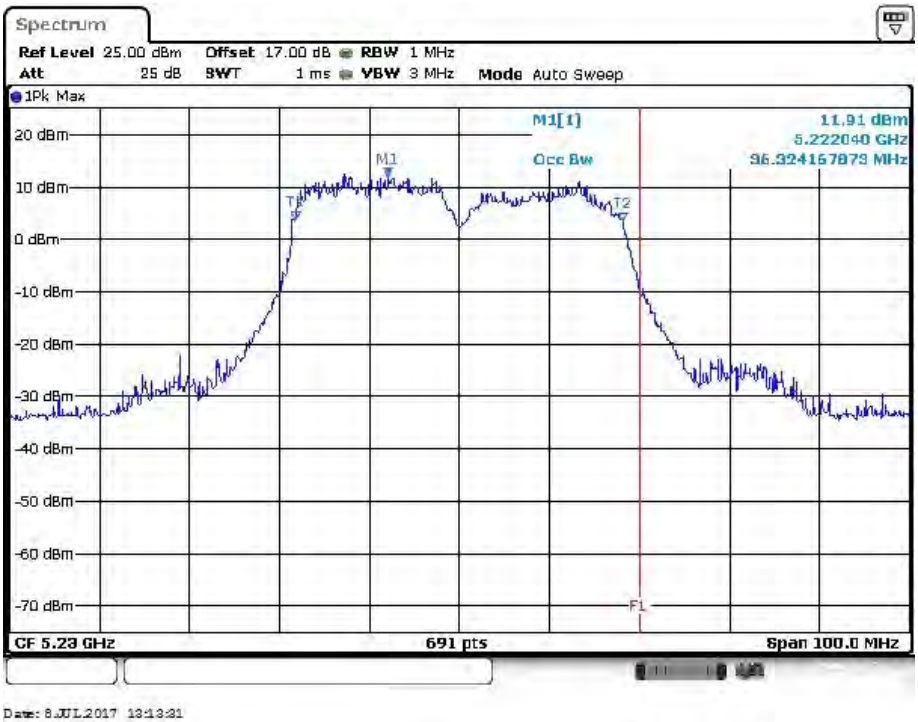
5795MHz



IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 2)
5190MHz

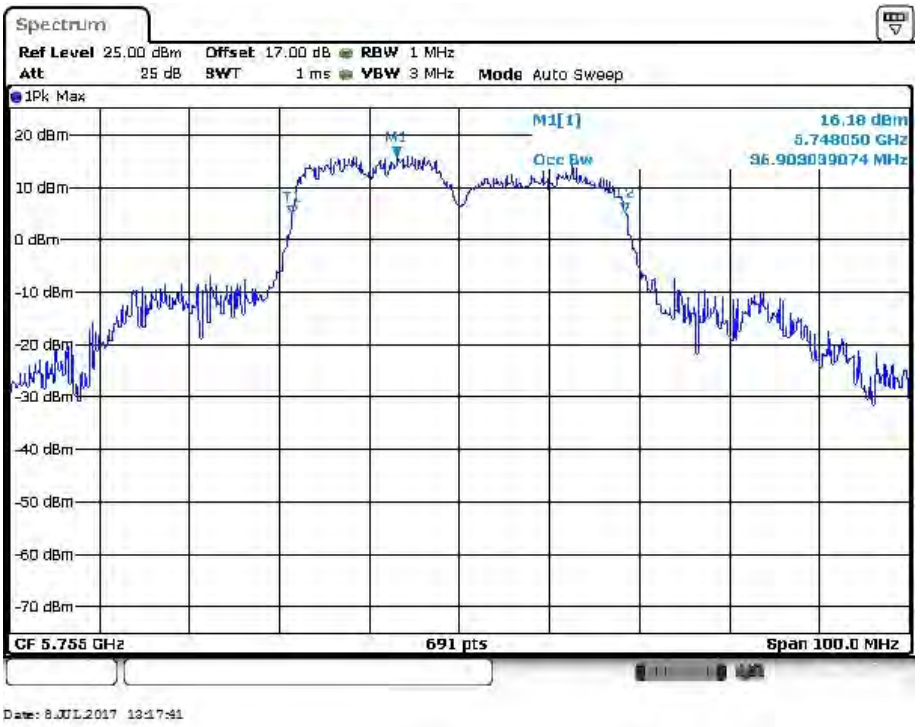


5230MHz

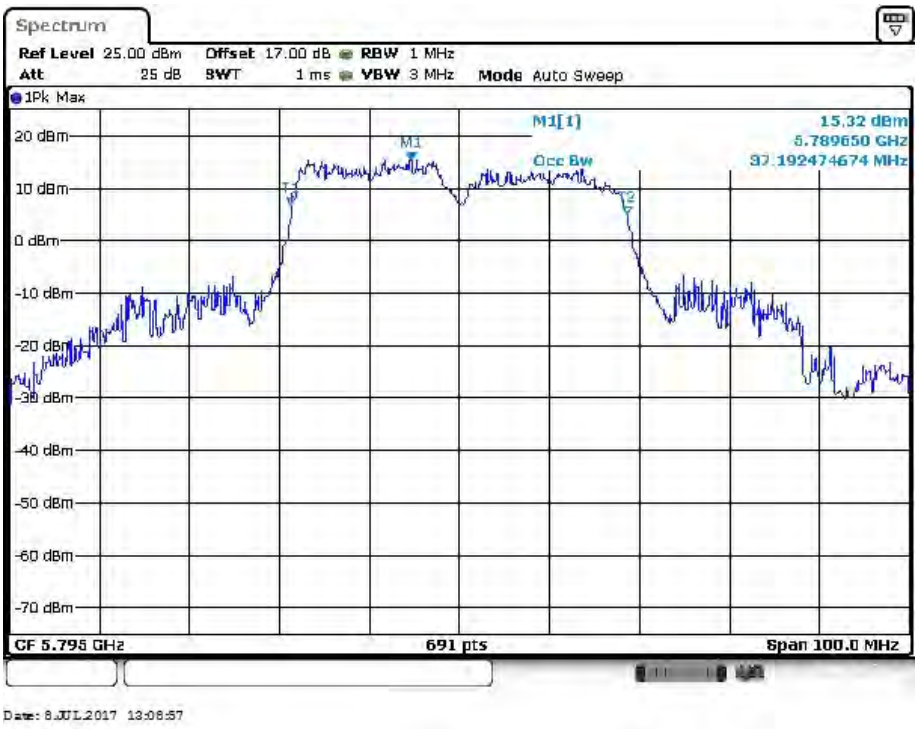


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 2)

5755MHz

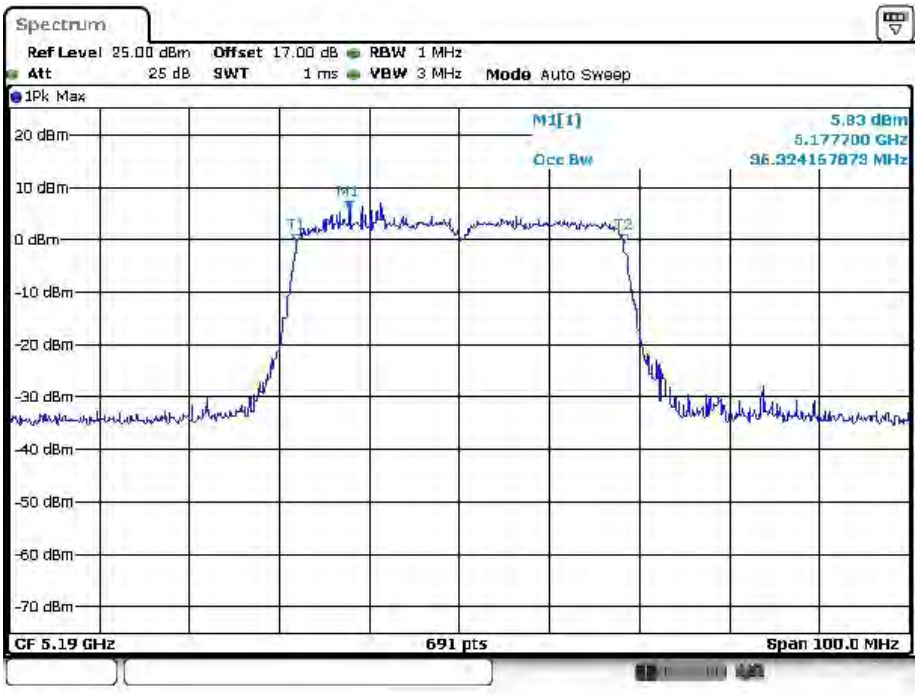


5795MHz

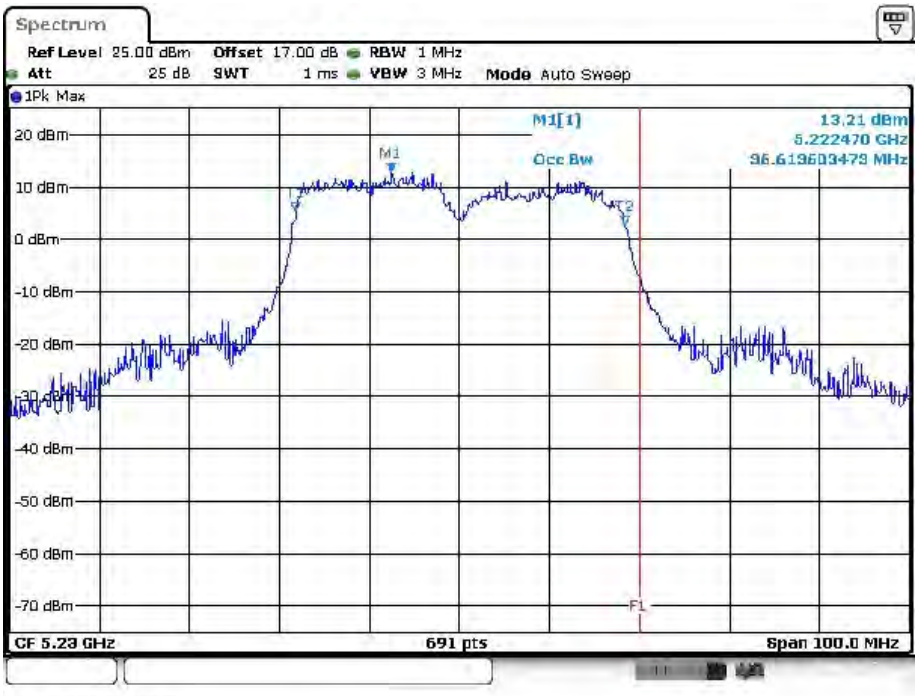


IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 3)

5190MHz

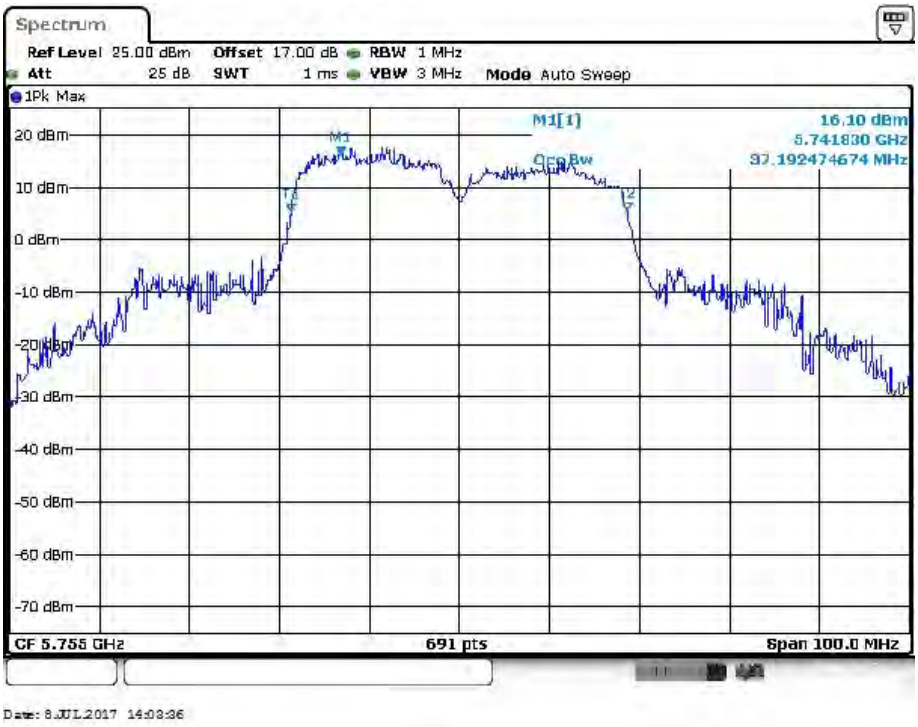


5230MHz

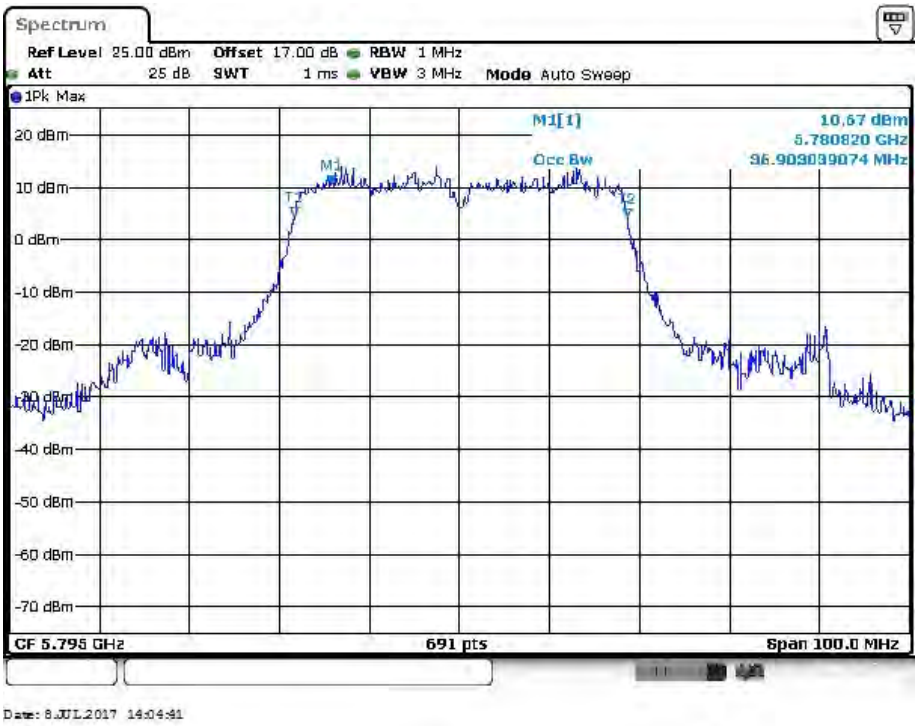


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 3)

5755MHz

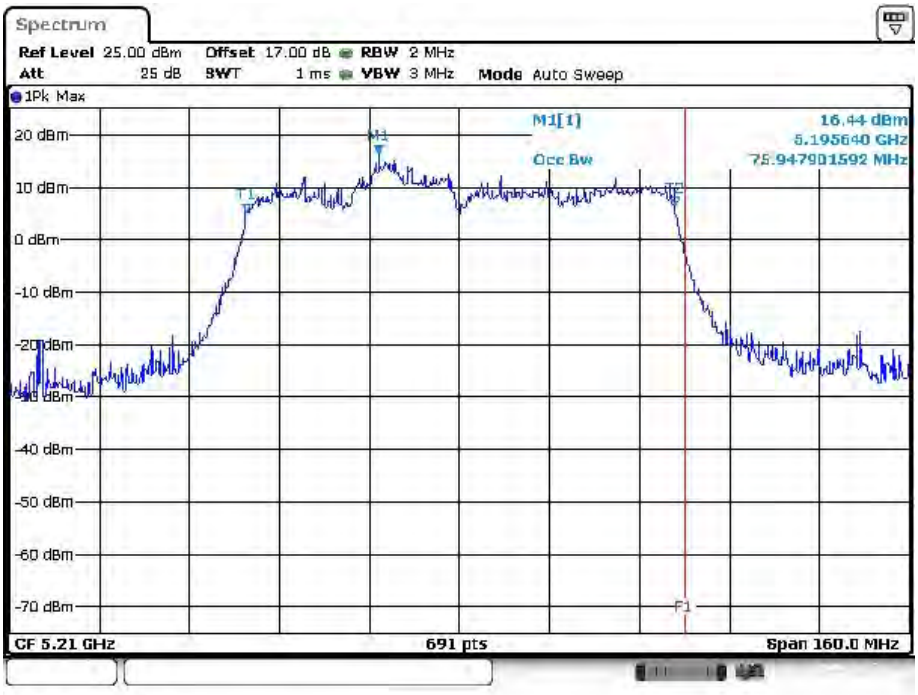


5795MHz



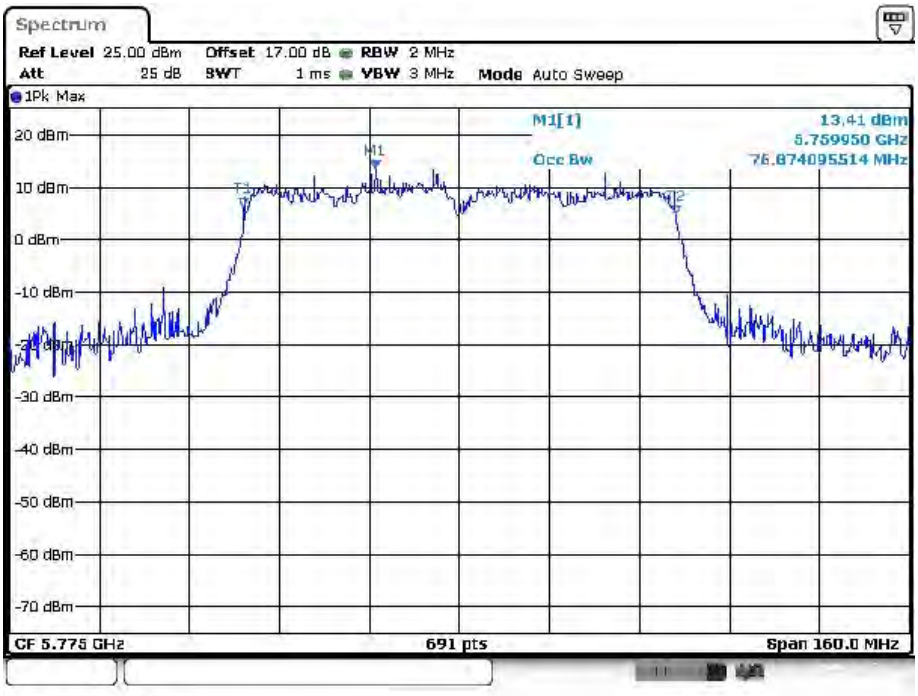
IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 0)

5210MHz



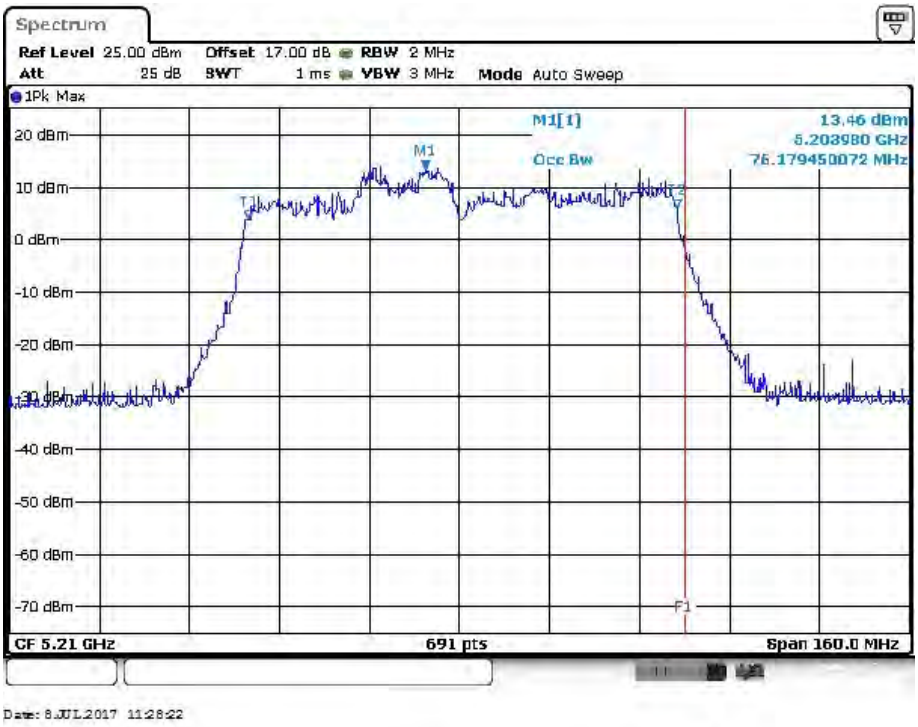
IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 0)

5775MHz



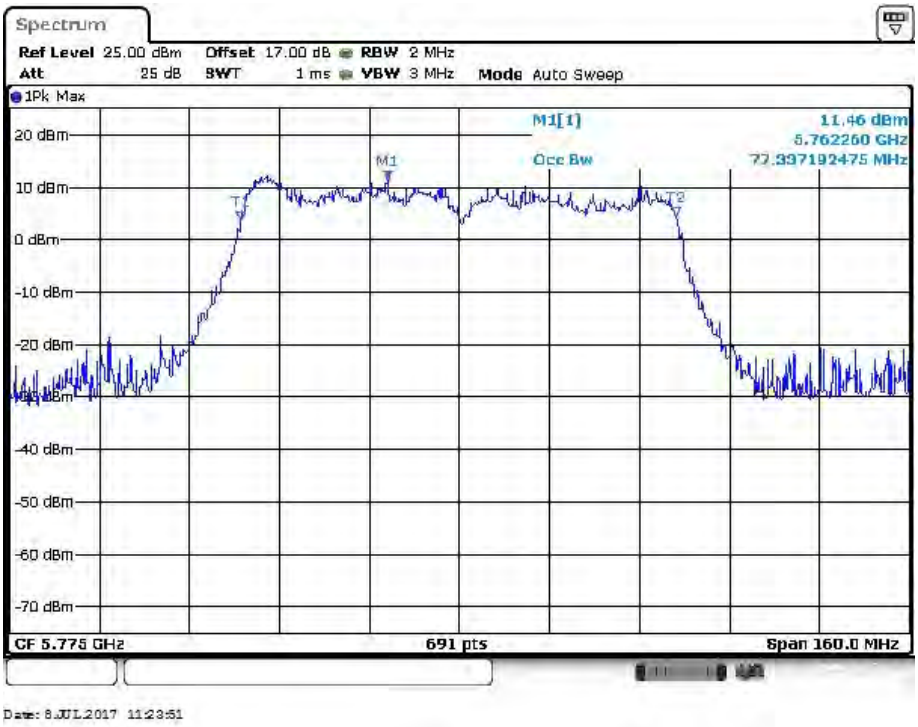
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 1)

5210MHz

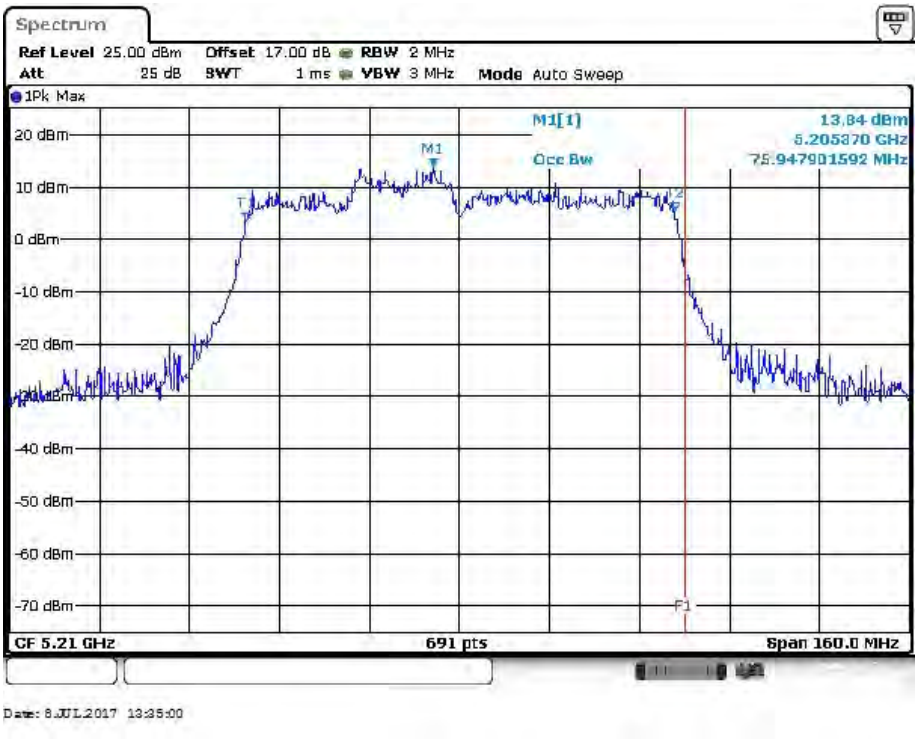


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 1)

5775MHz

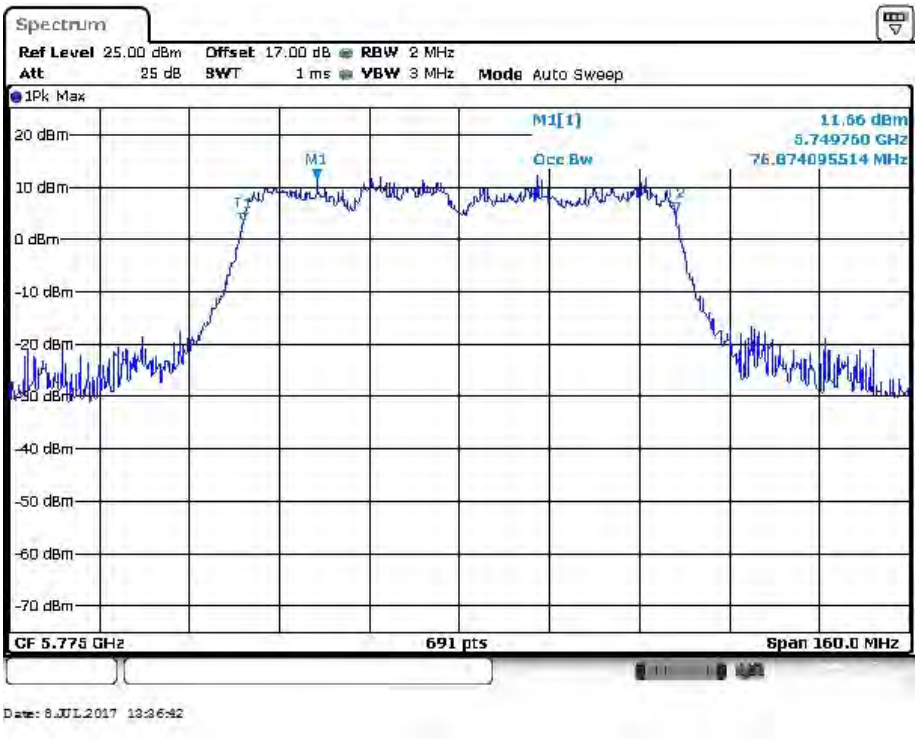


IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 2)
5210MHz



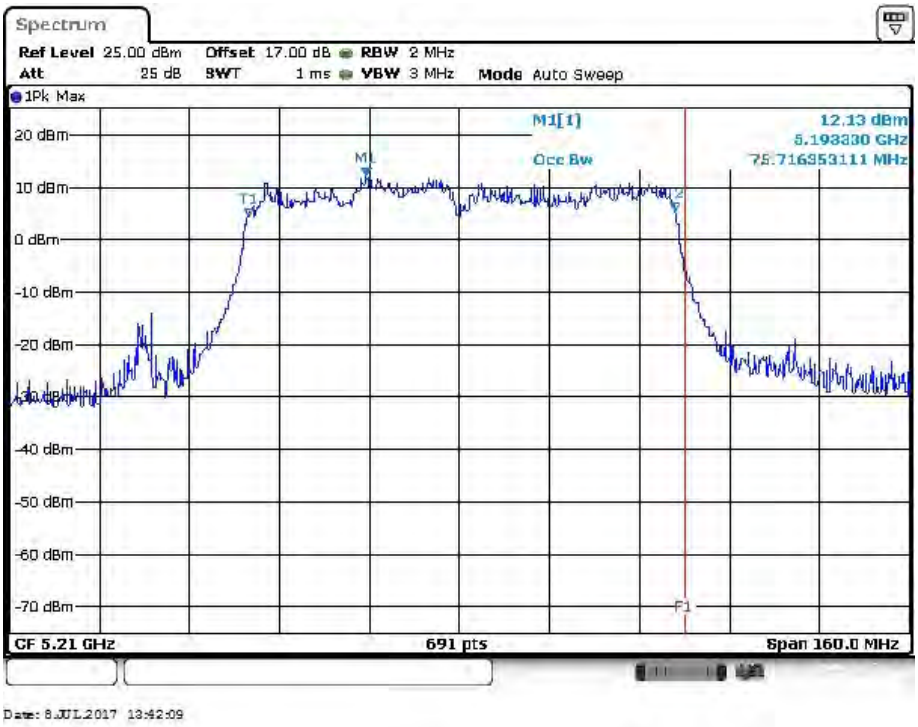
IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 2)

5775MHz

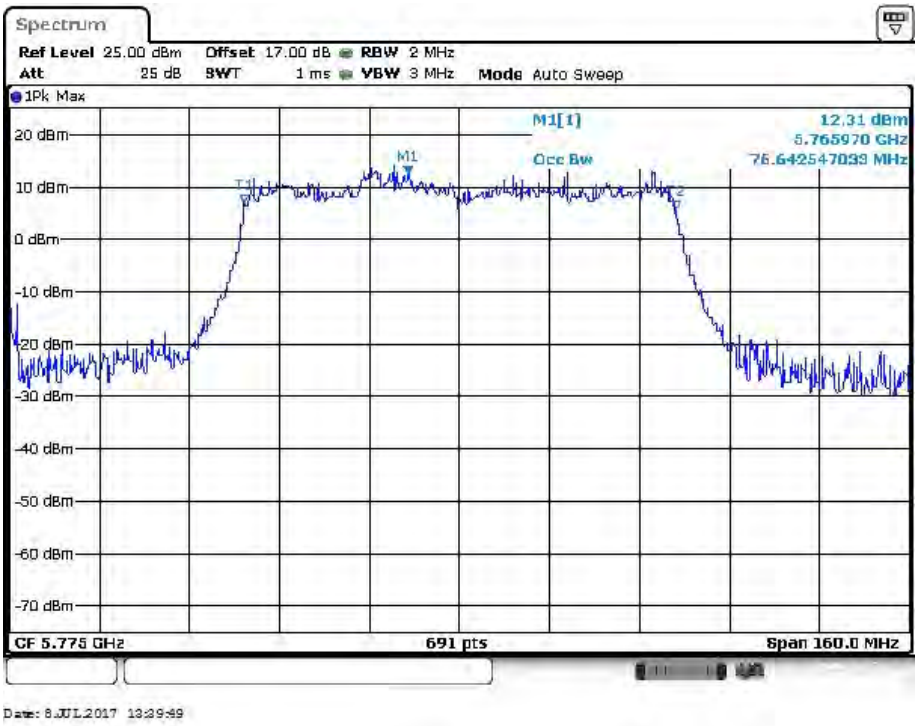


IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz(chain 3)

5210MHz



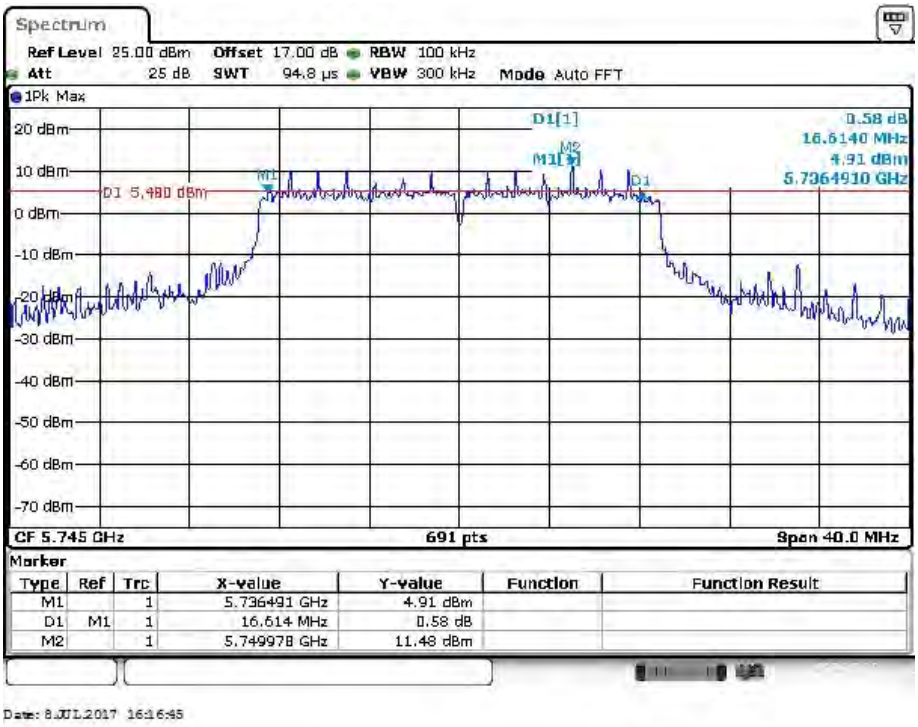
IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 3)
5775MHz



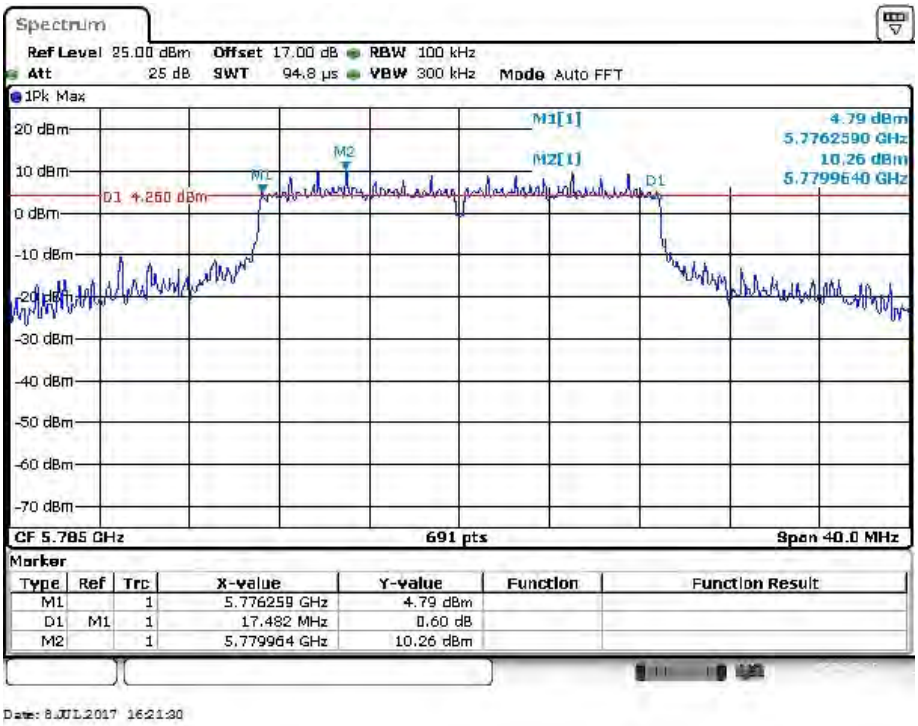
BW 6dBc

IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz(chain 0)

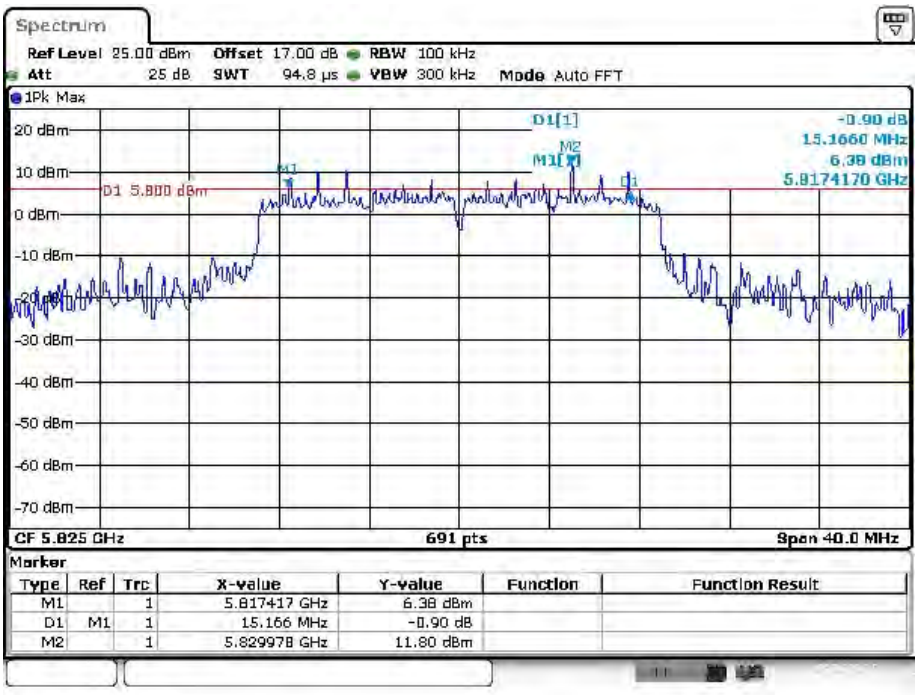
5745MHz



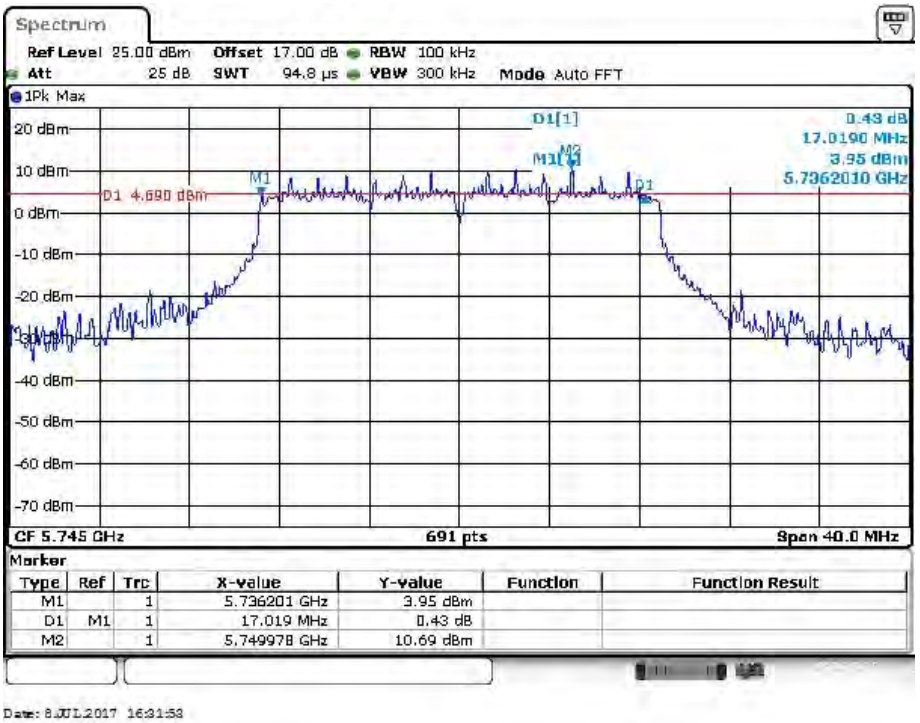
5785MHz



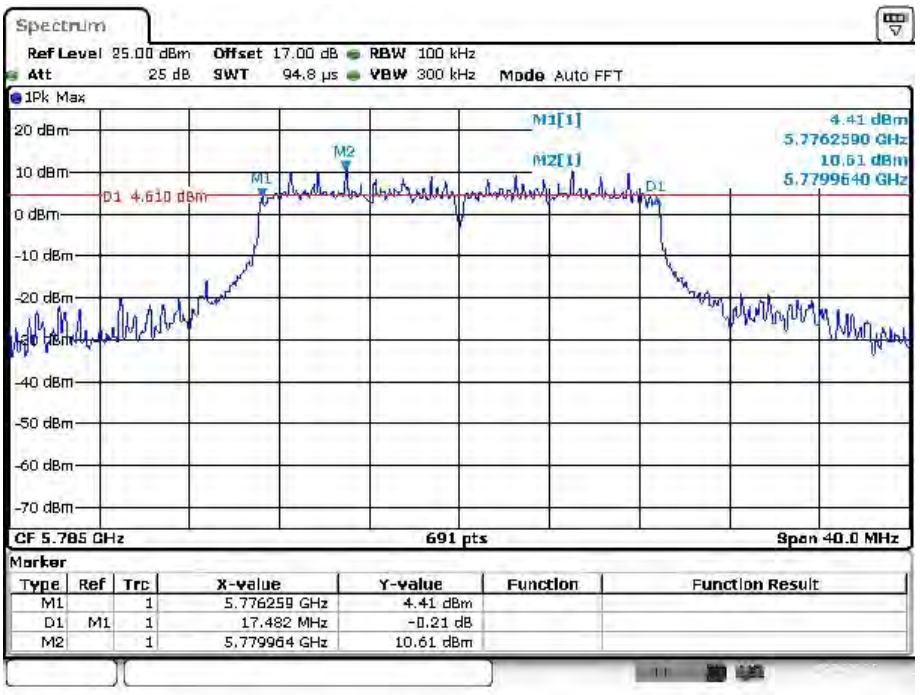
5825MHz



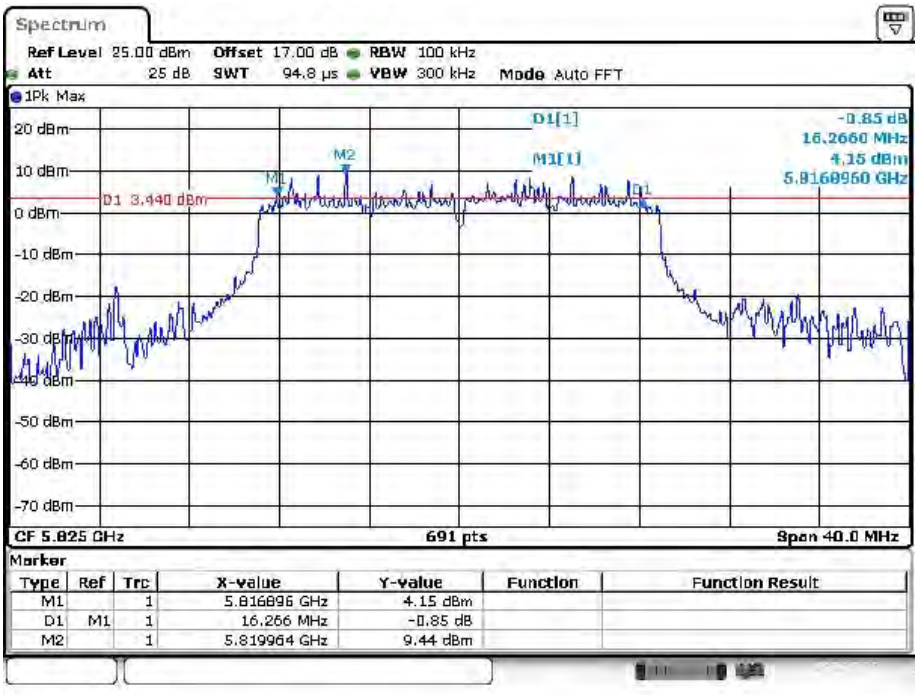
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz(chain 1)
5745MHz



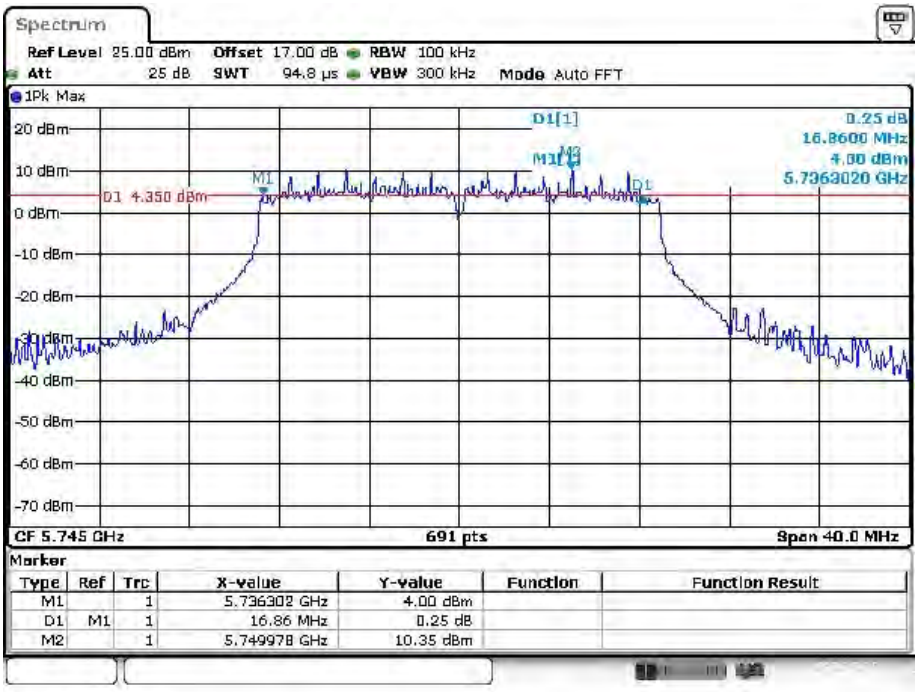
5785MHz



5825MHz



IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz(chain 2)
5745MHz



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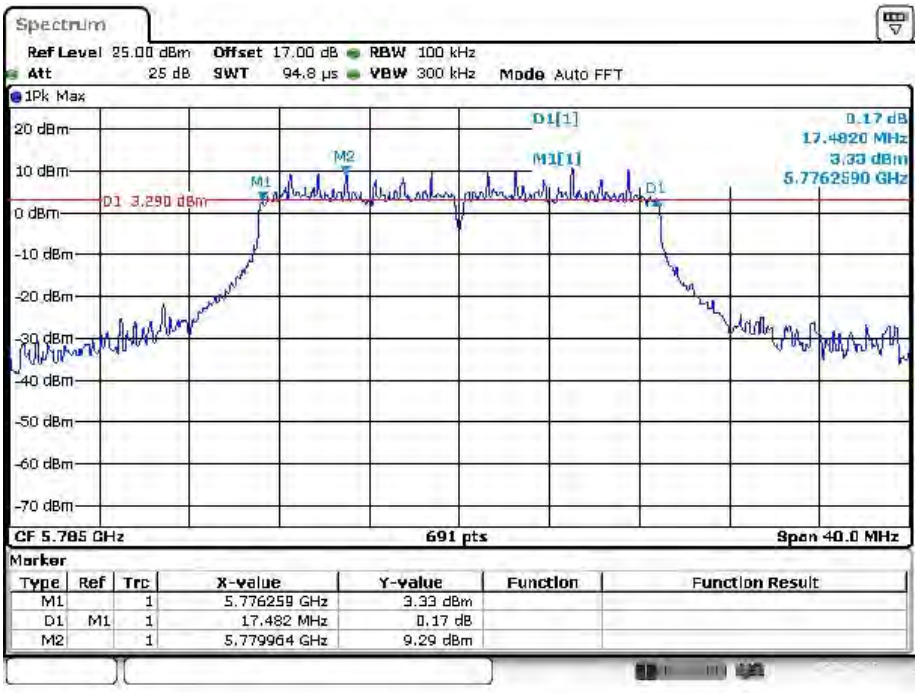
5785MHz



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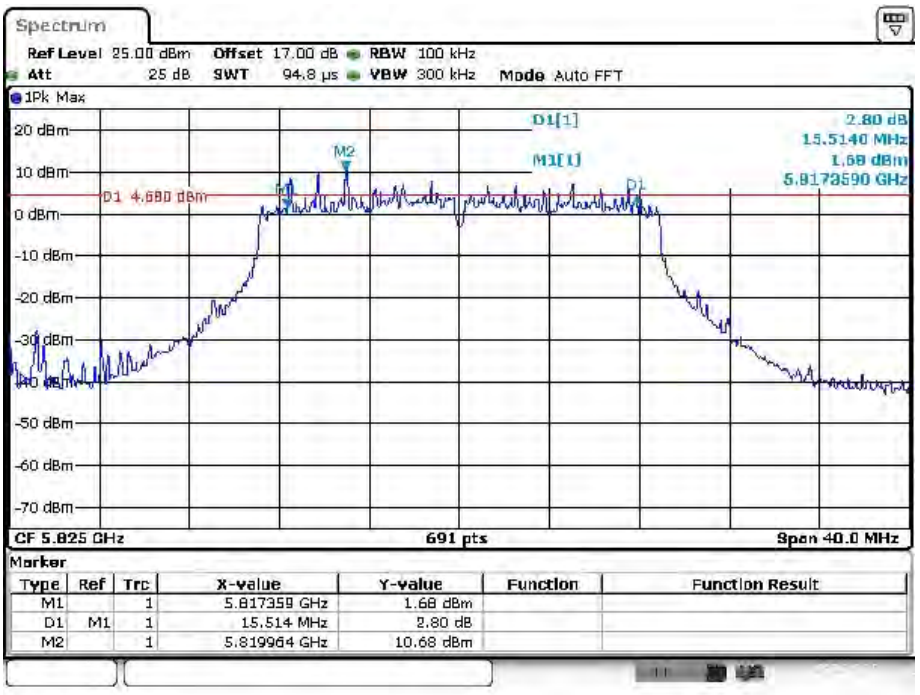
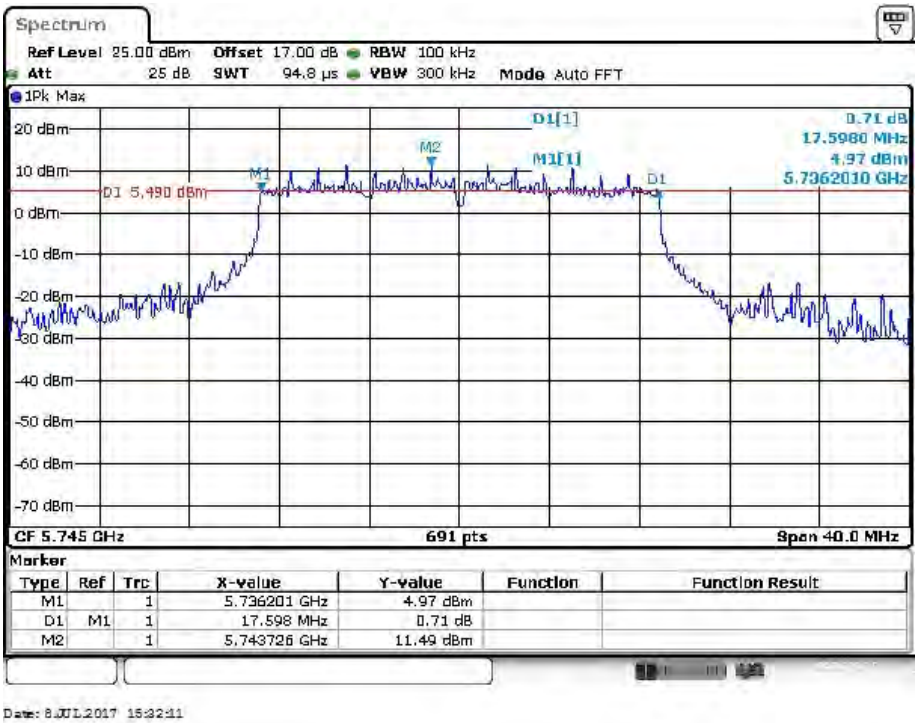
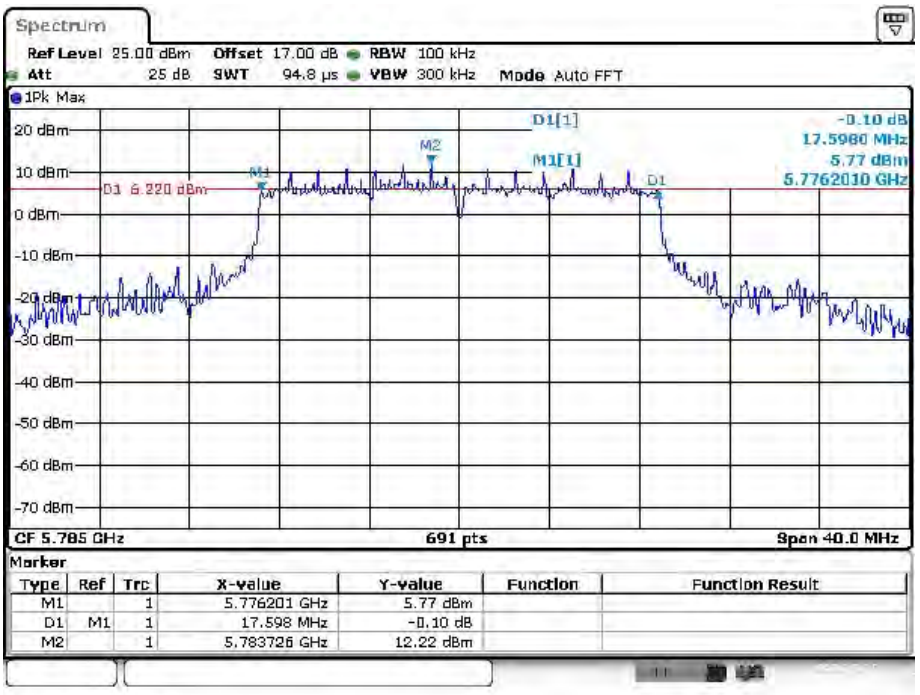
5825MHz



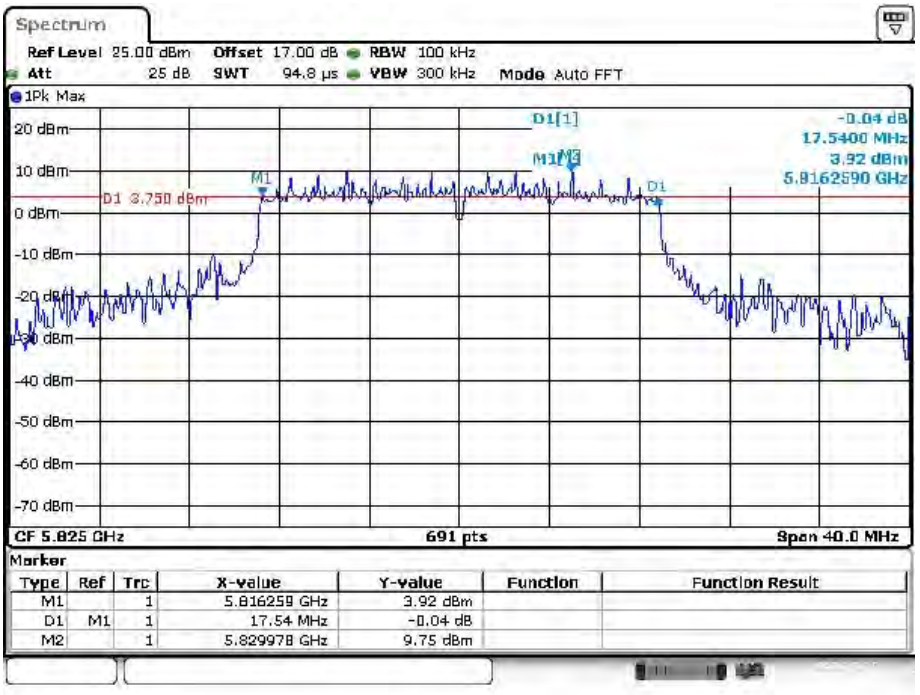
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz(chain 3)
5745MHz



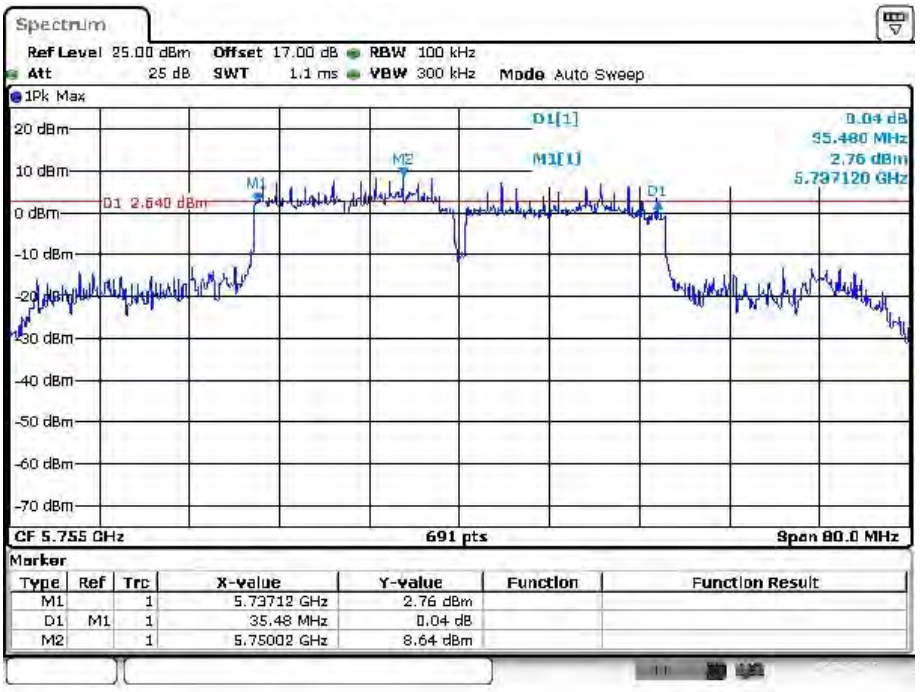
5785MHz



5825MHz

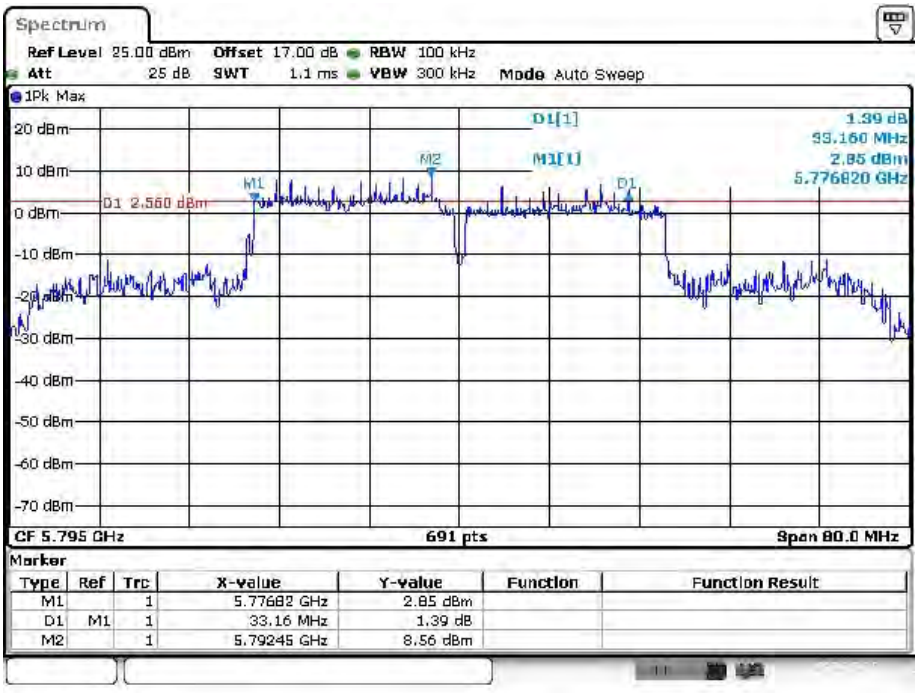


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz(chain 0)
5755MHz



Date: 8.JUL.2017 16:10:50

5795MHz



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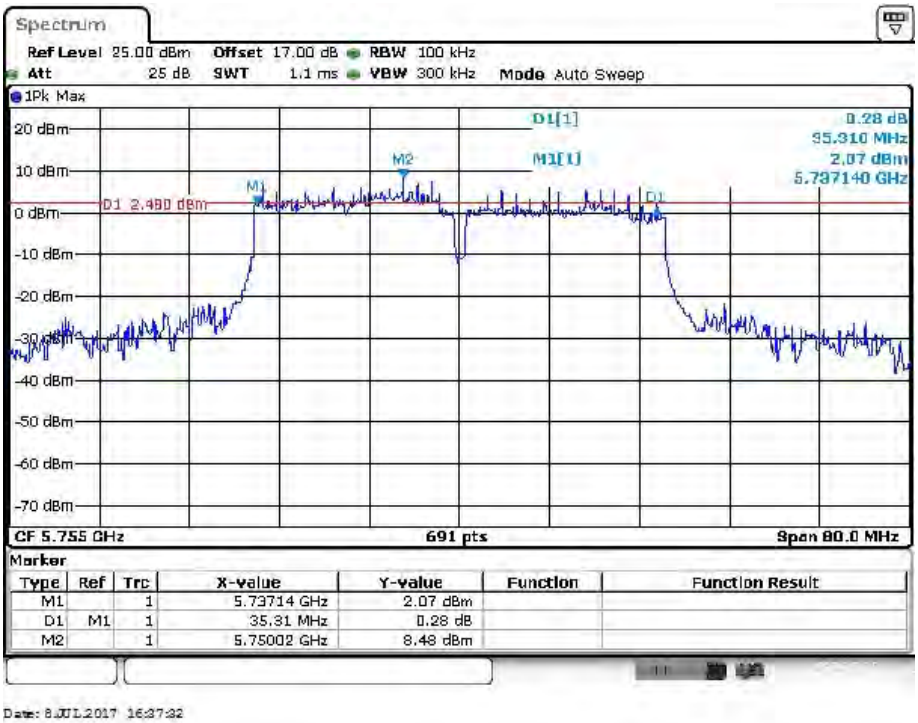
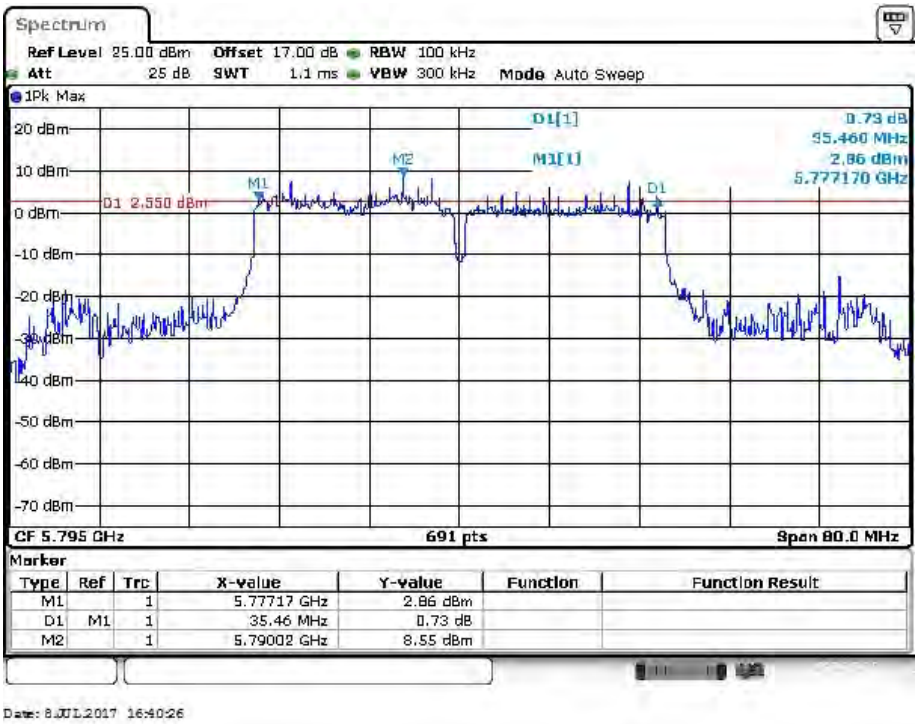
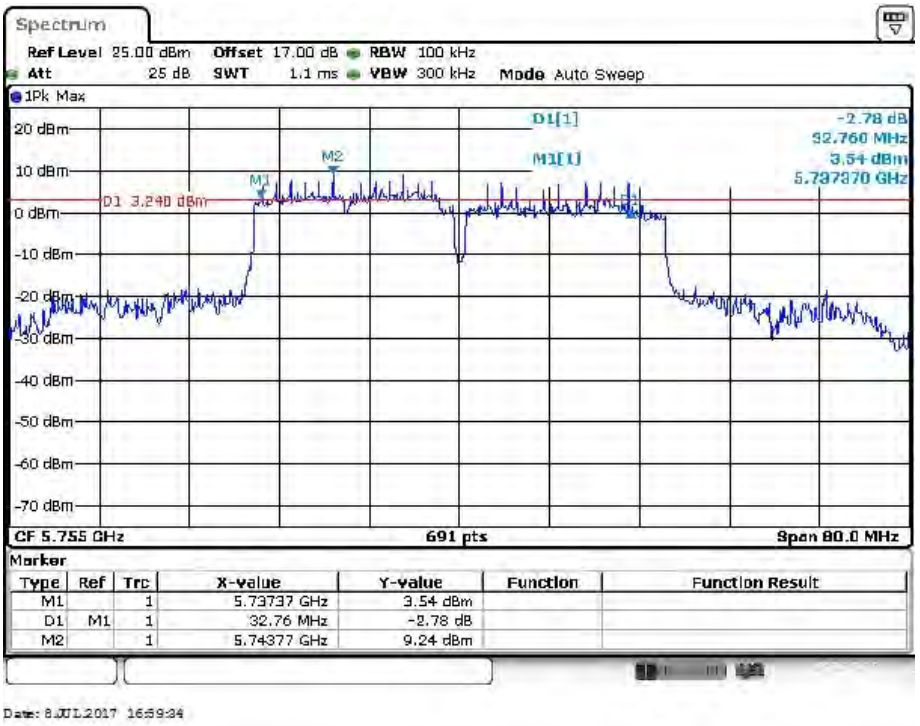
IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz(chain 1)
5755MHz



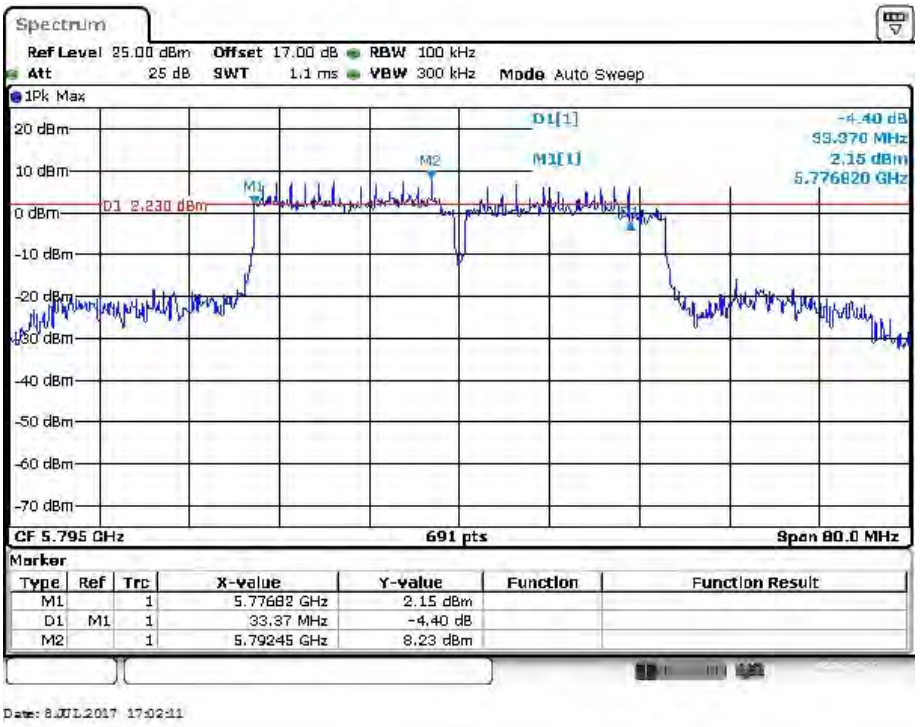
5795MHz



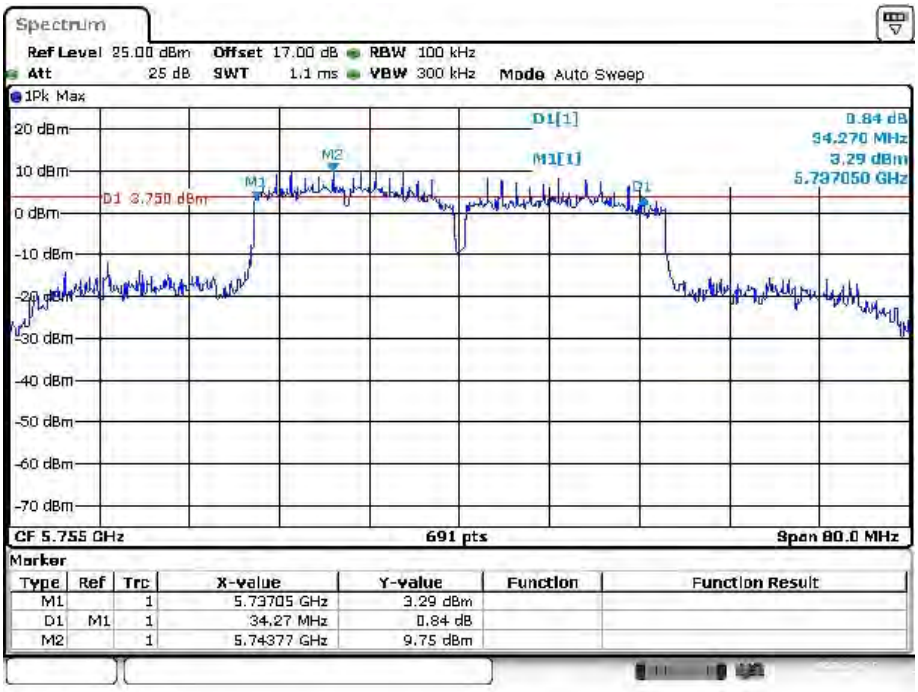
IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz(chain 2)
5755MHz



5795MHz



IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz(chain 3)
5755MHz



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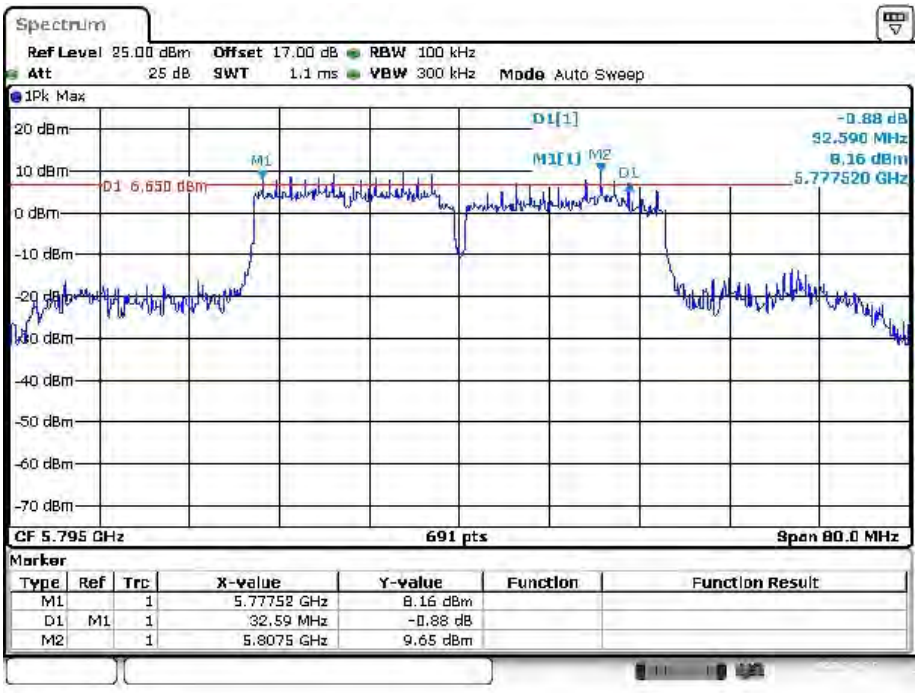
5795MHz



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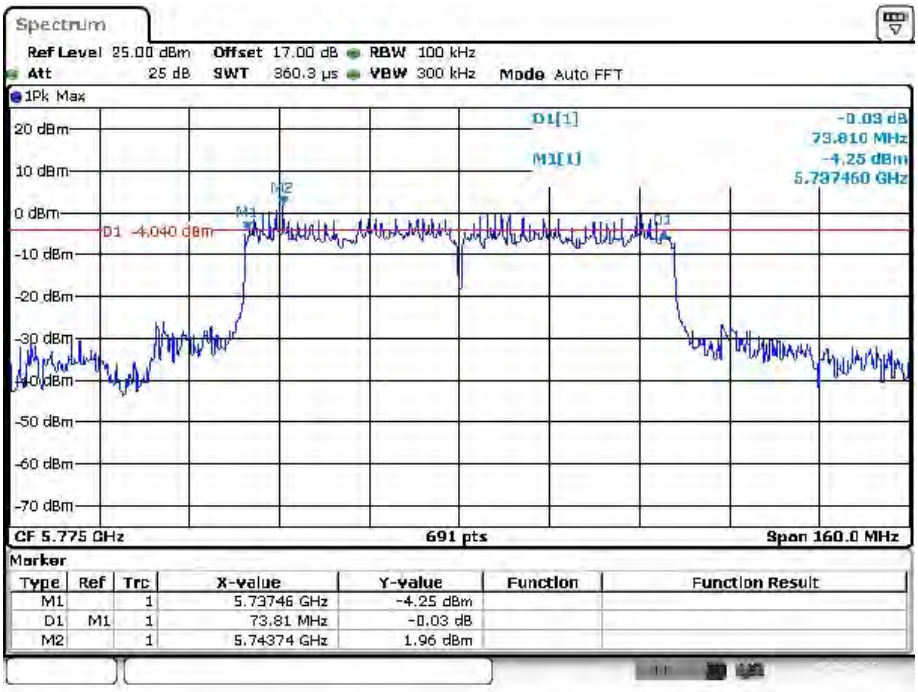
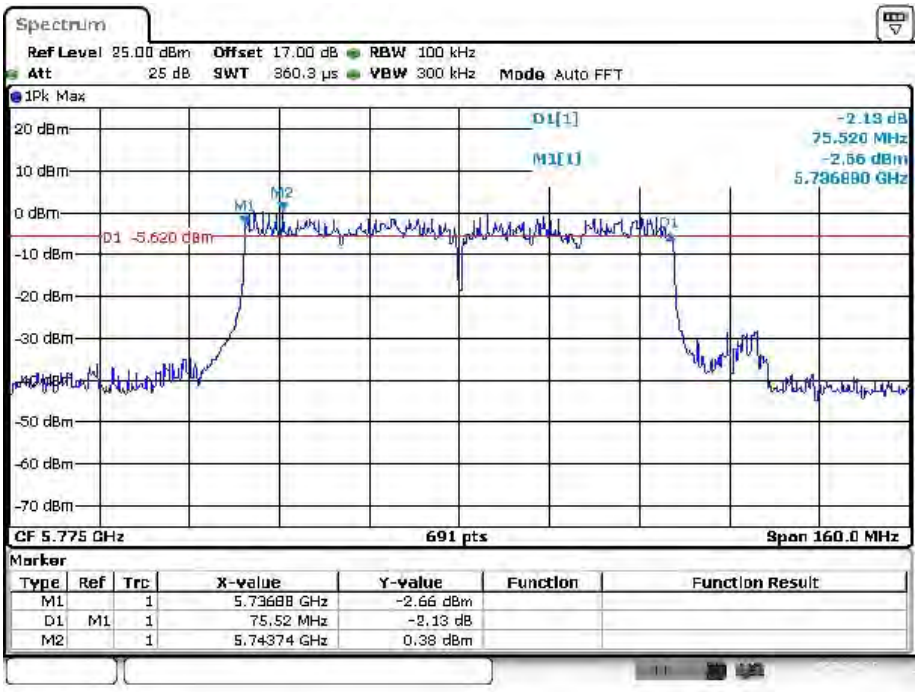
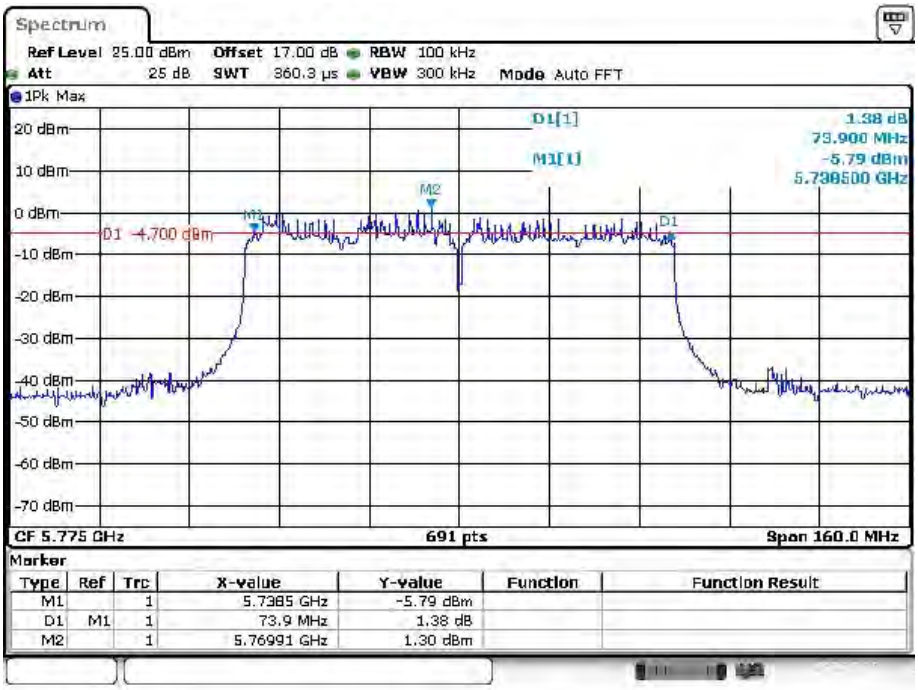
IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz(chain 0)
5775MHz



IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz(chain 1)
5775MHz



IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz(chain 2)
5775MHz



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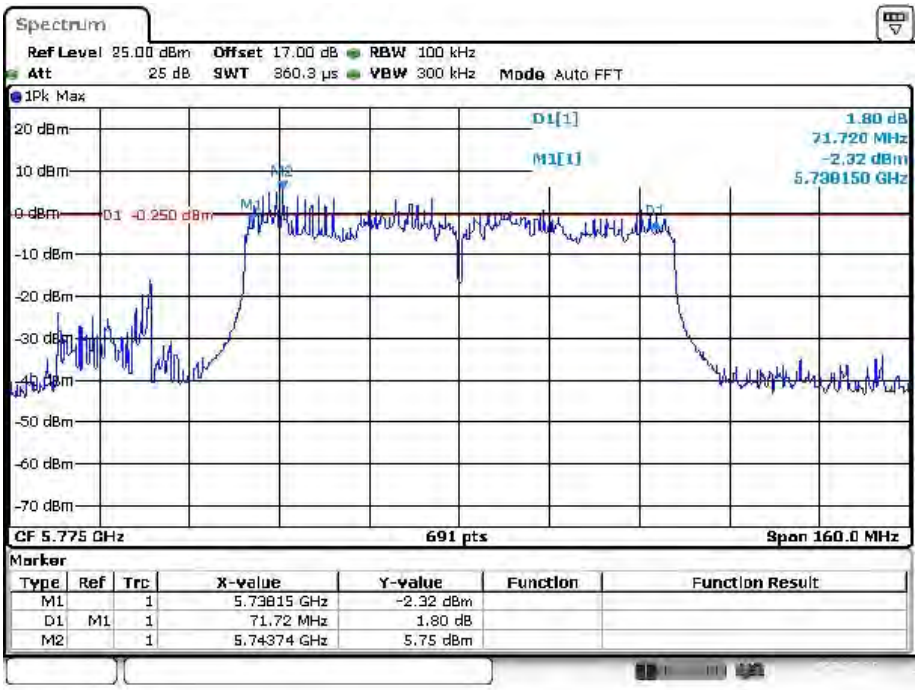
IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz(chain 3)
5775MHz



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9 FCC §15.407(a)(1), §15.407(a)(3) – Maximum Output Power

9.1 Applicable Standard

According to FCC §15.407(a):
For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

9.2 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r04
The use Power Meter
1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a Power sensor.

9.3 Test Equipment List and Details

Descriptions	Manufacturers	Models	Serial Numbers	Calibration Date	Calibration Due Date
Cable	WOKEN	SFL402	S02-160323-07	2017/2/22	2018/2/21
Power Sensor	KEYSIGHT	U2021XA	MY54080018	2017/3/21	2018/3/20
Attenuator	MINI-CIRCUITS	BW-S10W5+	N/A	2017/3/14	2018/3/13

**** Statement of Traceability:*** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

9.4 Test Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	57 %
ATM Pressure:	1020 hPa

The testing was performed by David Hsu on 2017-02-22 ~ 2017-05-23.

9.5 Test Results

Test Mode: Transmitting(CDD)

UNII Band	Mode	Channel	Frequency (MHz)	Maximum Conducted Average Output Power(dBm)					Duty Factor (dB)	Total Maximum Conducted Average Output Power With Duty Factor (dBm)	Limit (dBm)
				Chain 0	Chain 1	Chain 2	Chain3	Total			
UNII-1	802.11a	36	5180	11.33	11.71	12.80	10.41	17.67	0.22	17.89	30
		40	5200	11.39	11.55	12.76	10.74	17.69	0.22	17.91	30
		48	5240	11.61	10.93	12.37	11.27	17.60	0.22	17.82	30
UNII-3		149	5745	16.33	16.01	17.18	16.22	22.48	0.22	22.70	30
		157	5785	15.89	15.04	15.78	15.13	21.50	0.22	21.72	30
		165	5825	15.58	15.03	15.72	14.83	21.33	0.22	21.55	30
UNII-1	802.11 ac20	36	5180	10.97	11.31	12.47	9.93	17.29	0.18	17.47	30
		40	5200	11.41	11.12	12.41	10.25	17.39	0.18	17.57	30
		48	5240	11.27	10.47	12.01	10.83	17.20	0.18	17.38	30
UNII-3		149	5745	15.33	14.72	15.77	14.82	21.20	0.18	21.38	30
		157	5785	15.49	14.73	15.41	14.71	21.12	0.18	21.30	30
		165	5825	15.43	14.74	15.32	14.43	21.02	0.18	21.20	30
UNII-1	802.11 ac 40	38	5190	13.79	14.17	15.18	12.81	20.09	0.46	20.55	30
		46	5230	14.01	13.84	15.15	13.62	20.22	0.46	20.68	30
UNII-3		151	5755	17.09	16.65	17.73	16.57	23.06	0.46	23.52	30
		159	5795	17.39	16.62	17.37	16.48	23.01	0.46	23.47	30
UNII-1	802.11 ac 80	42	5210	12.08	11.92	12.97	11.18	18.11	0.92	19.03	30
UNII-3		155	5775	16.25	15.62	16.64	15.28	22.00	0.92	22.92	30

According to FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For power measurements on IEEE 802.11 devices, Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4.

The device have four antenna, so array gain is 0 dB.

Test Mode: Beamforming

UNII Band	Mode	Channel	Frequency (MHz)	Maximum Conducted Average Output Power(dBm)					Duty Factor (dB)	Total Maximum Conducted Average Output Power With Duty Factor (dBm)	Limit (dBm)
				Chain 0	Chain 1	Chain 2	Chain3	Total			
UNII-1	802.11 ac20	36	5180	8.01	8.71	7.95	7.81	14.15	0.32	14.47	25.53
		40	5200	8.32	8.68	8.48	8.16	14.43	0.32	14.75	25.53
		48	5240	8.11	8.53	7.93	8.85	14.39	0.32	14.71	25.53
UNII-3		149	5745	16.88	16.94	16.76	17.75	23.12	0.32	23.44	25.53
		157	5785	17.25	16.87	16.12	17.82	23.08	0.32	23.40	25.53
		165	5825	14.91	15.53	14.03	16.64	21.4	0.32	21.72	25.53
UNII-1	802.11 ac 40	38	5190	7.94	8.31	8.07	7.66	14.02	0.36	14.38	25.53
		46	5230	11.42	10.87	10.47	10.86	16.94	0.36	17.30	25.53
UNII-3		151	5755	14.56	14.62	14.38	15.35	20.76	0.36	21.12	25.53
		159	5795	14.67	14.85	14.54	15.53	20.94	0.36	21.30	25.53
UNII-1	802.11 ac 80	42	5210	9.89	10.01	9.61	9.72	15.83	0.36	16.19	25.53
UNII-3		155	5775	11.26	11.34	11.98	12.11	17.71	0.36	18.07	25.53

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where
Each antenna is driven by no more than one spatial stream;
N_{SS} = the number of independent spatial streams of data;
N_{ANT} = the total number of antennas
$g_{j,k} = 10^{G_k/20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;
G_k is the gain in dBi of the kth antenna.

The EUT supports beamforming.

Directional gain = GANT + Array Gain =10.47 dBi

The Power Limits was reduce 4.47 dB

10 FCC §15.407(g) – FREQUENCY STABILITY

10.1 Applicable Standard

FCC §15.407(g)

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

10.2 Test Procedure

According to ANSI C63.10-2013 §6.8

Some unlicensed wireless device requirements specify frequency stability tests with variation of supply voltage and temperature; the requirements can be found in the regulatory specifications for each type of unlicensed wireless device. The procedures listed in 6.8.1 and 6.8.2 shall be used for frequency stability tests.

10.3 Test Equipment List and Details

Descriptions	Manufacturers	Models	Serial Numbers	Calibration Date	Calibration Due Date
Cable	WOKEN	SFL402	S02-160323-07	2017/2/22	2018/2/21
Temp & midity Chamber	BACL	BTH-150	30028	2016/12/09	2017/12/08
Spectrum Analyzer	Rohde & Schwarz	FSV40	101203	2016/7/19	2017/7/18
Attenuator	MINI-CIRCUITS	BW-S10W5+	N/A	2017/3/14	2018/3/13

**** Statement of Traceability:*** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

10.4 Test Environmental Conditions

Temperature:	25° C
Relative Humidity:	56 %
ATM Pressure:	1010 hPa

The testing was performed by David Hsu on 2017-05-22 ~ 2017-05-23.

10.5 Test Results

Please refer to the following plots

5150-5250MHz

802.11a Mode:

Temperature	Voltage	f_L at Low Test Channel	f_H at Low Test Channel	Limit
(℃)	(V)	MHz	MHz	
0	120	5171.6161	5248.3913	f_L and f_H Within 5150~5250MHz
10	120	5171.6167	5248.3918	
20	120	5171.6164	5248.3914	
30	120	5171.6169	5248.3916	
40	120	5171.6162	5248.3917	
25	102	5171.6163	5248.3915	
25	138	5171.6164	5248.3915	

802.11ac20 vht20 Mode:

Temperature	Voltage	fL at Low Test Channel	fH at Low Test Channel	Limit
(℃)	(V)	MHz	MHz	
0	120	5171.1013	5248.9356	f_L and f_H Within 5150~5250MHz
10	120	5171.1015	5248.9355	
20	120	5171.1016	5248.9357	
30	120	5171.1015	5248.9357	
40	120	5171.1017	5248.9356	
25	102	5171.1016	5248.9359	
25	138	5171.1018	5248.9352	

802.11ac40 vht40 Mode:

Temperature	Voltage	f_L at Low Test Channel	f_H at Low Test Channel	Limit
(℃)	(V)	MHz	MHz	
0	120	5171.9852	5248.0156	f_L and f_H Within 5150~5250MHz
10	120	5171.9854	5248.0157	
20	120	5171.9857	5248.0155	
30	120	5171.9858	5248.0159	
40	120	5171.9855	5248.0158	
25	102	5171.9852	5248.0155	
25	138	5171.9854	5248.0151	

802.11ac80 vht80 Mode:

Temperature	Voltage	f_L at Low Test Channel	f_H at Low Test Channel	Limit
(℃)	(V)	MHz	MHz	
0	120	5171.7952	5248.2054	f_L and f_H Within 5150~5250MHz
10	120	5171.7954	5248.2055	
20	120	5171.7955	5248.2054	
30	120	5171.7957	5248.2056	
40	120	5171.7959	5248.2058	
25	102	5171.7954	5248.2051	
25	138	5171.7953	5248.2052	

Note: the f_L and f_H determined by 99% Occupied bandwidth low edge at Low test channel and High edge at High test channel.

5725-5850MHz

802.11a Mode:

Temperature	Voltage	f_L at Low Test Channel	f_H at Low Test Channel	Limit
(℃)	(V)	MHz	MHz	
0	120	5736.6455	5833.3554	f_L and f_H Within 5725~5850MHz
10	120	5736.6454	5833.3556	
20	120	5736.6459	5833.3557	
30	120	5736.6451	5833.3555	
40	120	5736.6452	5833.3556	
25	102	5736.6455	5833.3554	
25	138	5736.6456	5833.3552	

802.11ac20 vht20 Mode:

Temperature	Voltage	f_L at Low Test Channel	f_H at Low Test Channel	Limit
(℃)	(V)	MHz	MHz	
0	120	5736.0655	5833.9356	f_L and f_H Within 5725~5850MHz
10	120	5736.0654	5833.9357	
20	120	5736.0656	5833.9355	
30	120	5736.0651	5833.9354	
40	120	5736.0653	5833.9353	
25	102	5736.0655	5833.9355	
25	138	5736.0654	5833.9358	

802.11ac40 vht40 Mode:

Temperature	Voltage	f_L at Low Test Channel	f_H at Low Test Channel	Limit
(℃)	(V)	MHz	MHz	
0	120	5736.9852	5813.0856	f_L and f_H Within 5725~5850MHz
10	120	5736.9853	5813.0854	
20	120	5736.9855	5813.0855	
30	120	5736.9856	5813.0855	
40	120	5736.9855	5813.0856	
25	102	5736.9854	5813.0851	
25	138	5736.9859	5813.0857	

802.11ac80 vht80 Mode:

Temperature	Voltage	f_L at Low Test Channel	f_H at Low Test Channel	Limit
(℃)	(V)	MHz	MHz	
0	120	5736.6812	5813.3232	f_L and f_H Within 5725~5850MHz
10	120	5736.6813	5813.3236	
20	120	5736.6817	5813.3234	
30	120	5736.6812	5813.3238	
40	120	5736.6816	5813.3239	
25	102	5736.6818	5813.3234	
25	138	5736.6816	5813.3231	

Note: the f_L and f_H determined by 99% Occupied bandwidth low edge at Low test channel and High edge at High test channel.

11 FCC §15.407(a)(1), §15.407(a)(3) – Power Spectral Density

11.1 Applicable Standard

According to FCC §15.407(a):

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

11.2 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r04

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/*T*, where *T* is defined in II.B.l.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

11.3 Test Equipment List and Details

Descriptions	Manufacturers	Models	Serial Numbers	Calibration Date	Calibration Due Date
Cable	WOKEN	SFL402	S02-160323-07	2017/2/22	2018/2/21
Spectrum Analyzer	Rohde & Schwarz	FSV40	101203	2016/7/19	2017/7/18
Attenuator	MINI-CIRCUITS	BW-S10W5+	N/A	2017/3/14	2018/3/13

**** Statement of Traceability:*** BACL Corp. attests that all calibrations have been performed according to TAF requirements, traceable to the ETC.

11.4 Test Environmental Conditions

Temperature:	24° C
Relative Humidity:	58 %
ATM Pressure:	1010 hPa

The testing was performed by David Hsu on 2017-05-06 ~ 2017-07-08.

11.5 Test Results

Test Mode: Transmitting

CDD Mode:

UNII Band	Mode	Channel	Frequency (MHz)	Maximum Power Spectral Density(dBm/MHz)					Duty Factor (dB)	Total Maximum Power Spectral DensityVwith duty factor (dBm/MHz)	Limit (dBm/MHz)
				Chain 0	Chain 1	Chain 2	Chain 3	Total			
UNII-1	802.11a	36	5180	5.83	5.55	7.31	5.21	12.07	0.22	12.29	12.53
		40	5200	5.81	5.43	7.14	5.36	12.02	0.22	12.24	12.53
		48	5240	5.82	5.73	7.19	5.82	12.21	0.22	12.43	12.53
	802.11 ac20	36	5180	5.96	5.69	6.89	5.17	11.99	0.18	12.17	12.53
		40	5200	5.71	5.39	7.05	5.74	12.04	0.18	12.22	12.53
		48	5240	5.71	5.21	7.06	5.82	12.03	0.18	12.21	12.53
	802.11 ac 40	38	5190	5.33	5.92	7.00	5.68	12.05	0.46	12.51	12.53
		46	5230	5.43	5.42	7.14	5.52	11.96	0.46	12.42	12.53
	802.11 ac 80	42	5210	0.69	0.79	2.31	0.85	7.23	0.92	8.15	12.53

The device is a master device. the 4 antenna maximum antenna gain are 4.45dBi, and employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for Power spectral density (PSD) measurements on the devices:

Array Gain = 10 log(NANT/NSS) dB.

So:

Directional gain = GANT + Array Gain = 4.45+10*log(4) =10.47 dBi

The Power density Limits was reduce 4.47 dB

UNII Band	Mode	Channel	Frequency (MHz)	Maximum Power Spectral Density(dBm/500kHz)					Duty Factor (dB)	Total Maximum Power Spectral DensityVwith duty factor (dBm/500kHz)	Limit (dBm/500kHz)
				Chain 0	Chain 1	Chain 2	Chain 3	Total			
UNII-3	802.11a	149	5745	9.27	9.62	10.76	9.52	15.85	0.22	16.07	25.53
		157	5785	9.56	9.41	8.09	9.71	15.26	0.22	15.48	25.53
		165	5825	9.72	8.57	9.03	8.20	14.94	0.22	15.16	25.53
	802.11 ac20	149	5745	8.52	7.18	9.95	8.17	14.59	0.18	14.77	25.53
		157	5785	9.05	8.60	10.47	7.86	15.12	0.18	15.30	25.53
		165	5825	9.41	8.69	8.47	7.35	14.56	0.18	14.74	25.53
	802.11 ac 40	151	5755	6.97	6.68	7.13	6.82	12.92	0.46	13.38	25.53
		159	5795	6.94	6.64	6.32	6.59	12.65	0.46	13.11	25.53
	802.11 ac 80	155	5775	3.49	3.26	4.21	3.66	9.69	0.92	10.61	25.53

The device is a master device. the 4 antenna maximum antenna gain are 4.45dBi, and employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for Power spectral density (PSD) measurements on the devices:

Array Gain = 10 log(NANT/NSS) dB.

So:

Directional gain = GANT + Array Gain = 4.45+10*log(4) =10.47 dBi

The Power density Limits was reduce 4.47 dB

Test Mode: Beamforming

UNII Band	Mode	Channel	Frequency (MHz)	Maximum Power Spectral Density(dBm/MHz)					Duty Factor (dB)	Total Maximum Power Spectral DensityVwith duty factor (dBm/MHz)	Limit (dBm/MHz)
				Chain 0	Chain 1	Chain 2	Chain 3	Total			
UNII-1	802.11 ac20	36	5180	5.14	5.95	5.91	5.70	11.71	0.32	12.03	12.53
		40	5200	5.25	6.13	5.49	5.78	11.70	0.32	12.02	12.53
		48	5240	4.98	5.93	5.85	6.26	11.80	0.32	12.12	12.53
	802.11 ac 40	38	5190	1.69	1.85	3.27	2.55	8.41	0.36	8.77	12.53
		46	5230	5.22	5.35	5.9	5.71	11.57	0.36	11.93	12.53
	802.11 ac 80	42	5210	3.58	4.68	5.84	5.00	10.87	0.36	11.23	12.53

UNII Band	Mode	Channel	Frequency (MHz)	Maximum Power Spectral Density(dBm/500kHz)					Duty Factor (dB)	Total Maximum Power Spectral DensityVwith duty factor (dBm/500kHz)	Limit (dBm/500kHz)
				Chain 0	Chain 1	Chain 2	Chain 3	Total			
UNII-3	802.11 ac20	149	5745	11.09	11.73	11.64	12.76	17.87	0.32	18.19	25.53
		157	5785	11.39	11.26	11.04	12.87	17.72	0.32	18.04	25.53
		165	5825	10.26	10.77	10.20	11.43	16.71	0.32	17.03	25.53
	802.11 ac 40	151	5755	6.09	6.45	7.31	8.05	13.06	0.36	13.42	25.53
		159	5795	6.53	7.29	7.06	7.85	13.23	0.36	13.59	25.53
	802.11 ac 80	155	5775	0.58	0.70	0.96	2.15	7.16	0.36	7.52	25.53

The device is a master device. the 4 antenna maximum antenna gain are 4.45dBi, and employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for Power spectral density (PSD) measurements on the devices:

Array Gain = 10 log(NANT/NSS) dB.

So:

Directional gain = GANT + Array Gain = 4.45+10*log(4) =10.47 dBi

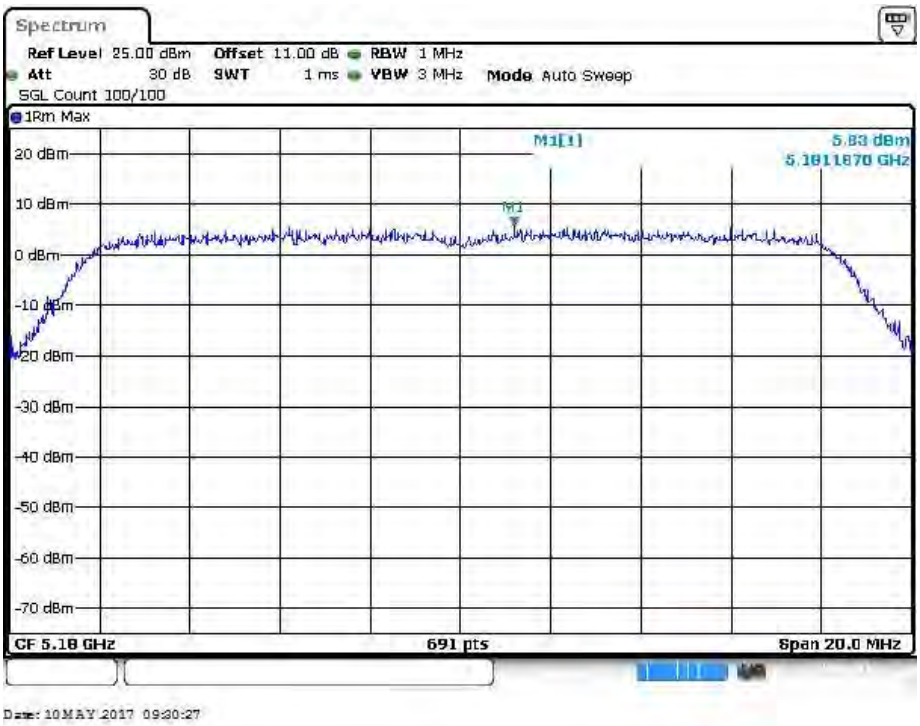
The Power density Limits was reduce 4.47 dB

Please refer to the following plots

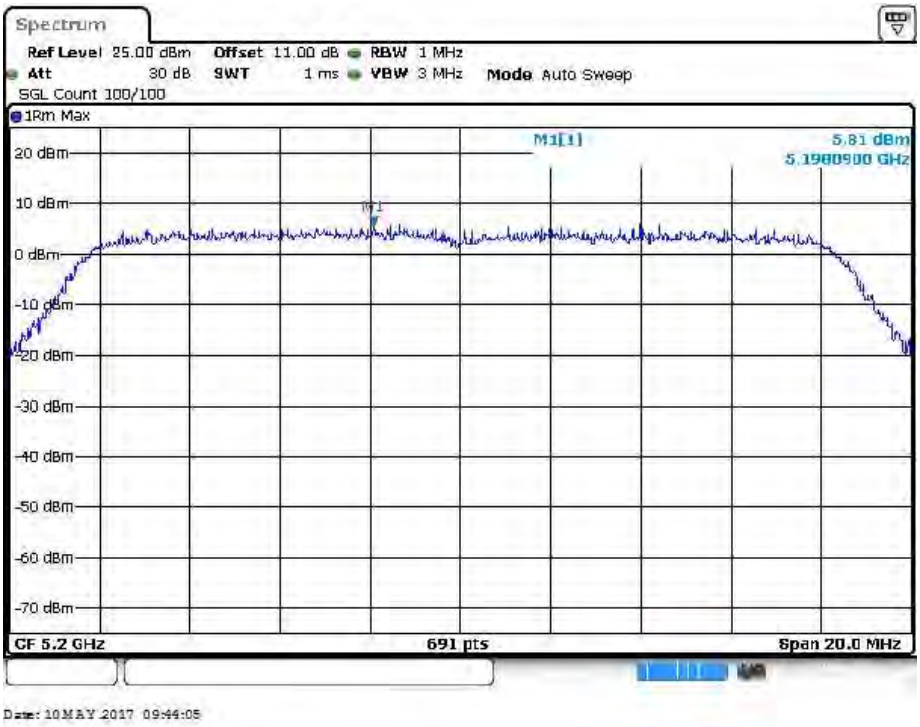
Test Mode: Transmitting

IEEE 802.11a mode / 5150 ~ 5250MHz (chain 0)

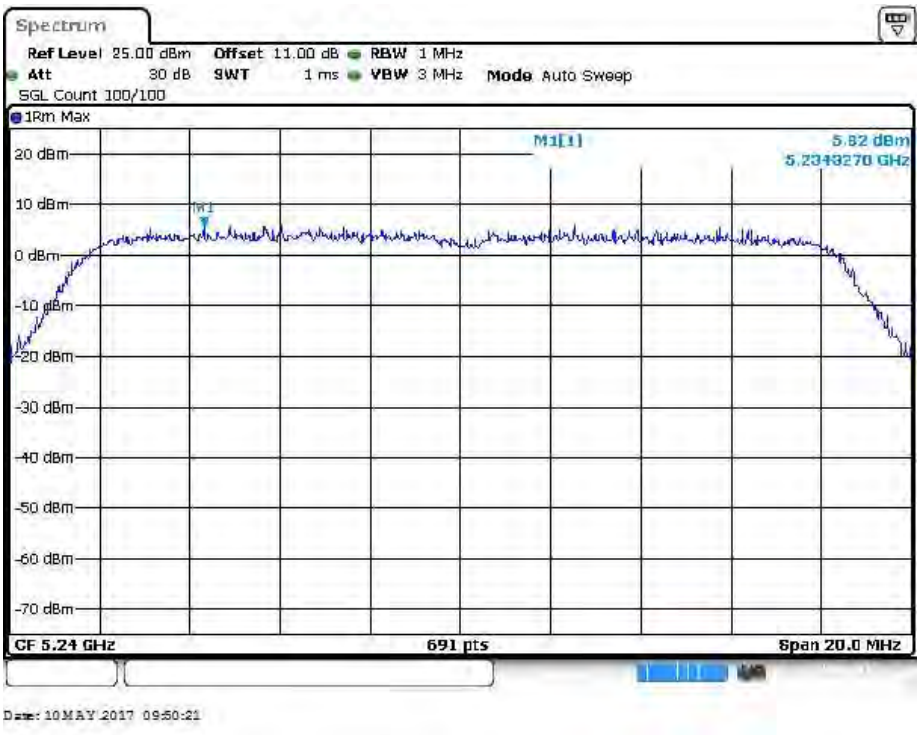
5180MHz



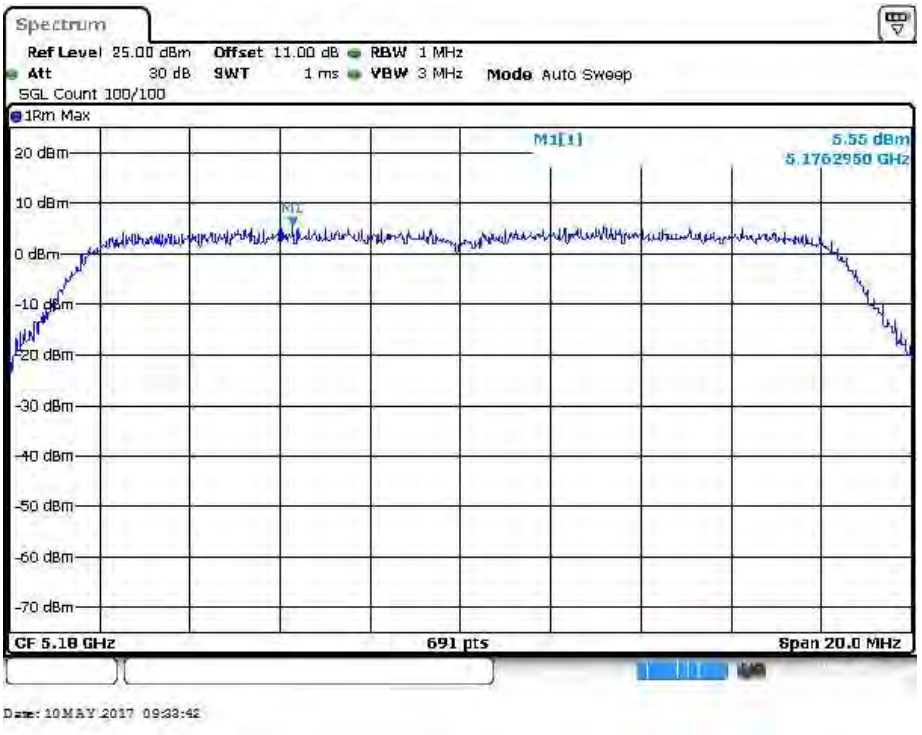
5200MHz



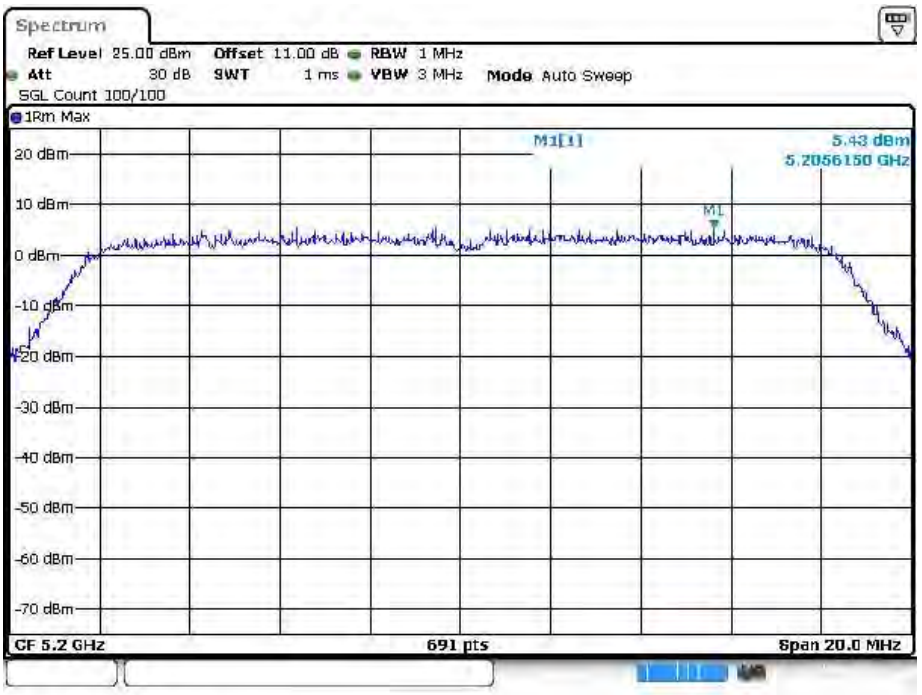
5240MHz



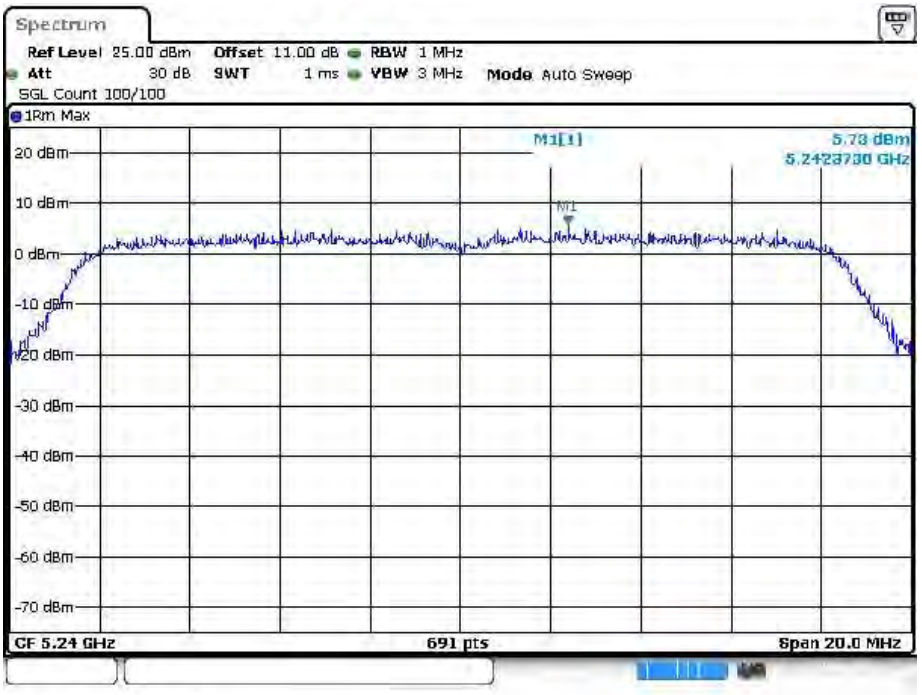
IEEE 802.11a mode / 5150 ~ 5250MHz (chain 1)
5180MHz



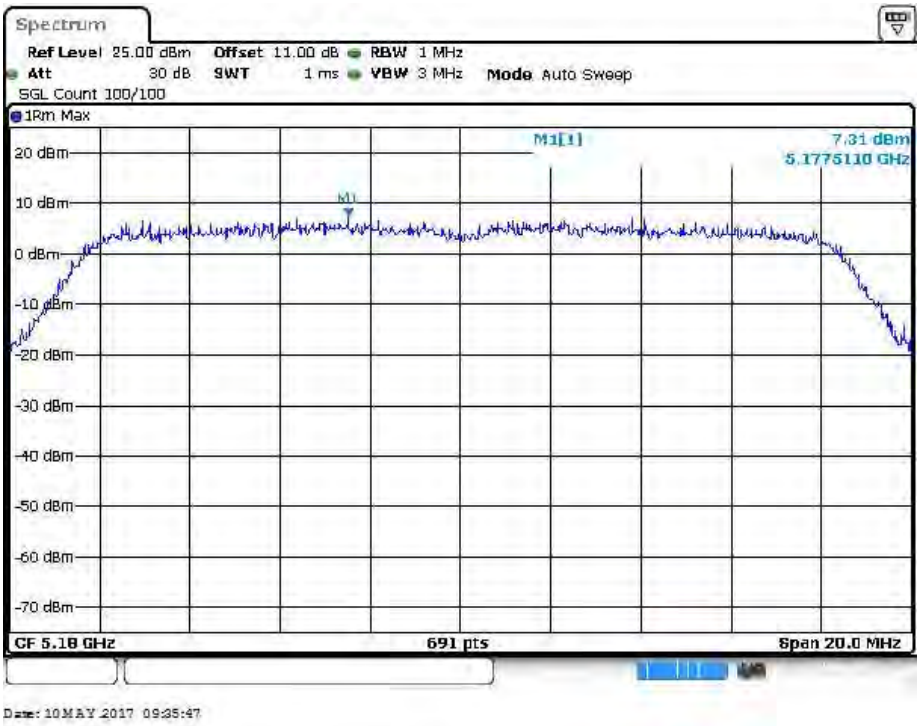
5200MHz



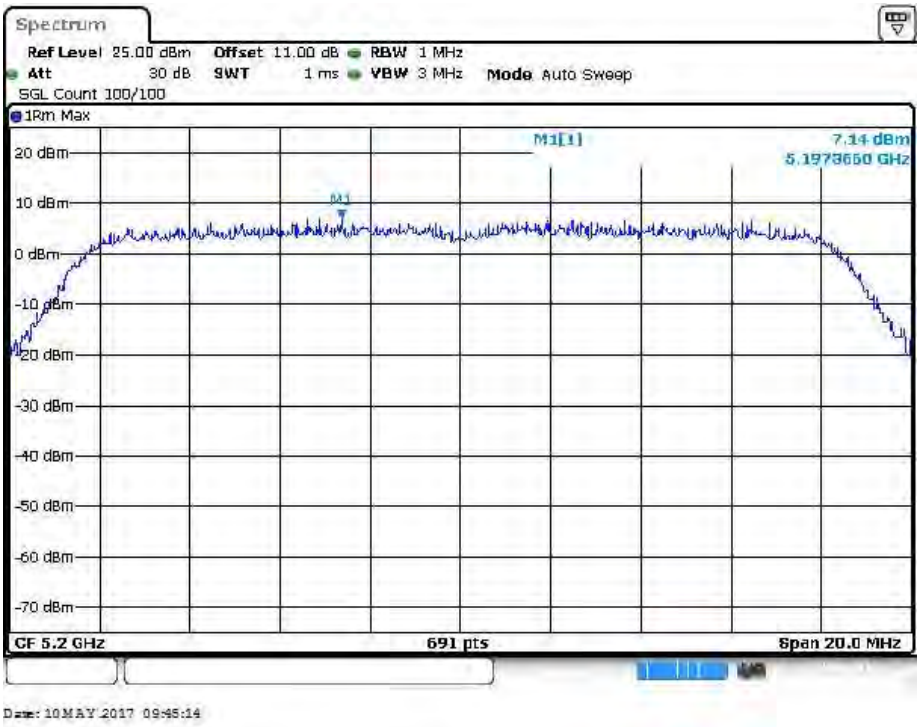
5240MHz



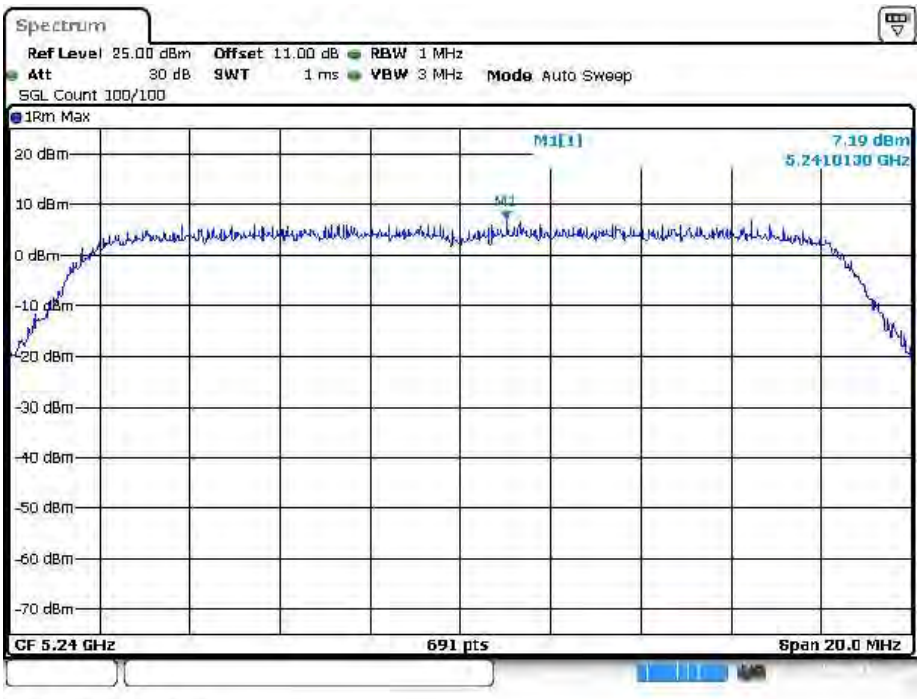
IEEE 802.11a mode / 5150 ~ 5250MHz (chain 2)
5180MHz



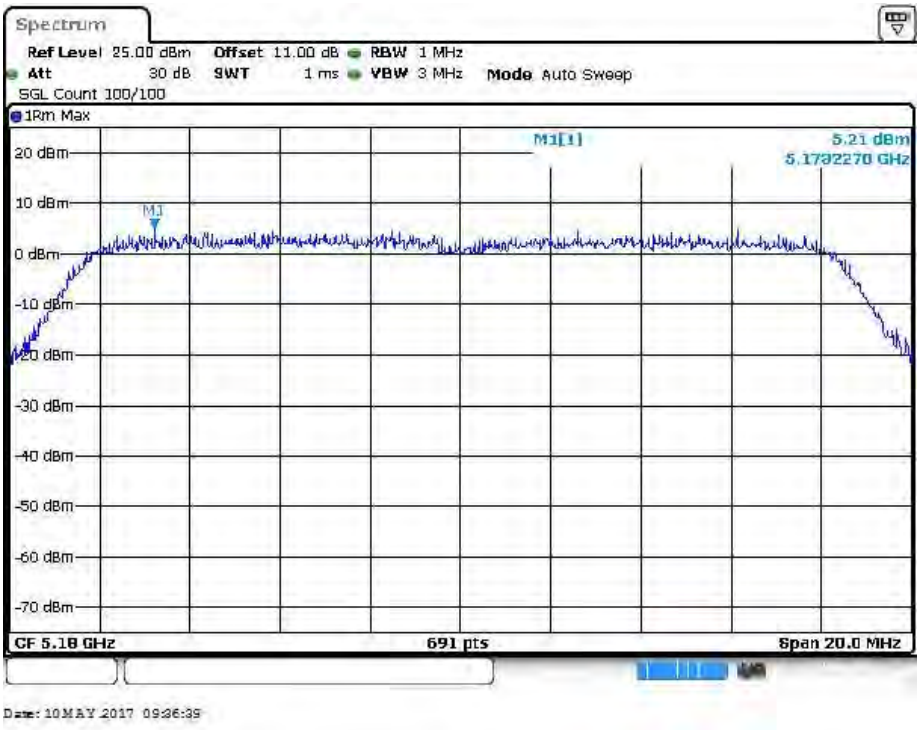
5200MHz



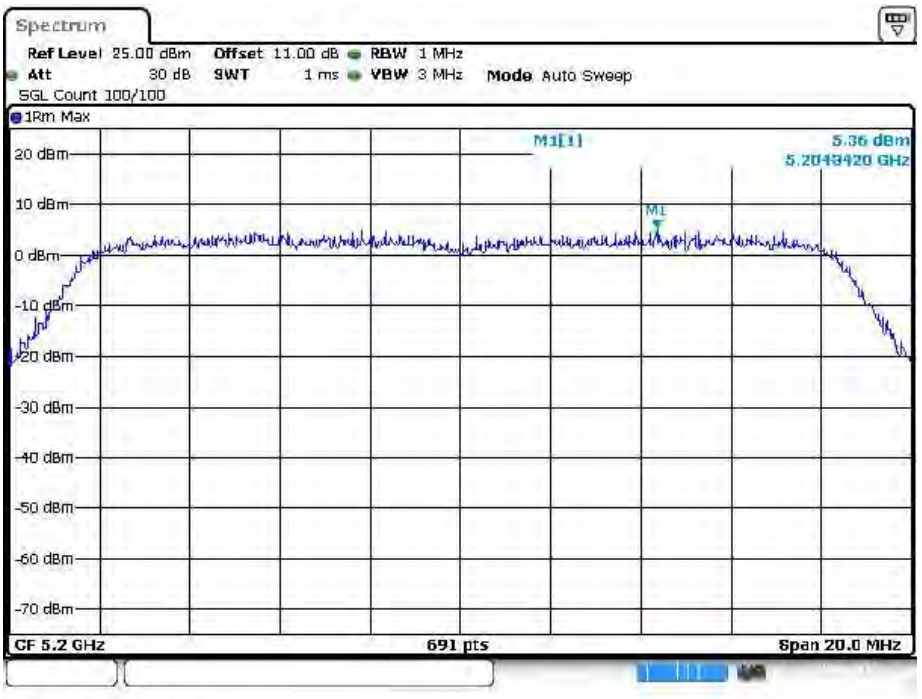
5240MHz



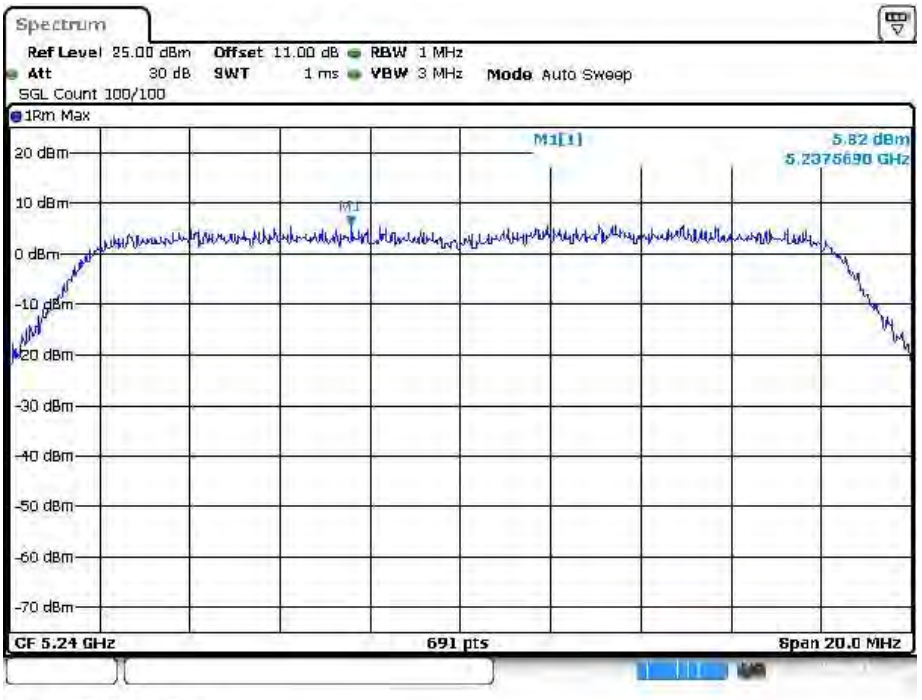
IEEE 802.11a mode / 5150 ~ 5250MHz (chain 3)
5180MHz



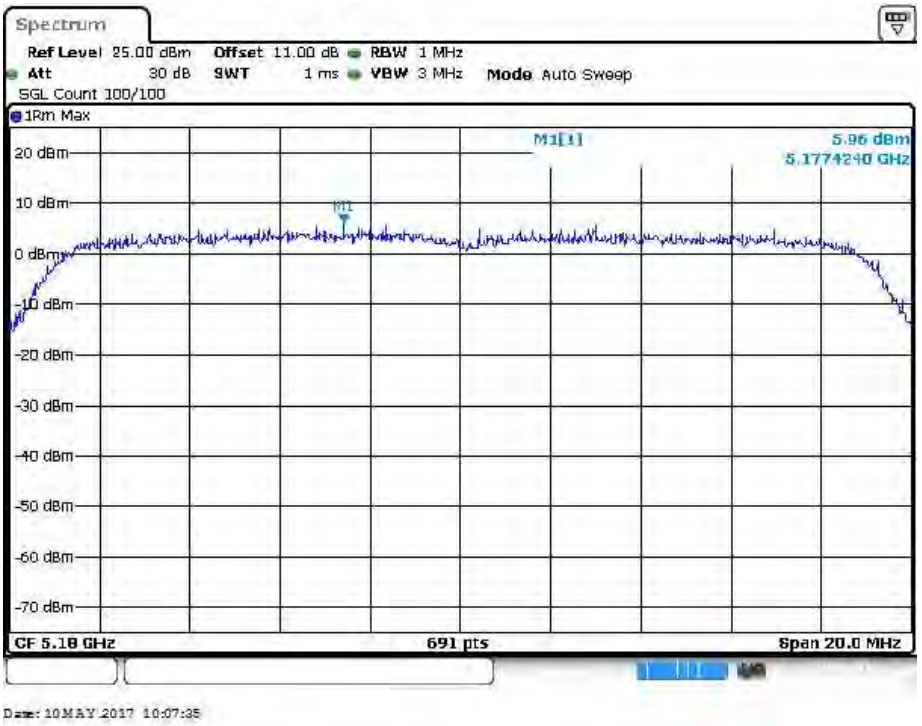
5200MHz



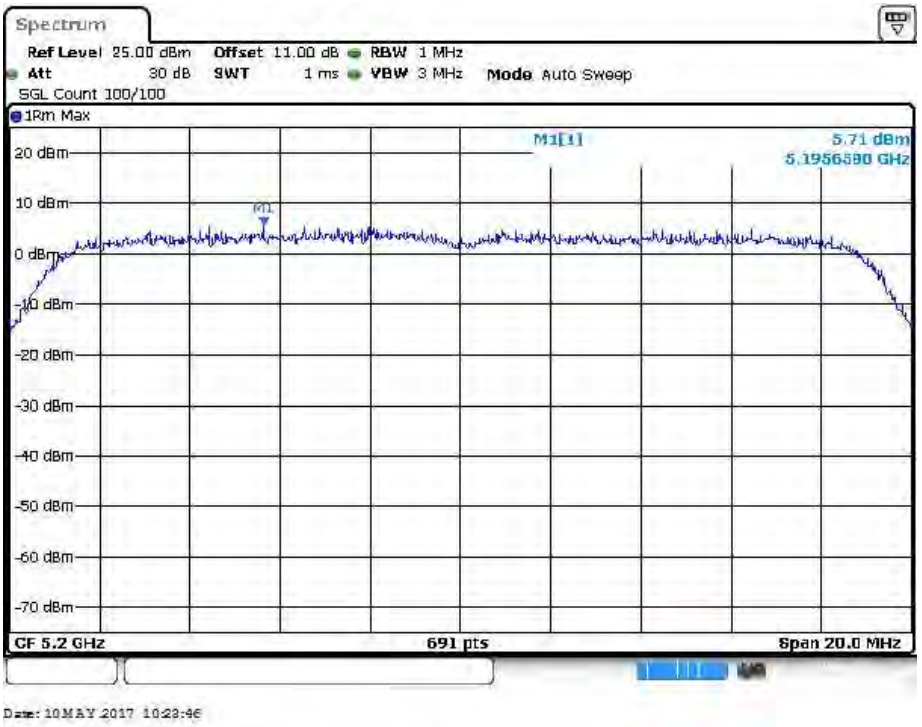
5240MHz



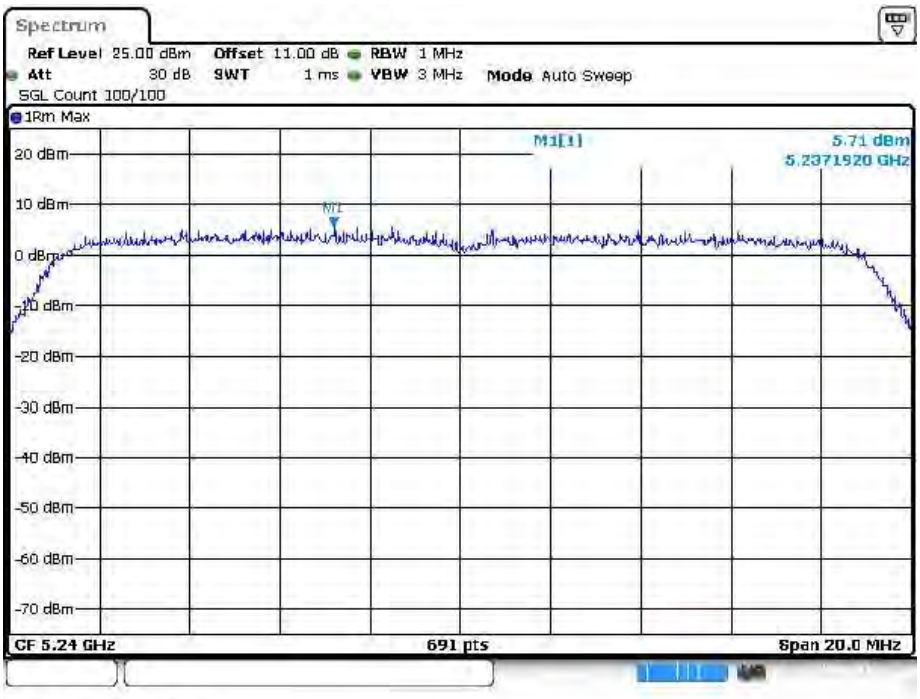
IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz (chain 0)
5180MHz



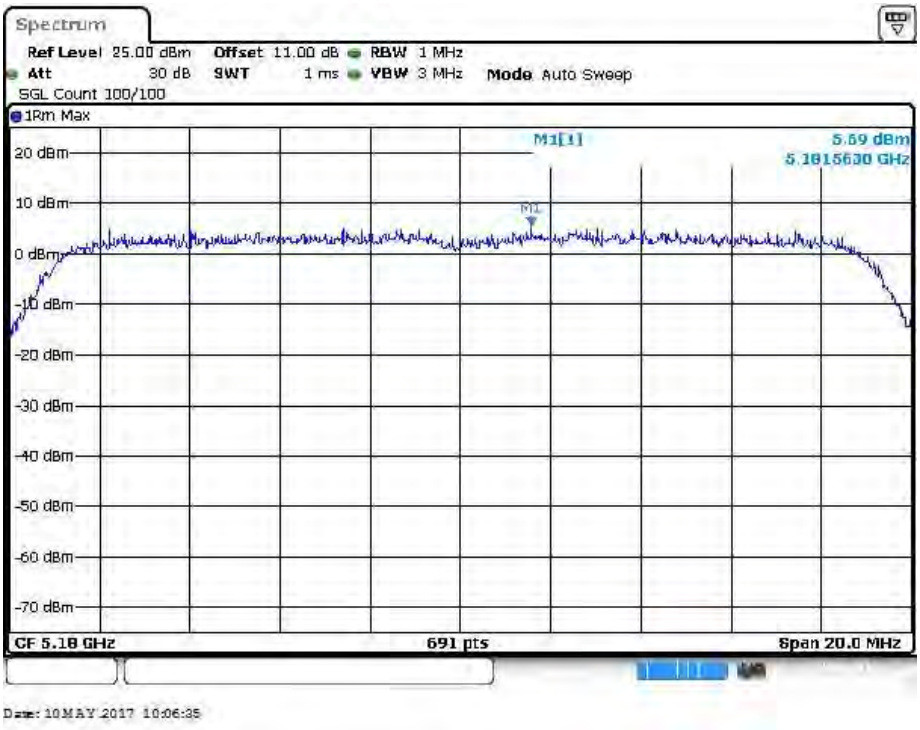
5200MHz



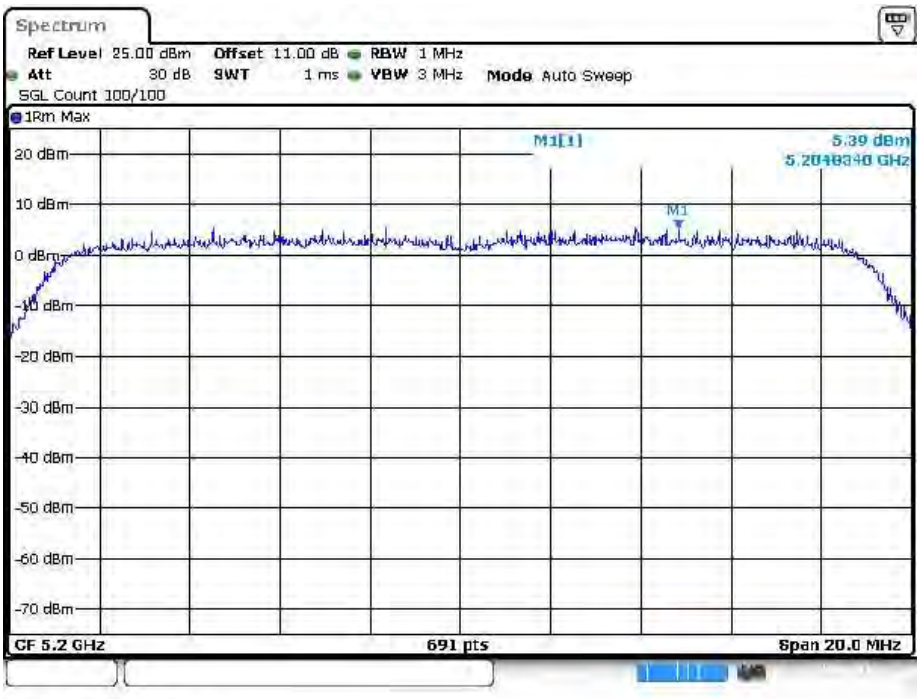
5240MHz



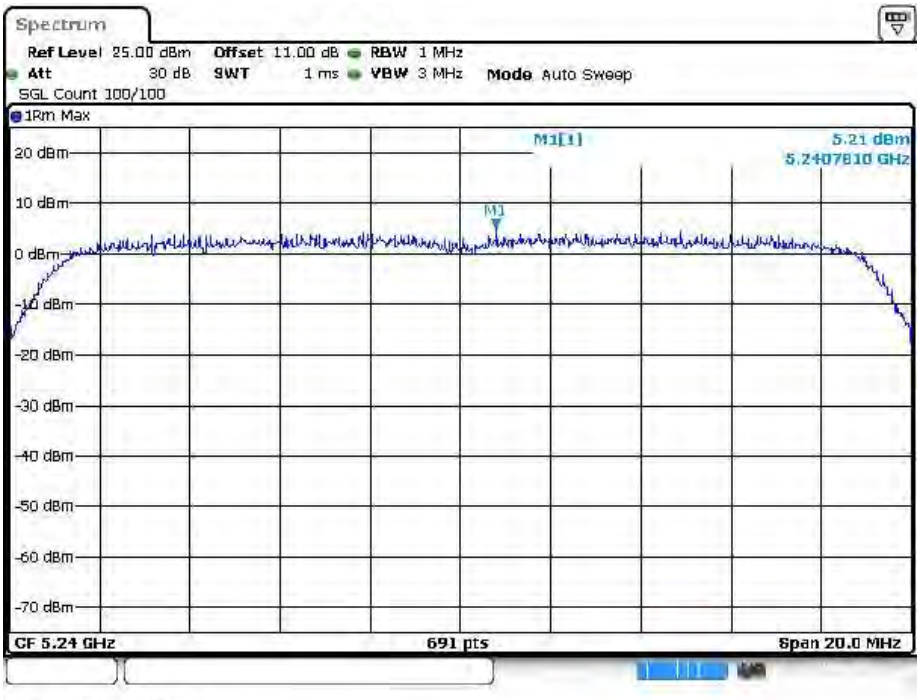
IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz (chain 1)
5180MHz



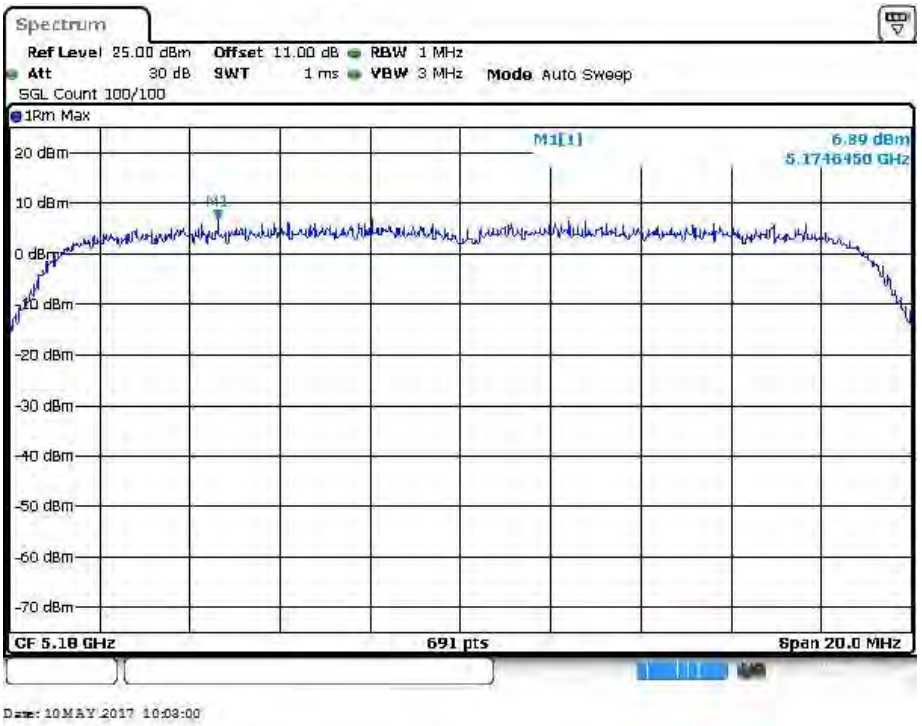
5200MHz



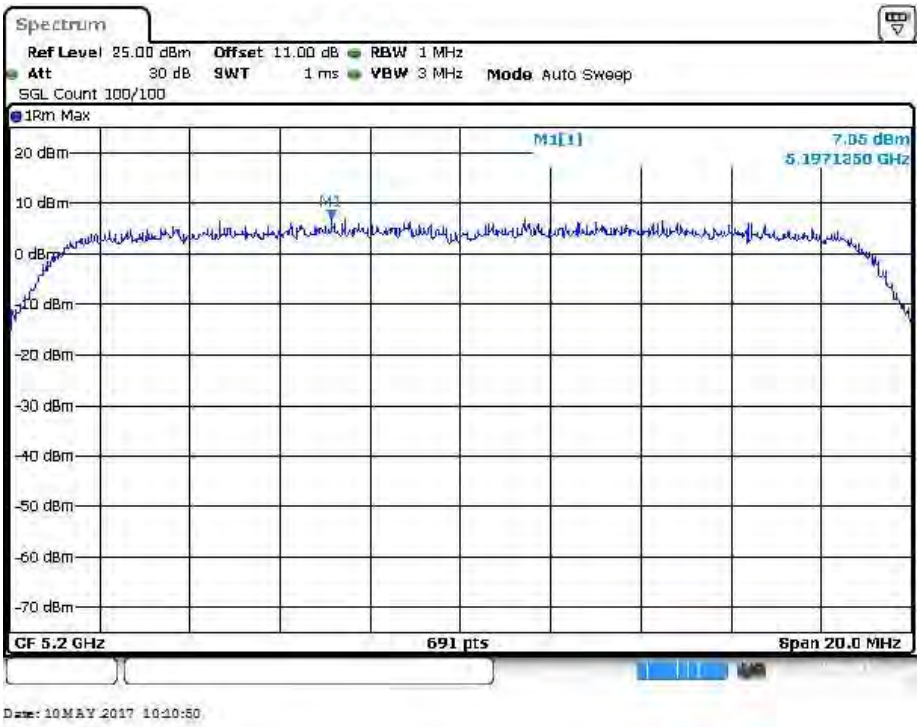
5240MHz



IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz (chain 2)
5180MHz



5200MHz



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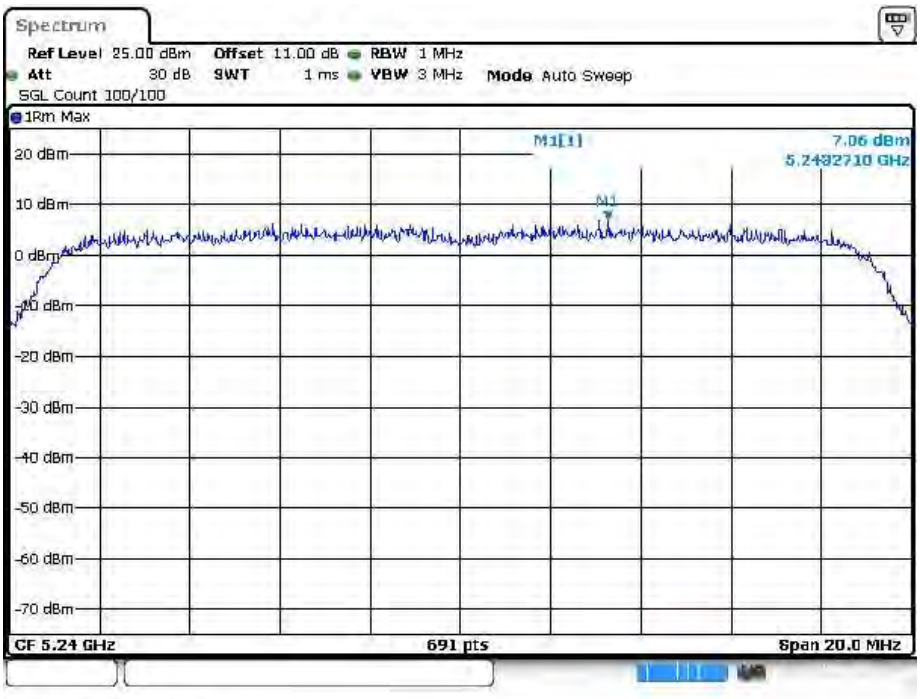
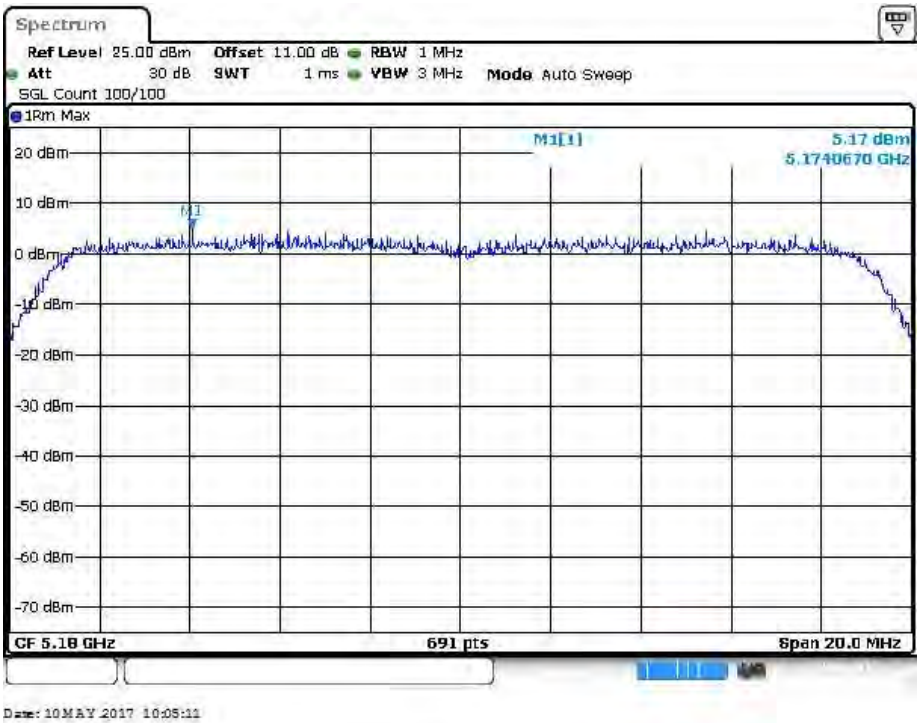
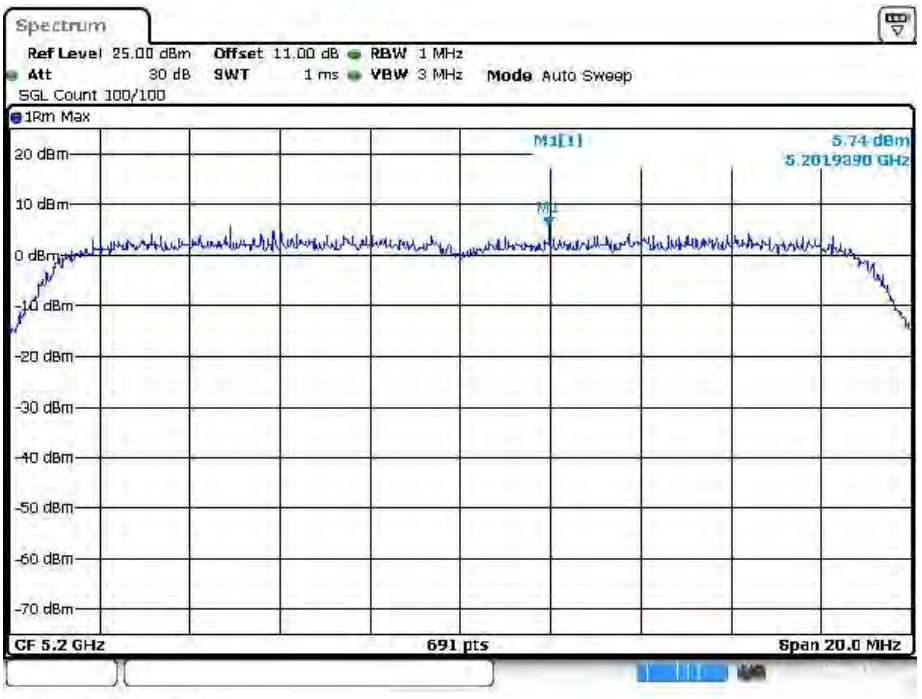


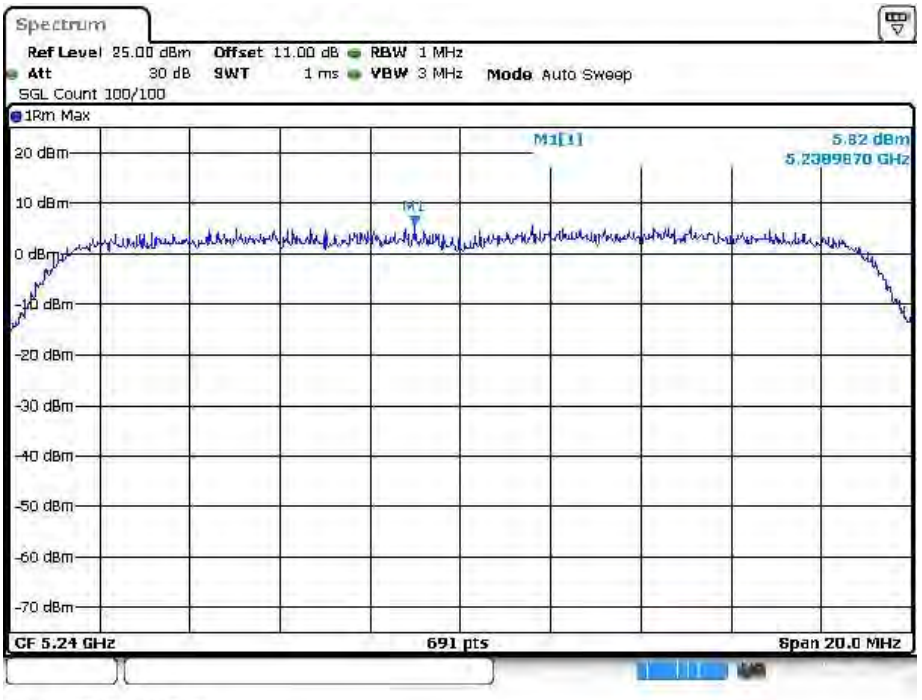
IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz (chain 3)
5180MHz



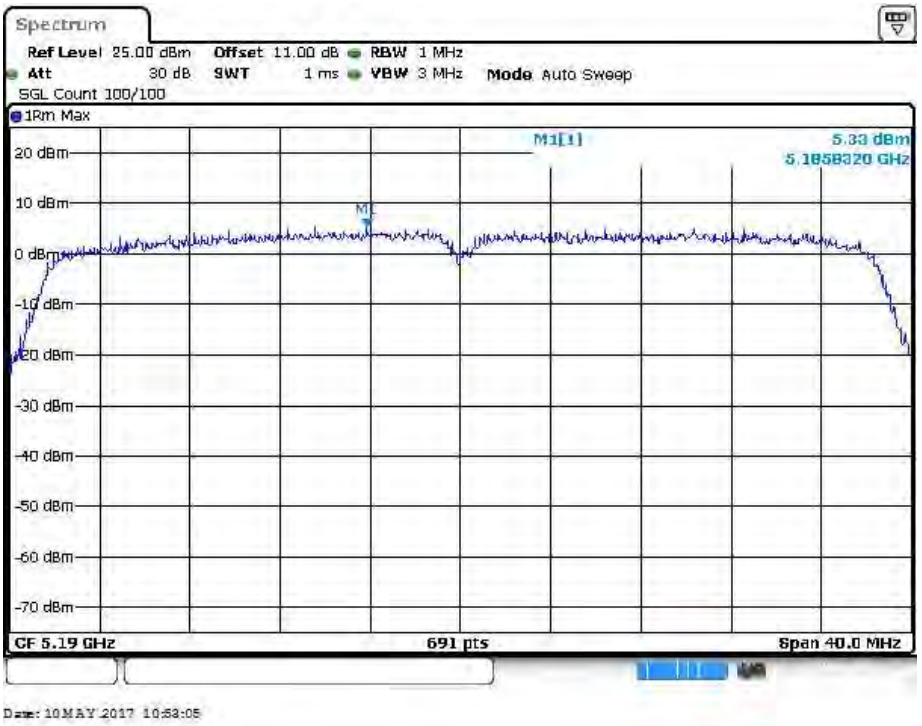
5200MHz



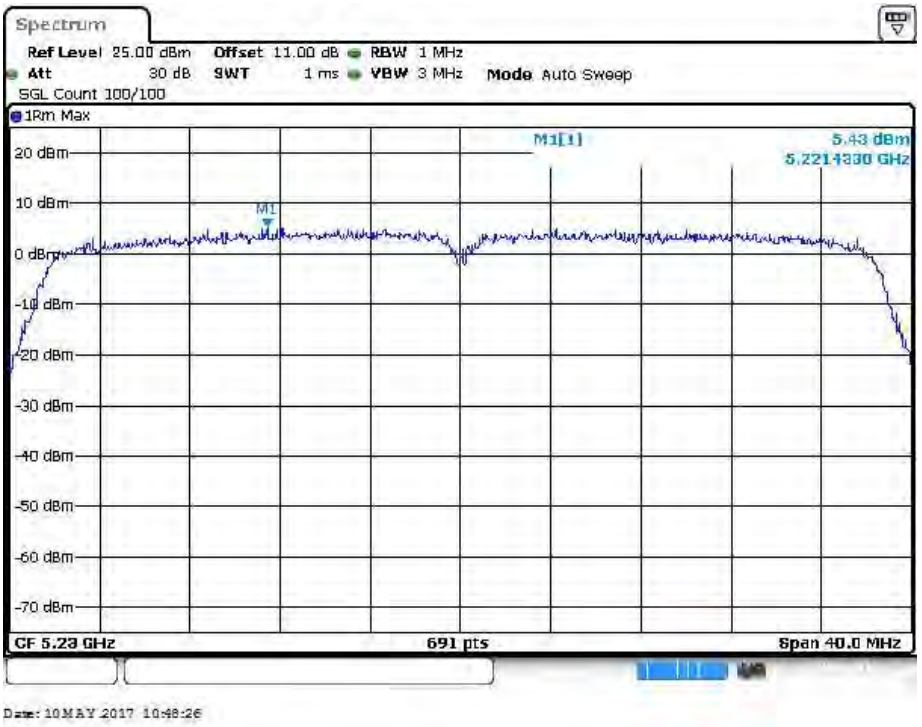
5240MHz



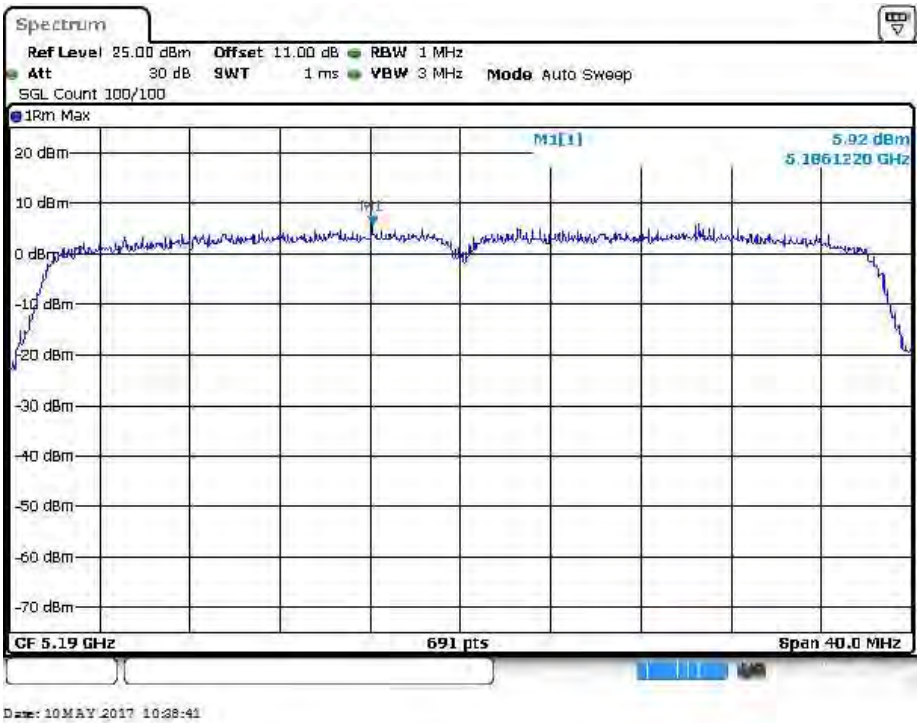
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 0)
5190MHz



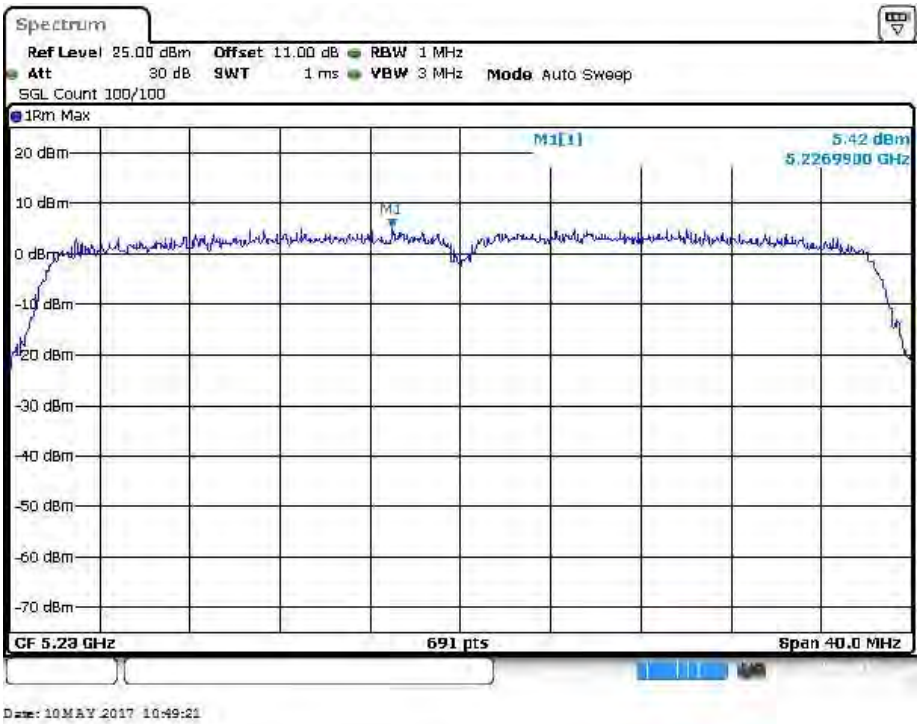
5230MHz



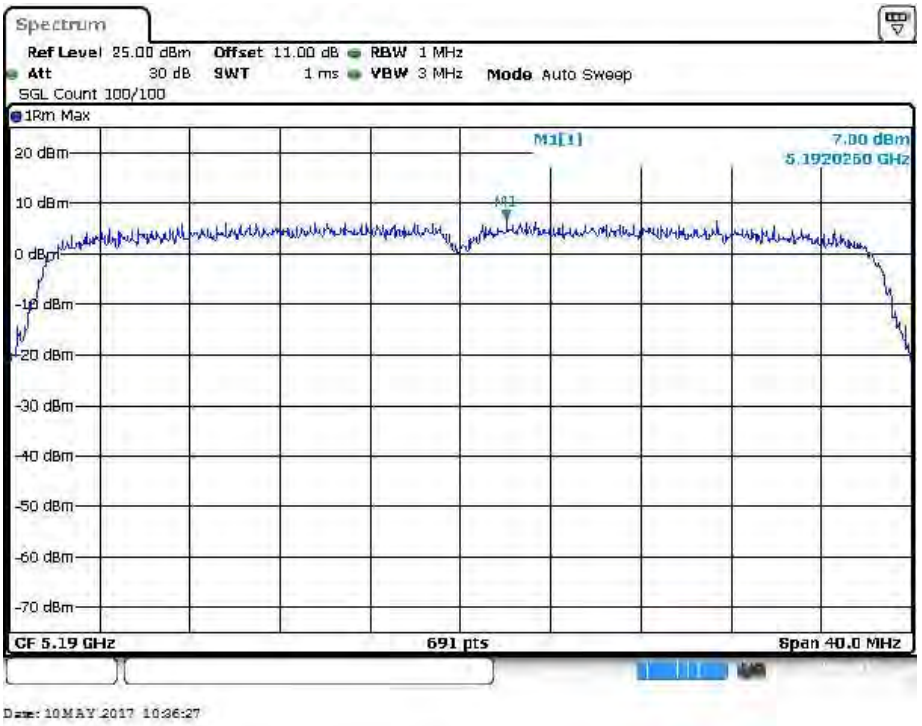
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 1)
5190MHz



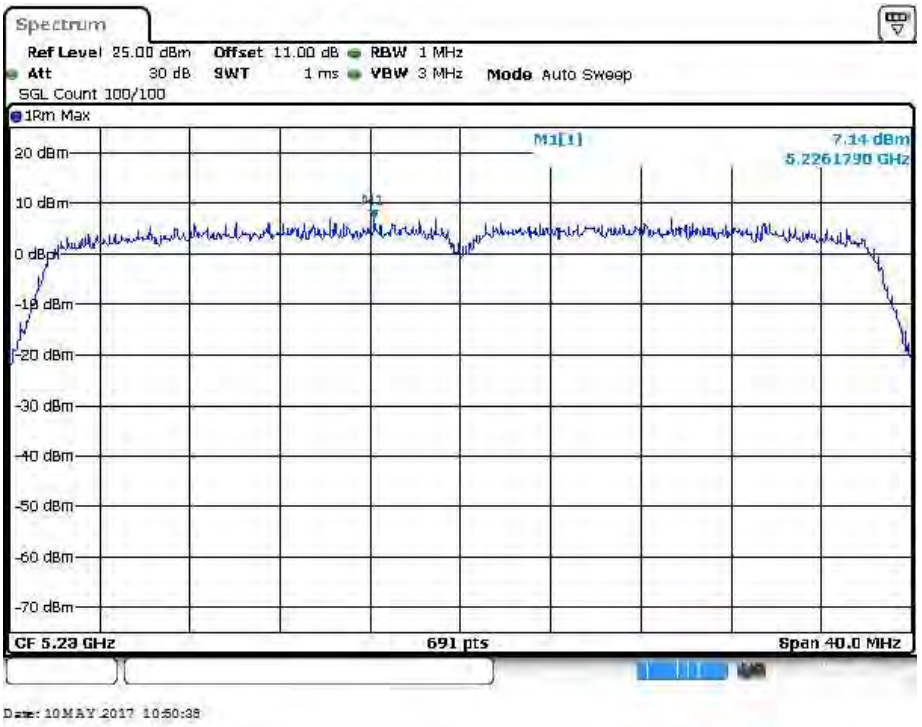
5230MHz



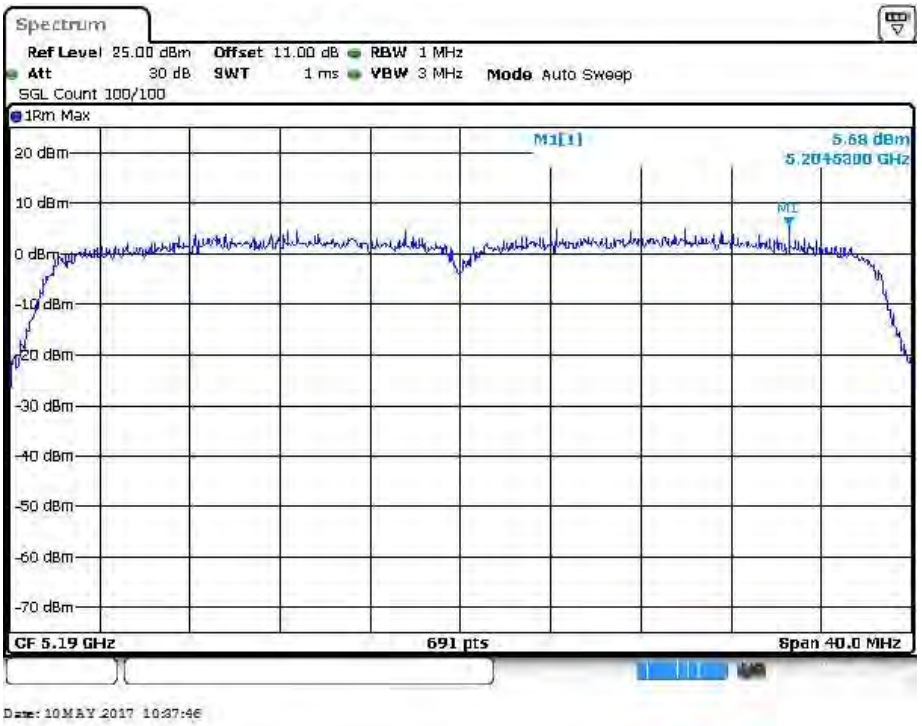
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 2)
5190MHz



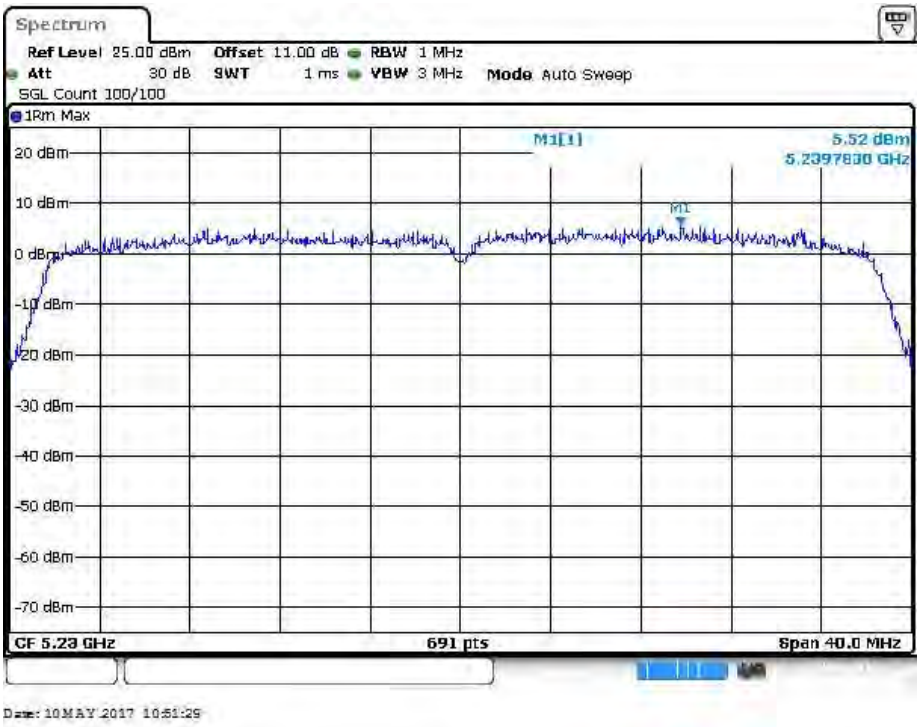
5230MHz



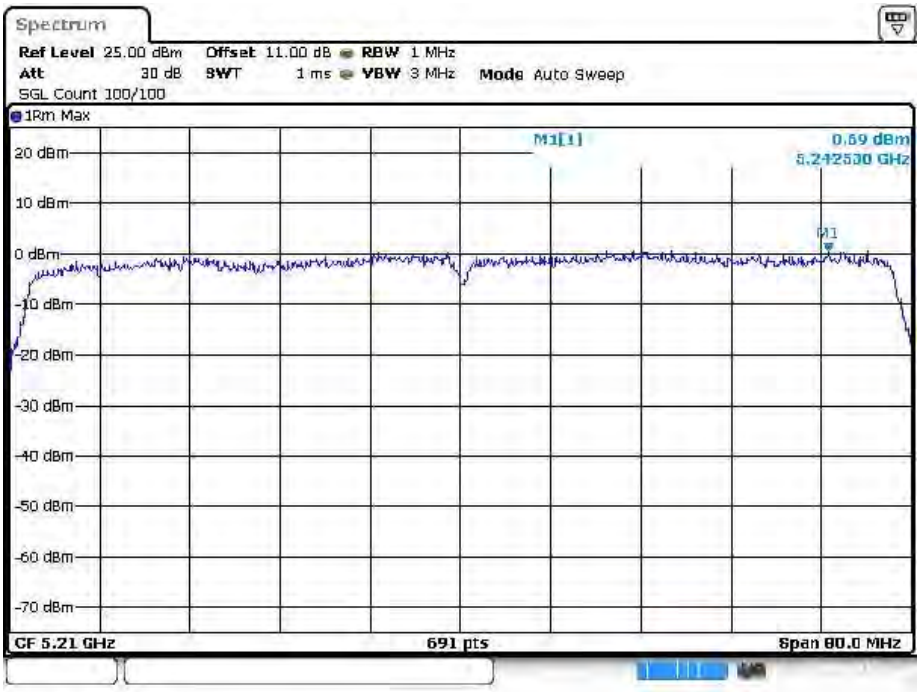
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 3)
5190MHz



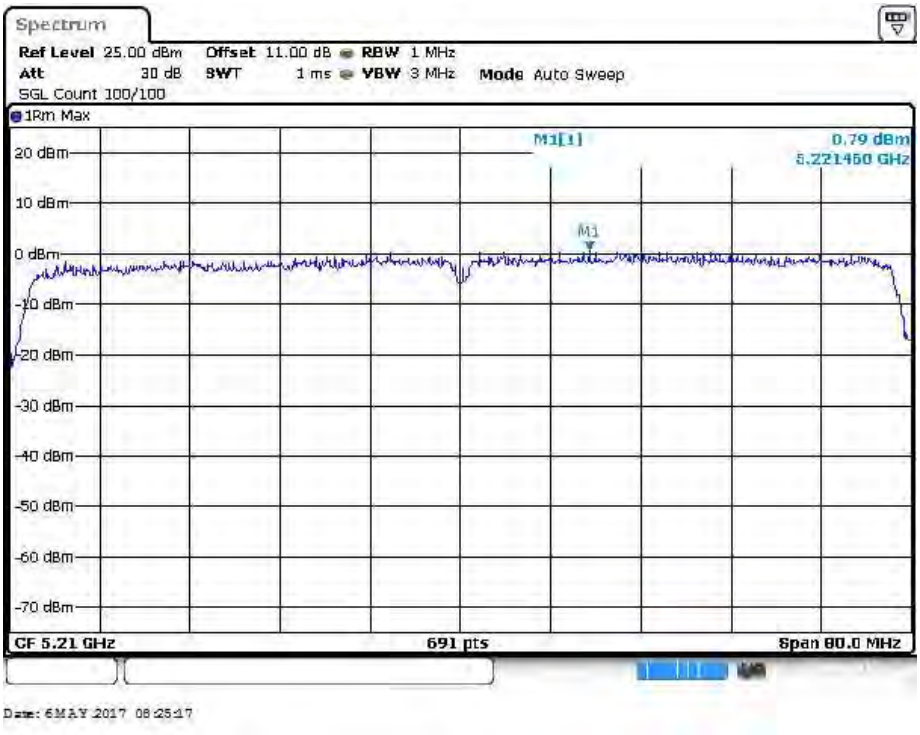
5230MHz



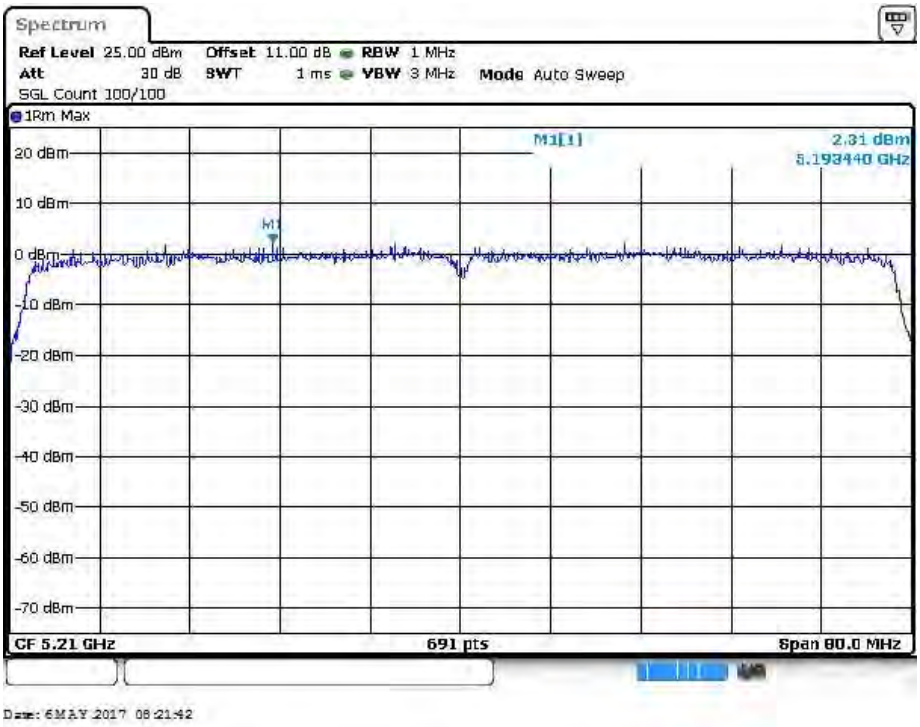
IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 0)
5210MHz



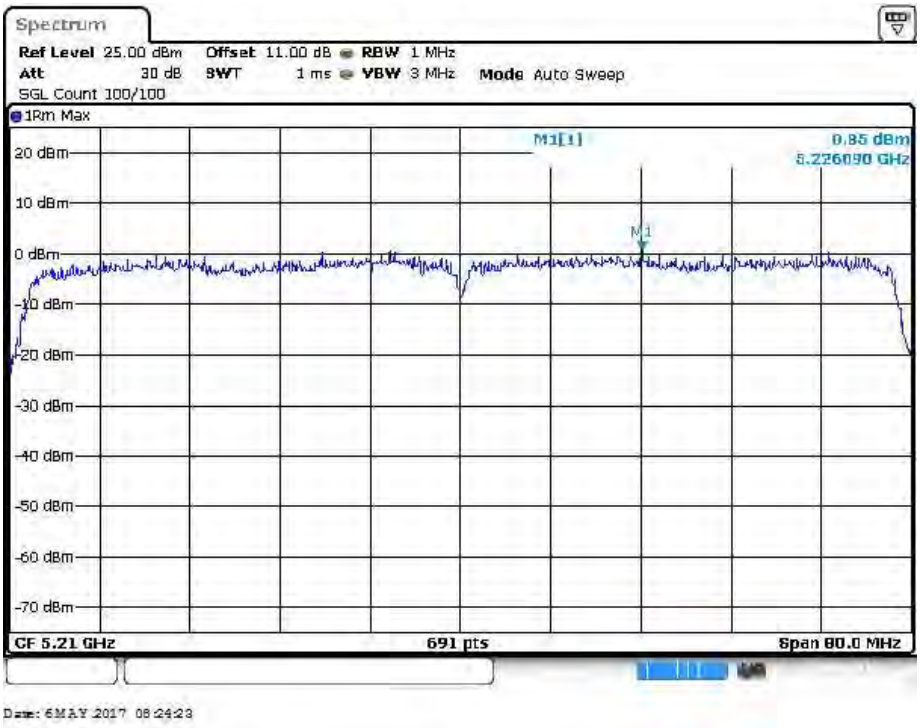
IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 1)
5210MHz



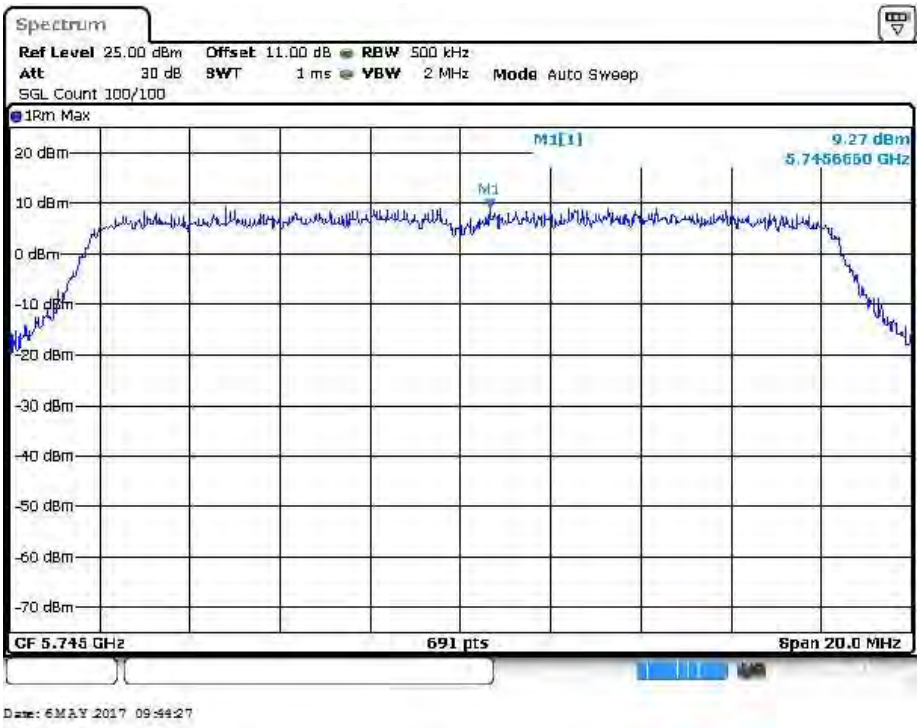
IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 2)
5210MHz



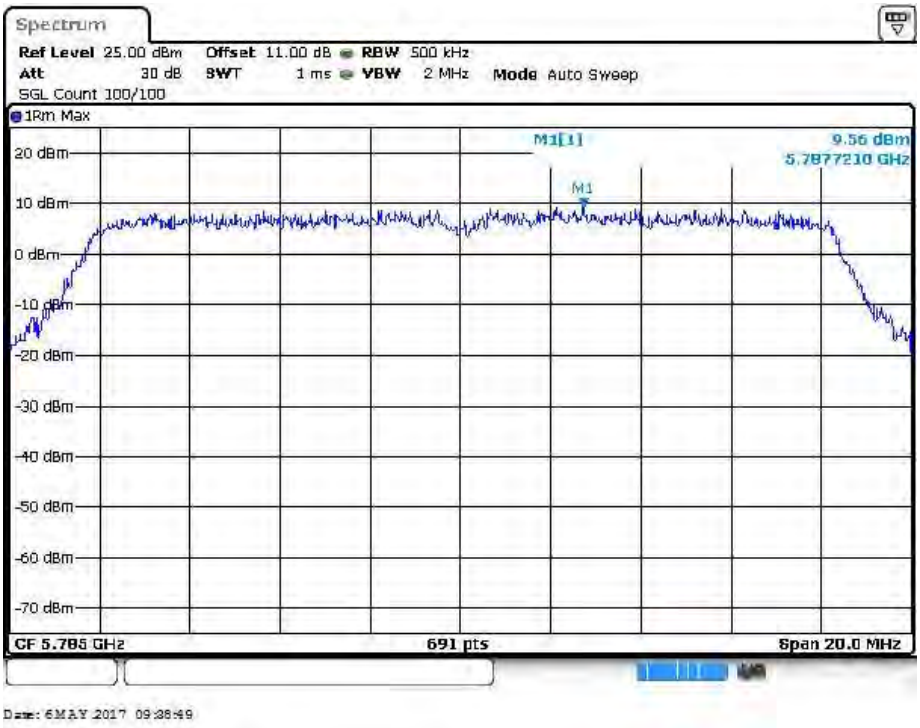
IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 3)
5210MHz



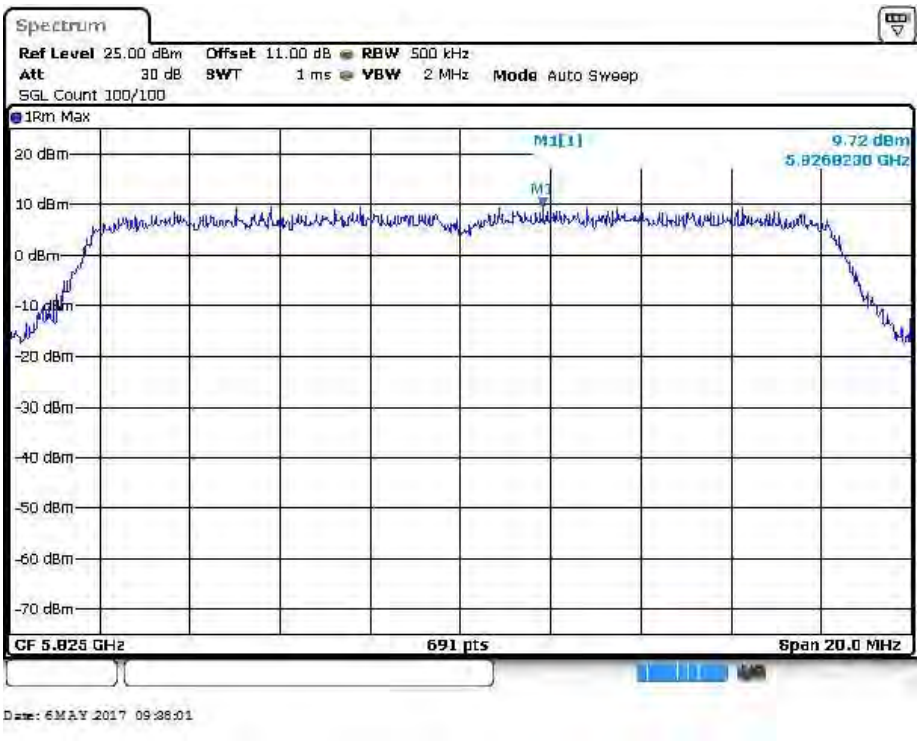
IEEE 802.11a mode / 5725 ~ 5850MHz (chain 0)
5745MHz



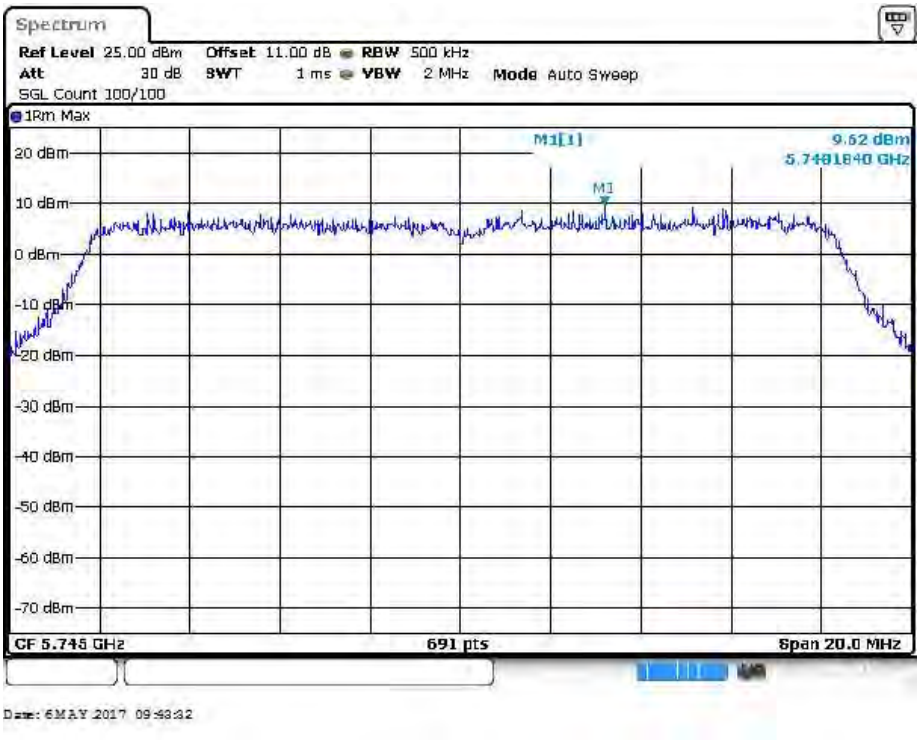
5785MHz



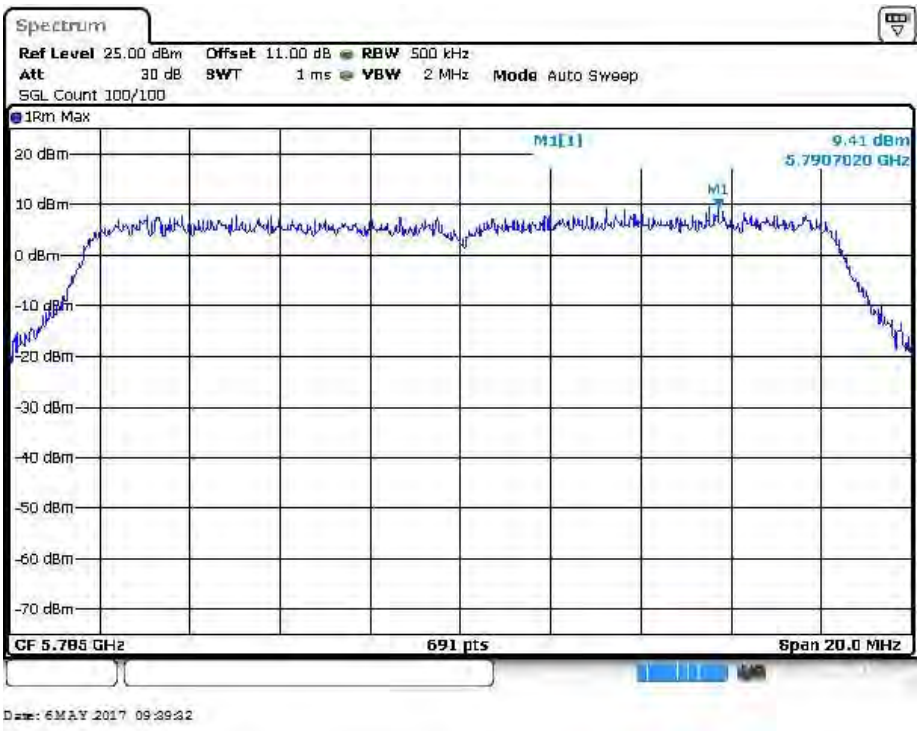
5825MHz



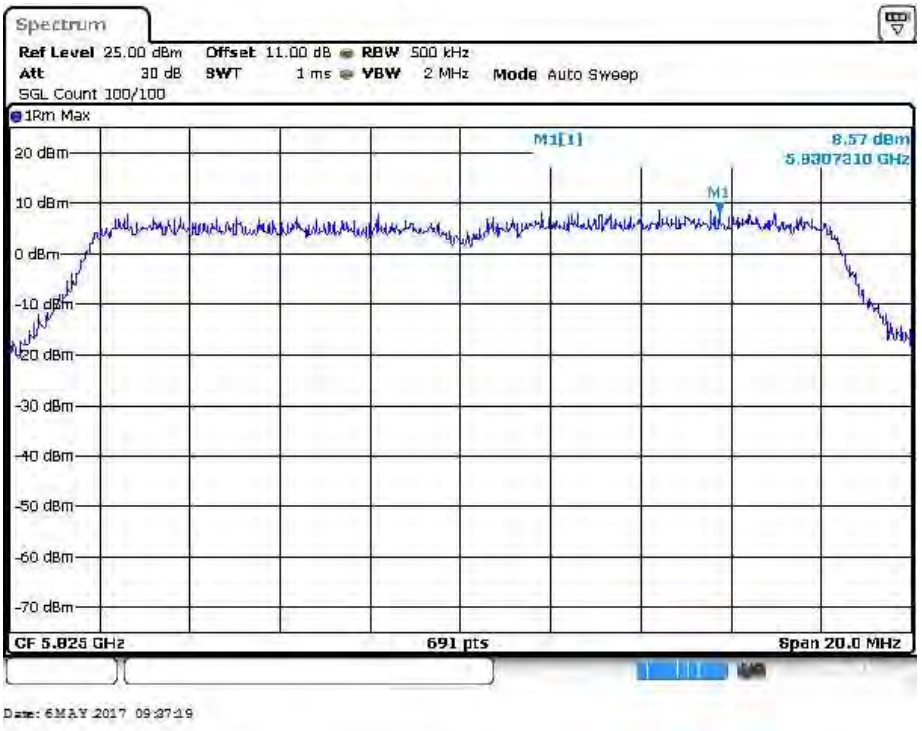
IEEE 802.11a mode / 5725 ~ 5850MHz (chain 1)
5745MHz



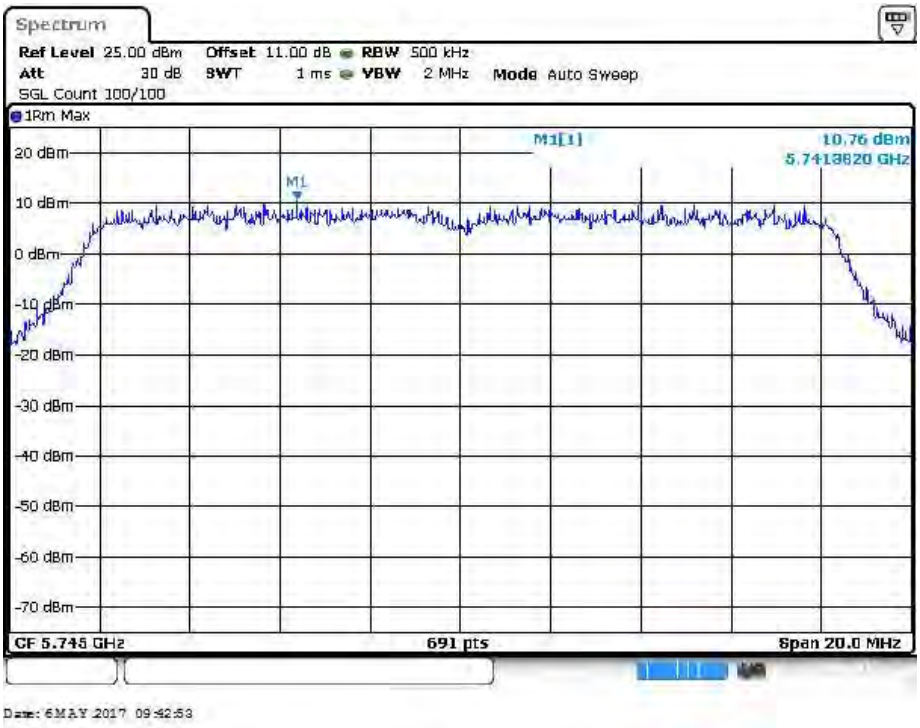
5785MHz



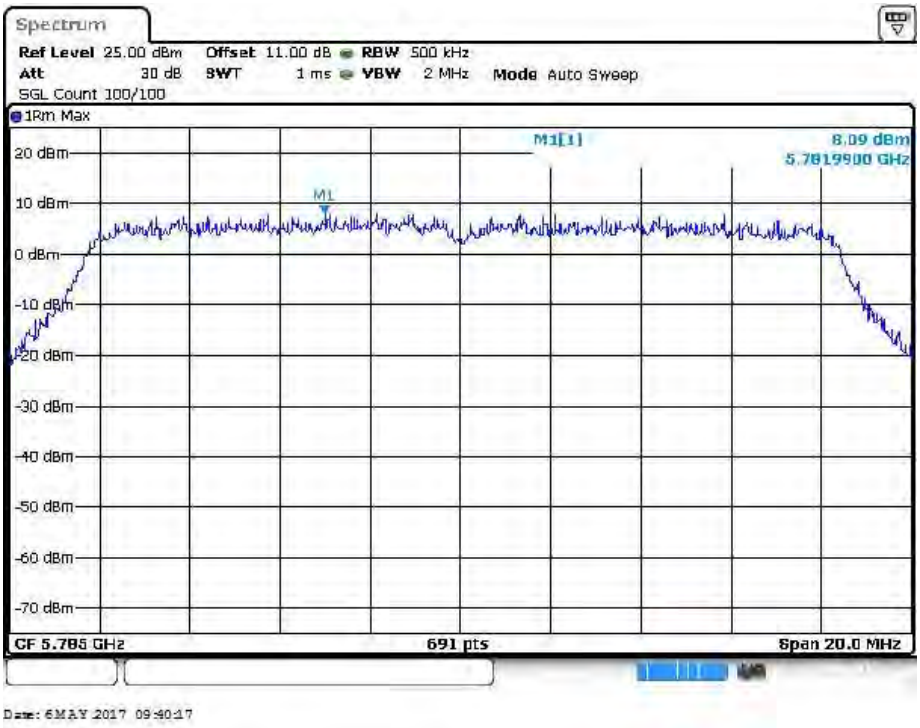
5825MHz



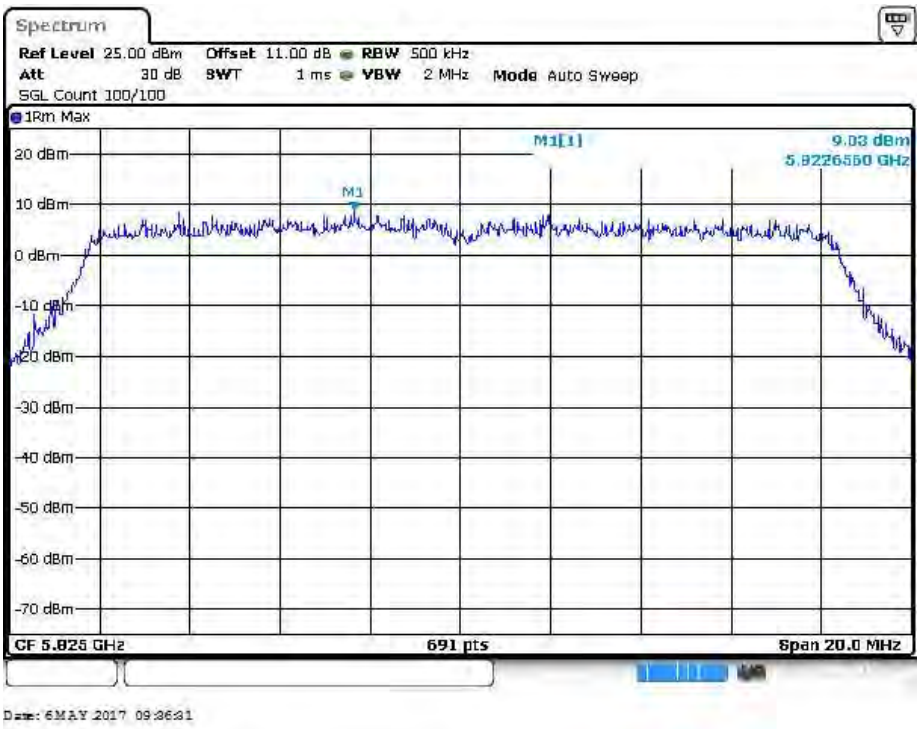
IEEE 802.11a mode / 5725 ~ 5850MHz (chain 2)
5745MHz



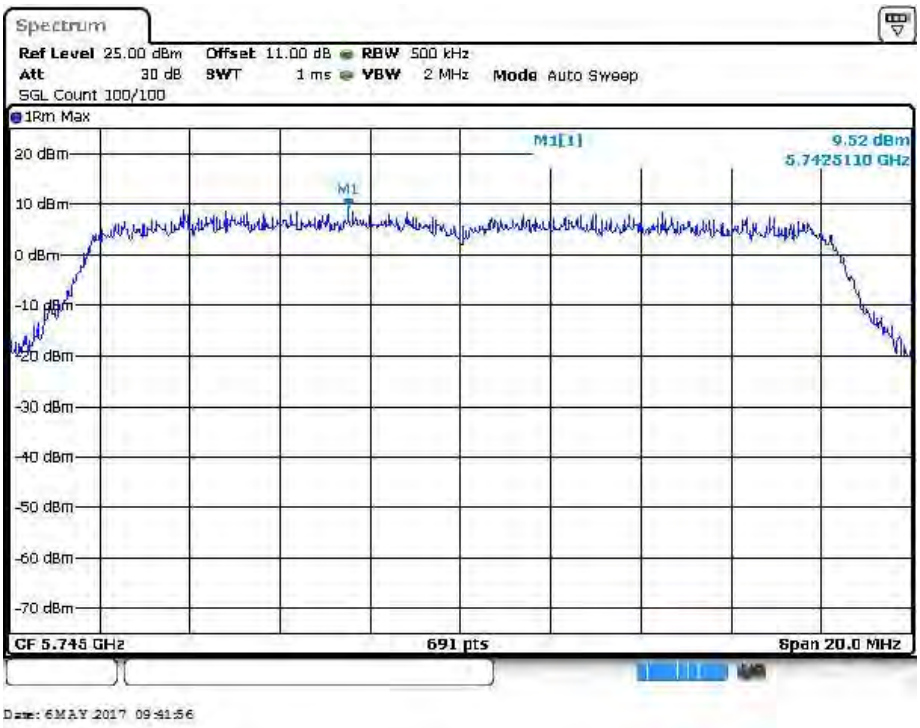
5785MHz



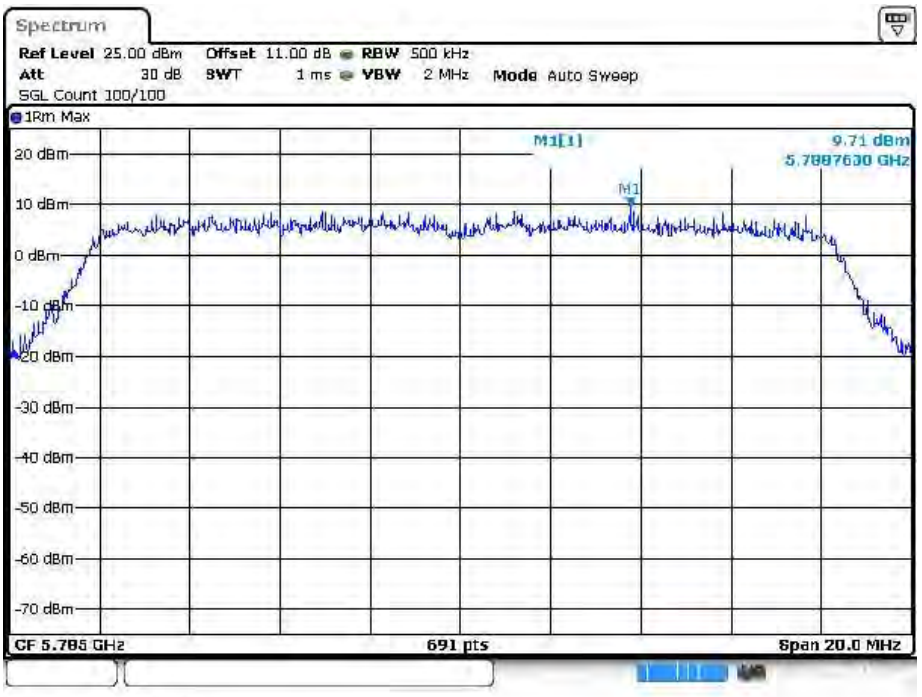
5825MHz



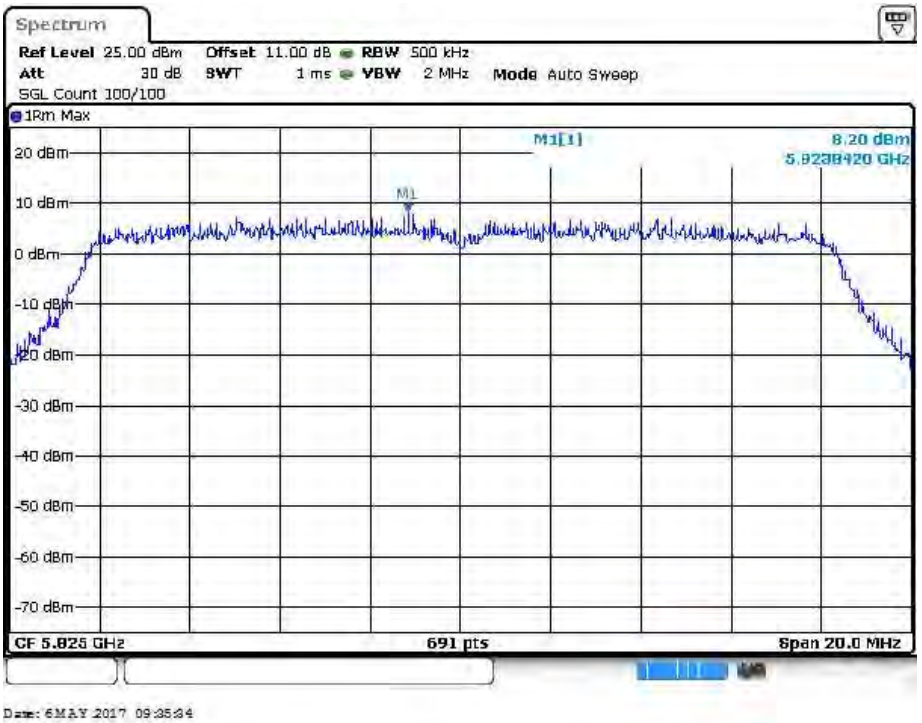
IEEE 802.11a mode / 5725 ~ 5850MHz (chain 3)
5745MHz



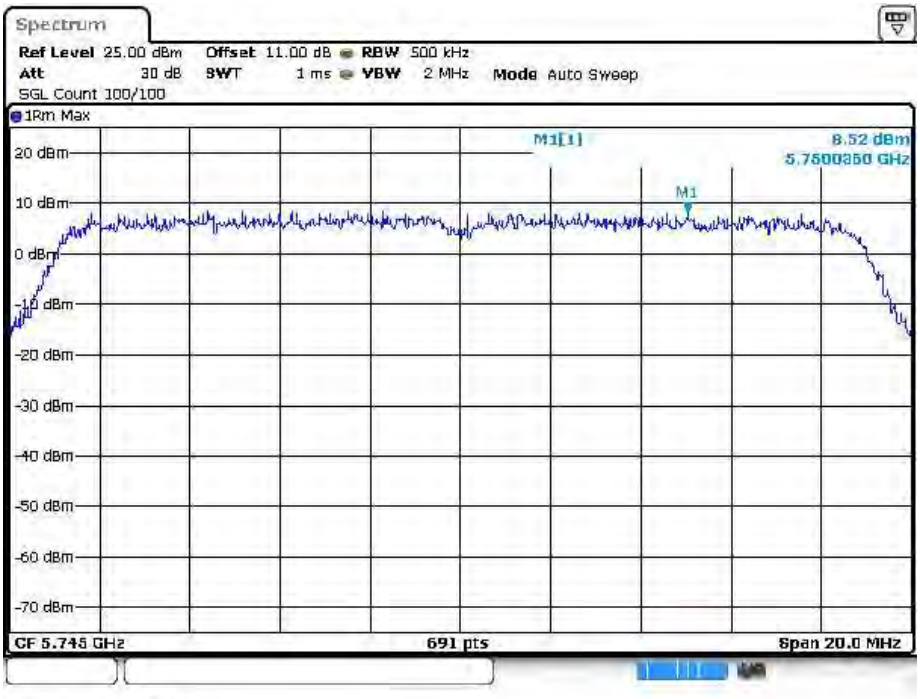
5785MHz



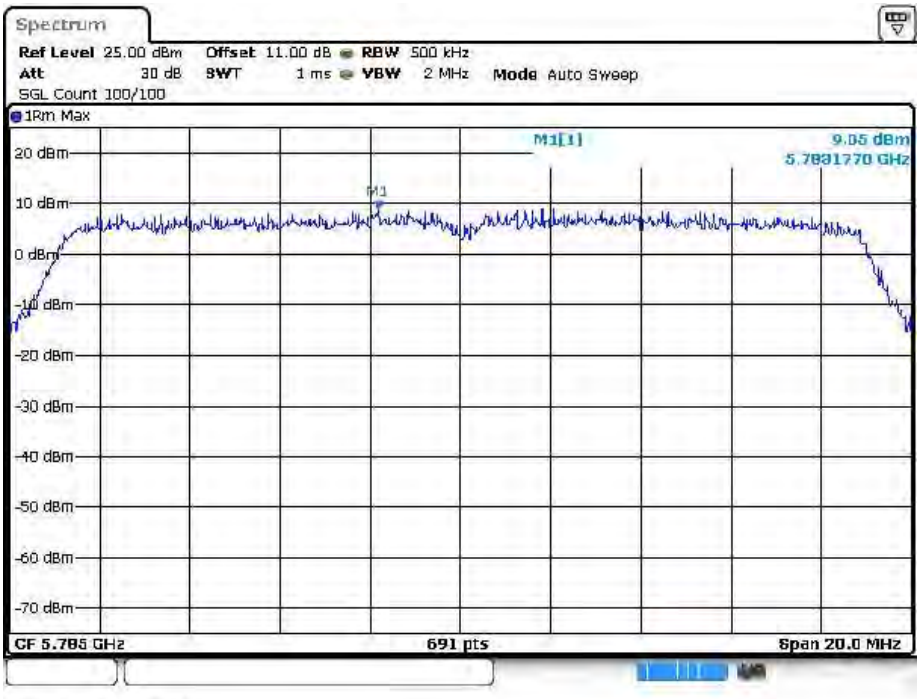
5825MHz



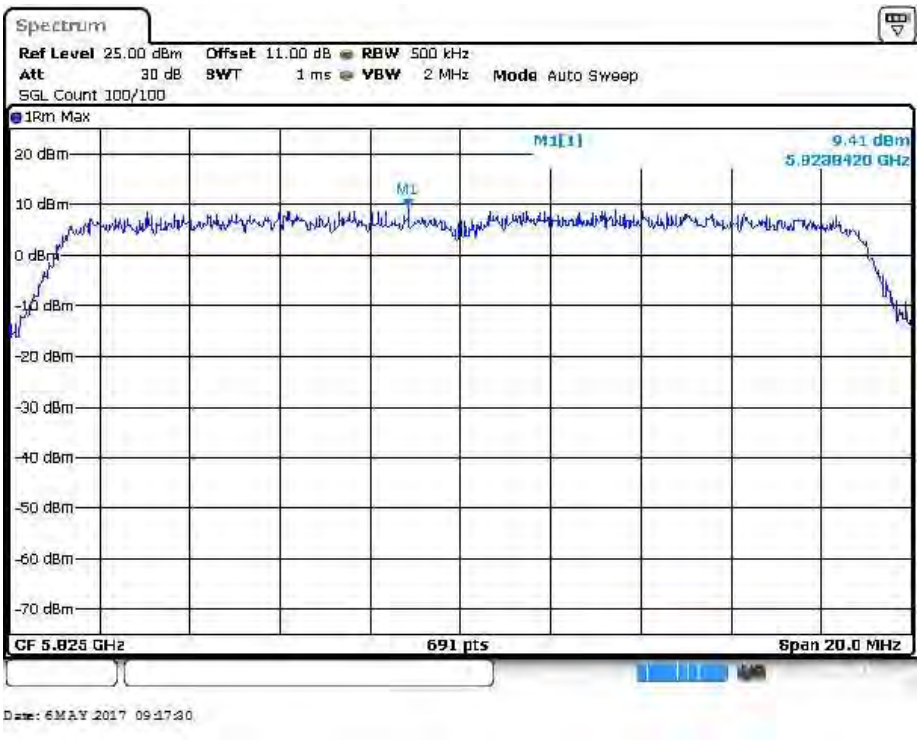
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 0)
5745MHz



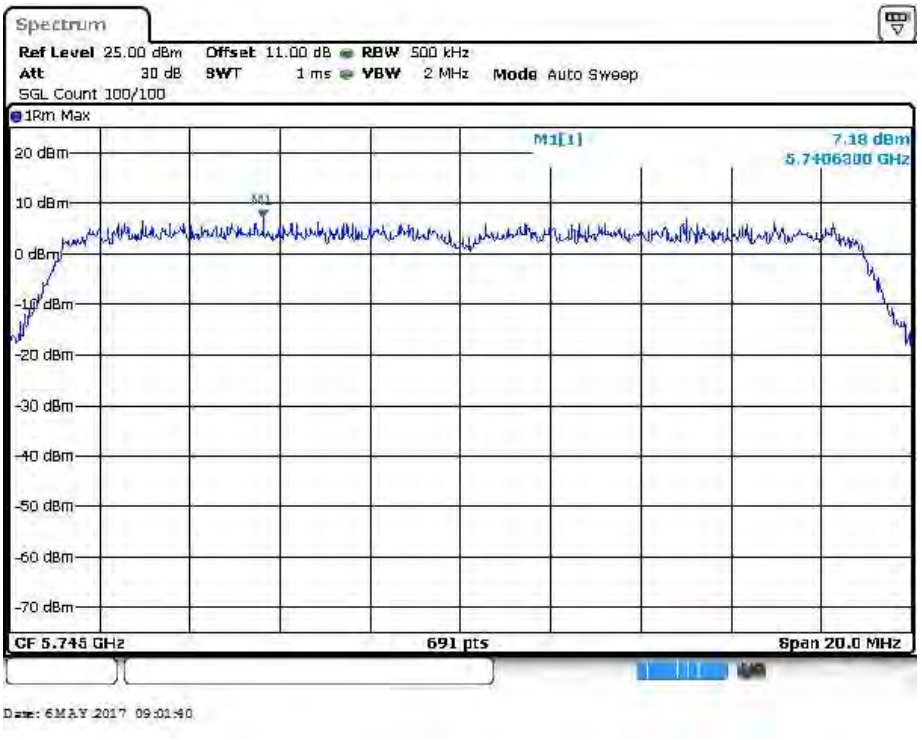
5785MHz



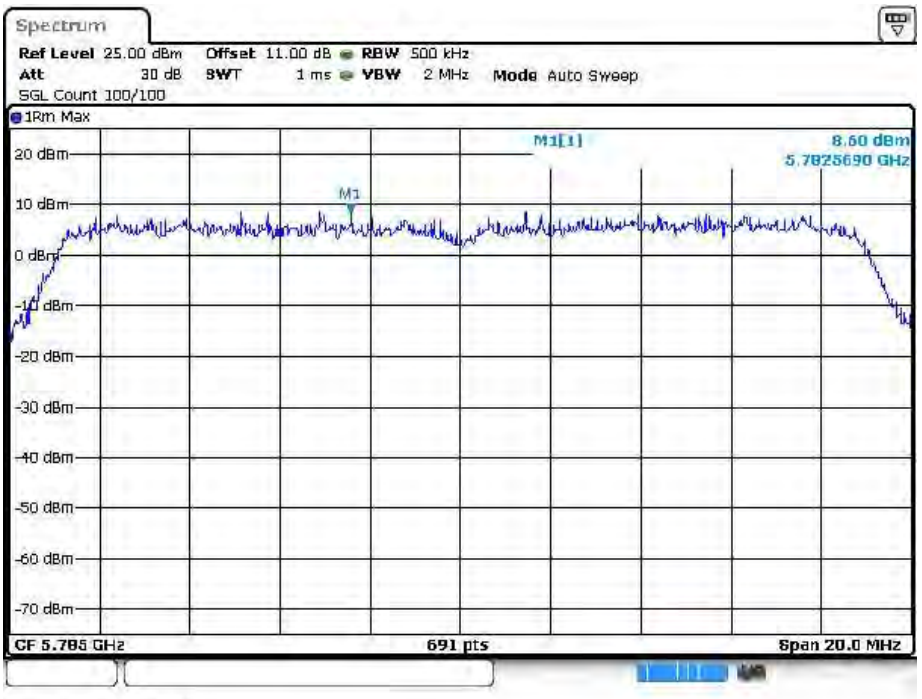
5825MHz



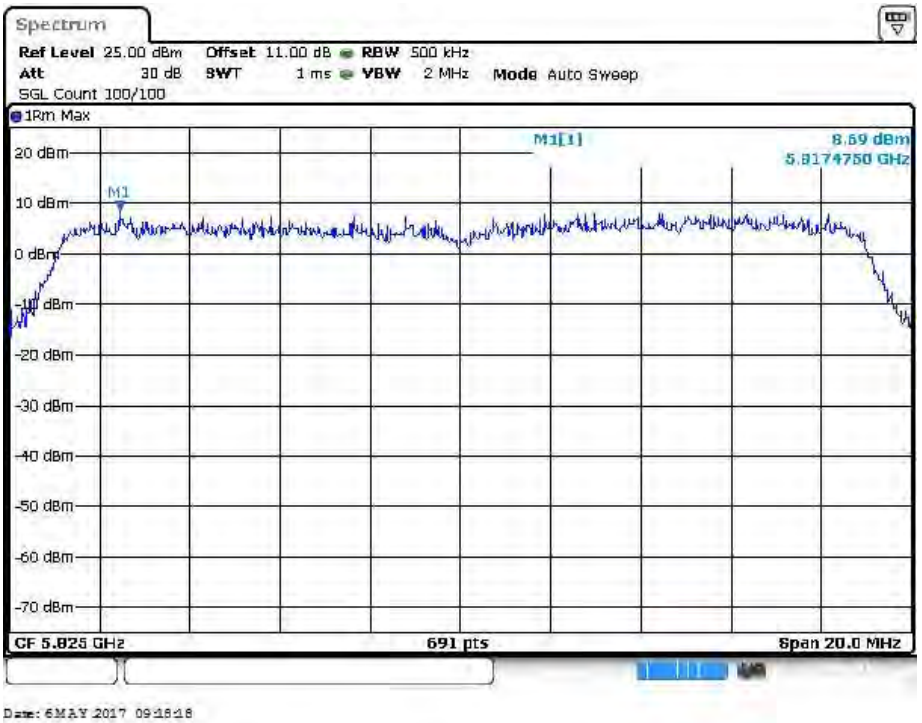
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 1)
5745MHz



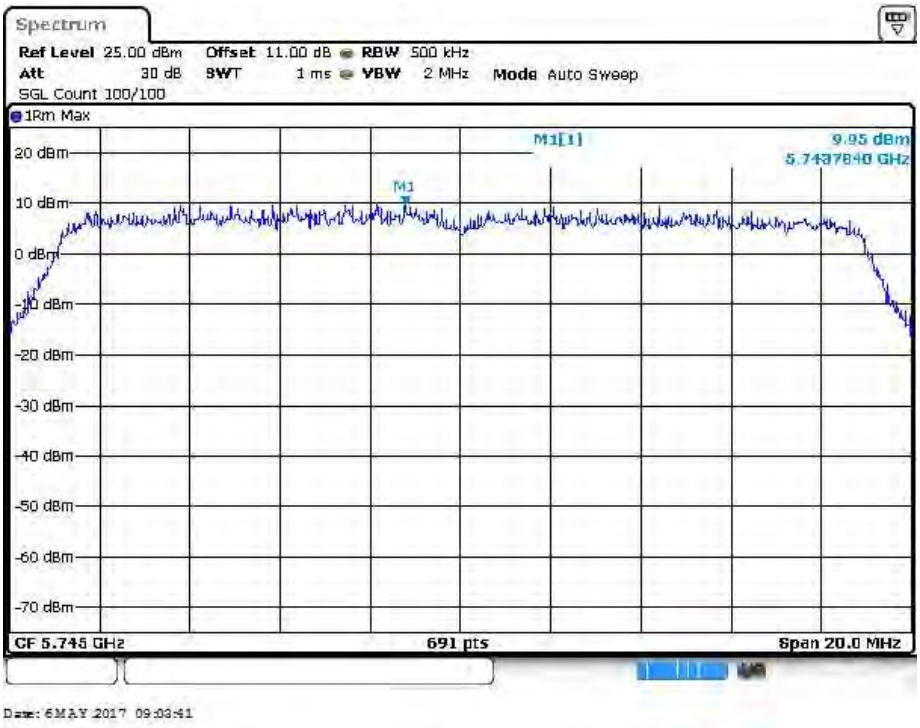
5785MHz



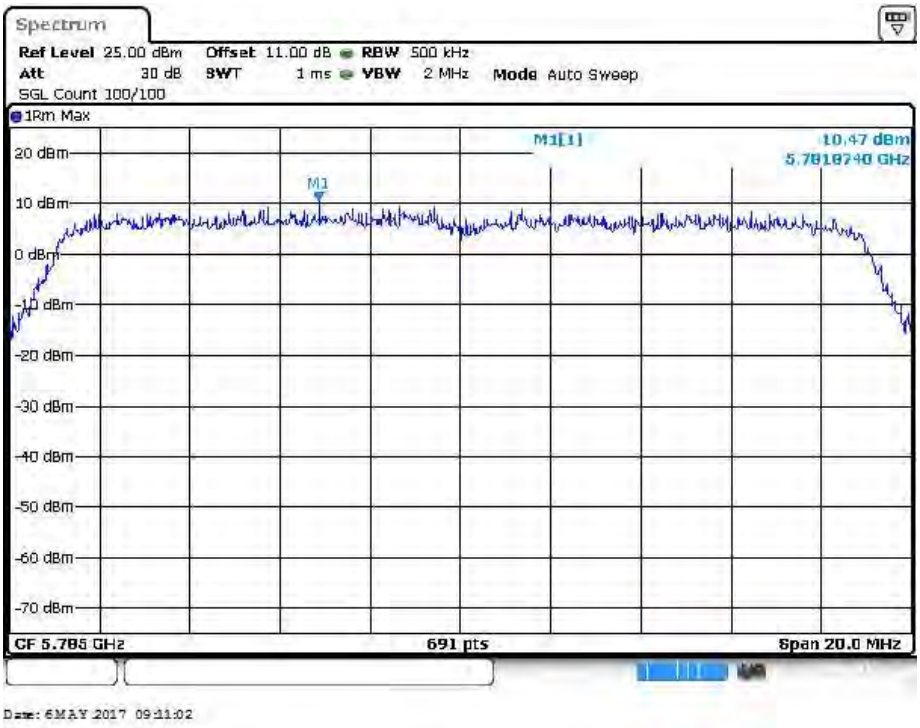
5825MHz



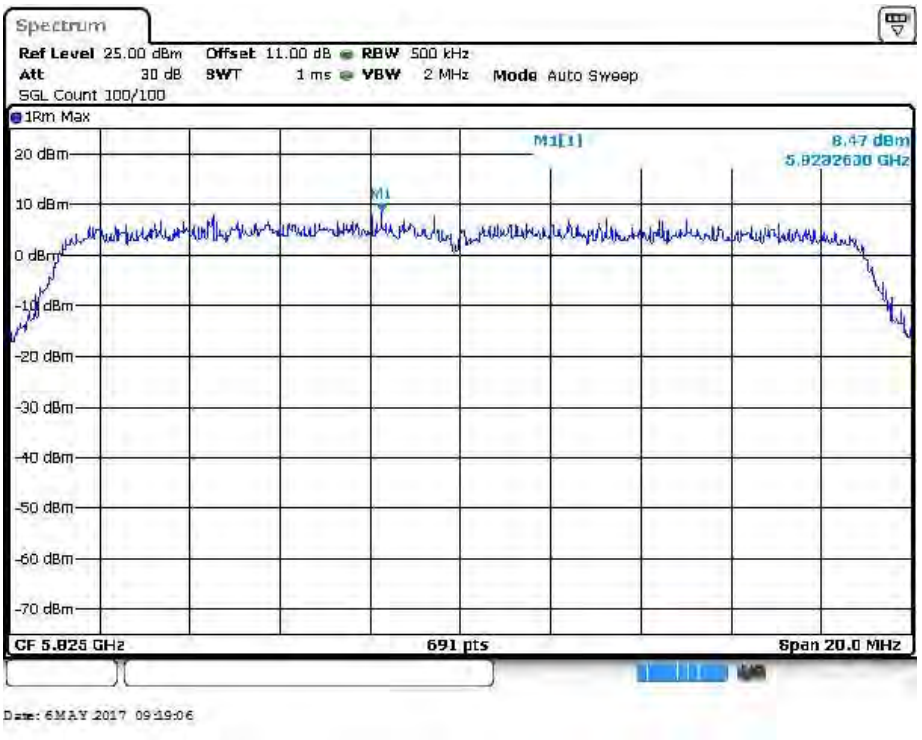
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 2)
5745MHz



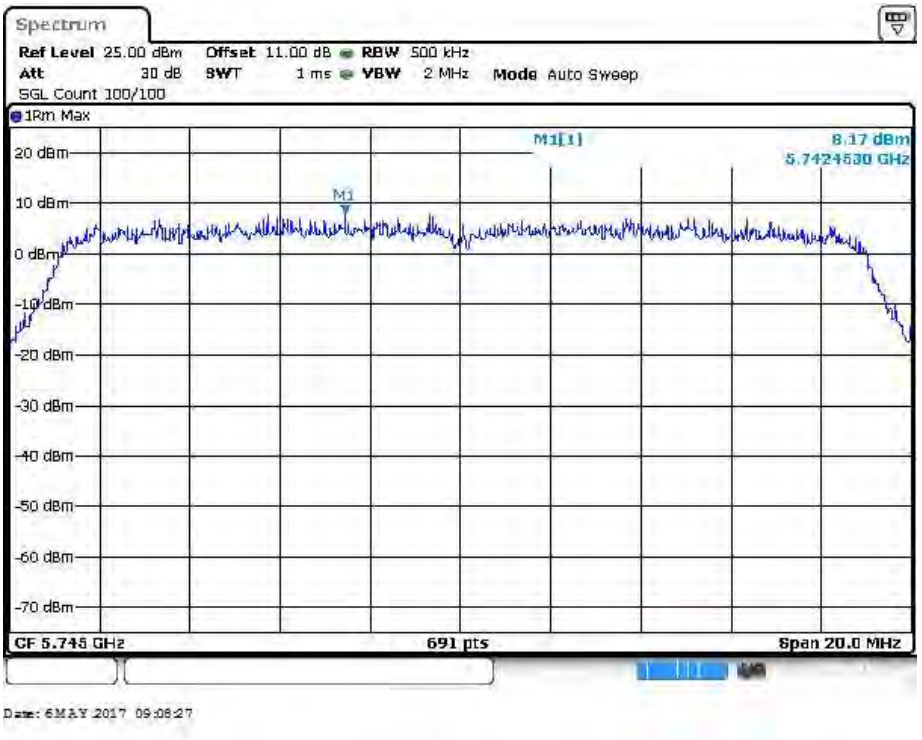
5785MHz



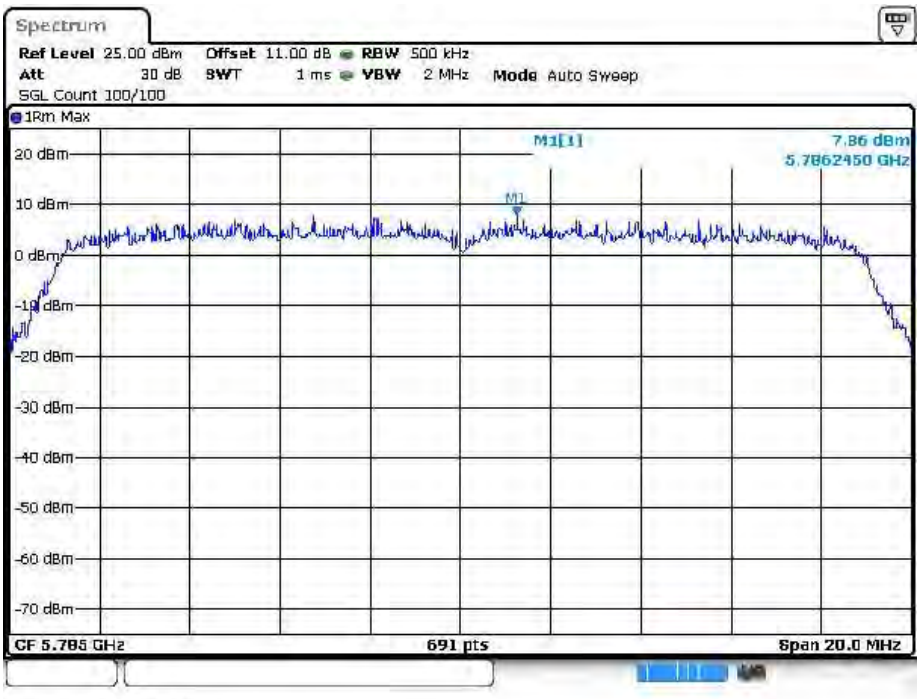
5825MHz



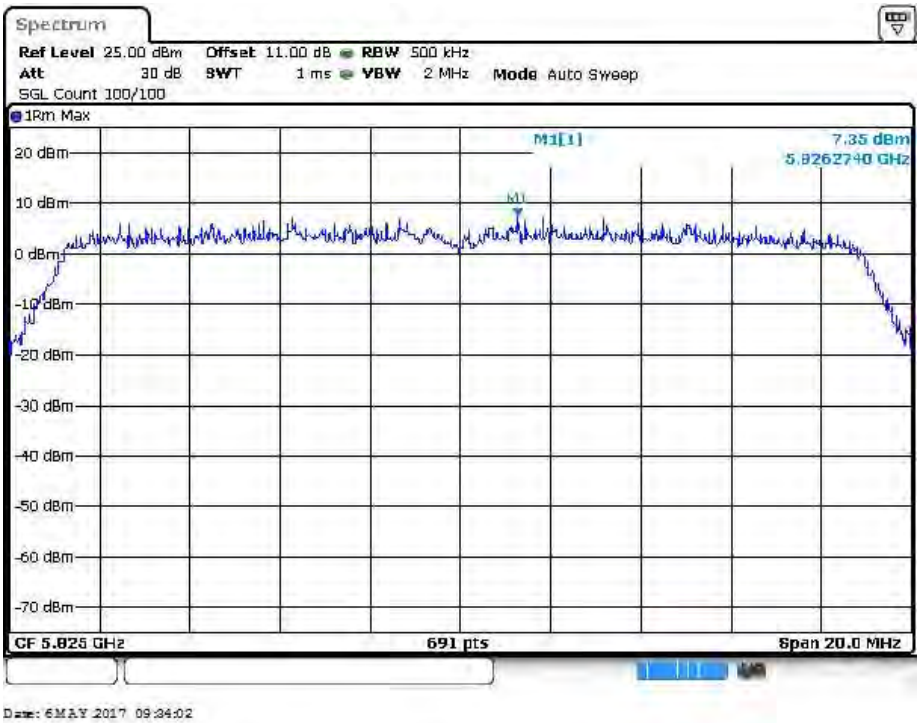
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 3)
5745MHz



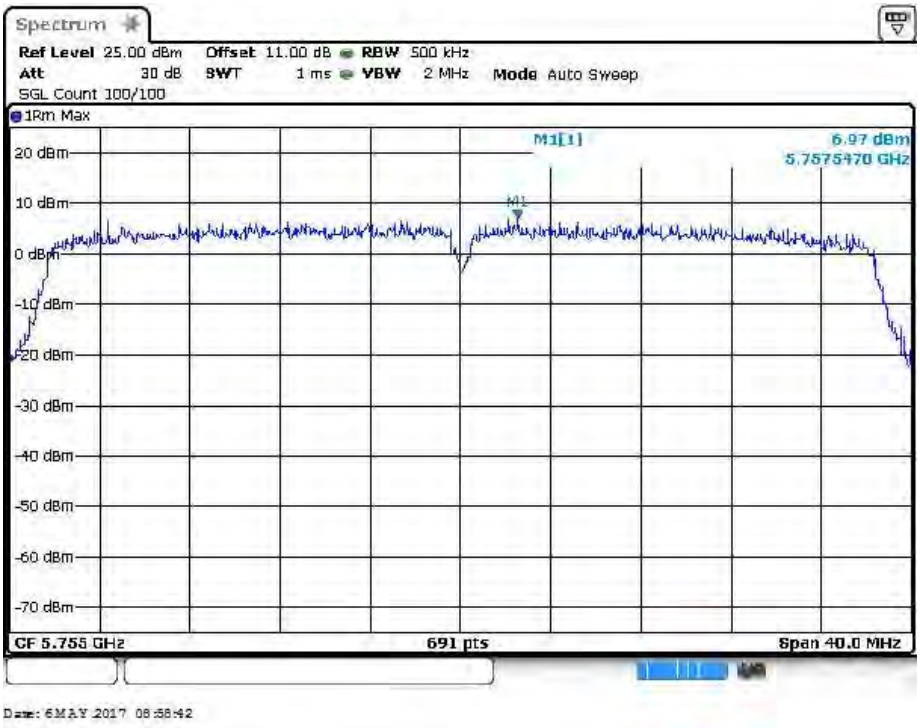
5785MHz



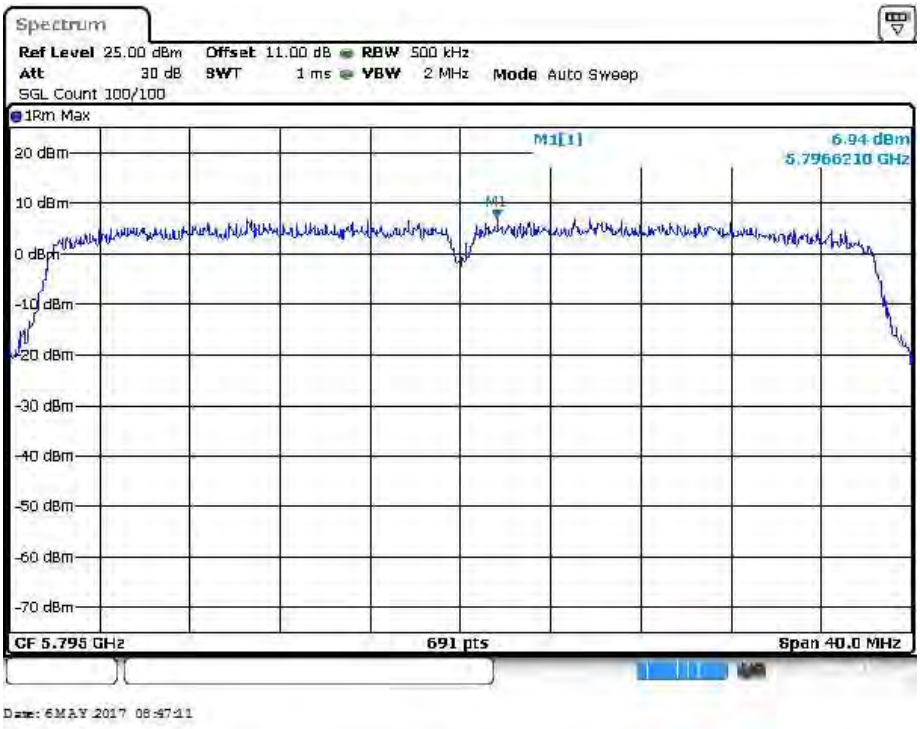
5825MHz



IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 0)
5755MHz

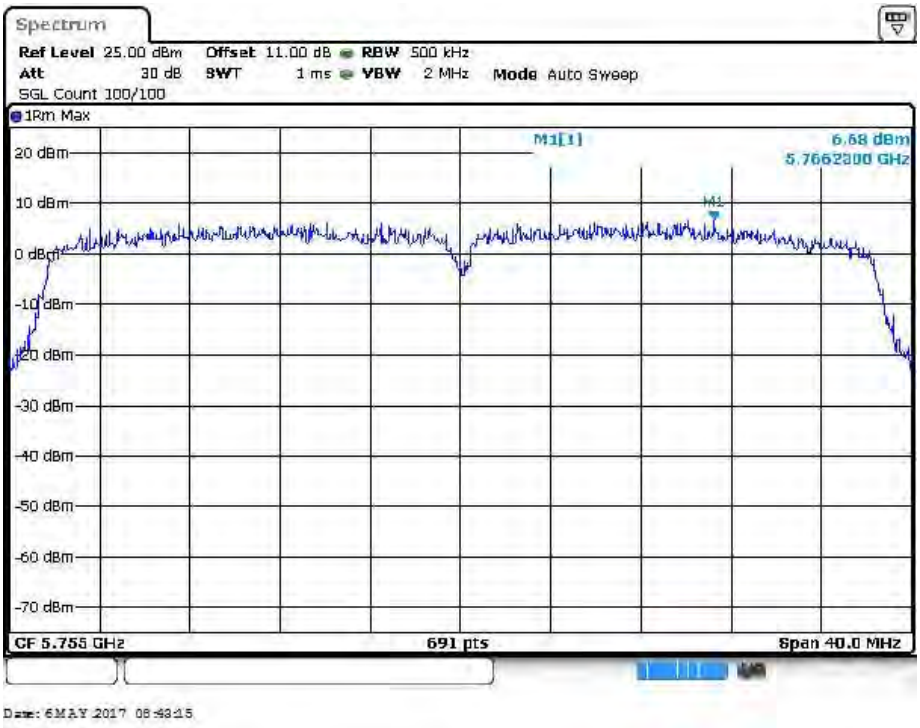


5795MHz

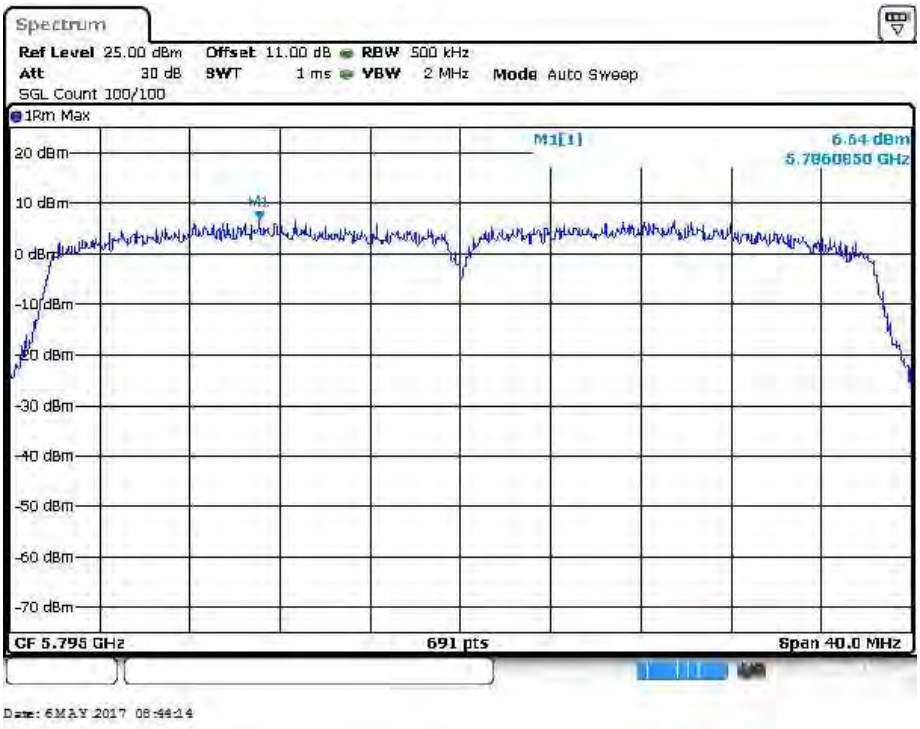


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 1)

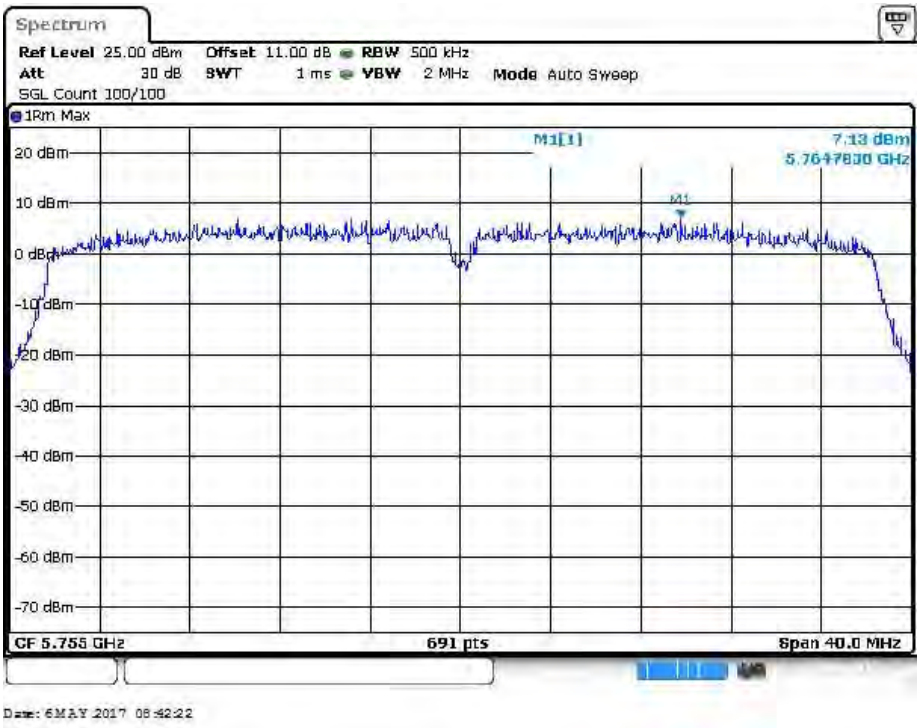
5755MHz



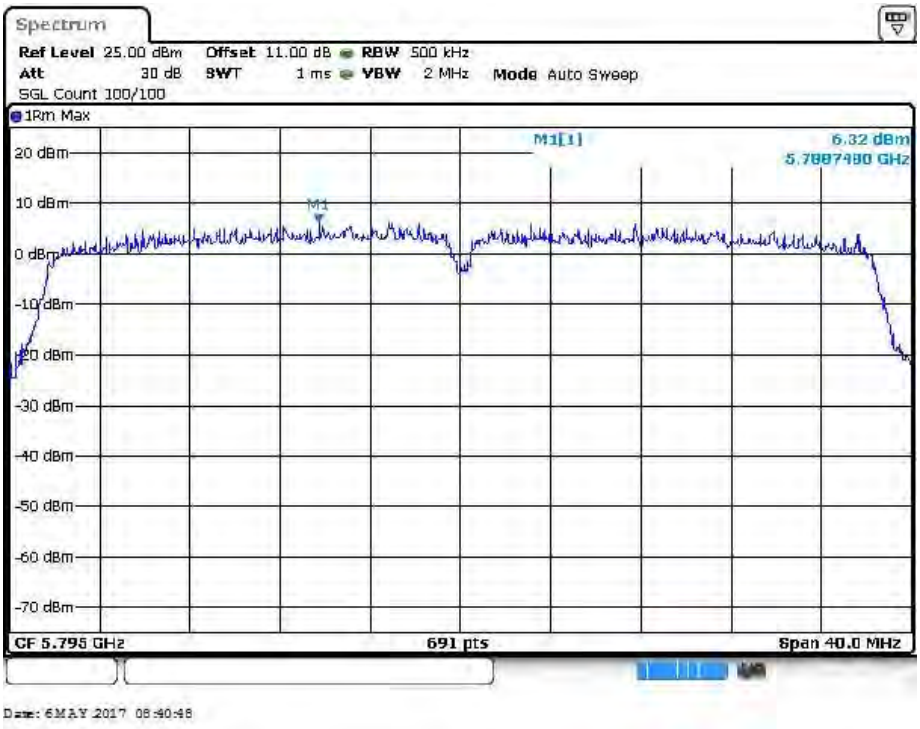
5795MHz



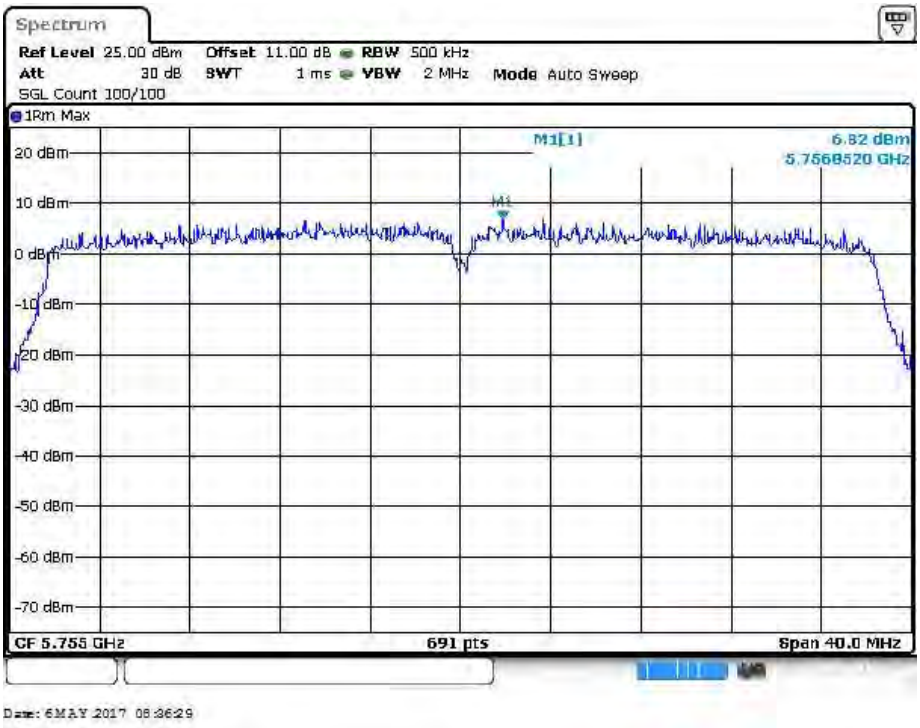
IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 2)
5755MHz



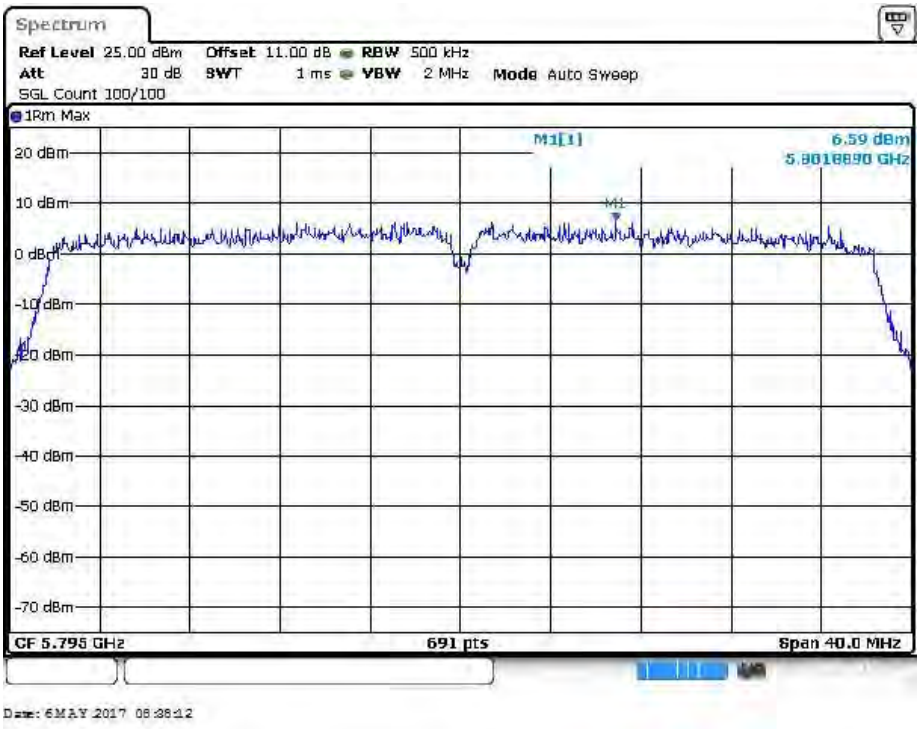
5795MHz



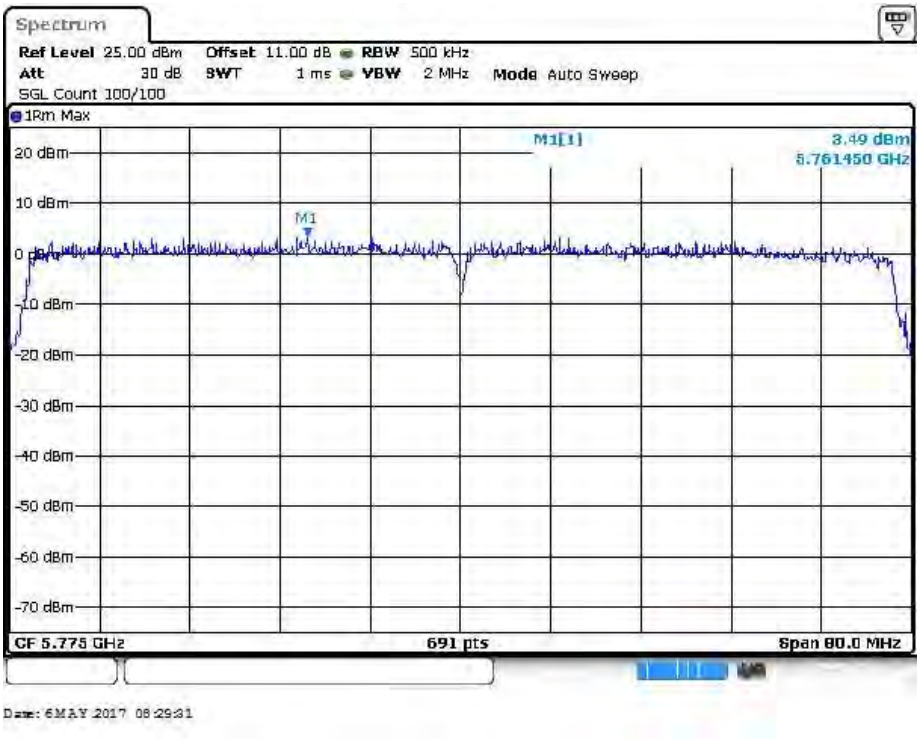
IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 3)
5755MHz



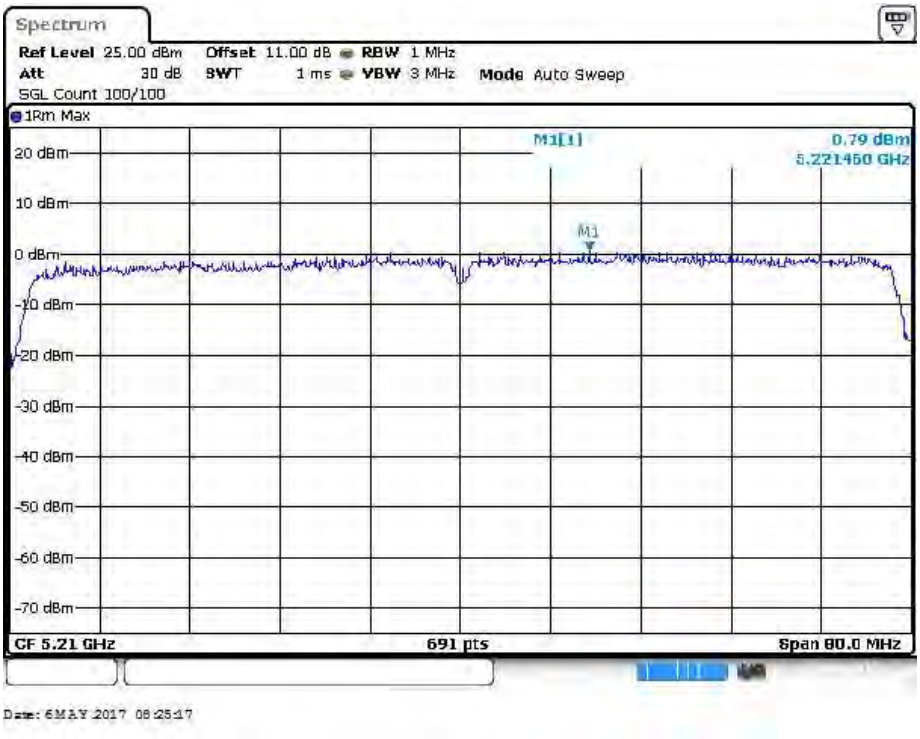
5795MHz



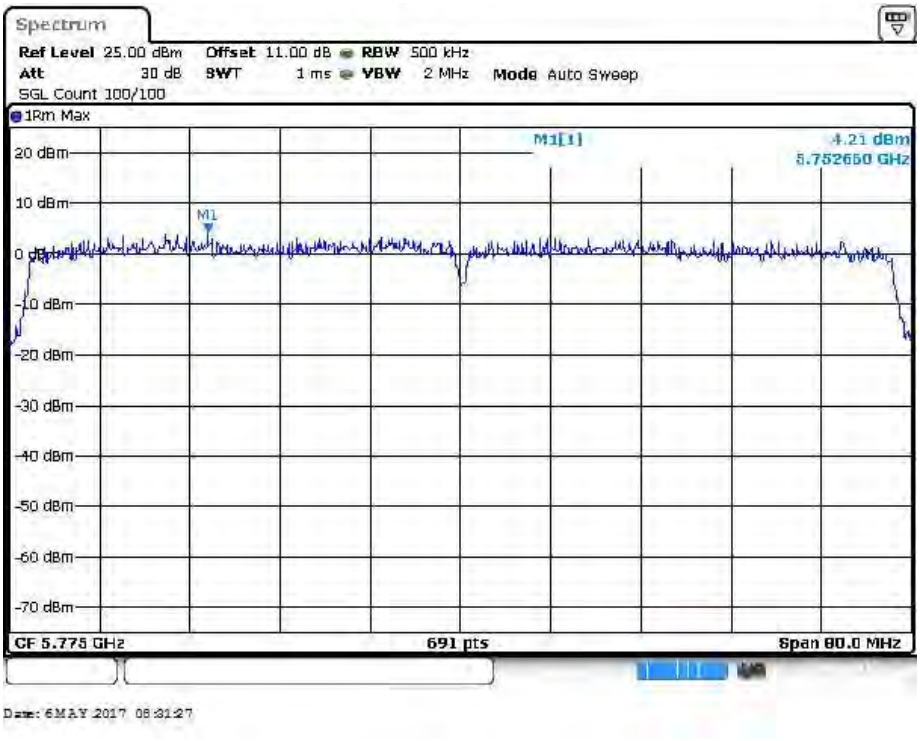
IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 0)
5775MHz



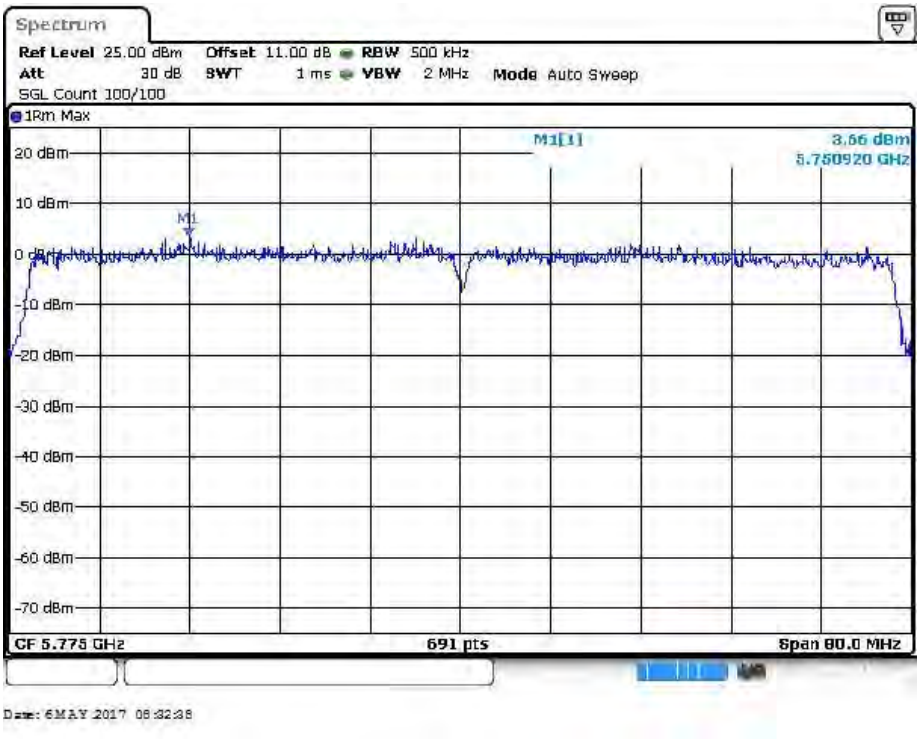
IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 1)
5775MHz



IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 2)
5775MHz



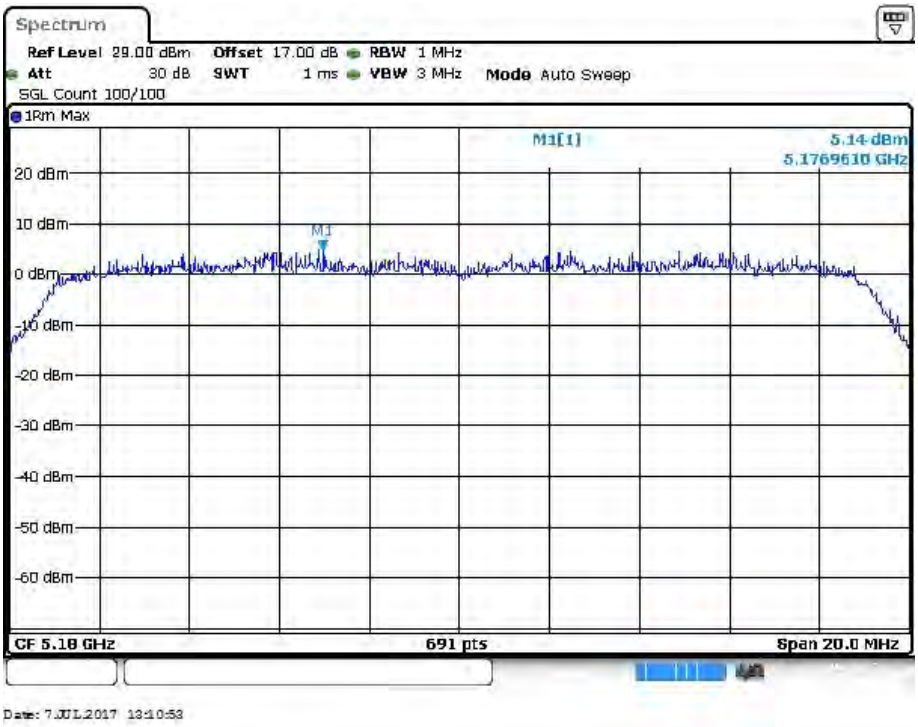
IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 3)
5775MHz



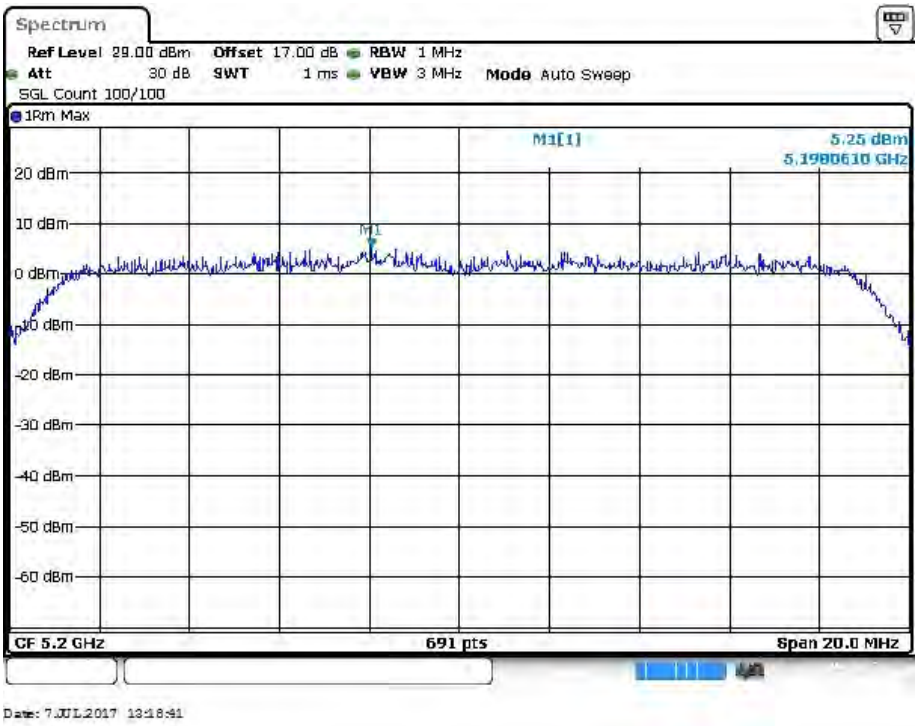
Test Mode: Beamforming

IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz (chain 0)

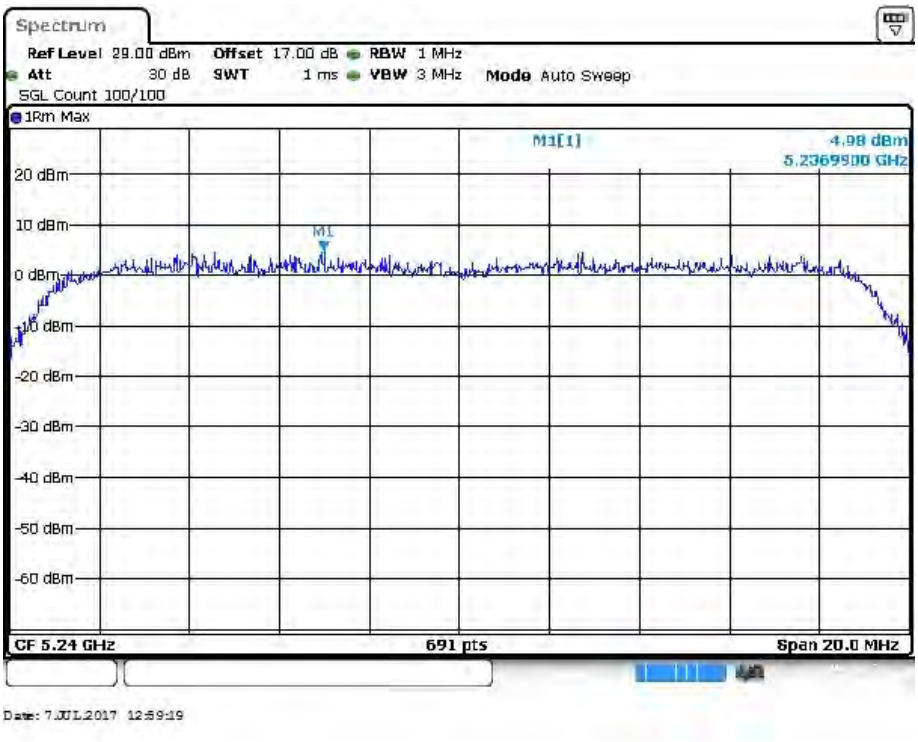
5180MHz



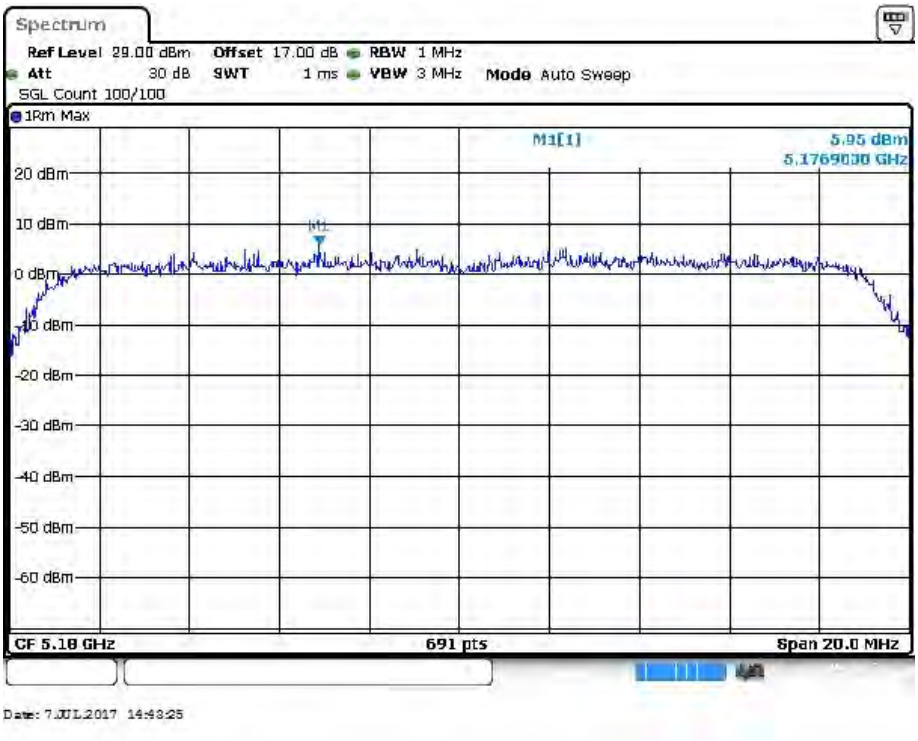
5200MHz



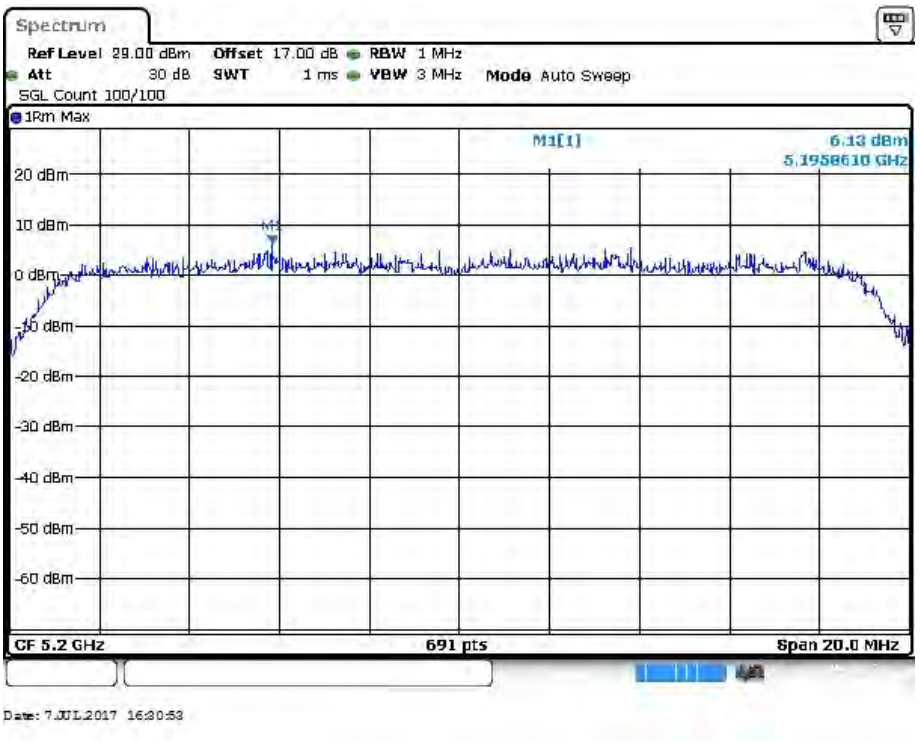
5240MHz



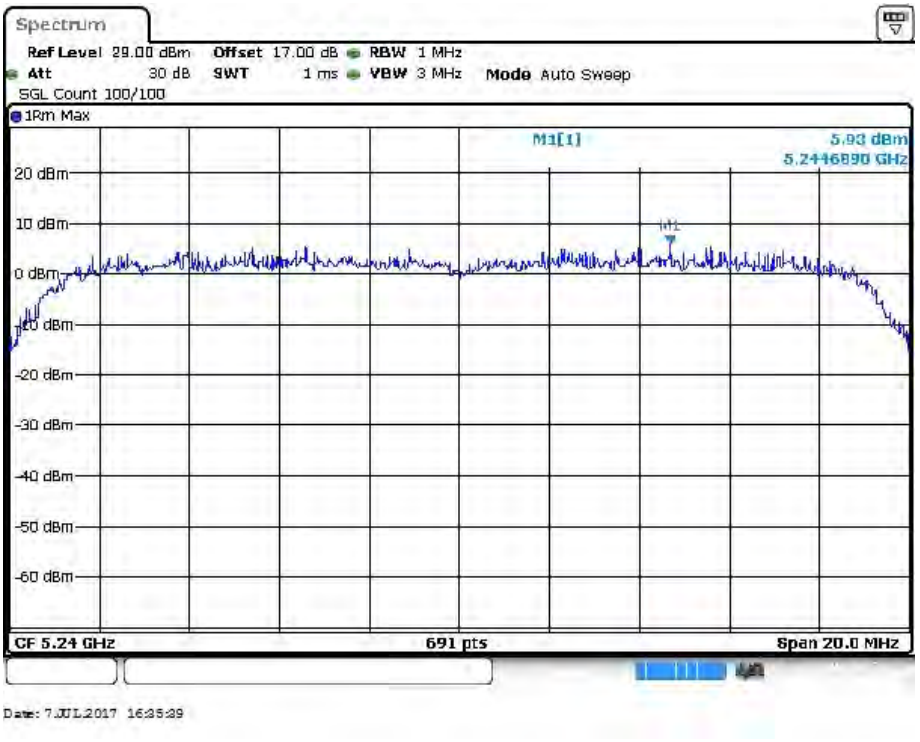
IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz (chain 1)
5180MHz



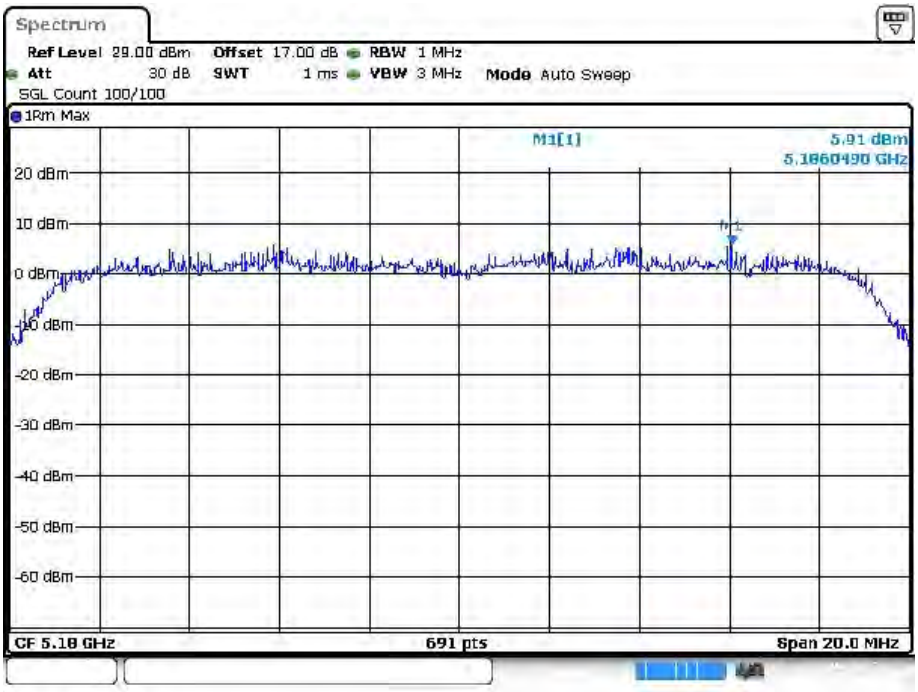
5200MHz



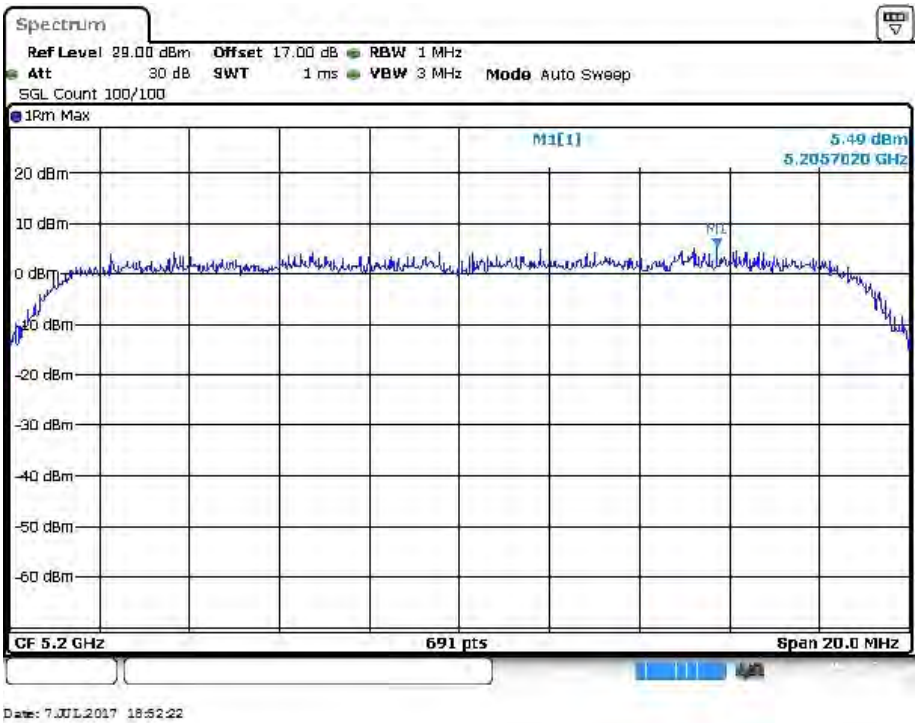
5240MHz



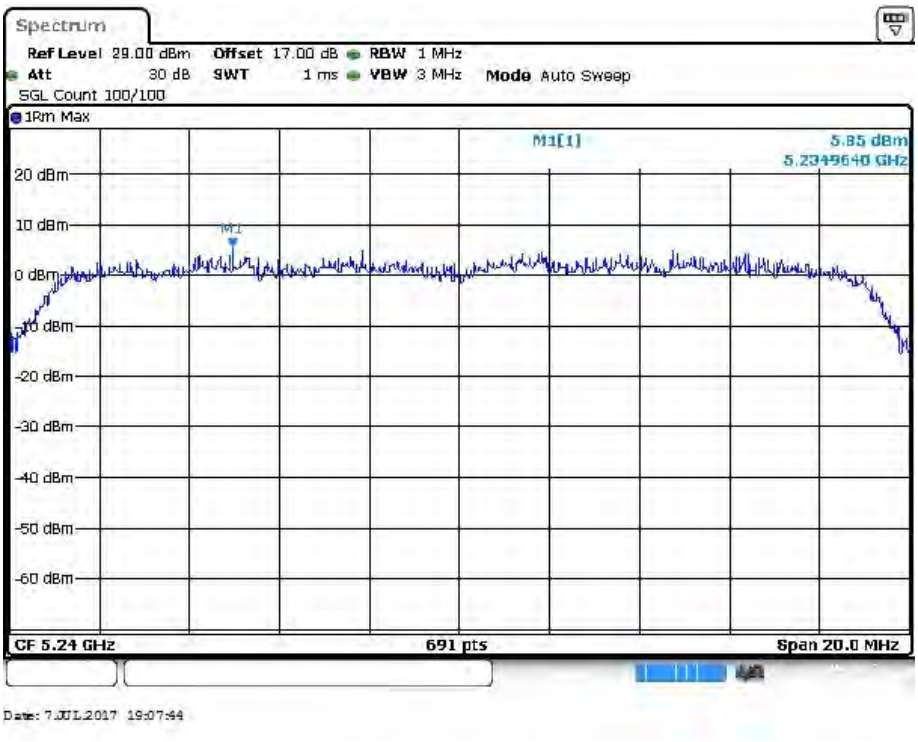
IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz (chain 2)
5180MHz



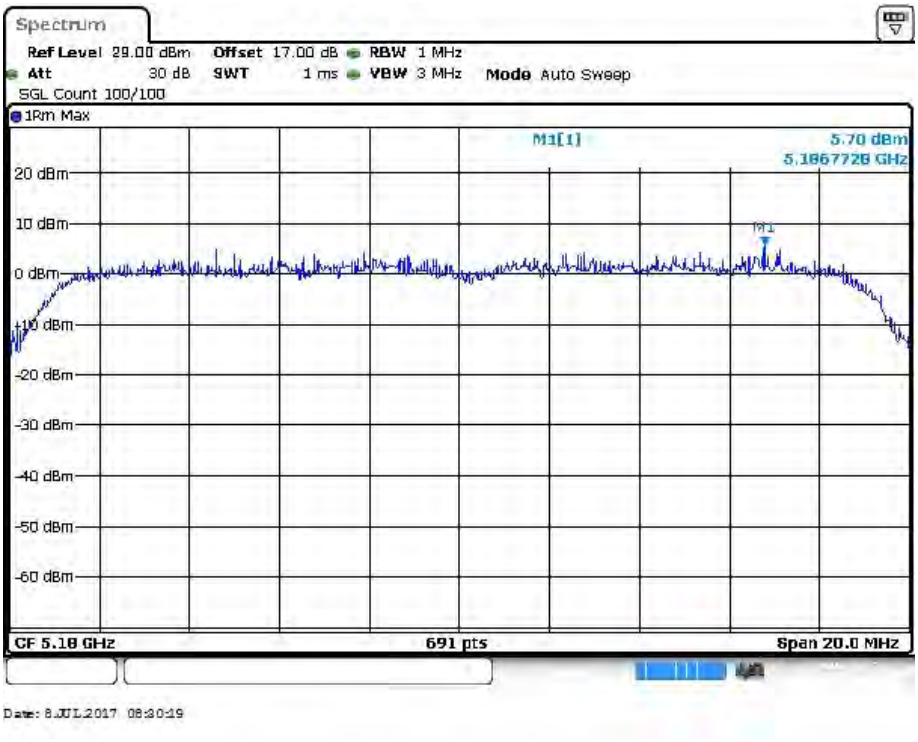
5200MHz



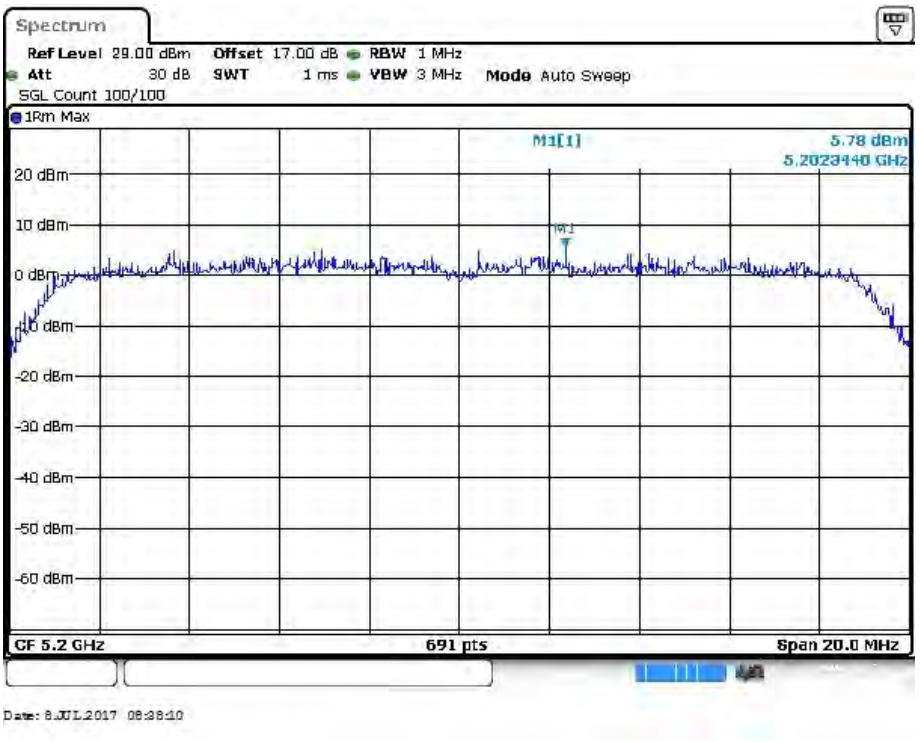
5240MHz



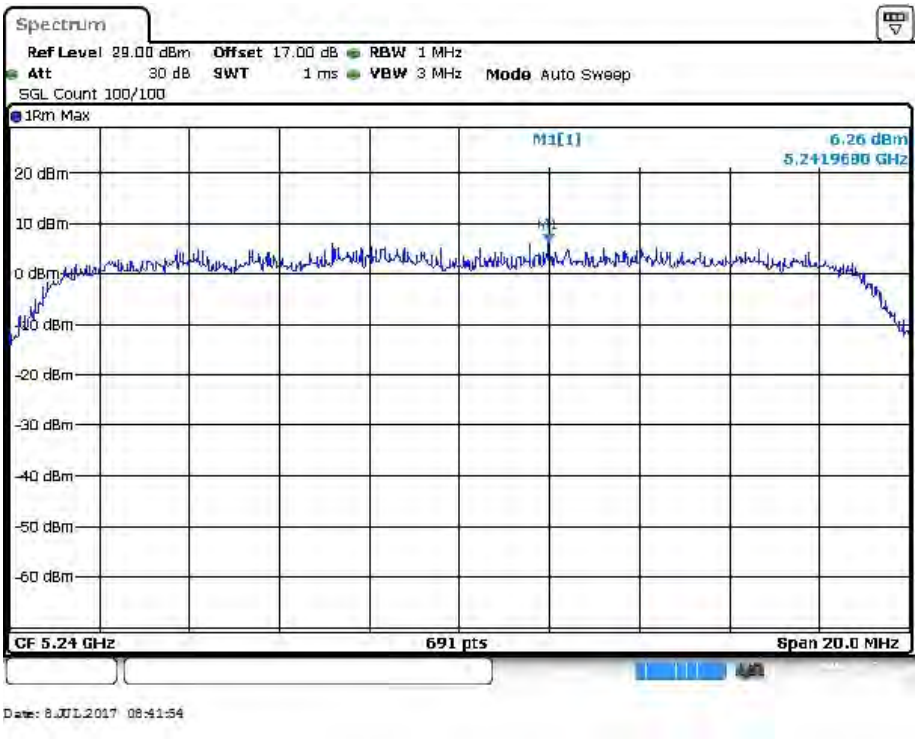
IEEE 802.11ac VHT20 mode / 5150 ~ 5250MHz (chain 3)
5180MHz



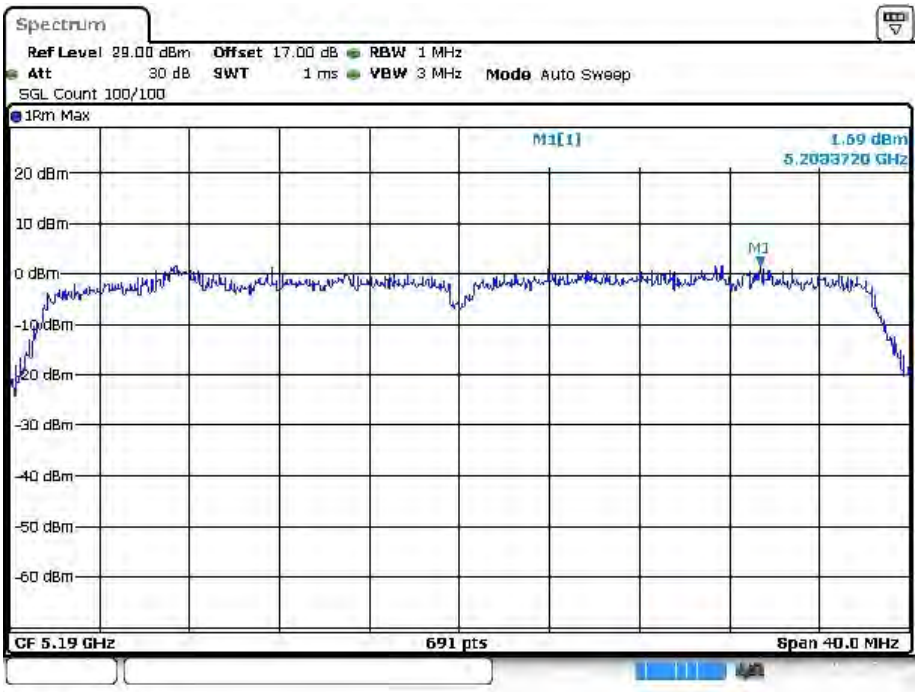
5200MHz



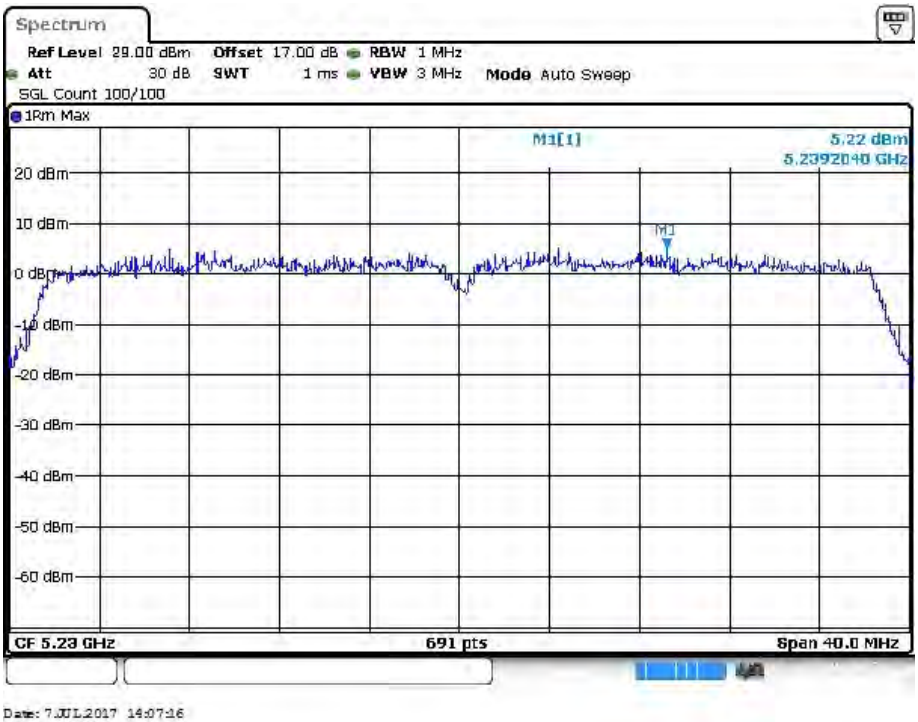
5240MHz



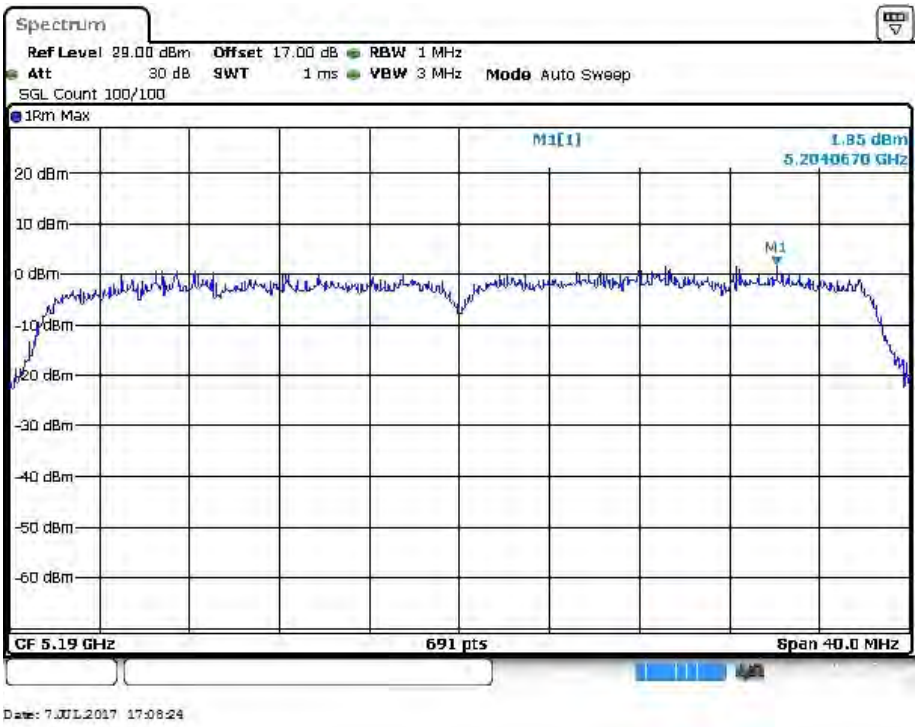
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 0)
5190MHz



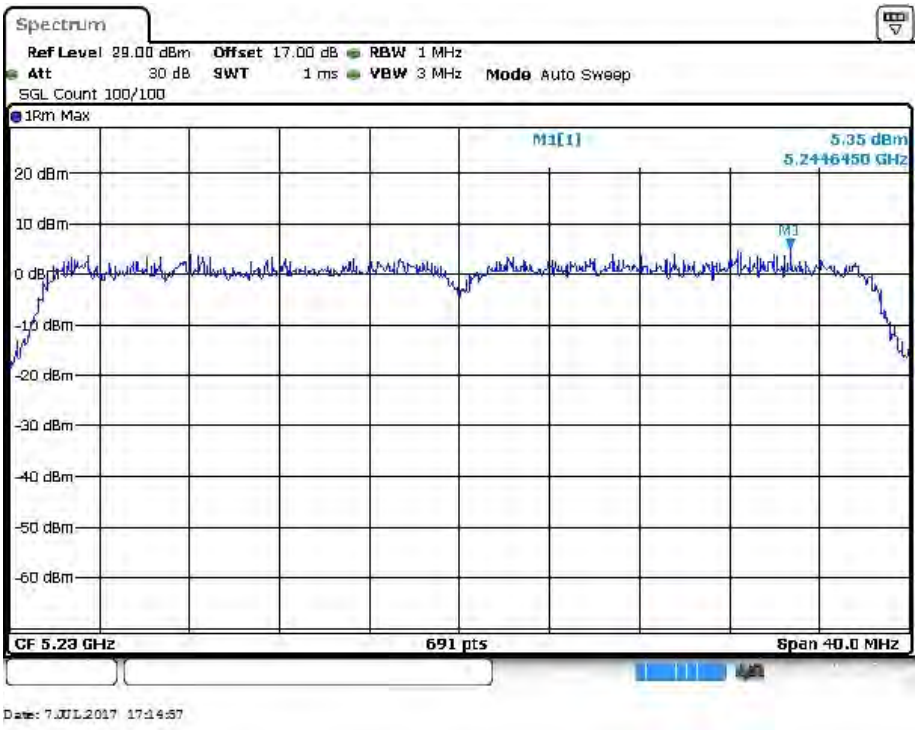
5230MHz



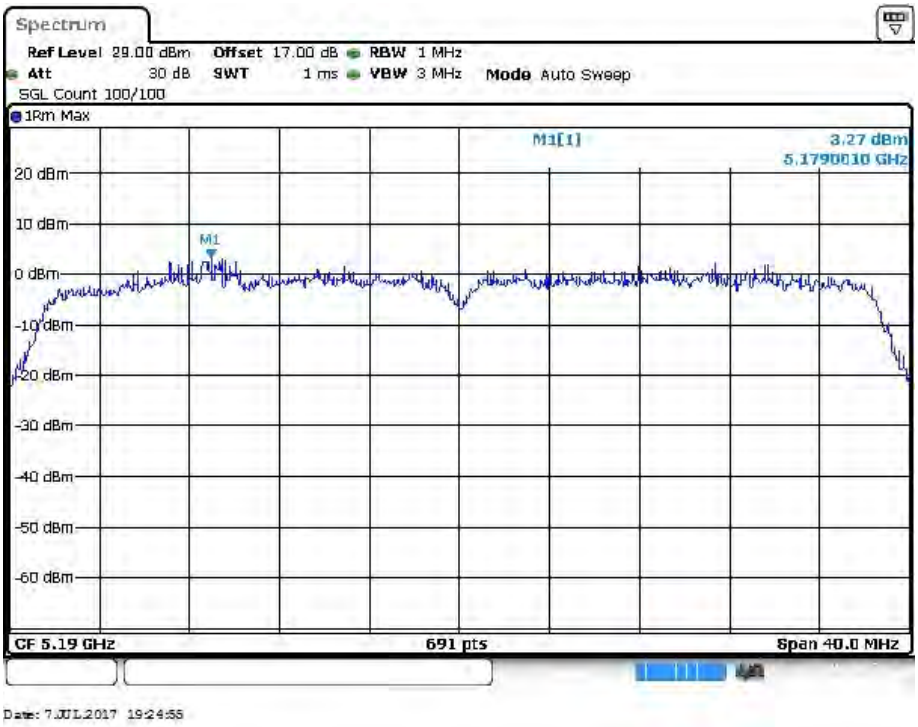
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 1)
5190MHz



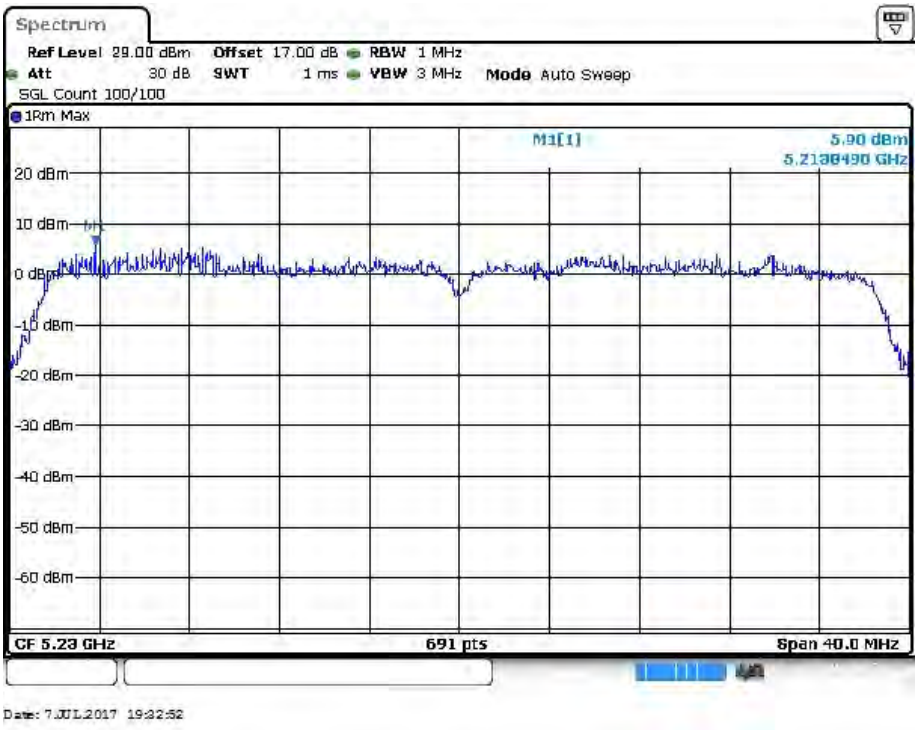
5230MHz



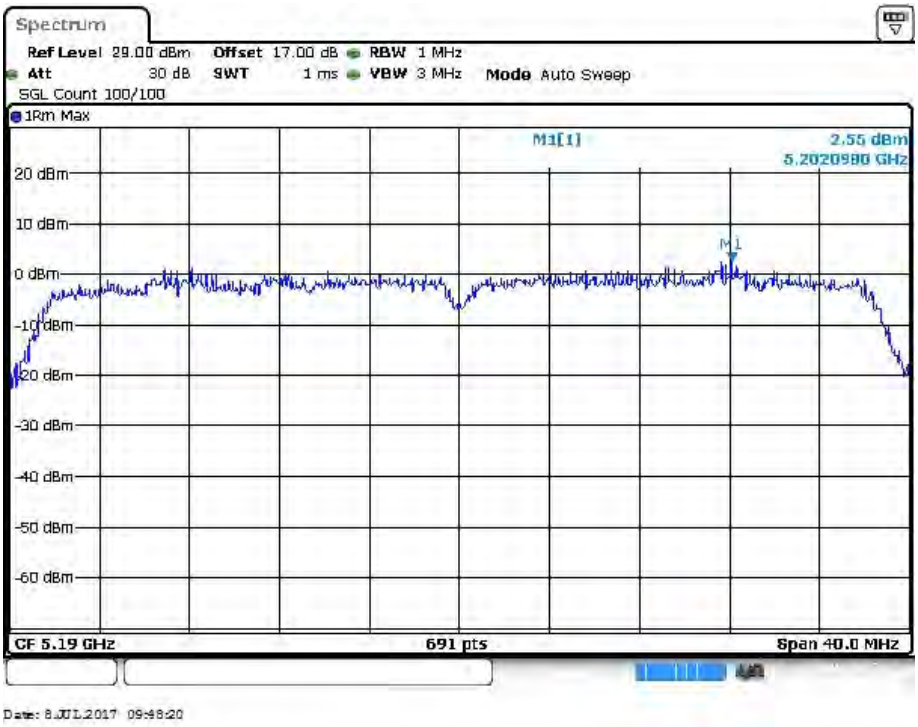
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 2)
5190MHz



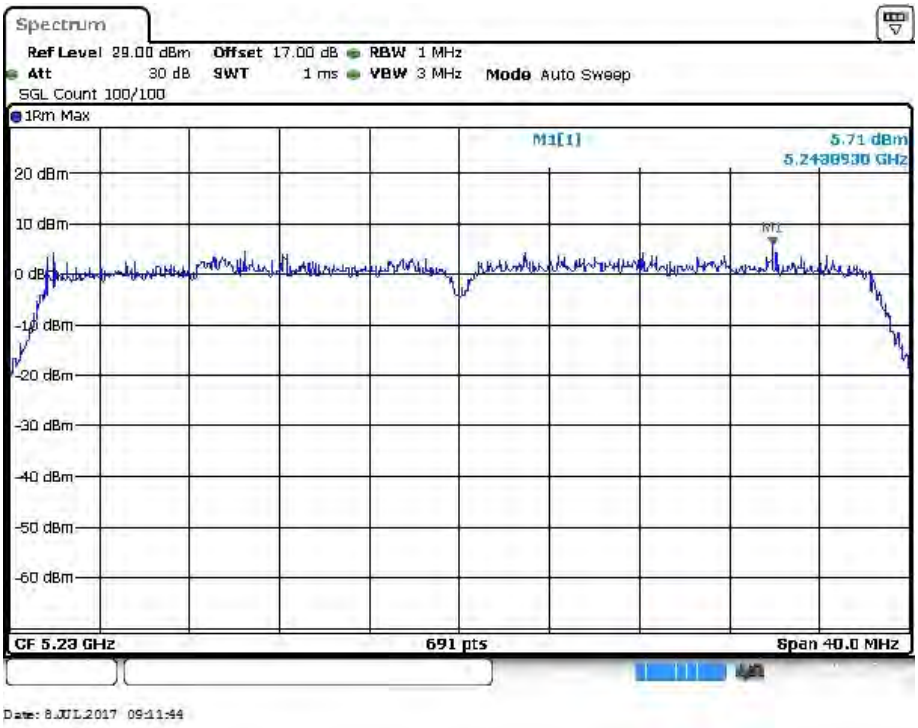
5230MHz



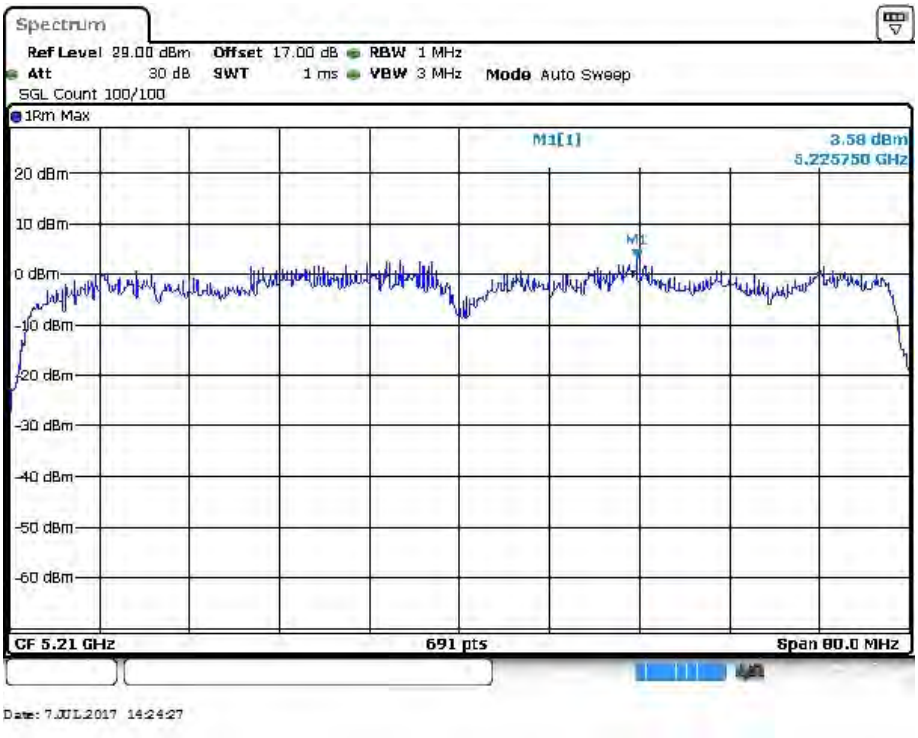
IEEE 802.11ac VHT40 mode / 5150 ~ 5250MHz (chain 3)
5190MHz



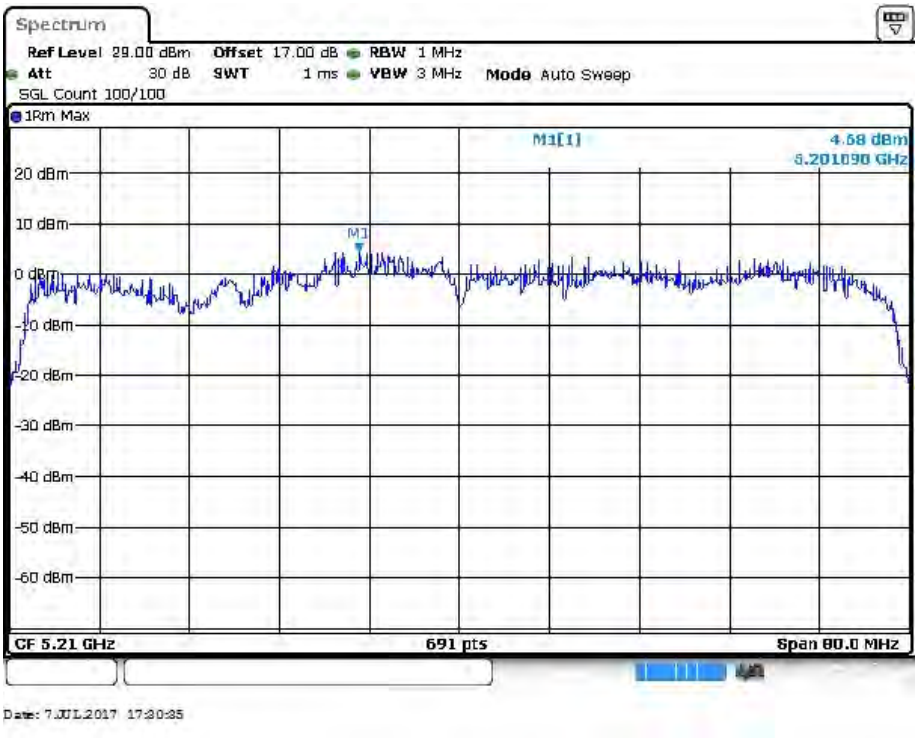
5230MHz



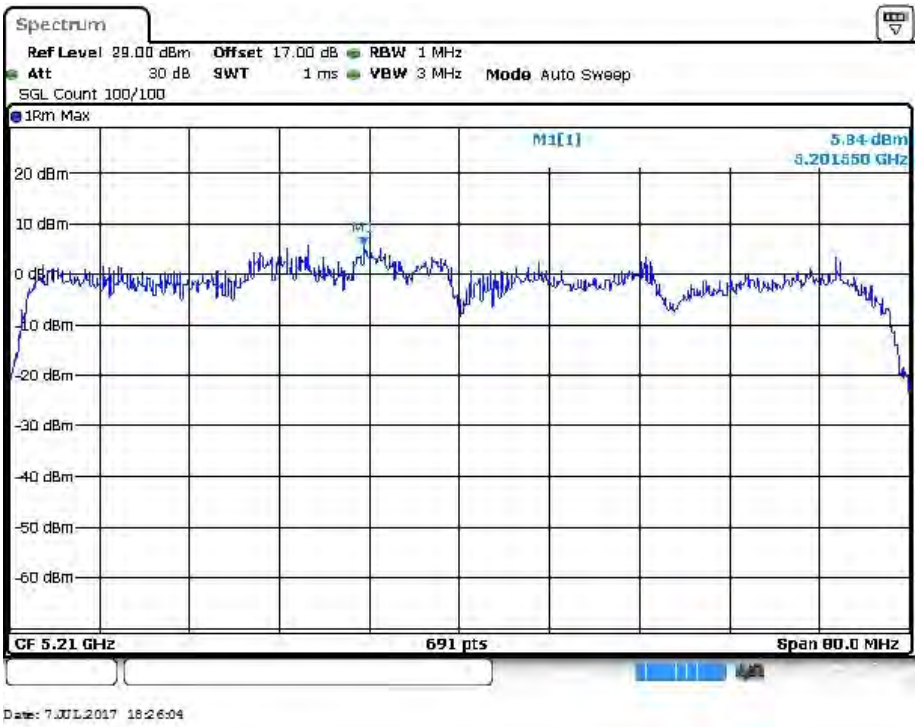
IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 0)
5210MHz



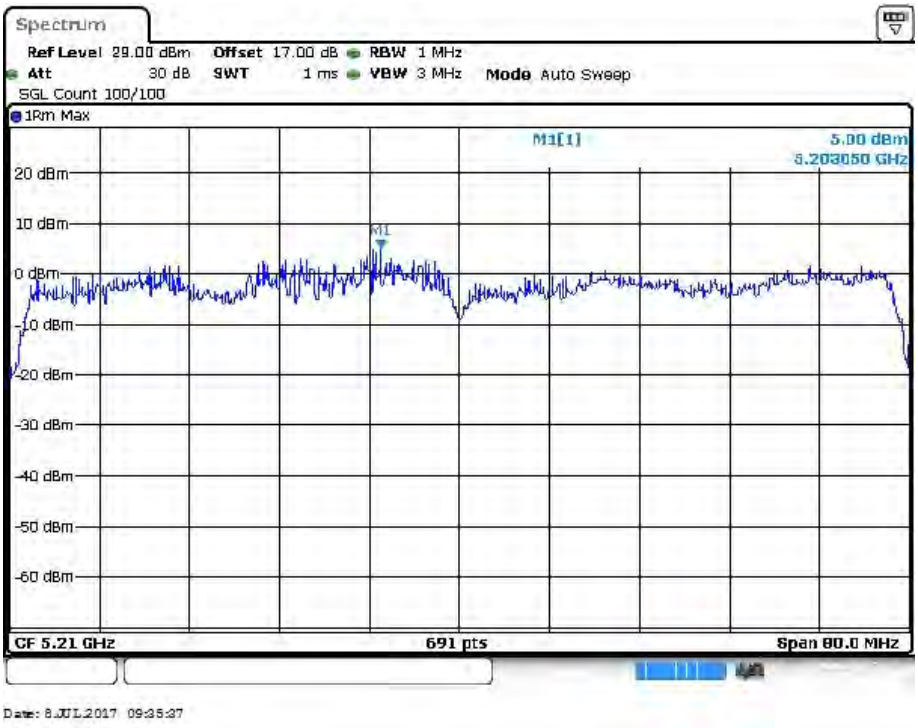
IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 1)
5210MHz



IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 2)
5210MHz

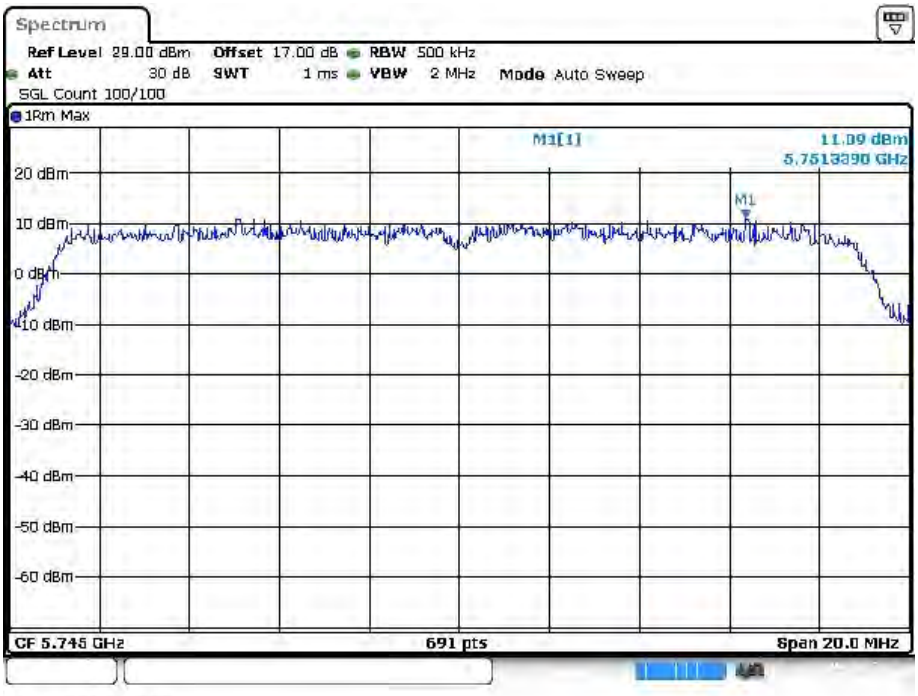


IEEE 802.11ac VHT80 mode / 5150 ~ 5250MHz (chain 3)
5210MHz

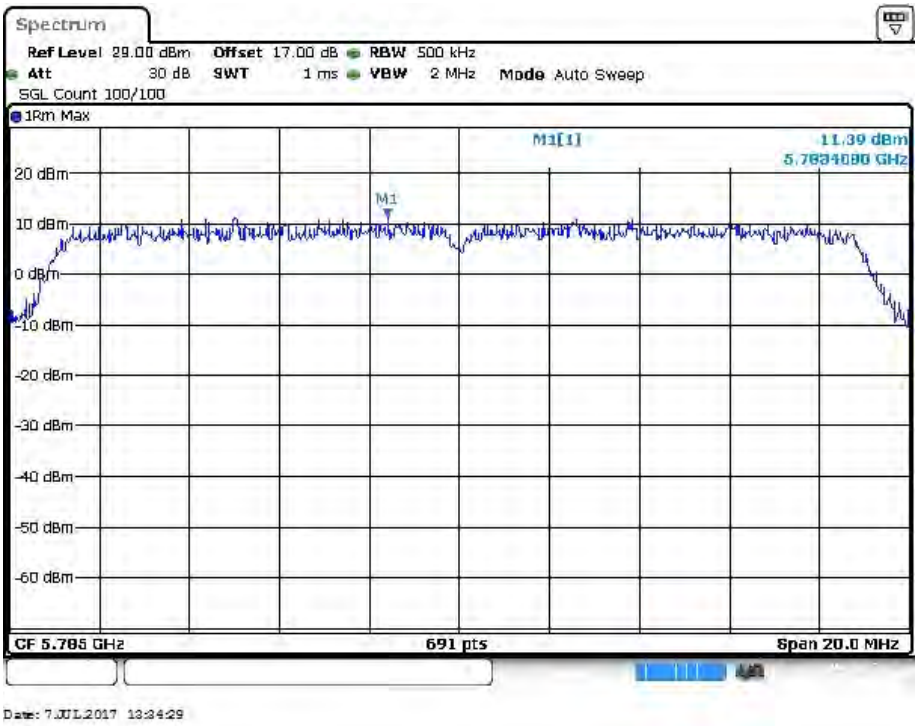


IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 0)

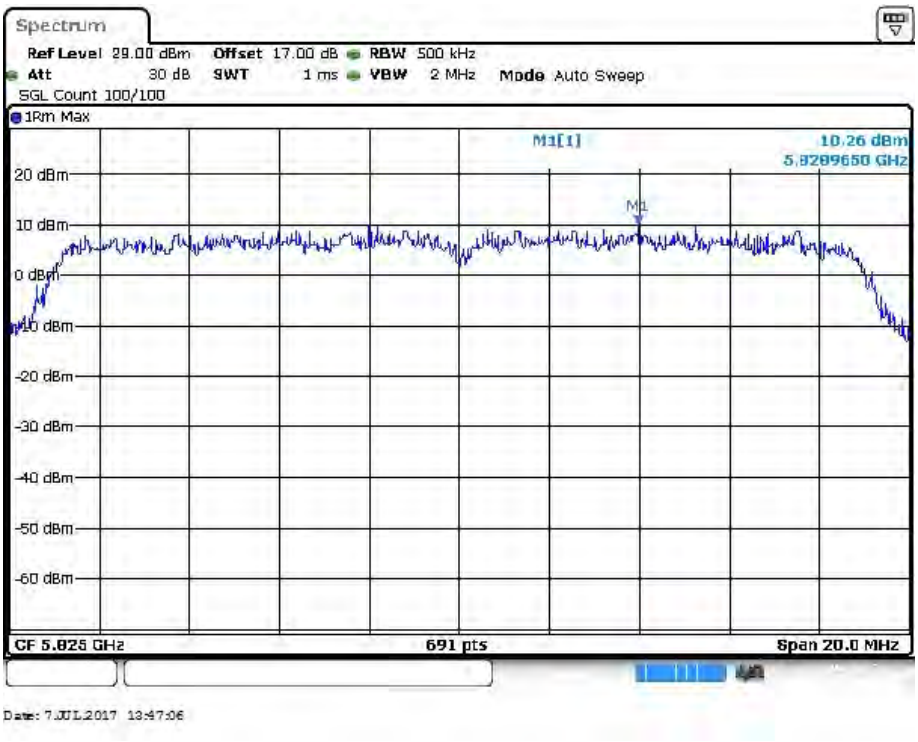
5745MHz



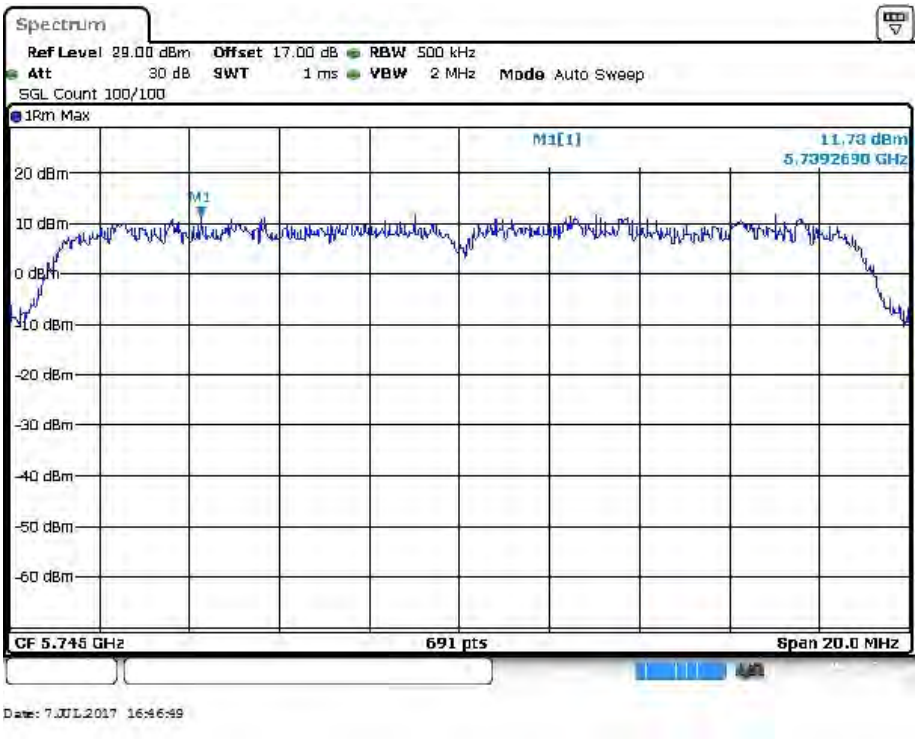
5785MHz



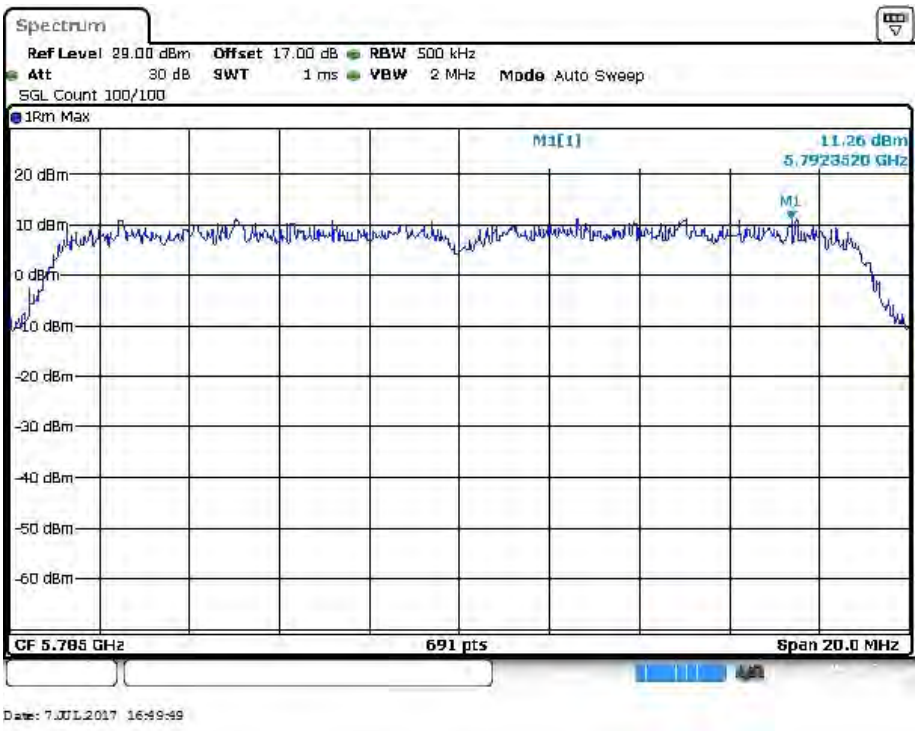
5825MHz



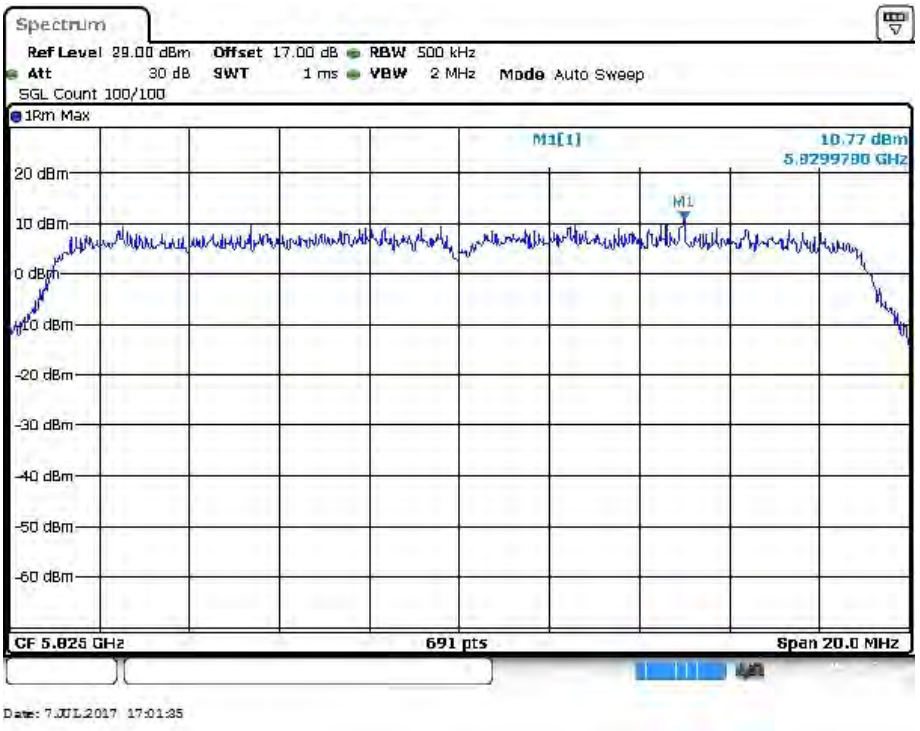
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 1)
5745MHz



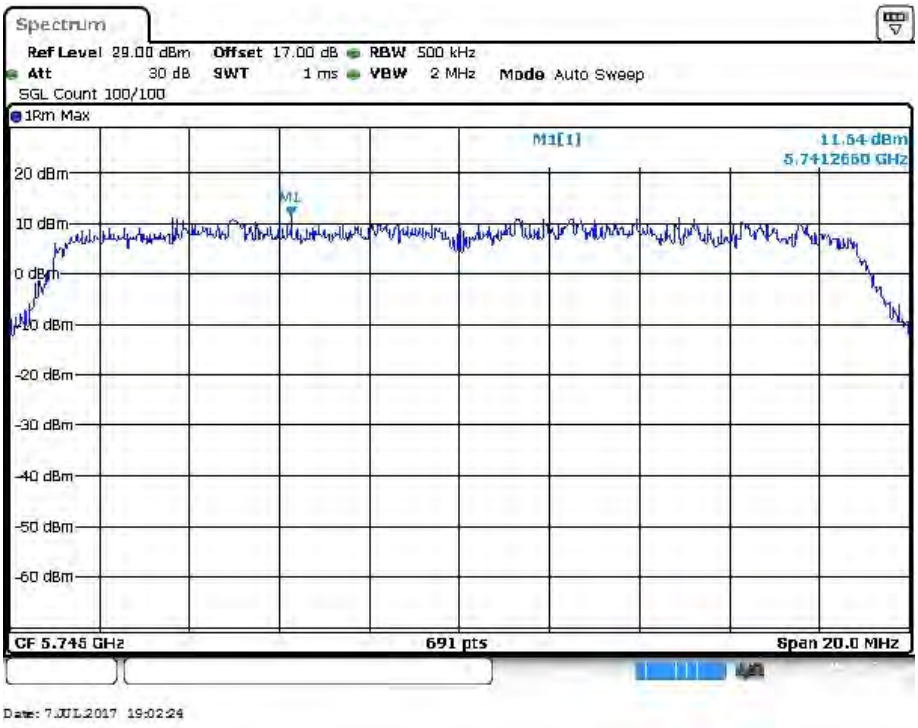
5785MHz



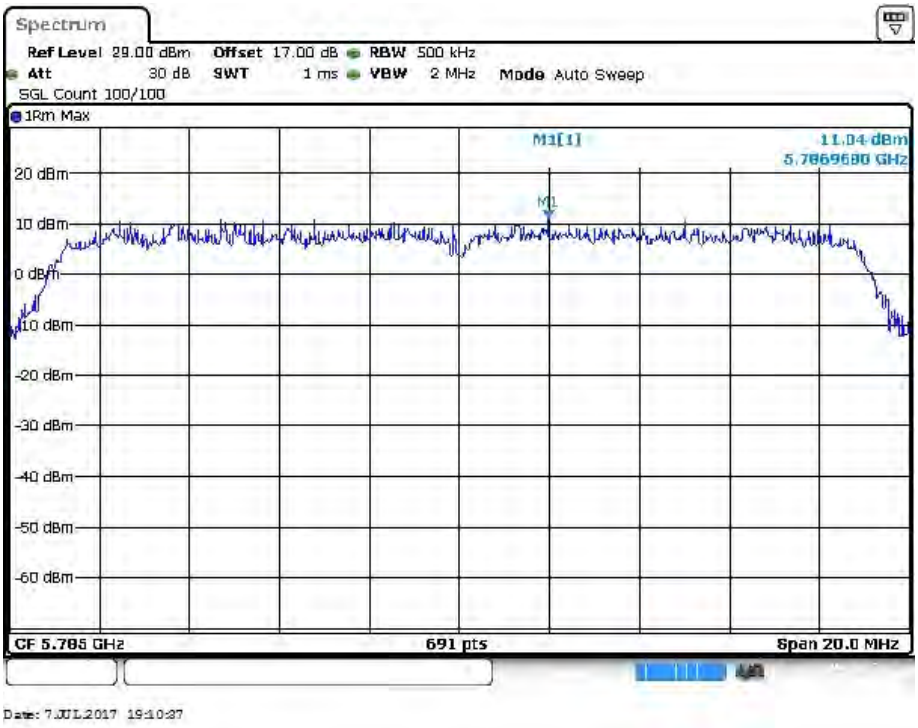
5825MHz



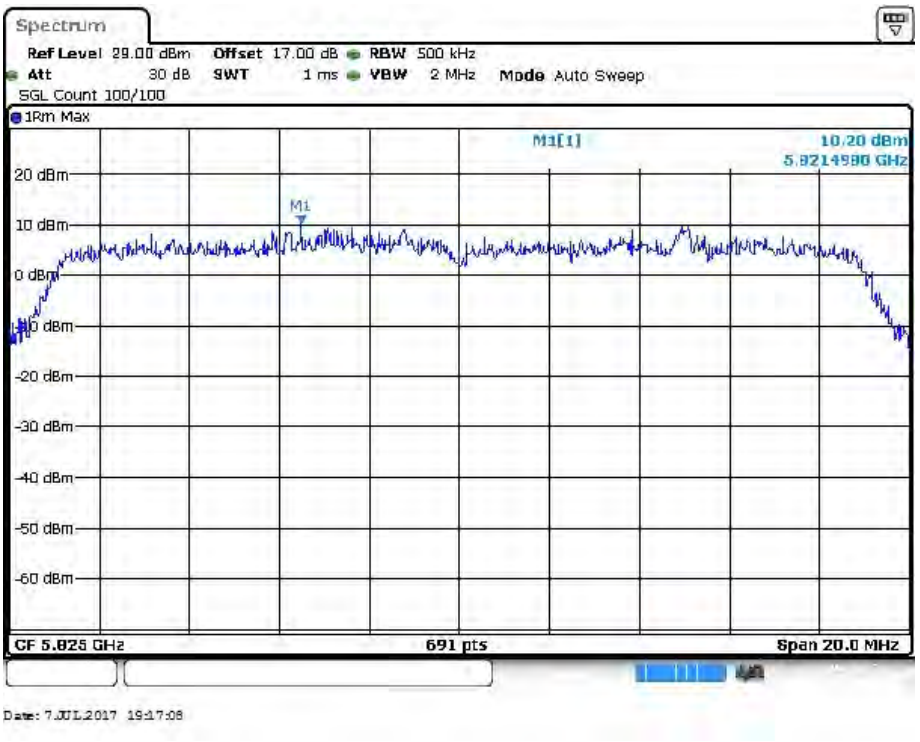
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 2)
5745MHz



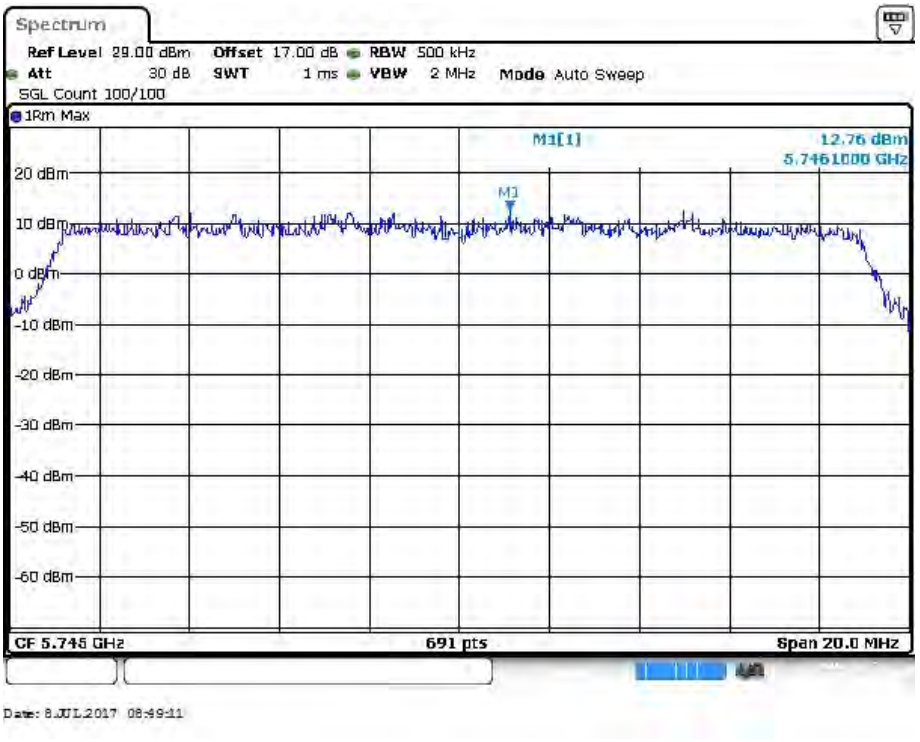
5785MHz



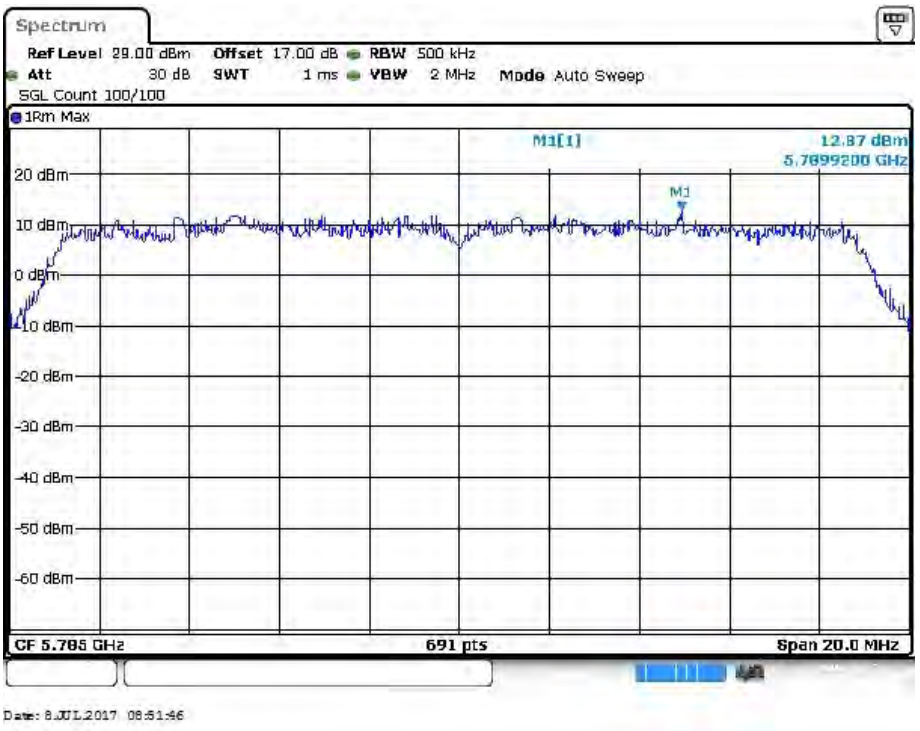
5825MHz



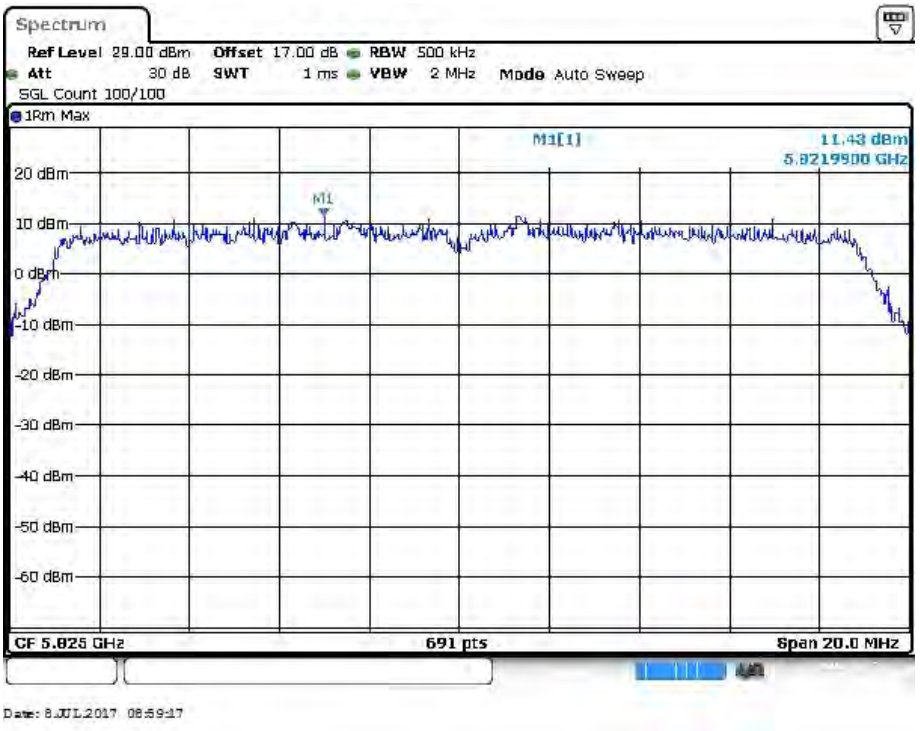
IEEE 802.11ac VHT20 mode / 5725 ~ 5850MHz (chain 3)
5745MHz



5785MHz

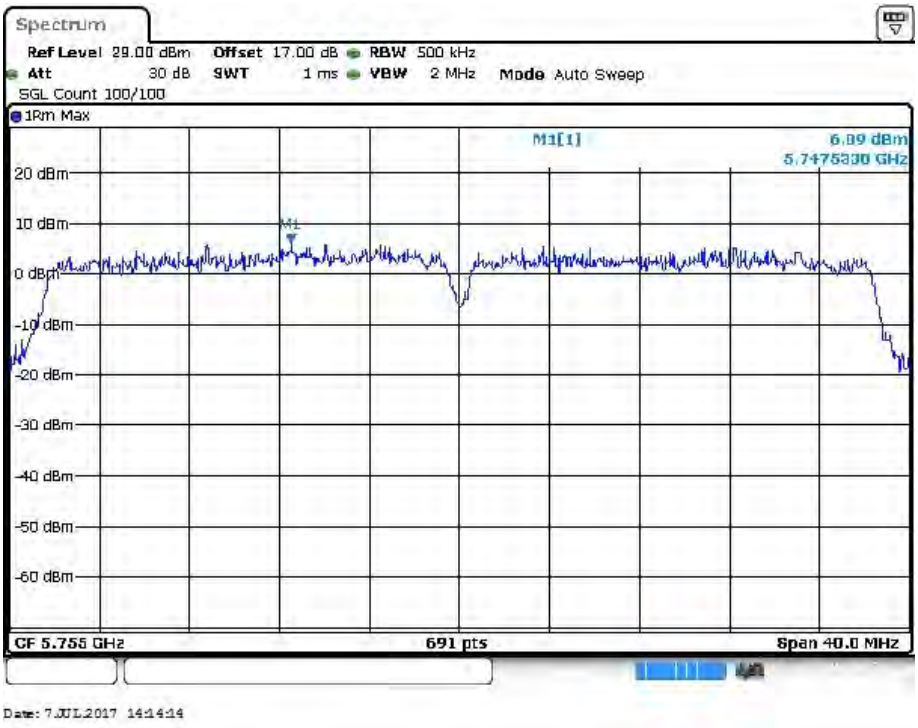


5825MHz

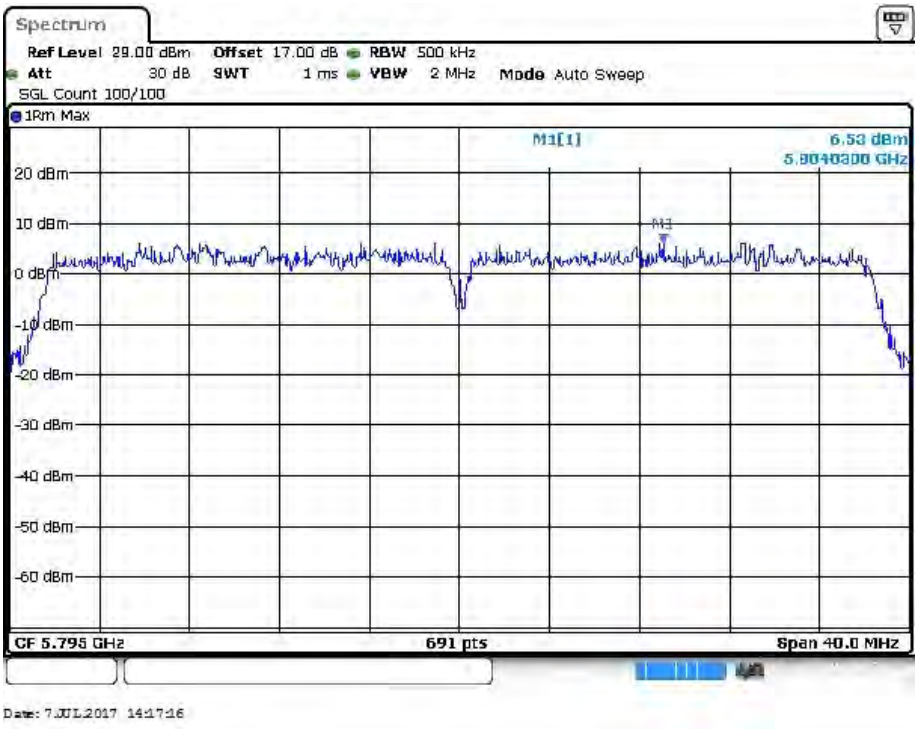


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 0)

5755MHz

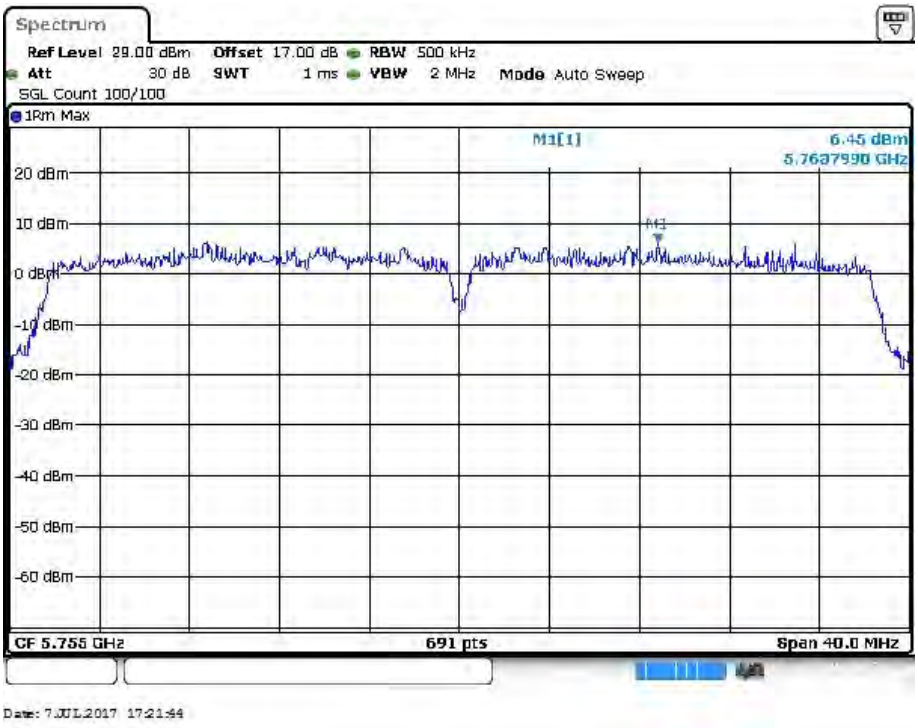


5795MHz

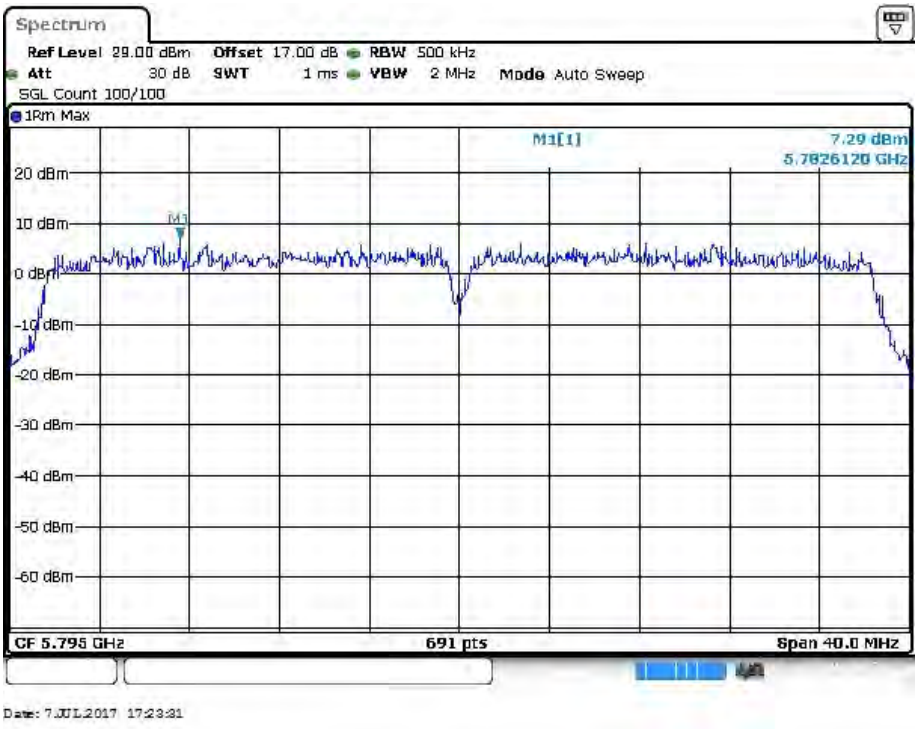


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 1)

5755MHz

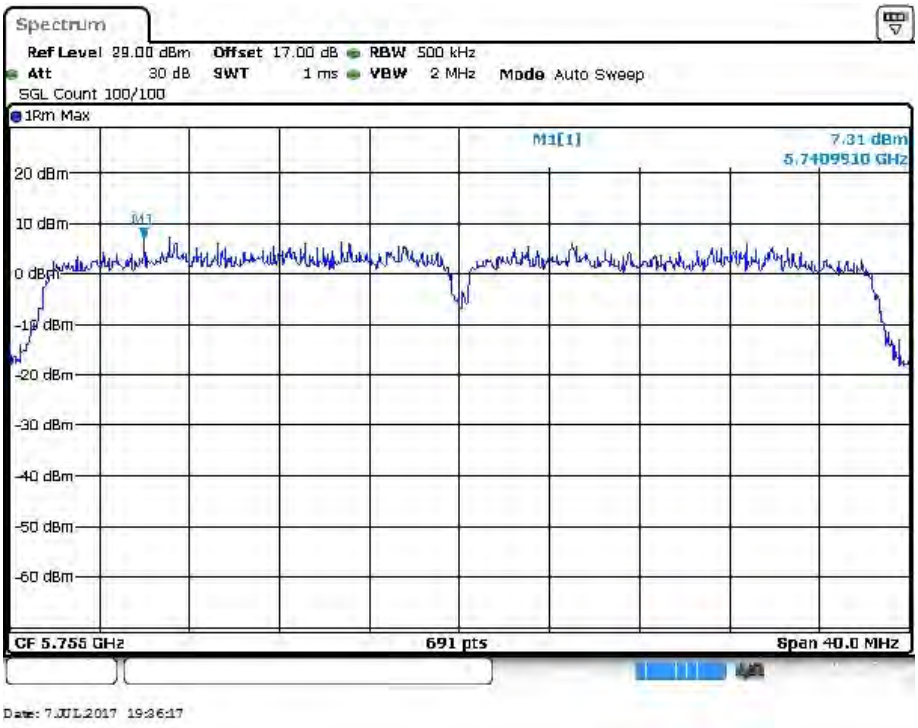


5795MHz

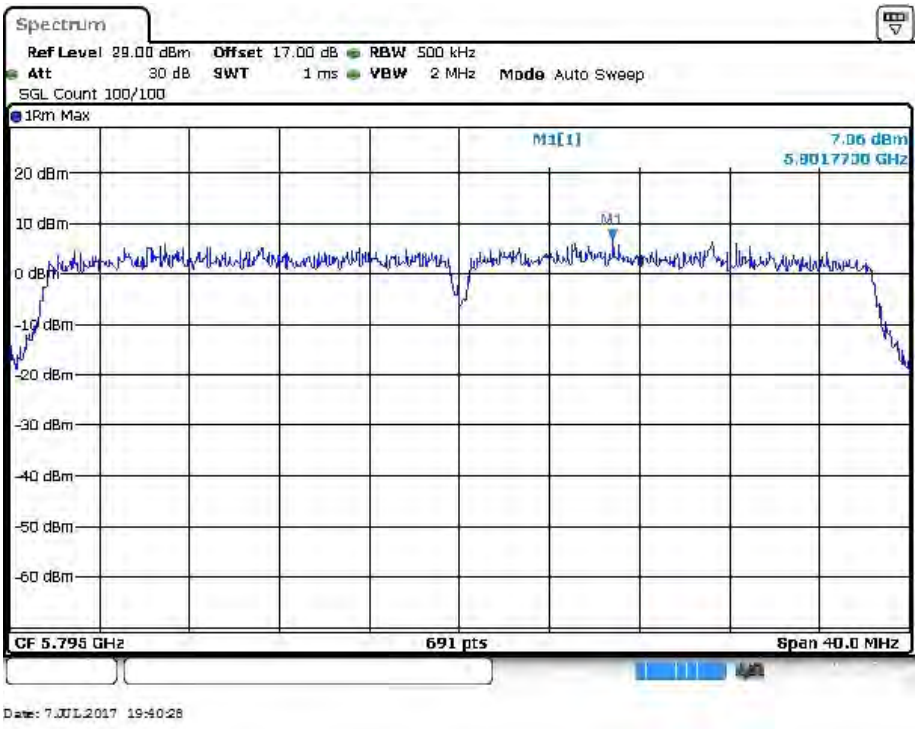


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 2)

5755MHz

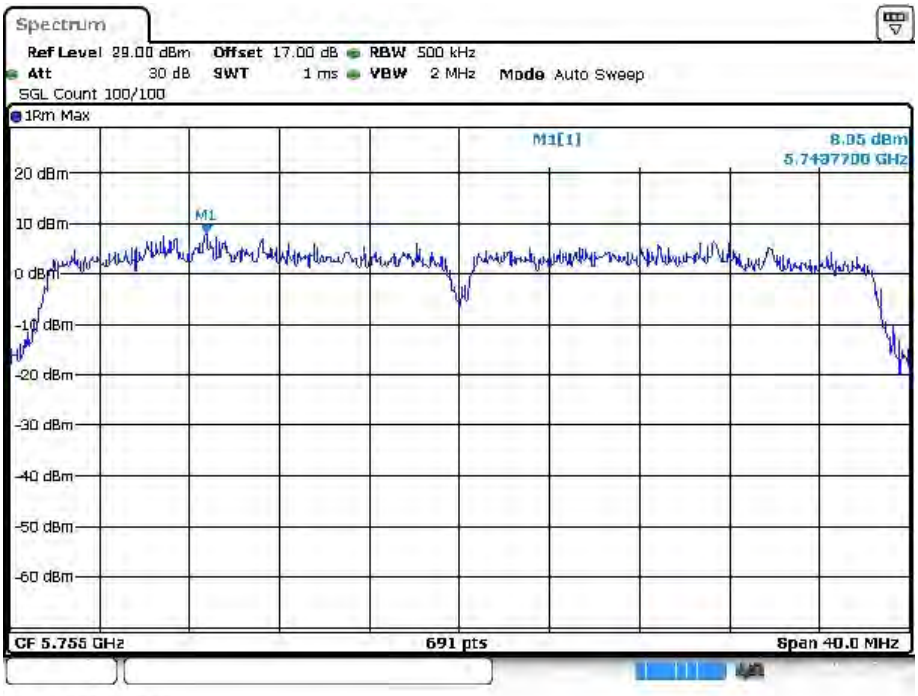


5795MHz

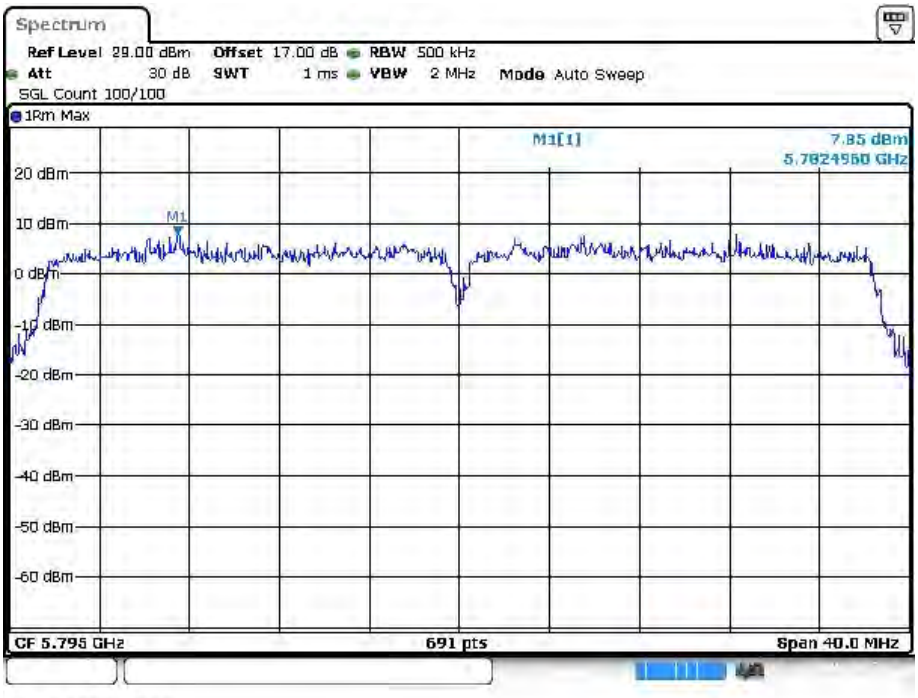


IEEE 802.11ac VHT40 mode / 5725 ~ 5850MHz (chain 3)

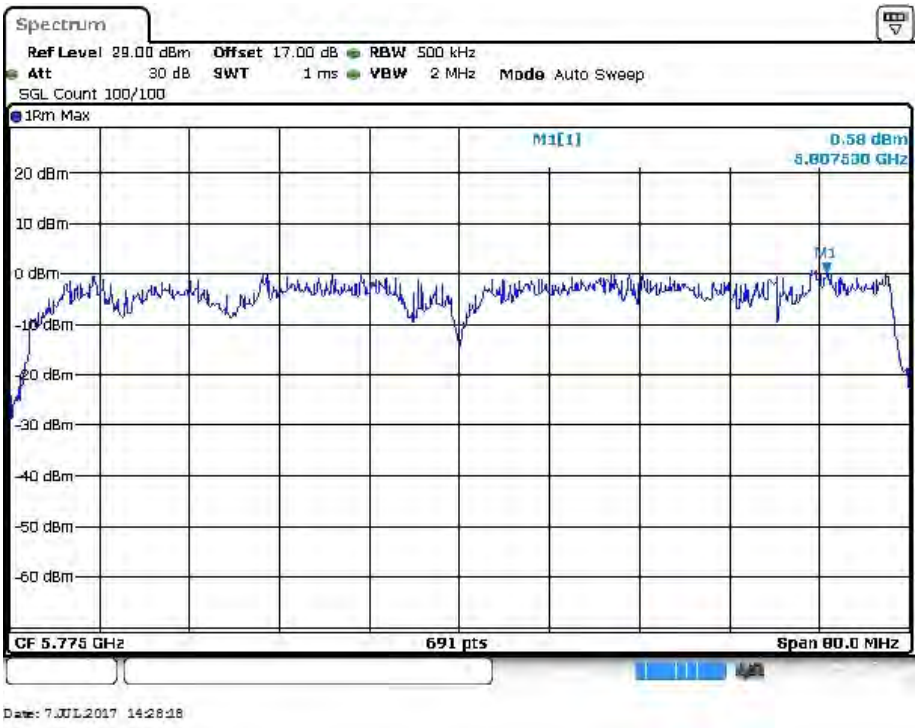
5755MHz



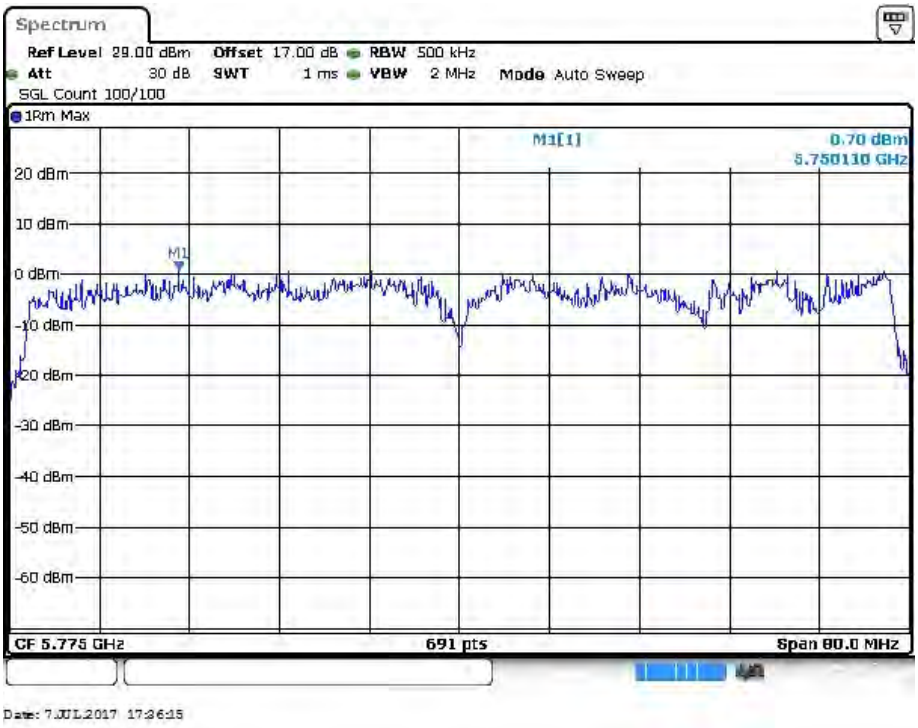
5795MHz



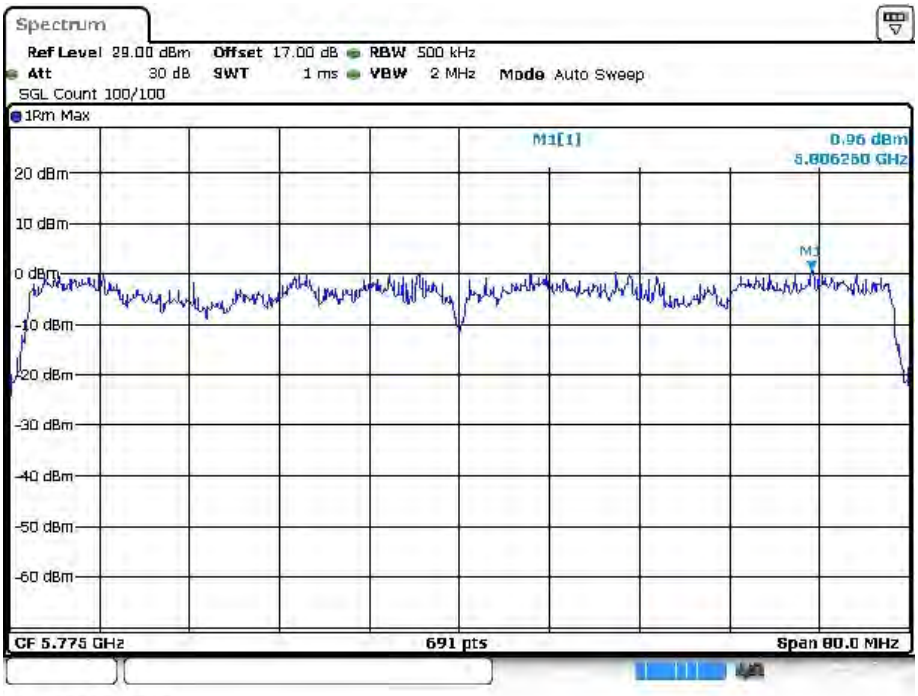
IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 0)
5775MHz



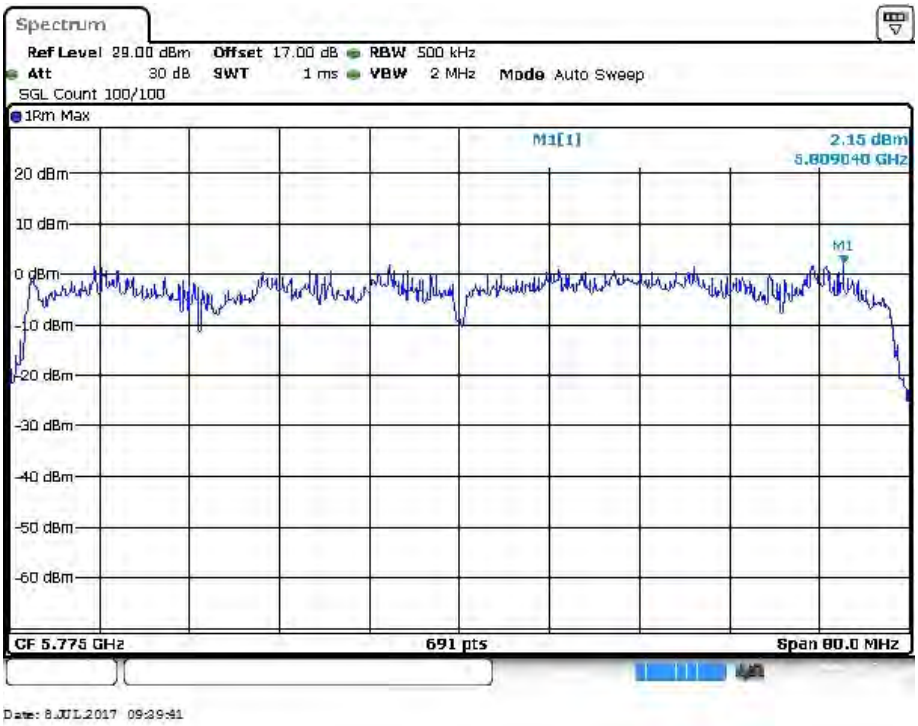
IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 1)
5775MHz



IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 2)
5775MHz



IEEE 802.11ac VHT80 mode / 5725 ~ 5850MHz (chain 3)
5775MHz



12 DECLARATION OF SIMILARITY

Draytek Corporation
No. 26, Fu Shing Rd., Hukou County, Hsinchu
Industrial Park, Hsinchu 303 Taiwan

DECLARATION OF SIMILARITY

May 12, 2017

FEDERAL COMMUNICATIONS COMMISSIONS
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

Dear Sir or Madam:

We Draytek Corporation hereby declare that product: VDSL2 & ADSL2+ Dual-WAN Security Router, model(s): Vigor2862BLgVac、Series Model:Vigor2862Lac, Vigor2862LVac, Vigor2862LFac, Vigor2862LFVac,Vigor2862Lgac, Vigor2862LgVac, Vigor2862LgFac, Vigor2862LgFVac, Vigor2862BLgVac, Vigor2862BLgFVac, Vigor2926Lac, Vigor2926LVac, Vigor2926LFac, Vigor2926LFVac, Vigor2926Lgac, Vigor2926LgVac, Vigor2926LgFac, Vigor2926LgFVac, Vigor2860Lac, Vigor2860LVac, Vigor2860LFac, Vigor2860LFVac, Vigor2860Lgac, Vigor2860LgVac, Vigor2860LgFac, Vigor2860LgFVac, Vigor2860BLgVac, Vigor2860BLgFVac, Vigor2925Lac, Vigor2925LVac, Vigor2925LFac, Vigor2925LFVac, Vigor2925Lgac, Vigor2925LgVac, Vigor2925LgFac, Vigor2925LgFVac, Vigor2862ac, Vigor2862Vac, Vigor2862Fac, Vigor2862FVac, Vigor2926ac, Vigor2926Vac, Vigor2926Fac, Vigor2926FVac, Vigor2860ac, Vigor2860Vac, Vigor2860Fac, Vigor2860FVac, Vigor2925ac, Vigor2925Vac, Vigor2925Fa, Vigor2925FVac are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as model: Vigor2862BLgFVac tested by BACL, the results of which are featured in BACL project: RTWA170214001.

A description of the differences between the tested model and those that are declared similar are as follows:

2862 ,2860 ,2832,has dsl function

2926 ,2925 didn't has dsl function

2862 ,2860 ,2832 for different marketing

2926 ,2925 for different marketing

ac 2.4G Wi-fi function and 5G Wi-fi function

F Fiber function

V VoIP function L LTE function

B Bonding VDSL function

g GPS function

Please contact me should there be need for any additional clarification or information. Best

Regards,

Abbott Yu/ HW manager

No. 26, Fu Shing Rd., Hukou County, Hsinchu Industrial Park, Hsinchu 303 Taiwan

******* END OF REPORT *******