

## Channel 58

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
5351.985	59.4	-25.5	34.5	50.43	68.3	8.9	H
5356.860	59.2	-25.5	34.5	50.29	68.3	9.1	H
10579.950	50.0	-29.6	37.6	41.99	68.3	18.3	H
15869.850	52.6	-24.4	40.6	36.35	68.3	15.7	V
17050.150	57.5	-23.5	41.6	39.36	68.3	10.8	V
17912.000	58.0	-23.0	41.3	39.74	68.3	10.3	V

## Channel 106

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
5459.705	61.5	-25.4	34.6	52.30	68.3	6.8	H
5459.970	61.8	-25.4	34.6	52.57	68.3	6.5	H
11044.700	55.0	-29.2	38.0	46.18	68.3	13.3	V
16493.000	58.2	-23.8	41.4	40.61	68.3	10.1	H
16589.800	55.0	-23.8	41.5	37.40	68.3	13.3	V
17349.900	58.0	-23.2	41.3	39.83	68.3	10.3	H

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

**Test Condition:**

Voltage (V)	Frequency (Hz)
120	60

**Measurement uncertainty:**

Expanded measurement uncertainty for this test item is U =3.10dB, k=2.

**Measurement Result and limit:**

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.87	Fig.88	<b>P</b>
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)

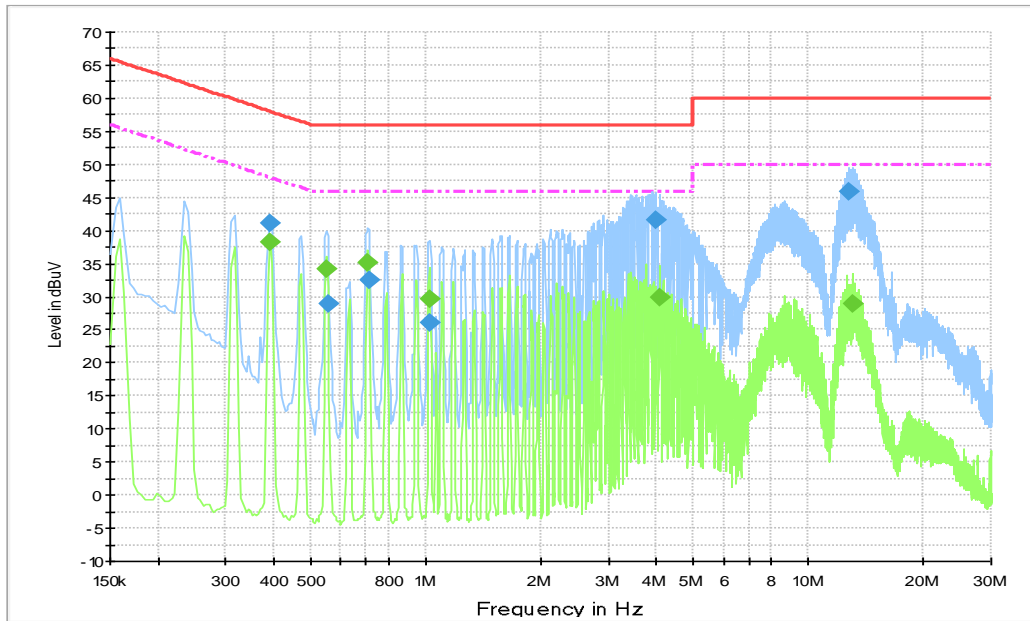
Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		802.11a	Idle	
0.15 to 0.5	67 56 to 46	Fig.87	Fig.88	<b>P</b>
0.5 to 5	46			
5 to 30	50			

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:

Traffic:



**Fig.87 Conducted Emission (802.11a, Ch40, TX)**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.393000	41.0	15000	9.000	L1	10.1	17.0	58.0
0.555000	29.0	15000	9.000	N	10.1	27.0	56.0
0.712500	32.4	15000	9.000	L1	10.0	23.6	56.0
1.027500	26.0	15000	9.000	N	10.1	30.0	56.0
3.997500	41.6	15000	9.000	L1	10.2	14.4	56.0
12.790500	45.9	15000	9.000	L1	10.7	14.1	60.0

**Final Result 2**

Frequency (MHz)	Average (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.393000	38.3	15000	9.000	L1	10.1	9.7	48.0
0.550500	34.3	15000	9.000	L1	10.1	11.7	46.0
0.708000	35.2	15000	9.000	L1	10.0	10.8	46.0
1.023000	29.6	15000	9.000	L1	10.1	16.4	46.0
4.078500	29.9	15000	9.000	L1	10.2	16.1	46.0
13.123500	28.8	15000	9.000	L1	10.7	21.2	50.0

Idle:

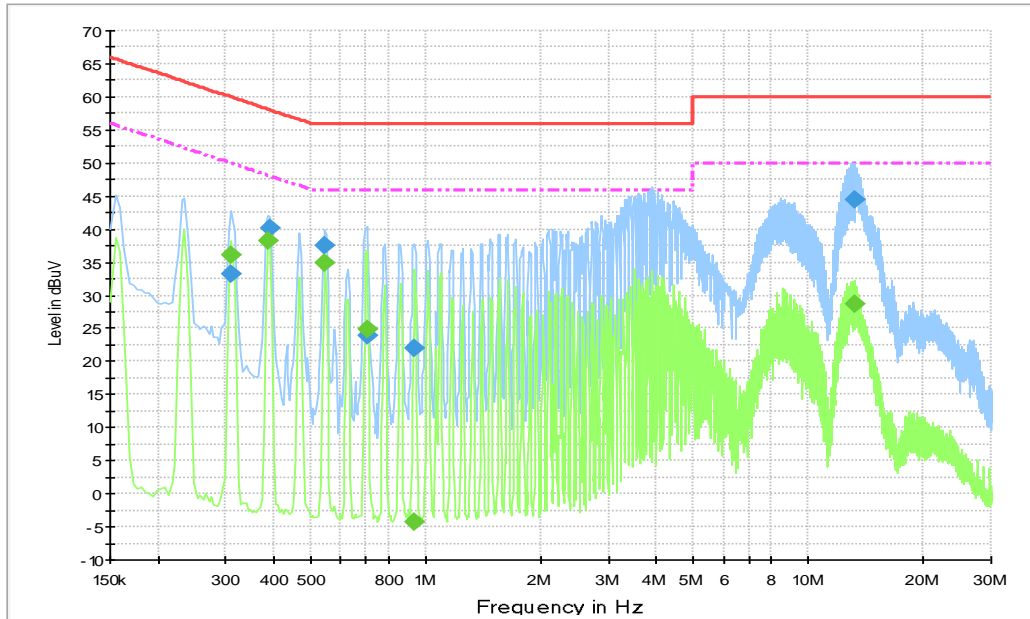


Fig.88 Conducted Emission(802.11a, IDLE)

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.312000	33.3	15000	9.000	N	10.1	26.6	59.9
0.393000	40.3	15000	9.000	L1	10.1	17.7	58.0
0.546000	37.4	15000	9.000	L1	10.1	18.6	56.0
0.703500	23.9	15000	9.000	N	10.1	32.1	56.0
0.933000	22.0	15000	9.000	N	10.1	34.0	56.0
13.132500	44.5	15000	9.000	L1	10.7	15.5	60.0

**Final Result 2**

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.312000	36.2	15000	9.000	L1	10.1	13.7	49.9
0.388500	38.3	15000	9.000	L1	10.1	9.8	48.1
0.546000	35.0	15000	9.000	L1	10.1	11.0	46.0
0.703500	24.9	15000	9.000	L1	10.0	21.1	46.0
0.937500	-4.2	15000	9.000	N	10.1	50.2	46.0
13.150500	28.7	15000	9.000	L1	10.7	21.3	50.0

### A.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% of the 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:

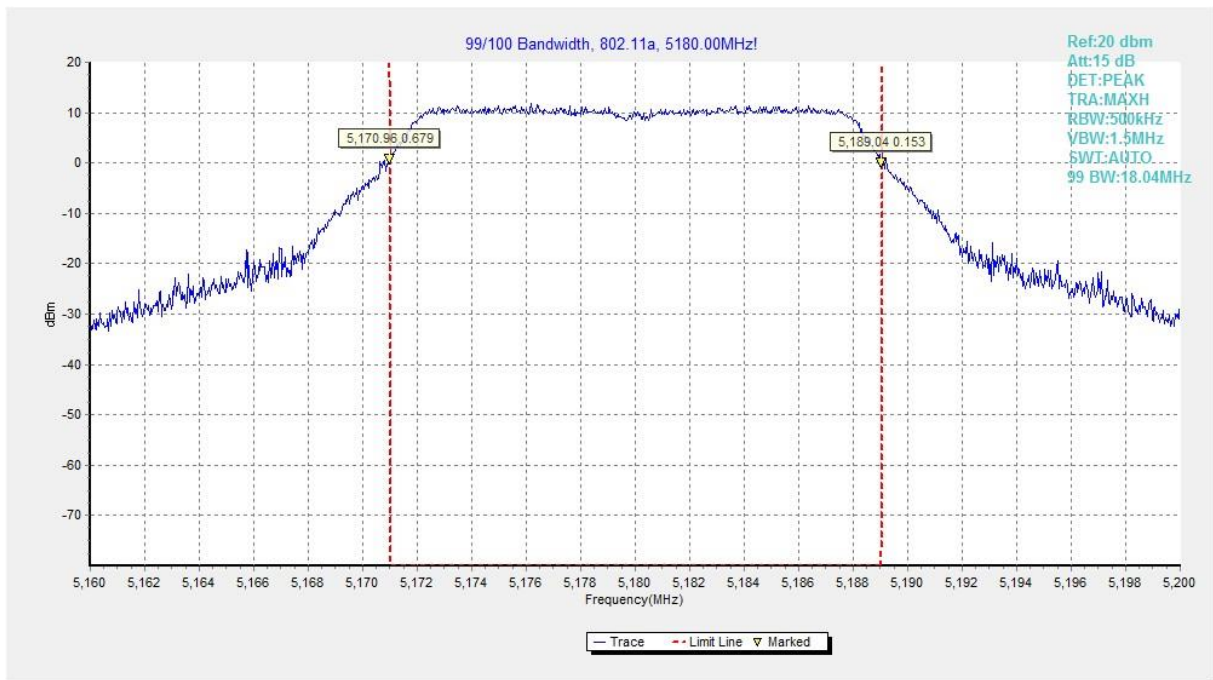
Measurement Uncertainty	60.80Hz
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#### Measurement Result:

Mode	Frequency	99% Occupied bandwidth ( MHz)		conclusion
802.11a	5180 MHz	Fig.89	18.04	P
	5200 MHz	Fig.90	18.04	P
	5240 MHz	Fig.91	18.08	P
802.11n HT20	5180 MHz	Fig.92	18.80	P
	5200 MHz	Fig.93	18.88	P
	5240 MHz	Fig.94	18.80	P
802.11ac HT20	5180 MHz	Fig.95	18.68	P
	5200 MHz	Fig.96	18.72	P
	5240 MHz	Fig.97	18.68	P
802.11n HT40	5190 MHz	Fig.98	36.48	P
	5230 MHz	Fig.99	36.40	P
802.11ac	5190 MHz	Fig.100	36.40	P

HT40	5230 MHz	Fig.101	36.40	P
802.11ac HT80	5210 MHz	Fig.102	74.72	P

**Conclusion: PASS**  
**Test graphs as below:**



**Fig.89 99% Occupied bandwidth (802.11a, 5180MHz)**

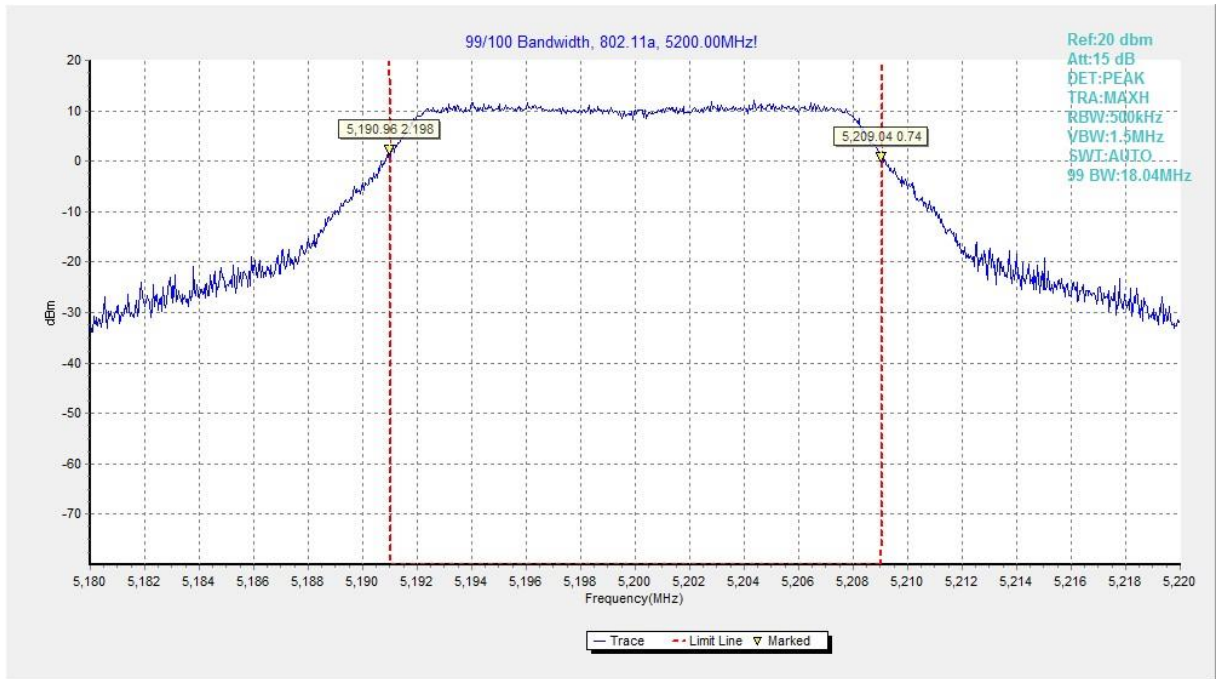


Fig.90 99% Occupied bandwidth (802.11a, 5200MHz)

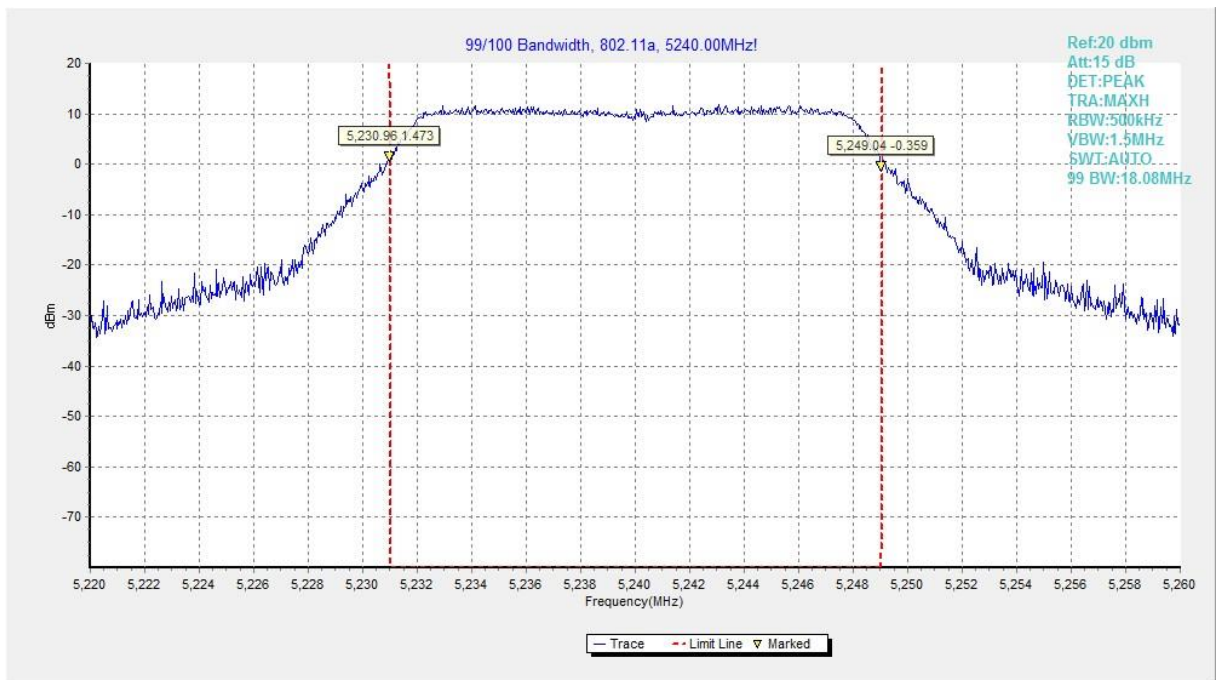
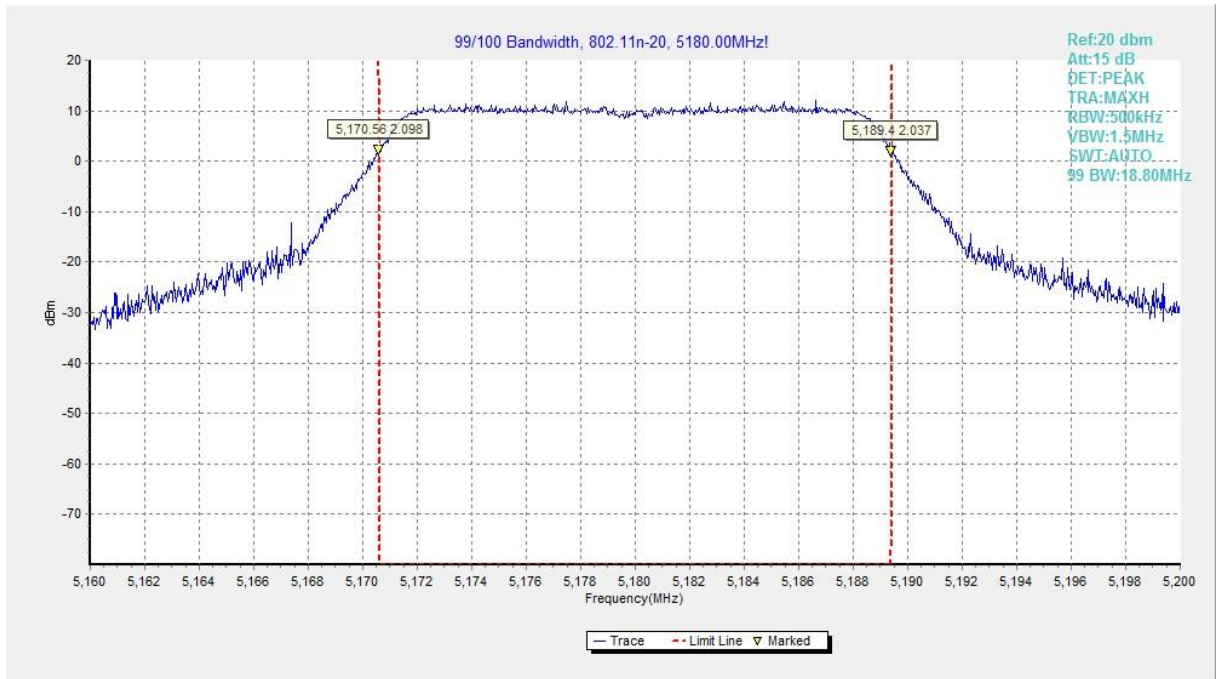
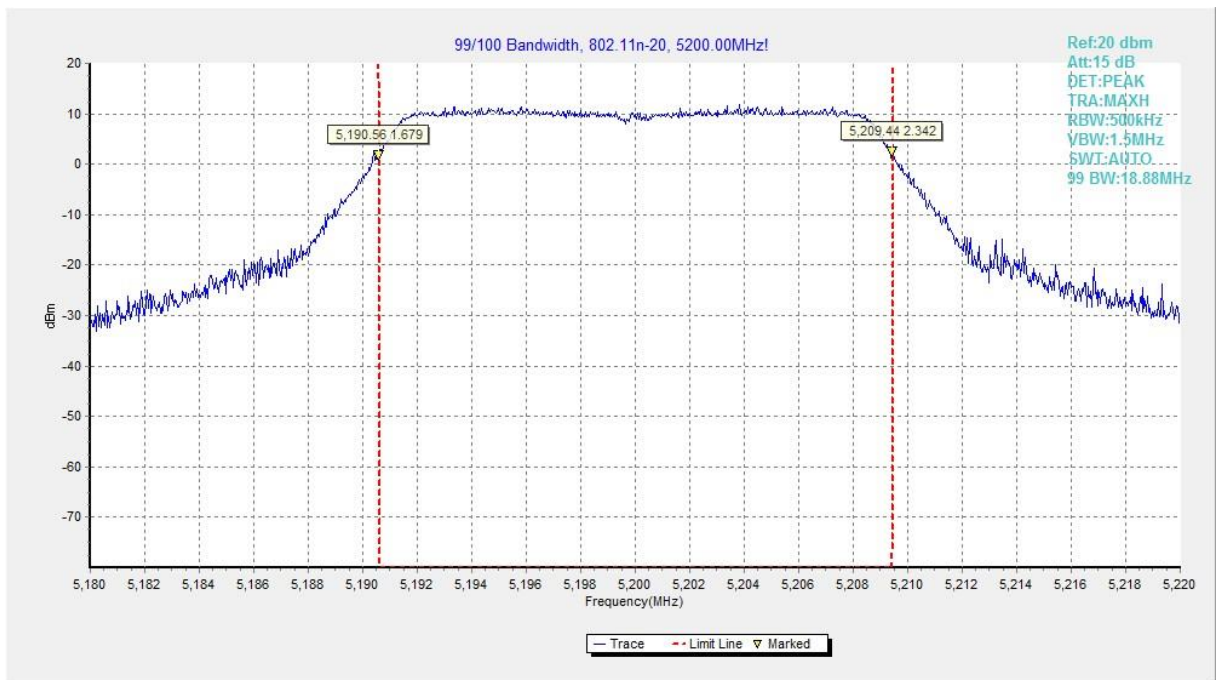


Fig.91 99% Occupied bandwidth (802.11a, 5240MHz)

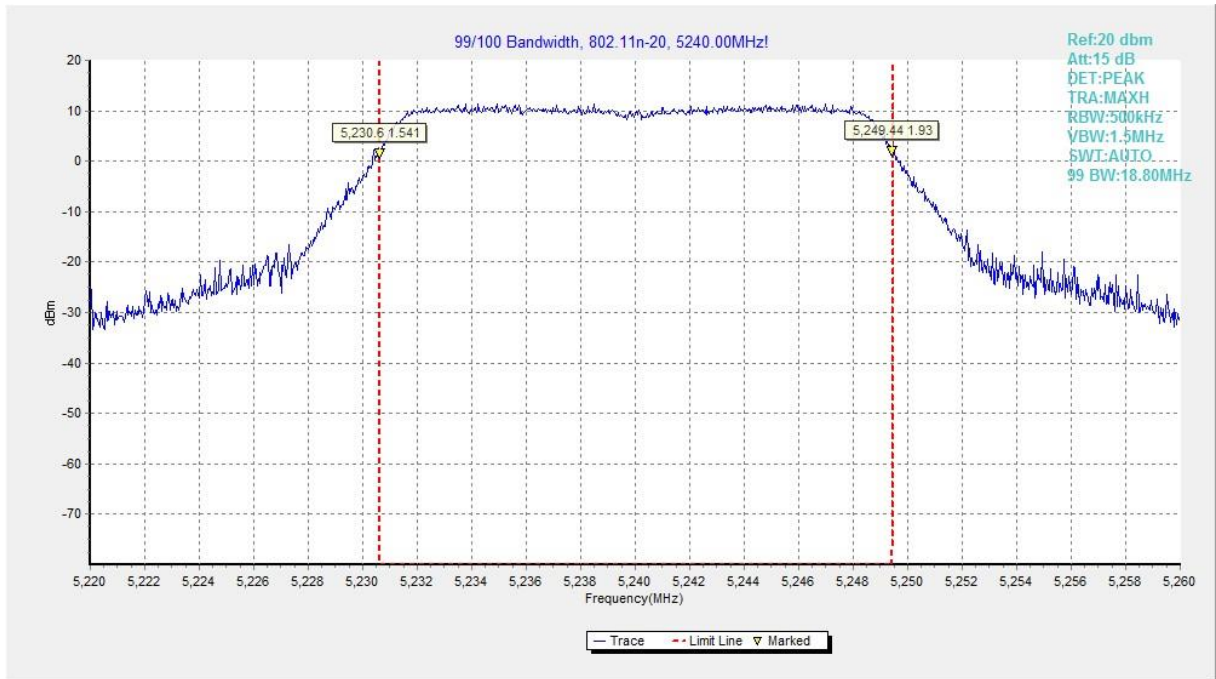


**Fig.92 99% Occupied bandwidth (802.11n-HT20, 5180MHz)**



**Fig.93 99% Occupied bandwidth (802.11n-HT20, 5200MHz)**

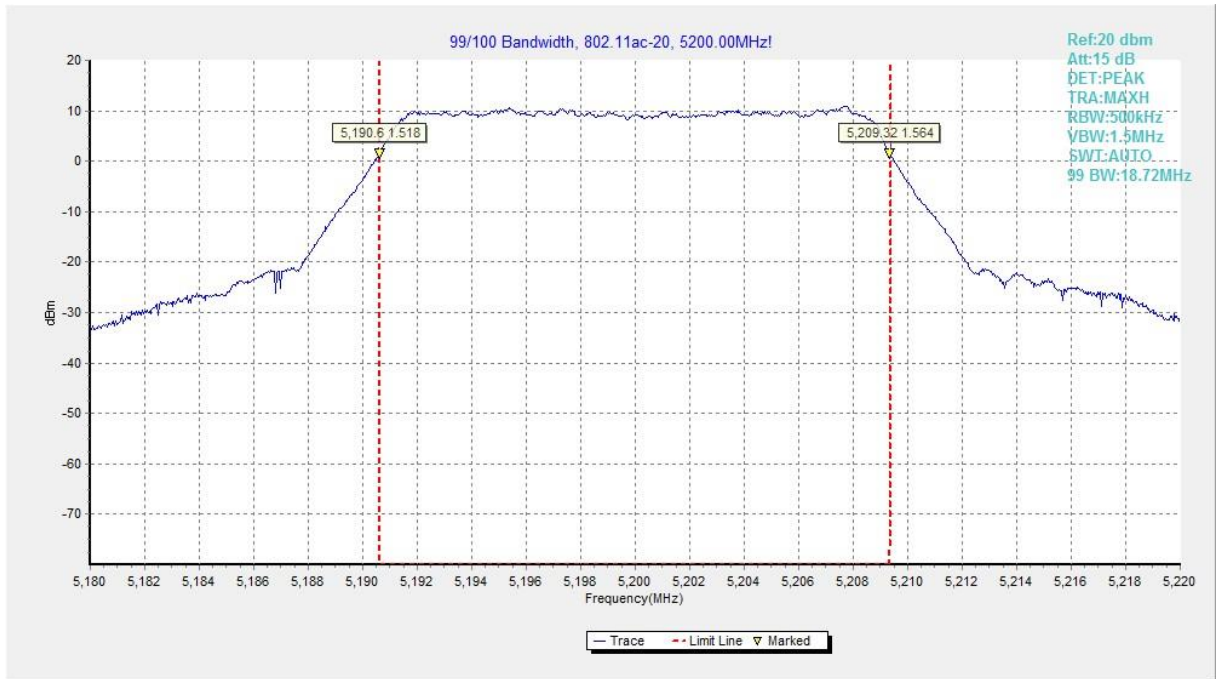




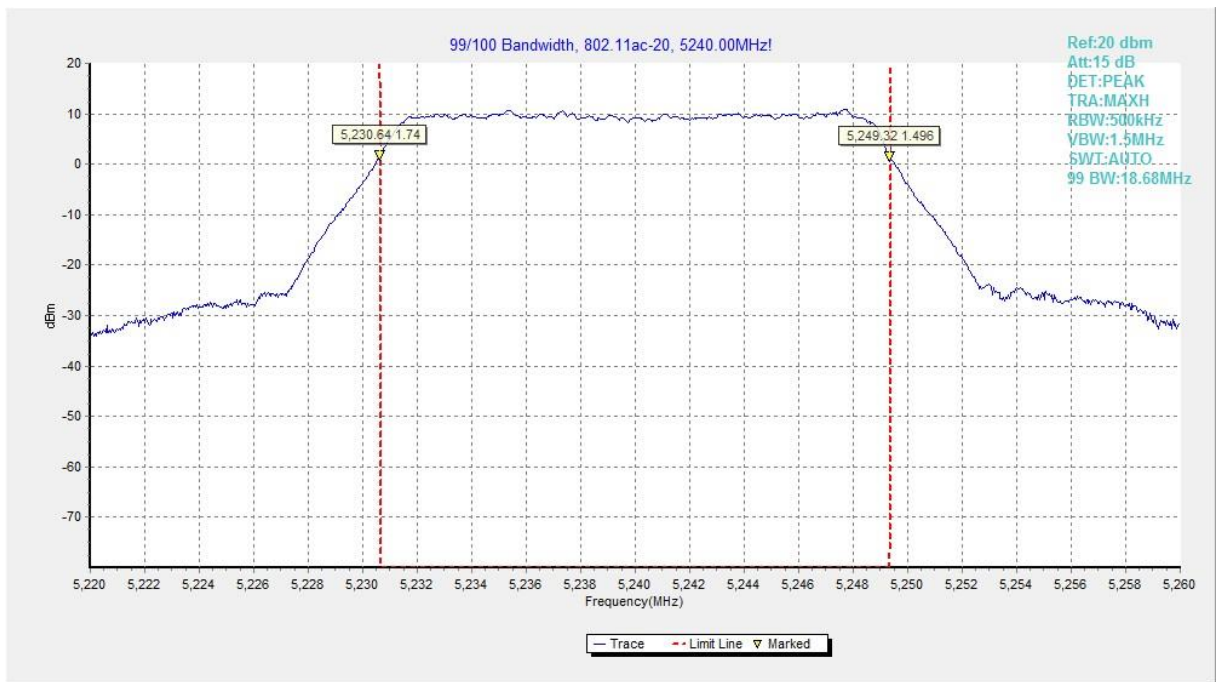
**Fig.94 99% Occupied bandwidth (802.11n-HT20, 5240MHz)**



**Fig.95 99% Occupied bandwidth (802.11ac-HT20, 5180MHz)**



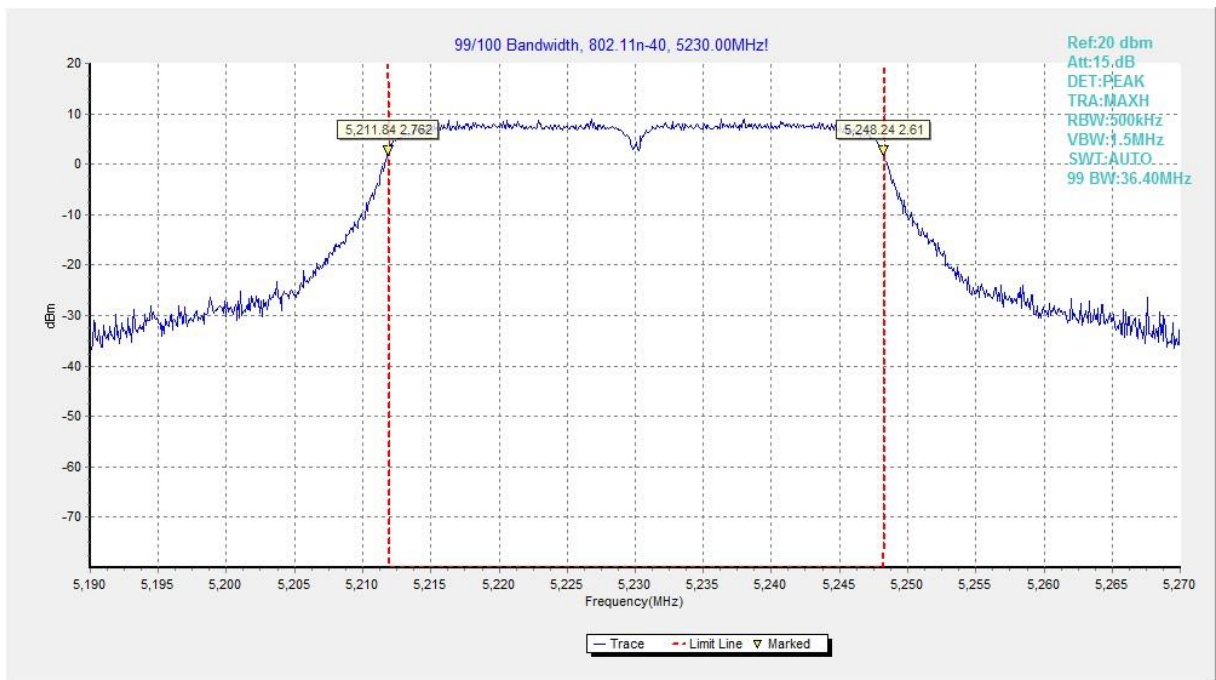
**Fig.96 99% Occupied bandwidth (802.11ac-HT20, 5200MHz)**



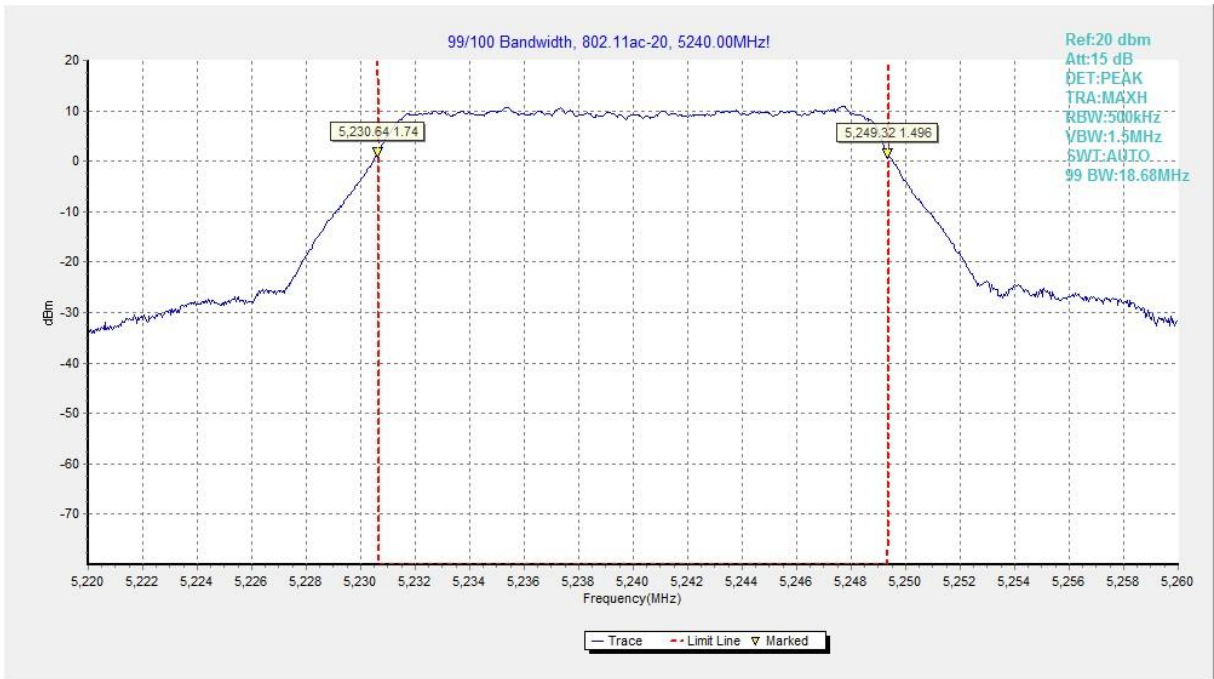
**Fig.97 99% Occupied bandwidth (802.11ac-HT20, 5240MHz)**



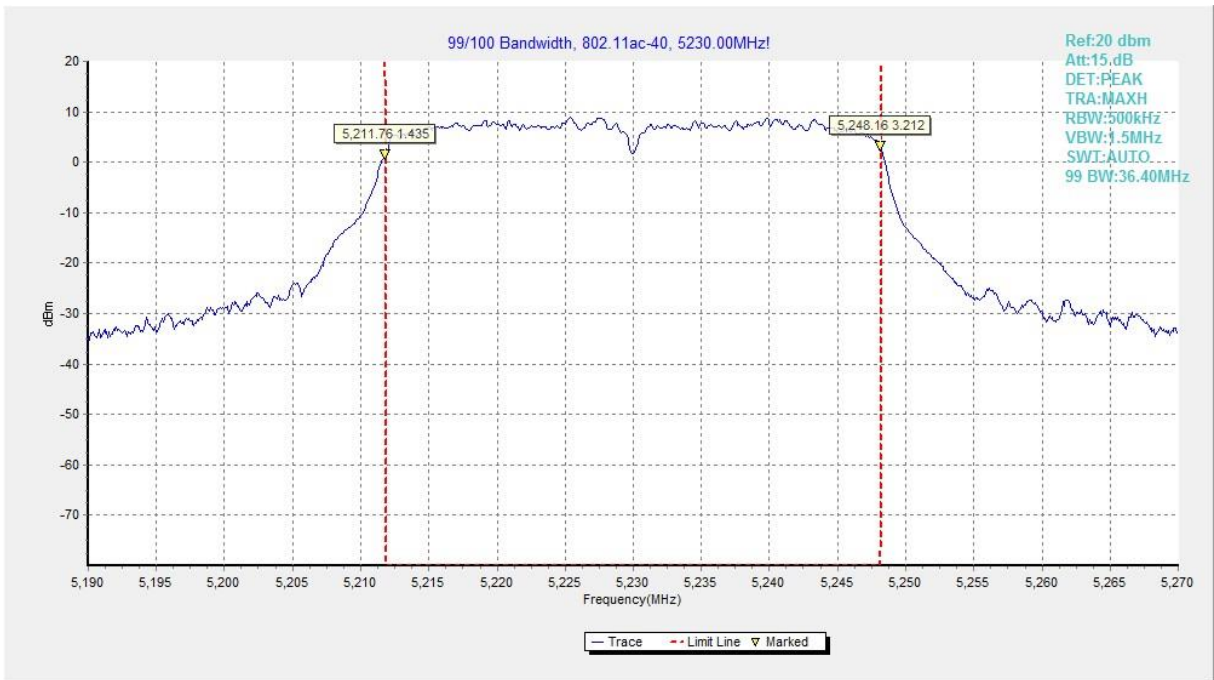
**Fig.98 99% Occupied bandwidth (802.11n-HT40, 5190MHz)**



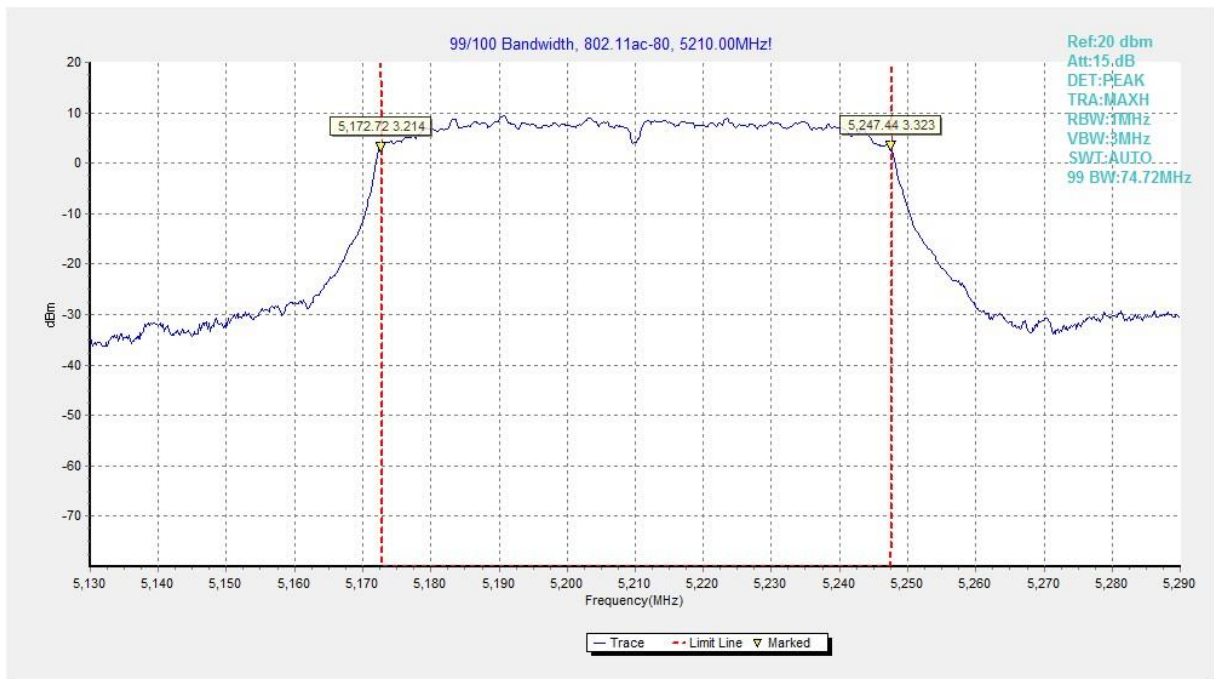
**Fig.99 99% Occupied bandwidth (802.11n-HT40, 5230MHz)**



**Fig.100 99% Occupied bandwidth (802.11ac-HT40, 5190MHz)**



**Fig.101 99% Occupied bandwidth (802.11ac-HT40, 5230MHz)**



**Fig.102 99% Occupied bandwidth (802.11ac-HT80, 5210MHz)**

### A.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 B: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p> 	
<hr/> <p><b>Certificate of Accreditation to ISO/IEC 17025:2005</b></p> <hr/>	
<p>NVLAP LAB CODE: 600118-0</p>	
<p><b>Telecommunication Technology Labs, CAICT</b> Beijing China</p>	
<p><i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i></p>	
<p><b>Electromagnetic Compatibility &amp; Telecommunications</b></p>	
<p><i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. 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).</i></p>	
<hr/> <p>2019-09-26 through 2020-09-30 <i>Effective Dates</i></p>	 <hr/> <p><i>[Signature]</i> For the National Voluntary Laboratory Accreditation Program</p>

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