# APPENDIX REPORT

| | | | |
|---|---|---|---|
| Project No. | SHT1912068505EW | Radio Specification | WIFI 5G |
| Test sample No. | YPHT19120685043 | Model No. | iData 50 |
| Start test date | 2019/12/31 | Finish date | 2019/12/31 |
| Temperature | 25°C | Humidity | 50% |
| Test Engineer | Ximing Huang | Auditor | William . wang |

| 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 | $CH_L$ | 17.86 | 24.00 | Pass |
| | | | $CH_M$ | 18.94 | | |
| | | | $CH_H$ | 19.69 | | |
| | | 802.11n | $CH_L$ | 17.06 | 24.00 | Pass |
| | | | $CH_M$ | 18.70 | | |
| | | | $CH_H$ | 19.35 | | |
| | | 802.11a | $CH_L$ | 18.98 | 24.00 | Pass |
| | | | $CH_M$ | 19.90 | | |
| | | | $CH_H$ | 19.87 | | |
| | 40 | 802.11ac | $CH_L$ | 18.26 | 24.00 | Pass |
| | | | $CH_H$ | 19.75 | | |
| | | 802.11n | $CH_L$ | 18.21 | 24.00 | Pass |
| | | | $CH_H$ | 19.29 | | |
| | 80 | 802.11ac | $CH_M$ | 19.17 | 24.00 | Pass |
| II | 20 | 802.11ac | $CH_L$ | 19.23 | 24.00 | Pass |
| | | | $CH_M$ | 20.03 | | |
| | | | $CH_H$ | 20.04 | | |
| | | 802.11n | $CH_L$ | 19.20 | 24.00 | Pass |
| | | | $CH_M$ | 19.55 | | |
| | | | $CH_H$ | 20.12 | | |
| | | 802.11a | $CH_L$ | 19.55 | 24.00 | Pass |
| | | | $CH_M$ | 20.15 | | |
| | | | $CH_H$ | 20.21 | | |
| | 40 | 802.11ac | $CH_L$ | 19.52 | 24.00 | Pass |
| | | | $CH_H$ | 20.06 | | |
| | | 802.11n | $CH_L$ | 19.51 | 24.00 | Pass |
| | | | $CH_H$ | 20.11 | | |
| | 80 | 802.11ac | $CH_M$ | 19.58 | 24.00 | Pass |

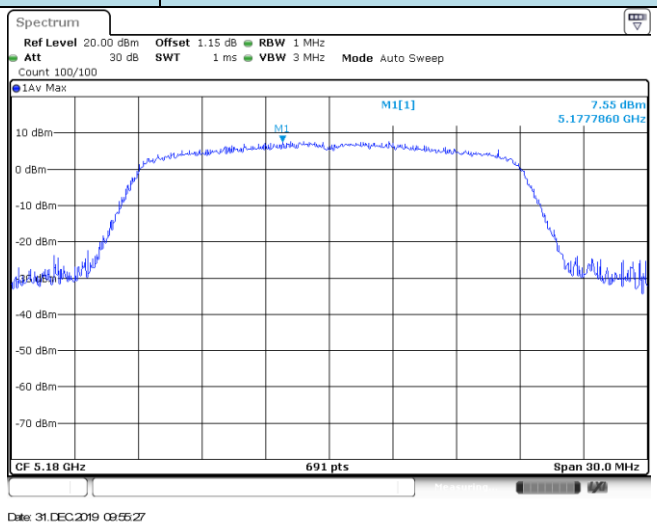
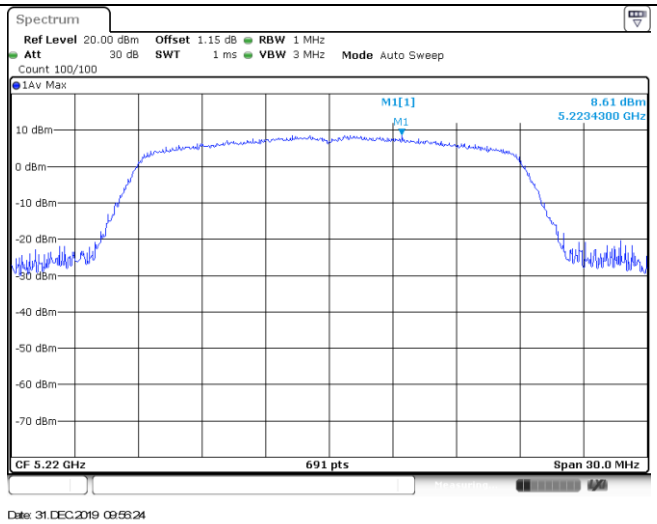
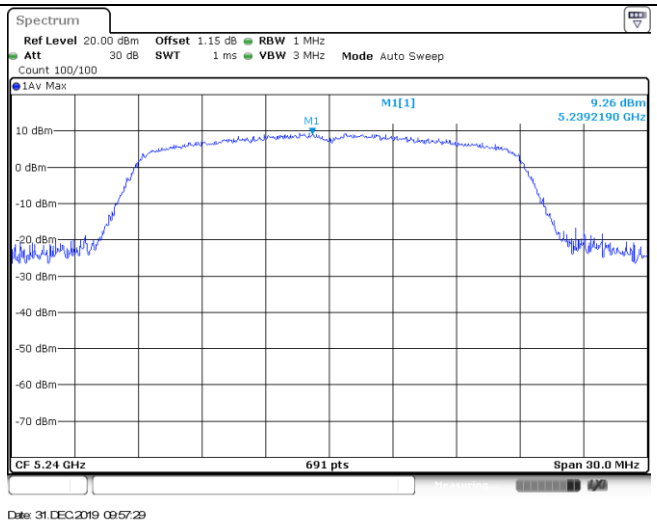
| Band | Bandwidth (MHz) | Type | Channel | Conducted Output Power (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| IV | 20 | 802.11ac | $CH_L$ | 19.55 | 30.00 | Pass |
| | | | $CH_M$ | 20.05 | | |
| | | | $CH_H$ | 19.98 | | |
| | | 802.11n | $CH_L$ | 19.87 | 30.00 | Pass |
| | | | $CH_M$ | 20.00 | | |
| | | | $CH_H$ | 19.95 | | |
| | | 802.11a | $CH_L$ | 20.18 | 30.00 | Pass |
| | | | $CH_M$ | 20.23 | | |
| | | | $CH_H$ | 20.26 | | |
| | 40 | 802.11ac | $CH_L$ | 20.06 | 30.00 | Pass |
| | | | $CH_H$ | 20.13 | | |
| | | 802.11n | $CH_L$ | 20.10 | 30.00 | Pass |
| | | | $CH_H$ | 20.06 | | |
| | 80 | 802.11ac | $CH_M$ | 19.93 | 30.00 | Pass |

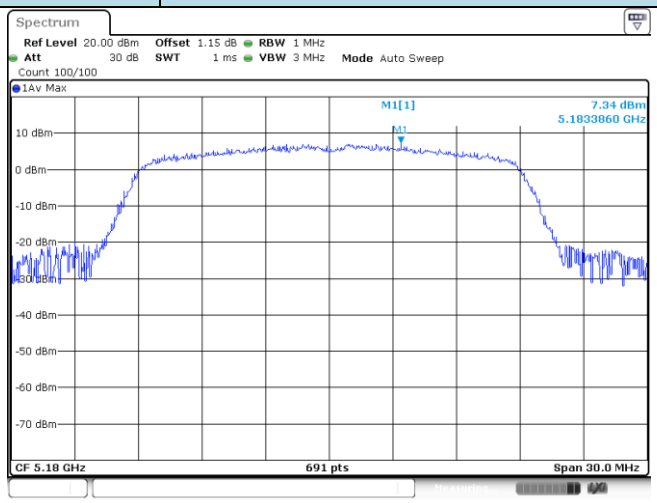
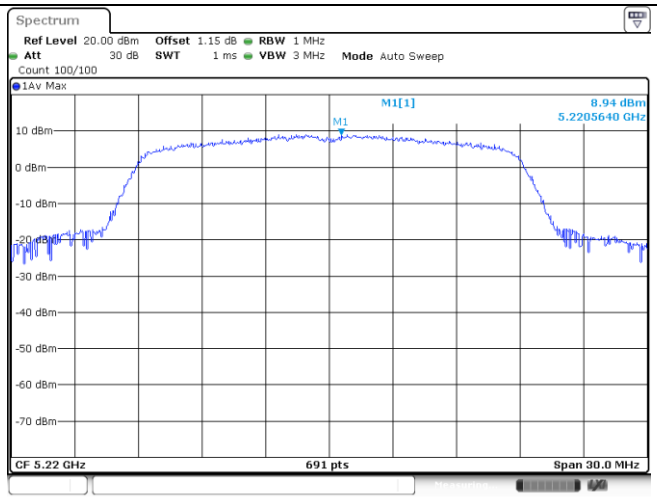
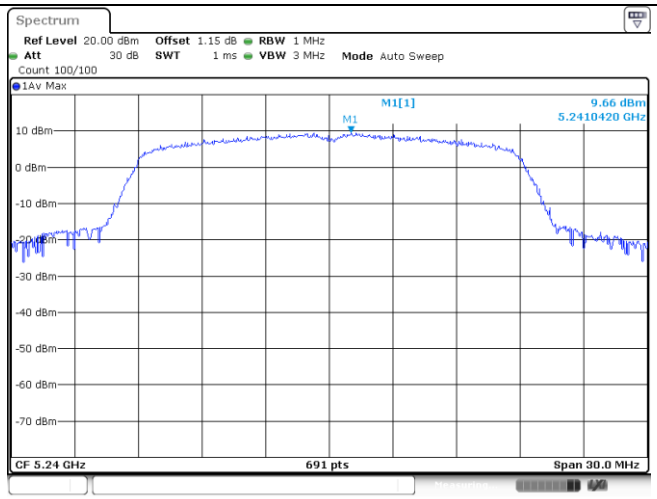
## Appendix B：Maximum Power Spectral Density

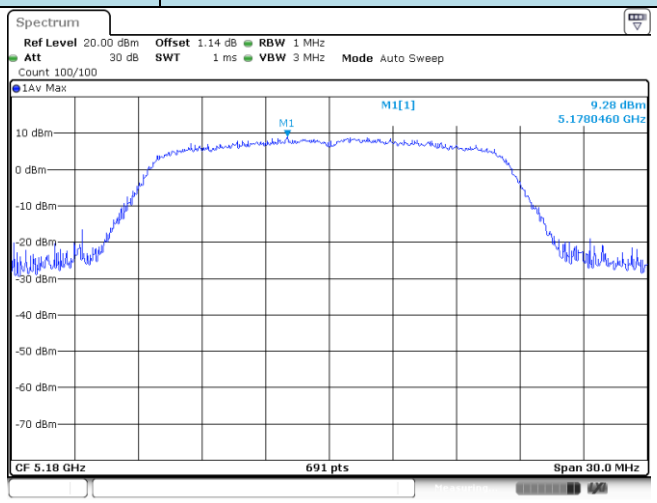
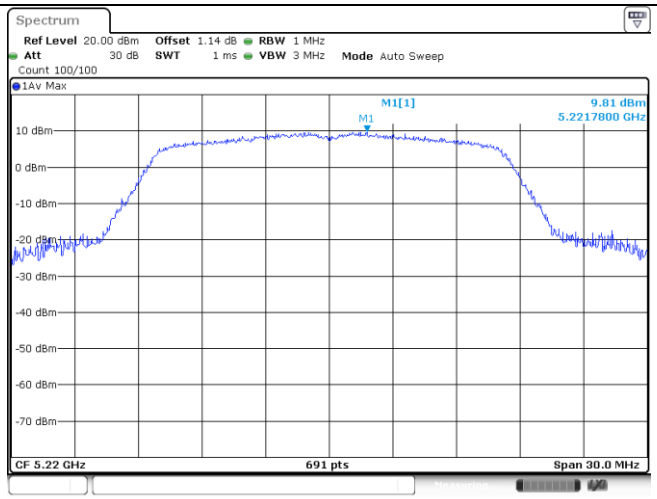
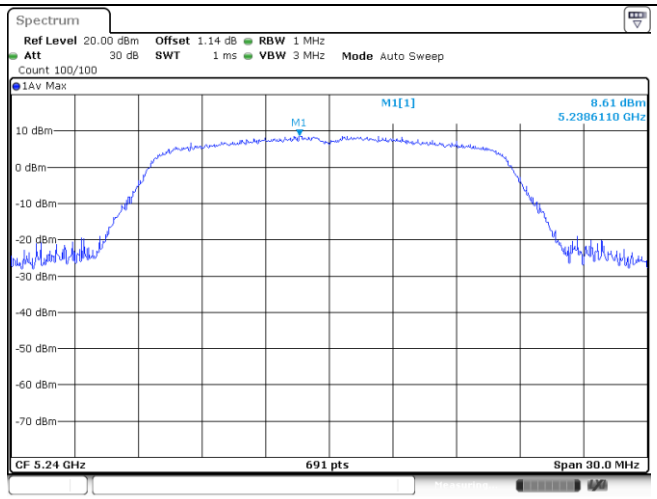
| Band | Bandwidth (MHz) | Type | Channel | Power Spectral Density (dBm/MHz) | Limit (dBm/MHz) | Result |
|---|---|---|---|---|---|---|
| I | 20 | 802.11ac | $CH_L$ | 7.55 | 11.00 | Pass |
| | | | $CH_M$ | 8.61 | | |
| | | | $CH_H$ | 9.26 | | |
| | | 802.11n | $CH_L$ | 7.34 | 11.00 | Pass |
| | | | $CH_M$ | 8.94 | | |
| | | | $CH_H$ | 9.66 | | |
| | | 802.11a | $CH_L$ | 9.28 | 11.00 | Pass |
| | | | $CH_M$ | 9.81 | | |
| | | | $CH_H$ | 8.61 | | |
| | 40 | 802.11ac | $CH_L$ | 5.88 | 11.00 | Pass |
| | | | $CH_H$ | 6.63 | | |
| | | 802.11n | $CH_L$ | 5.33 | 11.00 | Pass |
| | | | $CH_H$ | 6.11 | | |
| | 80 | 802.11ac | $CH_M$ | 3.20 | 11.00 | Pass |
| II | 20 | 802.11ac | $CH_L$ | 9.45 | 11.00 | Pass |
| | | | $CH_M$ | 9.59 | | |
| | | | $CH_H$ | 10.13 | | |
| | | 802.11n | $CH_L$ | 8.86 | 11.00 | Pass |
| | | | $CH_M$ | 9.69 | | |
| | | | $CH_H$ | 10.28 | | |
| | | 802.11a | $CH_L$ | 9.40 | 11.00 | Pass |
| | | | $CH_M$ | 9.80 | | |
| | | | $CH_H$ | 10.19 | | |
| | 40 | 802.11ac | $CH_L$ | 7.24 | 11.00 | Pass |
| | | | $CH_H$ | 6.98 | | |
| | | 802.11n | $CH_L$ | 6.24 | 11.00 | Pass |
| | | | $CH_H$ | 6.99 | | |
| | 80 | 802.11ac | $CH_M$ | 3.23 | 11.00 | Pass |

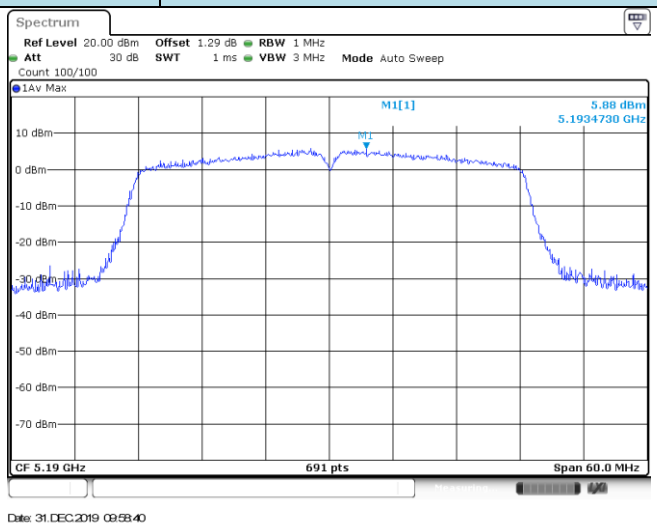
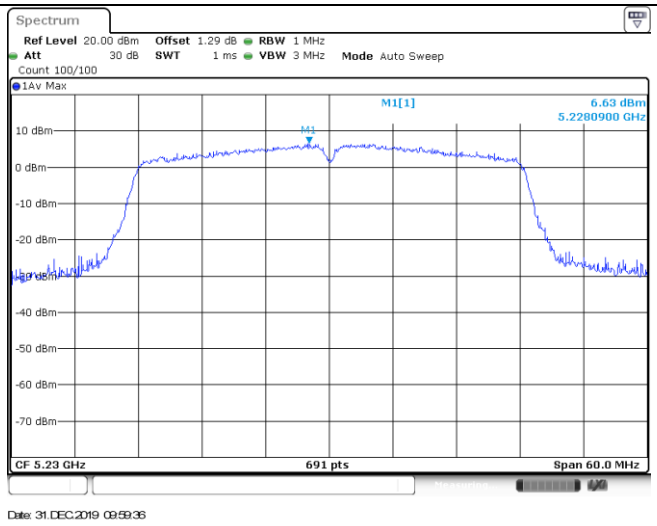
| Band | Bandwidth (MHz) | Type | Channel | Power Spectral Density (dBm/500kHz) | Limit (dBm/500KHz) | Result |
|---|---|---|---|---|---|---|
| IV | 20 | 802.11ac | $CH_L$ | 8.59 | 30.00 | Pass |
| | | | $CH_M$ | 8.97 | | |
| | | | $CH_H$ | 8.47 | | |
| | | 802.11n | $CH_L$ | 8.59 | 30.00 | Pass |
| | | | $CH_M$ | 8.49 | | |
| | | | $CH_H$ | 8.28 | | |
| | | 802.11a | $CH_L$ | 8.62 | 30.00 | Pass |
| | | | $CH_M$ | 8.34 | | |
| | | | $CH_H$ | 8.47 | | |
| | 40 | 802.11ac | $CH_L$ | 5.88 | 30.00 | Pass |
| | | | $CH_H$ | 5.94 | | |
| | | 802.11n | $CH_L$ | 5.55 | 30.00 | Pass |
| | | | $CH_H$ | 5.88 | | |
| | 80 | 802.11ac | $CH_M$ | 2.99 | 30.00 | Pass |

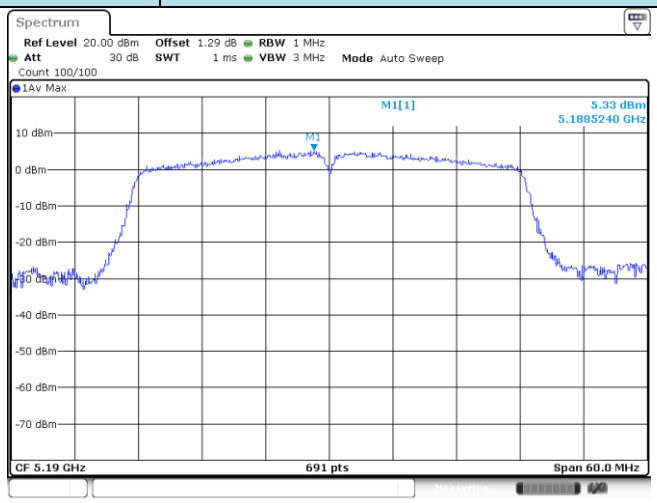
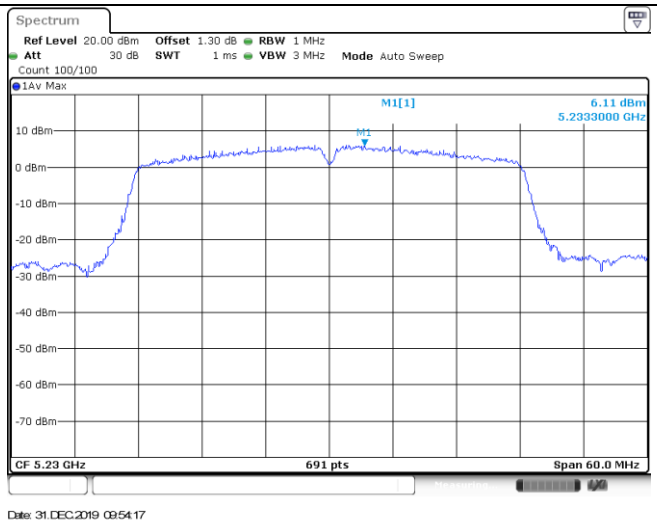
Test plot as follows:

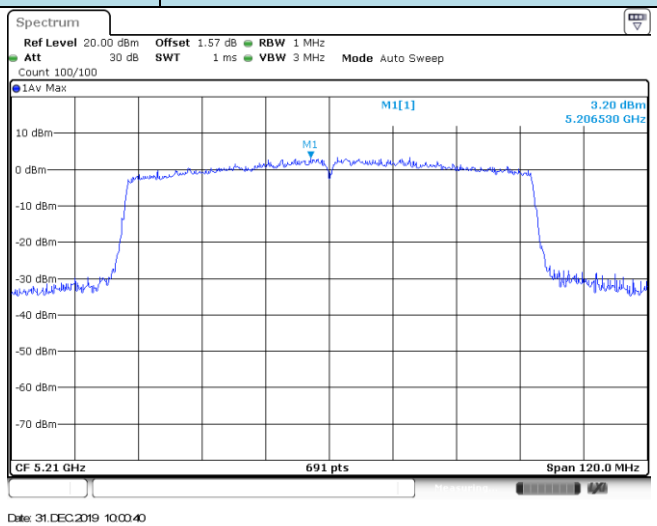
| **Band I** | **802.11ac (HT20)** |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

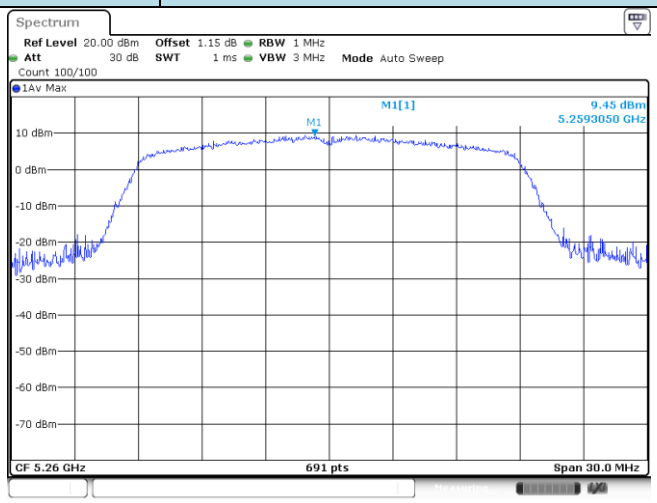
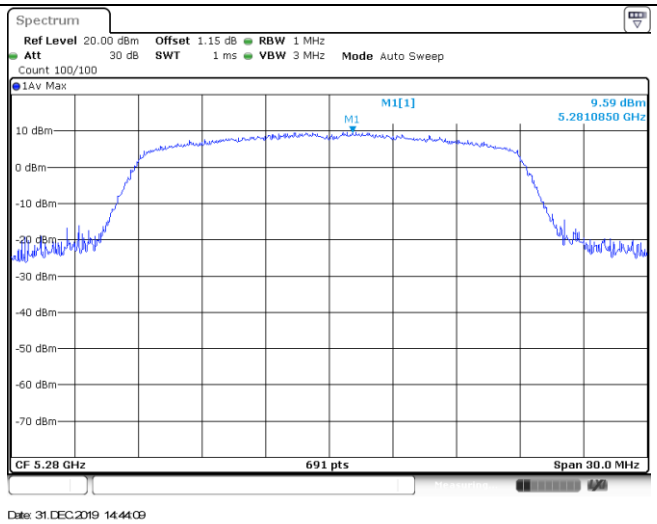
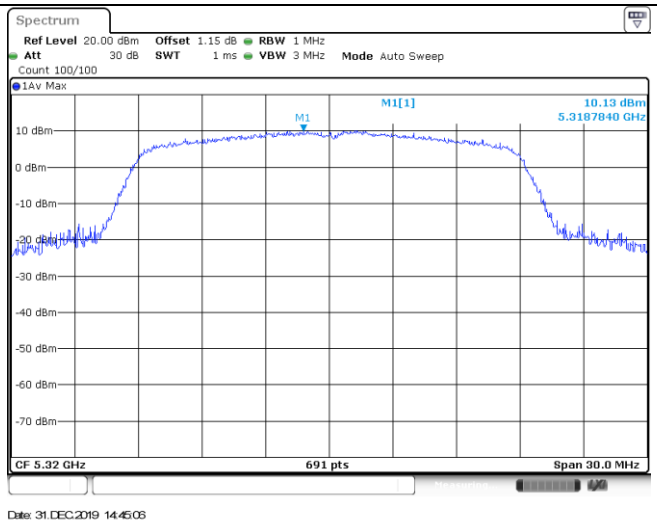
| Band I | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

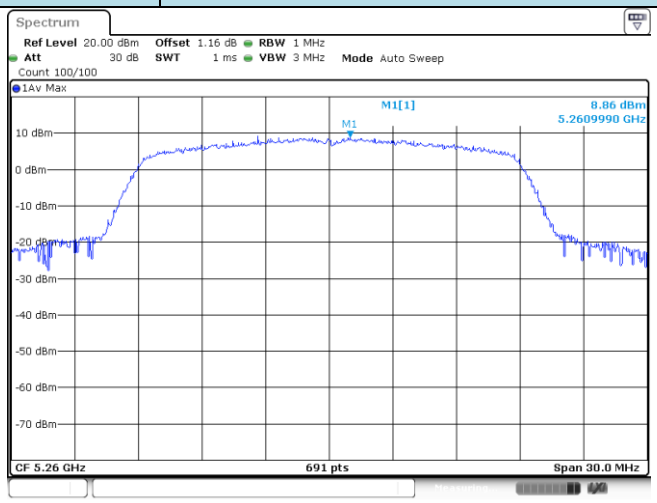
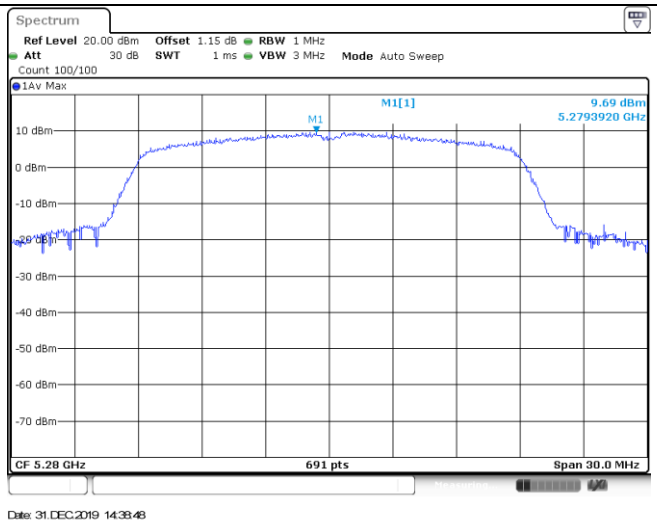
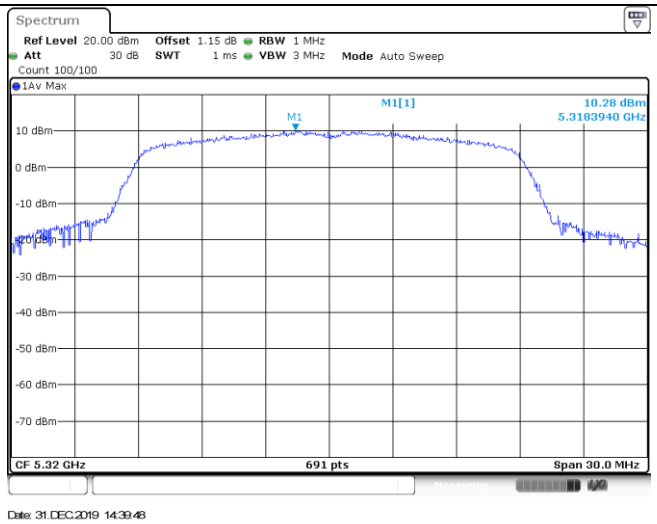
| Band I | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

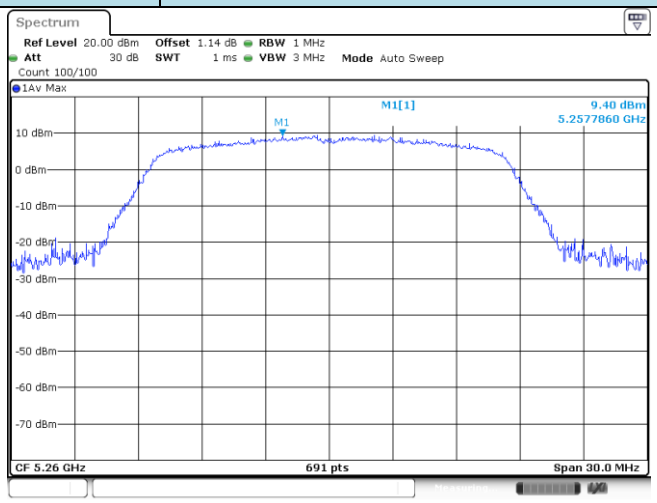
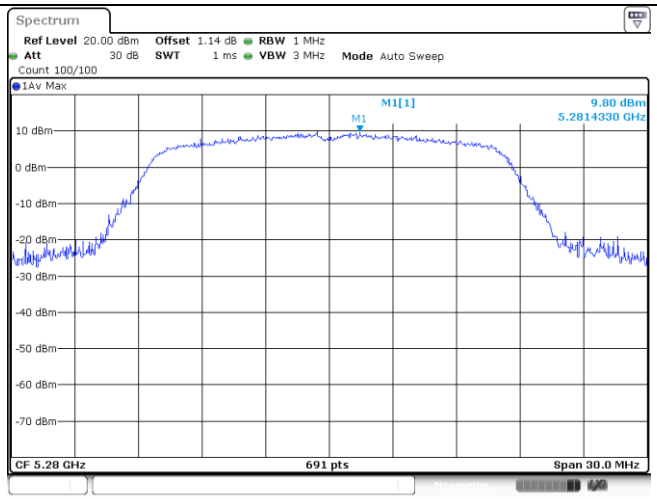
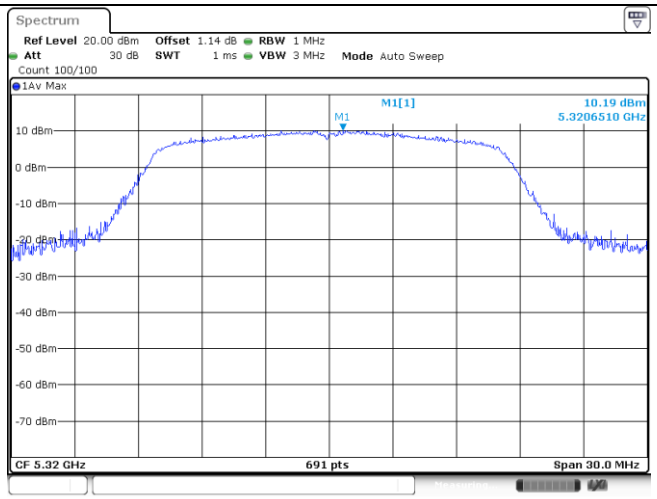
| Band I | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

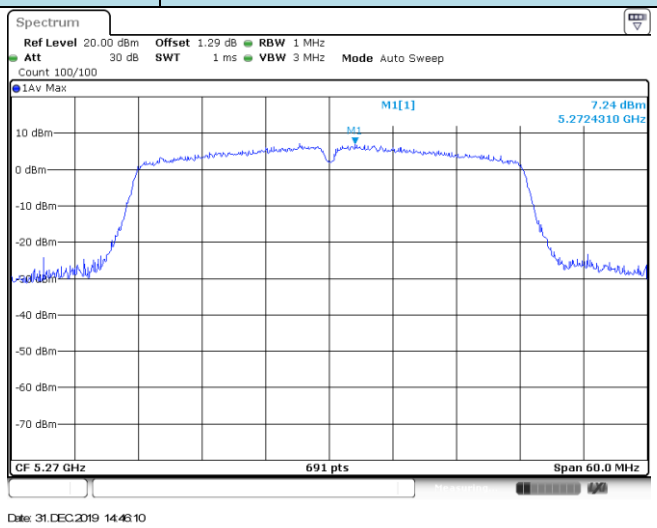
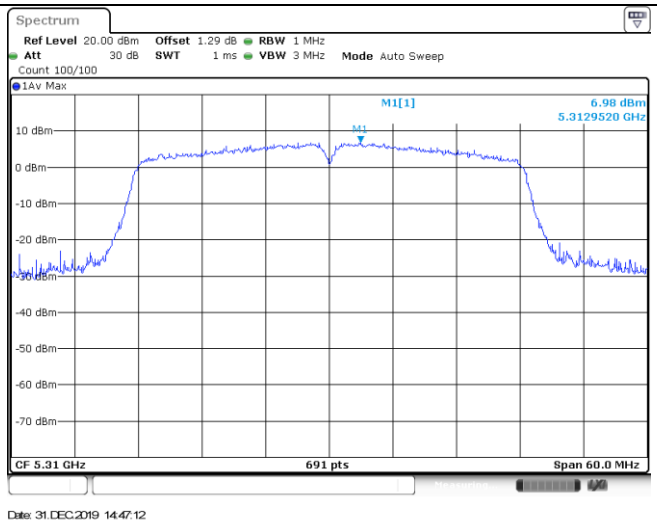
| Band I | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

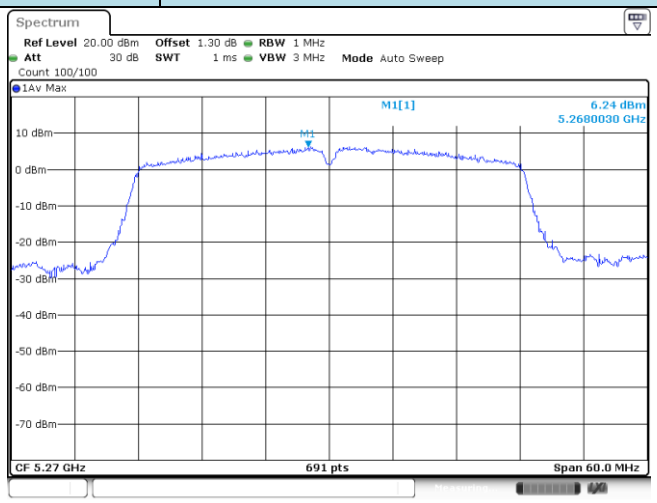
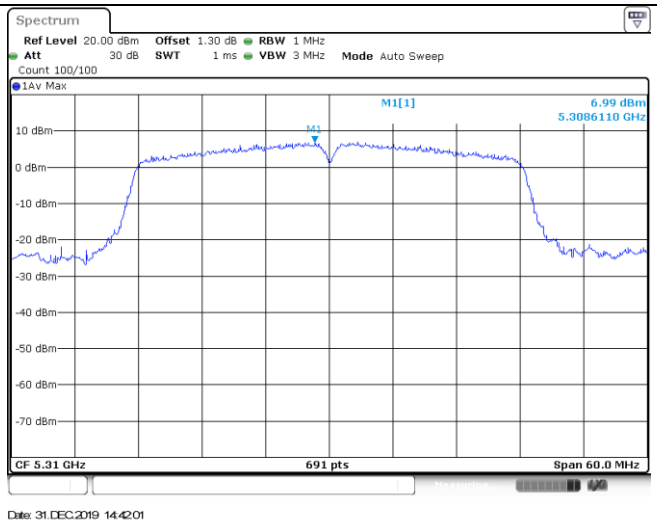
| Band I | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

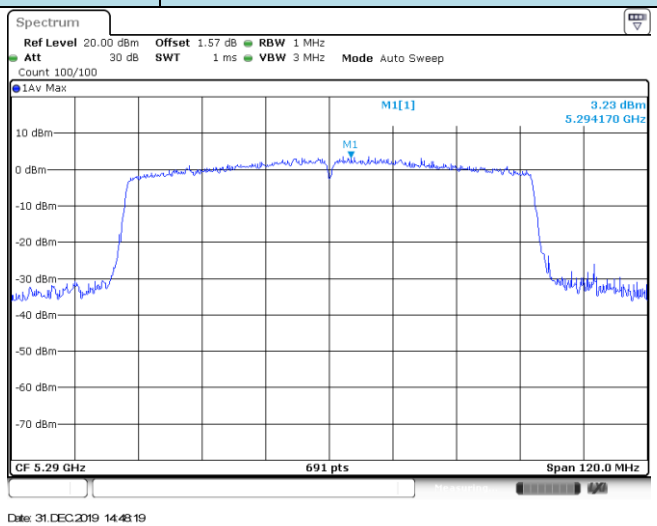
| Band II | 802.11ac (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

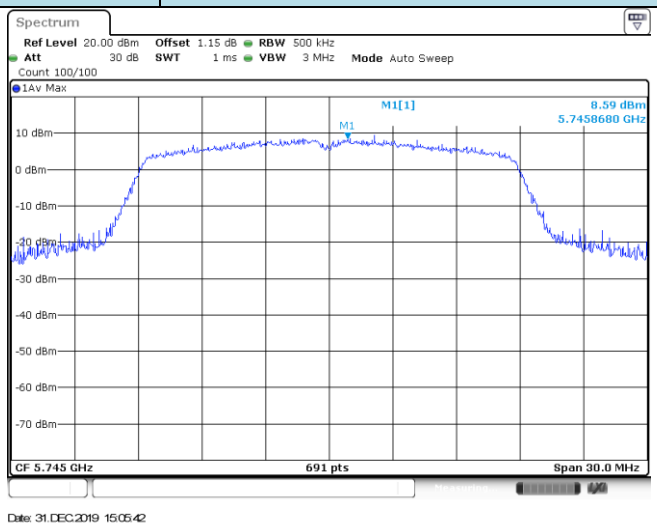
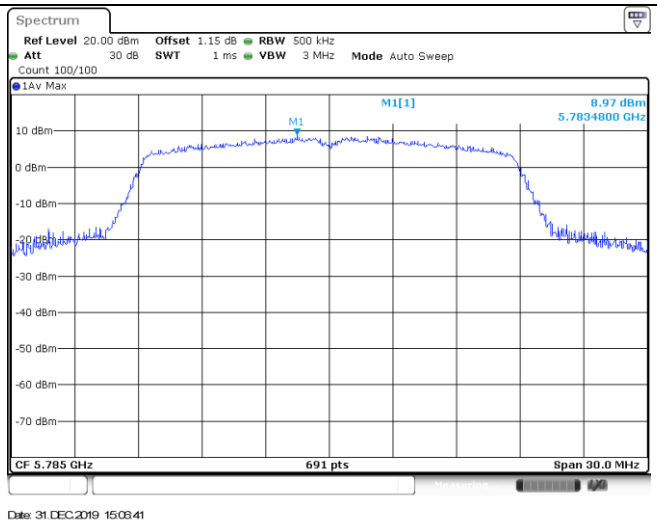
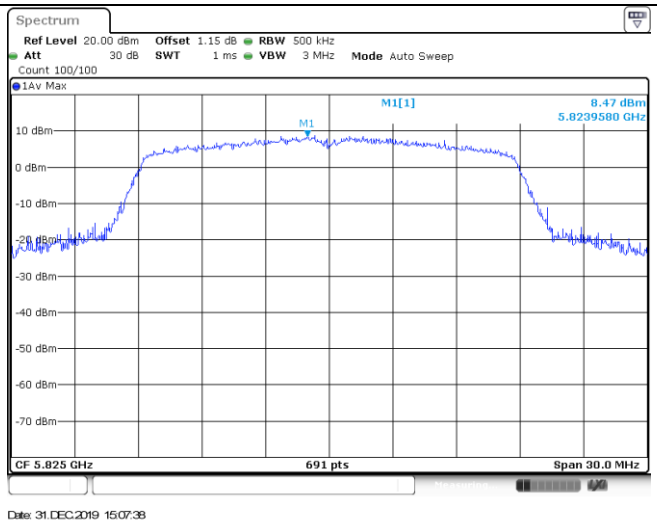
| Band II | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

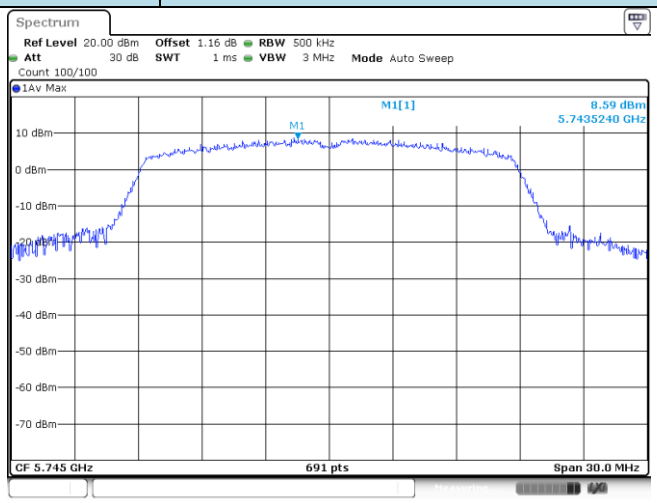
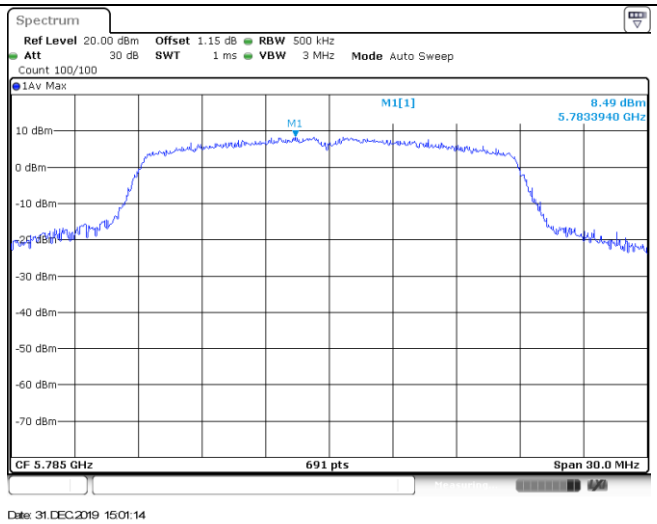
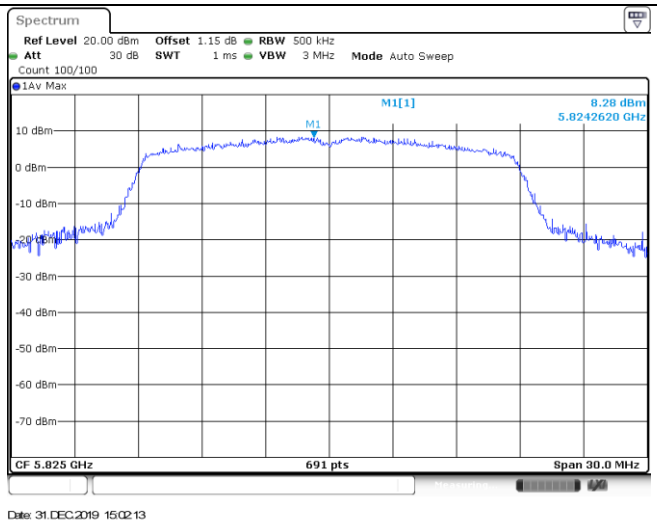
| Band II | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

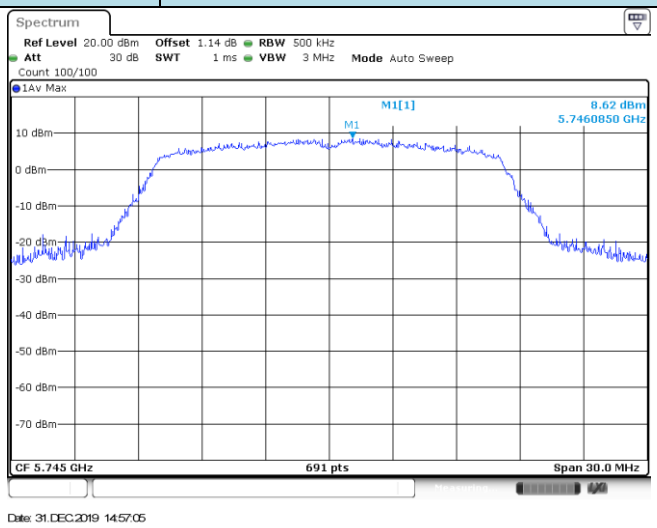
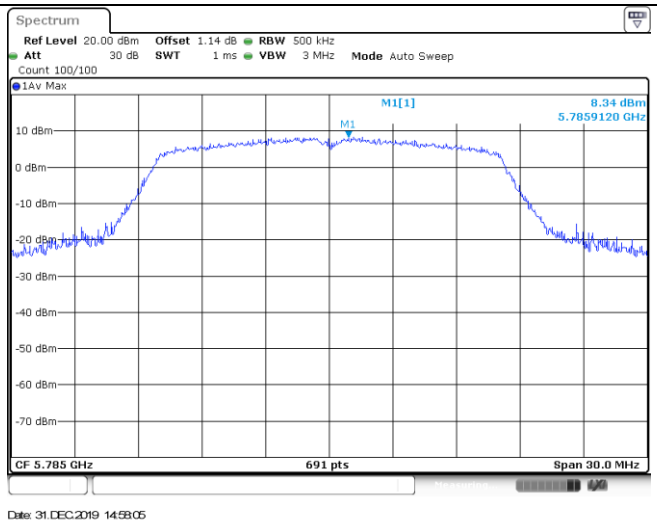
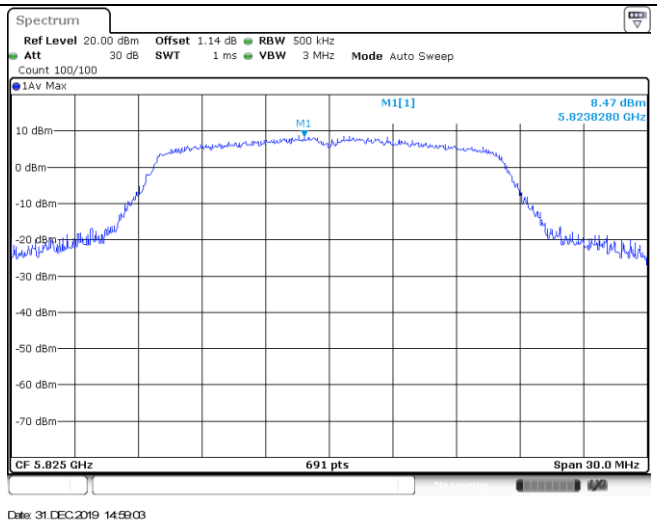
| Band II | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

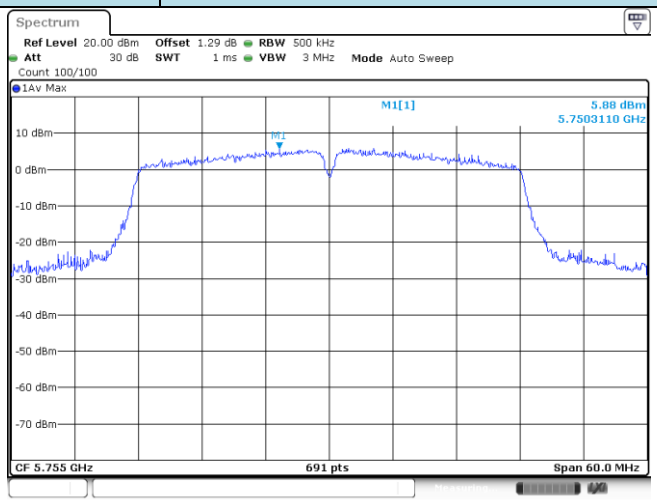
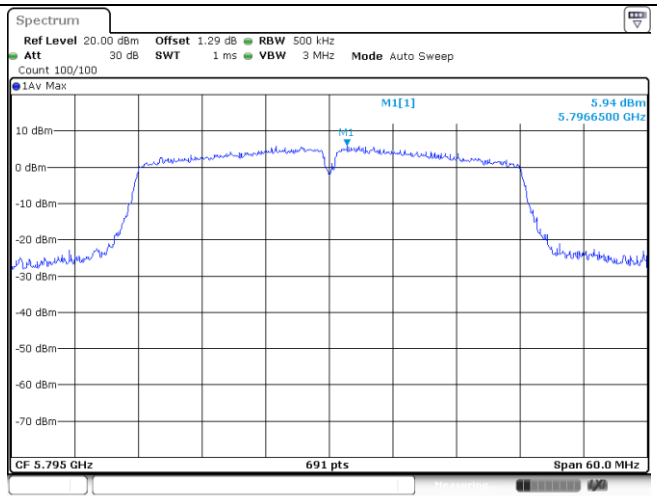
| Band II | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

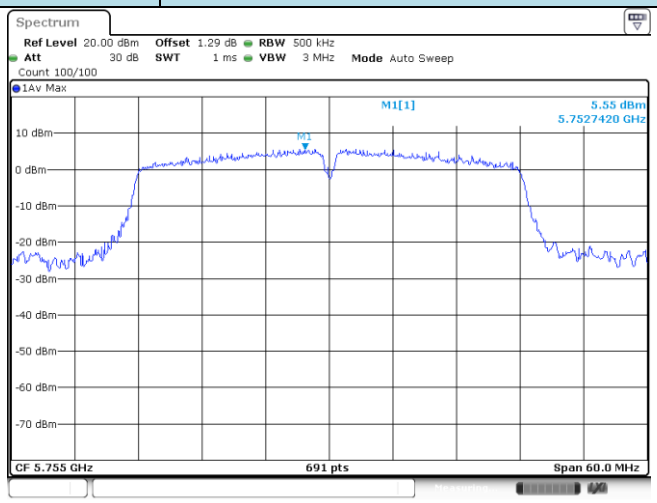
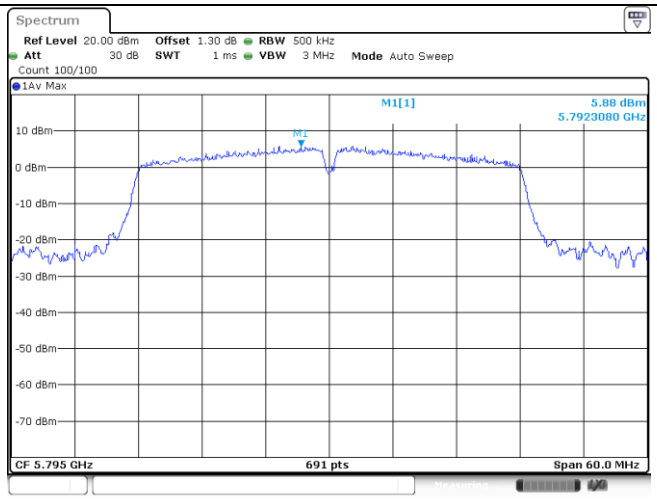
| Band II | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

| Band IV | 802.11ac (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band IV | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

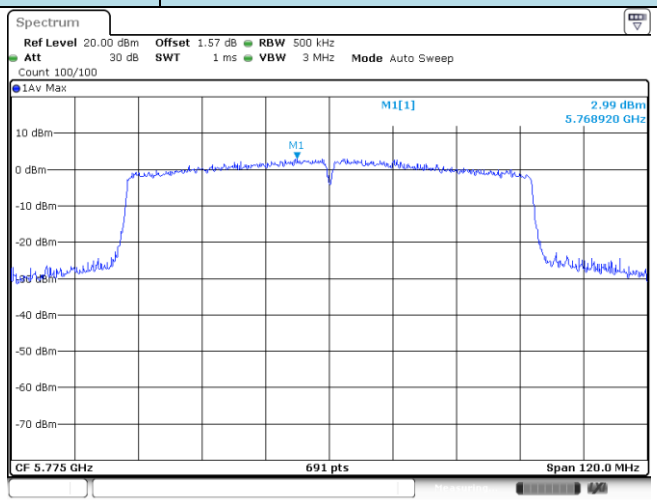
| Band IV | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band IV | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

| Band IV | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

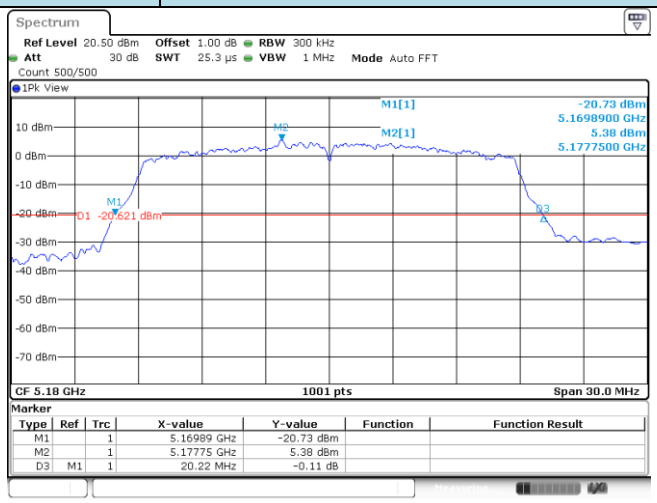
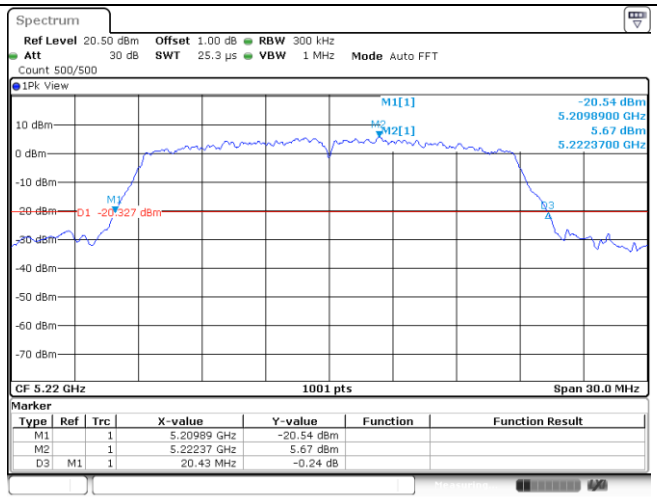
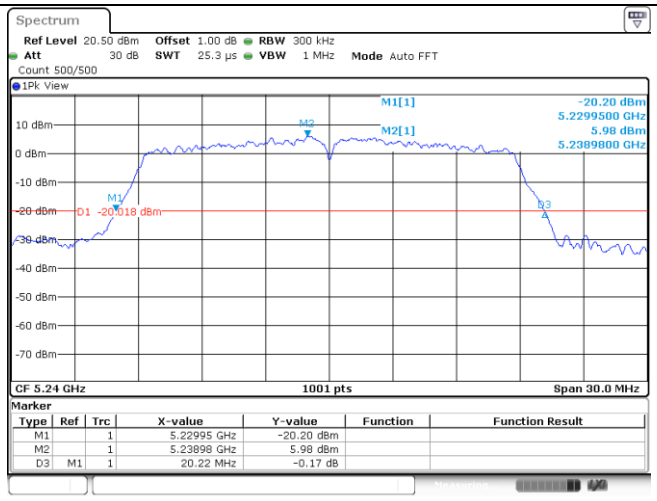


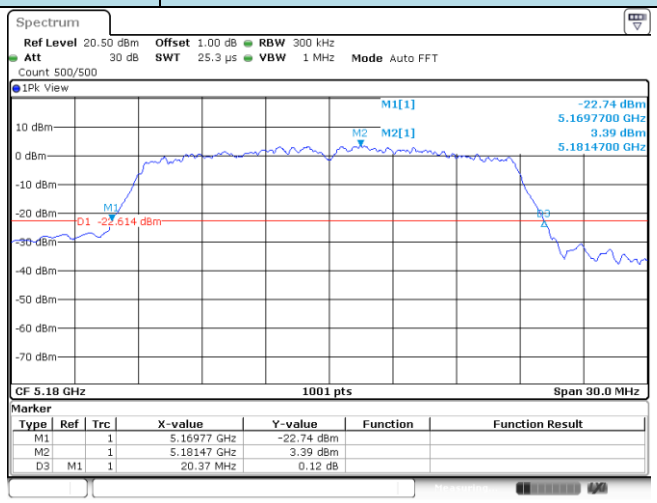
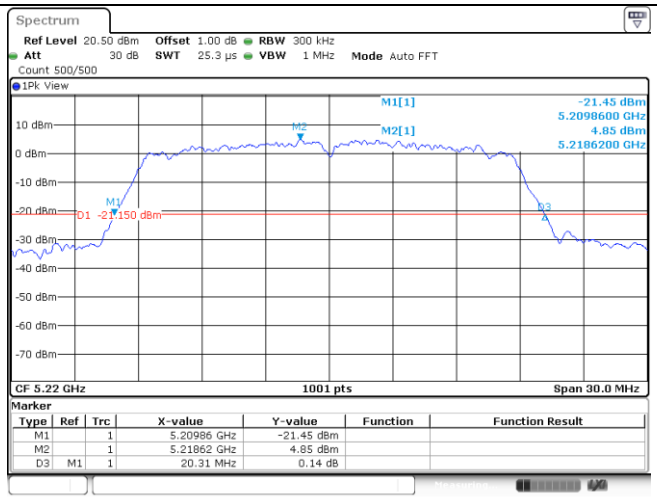
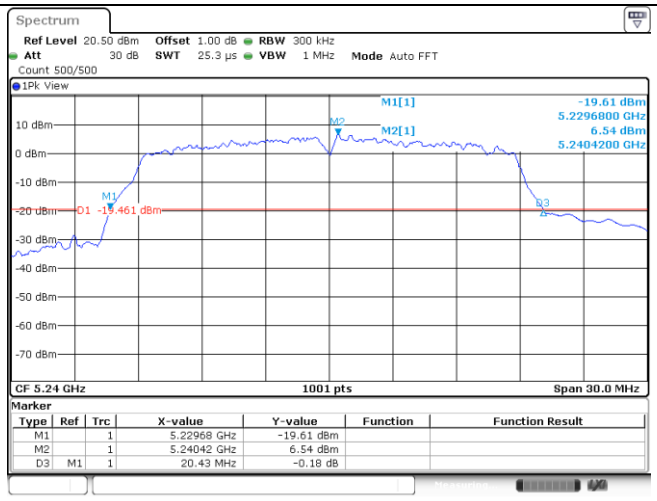


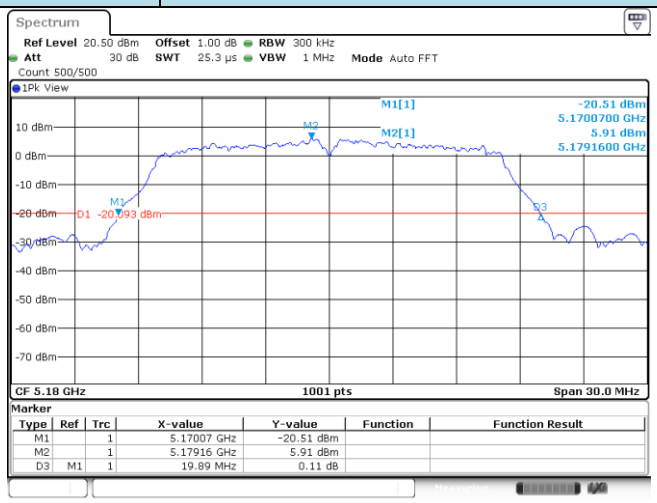
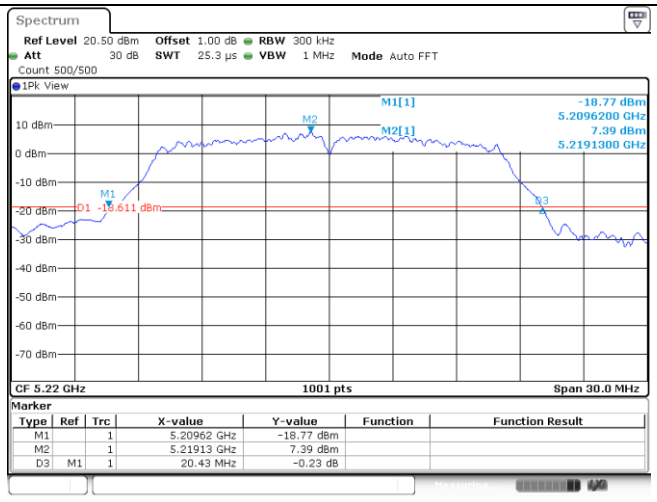
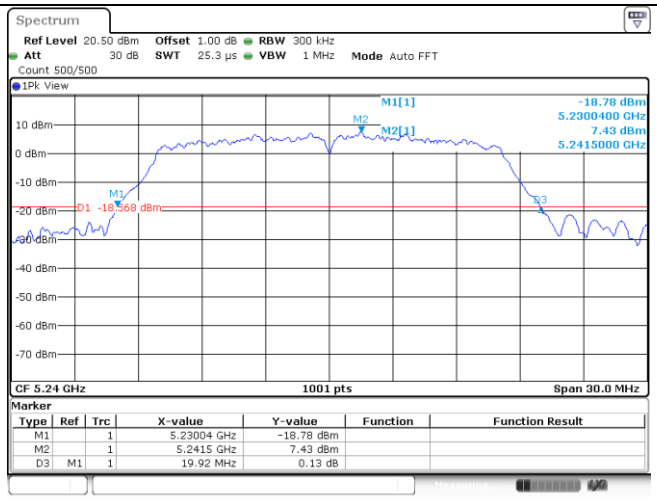
| Band IV | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

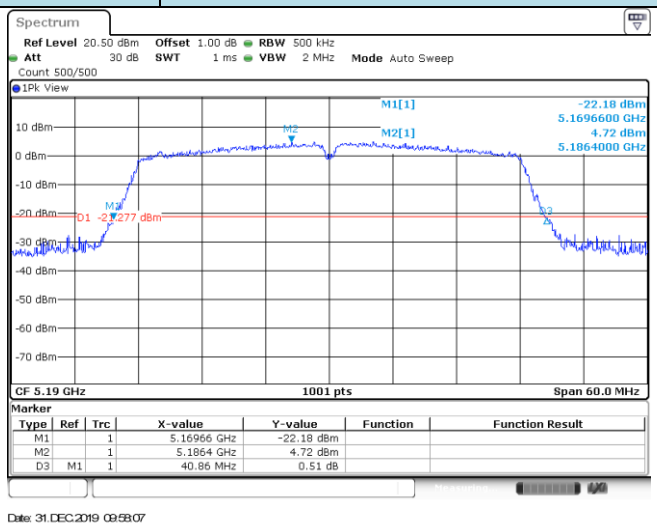
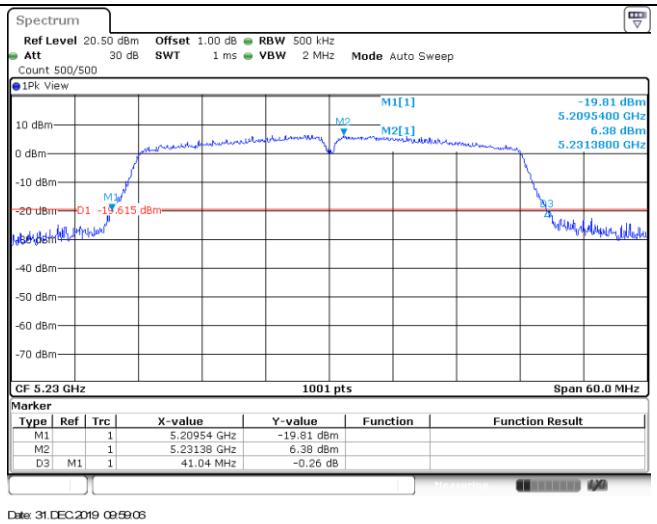
## Appendix C：26dB bandwidth

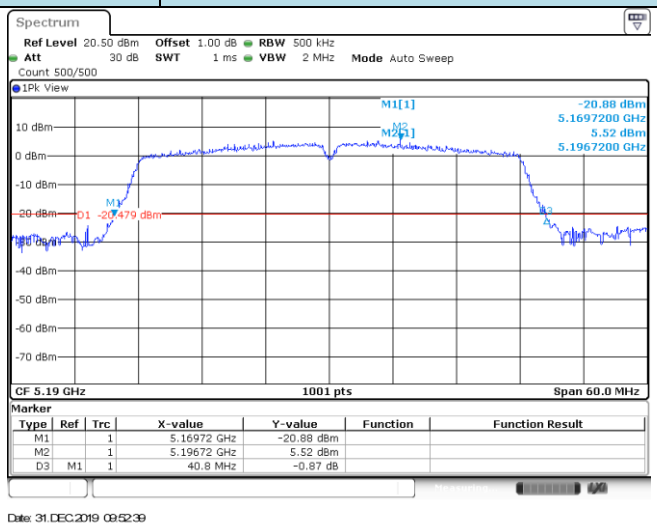
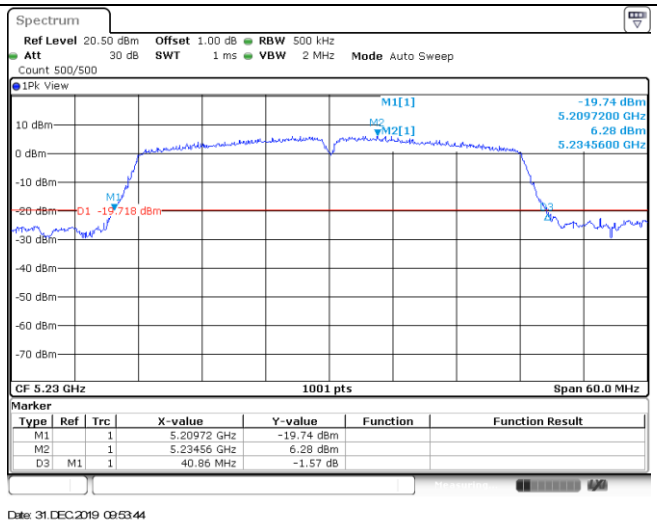
| Band | Bandwidth (MHz) | Type | Channel | 26dB bandwidth (MHz) | Result |
|---|---|---|---|---|---|
| I | 20 | 802.11ac | $CH_L$ | 20.22 | Pass |
| | | | $CH_M$ | 20.43 | |
| | | | $CH_H$ | 20.22 | |
| | | 802.11n | $CH_L$ | 20.37 | Pass |
| | | | $CH_M$ | 20.31 | |
| | | | $CH_H$ | 20.43 | |
| | | 802.11a | $CH_L$ | 19.89 | Pass |
| | | | $CH_M$ | 20.43 | |
| | | | $CH_H$ | 19.92 | |
| | 40 | 802.11ac | $CH_L$ | 40.86 | Pass |
| | | | $CH_H$ | 41.04 | |
| | | 802.11n | $CH_L$ | 40.80 | Pass |
| | | | $CH_H$ | 40.86 | |
| | 80 | 802.11ac | $CH_M$ | 81.24 | Pass |
| II | 20 | 802.11ac | $CH_L$ | 20.19 | Pass |
| | | | $CH_M$ | 20.25 | |
| | | | $CH_H$ | 20.46 | |
| | | 802.11n | $CH_L$ | 20.46 | Pass |
| | | | $CH_M$ | 20.34 | |
| | | | $CH_H$ | 20.52 | |
| | | 802.11a | $CH_L$ | 20.07 | Pass |
| | | | $CH_M$ | 19.86 | |
| | | | $CH_H$ | 20.73 | |
| | 40 | 802.11ac | $CH_L$ | 41.58 | Pass |
| | | | $CH_H$ | 41.22 | |
| | | 802.11n | $CH_L$ | 41.10 | Pass |
| | | | $CH_H$ | 41.34 | |
| | 80 | 802.11ac | $CH_M$ | 81.24 | Pass |

| Band I | 802.11ac (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band I | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

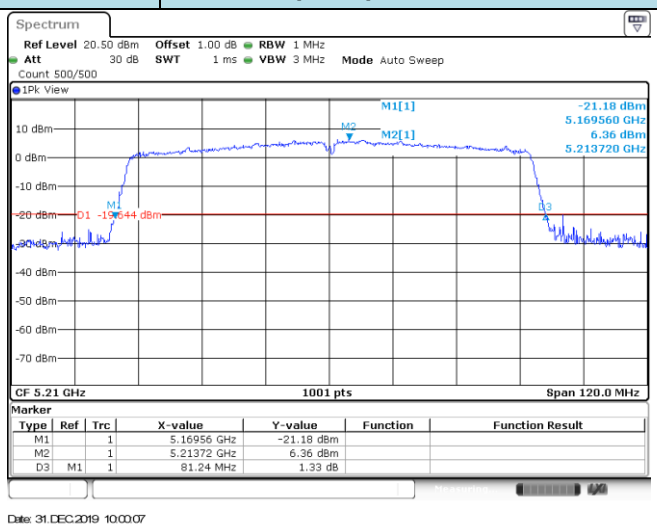
| Band I | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

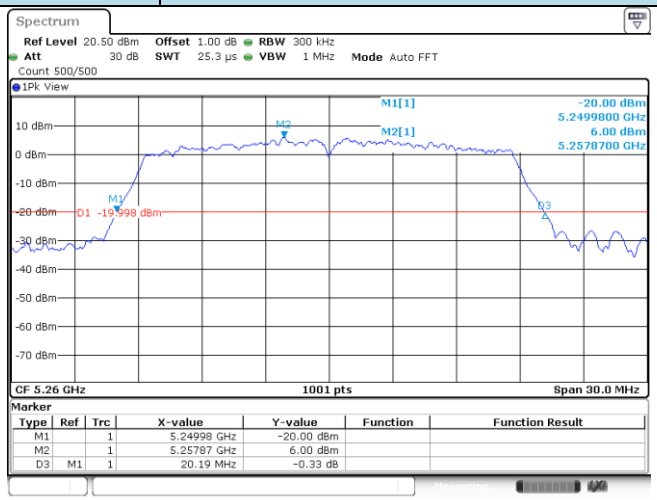
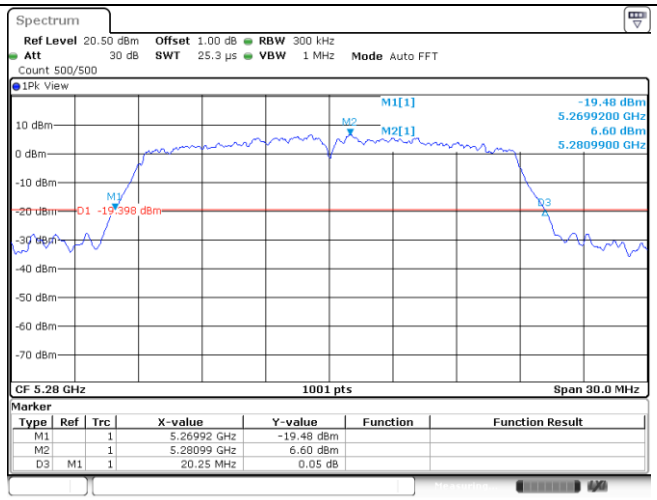
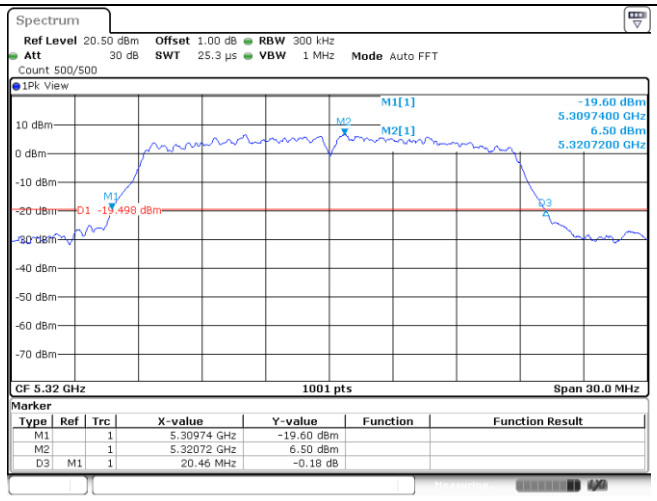
| Band I | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

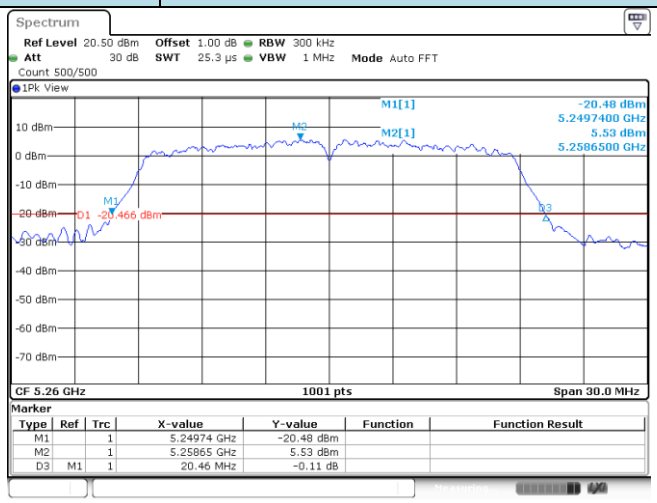
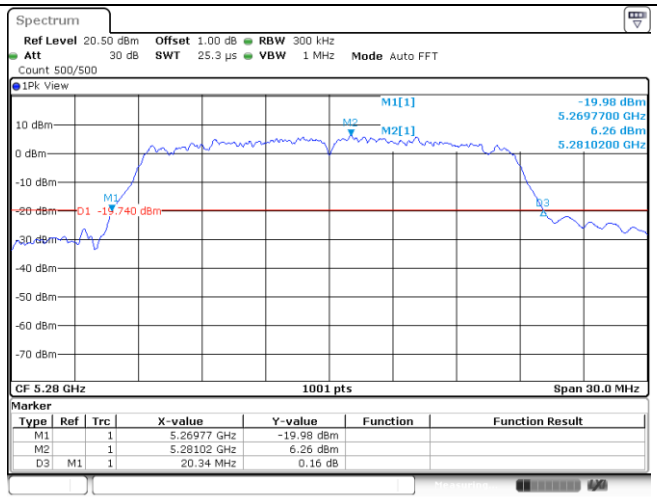
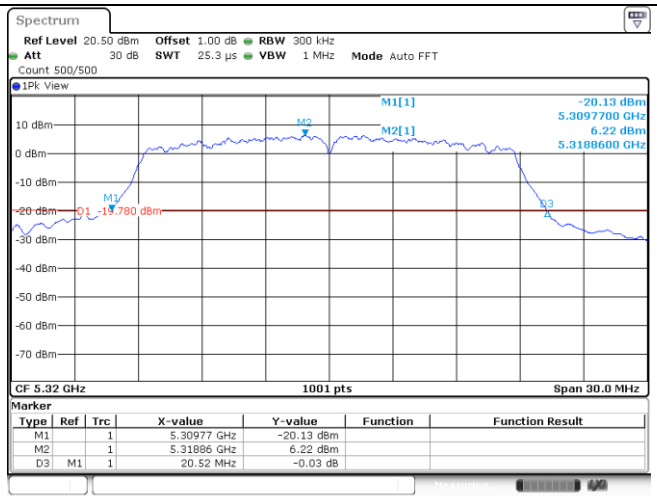
| Band I | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

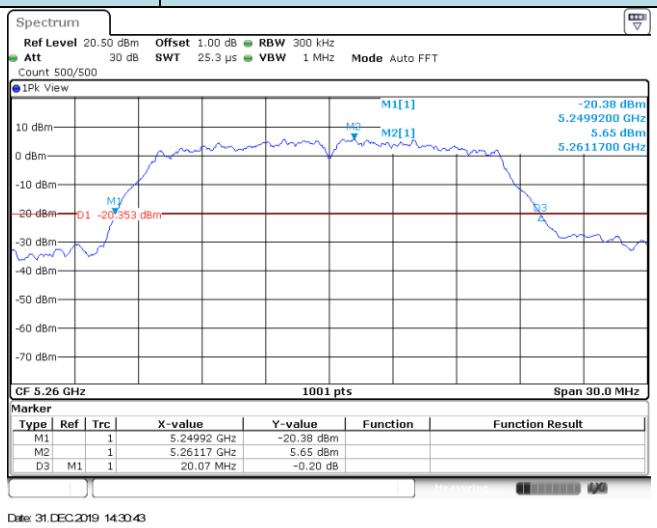
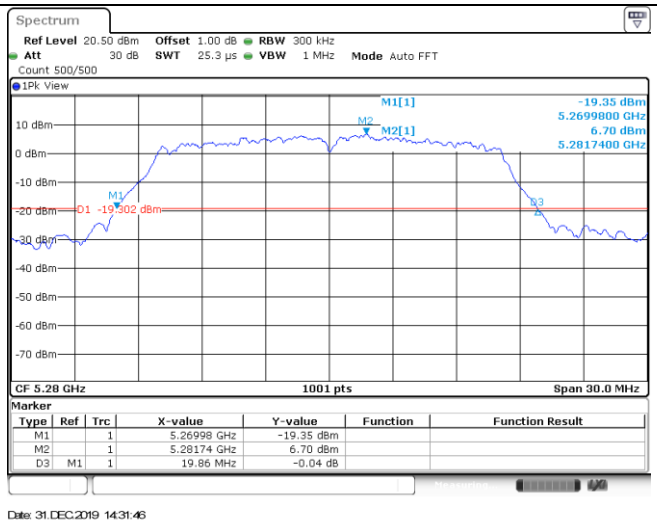
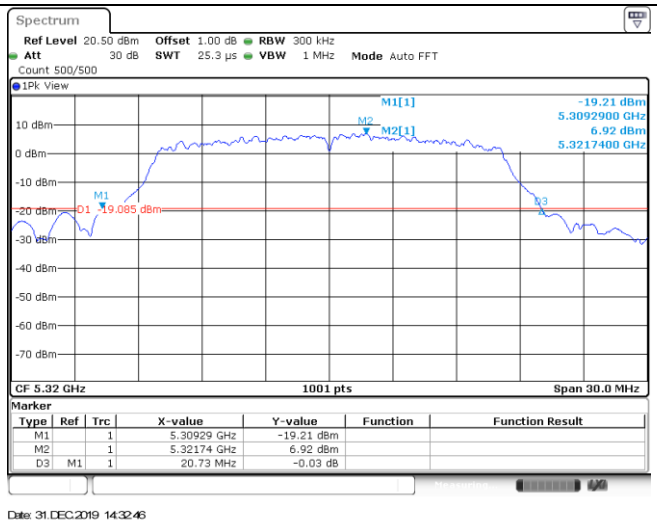


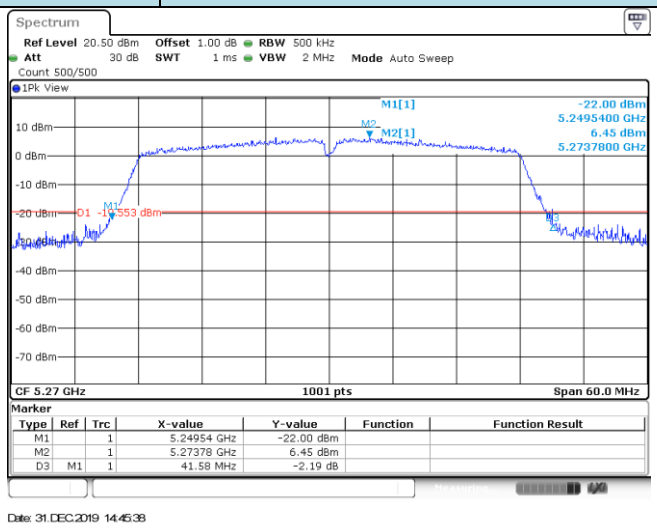
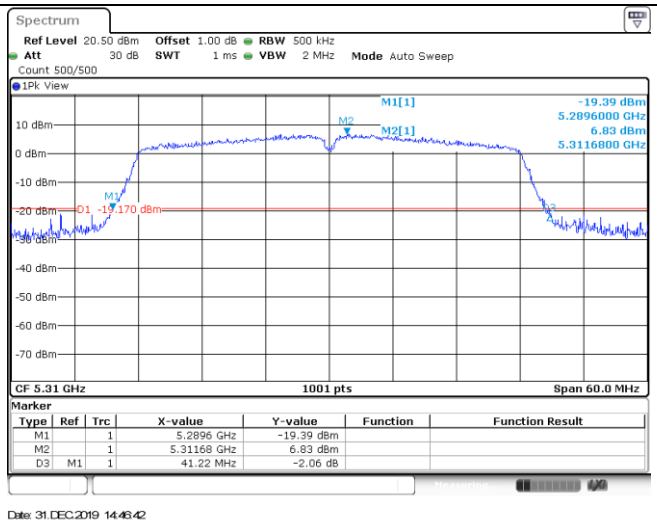


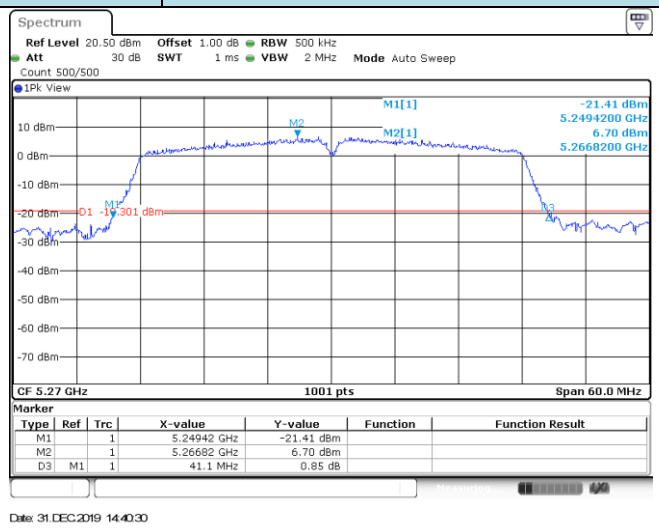
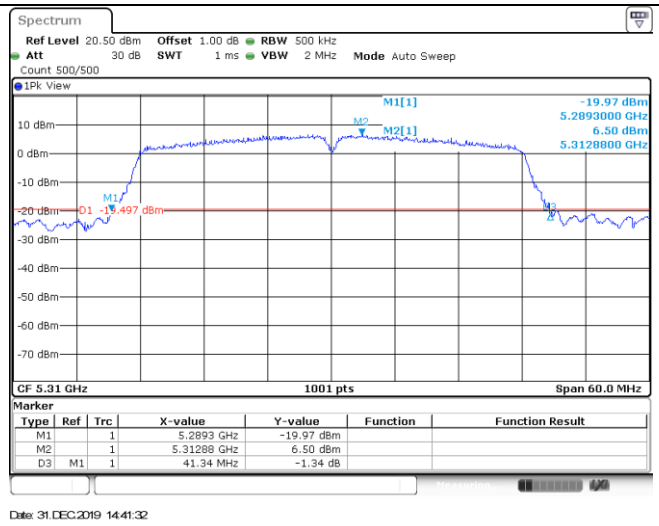
| Band I | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

| Band II | 802.11ac (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band II | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

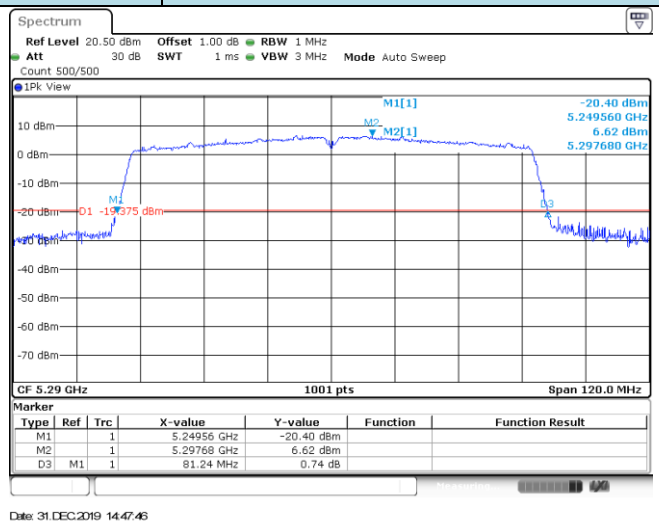
| Band II | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band II | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

| Band II | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |



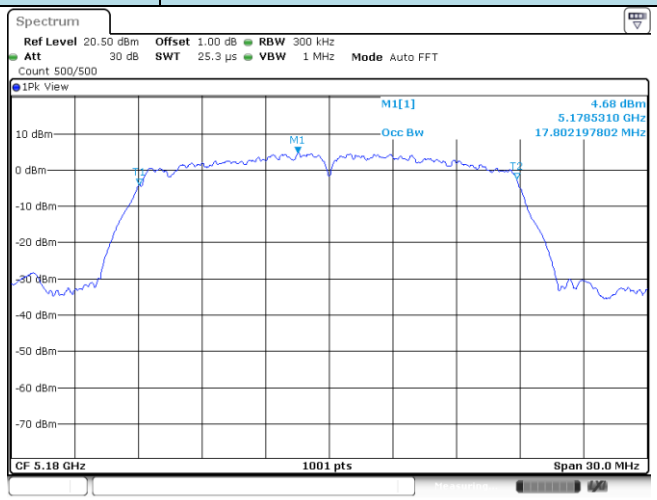
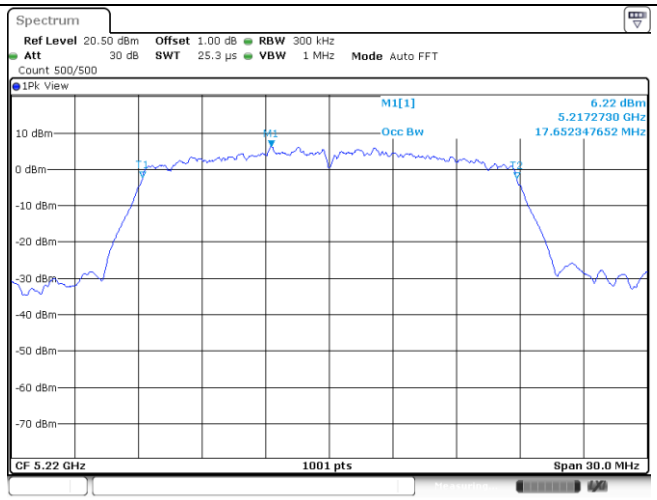
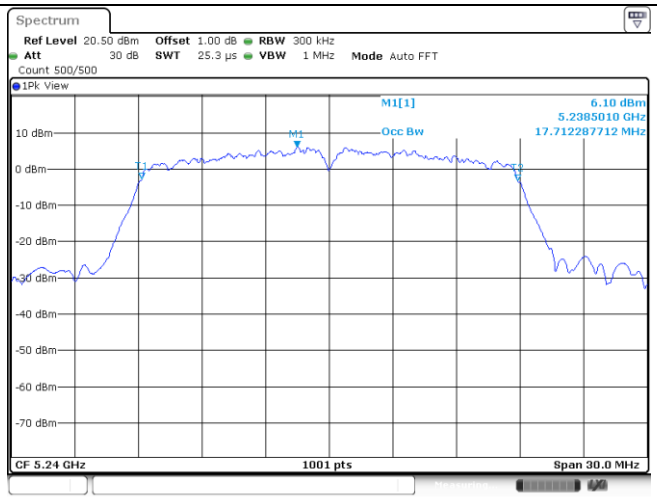


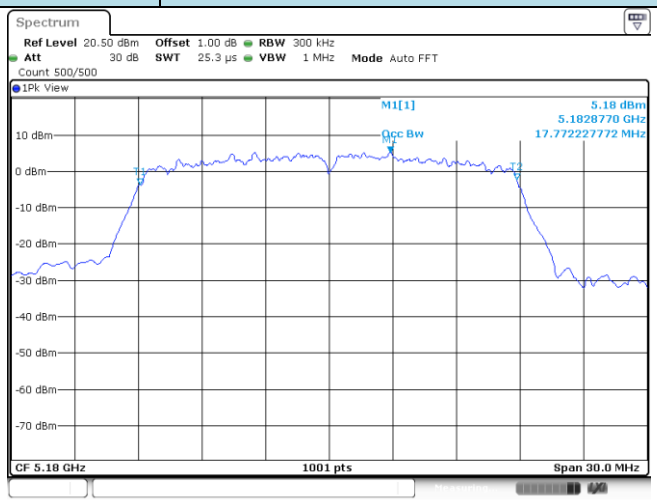
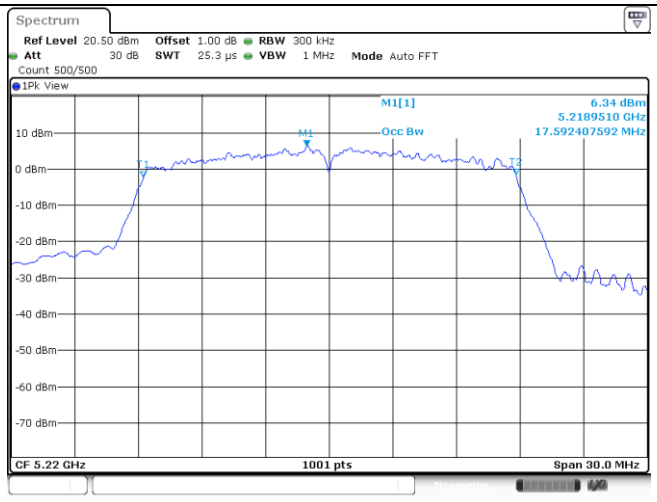
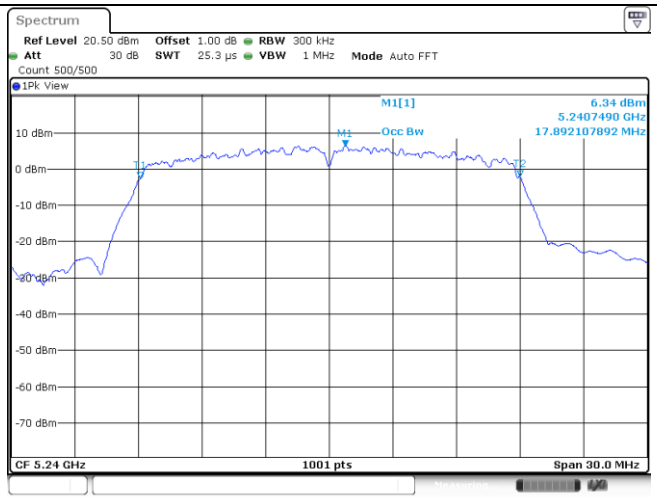
| Band II | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

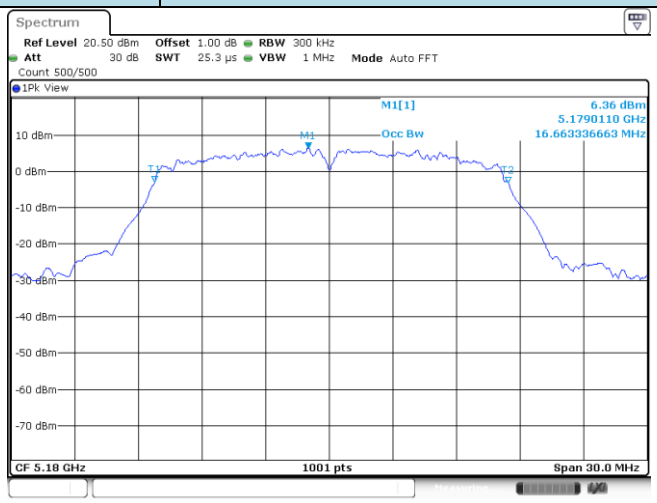
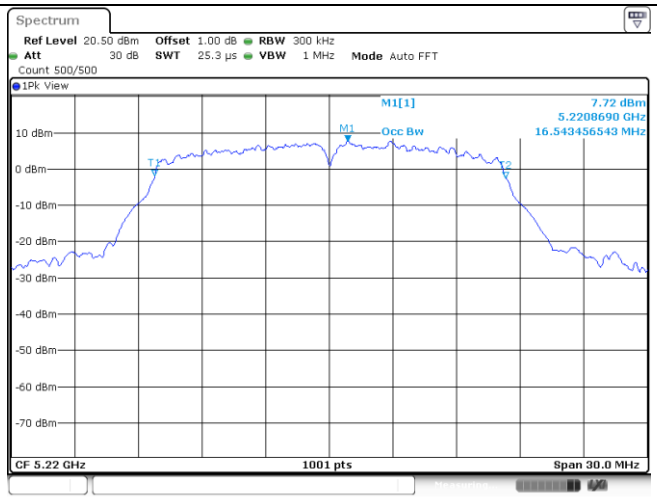
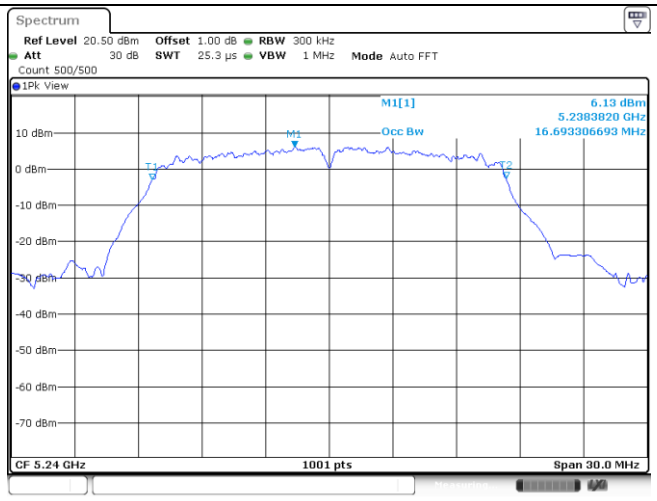
## Appendix D：99% Occupy bandwidth

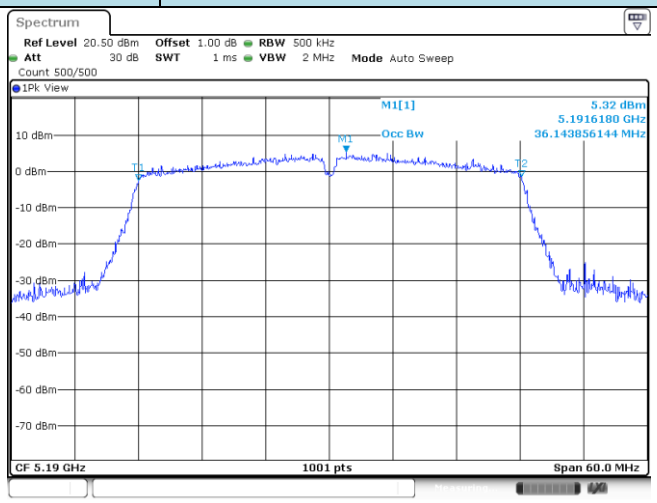
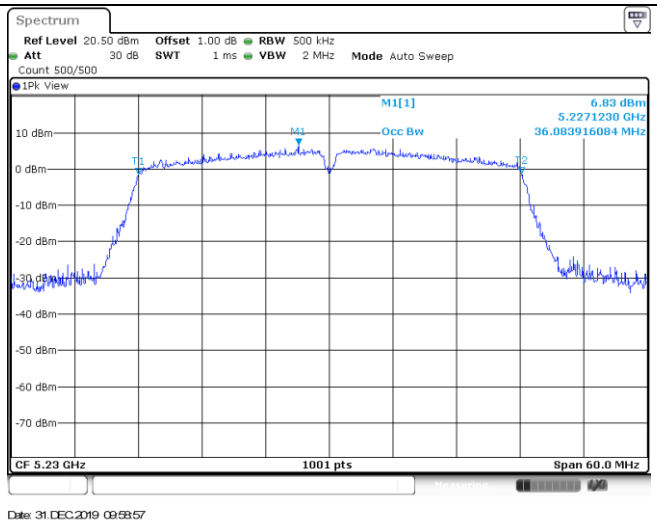
| Band | Bandwidth (MHz) | Type | Channel | 99% Occupy bandwith (MHz) | Result |
|---|---|---|---|---|---|
| I | 20 | 802.11ac | $CH_L$ | 17.80 | Pass |
| | | | $CH_M$ | 17.65 | |
| | | | $CH_H$ | 17.71 | |
| | | 802.11n | $CH_L$ | 17.77 | Pass |
| | | | $CH_M$ | 17.59 | |
| | | | $CH_H$ | 17.89 | |
| | | 802.11a | $CH_L$ | 16.66 | Pass |
| | | | $CH_M$ | 16.54 | |
| | | | $CH_H$ | 16.69 | |
| | 40 | 802.11ac | $CH_L$ | 36.14 | Pass |
| | | | $CH_H$ | 36.08 | |
| | | 802.11n | $CH_L$ | 36.08 | Pass |
| | | | $CH_H$ | 36.14 | |
| | 80 | 802.11ac | $CH_M$ | 75.17 | Pass |
| II | 20 | 802.11ac | $CH_L$ | 17.65 | Pass |
| | | | $CH_M$ | 17.59 | |
| | | | $CH_H$ | 17.71 | |
| | | 802.11n | $CH_L$ | 17.65 | Pass |
| | | | $CH_M$ | 17.74 | |
| | | | $CH_H$ | 17.71 | |
| | | 802.11a | $CH_L$ | 16.54 | Pass |
| | | | $CH_M$ | 16.66 | |
| | | | $CH_H$ | 16.57 | |
| | 40 | 802.11ac | $CH_L$ | 36.08 | Pass |
| | | | $CH_H$ | 36.14 | |
| | | 802.11n | $CH_L$ | 36.14 | Pass |
| | | | $CH_H$ | 36.14 | |
| | 80 | 802.11ac | $CH_M$ | 75.17 | Pass |

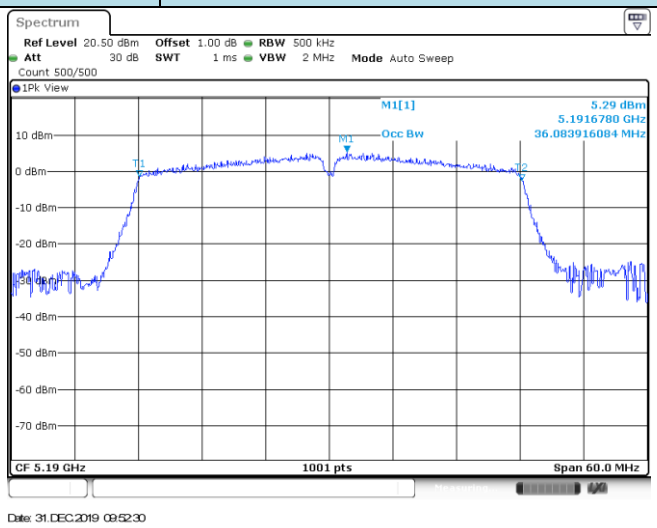
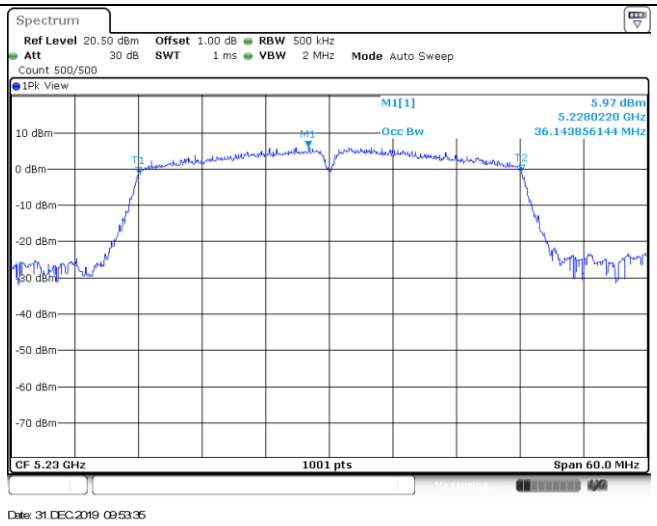
| Band | Bandwidth (MHz) | Type | Channel | 99% Occupy bandwith (MHz) | Result |
|---|---|---|---|---|---|
| IV | 20 | 802.11ac | $CH_L$ | 17.68 | Pass |
| | | | $CH_M$ | 17.74 | |
| | | | $CH_H$ | 17.68 | |
| | | 802.11n | $CH_L$ | 17.68 | Pass |
| | | | $CH_M$ | 17.83 | |
| | | | $CH_H$ | 17.65 | |
| | | 802.11a | $CH_L$ | 16.72 | Pass |
| | | | $CH_M$ | 16.81 | |
| | | | $CH_H$ | 16.63 | |
| | 40 | 802.11ac | $CH_L$ | 36.14 | Pass |
| | | | $CH_H$ | 36.20 | |
| | | 802.11n | $CH_L$ | 36.21 | Pass |
| | | | $CH_H$ | 36.21 | |
| | 80 | 802.11ac | $CH_M$ | 75.29 | Pass |

| Band I | 802.11ac (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band I | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

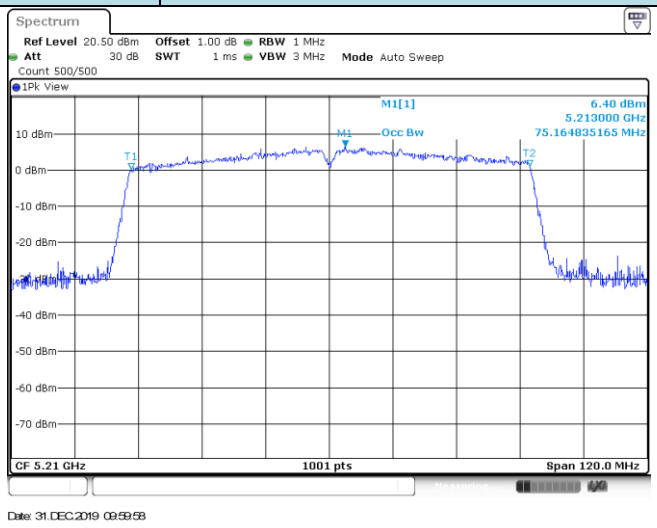
| Band I | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

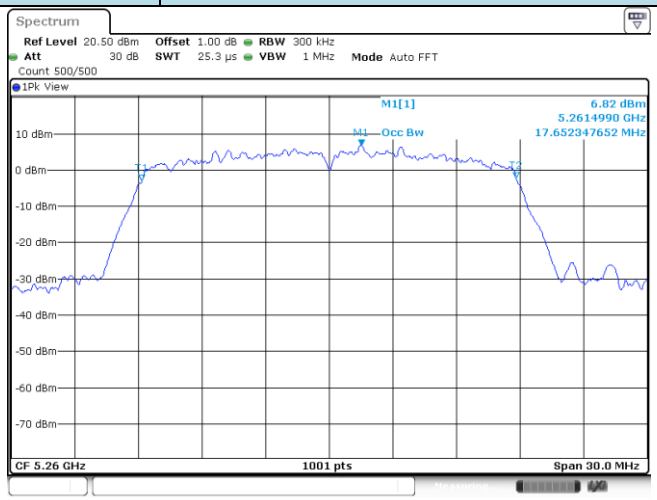
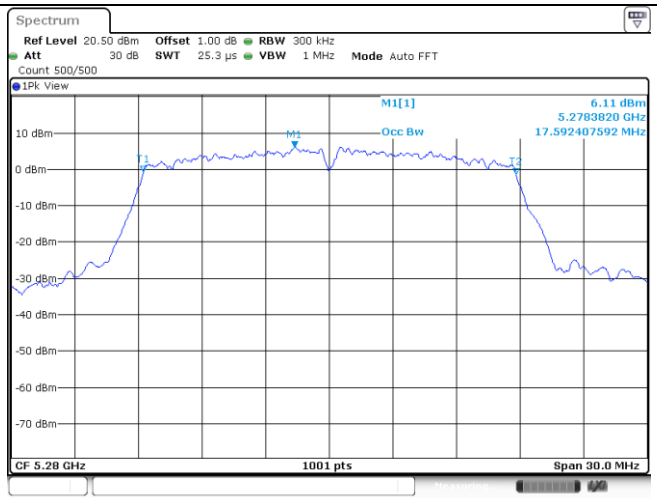
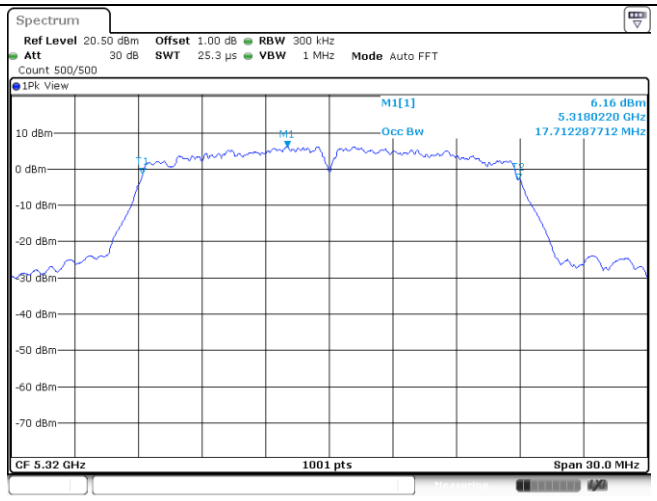
| Band I | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

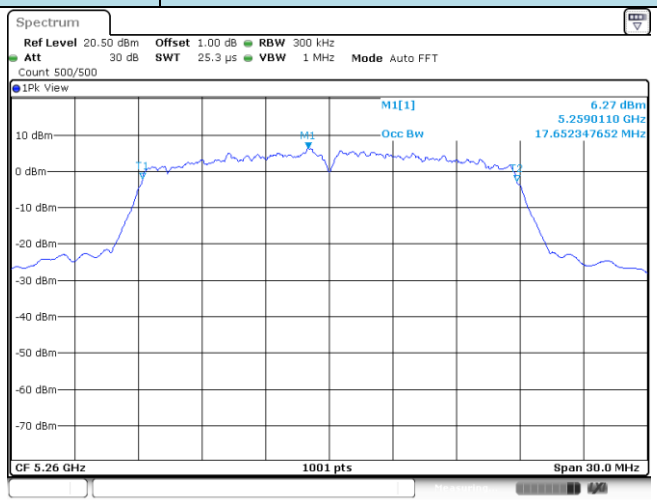
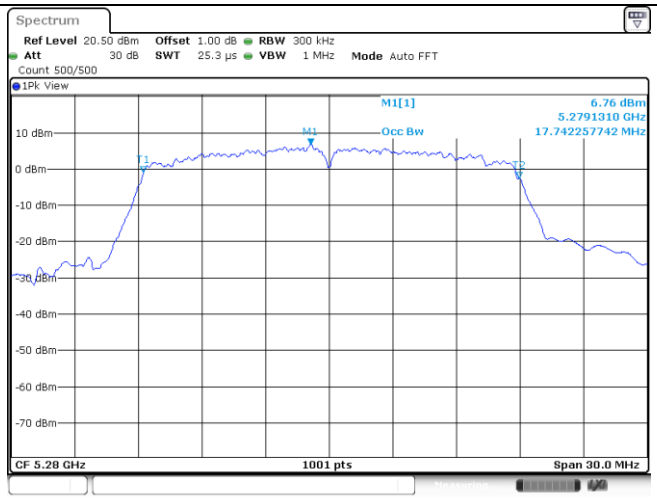
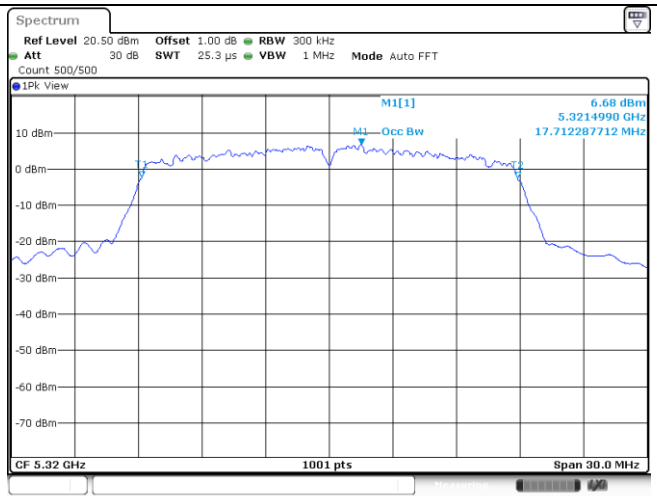
| Band I | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

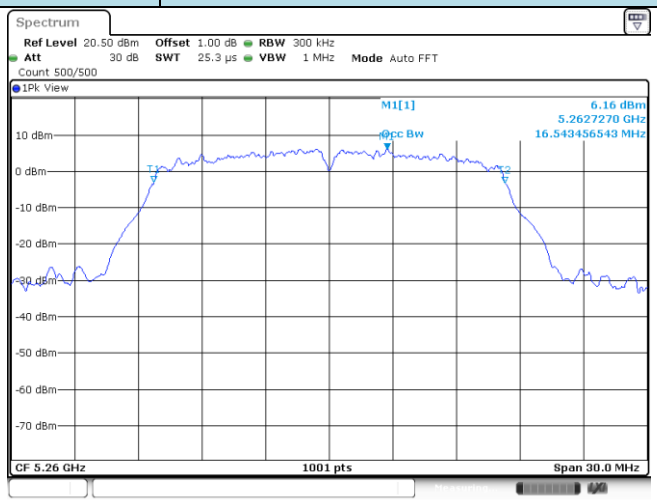
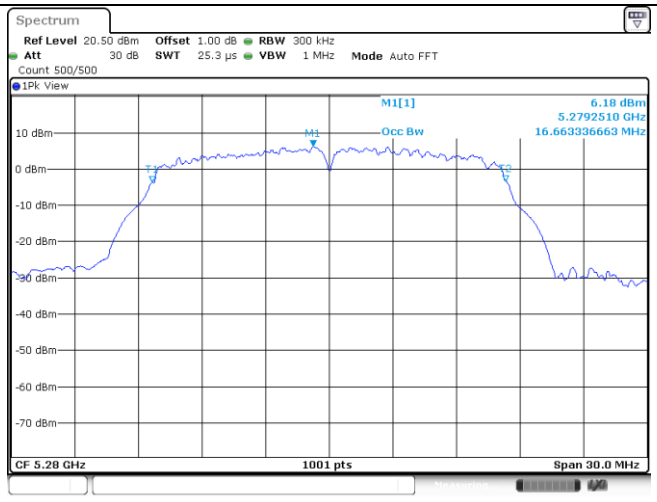
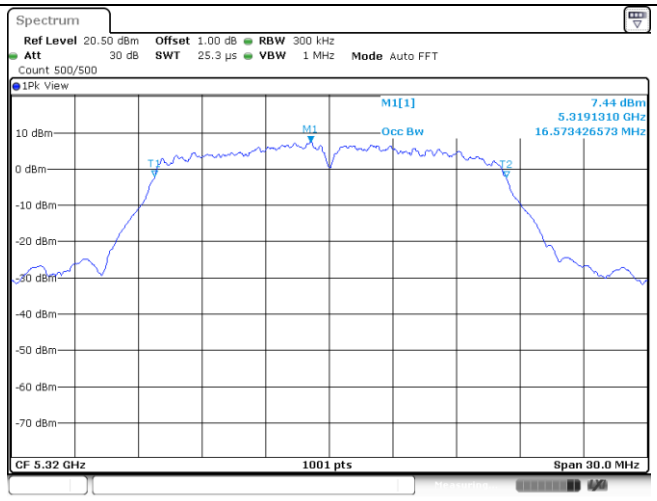


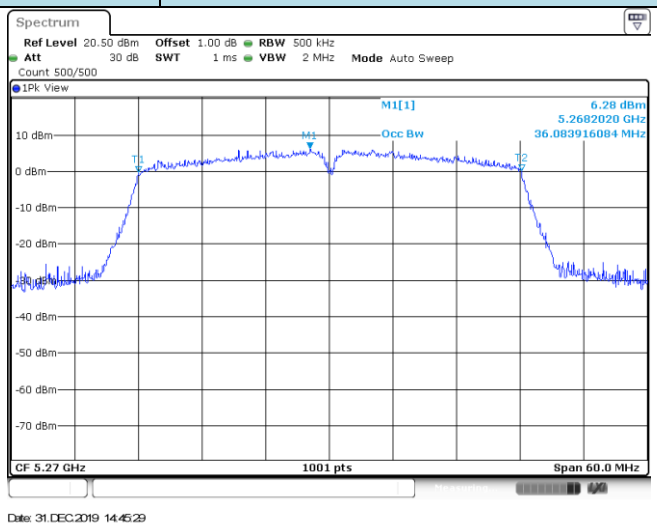
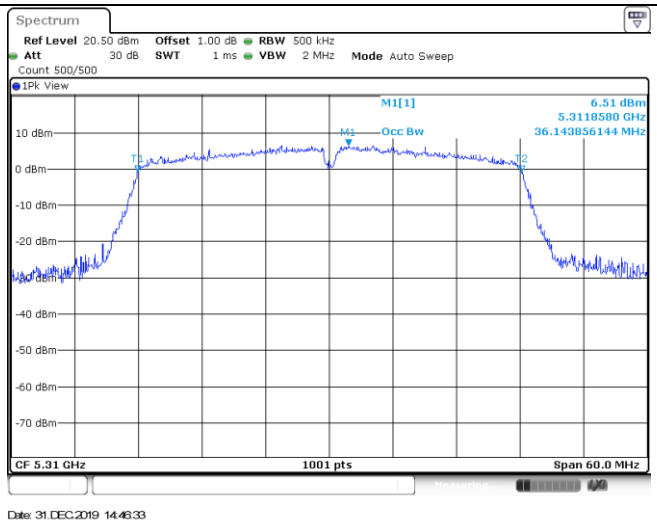


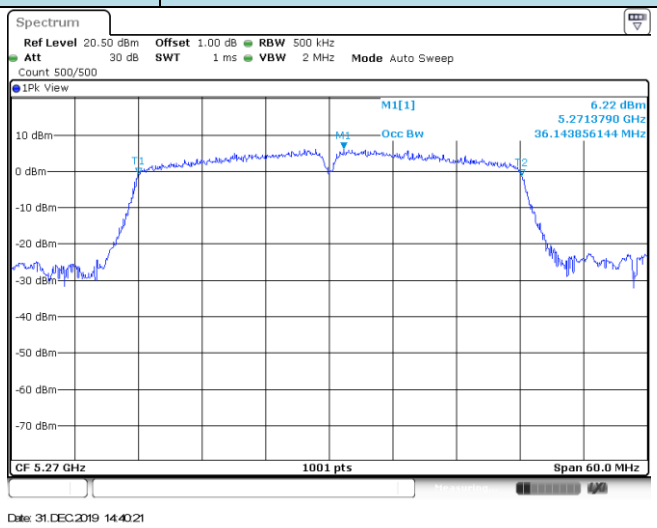
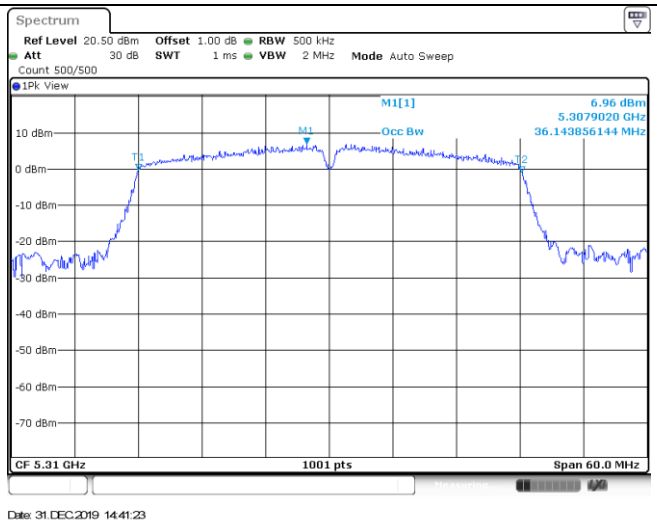
| Band I | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

| Band II | 802.11ac (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band II | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

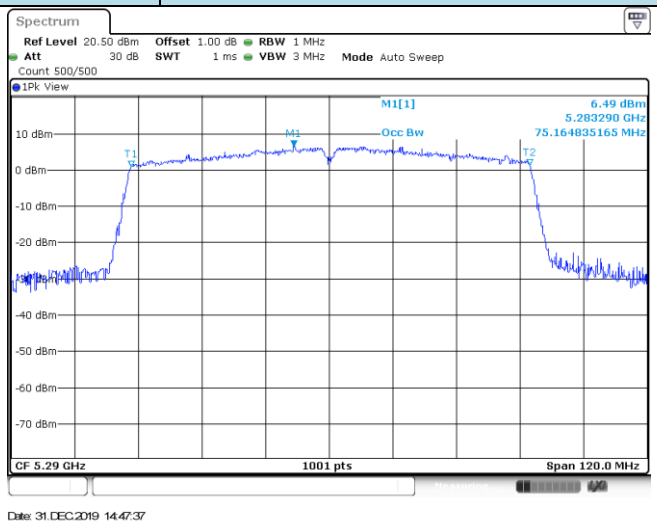
| Band II | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

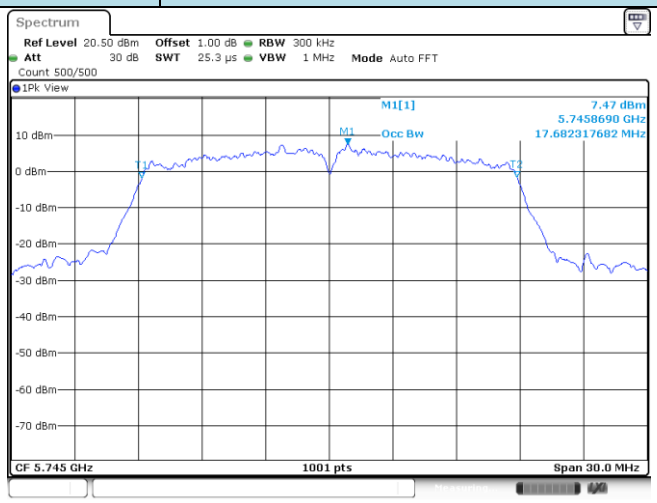
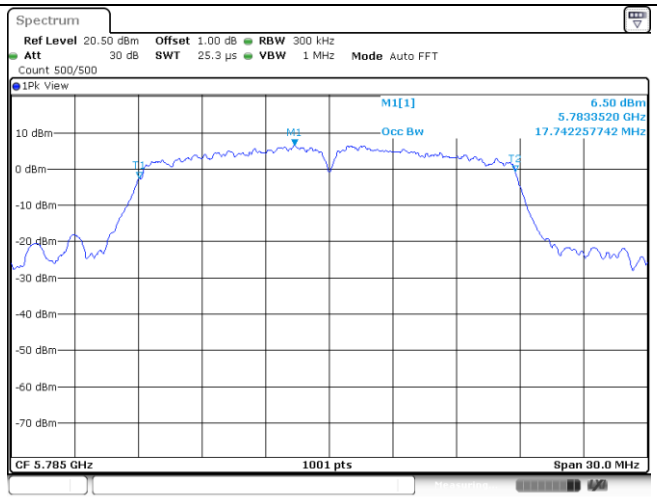
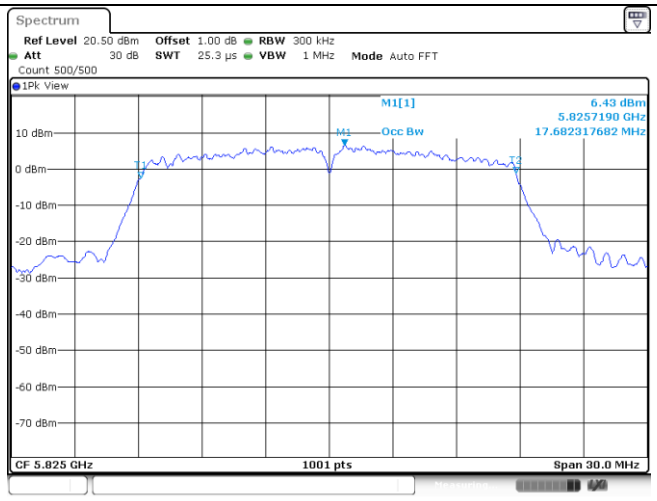
| Band II | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

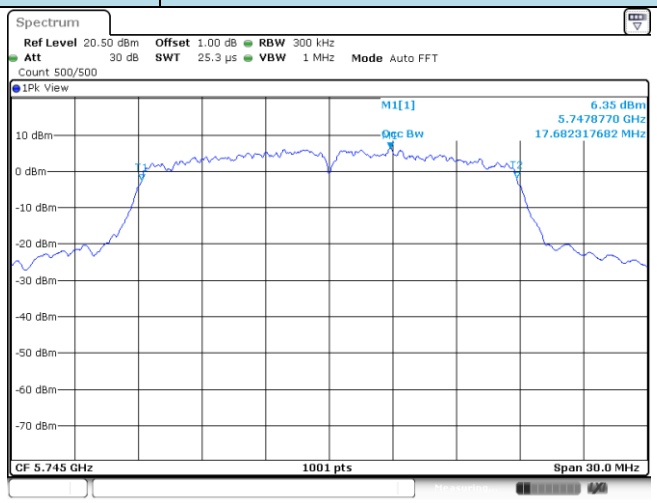
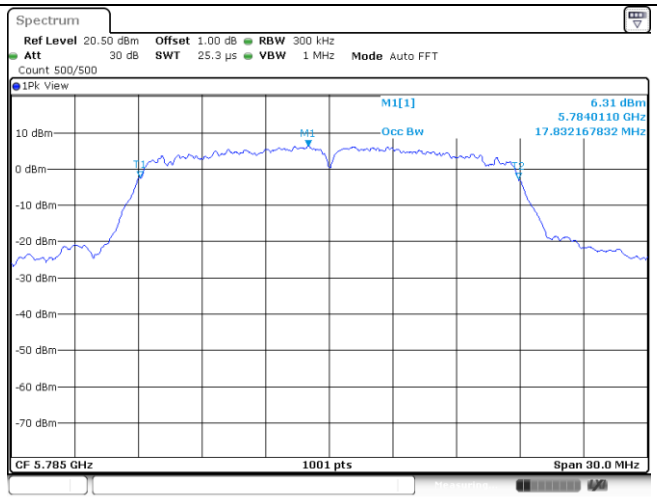
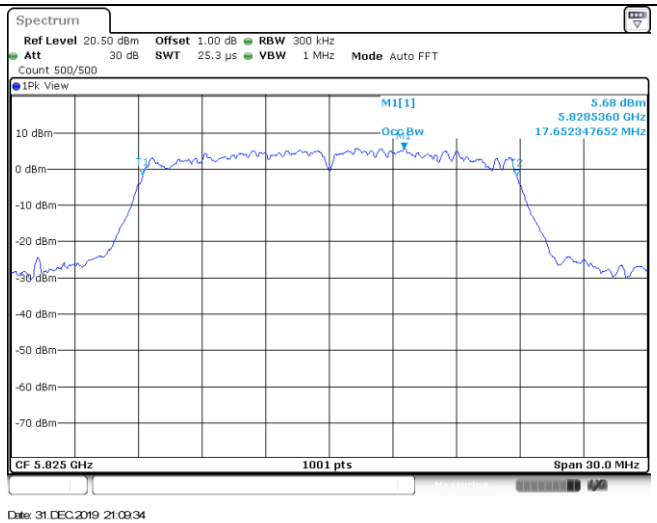
| Band II | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

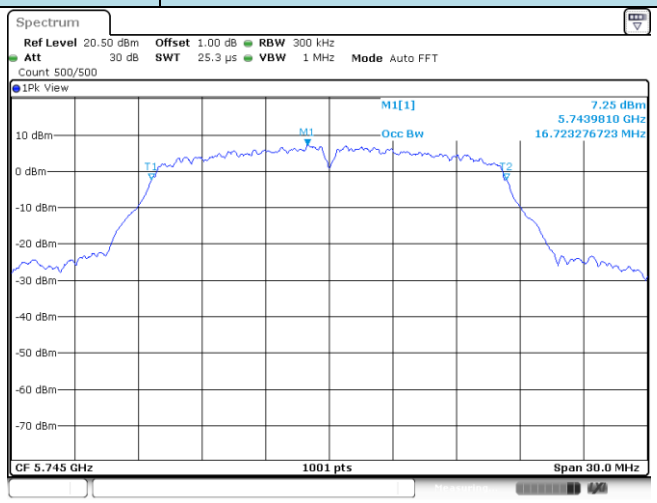
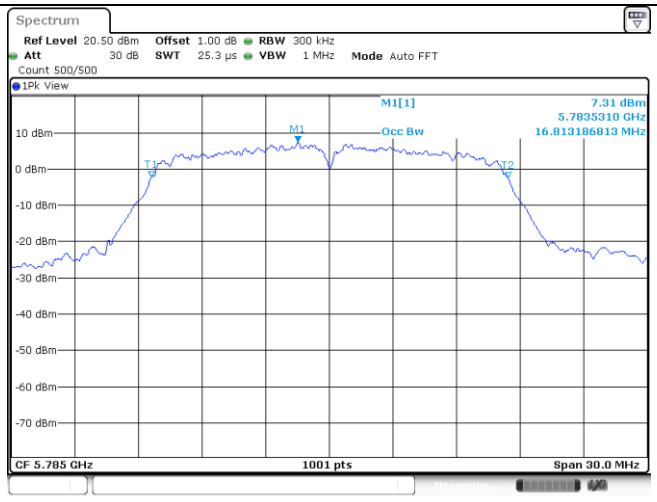
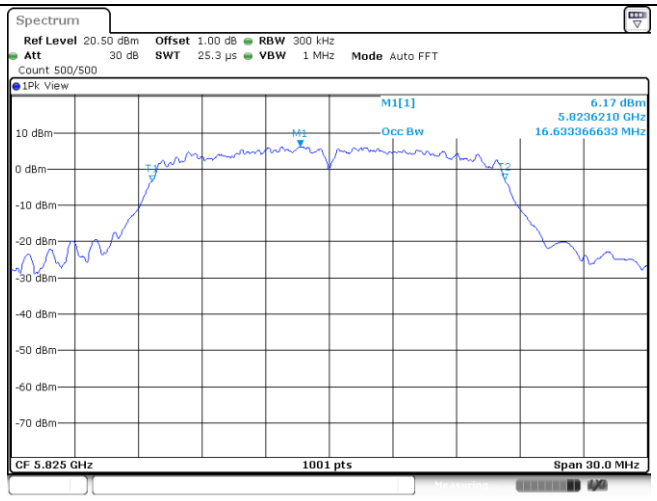


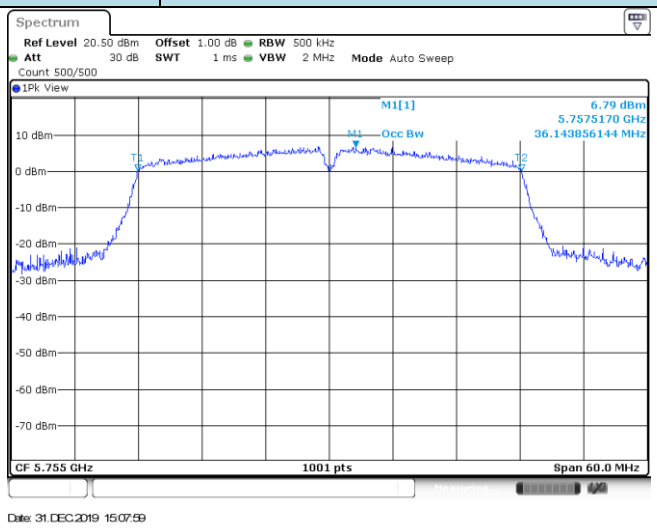
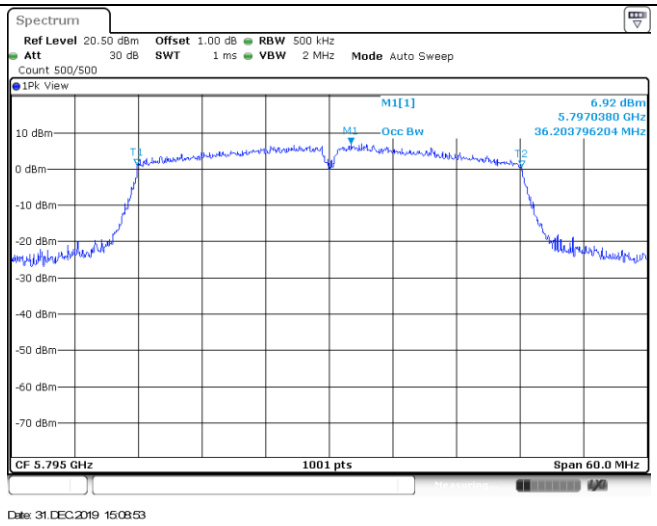


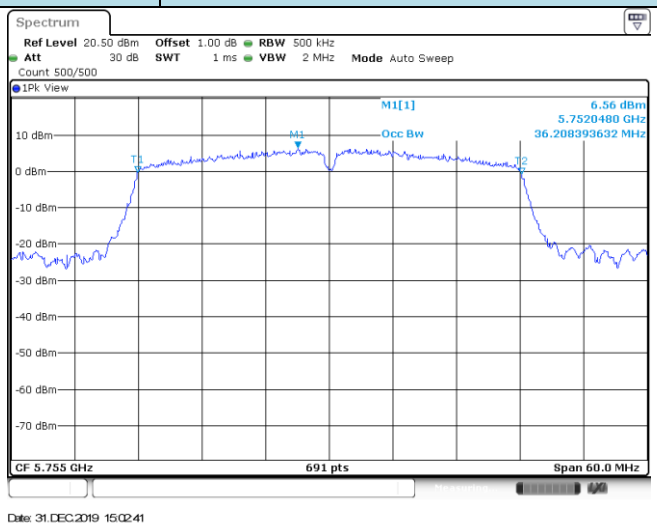
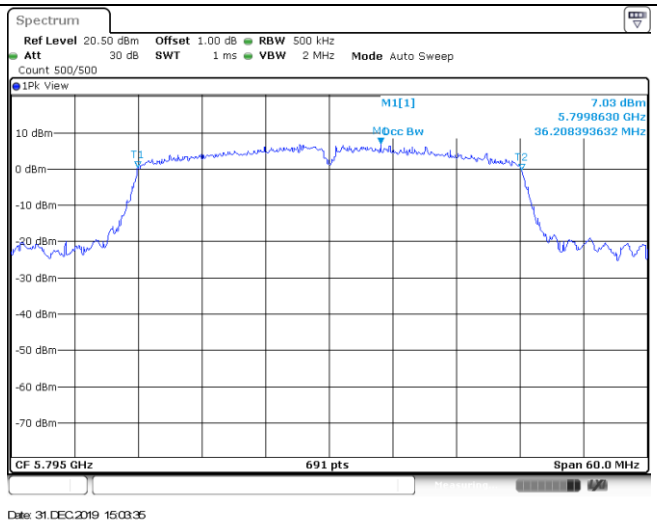
| Band II | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

| Band IV | 802.11ac (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band IV | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

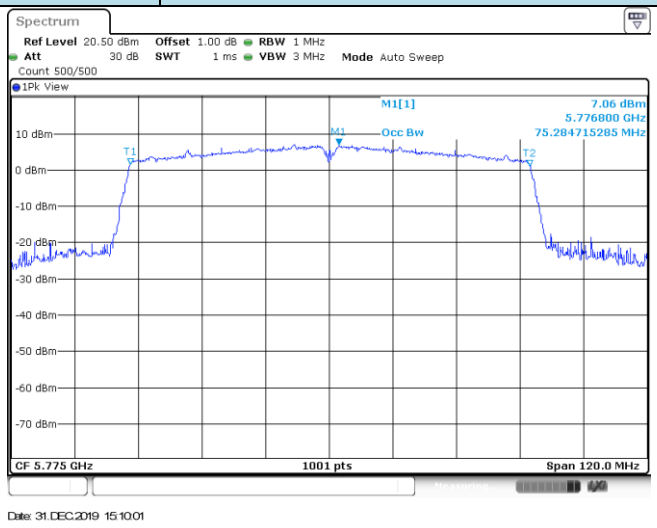
| Band IV | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band IV | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

| Band IV | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

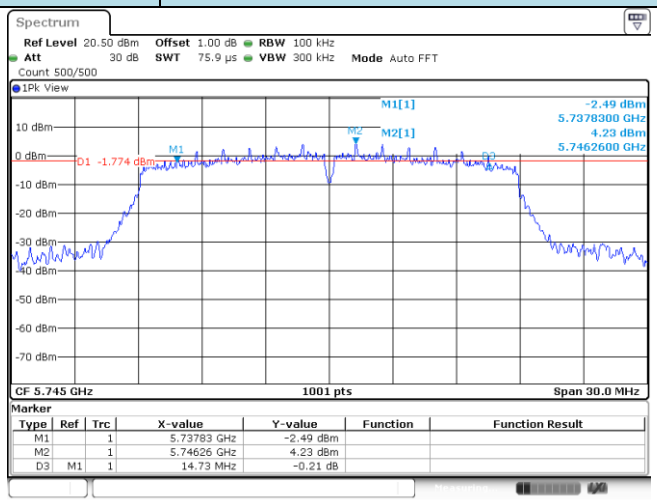
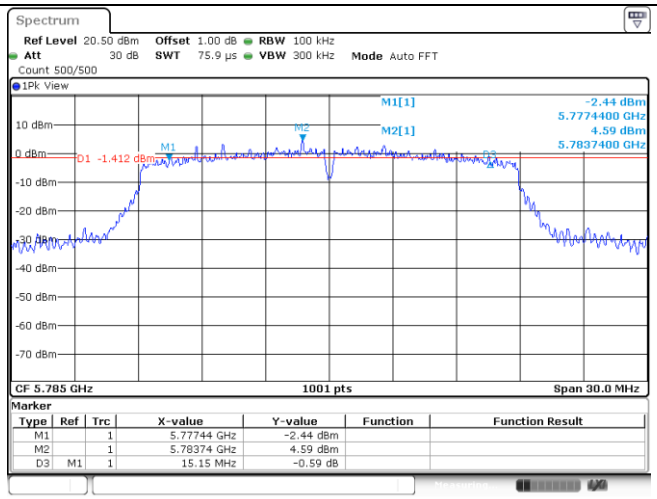
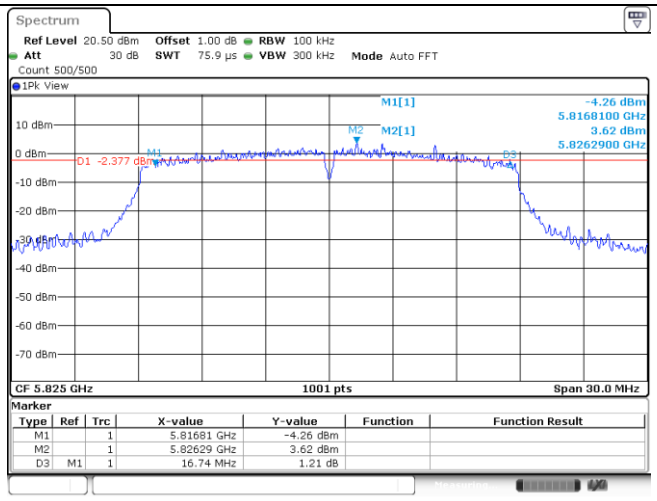


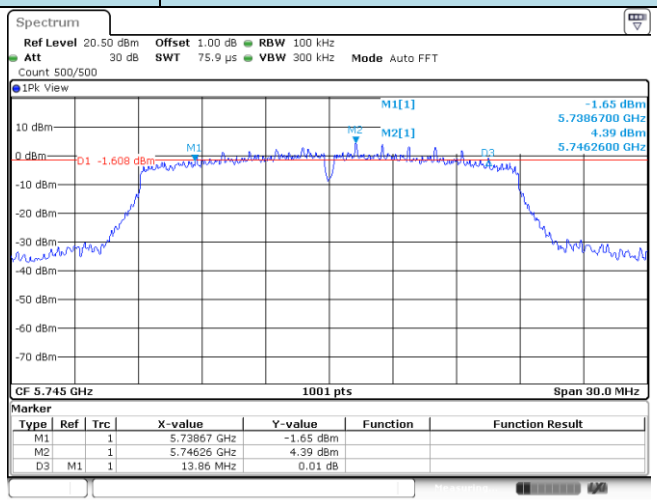
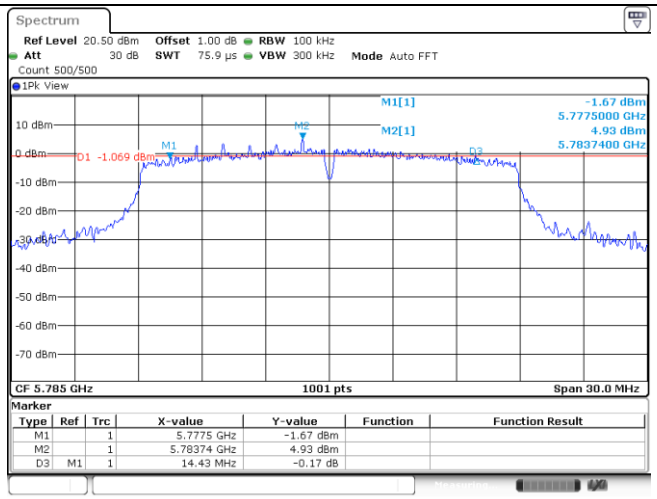
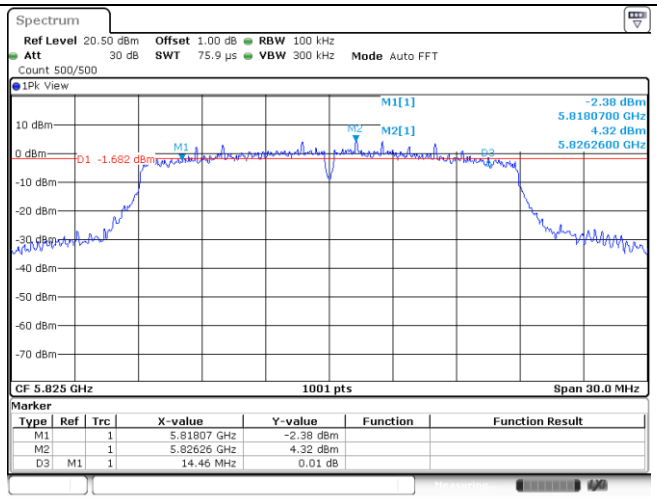


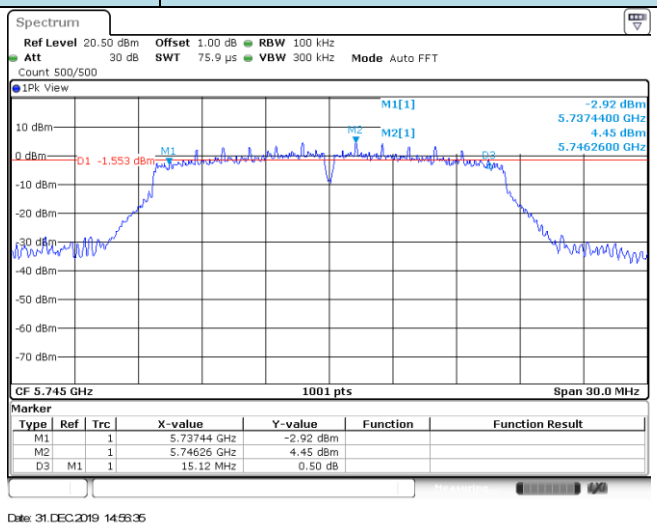
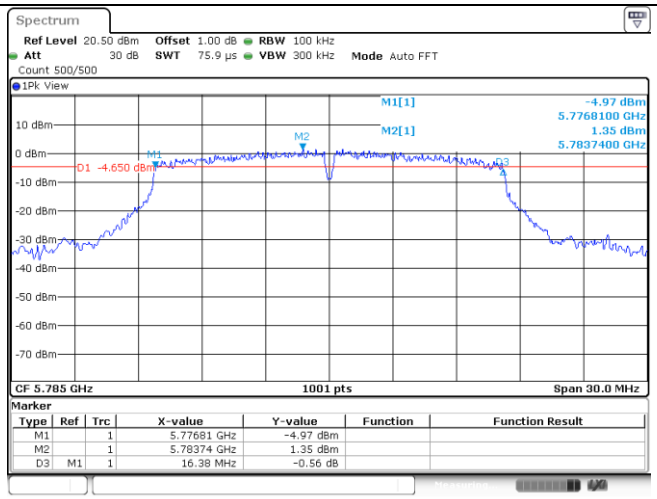
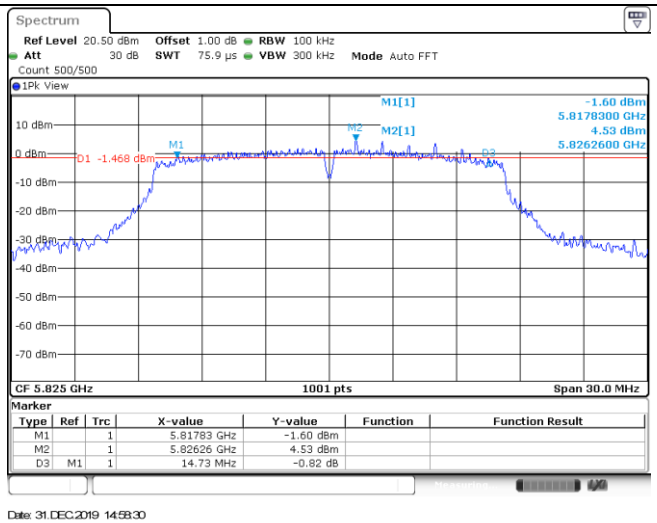
| Band IV | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

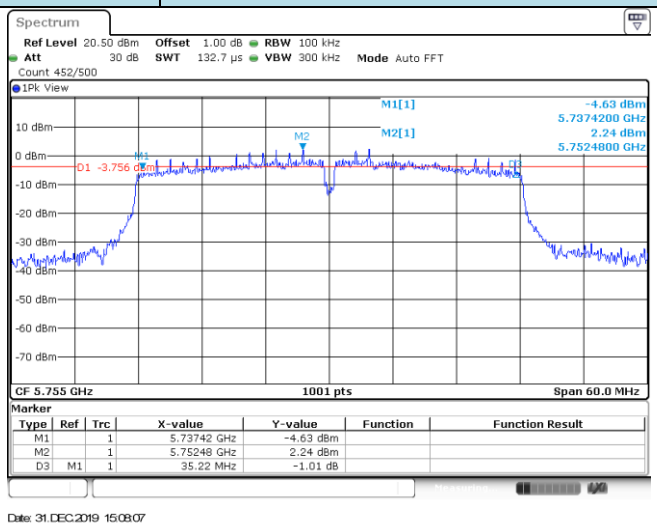
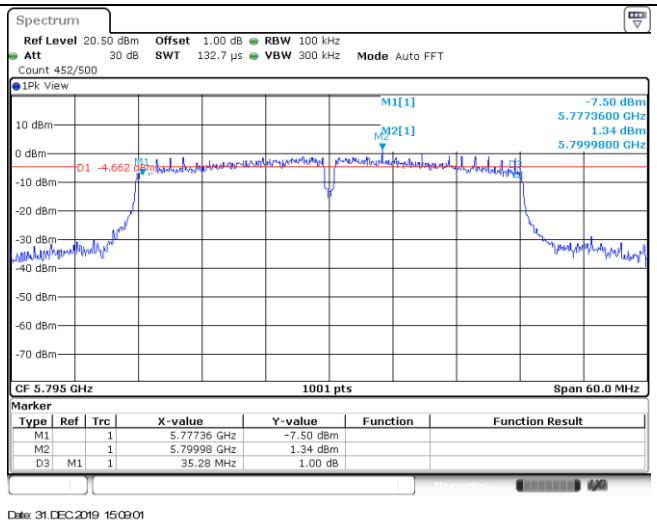
## Appendix E：6dB Bandwidth

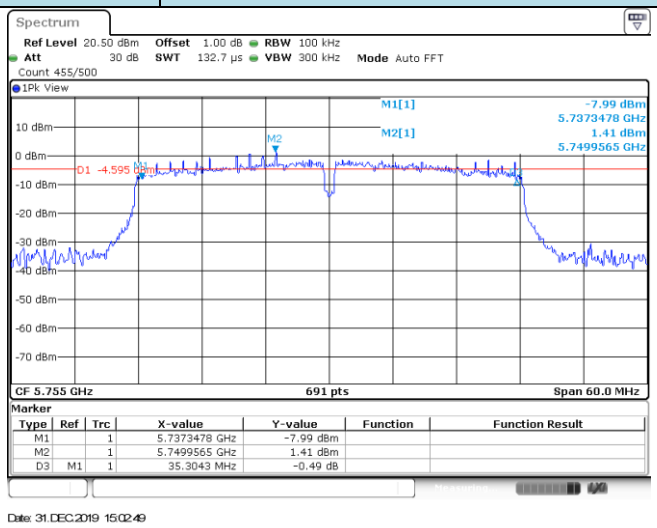
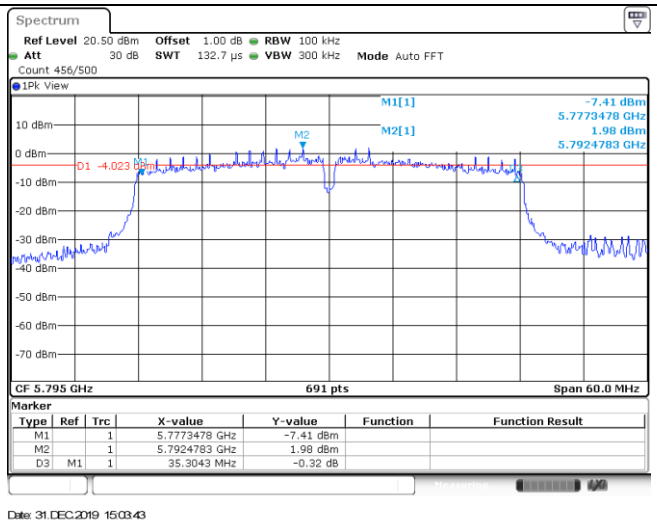
| Band | Bandwidth (MHz) | Type | Channel | 6dB bandwith (MHz) | Result |
|---|---|---|---|---|---|
| IV | 20 | 802.11ac | $CH_L$ | 14.73 | Pass |
| | | | $CH_M$ | 15.15 | |
| | | | $CH_H$ | 16.74 | |
| | | 802.11n | $CH_L$ | 13.86 | Pass |
| | | | $CH_M$ | 14.43 | |
| | | | $CH_H$ | 14.46 | |
| | | 802.11a | $CH_L$ | 15.12 | Pass |
| | | | $CH_M$ | 16.38 | |
| | | | $CH_H$ | 14.73 | |
| | 40 | 802.11ac | $CH_L$ | 35.22 | Pass |
| | | | $CH_H$ | 35.28 | |
| | | 802.11n | $CH_L$ | 35.30 | Pass |
| | | | $CH_H$ | 35.30 | |
| | 80 | 802.11ac | $CH_M$ | 75.36 | Pass |

| Band IV | 802.11ac (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band IV | 802.11n (HT20) |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

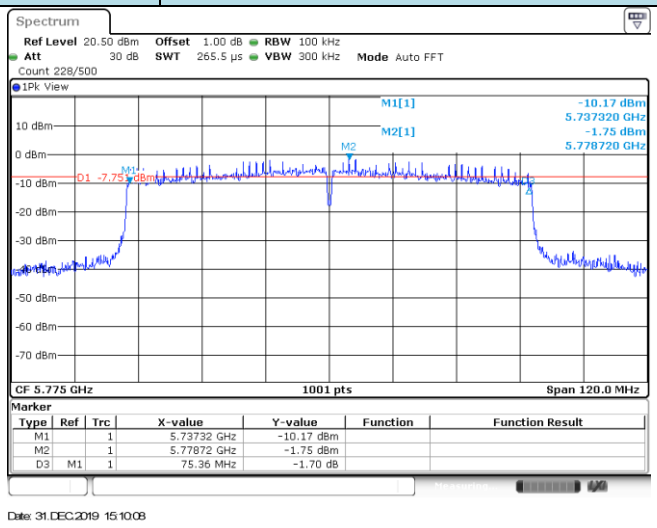
| Band IV | 802.11a |
|---|---|
| $CH_L$ |  |
| $CH_M$ |  |
| $CH_H$ |  |

| Band IV | 802.11ac (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |

| Band IV | 802.11n (HT40) |
|---|---|
| $CH_L$ |  |
| $CH_H$ |  |





| Band IV | 802.11ac (HT80) |
|---|---|
| $CH_M$ |  |

## Appendix F: Frequency stability

**Voltage VS Frequency stability**

| Band: I | | | Test Frequency: 5180.00MHz | |
|---|---|---|---|---|
| Temperature (℃) | Voltage (V) | Frequency Deviation (Hz) | Frequency Deviation (ppm) | Result |
| $T_N$ | $V_L$ | 0.00 | 0.00000 | PASS |
| $T_N$ | $V_N$ | 0.00 | 0.00000 | PASS |
| $T_N$ | $V_H$ | 0.00 | 0.00000 | PASS |

| Band: II | | | Test Frequency: 5260.00MHz | |
|---|---|---|---|---|
| Temperature (℃) | Voltage (V) | Frequency Deviation (Hz) | Frequency Deviation (ppm) | Result |
| $T_N$ | $V_L$ | 0.00 | 0.00000 | PASS |
| $T_N$ | $V_N$ | 0.00 | 0.00000 | PASS |
| $T_N$ | $V_H$ | 0.00 | 0.00000 | PASS |

| Band: IV | | | Test Frequency: 5745.00MHz | |
|---|---|---|---|---|
| Temperature (℃) | Voltage (V) | Frequency Deviation (Hz) | Frequency Deviation (ppm) | Result |
| $T_N$ | $V_L$ | 0.00 | 0.00000 | PASS |
| $T_N$ | $V_N$ | -1000.00 | -0.17406 | PASS |
| $T_N$ | $V_H$ | 0.00 | 0.00000 | PASS |

**Temperature VS Frequency stability**

| Band: I | | | Test Frequency: 5180.00MHz | |
|---|---|---|---|---|
| Voltage (V) | Temperature (℃) | Frequency Deviation (Hz) | Frequency Deviation (ppm) | Result |
| $V_N$ | -20 | -1000.00 | -0.19305 | PASS |
| $V_N$ | -10 | -1000.00 | -0.19305 | PASS |
| $V_N$ | 0 | -1000.00 | -0.19305 | PASS |
| $V_N$ | 10 | -2000.00 | -0.38610 | PASS |
| $V_N$ | 20 | -2000.00 | -0.38610 | PASS |
| $V_N$ | 30 | -2000.00 | -0.38610 | PASS |
| $V_N$ | 40 | -2000.00 | -0.38610 | PASS |
| $V_N$ | 50 | -2000.00 | -0.38610 | PASS |

| Band: II | | | Test Frequency: 5260.00MHz | |
|---|---|---|---|---|
| Voltage (V) | Temperature (℃) | Frequency Deviation (Hz) | Frequency Deviation (ppm) | Result |
| $V_N$ | -20 | -1000.00 | -0.19011 | PASS |
| $V_N$ | -10 | -1000.00 | -0.19011 | PASS |
| $V_N$ | 0 | -1000.00 | -0.19011 | PASS |
| $V_N$ | 10 | -1000.00 | -0.19011 | PASS |
| $V_N$ | 20 | -1000.00 | -0.19011 | PASS |
| $V_N$ | 30 | -2000.00 | -0.38023 | PASS |
| $V_N$ | 40 | -2000.00 | -0.38023 | PASS |
| $V_N$ | 50 | -2000.00 | -0.38023 | PASS |

| Band: IV | | | Test Frequency: 5745.00MHz | |
|---|---|---|---|---|
| Voltage (V) | Temperature (℃) | Frequency Deviation (Hz) | Frequency Deviation (ppm) | Result |
| $V_N$ | -20 | -1000.00 | -0.17406 | PASS |
| $V_N$ | -10 | -1000.00 | -0.17406 | PASS |
| $V_N$ | 0 | -2000.00 | -0.34813 | PASS |
| $V_N$ | 10 | -2000.00 | -0.34813 | PASS |
| $V_N$ | 20 | -2000.00 | -0.34813 | PASS |
| $V_N$ | 30 | -3000.00 | -0.52219 | PASS |
| $V_N$ | 40 | -3000.00 | -0.52219 | PASS |
| $V_N$ | 50 | -3000.00 | -0.52219 | PASS |

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