

## RF Test Data for RLAN(5.8G) (Conducted Measurement)

Product Name: WIFI TOUCH SCREEN KARAOKE SYSTEM

Trade Mark: Singing Machine

Test Model: ISM9015

FCC ID: 2AAXO-ISM9015

### Environmental Conditions

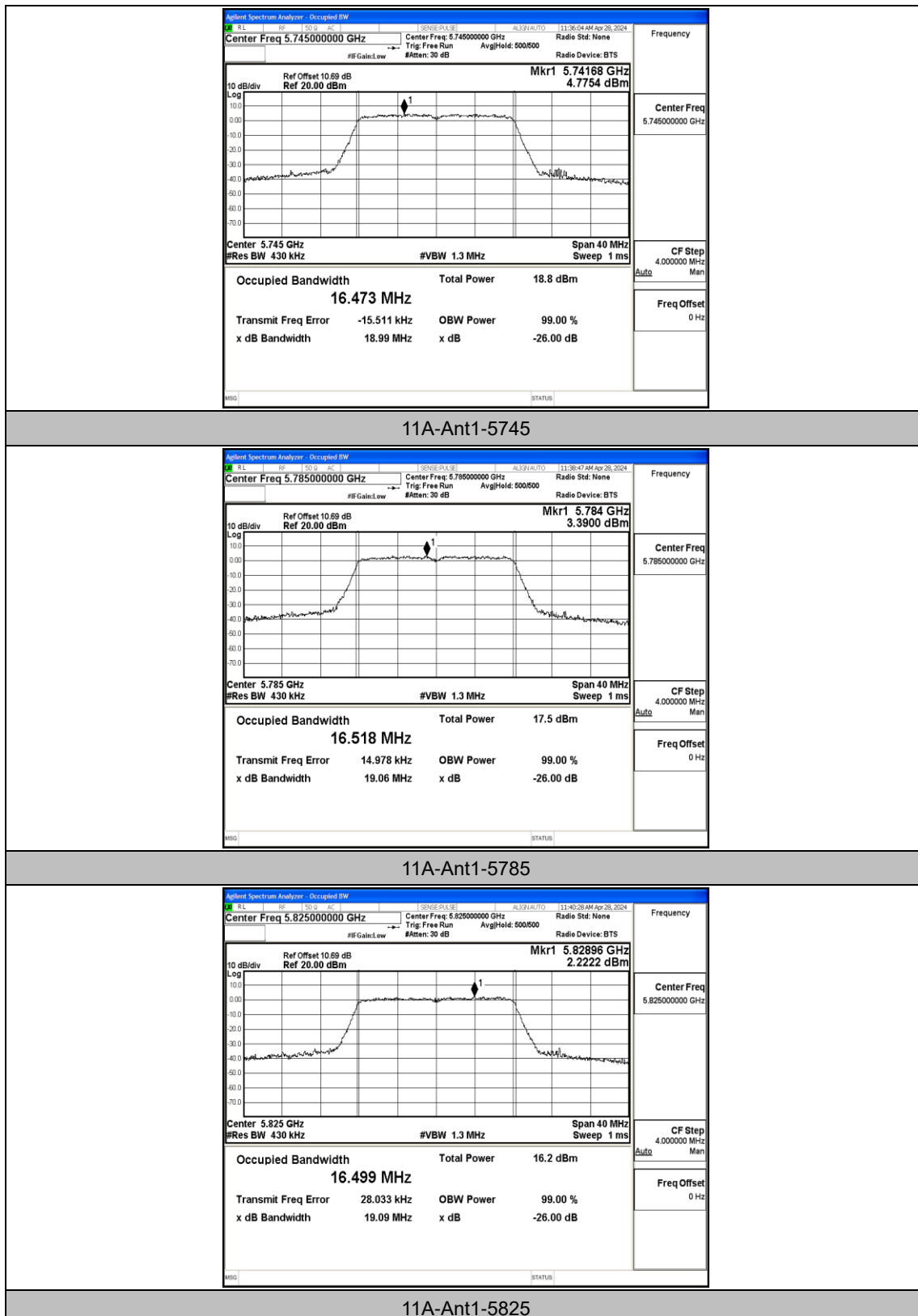
|                    |           |
|--------------------|-----------|
| Temperature:       | 23.8℃     |
| Relative Humidity: | 58%       |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Allen Lai |
| Supervised by:     | Hugo Chen |
| NOTE               | N/A       |

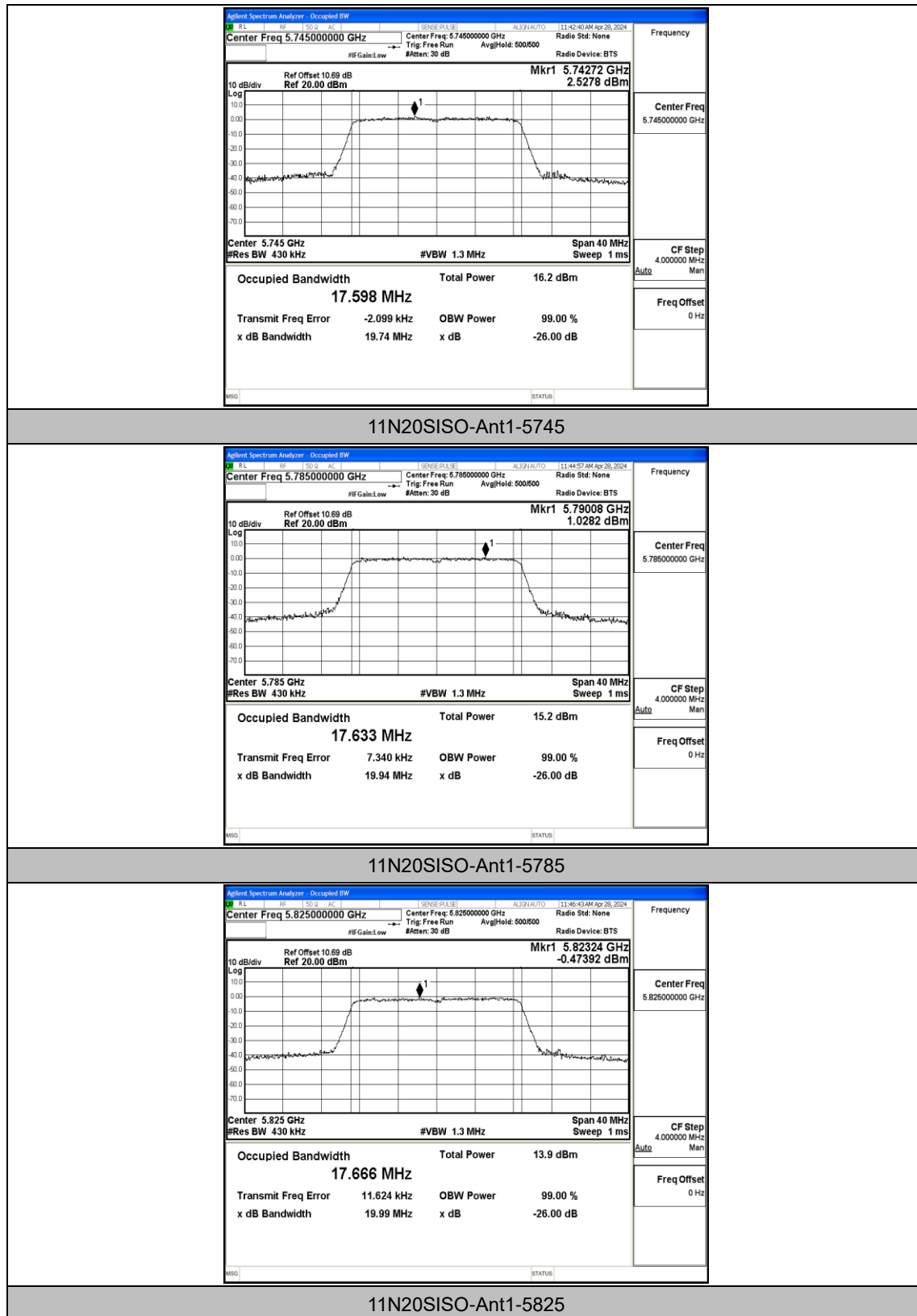
### Appendix A2: Occupied channel bandwidth[IC 才留]

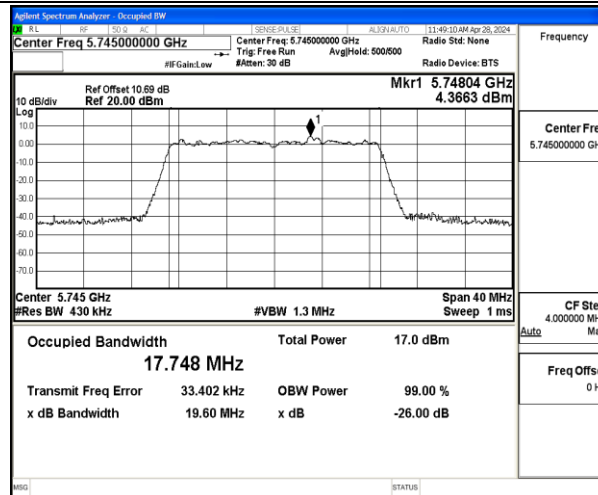
#### Test Result

| TestMode   | Antenna | Frequency[MHz] | OCB<br>[MHz] | FL[MHz]   | FH[MHz]   | Limit[MHz] | Verdict |
|------------|---------|----------------|--------------|-----------|-----------|------------|---------|
| 11A        | Ant1    | 5745           | 16.473       | 5736.7480 | 5753.2210 | ---        | ---     |
| 11A        | Ant1    | 5785           | 16.518       | 5776.7560 | 5793.2740 | ---        | ---     |
| 11A        | Ant1    | 5825           | 16.499       | 5816.7785 | 5833.2775 | ---        | ---     |
| 11N20SISO  | Ant1    | 5745           | 17.598       | 5736.1989 | 5753.7969 | ---        | ---     |
| 11N20SISO  | Ant1    | 5785           | 17.633       | 5776.1908 | 5793.8238 | ---        | ---     |
| 11N20SISO  | Ant1    | 5825           | 17.666       | 5816.1786 | 5833.8446 | ---        | ---     |
| 11AC20SISO | Ant1    | 5745           | 17.748       | 5736.1594 | 5753.9074 | ---        | ---     |
| 11AC20SISO | Ant1    | 5785           | 17.760       | 5776.1749 | 5793.9349 | ---        | ---     |
| 11AC20SISO | Ant1    | 5825           | 17.799       | 5816.1475 | 5833.9465 | ---        | ---     |

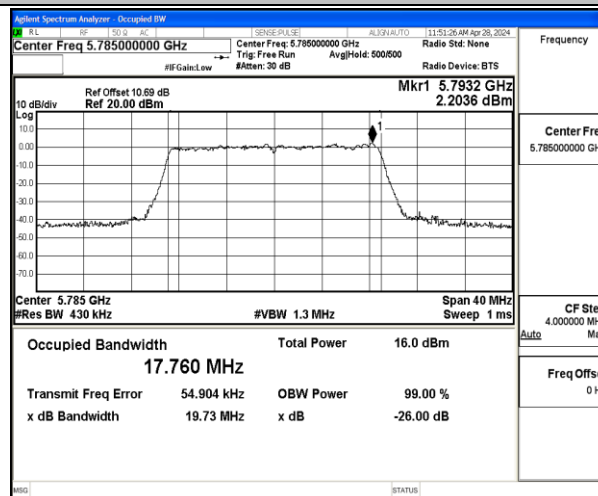
## Test Graphs



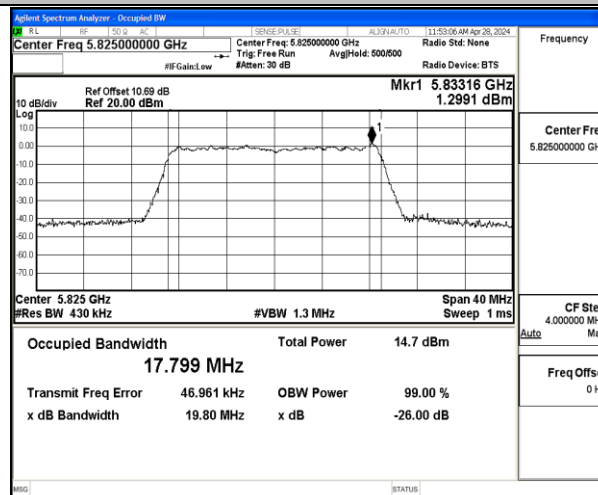




11AC20SISO-Ant1-5745



11AC20SISO-Ant1-5785



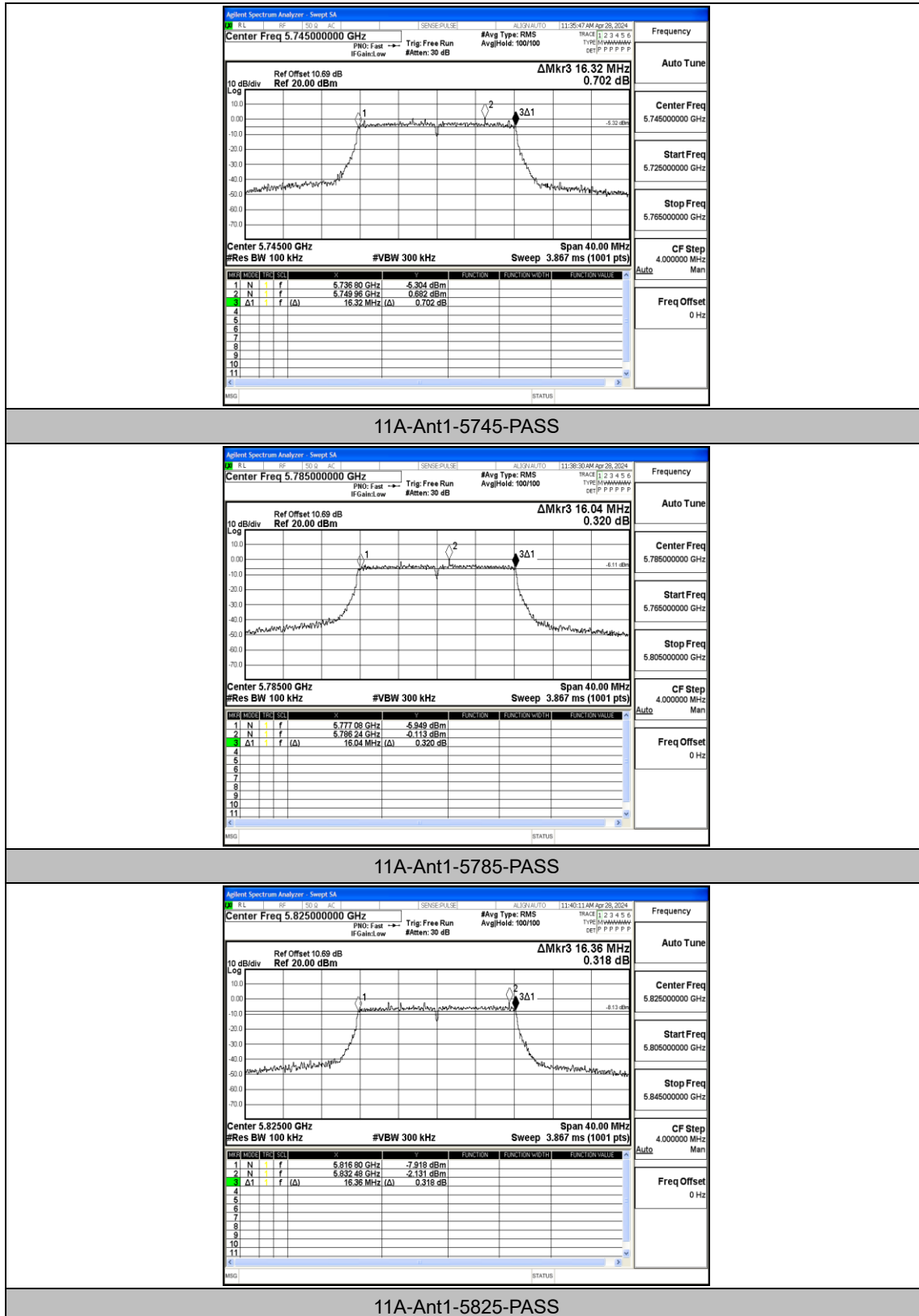
11AC20SISO-Ant1-5825

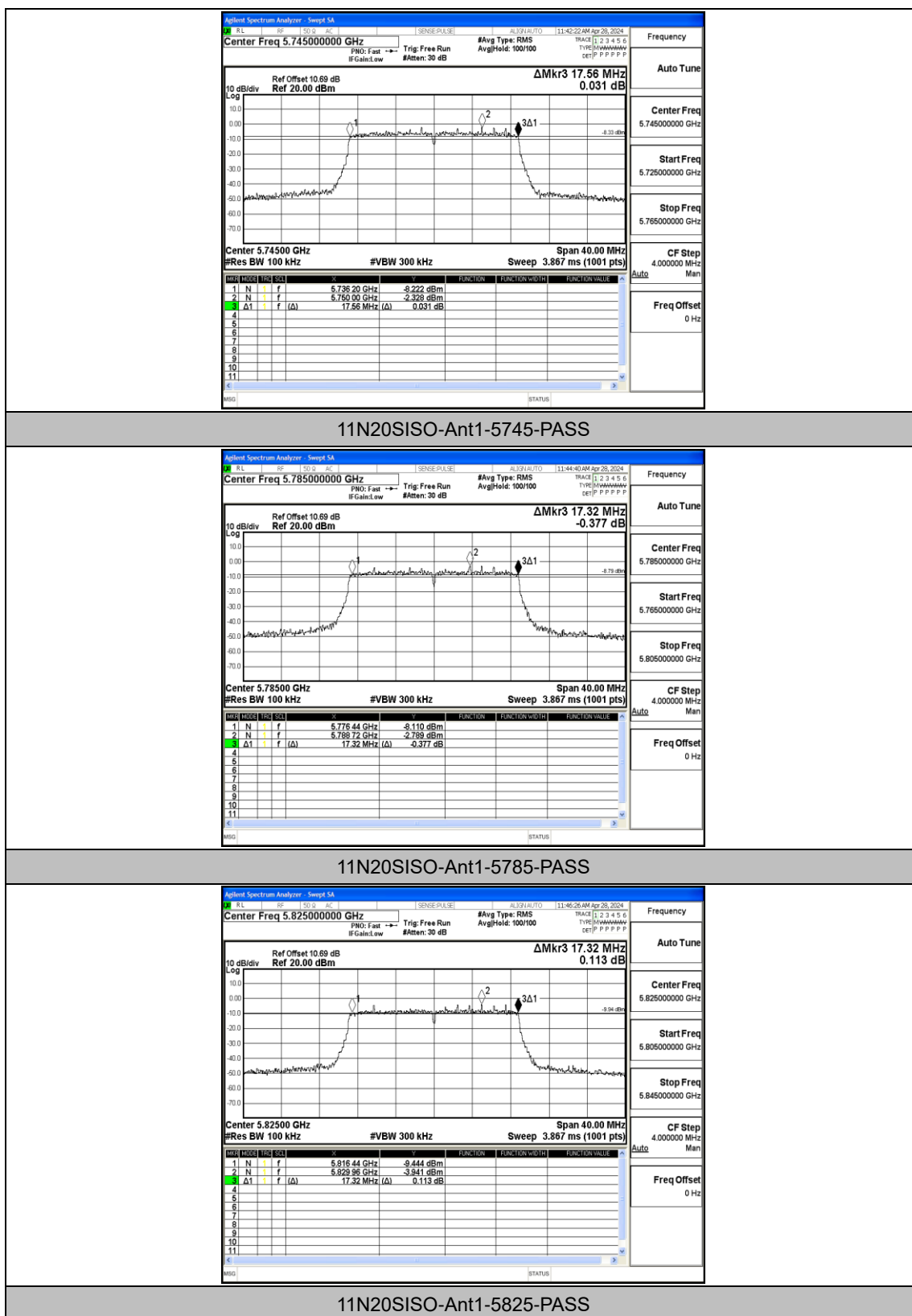
## Appendix A: Min emission bandwidth

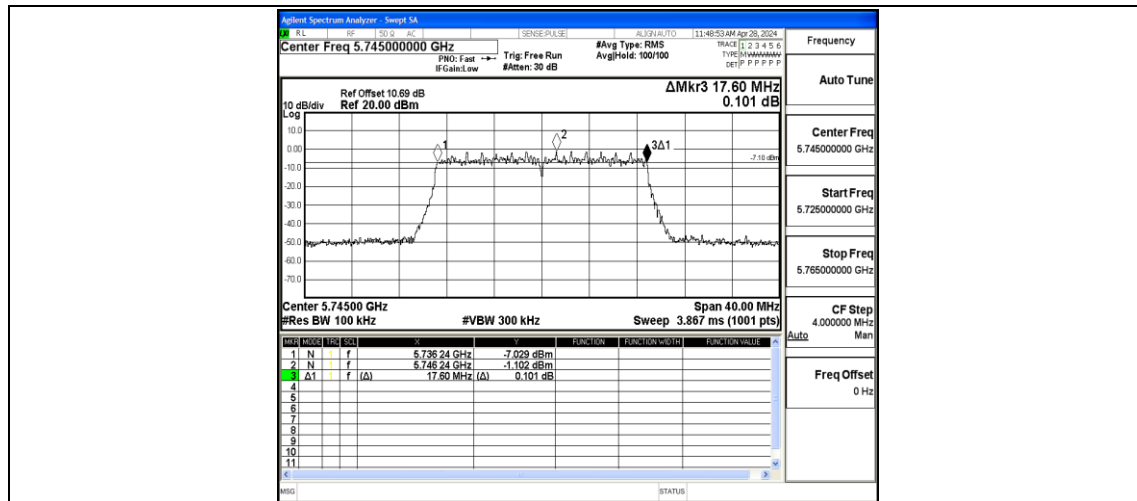
### Test Result

| TestMode   | Antenna | Frequency[MHz] | 6db EBW [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|------------|---------|----------------|---------------|----------|----------|------------|---------|
| 11A        | Ant1    | 5745           | 16.320        | 5736.800 | 5753.120 | 0.5        | PASS    |
| 11A        | Ant1    | 5785           | 16.040        | 5777.080 | 5793.120 | 0.5        | PASS    |
| 11A        | Ant1    | 5825           | 16.360        | 5816.800 | 5833.160 | 0.5        | PASS    |
| 11N20SISO  | Ant1    | 5745           | 17.560        | 5736.200 | 5753.760 | 0.5        | PASS    |
| 11N20SISO  | Ant1    | 5785           | 17.320        | 5776.440 | 5793.760 | 0.5        | PASS    |
| 11N20SISO  | Ant1    | 5825           | 17.320        | 5816.440 | 5833.760 | 0.5        | PASS    |
| 11AC20SISO | Ant1    | 5745           | 17.600        | 5736.240 | 5753.840 | 0.5        | PASS    |
| 11AC20SISO | Ant1    | 5785           | 17.640        | 5776.200 | 5793.840 | 0.5        | PASS    |
| 11AC20SISO | Ant1    | 5825           | 17.640        | 5816.200 | 5833.840 | 0.5        | PASS    |

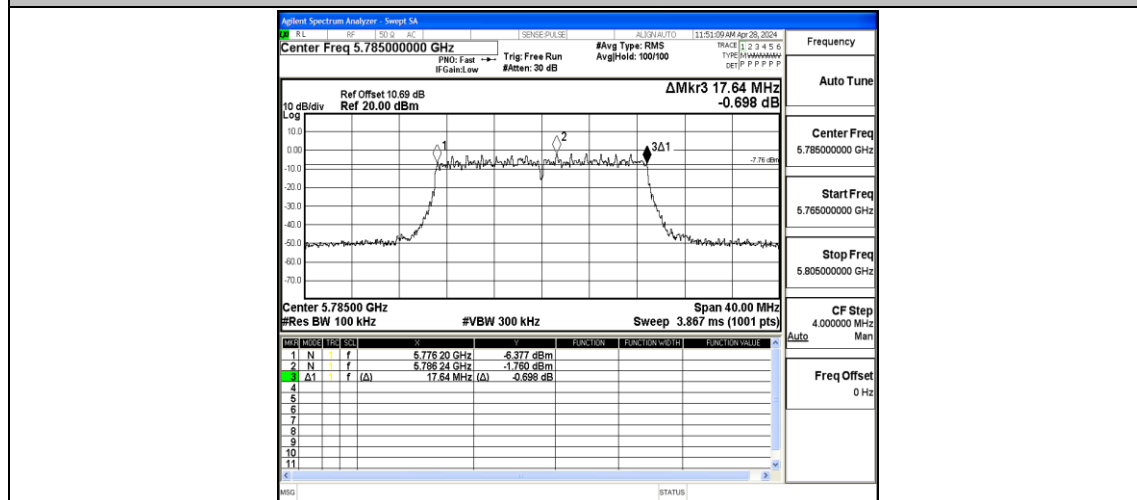
## Test Graphs



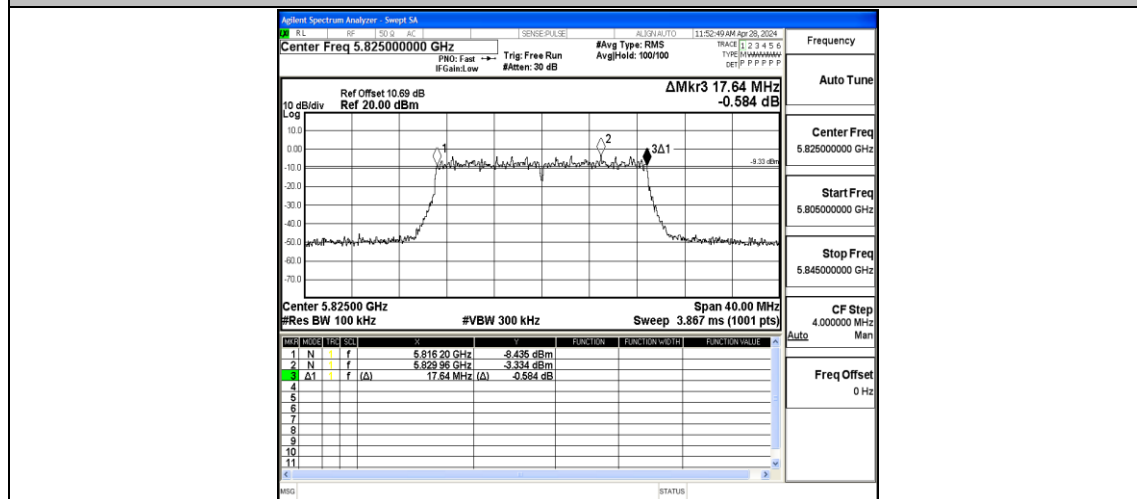




11AC20SISO-Ant1-5745-PASS



11AC20SISO-Ant1-5785-PASS



11AC20SISO-Ant1-5825-PASS

## Appendix B: Maximum conducted output power

### Test Result

| TestMode   | Antenna | Frequency[MHz] | Conducted Power[dBm] | Conducted Limit[dBm] | Verdict |
|------------|---------|----------------|----------------------|----------------------|---------|
| 11A        | Ant1    | 5745           | 12.04                | ≤30.00               | PASS    |
| 11A        | Ant1    | 5785           | 10.89                | ≤30.00               | PASS    |
| 11A        | Ant1    | 5825           | 9.69                 | ≤30.00               | PASS    |
| 11N20SISO  | Ant1    | 5745           | 9.48                 | ≤30.00               | PASS    |
| 11N20SISO  | Ant1    | 5785           | 8.56                 | ≤30.00               | PASS    |
| 11N20SISO  | Ant1    | 5825           | 7.42                 | ≤30.00               | PASS    |
| 11AC20SISO | Ant1    | 5745           | 10.47                | ≤30.00               | PASS    |
| 11AC20SISO | Ant1    | 5785           | 9.91                 | ≤30.00               | PASS    |
| 11AC20SISO | Ant1    | 5825           | 8.69                 | ≤30.00               | PASS    |

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

## Appendix C: Maximum power spectral density

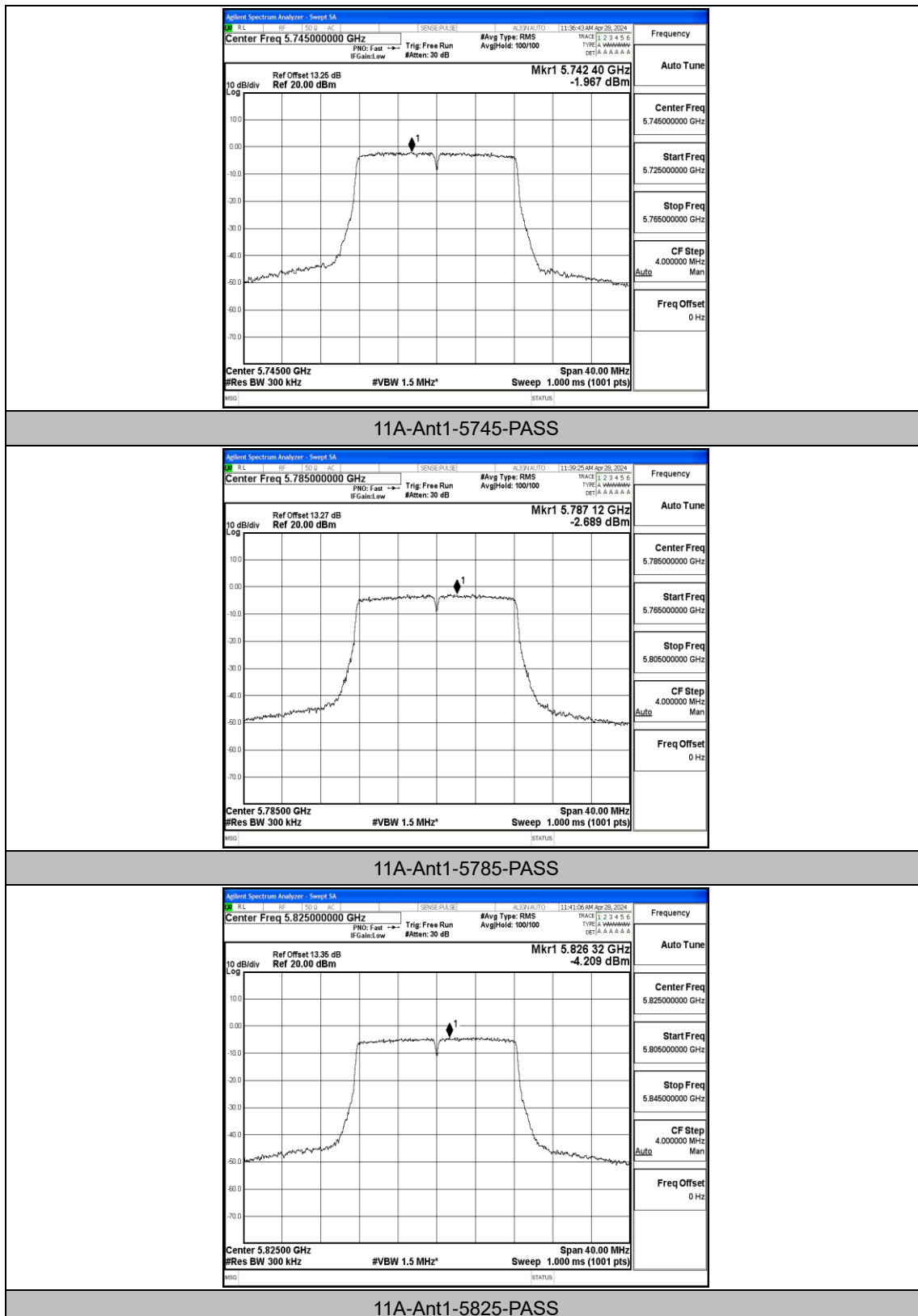
### Test Result

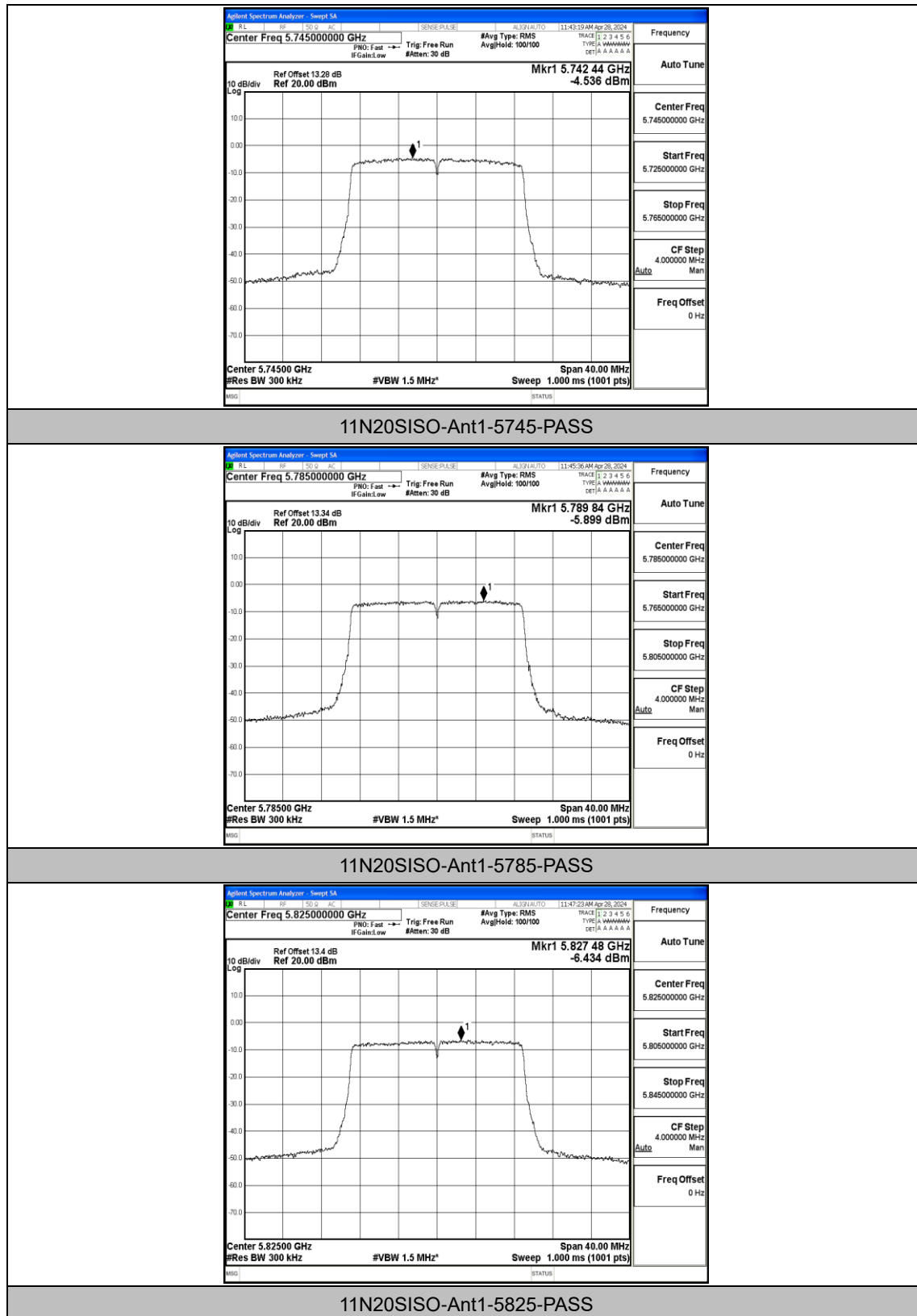
| TestMode   | Antenna | Frequency[MHz] | Result [dBm/MHz] | Limit[dBm/MHz] | Verdict |
|------------|---------|----------------|------------------|----------------|---------|
| 11A        | Ant1    | 5745           | -1.97            | ≤30.00         | PASS    |
| 11A        | Ant1    | 5785           | -2.69            | ≤30.00         | PASS    |
| 11A        | Ant1    | 5825           | -4.21            | ≤30.00         | PASS    |
| 11N20SISO  | Ant1    | 5745           | -4.54            | ≤30.00         | PASS    |
| 11N20SISO  | Ant1    | 5785           | -5.90            | ≤30.00         | PASS    |
| 11N20SISO  | Ant1    | 5825           | -6.43            | ≤30.00         | PASS    |
| 11AC20SISO | Ant1    | 5745           | -3.03            | ≤30.00         | PASS    |
| 11AC20SISO | Ant1    | 5785           | -3.43            | ≤30.00         | PASS    |
| 11AC20SISO | Ant1    | 5825           | -4.65            | ≤30.00         | PASS    |

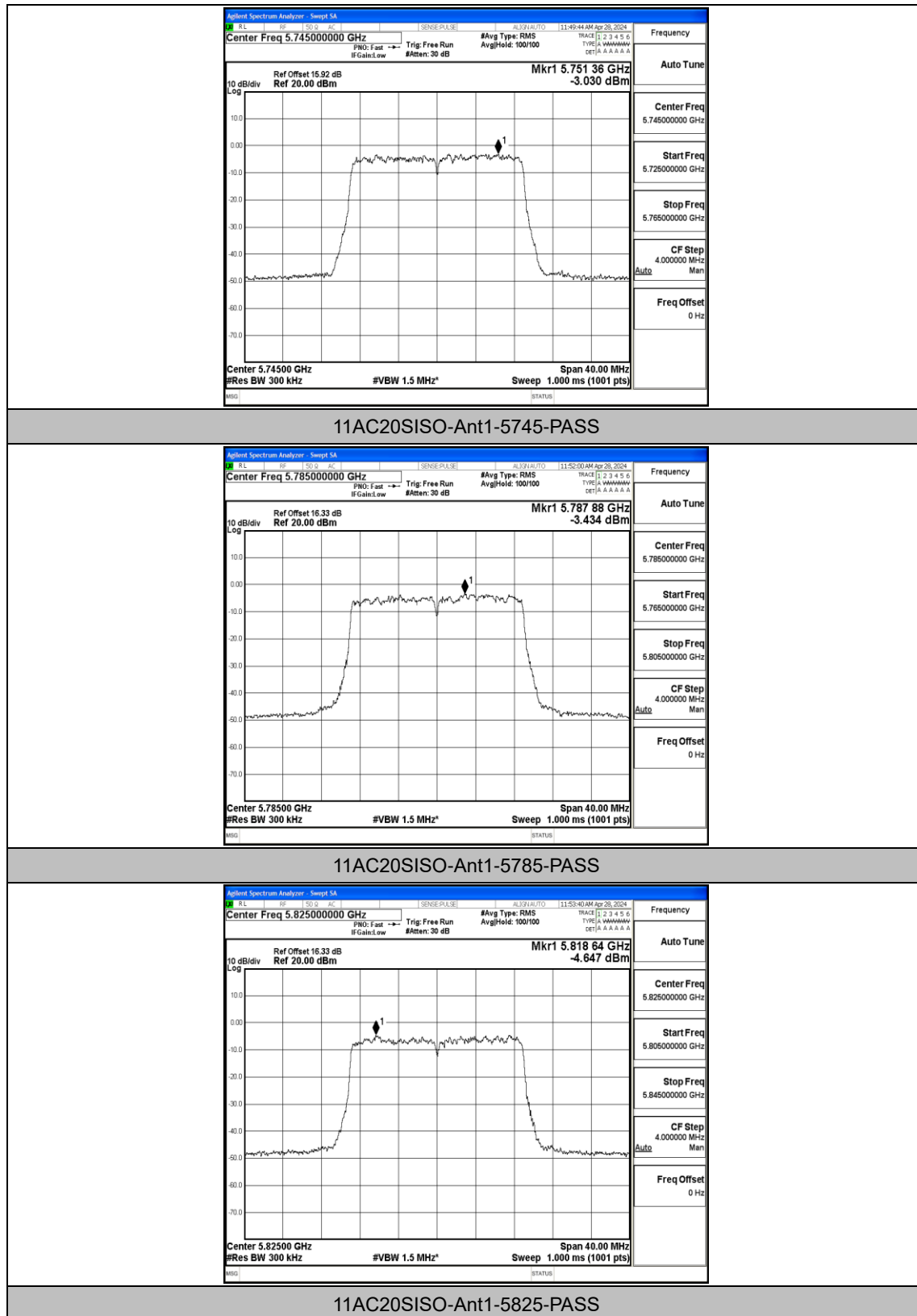
Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

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

## Test Graphs





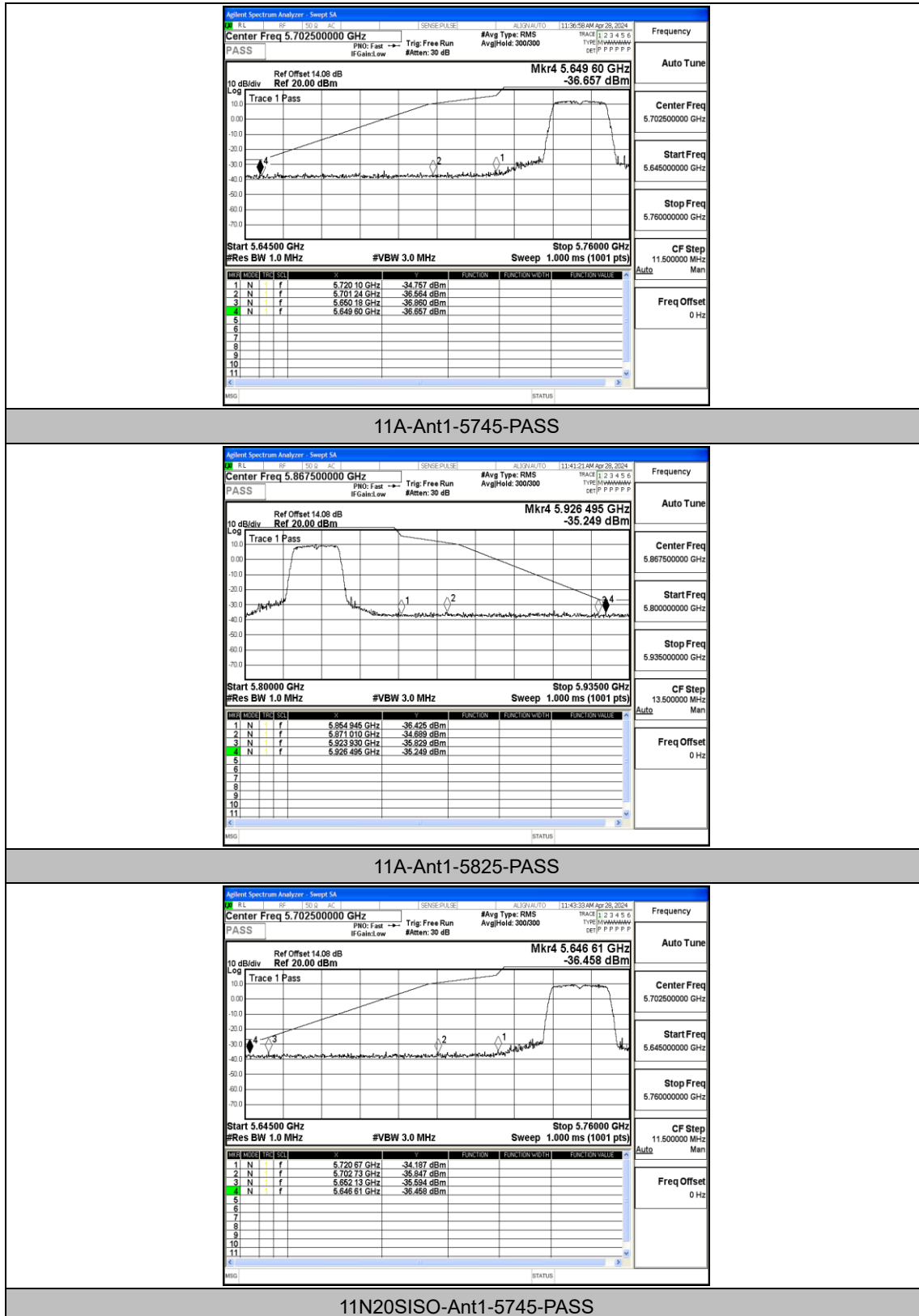


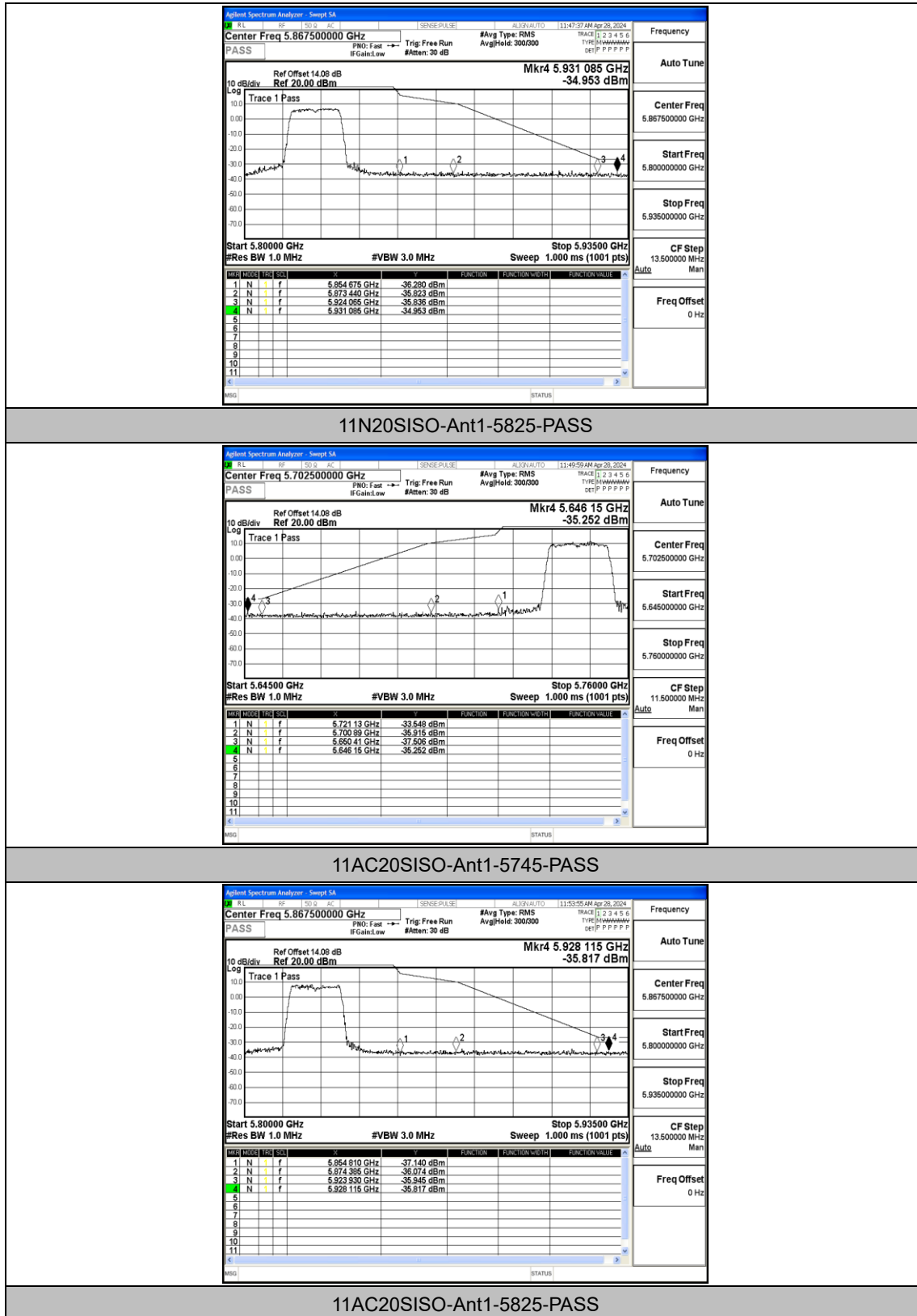
## Appendix D: Band edge measurements

### Test Result

| TestMode       | Antenna | ChName | Frequency[MHz] | FreqRange [MHz] | Result [dBm] | Limit [dBm] | Verdict |
|----------------|---------|--------|----------------|-----------------|--------------|-------------|---------|
| 11A            | Ant1    | Low    | 5745           | 5720~5725       | -34.76       | ≤15.82      | PASS    |
| 11A            | Ant1    | Low    | 5745           | 5700~5720       | -36.56       | ≤10.35      | PASS    |
| 11A            | Ant1    | Low    | 5745           | 5650~5700       | -36.86       | ≤-26.87     | PASS    |
| 11A            | Ant1    | Low    | 5745           | 5760~5650       | -36.66       | ≤-27        | PASS    |
| 11A            | Ant1    | High   | 5825           | 5850~5855       | -36.43       | ≤15.73      | PASS    |
| 11A            | Ant1    | High   | 5825           | 5855~5875       | -34.69       | ≤11.12      | PASS    |
| 11A            | Ant1    | High   | 5825           | 5875~5925       | -35.83       | ≤-26.21     | PASS    |
| 11A            | Ant1    | High   | 5825           | 5925~5935       | -35.25       | ≤-27        | PASS    |
| 11N20SIS<br>O  | Ant1    | Low    | 5745           | 5720~5725       | -34.19       | ≤17.13      | PASS    |
| 11N20SIS<br>O  | Ant1    | Low    | 5745           | 5700~5720       | -35.85       | ≤10.76      | PASS    |
| 11N20SIS<br>O  | Ant1    | Low    | 5745           | 5650~5700       | -35.59       | ≤-25.42     | PASS    |
| 11N20SIS<br>O  | Ant1    | Low    | 5745           | 5760~5650       | -36.46       | ≤-27        | PASS    |
| 11N20SIS<br>O  | Ant1    | High   | 5825           | 5850~5855       | -36.28       | ≤16.34      | PASS    |
| 11N20SIS<br>O  | Ant1    | High   | 5825           | 5855~5875       | -35.82       | ≤10.44      | PASS    |
| 11N20SIS<br>O  | Ant1    | High   | 5825           | 5875~5925       | -35.84       | ≤-26.31     | PASS    |
| 11N20SIS<br>O  | Ant1    | High   | 5825           | 5925~5935       | -34.95       | ≤-27        | PASS    |
| 11AC20SI<br>SO | Ant1    | Low    | 5745           | 5720~5725       | -33.55       | ≤18.18      | PASS    |
| 11AC20SI<br>SO | Ant1    | Low    | 5745           | 5700~5720       | -35.92       | ≤10.25      | PASS    |
| 11AC20SI<br>SO | Ant1    | Low    | 5745           | 5650~5700       | -37.51       | ≤-26.70     | PASS    |
| 11AC20SI<br>SO | Ant1    | Low    | 5745           | 5760~5650       | -35.25       | ≤-27        | PASS    |
| 11AC20SI<br>SO | Ant1    | High   | 5825           | 5850~5855       | -37.14       | ≤16.03      | PASS    |
| 11AC20SI<br>SO | Ant1    | High   | 5825           | 5855~5875       | -36.07       | ≤10.17      | PASS    |
| 11AC20SI<br>SO | Ant1    | High   | 5825           | 5875~5925       | -35.95       | ≤-26.21     | PASS    |
| 11AC20SI<br>SO | Ant1    | High   | 5825           | 5925~5935       | -35.82       | ≤-27        | PASS    |

## Test Graphs





## Appendix E: Frequency Stability

### Test Result

Ant1

| Frequency<br>(MHz) | Environment<br>Temperature<br>(Degree) | Voltage<br>(VAC) | Measured<br>Frequency<br>(MHz) | Limit Range<br>(MHz) | Test<br>Results |
|--------------------|----------------------------------------|------------------|--------------------------------|----------------------|-----------------|
| 5745               | 20                                     | 132              | 5744.900978                    | 5745 – 5825          | PASS            |
| 5745               | 20                                     | 108              | 5745.041039                    | 5745 – 5825          | PASS            |
| 5745               | 50                                     | 120              | 5744.933548                    | 5745 – 5825          | PASS            |
| 5745               | 40                                     | 120              | 5745.050945                    | 5745 – 5825          | PASS            |
| 5745               | 30                                     | 120              | 5745.009926                    | 5745 – 5825          | PASS            |
| 5745               | 20                                     | 120              | 5744.907202                    | 5745 – 5825          | PASS            |
| 5745               | 10                                     | 120              | 5745.076732                    | 5745 – 5825          | PASS            |
| 5745               | 0                                      | 120              | 5745.084333                    | 5745 – 5825          | PASS            |
| 5745               | -10                                    | 120              | 5744.903159                    | 5745 – 5825          | PASS            |
| 5745               | -20                                    | 120              | 5745.033055                    | 5745 – 5825          | PASS            |
| 5745               | -30                                    | 120              | 5745.059729                    | 5745 – 5825          | PASS            |

Ant1

| Frequency<br>(MHz) | Enviroment<br>Temperature<br>(Dregree) | Voltage<br>(VAC) | Measured<br>Frequency<br>(MHz) | Limit Range<br>(MHz) | Test<br>Results |
|--------------------|----------------------------------------|------------------|--------------------------------|----------------------|-----------------|
| 5785               | 20                                     | 132              | 5784.918658                    | 5745 – 5825          | PASS            |
| 5785               | 20                                     | 108              | 5784.976167                    | 5745 – 5825          | PASS            |
| 5785               | 50                                     | 120              | 5785.027551                    | 5745 – 5825          | PASS            |
| 5785               | 40                                     | 120              | 5784.962090                    | 5745 – 5825          | PASS            |
| 5785               | 30                                     | 120              | 5784.990629                    | 5745 – 5825          | PASS            |
| 5785               | 20                                     | 120              | 5784.998354                    | 5745 – 5825          | PASS            |
| 5785               | 10                                     | 120              | 5785.012681                    | 5745 – 5825          | PASS            |
| 5785               | 0                                      | 120              | 5785.059765                    | 5745 – 5825          | PASS            |
| 5785               | -10                                    | 120              | 5784.912339                    | 5745 – 5825          | PASS            |
| 5785               | -20                                    | 120              | 5785.074352                    | 5745 – 5825          | PASS            |
| 5785               | -30                                    | 120              | 5784.912952                    | 5745 – 5825          | PASS            |

Ant1

| Frequency<br>(MHz) | Enviroment<br>Temperature<br>(Dregree) | Voltage<br>(VAC) | Measured<br>Frequency<br>(MHz) | Limit Range<br>(MHz) | Test<br>Results |
|--------------------|----------------------------------------|------------------|--------------------------------|----------------------|-----------------|
| 5825               | 20                                     | 132              | 5824.902968                    | 5745 – 5825          | PASS            |
| 5825               | 20                                     | 108              | 5824.910994                    | 5745 – 5825          | PASS            |
| 5825               | 50                                     | 120              | 5824.955446                    | 5745 – 5825          | PASS            |
| 5825               | 40                                     | 120              | 5824.950636                    | 5745 – 5825          | PASS            |
| 5825               | 30                                     | 120              | 5824.982370                    | 5745 – 5825          | PASS            |
| 5825               | 20                                     | 120              | 5825.085909                    | 5745 – 5825          | PASS            |
| 5825               | 10                                     | 120              | 5824.906989                    | 5745 – 5825          | PASS            |
| 5825               | 0                                      | 120              | 5825.008848                    | 5745 – 5825          | PASS            |
| 5825               | -10                                    | 120              | 5824.975844                    | 5745 – 5825          | PASS            |
| 5825               | -20                                    | 120              | 5824.953194                    | 5745 – 5825          | PASS            |
| 5825               | -30                                    | 120              | 5825.032182                    | 5745 – 5825          | PASS            |

Ant1

| Frequency<br>(MHz) | Enviroment<br>Temperature<br>(Dregree) | Voltage<br>(VAC) | Measured<br>Frequency<br>(MHz) | Limit Range<br>(MHz) | Test<br>Results |
|--------------------|----------------------------------------|------------------|--------------------------------|----------------------|-----------------|
| 5755               | 20                                     | 132              | 5755.085781                    | 5745 – 5825          | PASS            |
| 5755               | 20                                     | 108              | 5755.018576                    | 5745 – 5825          | PASS            |
| 5755               | 50                                     | 120              | 5754.997551                    | 5745 – 5825          | PASS            |
| 5755               | 40                                     | 120              | 5755.045244                    | 5745 – 5825          | PASS            |
| 5755               | 30                                     | 120              | 5755.005085                    | 5745 – 5825          | PASS            |
| 5755               | 20                                     | 120              | 5754.993754                    | 5745 – 5825          | PASS            |
| 5755               | 10                                     | 120              | 5755.045784                    | 5745 – 5825          | PASS            |
| 5755               | 0                                      | 120              | 5754.938192                    | 5745 – 5825          | PASS            |
| 5755               | -10                                    | 120              | 5755.050014                    | 5745 – 5825          | PASS            |
| 5755               | -20                                    | 120              | 5754.939851                    | 5745 – 5825          | PASS            |
| 5755               | -30                                    | 120              | 5755.084397                    | 5745 – 5825          | PASS            |

Ant1

| Frequency<br>(MHz) | Enviroment<br>Temperature<br>(Dregree) | Voltage<br>(VAC) | Measured<br>Frequency<br>(MHz) | Limit Range<br>(MHz) | Test<br>Results |
|--------------------|----------------------------------------|------------------|--------------------------------|----------------------|-----------------|
| 5795               | 20                                     | 132              | 5794.976560                    | 5745 – 5825          | PASS            |
| 5795               | 20                                     | 108              | 5794.980464                    | 5745 – 5825          | PASS            |
| 5795               | 50                                     | 120              | 5795.053547                    | 5745 – 5825          | PASS            |
| 5795               | 40                                     | 120              | 5795.071755                    | 5745 – 5825          | PASS            |
| 5795               | 30                                     | 120              | 5794.989789                    | 5745 – 5825          | PASS            |
| 5795               | 20                                     | 120              | 5794.909062                    | 5745 – 5825          | PASS            |
| 5795               | 10                                     | 120              | 5795.070606                    | 5745 – 5825          | PASS            |
| 5795               | 0                                      | 120              | 5794.943231                    | 5745 – 5825          | PASS            |
| 5795               | -10                                    | 120              | 5794.943866                    | 5745 – 5825          | PASS            |
| 5795               | -20                                    | 120              | 5795.024793                    | 5745 – 5825          | PASS            |
| 5795               | -30                                    | 120              | 5795.006434                    | 5745 – 5825          | PASS            |

Ant1

| Frequency<br>(MHz) | Enviroment<br>Temperature<br>(Dregree) | Voltage<br>(VAC) | Measured<br>Frequency<br>(MHz) | Limit Range<br>(MHz) | Test<br>Results |
|--------------------|----------------------------------------|------------------|--------------------------------|----------------------|-----------------|
| 5775               | 20                                     | 132              | 5775.069852                    | 5745 – 5825          | PASS            |
| 5775               | 20                                     | 108              | 5774.910218                    | 5745 – 5825          | PASS            |
| 5775               | 50                                     | 120              | 5775.038829                    | 5745 – 5825          | PASS            |
| 5775               | 40                                     | 120              | 5774.992270                    | 5745 – 5825          | PASS            |
| 5775               | 30                                     | 120              | 5774.948452                    | 5745 – 5825          | PASS            |
| 5775               | 20                                     | 120              | 5774.953492                    | 5745 – 5825          | PASS            |
| 5775               | 10                                     | 120              | 5774.903603                    | 5745 – 5825          | PASS            |
| 5775               | 0                                      | 120              | 5774.973904                    | 5745 – 5825          | PASS            |
| 5775               | -10                                    | 120              | 5775.010758                    | 5745 – 5825          | PASS            |
| 5775               | -20                                    | 120              | 5774.908281                    | 5745 – 5825          | PASS            |
| 5775               | -30                                    | 120              | 5775.090681                    | 5745 – 5825          | PASS            |

## Appendix F: Duty Cycle

### Test Result

| TestMode   | Antenna | Frequency[MHz] | Transmission Duration [ms] | Transmission Period [ms] | Duty Cycle [%] | Dc Factor [%] | 1/T  |
|------------|---------|----------------|----------------------------|--------------------------|----------------|---------------|------|
| 11A        | Ant1    | 5745           | 2.06                       | 2.23                     | 92.38          | 0.34          | 0.49 |
| 11A        | Ant1    | 5785           | 2.07                       | 2.25                     | 92.00          | 0.36          | 0.48 |
| 11A        | Ant1    | 5825           | 2.06                       | 2.28                     | 90.35          | 0.44          | 0.49 |
| 11N20SISO  | Ant1    | 5745           | 1.92                       | 2.09                     | 91.87          | 0.37          | 0.52 |
| 11N20SISO  | Ant1    | 5785           | 1.92                       | 2.12                     | 90.57          | 0.43          | 0.52 |
| 11N20SISO  | Ant1    | 5825           | 1.92                       | 2.15                     | 89.30          | 0.49          | 0.52 |
| 11AC20SISO | Ant1    | 5745           | 0.20                       | 0.40                     | 50.00          | 3.01          | 5.00 |
| 11AC20SISO | Ant1    | 5785           | 0.20                       | 0.44                     | 45.45          | 3.42          | 5.00 |
| 11AC20SISO | Ant1    | 5825           | 0.20                       | 0.44                     | 45.45          | 3.42          | 5.00 |

## Test Graphs

