# Appendix D

## RF Test Data for B1 WIFI(Conducted Measurement)

**Product Name: FDM 3D Printer**

**Trade Mark: ELEGOO**

**Test Model: Centauri Carbon**

**Environmental Conditions**

| | |
|---|---|
| Temperature: | 25.6° C |
| Relative Humidity: | 52.4% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Emiya lin |
| Supervised by: | Simba Haung |

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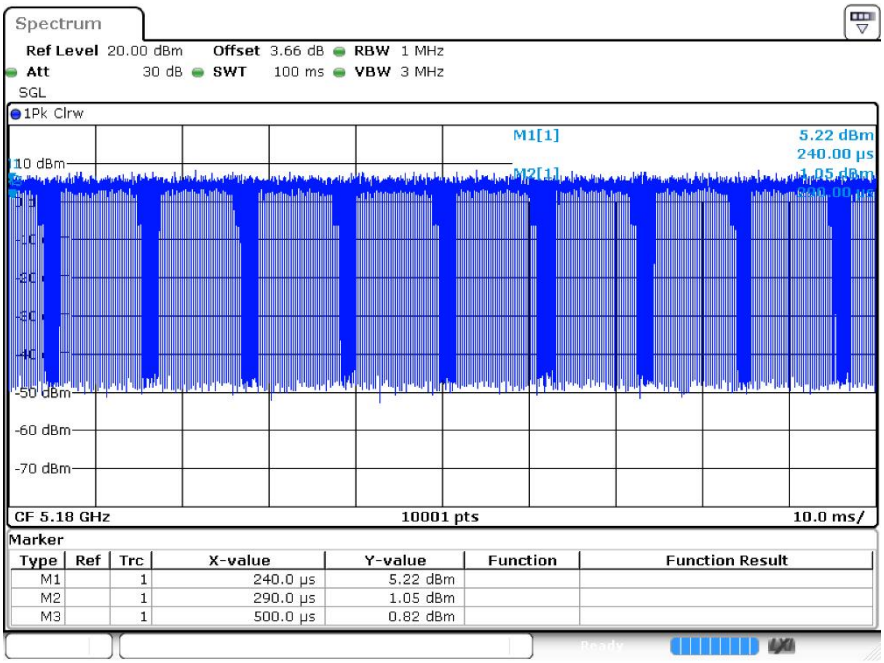
# 1 Duty Cycle

## 1.1 Test Result

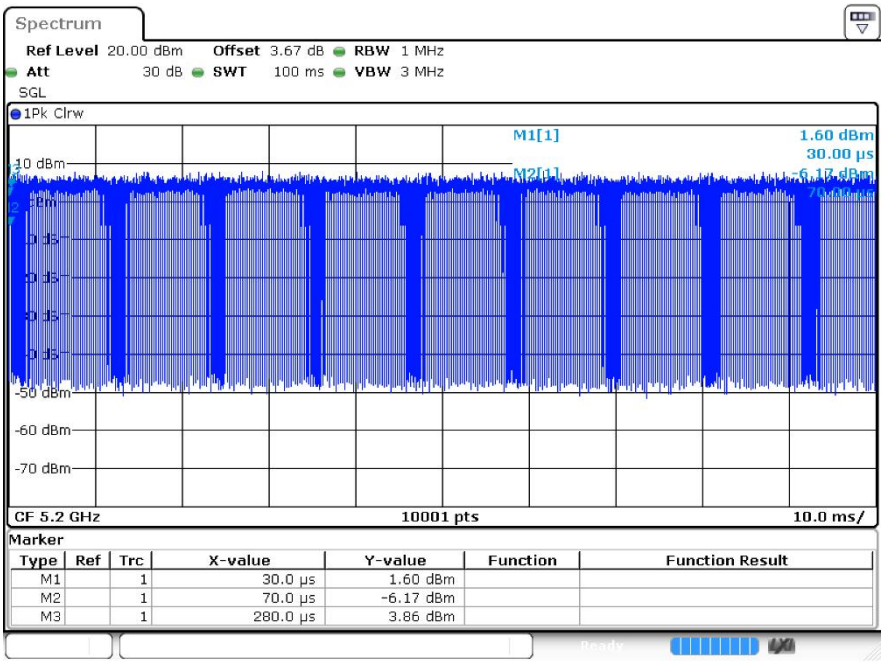
| Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|---|---|---|---|---|---|
| a | 5180 | Ant1 | 87.04 | 0.6 | 4.76 |
| a | 5200 | Ant1 | 86.89 | 0.61 | 4.76 |
| a | 5240 | Ant1 | 87.05 | 0.6 | 4.55 |
| n20 | 5180 | Ant1 | 87.6 | 0.57 | 4.35 |
| n20 | 5200 | Ant1 | 87.61 | 0.57 | 4.35 |
| n20 | 5240 | Ant1 | 87.65 | 0.57 | 4.35 |
| n40 | 5190 | Ant1 | 88.05 | 0.55 | 4 |
| n40 | 5230 | Ant1 | 88.11 | 0.55 | 4 |
| ac20 | 5180 | Ant1 | 87.17 | 0.6 | 4.55 |
| ac20 | 5200 | Ant1 | 87.37 | 0.59 | 4.35 |
| ac20 | 5240 | Ant1 | 87.15 | 0.6 | 4.55 |
| ac40 | 5190 | Ant1 | 87.08 | 0.6 | 4.55 |
| ac40 | 5230 | Ant1 | 87.14 | 0.6 | 4.35 |
| ac80 | 5210 | Ant1 | 87.38 | 0.59 | 4.35 |

## 1.2 Test Graphs

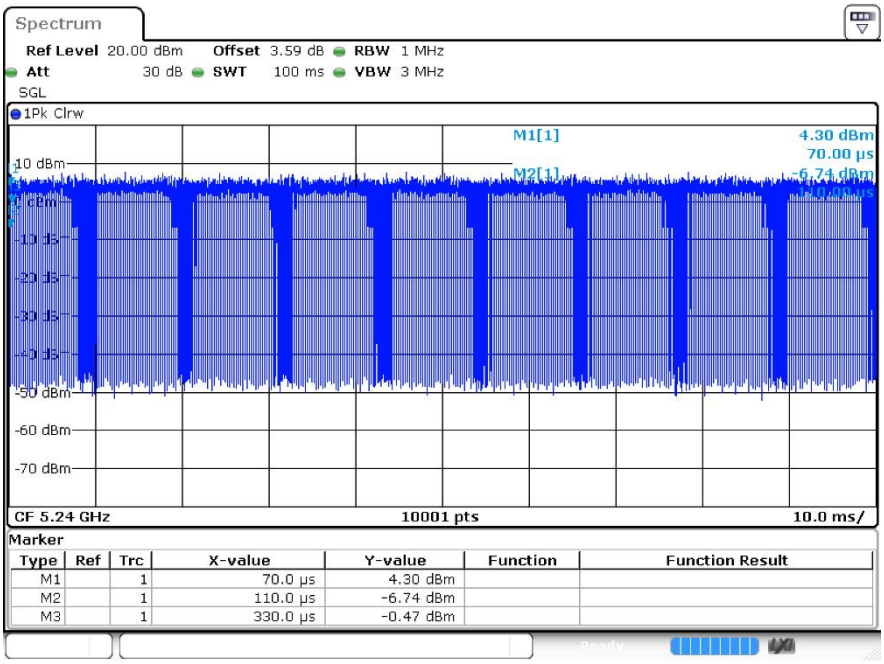
| Test Graphs |
|---|
| Duty Cyclea 5180MHz Ant1 |



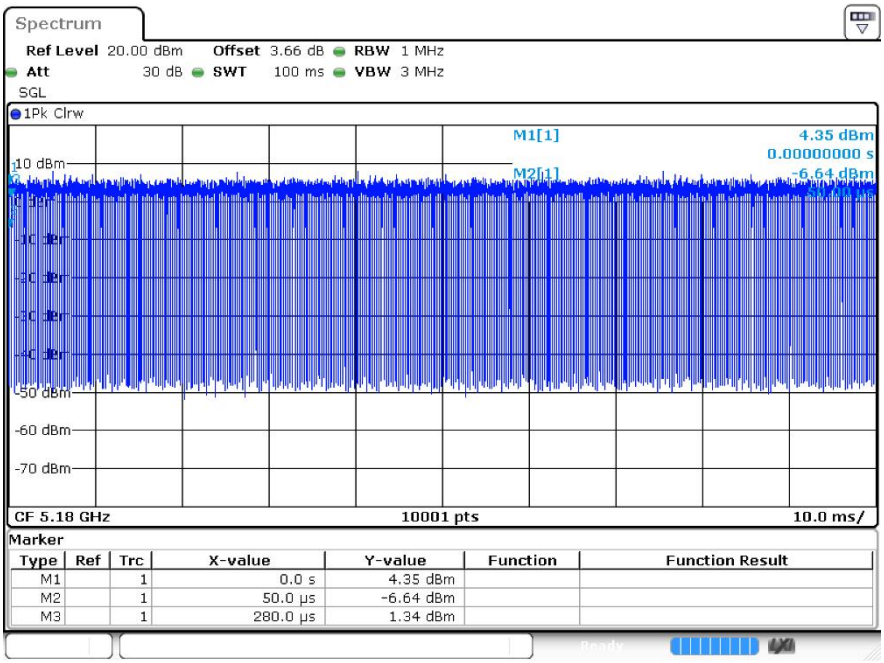

| Duty Cycle a 5200MHz Ant1 |
|---|



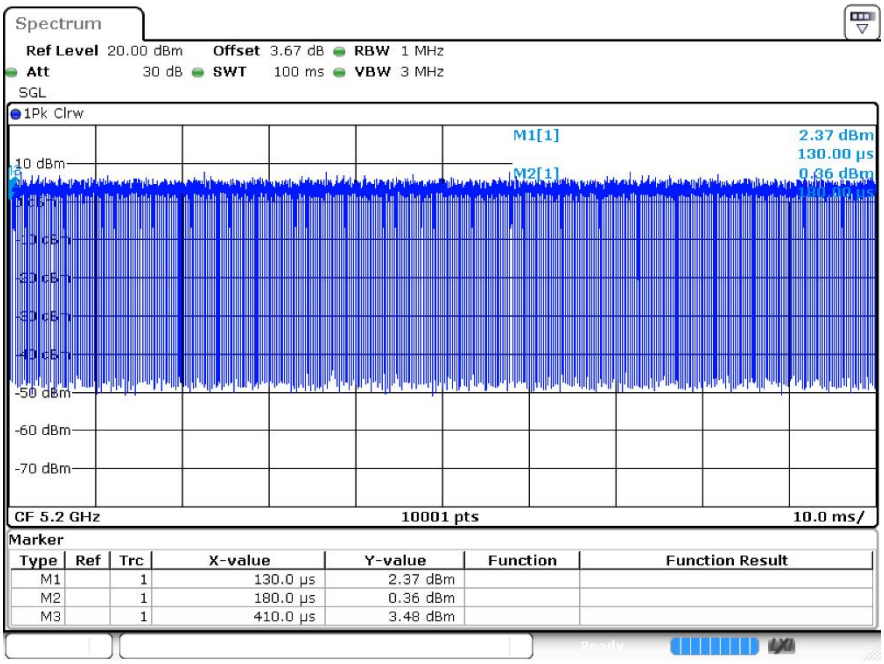
Duty Cyclea 5240MHz Ant1



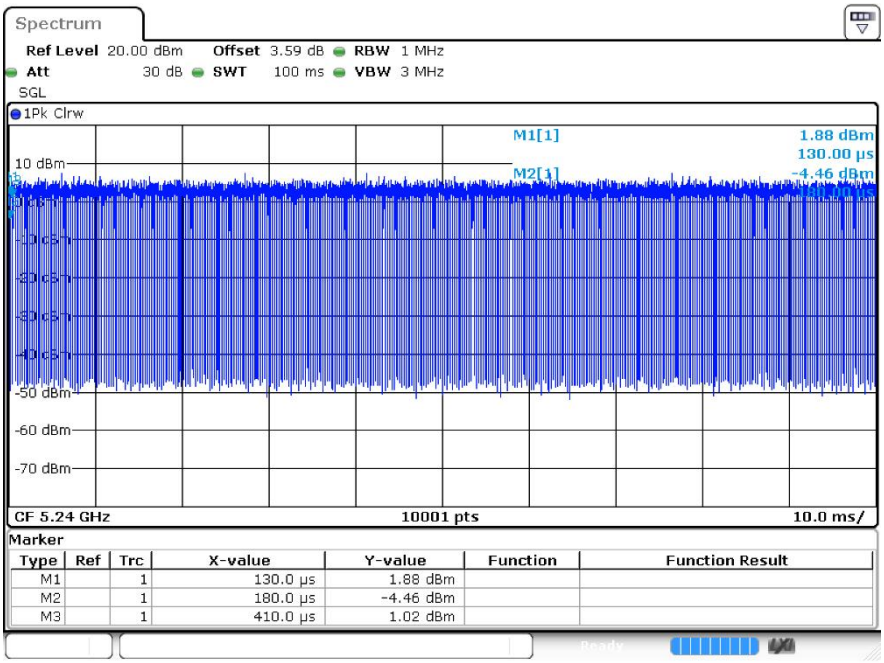

Duty Cycle n20 5180MHz Ant1



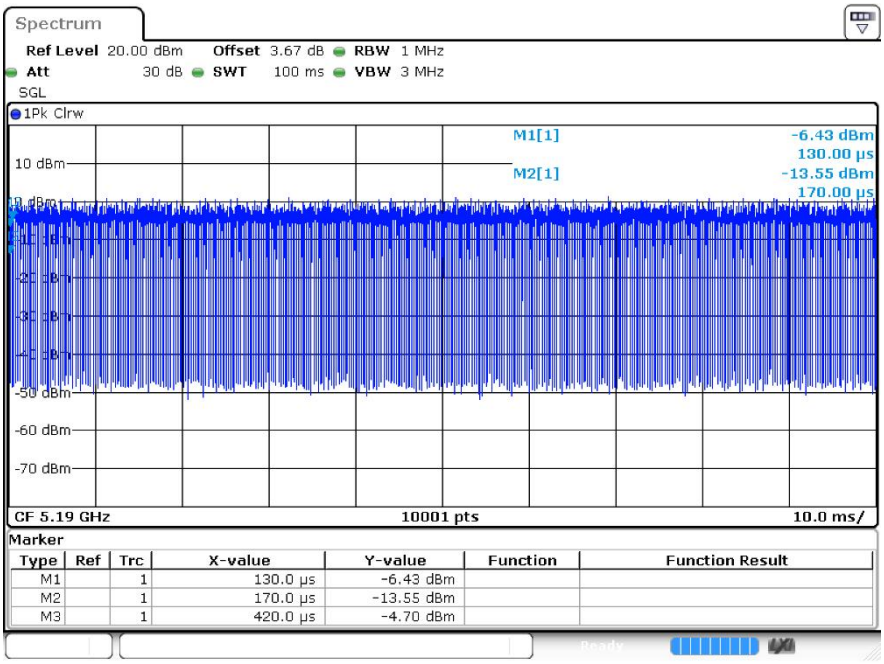
Duty Cycle n20 5200MHz Ant1



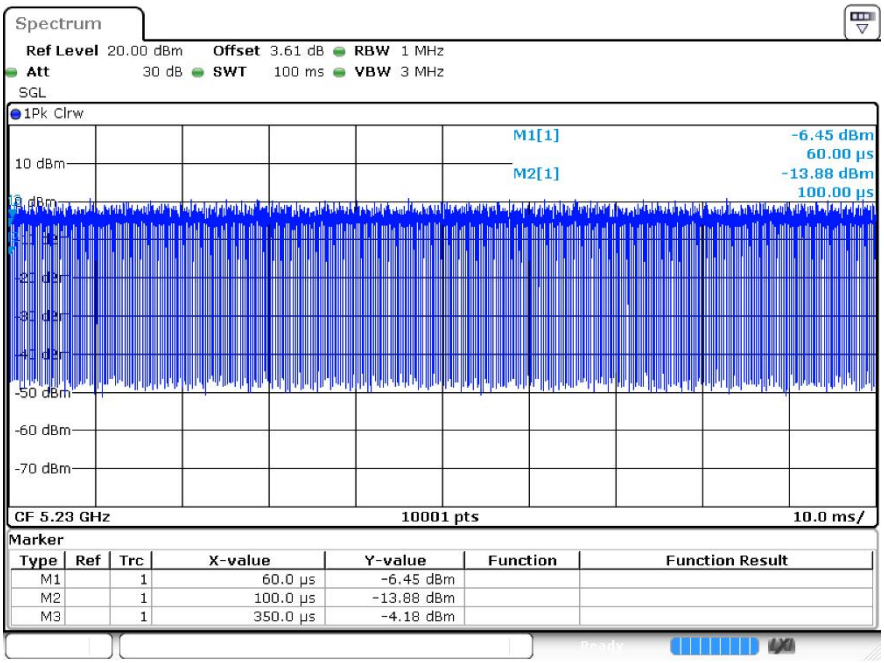

Duty Cycle n20 5240MHz Ant1



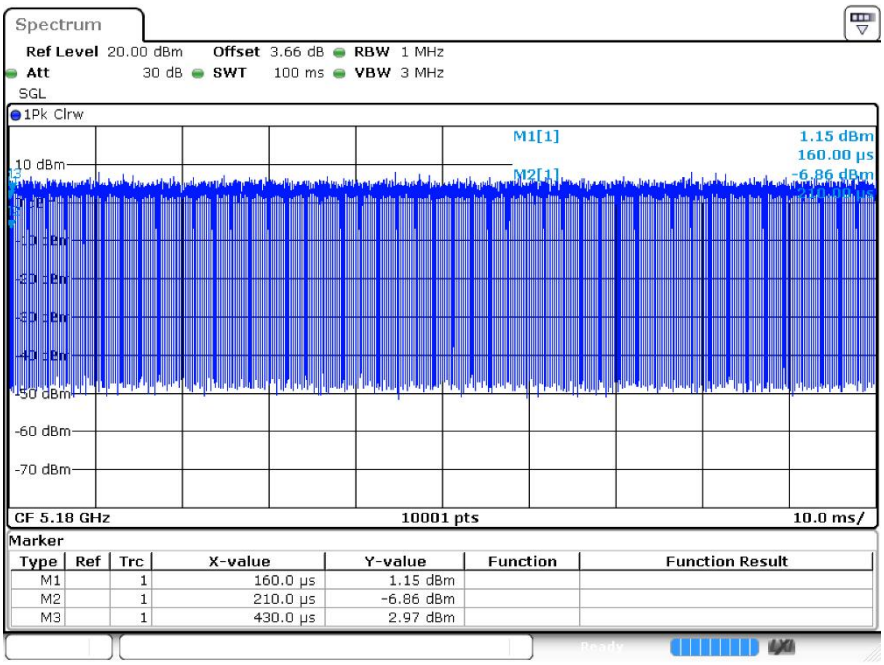
Duty Cyclen40 5190MHz Ant1



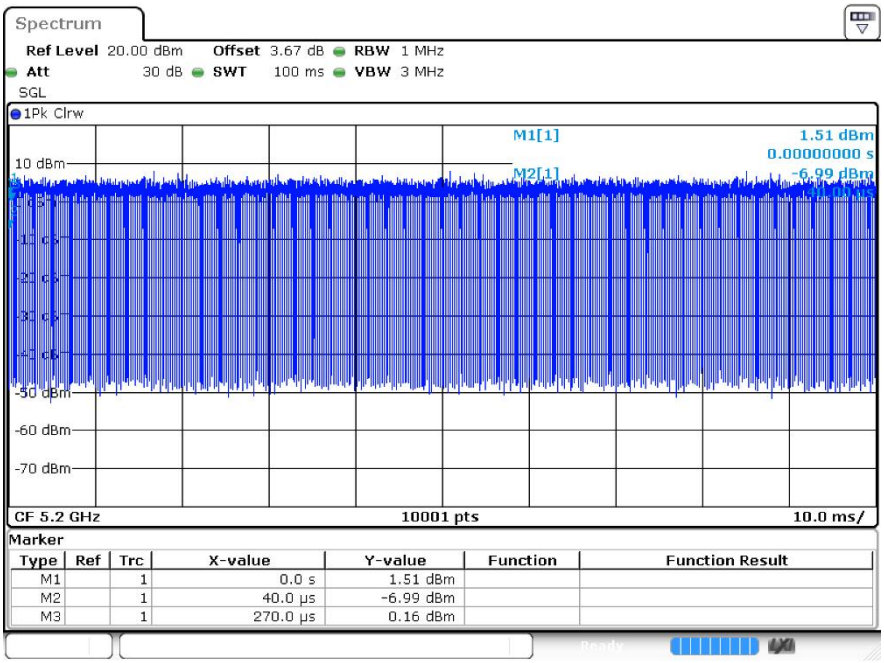

Duty Cyclen40 5230MHz Ant1



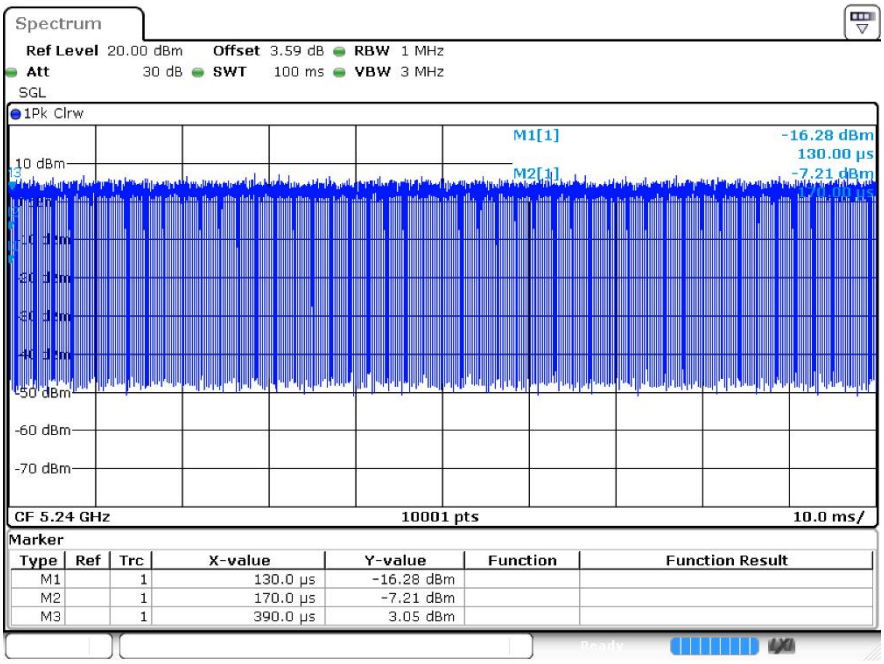
Duty Cycle ac20 5180MHz Ant1



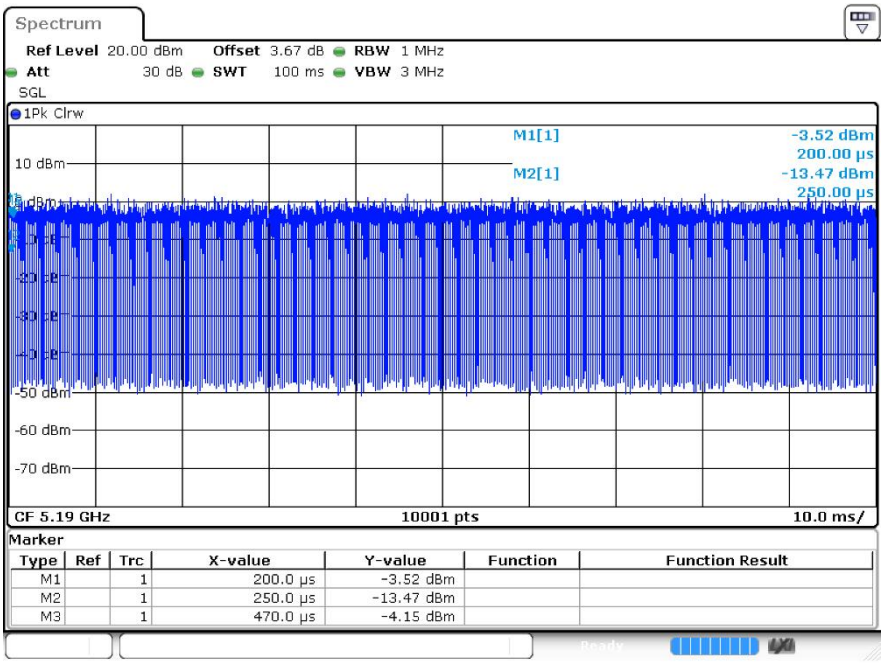

Duty Cycle ac20 5200MHz Ant1



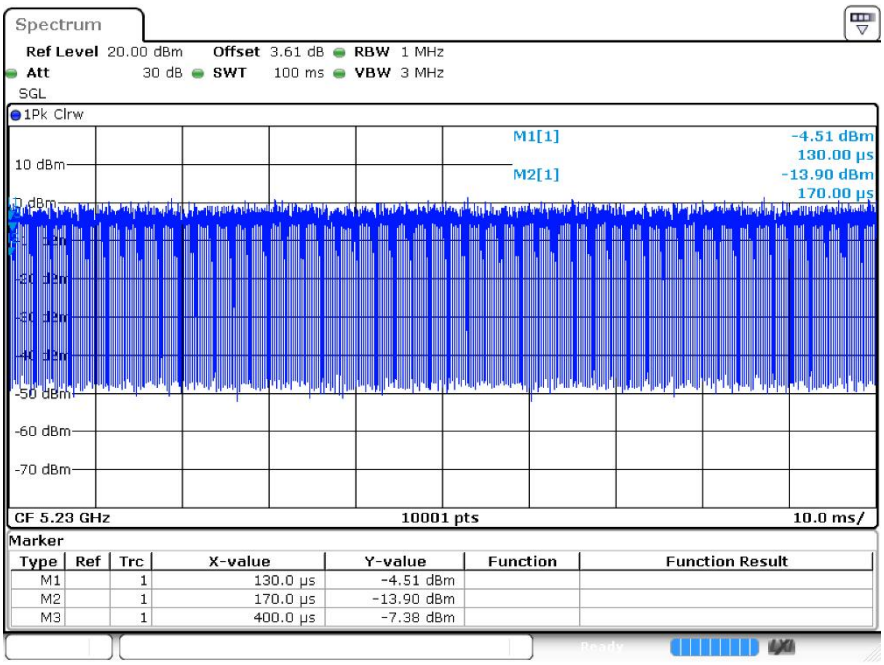
Duty Cycle ac20 5240MHz Ant1



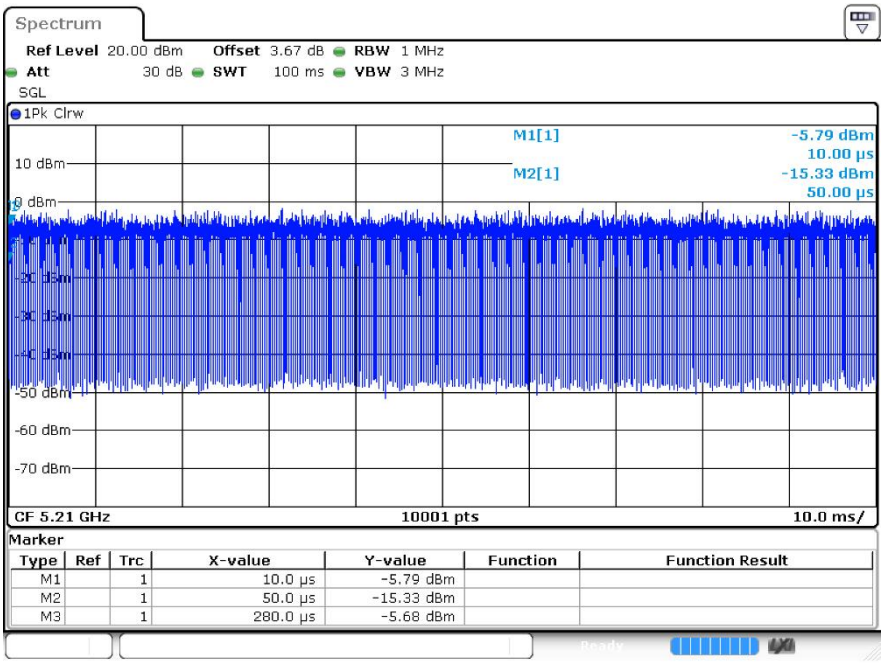

Duty Cycleac40 5190MHz Ant1



Duty Cycleac40 5230MHz Ant1




Duty Cycleac80 5210MHz Ant1



# 2 Maximum Conducted Output Power

## 2.1 Test Result

| Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|
| a | 5180 | Ant1 | 14.56 | 24 | Pass |
| a | 5200 | Ant1 | 14.35 | 24 | Pass |
| a | 5240 | Ant1 | 14.06 | 24 | Pass |
| n20 | 5180 | Ant1 | 13.82 | 24 | Pass |
| n20 | 5200 | Ant1 | 13.77 | 24 | Pass |
| n20 | 5240 | Ant1 | 13.55 | 24 | Pass |
| n40 | 5190 | Ant1 | 13.36 | 24 | Pass |
| n40 | 5230 | Ant1 | 13.02 | 24 | Pass |
| ac20 | 5180 | Ant1 | 13.79 | 24 | Pass |
| ac20 | 5200 | Ant1 | 13.83 | 24 | Pass |
| ac20 | 5240 | Ant1 | 13.48 | 24 | Pass |
| ac40 | 5190 | Ant1 | 13.36 | 24 | Pass |
| ac40 | 5230 | Ant1 | 12.93 | 24 | Pass |
| ac80 | 5210 | Ant1 | 13 | 24 | Pass |

Note:

The duty factor has been compensated into the result.

# 3 -26dB Bandwidth

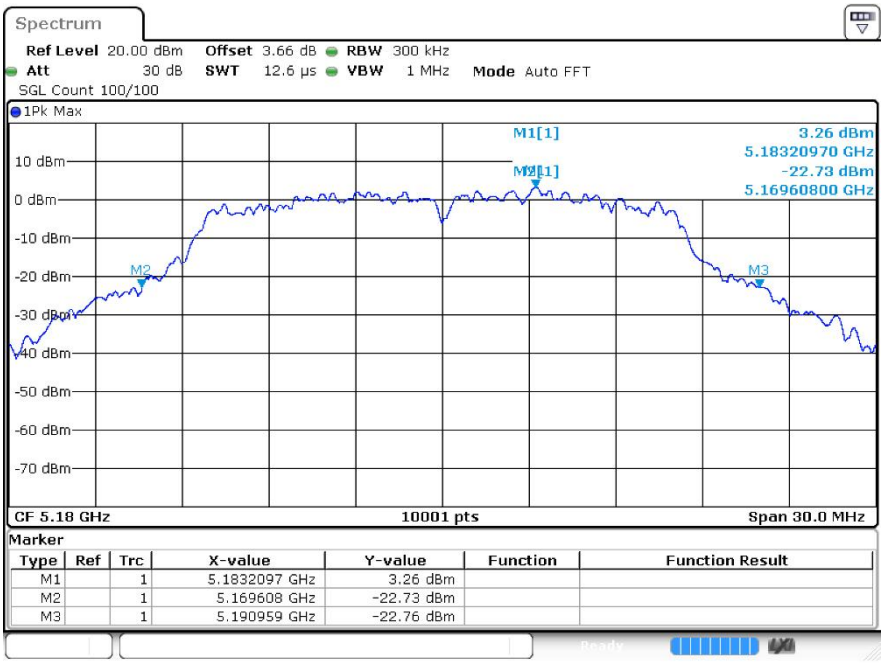
## 3.1 Test Result

| Mode | Frequency (MHz) | Antenna | -26 dB Bandwidth (MHz) | Limit -26 dB Bandwidth (MHz) | Verdict |
|---|---|---|---|---|---|
| a | 5180 | Ant1 | 21.351 | 0.5 | Pass |
| a | 5200 | Ant1 | 23.178 | 0.5 | Pass |
| a | 5240 | Ant1 | 22.185 | 0.5 | Pass |
| n20 | 5180 | Ant1 | 22.293 | 0.5 | Pass |
| n20 | 5200 | Ant1 | 22.116 | 0.5 | Pass |
| n20 | 5240 | Ant1 | 23.883 | 0.5 | Pass |
| n40 | 5190 | Ant1 | 41.538 | 0.5 | Pass |
| n40 | 5230 | Ant1 | 43.704 | 0.5 | Pass |
| ac20 | 5180 | Ant1 | 22.692 | 0.5 | Pass |
| ac20 | 5200 | Ant1 | 23.181 | 0.5 | Pass |
| ac20 | 5240 | Ant1 | 23.073 | 0.5 | Pass |
| ac40 | 5190 | Ant1 | 41.25 | 0.5 | Pass |
| ac40 | 5230 | Ant1 | 41.736 | 0.5 | Pass |
| ac80 | 5210 | Ant1 | 83.892 | 0.5 | Pass |

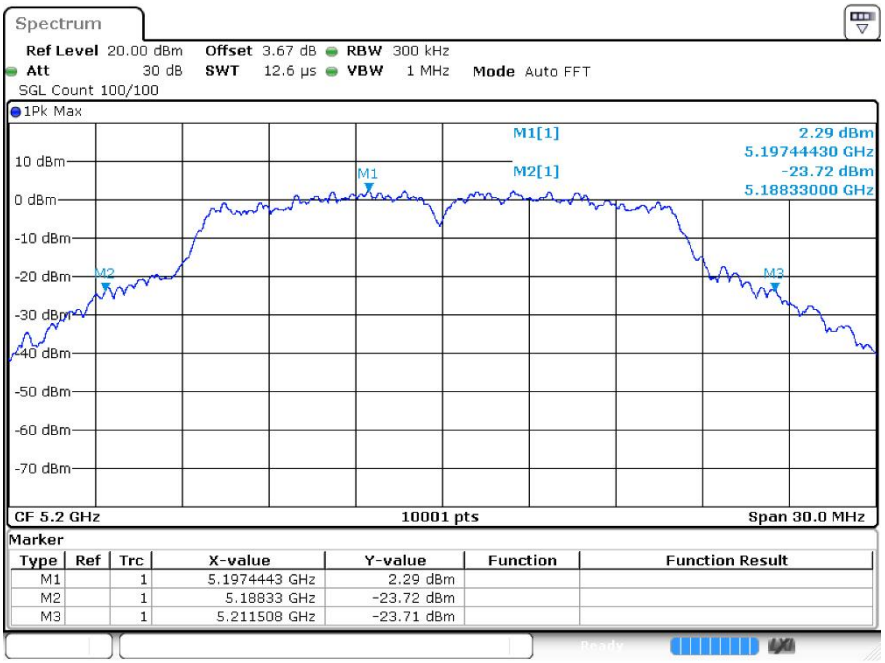
## 3.2 Test Graphs

Test Graphs

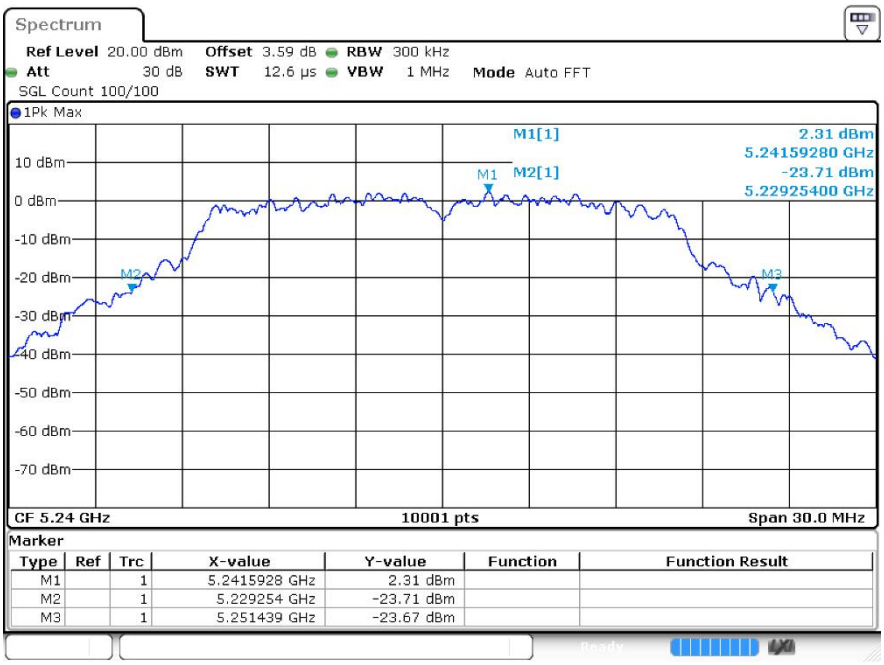
-26dB Bandwidtha 5180MHz Ant1



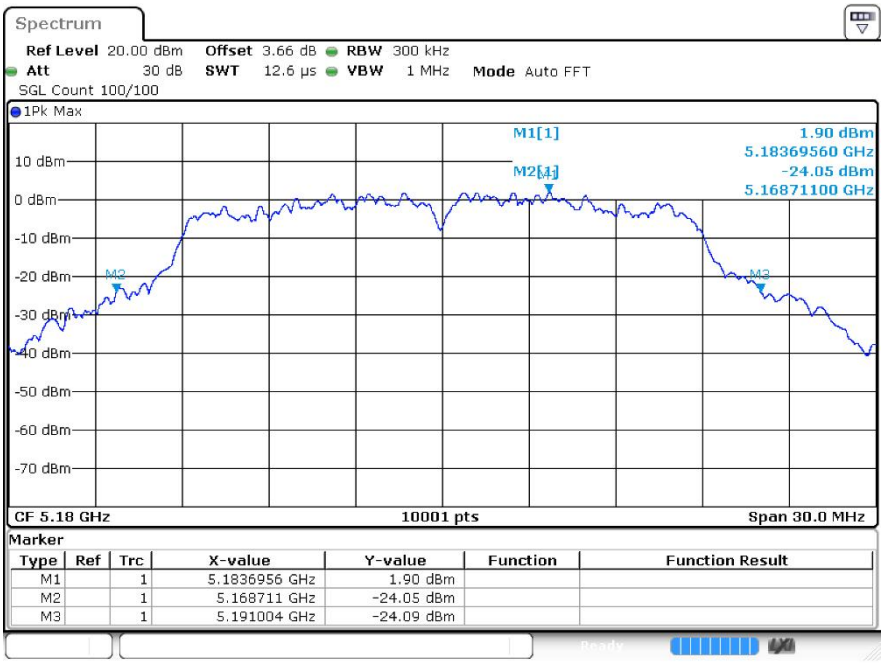

-26dB Bandwidtha 5200MHz Ant1



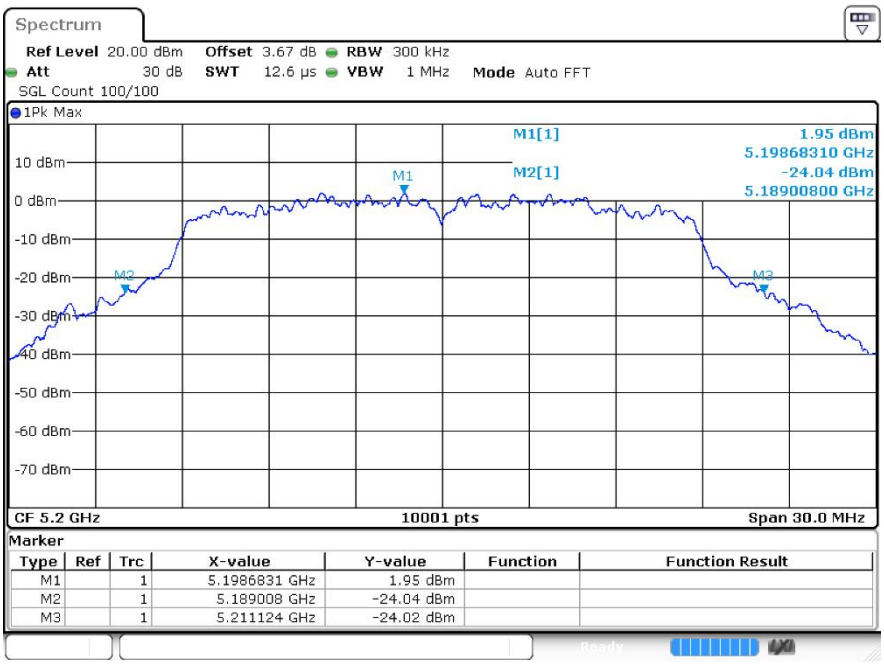
-26dB Bandwidtha 5240MHz Ant1



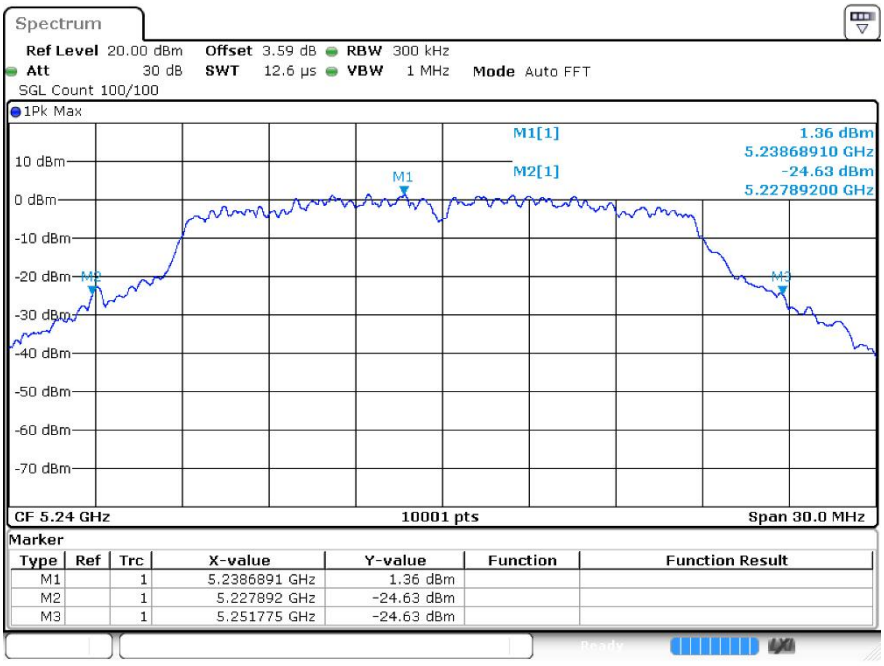

-26dB Bandwidth n20 5180MHz Ant1



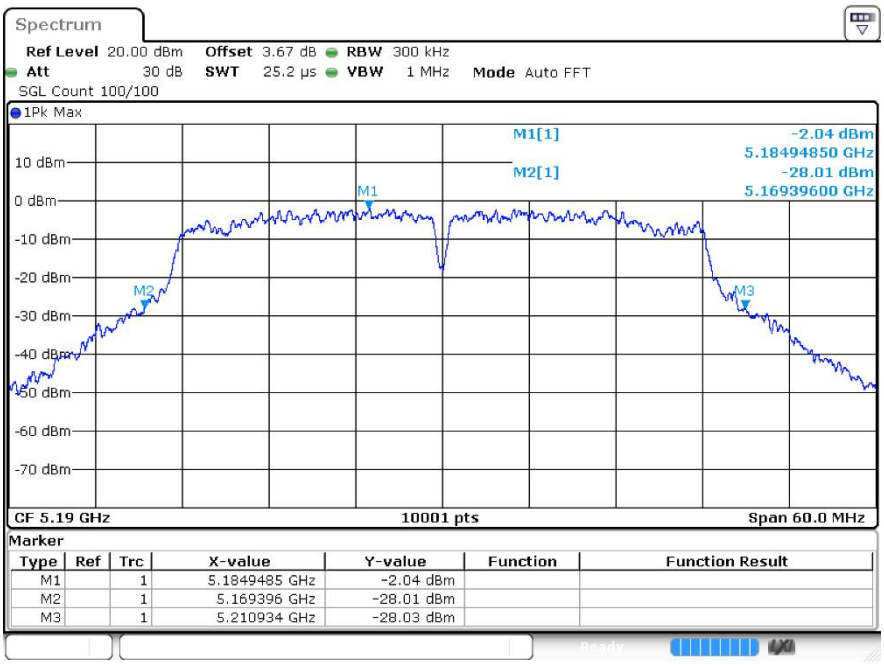
-26dB Bandwidth n20 5200MHz Ant1



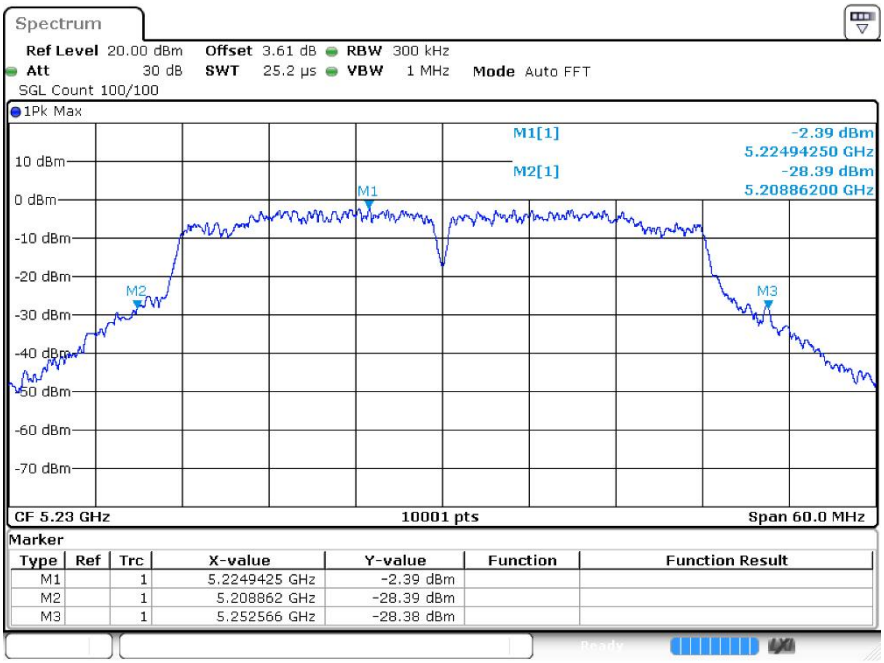

-26dB Bandwidth n20 5240MHz Ant1



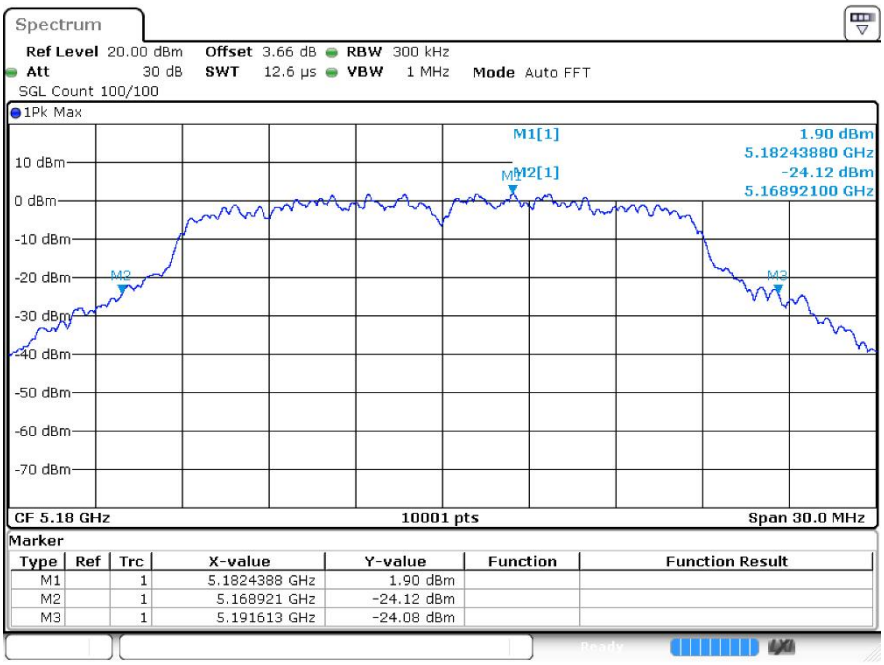
-26dB Bandwidthn40 5190MHz Ant1



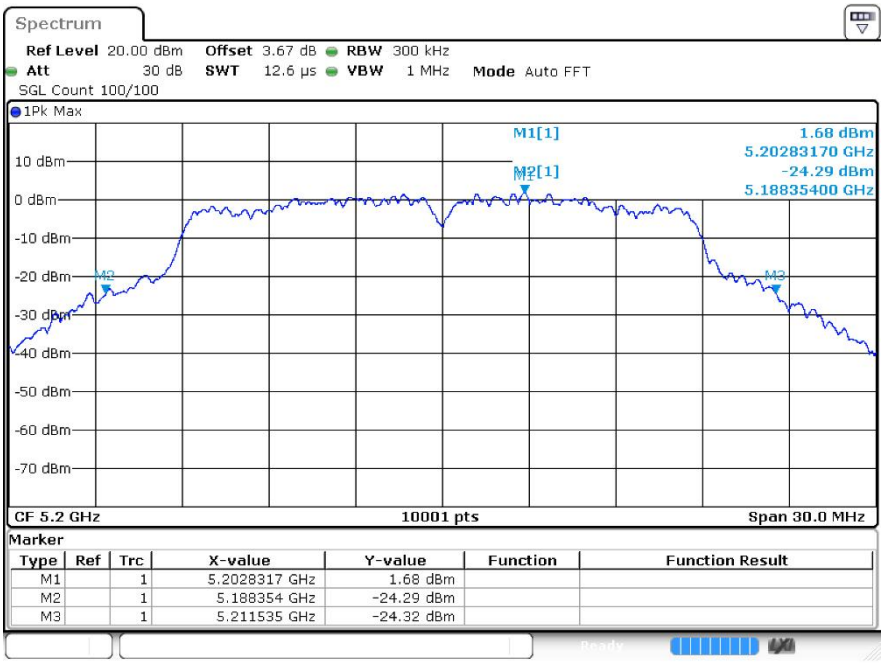

-26dB Bandwidthn40 5230MHz Ant1



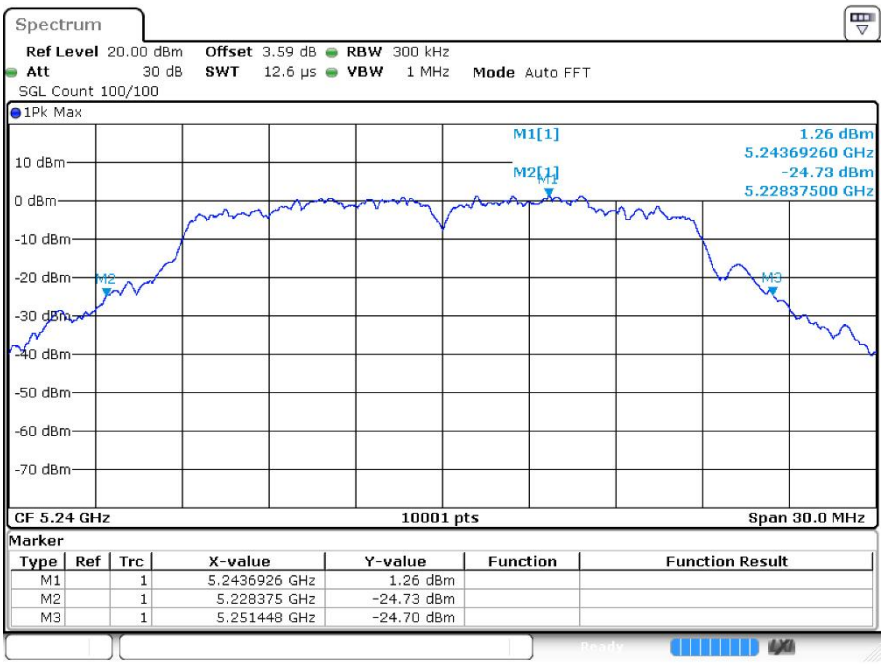
-26dB Bandwidth ac20 5180MHz Ant1



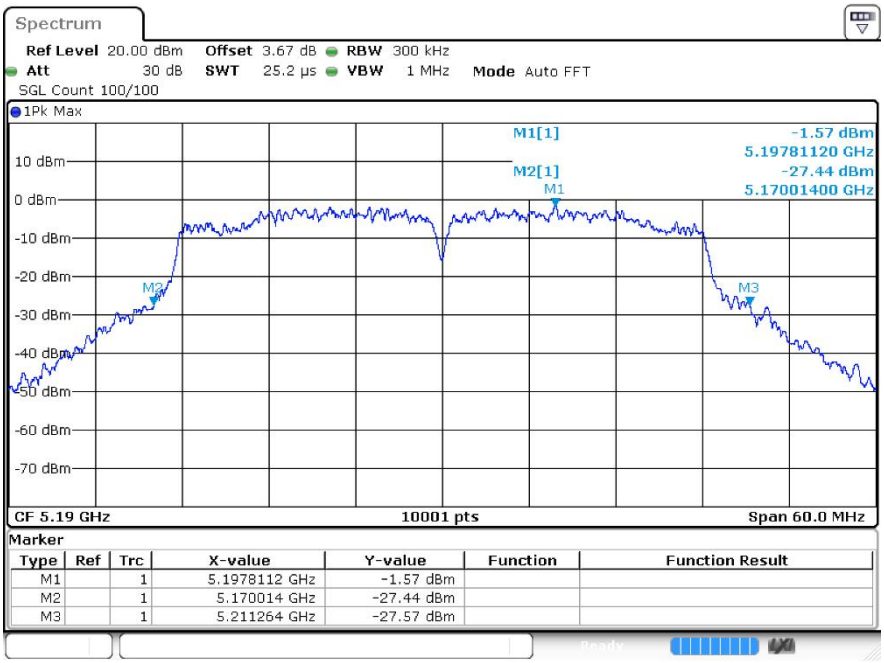

-26dB Bandwidth ac20 5200MHz Ant1



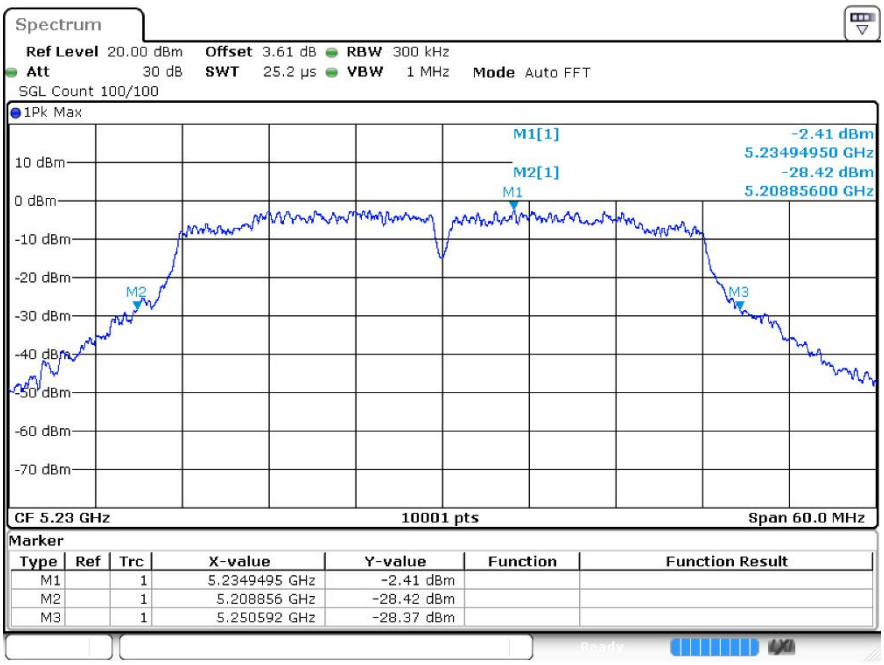
-26dB Bandwidth ac20 5240MHz Ant1



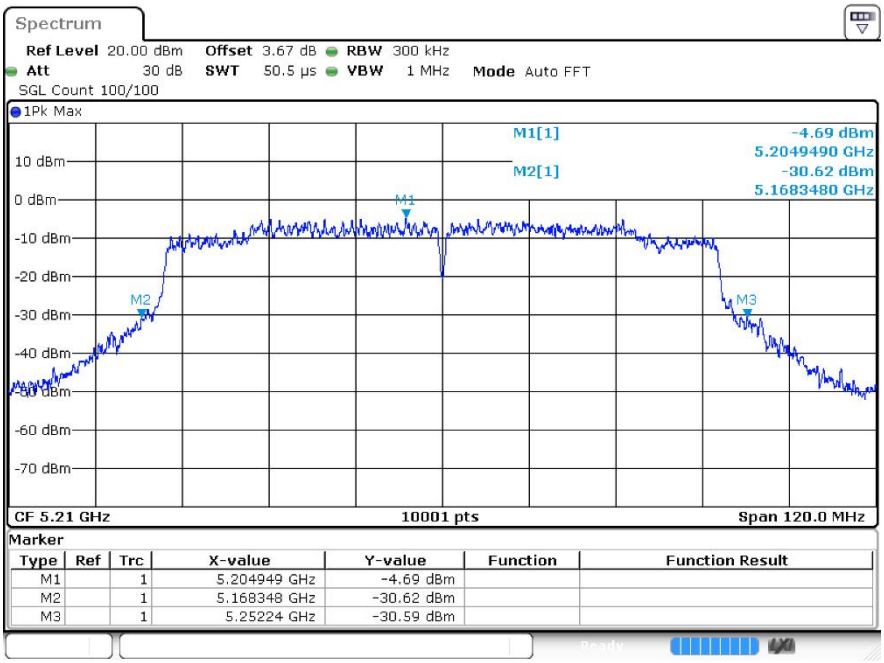

-26dB Bandwidthac40 5190MHz Ant1



-26dB Bandwidthac40 5230MHz Ant1




-26dB Bandwidthac80 5210MHz Ant1



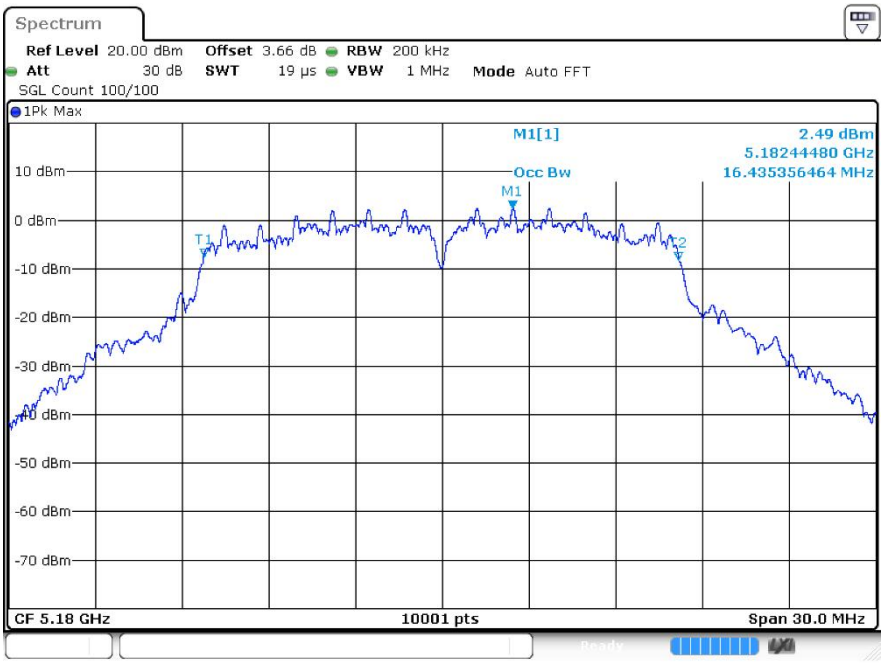
# 4 Occupied Channel Bandwidth

## 4.1 Test Result

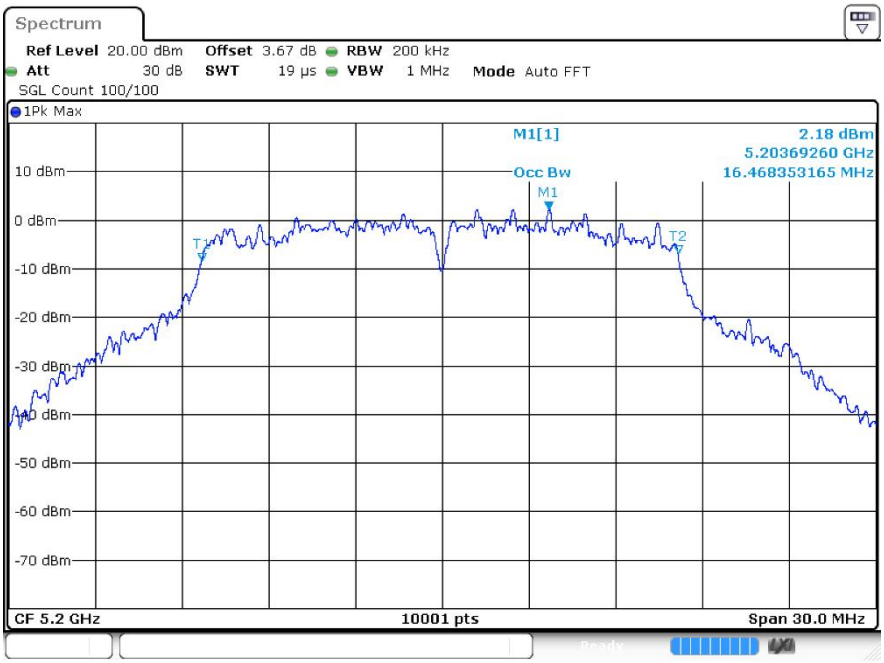
| Mode | Frequency (MHz) | Antenna | 99% OBW (MHz) |
|---|---|---|---|
| a | 5180 | Ant1 | 16.435 |
| a | 5200 | Ant1 | 16.468 |
| a | 5240 | Ant1 | 16.459 |
| n20 | 5180 | Ant1 | 17.629 |
| n20 | 5200 | Ant1 | 17.713 |
| n20 | 5240 | Ant1 | 17.563 |
| n40 | 5190 | Ant1 | 36.074 |
| n40 | 5230 | Ant1 | 36.02 |
| ac20 | 5180 | Ant1 | 17.668 |
| ac20 | 5200 | Ant1 | 17.668 |
| ac20 | 5240 | Ant1 | 17.704 |
| ac40 | 5190 | Ant1 | 36.026 |
| ac40 | 5230 | Ant1 | 35.996 |
| ac80 | 5210 | Ant1 | 75.1 |

## 4.2 Test Graphs

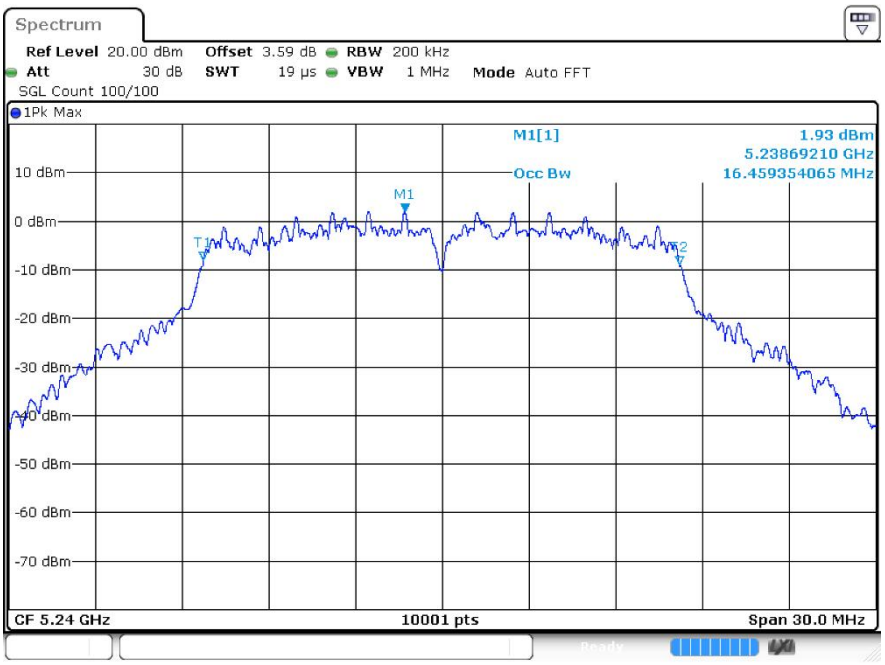
| Test Graphs |
|---|
| OBWa 5180MHz Ant1 |



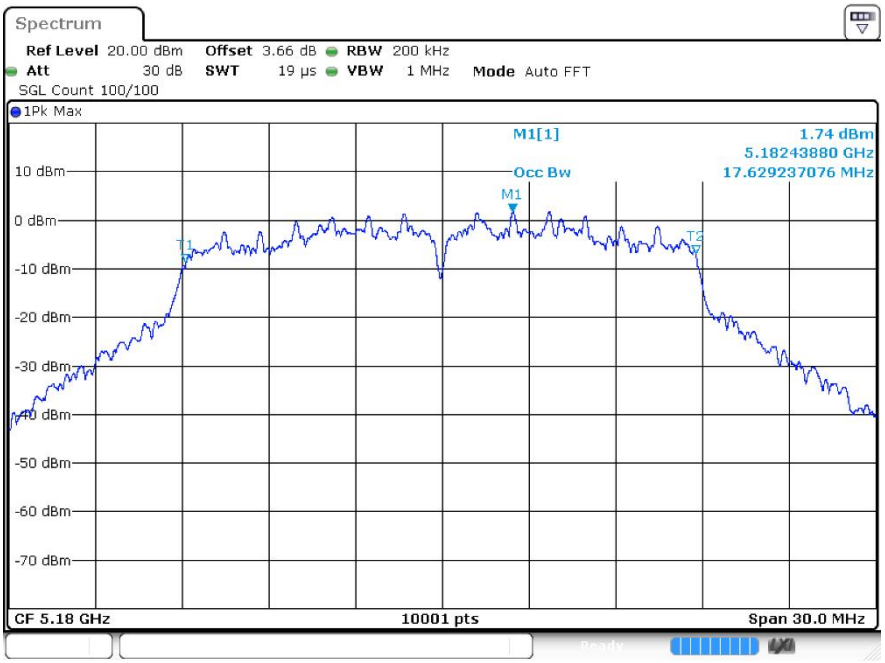

| OBWa 5200MHz Ant1 |
|---|



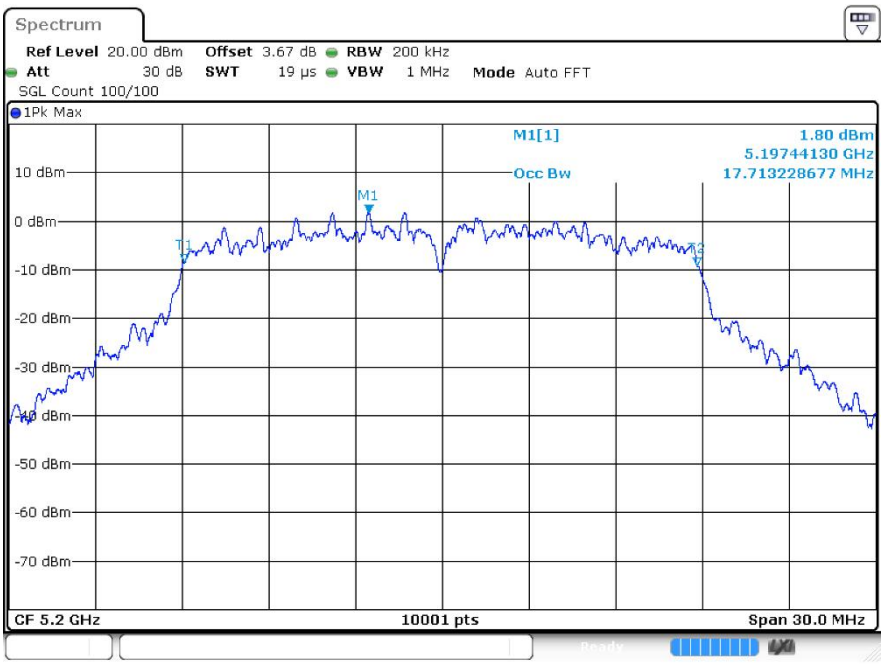
OBWa 5240MHz Ant1



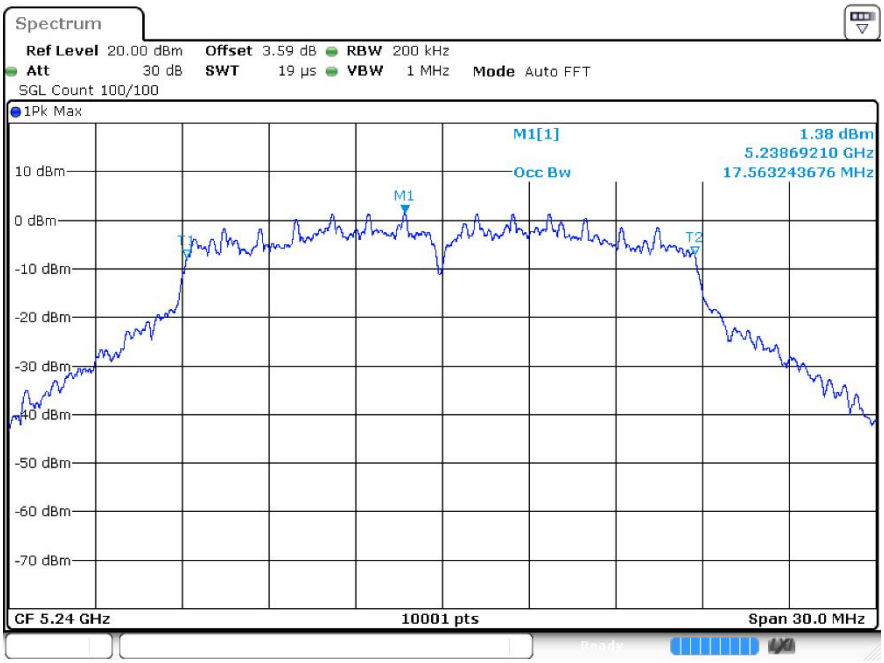

OBW n20 5180MHz Ant1



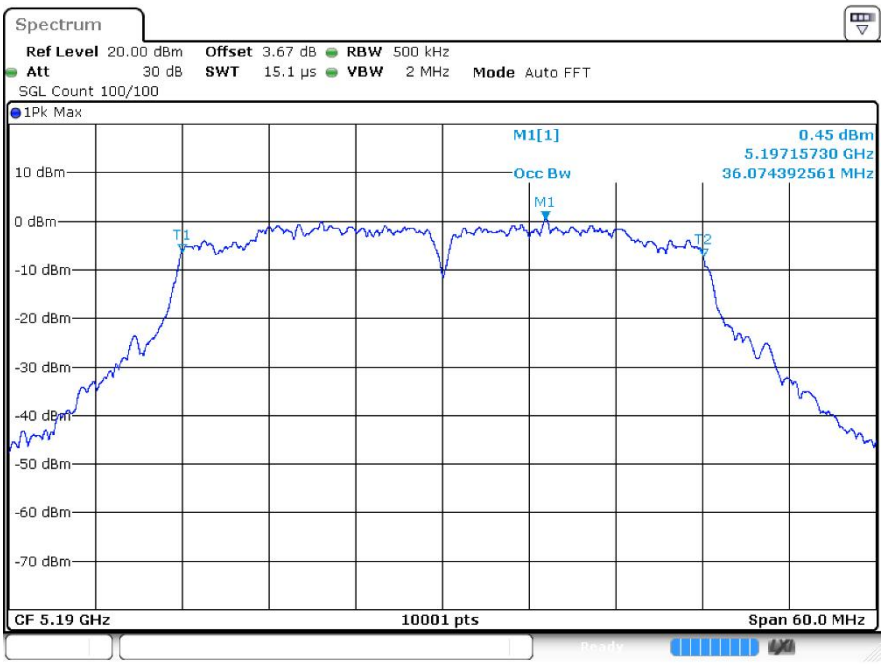
OBW n20 5200MHz Ant1



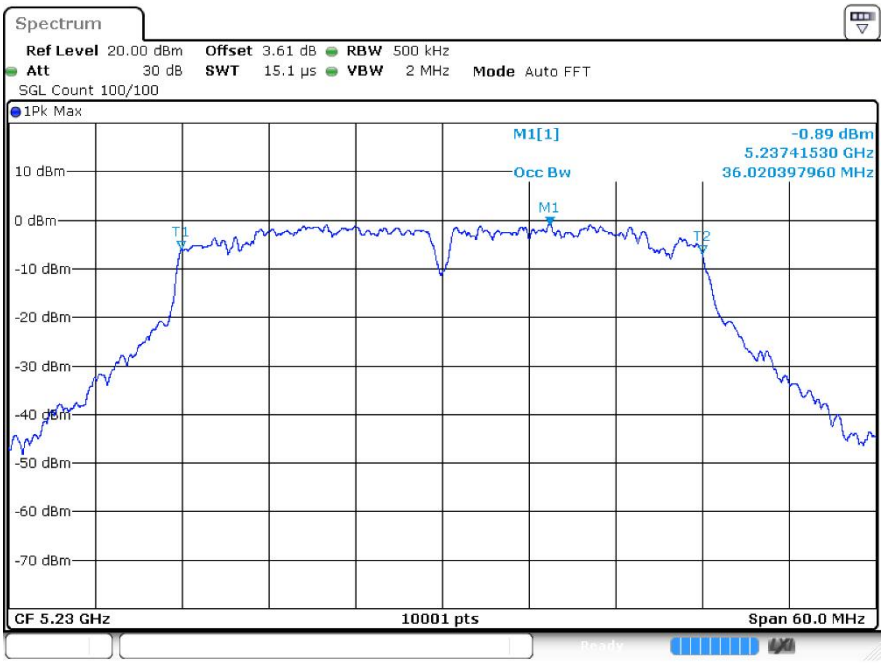

OBW n20 5240MHz Ant1



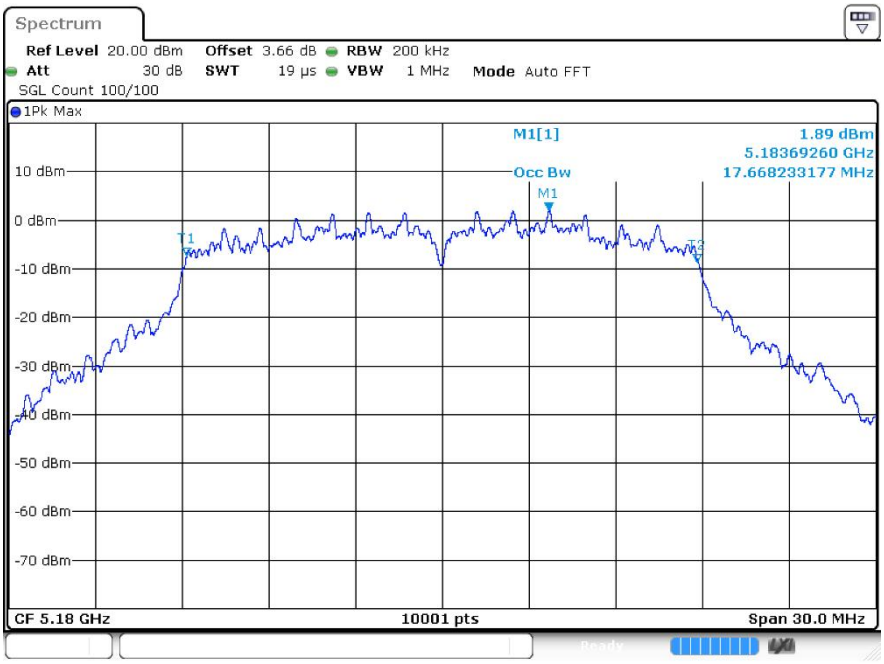
OBWn40 5190MHz Ant1



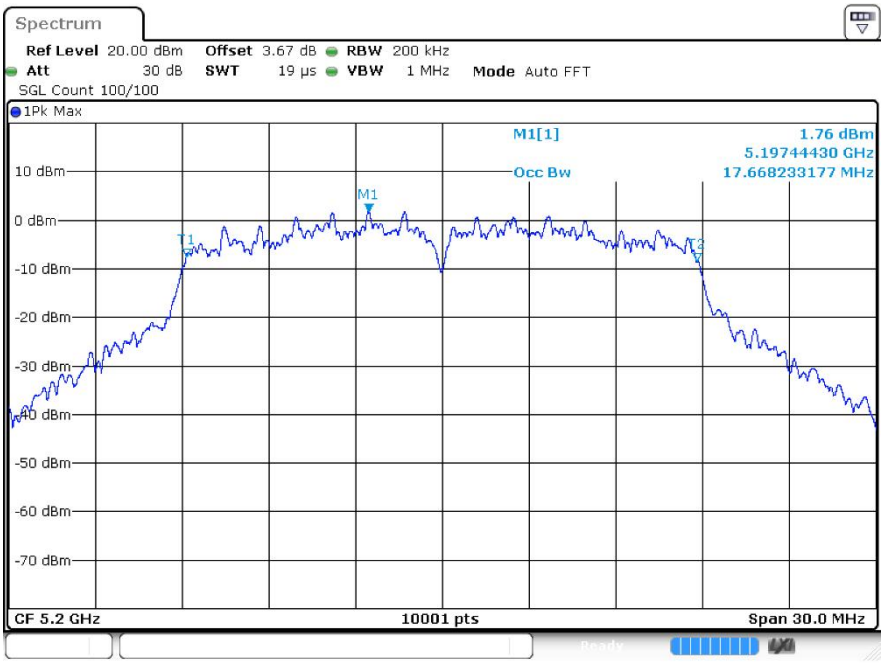

OBWn40 5230MHz Ant1



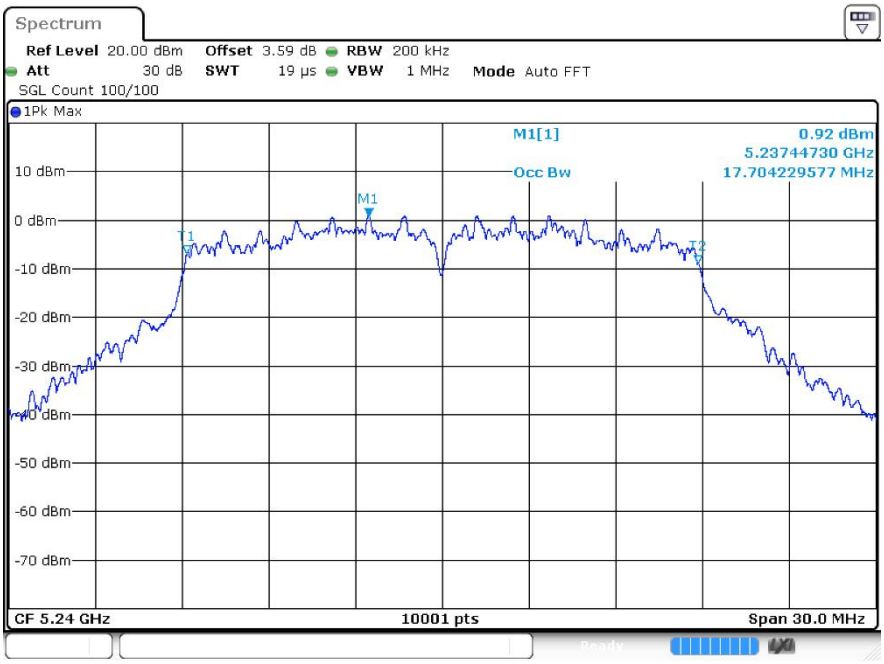
OBW ac20 5180MHz Ant1



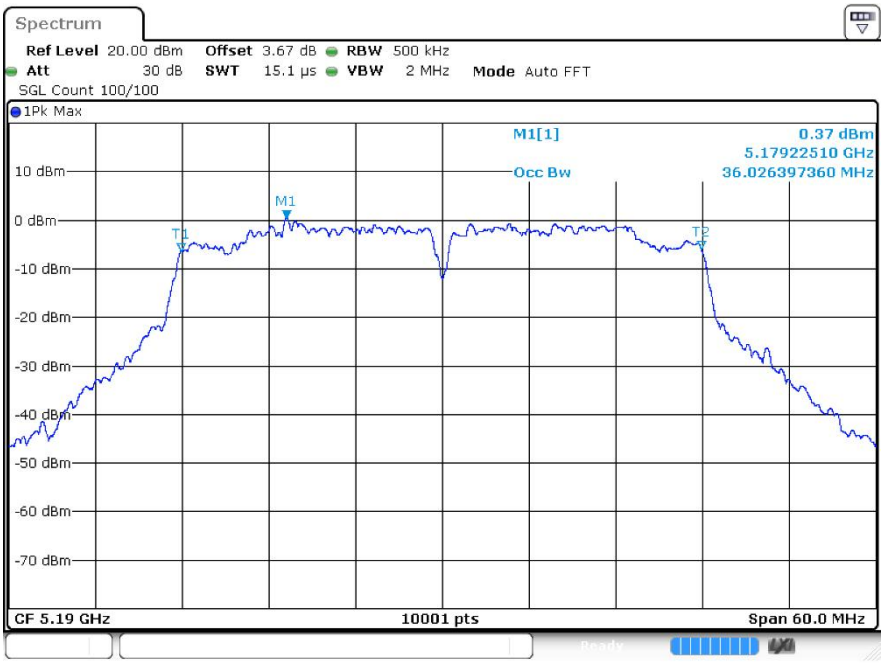

OBW ac20 5200MHz Ant1



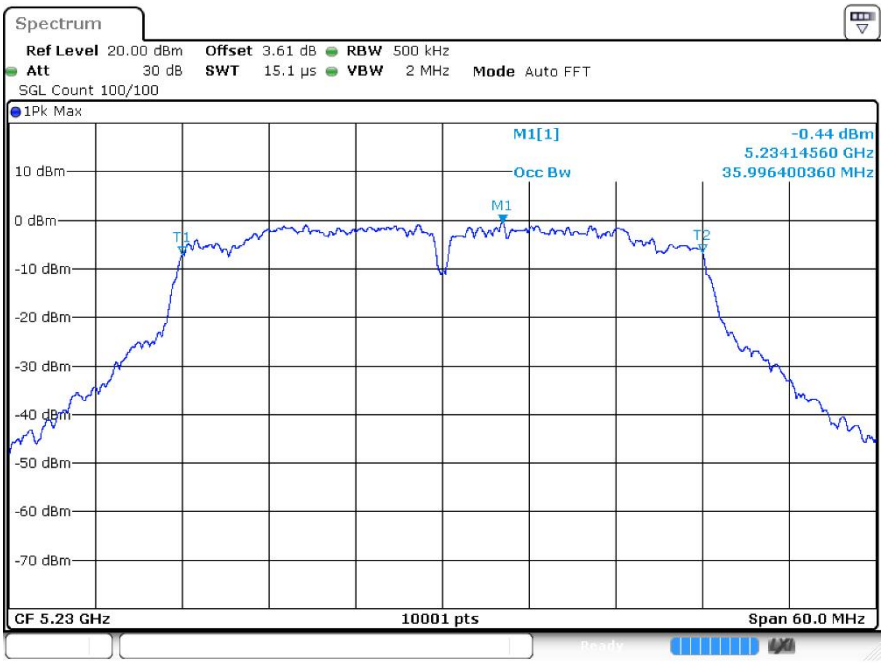
OBW ac20 5240MHz Ant1



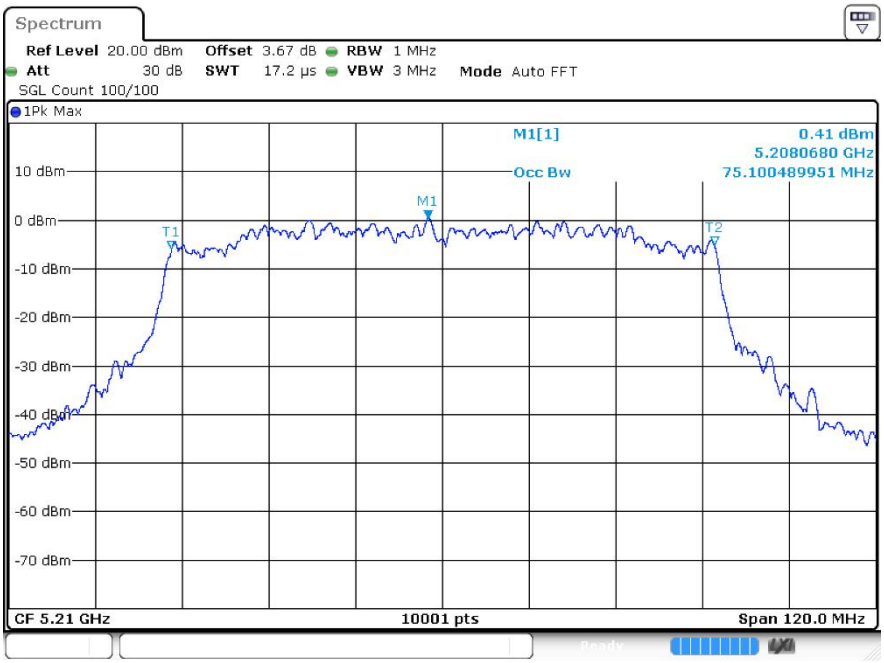

OBWac40 5190MHz Ant1



OBWac40 5230MHz Ant1




OBWac80 5210MHz Ant1



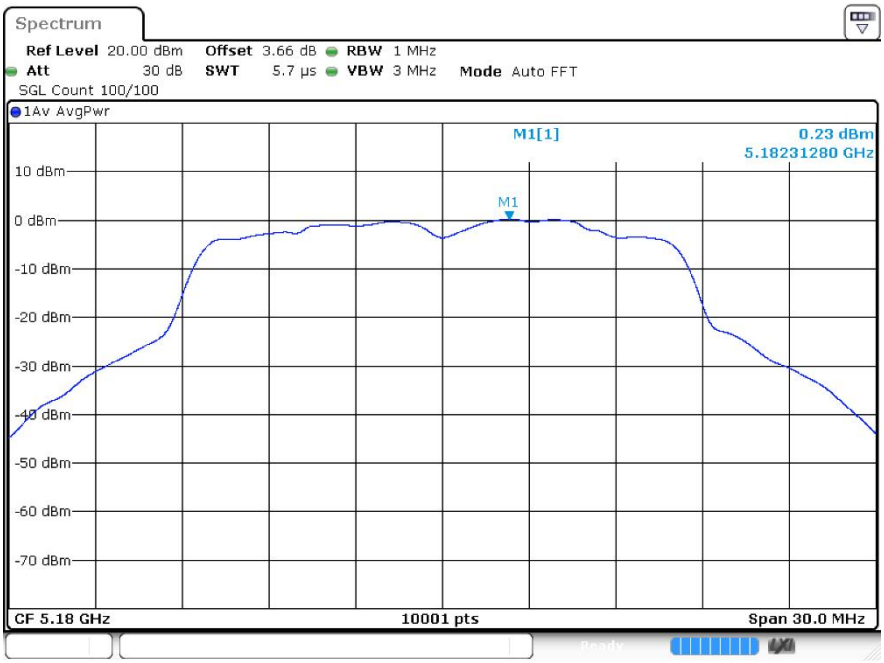
# 5 Maximum Power Spectral Density Level

## 5.1 Test Result

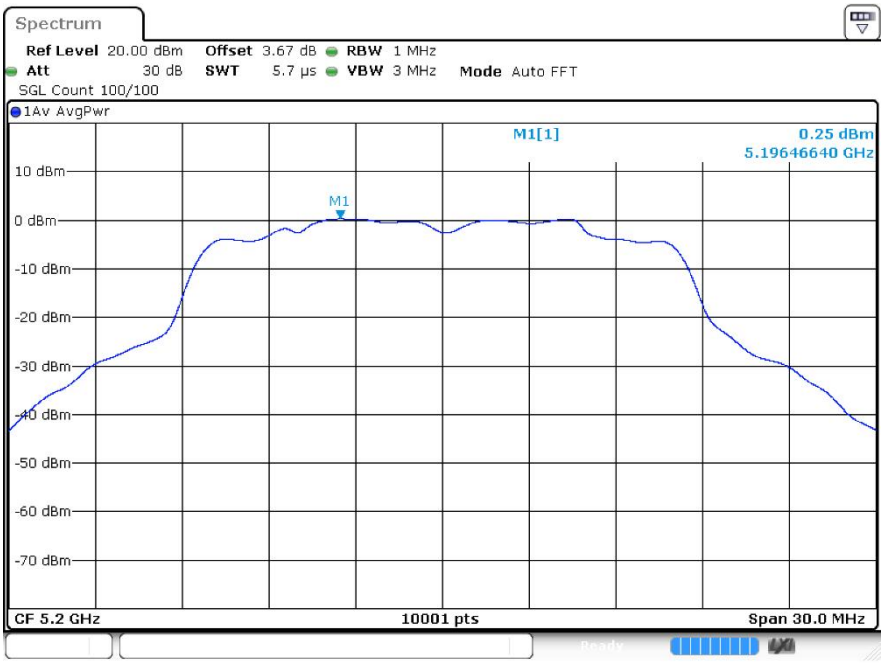
| Mode | Frequency (MHz) | Antenna | Conducted PSD (dBm) | Duty Factor (dB) | Total PSD (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|---|
| a | 5180 | Ant1 | 0.23 | 0.6 | 0.83 | 11 | Pass |
| a | 5200 | Ant1 | 0.25 | 0.61 | 0.86 | 11 | Pass |
| a | 5240 | Ant1 | -0.11 | 0.6 | 0.49 | 11 | Pass |
| n20 | 5180 | Ant1 | -0.38 | 0.57 | 0.19 | 11 | Pass |
| n20 | 5200 | Ant1 | -0.57 | 0.57 | 0 | 11 | Pass |
| n20 | 5240 | Ant1 | -1.02 | 0.57 | -0.45 | 11 | Pass |
| n40 | 5190 | Ant1 | -4.08 | 0.55 | -3.53 | 11 | Pass |
| n40 | 5230 | Ant1 | -5.38 | 0.55 | -4.83 | 11 | Pass |
| ac20 | 5180 | Ant1 | -0.99 | 0.6 | -0.39 | 11 | Pass |
| ac20 | 5200 | Ant1 | -0.54 | 0.59 | 0.05 | 11 | Pass |
| ac20 | 5240 | Ant1 | -0.4 | 0.6 | 0.2 | 11 | Pass |
| ac40 | 5190 | Ant1 | -4.56 | 0.6 | -3.96 | 11 | Pass |
| ac40 | 5230 | Ant1 | -4.48 | 0.6 | -3.88 | 11 | Pass |
| ac80 | 5210 | Ant1 | -7.34 | 0.59 | -6.75 | 11 | Pass |

## 5.2 Test Graphs

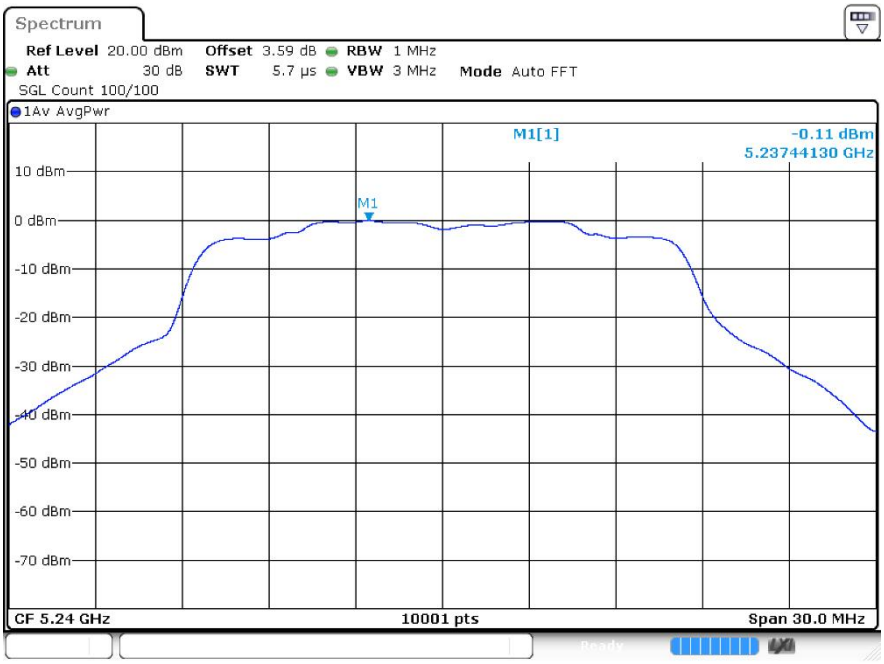
| Test Graphs |
|---|
| PSDa 5180MHz Ant1 |

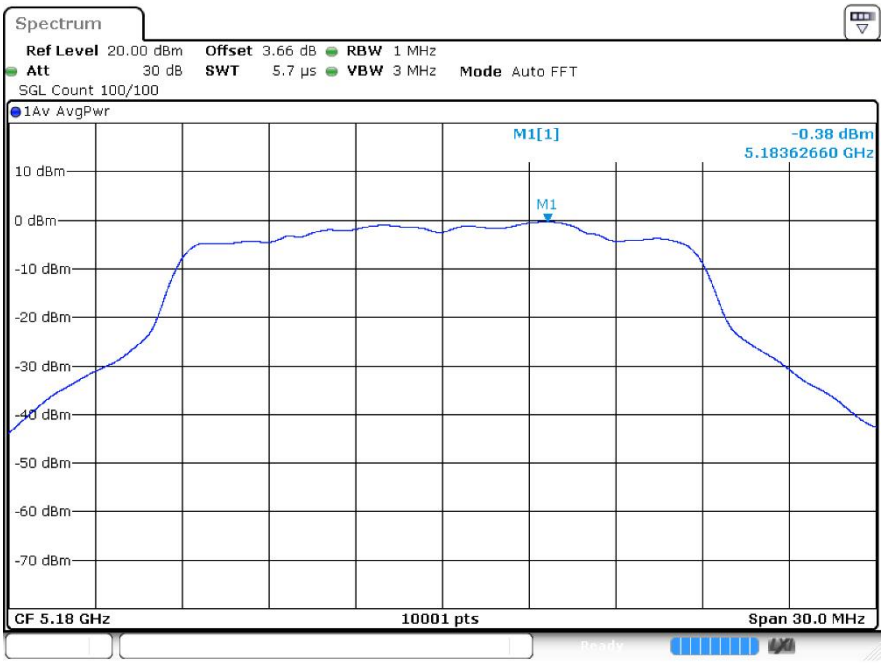



| PSD a 5200MHz Ant1 |
|---|



PSDa 5240MHz Ant1




PSD n20 5180MHz Ant1