

APPENDIX REPORT

Project No.	SHT1911084903EW	Radio Specification	WIFI 5G
Test sample No.	YPHT19110849003	Model No.	T3.0
Start test date	2019/9/11	Finish date	2019/9/11
Temperature	25°C	Humidity	50%
Test Engineer	Ximing Huang	Auditor	<i>William.wang</i>

Appendix clause	Test item	Result
A	Maximum Conducted Output Power	PASS
B	Maximum Power Spectral Density	PASS
C	26 dB Bandwidth	PASS
D	99% Occupy bandwidth	PASS
E	6 dB Bandwidth	PASS
F	Frequency stability	PASS

Appendix A: Maximum Conducted Output Power

Band	Bandwidth (MHz)	Type	Channel	Conducted Output Power (dBm)	Limit (dBm)	Result
I	20	802.11ac	CH _L	19.20	24.00	Pass
			CH _M	20.15		
			CH _H	20.01		
		802.11n	CH _L	19.28	24.00	Pass
			CH _M	20.18		
			CH _H	19.32		
		802.11a	CH _L	19.37	24.00	Pass
			CH _M	20.34		
			CH _H	20.12		
	40	802.11ac	CH _L	19.37	24.00	Pass
			CH _H	19.93		
	80	802.11ac	CH _M	19.58	24.00	Pass

Band	Bandwidth (MHz)	Type	Channel	Conducted Output Power (dBm)	Limit (dBm)	Result
IV	20	802.11ac	CH _L	8.89	30.00	Pass
			CH _M	7.71		
			CH _H	7.94		
		802.11n	CH _L	8.95	30.00	Pass
			CH _M	7.69		
			CH _H	7.93		
		802.11a	CH _L	9.16	30.00	Pass
			CH _M	7.84		
			CH _H	8.03		
	40	802.11ac	CH _L	6.89	30.00	Pass
			CH _H	6.38		
	80	802.11ac	CH _M	6.69	30.00	Pass

Appendix B: Maximum Power Spectral Density

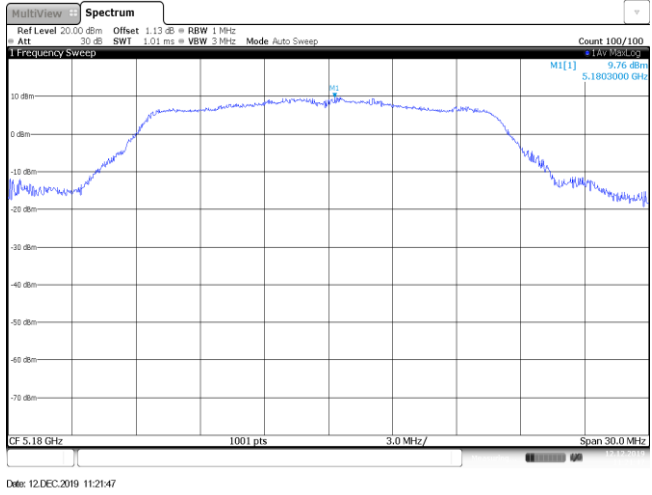
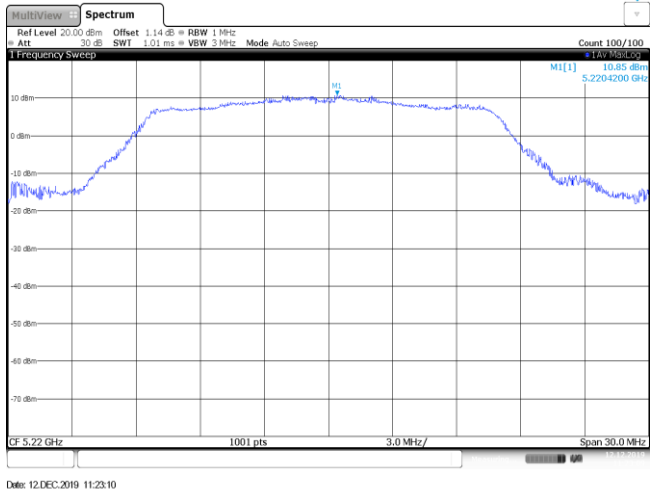
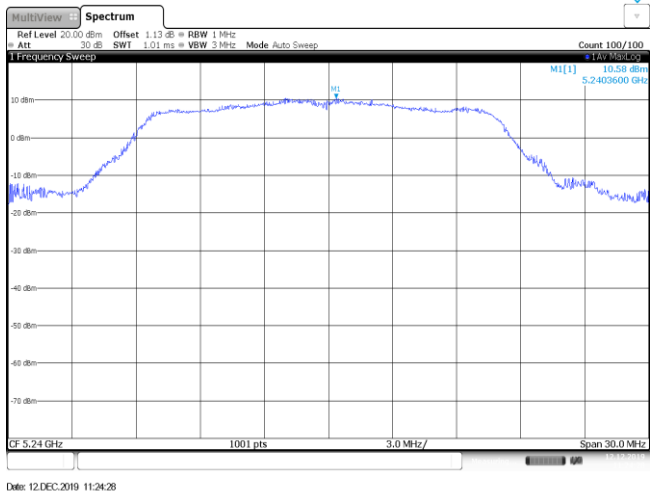
Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
I	20	802.11ac	CH _L	9.31	11.00	Pass
			CH _M	10.56		
			CH _H	10.28		
		802.11n	CH _L	9.73	11.00	Pass
			CH _M	10.50		
			CH _H	9.62		
		802.11a	CH _L	9.76	11.00	Pass
			CH _M	10.85		
			CH _H	10.58		
	40	802.11ac	CH _L	6.83	11.00	Pass
			CH _H	7.60		
	80	802.11ac	CH _M	4.70	11.00	Pass

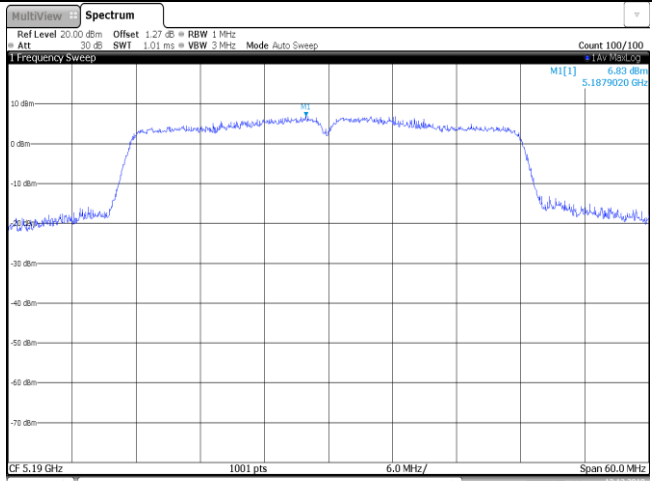
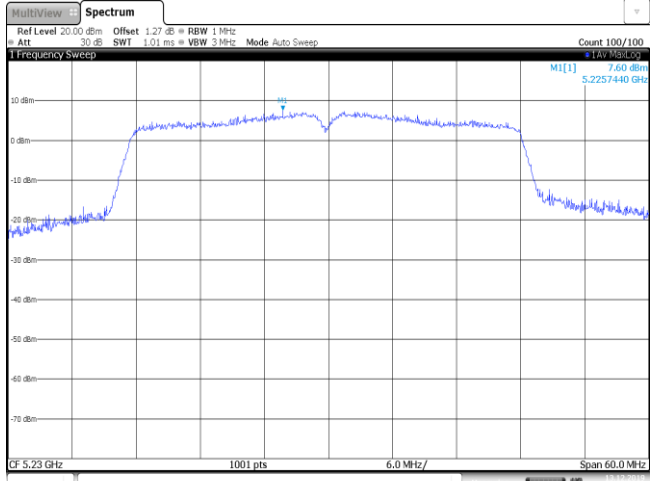
Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/500kHz)	Limit (dBm/500KHz)	Result
IV	20	802.11ac	CH _L	-2.47	30.00	Pass
			CH _M	-4.16		
			CH _H	-4.70		
		802.11n	CH _L	-2.14	30.00	Pass
			CH _M	-4.07		
			CH _H	-4.27		
		802.11a	CH _L	-2.00	30.00	Pass
			CH _M	-3.73		
			CH _H	-4.07		
	40	802.11ac	CH _L	-7.63	30.00	Pass
			CH _H	-8.33		
	80	802.11ac	CH _M	-10.24	30.00	Pass

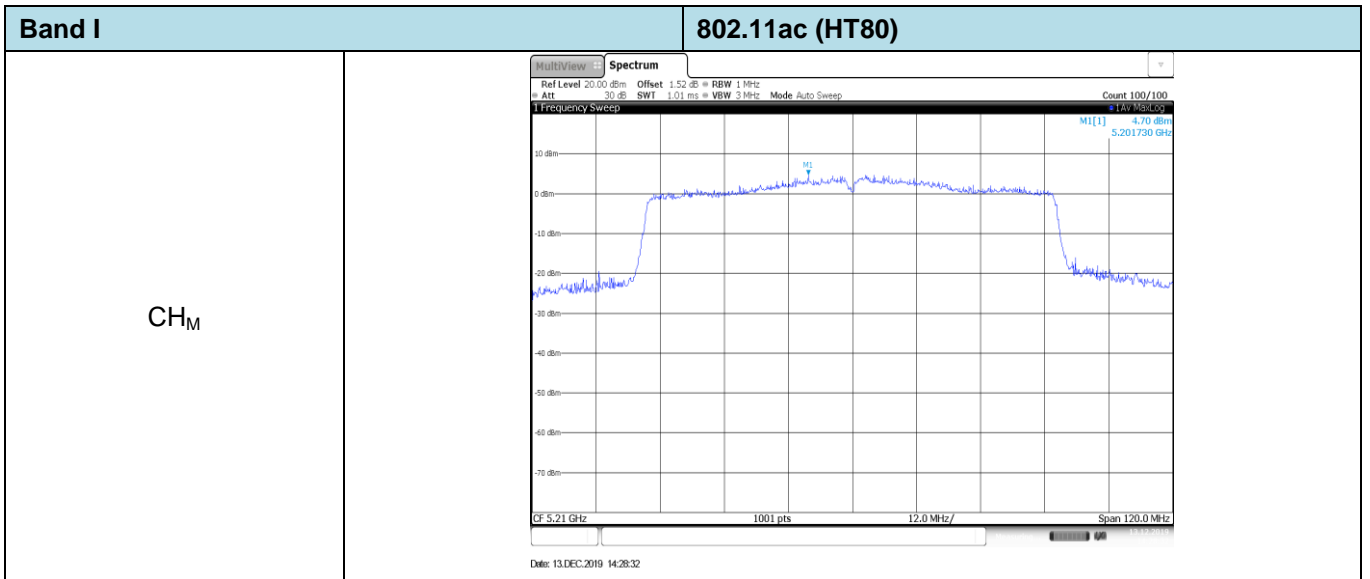
Test plot as follows:

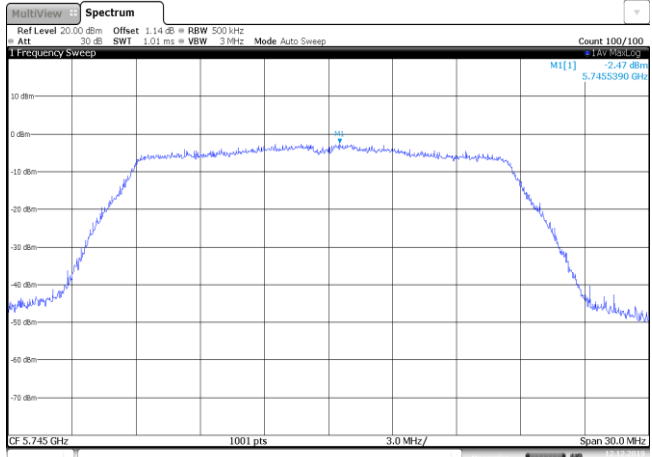
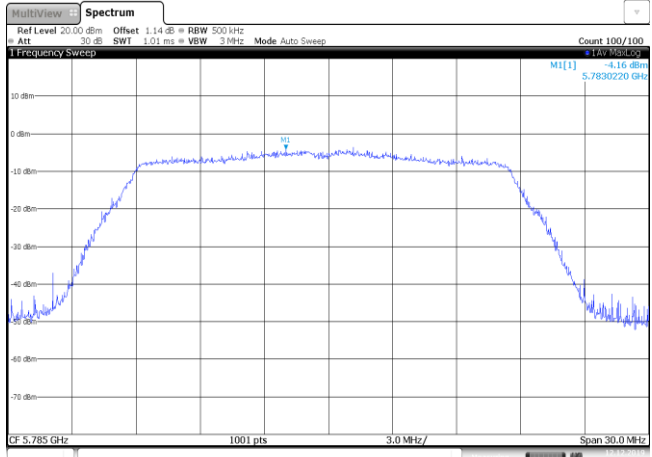
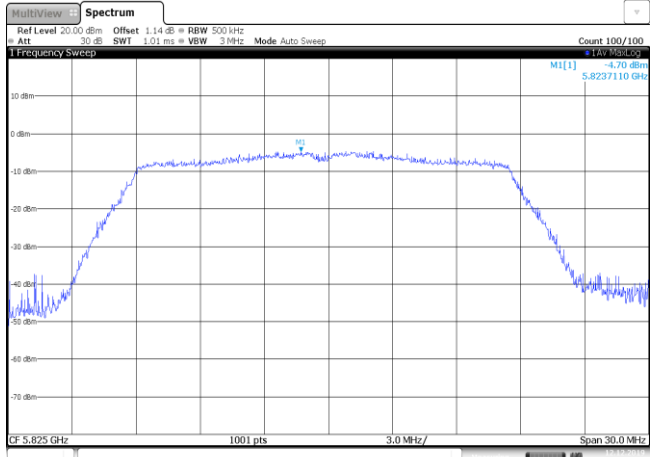
Band I	802.11ac (HT20)
<p>CH_L</p>	
<p>CH_M</p>	
<p>CH_H</p>	

Band I	802.11n (HT20)
CH _L	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 9.73 dBm 5.1794010 GHz CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 12.DEC.2019 11:27:18</p>
CH _M	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 10.58 dBm 5.2197300 GHz CF 5.22 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 12.DEC.2019 11:28:30</p>
CH _H	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 9.62 dBm 5.2399400 GHz CF 5.24 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 14.DEC.2019 18:47:24</p>

Band I		802.11a
CH _L		
CH _M		
CH _H		

Band I		802.11ac (HT40)
CH _L	 <p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.27 dB RBW 1 MHz Count 100/100 Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep 1 Frequency Sweep MI[1] 6.83 dBm 5.1879020 GHz CF 5.19 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 13.DEC.2019 14:21:26</p>	
CH _H	 <p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.27 dB RBW 1 MHz Count 100/100 Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep 1 Frequency Sweep MI[1] 7.60 dBm 5.2257440 GHz CF 5.23 GHz 1001 pts 6.0 MHz/ Span 60.0 MHz Date: 13.DEC.2019 14:24:38</p>	



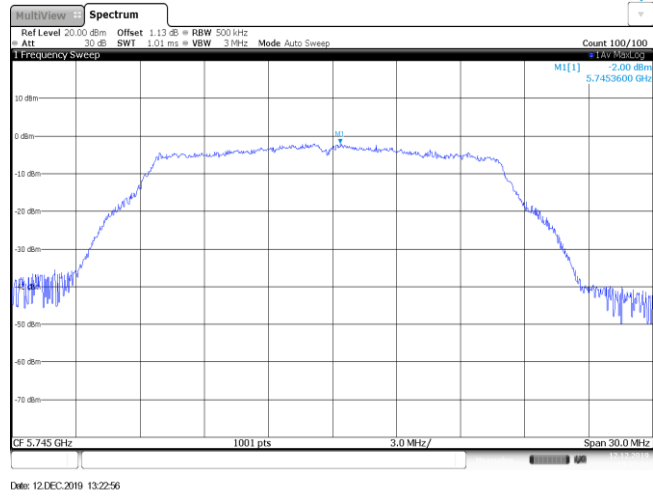
Band IV		802.11ac (HT20)
CH _L	 <p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 500 Hz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] -2.47 dBm 5.7453390 GHz CF 5.745 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 12.DEC.2019 13:40:05</p>	
CH _M	 <p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 500 Hz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] -4.16 dBm 5.7850220 GHz CF 5.785 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 12.DEC.2019 13:41:16</p>	
CH _H	 <p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 500 Hz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] -4.70 dBm 5.8257110 GHz CF 5.825 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 12.DEC.2019 13:42:52</p>	

Band IV	802.11n (HT20)
CH _L	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 500 Hz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] -2.14 dBm 5.7490010 GHz CF 5.745 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 12.DEC.2019 13:29:11</p>
CH _M	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 500 Hz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] -4.07 dBm 5.7821230 GHz CF 5.785 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 12.DEC.2019 13:31:57</p>
CH _H	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 1.14 dB RBW 500 Hz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] -4.27 dBm 5.8240410 GHz CF 5.825 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 12.DEC.2019 13:33:00</p>

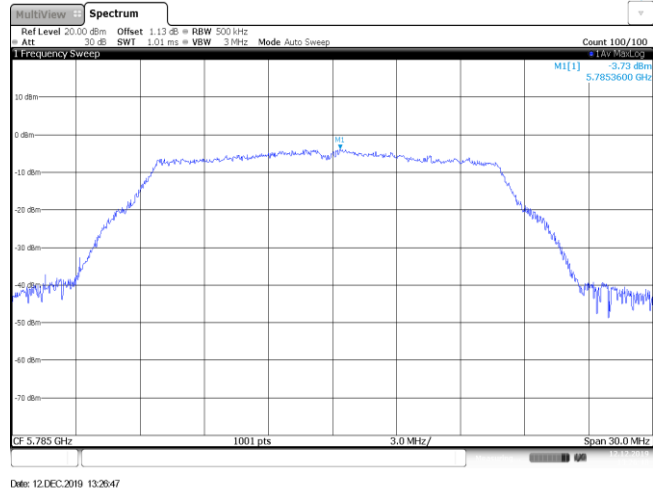
Band IV

802.11a

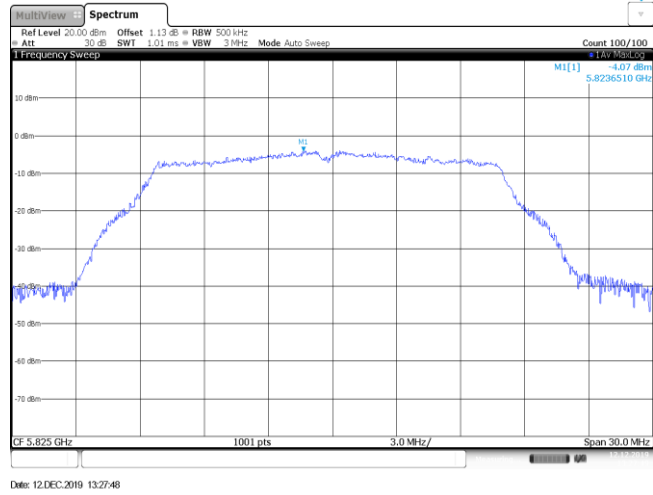
CH_L



CH_M



CH_H

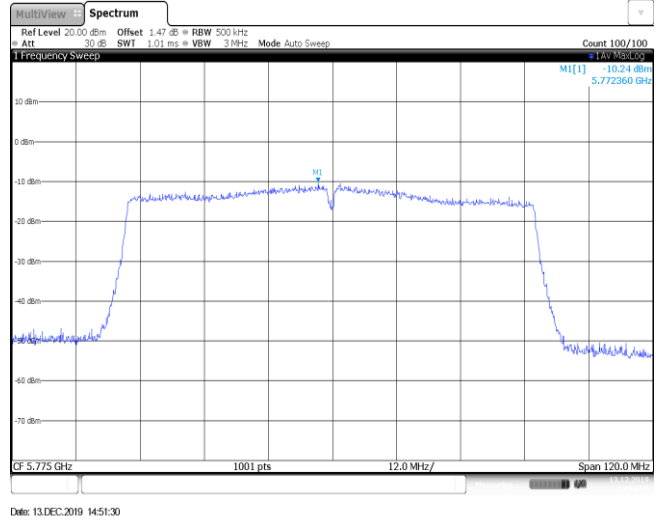


Band IV		802.11ac (HT40)
CH _L	<p>The spectrum plot for channel CH_L shows a signal centered at 5.775 GHz. The signal level is -7.63 dBm. The plot includes parameters: Ref Level 20.00 dBm, Offset 1.27 dB, RBW 500 kHz, Att 30 dB, SWF 1.01 ms, VBW 3 MHz, Mode Auto Sweep, Count 100/100. The frequency span is 60.0 MHz, centered at 5.755 GHz. The plot shows a signal level of approximately -10 dBm across the channel bandwidth, with a peak level of -7.63 dBm. The plot also shows a noise floor of approximately -50 dBm.</p>	
CH _H	<p>The spectrum plot for channel CH_H shows a signal centered at 5.815 GHz. The signal level is -8.33 dBm. The plot includes parameters: Ref Level 20.00 dBm, Offset 1.27 dB, RBW 500 kHz, Att 30 dB, SWF 1.01 ms, VBW 3 MHz, Mode Auto Sweep, Count 100/100. The frequency span is 60.0 MHz, centered at 5.795 GHz. The plot shows a signal level of approximately -10 dBm across the channel bandwidth, with a peak level of -8.33 dBm. The plot also shows a noise floor of approximately -50 dBm.</p>	

Band IV

802.11ac (HT80)

CH_M

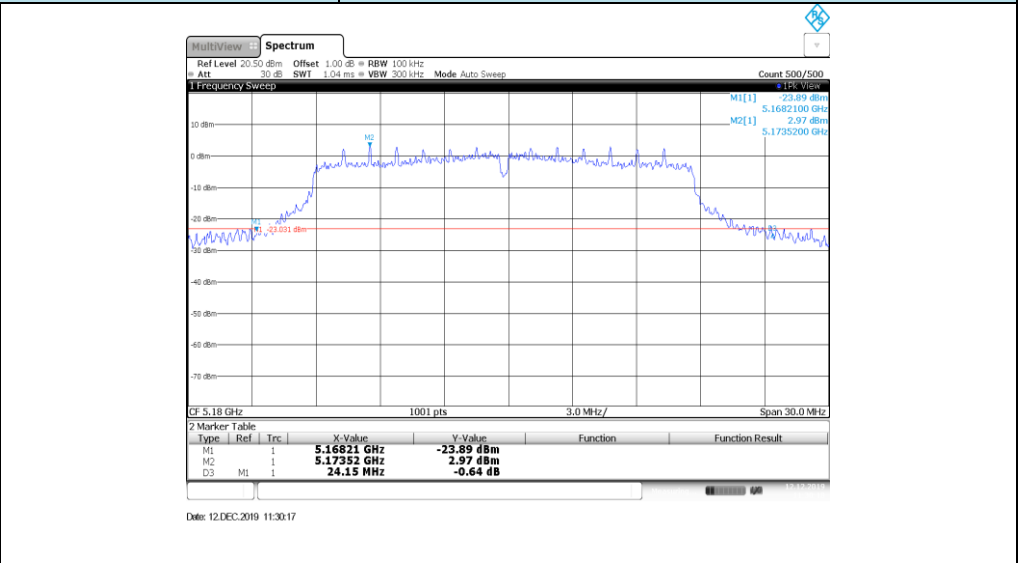


Appendix C: 26dB bandwidth

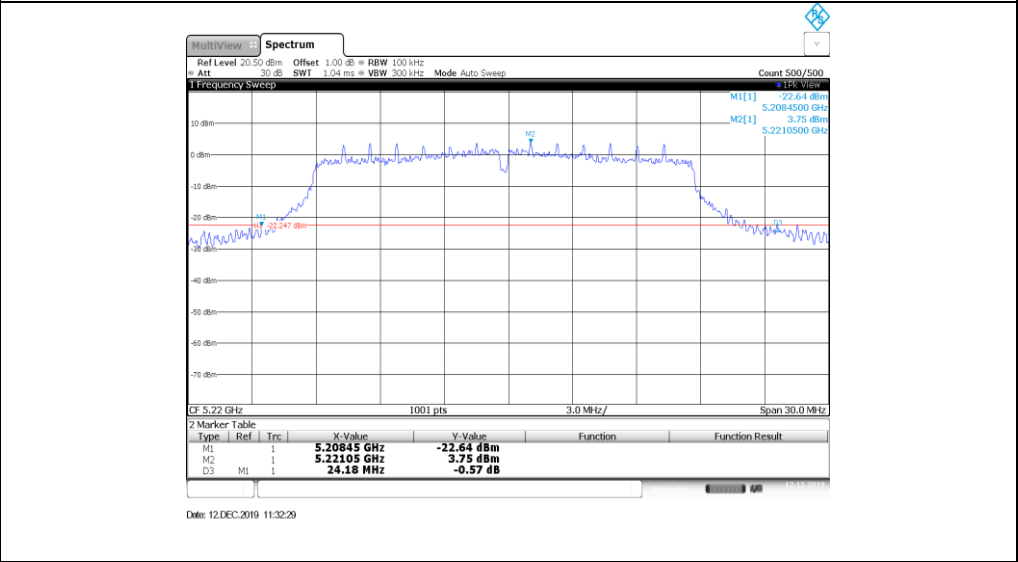
Band	Bandwidth (MHz)	Type	Channel	26dB bandwidth (MHz)	Result
I	20	802.11ac	CH _L	24.15	Pass
			CH _M	24.18	
			CH _H	24.63	
		802.11n	CH _L	26.34	Pass
			CH _M	25.14	
			CH _H	26.07	
		802.11a	CH _L	24.87	Pass
			CH _M	22.50	
			CH _H	23.25	
	40	802.11ac	CH _L	47.76	Pass
			CH _H	47.70	
80	802.11ac	CH _M	85.92	Pass	

Band I **802.11ac (HT20)**

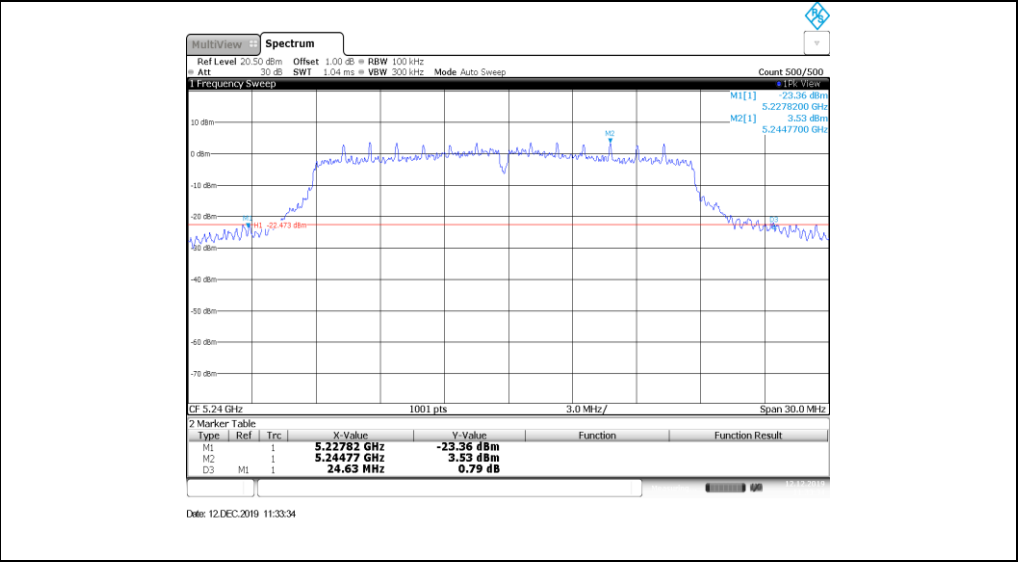
CH_L



CH_M

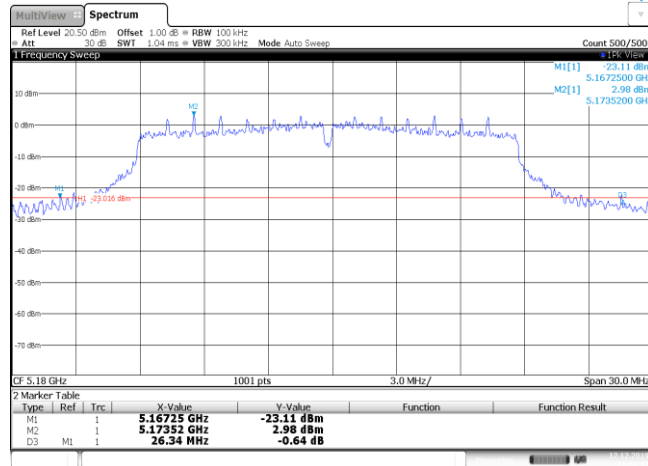


CH_H



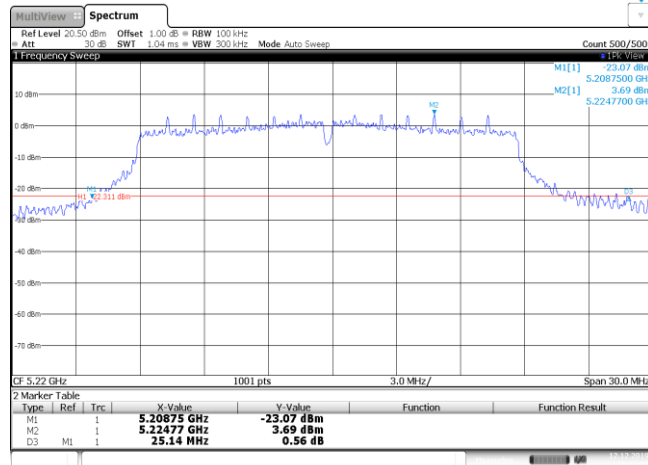
Band I **802.11n (HT20)**

CH_L



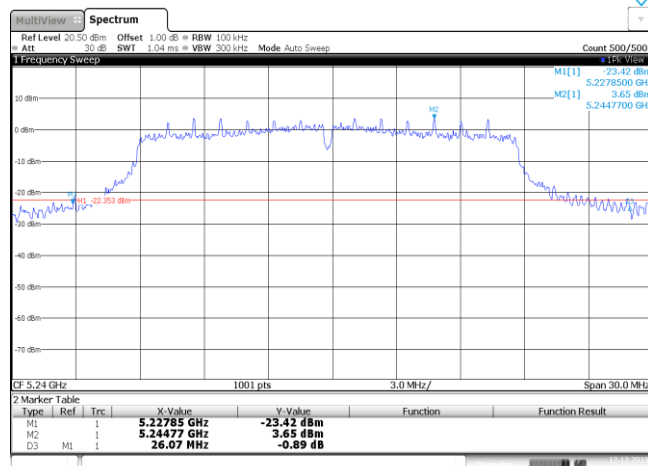
Date: 12.DEC.2019 11:26:44

CH_M



Date: 12.DEC.2019 11:27:57

CH_H



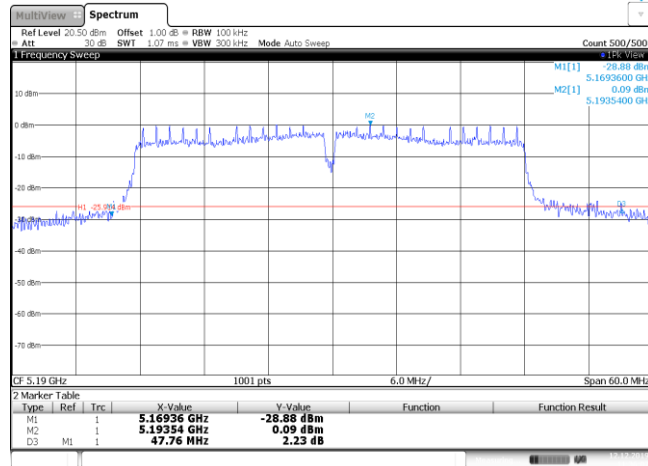
Date: 12.DEC.2019 11:28:10

Band I	802.11a																												
CH _L	<p>Spectrum Ref Level 20.50 dBm Offset 1.00 dB RBW 100 kHz Count 500/500 Att 30 dB SWI 1.04 ms VBW 300 kHz Mode Auto Sweep</p> <p>1 Frequency Sweep CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.16719 GHz</td> <td>-24.48 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.18228 GHz</td> <td>2.69 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>24.87 MHz</td> <td>0.33 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 12.DEC.2019 11:20:27</p>	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.16719 GHz	-24.48 dBm			M2	1		5.18228 GHz	2.69 dBm			D3	M1	1	24.87 MHz	0.33 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																							
M1	1		5.16719 GHz	-24.48 dBm																									
M2	1		5.18228 GHz	2.69 dBm																									
D3	M1	1	24.87 MHz	0.33 dB																									
CH _M	<p>Spectrum Ref Level 20.50 dBm Offset 1.00 dB RBW 100 kHz Count 500/500 Att 30 dB SWI 1.04 ms VBW 300 kHz Mode Auto Sweep</p> <p>1 Frequency Sweep CF 5.22 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.20923 GHz</td> <td>-22.81 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.22228 GHz</td> <td>3.72 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>22.5 MHz</td> <td>-0.19 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 12.DEC.2019 11:22:36</p>	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.20923 GHz	-22.81 dBm			M2	1		5.22228 GHz	3.72 dBm			D3	M1	1	22.5 MHz	-0.19 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																							
M1	1		5.20923 GHz	-22.81 dBm																									
M2	1		5.22228 GHz	3.72 dBm																									
D3	M1	1	22.5 MHz	-0.19 dB																									
CH _H	<p>Spectrum Ref Level 20.50 dBm Offset 1.00 dB RBW 100 kHz Count 500/500 Att 30 dB SWI 1.04 ms VBW 300 kHz Mode Auto Sweep</p> <p>1 Frequency Sweep CF 5.24 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.22881 GHz</td> <td>-22.81 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.24228 GHz</td> <td>3.54 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>23.25 MHz</td> <td>0.27 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 12.DEC.2019 11:23:56</p>	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.22881 GHz	-22.81 dBm			M2	1		5.24228 GHz	3.54 dBm			D3	M1	1	23.25 MHz	0.27 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																							
M1	1		5.22881 GHz	-22.81 dBm																									
M2	1		5.24228 GHz	3.54 dBm																									
D3	M1	1	23.25 MHz	0.27 dB																									

Band I

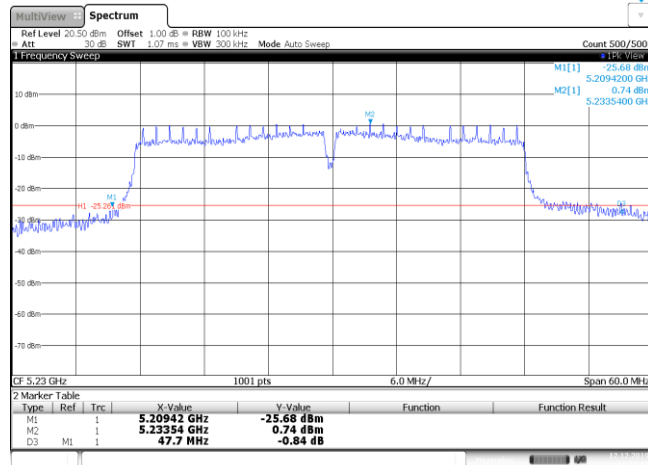
802.11ac (HT40)

CH_L

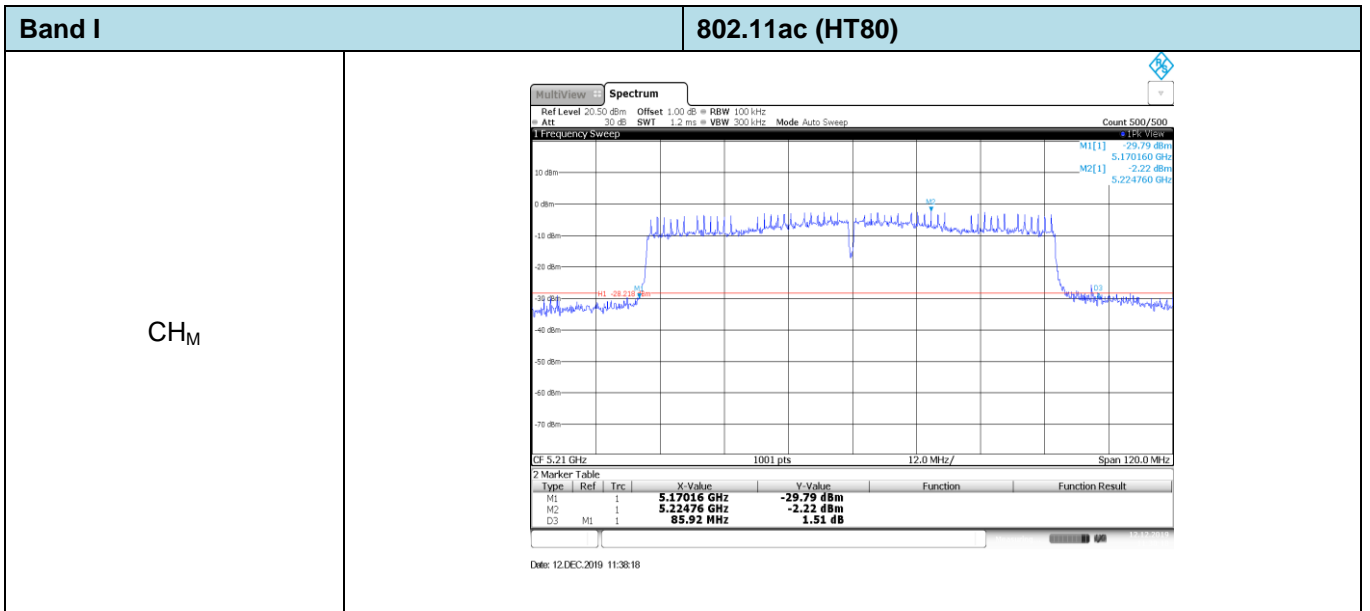


Date: 12.DEC.2019 11:36:02

CH_H



Date: 12.DEC.2019 11:37:11



Appendix D: 99% Occupy bandwidth

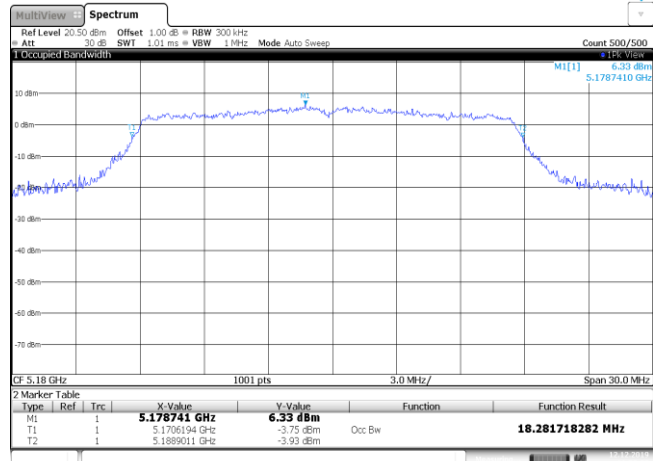
Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	Result
I	20	802.11ac	CH _L	18.28	Pass
			CH _M	18.25	
			CH _H	18.25	
		802.11n	CH _L	18.25	Pass
			CH _M	18.25	
			CH _H	18.34	
	802.11a	CH _L	17.38	Pass	
		CH _M	17.29		
		CH _H	17.38		
	40	802.11ac	CH _L	36.62	Pass
CH _H			36.50		
80	802.11ac	CH _M	75.76	Pass	

Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	Result
IV	20	802.11ac	CH _L	17.37	Pass
			CH _M	17.58	
			CH _H	17.37	
		802.11n	CH _L	17.61	Pass
			CH _M	17.34	
			CH _H	17.64	
	802.11a	CH _L	16.38	Pass	
		CH _M	16.38		
		CH _H	16.38		
	40	802.11ac	CH _L	36.06	Pass
CH _H			36.42		
80	802.11ac	CH _M	75.72	Pass	

Band I

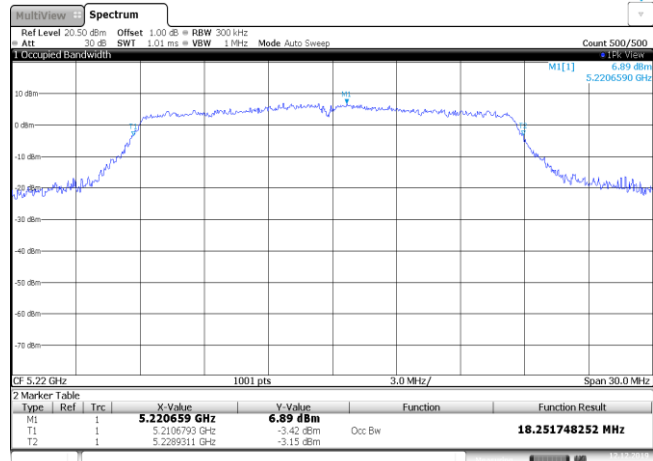
802.11ac (HT20)

CH_L



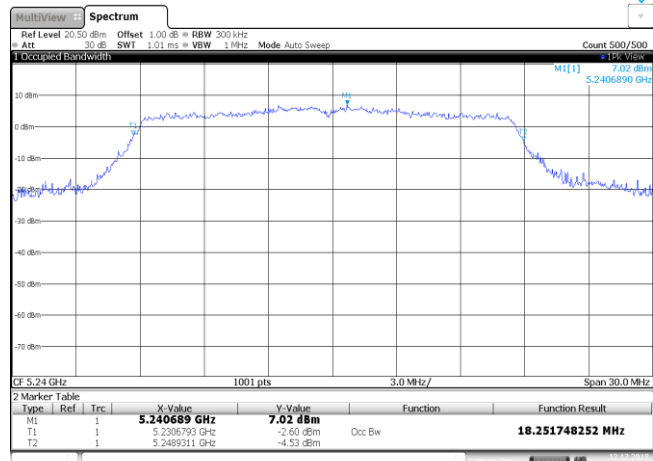
Date: 12.DEC.2019 11:30:08

CH_M



Date: 12.DEC.2019 11:32:20

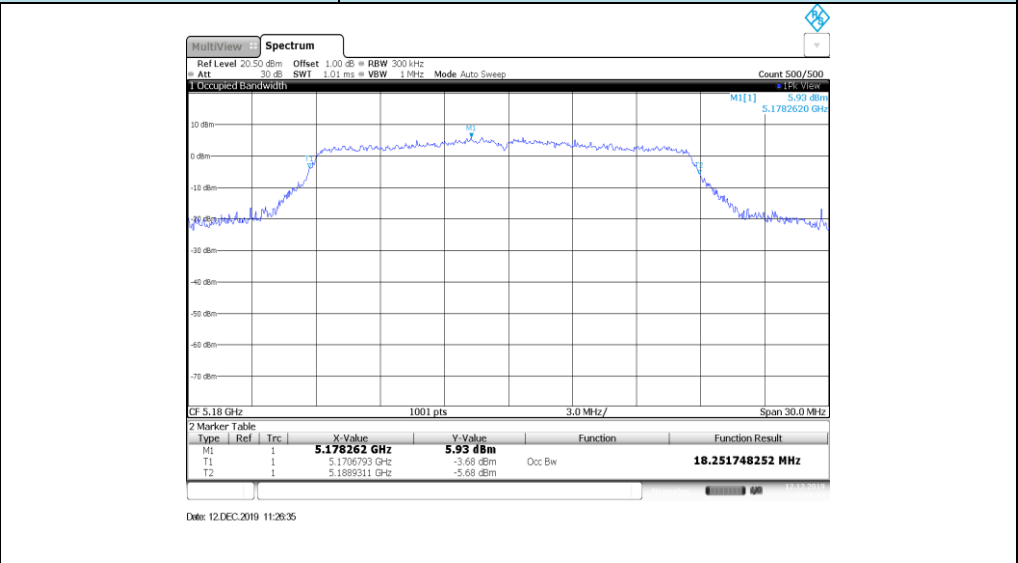
CH_H



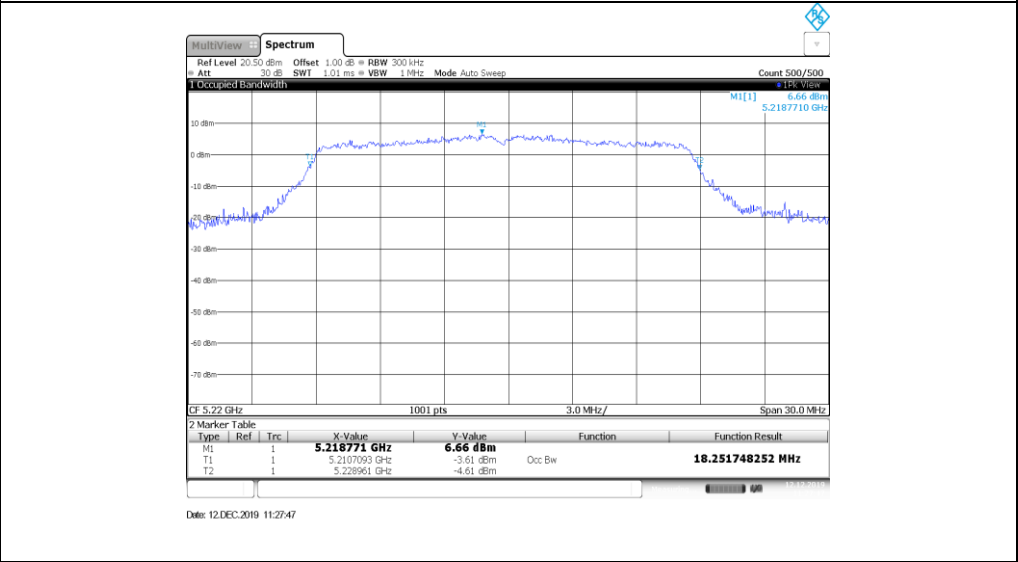
Date: 12.DEC.2019 11:33:25

Band I **802.11n (HT20)**

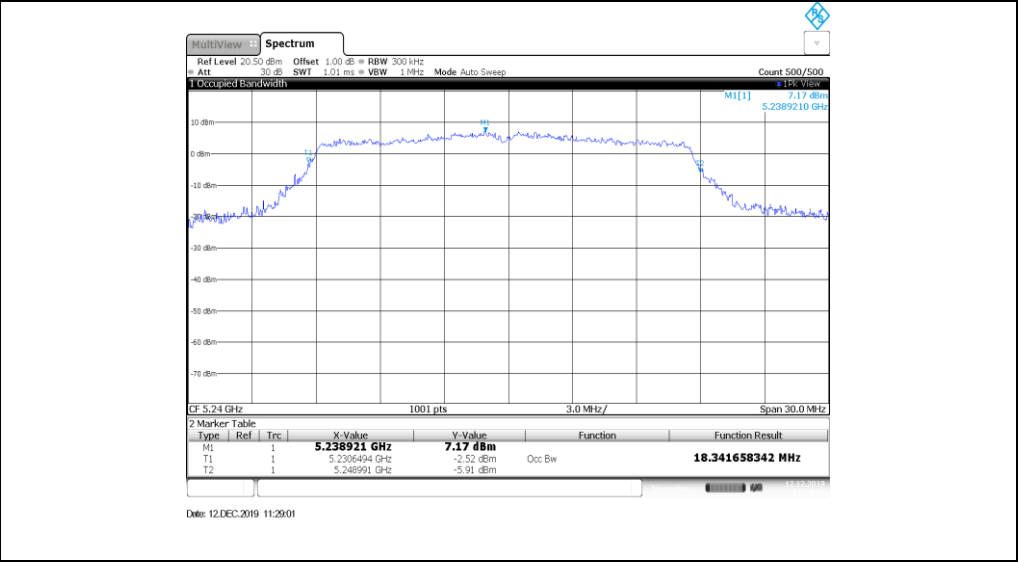
CH_L



CH_M



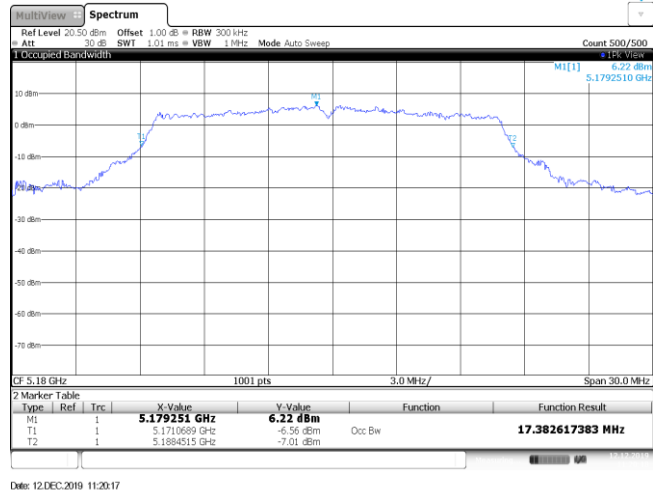
CH_H



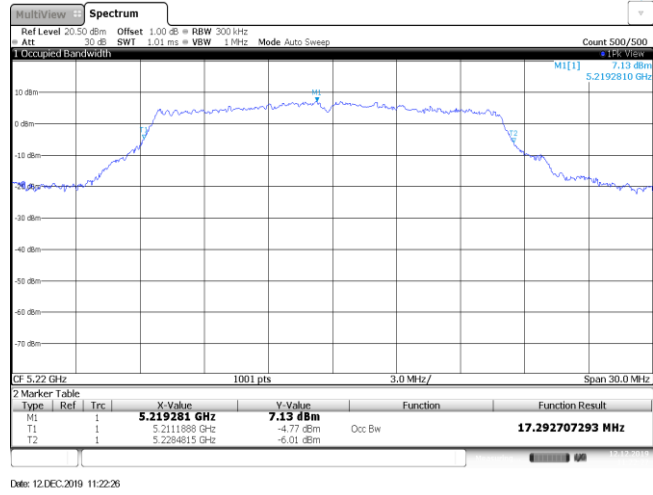
Band I

802.11a

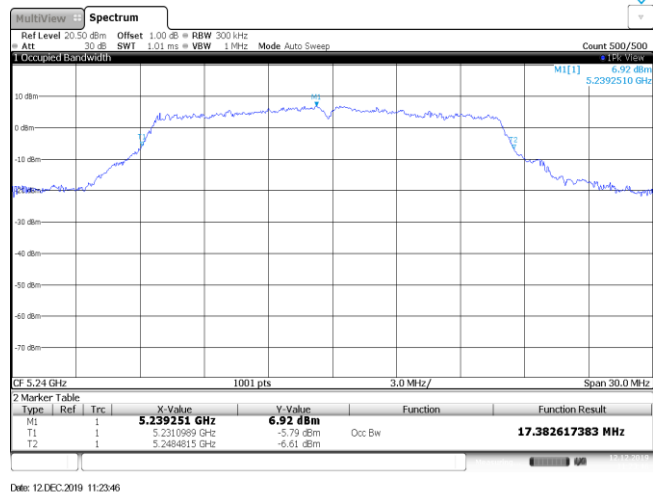
CH_L



CH_M



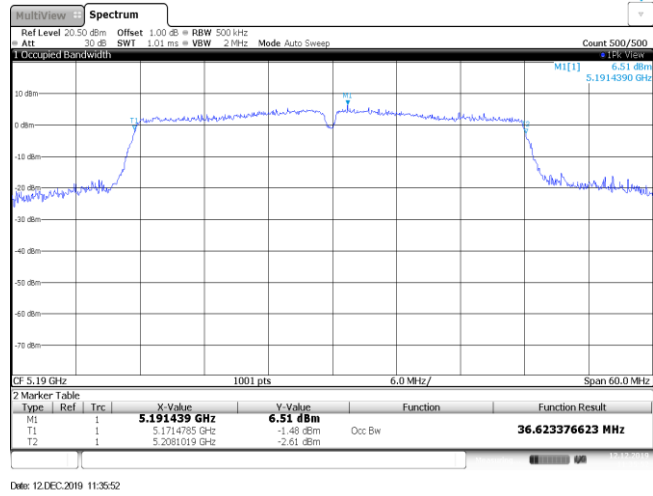
CH_H



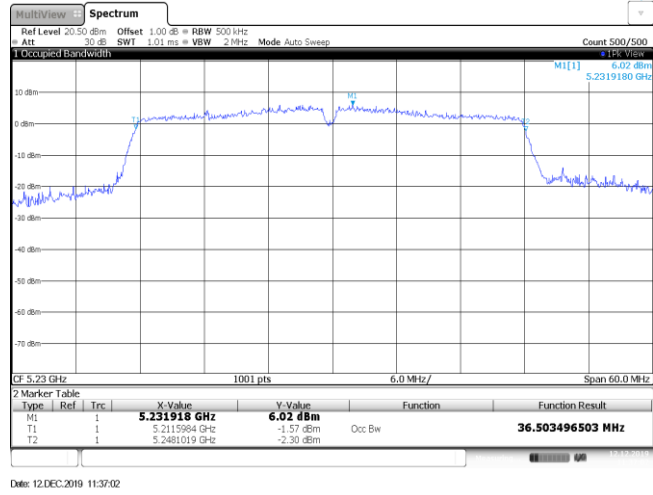
Band I

802.11ac (HT40)

CH_L



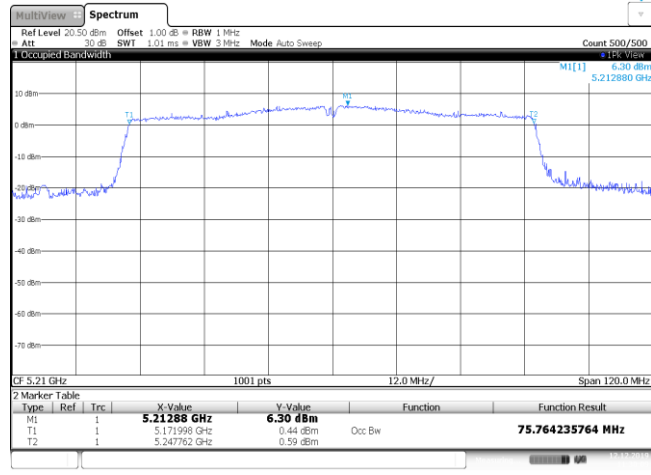
CH_H



Band I

802.11ac (HT80)

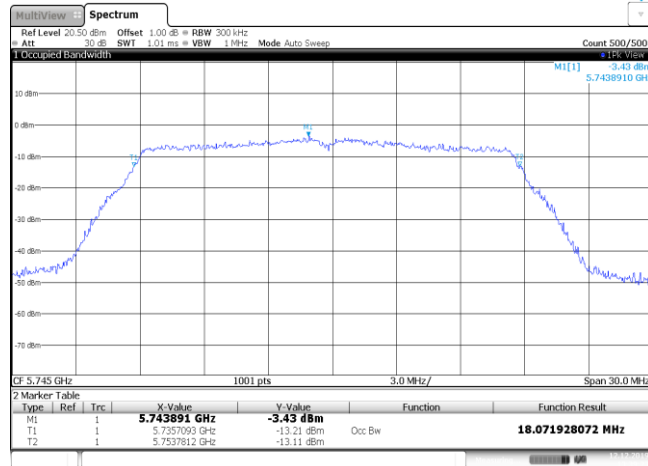
CH_M



Band IV

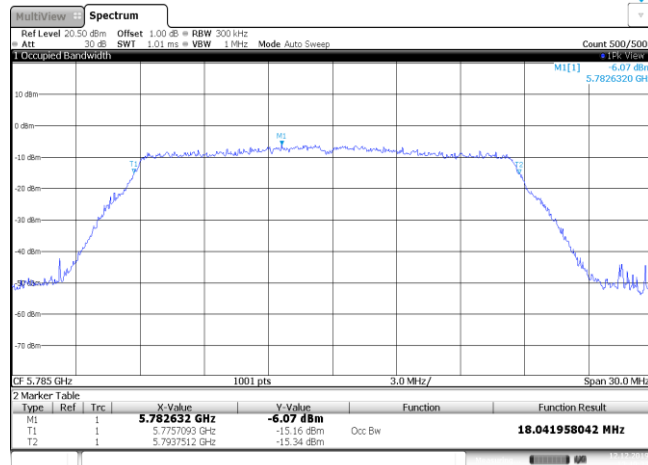
802.11ac (HT20)

CH_L



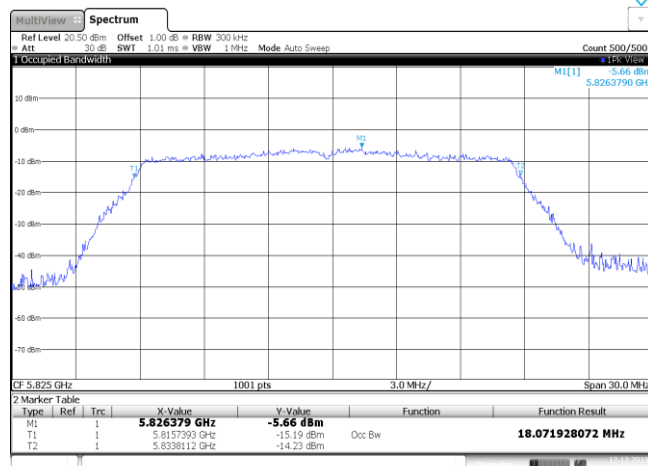
Date: 12.DEC.2019 13:39:25

CH_M



Date: 12.DEC.2019 13:40:33

CH_H

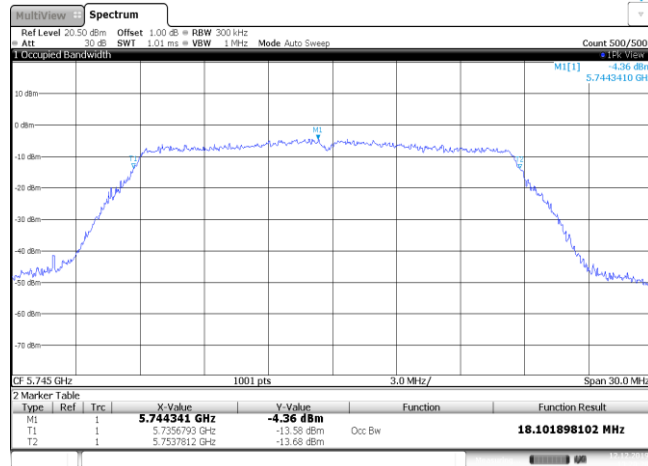


Date: 12.DEC.2019 13:42:07

Band IV

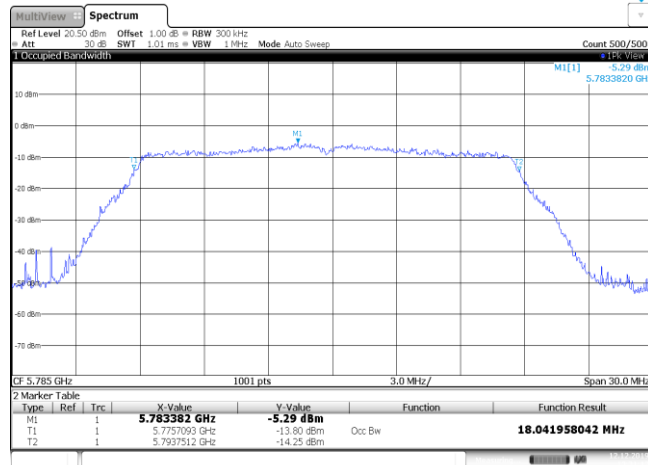
802.11n (HT20)

CH_L



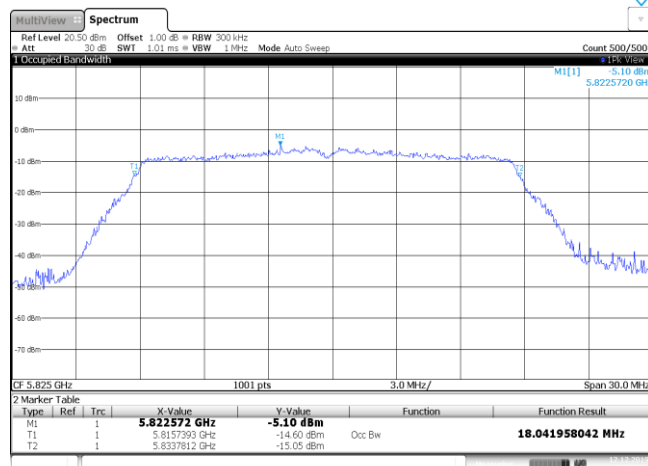
Date: 12.DEC.2019 13:28:28

CH_M



Date: 12.DEC.2019 13:31:13

CH_H

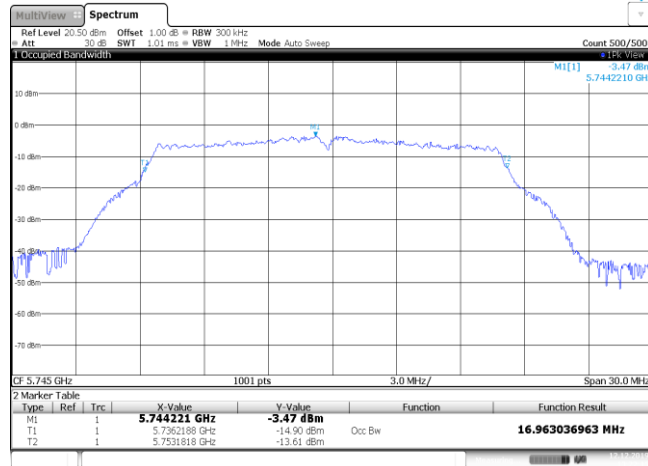


Date: 12.DEC.2019 13:32:17

Band IV

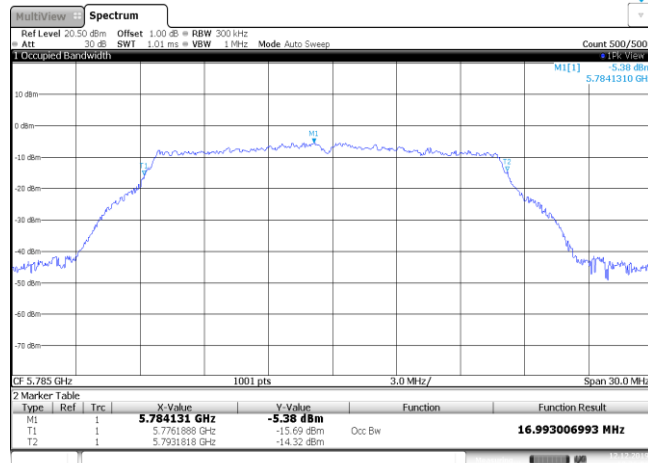
802.11a

CH_L



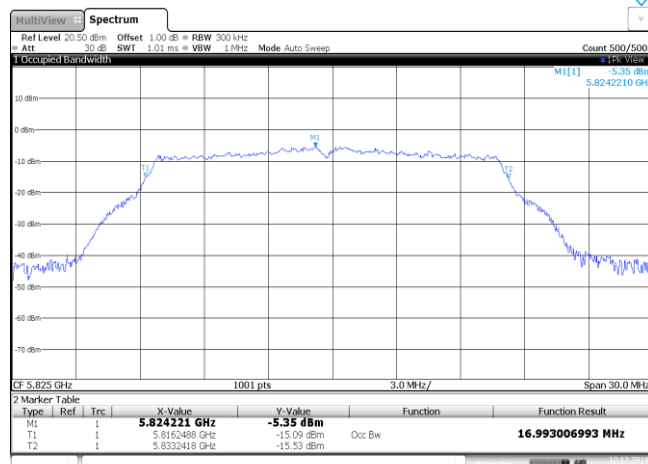
Date: 12.DEC.2019 13:22:14

CH_M



Date: 12.DEC.2019 13:26:06

CH_H

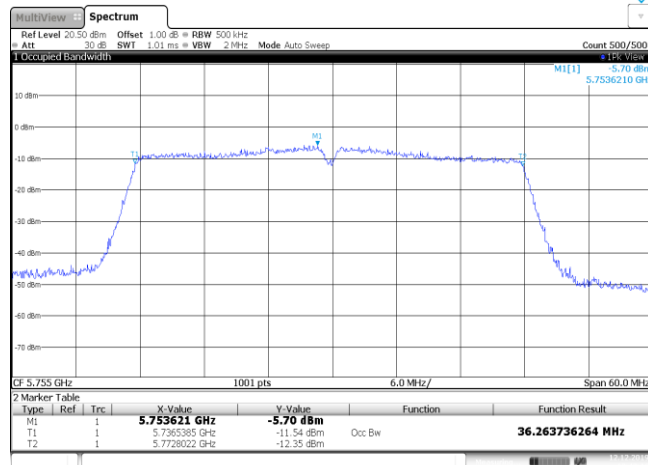


Date: 12.DEC.2019 13:27:08

Band IV

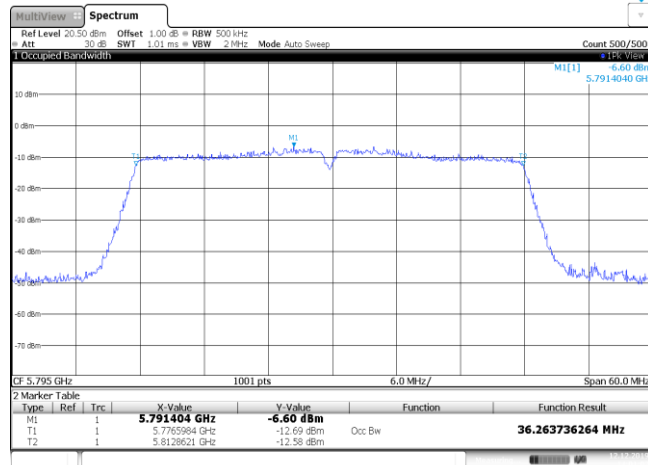
802.11ac (HT40)

CH_L



Date: 12.DEC.2019 13:43:16

CH_H

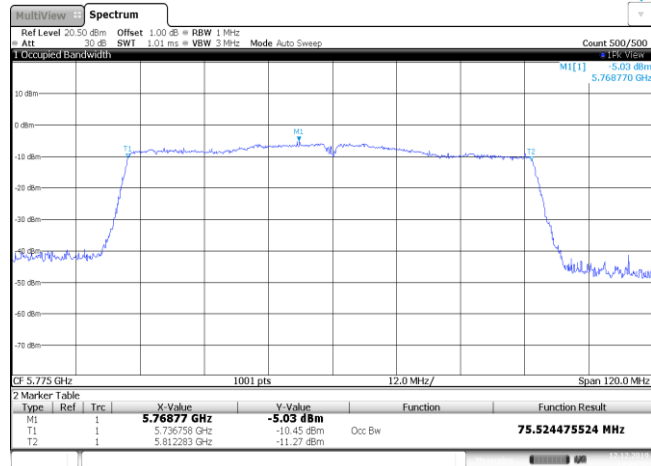


Date: 12.DEC.2019 14:01:02

Band IV

802.11ac (HT80)

CH_M



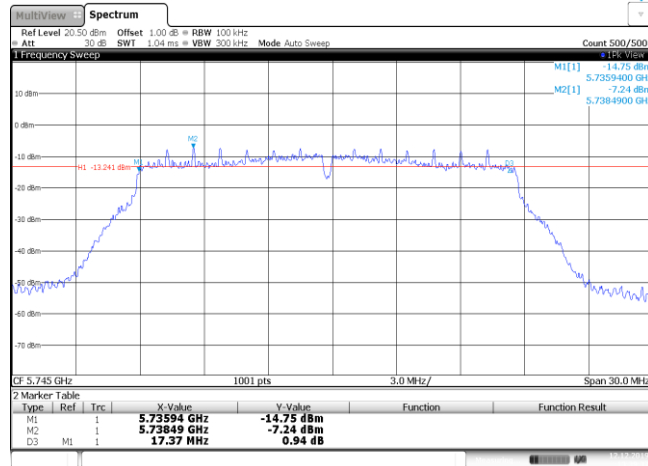
Appendix E: 6dB Bandwidth

Band	Bandwidth (MHz)	Type	Channel	6dB bandwidth (MHz)	Result
IV	20	802.11ac	CH _L	17.37	Pass
			CH _M	17.58	
			CH _H	17.37	
		802.11n	CH _L	17.61	Pass
			CH _M	17.34	
			CH _H	17.64	
		802.11a	CH _L	16.38	Pass
			CH _M	16.38	
			CH _H	16.38	
	40	802.11ac	CH _L	36.06	Pass
			CH _H	36.42	
	80	802.11ac	CH _M	75.72	Pass

Band IV

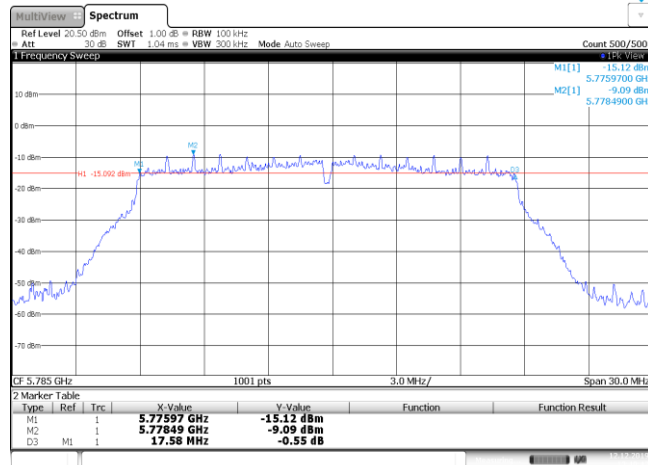
802.11ac (HT20)

CH_L



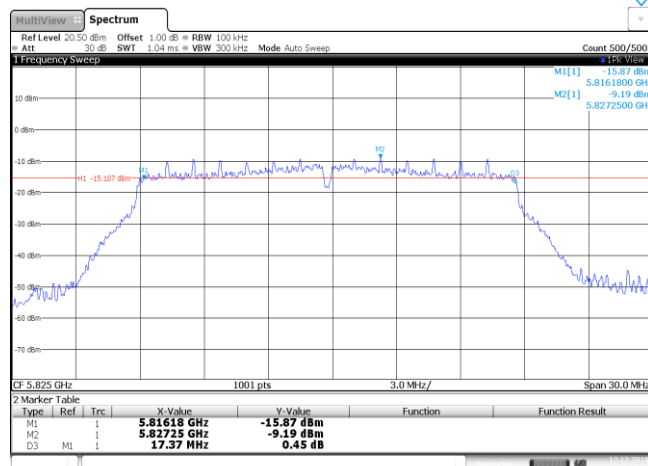
Date: 12.DEC.2019 13:39:32

CH_M



Date: 12.DEC.2019 13:40:42

CH_H

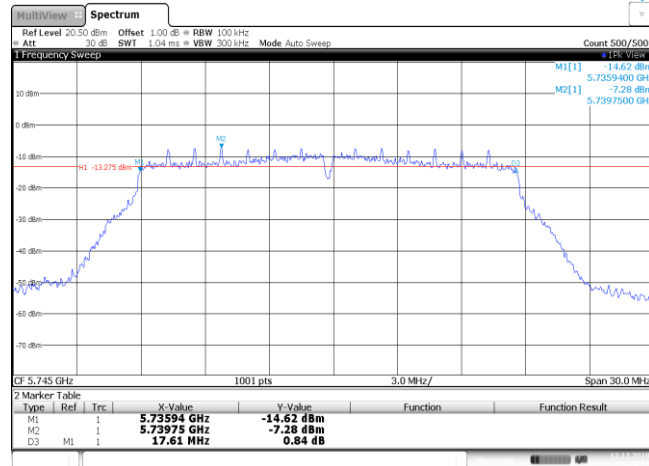


Date: 12.DEC.2019 13:42:16

Band IV

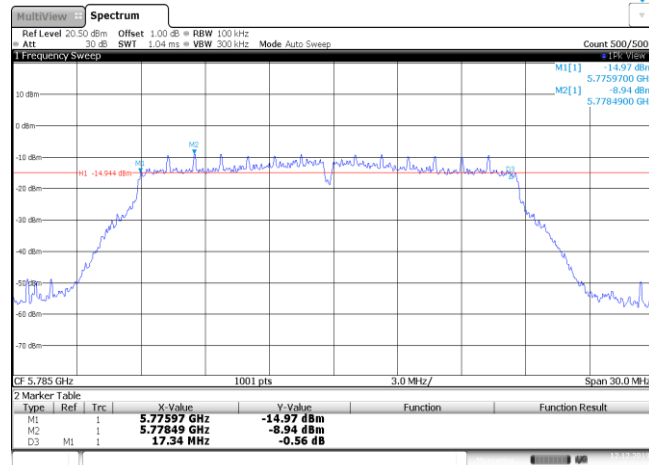
802.11n (HT20)

CH_L



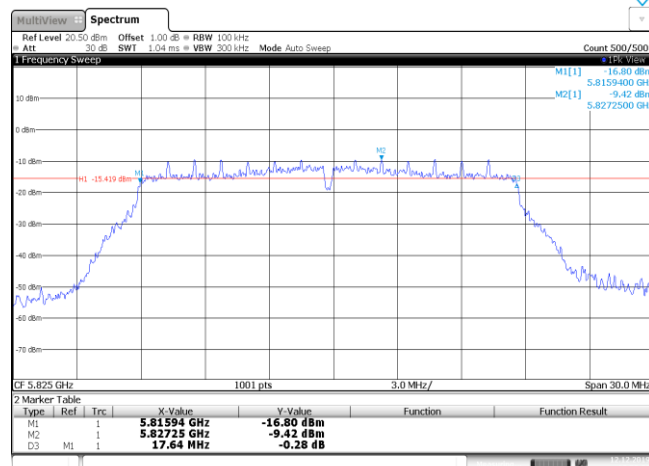
Date: 12.DEC.2019 13:28:37

CH_M



Date: 12.DEC.2019 13:31:23

CH_H

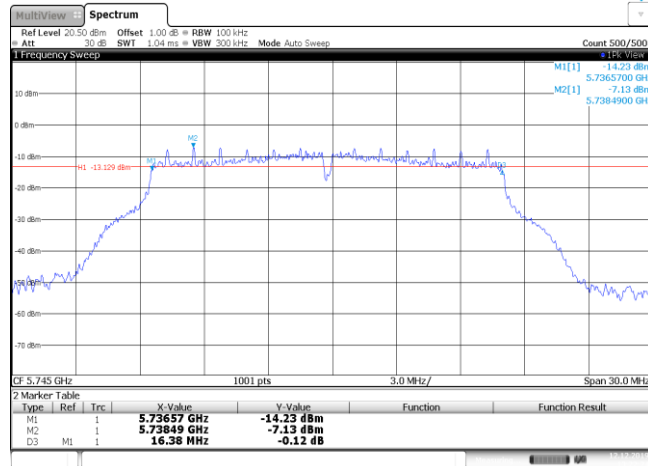


Date: 12.DEC.2019 13:32:26

Band IV

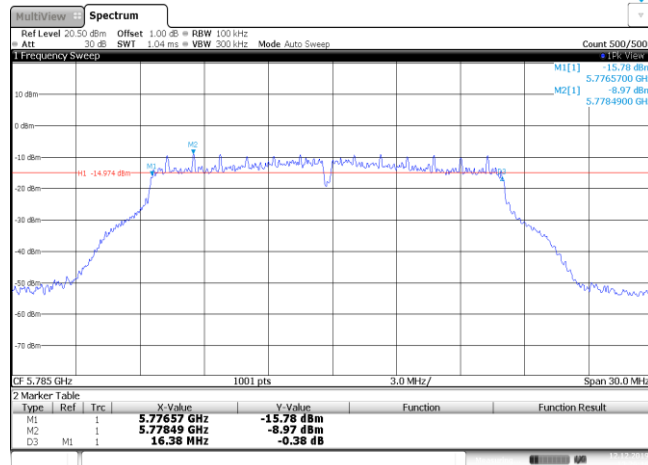
802.11a

CH_L



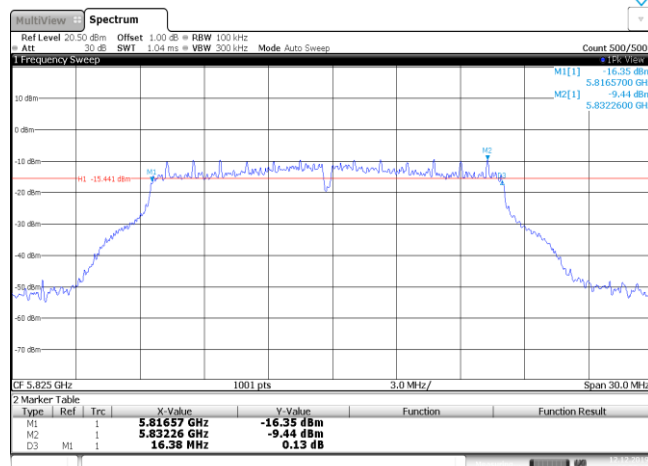
Date: 12.DEC.2019 13:22:24

CH_M



Date: 12.DEC.2019 13:26:16

CH_H

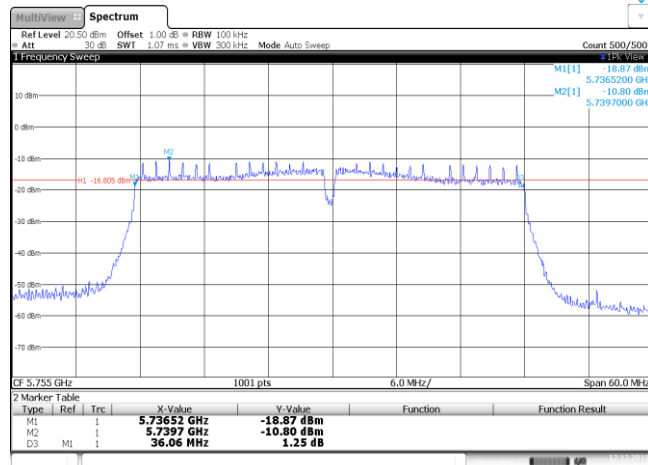


Date: 12.DEC.2019 13:27:18

Band IV

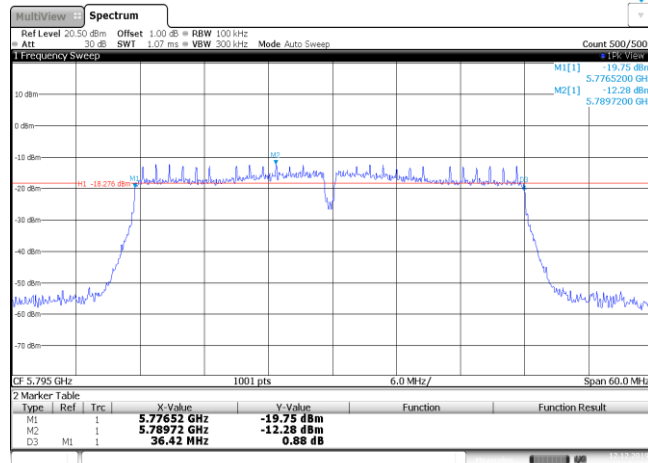
802.11ac (HT40)

CH_L



Date: 12.DEC.2019 13:43:25

CH_H

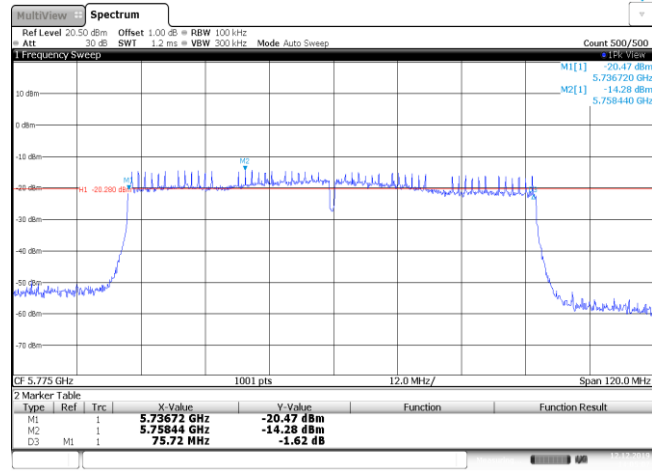


Date: 12.DEC.2019 14:01:11

Band IV

802.11ac (HT80)

CH_M



Date: 12.DEC.2019 14:05:07

Appendix F: Frequency stability**Voltage VS Frequency stability**

Band: I			Test Frequency: 5180.00MHz	
Temperature (°C)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	V _L	-200800.00	-38.76448	PASS
25	V _N	-199800.00	-38.57143	PASS
25	V _H	-200800.00	-38.76448	PASS

Band: IV			Test Frequency: 5745.00MHz	
Temperature (°C)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	V _L	-221800.00	-38.60748	PASS
25	V _N	-221800.00	-38.60748	PASS
25	V _H	-221800.00	-38.60748	PASS

Temperature VS Frequency stability

Band: I			Test Frequency: 5180.00MHz	
Voltage (V)	Temperature (°C)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
V _N	-20	-199800.00	-38.57143	PASS
V _N	-10	-199800.00	-38.57143	PASS
V _N	0	-200800.00	-38.76448	PASS
V _N	10	-199800.00	-38.57143	PASS
V _N	20	-199800.00	-38.57143	PASS
V _N	30	-199800.00	-38.57143	PASS
V _N	40	-199800.00	-38.57143	PASS
V _N	50	-200800.00	-38.76448	PASS

Band: IV			Test Frequency: 5745.00MHz	
Voltage (V)	Temperature (°C)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
V _N	-20	-221800.00	-38.60748	PASS
V _N	-10	-221800.00	-38.60748	PASS
V _N	0	-221800.00	-38.60748	PASS
V _N	10	-221800.00	-38.60748	PASS
V _N	20	-221800.00	-38.60748	PASS
V _N	30	-221800.00	-38.60748	PASS
V _N	40	-221800.00	-38.60748	PASS
V _N	50	-221800.00	-38.60748	PASS

-----End of Report-----