Channel 140

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5728.150	55.7	-23.0	34.8	43.82	68.3	12.6	H	155	12
5730.088	55.8	-23.0	34.8	43.96	68.3	12.5	V	155	136
11395.600	49.5	-29.7	38.2	40.20	74.0	24.5	H	155	220
17099.650	55.6	-23.0	42.1	40.29	68.3	12.7	V	155	22
17205.800	56.9	-22.9	42.0	39.39	68.3	11.4	V	155	64
17352.650	56.8	-22.9	41.8	38.14	68.3	11.5	V	155	30

802.11ac-HT40

Channel 38

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5125.930	55.4	-23.3	34.3	44.44	74.0	18.6	H	155	0
5145.583	55.3	-23.3	34.3	44.33	74.0	18.7	V	155	22
10379.200	48.2	-29.5	37.7	40.08	68.3	20.1	V	155	352
15570.100	53.3	-24.5	40.2	37.60	74.0	20.7	V	155	352
16887.900	57.1	-23.0	42.0	38.03	68.3	11.2	V	155	176
17005.050	57.7	-23.0	42.2	38.48	68.3	10.6	V	155	110

Channel 46

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5202.800	56.8	-23.2	34.3	45.80	68.3	11.5	H	155	268
5256.400	59.1	-23.1	34.3	47.91	68.3	9.2	H	155	138
10433.100	48.0	-29.4	37.7	39.62	68.3	20.3	H	155	104
15690.000	51.3	-24.4	40.3	35.36	74.0	22.7	H	155	40
16784.500	56.5	-23.0	41.9	37.60	68.3	11.8	H	155	28
17014.400	56.5	-23.0	42.2	38.29	68.3	11.8	H	155	8

Channel 54

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5243.200	57.9	-23.3	34.3	46.89	68.3	10.4	H	155	260
5296.600	60.6	-22.7	34.3	48.93	68.3	7.7	H	155	130
10551.900	48.3	-29.5	37.8	41.14	68.3	20.0	H	155	112
15809.900	53.5	-24.1	40.5	42.73	74.0	20.5	H	155	42
16343.500	56.8	-23.1	41.3	42.04	68.3	11.5	H	155	22
16976.450	57.4	-23.0	42.2	38.28	68.3	10.9	V	155	2

Channel 62

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5350.731	58.8	-22.3	34.3	46.74	74.0	15.2	H	155	0
5352.311	58.3	-22.3	34.3	46.25	74.0	15.7	H	155	0
10623.400	47.6	-29.2	37.9	40.50	68.3	20.7	H	155	22
15929.800	52.8	-23.9	40.6	39.21	68.3	15.5	H	155	352
16860.400	57.6	-23.0	42.0	42.43	68.3	10.7	V	155	88
17281.150	57.4	-22.8	41.9	38.27	68.3	10.9	V	155	88

Channel 102

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5448.055	56.3	-22.7	34.4	44.59	74.0	17.7	V	155	88
5453.770	55.5	-22.7	34.4	43.80	74.0	18.5	H	155	110
11019.950	48.3	-29.8	38.0	40.58	68.3	20.0	V	155	22
16529.850	53.9	-23.2	41.5	40.31	68.3	14.4	V	155	66
16852.150	57.3	-23.0	42.0	39.36	68.3	11.0	V	155	132
17086.450	57.9	-23.0	42.1	38.87	68.3	10.4	V	155	274

Channel 118

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5547.400	54.8	-22.6	34.5	42.93	68.3	13.5	H	155	132
5641.800	54.9	-22.8	34.7	43.04	68.3	13.4	H	155	154
11180.000	47.7	-30.4	38.1	41.03	68.3	20.6	H	155	0
16770.200	55.1	-23.0	41.9	38.56	68.3	13.2	H	155	0
17010.000	57.7	-23.0	42.2	39.31	68.3	10.6	H	155	22
17324.050	57.4	-22.9	41.8	38.53	68.3	10.9	H	155	176

Channel 134

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5727.625	56.1	-23.0	34.8	44.27	68.3	12.2	H	155	140
5737.438	56.1	-23.0	34.8	44.19	68.3	12.2	V	155	160
11340.050	48.0	-30.0	38.1	41.72	68.3	20.3	H	155	66
17010.000	55.2	-23.0	42.2	40.28	68.3	13.1	H	155	0
17128.250	56.8	-23.0	42.0	38.70	68.3	11.5	H	155	44
17504.450	57.0	-22.9	41.6	38.48	68.3	11.3	V	155	242

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Channel 42

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5119.228	57.8	-23.4	34.3	46.90	74.0	16.2	H	155	4
5144.200	58.9	-23.3	34.3	47.91	74.0	15.1	H	155	20
10419.900	46.0	-30.1	37.0	39.14	68.3	22.3	H	155	252
15630.050	52.2	-28.5	39.2	41.57	74.0	21.8	V	155	352
16923.100	57.8	-24.9	39.8	43.01	68.3	10.5	V	155	170
17421.400	57.2	-23.0	41.7	38.57	68.3	11.1	V	155	176

Channel 58

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5362.260	58.5	-22.3	34.5	46.29	74.0	15.5	V	155	88
5363.313	58.8	-22.3	34.5	46.63	74.0	15.2	H	155	120
11060.100	47.5	-30.0	37.3	40.21	68.3	20.8	V	155	132
16589.800	54.2	-28.4	39.1	43.46	68.3	14.1	H	155	146
16835.650	57.0	-25.0	39.7	42.33	68.3	11.3	V	155	176
17026.500	58.1	-23.0	41.7	39.49	68.3	10.2	V	155	198

Channel 106

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5434.000	58.2	-22.6	34.5	46.23	74.0	15.8	H	155	22
5439.115	58.4	-22.6	34.6	46.49	74.0	15.6	V	155	44
11060.100	47.5	-30.3	37.3	40.51	68.3	20.8	H	155	0
16589.800	54.2	-28.5	39.1	43.52	68.3	14.1	H	155	0
16966.000	57.4	-25.0	39.7	42.70	68.3	10.9	H	155	22
17026.500	58.1	-23.0	41.7	39.50	68.3	10.2	H	155	176

Channel 122

Frequency (MHz)	Meas. Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
5730.687	56.0	-23.0	34.9	44.13	68.3	12.3	H	155	176
5768.425	56.1	-22.9	34.9	44.11	68.3	12.2	H	155	154
11220.150	48.0	-30.1	37.3	40.75	68.3	20.3	V	155	22
16830.150	54.7	-28.4	39.2	43.94	68.3	13.6	V	155	176
17062.250	54.1	-25.1	39.7	39.44	68.3	14.2	H	155	198
17525.900	57.2	-22.7	41.2	38.77	68.3	11.1	H	155	0

Sample calculation:
802.11ac 80MHz CH122–Peak, 5730.687 MHz
Result (dBμV/m) = PMea(44.13) + Cable Loss(-23.0) + Antenna Factor(34.9) = 56.0dBuV/m

B.7. AC Powerline Conducted Emission (150kHz- 30MHz)

Test Condition:

Voltage（V）	Frequency（Hz）
110	60

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig.75	Fig.76	P
0.5 to 5	56			
5 to 30	60			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.75	Fig.76	P
0.5 to 5	46			
5 to 30	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: PASS

Test graphs as below:

Result for Traffic:

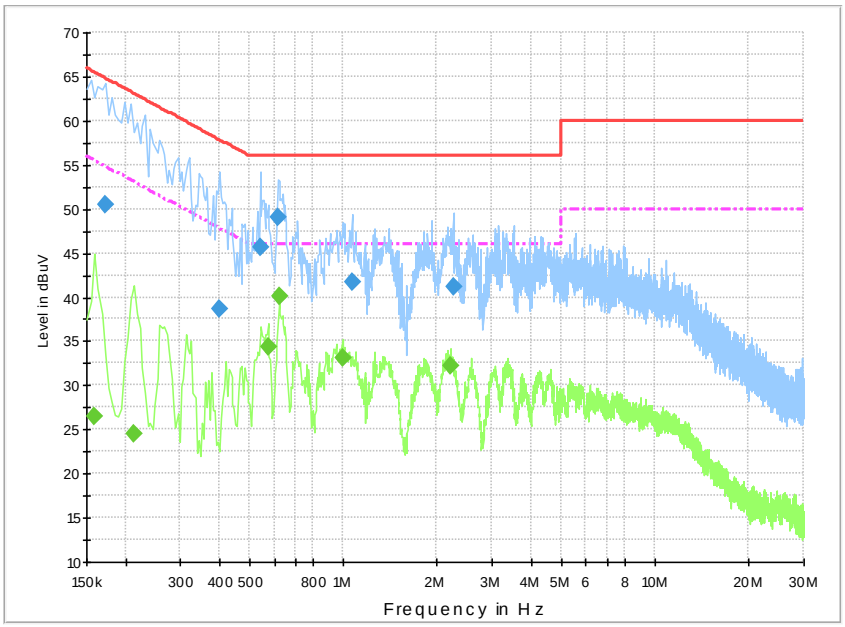


Fig.75 Conducted Emission (802.11a, Ch40, TX)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.172500	50.5	5000.0	9.000	On	L1	20.1	14.3	64.8	
0.402000	38.7	5000.0	9.000	On	L1	20.0	19.1	57.8	
0.541500	45.7	5000.0	9.000	On	L1	20.0	10.3	56.0	
0.618000	49.0	5000.0	9.000	On	L1	19.9	7.0	56.0	
1.068000	41.7	5000.0	9.000	On	N	19.9	14.3	56.0	
2.251500	41.1	5000.0	9.000	On	N	19.8	14.9	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.159000	26.5	5000.0	9.000	On	N	19.9	29.0	55.5	
0.213000	24.5	5000.0	9.000	On	L1	19.9	28.6	53.1	
0.573000	34.3	5000.0	9.000	On	L1	20.0	11.7	46.0	
0.622500	40.1	5000.0	9.000	On	L1	19.9	5.9	46.0	
0.996000	33.1	5000.0	9.000	On	L1	19.8	12.9	46.0	
2.202000	32.3	5000.0	9.000	On	N	19.8	13.7	46.0	

Result for Idle:

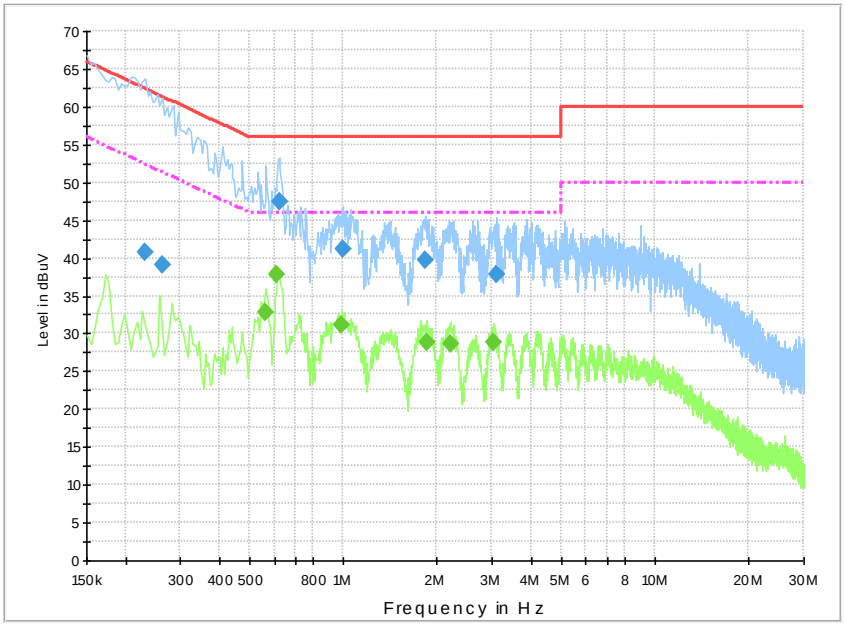


Fig.76 Conducted Emission (802.11a, IDLE)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.231000	40.8	5000.0	9.000	On	L1	19.9	21.6	62.4	
0.262500	39.0	5000.0	9.000	On	L1	19.9	22.4	61.4	
0.622500	47.5	5000.0	9.000	On	L1	19.9	8.5	56.0	
0.996000	41.2	5000.0	9.000	On	L1	19.8	14.8	56.0	
1.837500	39.7	5000.0	9.000	On	L1	19.8	16.3	56.0	
3.097500	37.8	5000.0	9.000	On	L1	19.8	18.2	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.564000	32.7	5000.0	9.000	On	L1	20.0	13.3	46.0	
0.613500	37.8	5000.0	9.000	On	L1	19.9	8.2	46.0	
0.987000	31.1	5000.0	9.000	On	L1	19.8	14.9	46.0	
1.846500	28.8	5000.0	9.000	On	N	19.8	17.2	46.0	
2.197500	28.5	5000.0	9.000	On	N	19.8	17.5	46.0	
3.021000	28.8	5000.0	9.000	On	L1	19.8	17.2	46.0	

B.8. 99% Occupied bandwidth

Method of Measurement: See ANSI C63.10-2013-clause 12.4.2.

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% ofthe total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

Measurement Result:

Mode	Frequency	99% Occupied bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.77	17.14	P
	5200 MHz	Fig.78	17.10	P
	5240 MHz	Fig.79	17.15	P
802.11n HT20	5180 MHz	Fig.80	18.30	P
	5200 MHz	Fig.81	18.28	P
	5240 MHz	Fig.82	18.32	P
802.11ac HT20	5180 MHz	Fig.83	18.33	P
	5200 MHz	Fig.84	18.33	P
	5240 MHz	Fig.85	18.30	P
802.11n HT40	5190 MHz	Fig.86	36.33	P
	5230 MHz	Fig.87	36.33	P
802.11ac	5190 MHz	Fig.88	36.33	P

HT40	5230 MHz	Fig.89	36.35	P
802.11ac HT80	5210 MHz	Fig.90	75.71	P

Conclusion: PASS

Test graphs as below:

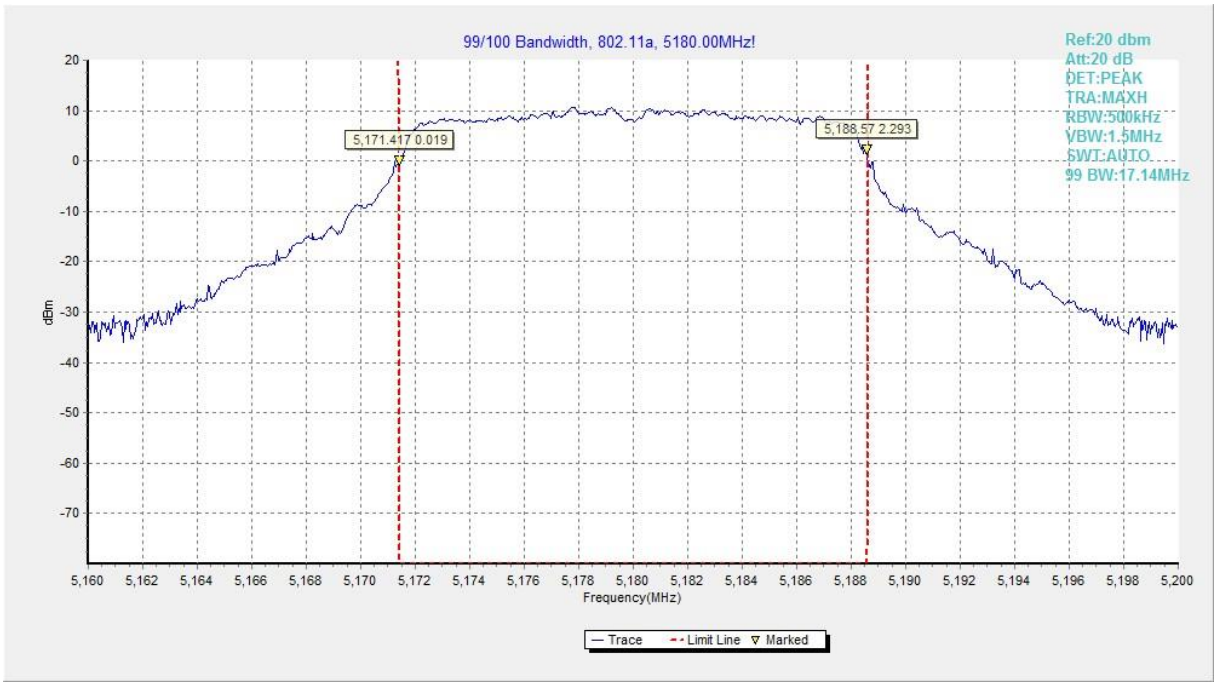


Fig.77 99% Occupied bandwidth (802.11a, 5180MHz)

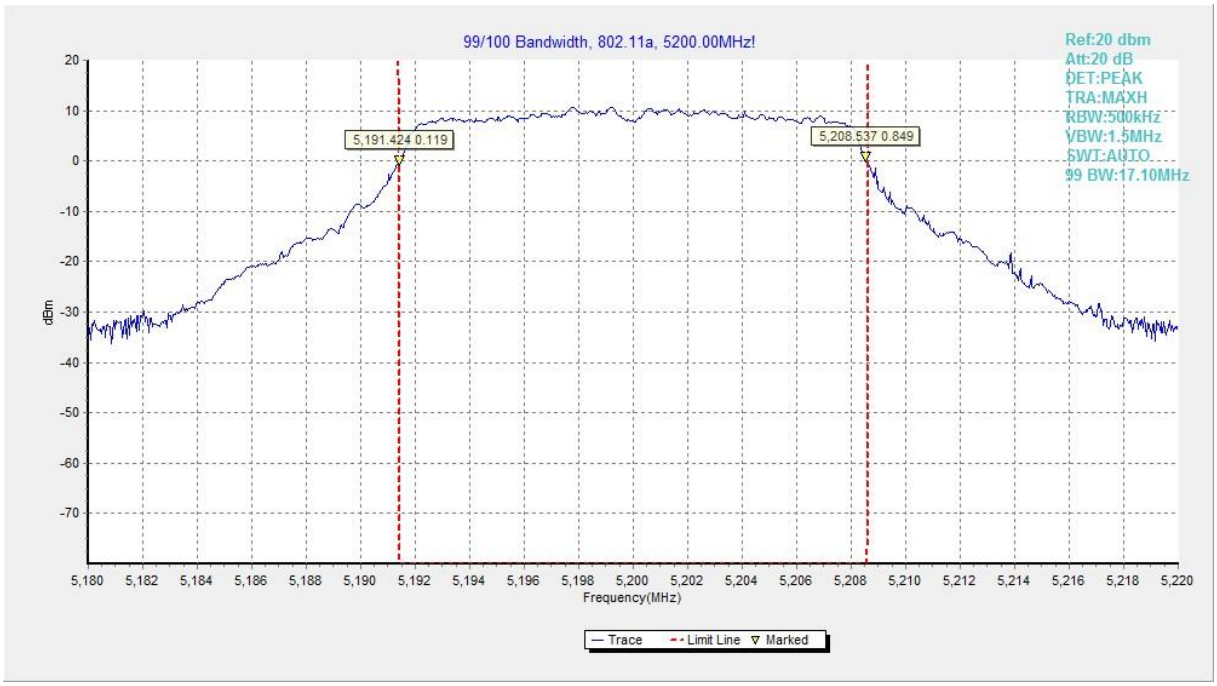


Fig.78 99% Occupied bandwidth (802.11a, 5200MHz)

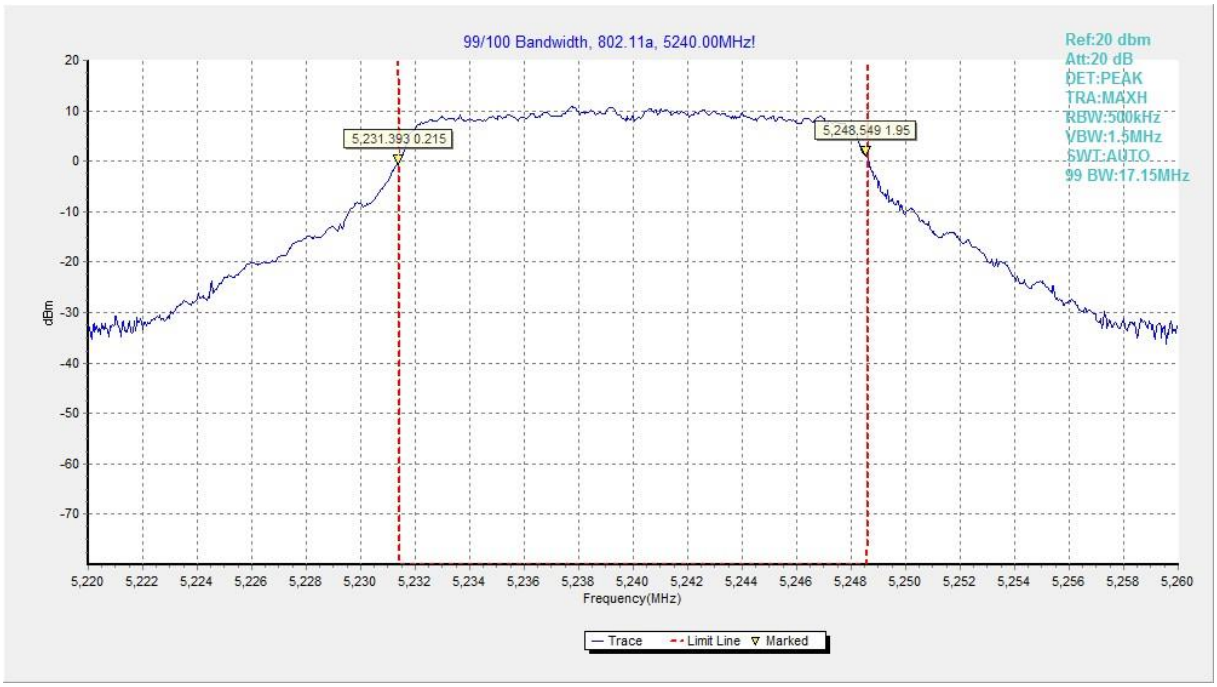


Fig.79 99% Occupied bandwidth (802.11a, 5240MHz)

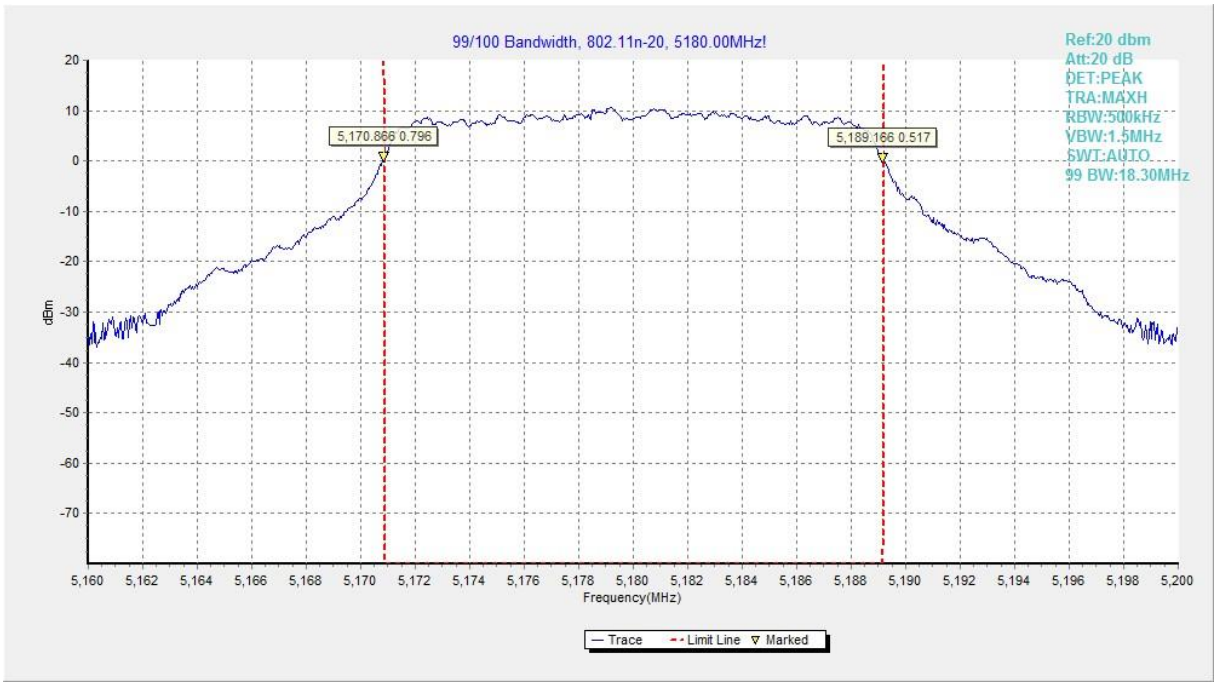


Fig.80 99% Occupied bandwidth (802.11n-HT20, 5180MHz)

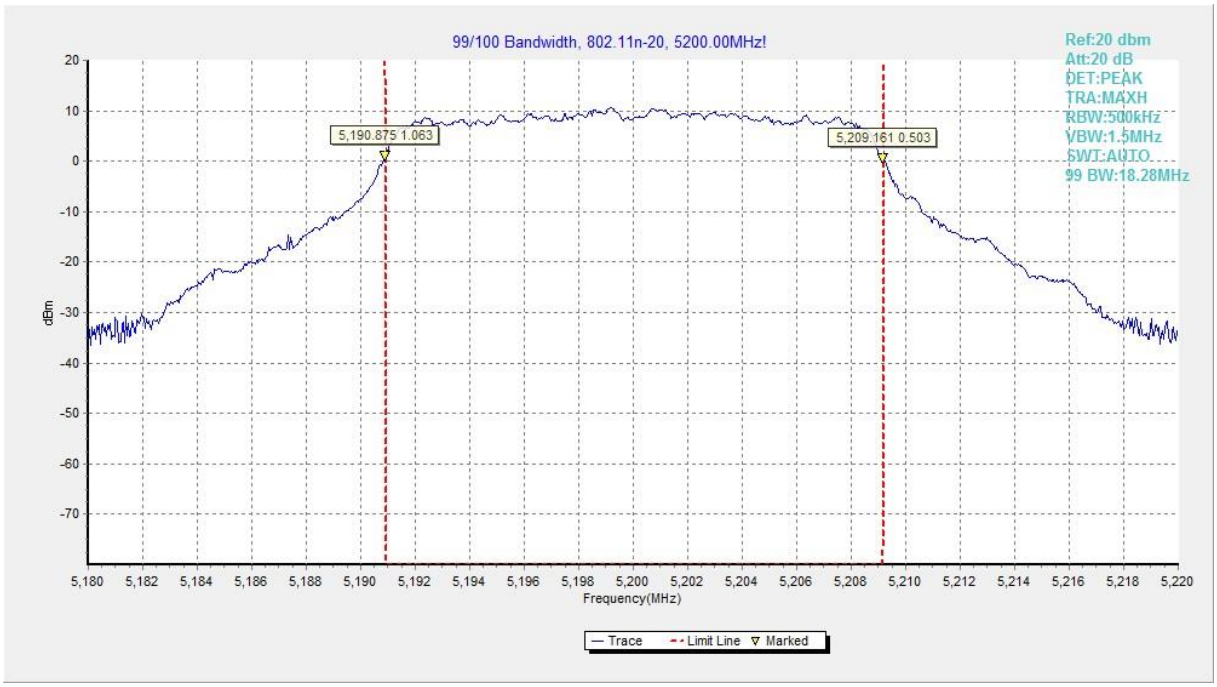


Fig.81 99% Occupied bandwidth (802.11n-HT20, 5200MHz)

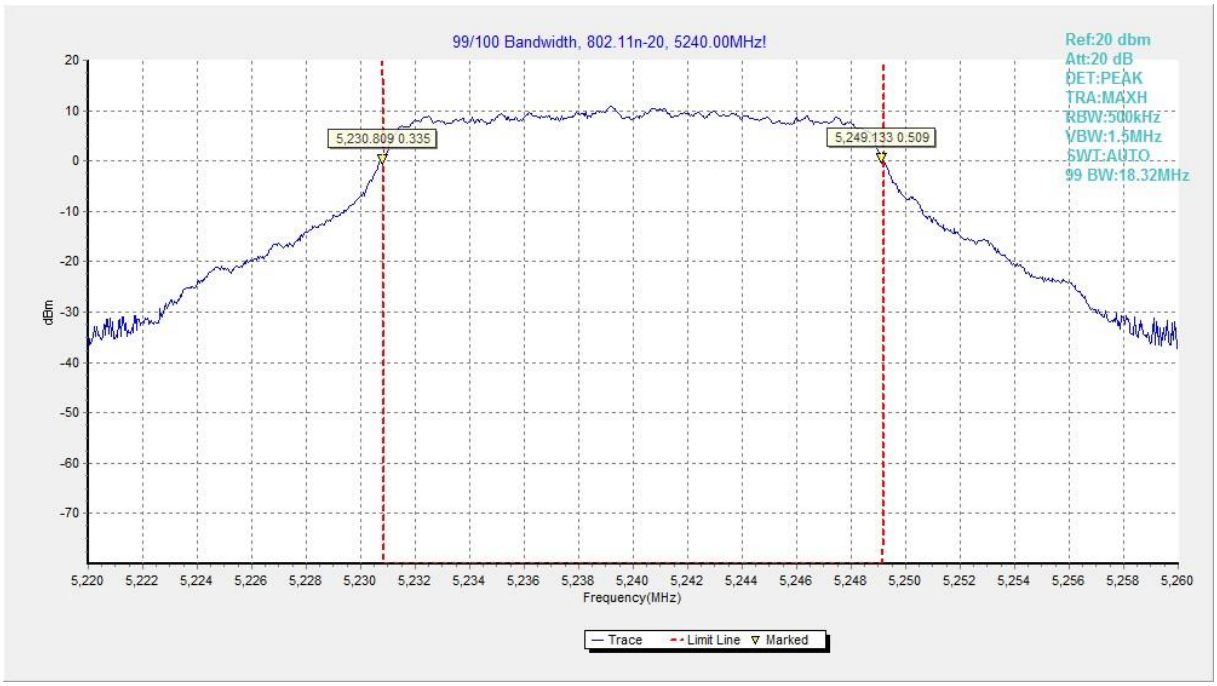


Fig.82 99% Occupied bandwidth (802.11n-HT20, 5240MHz)

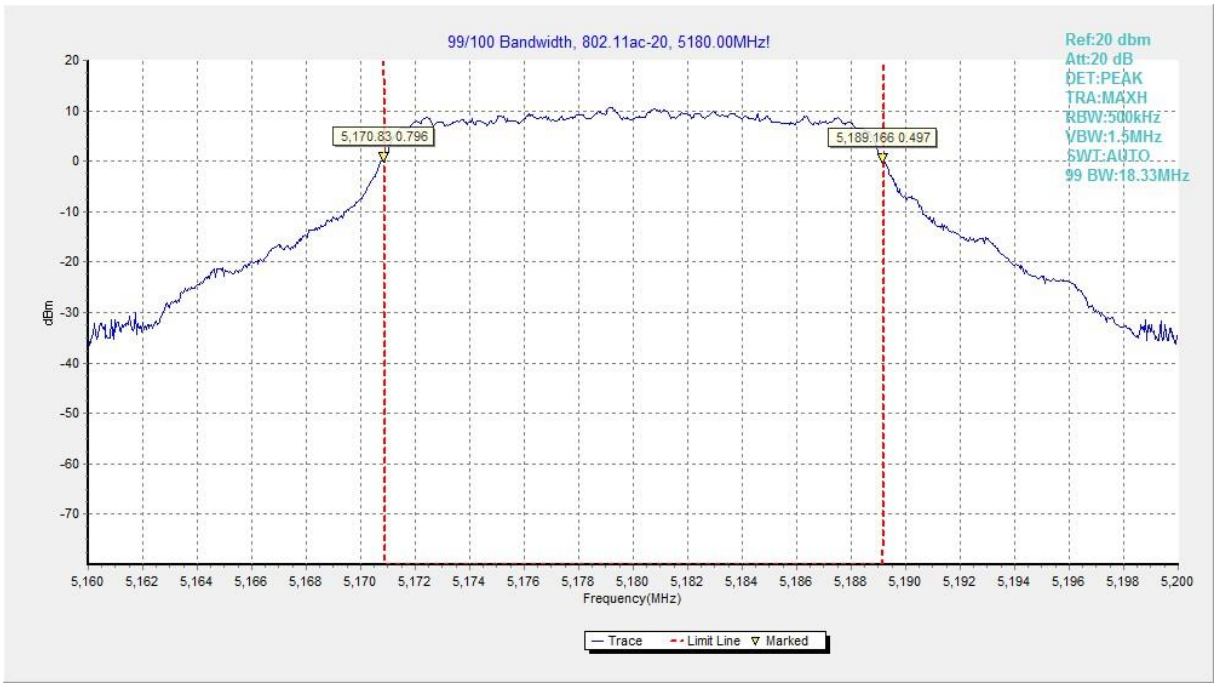


Fig.83 99% Occupied bandwidth (802.11ac-HT20, 5180MHz)

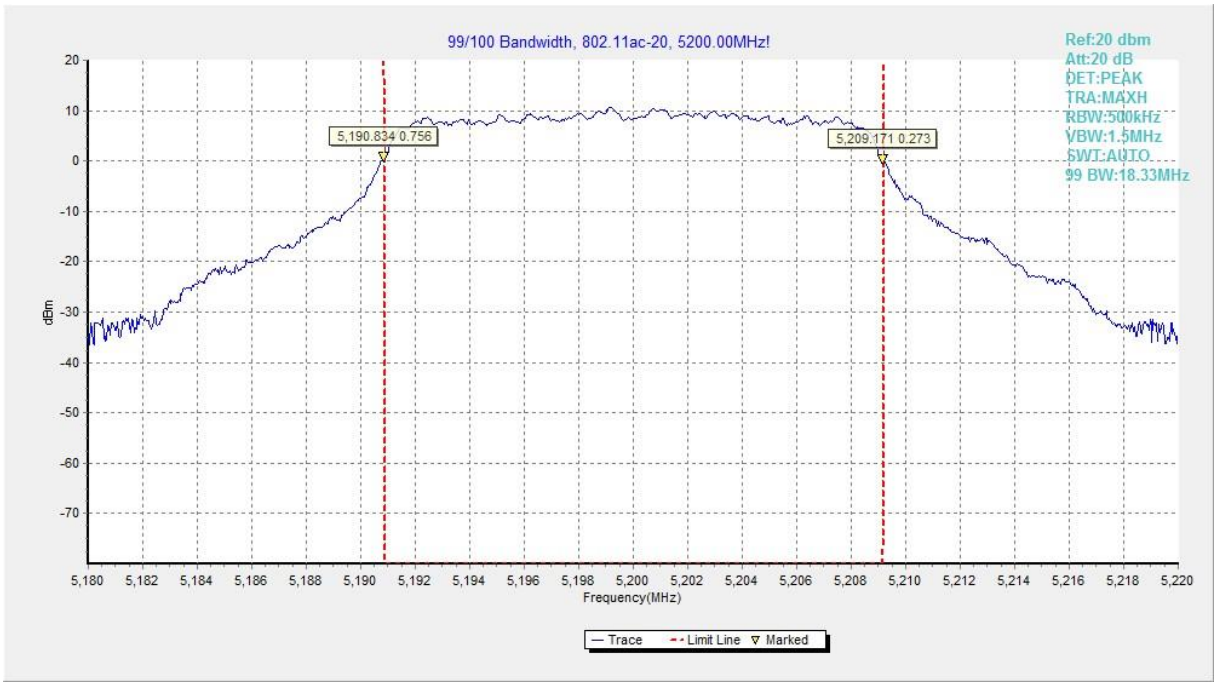


Fig.84 99% Occupied bandwidth (802.11ac-HT20, 5200MHz)

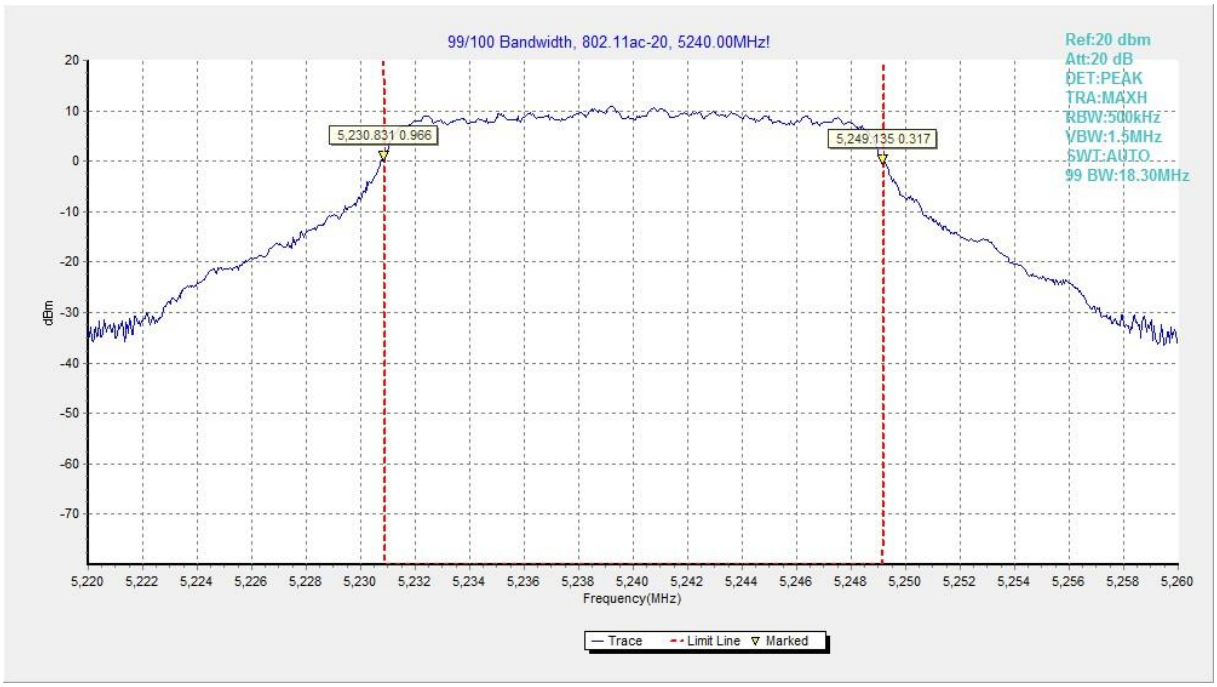


Fig.85 99% Occupied bandwidth (802.11ac-HT20, 5240MHz)

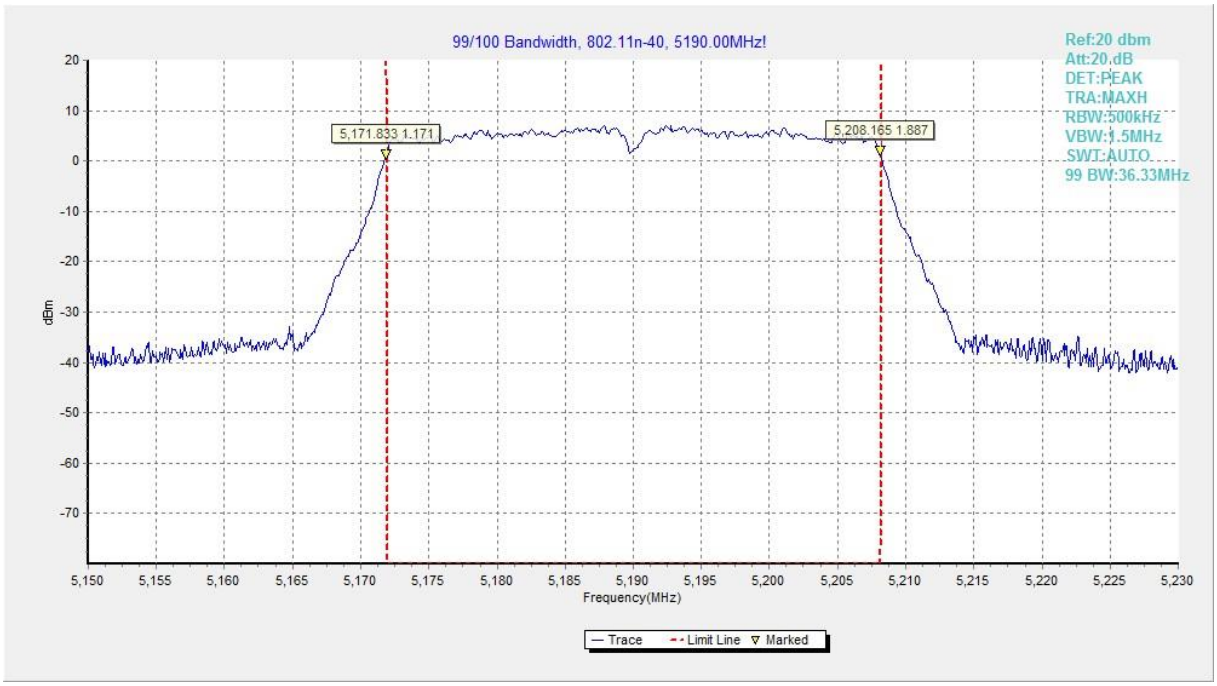


Fig.86 99% Occupied bandwidth (802.11n-HT40, 5190MHz)

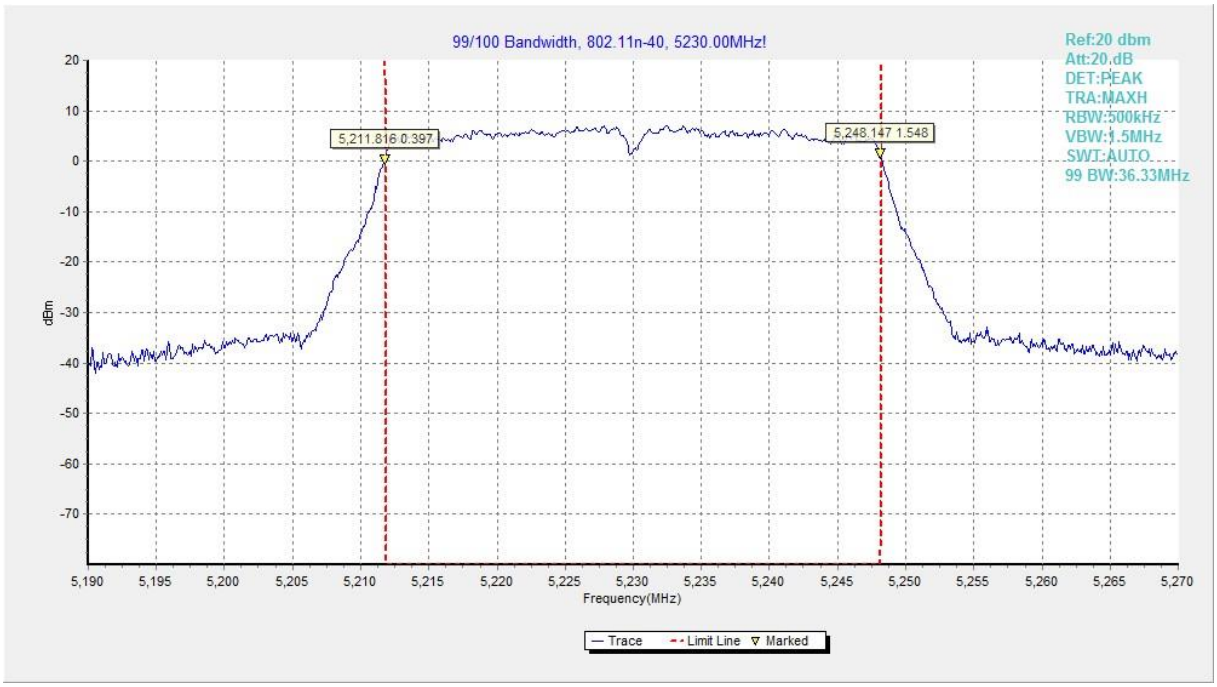


Fig.87 99% Occupied bandwidth (802.11n-HT40, 5230MHz)

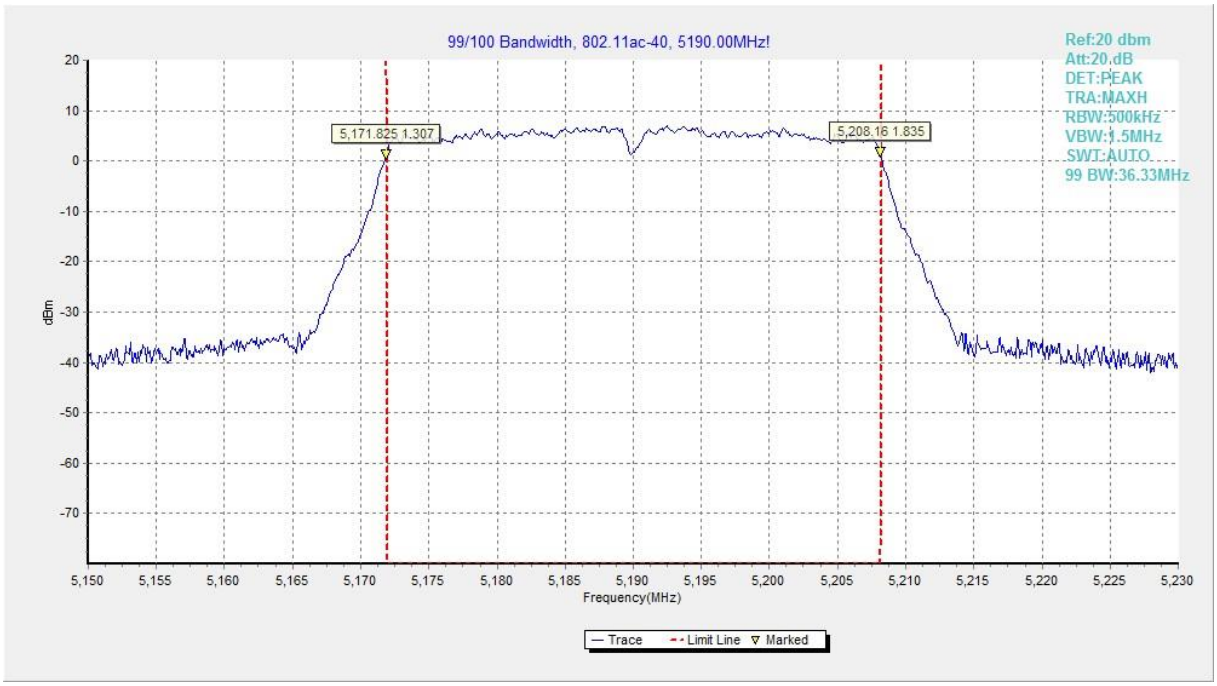


Fig.88 99% Occupied bandwidth (802.11ac-HT40, 5190MHz)

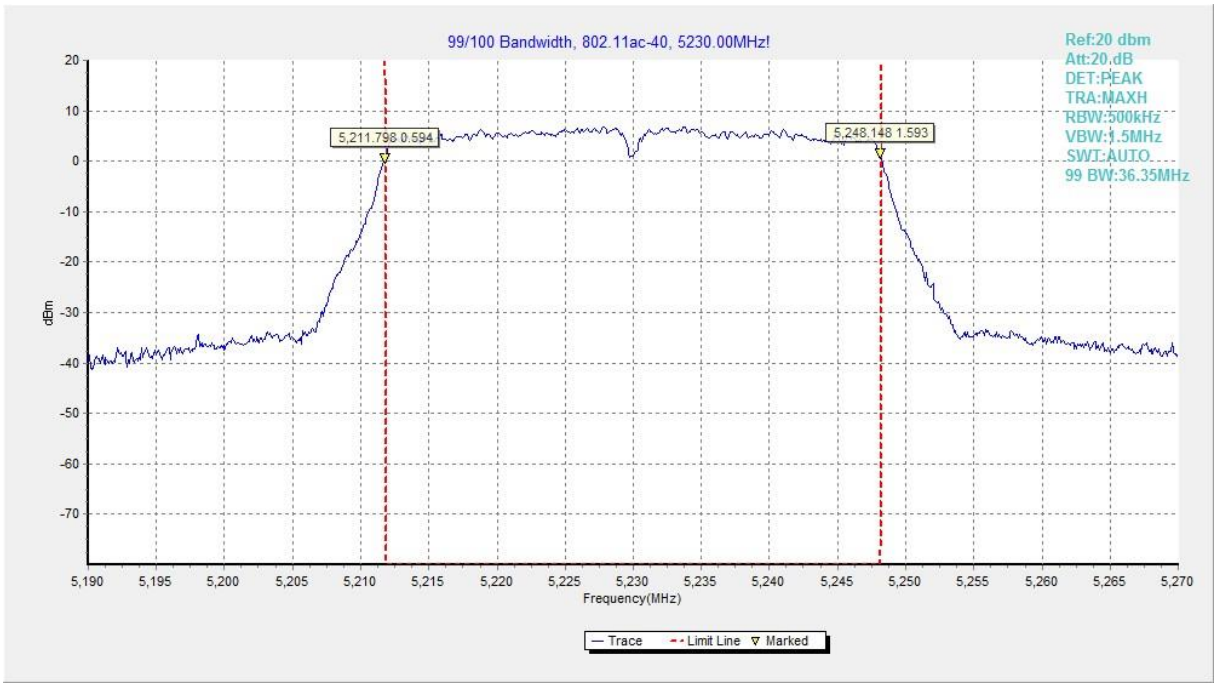


Fig.89 99% Occupied bandwidth (802.11ac-HT40, 5230MHz)

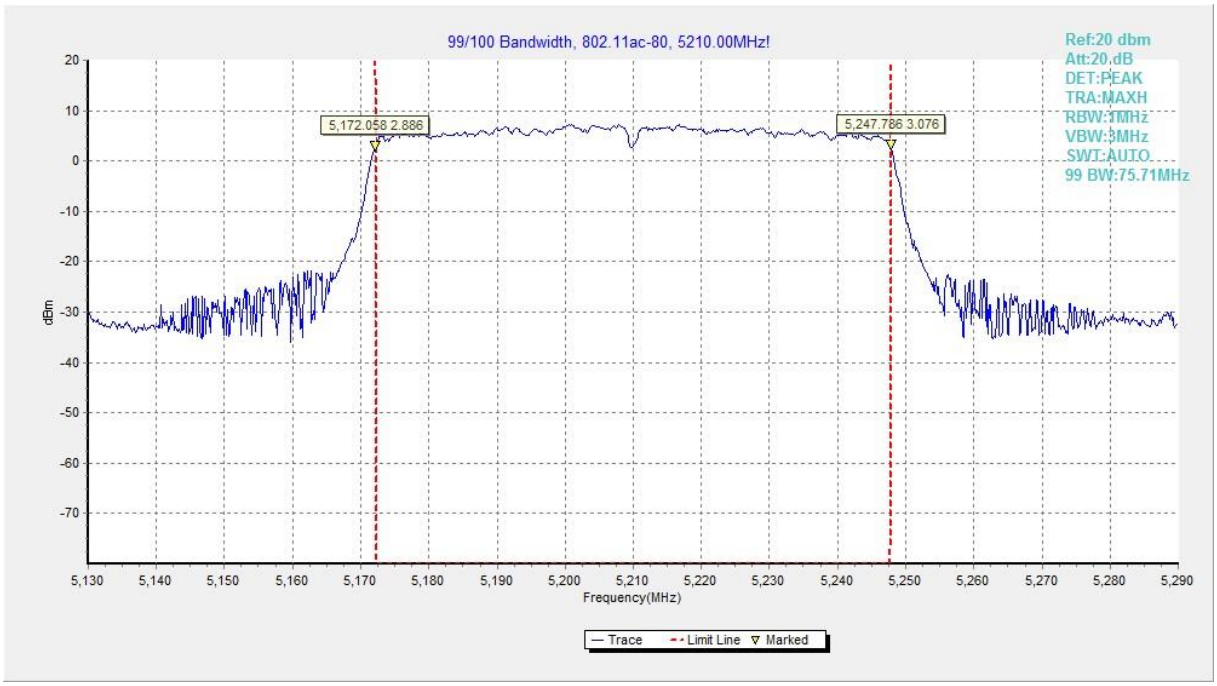
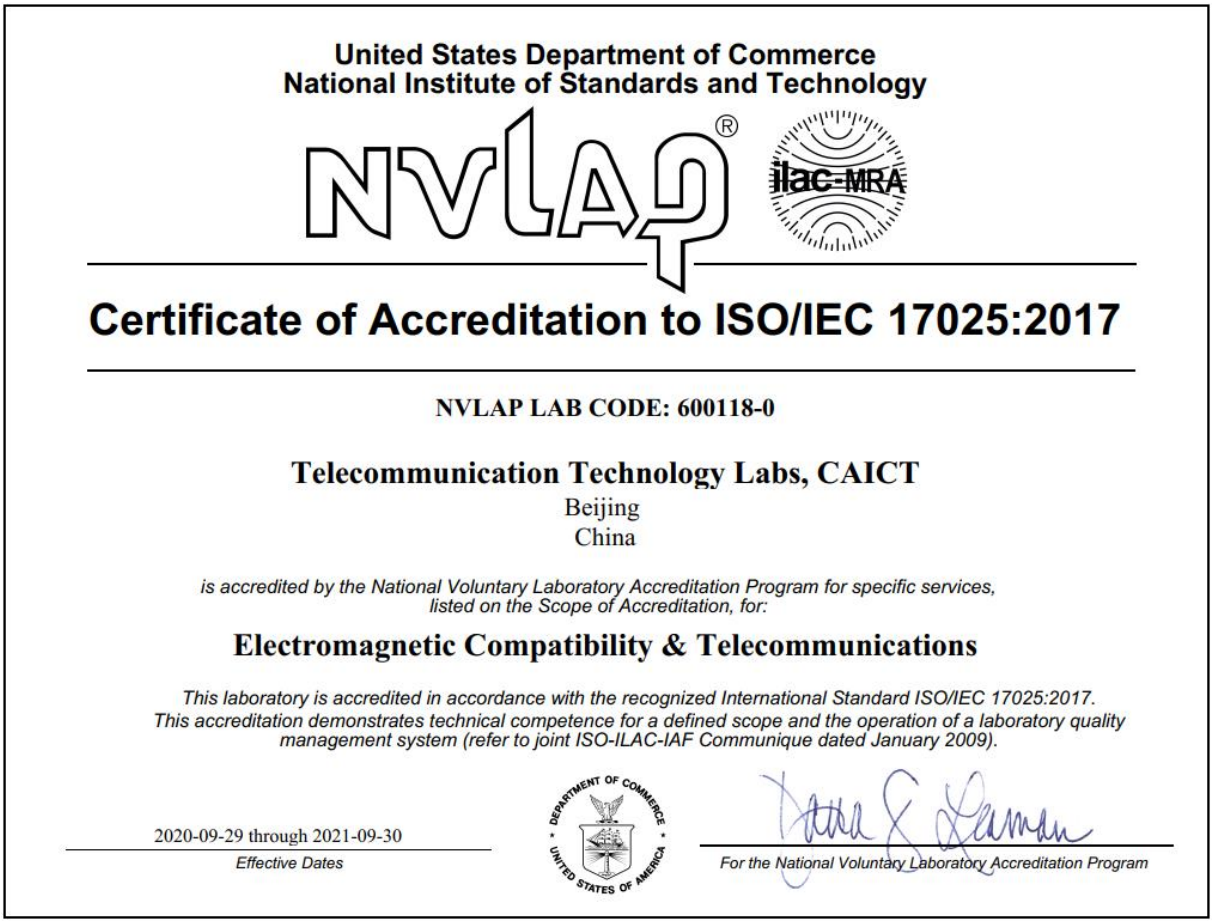


Fig.90 99% Occupied bandwidth (802.11ac-HT80, 5210MHz)

B.9. Power control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500 mW).

ANNEX C: Accreditation Certificate



United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ilac-MRA

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT
Beijing
China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2020-09-29 through 2021-09-30
Effective Dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Voluntary Laboratory Accreditation Program

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