1. TEST RESULTS

1.1. Maximum Conducted Output Power

Conducted Test Conditions for Maximum Conducted Output Power			
Standard:	FCC CFR 47:15.407	Ambient Temp. (ºC):	24.0 - 27.5
Test Heading:	Maximum Conducted Output Power	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.407 (a)(1), (2), (3)	Pressure (mBars):	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Maximum Conducted Output Power Measurement
Method PM (Measurement using an RF average power meter). KDB 789033 defines a methodology using an average wideband power meter. Measurements were made while the EUT was operating in a continuous transmission mode (100% duty cycle) at the appropriate center frequency. All operational modes and frequency bands were measured independently and the resultant calculated. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported separately. A summation (Σ) of each antenna port output power is provided which includes any offset due to Duty Cycle Correction Factor (DCCF). Testing was performed under ambient conditions at nominal voltage.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.
Supporting Information
Calculated Power = A + G + Y+ 10 log (1/x) dBm

A = Total Power [$10*Log10 (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})$]
G = Antenna Gain
Y = Beamforming Gain
x = Duty Cycle (average power measurements only)

Limits Maximum Conducted Output Power

Operating Frequency Band 5150-5250 MHz

15. 407 (a)(1)
(i) For an outdoor 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) 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.

(iii) For fixed point-to-point access points 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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

(iv) For mobile and portable 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

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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.

Operating Frequency Band 5250-5350 and 5470 – 5725 MHz

15. 407 (a)(2)
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. 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.

Operating Frequency Band 5725 – 5850 MHz

15. 407 (a)(3)
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.

NOTE: All recorded power settings incorporate any reduction in output power brought about as a result of radiated spurious emissions and radiated band-edge testing.

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5180.0	16.22	13.62	--	--	18.12	Not Applicable	30.00	-11.88	15.00
5200.0	18.34	18.18	--	--	21.27	Not Applicable	30.00	-8.73	18.00
5240.0	18.23	18.21	--	--	21.23	Not Applicable	30.00	-8.77	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Equipment Configuration for Peak Transmit Power			

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5210.0	13.43	12.81	--	--	16.14	Not Applicable	28.10	-11.96	12.00

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	1.33 dB

Equipment Configuration for Peak Transmit Power			

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5180.0	15.37	12.70	--	--	17.25	Not Applicable	28.10	-10.85	14.00
5200.0	18.40	16.45	--	--	20.54	Not Applicable	28.10	-7.56	18.00
5240.0	18.34	16.55	--	--	20.55	Not Applicable	28.10	-7.55	18.00

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	1.33 dB

Equipment Configuration for Peak Transmit Power	

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5190.0	12.38	12.70	--	--	15.55	Not Applicable	28.10	-12.55	11.00
5230.0	16.16	16.40	--	--	19.29	Not Applicable	28.10	-8.81	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	1.33 dB

Equipment Configuration for Peak Transmit Power			

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5260.0	16.22	18.22	--	--	20.34	30.862	24.00	-3.66	18.00
5300.0	16.11	18.19	--	--	20.28	24.609	24.00	-3.72	18.00
5320.0	14.93	11.59	--	--	16.58	19.960	24.00	-7.42	13.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	?2.81 dB

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5290.0	11.41	9.94	--	--	13.75	82.405	22.10	-8.35	9.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	98.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	5.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	3.00
TPC:	Not Applicable	Tested By:	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5260.0	16.26	18.19	--	--	20.34	30.301	22.10	-1.76	18.00
5300.0	16.08	18.15	--	--	20.25	29.659	22.10	-1.85	18.00
5320.0	16.30	18.12	--	--	20.31	20.120	22.10	-1.79	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	?2.81 dB

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Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5270.0	16.62	18.58	--	--	20.72	72.946	22.10	-1.38	18.00
5310.0	13.22	9.83	--	--	14.86	41.363	22.10	-7.24	11.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

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Equipment Configuration for Peak Transmit Power

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5500.0	14.70	11.44	--	--	16.38	19.880	23.98	-7.60	14.00
5580.0	16.91	18.25	--	--	20.64	36.072	24.00	-3.36	18.00
5720.0	17.23	18.25	--	--	20.78	35.912	24.00	-3.22	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5530.0	10.04	10.17	--	--	13.12	82.405	22.10	-8.98	9.00
5610.0	17.96	18.39	--	--	21.19	196.794	22.10	-0.91	18.00
5690.0	14.03	14.34	--	--	17.20	235.511	22.10	-4.90	14.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5500.0	12.57	12.93	--	--	15.76	20.120	22.10	-6.34	12.00
5580.0	16.97	18.42	--	--	20.77	41.162	22.10	-1.33	18.00
5720.0	17.25	18.36	--	--	20.85	40.762	22.10	-1.25	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5510.0	11.61	11.79	--	--	14.71	40.561	22.10	-7.39	11.00
5550.0	16.83	18.26	--	--	20.61	85.531	22.10	-1.49	18.00
5710.0	16.19	17.25	--	--	19.76	86.533	22.10	-2.34	17.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5745.0	18.05	18.63	--	--	21.36	Not Applicable	30.00	-8.64	18.00
5785.0	17.79	18.18	--	--	21.00	Not Applicable	30.00	-9.00	18.00
5825.0	16.47	18.07	--	--	20.35	Not Applicable	30.00	-9.65	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11ac-80	**Duty Cycle (%):**	98.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5775.0	18.07	18.27	--	--	21.18	Not Applicable	28.10	-6.92	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	1.33 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5745.0	17.21	18.34	--	--	20.82	Not Applicable	28.10	-7.28	18.00
5785.0	16.80	18.29	--	--	20.62	Not Applicable	28.10	-7.48	18.00
5825.0	16.58	18.21	--	--	20.48	Not Applicable	28.10	-7.62	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	1.33 dB

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	**a**	**b**	**c**	**d**	**Σ Port(s) dBm**	**MHz**	**dBm**	**dB**	
5755.0	16.90	18.12	--	--	20.56	Not Applicable	28.10	-7.54	18.00
5795.0	16.67	18.13	--	--	20.47	Not Applicable	28.10	-7.63	18.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	1.33 dB

1.2. 26 dB & 99% Bandwidth

Conducted Test Conditions for 26 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	26 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for 26 dB and 99% Bandwidth Measurement

The bandwidth at 26 dB and 99 % is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.   The Resolution Bandwidth was set to approximately 1% of the emission bandwidth.

Testing was performed under ambient conditions at nominal voltage.   Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	19.719	19.719	--	--	19.719	19.719		
5200.0	28.778	25.251	--	--	28.778	25.251		
5240.0	32.144	29.739	--	--	32.144	29.739		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	16.673	16.673	--	--	16.673	16.673		
5200.0	16.914	16.914	--	--	16.914	16.914		
5240.0	16.994	16.834	--	--	16.994	16.834		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5210.0	83.687	82.405	--	--	83.687	82.405		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5210.0	76.633	76.313	--	--	76.633	76.313		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5180.0	20.120	20.120	--	--	20.120	20.120		
5200.0	37.194	21.403	--	--	37.194	21.403		
5240.0	21.563	21.563	--	--	21.563	21.563		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5180.0	17.715	17.715	--	--	17.715	17.715		
5200.0	18.036	17.715	--	--	18.036	17.715		
5240.0	17.796	17.796	--	--	17.796	17.796		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-40	Duty Cycle (%):	98.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	5.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	3.00
TPC:	Not Applicable	Tested By:	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5190.0	41.202	40.561	--	--	41.202	40.561		
5230.0	85.050	55.311	--	--	85.050	55.311		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5190.0	36.393	36.232	--	--	36.393	36.232		
5230.0	38.717	36.393	--	--	38.717	36.393		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	41.202	30.862	--	--	41.202	30.862		
5300.0	38.557	24.609	--	--	38.557	24.609		
5320.0	20.361	19.960	--	--	20.361	19.960		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	17.796	16.754	--	--	17.796	16.754		
5300.0	17.555	16.834	--	--	17.555	16.834		
5320.0	16.673	16.673	--	--	16.673	16.673		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	?2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5290.0	82.405	112.224	--	--	112.224	82.405		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5290.0	76.633	76.313	--	--	76.633	76.313		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth	

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	41.443	30.301	--	--	41.443	30.301		
5300.0	29.659	29.659	--	--	29.659	29.659		
5320.0	20.120	20.200	--	--	20.200	20.120		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	17.916	16.834	--	--	17.916	16.834		
5300.0	16.834	16.834	--	--	16.834	16.834		
5320.0	17.715	17.715	--	--	17.715	17.715		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	?2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5270.0	75.992	72.946	--	--	75.992	72.946		
5310.0	41.363	43.447	--	--	43.447	41.363		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5270.0	37.675	36.874	--	--	37.675	36.874		
5310.0	36.393	36.232	--	--	36.393	36.232		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	19.880	20.040	--	--	20.040	19.880		
5580.0	38.156	36.072	--	--	38.156	36.072		
5720.0	38.036	35.912	--	--	38.036	35.912		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	16.673	16.673	--	--	16.673	16.673		
5580.0	19.118	17.315	--	--	19.118	17.315		
5720.0	20.321	17.395	--	--	20.321	17.395		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5530.0	82.405	82.405	--	--	82.405	82.405		
5610.0	196.794	199.599	--	--	199.599	196.794		
5690.0	151.343	166.253	--	--	166.253	151.343		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5530.0	76.313	76.313	--	--	76.313	76.313		
5610.0	99.399	92.986	--	--	99.399	92.986		
5690.0	77.435	76.954	--	--	77.435	76.954		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	20.120	20.361	--	--	20.361	20.120		
5580.0	41.804	41.162	--	--	41.804	41.162		
5720.0	42.926	40.762	--	--	42.926	40.762		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	17.635	17.715	--	--	17.715	17.635		
5580.0	23.327	19.118	--	--	23.327	19.118		
5720.0	23.086	19.238	--	--	23.086	19.238		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth		

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5510.0	42.164	40.561	--	--	42.164	40.561		
5550.0	93.407	85.531	--	--	93.407	85.531		
5710.0	89.659	86.533	--	--	89.659	86.533		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5510.0	36.553	36.393	--	--	36.553	36.393		
5550.0	50.261	38.076	--	--	50.261	38.076		
5710.0	51.363	38.677	--	--	51.363	38.677		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

1.3. 6 dB & 99% Bandwidth

Conducted Test Conditions for 6 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	6 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for 6 dB and 99% Bandwidth Measurement
The bandwidth at 6 dB and 99 % is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.   The Resolution Bandwidth was set to 100 kHz.
Testing was performed under ambient conditions at nominal voltage.   Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.

Equipment Configuration for 6 dB & 99% Bandwidth	

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5745.0	16.353	16.353	--	--	16.353	16.353		
5785.0	16.353	16.353	--	--	16.353	16.353		
5825.0	16.353	16.353	--	--	16.353	16.353		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5745.0	17.315	16.513	--	--	17.315	16.513		
5785.0	17.315	16.834	--	--	17.315	16.834		
5825.0	17.154	16.834	--	--	17.154	16.834		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 6 dB & 99% Bandwidth			

Variant:	802.11ac-80	Duty Cycle (%):	98.0
Data Rate:	29.30 MBit/s	Antenna Gain (dBi):	5.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	3.00
TPC:	Not Applicable	Tested By:	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5775.0	75.752	75.752	--	--	75.752	75.752		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5775.0	90.180	77.355	--	--	90.180	77.355		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

...

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-20	Duty Cycle (%):	98.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	5.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	3.00
TPC:	Not Applicable	Tested By:	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

| Test Frequency | Measured 6 dB Bandwidth (MHz) | | | | 6 dB Bandwidth (MHz) | | | |
| | Port(s) | | | | | | | |
MHz	a	b	c	d	Highest	Lowest		
5745.0	17.555	17.555	--	--	17.555	17.555		
5785.0	17.635	17.635	--	--	17.635	17.635		
5825.0	17.555	17.555	--	--	17.555	17.555		

| Test Frequency | Measured 99% Bandwidth (MHz) | | | | 99% Bandwidth (MHz) | | | |
| | Port(s) | | | | | | | |
MHz	a	b	c	d	Highest	Lowest		
5745.0	19.078	18.036	--	--	19.078	18.036		
5785.0	18.517	17.956	--	--	18.517	17.956		
5825.0	18.357	18.036	--	--	18.357	18.036		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

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Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5755.0	35.591	35.431	--	--	35.591	35.431		
5795.0	35.752	35.752	--	--	35.752	35.752		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5755.0	37.355	36.713	--	--	37.355	36.713		
5795.0	36.393	36.393	--	--	36.393	36.393		

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

1.4. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Power Spectral Density	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Power Spectral Density
The in-band power spectral density was measured using the test technique specified in KDB 789033. A 1 MHz measurement bandwidth was implemented for the analyzer sweep. Once the sweep is complete the analyzer trace data is downloaded and used for post processing purposes.
Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured separately. The Peak Power Spectral Density is the highest level found across the emission bandwidth. With multiple antenna port measurements the numerical analyzer data from each port is summed (å) and a link to this additional graphic is provided.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.

Measure and sum the spectra across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The individual spectra are then summed mathematically in linear power units. Unlike in-band power measurements, in which the sum involves a single measured value (output power) from each output, measurements for compliance with PSD limits involve summing entire spectra across corresponding frequency bins on the various outputs. Consistency is maintained for any device with multiple transmitter outputs to be certain the individual outputs are all aligned with the same span and same number of points. In this instance, the linear power spectrum value within the first spectral bin of output 0 is summed with that in the first spectral bin of output 1, and the first spectral bin of output 2, and so on up to the Nth output to obtain the true value for the first frequency bin of the summed spectrum. The summed spectrum value for each frequency bin is computed in this fashion. These summed spectral values were post processed and the resulting numerical and graphical data presented.

NOTE: It may be observed that spectrum in some plots break the limit line however this in itself does NOT constitute a failure. In all cases a spectrum summation plot is provided in order to prove compliance. A failure occurs only after the summation of all spectrum plots have been summed and are found to be greater than the limit line.

Supporting Information
Calculated Power = A + 10 log (1/x) dBm
A = Total Power Spectral Density [$10*Log10 (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})$]
x = Duty Cycle

Limits Power Spectral Density

Operating Frequency Band 5150-5250 MHz

15. 407 (a)(1)
(i) For an outdoor 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) 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.

(iii) For fixed point-to-point access points 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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any

corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.

(iv) For mobile and portable 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.

Operating Frequency Band 5250-5350 and 5470 – 5725 MHz

15. 407 (a)(2)
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. 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.

Operating Frequency Band 5725 – 5850 MHz

15. 407 (a)(3)
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.

Equipment Configuration for Power Spectral Density

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5180.0	2.242	-1.566	--	--	3.795	17.0	-13.2
5200.0	4.152	4.047	--	--	7.179	17.0	-9.8
5240.0	4.110	4.037	--	--	7.159	17.0	-9.9

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.56 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5210.0	-7.631	-8.115	--	--	-4.381	15.1	-19.5

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5180.0	1.074	-1.652	--	--	3.008	15.1	-12.1
5200.0	4.000	2.080	--	--	6.196	15.1	-8.9
5240.0	4.005	2.212	--	--	6.275	15.1	-8.8

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density	

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5190.0	-4.890	-4.522	--	--	-1.619	15.1	-16.7
5230.0	-0.886	-0.853	--	--	2.217	15.1	-12.9

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density	

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5260.0	1.768	3.929	--	--	6.069	11.0	-4.9
5300.0	1.679	3.903	--	--	6.012	11.0	-5.0
5320.0	0.709	-2.624	--	--	2.394	11.0	-8.6

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	?2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.56 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5290.0	-10.181	-11.284	--	--	-7.275	9.1	-16.4

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5260.0	1.875	3.812	--	--	6.018	9.1	-3.1
5300.0	1.744	3.890	--	--	6.002	9.1	-3.1
5320.0	-0.320	-4.724	--	--	1.096	9.1	-8.0

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density			

Variant:	802.11n HT-40	Duty Cycle (%):	98.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	5.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	3.00
TPC:	Not Applicable	Tested By:	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5270.0	0.114	2.023	--	--	4.222	9.1	-4.9
5310.0	-4.252	-7.772	--	--	-2.632	9.1	-11.7

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5500.0	0.395	-3.211	--	--	2.053	11.0	-9.0
5580.0	2.716	3.826	--	--	6.363	11.0	-4.6
5720.0	2.985	3.580	--	--	6.350	11.0	-4.7

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11ac-80	**Duty Cycle (%):**	88.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.56 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5530.0	-12.007	-11.498	--	--	-8.358	9.1	-17.5
5610.0	-3.371	-2.744	--	--	0.387	9.1	-8.7
5690.0	-3.542	-3.018	--	--	0.166	9.1	-8.9

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density	

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5500.0	-1.916	-1.870	--	--	1.200	9.1	-7.9
5580.0	2.798	3.883	--	--	6.441	9.1	-2.7
5720.0	2.807	3.605	--	--	6.251	9.1	-2.9

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5510.0	-6.294	-6.593	--	--	-3.416	9.1	-12.5
5550.0	0.125	1.076	--	--	3.725	9.1	-5.4
5710.0	0.482	0.705	--	--	3.621	9.1	-5.5

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11a	**Duty Cycle (%):**	98.0
Data Rate:	6.00 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/500 KHz)				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/500 KHz**	**dBm/500 KHz**	**dB**
5745.0	0.743	-6.955	--	--	1.488	30.0	-28.5
5785.0	0.404	0.811	--	--	3.711	30.0	-26.3
5825.0	-0.953	0.538	--	--	2.931	30.0	-27.1

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density

Variant:	802.11ac-80	**Duty Cycle (%):**	98.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)						
MHz	**a**	**b**	**c**	**d**	**dBm/500 KHz**	**dBm/500 KHz**	**dB**
5775.0	-7.018	-5.451	--	--	0.075	28.1	-28.0

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density			

Variant:	802.11n HT-20	**Duty Cycle (%):**	98.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)						
MHz	**a**	**b**	**c**	**d**	**dBm/500 KHz**	**dBm/500 KHz**	**dB**
5745.0	<u>-0.538</u>	<u>0.776</u>	--	--	<u>3.267</u>	28.1	-24.8
5785.0	<u>-0.897</u>	<u>0.600</u>	--	--	<u>2.965</u>	28.1	-25.1
5825.0	<u>-1.137</u>	<u>0.412</u>	--	--	<u>2.732</u>	28.1	-25.4

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for Power Spectral Density			

Variant:	802.11n HT-40	**Duty Cycle (%):**	98.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	3.00
TPC:	Not Applicable	**Tested By:**	GMH
Engineering Test Notes:	Mac Address 204C0380E4BE		

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.09 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)						
MHz	**a**	**b**	**c**	**d**	**dBm/500 KHz**	**dBm/500 KHz**	**dB**
5755.0	-3.331	-1.869	--	--	0.486	28.1	-27.6
5795.0	-3.940	-2.196	--	--	0.037	28.1	-28.1

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

1.5. <u>Frequency Stability</u>

Test Procedure

The manufacturer of the equipment is responsible for ensuring that the frequency stability is such that emissions are always maintained within the band of operation under all conditions.

Manufacturer Declaration

The frequency stability of the reference oscillator sets the frequency stability of the RF transceiver signals. Therefore, all RF signals should have better than ±20ppm stability.

This stability accounts for room temperature tolerance of the crystal oscillator circuit, frequency variation across temperature, and crystal ageing.

±20ppm at 5.250 GHz translates to a maximum frequency shift of ±105 KHz.   As the channel band-edge is at least 1 MHz from either of the band edges, ±105 KHz is more than sufficient to guarantee that the intentional emission will remain in the band over the entire operating range of the EUT.

Specification

Limits

§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 user's manual.

1.6. Dynamic Frequency Selection (DFS)

Test Conditions for Dynamic Frequency Selection (DFS)			
Standard:	FCC 15.407	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Dynamic Frequency Selection (DFS)	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	KDB 905462	**Pressure (mBars):**	999 - 1001
EUT Type:	Slave w/ Radar Detection	**Frequency Bands:**	5,250 – 5,350 MHz 5,470 – 5,725 MHz
Test Environment:	Radiated	**Antenna Gain used for Testing:**	0 dBi
Detection Threshold:	n/a	**Test Radar Level: (Threshold + Gain)**	n/a
Number of Antenna Chains:	2	**Duty Cycle Target:**	≥ 30.00%
802.11a Transmit Power:	+15 dBm	**Minimum Data Rate:**	6 Mbit/s
802.11ac-80 Transmit Power:	+15 dBm	**Minimum Data Rate:**	MCS0
Uniform Loading:	For the above frequency band(s) the manufacturer declared that the device provides an aggregate uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm.		
Communication Method:	The requisite MPEG video file ("TestFile.mpg" available on the NTIA website at the following link http://ntiacsd.ntia.doc.gov/dfs/) is used during this video stream.		
Engineer Notes:			
Reference Document(s):	See Normative References		

Client Devices

a) A Client Device will not transmit before having received appropriate control signals from a Master Device.

b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.

c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and
d) through f) of section 5.1.1 apply.

d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.

e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shutdown (rather than moving channels), no beacons should appear.

1.6.1. DFS Detection Thresholds

The table below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating In-Service Monitoring.

DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (see Notes 1, 2 and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP > 200 milliwatt and power density <10 dBm/MHz	-62 dBm
EIRP > 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

NOTE 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna

NOTE 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

NOTE 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

1.6.2. Response Requirements

The following table provides the response requirements for Master and Client Devices incorporating DFS.

DFS Response Requirement Values

Parameter	Value
Non-Occupancy Period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds, see NOTE 1
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period, see NOTES 1 and 2
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth, see NOTE 3

NOTE 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

NOTE 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

NOTE 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

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1.6.3. Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

1.6.3.1. Short Radar Pulses

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µS)	PRI (µS)		Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428		18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{ \dfrac{\left(\dfrac{1}{360}\right) \cdot}{\left(\dfrac{19 \cdot 10^6}{PRI_{\mu sec}}\right)} \right\}$		60%	30
		Test B: 15 unique PRI values randomly selected in the range 518-3066 µS, with a minimum increment of 1 µS, excluding PRI values selected in Test A				
2	1-5	150-230		23-29	60%	30
3	6-10	200-500		16-18	60%	30
4	11-20	200-500		12-16	60%	30
Aggregate (Radar Types 1-4)					80%	120

Note 1: Short Radar Pulse Type 0 should be used for the Detection Bandwidth test, Channel Move Time and Channel Closing Time tests

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

1.6.3.2. Long Radar Pulse Test

Long Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse radar test signal. If more than 30 waveforms are used for the Long Pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms.

Each waveform is defined as follows:

1. The transmission period for the Long Pulse Radar test signal is 12 seconds.

2. There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst Count.

3. Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.

4. The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.

5. Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. Pulses in different Bursts may have different chirp widths. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.

6. If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.

7. The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst_Count. Each interval is of length (12,000,000 / Burst_Count) microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and [(12,000,000 / Burst_Count) – (Total Burst Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.

A representative example of a Long Pulse radar test waveform:

1. The total test signal length is 12 seconds.

2. 8 Bursts are randomly generated for the Burst_Count

3. Burst 1 has 2 randomly generated pulses.

4. The pulse width (for both pulses) is randomly selected to be 75 microseconds.

5. The PRI is randomly selected to be at 1213 microseconds.

6. Bursts 2 through 8 are generated using steps 3 – 5.

7. Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step.   Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical representation of the Long Pulse Radar Test Waveform.

1.6.3.3. Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	.333	300	70%	30

For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

1.6.4. Radar Waveform Calibration

The following equipment setup was used to calibrate the Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode at the frequency of the Radar Waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz.

The signal generator amplitude was set so that the power level measured at the spectrum analyzer was equal to the DFS detection threshold +1dB (Ref Section 9.2).

1.6.5. Channel Close / Transmission Time

The steps below define the procedure to determine the above-mentioned parameters when a radar burst with a level of up to 10 dB above the DFS Detection threshold is injected on the Operating Channel of the EUT.

Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Compare the Channel Move Time and Channel Closing Transmission Time results to the limits defined in the DFS Response requirement values table.

Channel Closing Transmission Time - Measurement
The reference radar signature was introduced to the EUT, from which a 11 second transmission record was captured, as well as 1000ms of pre-trigger data. The Reference radar type was triggered to play at the exact time allowing the end of the pulse to occur at time t=0.

The system was setup to capture data for all transmission events above a given threshold level as determined and adjusted by the test engineer. The system time stamps all captured events with respect to T0 (zero time indicating the start of the measurement sequence) starting at the end of the radar pulse indicated by the purple vertical marker line in the Plot (on the next page).

The system captured data over a 12 second period at 10 points per microsecond. The data is analyzed by counting all "bursts" that occur above the threshold limit and aggregating the time each burst is on. The data is then compressed for presentation in one 12 second segment showing all of the activity recorded over the period.

802.11ac-80 Channel 5530 MHz; Observed Frequency 5500 MHz

The system measures and aggregates the pulses occurring after the end of the radar pulse to determine the following parameters: -

Test Heading	Time (Secs)	Limit (Secs)	Status
Channel Closing Transmission Time	0.000000	0.260	Complies
Channel Move Time	0.000000	10.0	Complies

Channel Move Time, Channel Closing Transmission Time
0-12 Second Capture

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1.6.6. <u>Non-Occupancy Period</u>

The EUT is monitored for more than 30 minutes following the channel close/move time to verify no transmissions resume on this Channel.

The device when triggered by the radar signature vacates the channel for a minimum period of 30 minutes per the standard.   During this period the device can (assuming compliance to full DFS regulations) move to another frequency channel.   It could also remain on the same channel and if this is the case the transmitter must remain muted for a period of 30 minutes.

If the transmitter has moved to another channel it cannot return and transmit on the original channel for an elapsed period of 30 minutes.

In the measured plots the period between the vertical frequency lines F1 and F2 = 30 minutes and therefore no EUT transmissions should occur between these two markers.

NON-OCCUPANCY PERIOD

Variant: 802.11ac-80, Channel: 5530.00 MHz, Data Rate: MCS0, Duty Cycle: 30.00%, Antenna Gain: 5.00 dBi

Ref Level: -10.00
0.0 Offset
Sweep Time: 2000.0 s
RBW: 1 MHz
VBW: 1 MHz
Date: 8/6/2019 2:24:25
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Tested by: JK

Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = POS Sweep Count = View RF Atten (dB) = 0 Trace Mode = 0	M1 : 33.333 s : -75.330 dBm M1 : 1833.333 s : -75.500 dBm	Observed Frequency: 5500.00 MHz F2 – F1 = 1833.333 s – 33.333 s = 1800 s

A. <u>APPENDIX - GRAPHICAL IMAGES</u>

A.1. 26 dB & 99% Bandwidth

26 dB & 99% BANDWIDTH

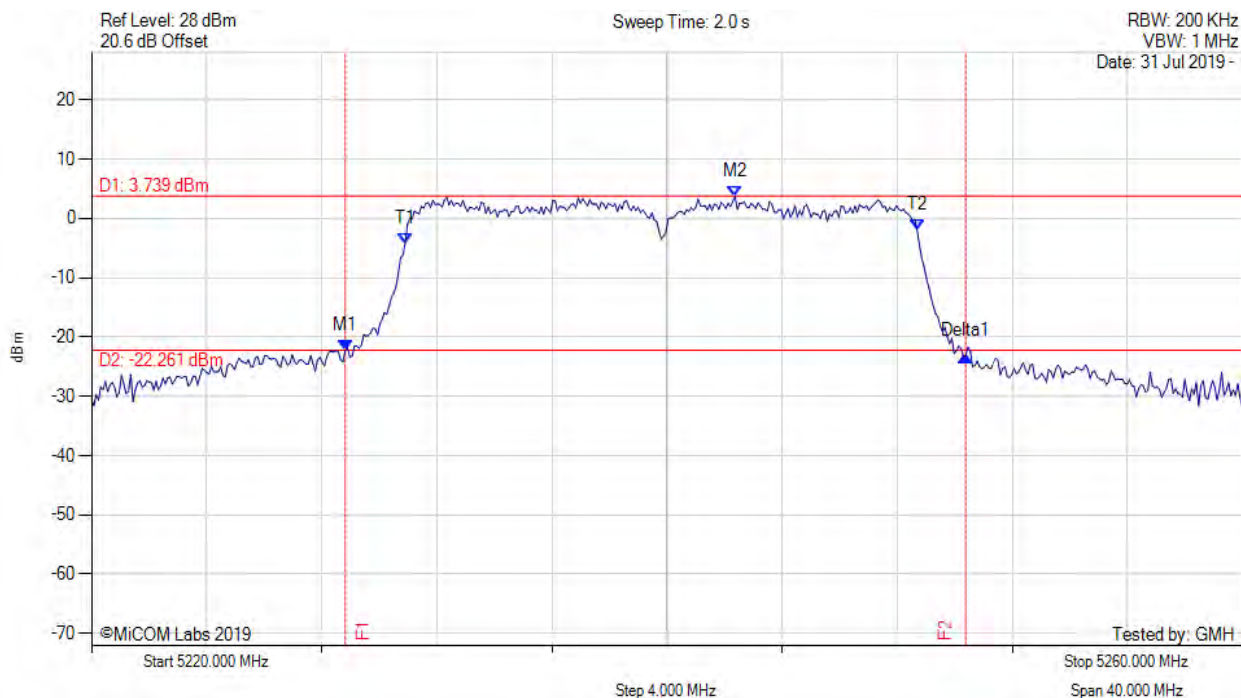Variant: 802.11a, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5170.261 MHz : -22.530 dBm M2 : 5182.605 MHz : 3.784 dBm Delta1 : 19.719 MHz : 1.928 dB T1 : 5171.784 MHz : -2.911 dBm T2 : 5188.457 MHz : -2.945 dBm OBW : 16.673 MHz	Channel Frequency: 5180.00 MHz

back to matrix

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Title: Hewlett Packard Enterprise, Aruba User Experience Insight
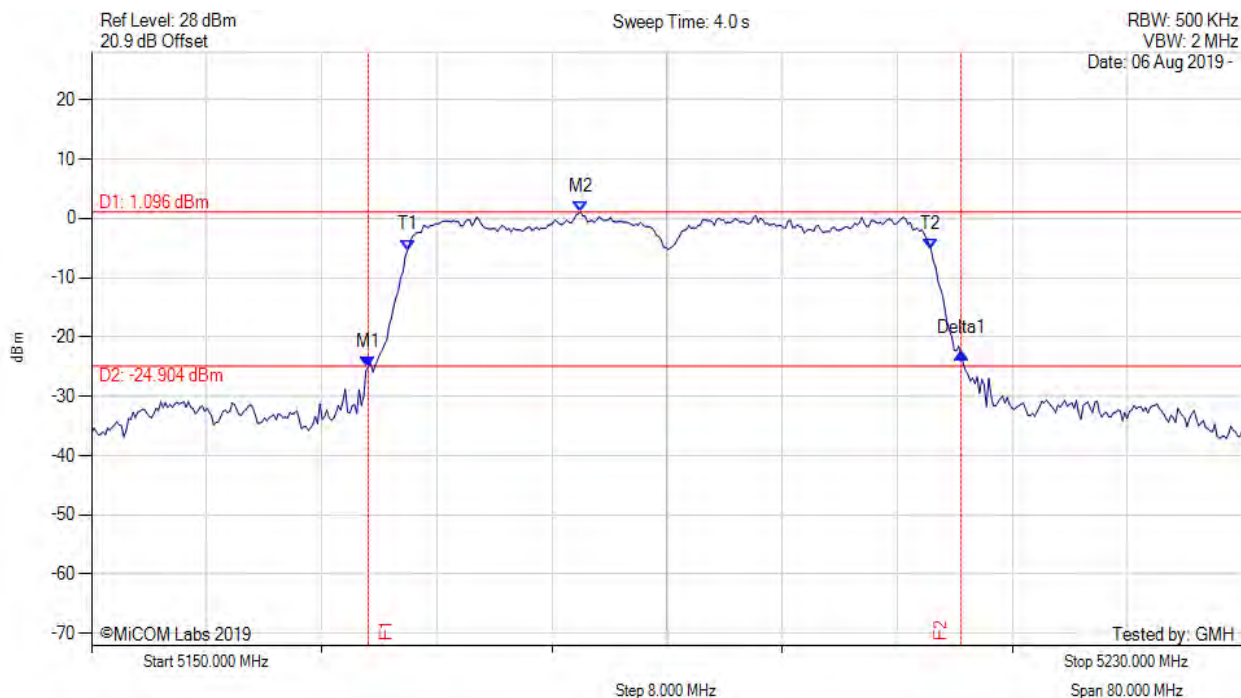To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
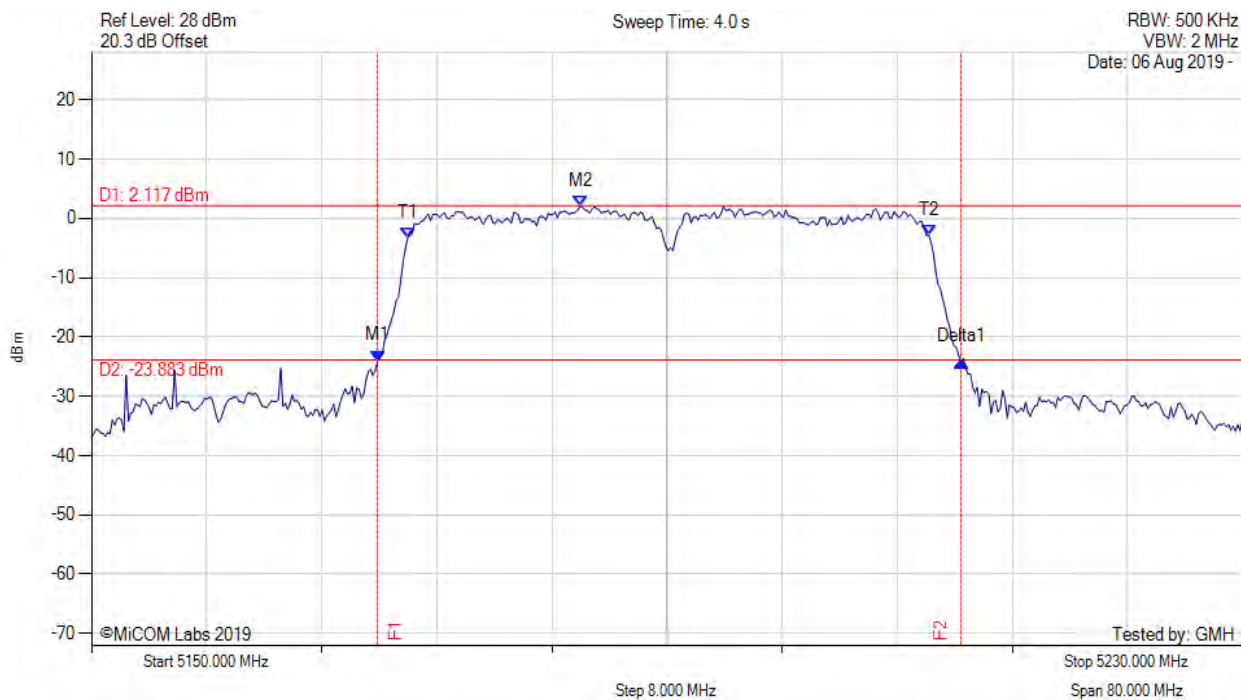

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5170.100 MHz : -26.759 dBm M2 : 5187.575 MHz : -0.080 dBm Delta1 : 19.719 MHz : 2.890 dB T1 : 5171.784 MHz : -7.369 dBm T2 : 5188.457 MHz : -7.595 dBm OBW : 16.673 MHz	Channel Frequency: 5180.00 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

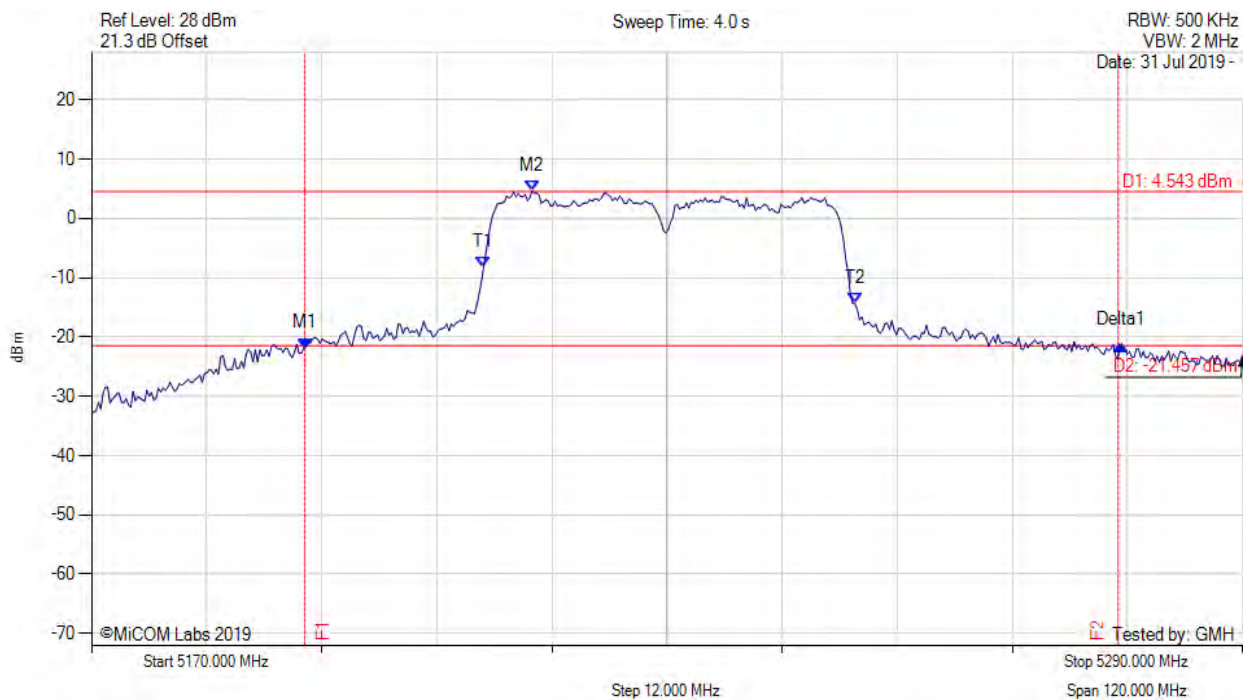| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5185.291 MHz : -21.479 dBm M2 : 5207.335 MHz : 5.765 dBm Delta1 : 28.778 MHz : 2.182 dB T1 : 5191.383 MHz : -3.328 dBm T2 : 5208.297 MHz : -3.377 dBm OBW : 16.914 MHz	Channel Frequency: 5200.00 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5187.776 MHz : -20.859 dBm M2 : 5207.335 MHz : 5.537 dBm Delta1 : 25.251 MHz : 0.773 dB T1 : 5191.383 MHz : -3.857 dBm T2 : 5208.297 MHz : -3.767 dBm OBW : 16.914 MHz	Channel Frequency: 5200.00 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
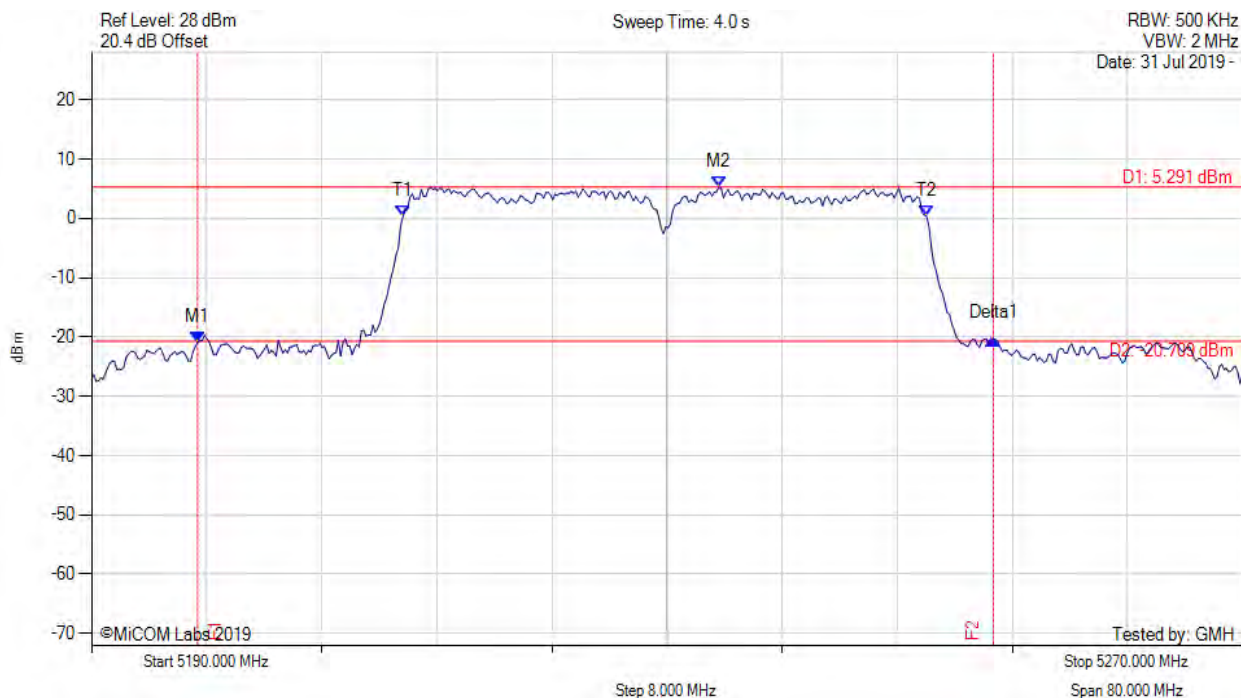

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5222.645 MHz : -22.278 dBm M2 : 5232.345 MHz : 5.617 dBm Delta1 : 32.144 MHz : 1.590 dB T1 : 5231.303 MHz : -5.325 dBm T2 : 5248.297 MHz : -3.338 dBm OBW : 16.994 MHz	Channel Frequency: 5240.00 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
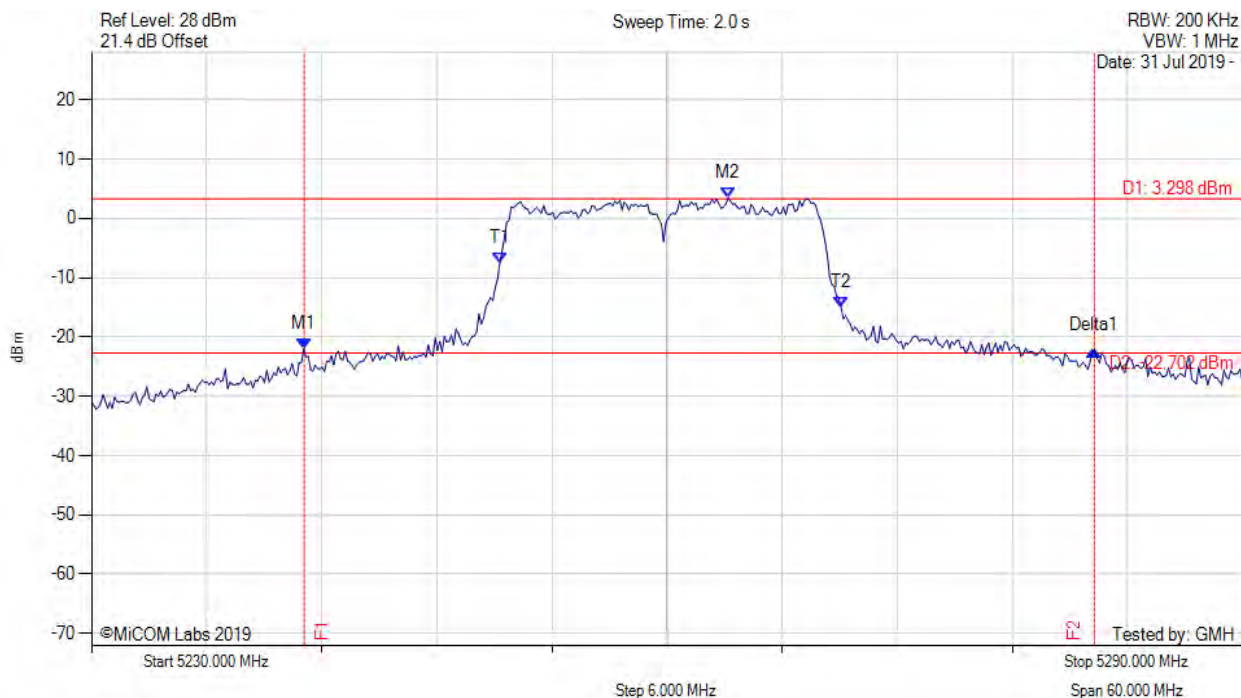

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5223.126 MHz : -24.208 dBm M2 : 5232.345 MHz : 5.458 dBm Delta1 : 29.739 MHz : 4.521 dB T1 : 5231.383 MHz : -3.741 dBm T2 : 5248.216 MHz : -2.870 dBm OBW : 16.834 MHz	Channel Frequency: 5240.00 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
20.7 dB Offset

Sweep Time: 5.0 s

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

D1: 2.080 dBm

M2

D2: -23.920 dBm

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Tested by: GMH

Start 5130.000 MHz
Stop 5290.000 MHz

Step 16.000 MHz
Span 160.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5168.477 MHz : -25.451 dBm M2 : 5207.275 MHz : 2.080 dBm Delta1 : 83.687 MHz : 0.667 dB T1 : 5172.004 MHz : -2.299 dBm T2 : 5248.637 MHz : -3.397 dBm OBW : 76.633 MHz	Measured 26 dB Bandwidth: 83.687 MHz Measured 99% Bandwidth: 76.633 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
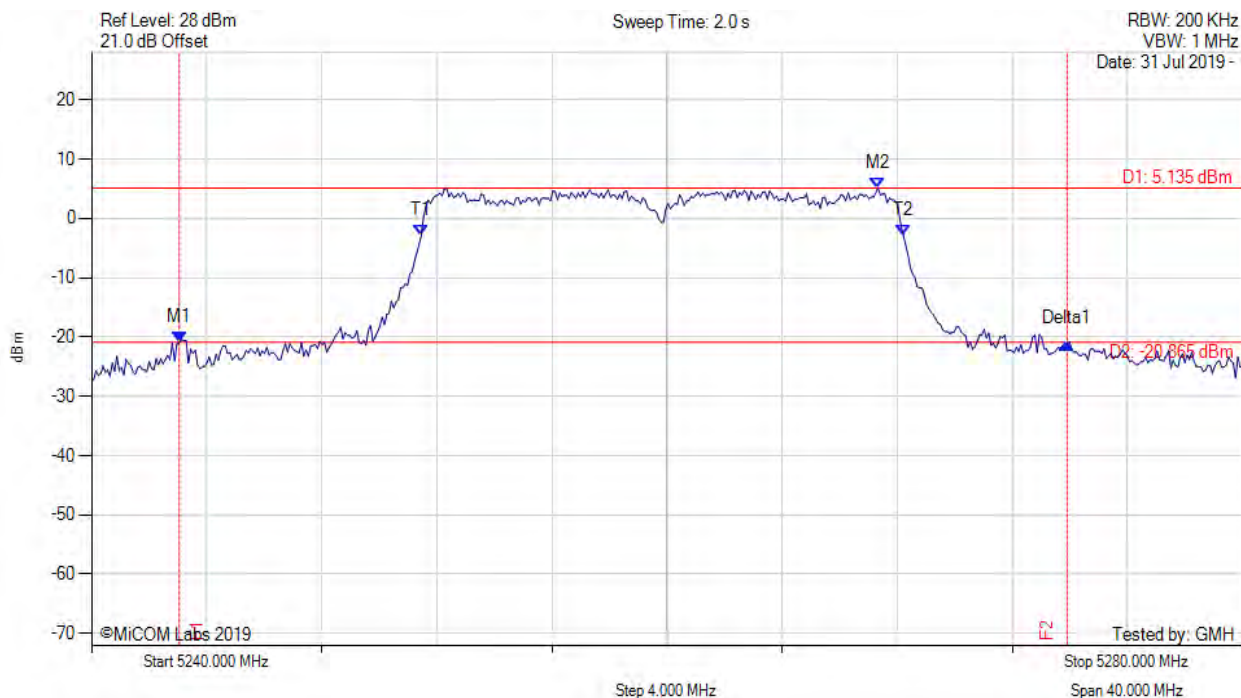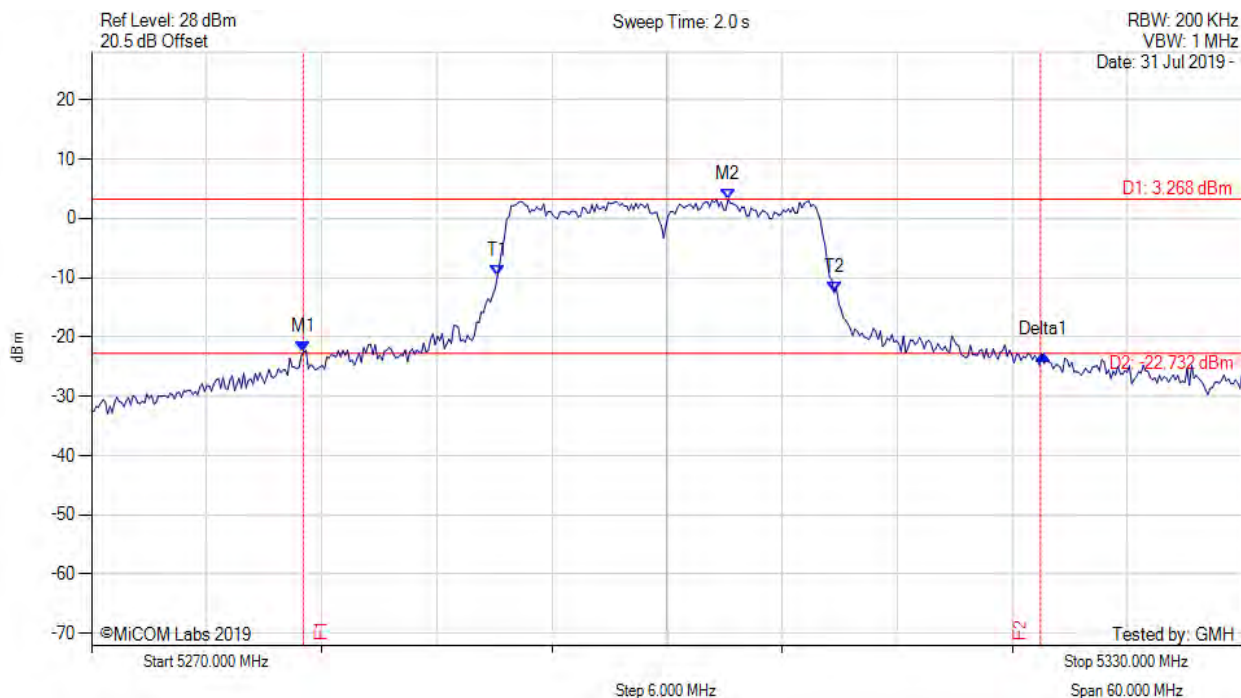

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5168.477 MHz : -25.972 dBm M2 : 5226.834 MHz : 2.383 dBm Delta1 : 82.405 MHz : 5.278 dB T1 : 5172.004 MHz : -3.126 dBm T2 : 5248.317 MHz : -2.337 dBm OBW : 76.313 MHz	Measured 26 dB Bandwidth: 82.405 MHz Measured 99% Bandwidth: 76.313 MHz

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5170.100 MHz : -23.568 dBm M2 : 5182.605 MHz : 2.700 dBm Delta1 : 20.120 MHz : 0.201 dB T1 : 5171.222 MHz : -3.962 dBm T2 : 5188.938 MHz : -2.360 dBm OBW : 17.715 MHz	Measured 26 dB Bandwidth: 20.120 MHz Measured 99% Bandwidth: 17.715 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

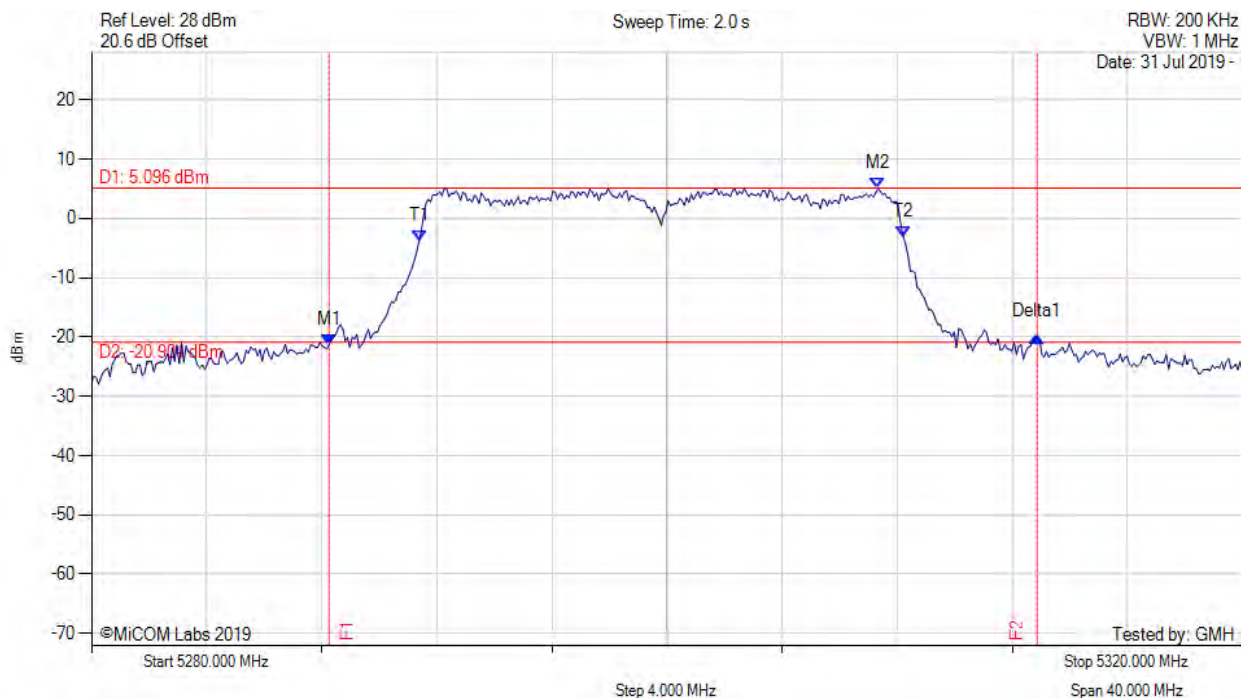| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5169.940 MHz : -27.546 dBm M2 : 5187.575 MHz : -0.401 dBm Delta1 : 20.120 MHz : 3.091 dB T1 : 5171.222 MHz : -6.775 dBm T2 : 5188.938 MHz : -4.741 dBm OBW : 17.715 MHz	Measured 26 dB Bandwidth: 20.120 MHz Measured 99% Bandwidth: 17.715 MHz

back to matrix

26 dB & 99% BANDWIDTH

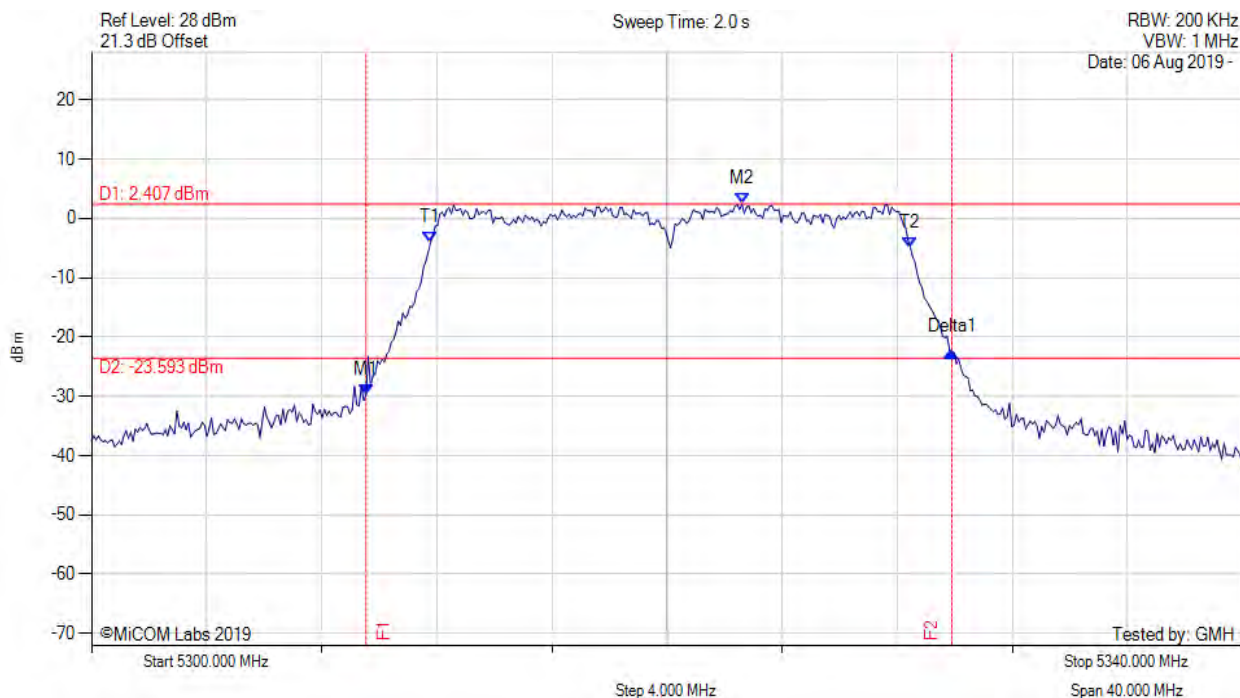Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5181.603 MHz : -22.801 dBm M2 : 5202.365 MHz : 5.594 dBm Delta1 : 37.194 MHz : 1.041 dB T1 : 5190.822 MHz : -3.787 dBm T2 : 5208.858 MHz : -3.844 dBm OBW : 18.036 MHz	Measured 26 dB Bandwidth: 37.194 MHz Measured 99% Bandwidth: 18.036 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

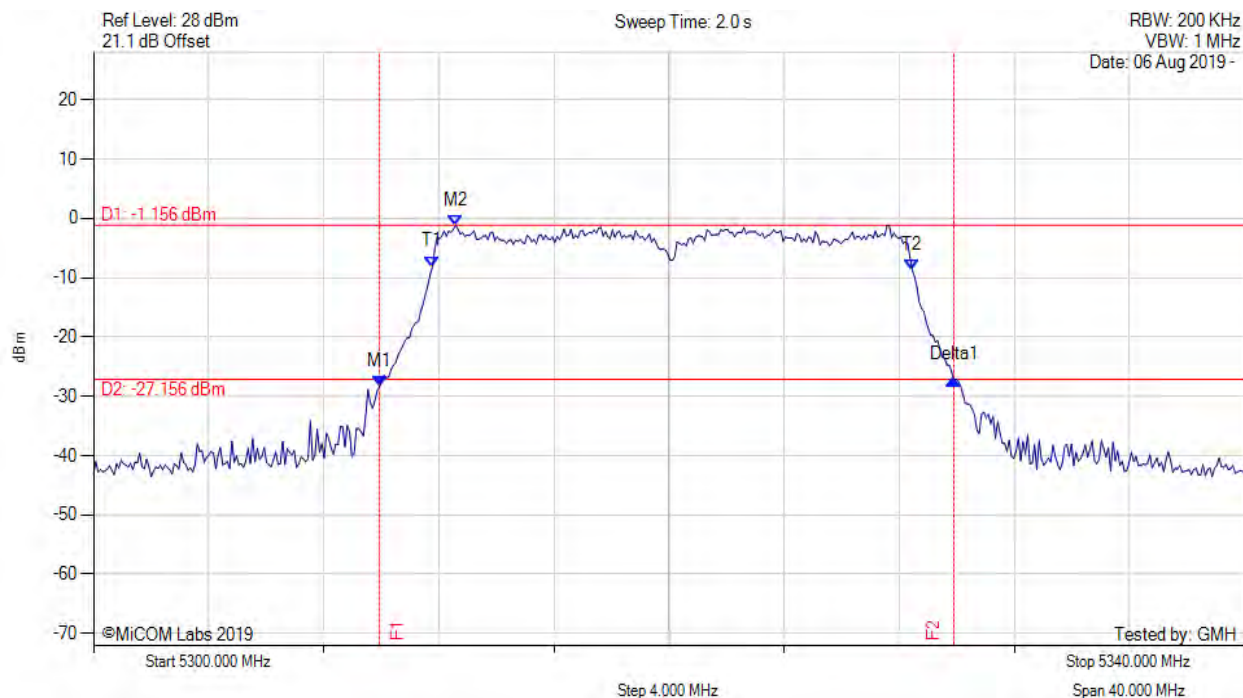| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5189.058 MHz : -24.135 dBm M2 : 5207.335 MHz : 3.550 dBm Delta1 : 21.403 MHz : 2.361 dB T1 : 5190.982 MHz : -1.678 dBm T2 : 5208.697 MHz : -1.483 dBm OBW : 17.715 MHz	Measured 26 dB Bandwidth: 21.403 MHz Measured 99% Bandwidth: 17.715 MHz

26 dB & 99% BANDWIDTH

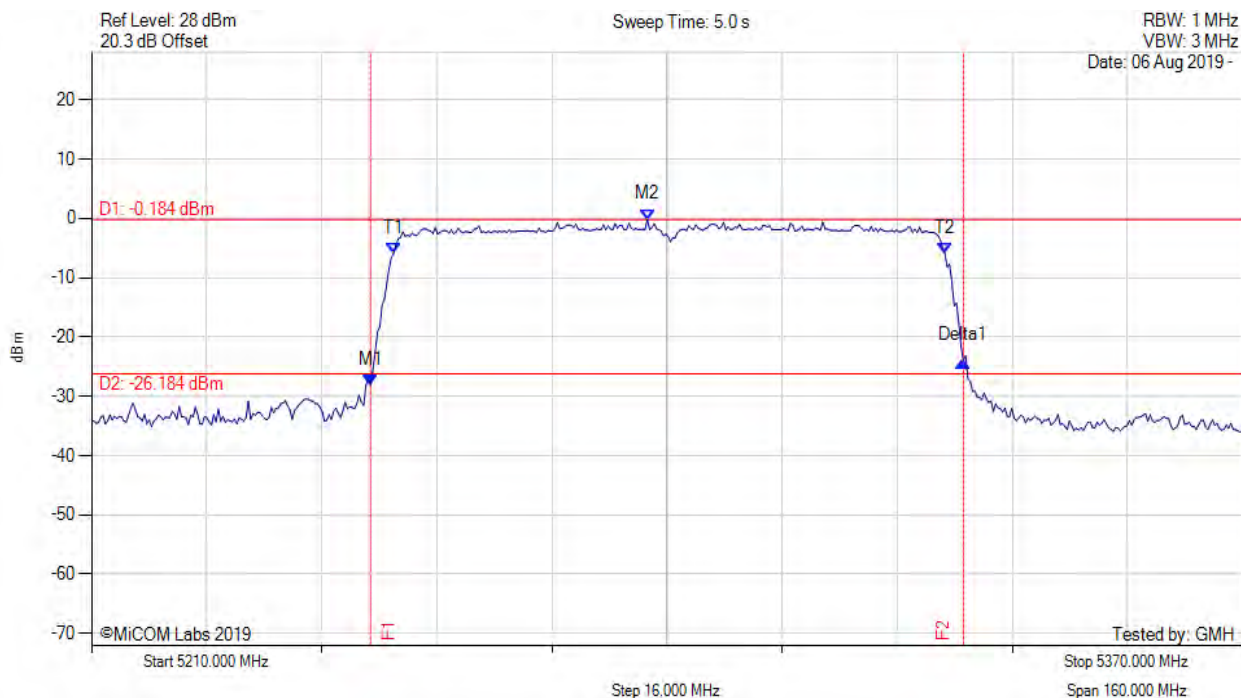Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5222.645 MHz : -20.531 dBm M2 : 5232.505 MHz : 5.637 dBm Delta1 : 34.950 MHz : -1.607 dB T1 : 5230.822 MHz : -2.956 dBm T2 : 5248.858 MHz : -3.954 dBm OBW : 18.036 MHz	Channel Frequency: 5240.00 MHz

back to matrix

---

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
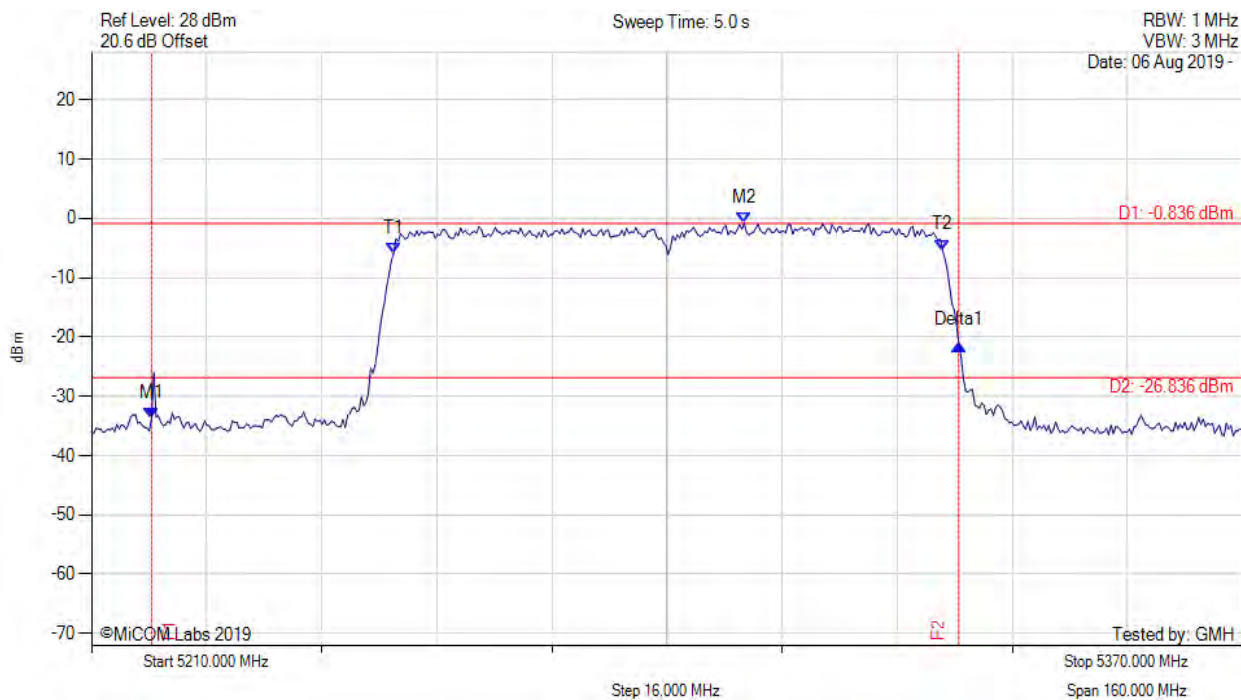

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	ERROR!!! MULTIPLE TEST RESULTS MATCHES...	Measured 26 dB Bandwidth: 21.563 MHz Measured 99% Bandwidth: 17.796 MHz ERROR!!! MULTIPLE TEST RESULTS MATCHES...

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
20.9 dB Offset

Sweep Time: 4.0 s

RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019 -

D1: 1.096 dBm
D2: -24.904 dBm

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Tested by: GMH

Start 5150.000 MHz
Stop 5230.000 MHz
Step 8.000 MHz
Span 80.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5169.238 MHz : -25.028 dBm M2 : 5183.988 MHz : 1.096 dBm Delta1 : 41.202 MHz : 2.276 dB T1 : 5171.964 MHz : -5.329 dBm T2 : 5208.357 MHz : -5.256 dBm OBW : 36.393 MHz	Measured 26 dB Bandwidth: 41.202 MHz Measured 99% Bandwidth: 36.393 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
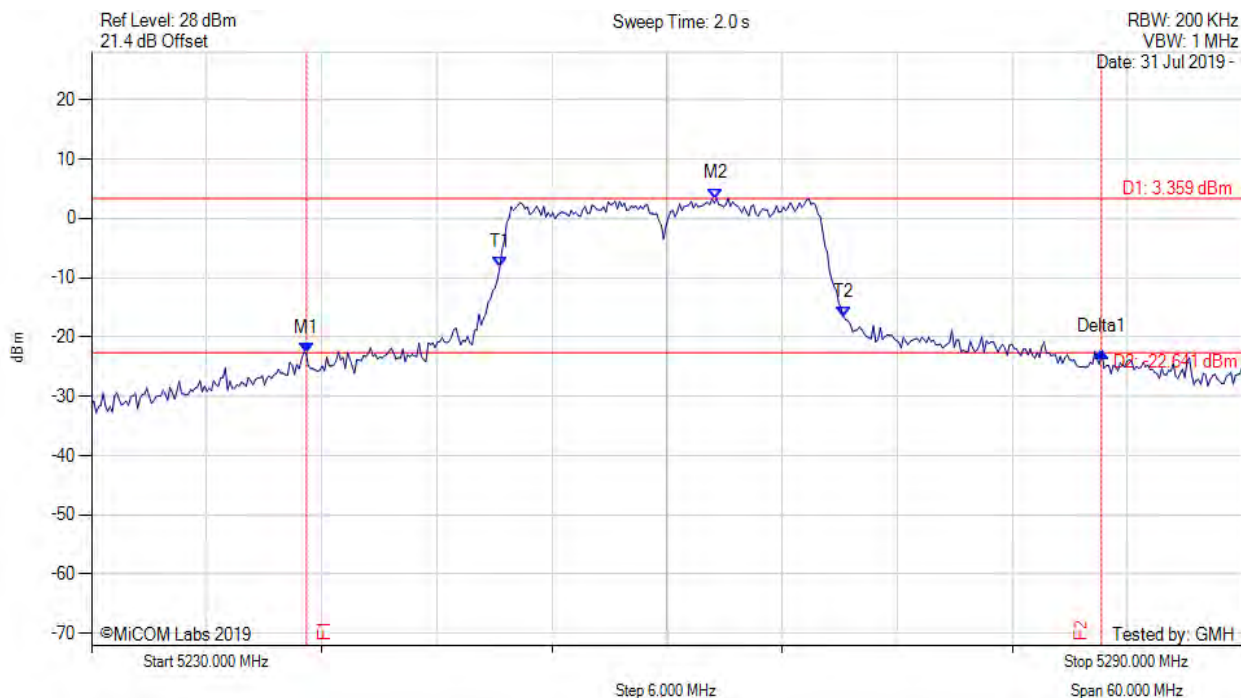

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5169.880 MHz : -24.042 dBm M2 : 5183.988 MHz : 2.117 dBm Delta1 : 40.561 MHz : -0.130 dB T1 : 5171.964 MHz : -3.320 dBm T2 : 5208.196 MHz : -2.860 dBm OBW : 36.232 MHz	Measured 26 dB Bandwidth: 40.561 MHz Measured 99% Bandwidth: 36.232 MHz

back to matrix

26 dB & 99% BANDWIDTH

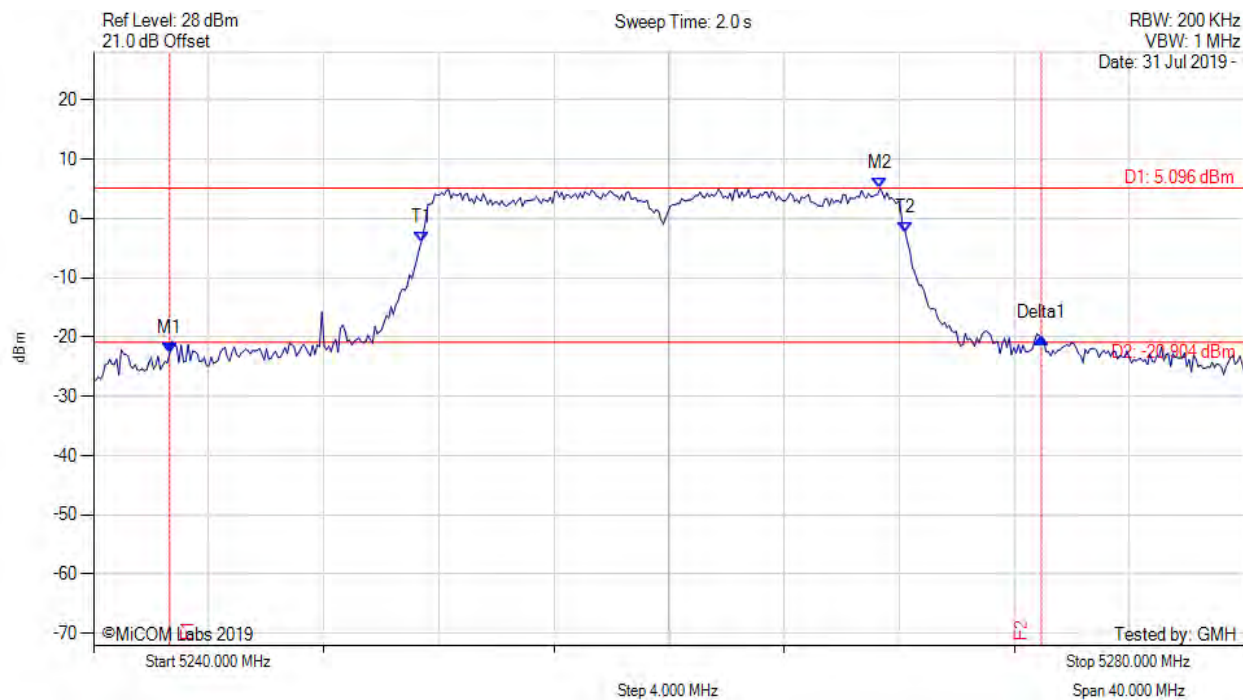Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
21.3 dB Offset
Sweep Time: 4.0 s
RBW: 500 KHz
VBW: 2 MHz
Date: 31 Jul 2019 -

D1: 4.543 dBm

D2: -21.457 dBm

Tested by: GMH

Start 5170.000 MHz
Step 12.000 MHz
Stop 5290.000 MHz
Span 120.000 MHz

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Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5192.244 MHz : -21.935 dBm M2 : 5215.972 MHz : 4.594 dBm Delta1 : 85.050 MHz : 0.561 dB T1 : 5210.882 MHz : -8.191 dBm T2 : 5249.599 MHz : -14.355 dBm OBW : 38.717 MHz	Measured 26 dB Bandwidth: 85.050 MHz Measured 99% Bandwidth: 38.717 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

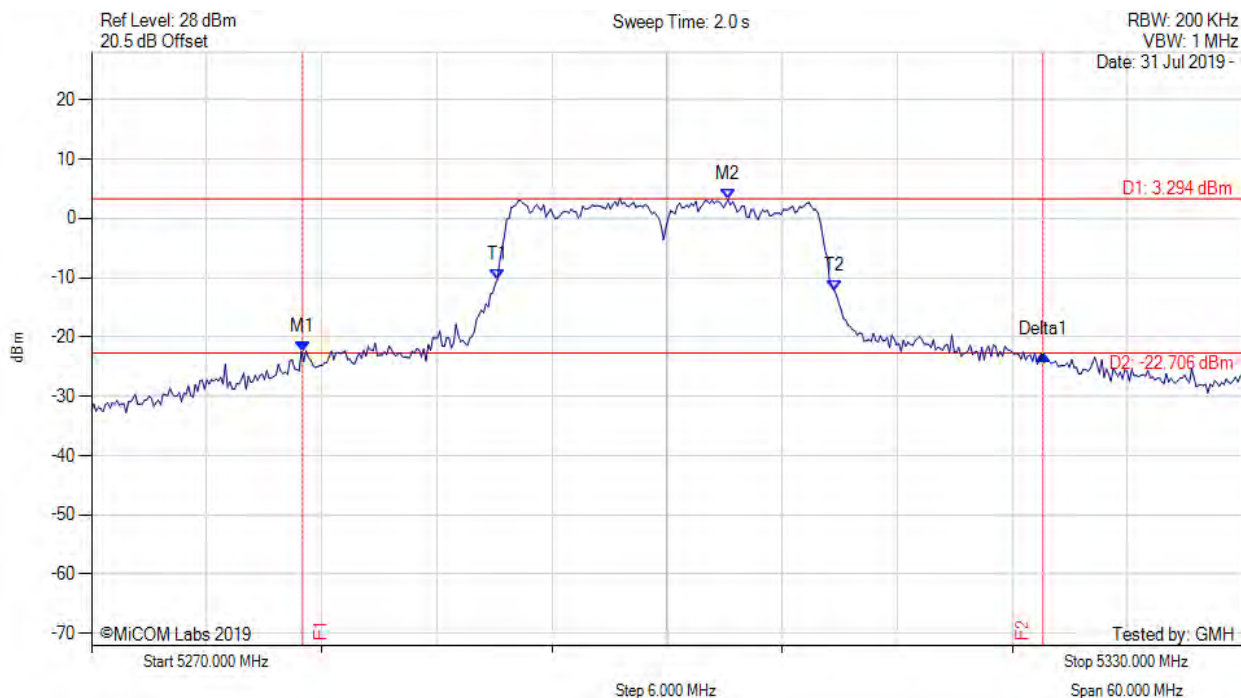| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5197.375 MHz : -20.914 dBm M2 : 5233.607 MHz : 5.291 dBm Delta1 : 55.311 MHz : 0.620 dB T1 : 5211.643 MHz : 0.343 dBm T2 : 5248.036 MHz : 0.392 dBm OBW : 36.393 MHz	Measured 26 dB Bandwidth: 55.311 MHz Measured 99% Bandwidth: 36.393 MHz

back to matrix

26 dB & 99% BANDWIDTH

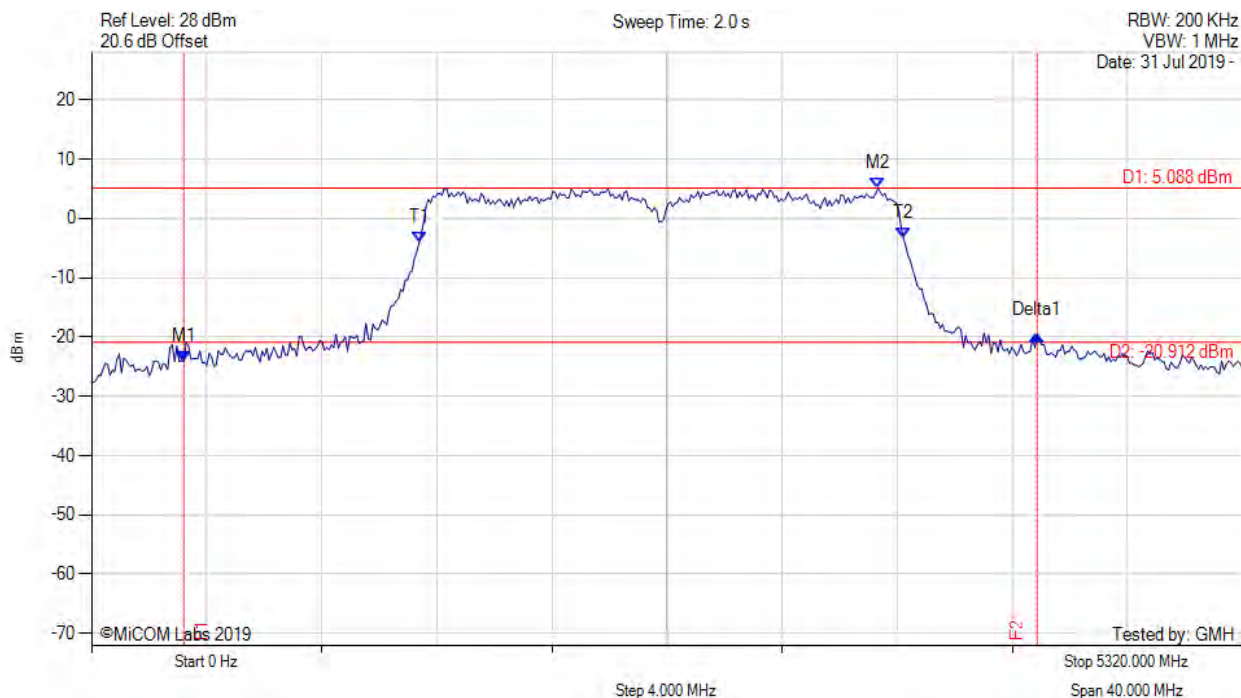Variant: 802.11a, Channel: 5260.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5241.082 MHz : -22.034 dBm M2 : 5263.166 MHz : 3.443 dBm Delta1 : 41.202 MHz : -0.173 dB T1 : 5251.283 MHz : -7.564 dBm T2 : 5269.078 MHz : -15.119 dBm OBW : 17.796 MHz	Measured 26 dB Bandwidth: 41.202 MHz Measured 99% Bandwidth: 17.796 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5260.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

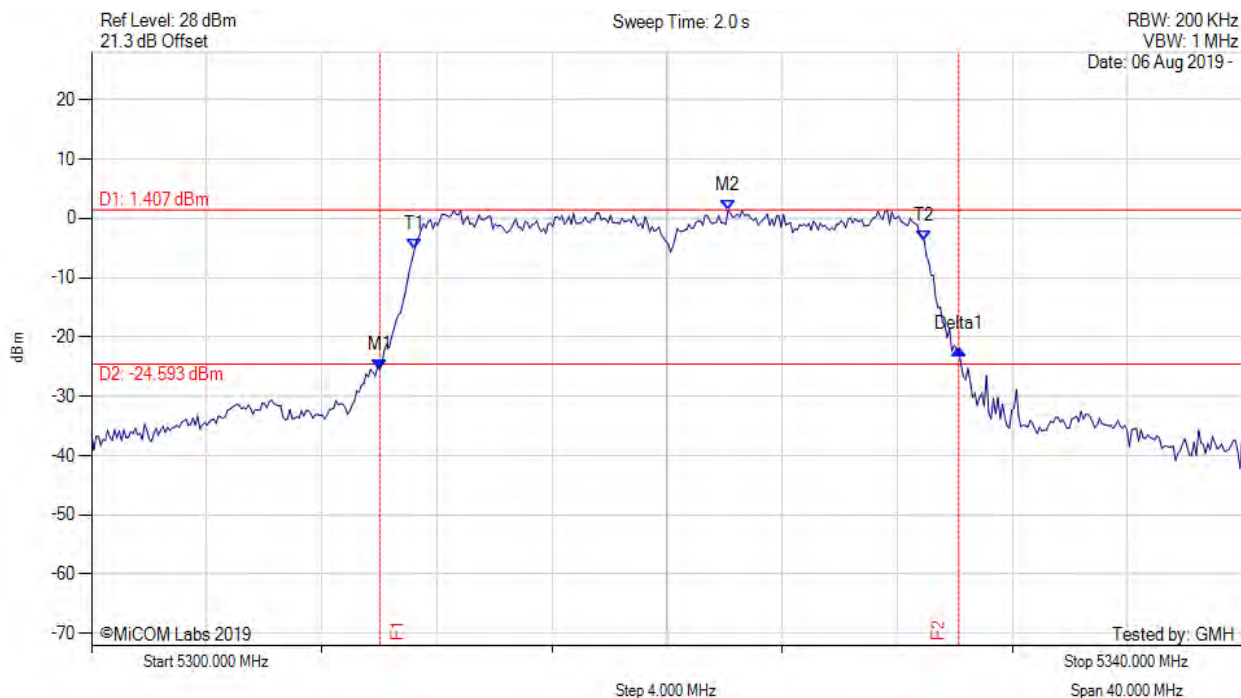| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5243.046 MHz : -20.912 dBm M2 : 5267.335 MHz : 5.135 dBm Delta1 : 30.862 MHz : -0.183 dB T1 : 5251.463 MHz : -2.893 dBm T2 : 5268.216 MHz : -2.962 dBm OBW : 16.754 MHz	Measured 26 dB Bandwidth: 30.862 MHz Measured 99% Bandwidth: 16.754 MHz

---

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5300.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
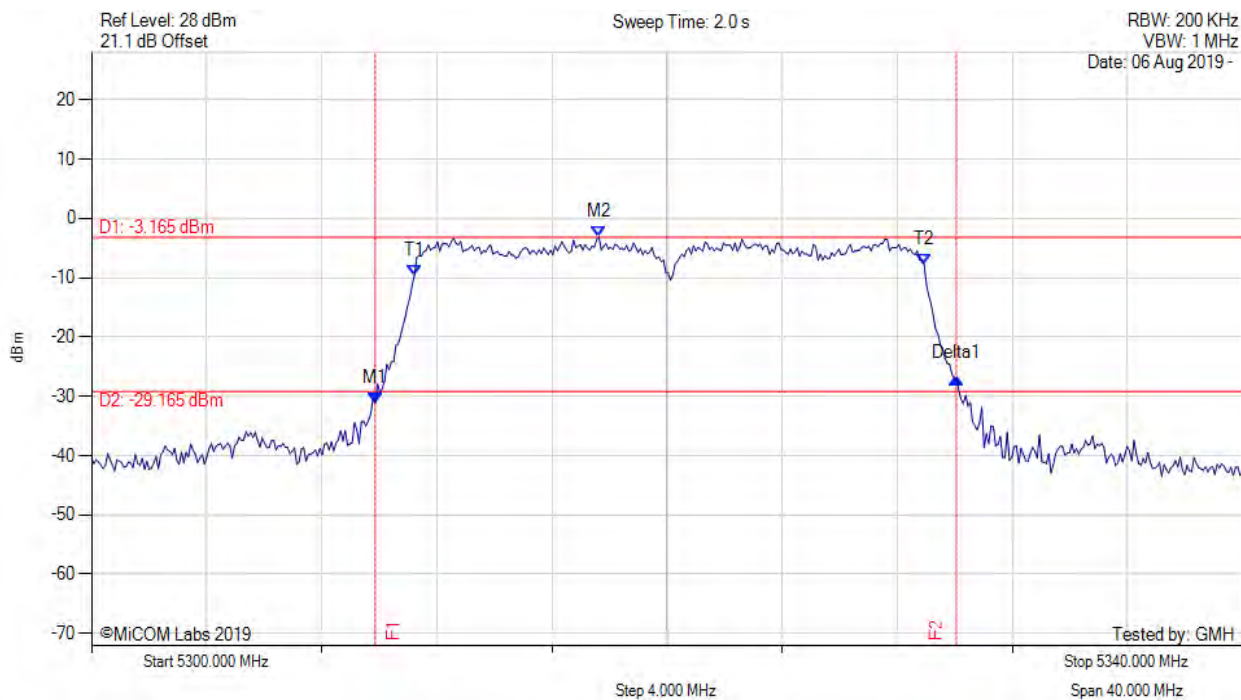

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5281.042 MHz : -22.506 dBm M2 : 5303.166 MHz : 3.239 dBm Delta1 : 38.557 MHz : -0.417 dB T1 : 5291.162 MHz : -9.759 dBm T2 : 5308.717 MHz : -12.524 dBm OBW : 17.555 MHz	Measured 26 dB Bandwidth: 38.557 MHz Measured 99% Bandwidth: 17.555 MHz

back to matrix

26 dB & 99% BANDWIDTH

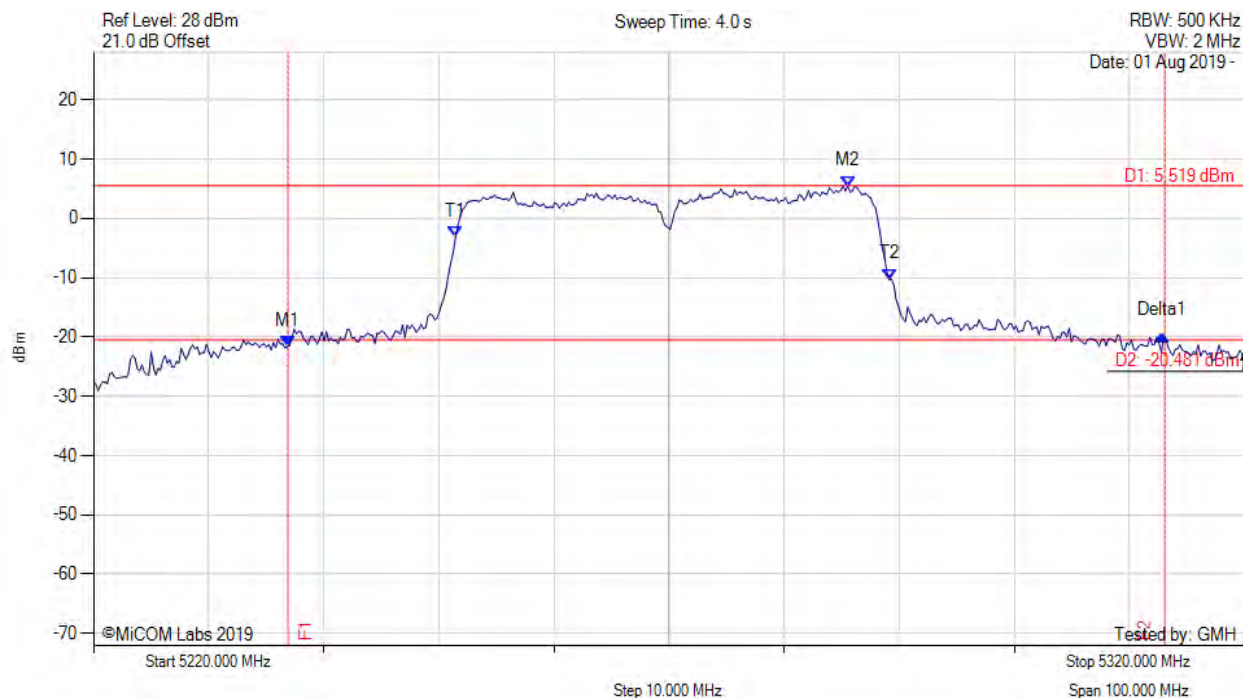Variant: 802.11a, Channel: 5300.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5288.257 MHz : -21.280 dBm M2 : 5307.335 MHz : 5.096 dBm Delta1 : 24.609 MHz : 1.302 dB T1 : 5291.383 MHz : -3.836 dBm T2 : 5308.216 MHz : -3.185 dBm OBW : 16.834 MHz	Measured 26 dB Bandwidth: 24.609 MHz Measured 99% Bandwidth: 16.834 MHz

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MiCOM Labs, 575 Boulder Court, Pleasanton, California 94566 USA, Phone: +1 (925) 462 0304, Fax: +1 (925) 462 0306, www.micomlabs.com

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5320.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5309.539 MHz : -29.720 dBm M2 : 5322.605 MHz : 2.407 dBm Delta1 : 20.361 MHz : 7.214 dB T1 : 5311.784 MHz : -4.005 dBm T2 : 5328.457 MHz : -4.914 dBm OBW : 16.673 MHz	Measured 26 dB Bandwidth: 20.361 MHz Measured 99% Bandwidth: 16.673 MHz

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26 dB & 99% BANDWIDTH

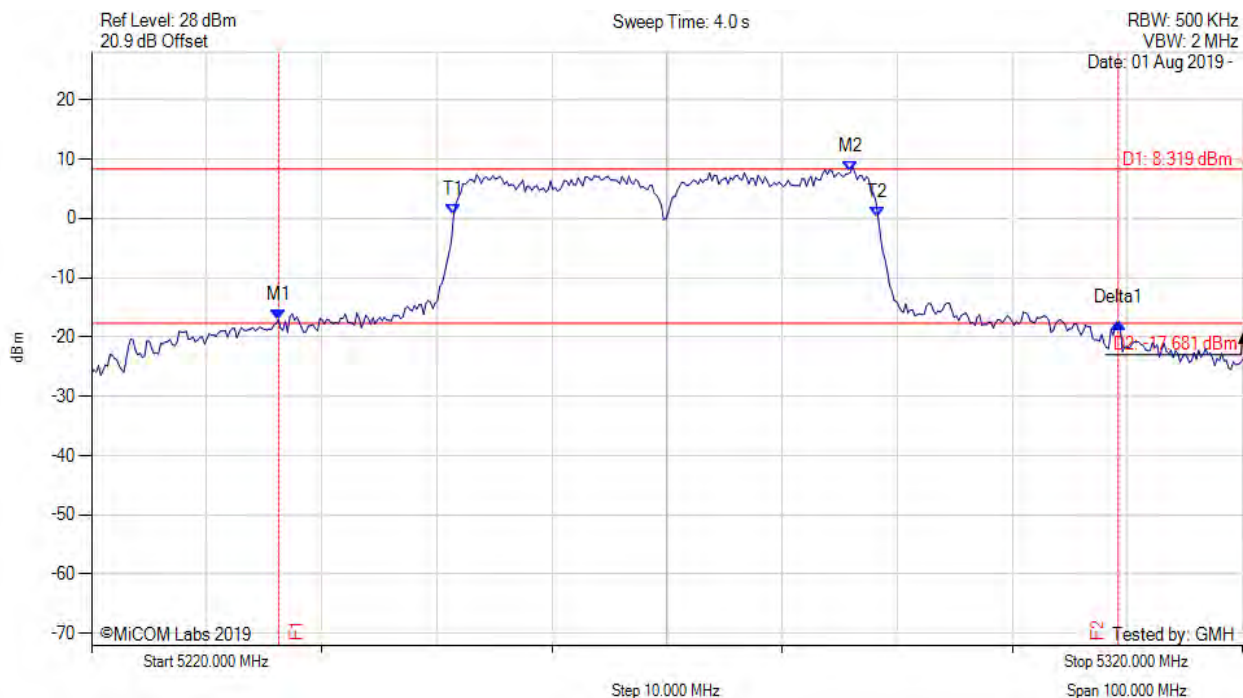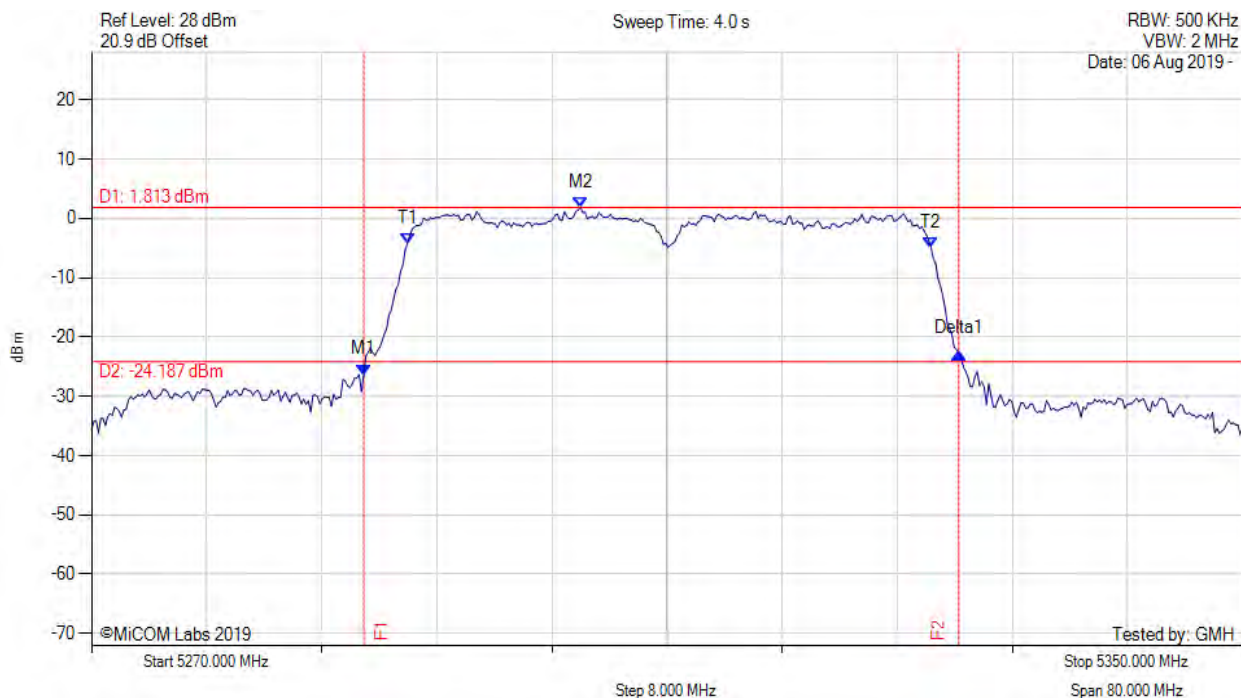Variant: 802.11a, Channel: 5320.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5309.940 MHz : -28.323 dBm M2 : 5312.585 MHz : -1.156 dBm Delta1 : 19.960 MHz : 1.058 dB T1 : 5311.784 MHz : -8.127 dBm T2 : 5328.457 MHz : -8.756 dBm OBW : 16.673 MHz	Measured 26 dB Bandwidth: 19.960 MHz Measured 99% Bandwidth: 16.673 MHz

26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5290.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5248.798 MHz : -28.168 dBm M2 : 5287.275 MHz : -0.184 dBm Delta1 : 82.405 MHz : 4.135 dB T1 : 5252.004 MHz : -5.831 dBm T2 : 5328.637 MHz : -5.959 dBm OBW : 76.633 MHz	Measured 26 dB Bandwidth: 82.405 MHz Measured 99% Bandwidth: 76.633 MHz

[back to matrix](#)

26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5290.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

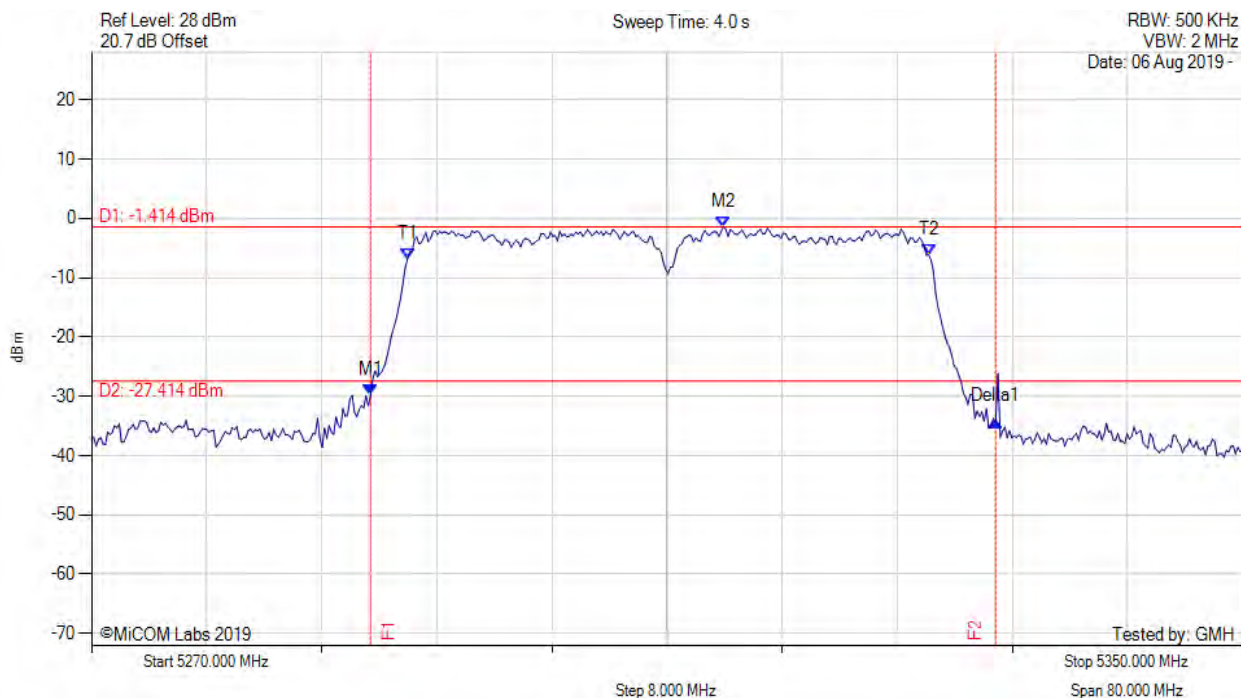| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5218.337 MHz : -33.789 dBm M2 : 5300.741 MHz : -0.836 dBm Delta1 : 112.224 MHz : 12.540 dB T1 : 5252.004 MHz : -5.964 dBm T2 : 5328.317 MHz : -5.327 dBm OBW : 76.313 MHz	Measured 26 dB Bandwidth: 112.224 MHz Measured 99% Bandwidth: 76.313 MHz

back to matrix

26 dB & 99% BANDWIDTH

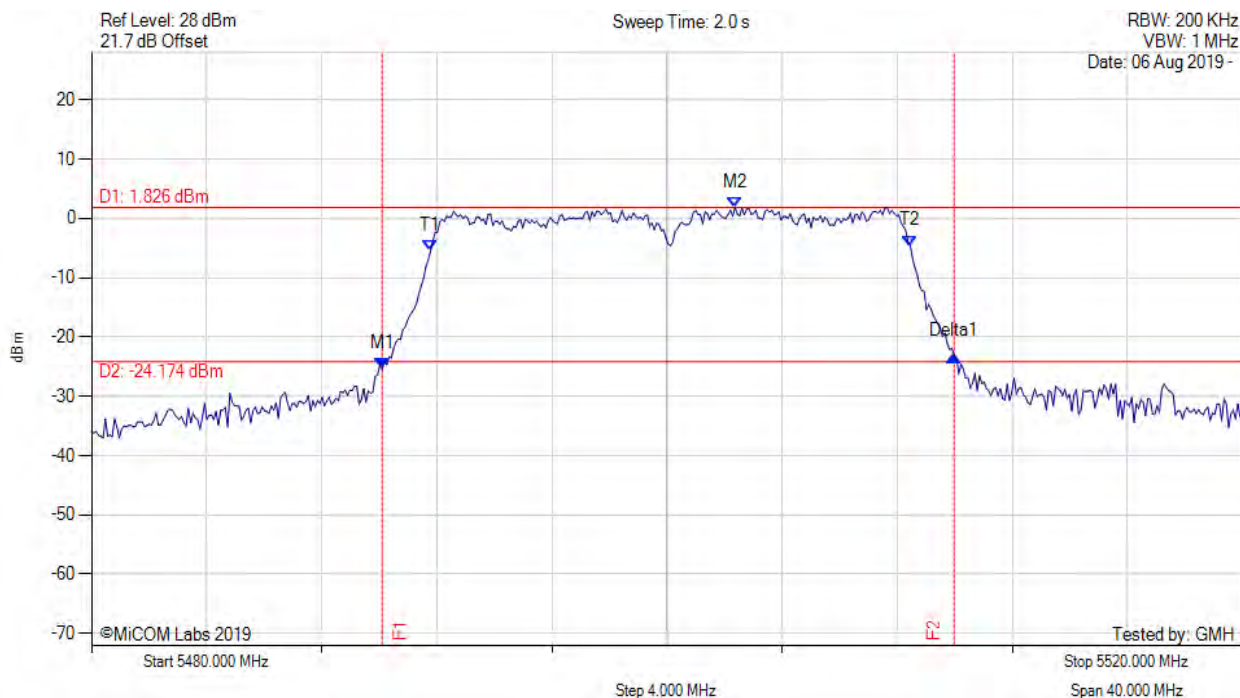Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5241.202 MHz : -22.669 dBm M2 : 5262.525 MHz : 3.320 dBm Delta1 : 41.443 MHz : 0.142 dB T1 : 5251.283 MHz : -8.184 dBm T2 : 5269.198 MHz : -16.576 dBm OBW : 17.916 MHz	Measured 26 dB Bandwidth: 41.443 MHz Measured 99% Bandwidth: 17.916 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

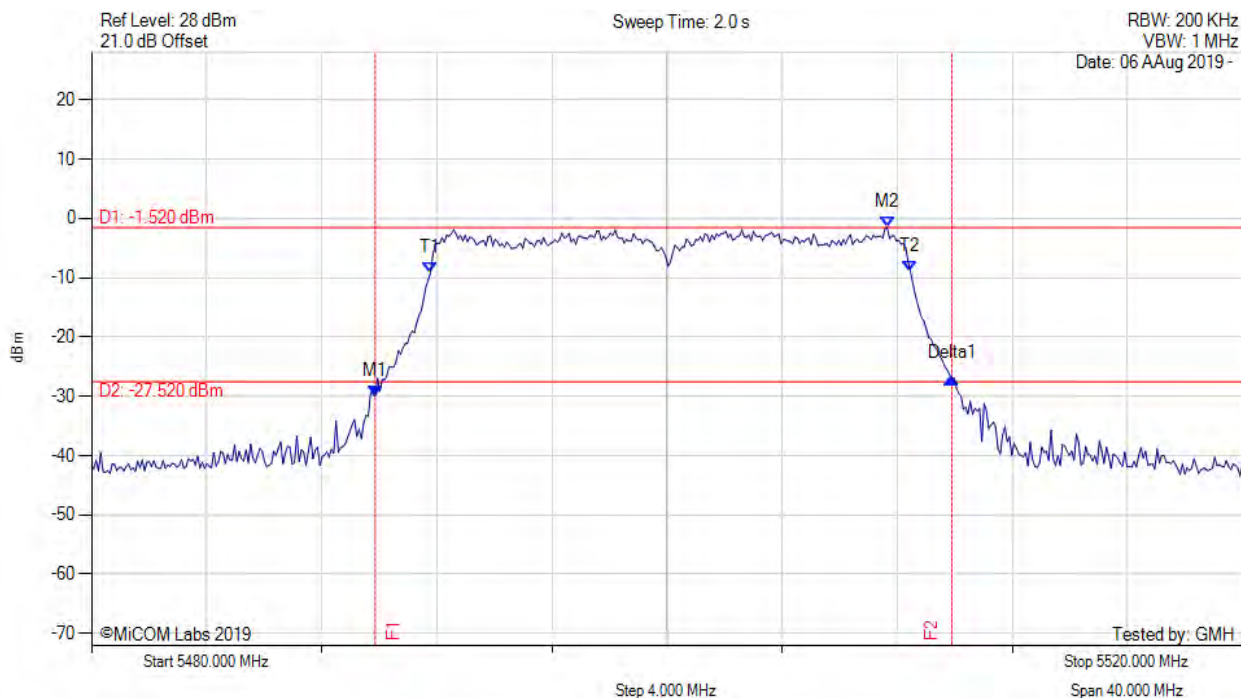| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5242.645 MHz : -22.842 dBm M2 : 5267.335 MHz : 5.096 dBm Delta1 : 30.301 MHz : 2.770 dB T1 : 5251.383 MHz : -4.143 dBm T2 : 5268.216 MHz : -2.382 dBm OBW : 16.834 MHz	Measured 26 dB Bandwidth: 30.301 MHz Measured 99% Bandwidth: 16.834 MHz

26 dB & 99% BANDWIDTH

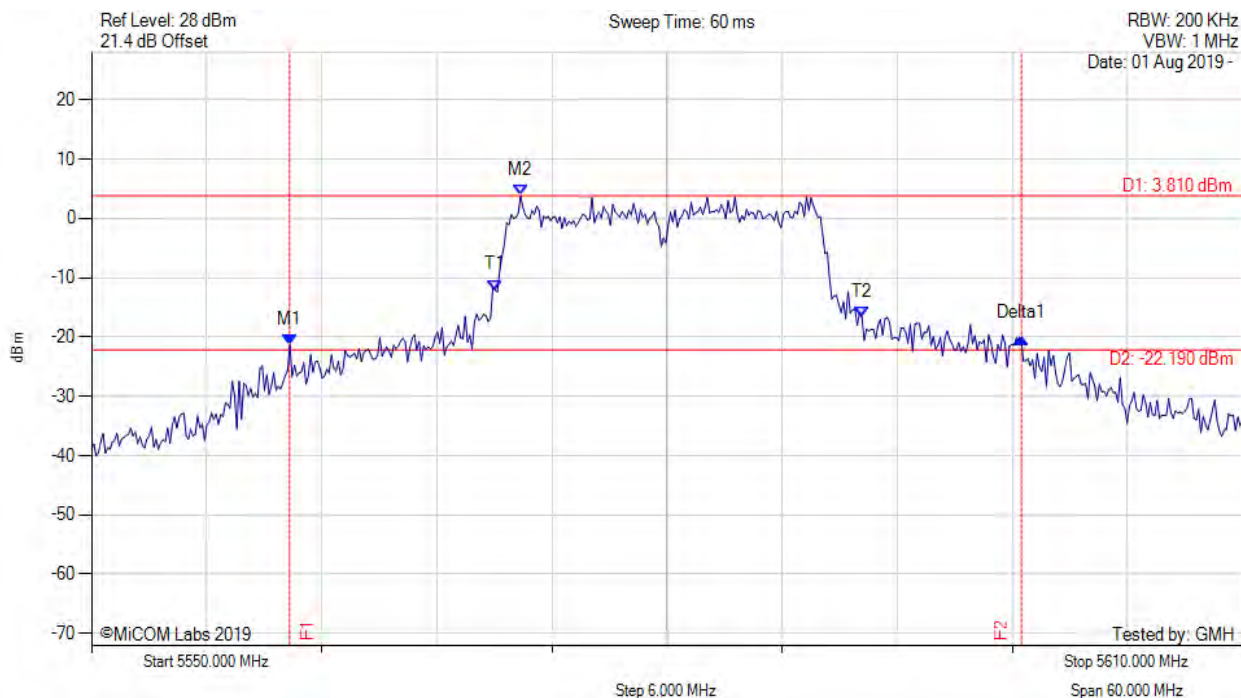Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5281.002 MHz : -22.408 dBm M2 : 5303.166 MHz : 3.178 dBm Delta1 : 38.597 MHz : -0.466 dB T1 : 5291.162 MHz : -10.265 dBm T2 : 5308.717 MHz : -12.128 dBm OBW : 17.555 MHz	Channel Frequency: 5300.00 MHz

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26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
20.6 dB Offset

Sweep Time: 2.0 s

RBW: 200 KHz
VBW: 1 MHz
Date: 31 Jul 2019 -

D1: 5.088 dBm

D2: -20.912 dBm

Delta1

M1   M2   T1   T2

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Start 0 Hz
Stop 5320.000 MHz
Step 4.000 MHz
Span 40.000 MHz

Tested by: GMH

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	ERROR!!! MULTIPLE TEST RESULTS MATCHES...	Measured 26 dB Bandwidth: 29.659 MHz Measured 99% Bandwidth: 16.834 MHz ERROR!!! MULTIPLE TEST RESULTS MATCHES...

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
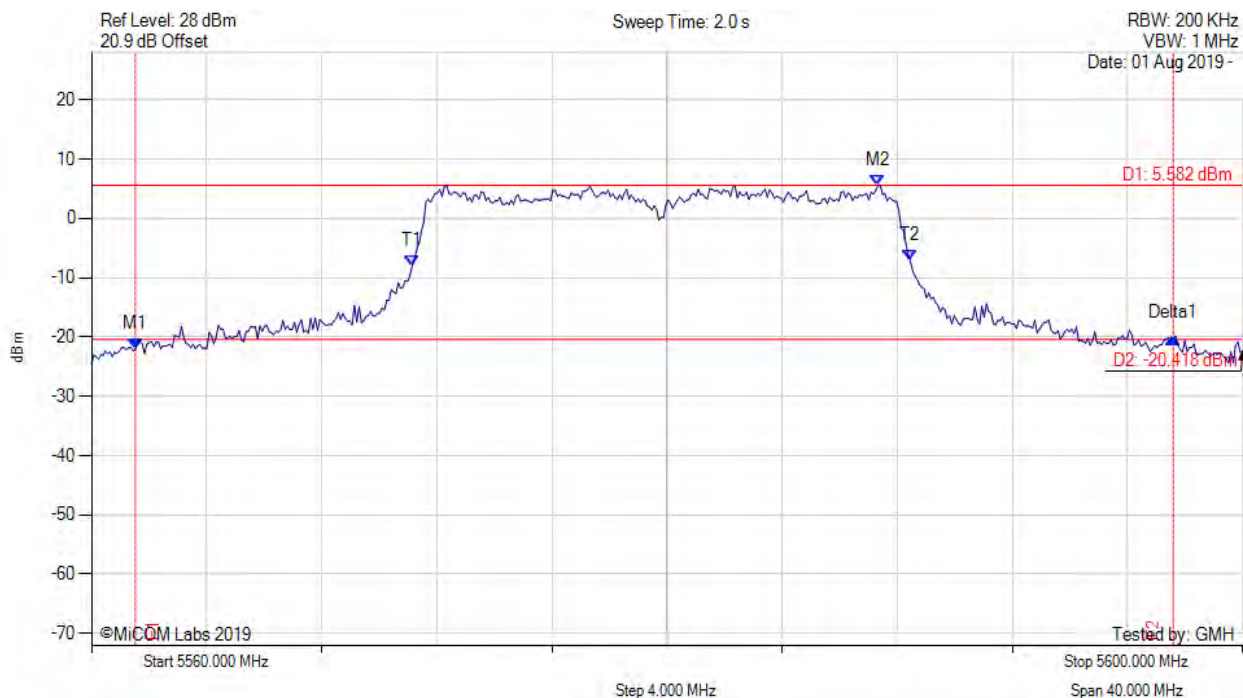

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5310.020 MHz : -25.457 dBm M2 : 5322.124 MHz : 1.407 dBm Delta1 : 20.120 MHz : 3.423 dB T1 : 5311.222 MHz : -5.294 dBm T2 : 5328.938 MHz : -3.741 dBm OBW : 17.715 MHz	Measured 26 dB Bandwidth: 20.120 MHz Measured 99% Bandwidth: 17.715 MHz

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26 dB & 99% BANDWIDTH

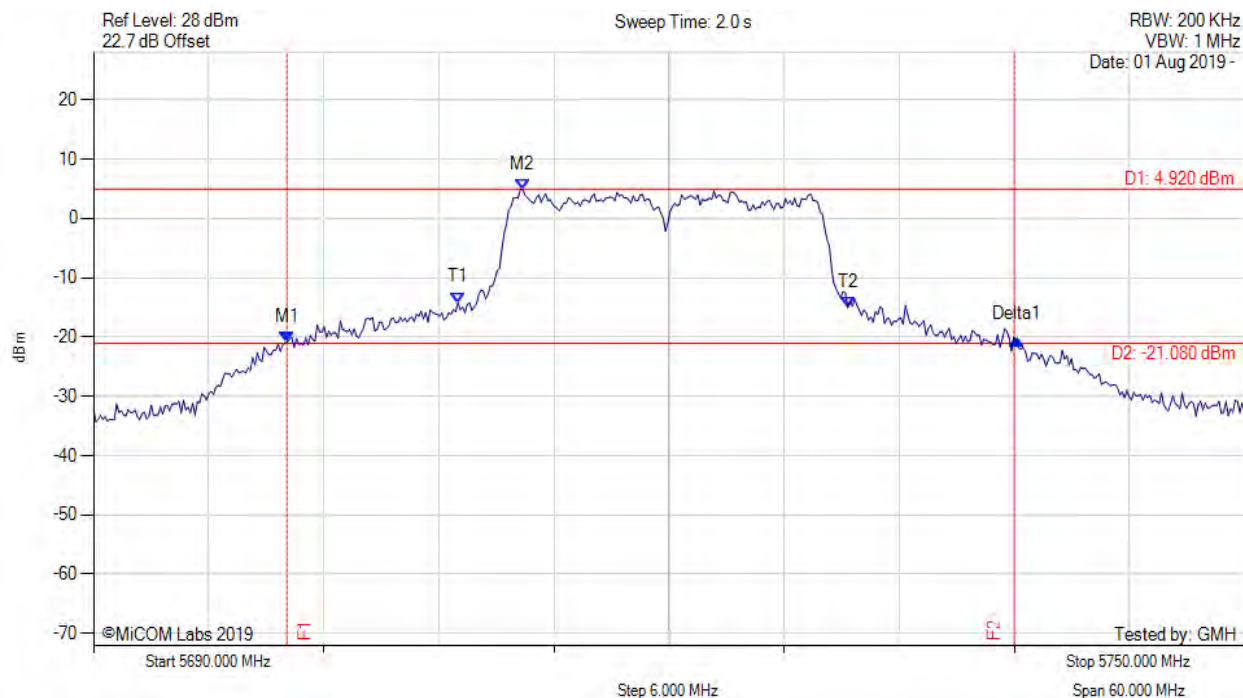Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5309.860 MHz : -31.097 dBm M2 : 5317.635 MHz : -3.165 dBm Delta1 : 20.200 MHz : 4.074 dB T1 : 5311.222 MHz : -9.610 dBm T2 : 5328.938 MHz : -7.790 dBm OBW : 17.715 MHz	Measured 26 dB Bandwidth: 20.200 MHz Measured 99% Bandwidth: 17.715 MHz

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26 dB & 99% BANDWIDTH

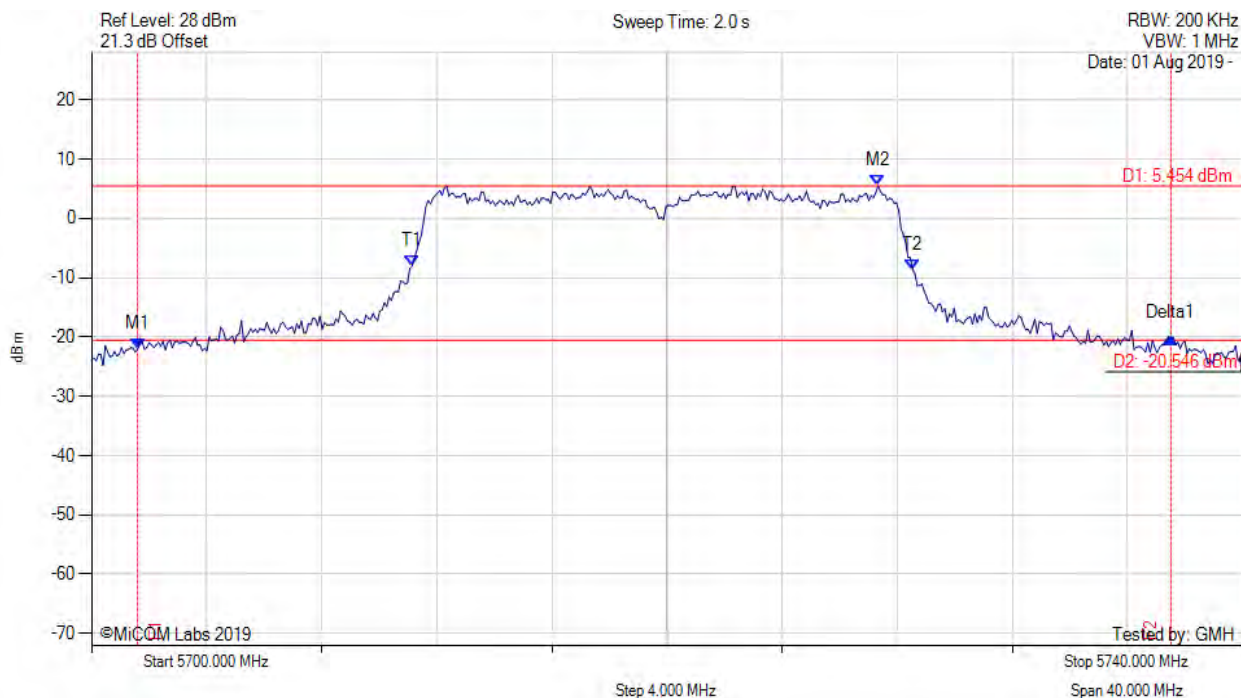Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5236.894 MHz : -21.638 dBm M2 : 5285.531 MHz : 5.425 dBm Delta1 : 75.992 MHz : 1.871 dB T1 : 5251.463 MHz : -3.049 dBm T2 : 5289.138 MHz : -10.249 dBm OBW : 37.675 MHz	Measured 26 dB Bandwidth: 75.992 MHz Measured 99% Bandwidth: 37.675 MHz

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26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

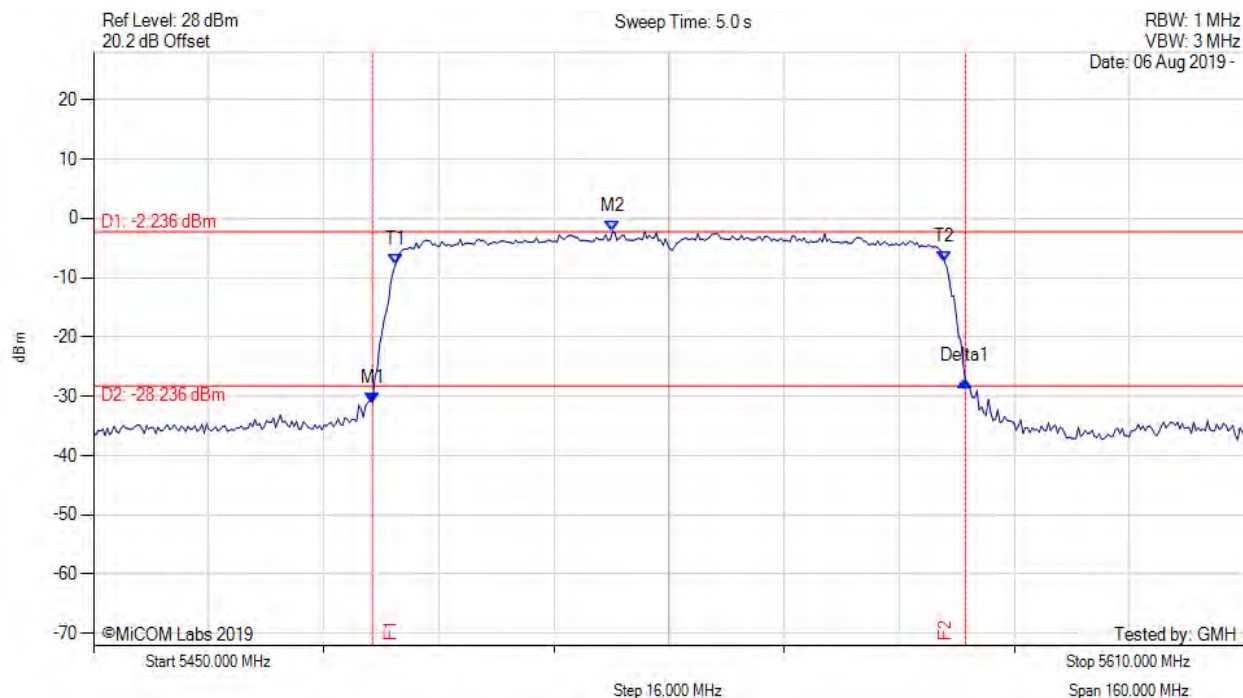| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5236.253 MHz : -17.058 dBm M2 : 5285.952 MHz : 7.778 dBm Delta1 : 72.946 MHz : -0.618 dB T1 : 5251.463 MHz : 0.575 dBm T2 : 5288.337 MHz : 0.248 dBm OBW : 36.874 MHz	Measured 26 dB Bandwidth: 72.946 MHz Measured 99% Bandwidth: 36.874 MHz

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26 dB & 99% BANDWIDTH

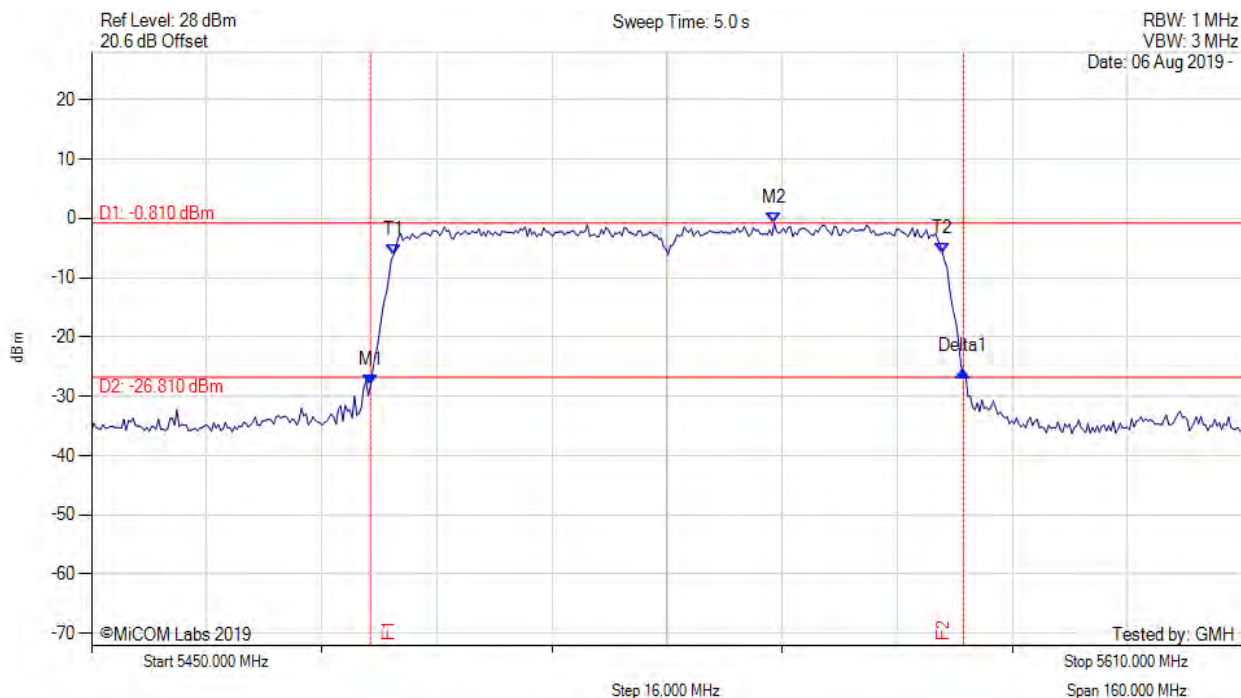Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5288.918 MHz : -26.368 dBm M2 : 5303.988 MHz : 1.813 dBm Delta1 : 41.363 MHz : 3.710 dB T1 : 5291.964 MHz : -4.178 dBm T2 : 5328.357 MHz : -4.941 dBm OBW : 36.393 MHz	Measured 26 dB Bandwidth: 41.363 MHz Measured 99% Bandwidth: 36.393 MHz

back to matrix

MiCOMLabs.

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5289.399 MHz : -29.813 dBm M2 : 5313.928 MHz : -1.414 dBm Delta1 : 43.447 MHz : -4.436 dB T1 : 5291.964 MHz : -6.781 dBm T2 : 5328.196 MHz : -6.140 dBm OBW : 36.232 MHz	Measured 26 dB Bandwidth: 43.447 MHz Measured 99% Bandwidth: 36.232 MHz

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MiCOMLabs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

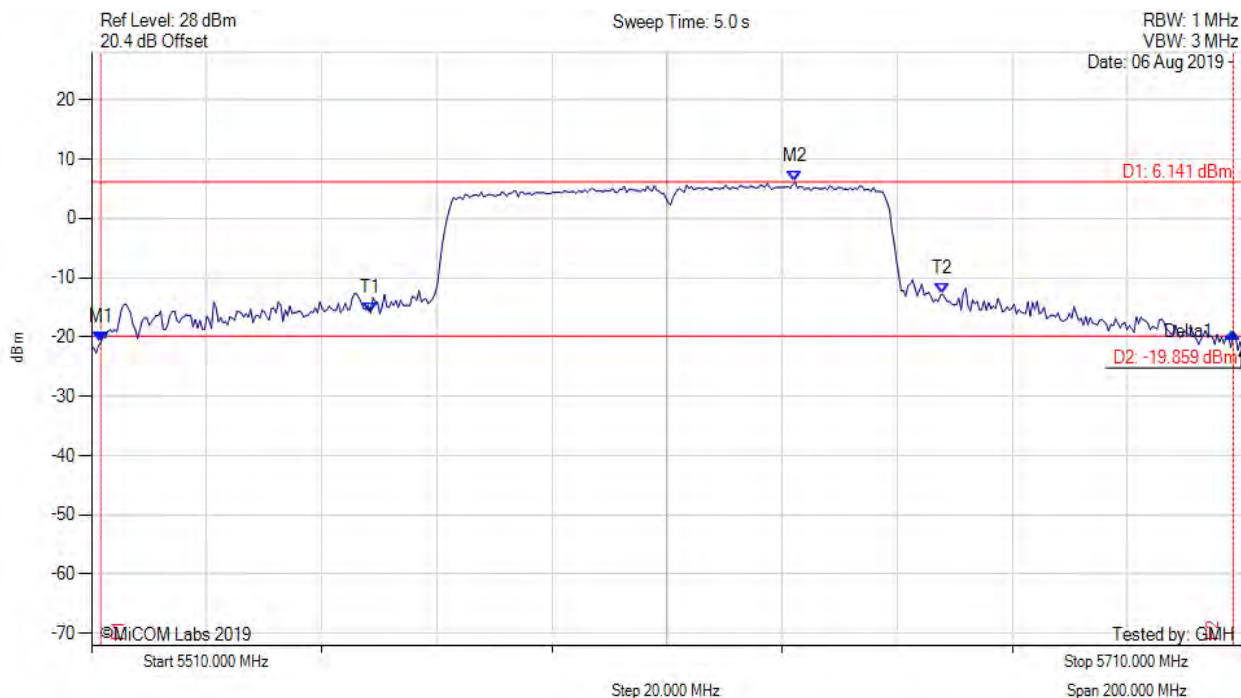## 26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5500.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5490.100 MHz : -25.400 dBm M2 : 5502.365 MHz : 1.826 dBm Delta1 : 19.880 MHz : 2.266 dB T1 : 5491.784 MHz : -5.467 dBm T2 : 5508.457 MHz : -4.644 dBm OBW : 16.673 MHz	Measured 26 dB Bandwidth: 19.880 MHz Measured 99% Bandwidth: 16.673 MHz

back to matrix

26 dB & 99% BANDWIDTH

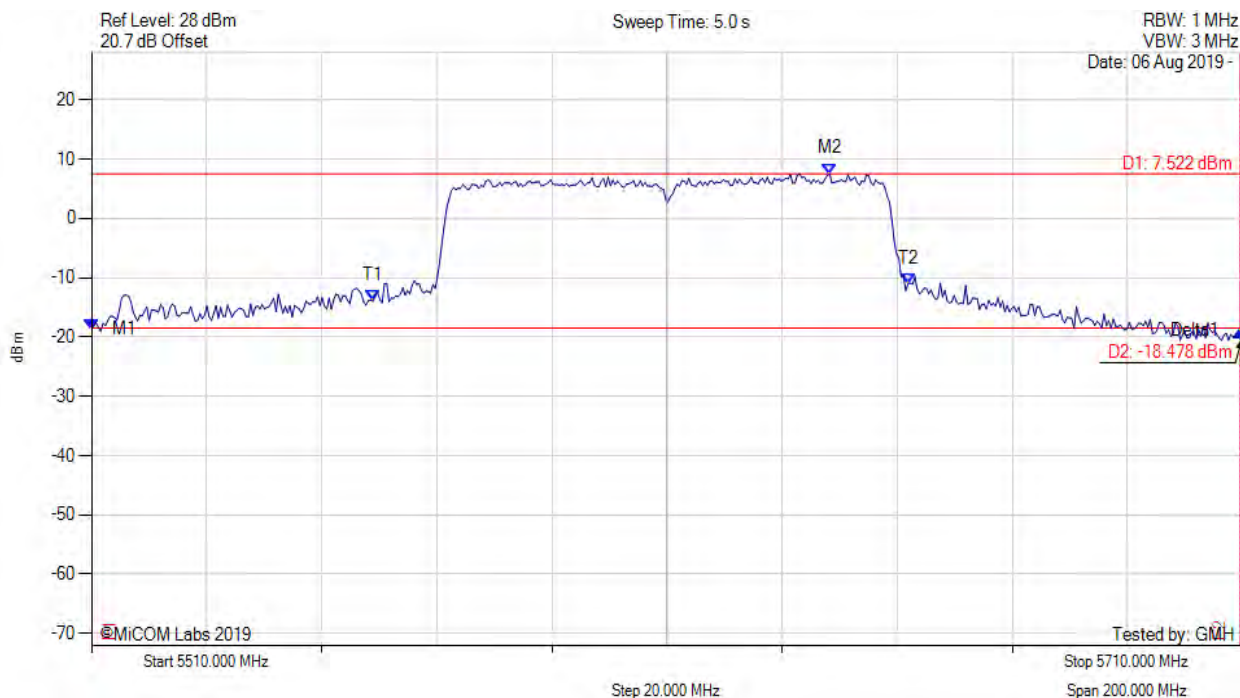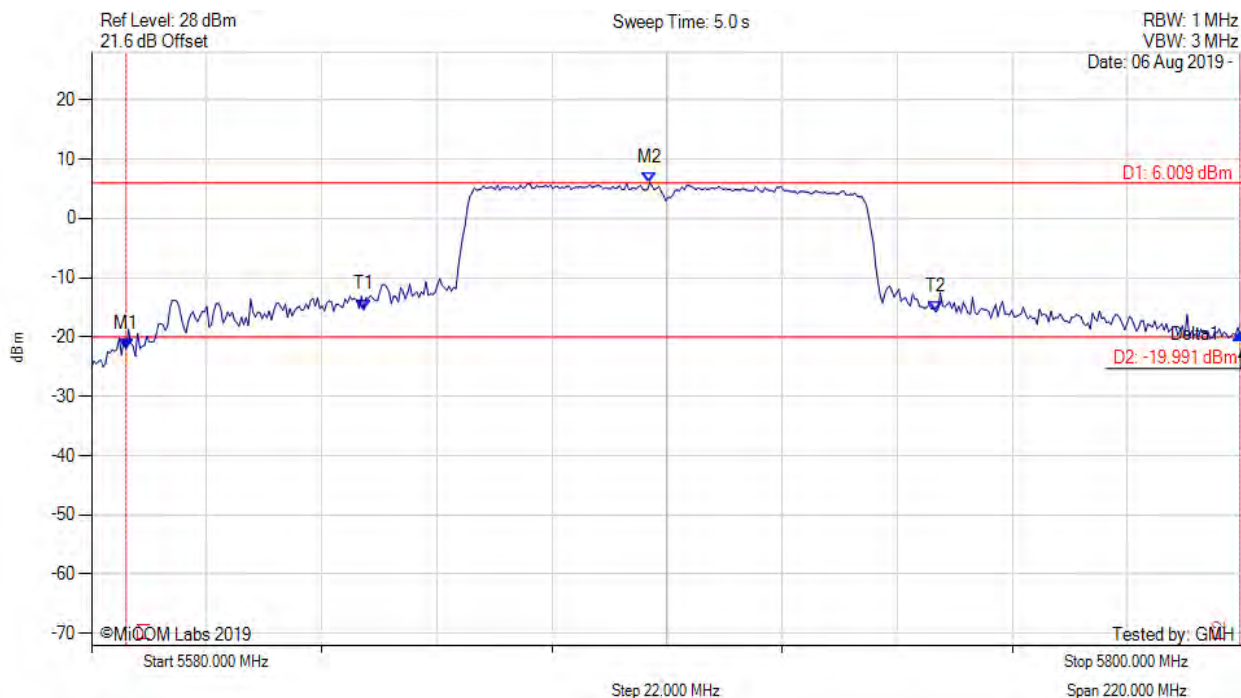Variant: 802.11a, Channel: 5500.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5489.860 MHz : -29.974 dBm M2 : 5507.655 MHz : -1.520 dBm Delta1 : 20.040 MHz : 3.097 dB T1 : 5491.784 MHz : -9.120 dBm T2 : 5508.457 MHz : -8.856 dBm OBW : 16.673 MHz	Measured 26 dB Bandwidth: 20.040 MHz Measured 99% Bandwidth: 16.673 MHz

26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5580.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5560.321 MHz : -21.314 dBm M2 : 5572.365 MHz : 3.813 dBm Delta1 : 38.156 MHz : 1.212 dB T1 : 5571.042 MHz : -12.122 dBm T2 : 5590.160 MHz : -16.594 dBm OBW : 19.118 MHz	Measured 26 dB Bandwidth: 38.156 MHz Measured 99% Bandwidth: 19.118 MHz

26 dB & 99% BANDWIDTH

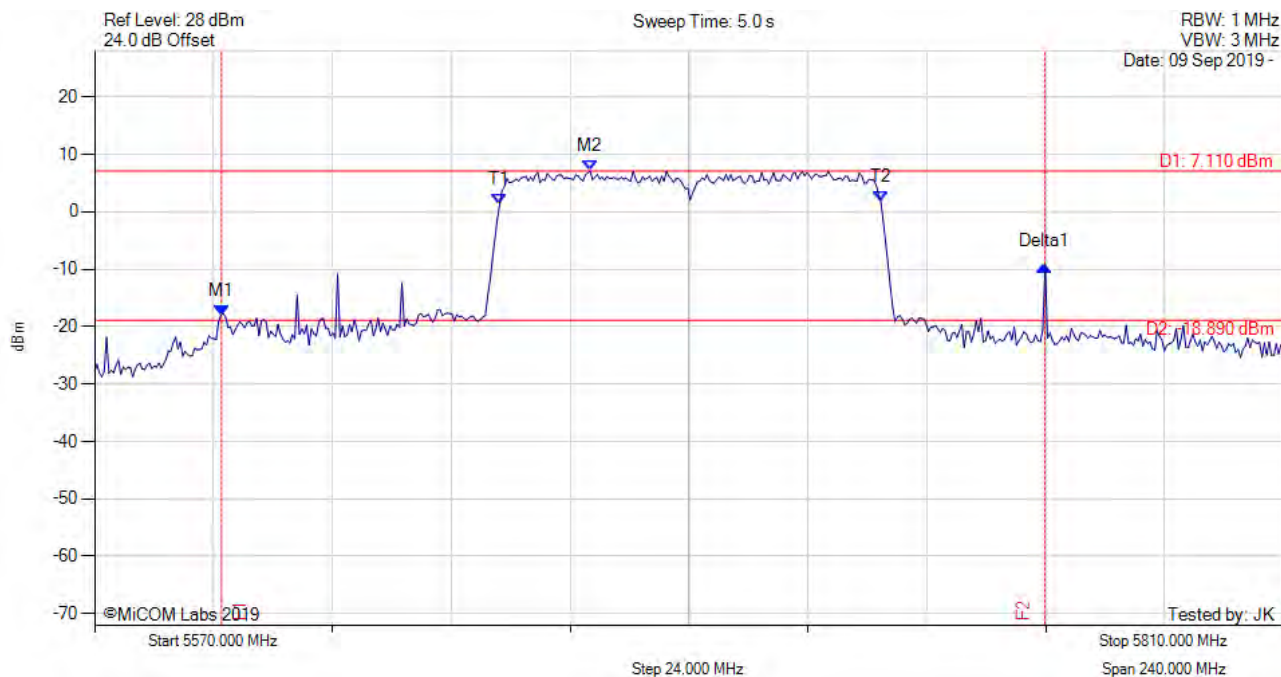Variant: 802.11a, Channel: 5580.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5561.523 MHz : -22.061 dBm M2 : 5587.335 MHz : 5.582 dBm Delta1 : 36.072 MHz : 1.879 dB T1 : 5571.142 MHz : -7.981 dBm T2 : 5588.457 MHz : -7.184 dBm OBW : 17.315 MHz	Measured 26 dB Bandwidth: 36.072 MHz Measured 99% Bandwidth: 17.315 MHz

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Issue Date: 18th November 2019   **Page:** 106 of 263

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26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5720.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
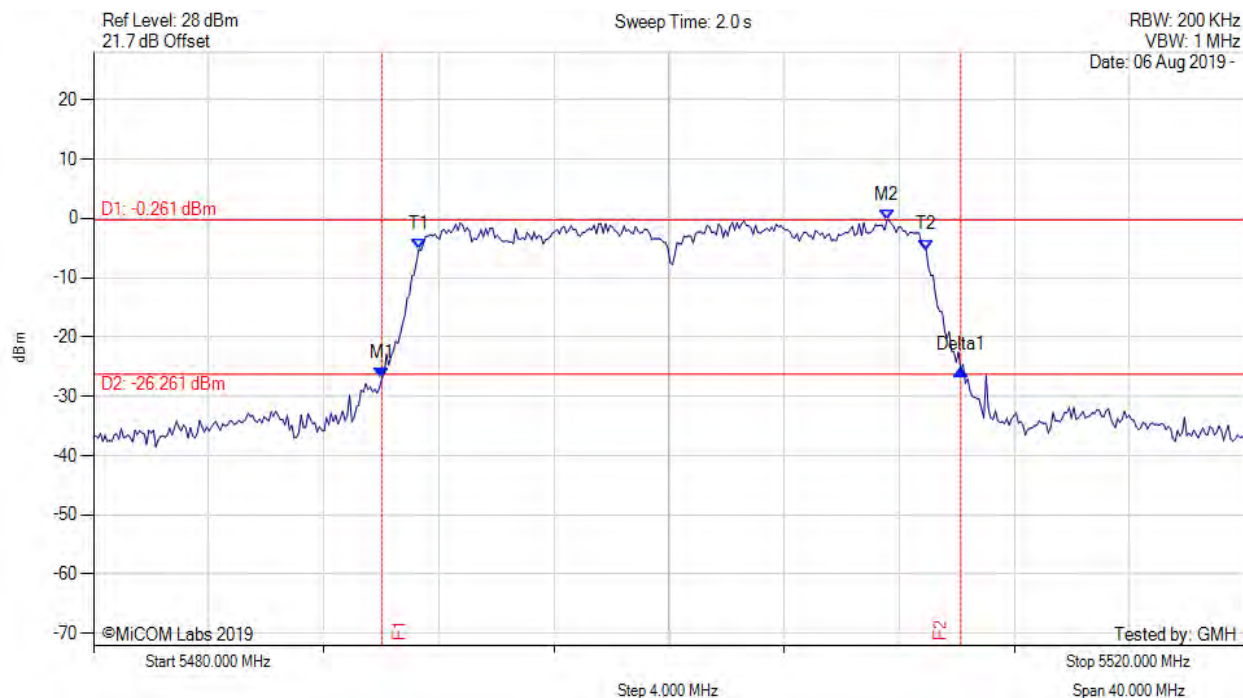

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5700.080 MHz : -20.792 dBm M2 : 5712.365 MHz : 4.919 dBm Delta1 : 38.036 MHz : 0.346 dB T1 : 5708.998 MHz : -14.225 dBm T2 : 5729.319 MHz : -15.022 dBm OBW : 20.321 MHz	Measured 26 dB Bandwidth: 38.036 MHz Measured 99% Bandwidth: 20.321 MHz

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26 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5720.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
21.3 dB Offset

Sweep Time: 2.0 s

RBW: 200 KHz
VBW: 1 MHz
Date: 01 Aug 2019 -

Start 5700.000 MHz
Stop 5740.000 MHz
Step 4.000 MHz
Span 40.000 MHz

Tested by: GMH

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5701.603 MHz : -22.063 dBm M2 : 5727.335 MHz : 5.454 dBm Delta1 : 35.912 MHz : 1.983 dB T1 : 5711.142 MHz : -8.007 dBm T2 : 5728.537 MHz : -8.622 dBm OBW : 17.395 MHz	Measured 26 dB Bandwidth: 35.912 MHz Measured 99% Bandwidth: 17.395 MHz

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MiCOM Labs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5530.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

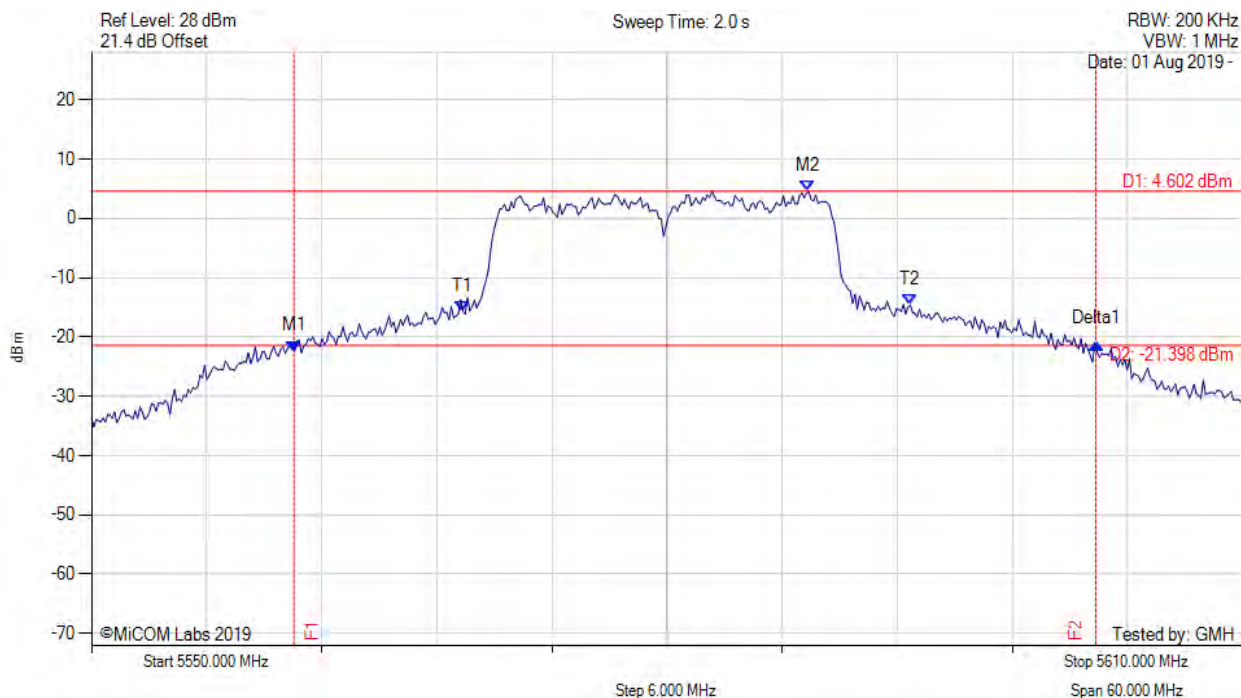| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5488.798 MHz : -31.054 dBm M2 : 5522.144 MHz : -2.236 dBm Delta1 : 82.405 MHz : 3.555 dB T1 : 5492.004 MHz : -7.755 dBm T2 : 5568.317 MHz : -7.365 dBm OBW : 76.313 MHz	Measured 26 dB Bandwidth: 82.405 MHz Measured 99% Bandwidth: 76.313 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5530.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
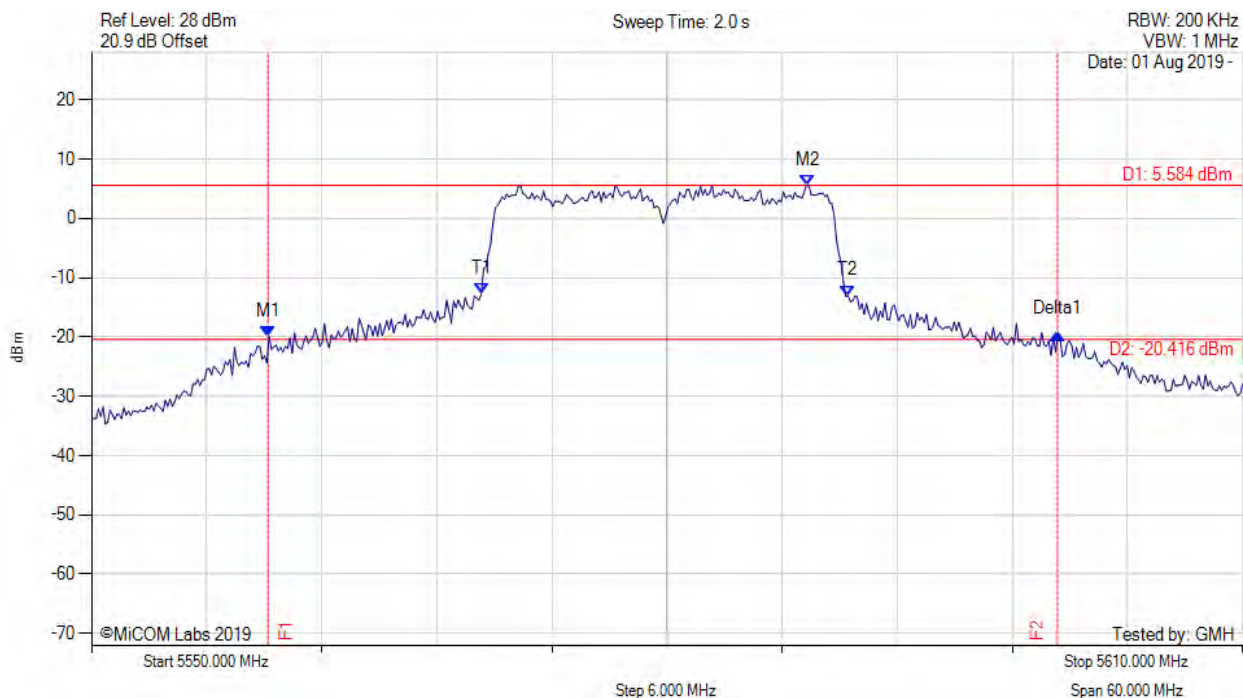

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5488.798 MHz : -28.152 dBm M2 : 5544.910 MHz : -0.810 dBm Delta1 : 82.405 MHz : 2.268 dB T1 : 5492.004 MHz : -6.120 dBm T2 : 5568.317 MHz : -5.864 dBm OBW : 76.313 MHz	Measured 26 dB Bandwidth: 82.405 MHz Measured 99% Bandwidth: 76.313 MHz

26 dB & 99% BANDWIDTH

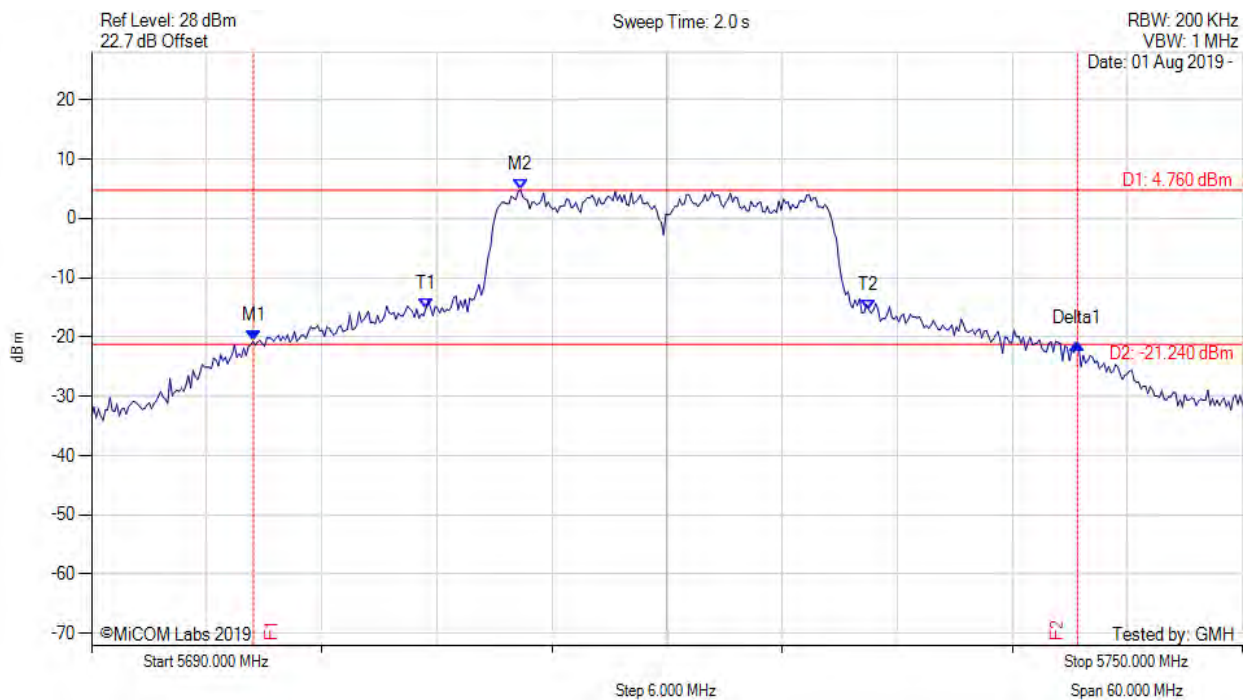Variant: 802.11ac-80, Channel: 5610.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5511.603 MHz : -20.918 dBm M2 : 5632.244 MHz : 6.141 dBm Delta1 : 196.794 MHz : 1.729 dB T1 : 5558.497 MHz : -15.961 dBm T2 : 5657.896 MHz : -12.768 dBm OBW : 99.399 MHz	Measured 26 dB Bandwidth: 196.794 MHz Measured 99% Bandwidth: 99.399 MHz

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26 dB & 99% BANDWIDTH

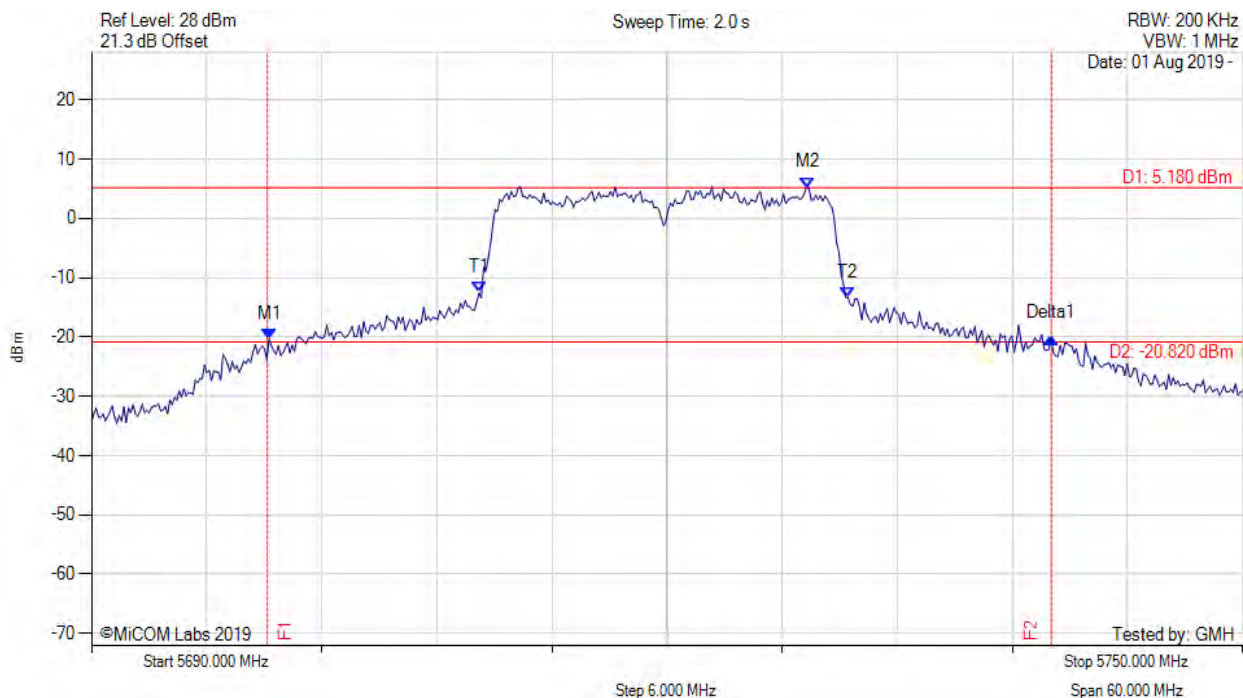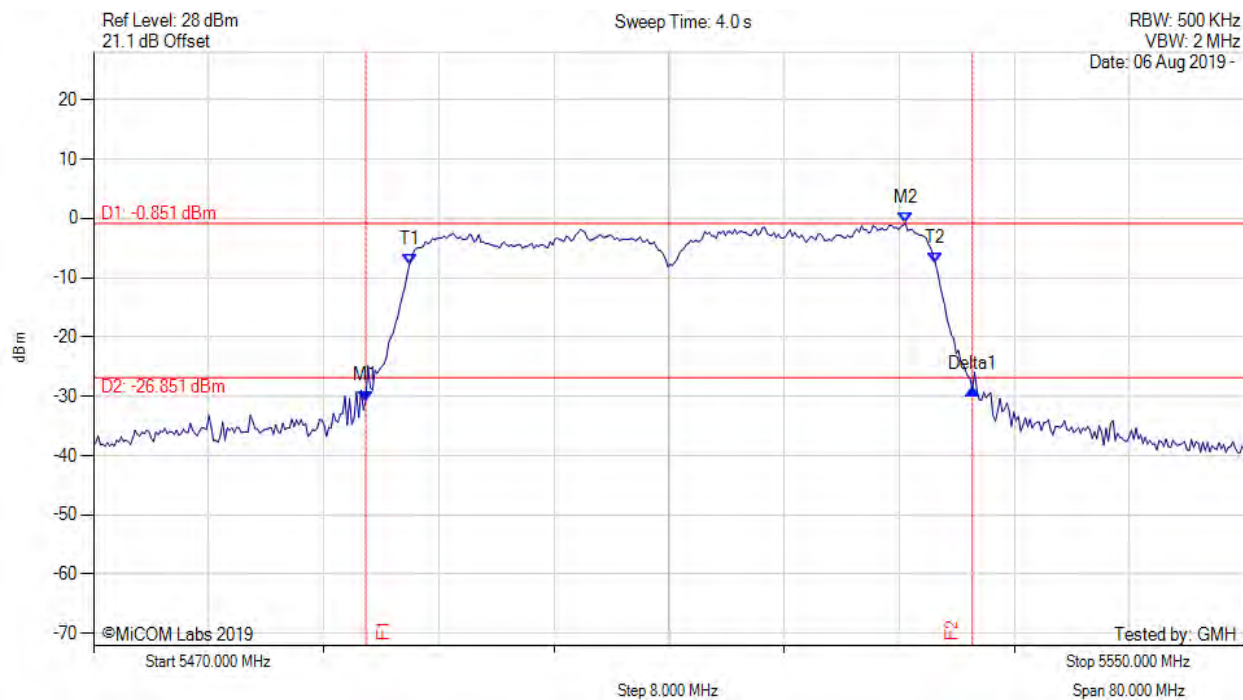Variant: 802.11ac-80, Channel: 5610.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5510.000 MHz : -18.697 dBm M2 : 5638.257 MHz : 7.522 dBm Delta1 : 199.599 MHz : -0.224 dB T1 : 5558.898 MHz : -13.938 dBm T2 : 5651.884 MHz : -11.111 dBm OBW : 92.986 MHz	Measured 26 dB Bandwidth: 199.599 MHz Measured 99% Bandwidth: 92.986 MHz

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Issue Date: 18th November 2019   **Page:** 112 of 263

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![MiCOM Labs logo]

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5690.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5586.613 MHz : -22.014 dBm M2 : 5686.693 MHz : 6.009 dBm Delta1 : 212.946 MHz : 2.508 dB T1 : 5632.024 MHz : -15.390 dBm T2 : 5741.363 MHz : -15.724 dBm OBW : 109.339 MHz	Channel Frequency: 5690.00 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11ac-80, Channel: 5690.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5595.571 MHz : -17.969 dBm M2 : 5670.040 MHz : 7.111 dBm Delta1 : 166.253 MHz : 8.530 dB T1 : 5651.764 MHz : 1.281 dBm T2 : 5728.717 MHz : 1.755 dBm OBW : 76.954 MHz	Measured 26 dB Bandwidth: 166.253 MHz Measured 99% Bandwidth: 76.954 MHz

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Title: Hewlett Packard Enterprise, Aruba User Experience Insight
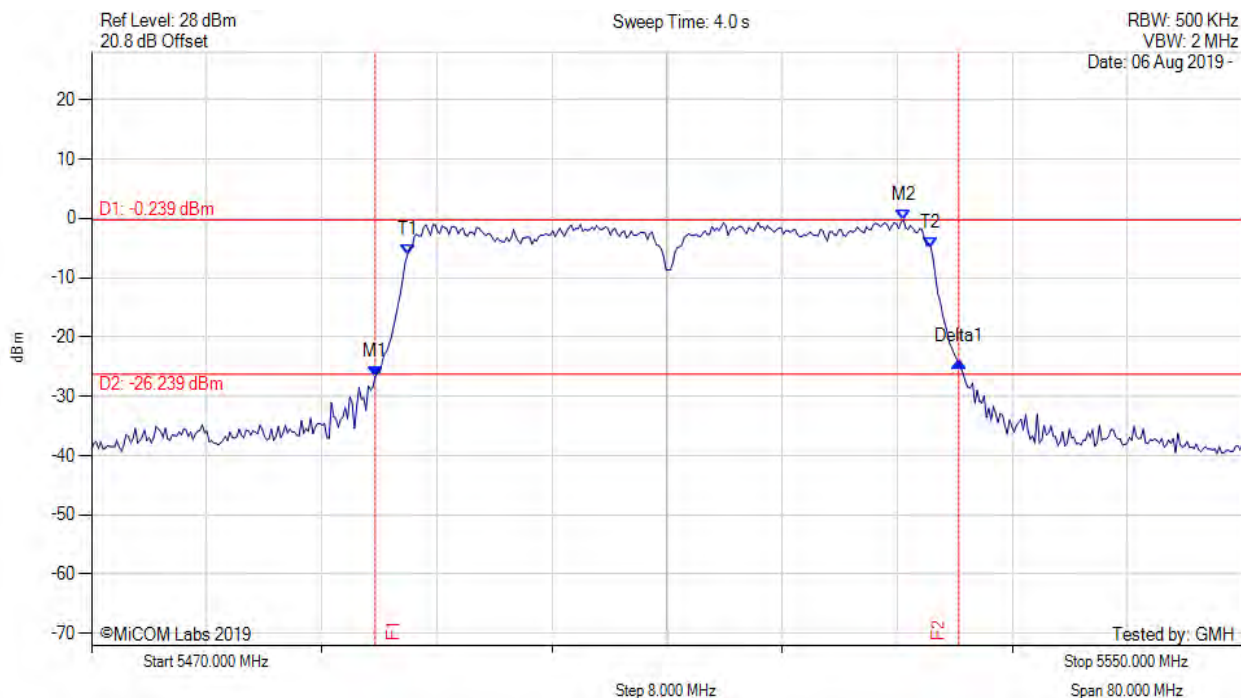**To:** FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

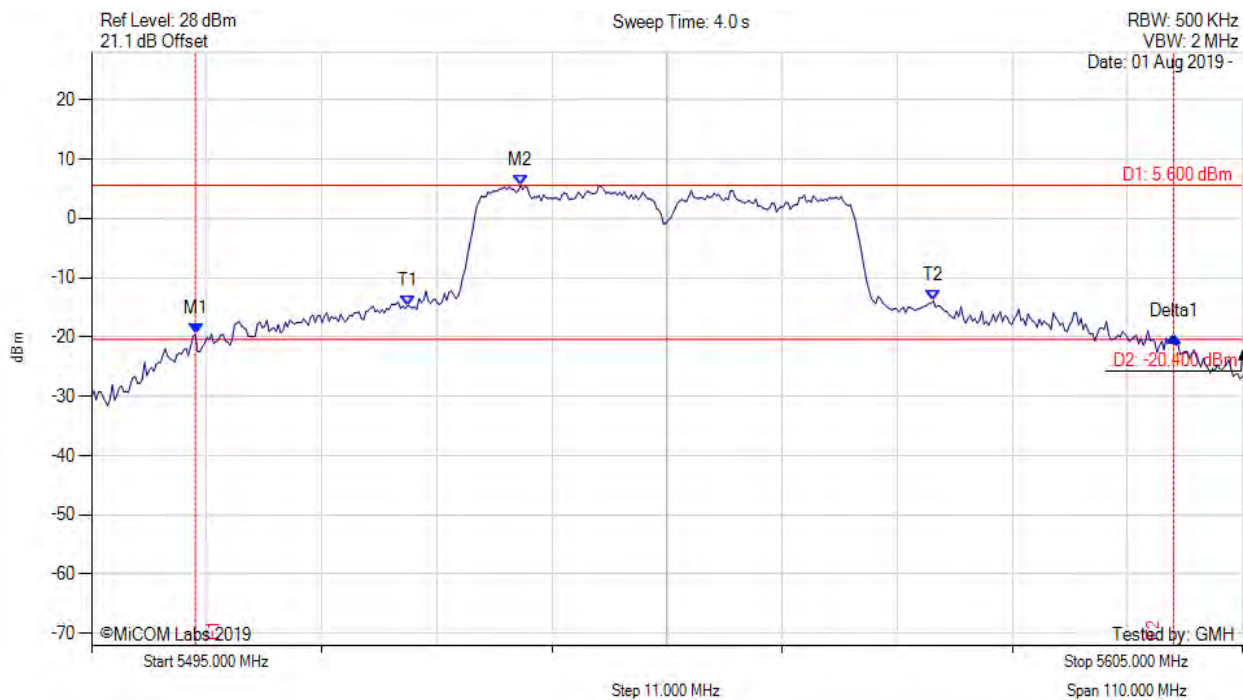| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5490.020 MHz : -27.001 dBm M2 : 5507.575 MHz : -0.261 dBm Delta1 : 20.120 MHz : 1.538 dB T1 : 5491.303 MHz : -5.266 dBm T2 : 5508.938 MHz : -5.343 dBm OBW : 17.635 MHz	Measured 26 dB Bandwidth: 20.120 MHz Measured 99% Bandwidth: 17.635 MHz

back to matrix

26 dB & 99% BANDWIDTH

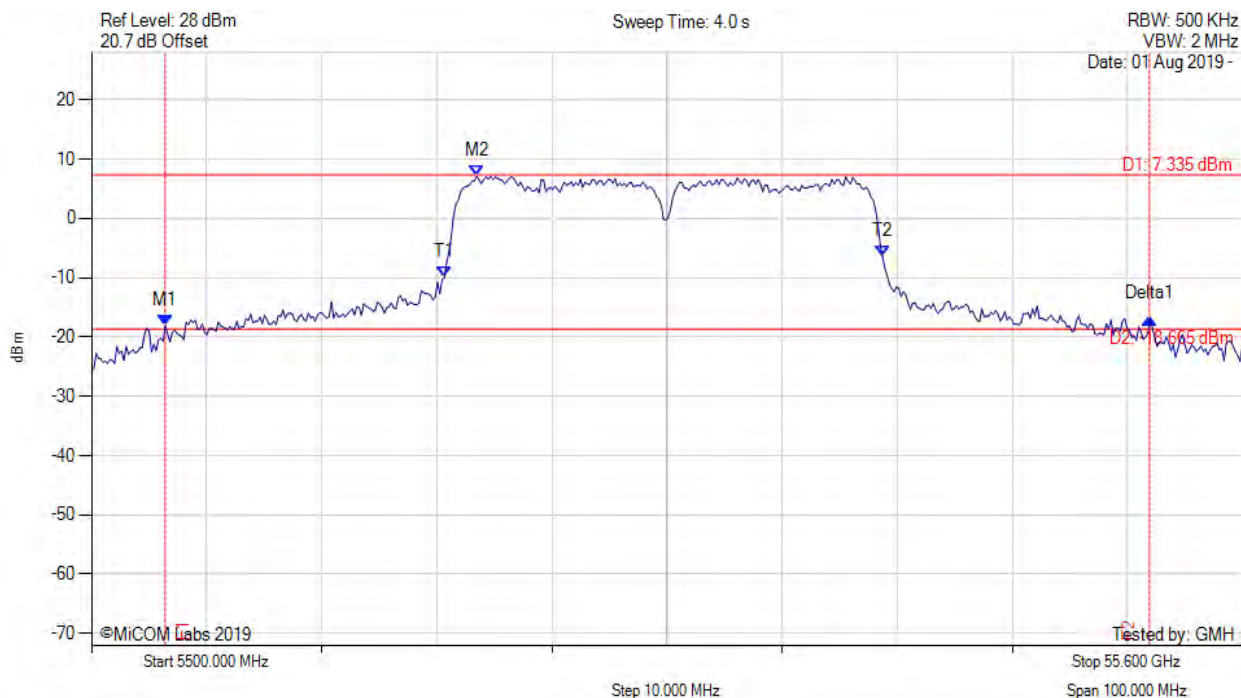Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5489.699 MHz : -29.205 dBm M2 : 5507.575 MHz : -0.375 dBm Delta1 : 20.361 MHz : 4.090 dB T1 : 5491.222 MHz : -6.480 dBm T2 : 5508.938 MHz : -4.396 dBm OBW : 17.715 MHz	Measured 26 dB Bandwidth: 20.361 MHz Measured 99% Bandwidth: 17.715 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5560.561 MHz : -22.388 dBm M2 : 5587.335 MHz : 4.541 dBm Delta1 : 41.804 MHz : 1.326 dB T1 : 5569.359 MHz : -15.681 dBm T2 : 5592.685 MHz : -14.615 dBm OBW : 23.327 MHz	Measured 26 dB Bandwidth: 41.804 MHz Measured 99% Bandwidth: 23.327 MHz

back to matrix

26 dB & 99% BANDWIDTH

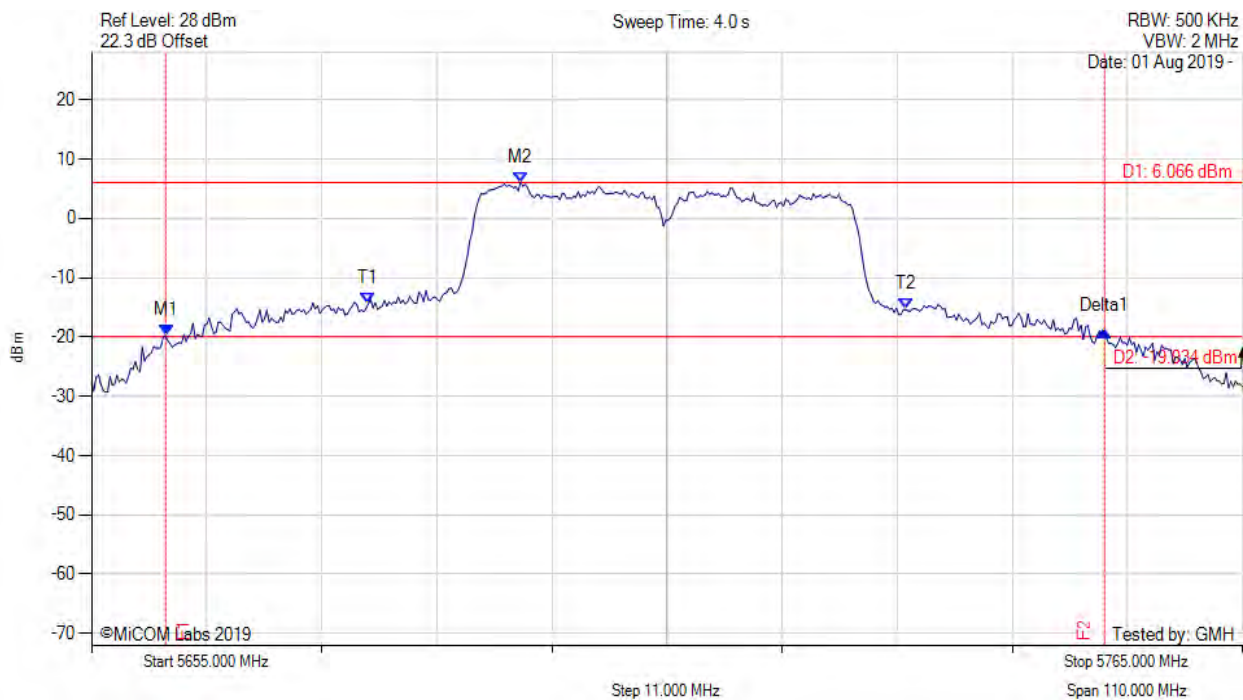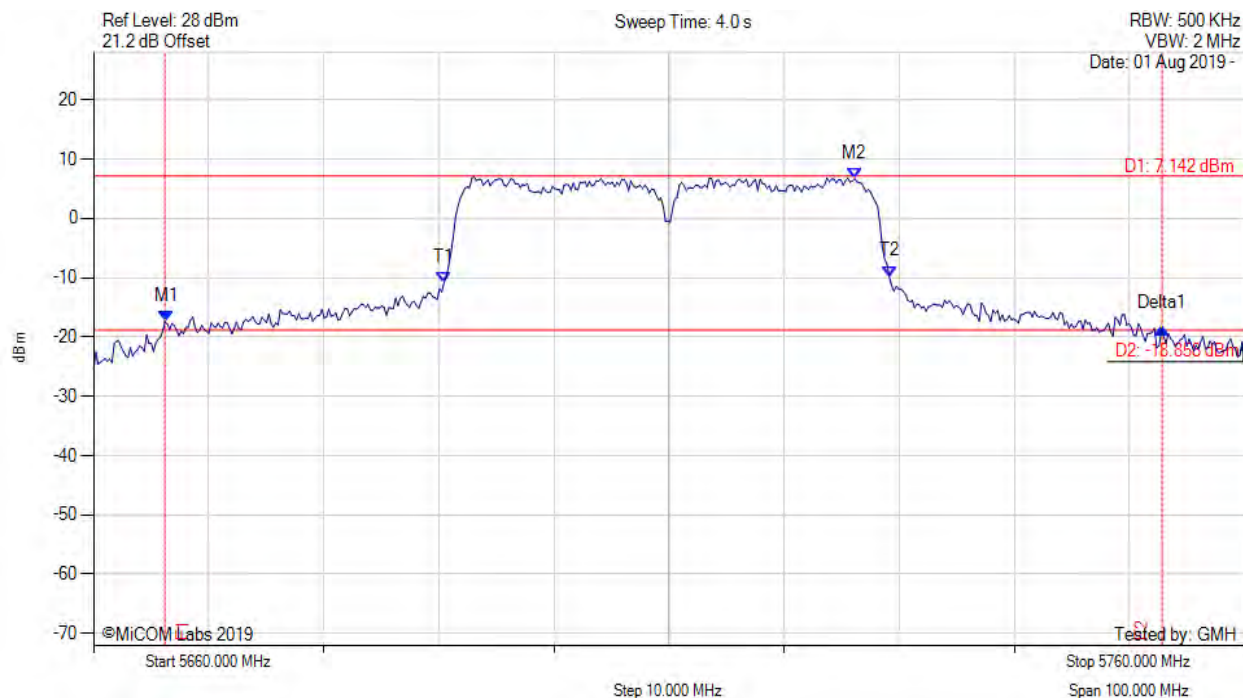Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5559.198 MHz : -19.905 dBm M2 : 5587.335 MHz : 5.539 dBm Delta1 : 41.162 MHz : 0.496 dB T1 : 5570.321 MHz : -12.768 dBm T2 : 5589.439 MHz : -13.053 dBm OBW : 19.118 MHz	Measured 26 dB Bandwidth: 41.162 MHz Measured 99% Bandwidth: 19.118 MHz

back to matrix

Issue Date: 18th November 2019   **Page:** 118 of 263

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26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5720.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5698.477 MHz : -20.706 dBm M2 : 5712.345 MHz : 4.791 dBm Delta1 : 42.926 MHz : -0.435 dB T1 : 5707.435 MHz : -15.185 dBm T2 : 5730.521 MHz : -15.396 dBm OBW : 23.086 MHz	Measured 26 dB Bandwidth: 42.926 MHz Measured 99% Bandwidth: 23.086 MHz

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5720.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
21.3 dB Offset

Sweep Time: 2.0 s

RBW: 200 KHz
VBW: 1 MHz
Date: 01 Aug 2019 -

D1: 5.180 dBm
D2: -20.820 dBm

Start 5690.000 MHz

Step 6.000 MHz

Stop 5750.000 MHz
Span 60.000 MHz

Tested by: GMH

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Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5699.279 MHz : -20.411 dBm M2 : 5727.335 MHz : 5.183 dBm Delta1 : 40.762 MHz : 0.291 dB T1 : 5710.200 MHz : -12.559 dBm T2 : 5729.439 MHz : -13.431 dBm OBW : 19.238 MHz	Measured 26 dB Bandwidth: 40.762 MHz Measured 99% Bandwidth: 19.238 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
21.1 dB Offset
Sweep Time: 4.0 s
RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019 -

D1: -0.851 dBm

D2: -26.851 dBm

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Tested by: GMH

Start 5470.000 MHz
Stop 5550.000 MHz
Step 8.000 MHz
Span 80.000 MHz

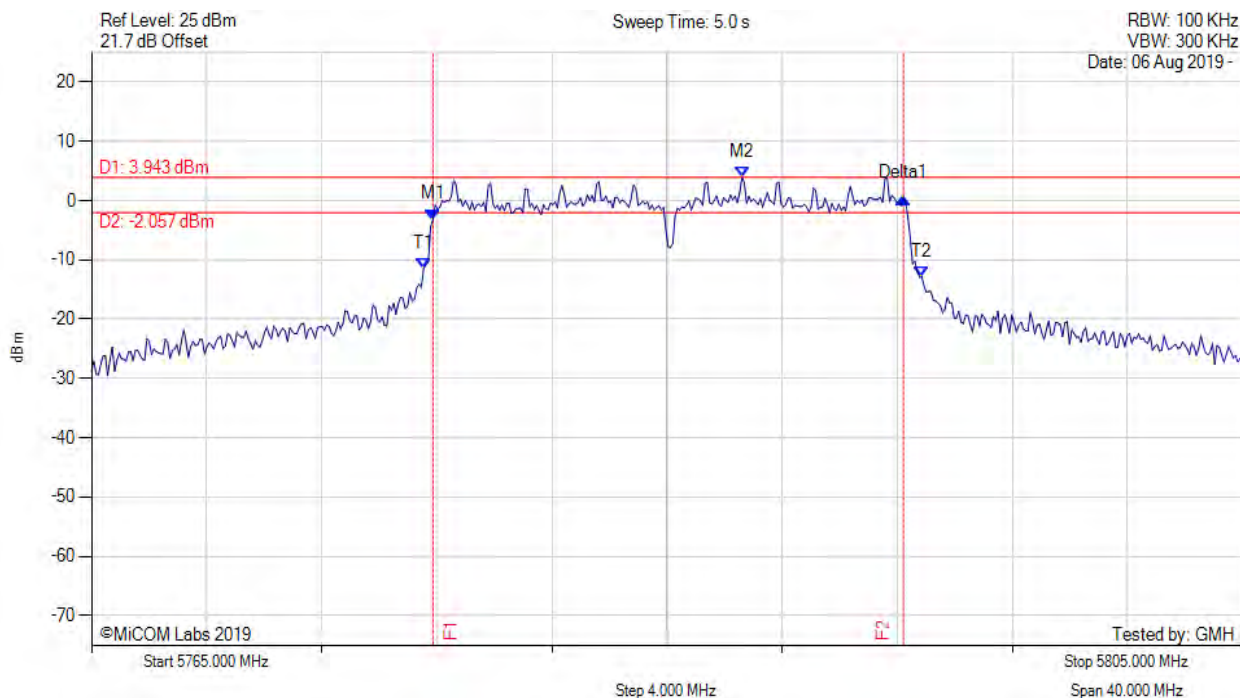| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5488.918 MHz : -30.812 dBm M2 : 5526.433 MHz : -0.851 dBm Delta1 : 42.164 MHz : 1.906 dB T1 : 5491.964 MHz : -7.711 dBm T2 : 5528.517 MHz : -7.554 dBm OBW : 36.553 MHz	Measured 26 dB Bandwidth: 42.164 MHz Measured 99% Bandwidth: 36.553 MHz

back to matrix

26 dB & 99% BANDWIDTH

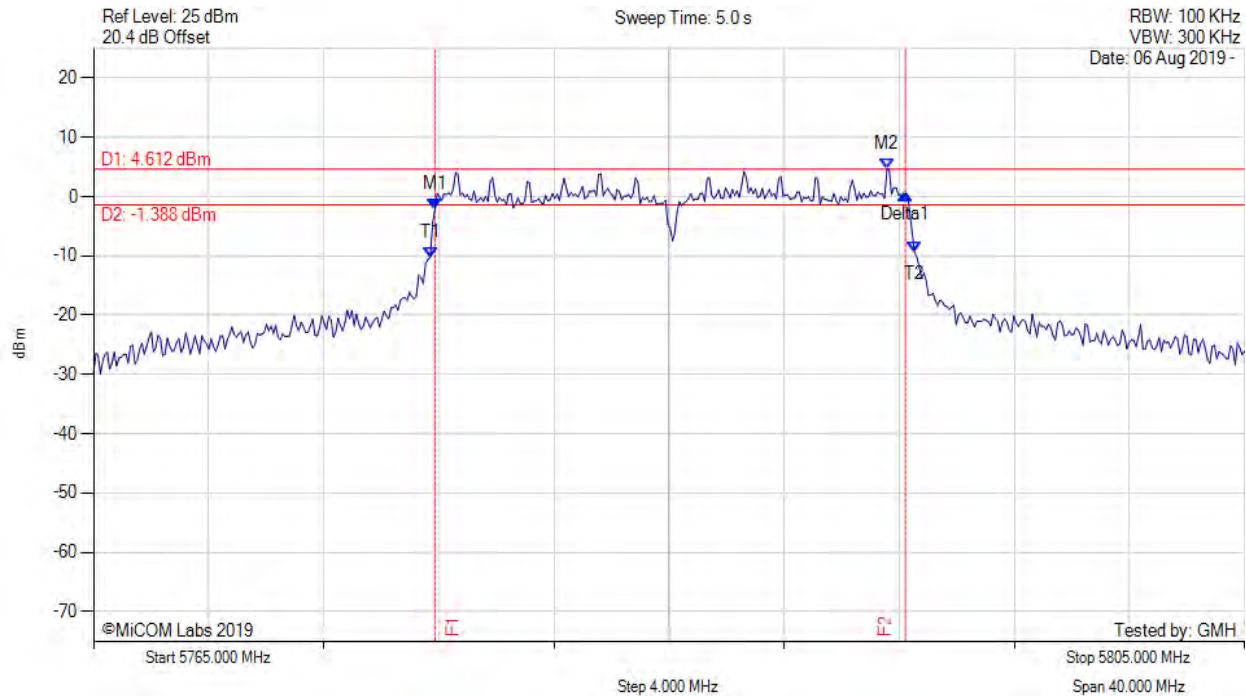Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5489.719 MHz : -26.683 dBm M2 : 5526.433 MHz : -0.239 dBm Delta1 : 40.561 MHz : 2.449 dB T1 : 5491.964 MHz : -6.073 dBm T2 : 5528.357 MHz : -4.930 dBm OBW : 36.393 MHz	Measured 26 dB Bandwidth: 40.561 MHz Measured 99% Bandwidth: 36.393 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5505.030 MHz : -19.567 dBm M2 : 5536.002 MHz : 5.598 dBm Delta1 : 93.407 MHz : -0.295 dB T1 : 5525.200 MHz : -14.741 dBm T2 : 5575.461 MHz : -13.913 dBm OBW : 50.261 MHz	Measured 26 dB Bandwidth: 93.407 MHz Measured 99% Bandwidth: 50.261 MHz

back to matrix

26 dB & 99% BANDWIDTH

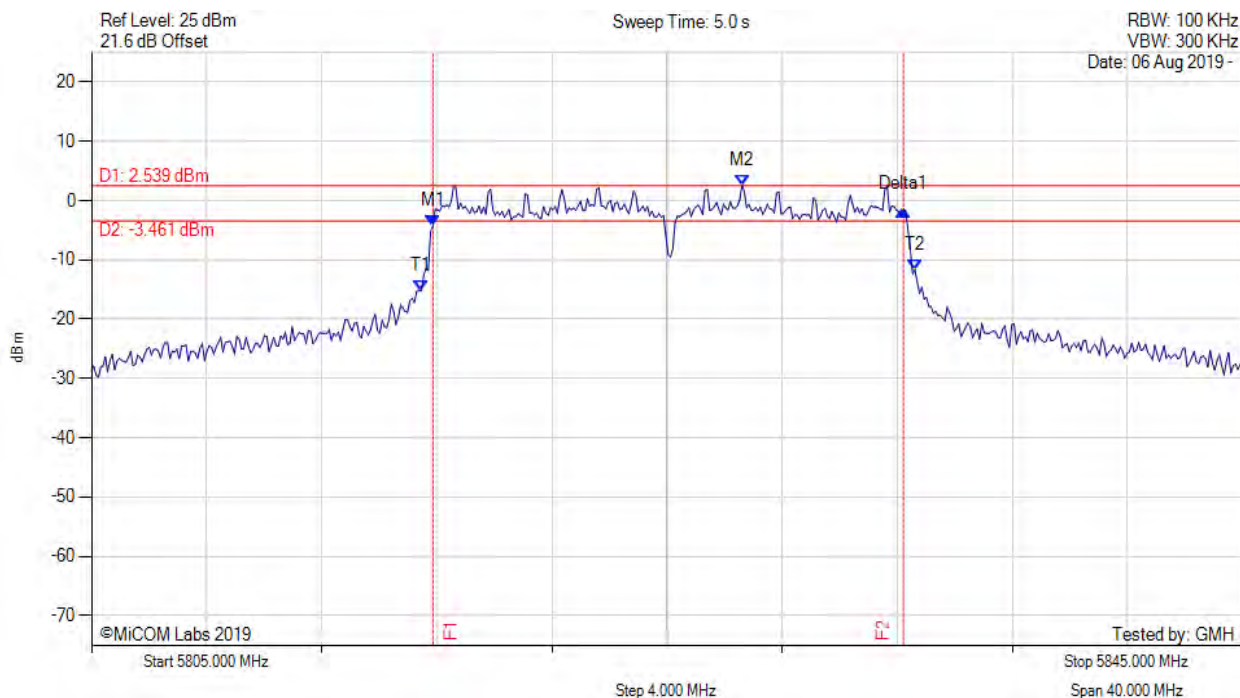Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
20.7 dB Offset

Sweep Time: 4.0 s

RBW: 500 KHz
VBW: 2 MHz
Date: 01 Aug 2019 -

D1: 7.335 dBm

D2: -18.665 dBm

Start 5500.000 MHz
Stop 55.600 GHz
Step 10.000 MHz
Span 100.000 MHz

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Tested by: GMH

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5506.393 MHz : -18.127 dBm M2 : 5533.467 MHz : 7.081 dBm Delta1 : 85.531 MHz : 1.173 dB T1 : 5530.661 MHz : -9.944 dBm T2 : 5568.737 MHz : -6.470 dBm OBW : 38.076 MHz	Measured 26 dB Bandwidth: 85.531 MHz Measured 99% Bandwidth: 38.076 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5710.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
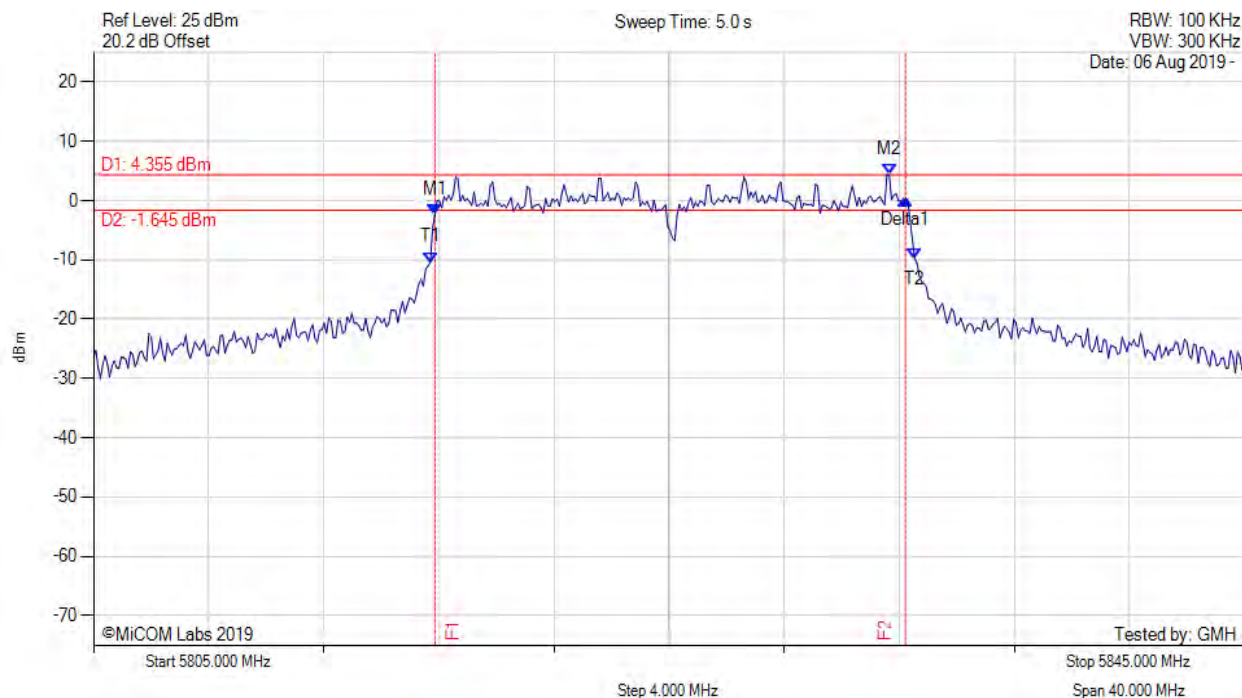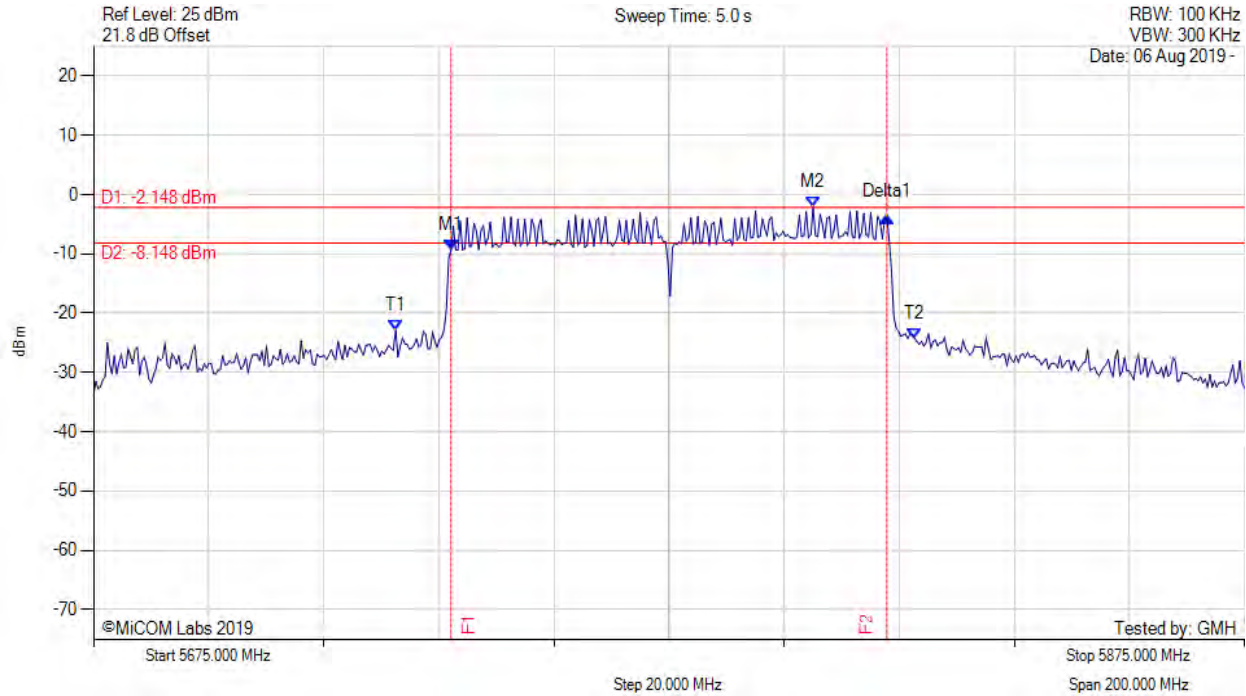

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5662.164 MHz : -19.773 dBm M2 : 5696.002 MHz : 6.078 dBm Delta1 : 89.659 MHz : 0.740 dB T1 : 5681.453 MHz : -14.426 dBm T2 : 5732.816 MHz : -15.359 dBm OBW : 51.363 MHz	Measured 26 dB Bandwidth: 89.659 MHz Measured 99% Bandwidth: 51.363 MHz

back to matrix

Issue Date: 18th November 2019   **Page:** 125 of 263

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26 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5710.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5666.313 MHz : -17.393 dBm M2 : 5726.112 MHz : 6.711 dBm Delta1 : 86.533 MHz : -1.220 dB T1 : 5690.461 MHz : -10.775 dBm T2 : 5729.138 MHz : -9.777 dBm OBW : 38.677 MHz	Measured 26 dB Bandwidth: 86.533 MHz Measured 99% Bandwidth: 38.677 MHz

back to matrix

A.2. 6 dB & 99% Bandwidth
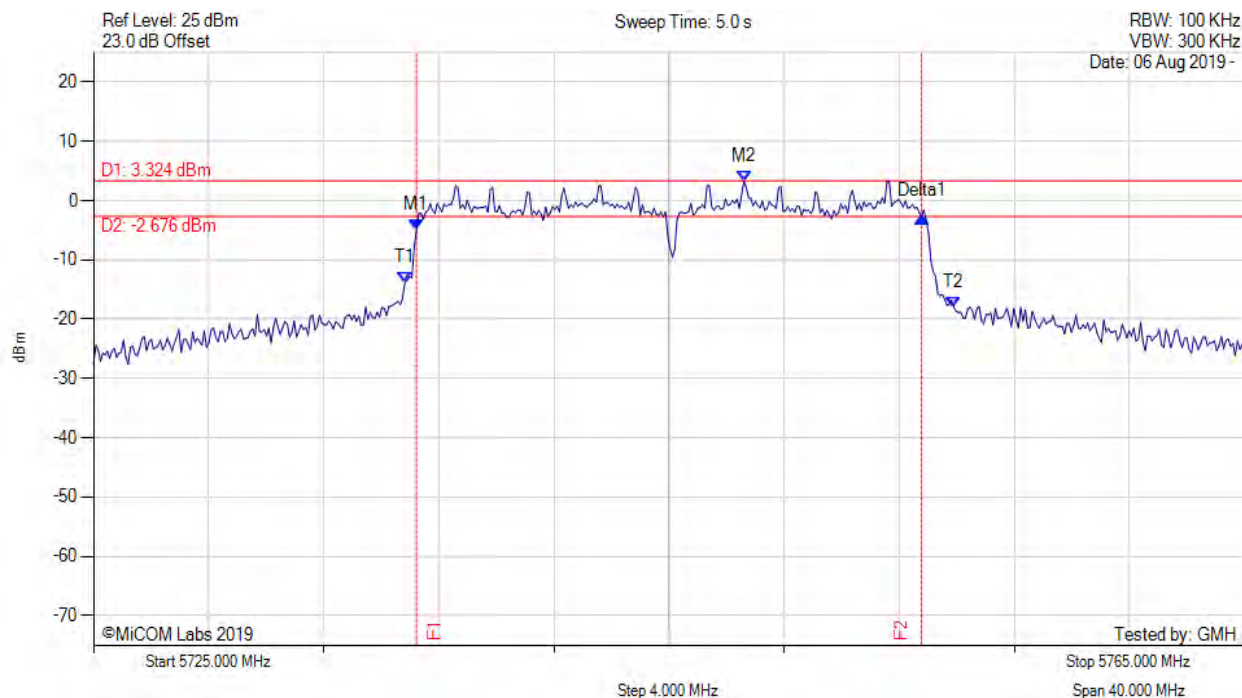
6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

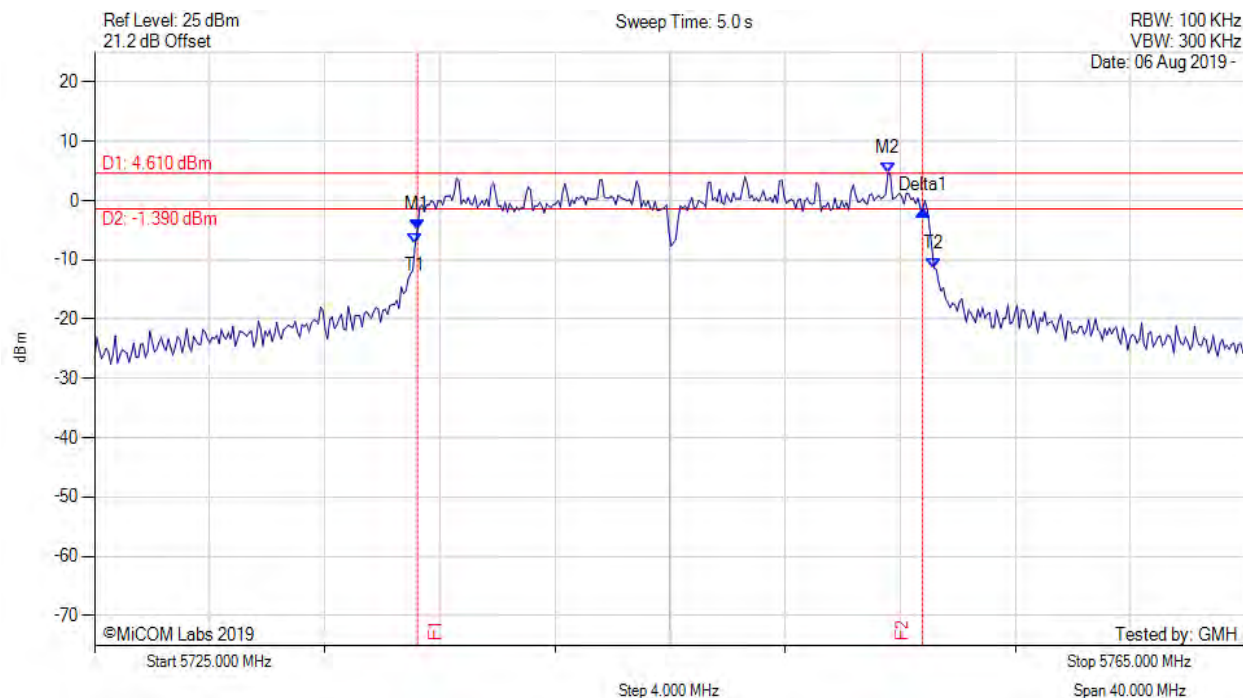| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.864 MHz : -2.870 dBm M2 : 5752.655 MHz : 4.455 dBm Delta1 : 16.353 MHz : 3.958 dB T1 : 5736.623 MHz : -10.473 dBm T2 : 5753.938 MHz : -14.491 dBm OBW : 17.315 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 17.315 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5745.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.864 MHz : -10.741 dBm M2 : 5752.655 MHz : -3.383 dBm Delta1 : 16.353 MHz : 3.091 dB T1 : 5736.864 MHz : -10.741 dBm T2 : 5753.377 MHz : -10.916 dBm OBW : 16.513 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 16.513 MHz

back to matrix

6 dB & 99% BANDWIDTH

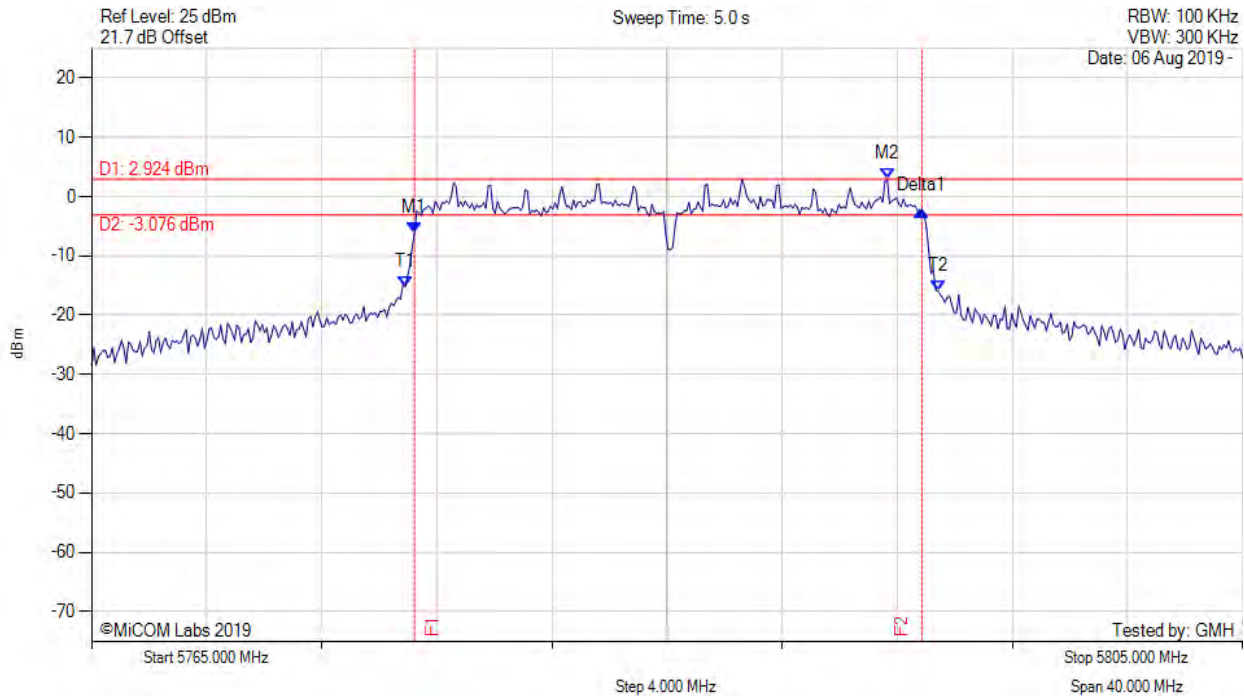Variant: 802.11a, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.864 MHz : -3.202 dBm M2 : 5787.605 MHz : 3.943 dBm Delta1 : 16.353 MHz : 3.549 dB T1 : 5776.543 MHz : -11.418 dBm T2 : 5793.858 MHz : -12.848 dBm OBW : 17.315 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 17.315 MHz

back to matrix

6 dB & 99% BANDWIDTH

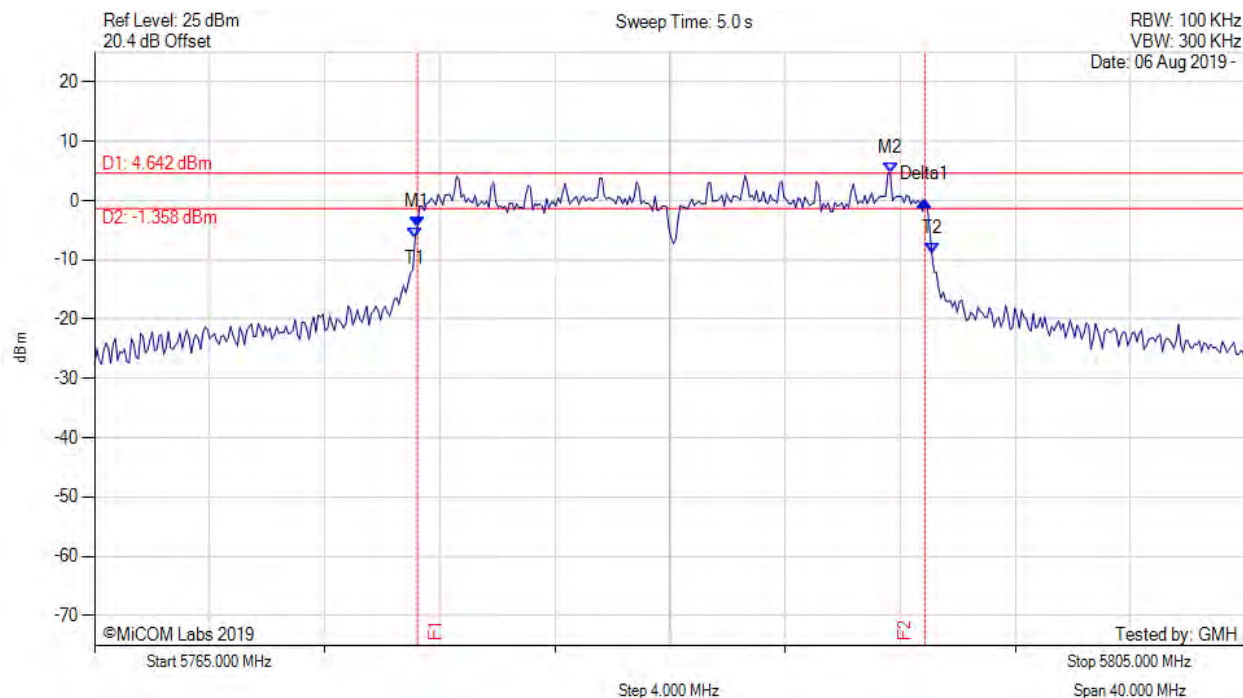Variant: 802.11a, Channel: 5785.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.864 MHz : -2.232 dBm M2 : 5792.575 MHz : 4.612 dBm Delta1 : 16.353 MHz : 2.748 dB T1 : 5776.703 MHz : -10.288 dBm T2 : 5793.537 MHz : -9.403 dBm OBW : 16.834 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 16.834 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

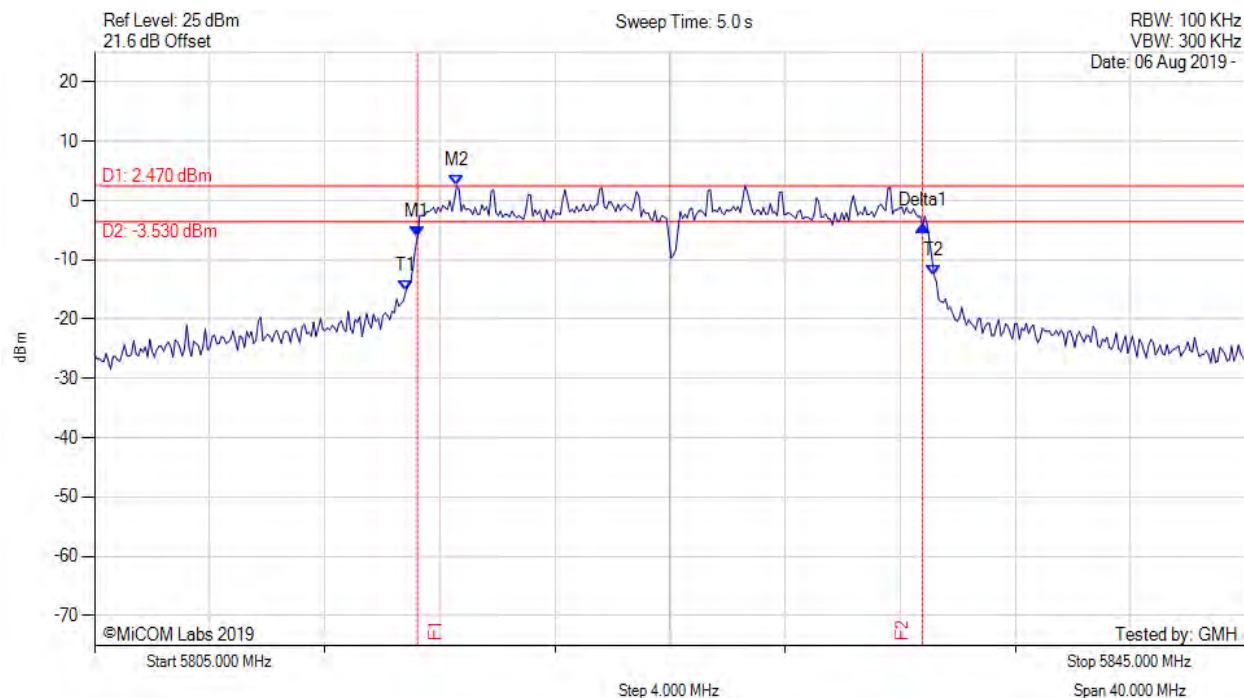| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.864 MHz : -4.298 dBm M2 : 5827.605 MHz : 2.539 dBm Delta1 : 16.353 MHz : 2.756 dB T1 : 5816.463 MHz : -15.225 dBm T2 : 5833.617 MHz : -11.658 dBm OBW : 17.154 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 17.154 MHz

6 dB & 99% BANDWIDTH

Variant: 802.11a, Channel: 5825.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.864 MHz : -2.344 dBm M2 : 5832.655 MHz : 4.355 dBm Delta1 : 16.353 MHz : 2.632 dB T1 : 5816.703 MHz : -10.430 dBm T2 : 5833.537 MHz : -9.745 dBm OBW : 16.834 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 16.834 MHz

back to matrix

6 dB & 99% BANDWIDTH

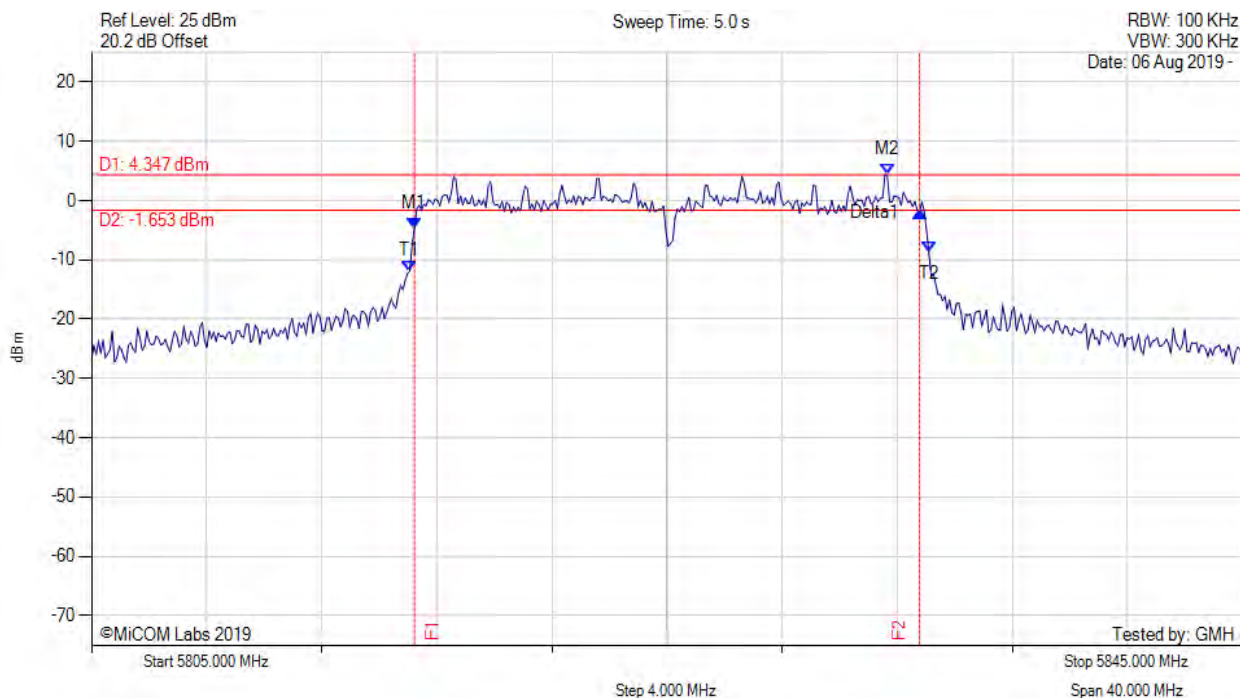Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.124 MHz : -9.340 dBm M2 : 5800.050 MHz : -2.148 dBm Delta1 : 75.752 MHz : 5.664 dB T1 : 5727.505 MHz : -22.838 dBm T2 : 5817.685 MHz : -24.253 dBm OBW : 90.180 MHz	Measured 6 dB Bandwidth: 75.752 MHz Measured 99% Bandwidth: 90.180 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 25 dBm
23.0 dB Offset

Sweep Time: 5.0 s

RBW: 100 KHz
VBW: 300 KHz
Date: 06 Aug 2019 -

D1: 3.324 dBm
D2: -2.676 dBm

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Tested by: GMH

Start 5725.000 MHz
Stop 5765.000 MHz

Step 4.000 MHz
Span 40.000 MHz

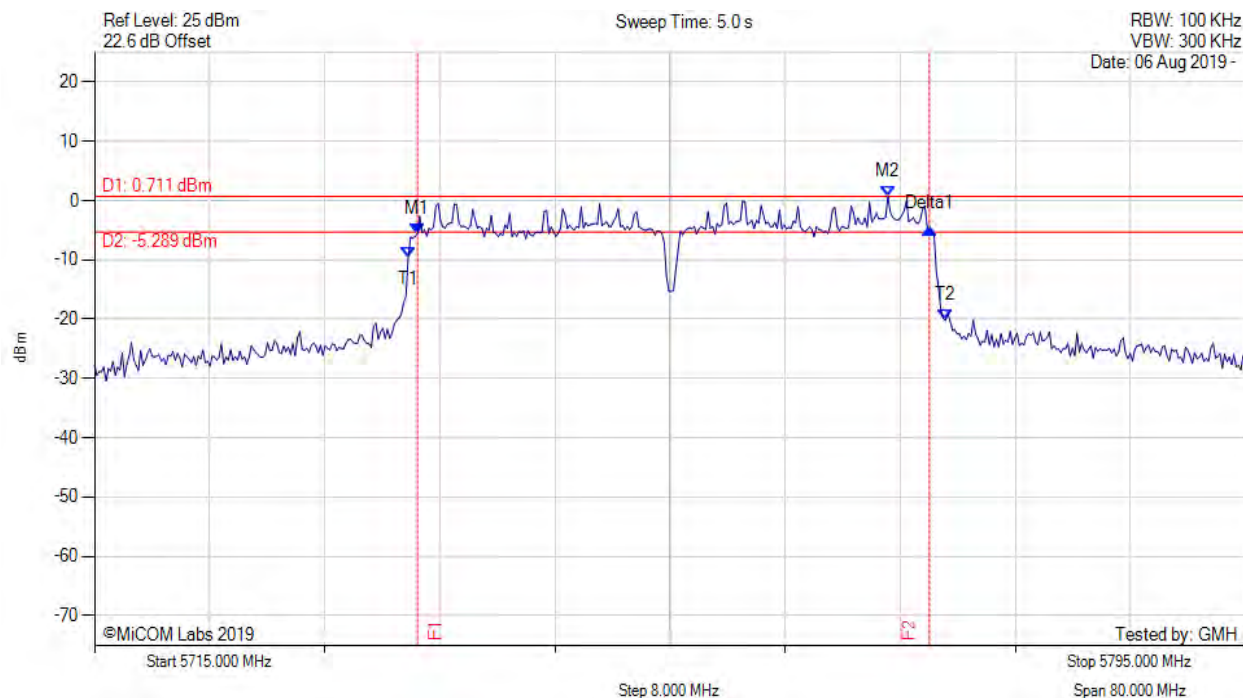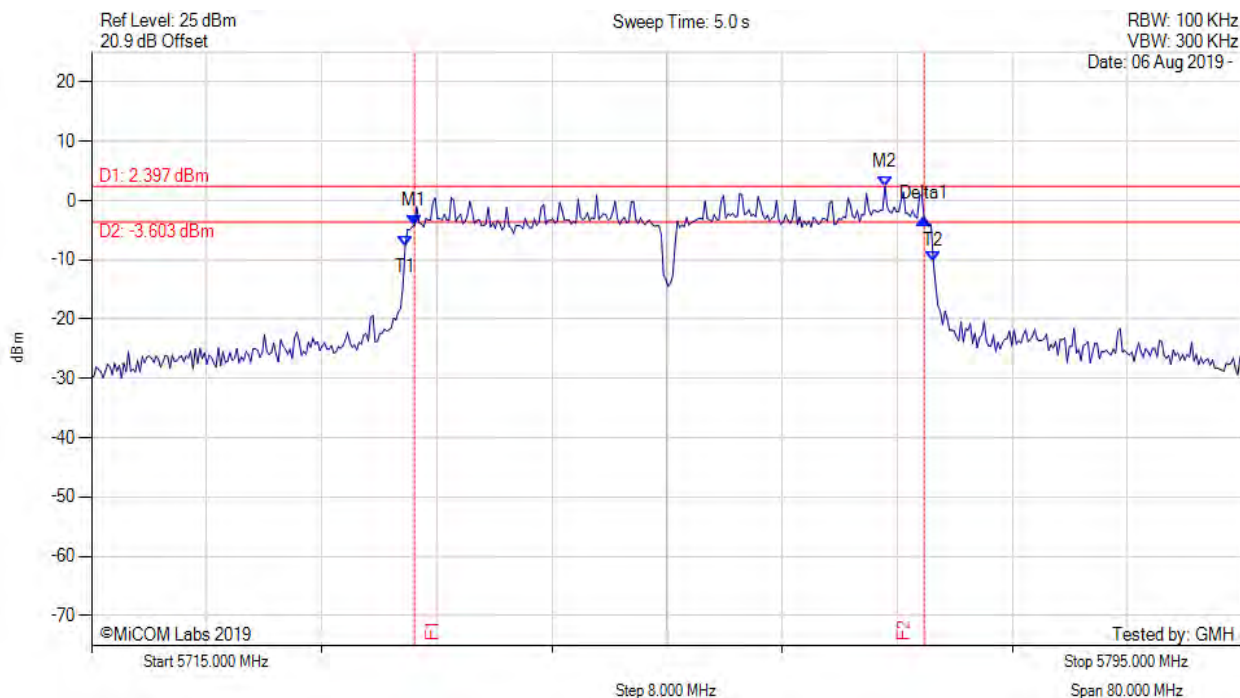| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.222 MHz : -5.000 dBm M2 : 5747.605 MHz : 3.324 dBm Delta1 : 17.555 MHz : 2.290 dB T1 : 5735.822 MHz : -13.737 dBm T2 : 5754.900 MHz : -18.040 dBm OBW : 19.078 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 19.078 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.222 MHz : -4.882 dBm M2 : 5752.575 MHz : 4.610 dBm Delta1 : 17.555 MHz : 3.232 dB T1 : 5736.142 MHz : -7.359 dBm T2 : 5754.178 MHz : -11.388 dBm OBW : 18.036 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 18.036 MHz

back to matrix

6 dB & 99% BANDWIDTH

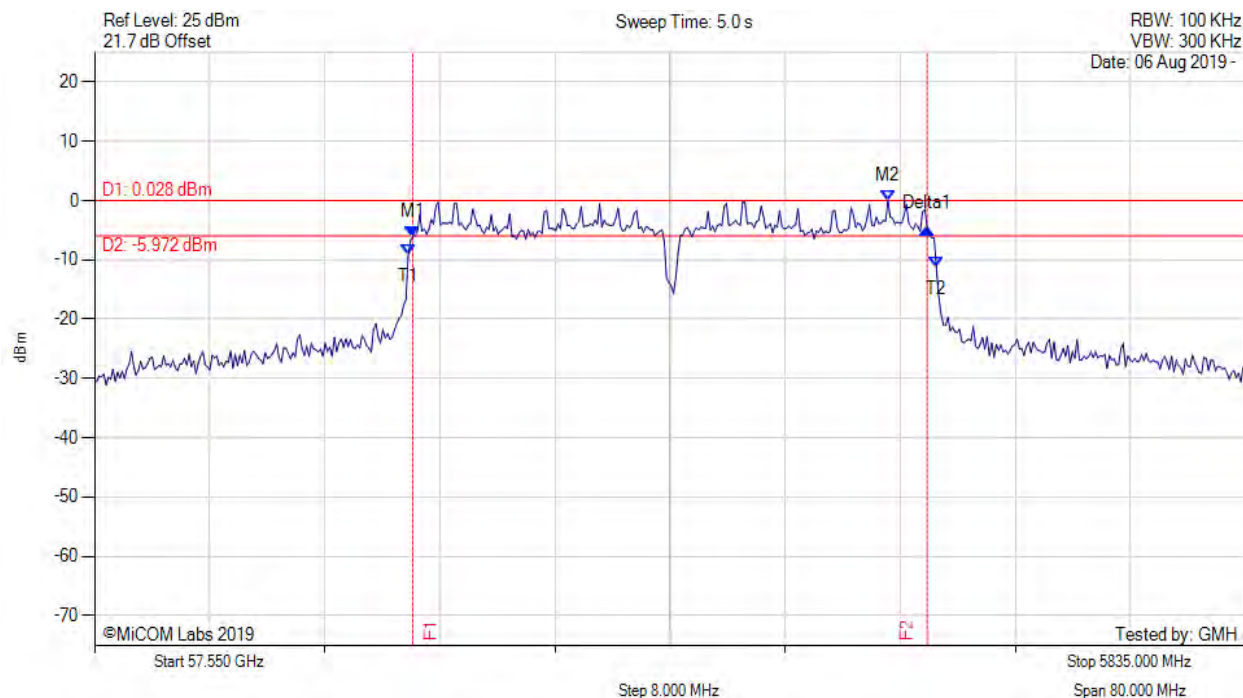Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.222 MHz : -6.196 dBm M2 : 5792.655 MHz : 2.924 dBm Delta1 : 17.635 MHz : 3.846 dB T1 : 5775.902 MHz : -15.199 dBm T2 : 5794.419 MHz : -15.929 dBm OBW : 18.517 MHz	Measured 6 dB Bandwidth: 17.635 MHz Measured 99% Bandwidth: 18.517 MHz

back to matrix

6 dB & 99% BANDWIDTH

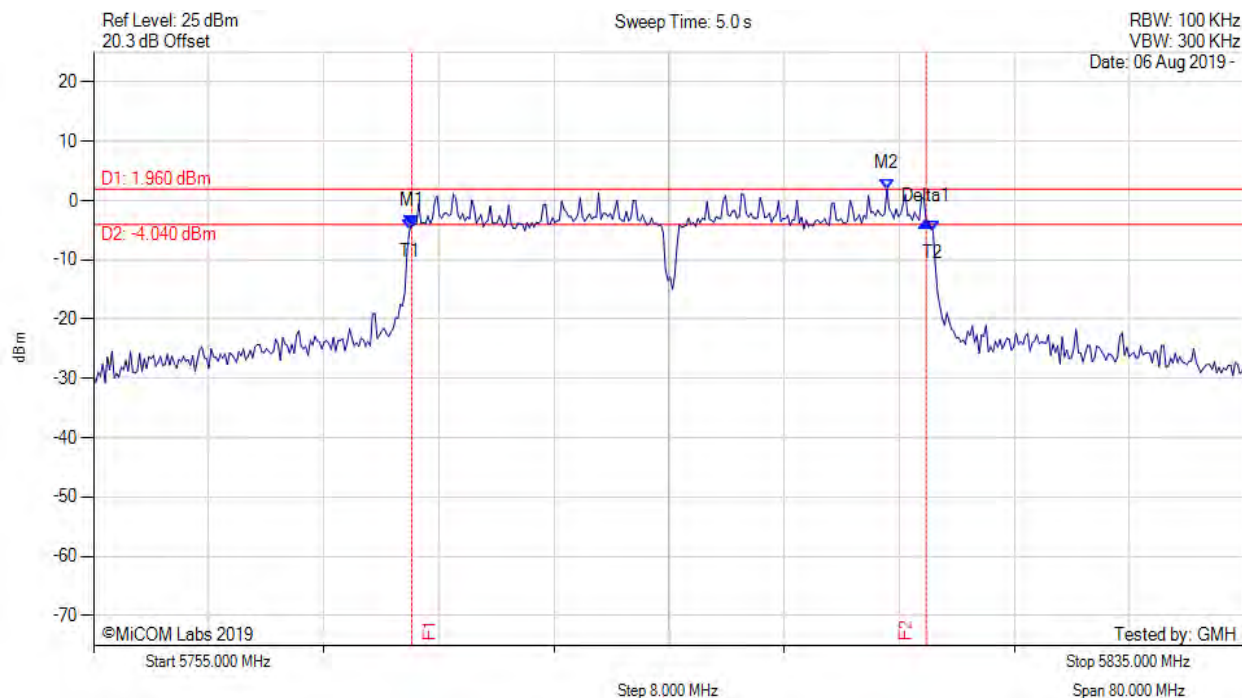Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK	M1 : 5776.222 MHz : -4.414 dBm	Measured 6 dB Bandwidth: 17.635 MHz
Sweep Count = 0	M2 : 5792.655 MHz : 4.642 dBm	Measured 99% Bandwidth: 17.956 MHz
RF Atten (dB) = 20	Delta1 : 17.635 MHz : 4.482 dB	
Trace Mode = MAX HOLD	T1 : 5776.142 MHz : -6.281 dBm	
	T2 : 5794.098 MHz : -8.929 dBm	
	OBW : 17.956 MHz	

back to matrix

---

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 25 dBm
21.6 dB Offset

Sweep Time: 5.0 s

RBW: 100 KHz
VBW: 300 KHz
Date: 06 Aug 2019 -

D1: 2.470 dBm
D2: -3.530 dBm

Start 5805.000 MHz
Stop 5845.000 MHz
Step 4.000 MHz
Span 40.000 MHz

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Tested by: GMH

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.222 MHz : -6.167 dBm M2 : 5817.585 MHz : 2.470 dBm Delta1 : 17.555 MHz : 1.963 dB T1 : 5815.822 MHz : -15.191 dBm T2 : 5834.178 MHz : -12.602 dBm OBW : 18.357 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 18.357 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 25 dBm
20.2 dB Offset
Sweep Time: 5.0 s
RBW: 100 KHz
VBW: 300 KHz
Date: 06 Aug 2019 -

D1: 4.347 dBm
D2: -1.653 dBm

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Tested by: GMH

Start 5805.000 MHz
Stop 5845.000 MHz
Step 4.000 MHz
Span 40.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.222 MHz : -4.664 dBm M2 : 5832.655 MHz : 4.347 dBm Delta1 : 17.555 MHz : 2.733 dB T1 : 5816.062 MHz : -11.862 dBm T2 : 5834.098 MHz : -8.683 dBm OBW : 18.036 MHz	Measured 6 dB Bandwidth: 17.555 MHz Measured 99% Bandwidth: 18.036 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 25 dBm
22.6 dB Offset

Sweep Time: 5.0 s

RBW: 100 KHz
VBW: 300 KHz
Date: 06 Aug 2019 -

D1: 0.711 dBm
D2: -5.289 dBm

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Tested by: GMH

Start 5715.000 MHz
Stop 5795.000 MHz

Step 8.000 MHz
Span 80.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.445 MHz : -5.624 dBm M2 : 5770.150 MHz : 0.711 dBm Delta1 : 35.591 MHz : 0.956 dB T1 : 5736.804 MHz : -9.655 dBm T2 : 5774.158 MHz : -20.184 dBm OBW : 37.355 MHz	Measured 6 dB Bandwidth: 35.591 MHz Measured 99% Bandwidth: 37.355 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5737.445 MHz : -4.170 dBm M2 : 5770.150 MHz : 2.397 dBm Delta1 : 35.431 MHz : 1.025 dB T1 : 5736.804 MHz : -7.676 dBm T2 : 5773.517 MHz : -10.241 dBm OBW : 36.713 MHz	Measured 6 dB Bandwidth: 35.431 MHz Measured 99% Bandwidth: 36.713 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5777.124 MHz : -6.084 dBm M2 : 5810.150 MHz : 0.028 dBm Delta1 : 35.752 MHz : 1.438 dB T1 : 5776.804 MHz : -9.236 dBm T2 : 5813.517 MHz : -11.241 dBm OBW : 36.713 MHz	Channel Frequency: 5795.00 MHz

back to matrix

6 dB & 99% BANDWIDTH

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	ERROR!!! MULTIPLE TEST RESULTS MATCHES...	Measured 6 dB Bandwidth: 35.752 MHz Measured 99% Bandwidth: 36.393 MHz ERROR!!! MULTIPLE TEST RESULTS MATCHES...

back to matrix

Issue Date: 18th November 2019   **Page:** 143 of 263
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A.3. Power Spectral Density

POWER SPECTRAL DENSITY

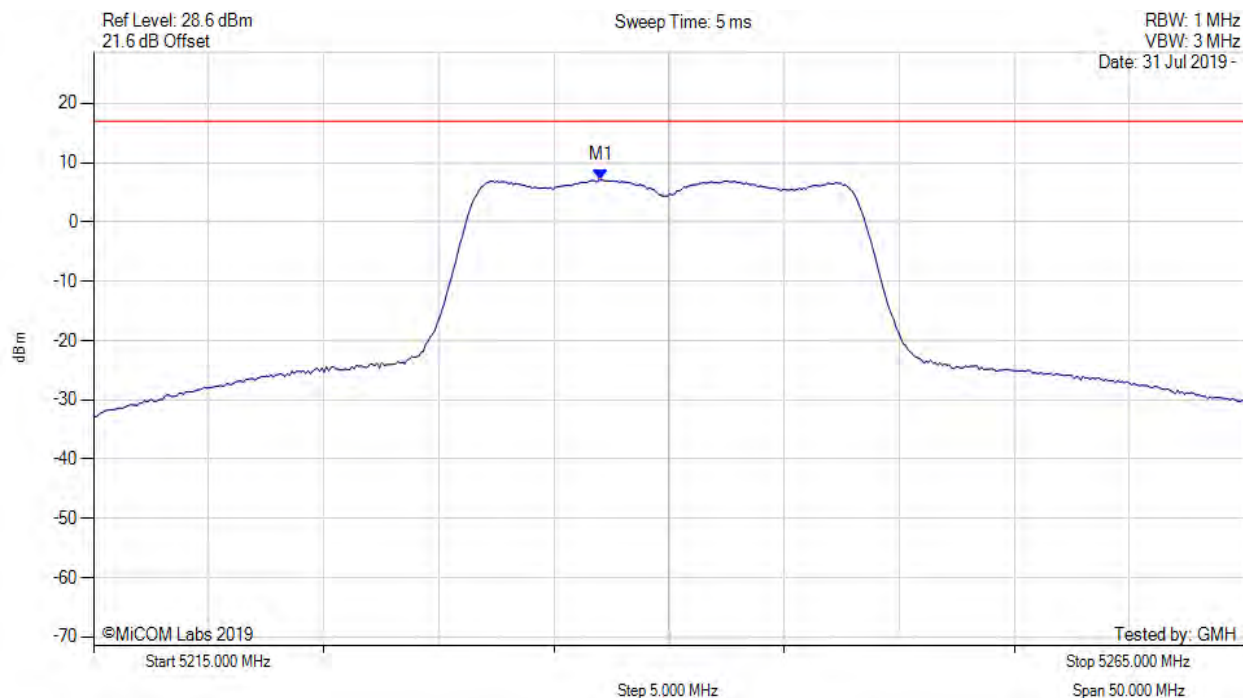Variant: 802.11a, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5182.956 MHz : 2.242 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.3 dBm
20.3 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

M1

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Tested by: GMH

Start 5155.000 MHz

Stop 5205.000 MHz

Step 5.000 MHz

Span 50.000 MHz

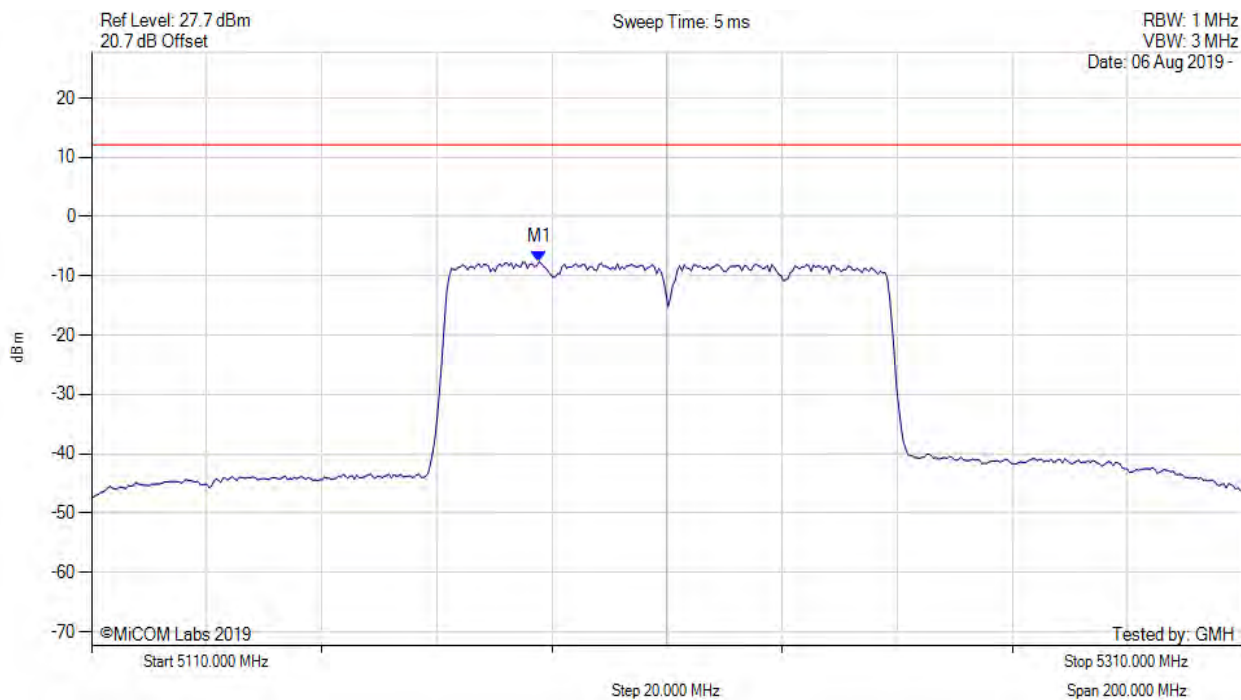| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5183.156 MHz : -1.566 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5183.000 MHz : 3.707 dBm M1 + DCCF : 5183.000 MHz : 3.795 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 17.0 dBm Margin: -13.2 dB

back to matrix

POWER SPECTRAL DENSITY

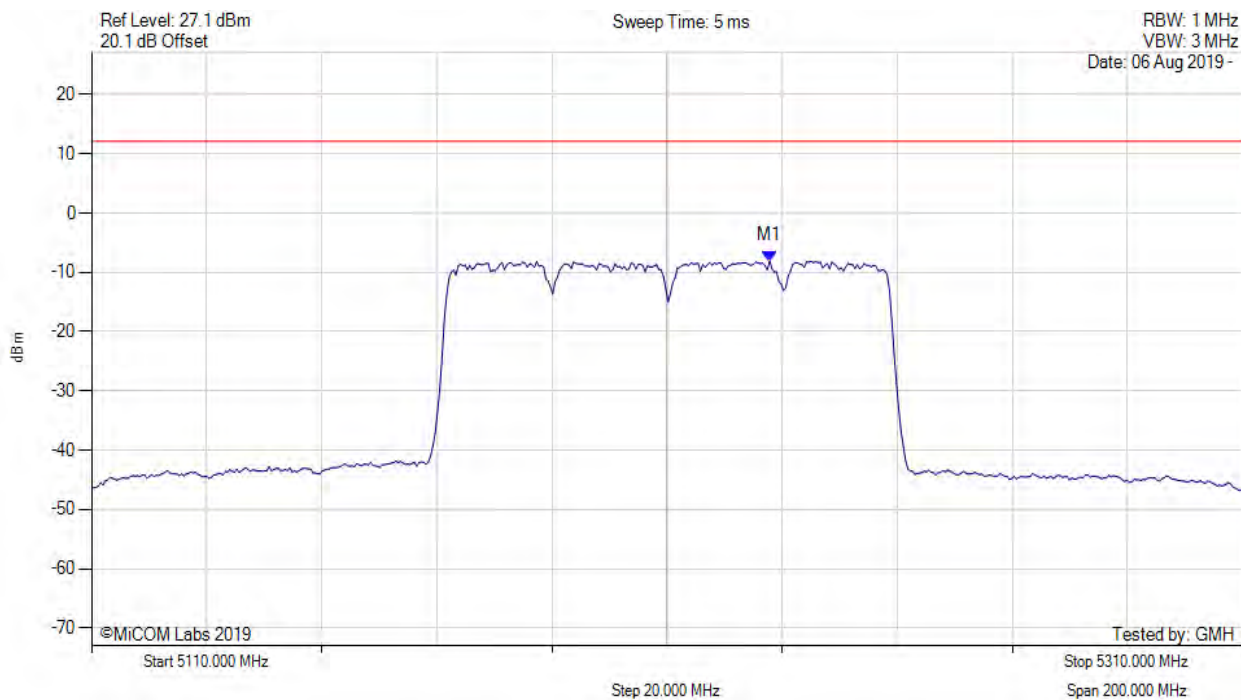Variant: 802.11a, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.255 MHz : 4.152 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
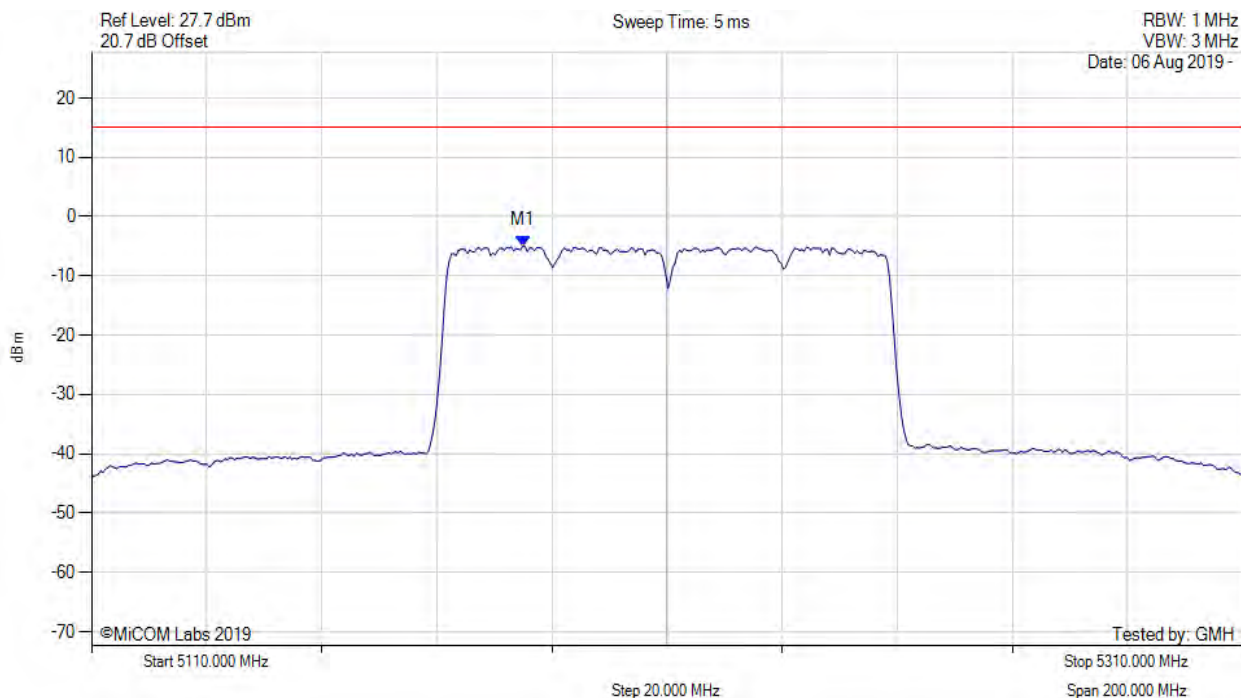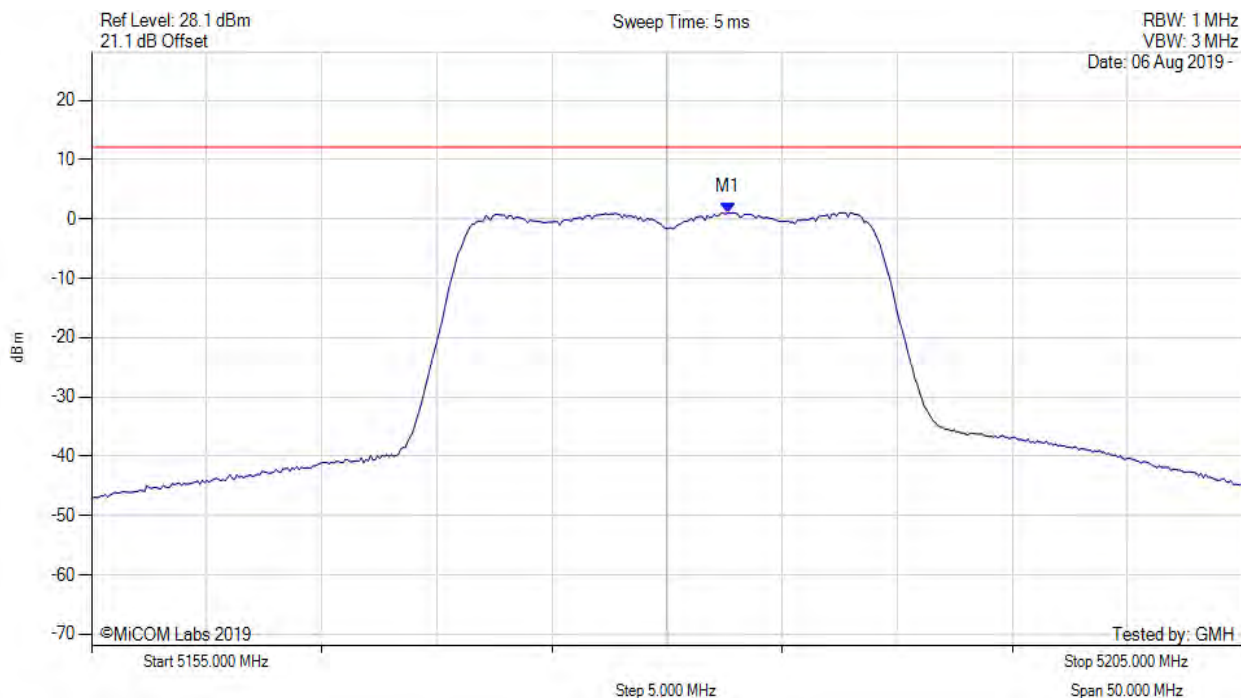
Ref Level: 27.1 dBm
20.1 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

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Tested by: GMH

Start 5175.000 MHz
Step 5.000 MHz
Stop 5225.000 MHz
Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.455 MHz : 4.047 dBm	Channel Frequency: 5200.00 MHz

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.8 dBm
20.8 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

Start 5175.000 MHz
Stop 5225.000 MHz
Step 5.000 MHz
Span 50.000 MHz

Tested by: GMH

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Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.400 MHz : 7.091 dBm M1 + DCCF : 5202.400 MHz : 7.179 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 17.0 dBm Margin: -9.8 dB

back to matrix

Issue Date: 18th November 2019   **Page:** 149 of 263

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POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.6 dBm
21.6 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

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Tested by: GMH

Start 5215.000 MHz

Stop 5265.000 MHz

Step 5.000 MHz

Span 50.000 MHz

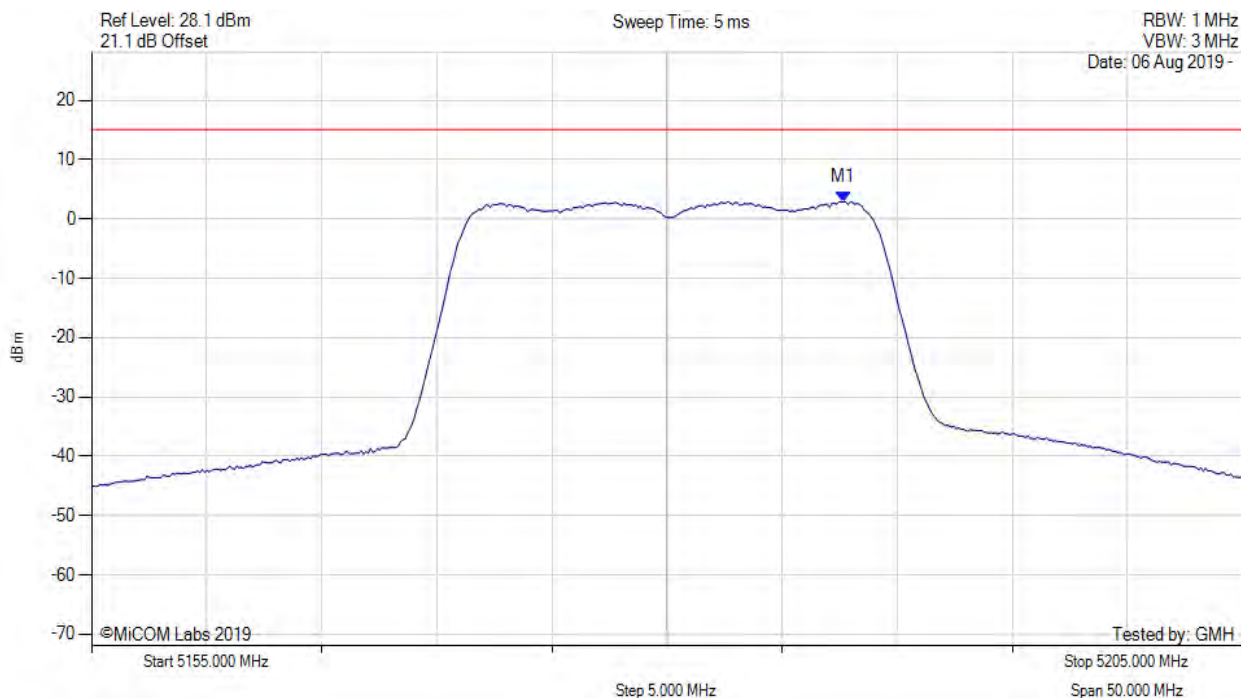| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5237.044 MHz : 4.110 dBm	Limit: ≤ 13.990 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5237.144 MHz : 4.037 dBm	Limit: ≤ 13.990 dBm

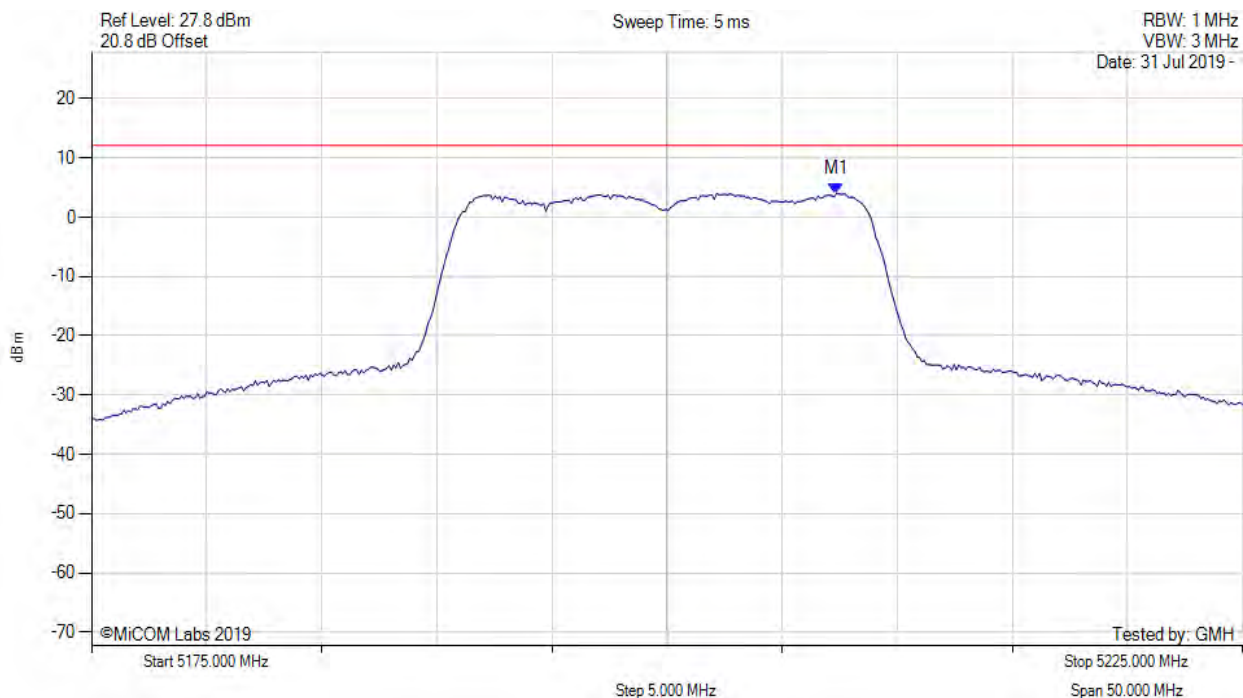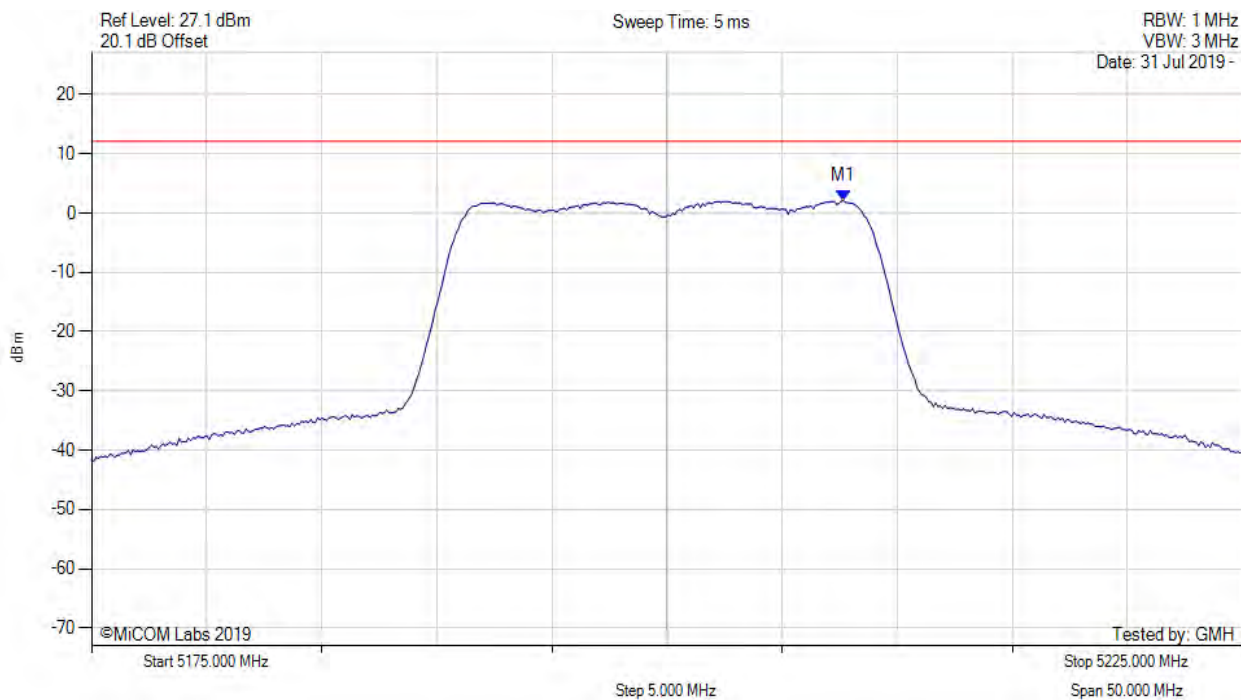back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5237.000 MHz : 7.071 dBm M1 + DCCF : 5237.000 MHz : 7.159 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 17.0 dBm Margin: -9.9 dB

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POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5187.756 MHz : -7.631 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

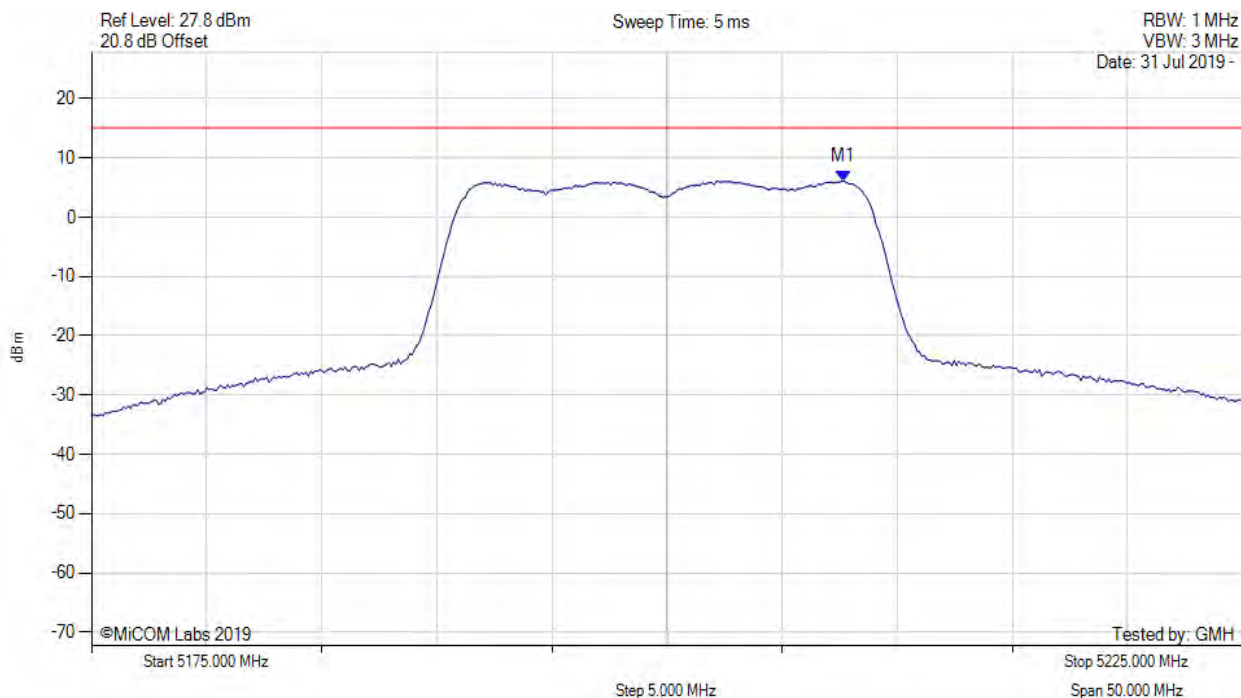Variant: 802.11ac-80, Channel: 5210.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
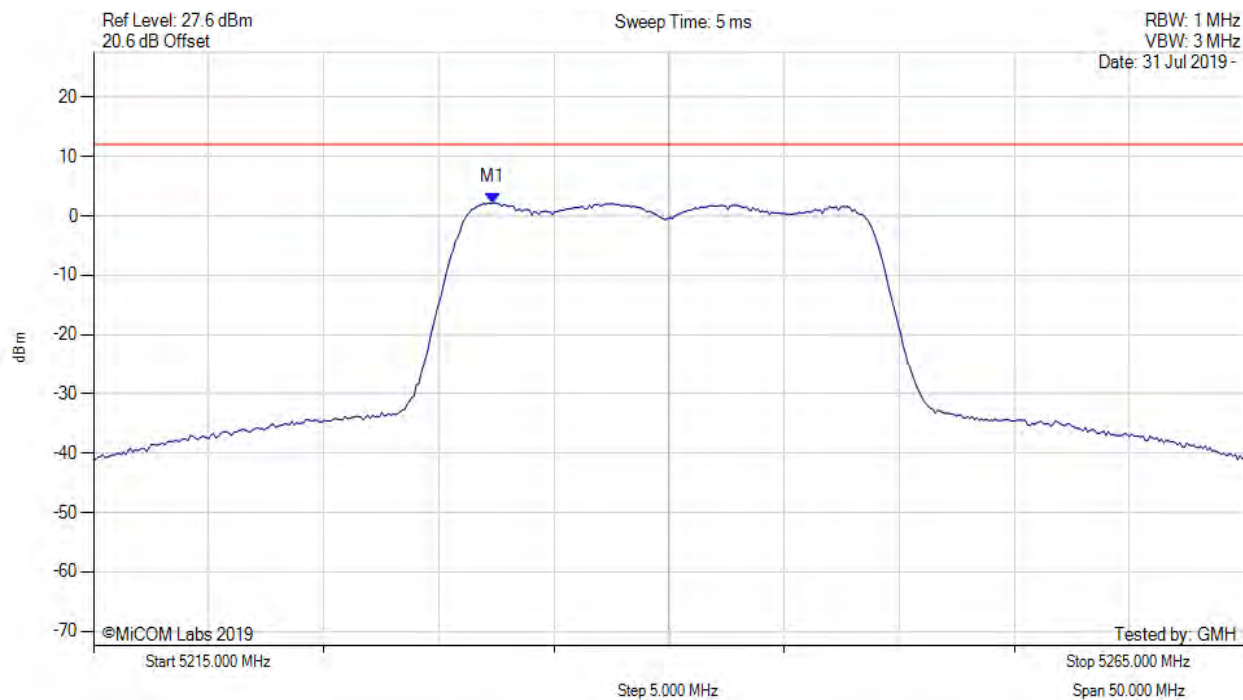

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5227.836 MHz : -8.115 dBm	Limit: ≤ 12.090 dBm

back to matrix

Issue Date: 18th November 2019 **Page:** 154 of 263

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MiCOM Labs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5210.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5184.900 MHz : -4.936 dBm M1 + DCCF : 5184.900 MHz : -4.381 dBm Duty Cycle Correction Factor : +0.56 dB	Limit: ≤ 15.1 dBm Margin: -19.5 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.1 dBm
21.1 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

Start 5155.000 MHz

Step 5.000 MHz

Stop 5205.000 MHz

Span 50.000 MHz

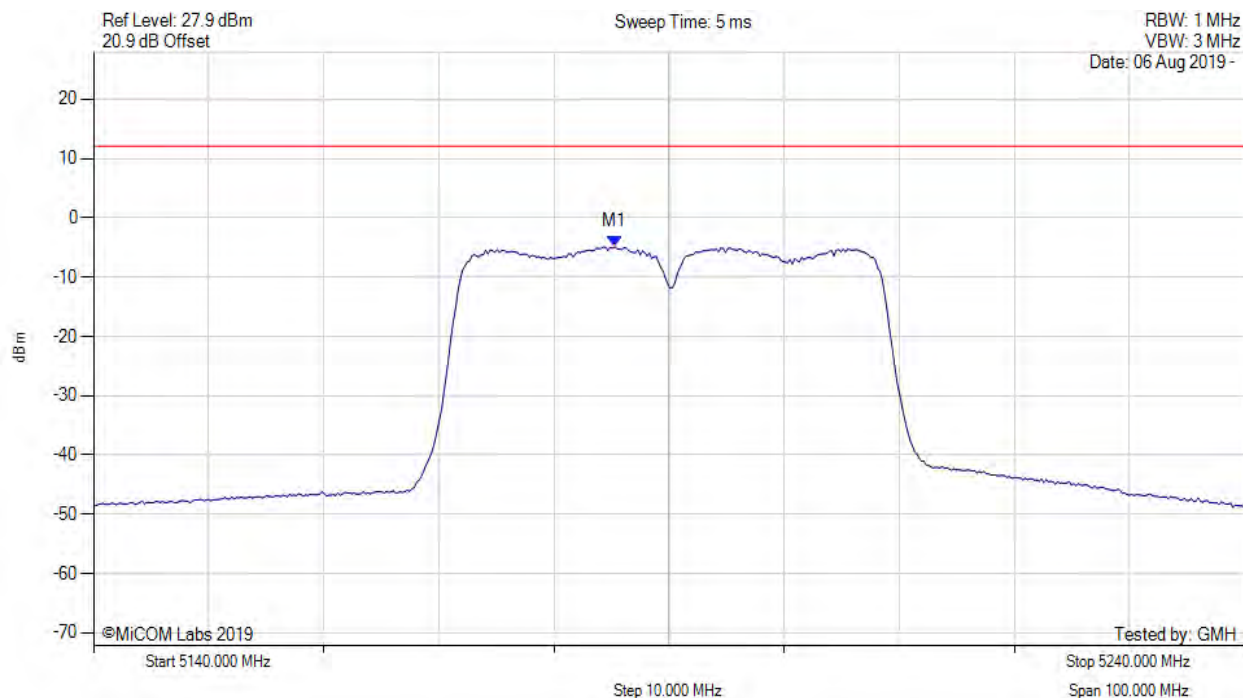| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5182.655 MHz : 1.074 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5187.665 MHz : -1.652 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5187.700 MHz : 2.920 dBm M1 + DCCF : 5187.700 MHz : 3.008 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 15.1 dBm Margin: -12.1 dB

back to matrix

POWER SPECTRAL DENSITY

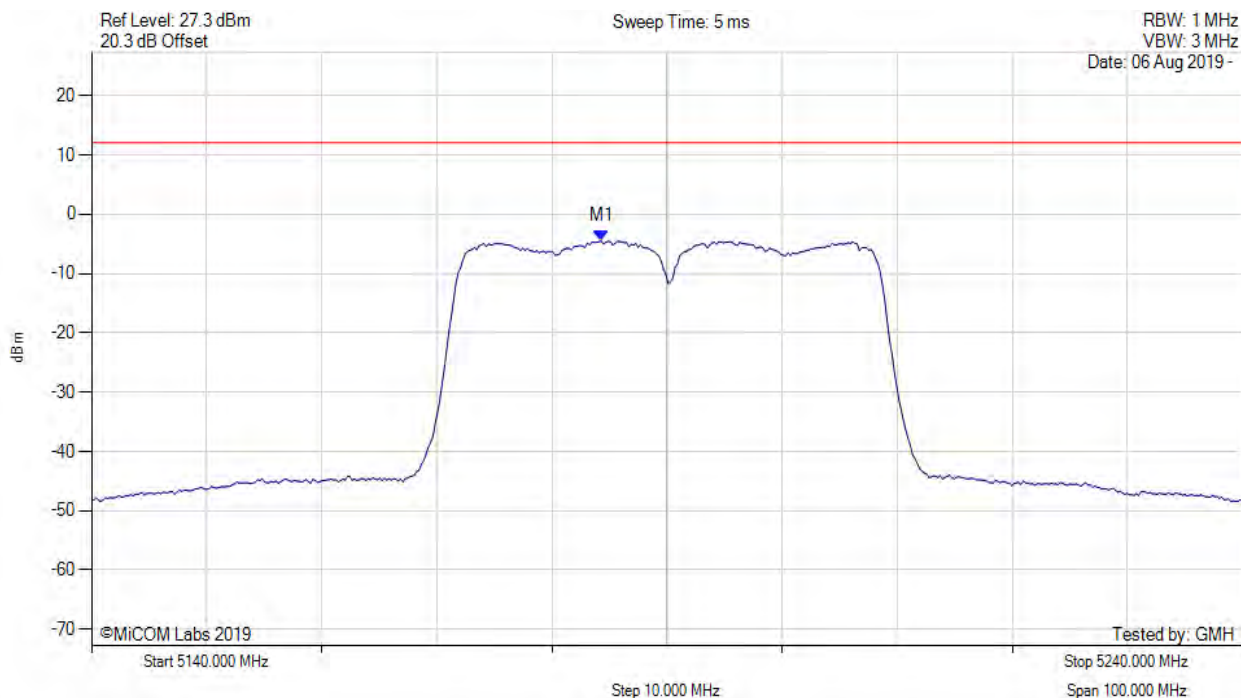Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5207.365 MHz : 4.000 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
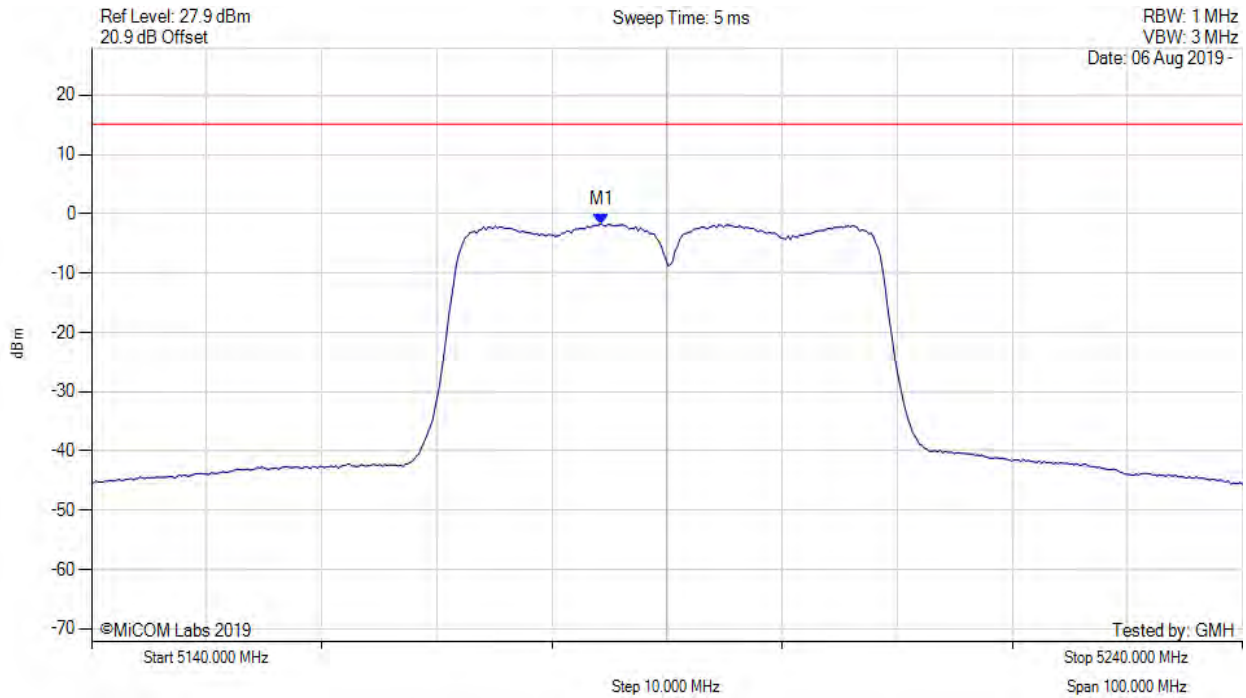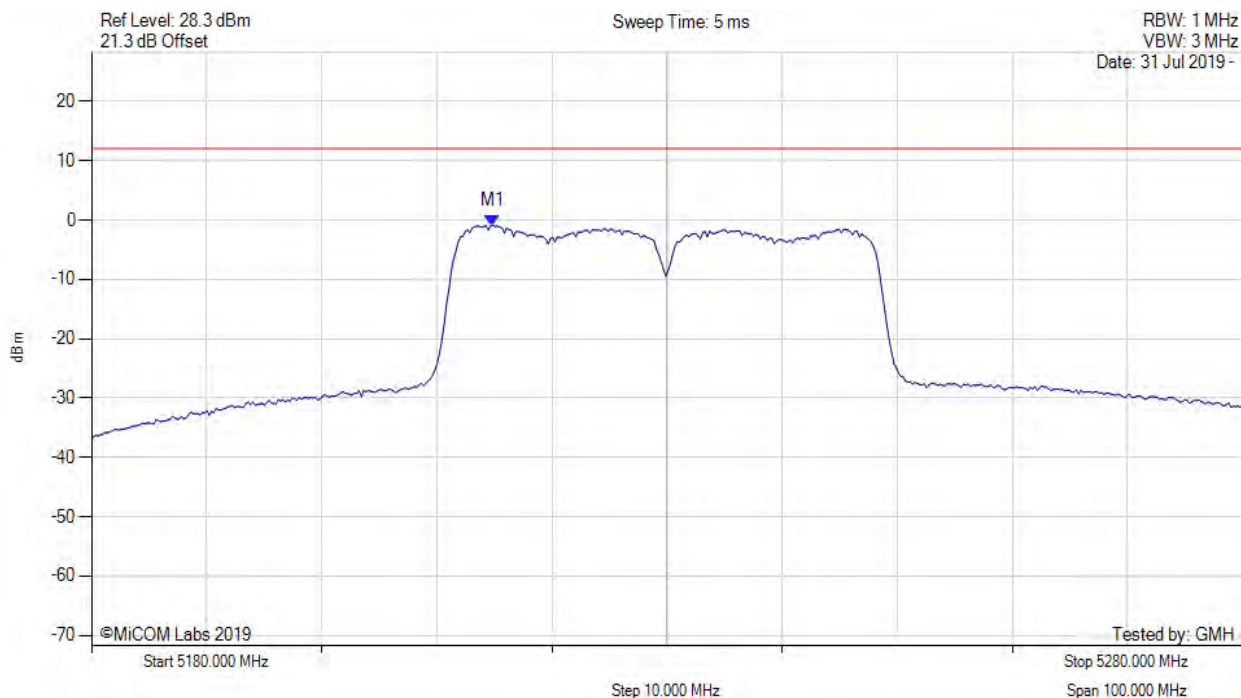
Ref Level: 27.1 dBm
20.1 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

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Tested by: GMH

Start 5175.000 MHz
Stop 5225.000 MHz
Step 5.000 MHz
Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5207.665 MHz : 2.080 dBm	Channel Frequency: 5200.00 MHz

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5207.700 MHz : 6.108 dBm M1 + DCCF : 5207.700 MHz : 6.196 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 15.1 dBm Margin: -8.9 dB

back to matrix

POWER SPECTRAL DENSITY

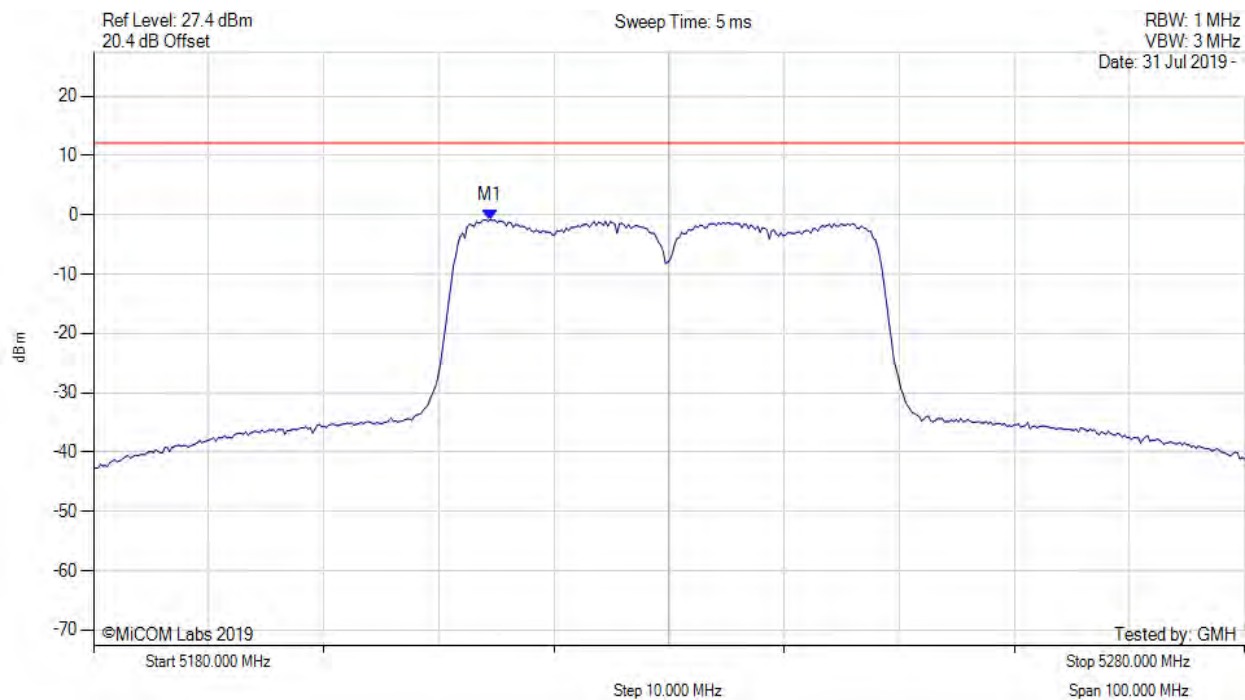Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

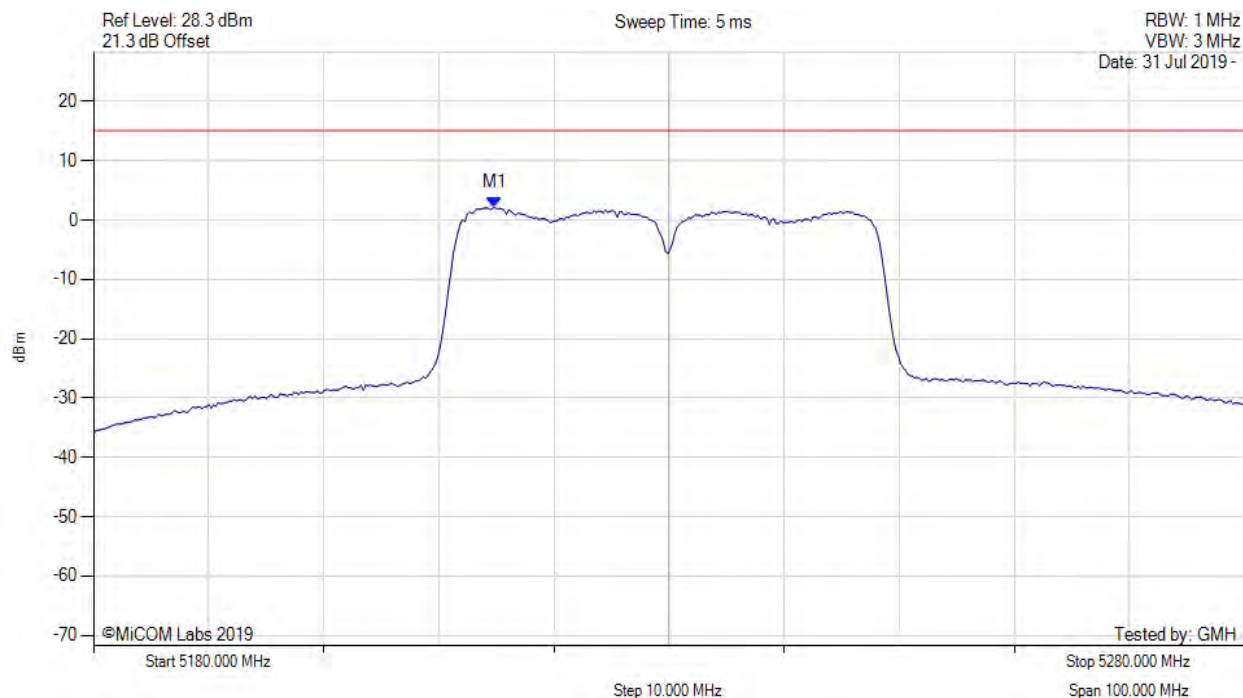| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5232.234 MHz : 4.005 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5232.335 MHz : 2.212 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.6 dBm
21.6 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

Start 5215.000 MHz   Step 5.000 MHz   Stop 5265.000 MHz   Span 50.000 MHz

Tested by: GMH

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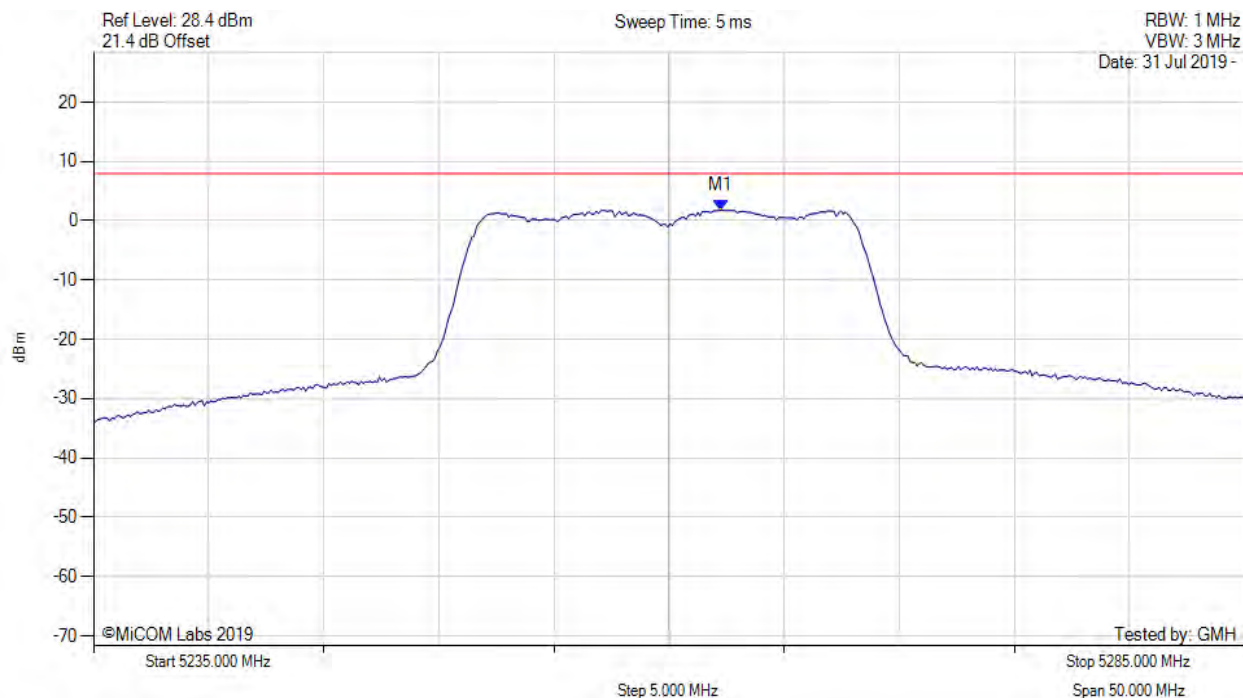| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5232.300 MHz : 6.187 dBm M1 + DCCF : 5232.300 MHz : 6.275 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 15.1 dBm Margin: -8.8 dB

back to matrix

POWER SPECTRAL DENSITY

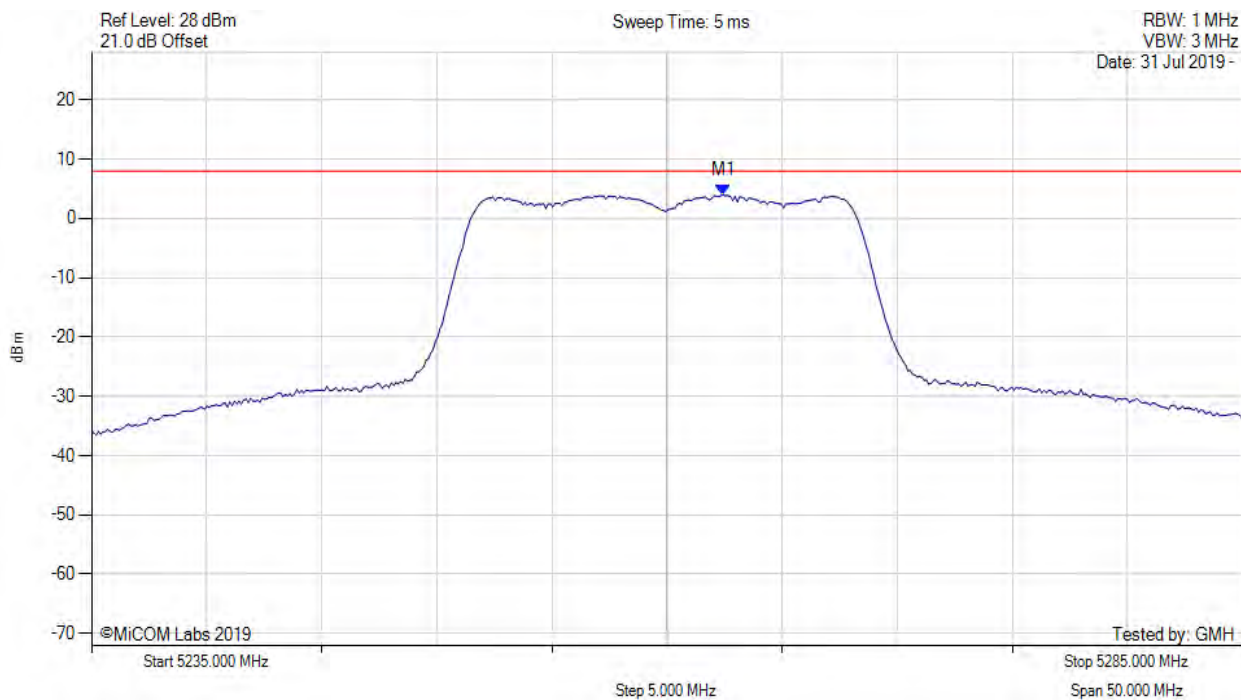Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5185.291 MHz : -4.890 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

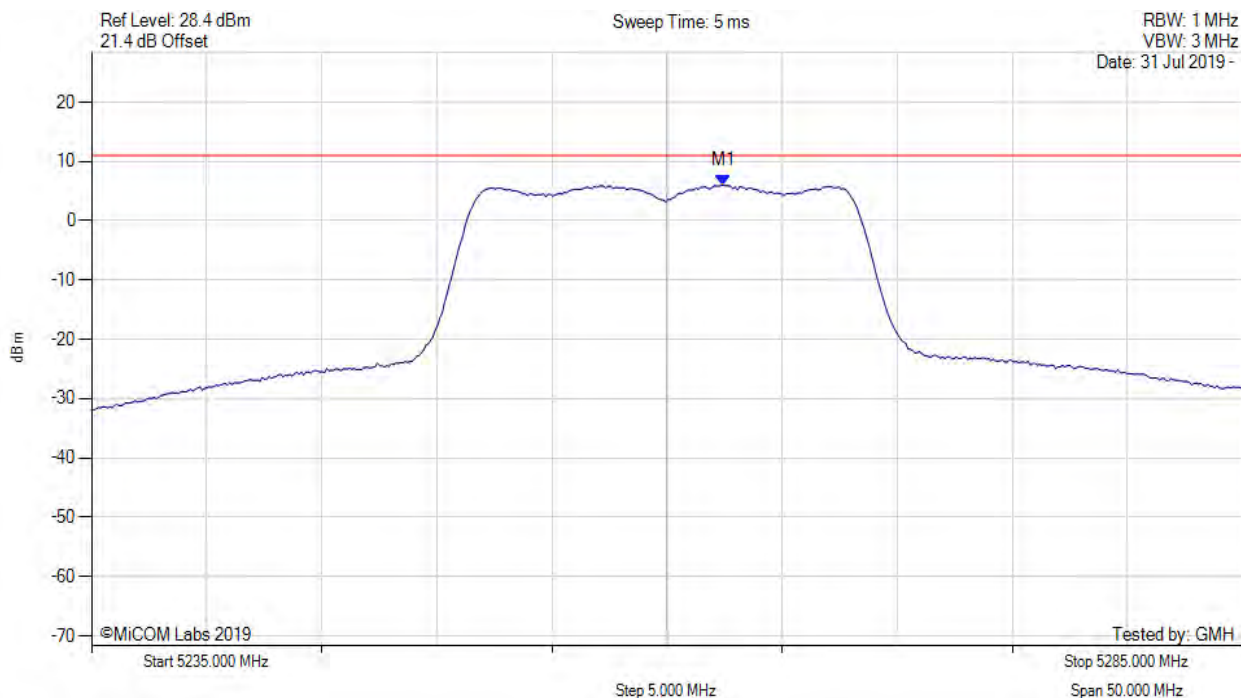Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.3 dBm
20.3 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

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Tested by: GMH

Start 5140.000 MHz
Stop 5240.000 MHz
Step 10.000 MHz
Span 100.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5184.289 MHz : -4.522 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

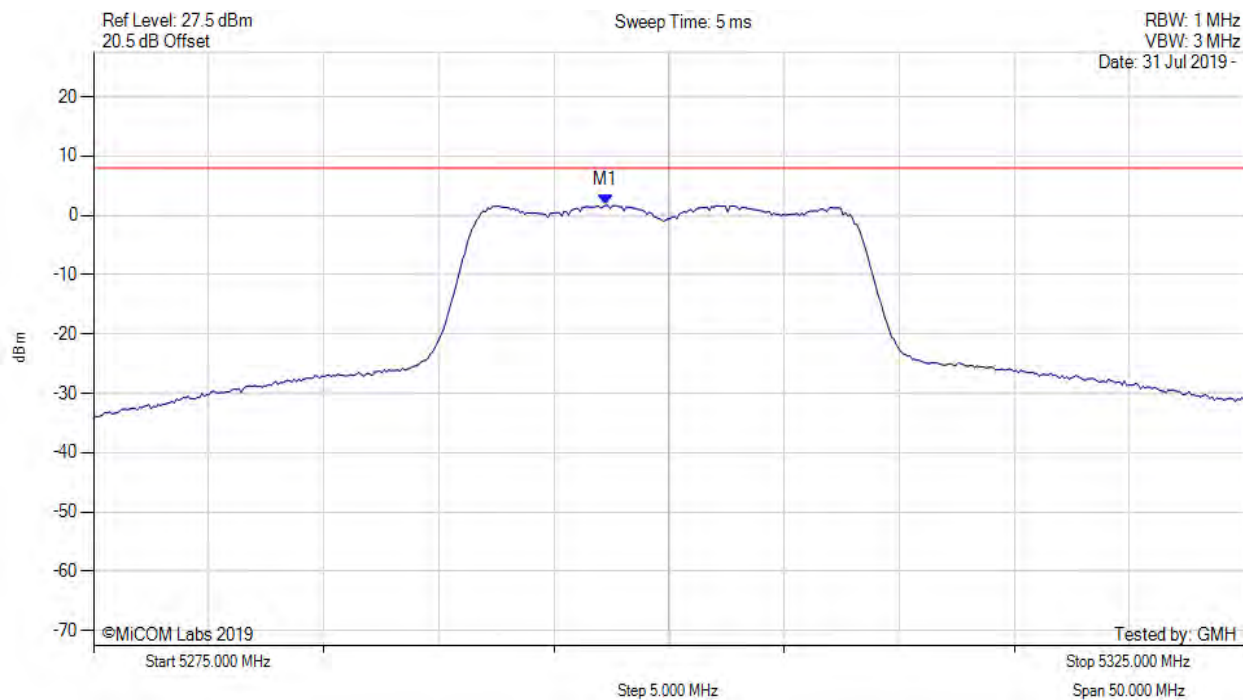Variant: 802.11n HT-40, Channel: 5190.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5184.300 MHz : -1.707 dBm M1 + DCCF : 5184.300 MHz : -1.619 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 15.1 dBm Margin: -16.7 dB

back to matrix

MiCOMLabs®

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

MiTest
regulatory compliance in the cloud

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5214.870 MHz : -0.886 dBm	Limit: ≤ 12.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5214.469 MHz : -0.853 dBm	Limit: ≤ 12.090 dBm

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.3 dBm
21.3 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

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Tested by: GMH

Start 5180.000 MHz
Stop 5280.000 MHz

Step 10.000 MHz
Span 100.000 MHz

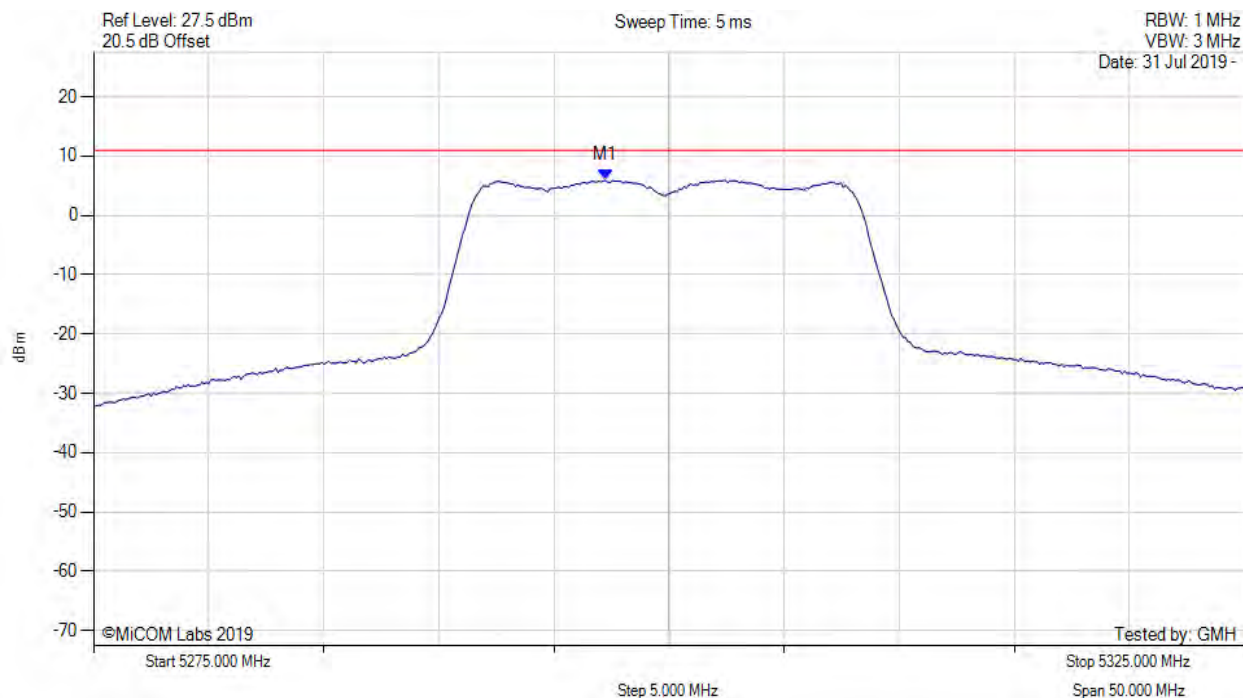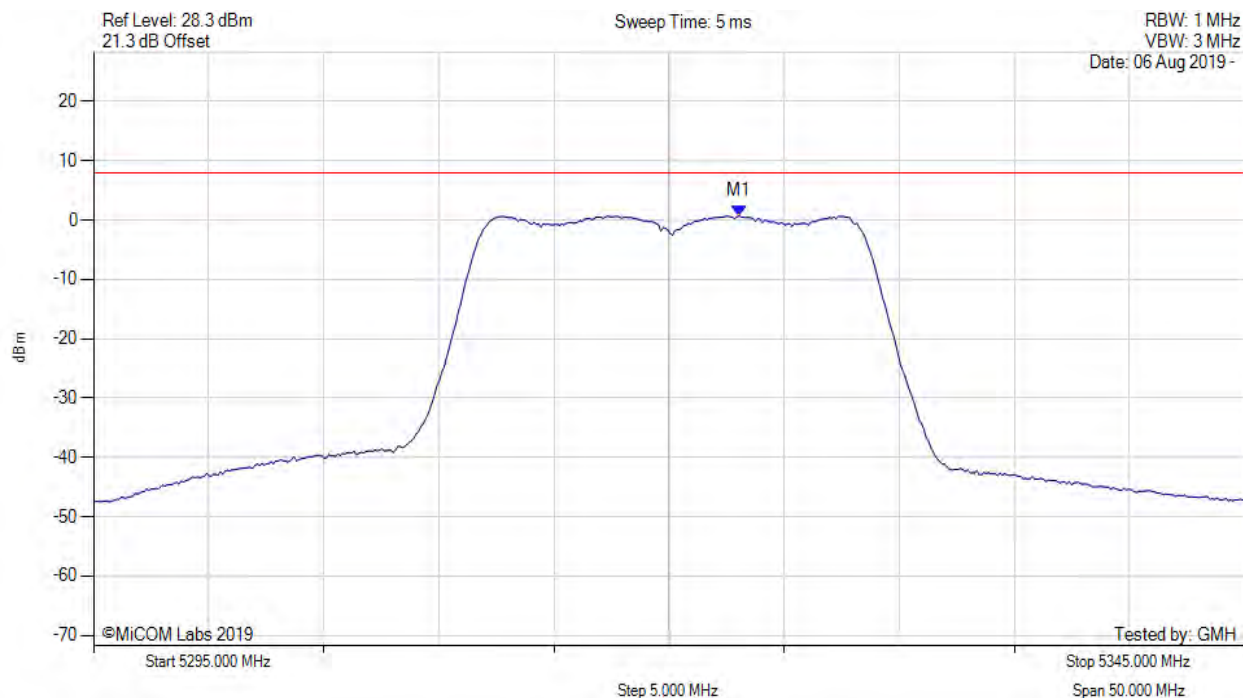| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5214.900 MHz : 2.129 dBm M1 + DCCF : 5214.900 MHz : 2.217 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 15.1 dBm Margin: -12.9 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5260.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

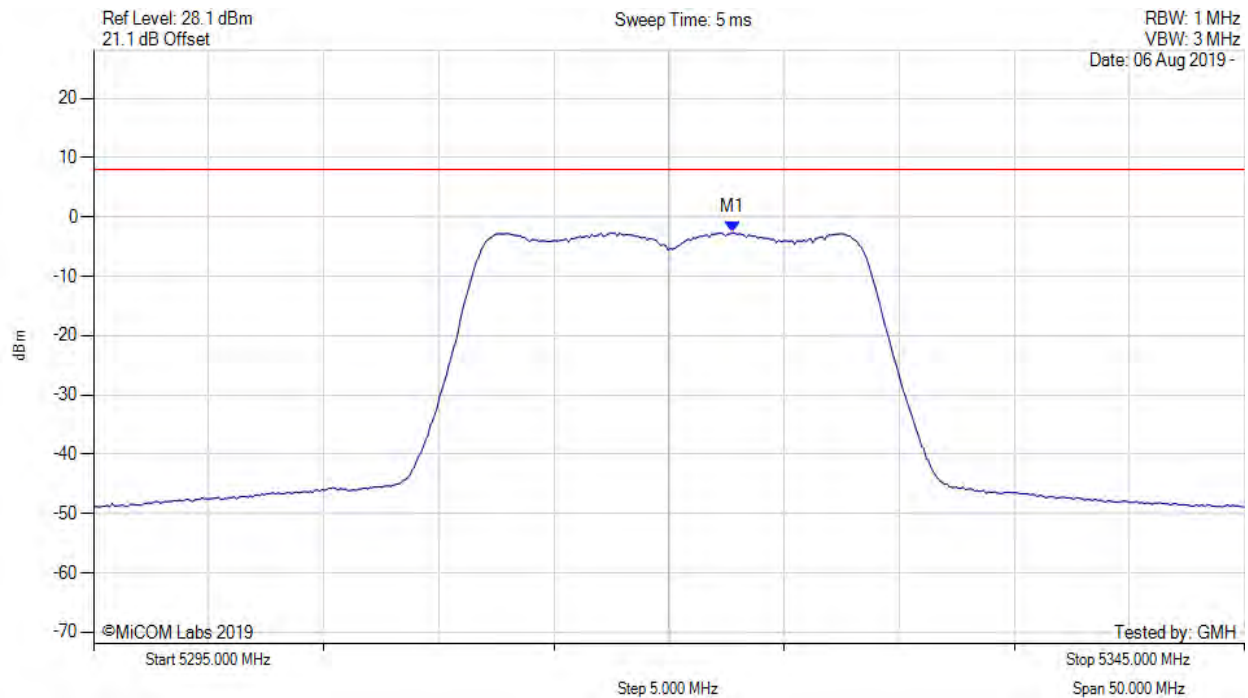| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.255 MHz : 1.768 dBm	Limit: ≤ 7.990 dBm

back to matrix

MiCOMLabs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5260.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.455 MHz : 3.929 dBm	Limit: ≤ 7.990 dBm

back to matrix

MiCOM Labs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

MiTest

Variant: 802.11a, Channel: 5260.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.500 MHz : 5.981 dBm M1 + DCCF : 5262.500 MHz : 6.069 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 11.0 dBm Margin: -4.9 dB

back to matrix

POWER SPECTRAL DENSITY

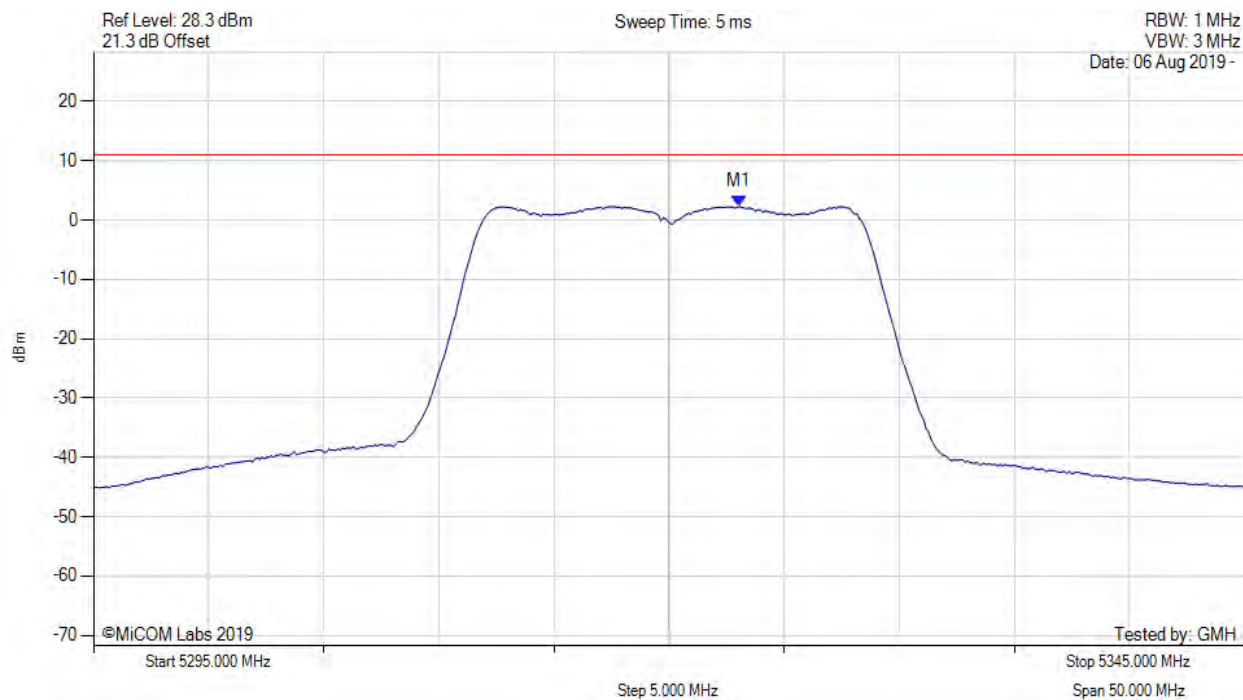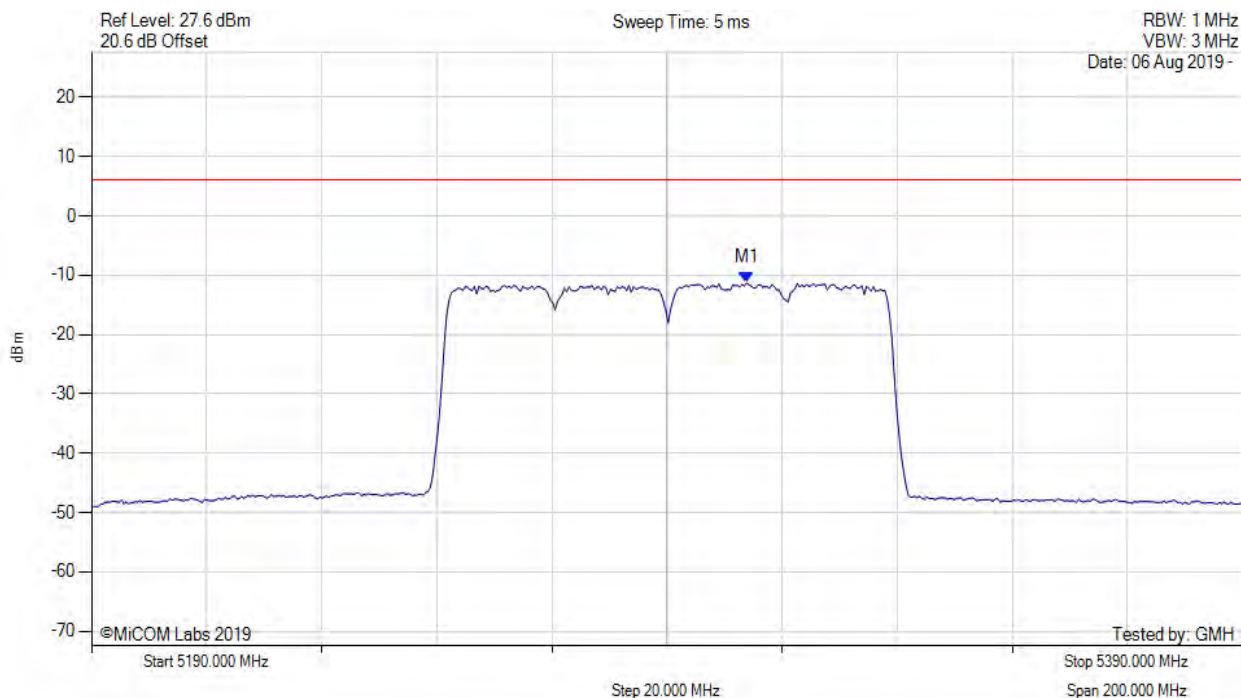Variant: 802.11a, Channel: 5300.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.5 dBm
20.5 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

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Tested by: GMH

Start 5275.000 MHz

Stop 5325.000 MHz

Step 5.000 MHz

Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5297.244 MHz : 1.679 dBm	Limit: ≤ 7.990 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5300.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.6 dBm
20.6 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

Start 5275.000 MHz
Step 5.000 MHz
Stop 5325.000 MHz
Span 50.000 MHz
Tested by: GMH
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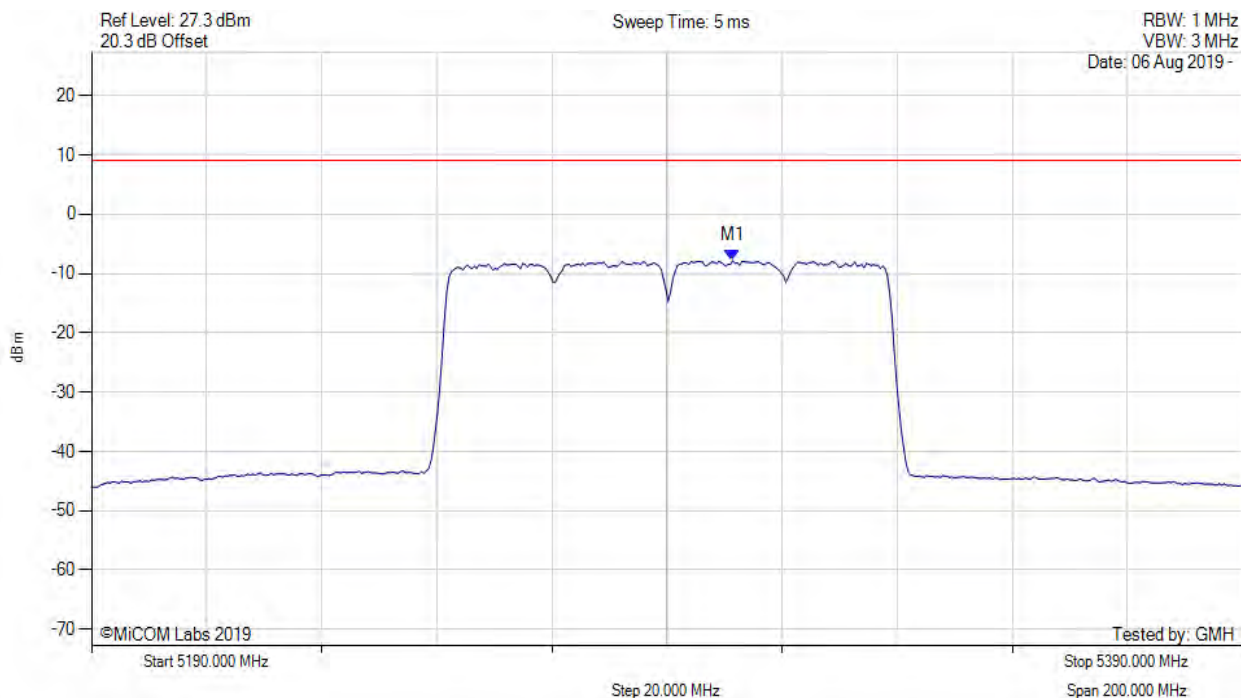| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5302.455 MHz : 3.903 dBm	Channel Frequency: 5300.00 MHz

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5300.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

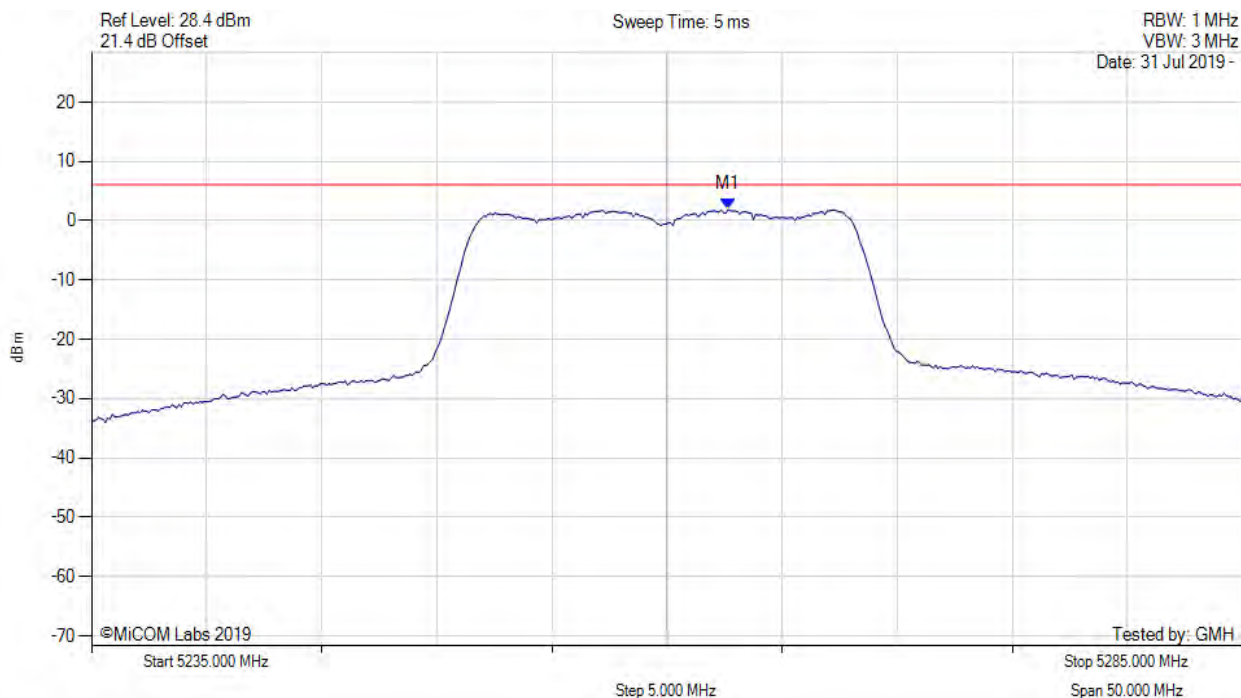| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5297.200 MHz : 5.924 dBm M1 + DCCF : 5297.200 MHz : 6.012 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 11.0 dBm Margin: -5.0 dB

back to matrix

POWER SPECTRAL DENSITY

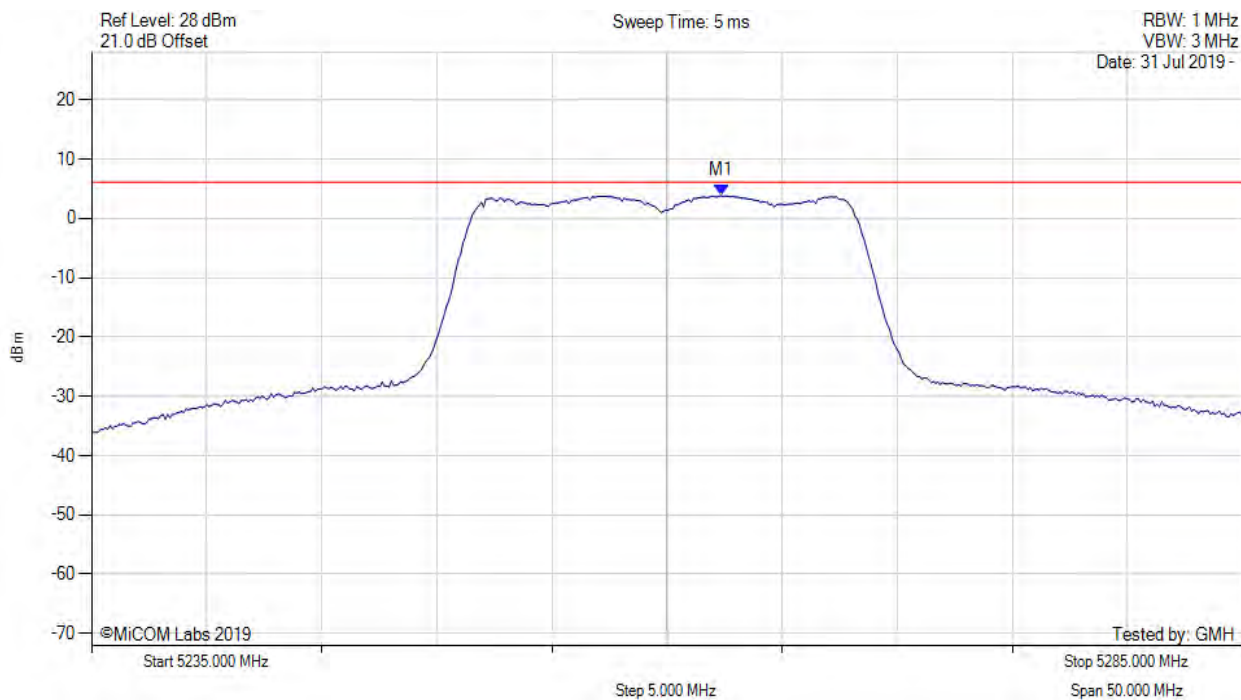Variant: 802.11a, Channel: 5320.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5323.056 MHz : 0.709 dBm	Limit: ≤ 7.990 dBm

back to matrix

Issue Date: 18th November 2019   **Page:** 177 of 263

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MiCOM Labs, 575 Boulder Court, Pleasanton, California 94566 USA, Phone: +1 (925) 462 0304, Fax: +1 (925) 462 0306, www.micomlabs.com

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5320.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5322.756 MHz : -2.624 dBm	Limit: ≤ 7.990 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5320.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

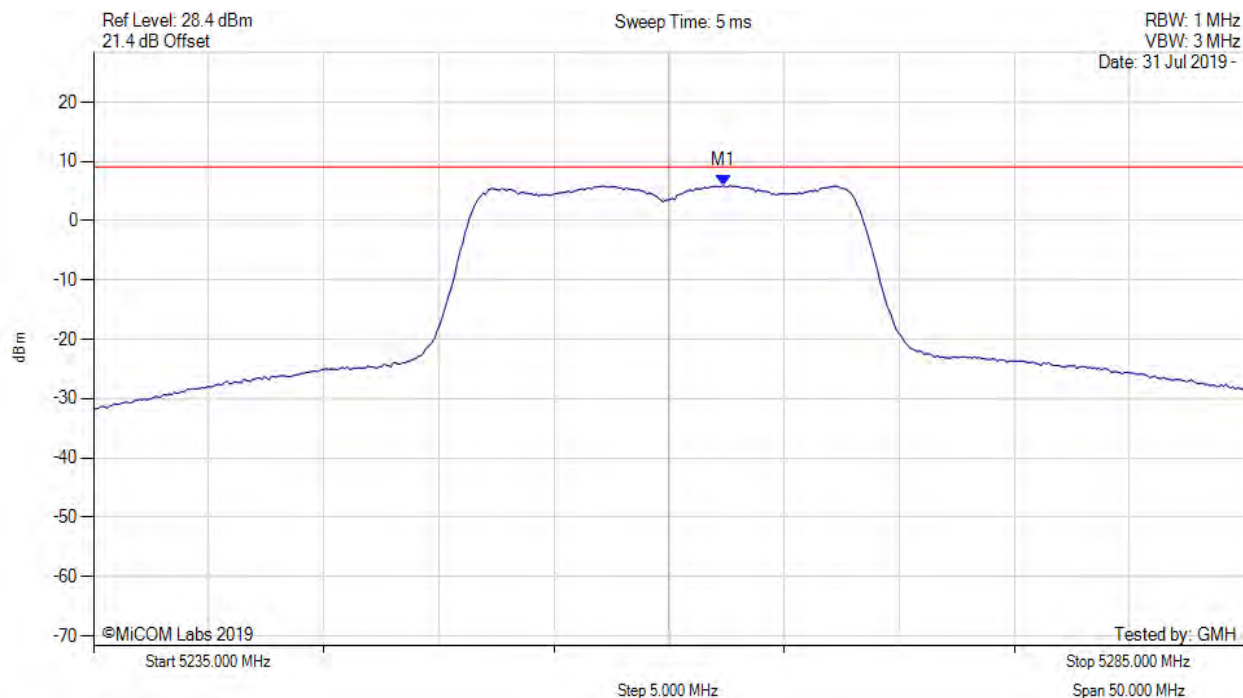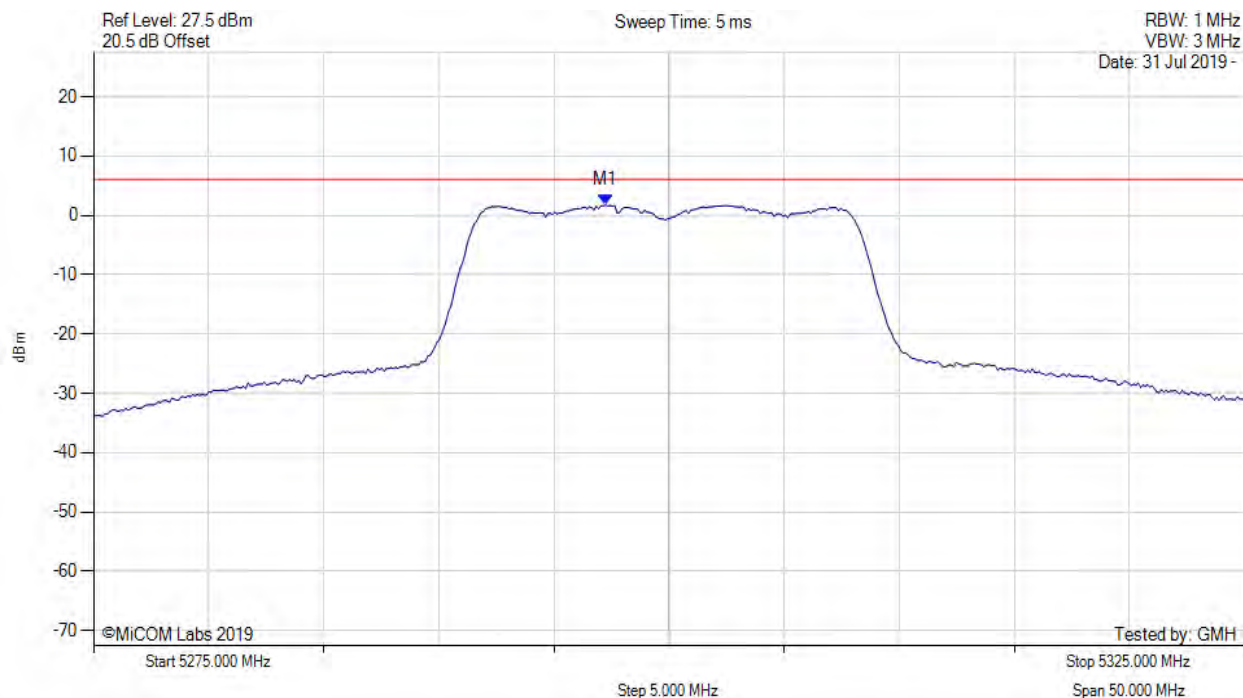Ref Level: 28.3 dBm
21.3 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

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Tested by: GMH

Start 5295.000 MHz

Stop 5345.000 MHz

Step 5.000 MHz

Span 50.000 MHz

M1

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5323.100 MHz : 2.306 dBm M1 + DCCF : 5323.100 MHz : 2.394 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 11.0 dBm Margin: -8.6 dB

back to matrix

POWER SPECTRAL DENSITY

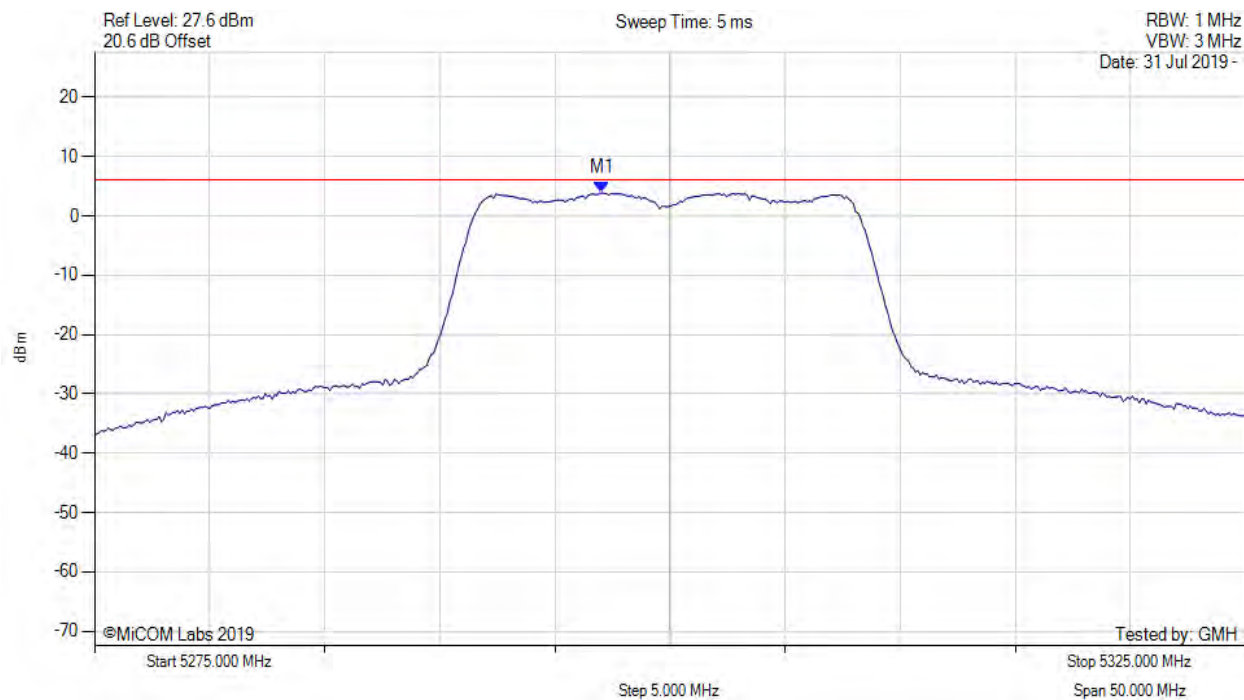Variant: 802.11ac-80, Channel: 5290.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.3 dBm
20.3 dB Offset
Sweep Time: 5 ms
RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

©MiCOM Labs 2019
Tested by: GMH
Start 5190.000 MHz
Stop 5390.000 MHz
Step 20.000 MHz
Span 200.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5301.423 MHz : -10.181 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5290.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5303.828 MHz : -11.284 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5290.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

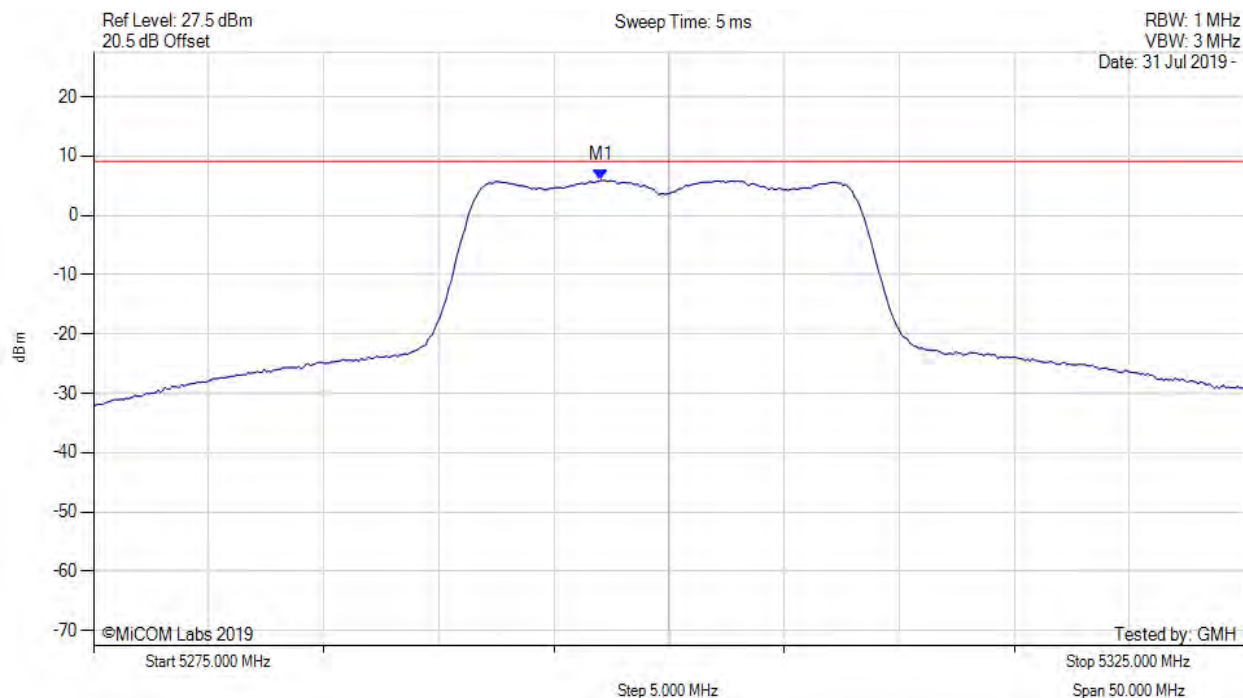| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5301.400 MHz : -7.830 dBm M1 + DCCF : 5301.400 MHz : -7.275 dBm Duty Cycle Correction Factor : +0.56 dB	Limit: ≤ 9.1 dBm Margin: -16.4 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

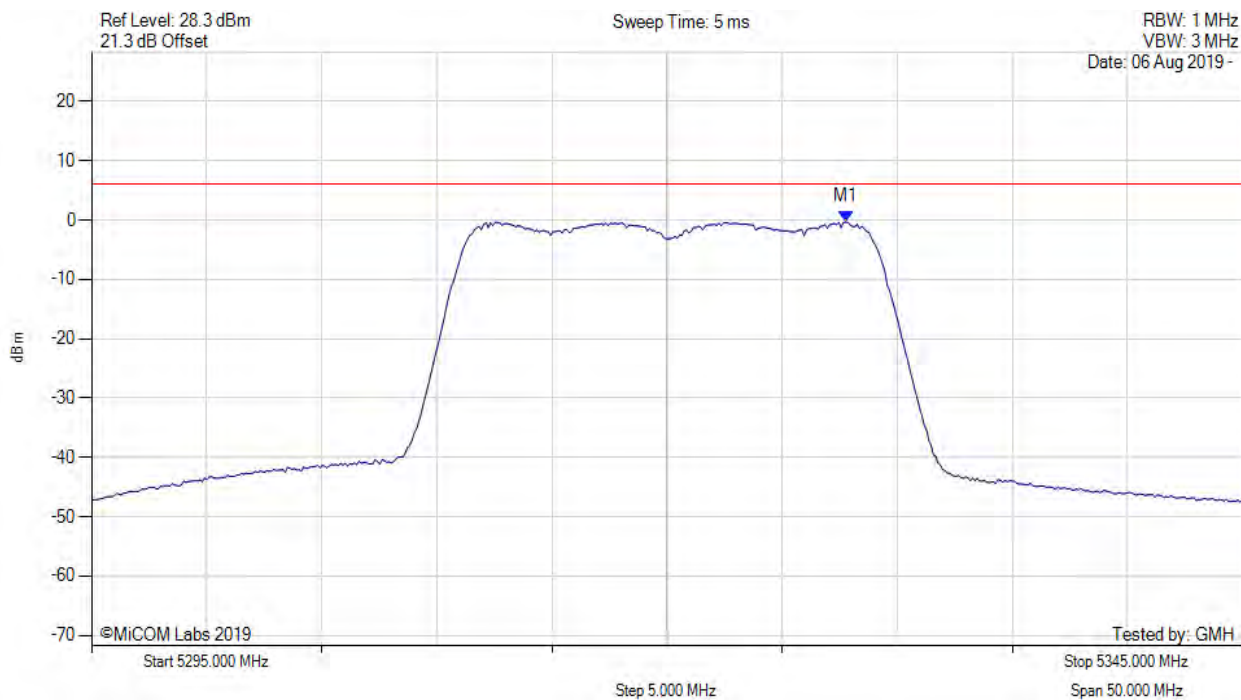| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.655 MHz : 1.875 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.355 MHz : 3.812 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

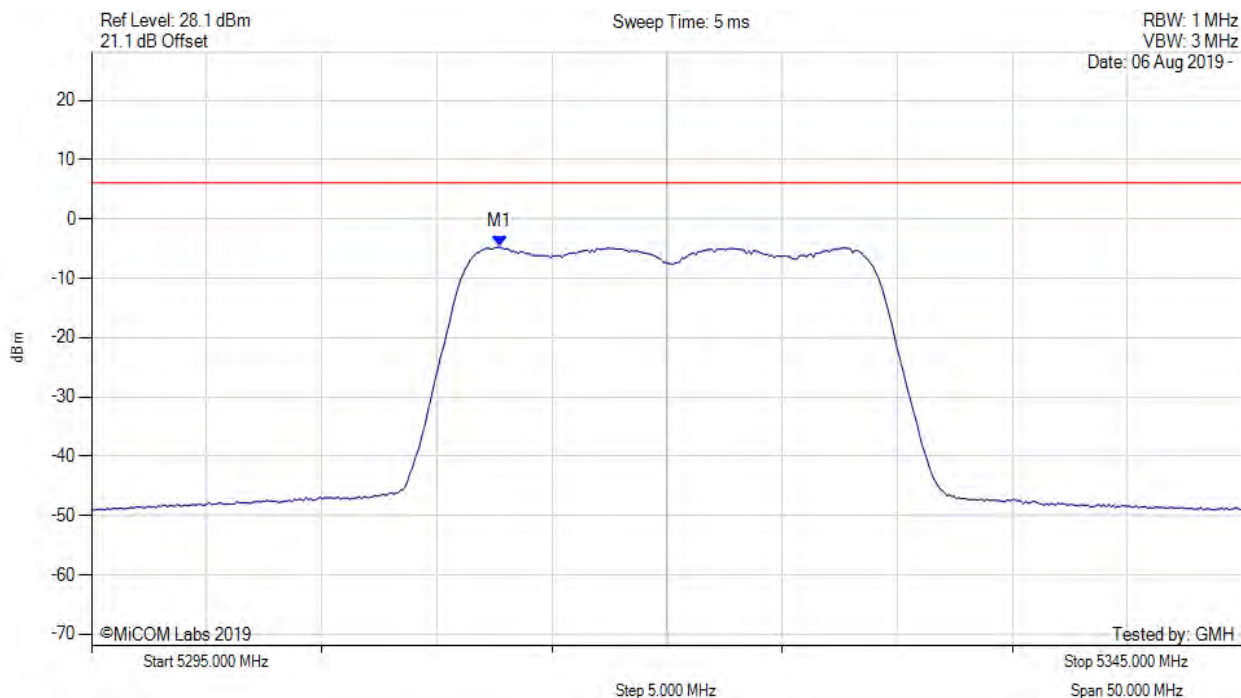Variant: 802.11n HT-20, Channel: 5260.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.4 dBm
21.4 dB Offset
Sweep Time: 5 ms
RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

Start 5235.000 MHz   Stop 5285.000 MHz
Step 5.000 MHz   Span 50.000 MHz

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Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5262.400 MHz : 5.930 dBm	Limit: ≤ 9.1 dBm
Sweep Count = 100	M1 + DCCF : 5262.400 MHz : 6.018 dBm	Margin: -3.1 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.09 dB	
Trace Mode = VIEW		

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5297.244 MHz : 1.744 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

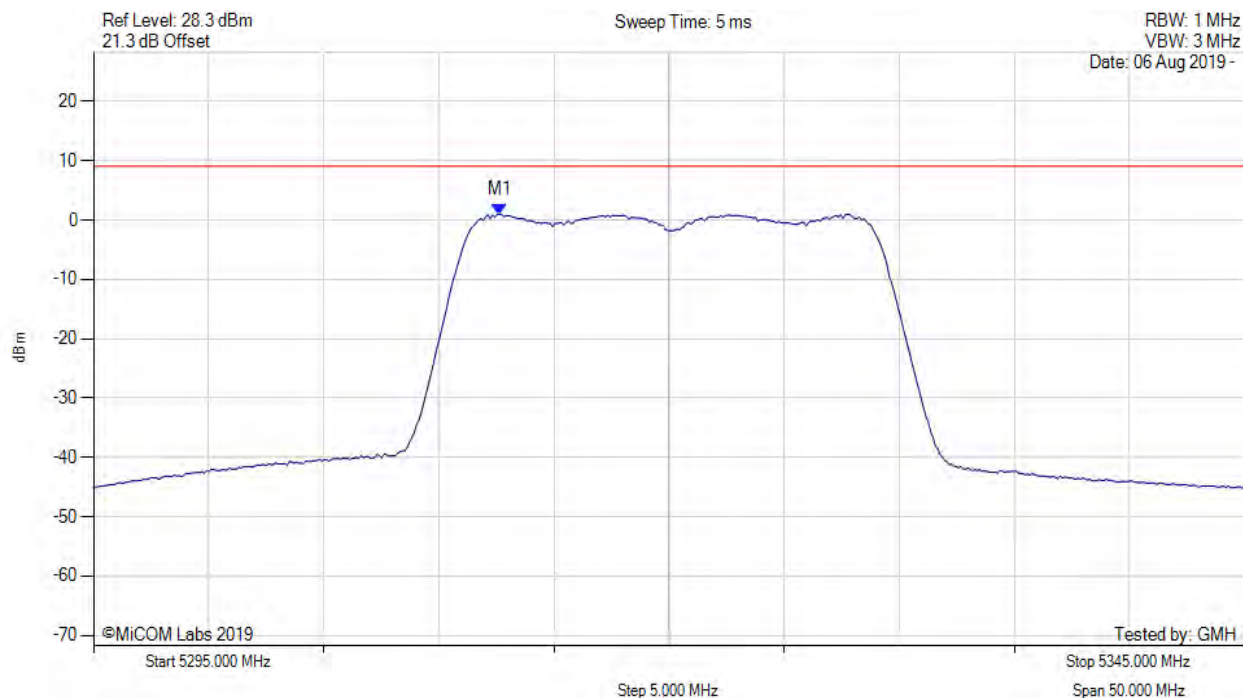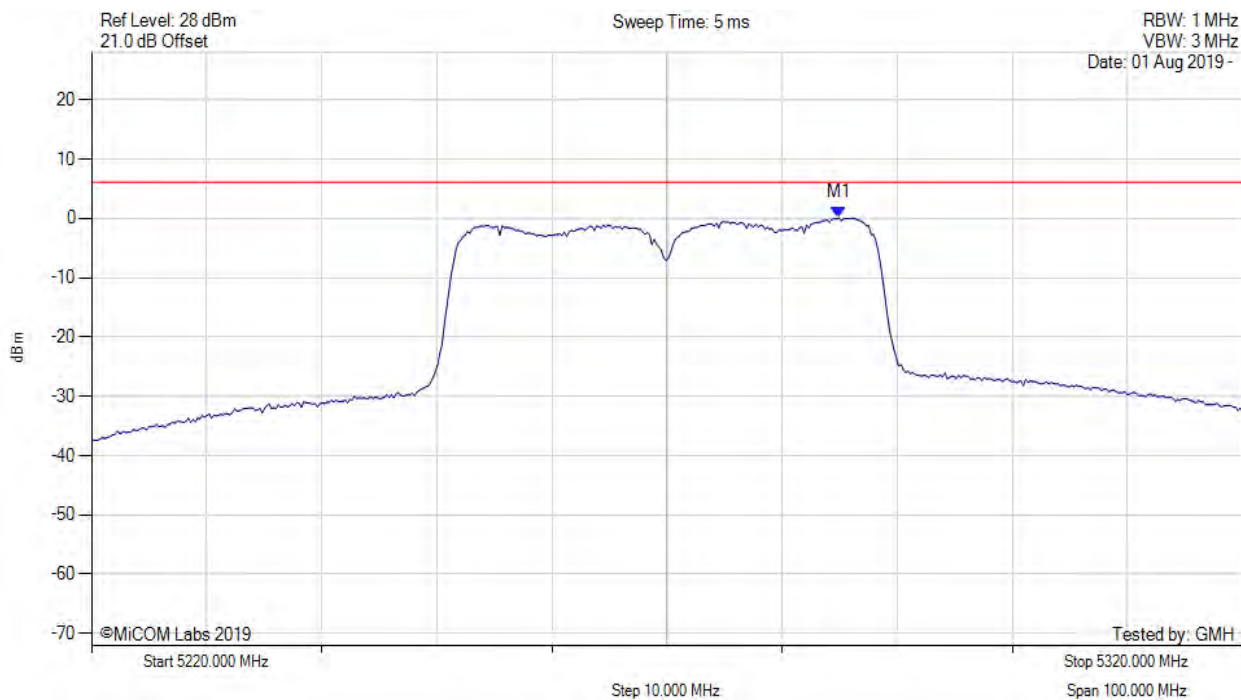Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.6 dBm
20.6 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

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Tested by: GMH

Start 5275.000 MHz

Stop 5325.000 MHz

Step 5.000 MHz

Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5297.044 MHz : 3.890 dBm	Channel Frequency: 5300.00 MHz

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.5 dBm
20.5 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 31 Jul 2019 -

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Tested by: GMH

Start 5275.000 MHz

Stop 5325.000 MHz

Step 5.000 MHz

Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5297.000 MHz : 5.914 dBm M1 + DCCF : 5297.000 MHz : 6.002 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -3.1 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
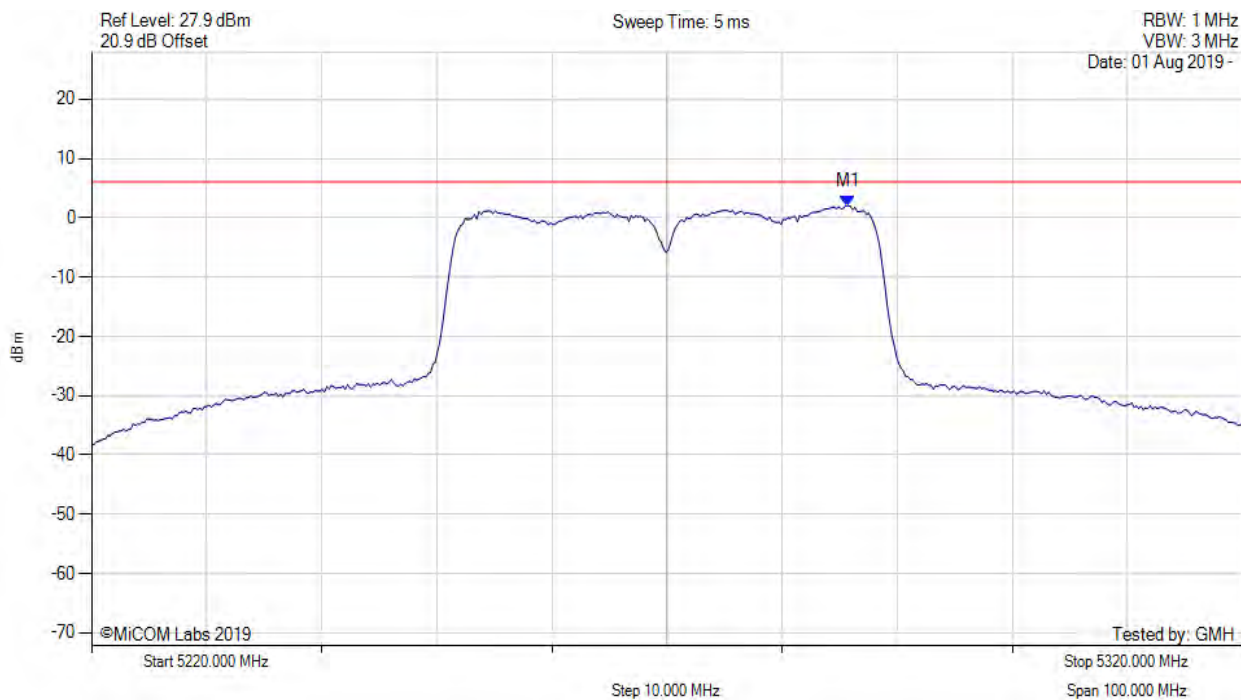
Ref Level: 28.3 dBm
21.3 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

Start 5295.000 MHz

Step 5.000 MHz

Stop 5345.000 MHz
Span 50.000 MHz

Tested by: GMH

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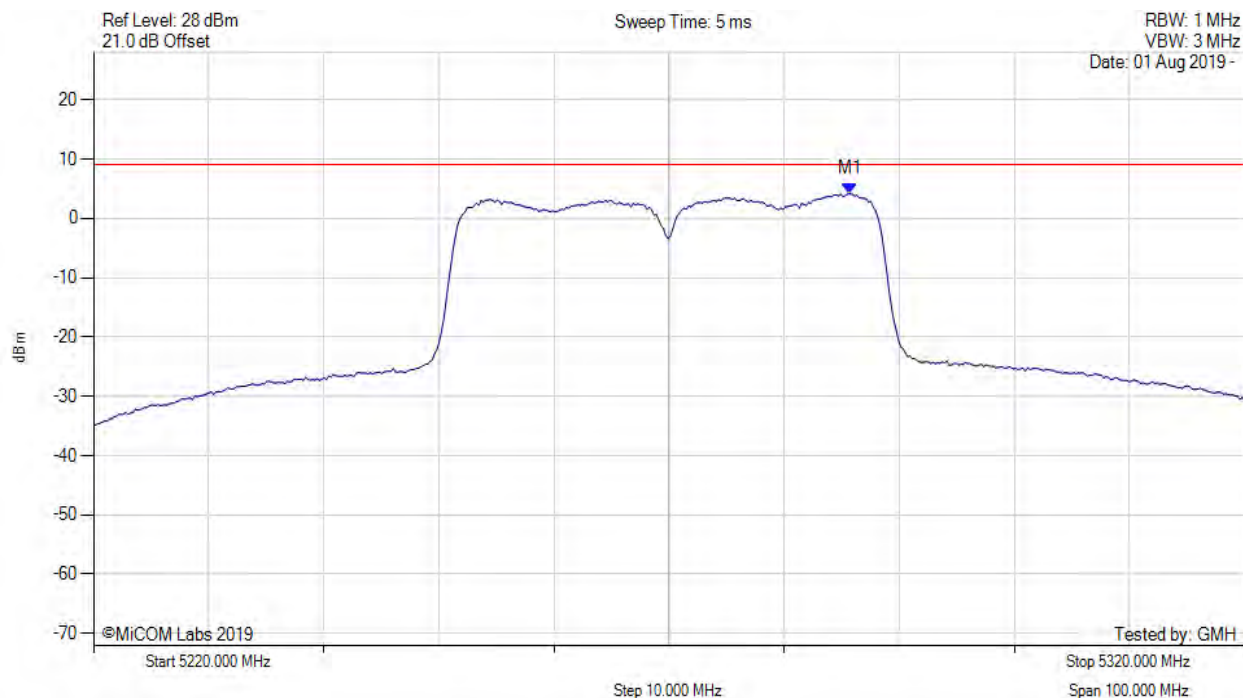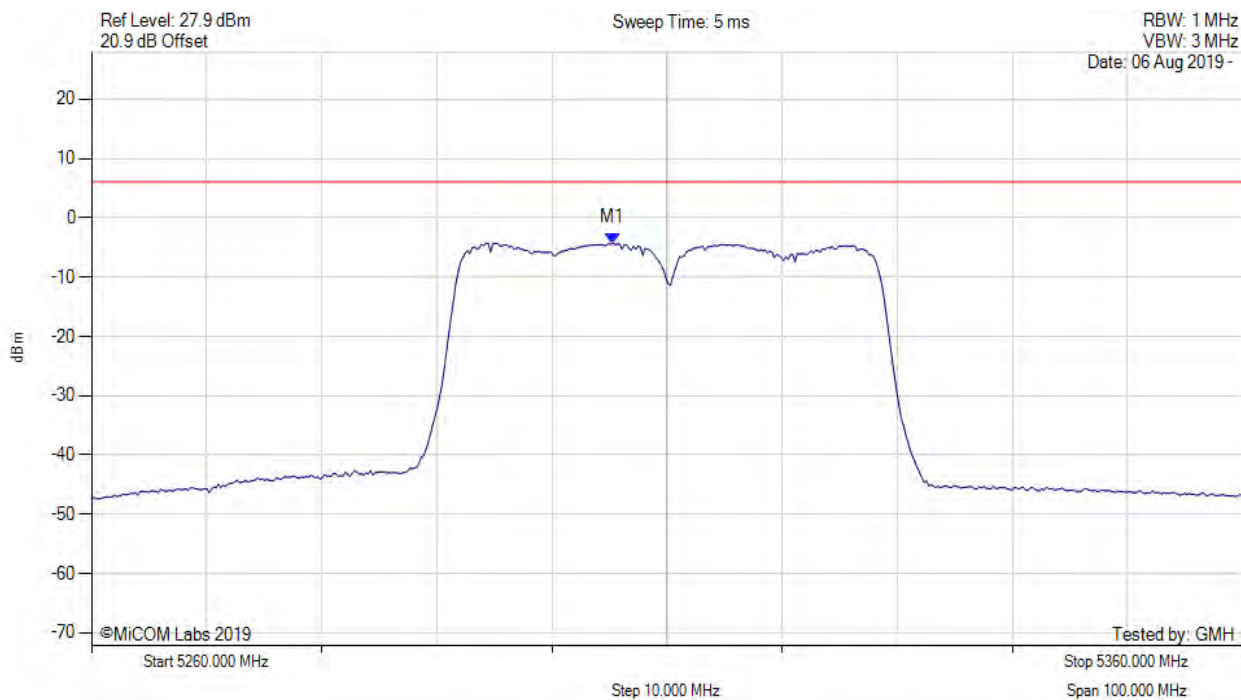| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5327.766 MHz : -0.320 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5312.735 MHz : -4.724 dBm	Limit: ≤ 6.090 dBm

back to matrix

MiCOMLabs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

MiTest

Variant: 802.11n HT-20, Channel: 5320.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.3 dBm
21.3 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

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Tested by: GMH

Start 5295.000 MHz
Stop 5345.000 MHz
Step 5.000 MHz
Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5312.600 MHz : 1.008 dBm M1 + DCCF : 5312.600 MHz : 1.096 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -8.0 dB

back to matrix

POWER SPECTRAL DENSITY

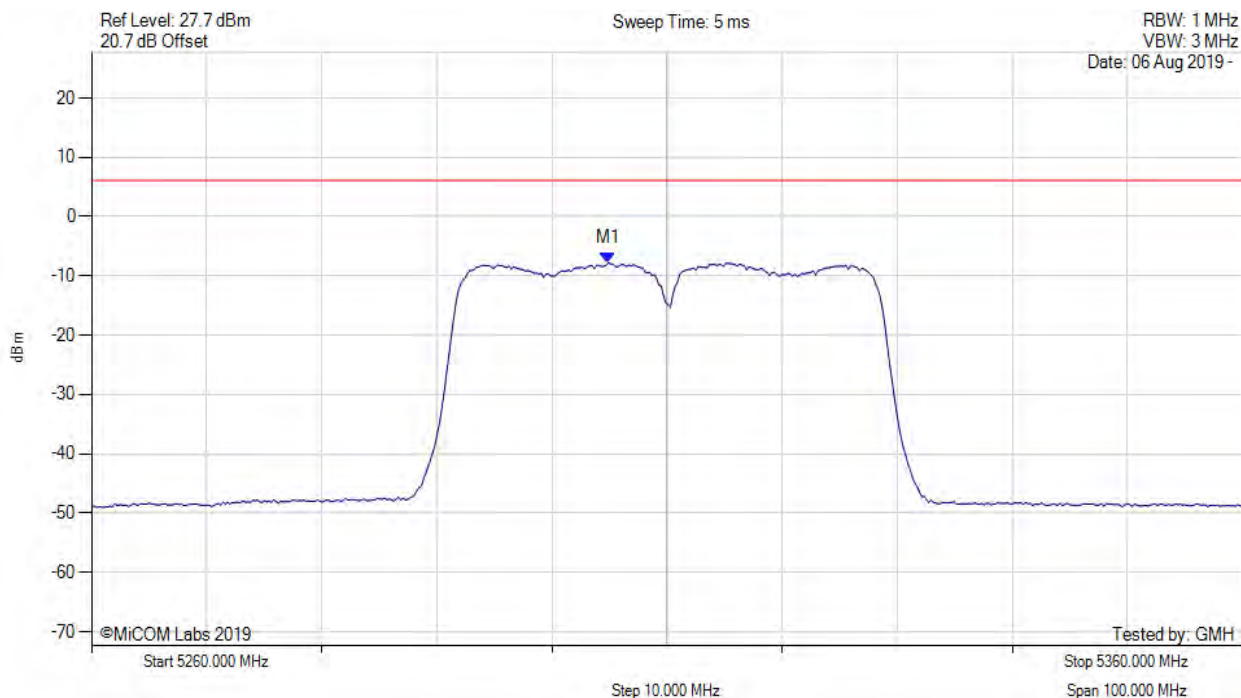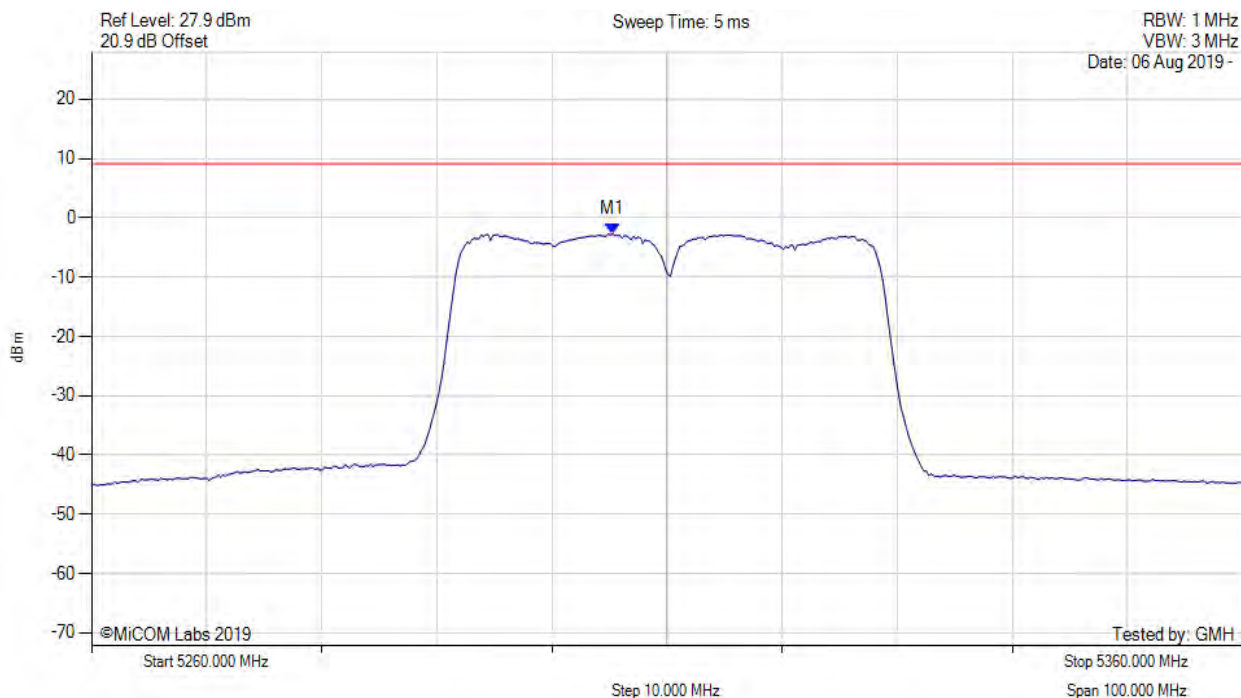Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
21.0 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 01 Aug 2019 -

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Tested by: GMH

Start 5220.000 MHz
Stop 5320.000 MHz
Step 10.000 MHz
Span 100.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5284.930 MHz : 0.114 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

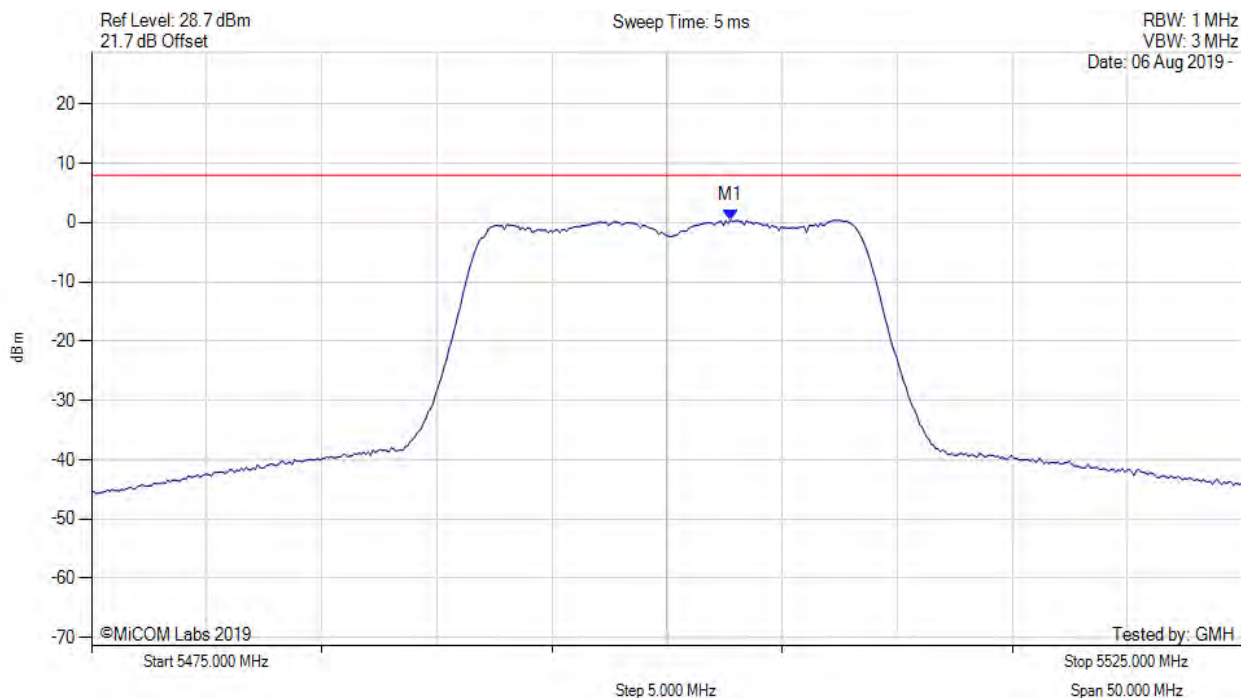Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.9 dBm
20.9 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 01 Aug 2019 -

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Tested by: GMH

Start 5220.000 MHz

Step 10.000 MHz

Stop 5320.000 MHz
Span 100.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5285.731 MHz : 2.023 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
21.0 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 01 Aug 2019 -

©MiCOM Labs 2019

Tested by: GMH

Start 5220.000 MHz
Stop 5320.000 MHz
Step 10.000 MHz
Span 100.000 MHz

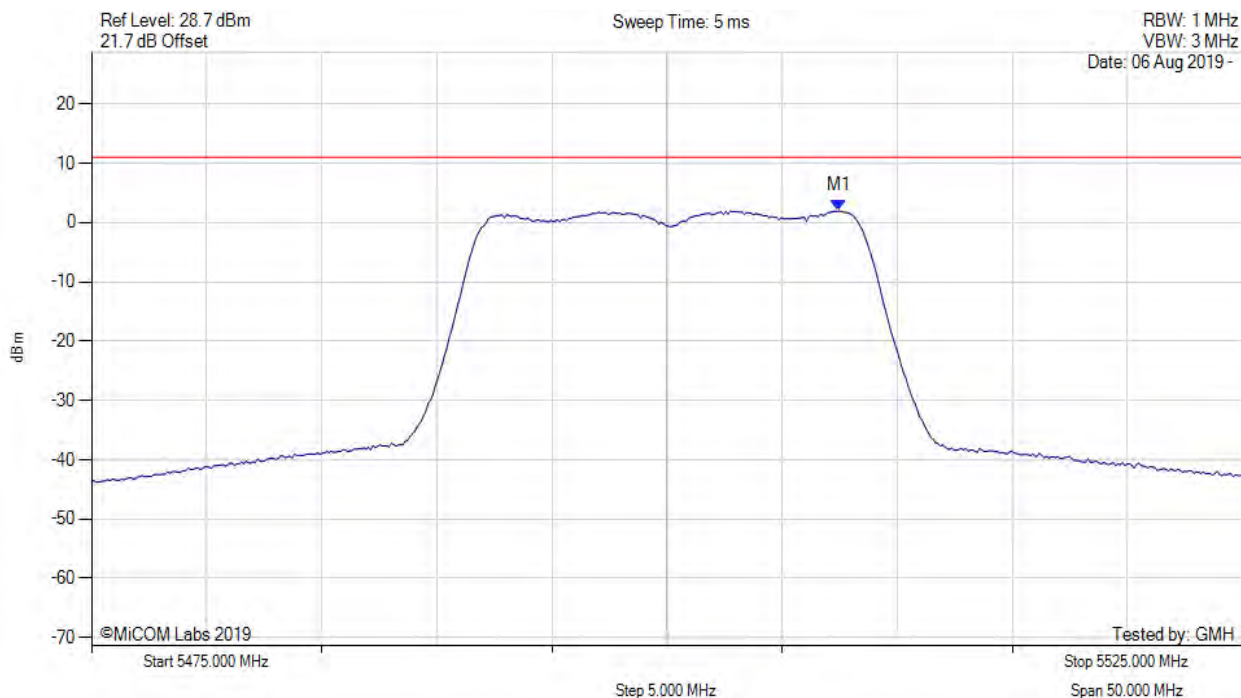| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5285.700 MHz : 4.134 dBm M1 + DCCF : 5285.700 MHz : 4.222 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -4.9 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5305.291 MHz : -4.252 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5304.890 MHz : -7.772 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.9 dBm
20.9 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

Start 5260.000 MHz
Step 10.000 MHz
Stop 5360.000 MHz
Span 100.000 MHz

Tested by: GMH
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Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5305.300 MHz : -2.720 dBm M1 + DCCF : 5305.300 MHz : -2.632 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -11.7 dB

back to matrix

POWER SPECTRAL DENSITY

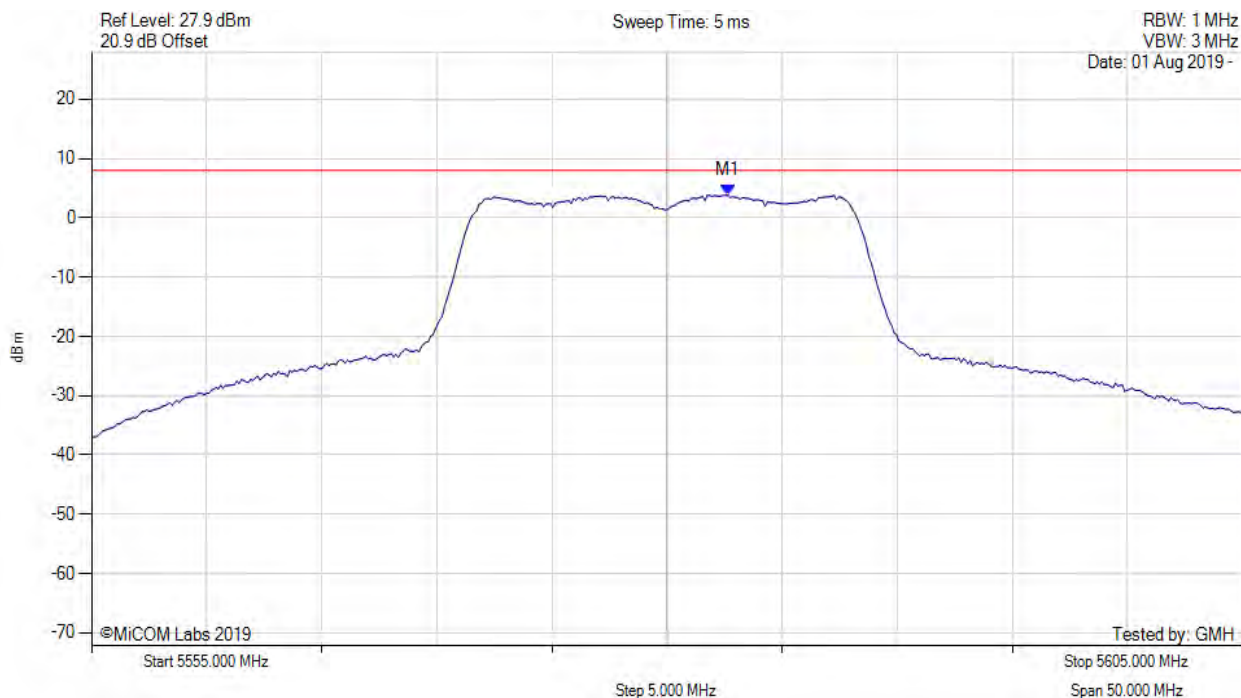Variant: 802.11a, Channel: 5500.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5502.756 MHz : 0.395 dBm	Limit: ≤ 7.990 dBm

back to matrix

POWER SPECTRAL DENSITY

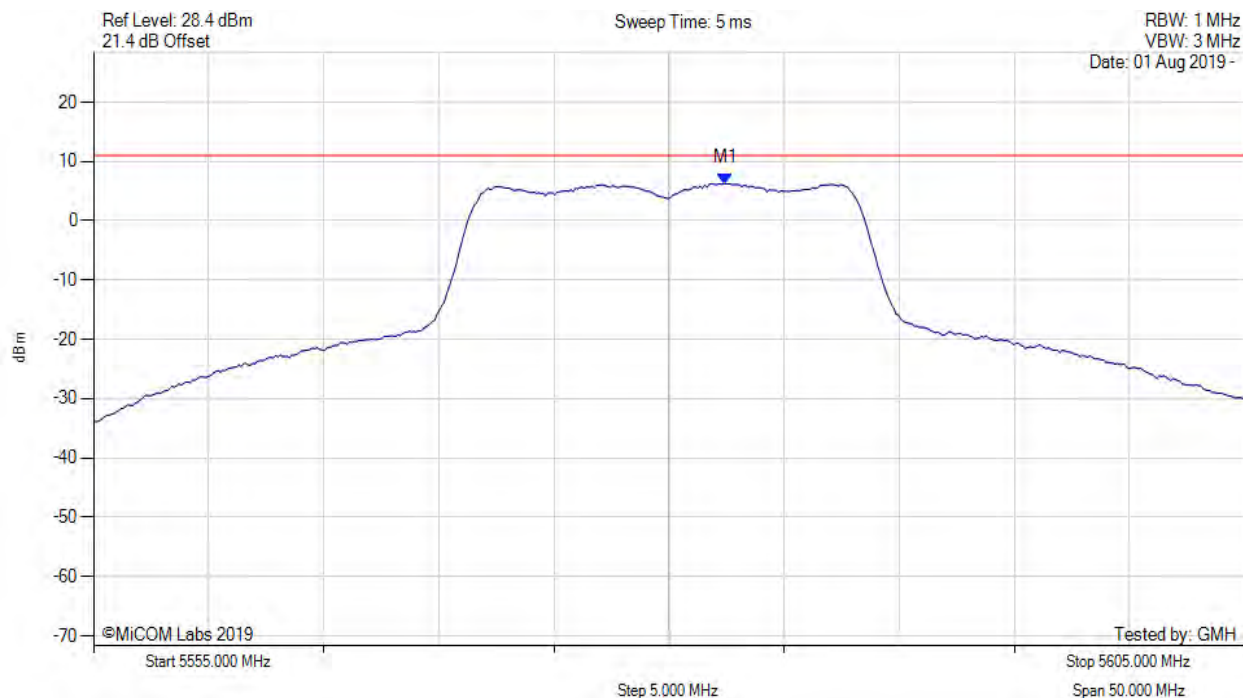Variant: 802.11a, Channel: 5500.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 28 dBm
21.0 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

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Tested by: GMH

Start 5475.000 MHz
Stop 5525.000 MHz
Step 5.000 MHz
Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5507.465 MHz : -3.211 dBm	Limit: ≤ 7.990 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

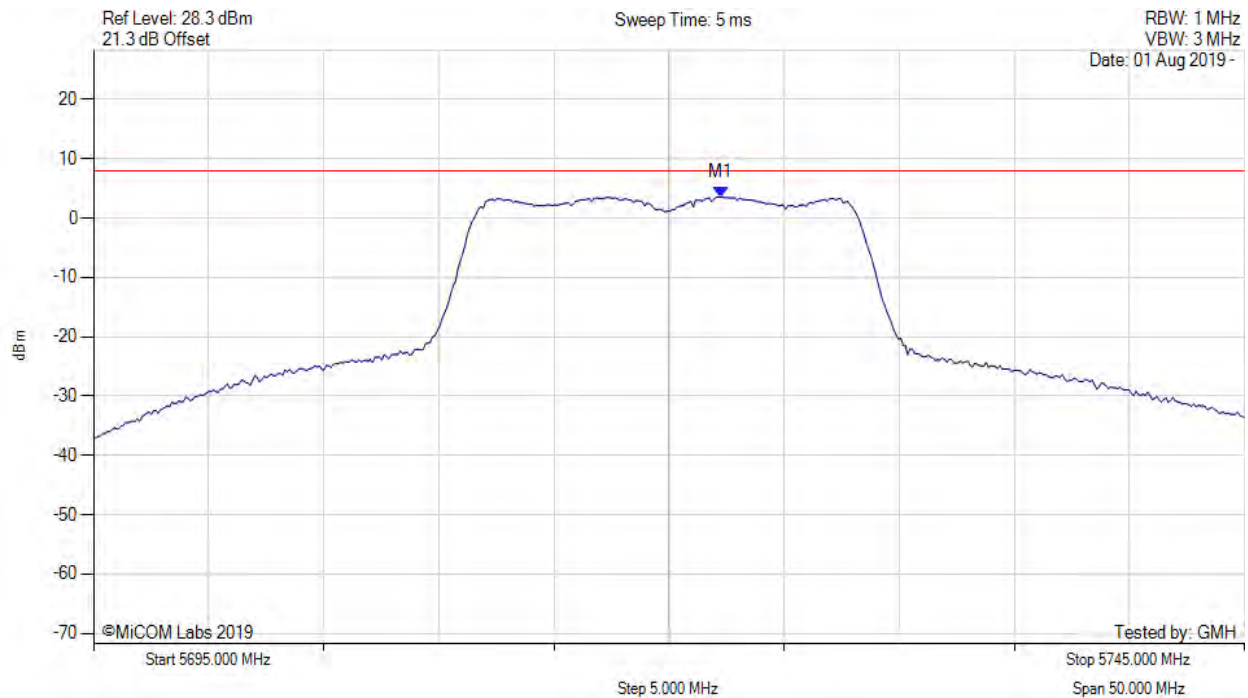| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5507.500 MHz : 1.965 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5507.500 MHz : 2.053 dBm	Margin: -9.0 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.09 dB	
Trace Mode = VIEW		

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5582.756 MHz : 2.716 dBm	Limit: ≤ 7.990 dBm

back to matrix

POWER SPECTRAL DENSITY

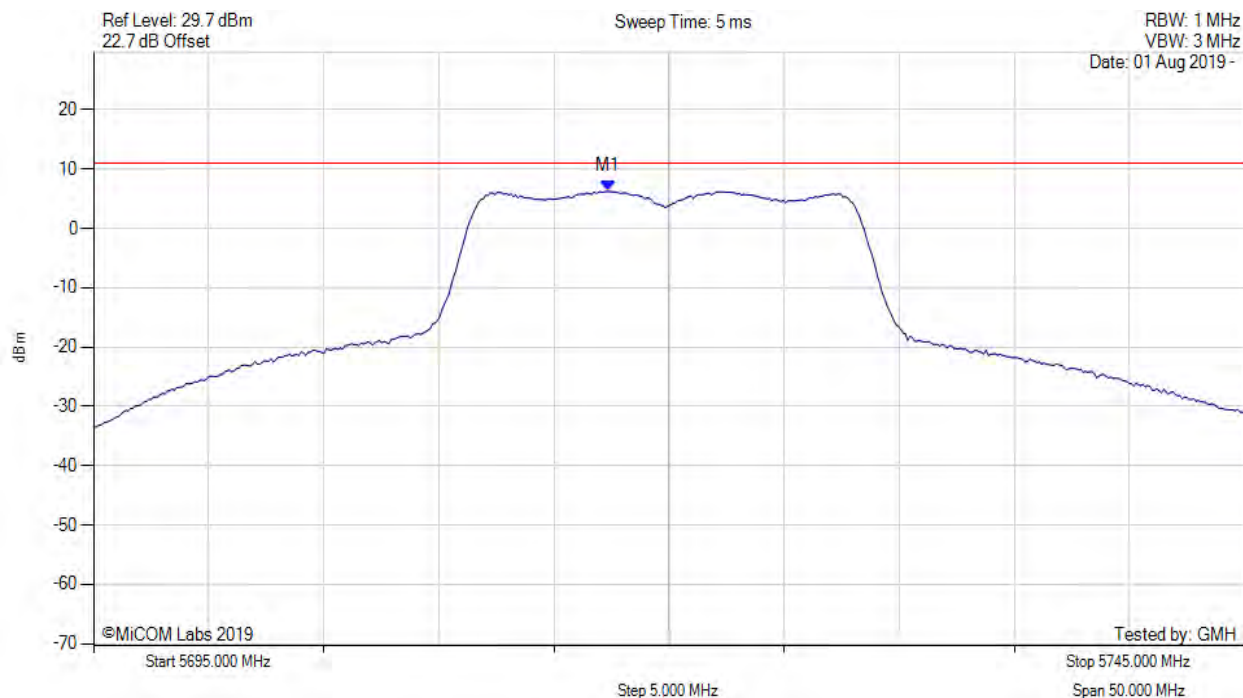Variant: 802.11a, Channel: 5580.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5582.655 MHz : 3.826 dBm	Channel Frequency: 5580.00 MHz

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

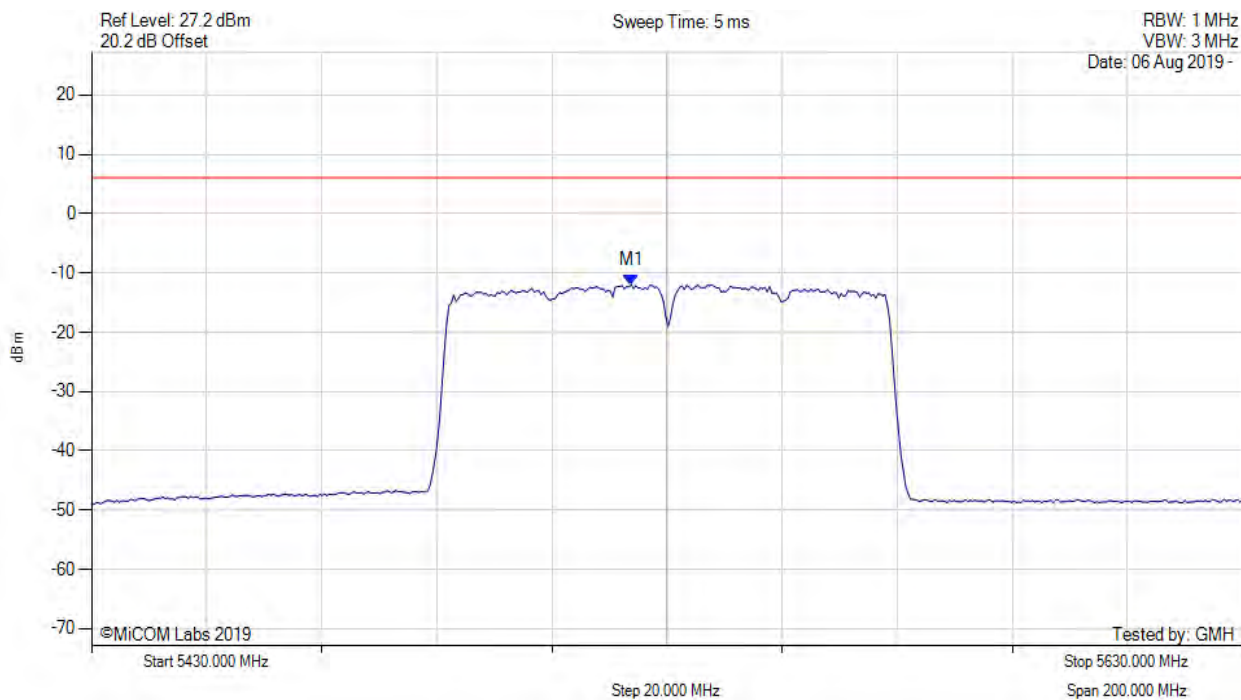| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5582.500 MHz : 6.275 dBm M1 + DCCF : 5582.500 MHz : 6.363 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 11.0 dBm Margin: -4.6 dB

back to matrix

POWER SPECTRAL DENSITY

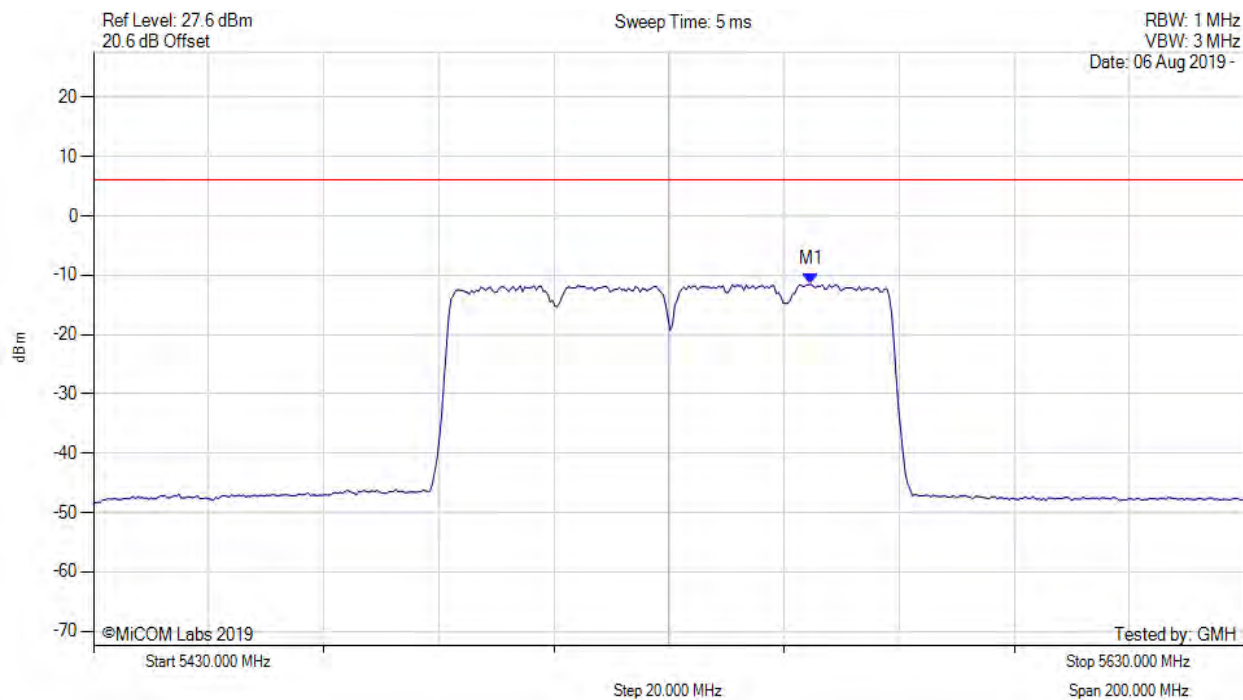Variant: 802.11a, Channel: 5720.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5717.244 MHz : 2.985 dBm	Limit: ≤ 7.990 dBm

back to matrix

Issue Date: 18th November 2019   **Page:** 204 of 263

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POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5720.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5722.255 MHz : 3.580 dBm	Limit: ≤ 7.990 dBm

back to matrix

POWER SPECTRAL DENSITY

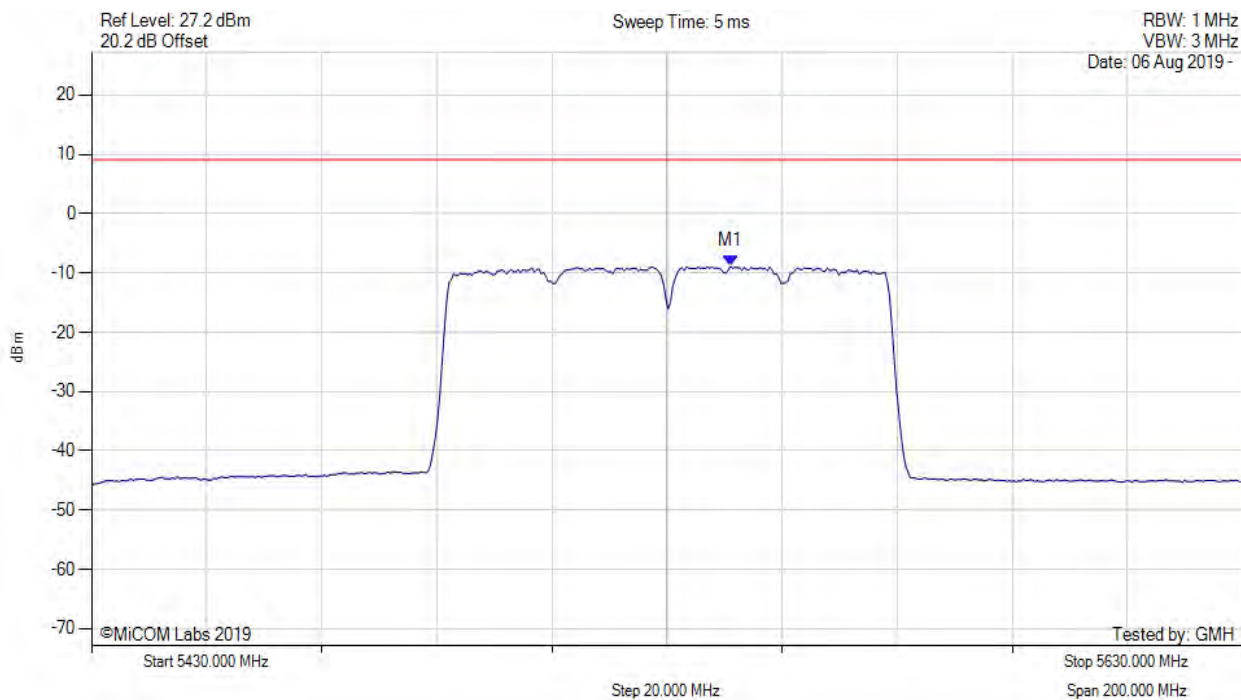Variant: 802.11a, Channel: 5720.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 29.7 dBm
22.7 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 01 Aug 2019 -

M1

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Tested by: GMH

Start 5695.000 MHz

Stop 5745.000 MHz

Step 5.000 MHz

Span 50.000 MHz

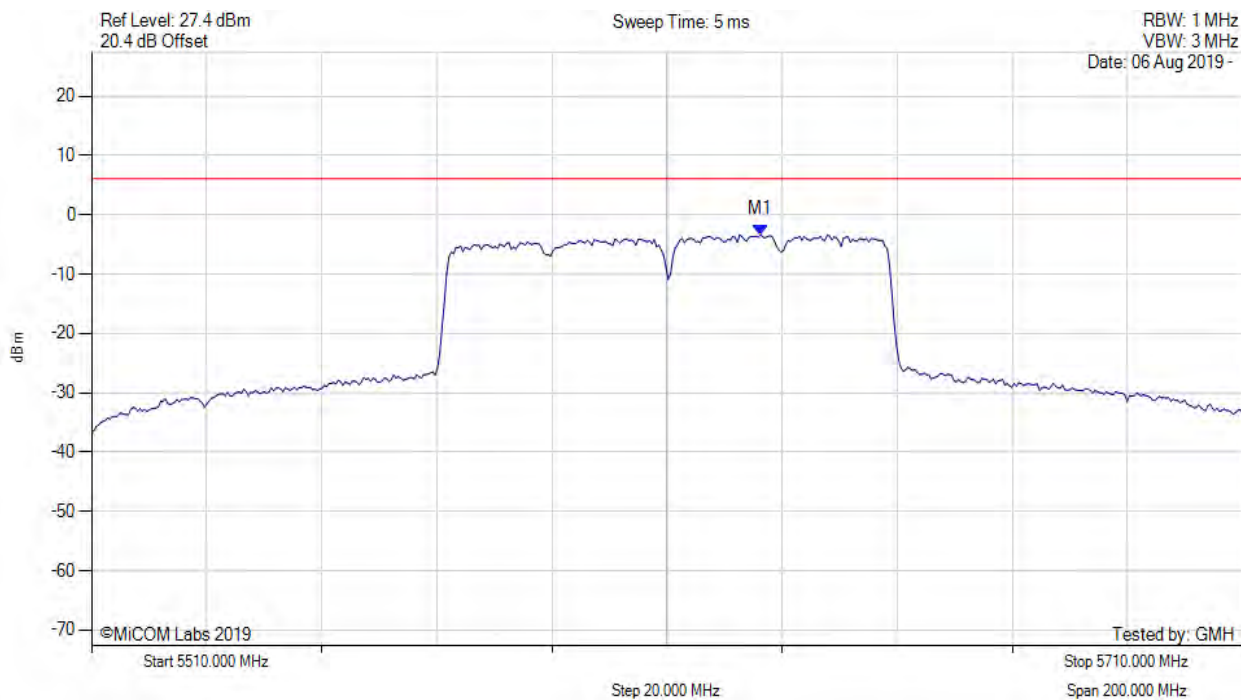| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5717.300 MHz : 6.262 dBm M1 + DCCF : 5717.300 MHz : 6.350 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 11.0 dBm Margin: -4.7 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5530.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
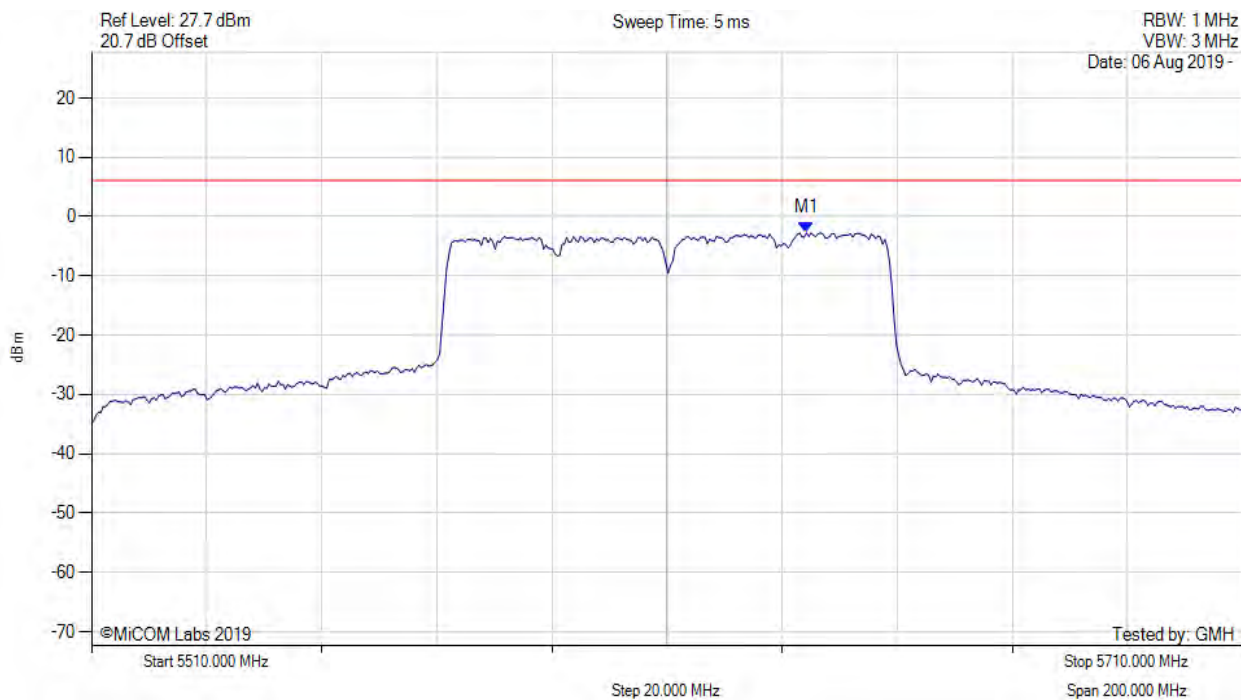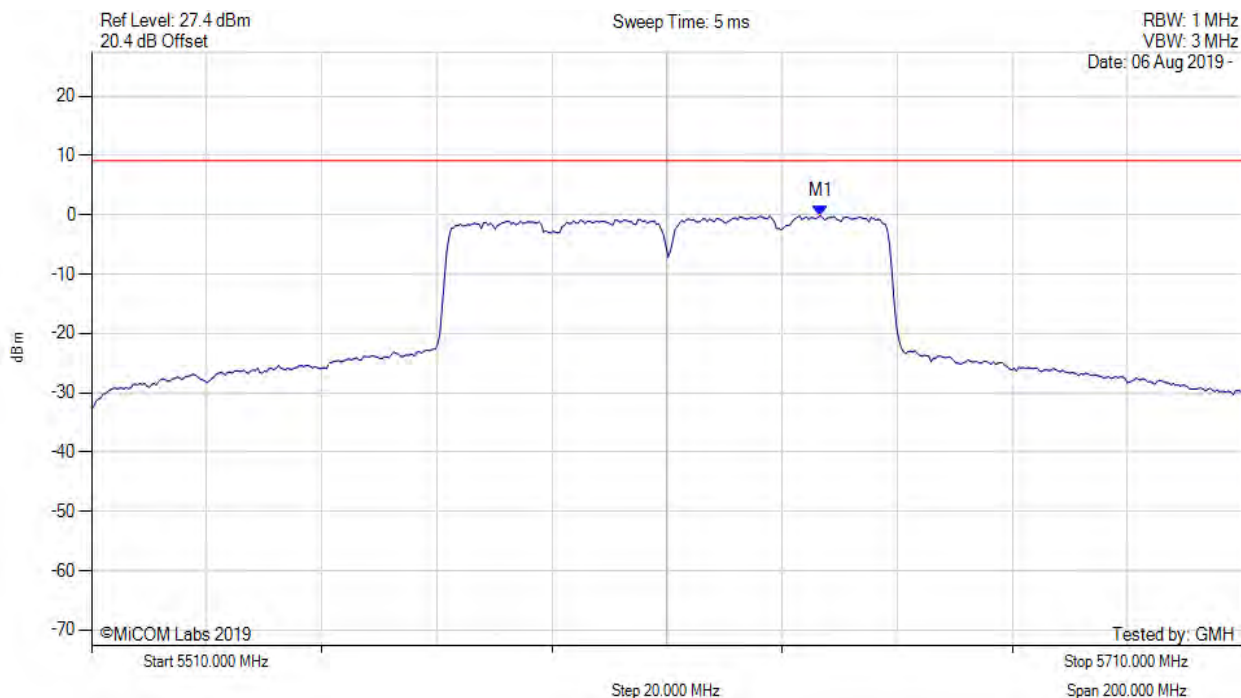
Ref Level: 27.2 dBm
20.2 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

M1

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Tested by: GMH

Start 5430.000 MHz

Stop 5630.000 MHz

Step 20.000 MHz

Span 200.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5523.788 MHz : -12.007 dBm	Limit: ≤ 6.090 dBm

back to matrix

MiCOMLabs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

MiTest

Variant: 802.11ac-80, Channel: 5530.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.6 dBm
20.6 dB Offset
Sweep Time: 5 ms
RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

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Tested by: GMH

Start 5430.000 MHz
Stop 5630.000 MHz
Step 20.000 MHz
Span 200.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5554.649 MHz : -11.498 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5530.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.2 dBm
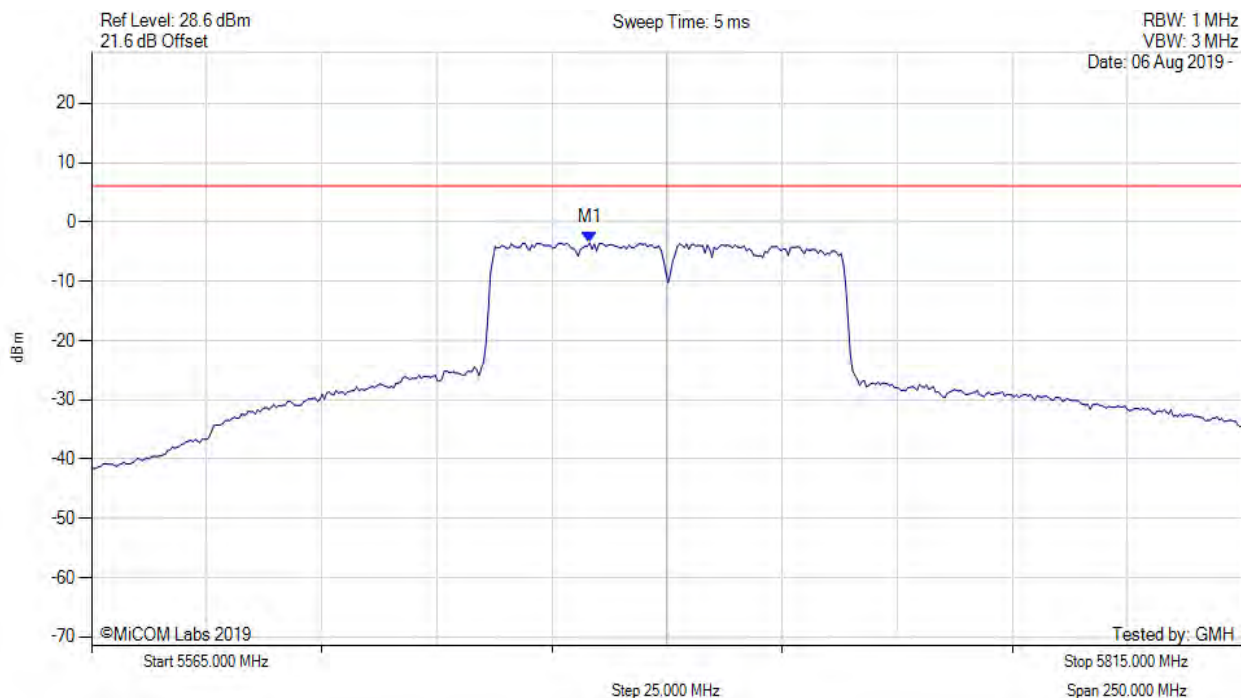20.2 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

©MiCOM Labs 2019

Tested by: GMH

Start 5430.000 MHz
Step 20.000 MHz
Stop 5630.000 MHz
Span 200.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5541.000 MHz : -8.913 dBm M1 + DCCF : 5541.000 MHz : -8.358 dBm Duty Cycle Correction Factor : +0.56 dB	Limit: ≤ 9.1 dBm Margin: -17.5 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5610.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
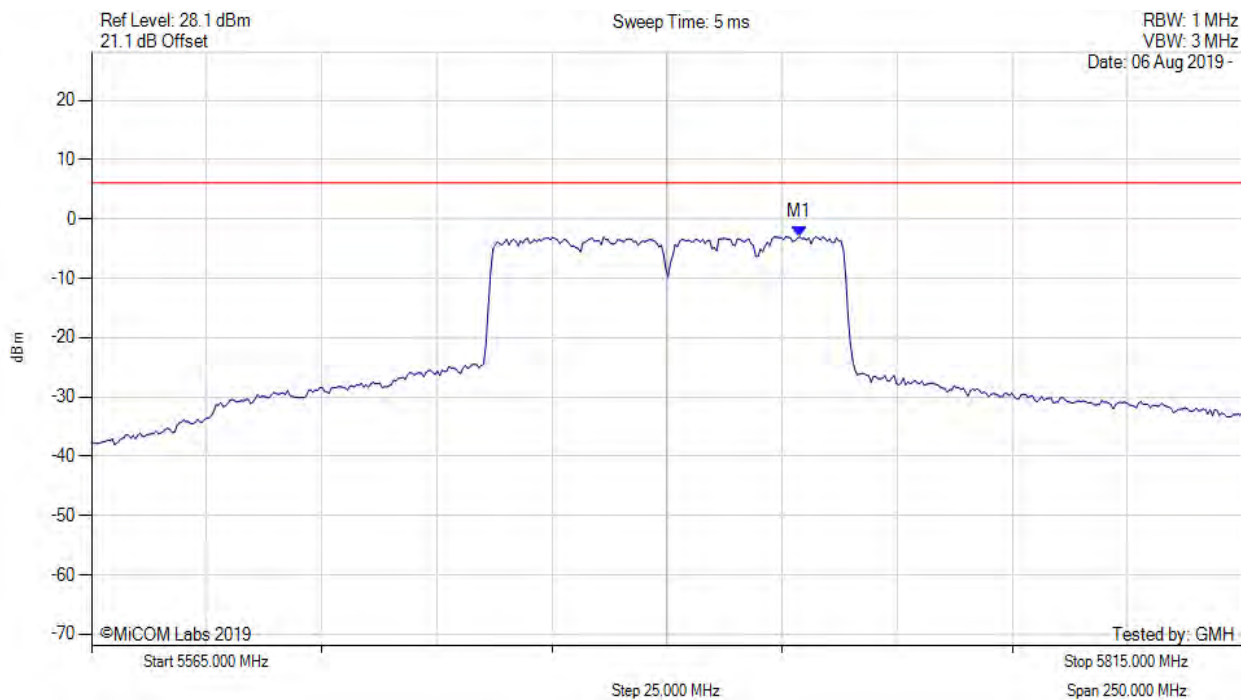

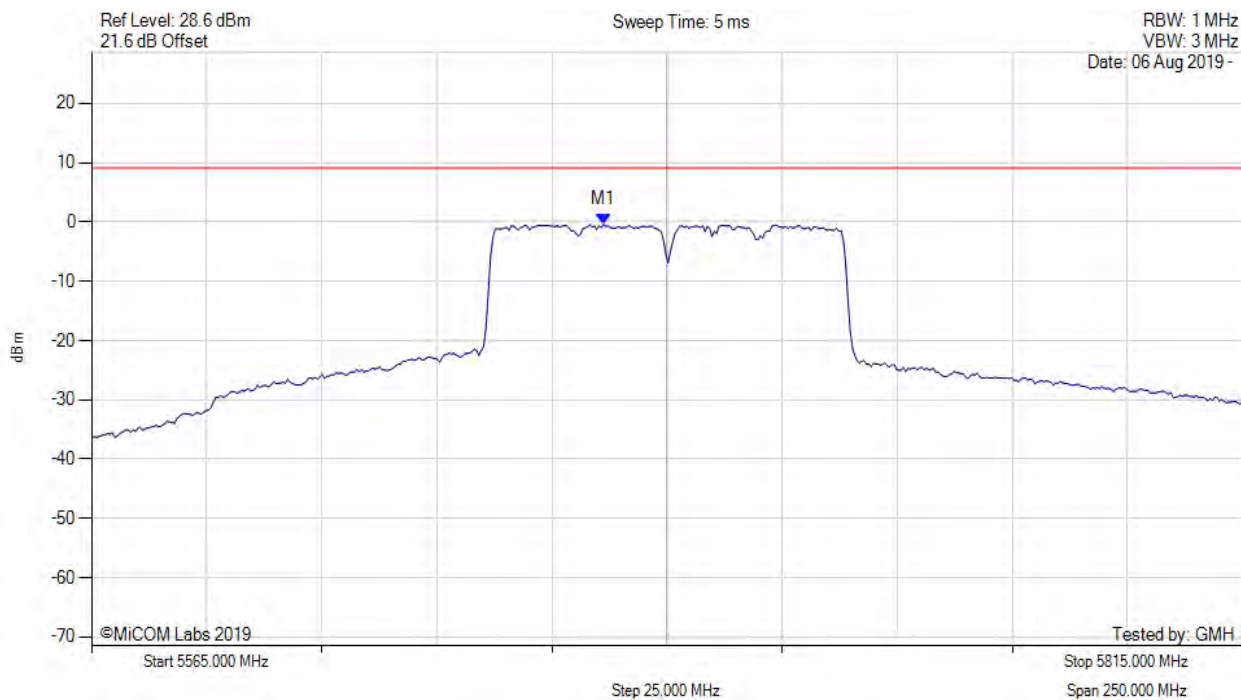| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5626.232 MHz : -3.371 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

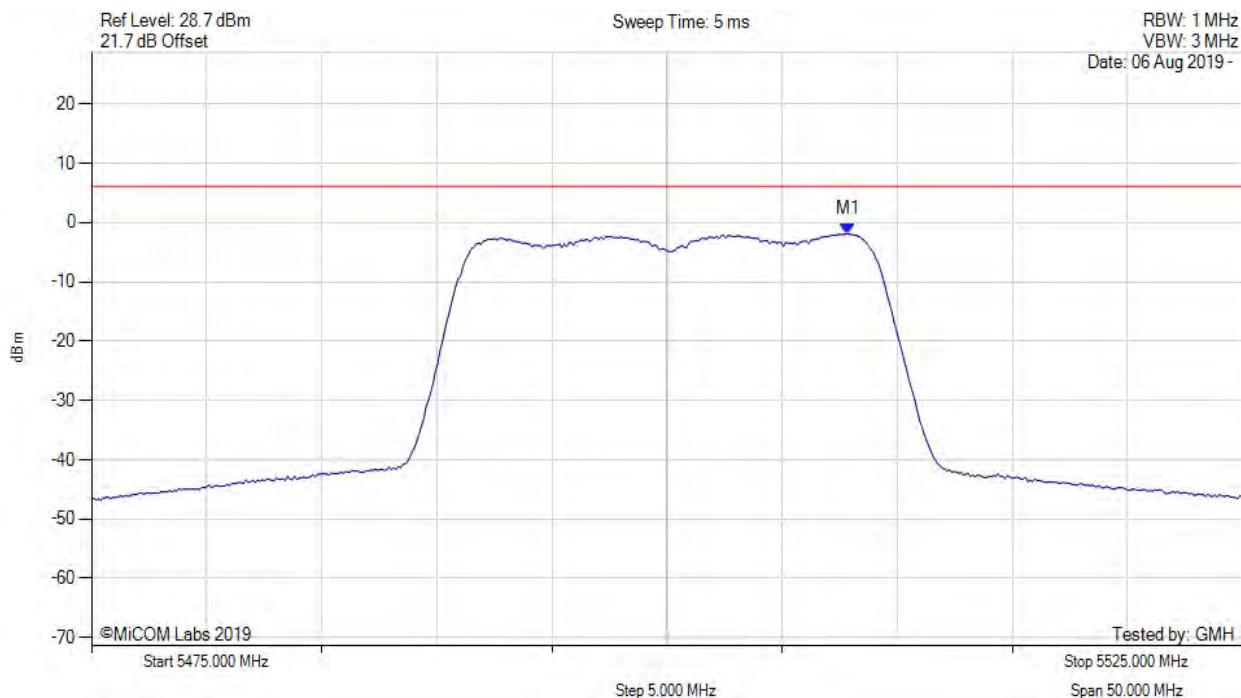Variant: 802.11ac-80, Channel: 5610.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5634.248 MHz : -2.744 dBm	Channel Frequency: 5610.00 MHz

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5610.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5636.700 MHz : -0.168 dBm M1 + DCCF : 5636.700 MHz : 0.387 dBm Duty Cycle Correction Factor : +0.56 dB	Limit: ≤ 9.1 dBm Margin: -8.7 dB

back to matrix

POWER SPECTRAL DENSITY

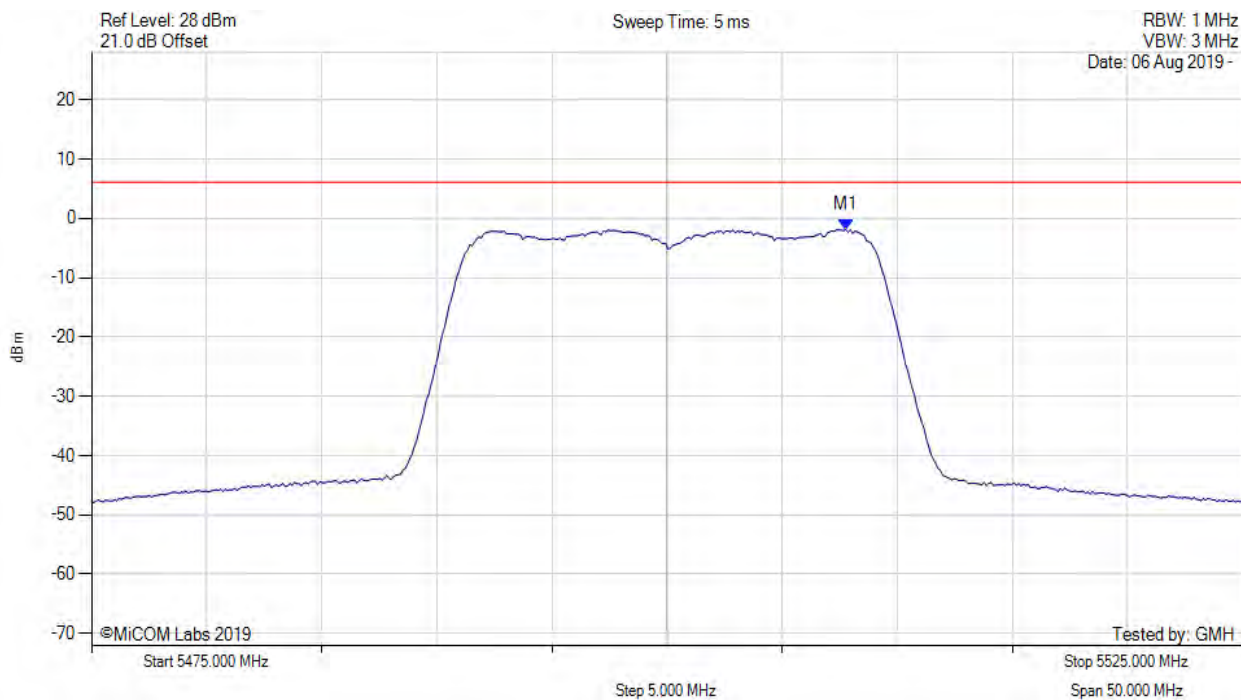Variant: 802.11ac-80, Channel: 5690.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.6 dBm
21.6 dB Offset
Sweep Time: 5 ms
RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

M1

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Tested by: GMH

Start 5565.000 MHz
Step 25.000 MHz
Stop 5815.000 MHz
Span 250.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5673.216 MHz : -3.542 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

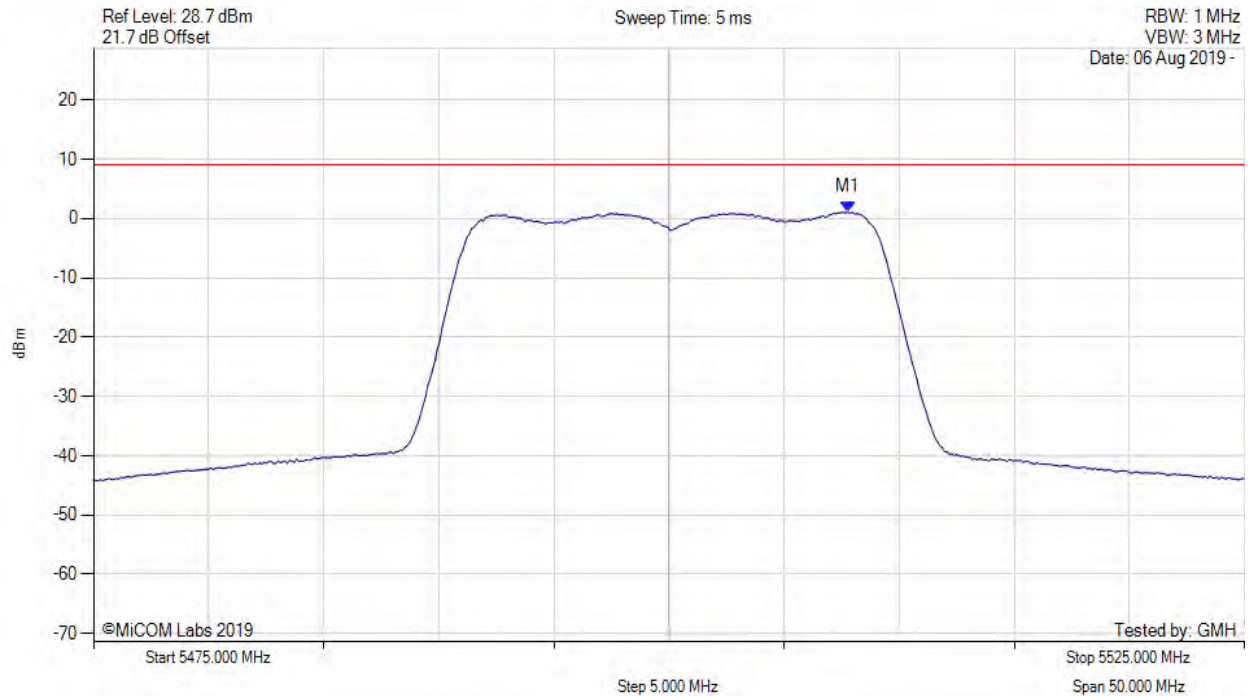Variant: 802.11ac-80, Channel: 5690.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.1 dBm
21.1 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

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Tested by: GMH

Start 5565.000 MHz   Stop 5815.000 MHz
Step 25.000 MHz   Span 250.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5718.808 MHz : -3.018 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

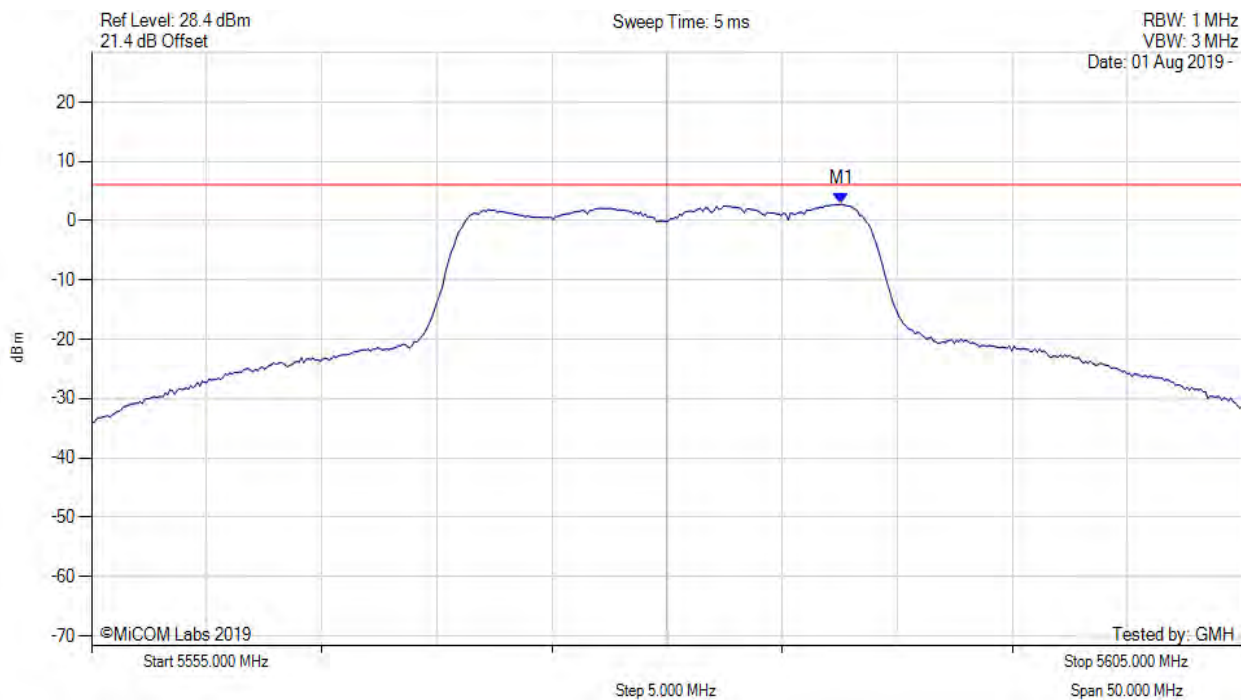Variant: 802.11ac-80, Channel: 5690.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.6 dBm
21.6 dB Offset
Sweep Time: 5 ms
RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

Start 5565.000 MHz
Stop 5815.000 MHz
Step 25.000 MHz
Span 250.000 MHz

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Tested by: GMH

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5676.200 MHz : -0.389 dBm M1 + DCCF : 5676.200 MHz : 0.166 dBm Duty Cycle Correction Factor : +0.56 dB	Limit: ≤ 9.1 dBm Margin: -8.9 dB

MiCOMLabs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

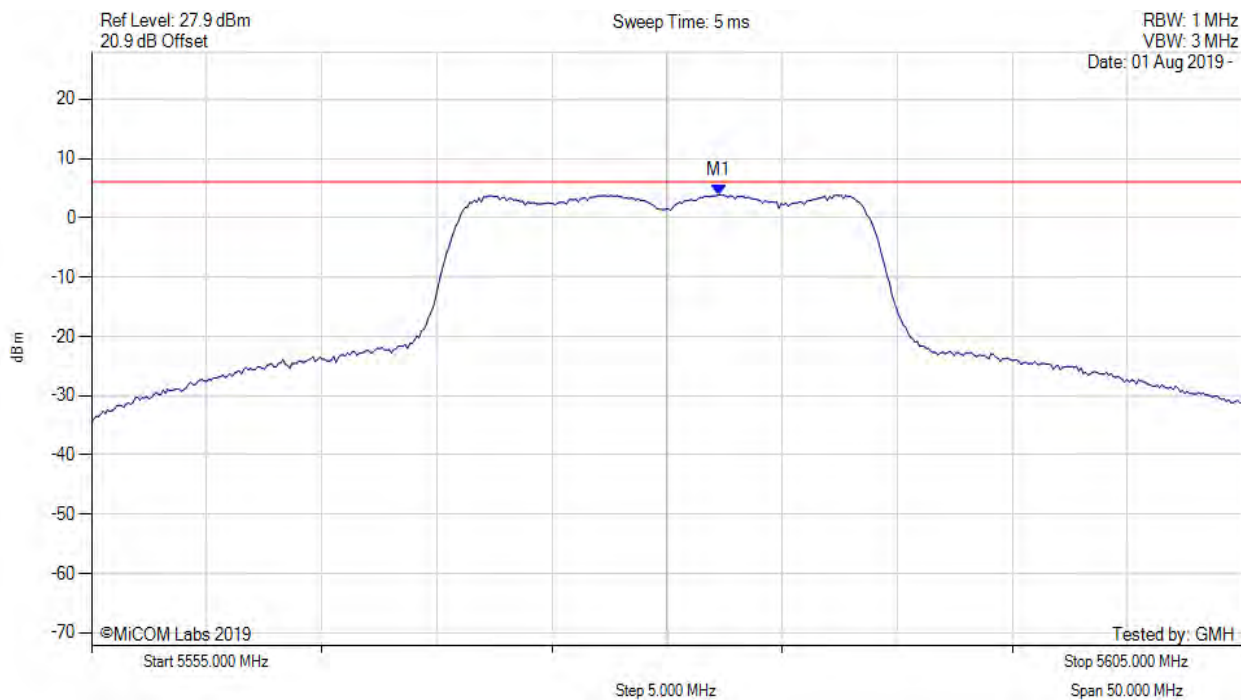| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5507.866 MHz : -1.916 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

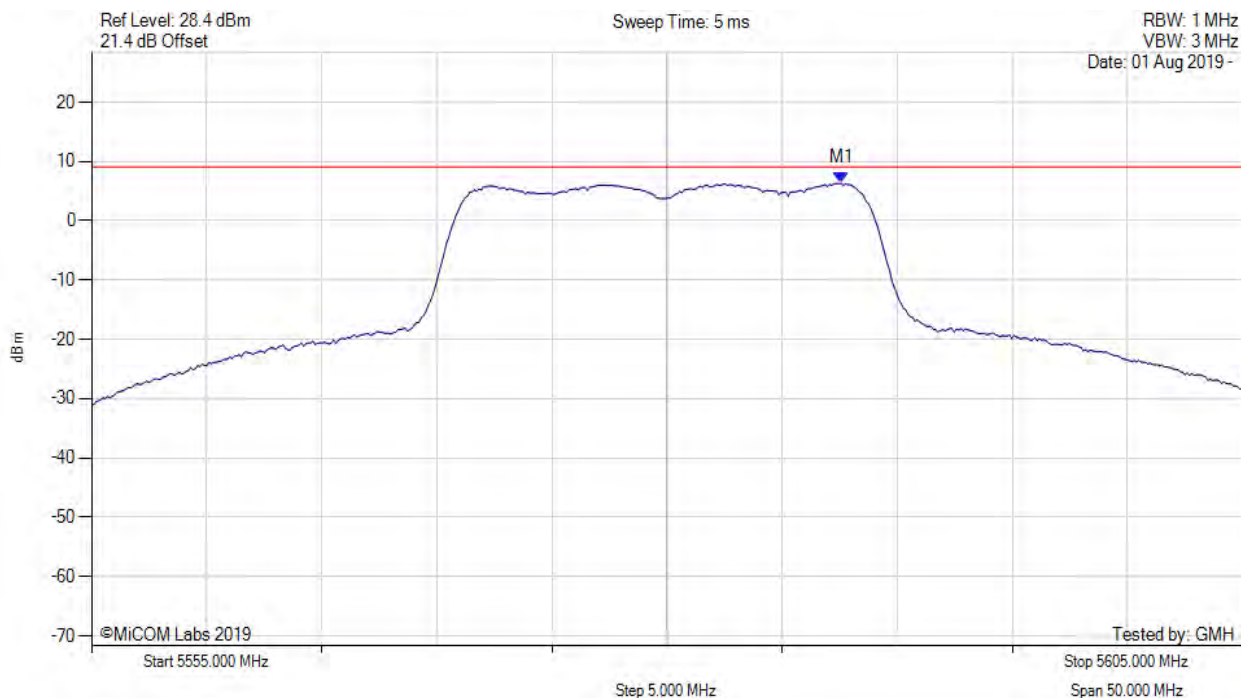Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5507.766 MHz : -1.870 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

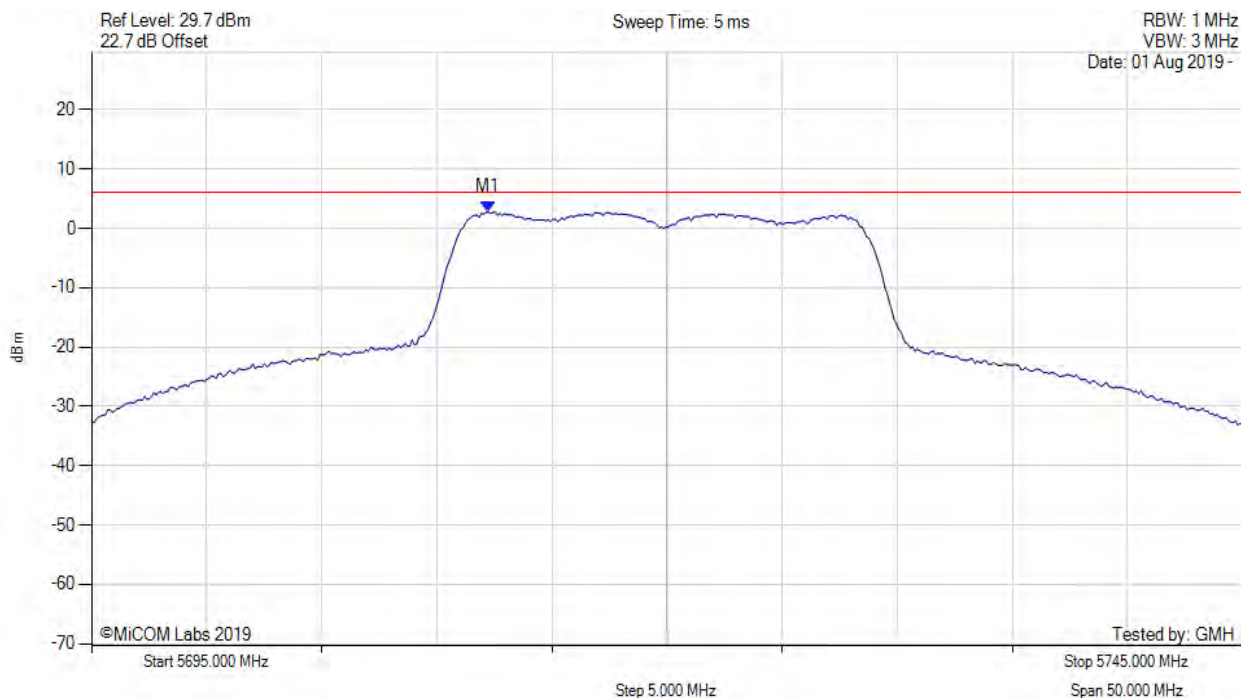Variant: 802.11n HT-20, Channel: 5500.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5507.800 MHz : 1.112 dBm M1 + DCCF : 5507.800 MHz : 1.200 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -7.9 dB

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POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5587.565 MHz : 2.798 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

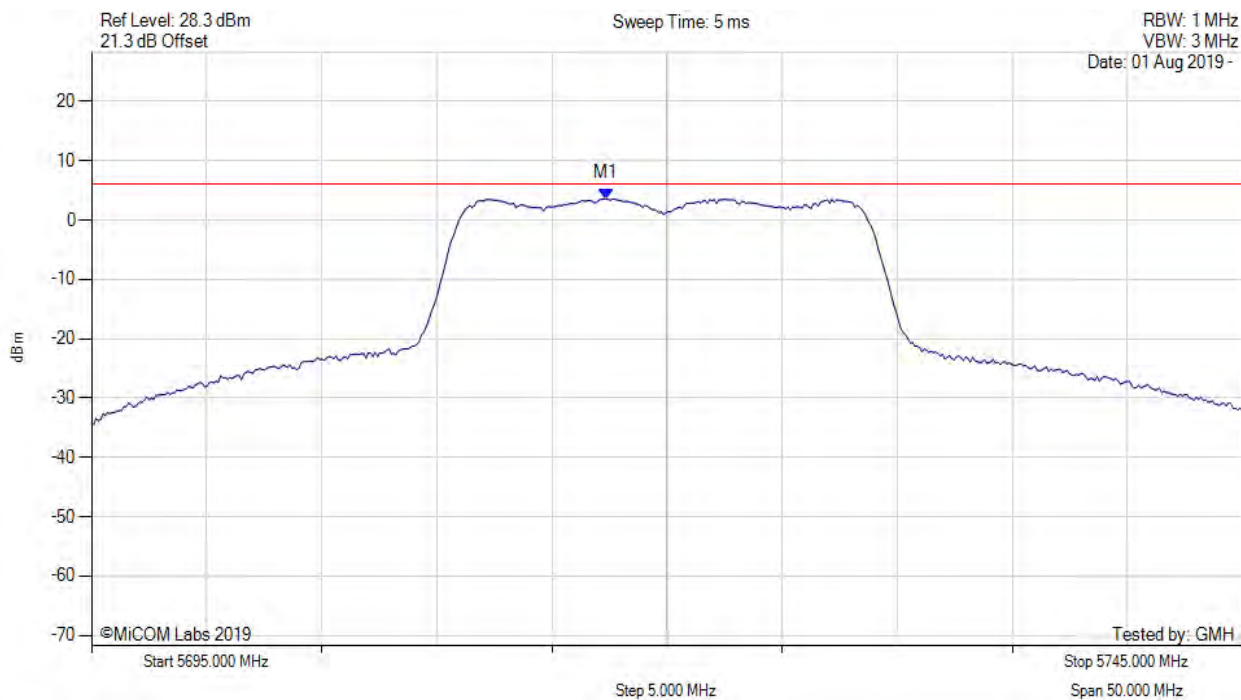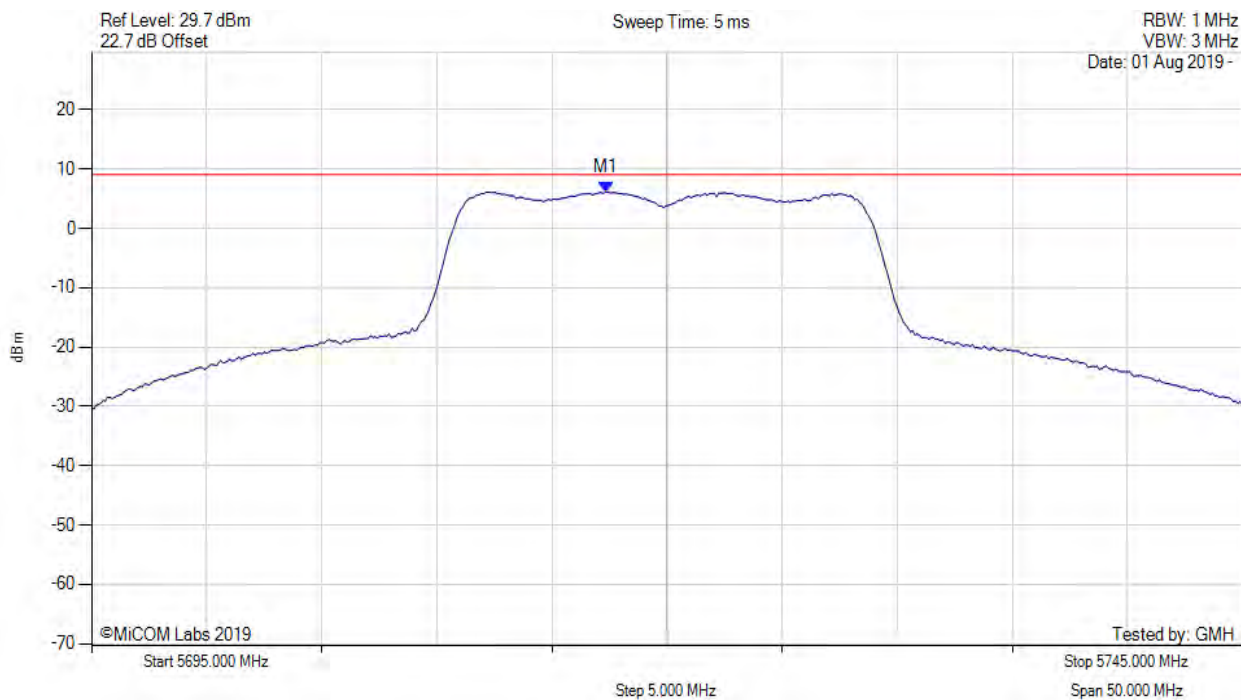Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5582.255 MHz : 3.883 dBm	Channel Frequency: 5580.00 MHz

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

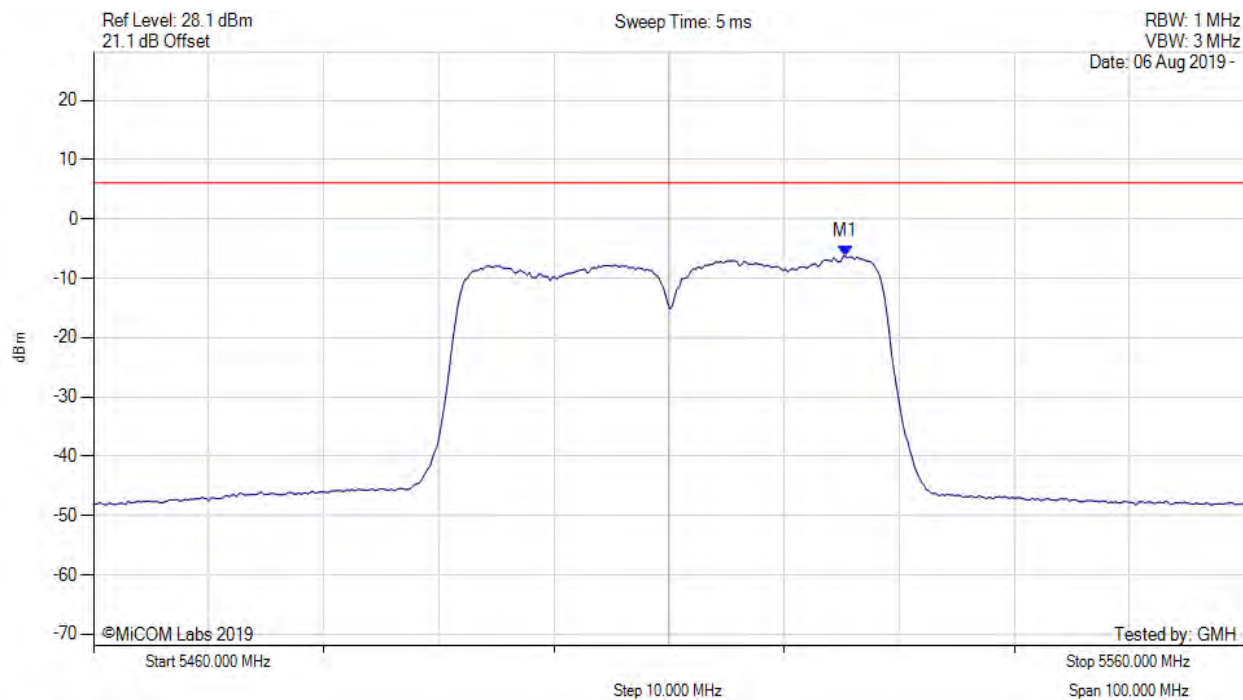| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5587.600 MHz : 6.353 dBm M1 + DCCF : 5587.600 MHz : 6.441 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -2.7 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5720.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
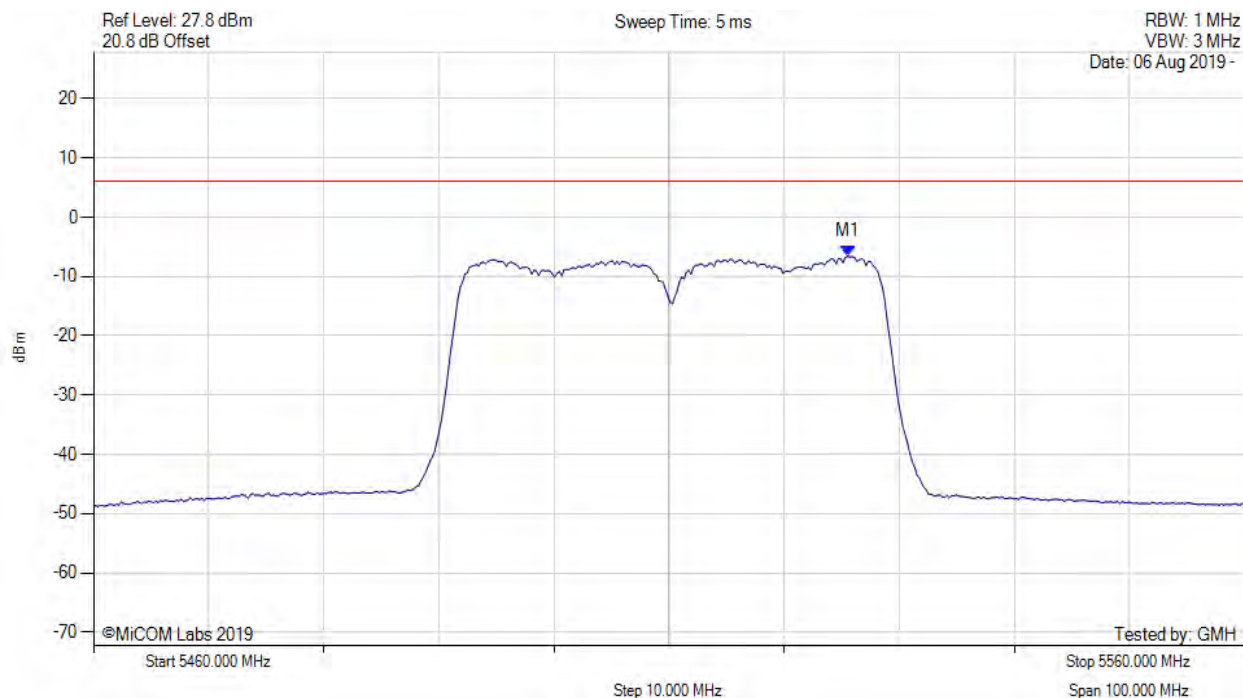

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5712.234 MHz : 2.807 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5720.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.3 dBm
21.3 dB Offset
Sweep Time: 5 ms
RBW: 1 MHz
VBW: 3 MHz
Date: 01 Aug 2019 -

Start 5695.000 MHz Stop 5745.000 MHz
Step 5.000 MHz Span 50.000 MHz

Tested by: GMH

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5717.345 MHz : 3.605 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5720.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

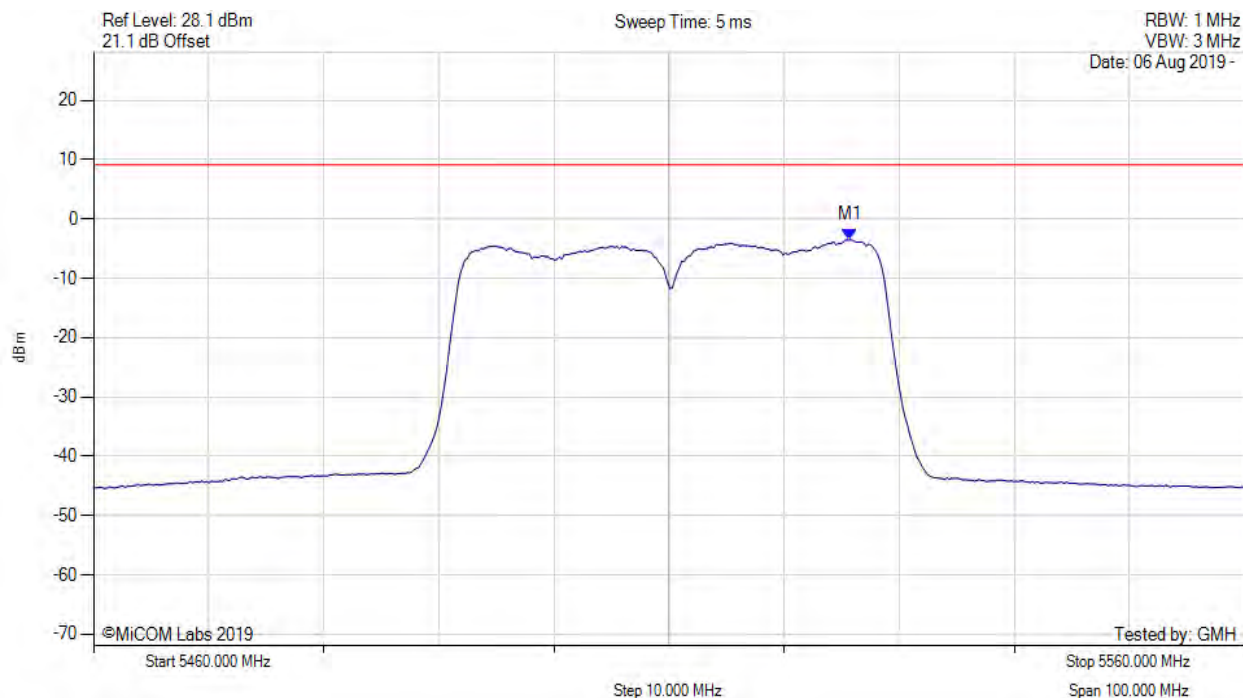

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5717.300 MHz : 6.163 dBm M1 + DCCF : 5717.300 MHz : 6.251 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -2.9 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.1 dBm
21.1 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 06 Aug 2019 -

Start 5460.000 MHz
Stop 5560.000 MHz
Step 10.000 MHz
Span 100.000 MHz

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Tested by: GMH

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5525.331 MHz : -6.294 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
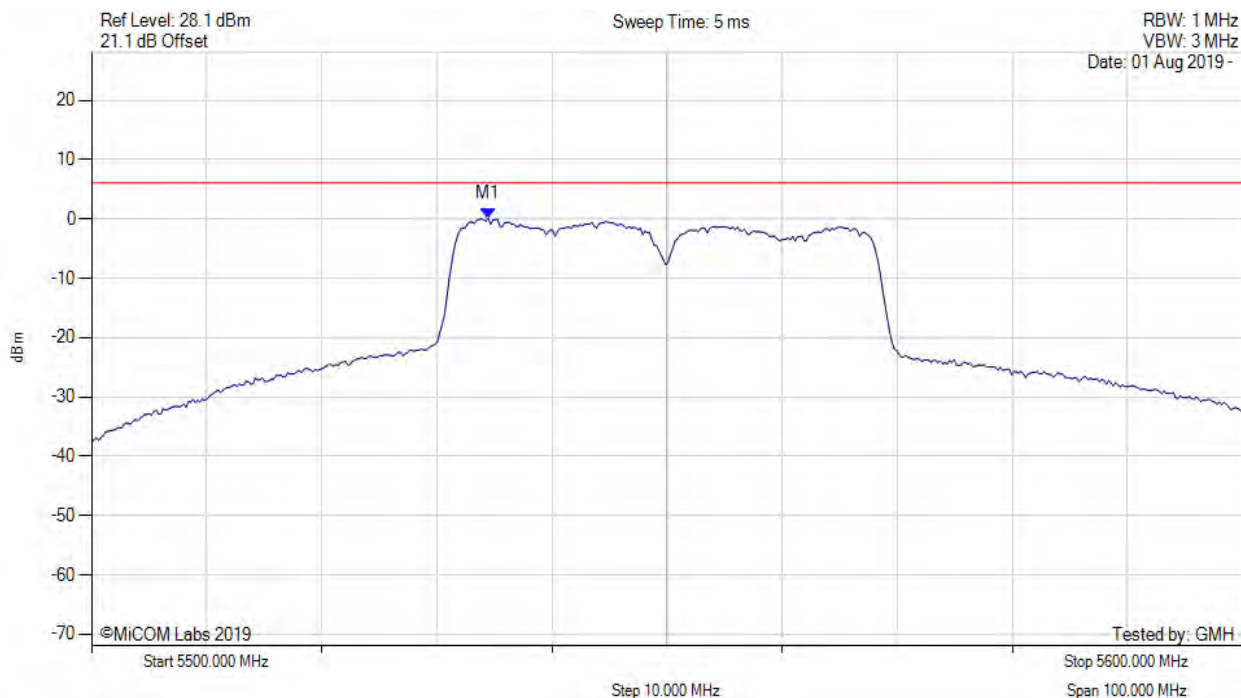

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5525.531 MHz : -6.593 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

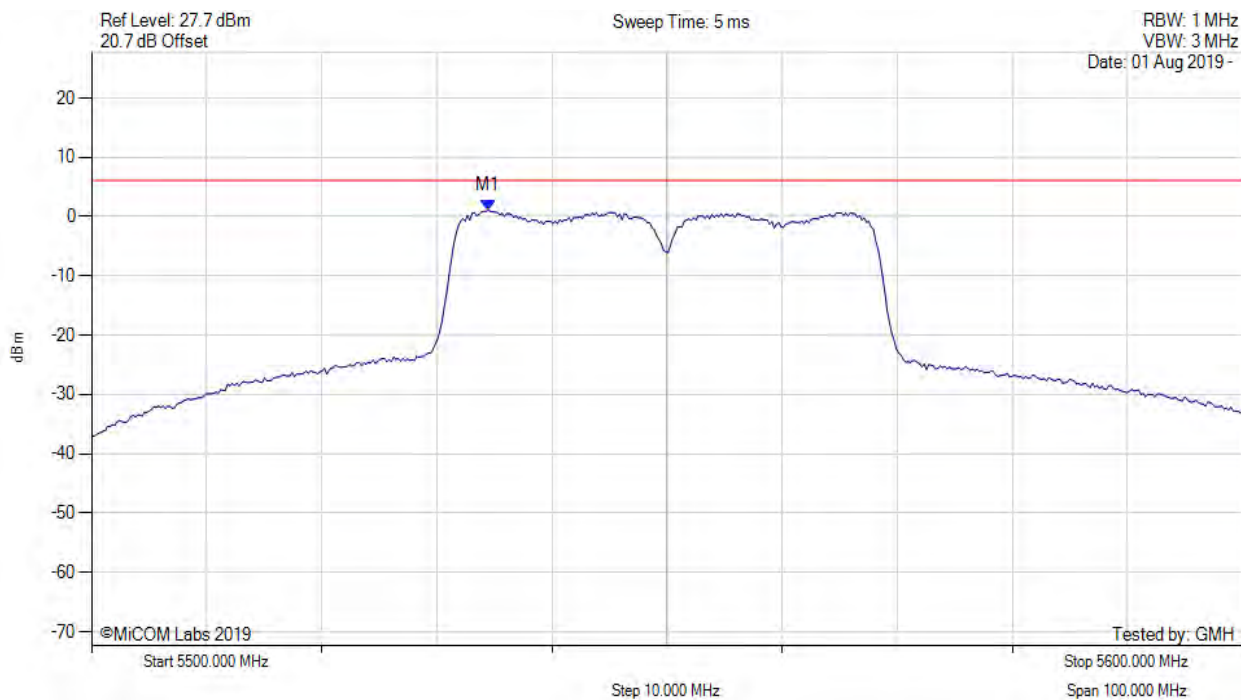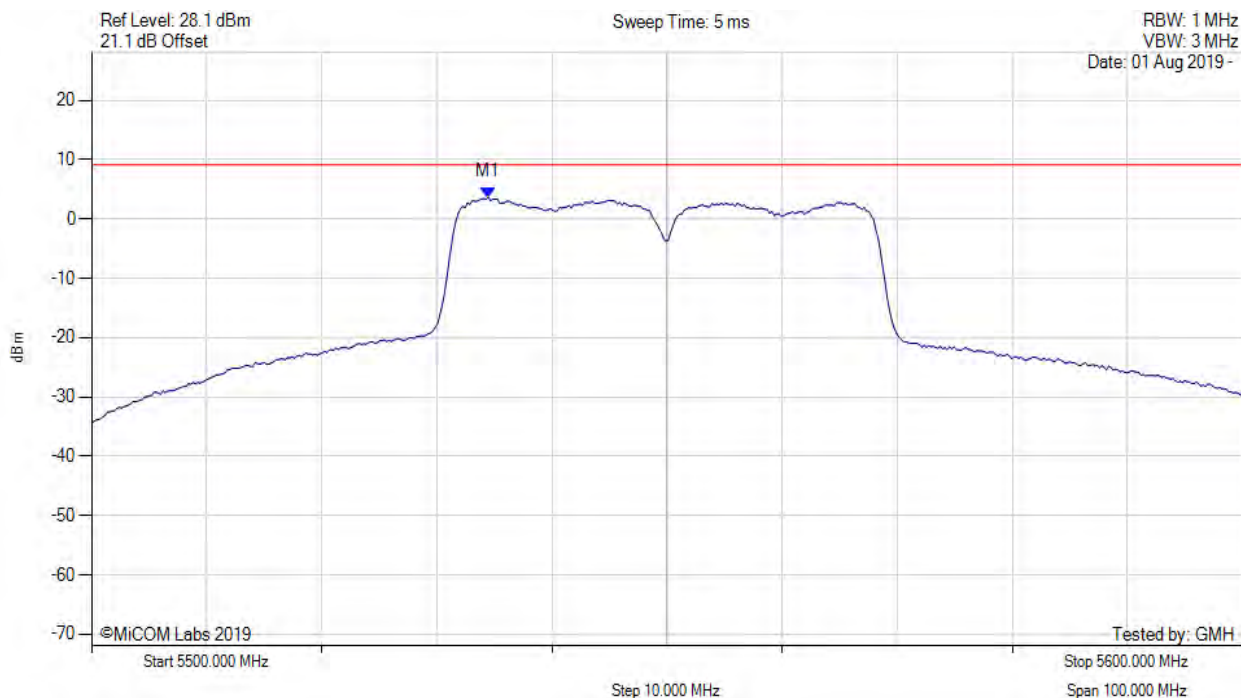| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5525.700 MHz : -3.504 dBm M1 + DCCF : 5525.700 MHz : -3.416 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -12.5 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.1 dBm
21.1 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 01 Aug 2019 -

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Tested by: GMH

Start 5500.000 MHz
Stop 5600.000 MHz

Step 10.000 MHz
Span 100.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5534.469 MHz : 0.125 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

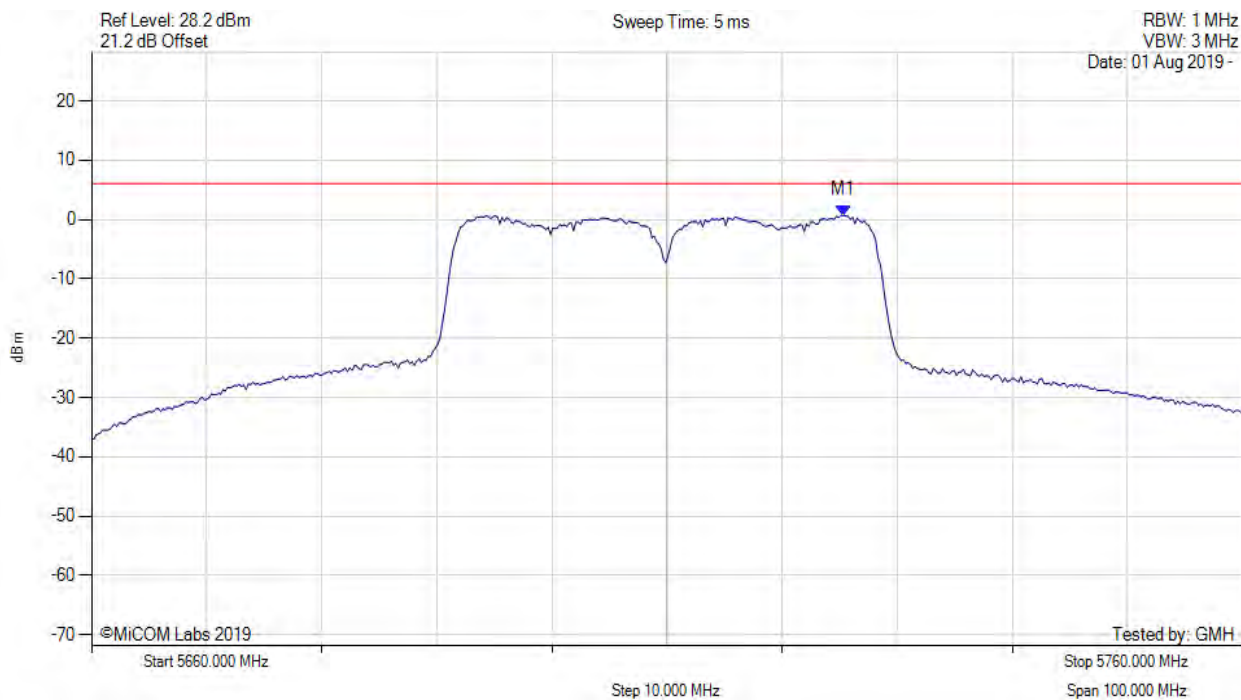Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 27.7 dBm
20.7 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 01 Aug 2019 -

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Tested by: GMH

Start 5500.000 MHz
Stop 5600.000 MHz
Step 10.000 MHz
Span 100.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5534.469 MHz : 1.076 dBm	Channel Frequency: 5550.00 MHz

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5534.500 MHz : 3.637 dBm M1 + DCCF : 5534.500 MHz : 3.725 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 9.1 dBm Margin: -5.4 dB

back to matrix

POWER SPECTRAL DENSITY

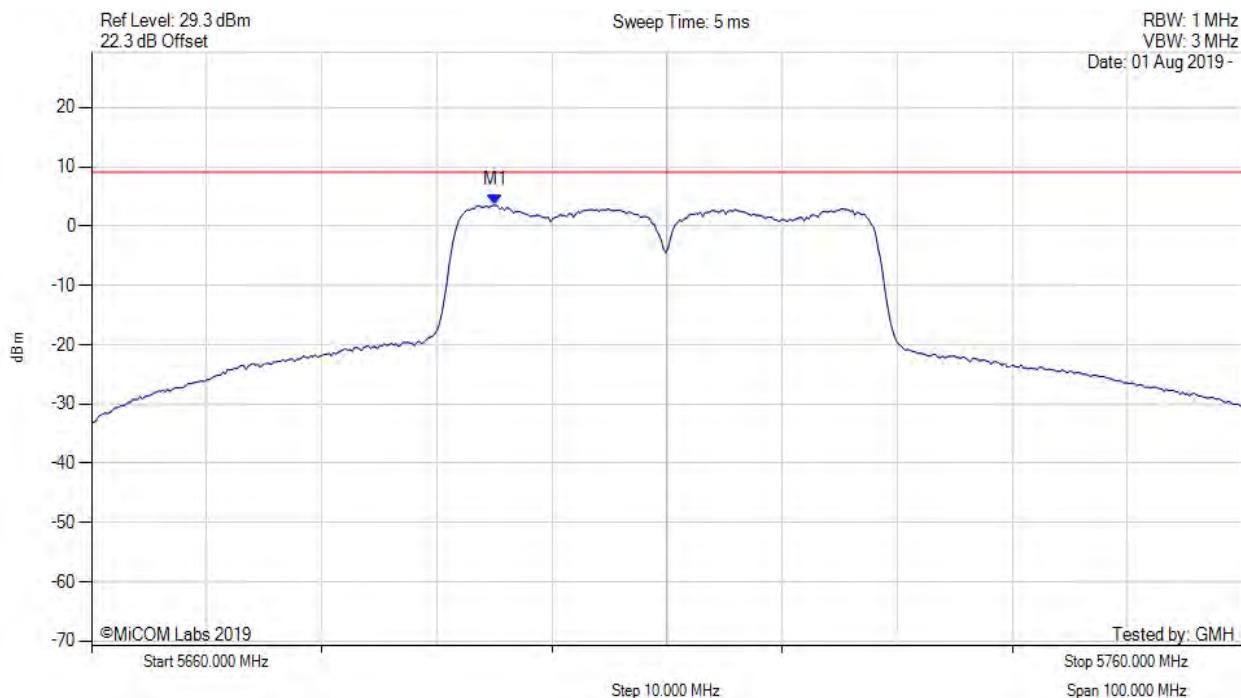Variant: 802.11n HT-40, Channel: 5710.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 29.3 dBm
22.3 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 3 MHz
Date: 01 Aug 2019 -

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Tested by: GMH

Start 5660.000 MHz

Stop 5760.000 MHz

Step 10.000 MHz

Span 100.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5694.870 MHz : 0.482 dBm	Limit: ≤ 6.090 dBm

back to matrix

POWER SPECTRAL DENSITY

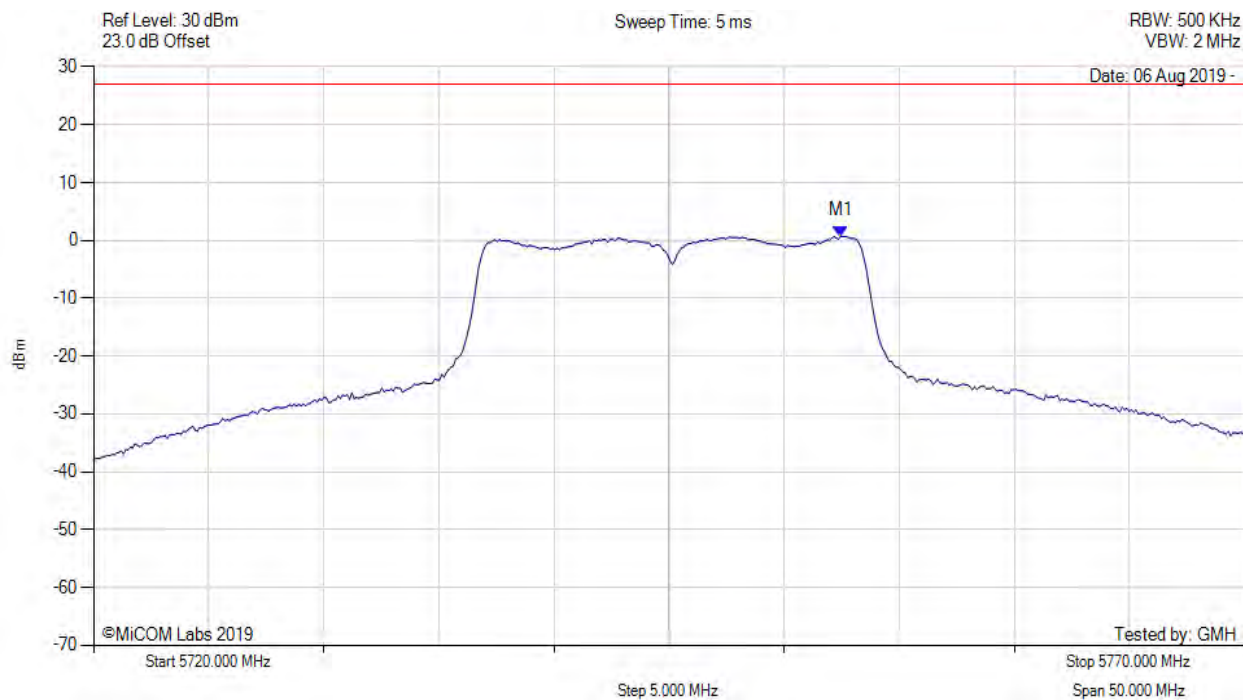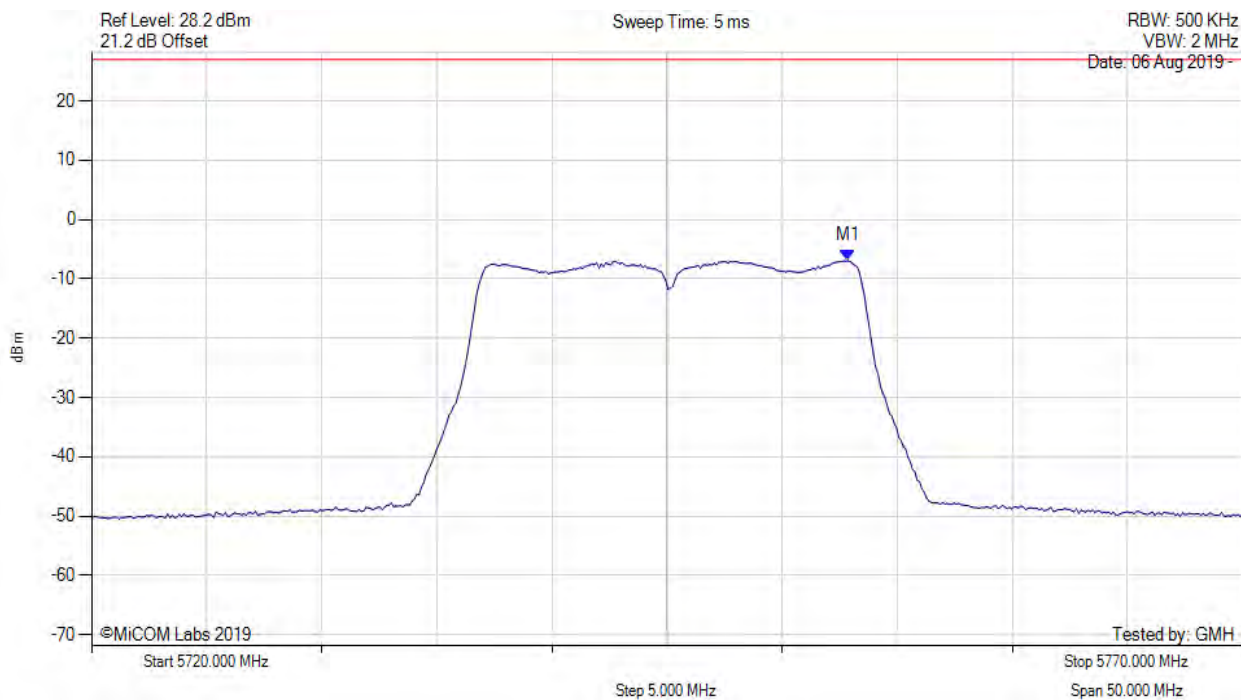Variant: 802.11n HT-40, Channel: 5710.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.331 MHz : 0.705 dBm	Limit: ≤ 6.090 dBm

back to matrix

MiCOMLabs.

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5710.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5695.100 MHz : 3.533 dBm	Limit: ≤ 9.1 dBm
Sweep Count = 100	M1 + DCCF : 5695.100 MHz : 3.621 dBm	Margin: -5.5 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.09 dB	
Trace Mode = VIEW		

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 30 dBm
23.0 dB Offset

Sweep Time: 5 ms

RBW: 500 KHz
VBW: 2 MHz

Date: 06 Aug 2019 -

M1

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Tested by: GMH

Start 5720.000 MHz
Stop 5770.000 MHz

Step 5.000 MHz
Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.465 MHz : 0.743 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

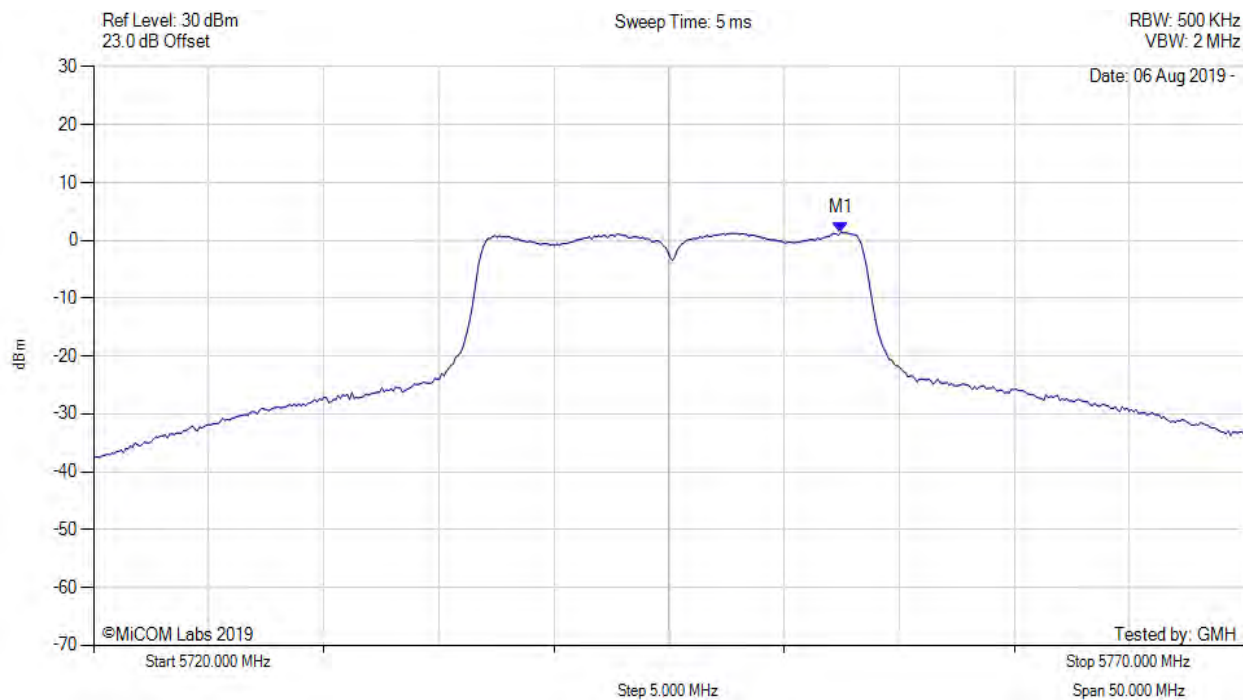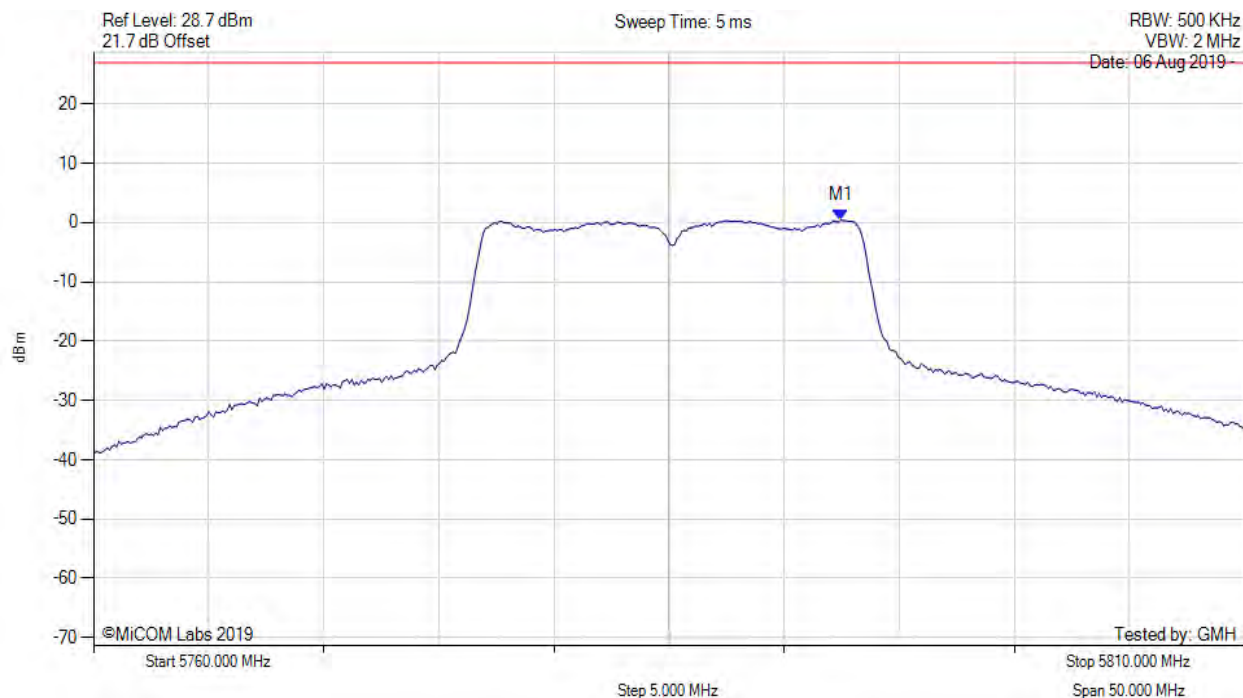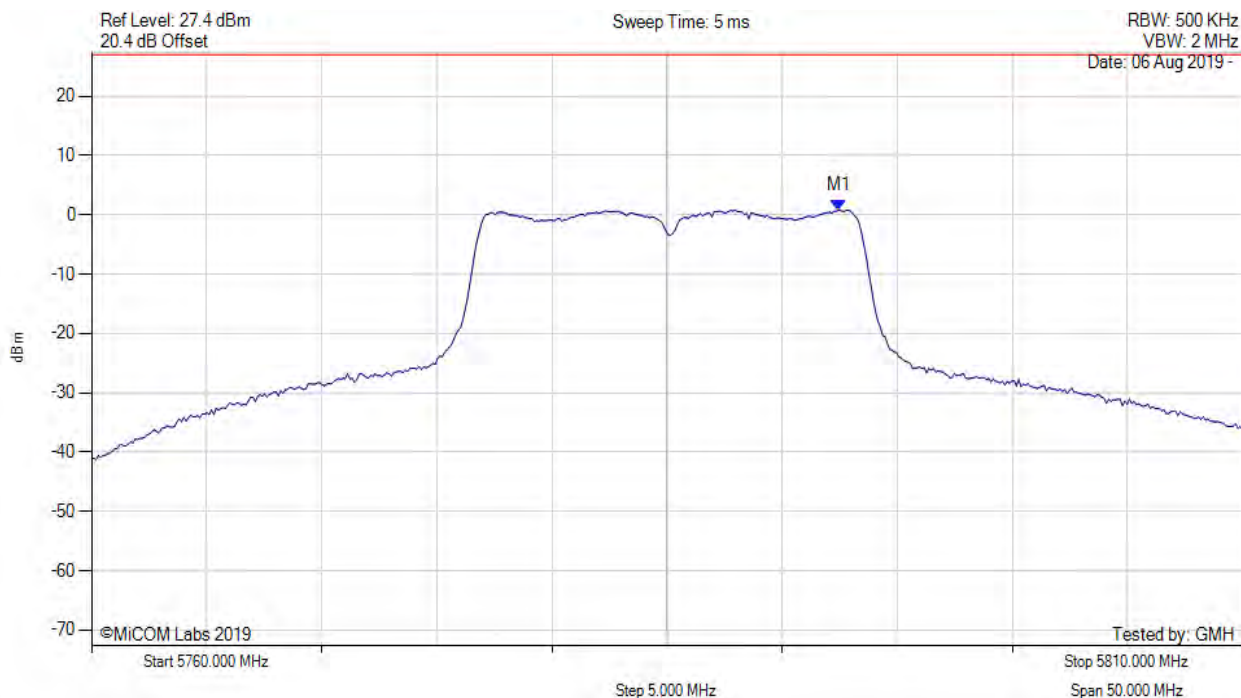Variant: 802.11a, Channel: 5745.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.2 dBm
21.2 dB Offset

Sweep Time: 5 ms

RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019

M1

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Tested by: GMH

Start 5720.000 MHz

Stop 5770.000 MHz

Step 5.000 MHz

Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.866 MHz : -6.955 dBm	Limit: ≤ 26.990 dBm

back to matrix

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 30 dBm
23.0 dB Offset
Sweep Time: 5 ms
RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019
©MiCOM Labs 2019
Tested by: GMH
Start 5720.000 MHz
Stop 5770.000 MHz
Step 5.000 MHz
Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.500 MHz : 1.400 dBm M1 + DCCF : 5752.500 MHz : 1.488 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 30.0 dBm Margin: -28.5 dB

back to matrix

POWER SPECTRAL DENSITY

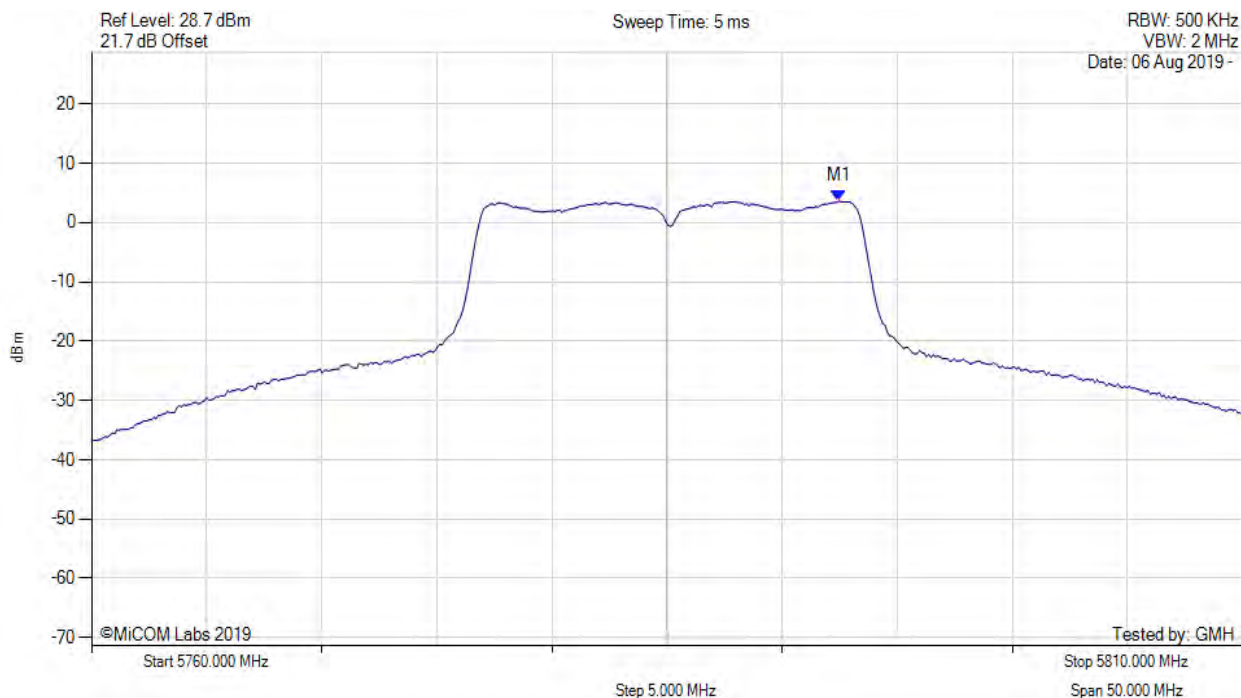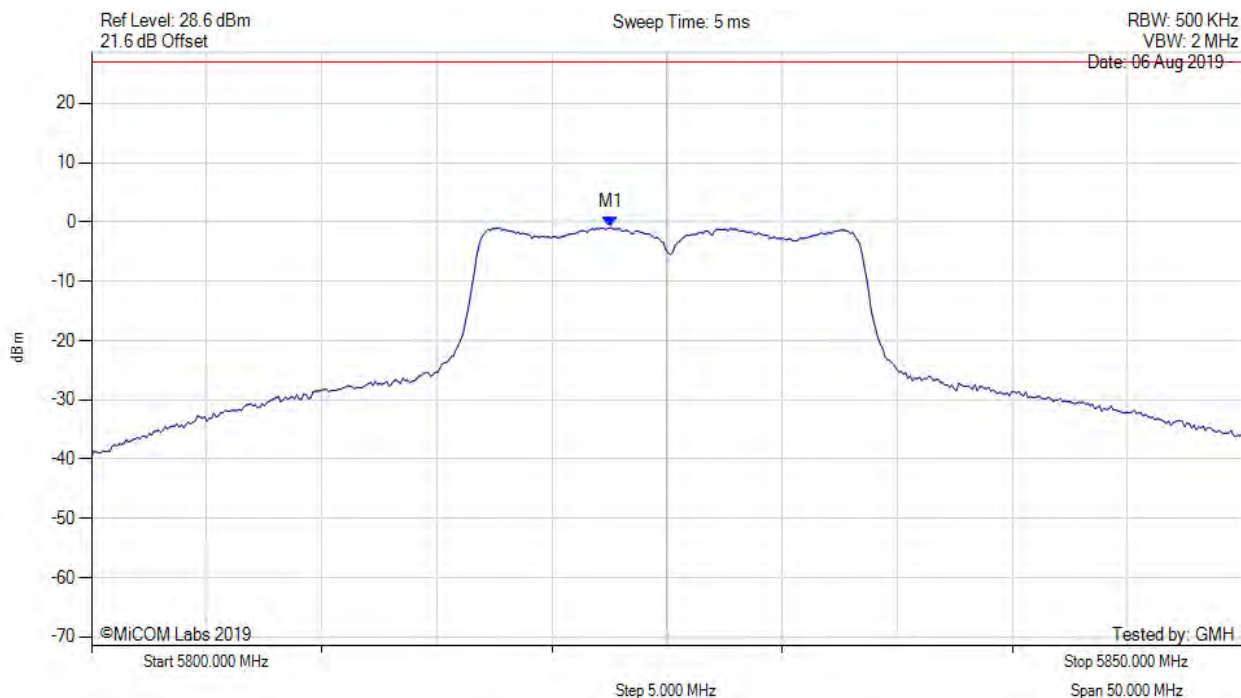Variant: 802.11a, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc
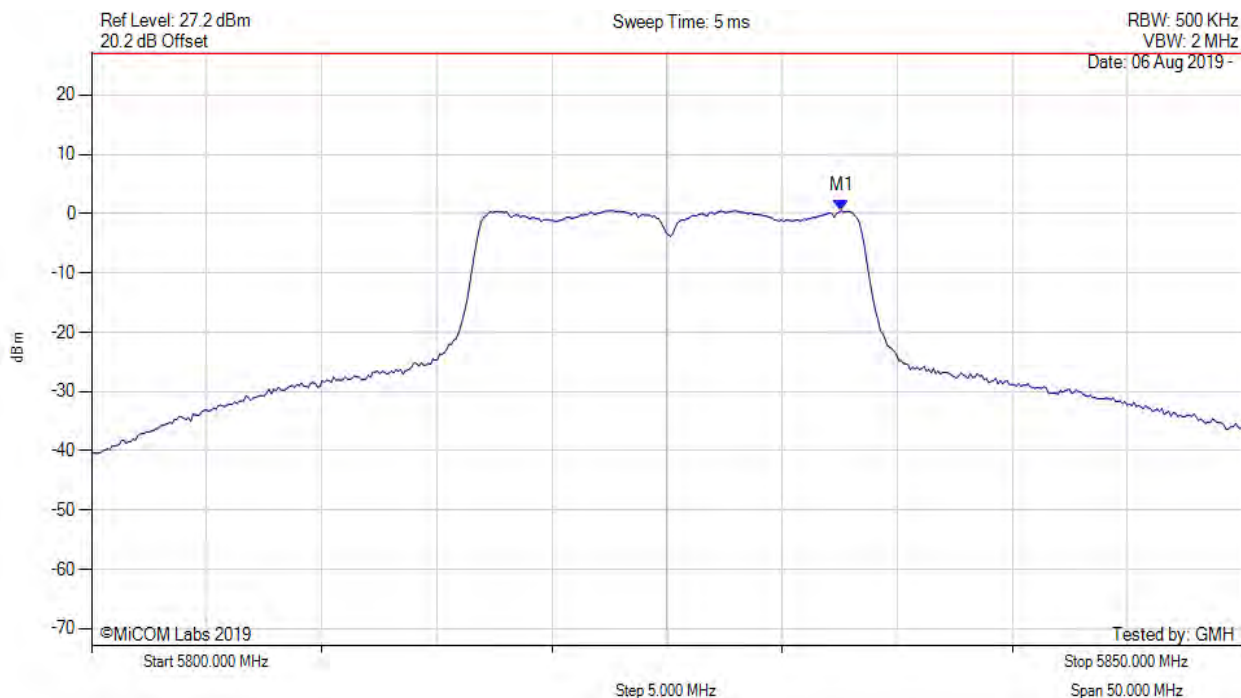

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.465 MHz : 0.404 dBm	Limit: ≤ 26.990 dBm

MiCOMLabs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.465 MHz : 0.811 dBm	Channel Frequency: 5785.00 MHz

back to matrix

Issue Date: 18th November 2019   **Page:** 238 of 263

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POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.7 dBm
21.7 dB Offset

Sweep Time: 5 ms

RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019 -

M1

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Tested by: GMH

Start 5760.000 MHz
Stop 5810.000 MHz
Step 5.000 MHz
Span 50.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.500 MHz : 3.623 dBm M1 + DCCF : 5792.500 MHz : 3.711 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 30.0 dBm Margin: -26.3 dB

back to matrix

Issue Date: 18th November 2019   **Page:** 239 of 263

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POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5822.545 MHz : -0.953 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

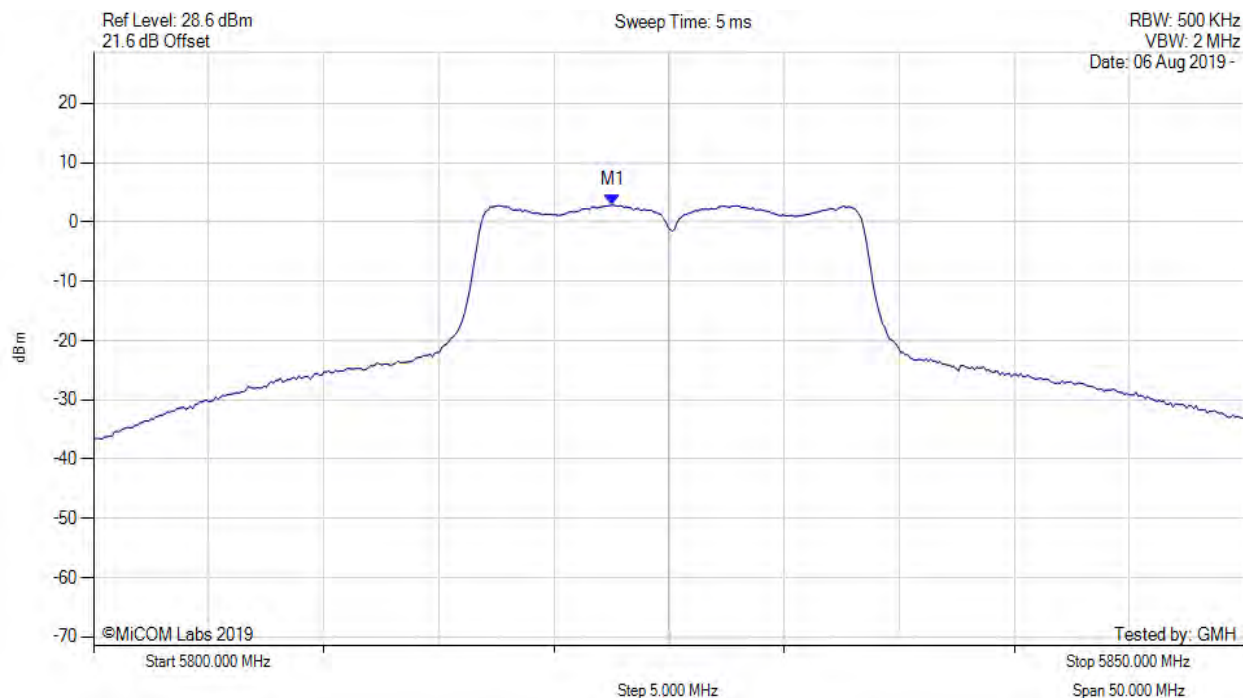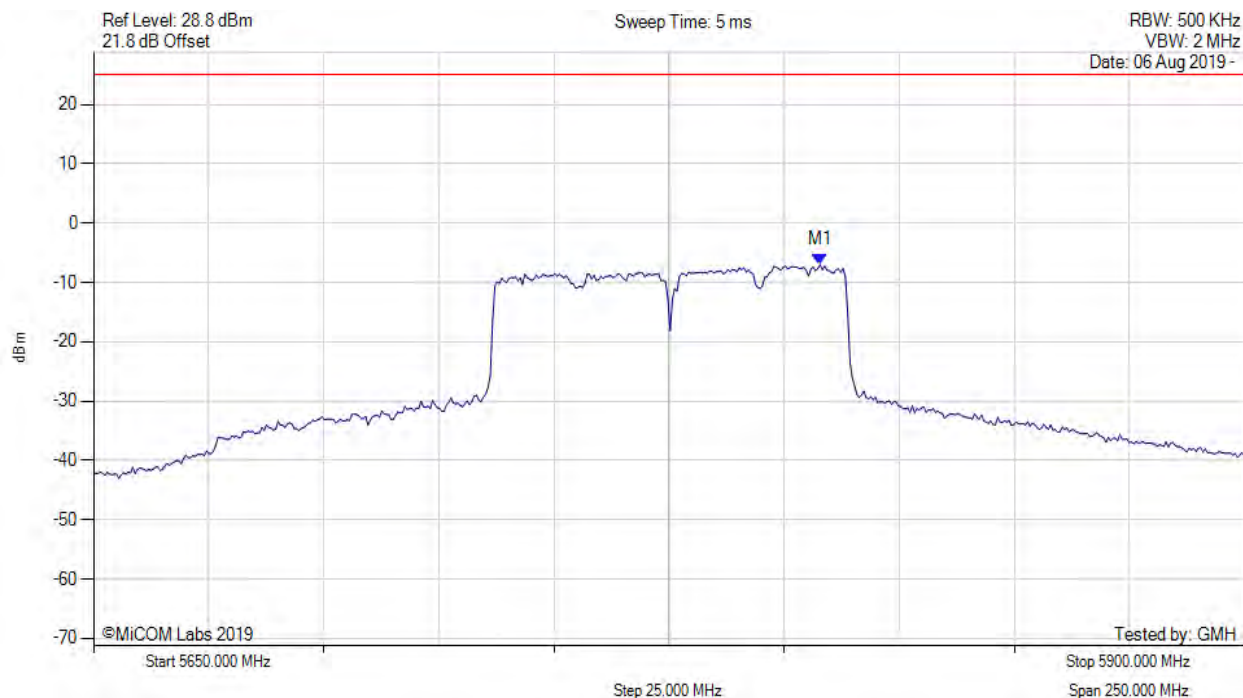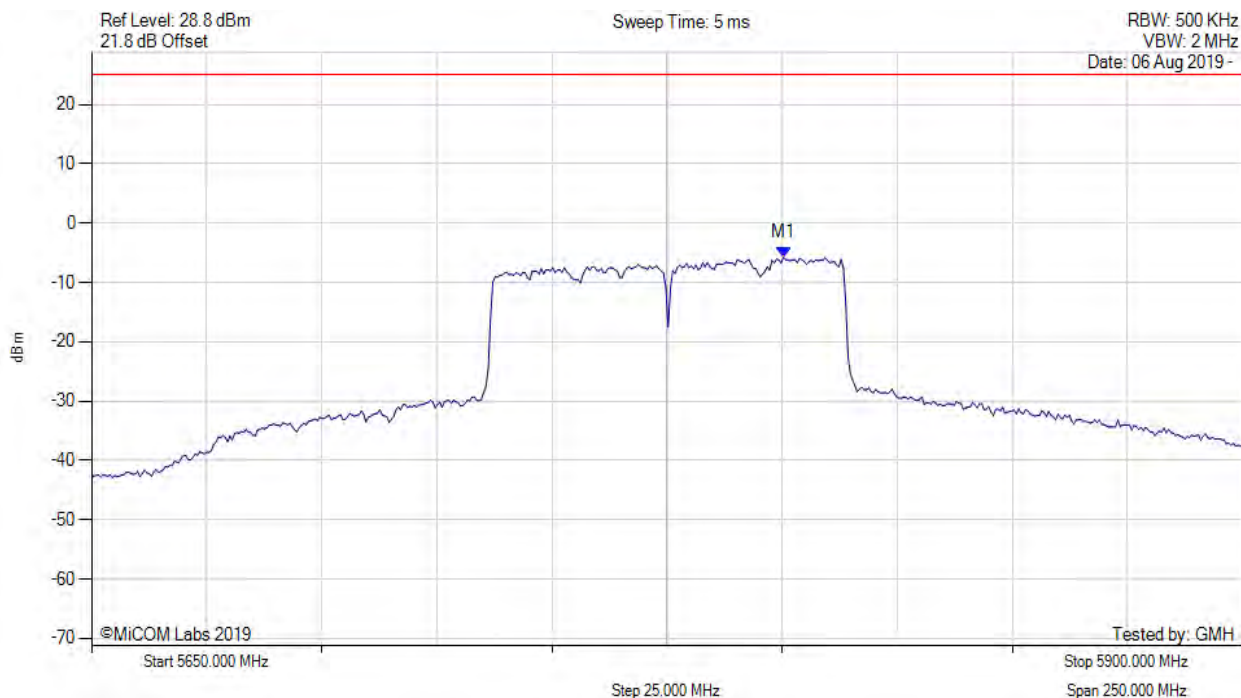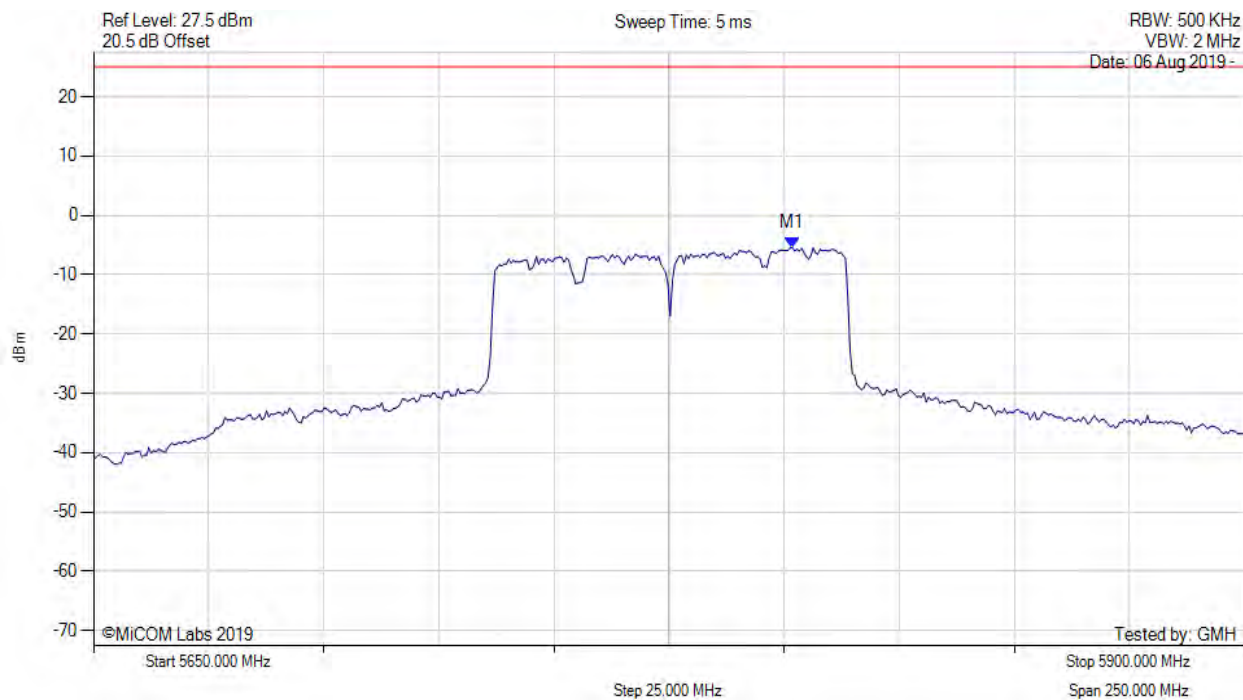Variant: 802.11a, Channel: 5825.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5832.565 MHz : 0.538 dBm	Limit: ≤ 26.990 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5822.500 MHz : 2.843 dBm M1 + DCCF : 5822.500 MHz : 2.931 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 30.0 dBm Margin: -27.1 dB

back to matrix

POWER SPECTRAL DENSITY

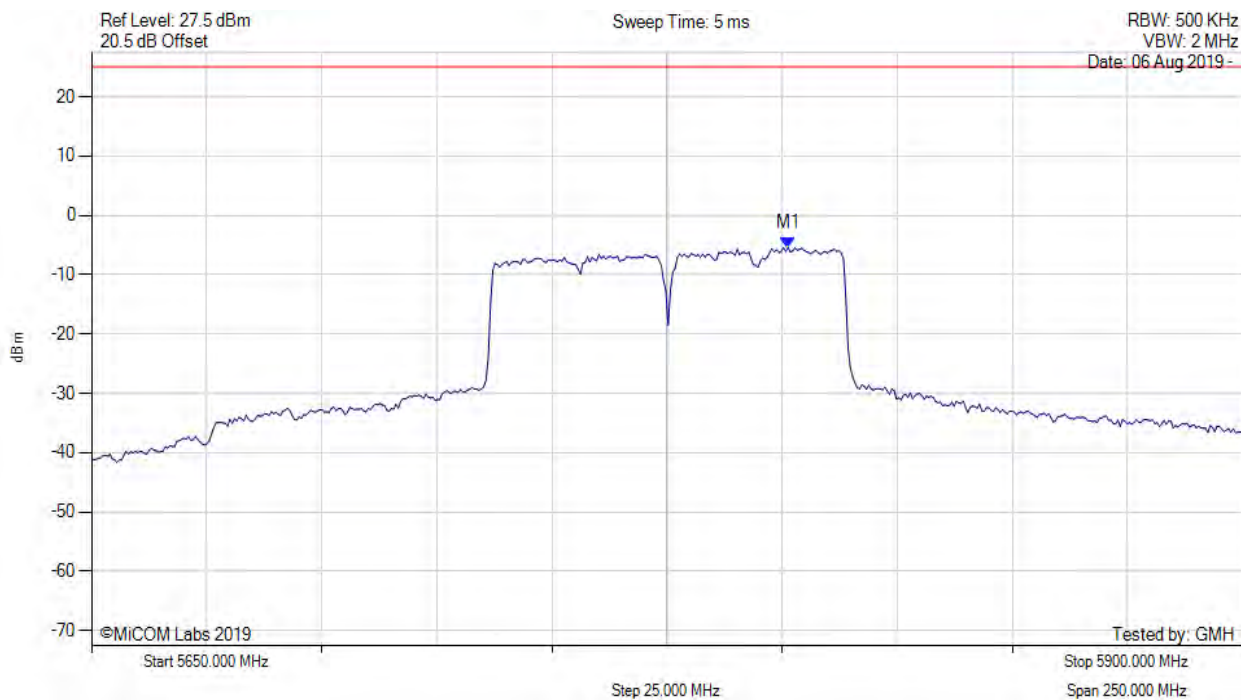Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.8 dBm
21.8 dB Offset
Sweep Time: 5 ms
RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019 -

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Tested by: GMH
Start 5650.000 MHz
Stop 5900.000 MHz
Step 25.000 MHz
Span 250.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5807.816 MHz : -7.018 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

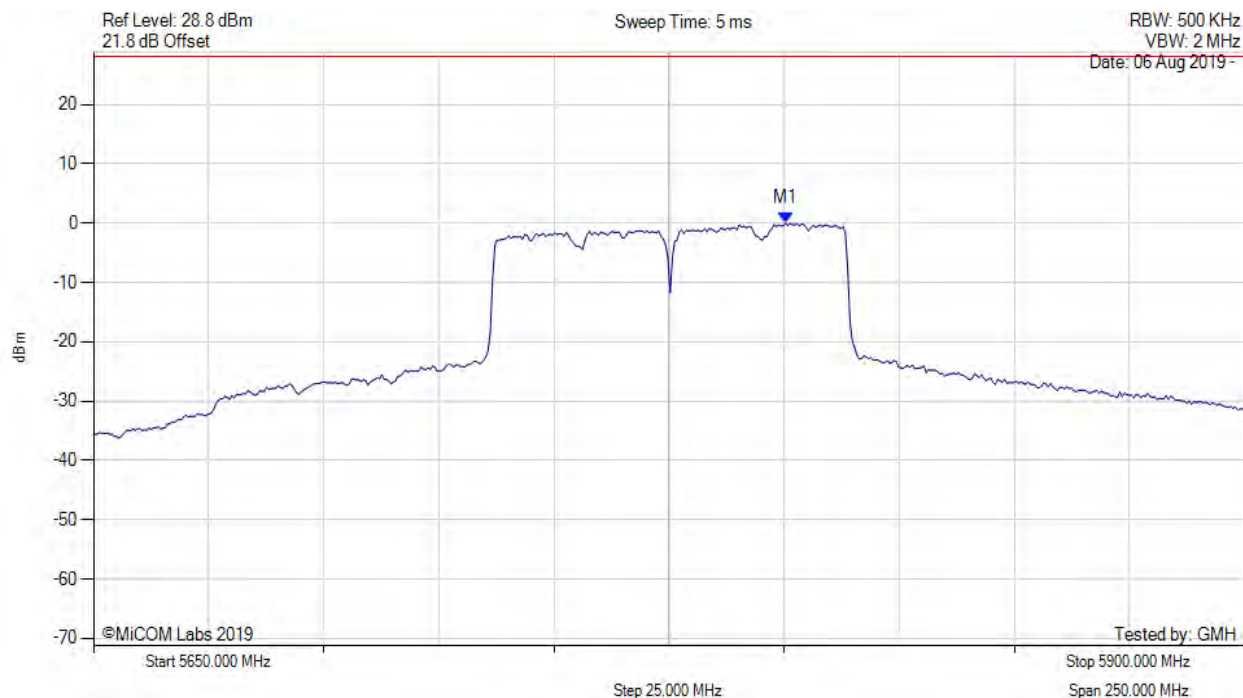Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5800.301 MHz : -5.749 dBm	Channel Frequency: 5775.00 MHz

back to matrix

POWER SPECTRAL DENSITY

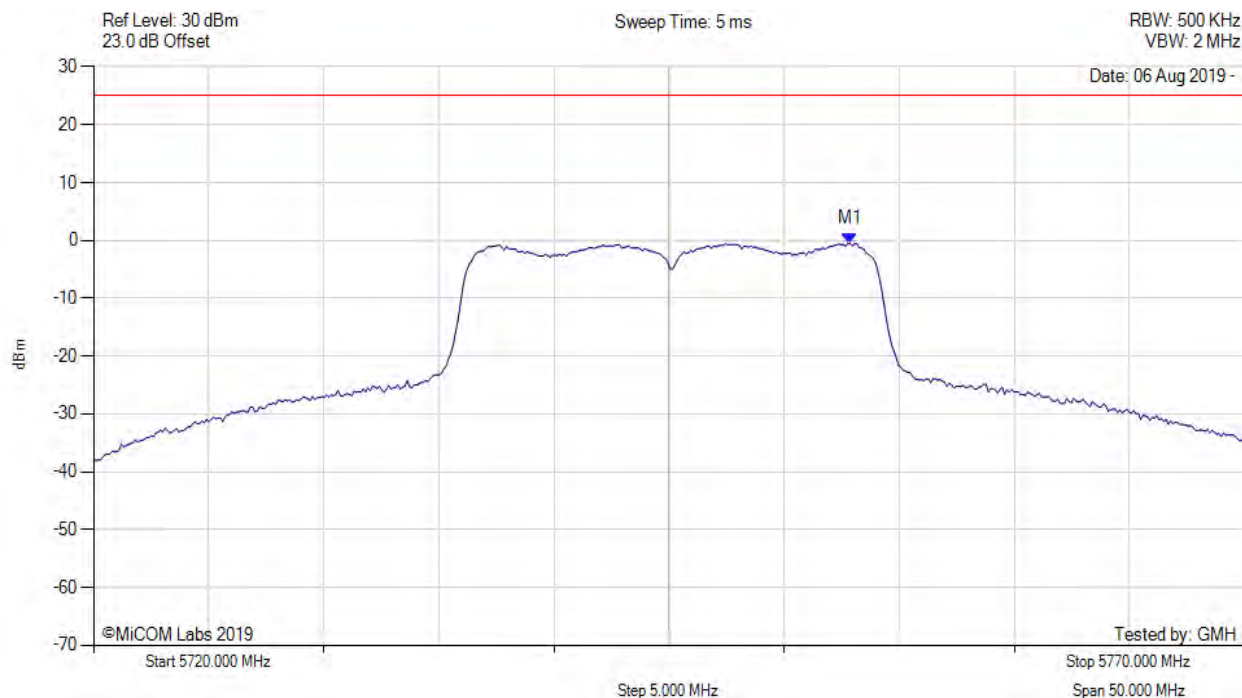Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5801.804 MHz : -5.451 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5801.303 MHz : -5.423 dBm	Channel Frequency: 5775.00 MHz

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11ac-80, Channel: 5775.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.8 dBm
21.8 dB Offset

Sweep Time: 5 ms

RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019 -

M1

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Tested by: GMH

Start 5650.000 MHz
Stop 5900.000 MHz

Step 25.000 MHz

Span 250.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5800.300 MHz : -0.013 dBm M1 + DCCF : 5800.300 MHz : 0.075 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 28.1 dBm Margin: -28.0 dB

back to matrix

POWER SPECTRAL DENSITY

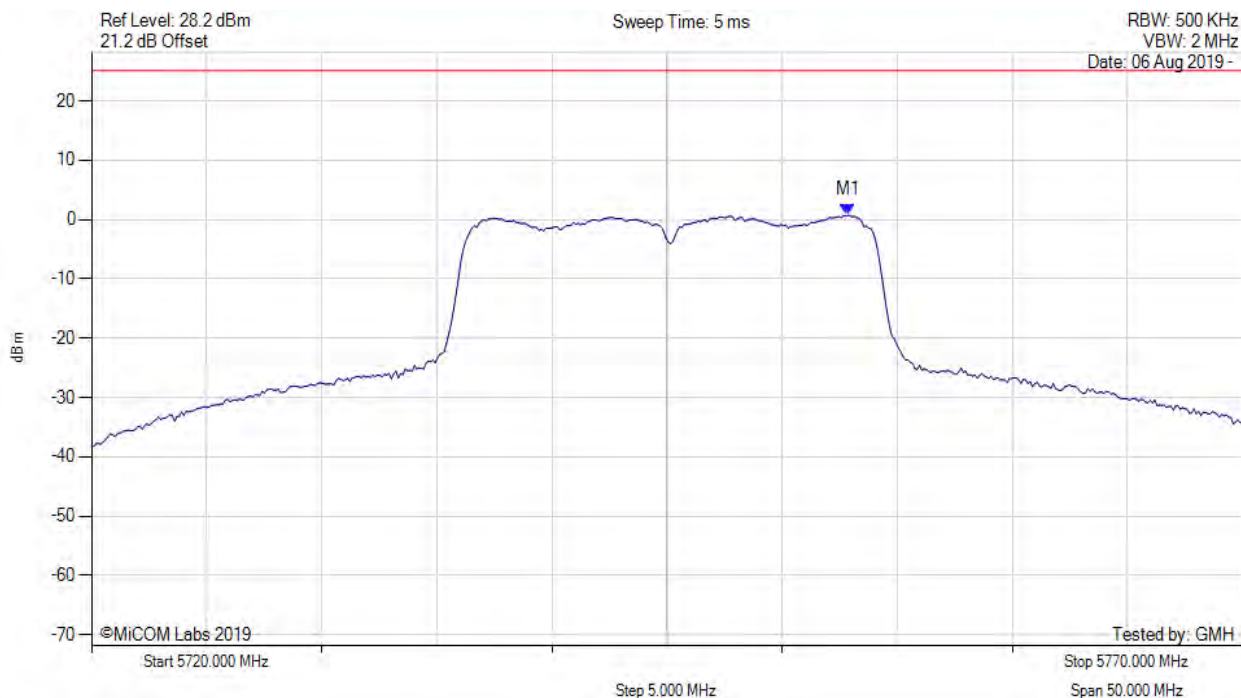Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 30 dBm 23.0 dB Offset	Sweep Time: 5 ms	RBW: 500 KHz VBW: 2 MHz

Start 5720.000 MHz   Step 5.000 MHz   Stop 5770.000 MHz   Span 50.000 MHz

Date: 06 Aug 2019

Tested by: GMH

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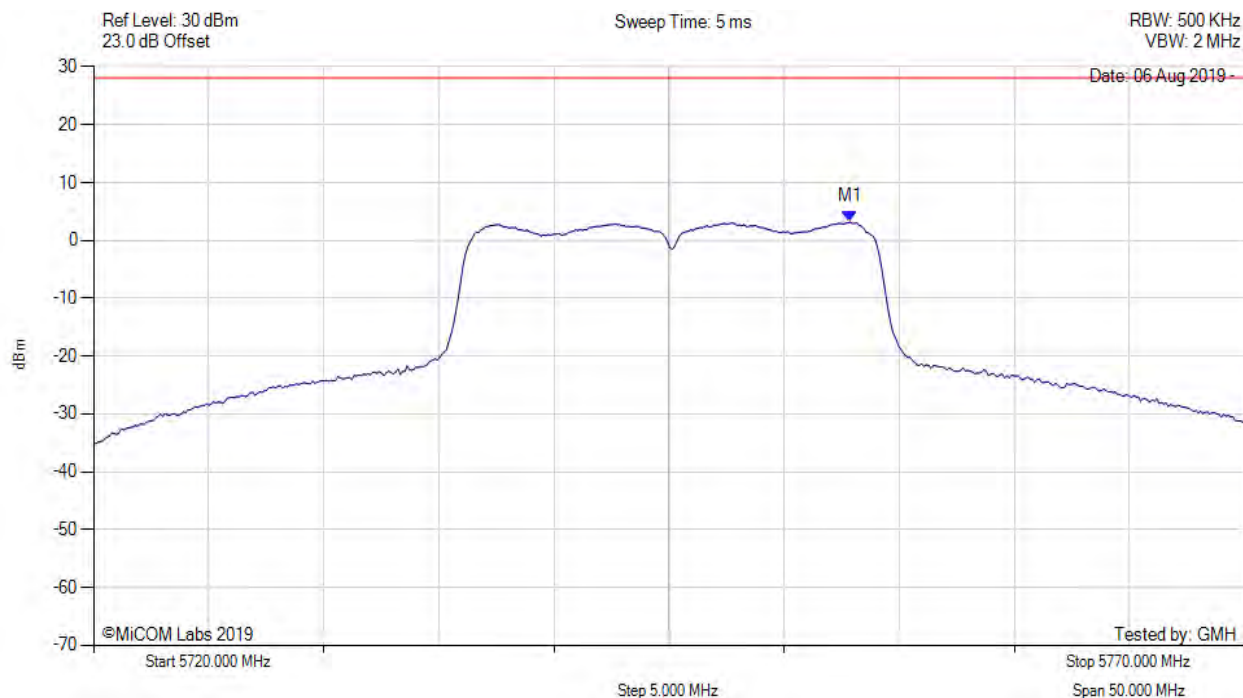| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.866 MHz : -0.538 dBm	Limit: ≤ 25.090 dBm

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.866 MHz : 0.776 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

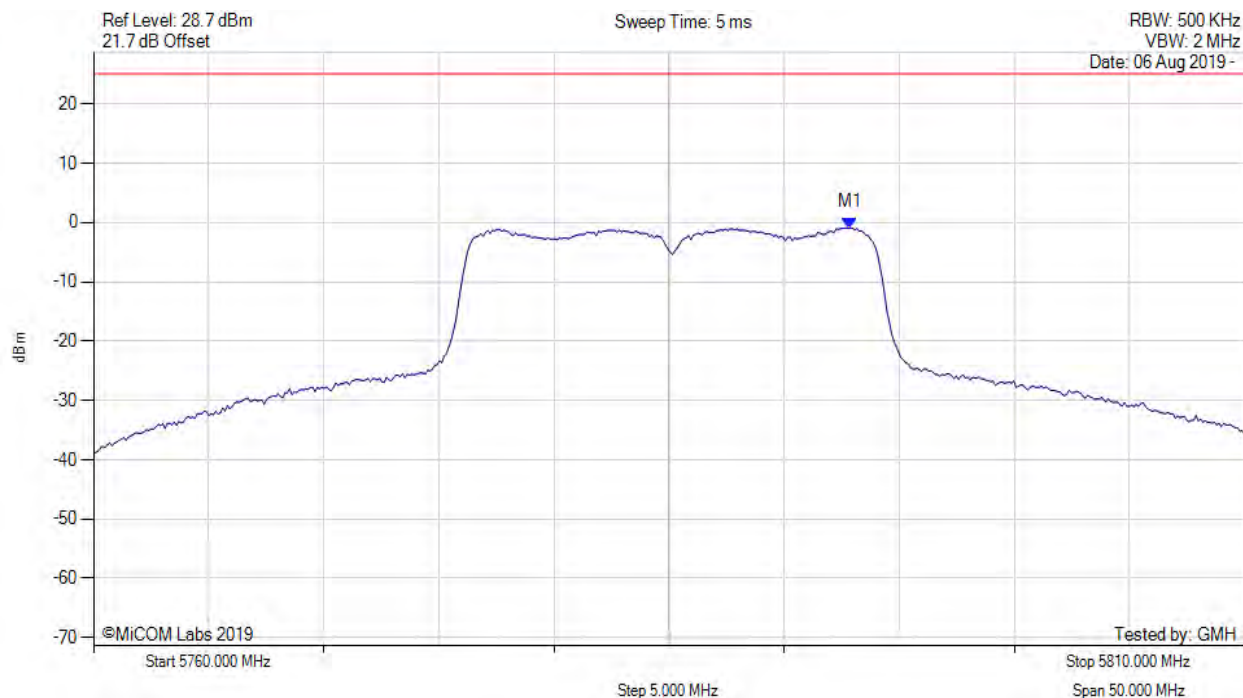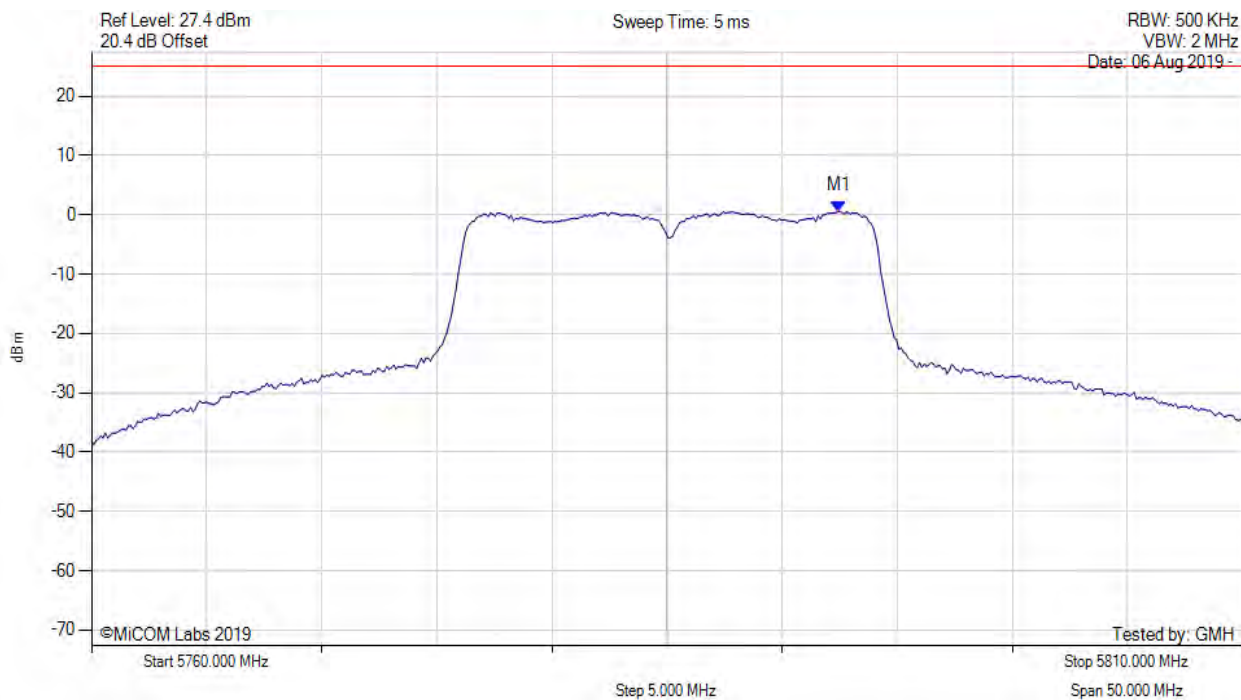Variant: 802.11n HT-20, Channel: 5745.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.900 MHz : 3.179 dBm M1 + DCCF : 5752.900 MHz : 3.267 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 28.1 dBm Margin: -24.8 dB

back to matrix

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POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.866 MHz : -0.897 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

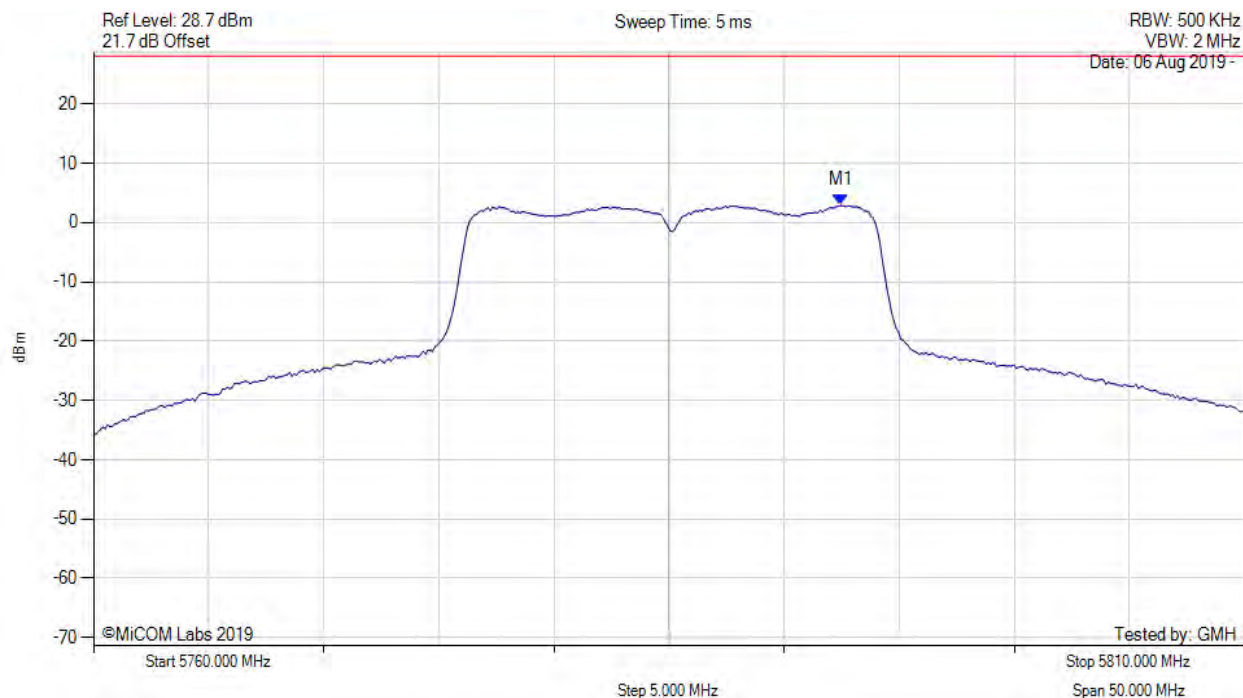Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

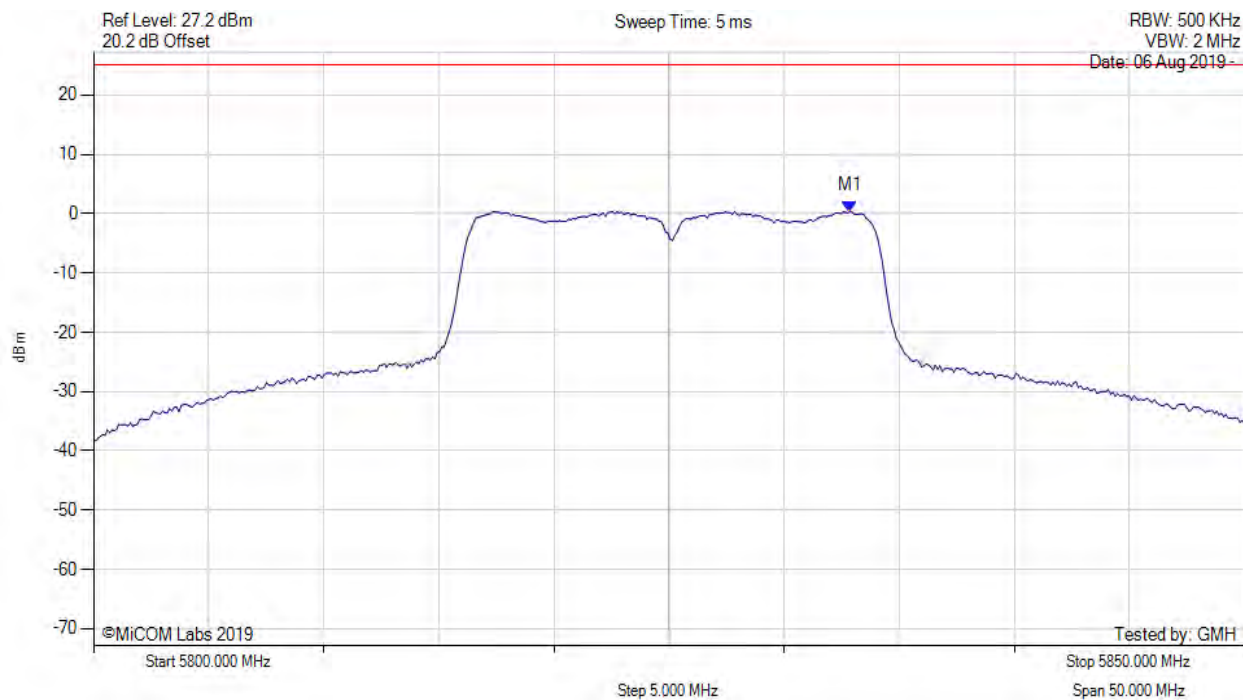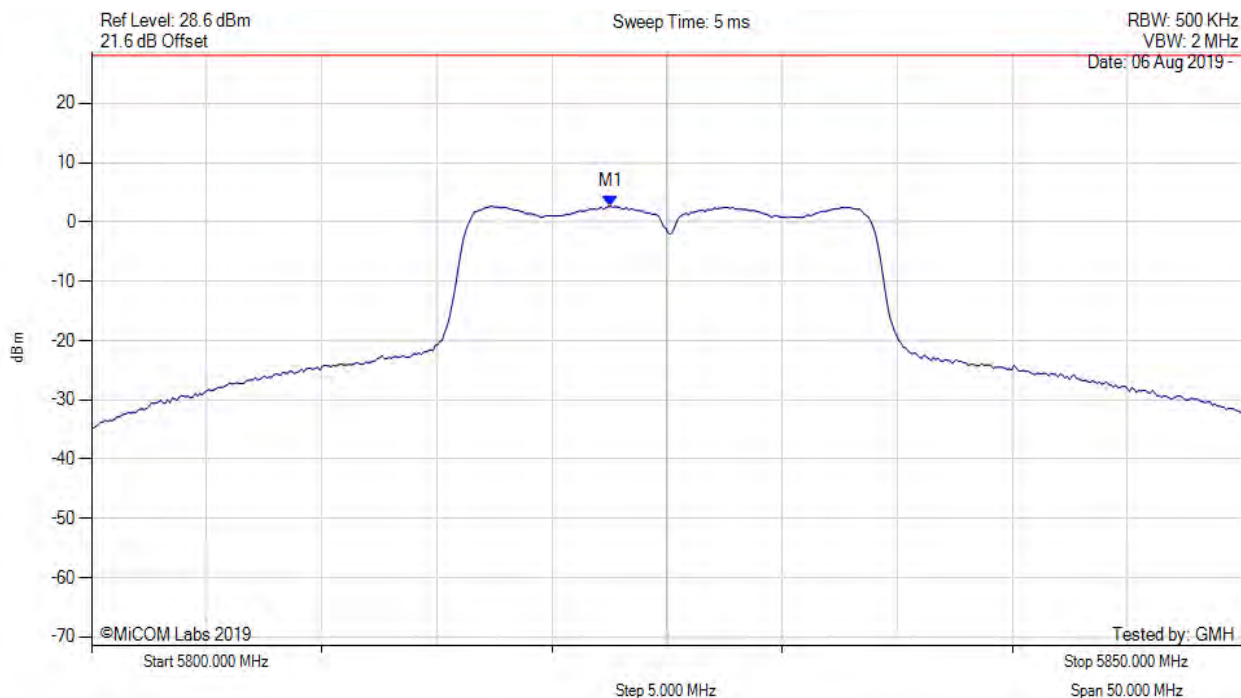| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.465 MHz : 0.600 dBm	Channel Frequency: 5785.00 MHz

back to matrix

MiCOM Labs

Title: Hewlett Packard Enterprise, Aruba User Experience Insight
To: FCC Part 15 Subpart C 15.407 (NII)
Serial #: HPEN149-U6 PCA 3.2 Rev A (Wi-Fi)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.500 MHz : 2.877 dBm M1 + DCCF : 5792.500 MHz : 2.965 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 28.1 dBm Margin: -25.1 dB

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 28.6 dBm
21.6 dB Offset
Sweep Time: 5 ms
RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019 -

Start 5800.000 MHz
Stop 5850.000 MHz
Step 5.000 MHz
Span 50.000 MHz

Tested by: GMH
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Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5817.234 MHz : -1.137 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

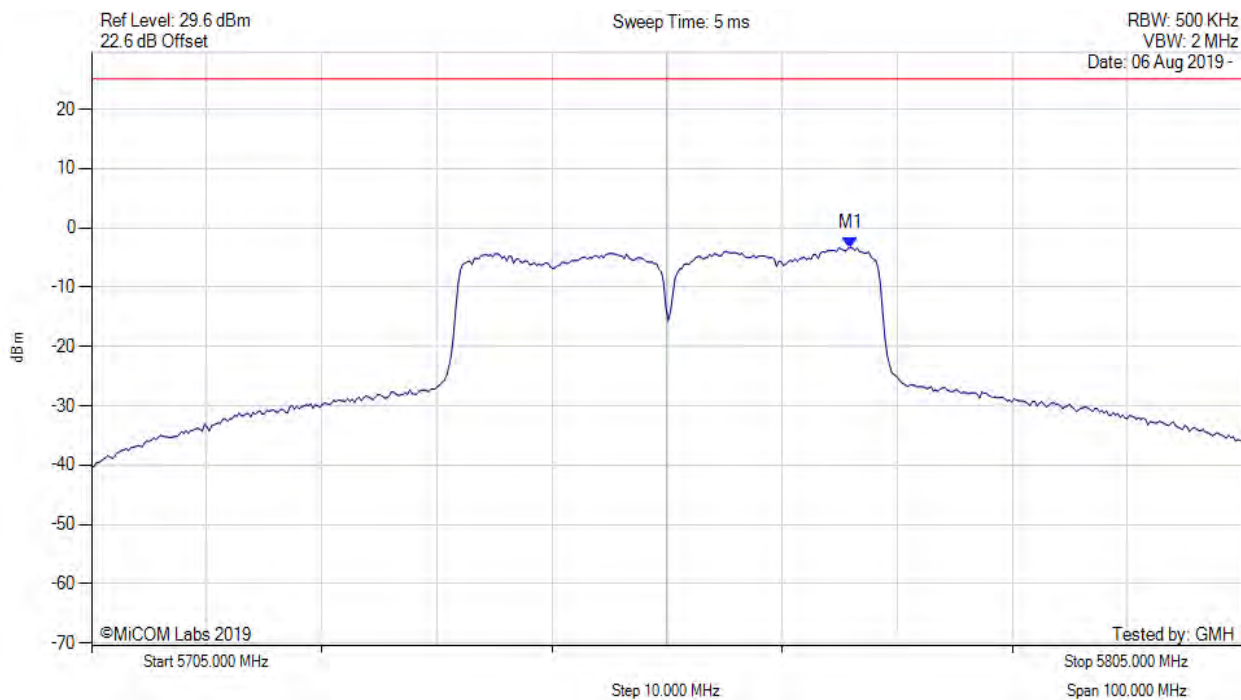Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5832.866 MHz : 0.412 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5822.500 MHz : 2.644 dBm M1 + DCCF : 5822.500 MHz : 2.732 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 28.1 dBm Margin: -25.4 dB

back to matrix

POWER SPECTRAL DENSITY

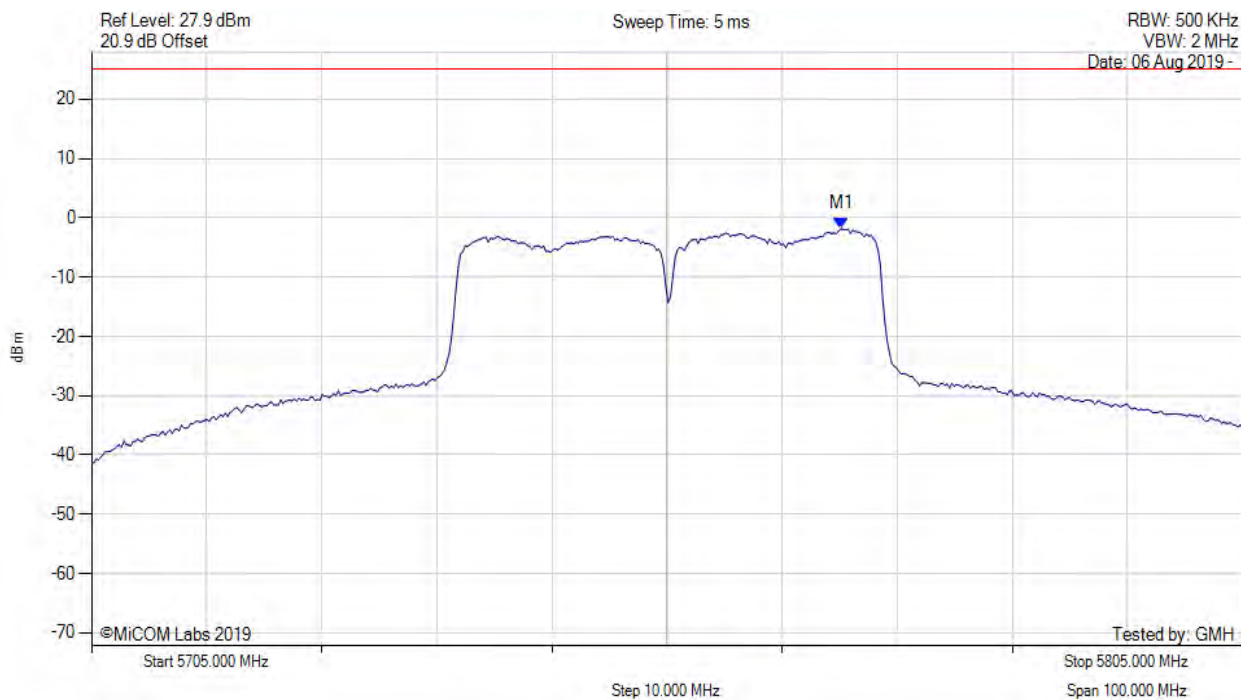Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Ref Level: 29.6 dBm
22.6 dB Offset

Sweep Time: 5 ms

RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019 -

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Tested by: GMH

Start 5705.000 MHz
Stop 5805.000 MHz
Step 10.000 MHz
Span 100.000 MHz

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5770.932 MHz : -3.331 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc
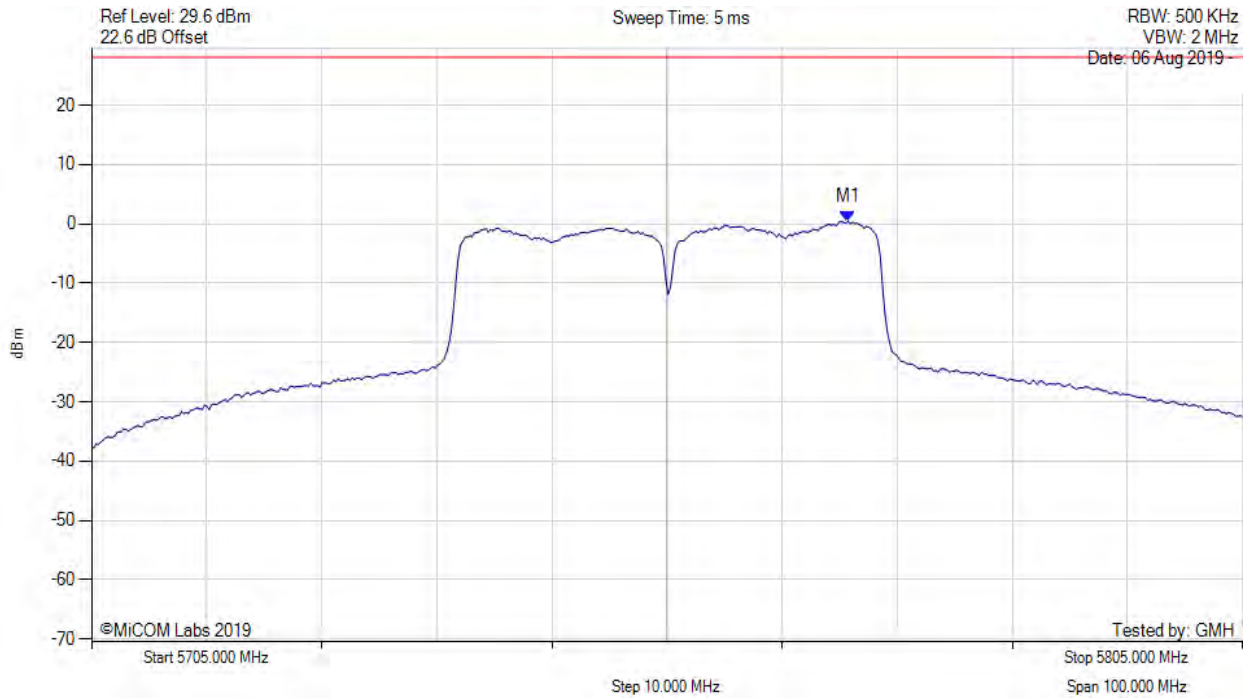

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5770.130 MHz : -1.869 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Ref Level: 29.6 dBm
22.6 dB Offset

Sweep Time: 5 ms

RBW: 500 KHz
VBW: 2 MHz
Date: 06 Aug 2019

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Tested by: GMH

Start 5705.000 MHz
Stop 5805.000 MHz
Step 10.000 MHz
Span 100.000 MHz

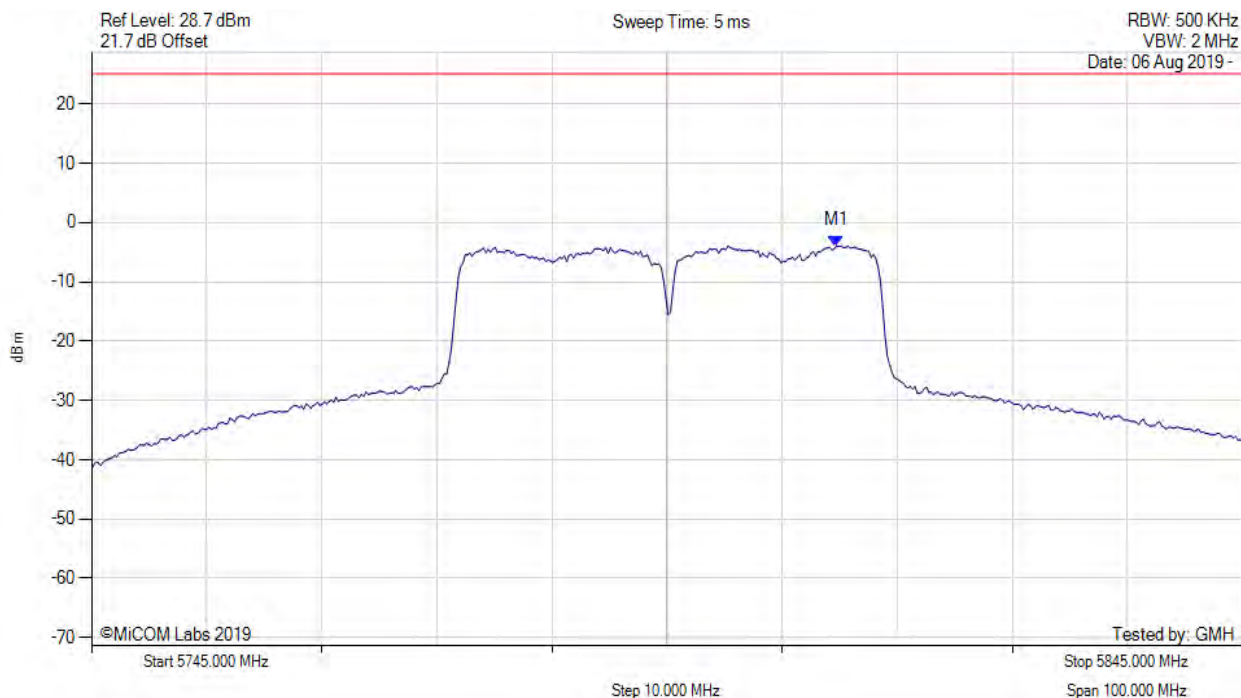| Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5770.700 MHz : 0.398 dBm M1 + DCCF : 5770.700 MHz : 0.486 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 28.1 dBm Margin: -27.6 dB

back to matrix

POWER SPECTRAL DENSITY

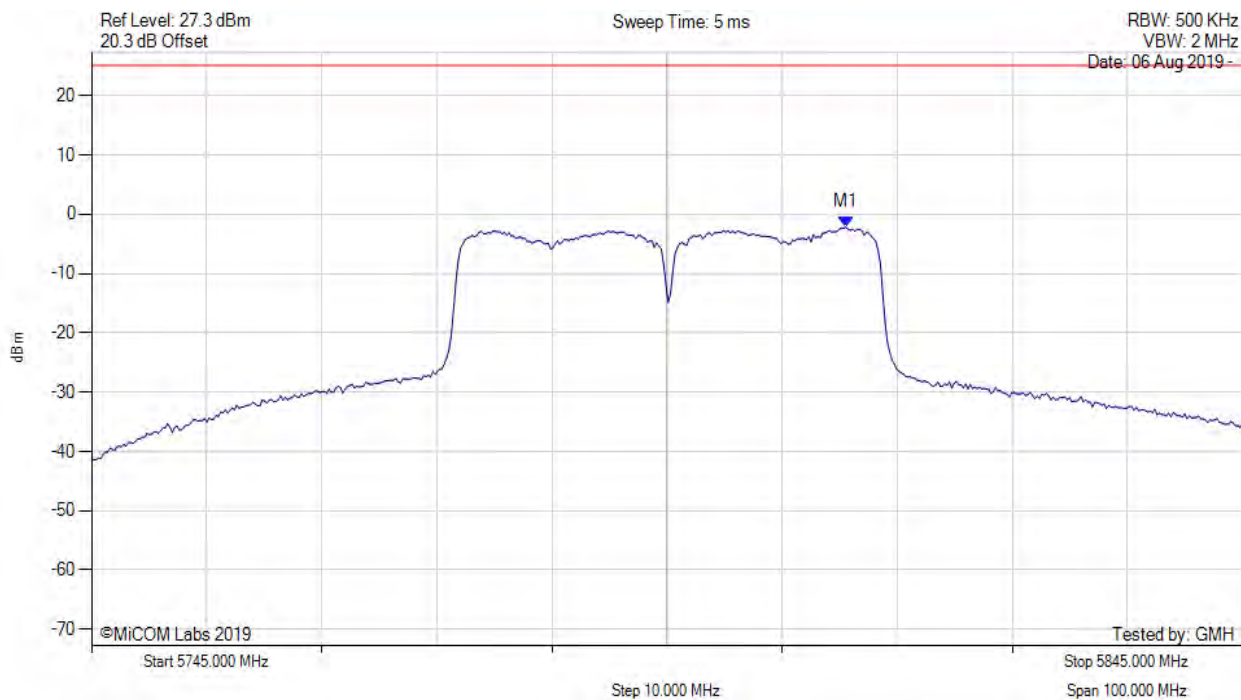Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5809.729 MHz : -3.940 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

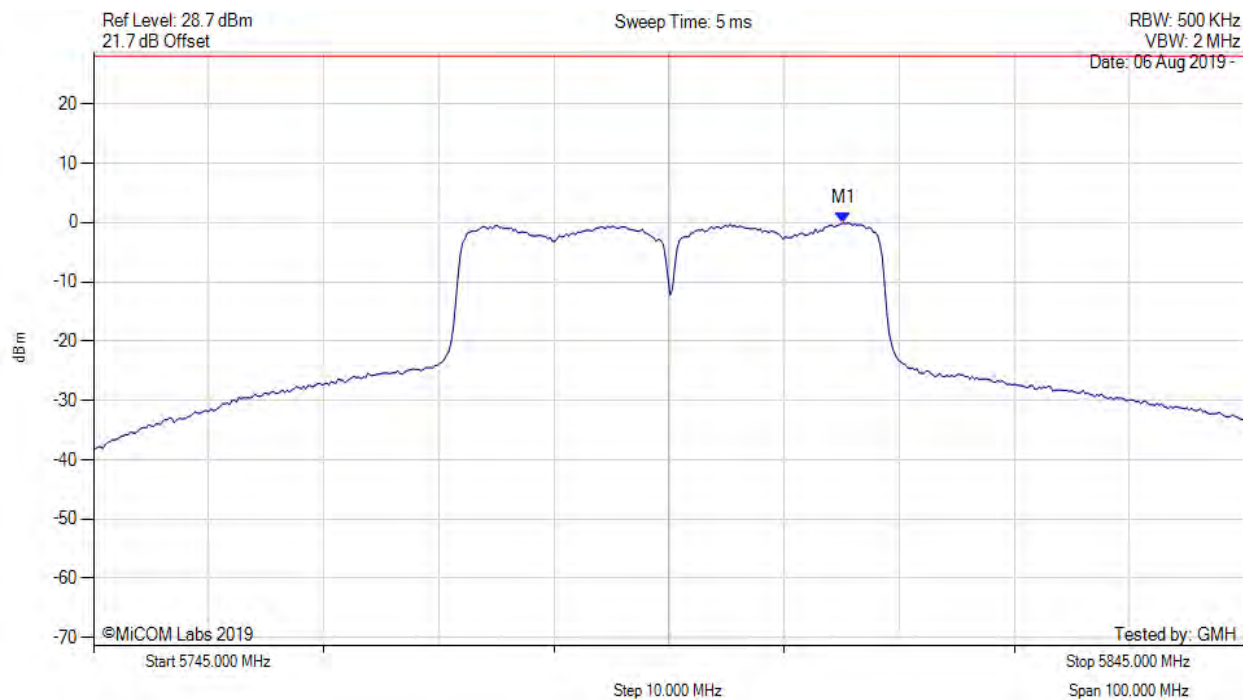Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5810.531 MHz : -2.196 dBm	Limit: ≤ 25.090 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5795.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5810.100 MHz : -0.051 dBm M1 + DCCF : 5810.100 MHz : 0.037 dBm Duty Cycle Correction Factor : +0.09 dB	Limit: ≤ 28.1 dBm Margin: -28.1 dB

back to matrix

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