



11N40MIMO Ant1 5755



11N40MIMO Ant2 5755



11N40MIMO Ant1 5795





11AC20MIMO Ant1 5785



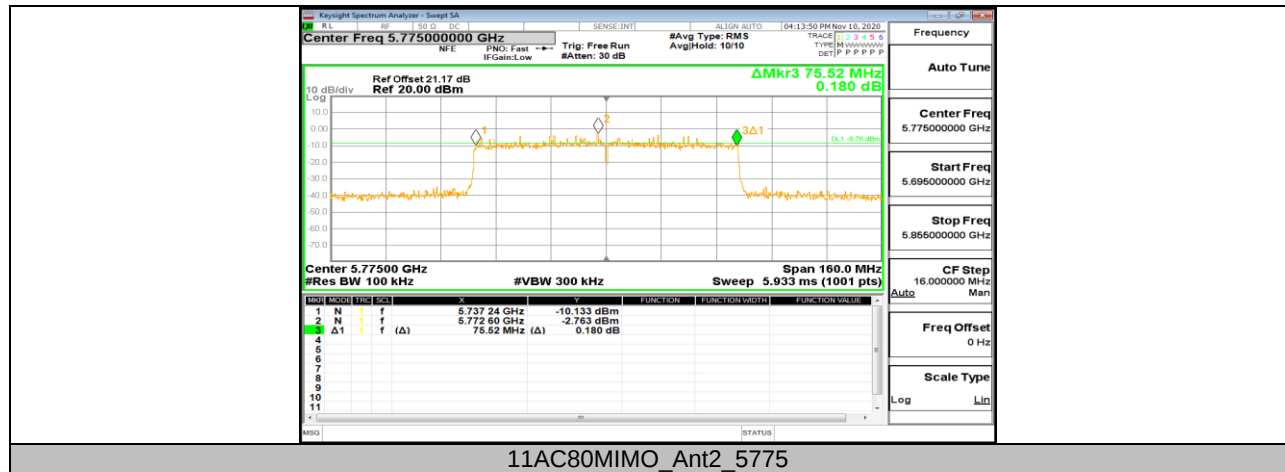
11AC20MIMO Ant2 5785



11AC20MIMO Ant1 5825







**Appendix B: Maximum conducted output power****Test Result**

| Test Mode  | Antenna | Channel | Power [dBm] | FCC Limit [dBm] | ISED Limit [dBm] | EIRP [dBm] | Limit [dBm] | Verdict |
|------------|---------|---------|-------------|-----------------|------------------|------------|-------------|---------|
| 11A        | Ant1    | 5180    | 13.44       | <=30            | ---              | 17.80      | <=22.19     | PASS    |
|            | Ant2    | 5180    | 14.79       | <=30            | ---              | 17.96      | <=22.18     | PASS    |
|            | Ant1    | 5200    | 13.35       | <=30            | ---              | 17.71      | <=22.23     | PASS    |
|            | Ant2    | 5200    | 14.84       | <=30            | ---              | 18.01      | <=22.22     | PASS    |
|            | Ant1    | 5240    | 14.03       | <=30            | ---              | 18.39      | <=22.17     | PASS    |
|            | Ant2    | 5240    | 14.83       | <=30            | ---              | 18.00      | <=22.18     | PASS    |
|            | Ant1    | 5745    | 13.30       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5745    | 14.83       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant1    | 5785    | 12.95       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5785    | 14.63       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant1    | 5825    | 12.93       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5825    | 14.11       | <=30            | <=30             | ---        | ---         | PASS    |
| 11N20MIMO  | Ant1    | 5180    | 9.68        | <=30            | ---              | ---        | ---         | PASS    |
|            | Ant2    | 5180    | 10.44       | <=30            | ---              | ---        | ---         | PASS    |
|            | total   | 5180    | 13.09       | <=29.2          | ---              | 19.89      | <=22.45     | PASS    |
|            | Ant1    | 5200    | 10.03       | <=30            | ---              | ---        | ---         | PASS    |
|            | Ant2    | 5200    | 10.42       | <=30            | ---              | ---        | ---         | PASS    |
|            | total   | 5200    | 13.24       | <=29.2          | ---              | 20.04      | <=22.45     | PASS    |
|            | Ant1    | 5240    | 10.12       | <=30            | ---              | ---        | ---         | PASS    |
|            | Ant2    | 5240    | 9.93        | <=30            | ---              | ---        | ---         | PASS    |
|            | total   | 5240    | 13.04       | <=29.2          | ---              | 19.84      | <=22.45     | PASS    |
|            | Ant1    | 5745    | 12.89       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5745    | 14.18       | <=30            | <=30             | ---        | ---         | PASS    |
|            | total   | 5745    | 16.59       | <=29.2          | <=29.2           | ---        | ---         | PASS    |
|            | Ant1    | 5785    | 12.48       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5785    | 14.09       | <=30            | <=30             | ---        | ---         | PASS    |
|            | total   | 5785    | 16.37       | <=29.2          | <=29.2           | ---        | ---         | PASS    |
|            | Ant1    | 5825    | 12.14       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5825    | 13.32       | <=30            | <=30             | ---        | ---         | PASS    |
|            | total   | 5825    | 15.78       | <=29.2          | <=29.2           | ---        | ---         | PASS    |
| 11N40MIMO  | Ant1    | 5190    | 12.31       | <=30            | ---              | ---        | ---         | PASS    |
|            | Ant2    | 5190    | 12.80       | <=30            | ---              | ---        | ---         | PASS    |
|            | total   | 5190    | 15.57       | <=29.2          | ---              | 22.37      | <=23        | PASS    |
|            | Ant1    | 5230    | 12.45       | <=30            | ---              | ---        | ---         | PASS    |
|            | Ant2    | 5230    | 11.96       | <=30            | ---              | ---        | ---         | PASS    |
|            | total   | 5230    | 15.22       | <=29.2          | ---              | 22.02      | <=23        | PASS    |
|            | Ant1    | 5755    | 13.48       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5755    | 14.62       | <=30            | <=30             | ---        | ---         | PASS    |
|            | total   | 5755    | 17.1        | <=29.2          | <=29.2           | ---        | ---         | PASS    |
|            | Ant1    | 5795    | 13.12       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5795    | 13.69       | <=30            | <=30             | ---        | ---         | PASS    |
|            | total   | 5795    | 16.4        | <=29.2          | <=29.2           | ---        | ---         | PASS    |
| 11AC20MIMO | Ant1    | 5180    | 9.65        | <=30            | ---              | ---        | ---         | PASS    |
|            | Ant2    | 5180    | 10.10       | <=30            | ---              | ---        | ---         | PASS    |
|            | total   | 5180    | 12.89       | <=29.2          | ---              | 19.69      | <=22.47     | PASS    |
|            | Ant1    | 5200    | 9.70        | <=30            | ---              | ---        | ---         | PASS    |
|            | Ant2    | 5200    | 10.15       | <=30            | ---              | ---        | ---         | PASS    |
|            | total   | 5200    | 12.94       | <=29.2          | ---              | 19.74      | <=22.47     | PASS    |
|            | Ant1    | 5240    | 10.02       | <=30            | ---              | ---        | ---         | PASS    |
|            | Ant2    | 5240    | 9.21        | <=30            | ---              | ---        | ---         | PASS    |
|            | total   | 5240    | 12.64       | <=29.2          | ---              | 19.44      | <=22.45     | PASS    |
|            | Ant1    | 5745    | 13.01       | <=30            | <=30             | ---        | ---         | PASS    |
|            | Ant2    | 5745    | 14.10       | <=30            | <=30             | ---        | ---         | PASS    |



|            |       |      |       |        |        |       |      |      |
|------------|-------|------|-------|--------|--------|-------|------|------|
|            | total | 5745 | 16.60 | <=29.2 | <=29.2 | ---   | ---  | PASS |
|            | Ant1  | 5785 | 12.67 | <=30   | <=30   | ---   | ---  | PASS |
|            | Ant2  | 5785 | 14.17 | <=30   | <=30   | ---   | ---  | PASS |
|            | total | 5785 | 16.49 | <=29.2 | <=29.2 | ---   | ---  | PASS |
|            | Ant1  | 5825 | 12.48 | <=30   | <=30   | ---   | ---  | PASS |
|            | Ant2  | 5825 | 13.24 | <=30   | <=30   | ---   | ---  | PASS |
| 11AC40MIMO | total | 5825 | 15.89 | <=29.2 | <=29.2 | ---   | ---  | PASS |
|            | Ant1  | 5190 | 12.19 | <=30   | ---    | ---   | ---  | PASS |
|            | Ant2  | 5190 | 12.56 | <=30   | ---    | ---   | ---  | PASS |
|            | total | 5190 | 15.39 | <=29.2 | ---    | 22.19 | <=23 | PASS |
|            | Ant1  | 5230 | 12.44 | <=30   | ---    | ---   | ---  | PASS |
|            | Ant2  | 5230 | 12.27 | <=30   | ---    | ---   | ---  | PASS |
|            | total | 5230 | 15.37 | <=29.2 | ---    | 22.17 | <=23 | PASS |
|            | Ant1  | 5755 | 13.41 | <=30   | <=30   | ---   | ---  | PASS |
|            | Ant2  | 5755 | 14.47 | <=30   | <=30   | ---   | ---  | PASS |
|            | total | 5755 | 16.98 | <=29.2 | <=29.2 | ---   | ---  | PASS |
|            | Ant1  | 5795 | 13.04 | <=30   | <=30   | ---   | ---  | PASS |
|            | Ant2  | 5795 | 14.37 | <=30   | <=30   | ---   | ---  | PASS |
| 11AC80MIMO | total | 5795 | 16.77 | <=29.2 | <=29.2 | ---   | ---  | PASS |
|            | Ant1  | 5210 | 12.19 | <=30   | ---    | ---   | ---  | PASS |
|            | Ant2  | 5210 | 12.15 | <=30   | ---    | ---   | ---  | PASS |
|            | total | 5210 | 15.18 | <=29.2 | ---    | 21.98 | <=23 | PASS |
|            | Ant1  | 5775 | 11.41 | <=30   | <=30   | ---   | ---  | PASS |
|            | Ant2  | 5775 | 12.51 | <=30   | <=30   | ---   | ---  | PASS |
|            | total | 5775 | 15.01 | <=29.2 | <=29.2 | ---   | ---  | PASS |

Note: The Duty Cycle Factor is compensated in the graph.

## Appendix C: Maximum power spectral density Test Result

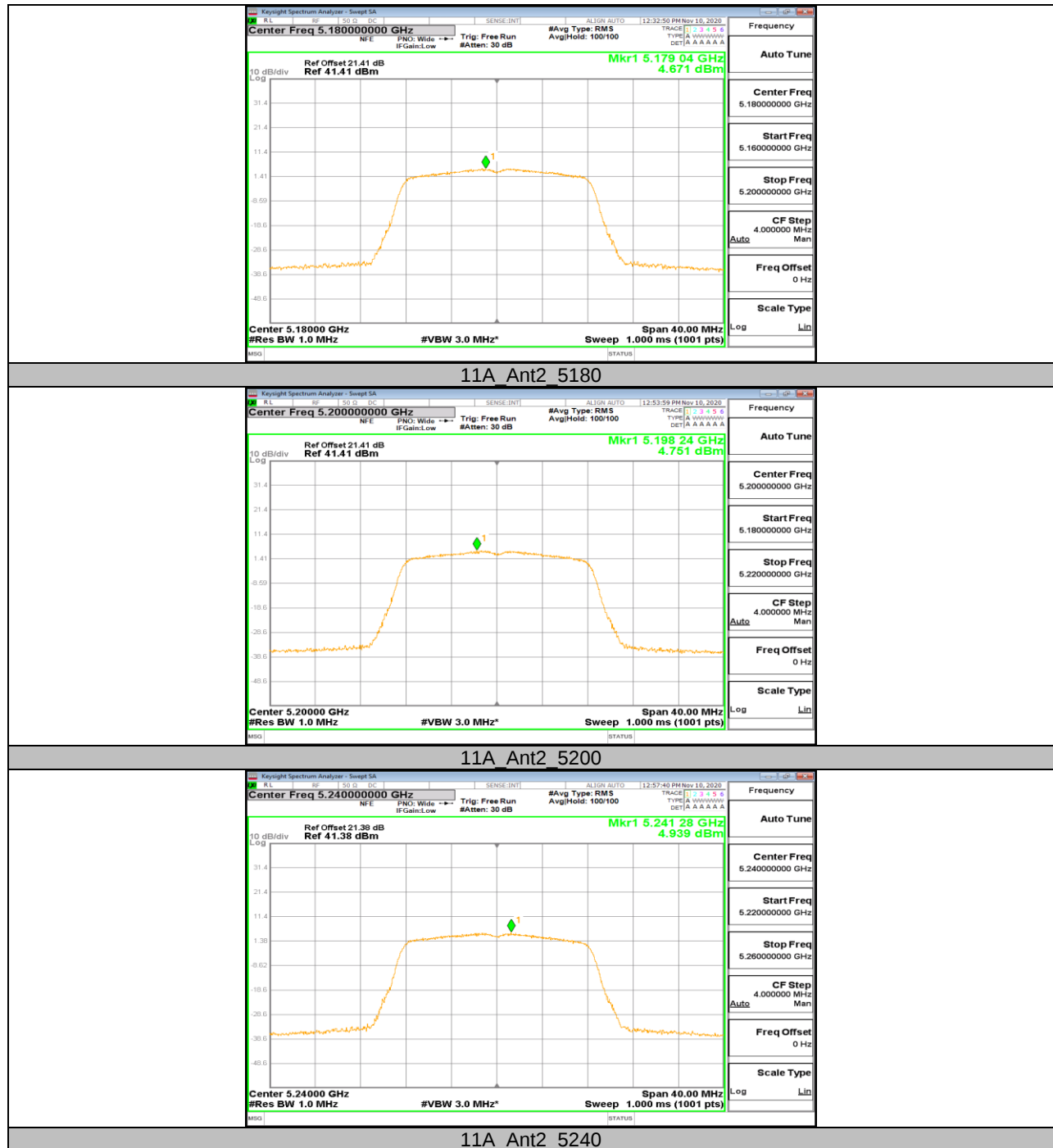
| Test Mode  | Antenna | Channel | Power [dBm/MHz] | Limit [dBm/MHz] | EIRP [dBm/MHz] | Limit [dBm/MHz] | Verdict |
|------------|---------|---------|-----------------|-----------------|----------------|-----------------|---------|
| 11A        | Ant2    | 5180    | 4.67            | <=11            | 7.84           | <=10            | PASS    |
|            |         | 5200    | 4.75            | <=11            | 7.92           | <=10            | PASS    |
|            |         | 5240    | 4.94            | <=11            | 8.11           | <=10            | PASS    |
|            |         | 5745    | 1.99            | <=30            | ---            | ---             | PASS    |
|            |         | 5785    | 1.67            | <=30            | ---            | ---             | PASS    |
|            |         | 5825    | 1.29            | <=30            | ---            | ---             | PASS    |
| 11N20MIMO  | Ant1    | 5180    | -0.64           | <=11            | ---            | ---             | PASS    |
|            | Ant2    | 5180    | 0.17            | <=11            | ---            | ---             | PASS    |
|            | total   | 5180    | 2.79            | <=10.2          | 9.59           | <=10            | PASS    |
|            | Ant1    | 5200    | -0.38           | <=11            | ---            | ---             | PASS    |
|            | Ant2    | 5200    | 0.1             | <=11            | ---            | ---             | PASS    |
|            | total   | 5200    | 2.88            | <=10.2          | 9.68           | <=10            | PASS    |
|            | Ant1    | 5240    | -0.22           | <=11            | ---            | ---             | PASS    |
|            | Ant2    | 5240    | -0.32           | <=11            | ---            | ---             | PASS    |
|            | total   | 5240    | 2.74            | <=10.2          | 9.52           | <=10            | PASS    |
|            | Ant1    | 5745    | -0.14           | <=30            | ---            | ---             | PASS    |
|            | Ant2    | 5745    | 1.32            | <=30            | ---            | ---             | PASS    |
|            | total   | 5745    | 3.66            | <=29.2          | ---            | ---             | PASS    |
|            | Ant1    | 5785    | -0.26           | <=30            | ---            | ---             | PASS    |
|            | Ant2    | 5785    | 1.52            | <=30            | ---            | ---             | PASS    |
|            | total   | 5785    | 3.73            | <=29.2          | ---            | ---             | PASS    |
|            | Ant1    | 5825    | -0.19           | <=30            | ---            | ---             | PASS    |
|            | Ant2    | 5825    | 0.53            | <=30            | ---            | ---             | PASS    |
|            | total   | 5825    | 3.20            | <=29.2          | ---            | ---             | PASS    |
| 11N40MIMO  | Ant1    | 5190    | -1.47           | <=11            | ---            | ---             | PASS    |
|            | Ant2    | 5190    | -0.81           | <=11            | ---            | ---             | PASS    |
|            | total   | 5190    | 1.88            | <=10.2          | 8.68           | <=10            | PASS    |
|            | Ant1    | 5230    | -1              | <=11            | ---            | ---             | PASS    |
|            | Ant2    | 5230    | -1.48           | <=11            | ---            | ---             | PASS    |
|            | total   | 5230    | 1.78            | <=10.2          | 8.58           | <=10            | PASS    |
|            | Ant1    | 5755    | -2.72           | <=30            | ---            | ---             | PASS    |
|            | Ant2    | 5755    | -1.78           | <=30            | ---            | ---             | PASS    |
|            | total   | 5755    | 0.79            | <=29.2          | ---            | ---             | PASS    |
|            | Ant1    | 5795    | -3.45           | <=30            | ---            | ---             | PASS    |
| 11AC80MIMO | Ant2    | 5795    | -1.89           | <=30            | ---            | ---             | PASS    |
|            | total   | 5795    | 0.41            | <=29.2          | ---            | ---             | PASS    |
|            | Ant1    | 5210    | -4.44           | <=11            | ---            | ---             | PASS    |
|            | Ant2    | 5210    | -5.06           | <=11            | ---            | ---             | PASS    |
|            | total   | 5210    | -1.73           | <=10.2          | 5.07           | <=10            | PASS    |
|            | Ant1    | 5775    | -7.91           | <=30            | ---            | ---             | PASS    |
|            | Ant2    | 5775    | -6.59           | <=30            | ---            | ---             | PASS    |
|            | total   | 5775    | -4.19           | <=29.2          | ---            | ---             | PASS    |

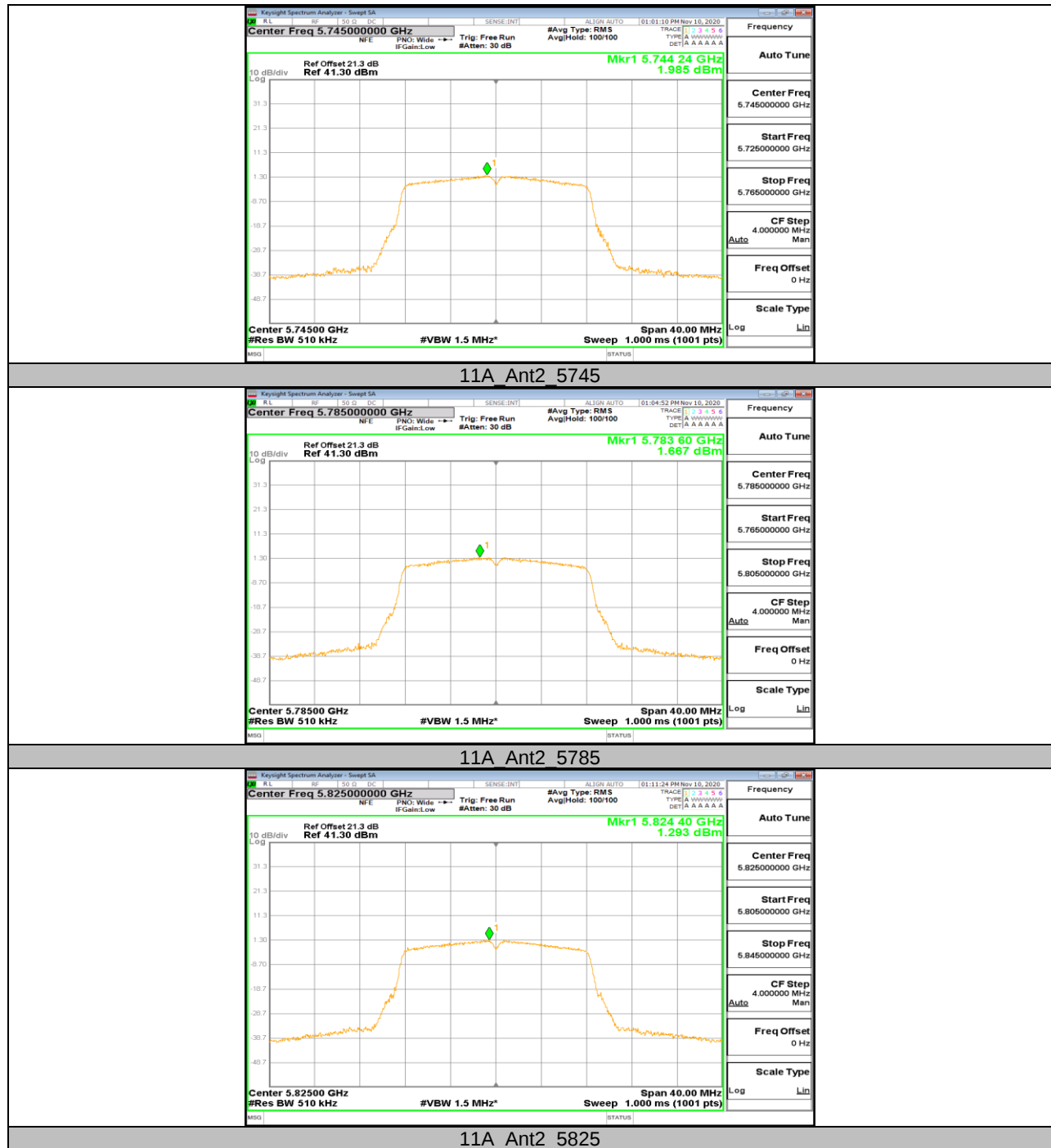
Note : 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

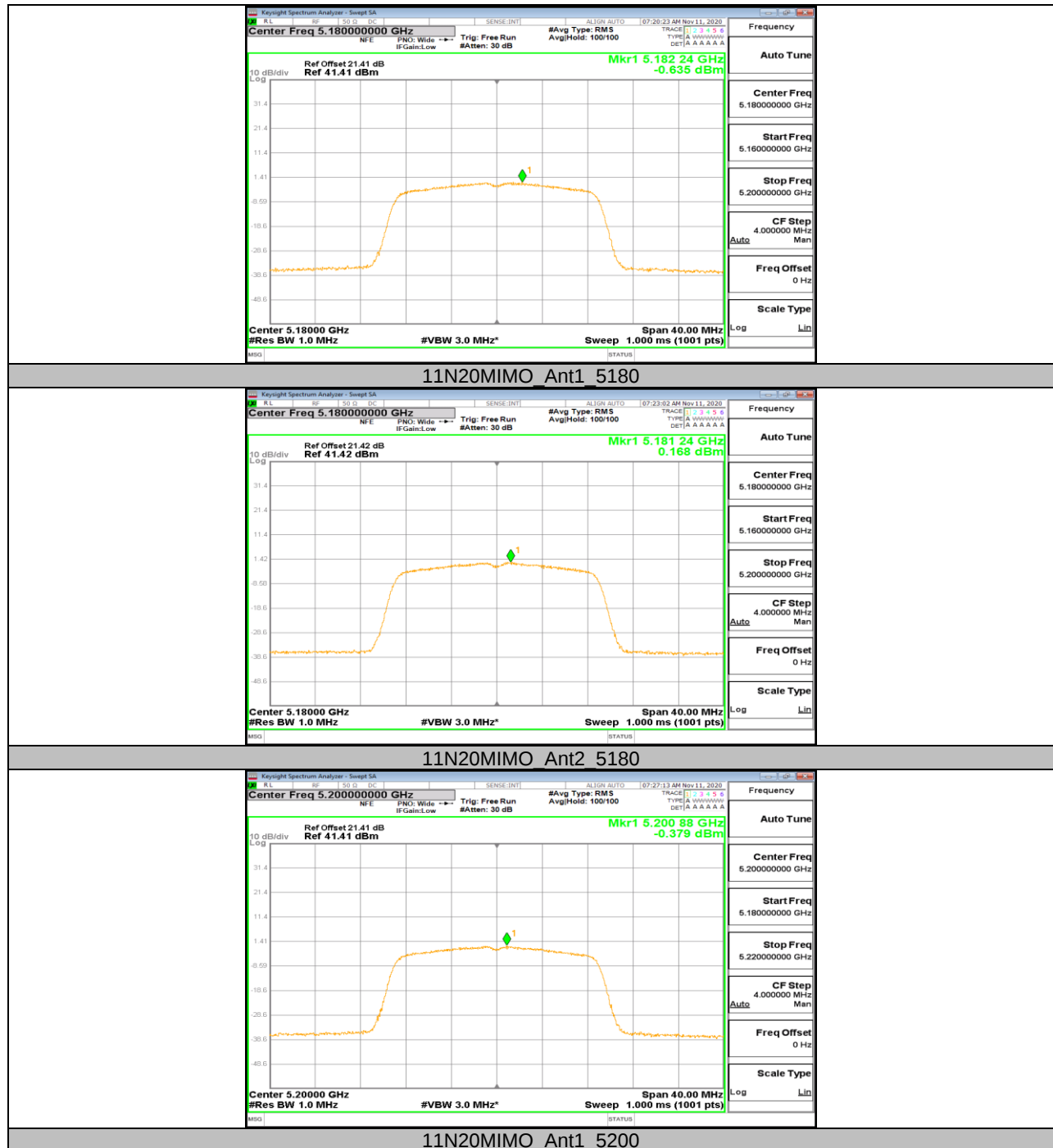
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

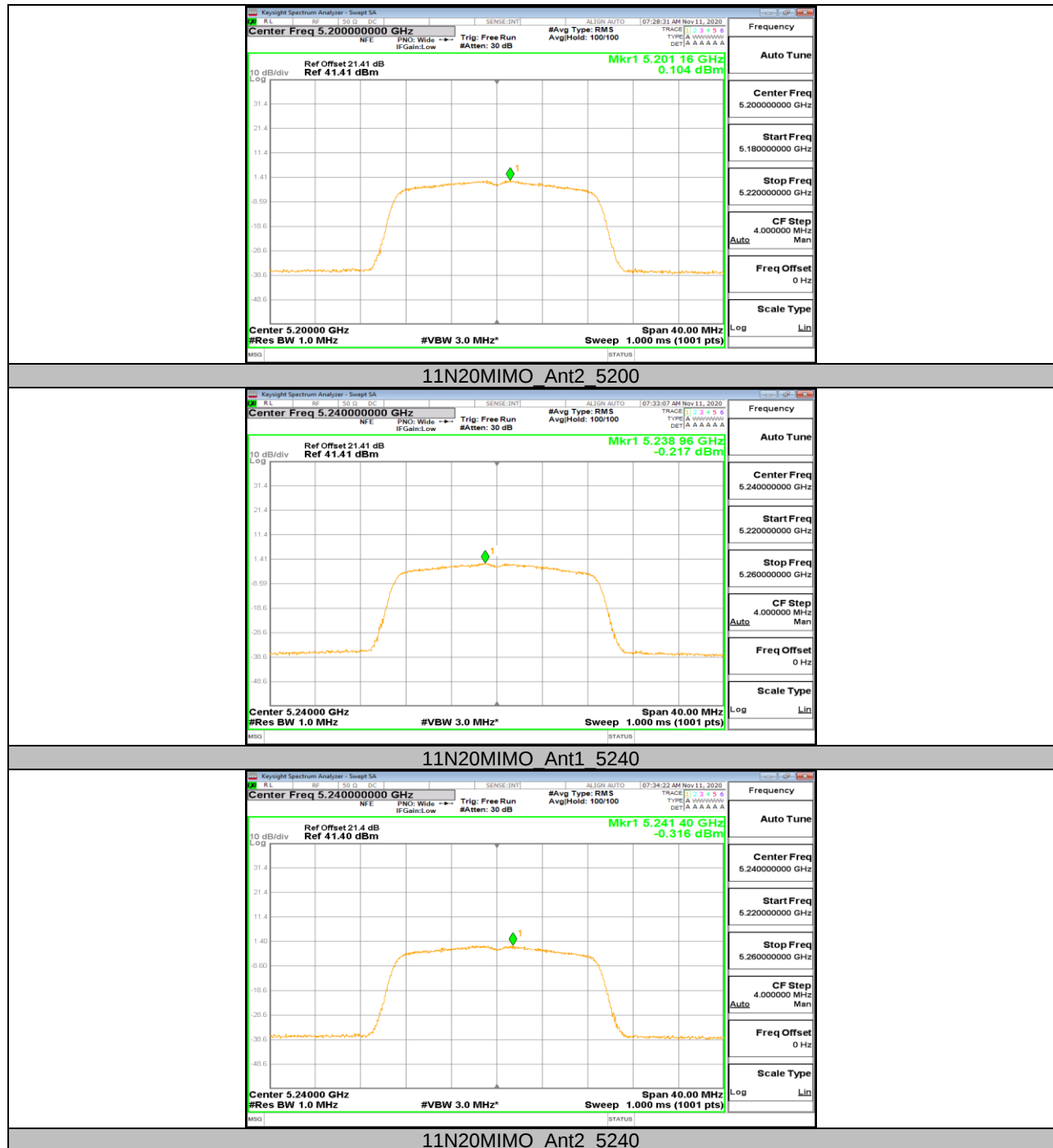


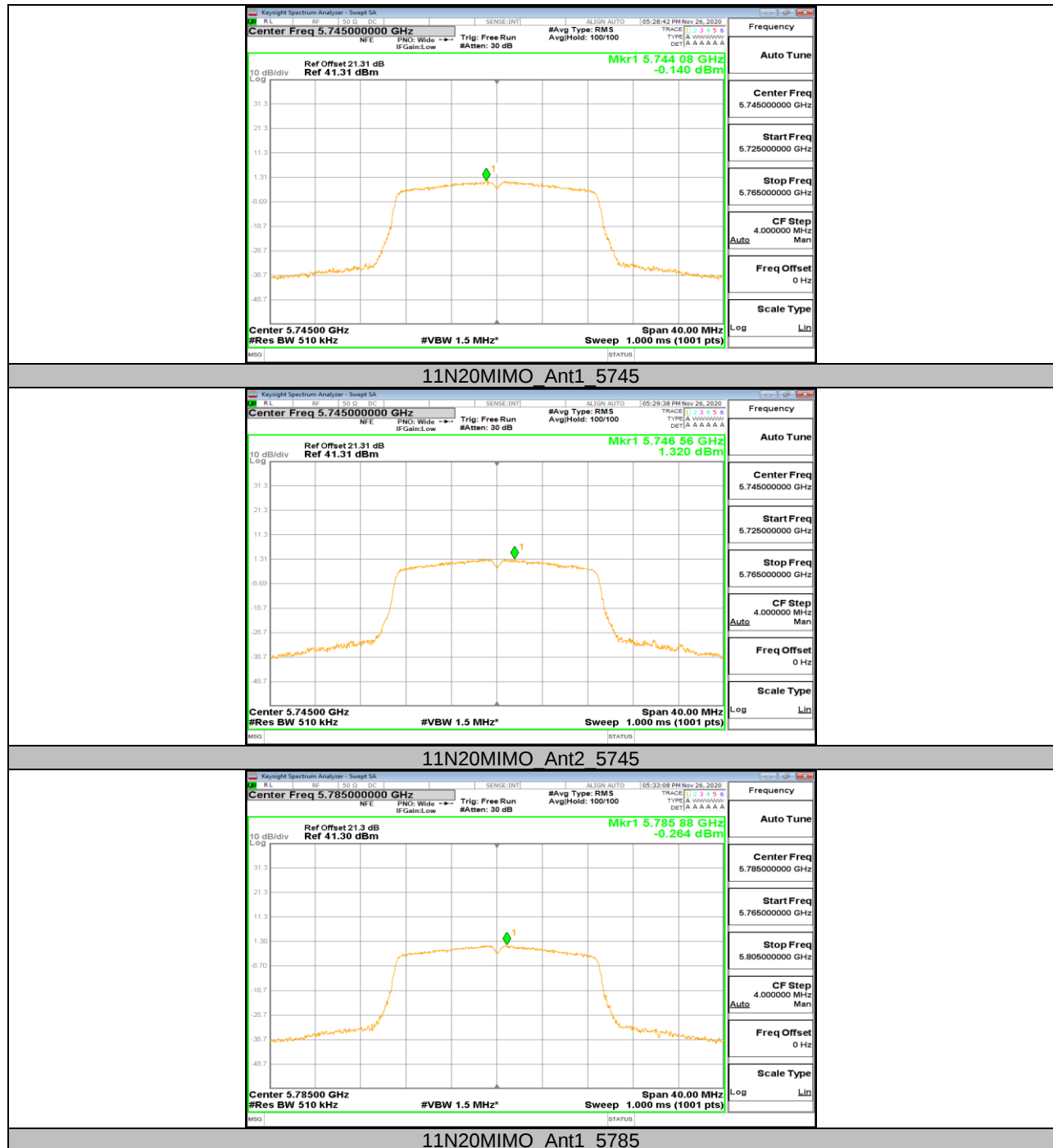
## Test Graphs

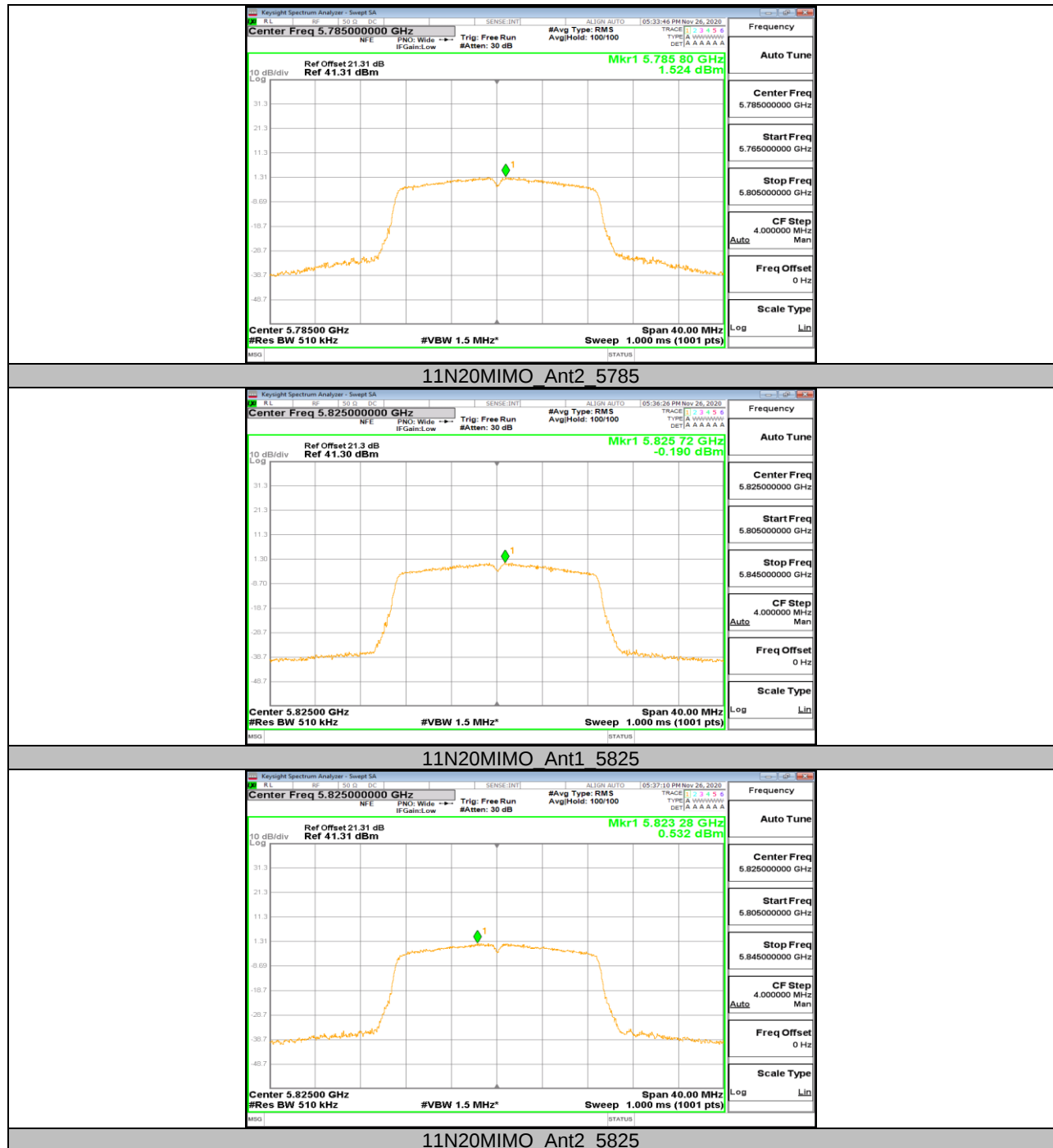




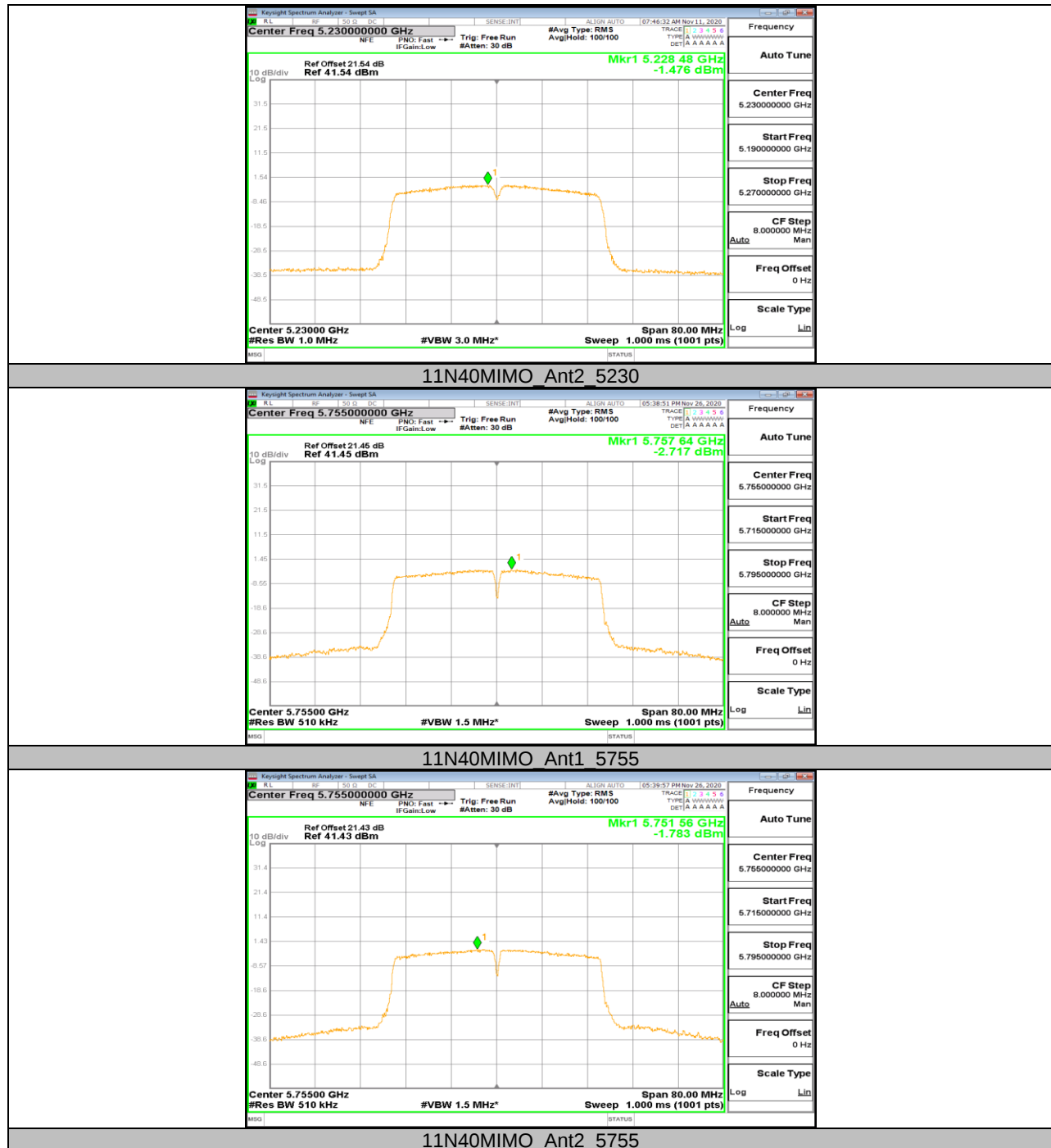


















### Appendix D: Duty Cycle Test Result

| Mode       | On Time<br>(msec) | Period<br>(msec) | Duty<br>Cycle<br>x<br>(Linear) | Duty<br>Cycle<br>(%) | Duty Cycle<br>Correction<br>Factor<br>(dB) | 1/T<br>Minimum<br>VBW<br>(kHz) | Final<br>setting<br>For VBW<br>(kHz) |
|------------|-------------------|------------------|--------------------------------|----------------------|--------------------------------------------|--------------------------------|--------------------------------------|
| 11A        | 1.39              | 1.43             | 0.9720                         | 97.20                | 0.12                                       | 0.72                           | 1                                    |
| 11N20MIMO  | 1.30              | 1.34             | 0.9701                         | 97.01                | 0.13                                       | 0.77                           | 1                                    |
| 11N40MIMO  | 0.65              | 0.68             | 0.9559                         | 95.59                | 0.20                                       | 1.54                           | 2                                    |
| 11AC20MIMO | 0.68              | 0.71             | 0.9577                         | 95.77                | 0.19                                       | 1.47                           | 2                                    |
| 11AC40MIMO | 0.35              | 0.39             | 0.8974                         | 89.74                | 0.47                                       | 2.86                           | 3                                    |
| 11AC80MIMO | 0.95              | 1.56             | 0.6090                         | 60.90                | 2.15                                       | 1.05                           | 2                                    |

Note:

Duty Cycle Correction Factor=10log (1/x).

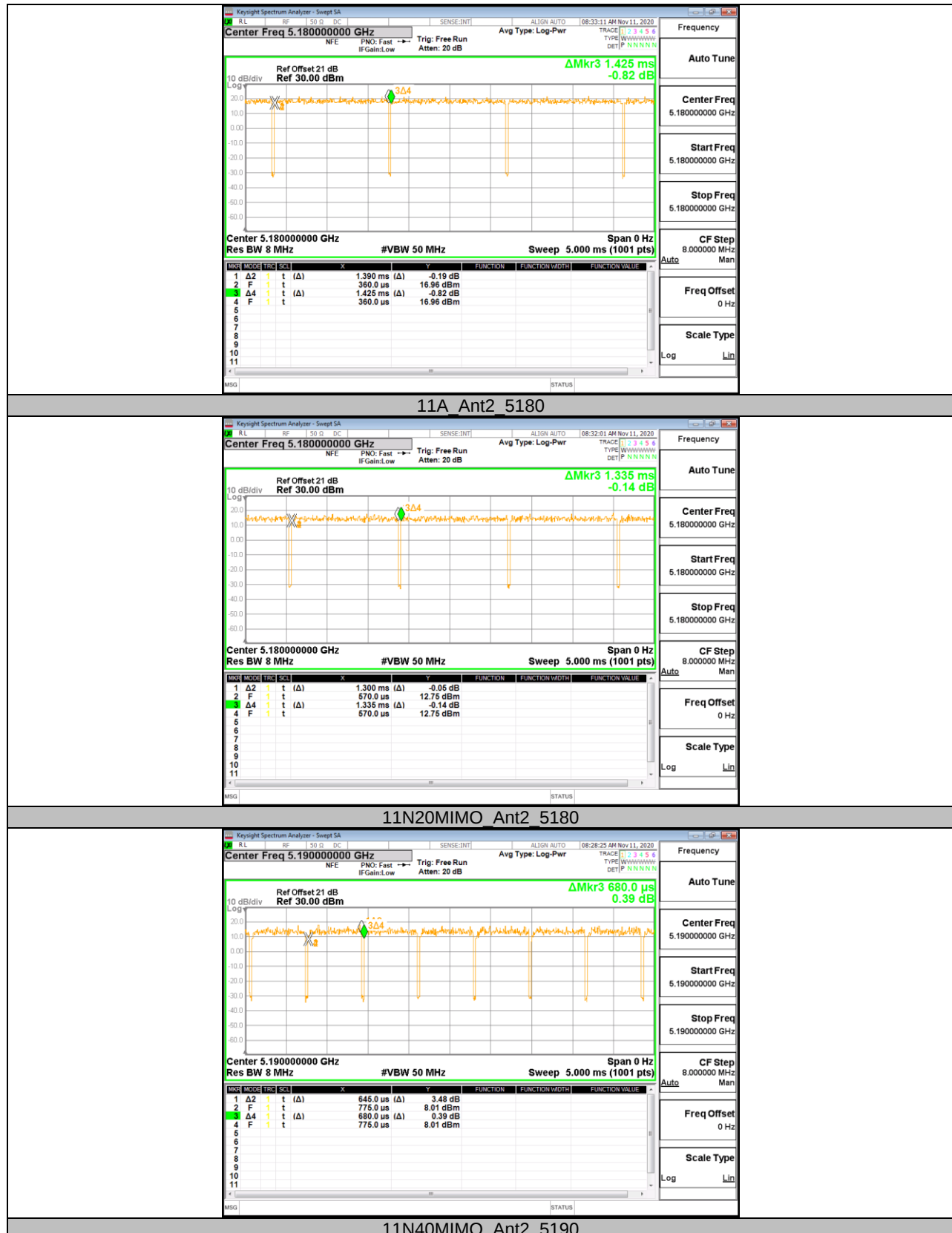
Where: x is Duty Cycle (Linear)

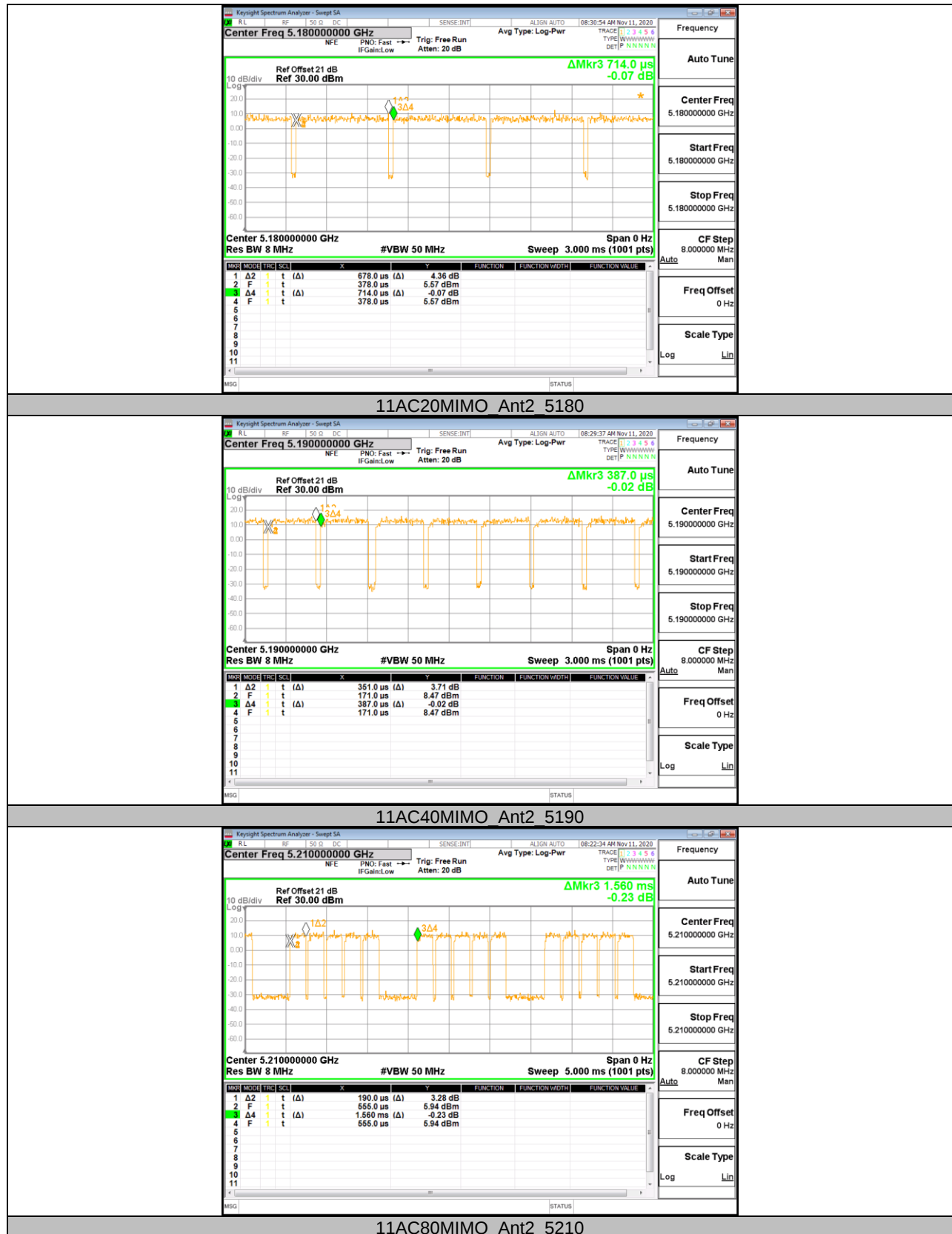
Where: T is On Time

If that calculated VBW is not available on the analyzer then the next higher value should be used.



## Test Graphs







## Appendix E FREQUENCY STABILITY

### Test Result

| Frequency Error vs. Voltage     |                |                  |                 |                  |                 |                  |                 |                  |                 |
|---------------------------------|----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|
| 802.11a:5200MHz                 |                |                  |                 |                  |                 |                  |                 |                  |                 |
| Temp.                           | Volt.          | 0 Minute         |                 | 2 Minute         |                 | 5 Minute         |                 | 10 Minute        |                 |
|                                 |                | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) |
| T <sub>N</sub>                  | V <sub>L</sub> | 5200.0192        | 3.70            | 5200.0039        | 0.76            | 5199.9889        | -2.13           | 5200.0037        | 0.71            |
| T <sub>N</sub>                  | V <sub>N</sub> | 5200.0002        | 0.05            | 5199.9908        | -1.77           | 5199.9821        | -3.45           | 5200.0023        | 0.43            |
| T <sub>N</sub>                  | V <sub>H</sub> | 5200.0139        | 2.66            | 5200.0035        | 0.67            | 5199.9795        | -3.93           | 5199.9823        | -3.41           |
| Frequency Error vs. Temperature |                |                  |                 |                  |                 |                  |                 |                  |                 |
| 802.11a: 5200 MHz               |                |                  |                 |                  |                 |                  |                 |                  |                 |
| Temp.                           | Volt.          | 0 Minute         |                 | 2 Minute         |                 | 5 Minute         |                 | 10 Minute        |                 |
|                                 |                | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) |
| 40                              | V <sub>N</sub> | 5200.0071        | 1.37            | 5199.9978        | -0.42           | 5200.0078        | 1.49            | 5200.0056        | 1.08            |
| 30                              | V <sub>N</sub> | 5199.9926        | -1.43           | 5200.0108        | 2.07            | 5199.9772        | -4.38           | 5200.0120        | 2.30            |
| 20                              | V <sub>N</sub> | 5200.0188        | 3.61            | 5200.0117        | 2.25            | 5200.0240        | 4.62            | 5199.9885        | -2.21           |
| 10                              | V <sub>N</sub> | 5200.0155        | 2.98            | 5200.0211        | 4.07            | 5200.0180        | 3.45            | 5199.9930        | -1.35           |
| 0                               | V <sub>N</sub> | 5200.0228        | 4.39            | 5200.0053        | 1.01            | 5199.9909        | -1.75           | 5199.9781        | -4.20           |

| Frequency Error vs. Voltage     |                |                  |                 |                  |                 |                  |                 |                  |                 |
|---------------------------------|----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|
| 802.11a: 5825 MHz               |                |                  |                 |                  |                 |                  |                 |                  |                 |
| Temp.                           | Volt.          | 0 Minute         |                 | 2 Minute         |                 | 5 Minute         |                 | 10 Minute        |                 |
|                                 |                | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) |
| T <sub>N</sub>                  | V <sub>L</sub> | 5825.0157        | 2.70            | 5824.9956        | -0.76           | 5825.0028        | 0.49            | 5825.0184        | 3.15            |
| T <sub>N</sub>                  | V <sub>N</sub> | 5825.0095        | 1.63            | 5824.9834        | -2.86           | 5825.0063        | 1.07            | 5824.9897        | -1.77           |
| T <sub>N</sub>                  | V <sub>H</sub> | 5824.9970        | -0.51           | 5825.0026        | 0.45            | 5824.9973        | -0.46           | 5825.0090        | 1.55            |
| Frequency Error vs. Temperature |                |                  |                 |                  |                 |                  |                 |                  |                 |
| 802.11a:5825MHz                 |                |                  |                 |                  |                 |                  |                 |                  |                 |
| Temp.                           | Volt.          | 0 Minute         |                 | 2 Minute         |                 | 5 Minute         |                 | 10 Minute        |                 |
|                                 |                | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) | Freq.Error (MHz) | Tolerance (ppm) |
| 40                              | V <sub>N</sub> | 5825.0213        | 3.66            | 5825.0084        | 1.44            | 5824.9816        | -3.16           | 5825.0100        | 1.71            |
| 30                              | V <sub>N</sub> | 5825.0138        | 2.37            | 5824.9918        | -1.40           | 5825.0146        | 2.51            | 5825.0174        | 2.98            |
| 20                              | V <sub>N</sub> | 5825.0159        | 2.73            | 5824.9866        | -2.30           | 5825.0035        | 0.60            | 5825.0114        | 1.96            |
| 10                              | V <sub>N</sub> | 5825.0052        | 0.90            | 5825.0193        | 3.31            | 5825.0226        | 3.87            | 5825.0217        | 3.72            |
| 0                               | V <sub>N</sub> | 5824.9962        | -0.66           | 5825.0155        | 2.67            | 5825.0146        | 2.51            | 5824.9791        | -3.59           |

Note: All the modes have been tested, only the worst data was recorded in the report.

**END OF REPORT**