The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

7.2 Test Result

PASS

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations / data rates and antenna ports.

Following channel was selected for the final test as listed below.

Antenna A

Modulation	26dB Emission Bandwidth(MHz)		
	Channel 36	Channel 40	Channel 48
802.11a	19.72	19.44	19.72
802.11n 20	21.013	20.608	20.666
802.11ac 20	21.48	20.84	21.40

Antenna A

Modulation	26dB Emission Bandwidth(MHz)	
	Channel 38	Channel 46
802.11n 40	42.26	40.98
802.11ac 40	39.92	40.48

Antenna A

Modulation	6dB Emission Bandwidth(MHz)			Limit
	Channel 149	Channel 157	Channel 165	
802.11a	16.36	16.32	16.32	≥500kHz
802.11n 20	17.61	17.67	17.58	≥500kHz
802.11ac20	17.6	17.6	17.6	≥500kHz

Modulation	6dB Emission Bandwidth(MHz)		Limit
	Channel 151	Channel 159	
802.11n40	35.76	35.98	≥500kHz
802.11ac40	35.12	35.20	≥500kHz

Antenna B

Modulation	26dB Emission Bandwidth(MHz)		
	Channel 36	Channel 40	Channel 48
802.11a	20.00	19.76	20.16
802.11n20	20.55	20.318	20.666
802.11ac 20	21.40	20.96	20.64

Antenna B

Modulation	26dB Emission Bandwidth(MHz)	
	Channel 38	Channel 46
802.11n40	42.49	42.37
802.11ac 40	40.08	40.32

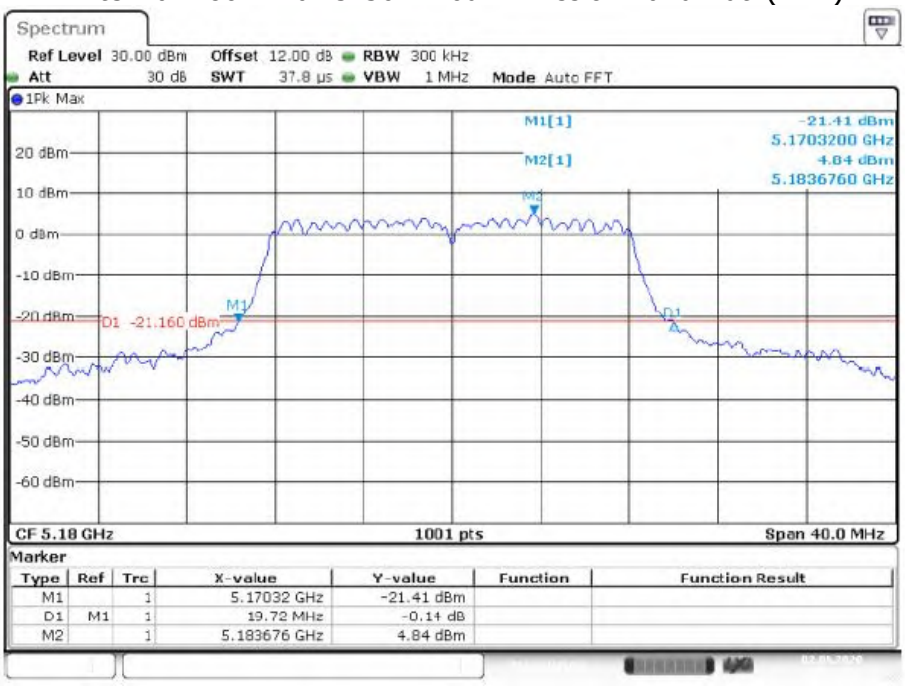
Antenna B

Modulation	6dB Emission Bandwidth(MHz)			Limit
	Channel 149	Channel 157	Channel 165	
802.11a	16.36	16.36	16.36	≥500kHz
802.11n20	17.65	17.58	17.68	≥500kHz
802.11ac20	17.56	17.60	17.60	≥500kHz

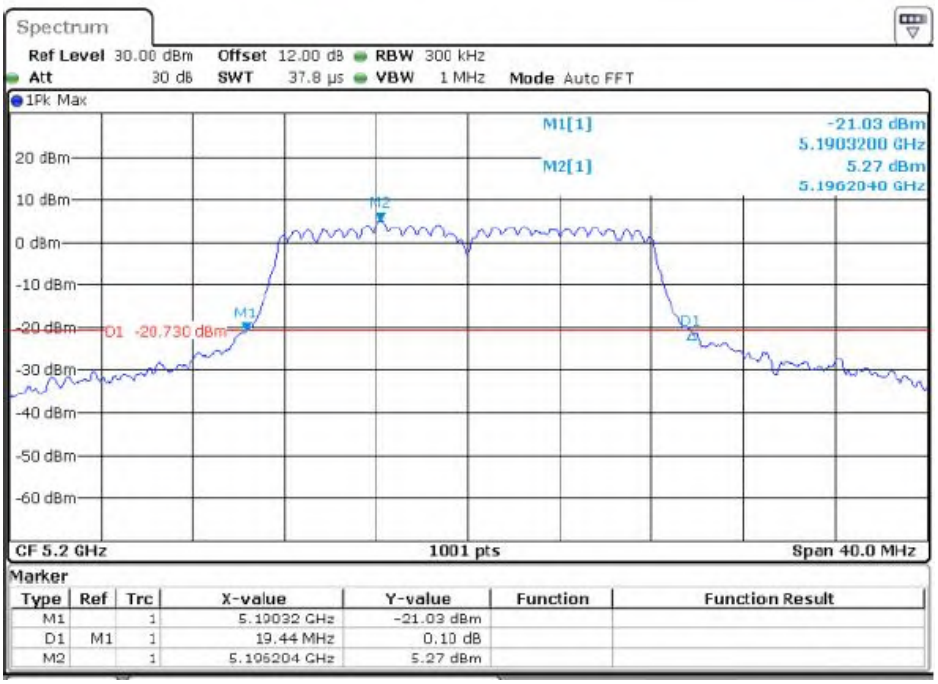
Antenna B

Modulation	6dB Emission Bandwidth(MHz)		Limit
	Channel 151	Channel 159	
802.11n40	35.63	35.88	≥500kHz
802.11ac40	35.36	35.68	≥500kHz

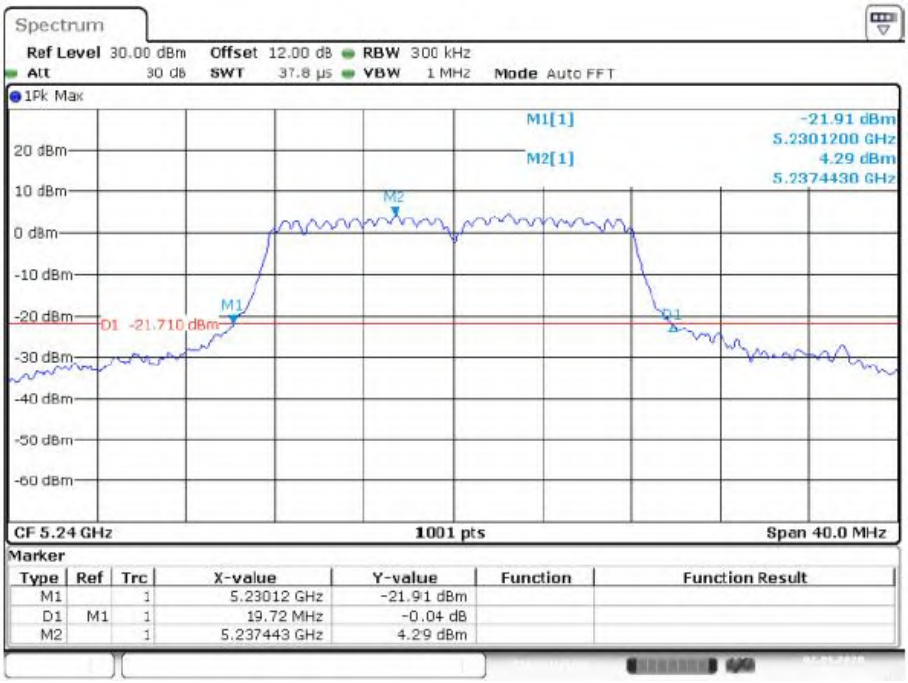
Antenna A 802.11a Ch36 26dB Emission Bandwidth(MHz)



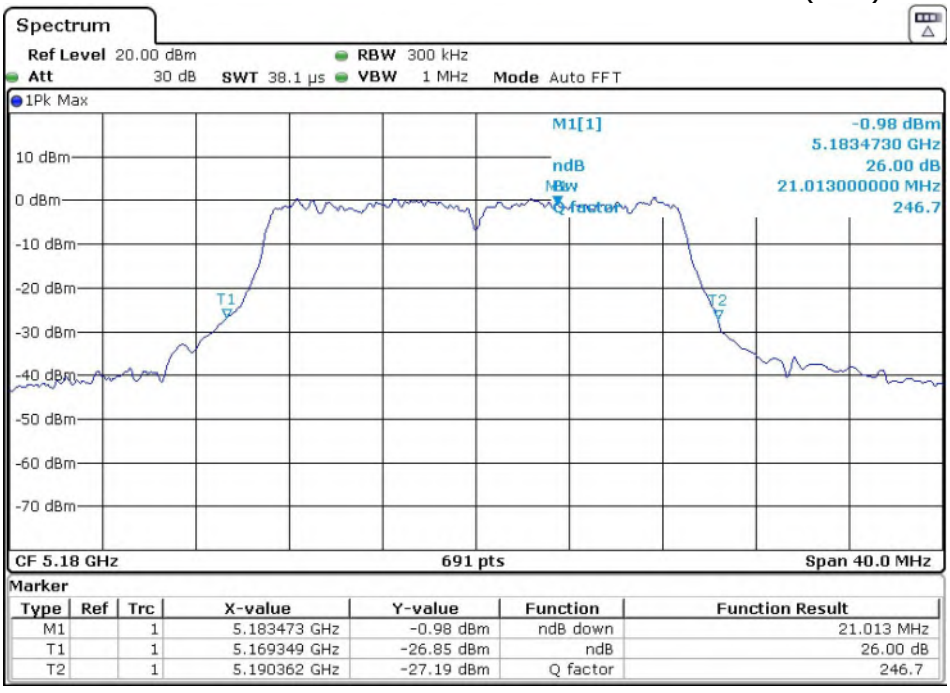
Antenna A 802.11a Ch40 26dB Emission Bandwidth(MHz)



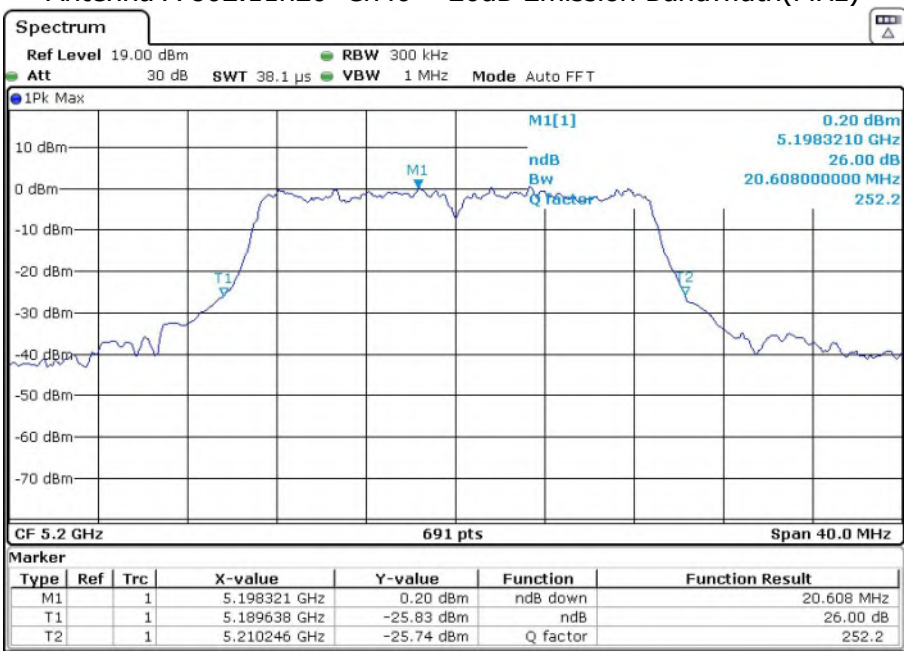
Antenna A 802.11a Ch48 26dB Emission Bandwidth(MHz)



Antenna A 802.11n20 Ch36 26dB Emission Bandwidth(MHz)



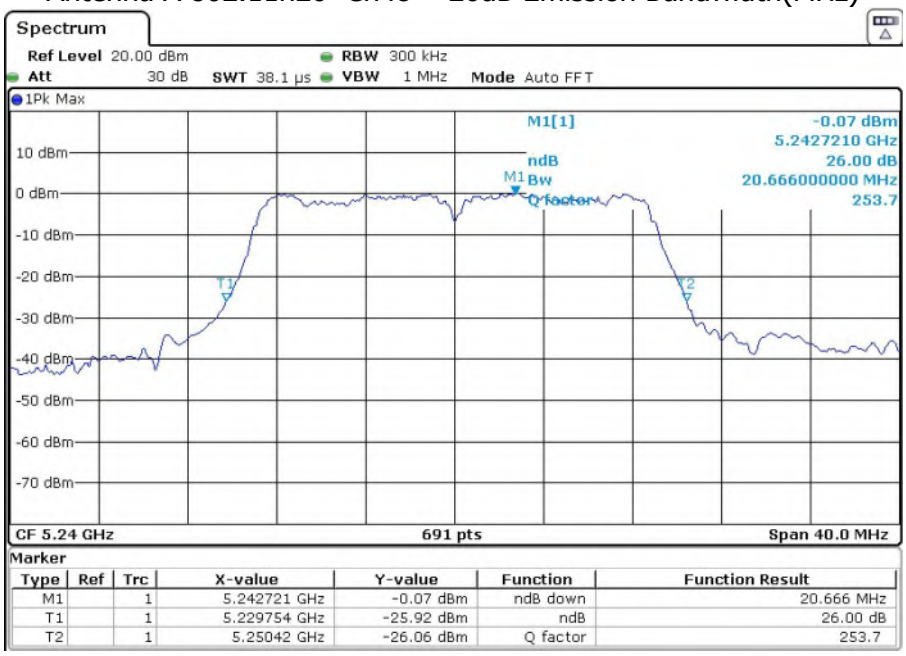
Antenna A 802.11n20 Ch40 26dB Emission Bandwidth(MHz)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.198321 GHz	0.20 dBm	ndB down	20.608 MHz
T1		1	5.189638 GHz	-25.83 dBm	ndB	26.00 dB
T2		1	5.210246 GHz	-25.74 dBm	Q factor	252.2

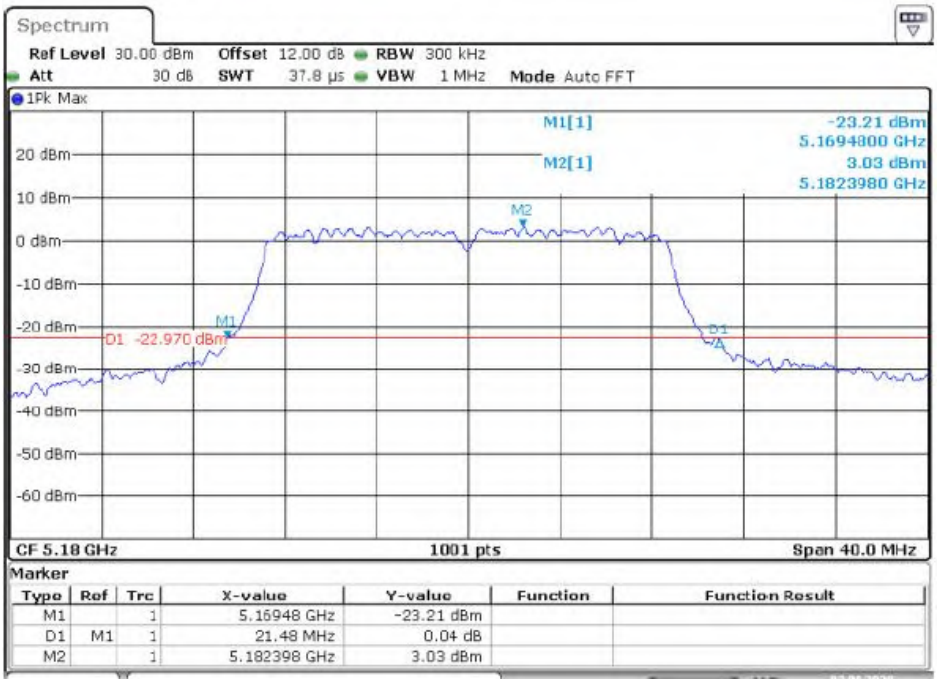
Antenna A 802.11n20 Ch48 26dB Emission Bandwidth(MHz)



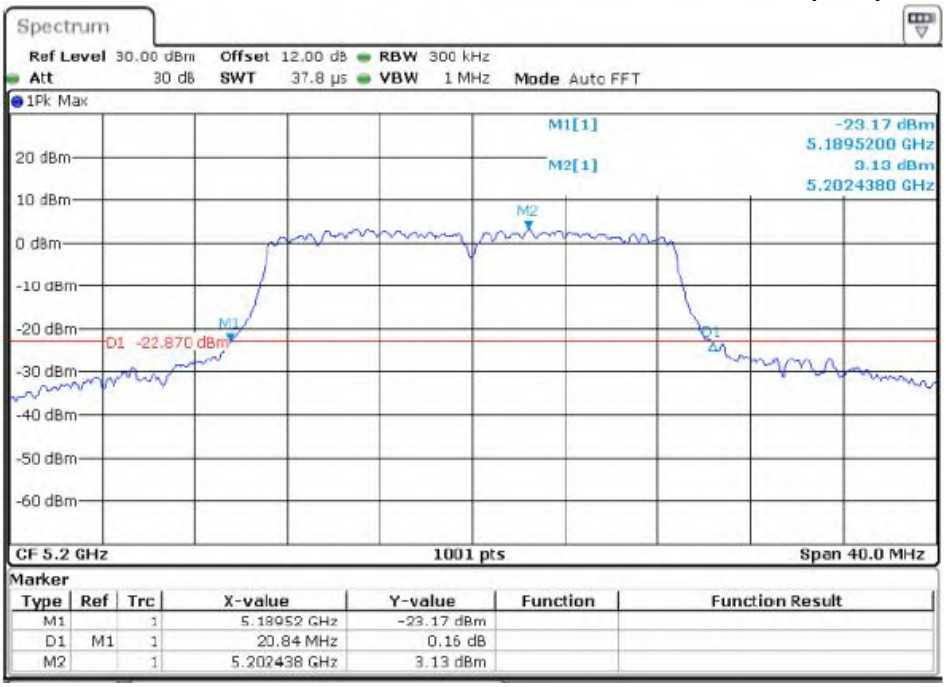
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.242721 GHz	-0.07 dBm	ndB down	20.666 MHz
T1		1	5.229754 GHz	-25.92 dBm	ndB	26.00 dB
T2		1	5.25042 GHz	-26.06 dBm	Q factor	253.7

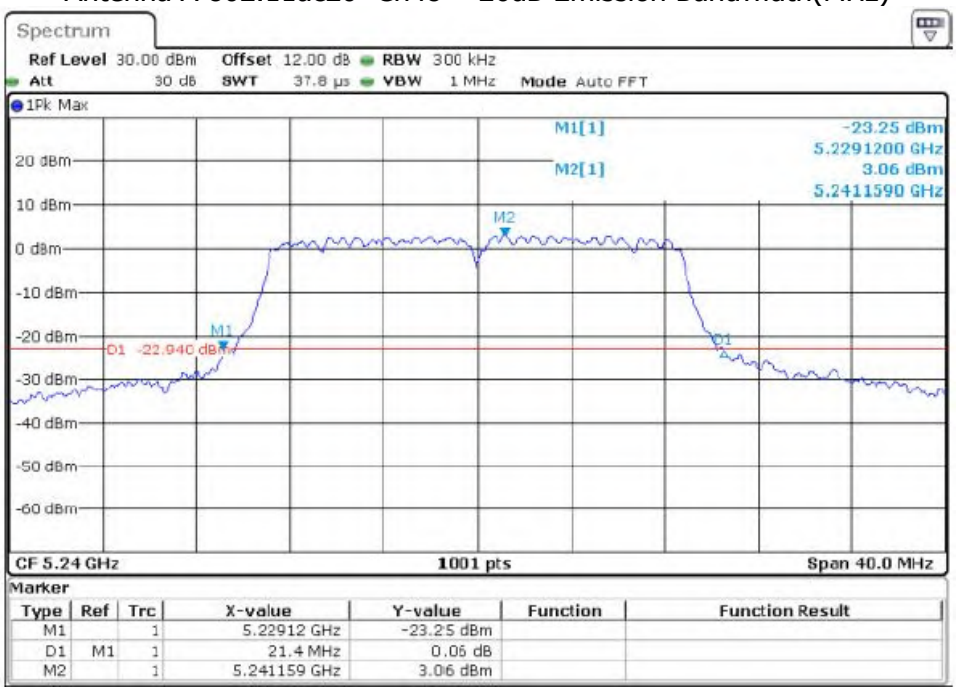
Antenna A 802.11ac20 Ch36 26dB Emission Bandwidth(MHz)



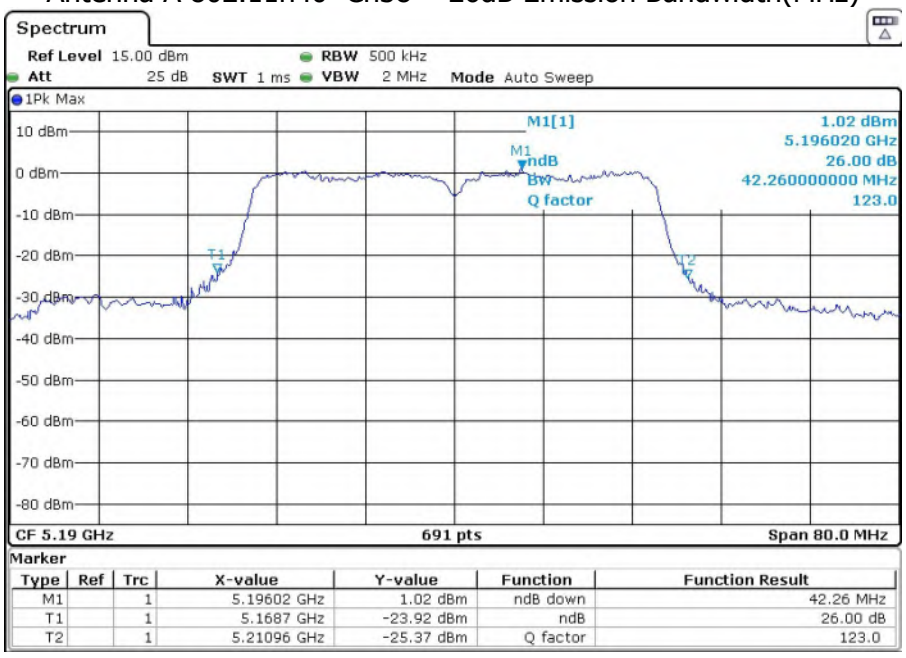
Antenna A 802.11ac20 Ch40 26dB Emission Bandwidth(MHz)



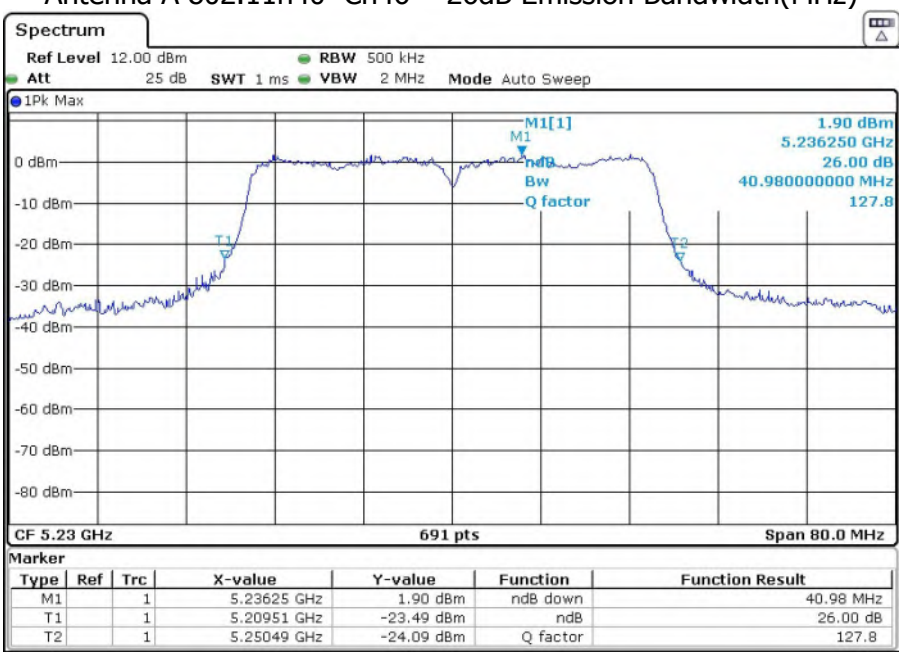
Antenna A 802.11ac20 Ch48 26dB Emission Bandwidth(MHz)



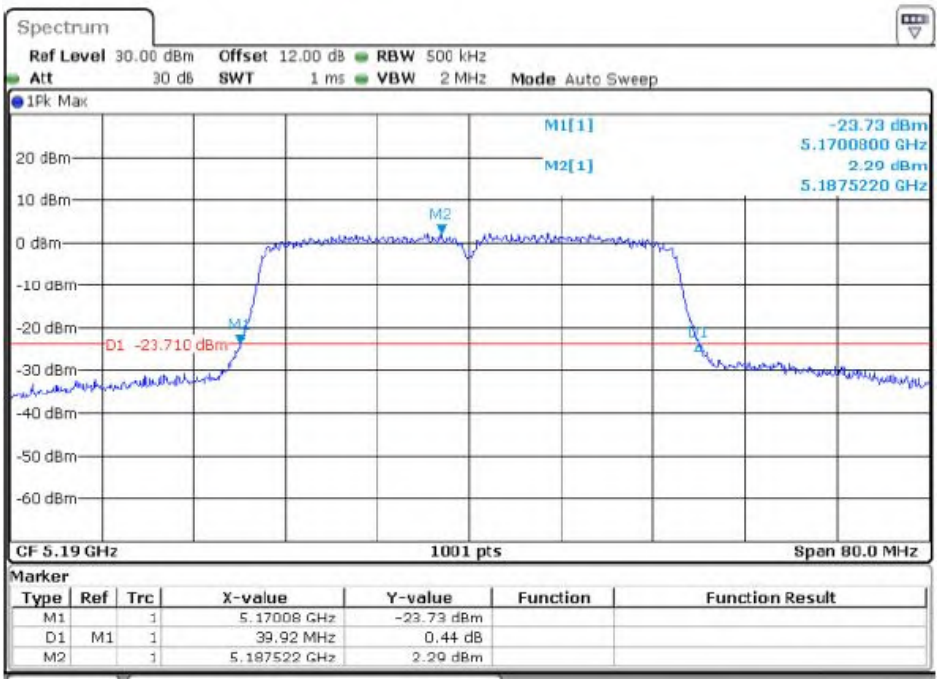
Antenna A 802.11n40 Ch38 26dB Emission Bandwidth(MHz)



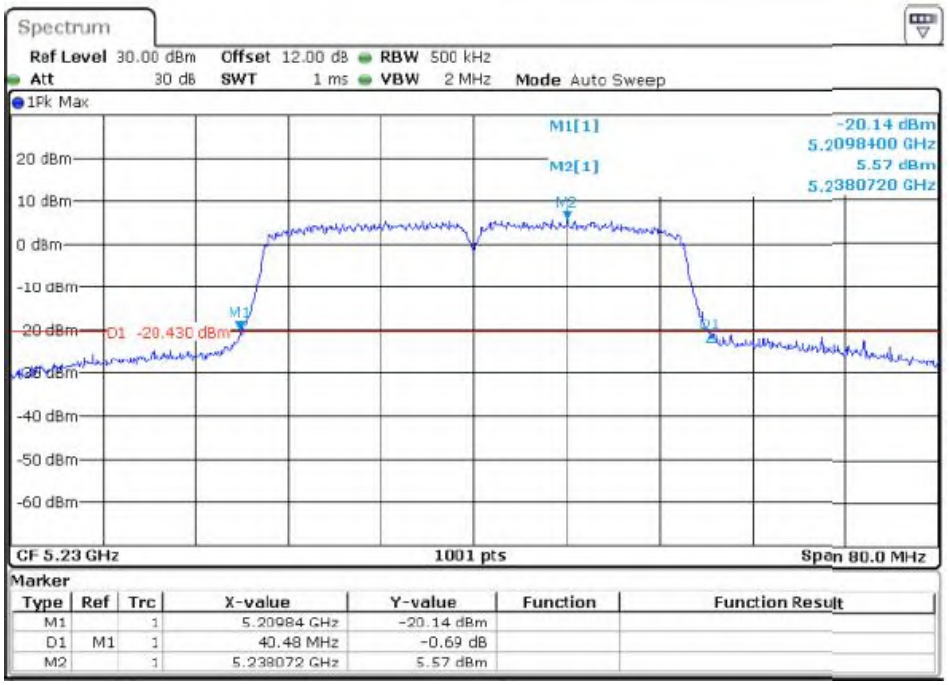
Antenna A 802.11n40 Ch46 26dB Emission Bandwidth(MHz)



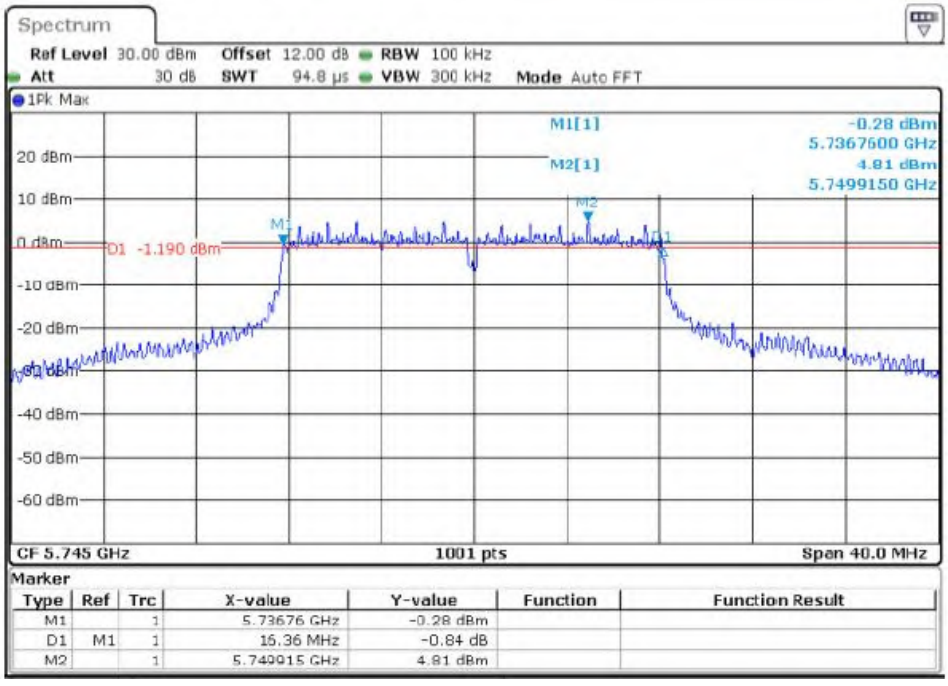
Antenna A 802.11ac40 Ch38 26dB Emission Bandwidth(MHz)



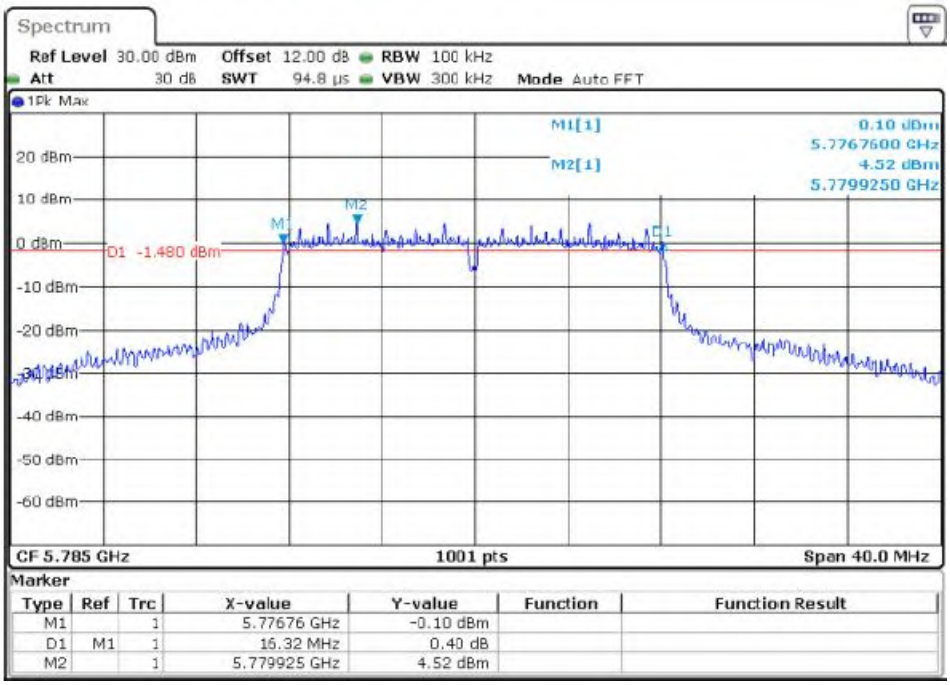
Antenna A 802.11ac40 Ch46 26dB Emission Bandwidth(MHz)



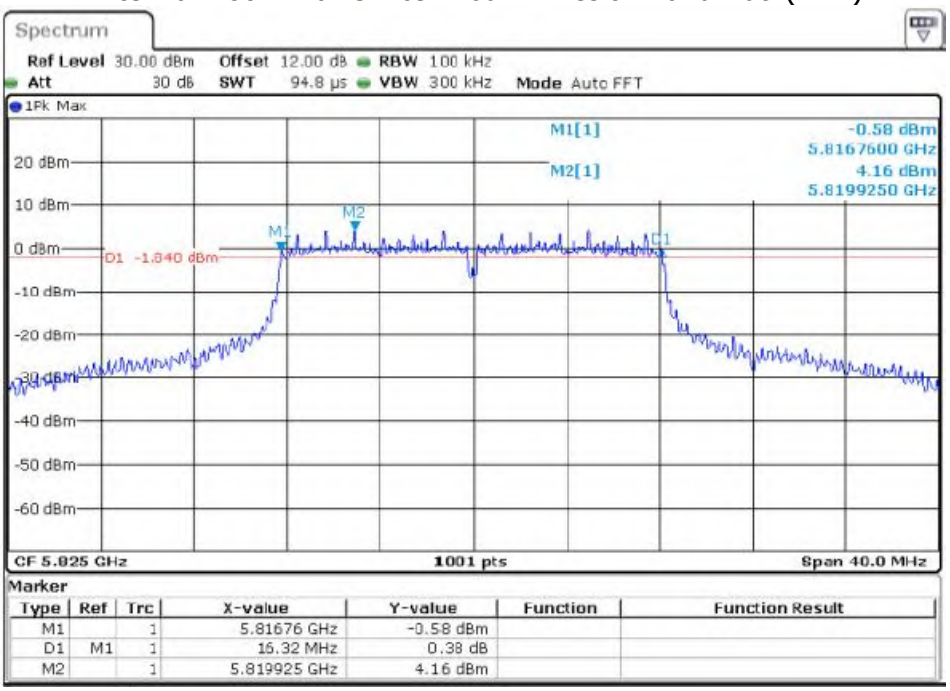
Antenna A 802.11a Ch149 6dB Emission Bandwidth(MHz)



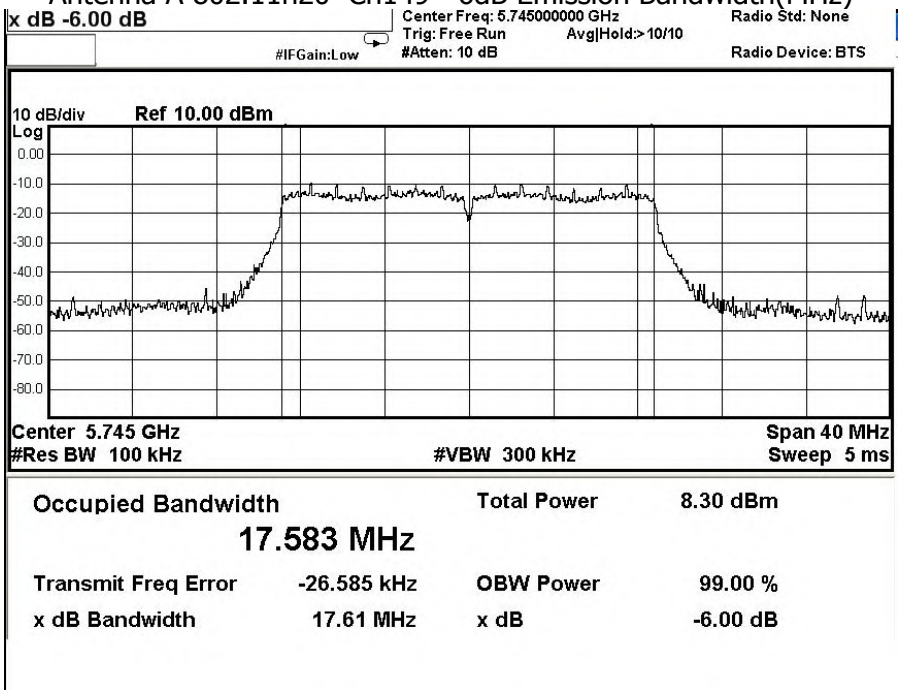
Antenna A 802.11a Ch157 6dB Emission Bandwidth(MHz)



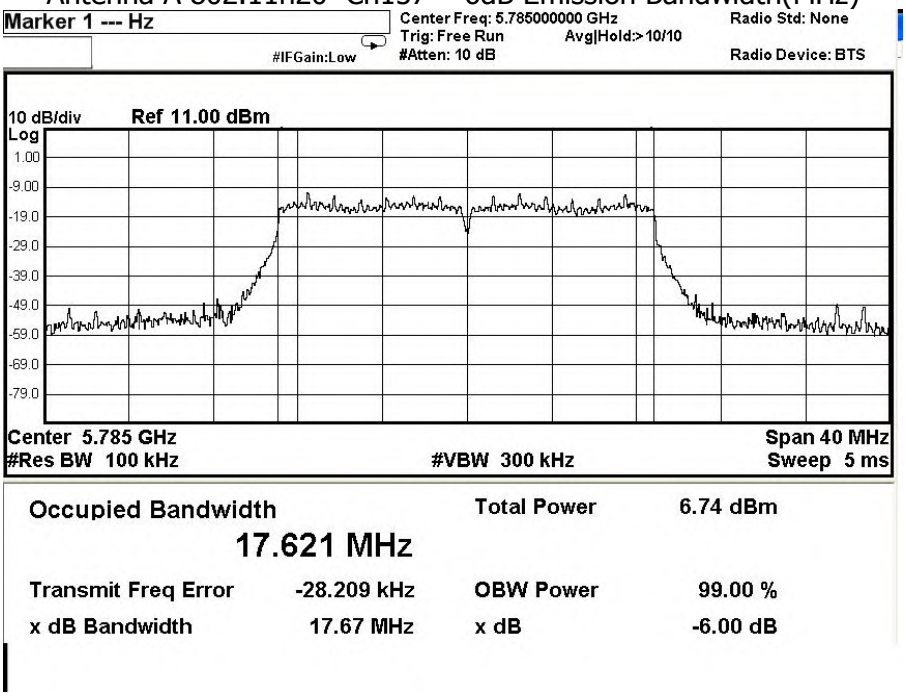
Antenna A 802.11a Ch169 6dB Emission Bandwidth(MHz)



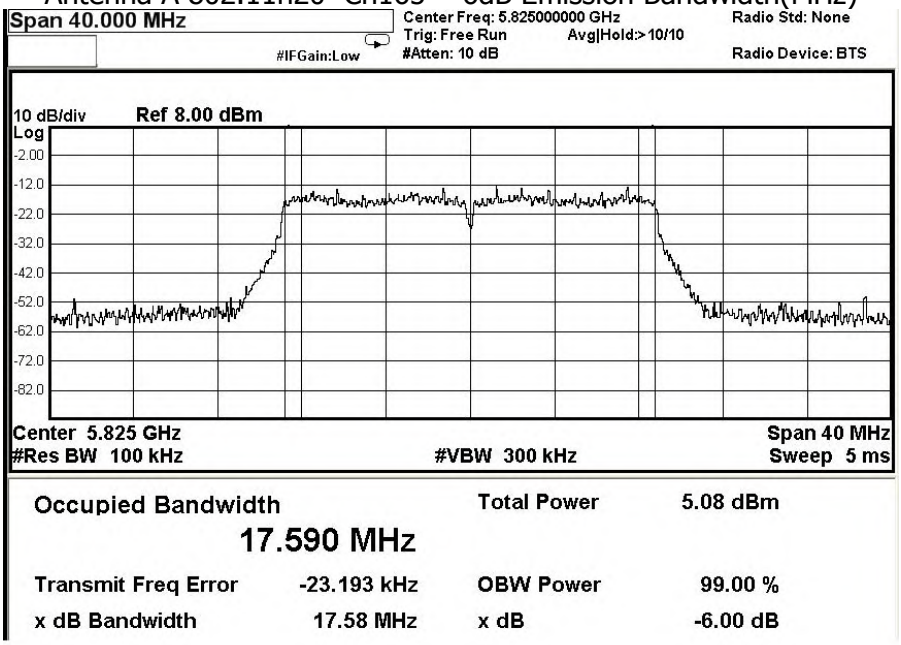
Antenna A 802.11n20 Ch149 6dB Emission Bandwidth(MHz)



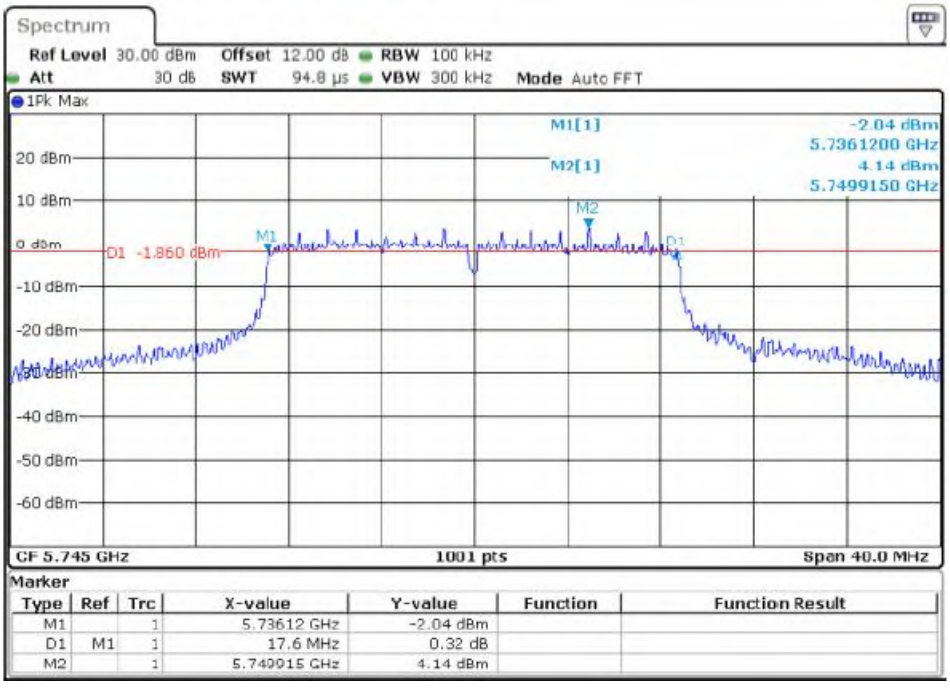
Antenna A 802.11n20 Ch157 6dB Emission Bandwidth(MHz)



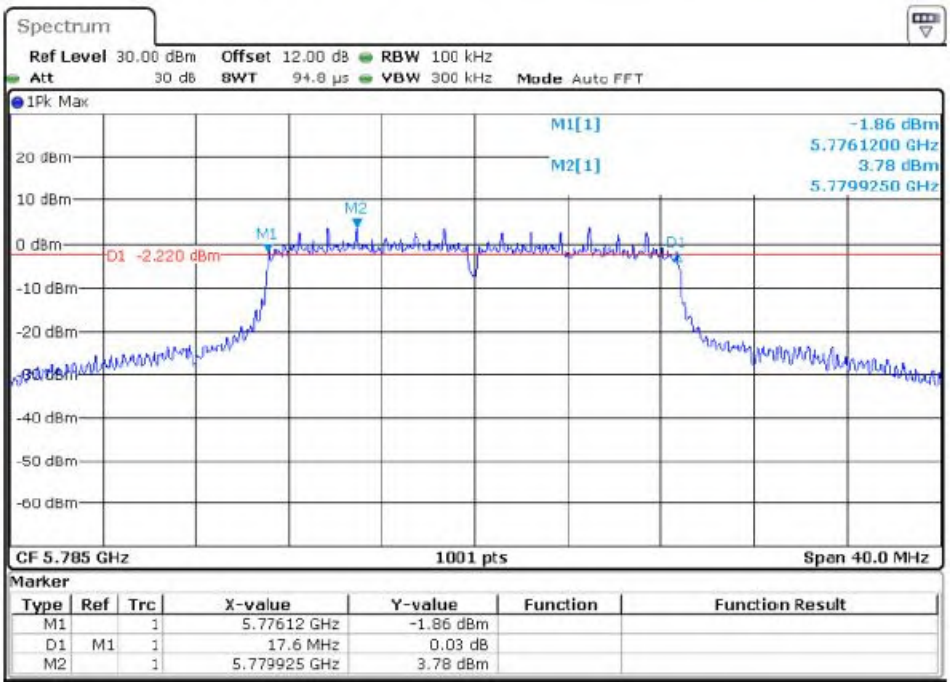
Antenna A 802.11n20 Ch165 6dB Emission Bandwidth(MHz)



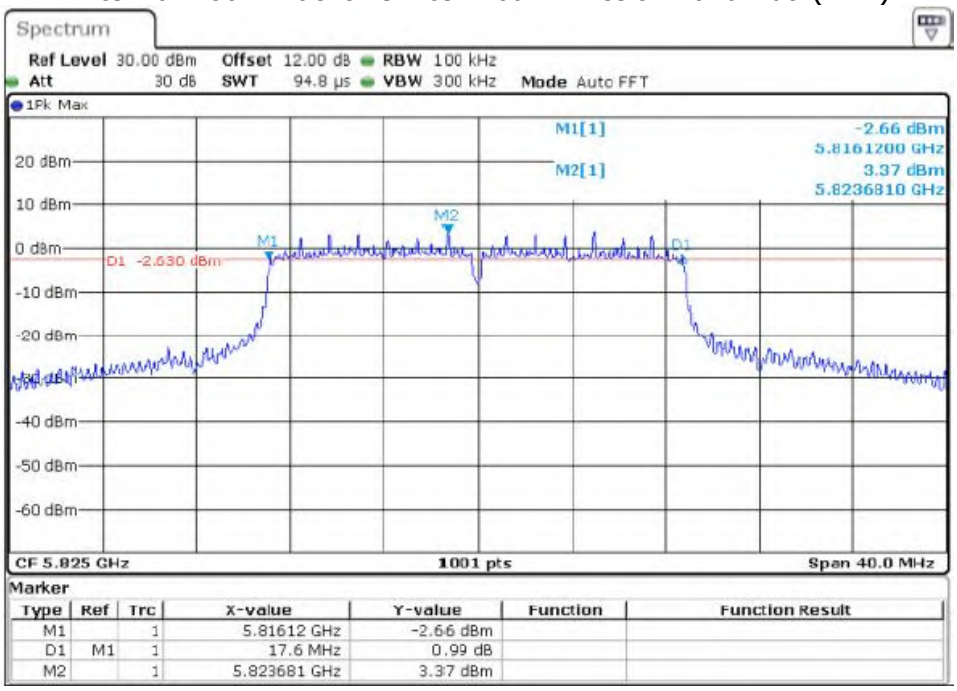
Antenna A 802.11ac20 Ch149 6dB Emission Bandwidth(MHz)



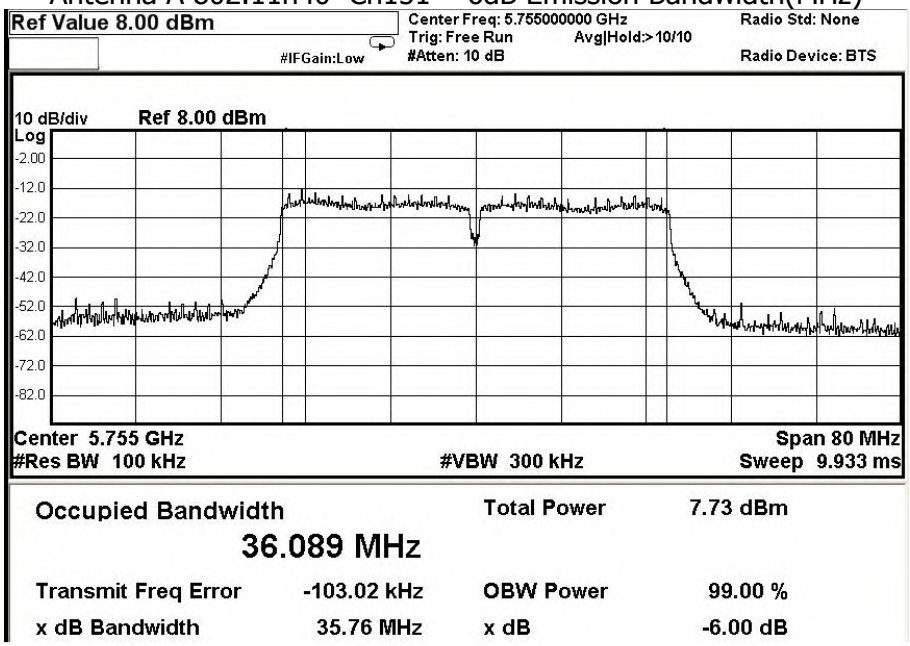
Antenna A 802.11ac20 Ch157 6dB Emission Bandwidth(MHz)



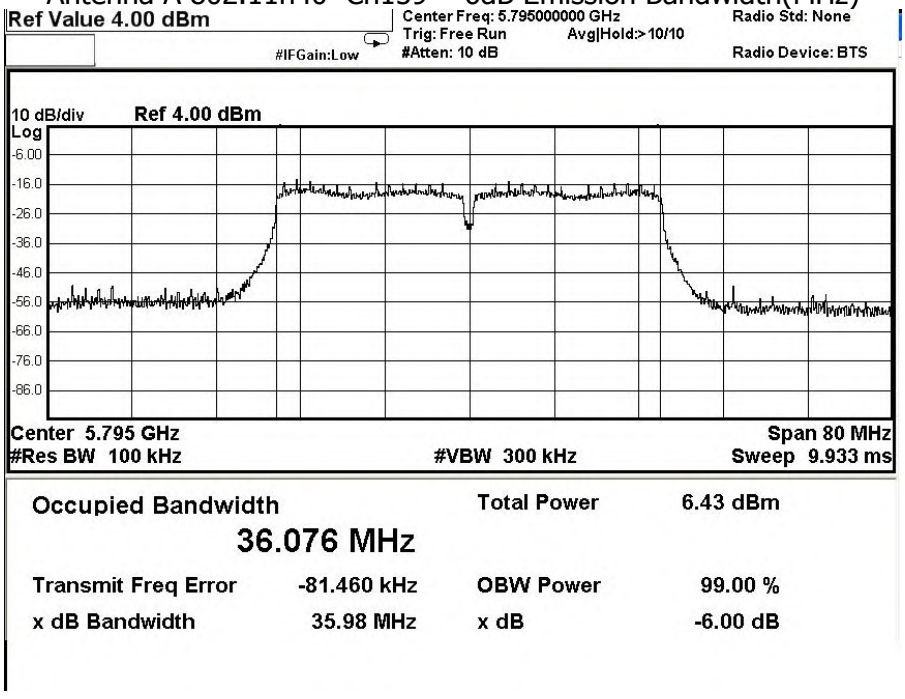
Antenna A 802.11ac20 Ch169 6dB Emission Bandwidth(MHz)



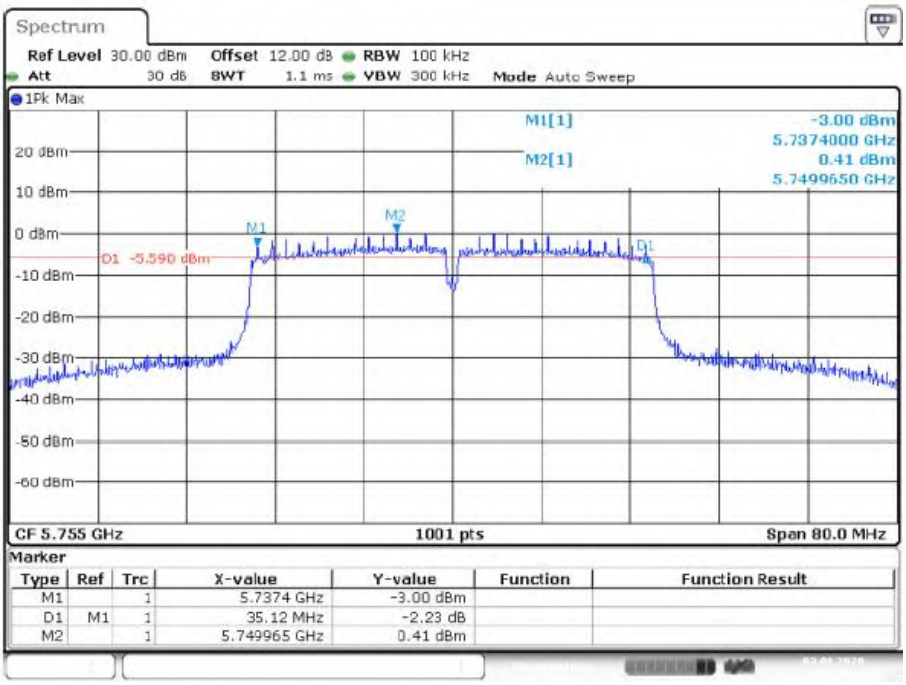
Antenna A 802.11n40 Ch151 6dB Emission Bandwidth(MHz)



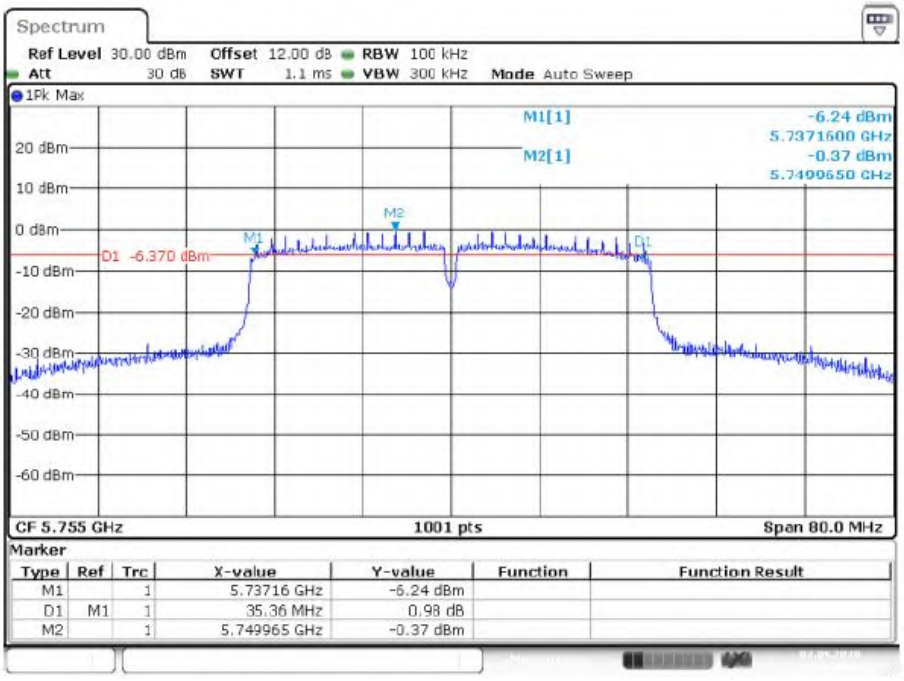
Antenna A 802.11n40 Ch159 6dB Emission Bandwidth(MHz)



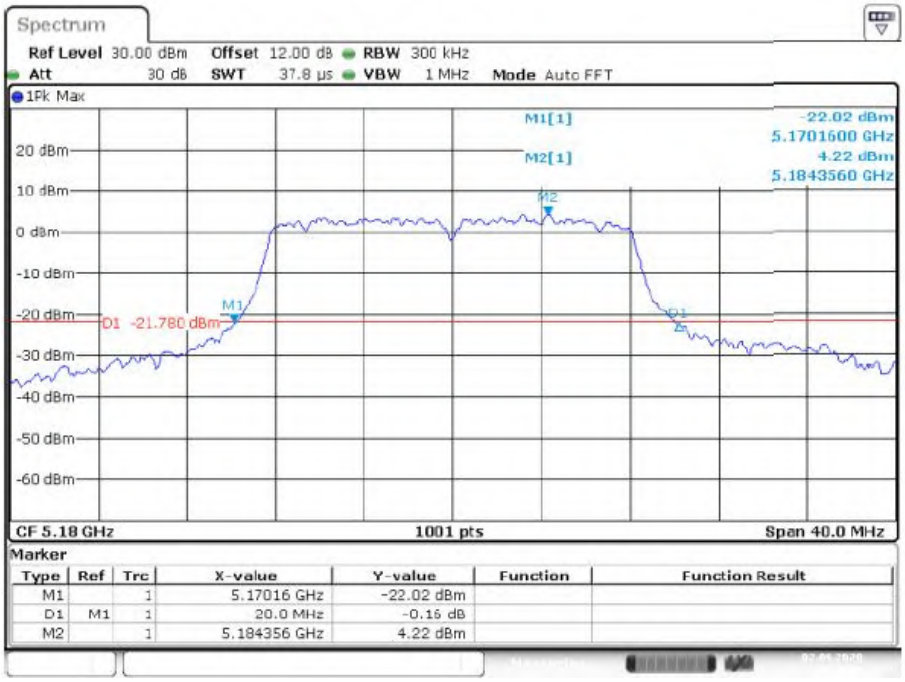
Antenna A 802.11ac40 Ch151 6dB Emission Bandwidth(MHz)



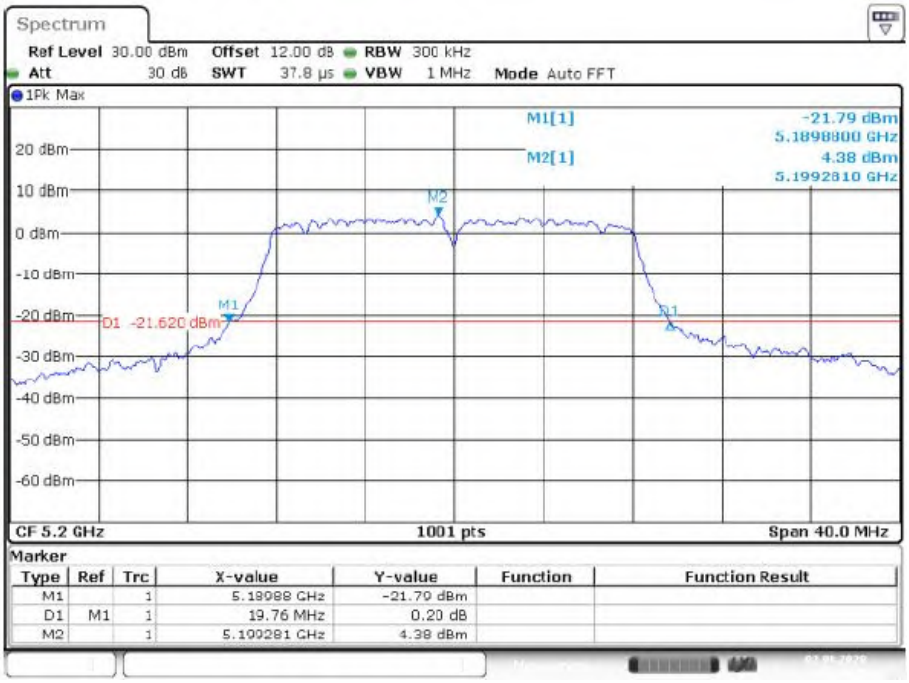
Antenna A 802.11ac40 Ch159 6dB Emission Bandwidth(MHz)



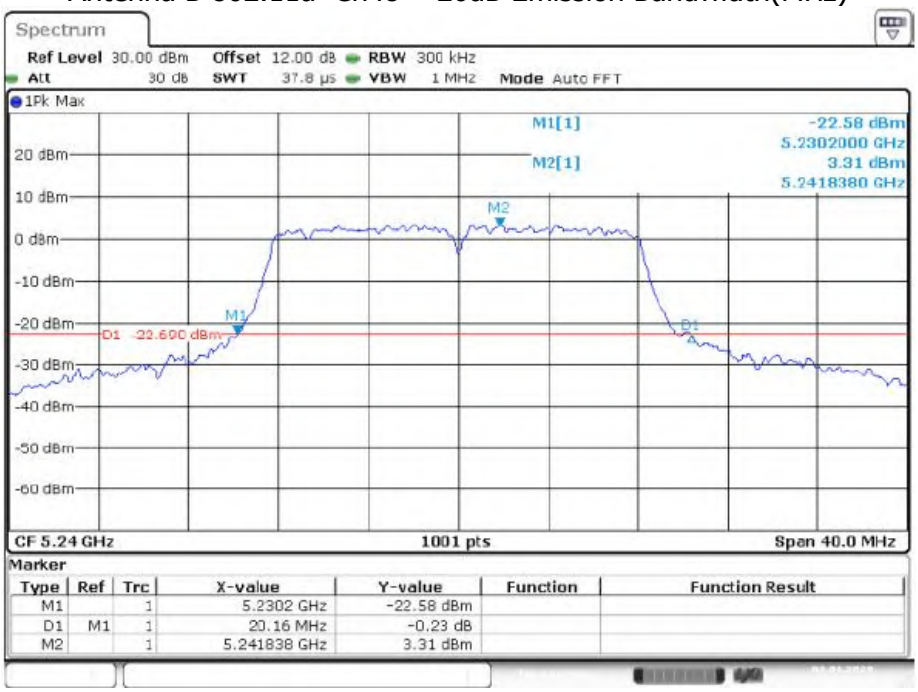
Antenna B 802.11a Ch36 26dB Emission Bandwidth(MHz)



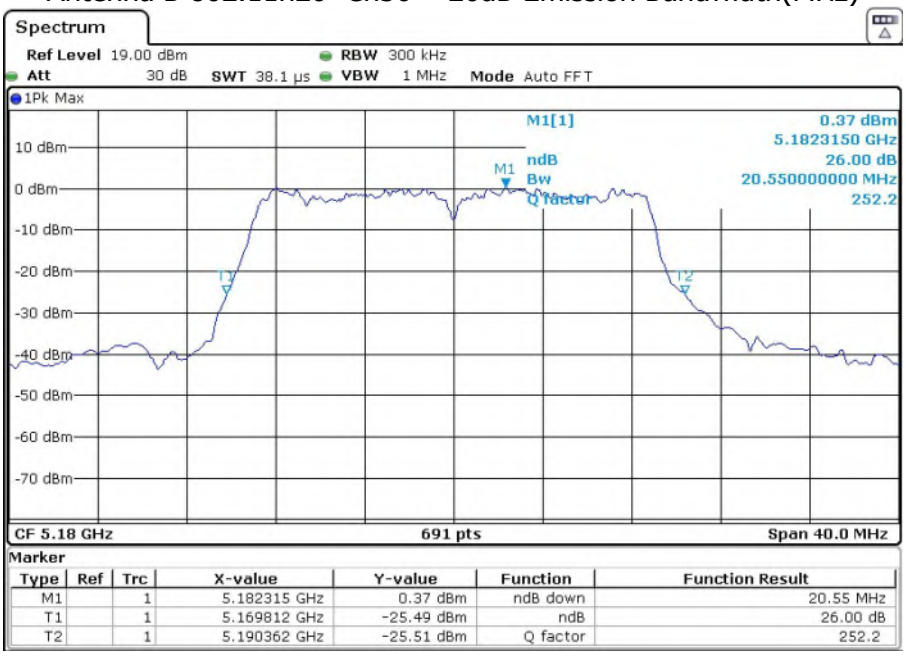
Antenna B 802.11a Ch40 26dB Emission Bandwidth(MHz)



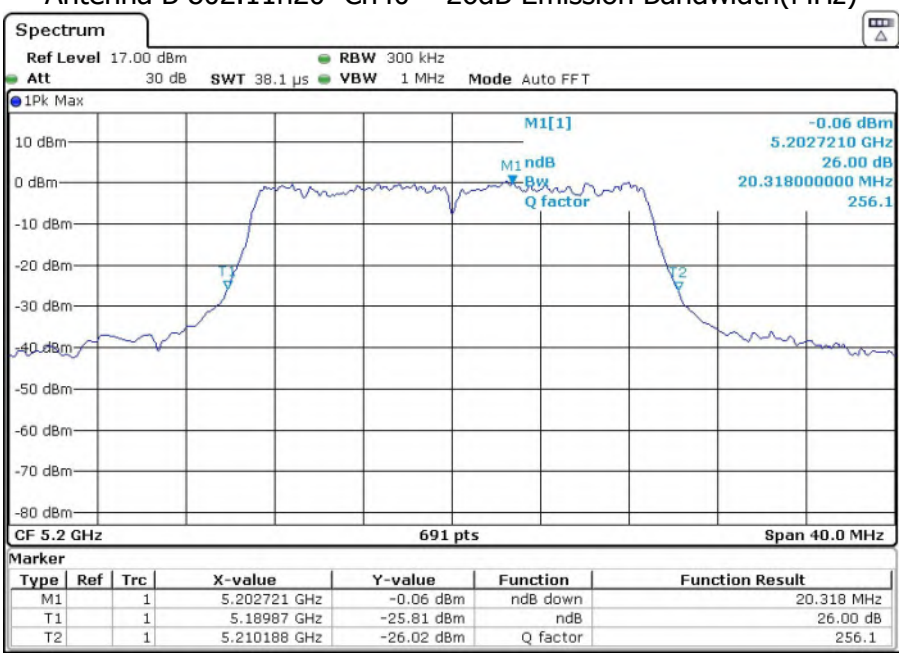
Antenna B 802.11a Ch48 26dB Emission Bandwidth(MHz)



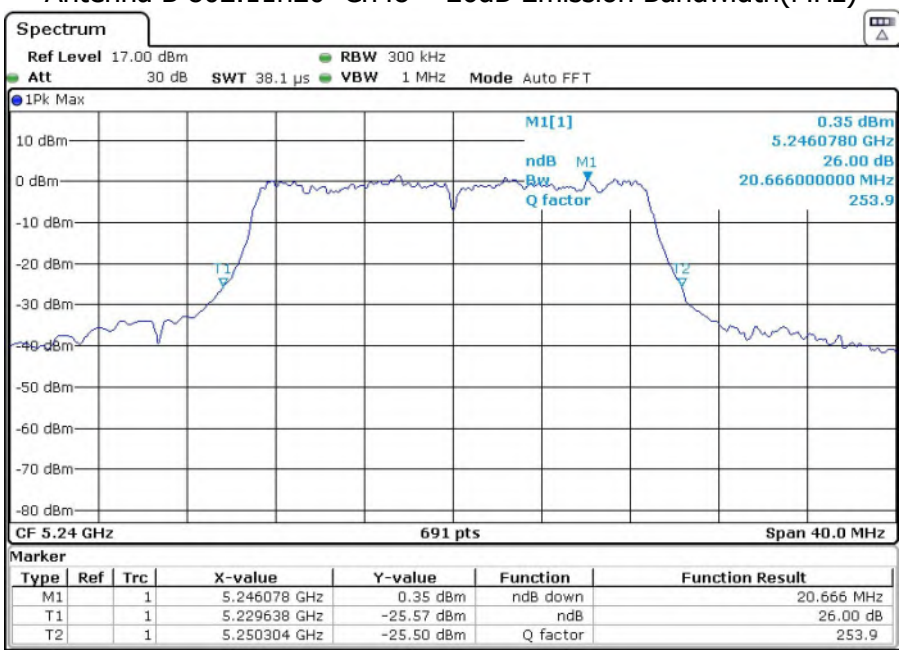
Antenna B 802.11n20 Ch36 26dB Emission Bandwidth(MHz)



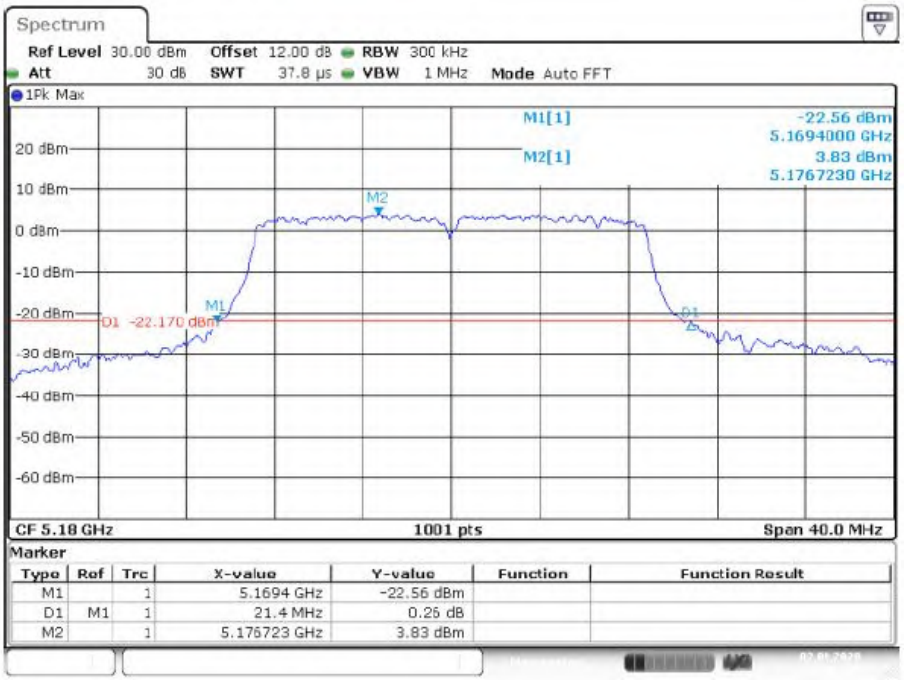
Antenna B 802.11n20 Ch40 26dB Emission Bandwidth(MHz)



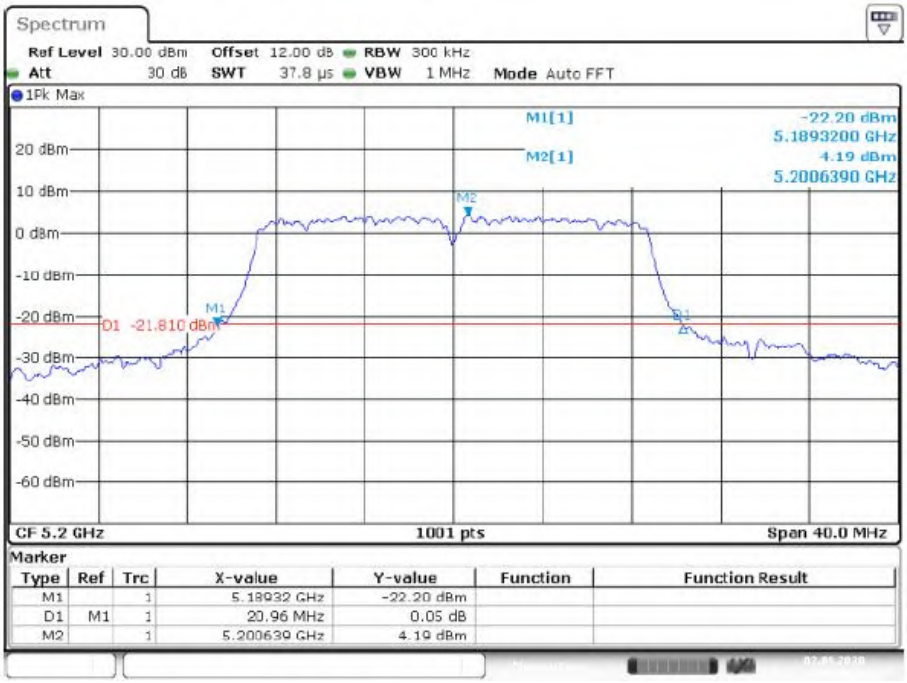
Antenna B 802.11n20 Ch48 26dB Emission Bandwidth(MHz)



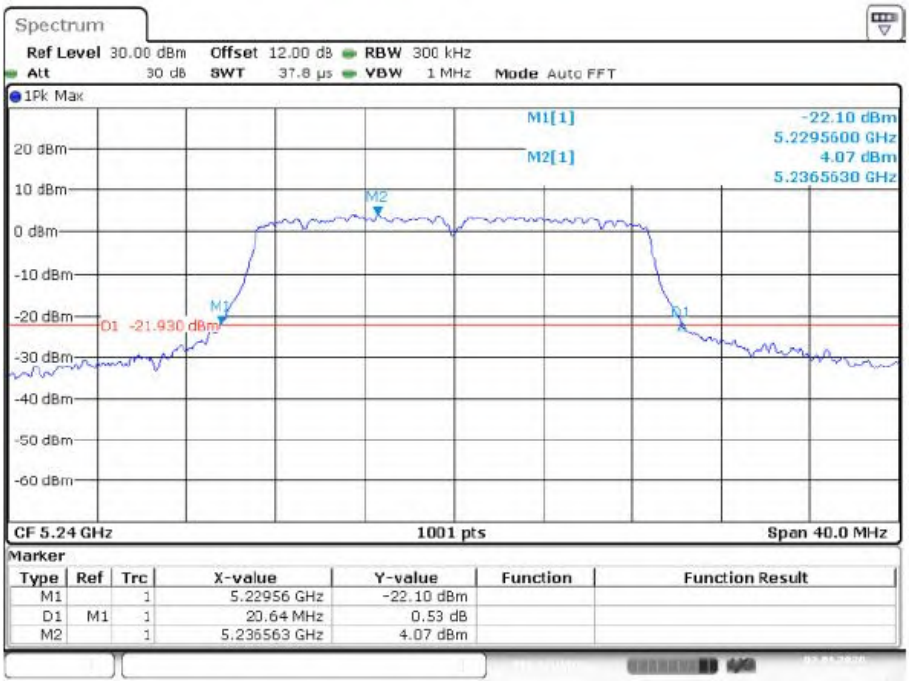
Antenna B 802.11ac20 Ch36 26dB Emission Bandwidth(MHz)



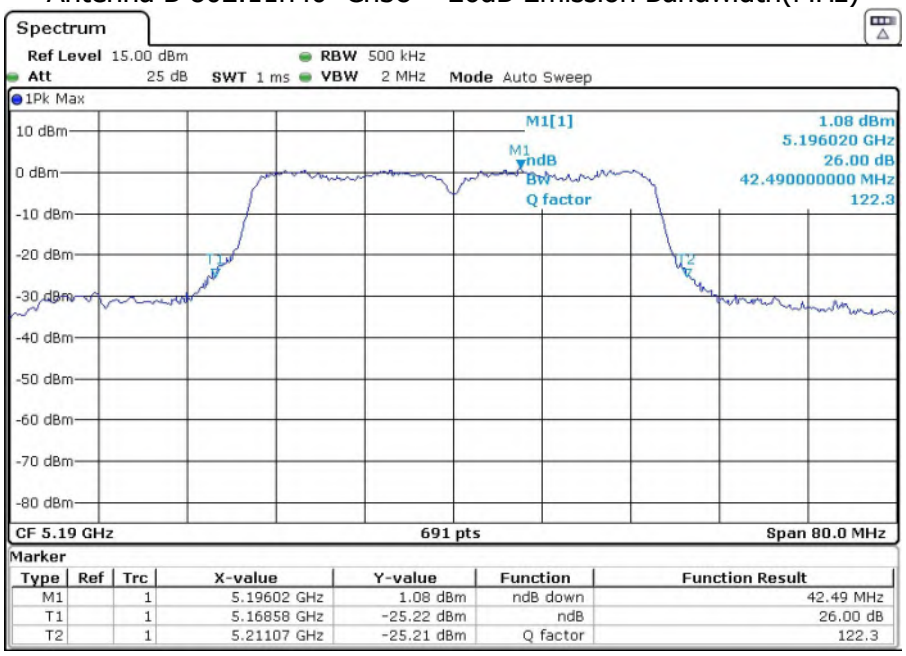
Antenna B 802.11ac20 Ch40 26dB Emission Bandwidth(MHz)



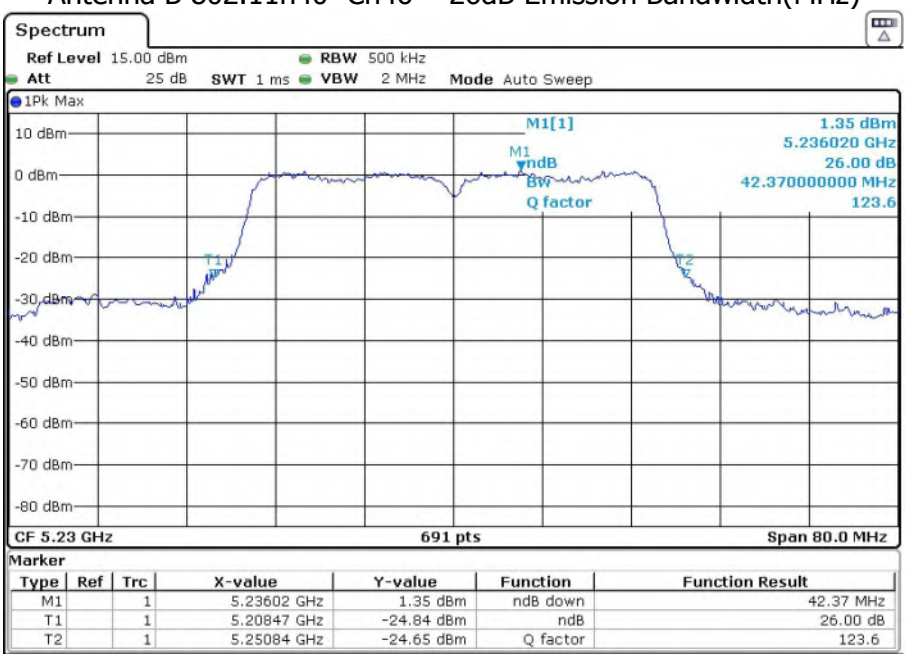
Antenna B 802.11ac20 Ch48 26dB Emission Bandwidth(MHz)



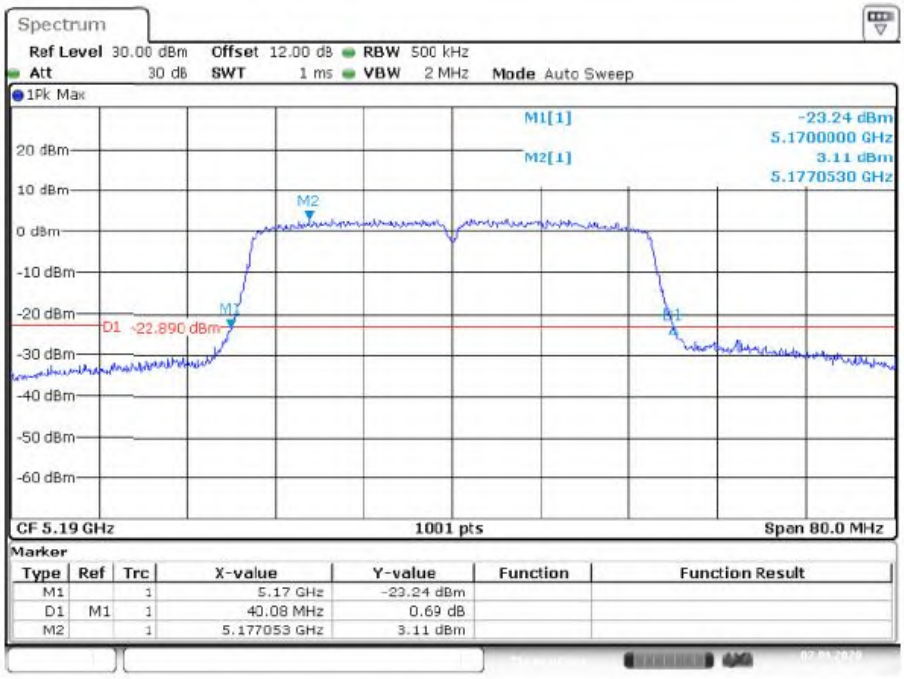
Antenna B 802.11n40 Ch38 26dB Emission Bandwidth(MHz)



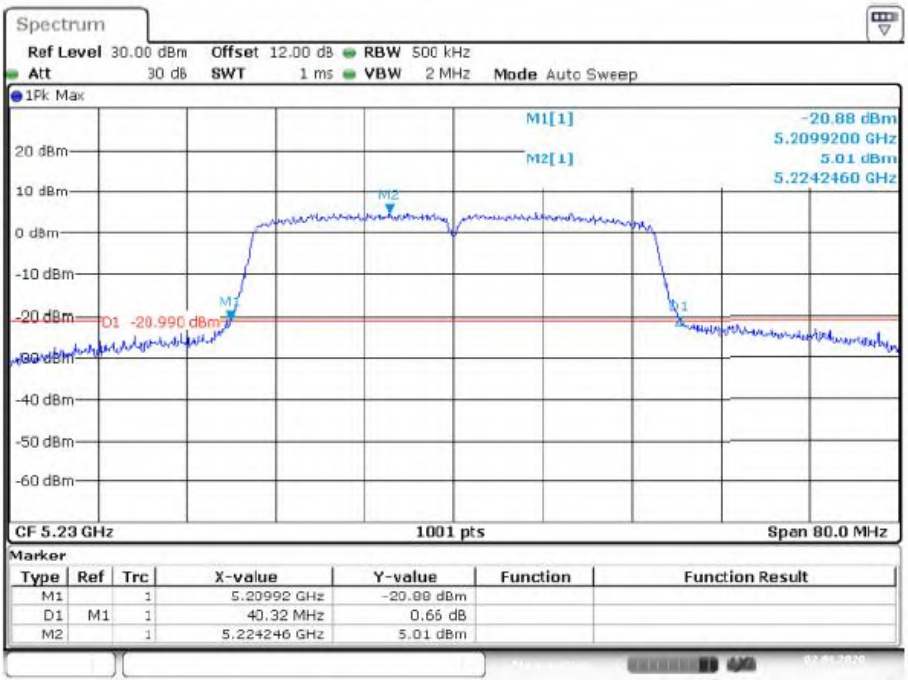
Antenna B 802.11n40 Ch46 26dB Emission Bandwidth(MHz)



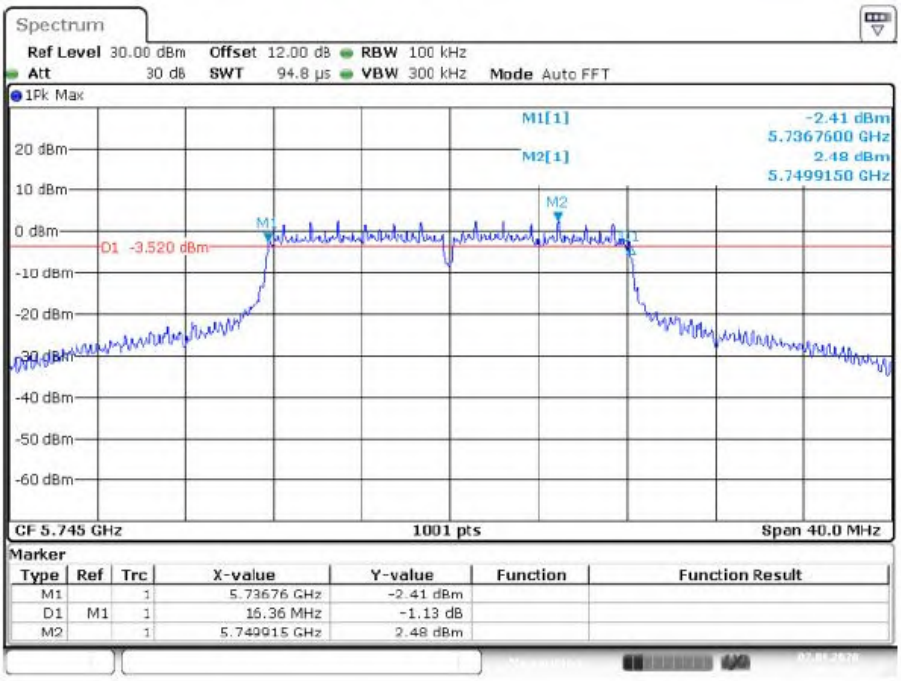
Antenna B 802.11ac40 Ch38 26dB Emission Bandwidth(MHz)



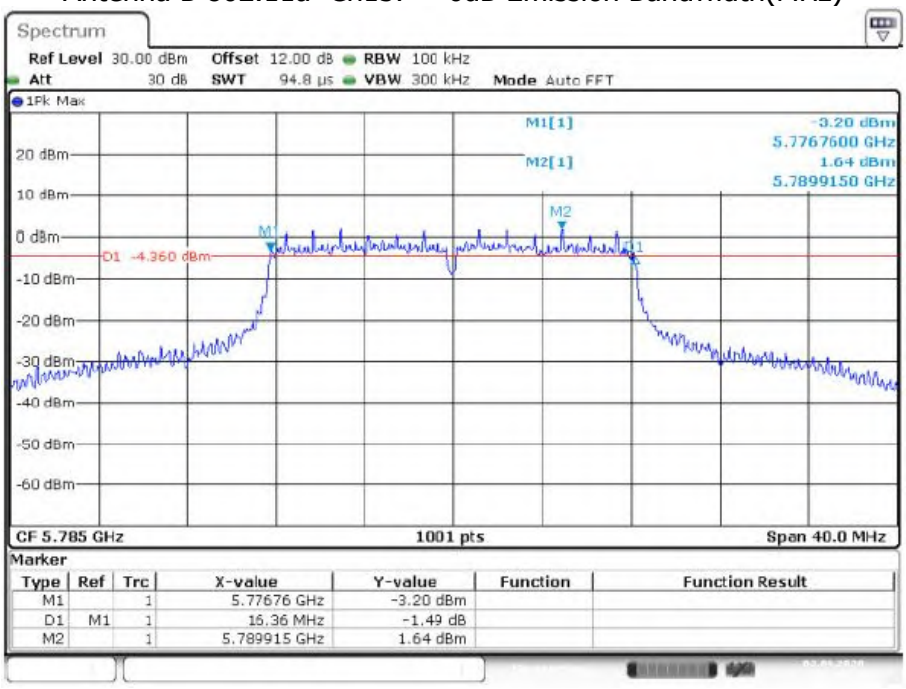
Antenna B 802.11ac40 Ch46 26dB Emission Bandwidth(MHz)



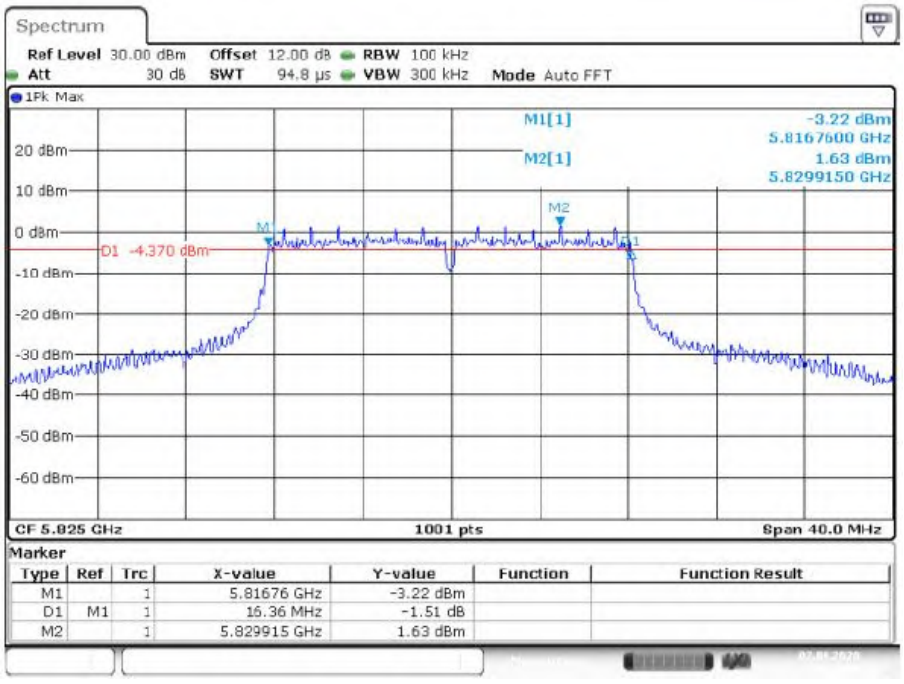
Antenna B 802.11a Ch149 6dB Emission Bandwidth(MHz)



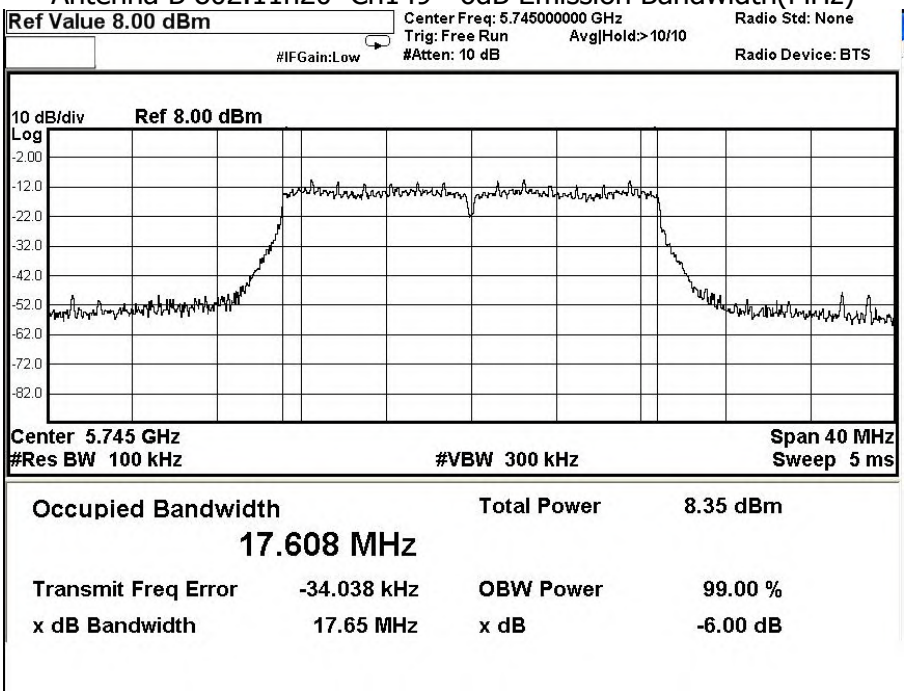
Antenna B 802.11a Ch157 6dB Emission Bandwidth(MHz)



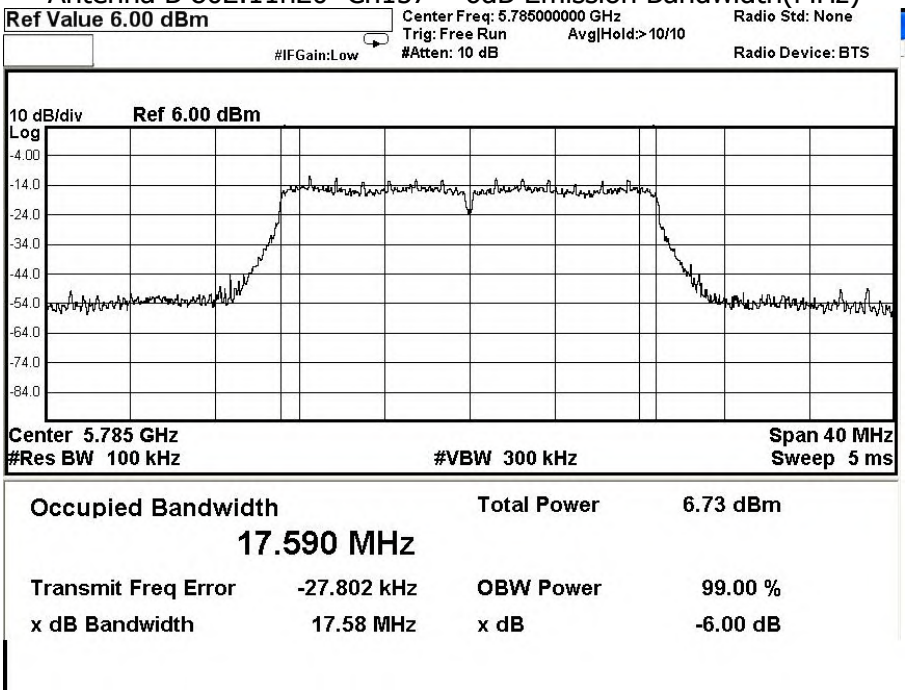
Antenna B 802.11a Ch169 6dB Emission Bandwidth(MHz)



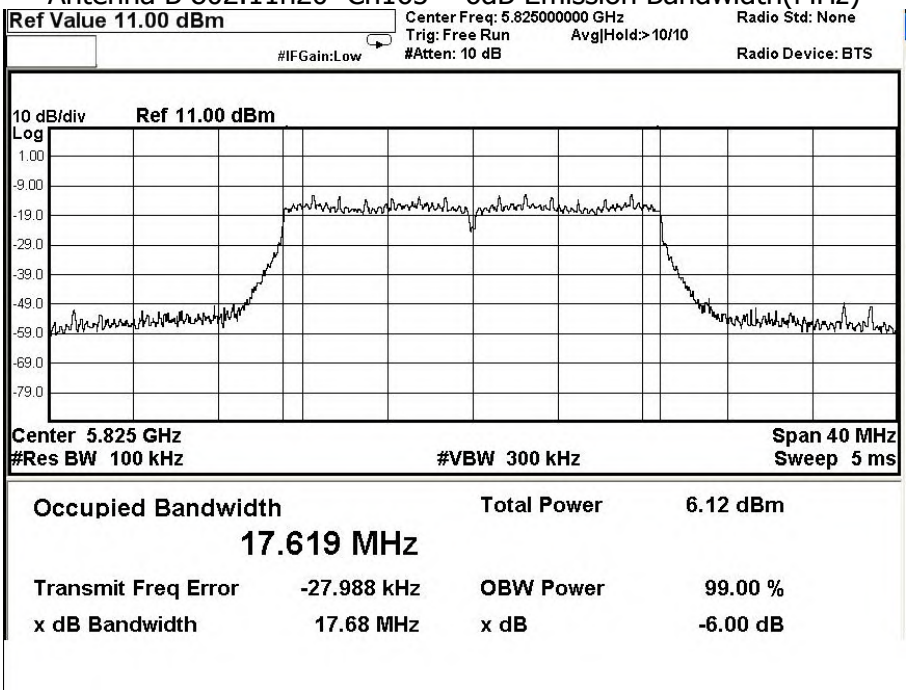
Antenna B 802.11n20 Ch149 6dB Emission Bandwidth(MHz)



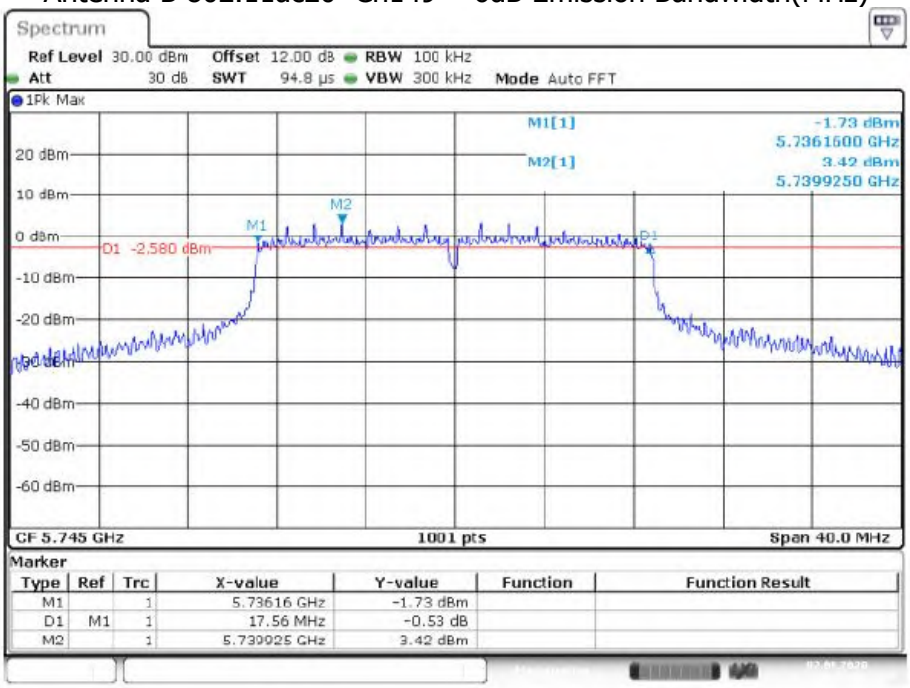
Antenna B 802.11n20 Ch157 6dB Emission Bandwidth(MHz)



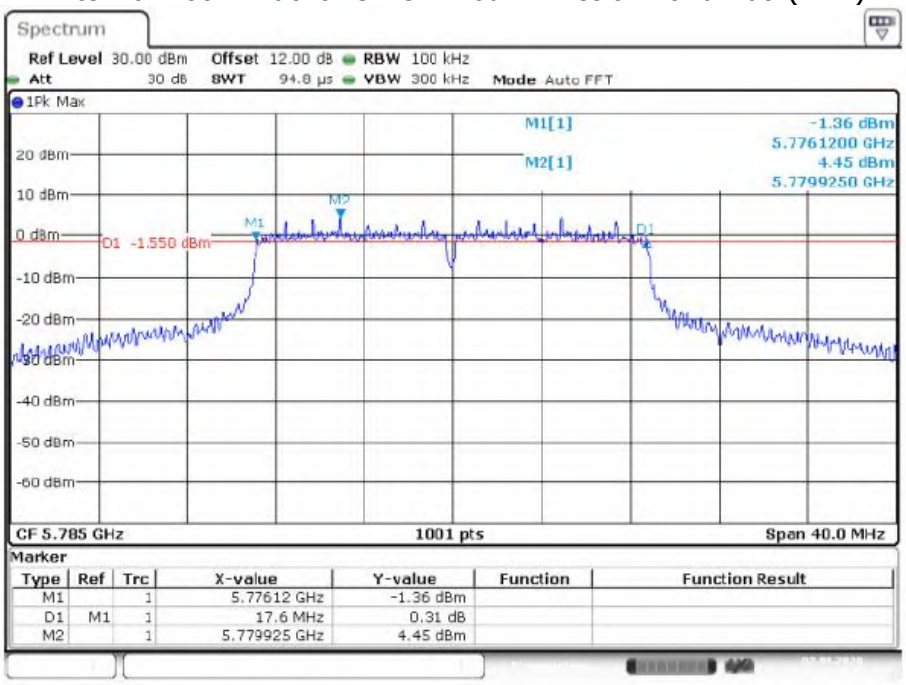
Antenna B 802.11n20 Ch165 6dB Emission Bandwidth(MHz)



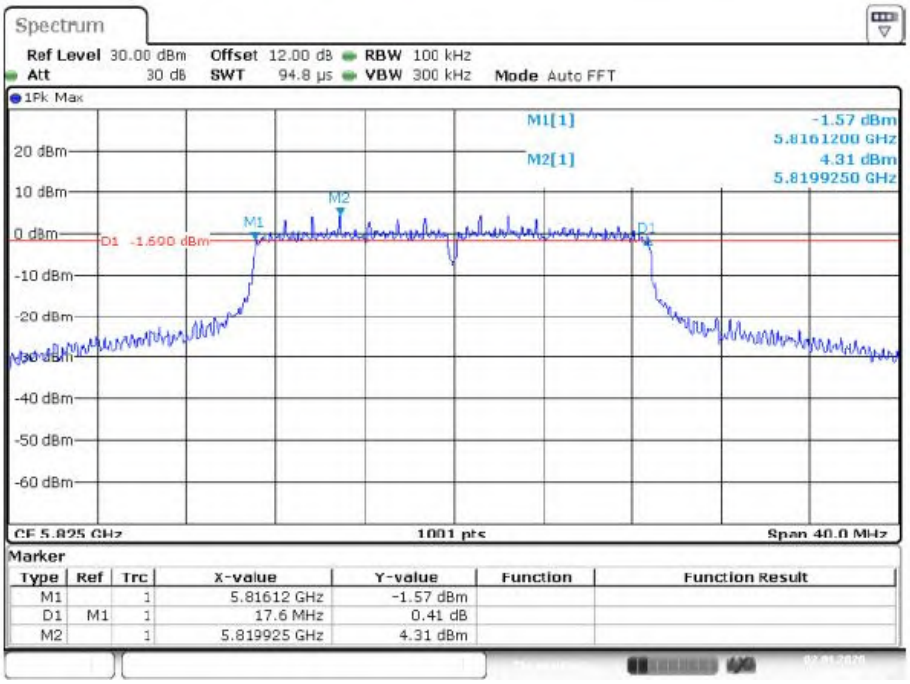
Antenna B 802.11ac20 Ch149 6dB Emission Bandwidth(MHz)



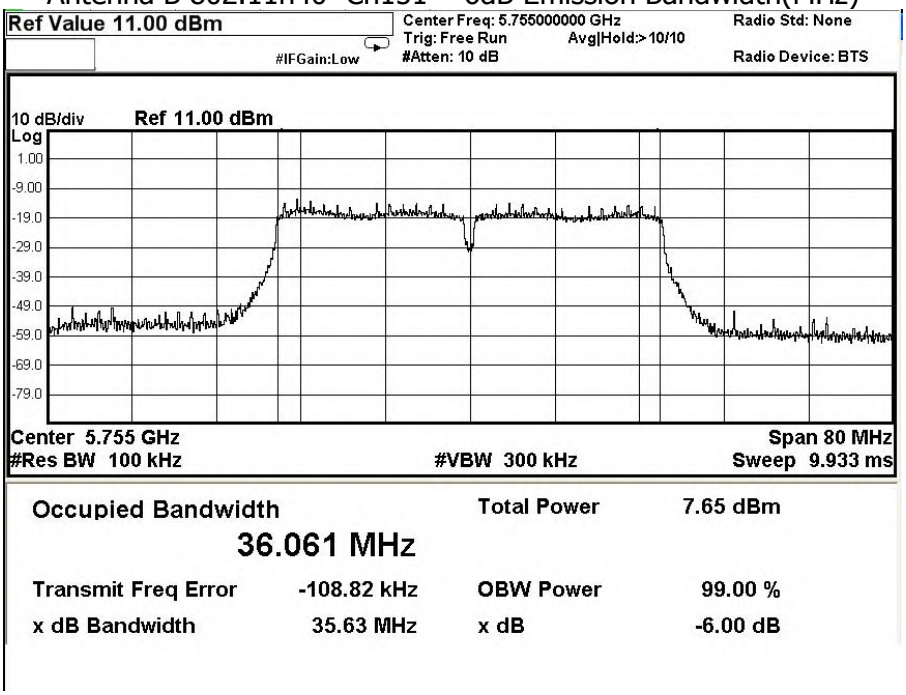
Antenna B 802.11ac20 Ch157 6dB Emission Bandwidth(MHz)



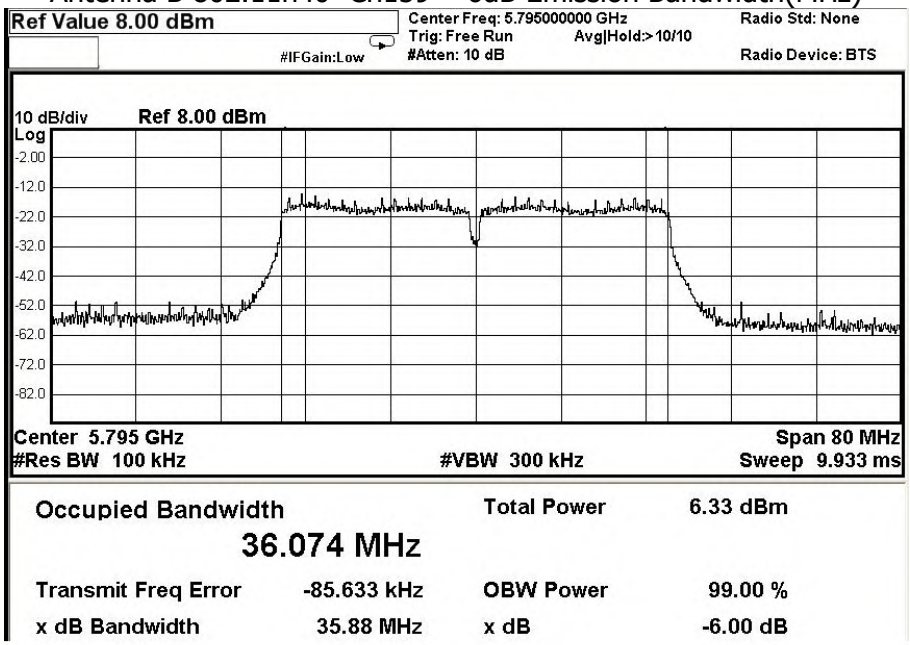
Antenna B 802.11ac20 Ch169 6dB Emission Bandwidth(MHz)



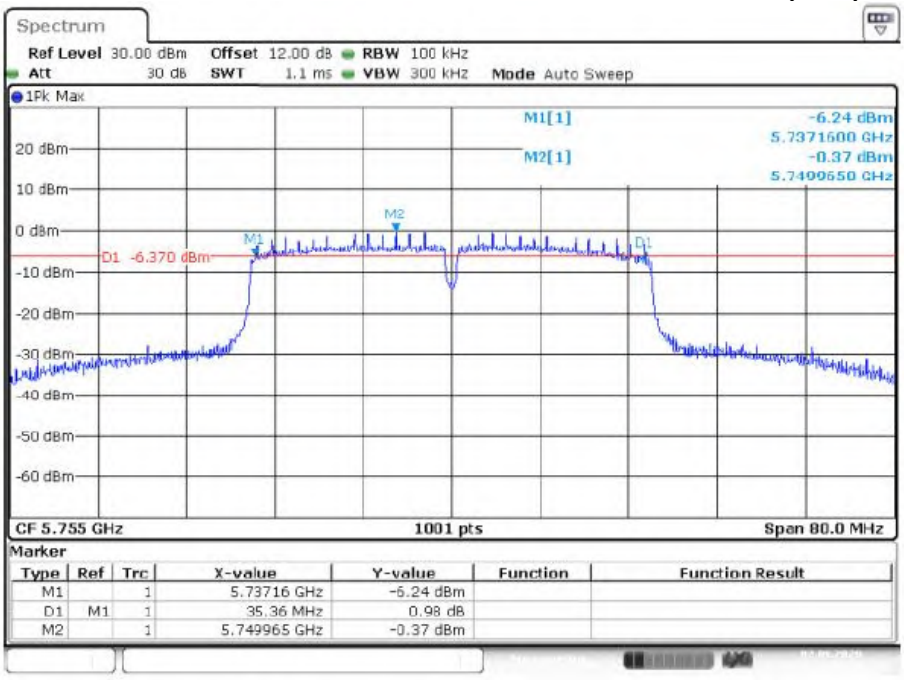
Antenna B 802.11n40 Ch151 6dB Emission Bandwidth(MHz)



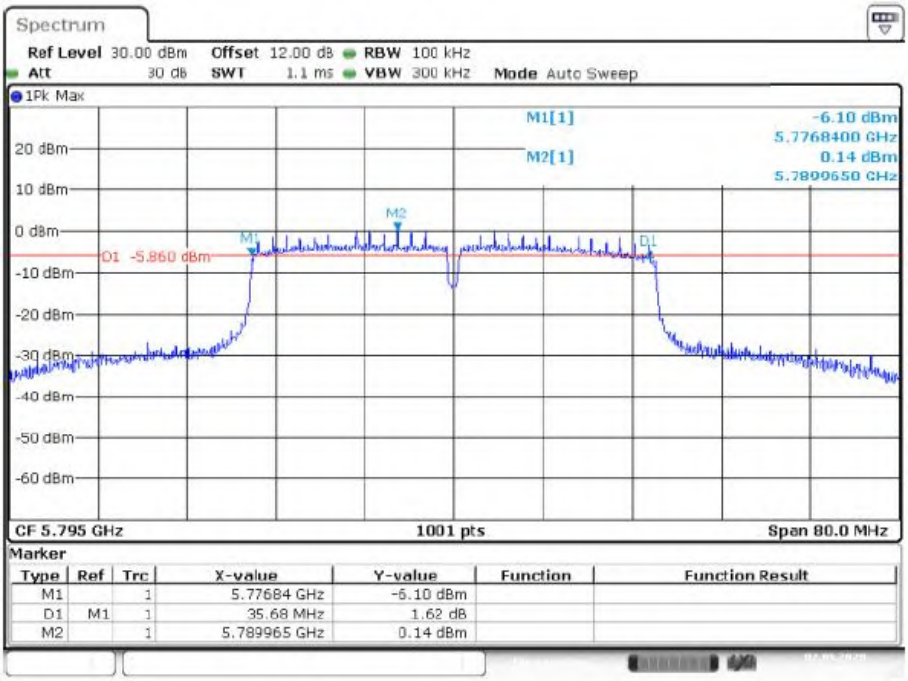
Antenna B 802.11n40 Ch159 6dB Emission Bandwidth(MHz)



Antenna B 802.11ac40 Ch151 6dB Emission Bandwidth(MHz)



Antenna B 802.11ac40 Ch159 6dB Emission Bandwidth(MHz)



8 Maximum Output Power

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013
Test Limit	:	For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 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.

8.1 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, 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 meter.

8.2 Test Result

Antenna A

Modulation	Maximum Average Output Power (dBm)			Limit
	Channel 36	Channel 40	Channel 48	
802.11a	18.768	18.747	18.809	0.25W(23.98dBm)
802.11n20	18.365	18.264	18.127	0.25W(23.98dBm)
802.11ac20	18.155	18.047	18.032	0.25W(23.98dBm)

Antenna A

Modulation	Maximum Average Output Power (dBm)			Limit
	Channel 149	Channel 157	Channel 165	
802.11a	19.669	19.836	19.245	1W(30dBm)
802.11n20	19.524	19.331	19.135	1W(30dBm)
802.11ac20	19.024	19.124	19.007	1W(30dBm)

Antenna A

Modulation	Maximum Average Output Power (dBm)		Limit
	Channel 38	Channel 46	
802.11n40	16.534	16.774	0.25W(23.98dBm)
802.11ac40	16.698	16.732	0.25W(23.98dBm)

Antenna A

Modulation	Maximum Average Output Power (dBm)		Limit
	Channel 151	Channel 159	
802.11n40	19.935	19.784	1W(30dBm)
802.11ac40	19.669	19.157	1W(30dBm)

Antenna B

Modulation	Maximum Average Output Power (dBm)			Limit
	Channel 36	Channel 40	Channel 48	
802.11a	17.669	17.725	17.814	0.25W(23.98dBm)
802.11n20	17.336	17.411	17.059	0.25W(23.98dBm)
802.11ac20	17.068	17.012	17.006	0.25W(23.98dBm)

Antenna B

Modulation	Maximum Average Output Power (dBm)			Limit
	Channel 149	Channel 157	Channel 165	
802.11a	18.523	18.745	18.889	1W(30dBm)
802.11n20	17.056	18.224	18.316	1W(30dBm)
802.11ac20	18.007	18.065	18.021	1W(30dBm)

Antenna B

Modulation	Maximum Average Output Power (dBm)		Limit
	Channel 38	Channel 46	
802.11n40	16.203	16.114	0.25W(23.98dBm)
802.11ac40	16.214	16.039	0.25W(23.98dBm)

Antenna B

Modulation	Maximum Average Output Power (dBm)		Limit
	Channel 151	Channel 159	
802.11n40	18.221	18.305	1W(30dBm)
802.11ac40	18.412	18.275	1W(30dBm)

9 Power Spectral density

Test Requirement	:	FCC CFR47 Part 15 Section 15.2407(a)
Test Method	:	ANSI C63.10:2013
Test Limit	:	For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 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-kHzband. 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

9.1 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI 63.10: 2013 Sec 10.3.7.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 the RBW to 1 MHz.

b) Set the VBW to be at least 1 MHz (a VBW of 3 MHz is desirable).

c) Set the frequency span to examine the spectrum across a convenient frequency segment (e.g., 600 MHz).

d) Select the power averaging (rms) detector.

e) Set the sweep time so that there is no more than a 1 ms integration period over each measurement bin.

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

9.2 Test Result

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations / data rates and antenna ports.

Following channel was selected for the final test as listed below

Antenna A

Modulation	Power Spectral density (dBm/MHz)			Limit(dBm/MHz)
	Channel 36	Channel 40	Channel 48	
802.11a	8.53	9.01	8.68	11
802.11Ac20	8.67	8.72	8.63	11

Antenna A

Modulation	Power Spectral density (dBm/MHz)		Limit(dBm/MHz)
	Channel 38	Channel 46	
802.11Ac40	4.24	7.29	11

Antenna A

Modulation	Power Spectral density (dBm/500KHz)			Limit (dBm/500KHz)
	Channel 149	Channel 157	Channel 165	
802.11a	13.84	13.82	13.30	30
802.11ac20	13.47	13.21	12.91	30

Antenna A

Modulation	Power Spectral density (dBm/500KHz)		Limit (dBm/500KHz)
	Channel 151	Channel 159	
802.11ac40	9.57	9.61	30

Antenna B

Modulation	Power Spectral density (dBm/MHz)			Limit(dBm/MHz)
	Channel 36	Channel 40	Channel 48	
802.11a	8.16	8.21	8.24	11
802.11Ac20	8.37	8.47	8.39	11

Antenna B

Modulation	Power Spectral density (dBm/MHz)		Limit(dBm/MHz)
	Channel 38	Channel 46	
802.11Ac40	4.10	7.01	11

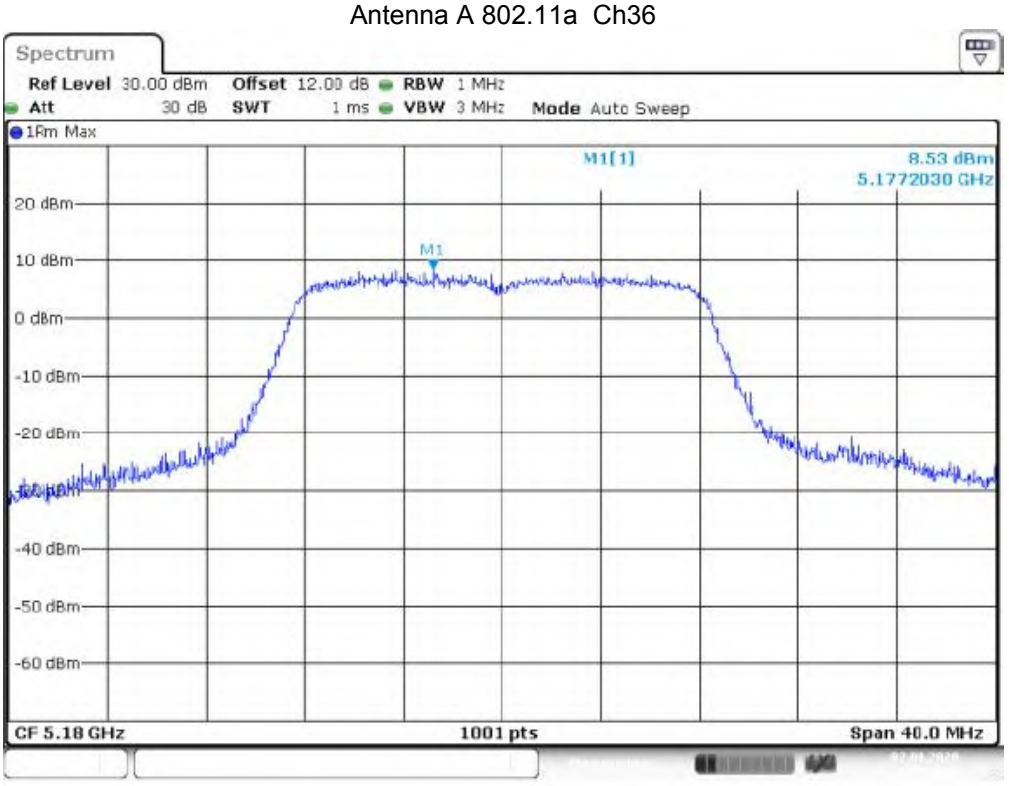
Antenna B

Modulation	Power Spectral density (dBm/500KHz)			Limit (dBm/500KHz)
	Channel 149	Channel 157	Channel 165	
802.11a	11.8	11.65	11.63	30
802.11ac20	11.45	11.41	11.30	30

Antenna B

Modulation	Power Spectral density (dBm/500KHz)		Limit (dBm/500KHz)
	Channel 151	Channel 159	
802.11ac40	8.45	8.85	30

Antenna A 802.11a Ch36



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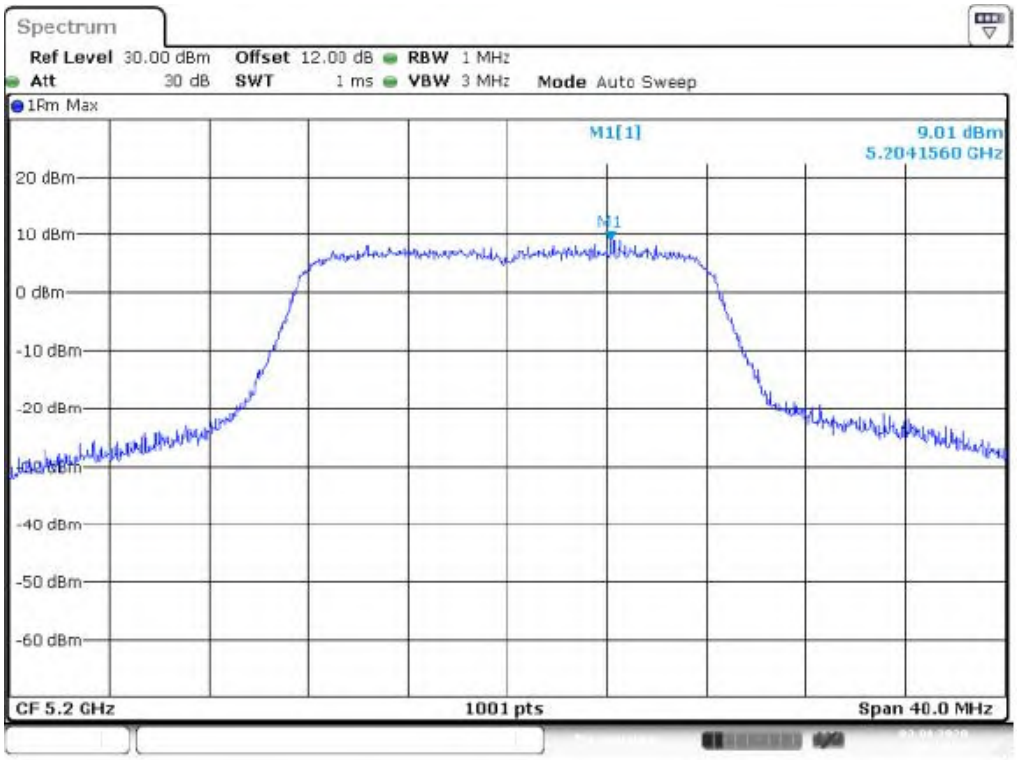
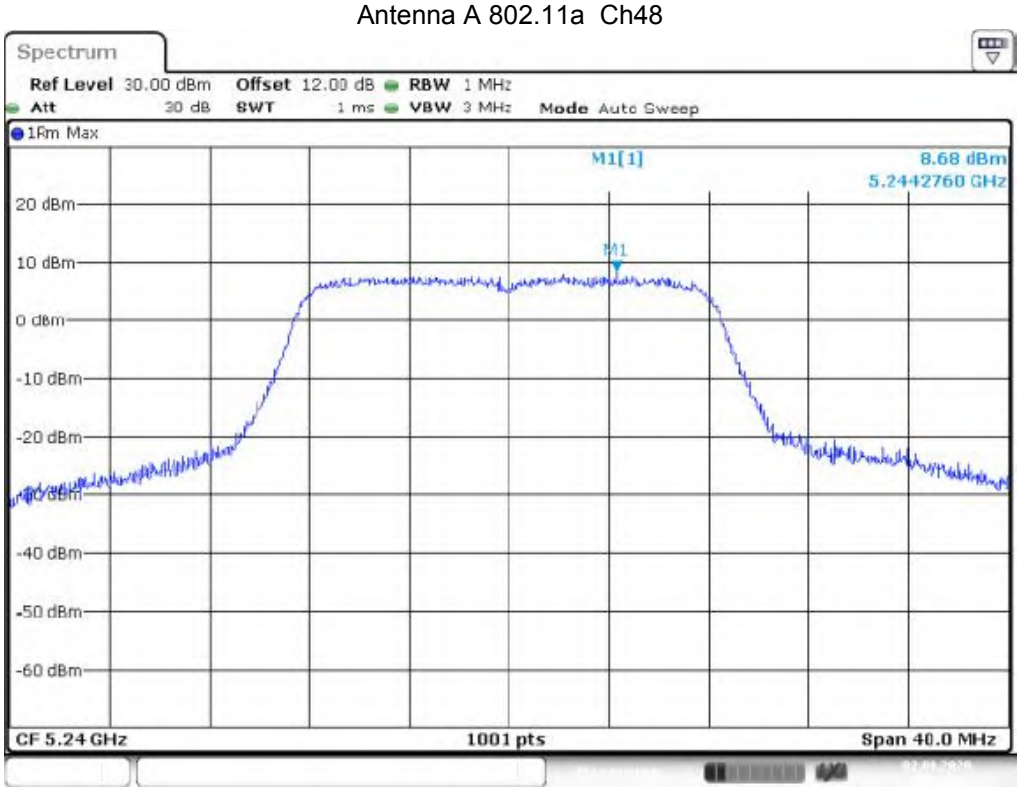


Antenna A 802.11a Ch48



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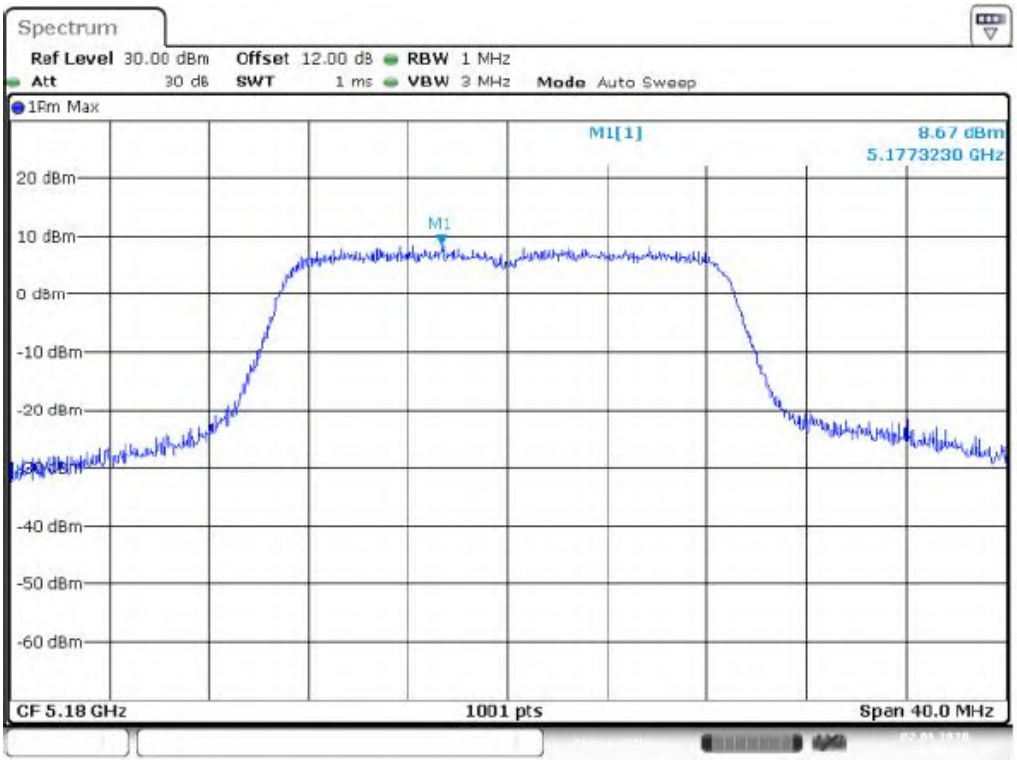

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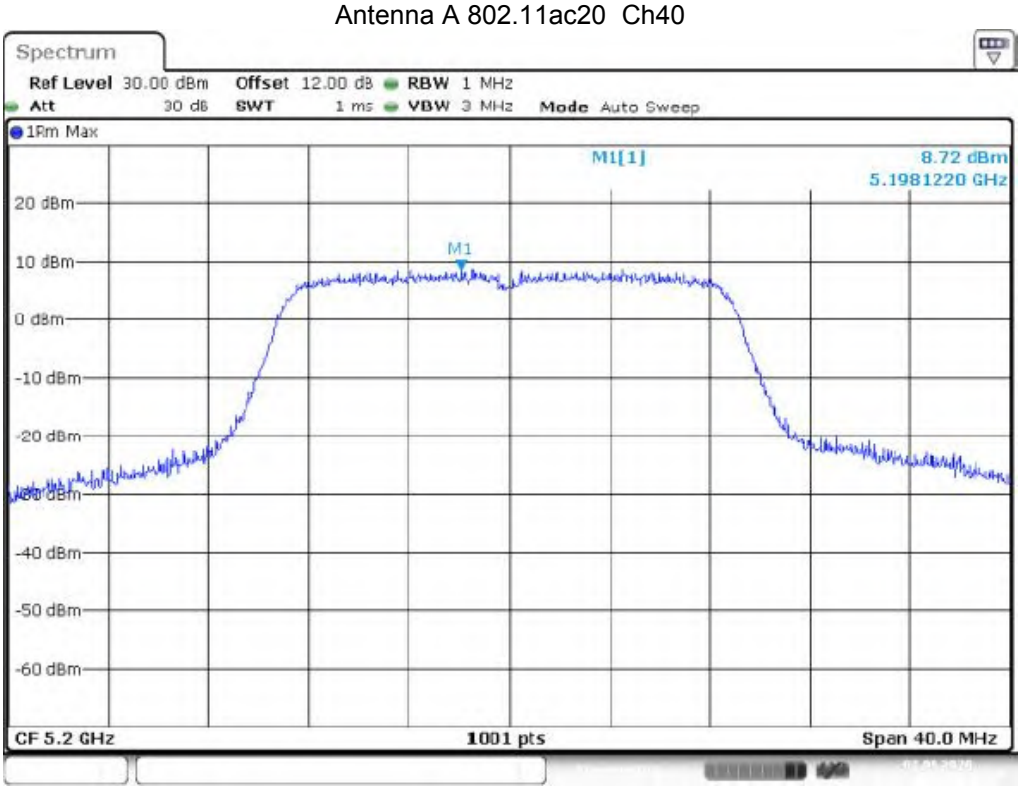

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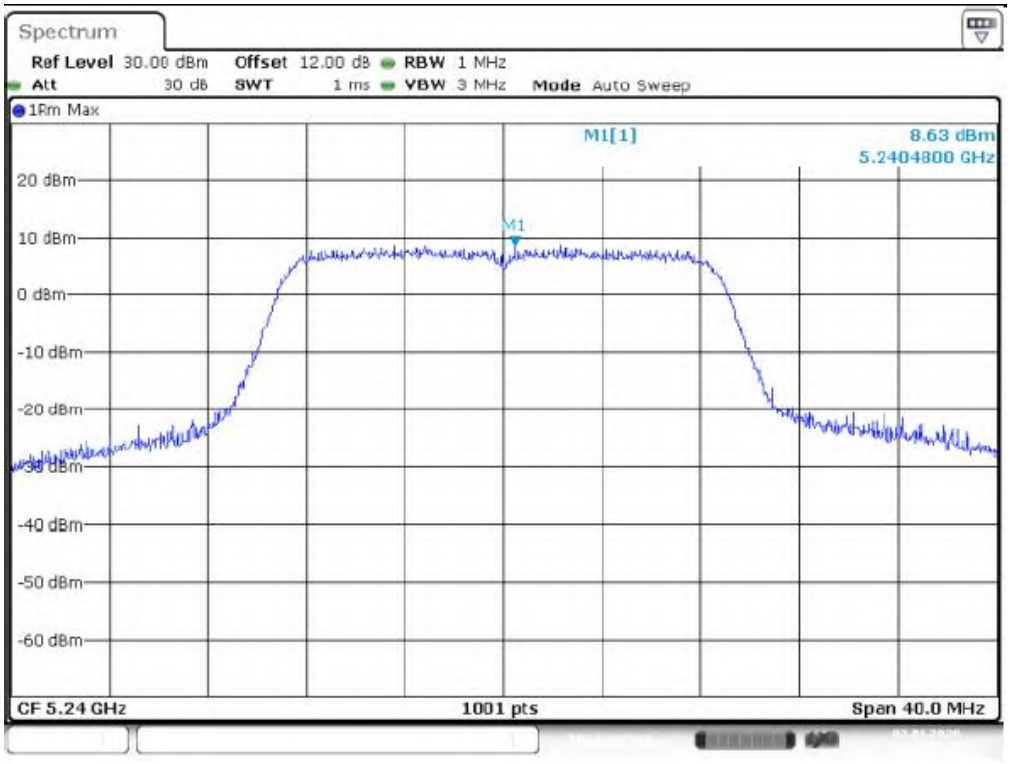

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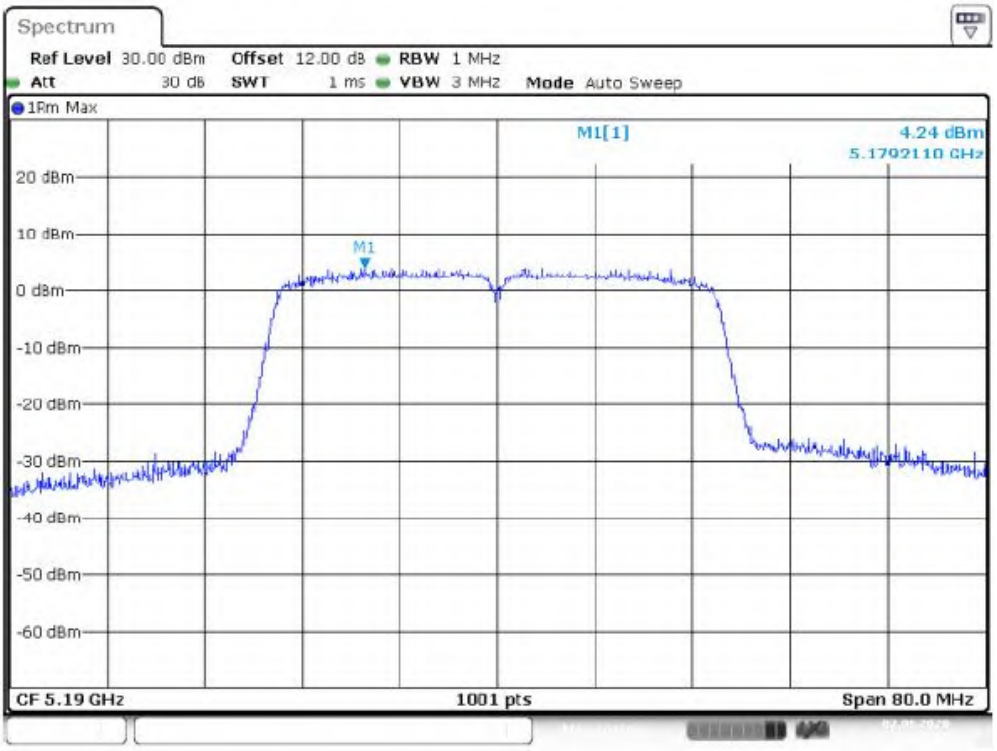

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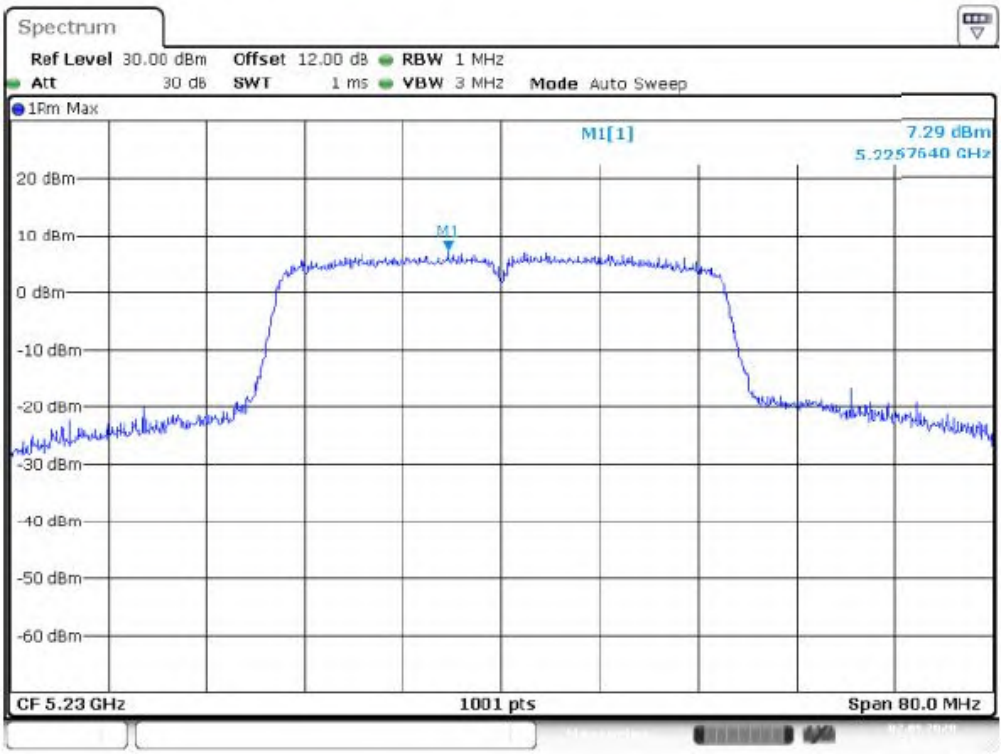
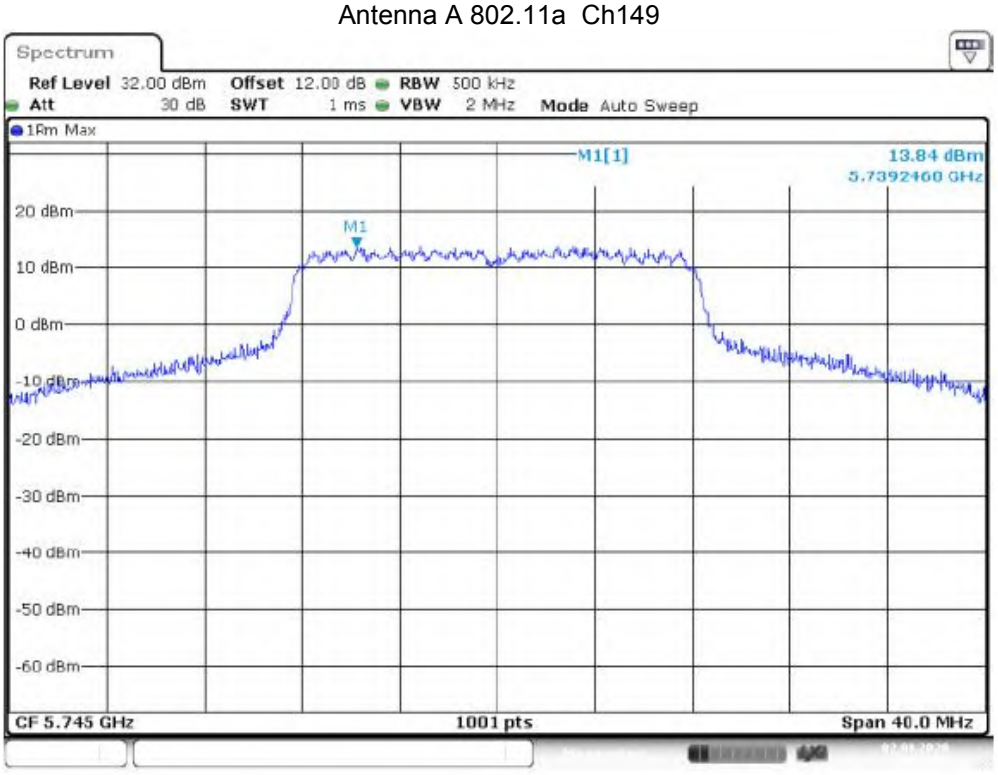
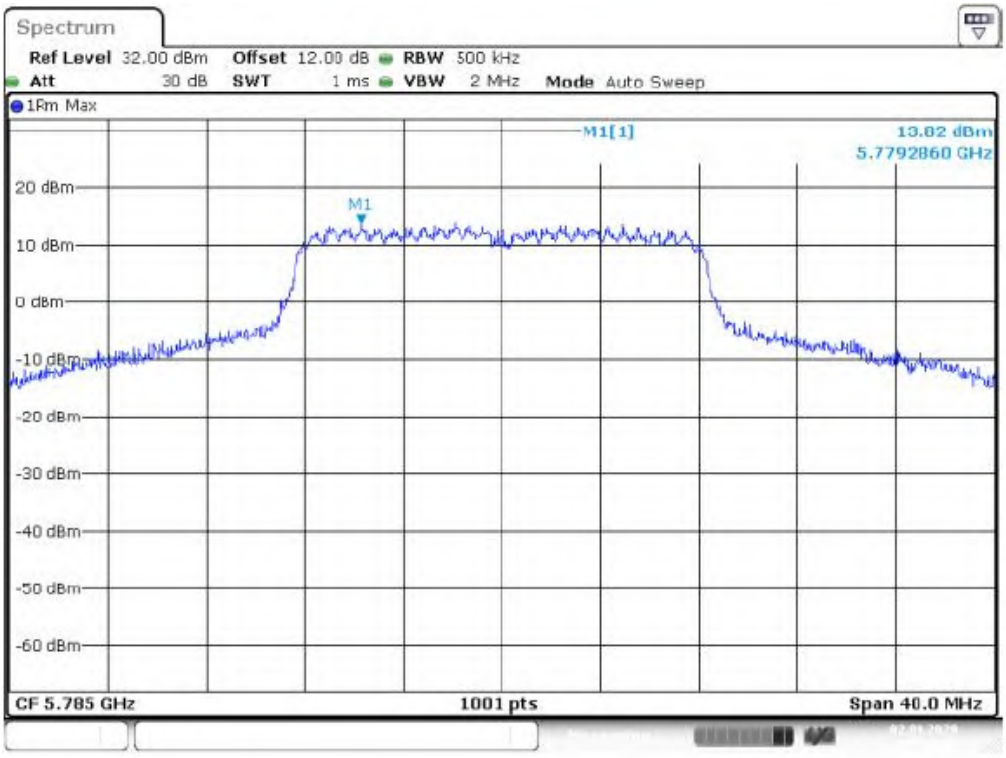


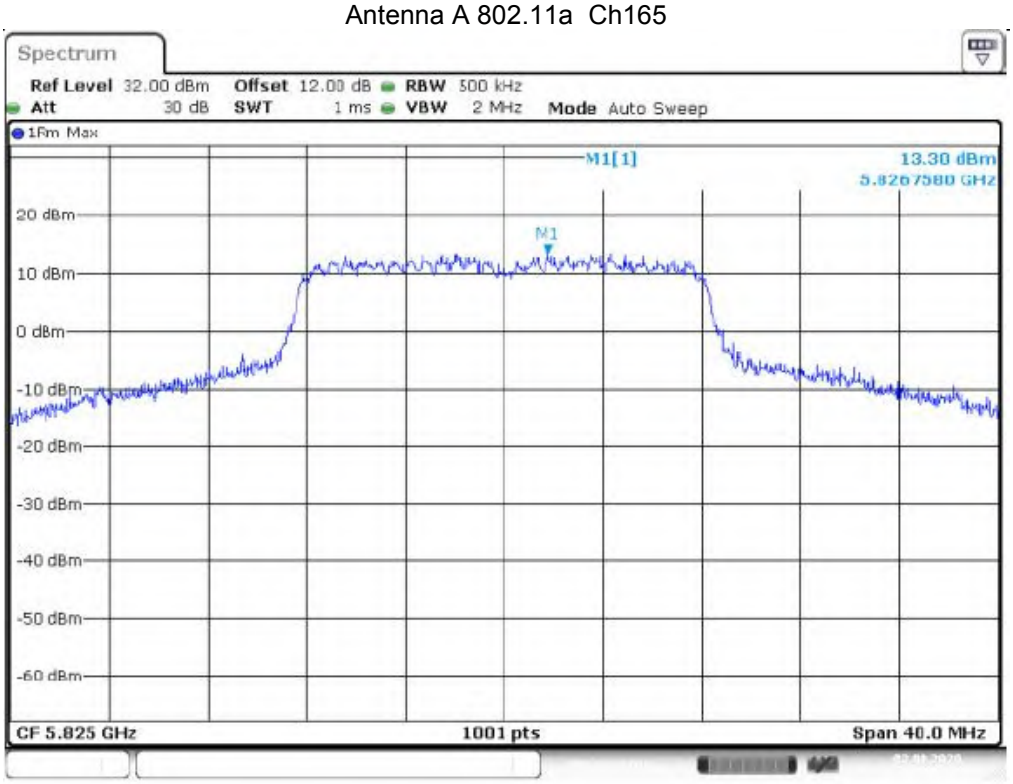
Antenna A 802.11a Ch149



Antenna A 802.11a Ch157



Antenna A 802.11a Ch165



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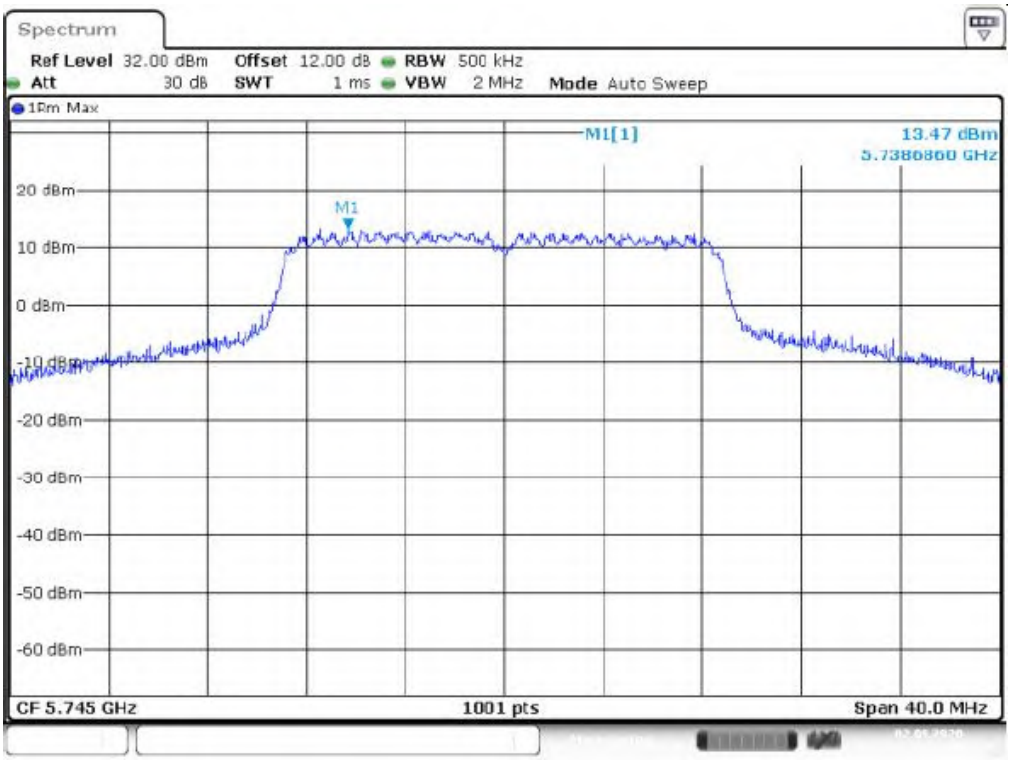

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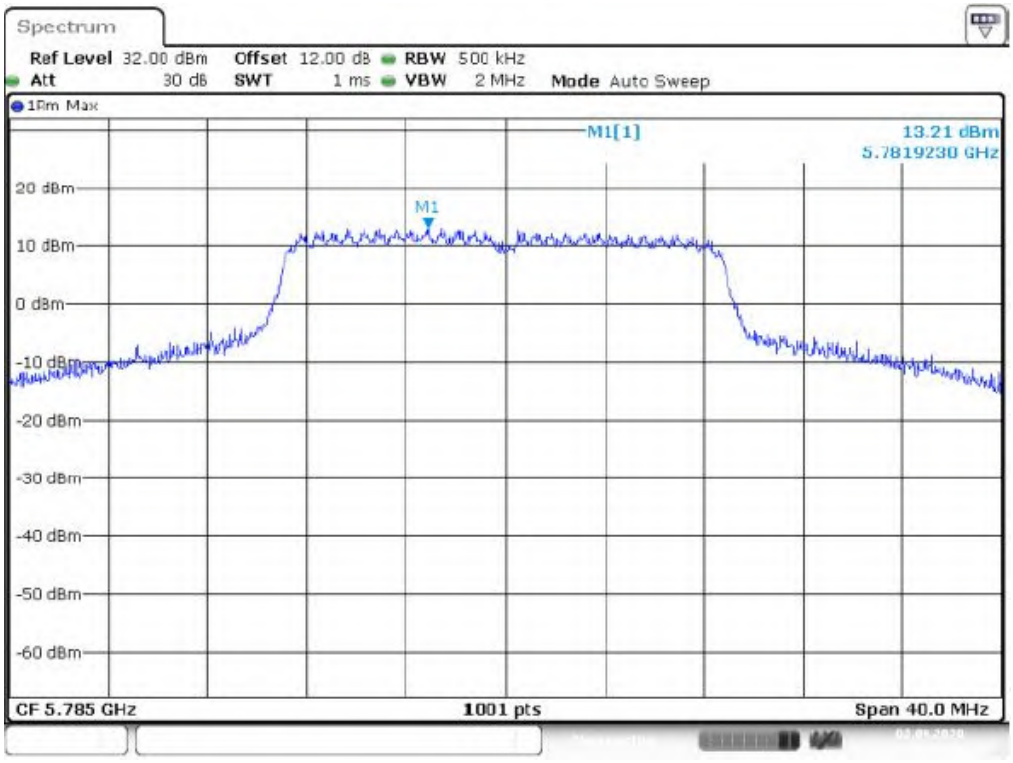

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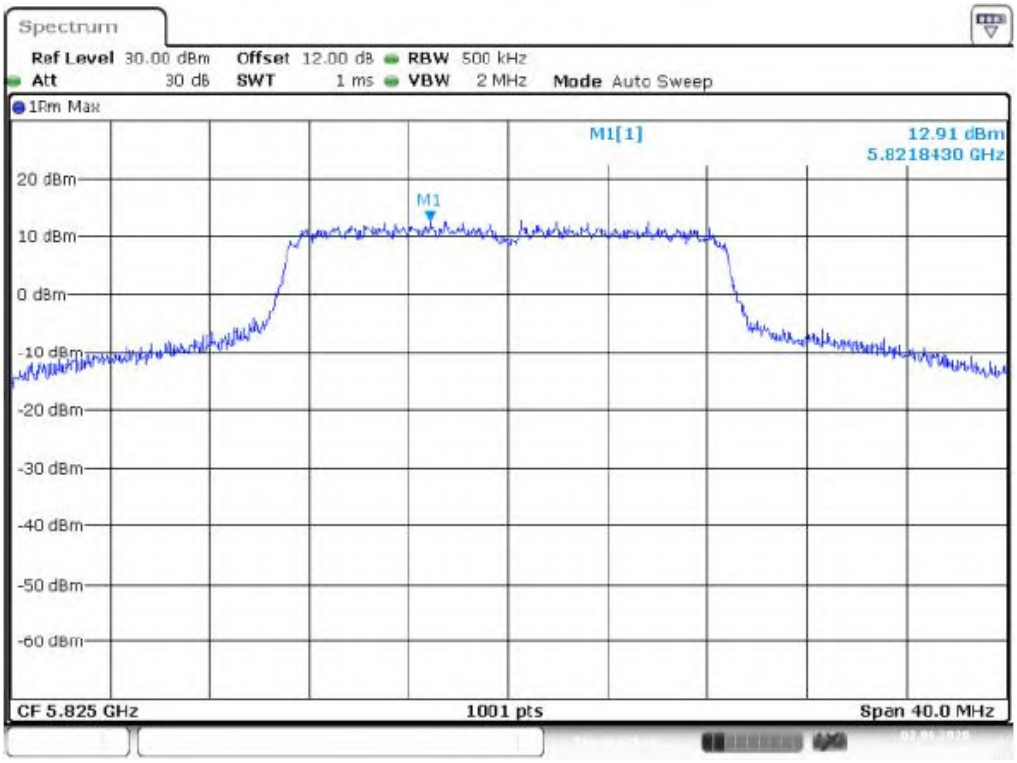

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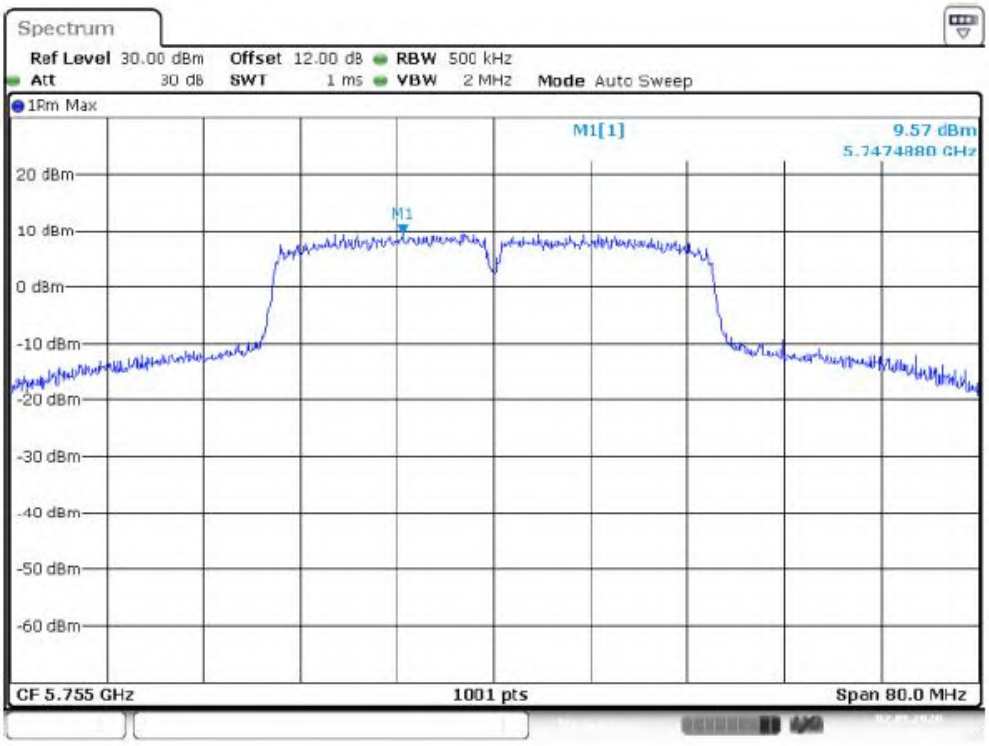

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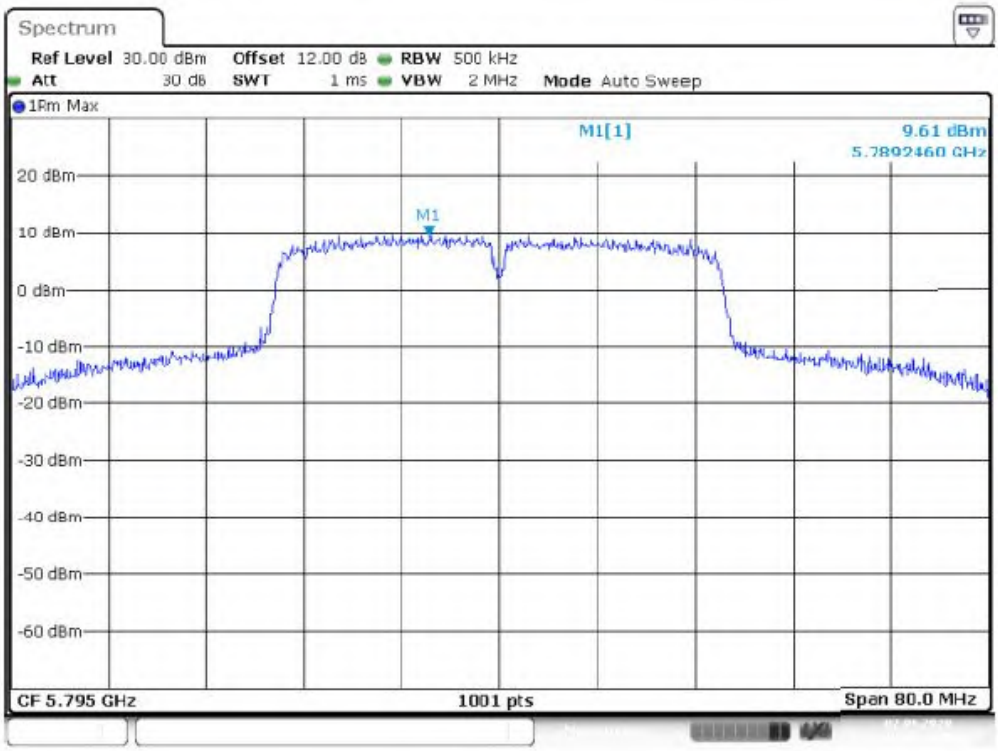
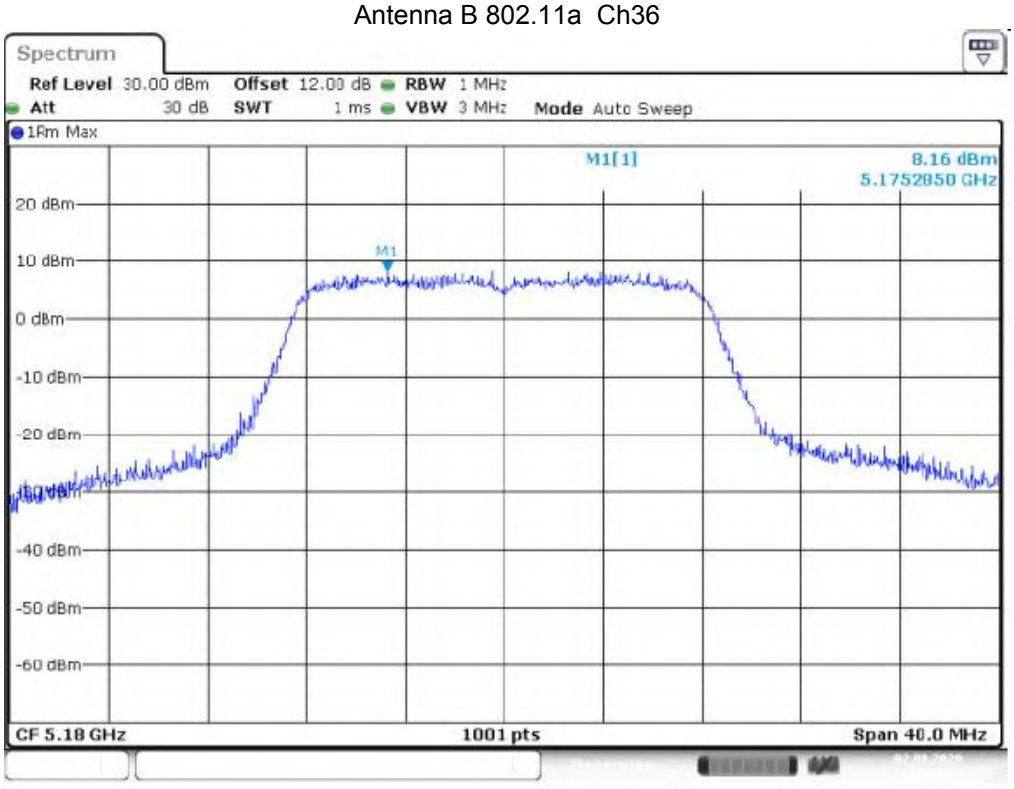


Antenna B 802.11a Ch36



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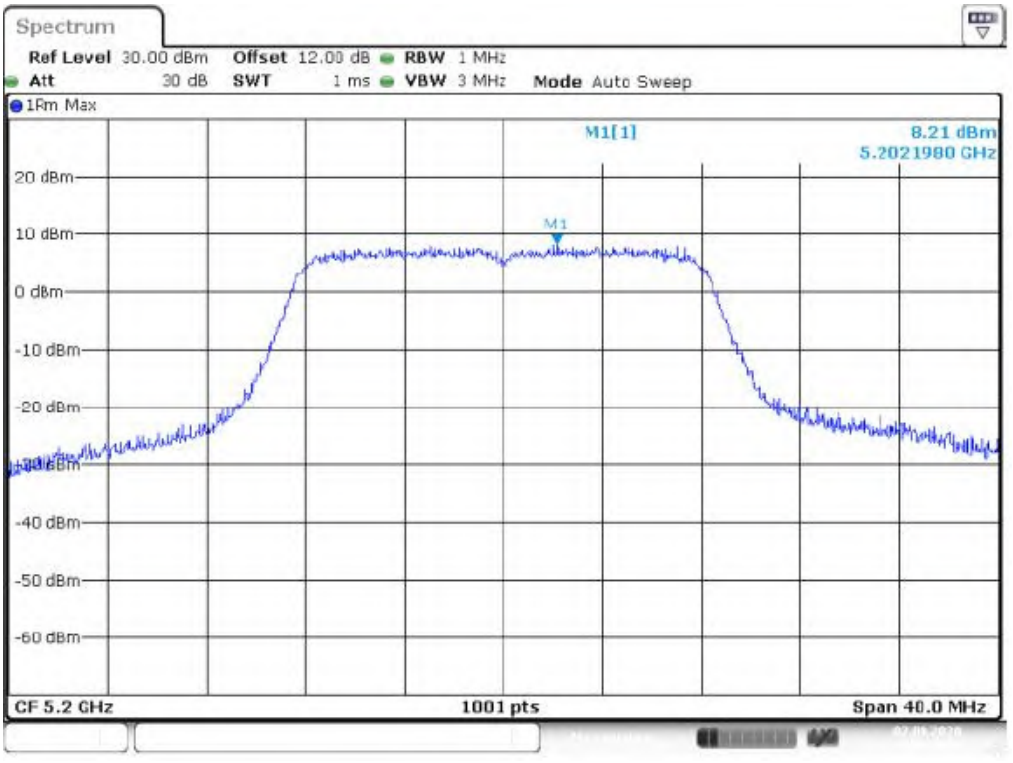

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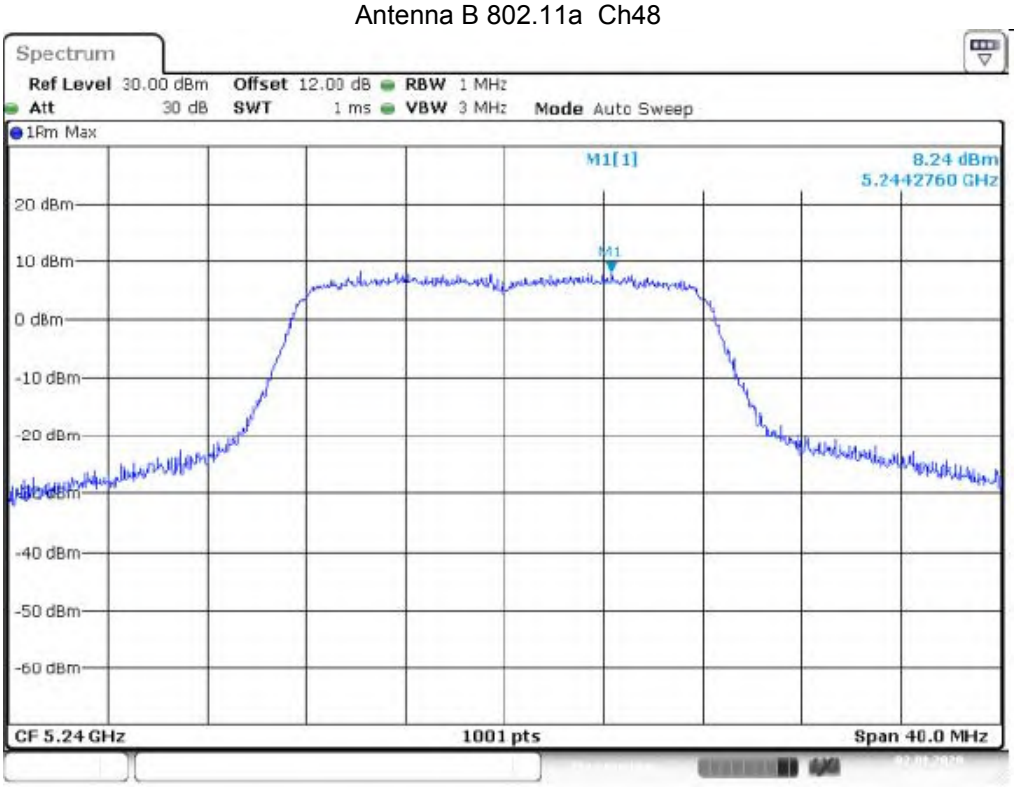

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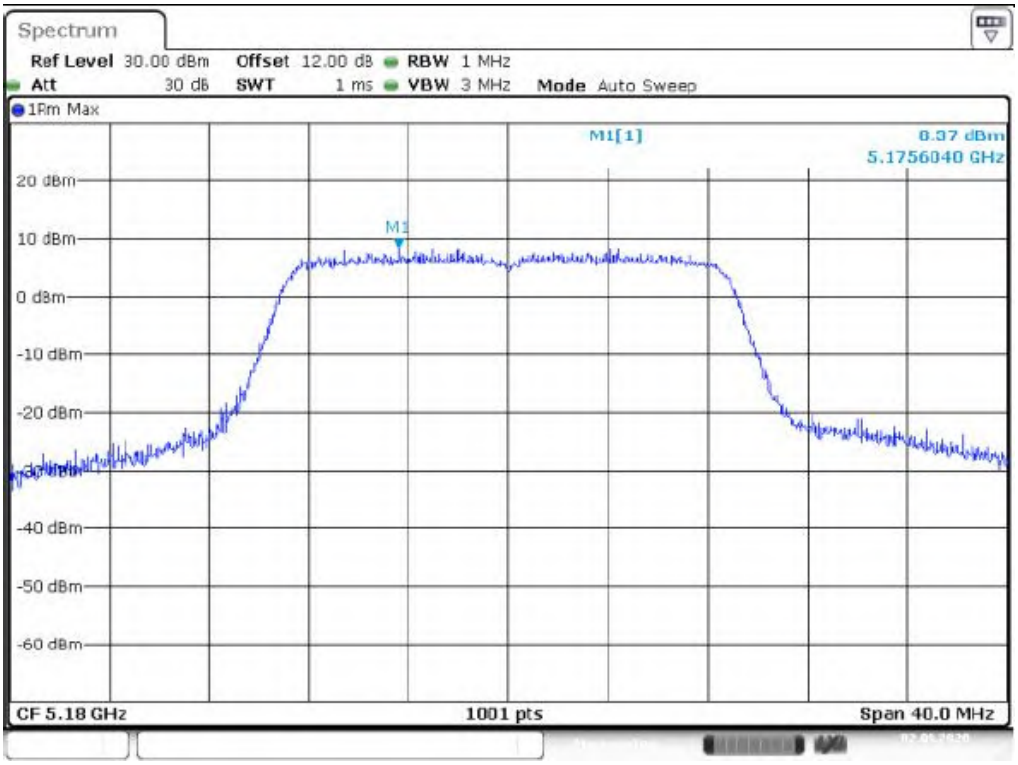

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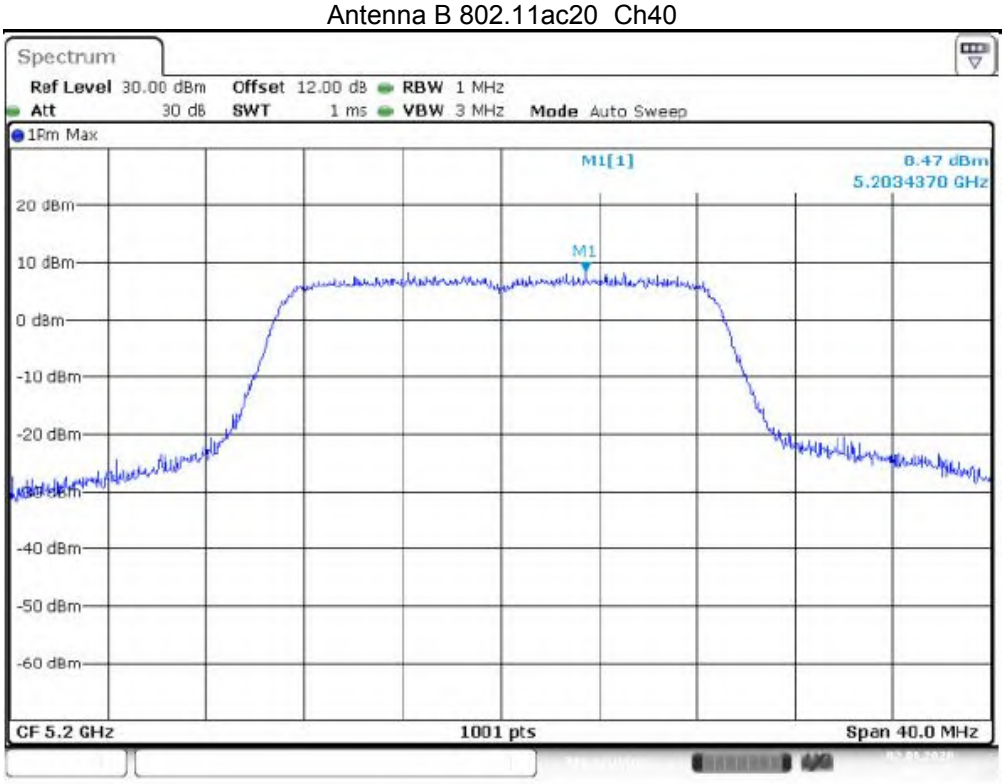

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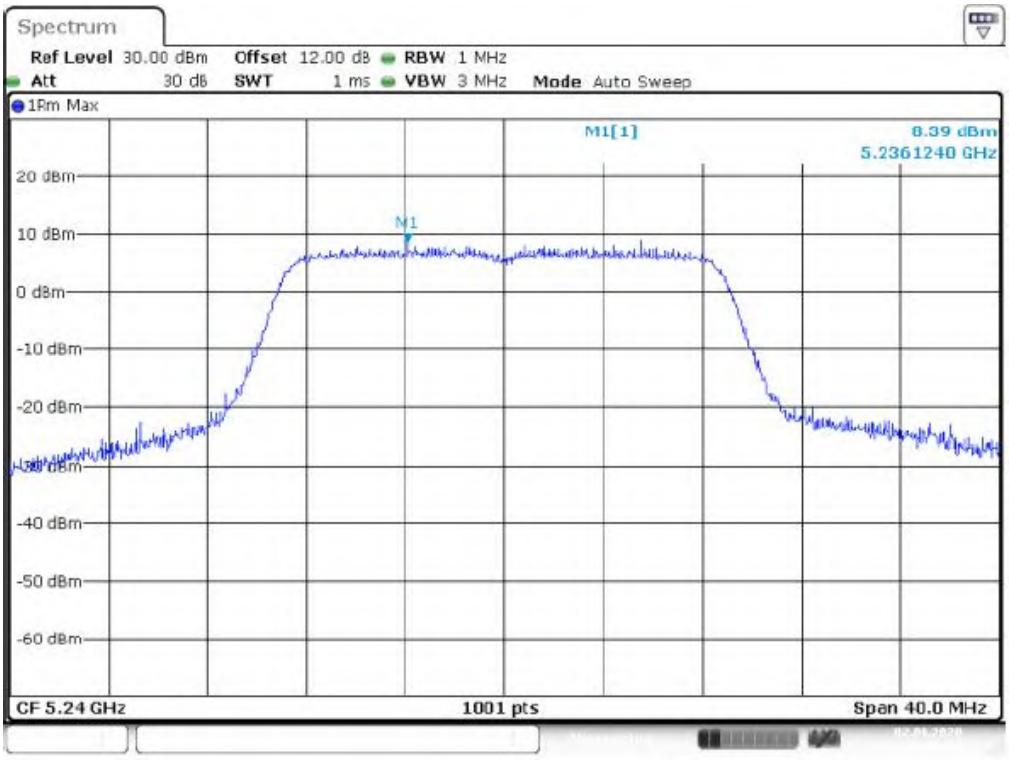

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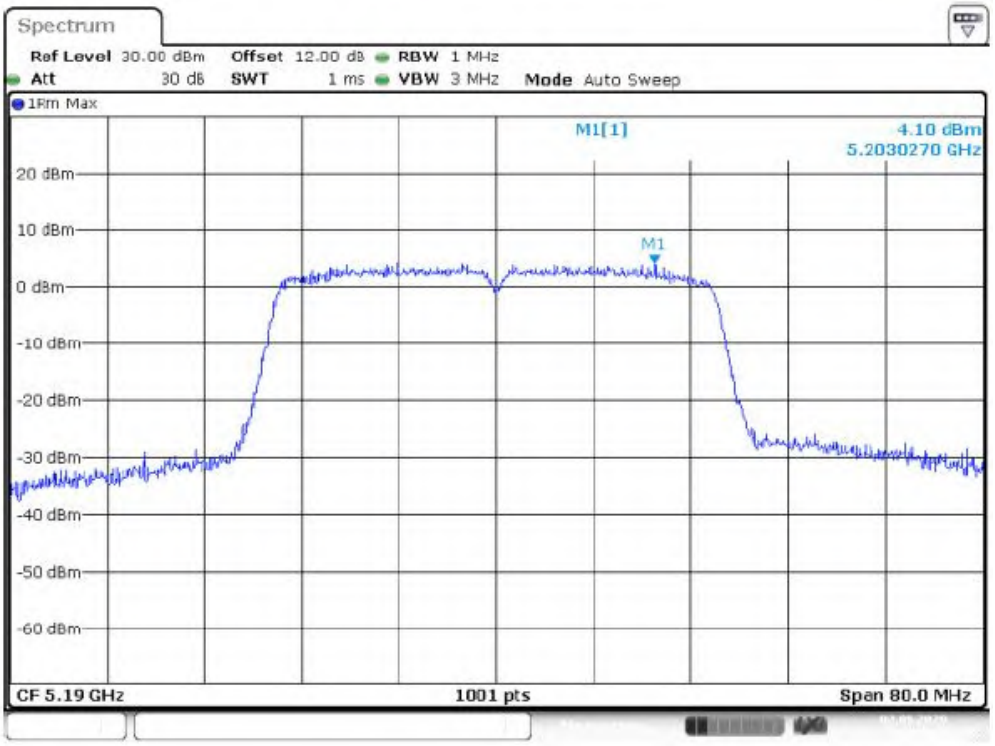

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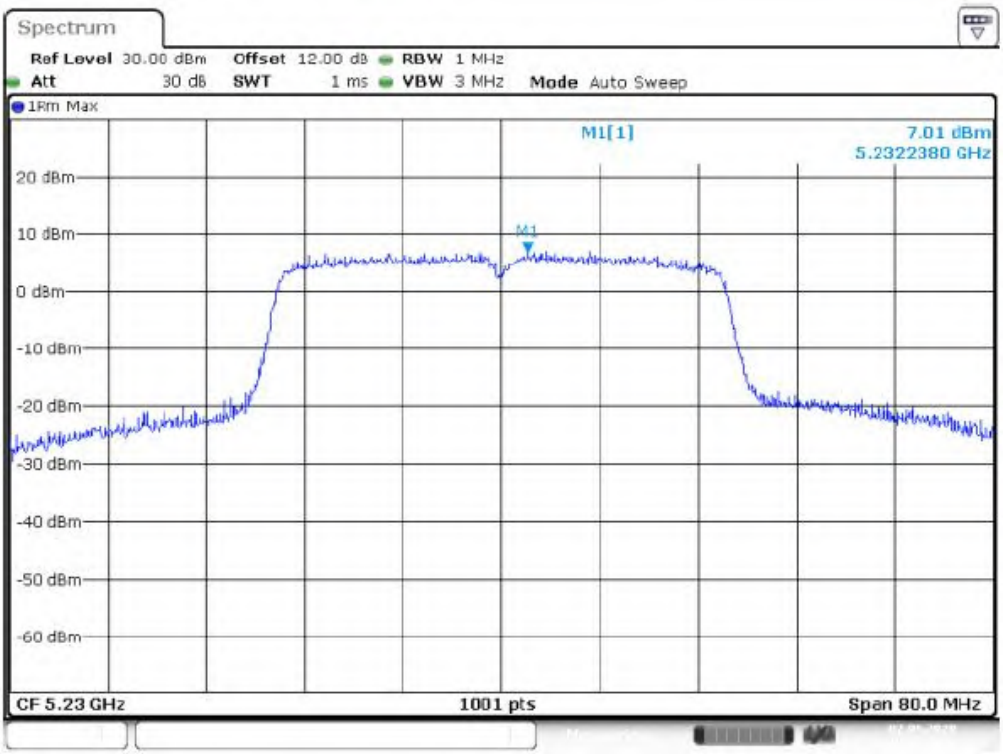

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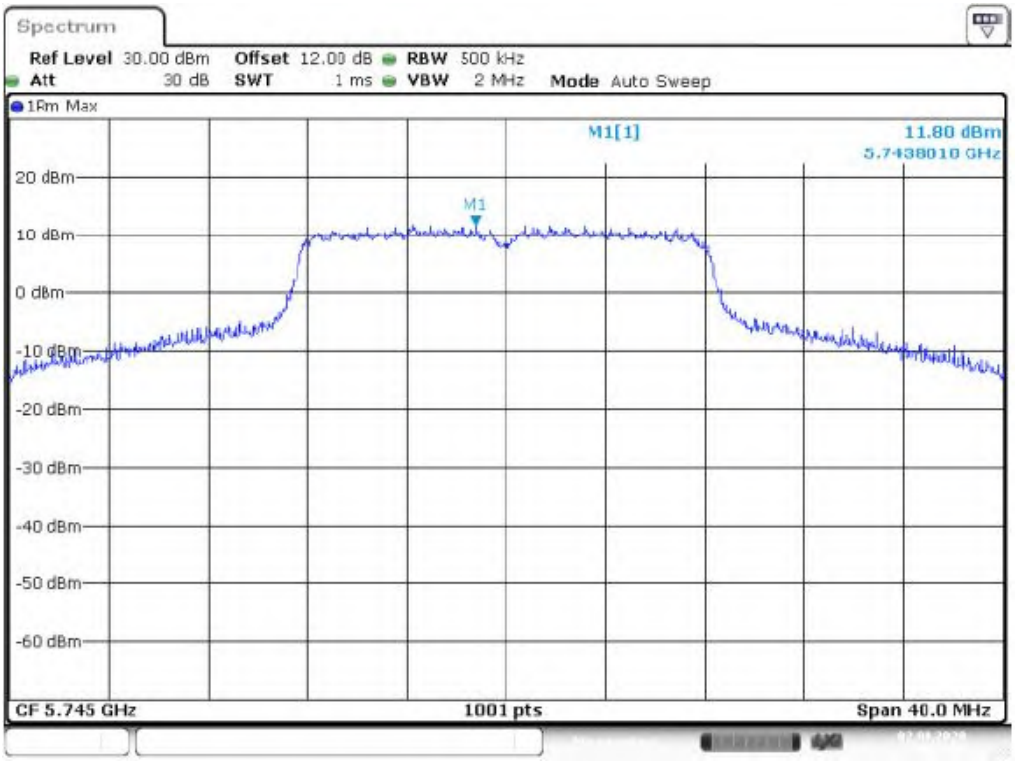

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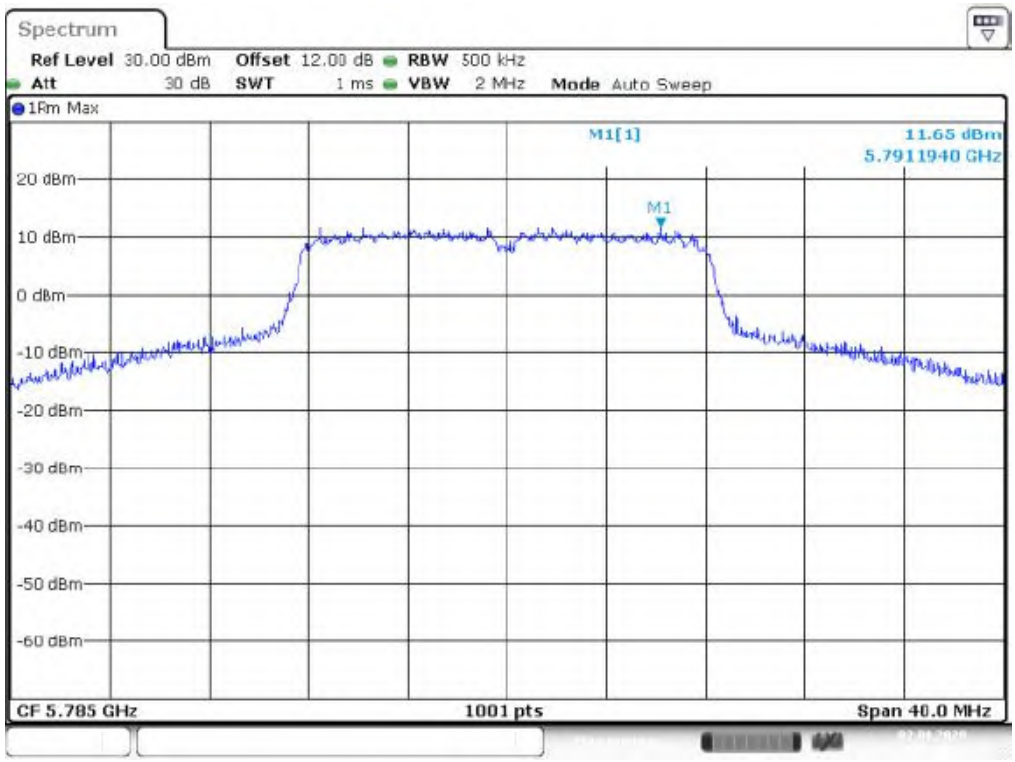

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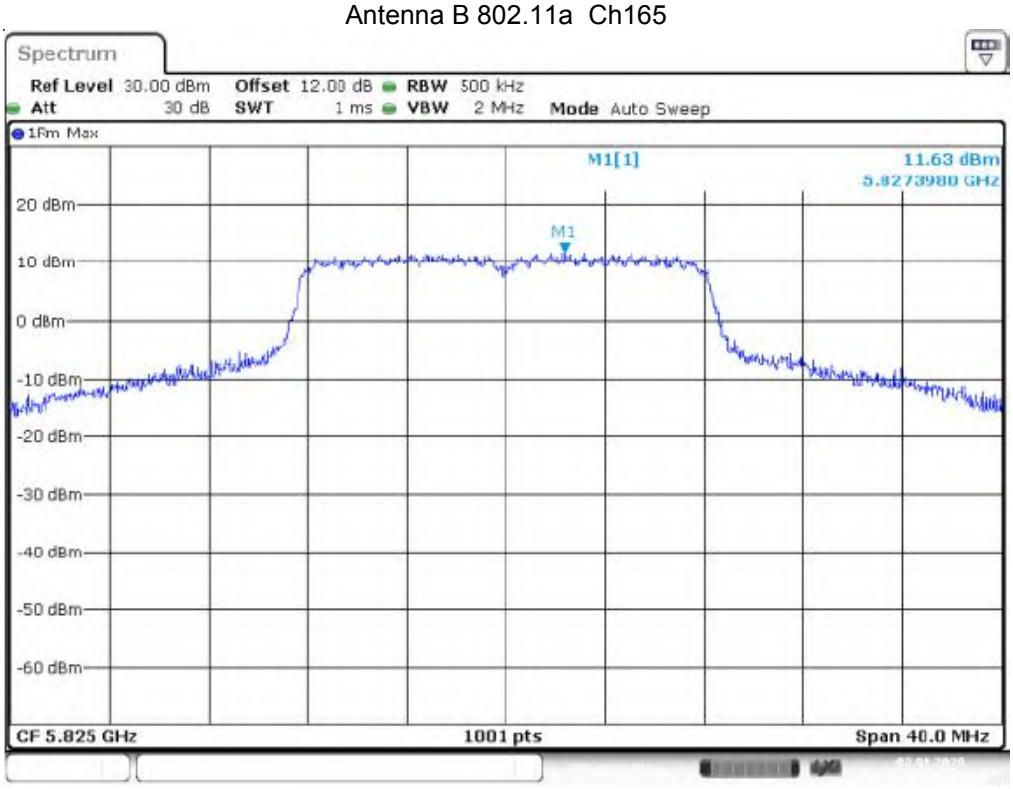

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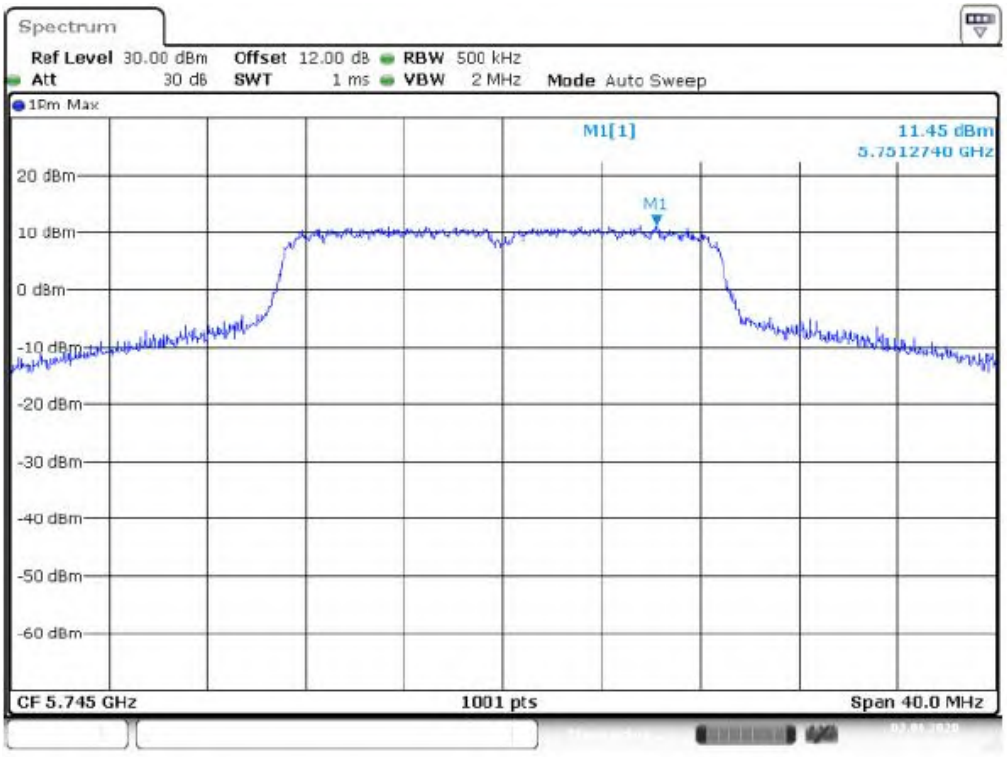

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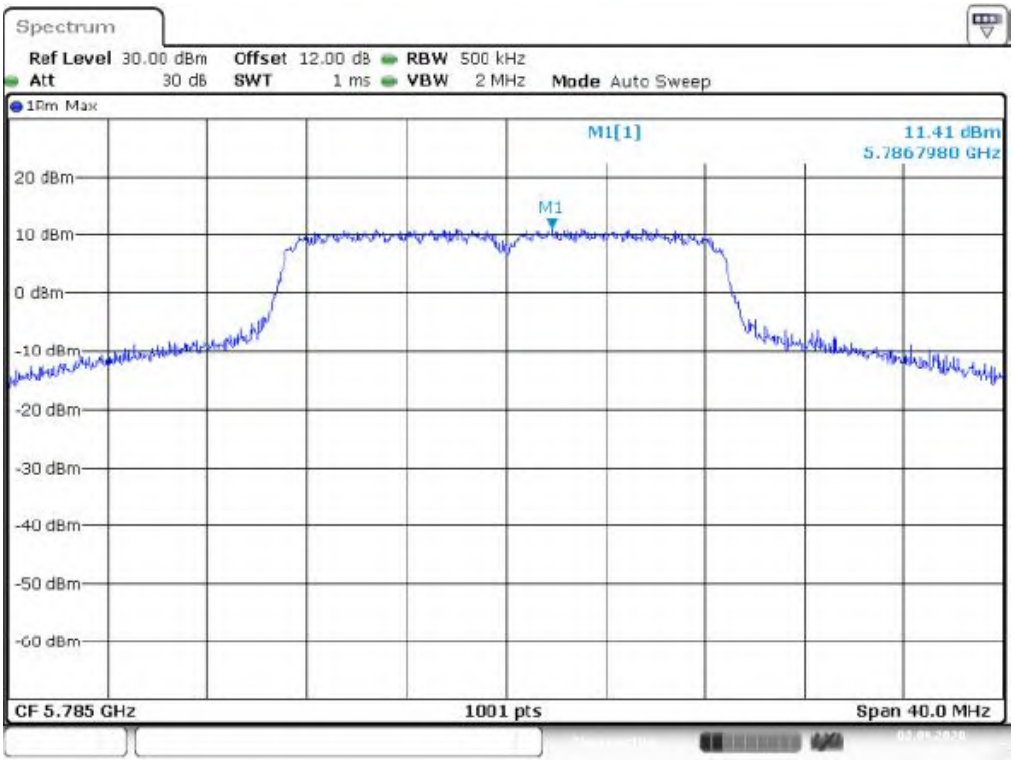

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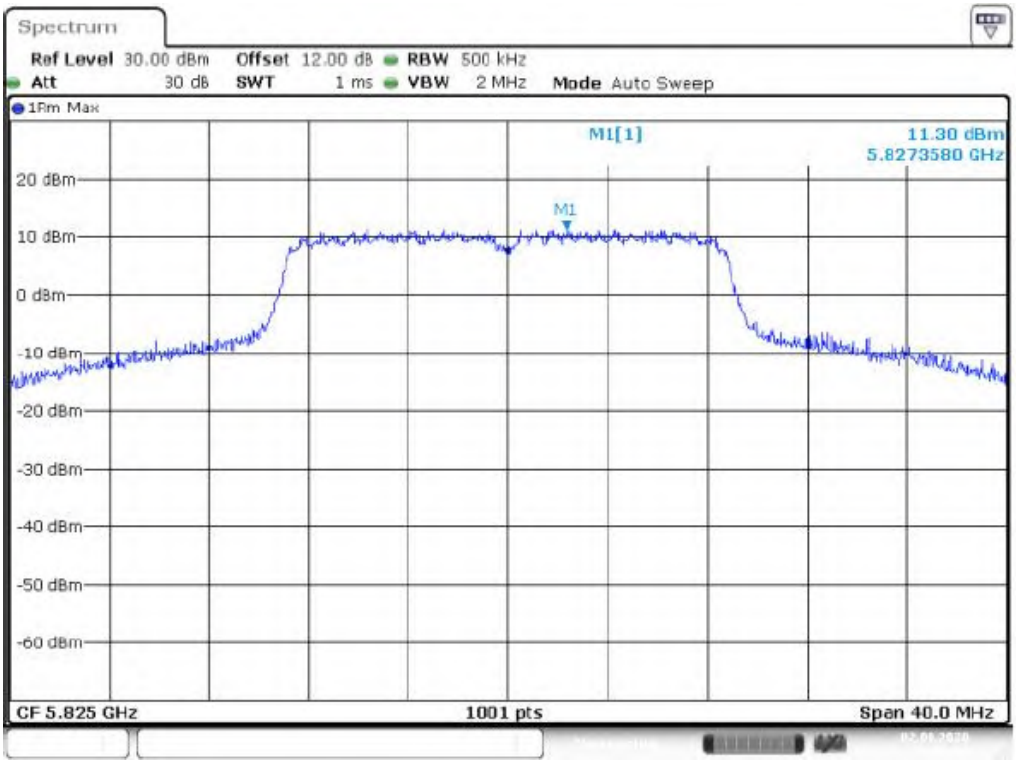

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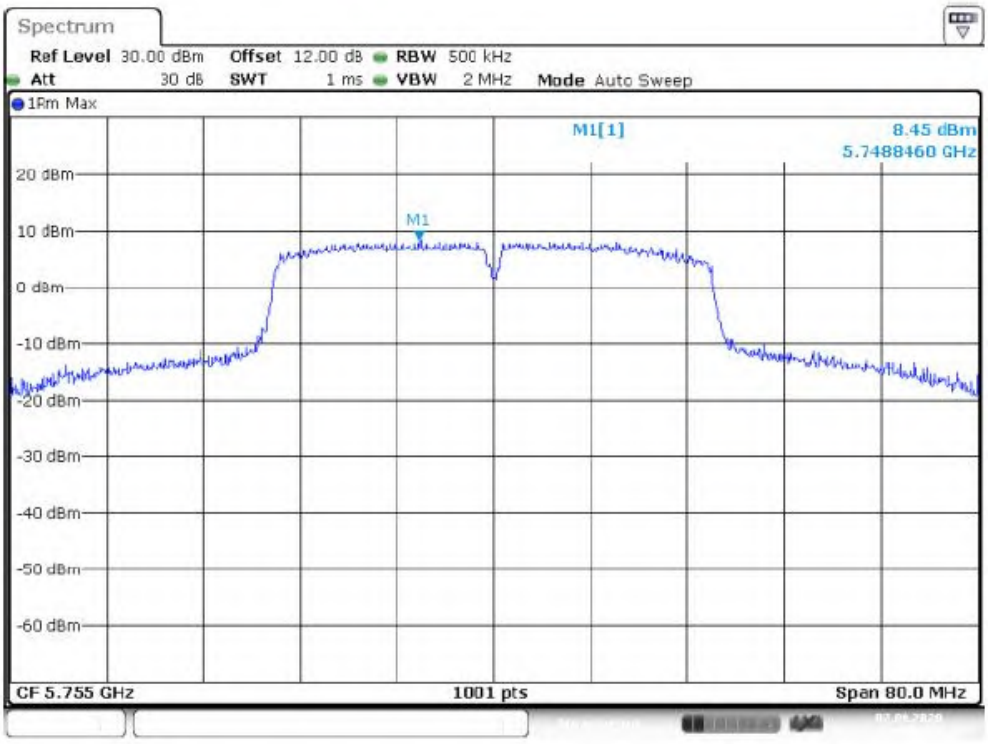

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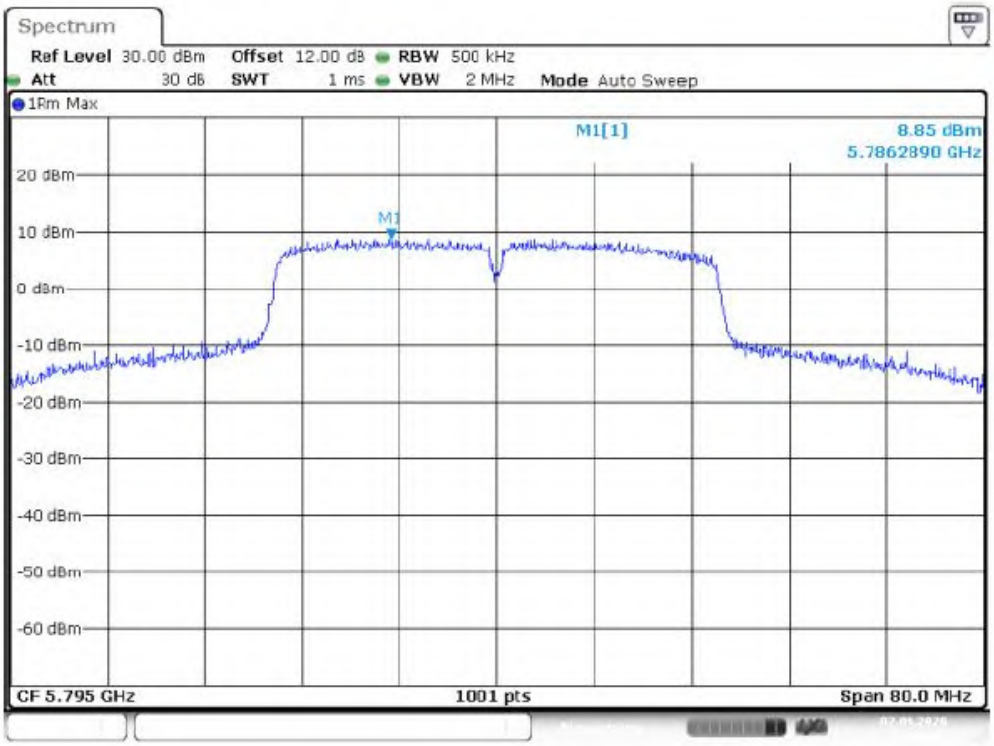


10 Antenna Application

10.1 Antenna Requirement

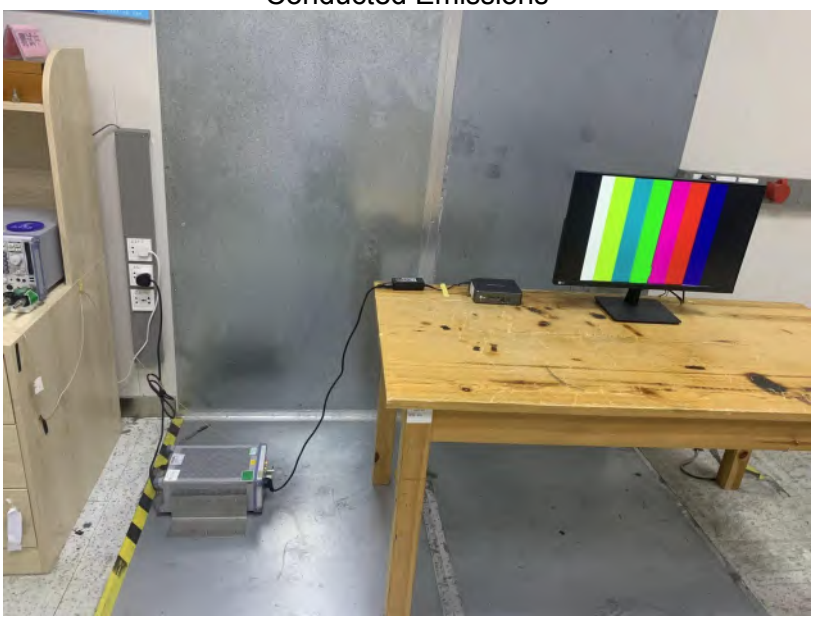
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2 Result

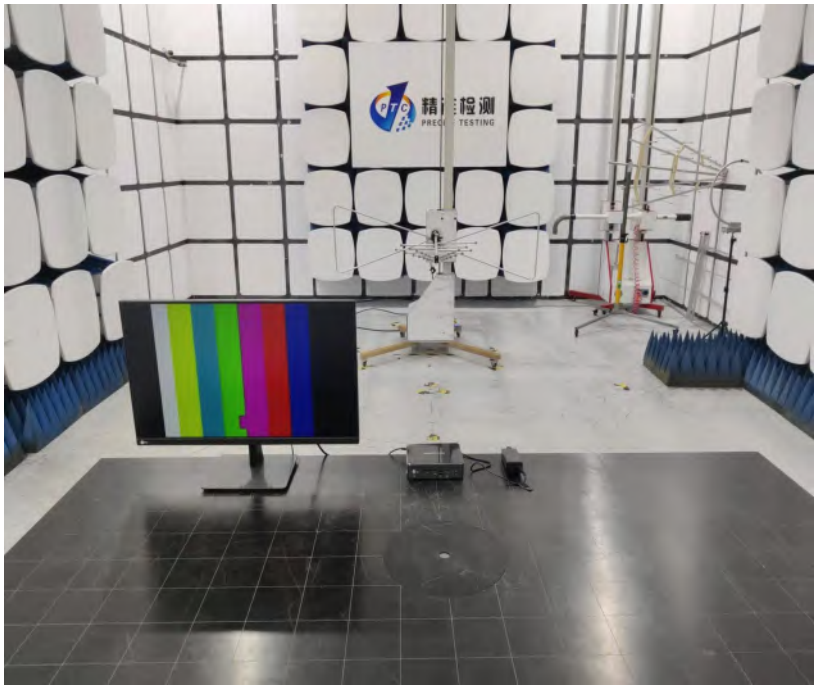
The EUT'S antenna, permanent attached antenna,is FPC Antenna. The antenna's gain is 3.0 dBi and meets the requirement.

11 Test Setup

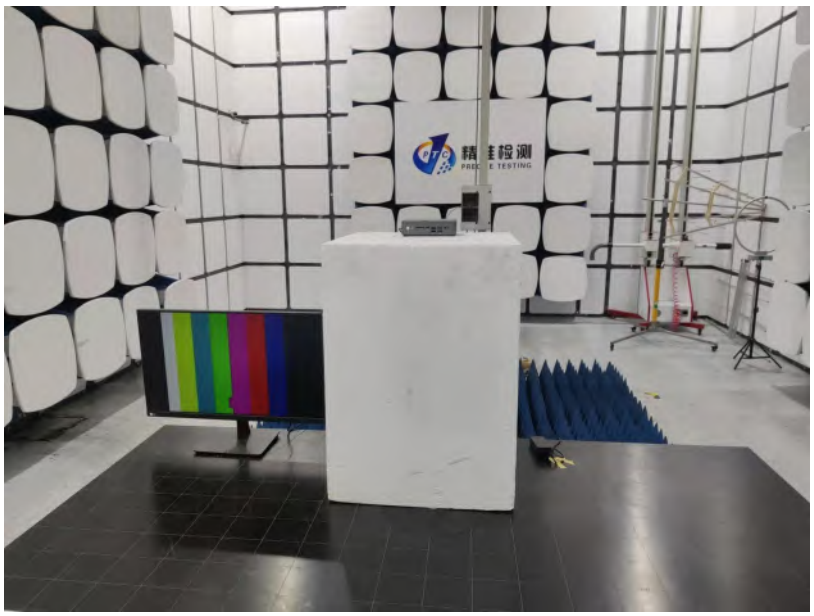
Conducted Emissions



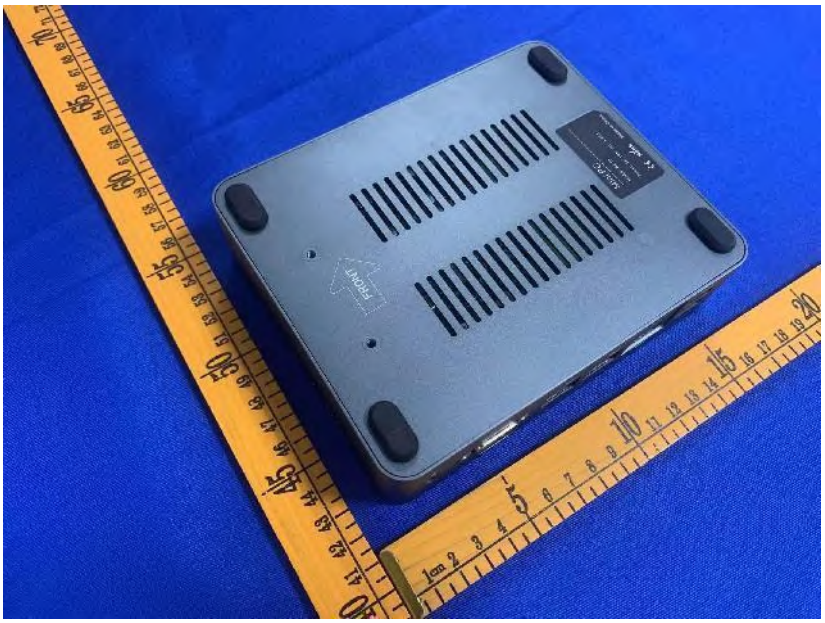
Radiated Spurious Emissions
From 30MHz-1000MHz



Test frequency from Above 1GHz



12 EUT PHOTOS

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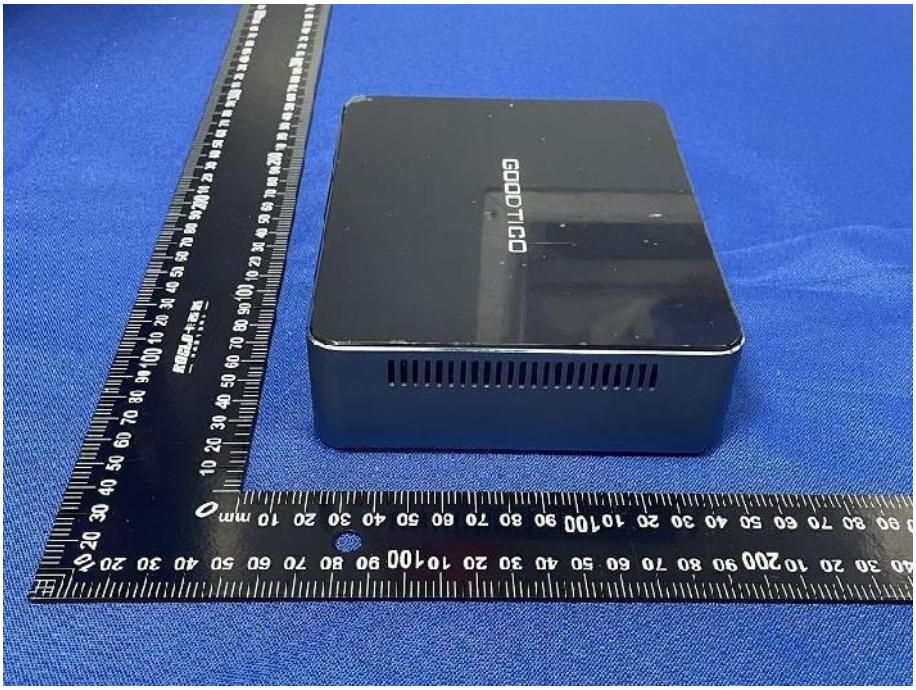
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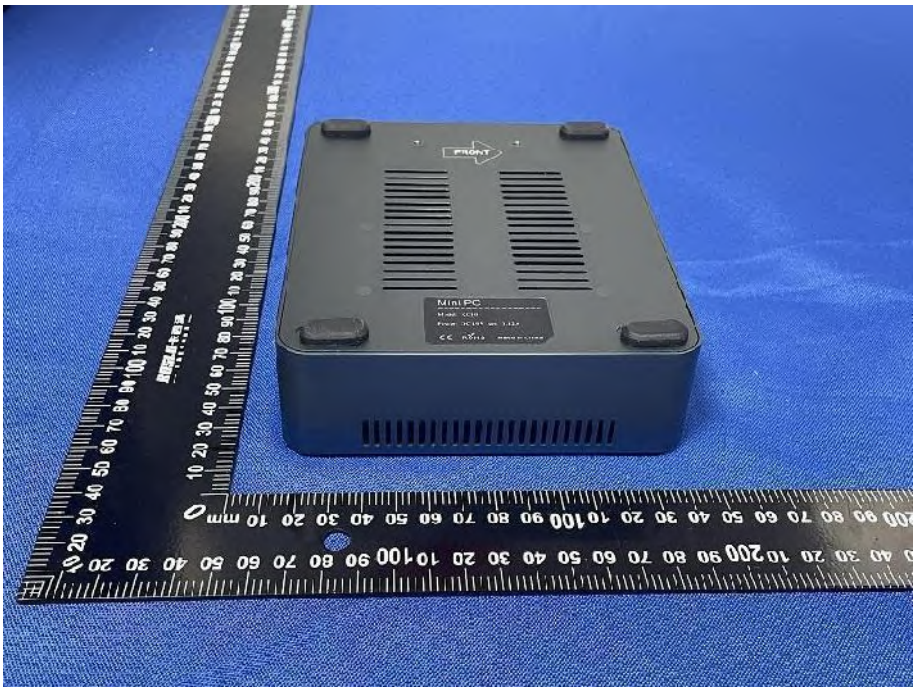
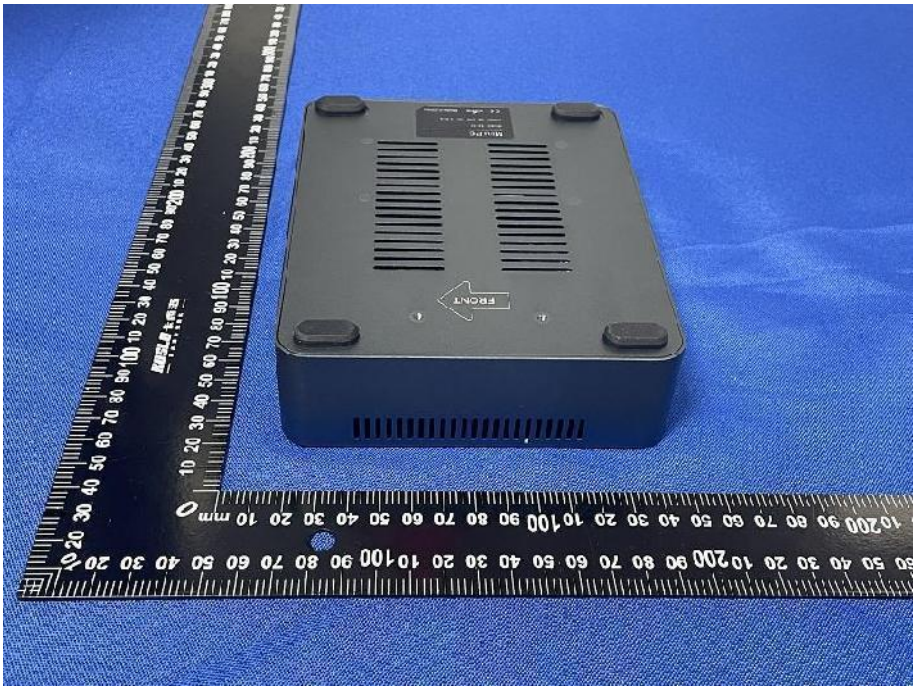

FRONT
Mini PC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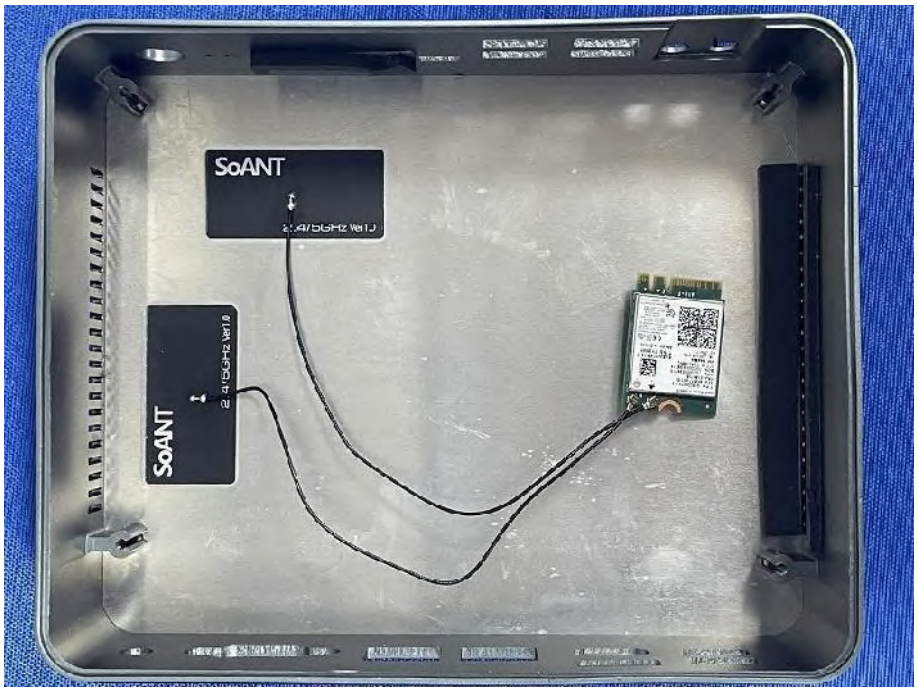
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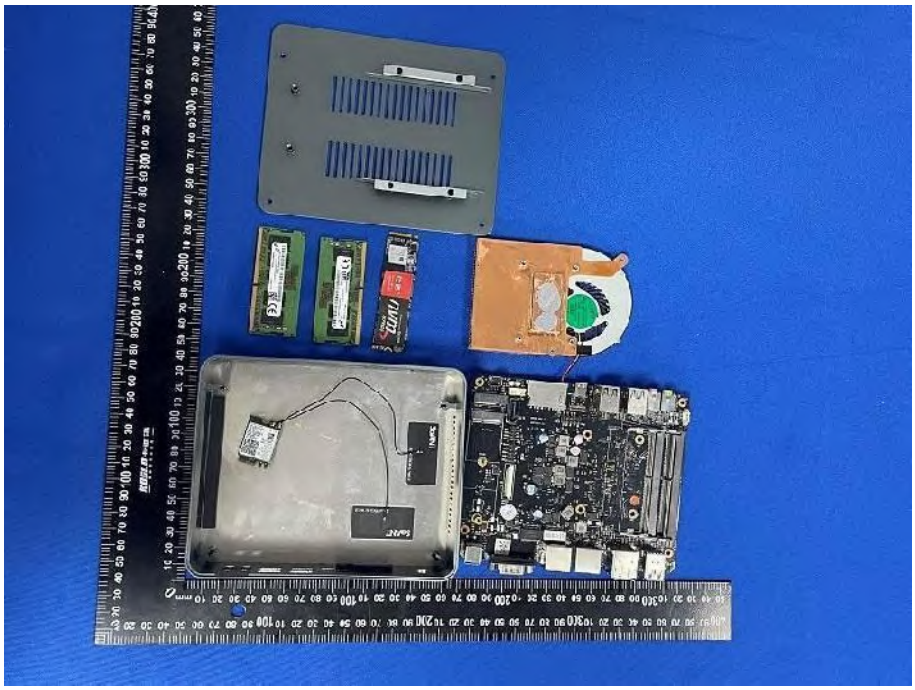

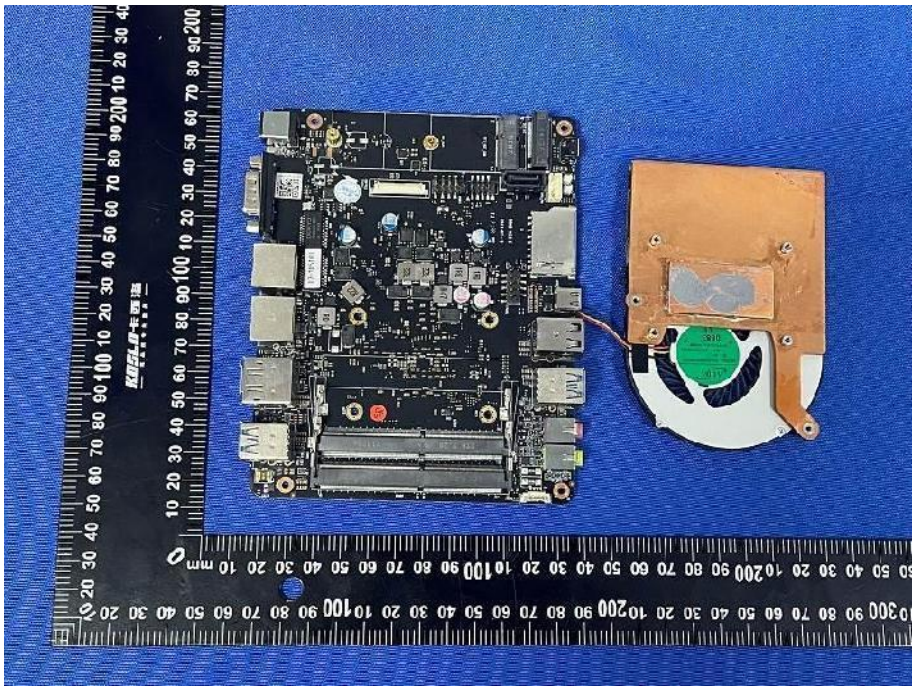

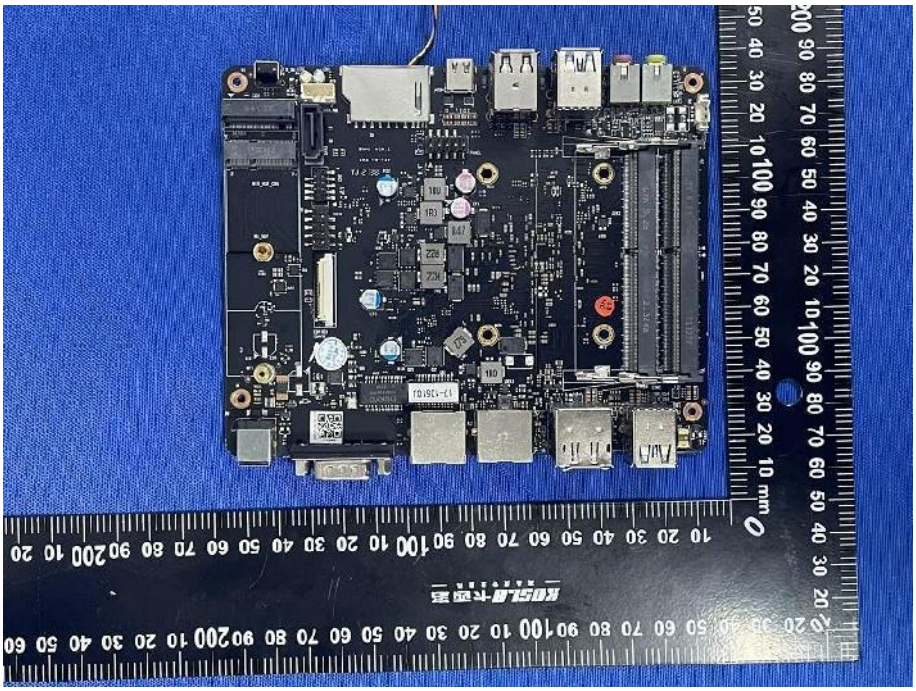

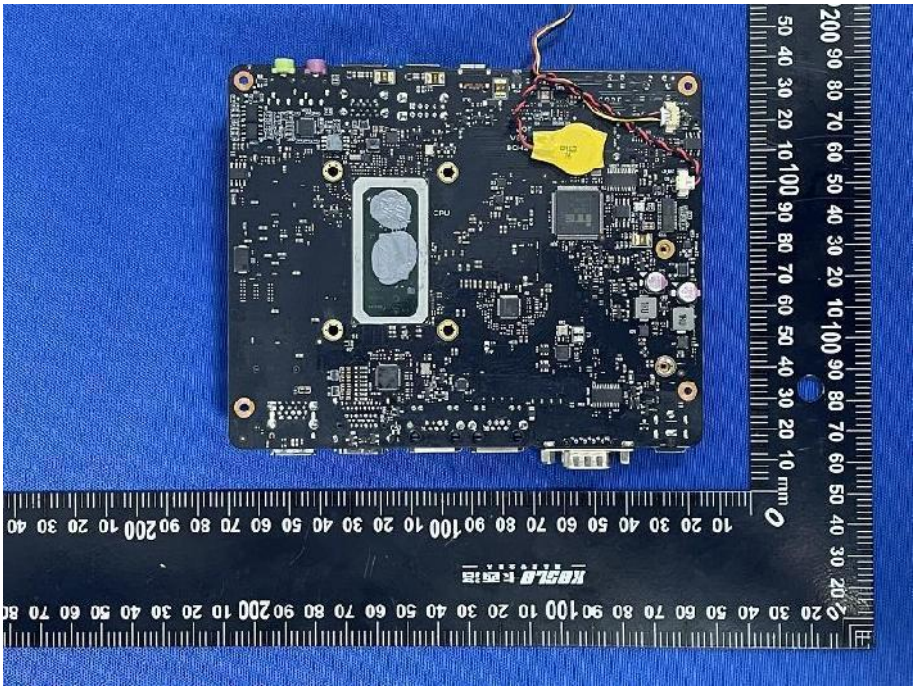

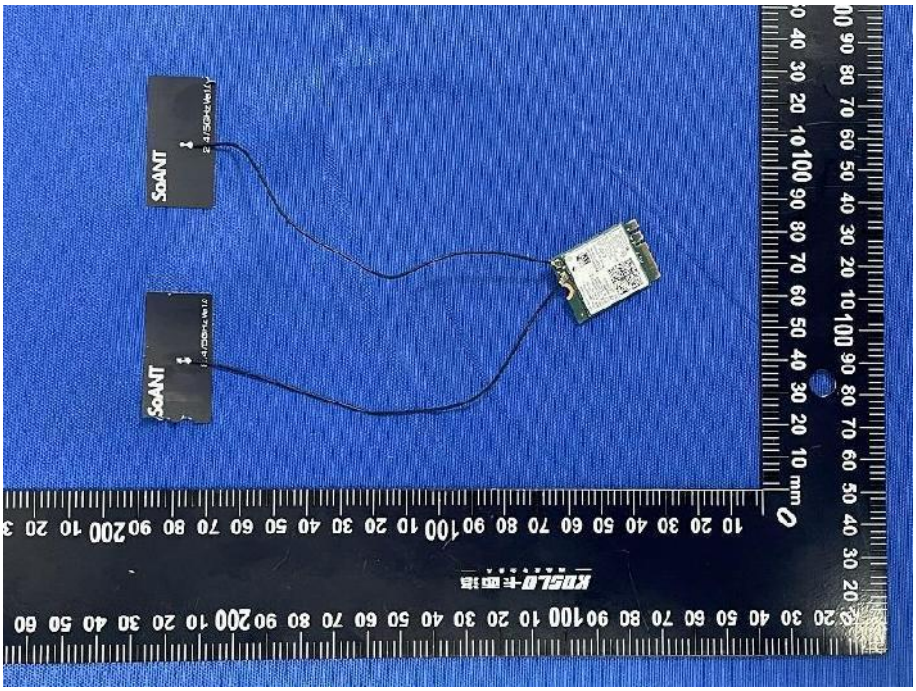
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T P/N: G85C0007K310
SPS: 852511-001 0J
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WFM: 70CD0DE99715
BDM: 70CD0DE99719
FCC ID: PD93168NG
MM: 944884
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******THE END REPORT******