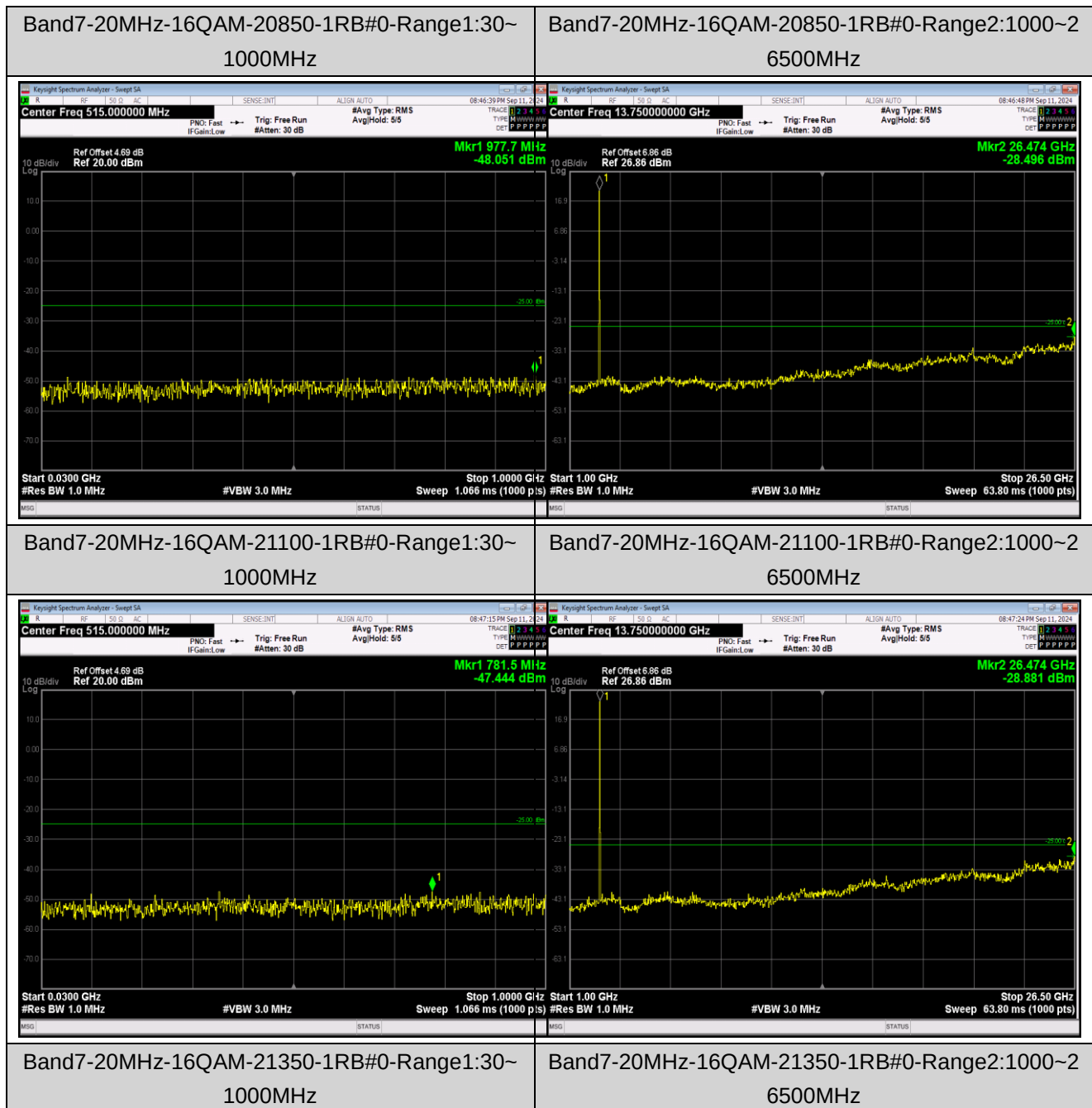
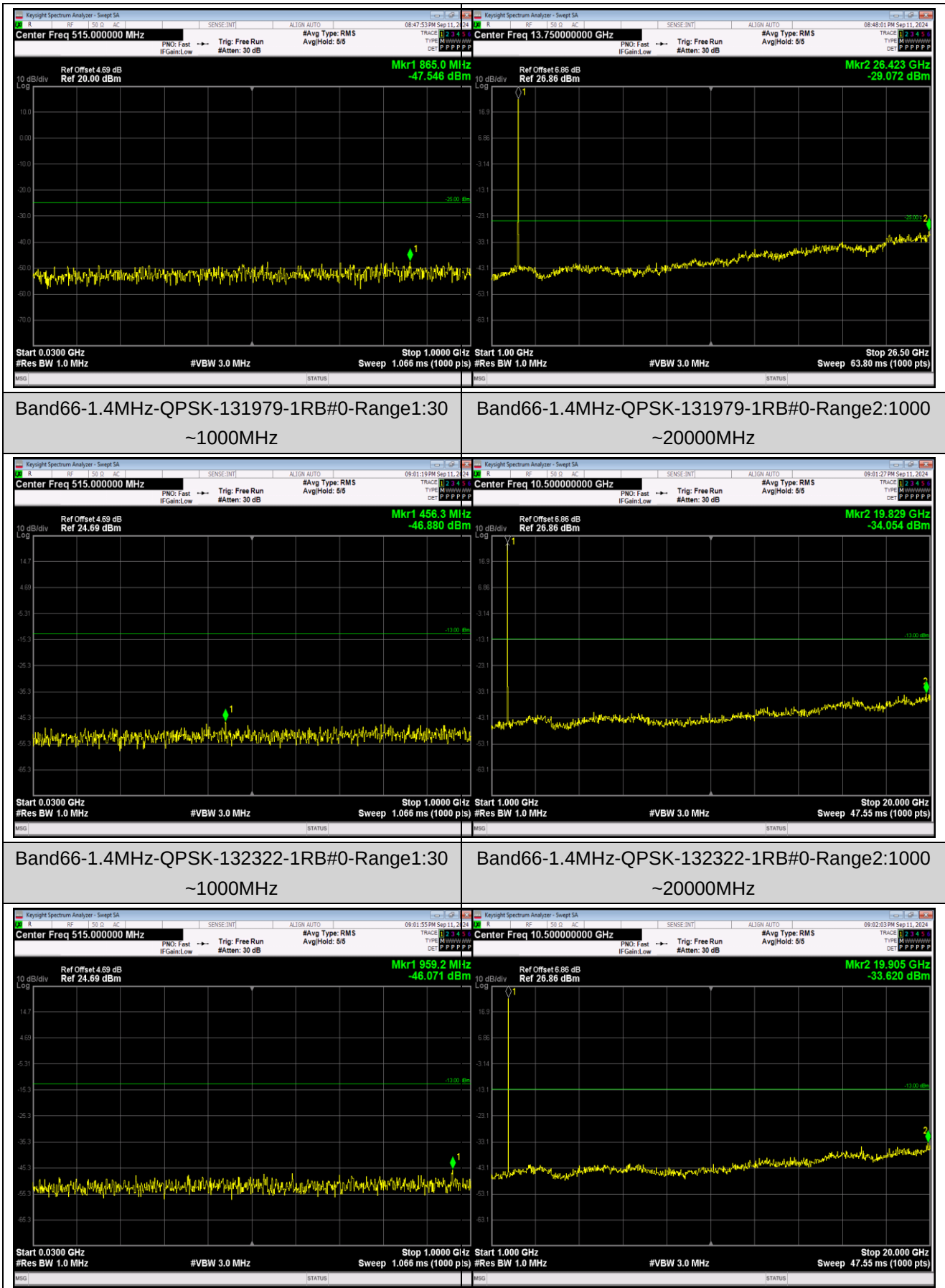
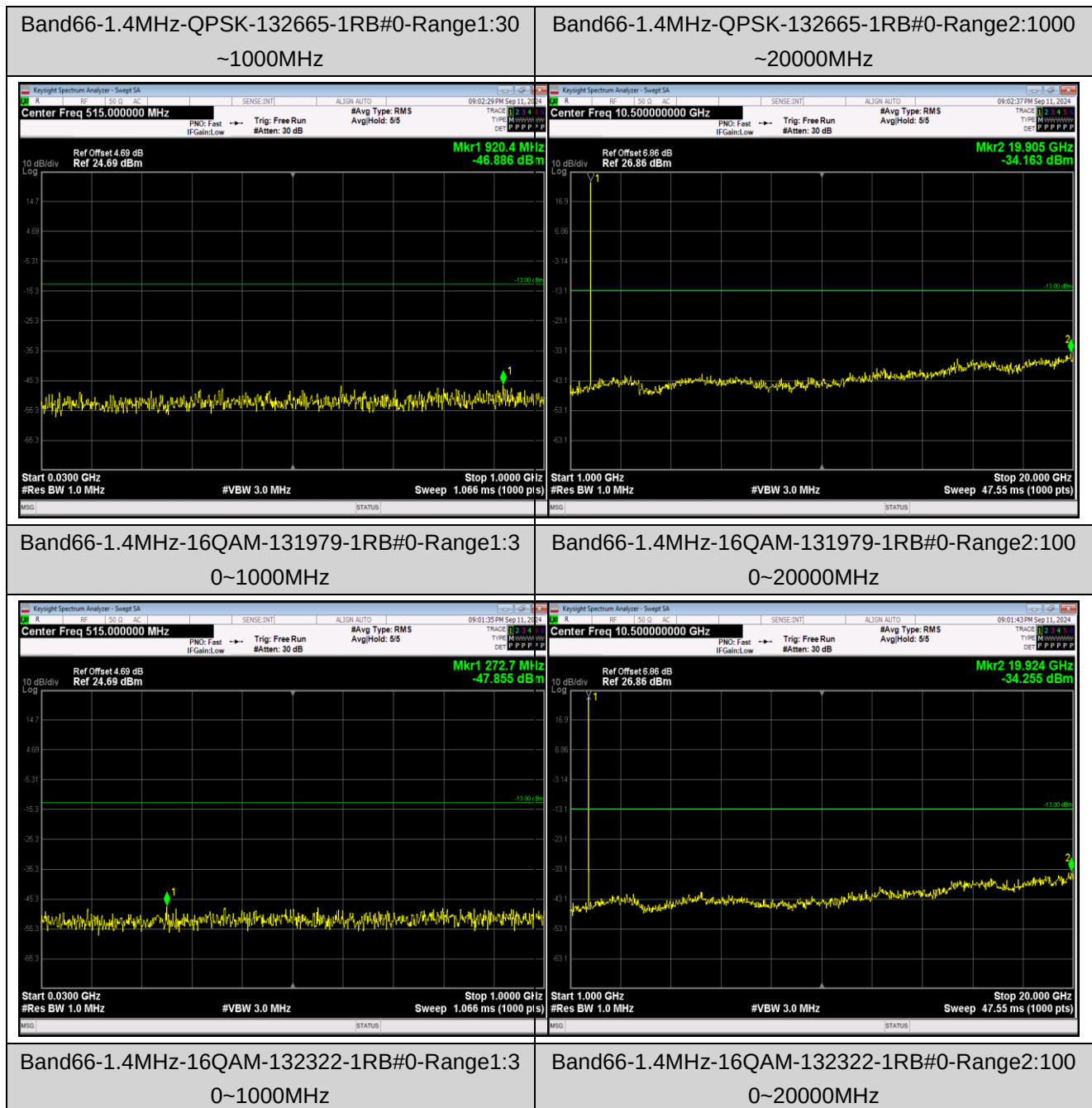
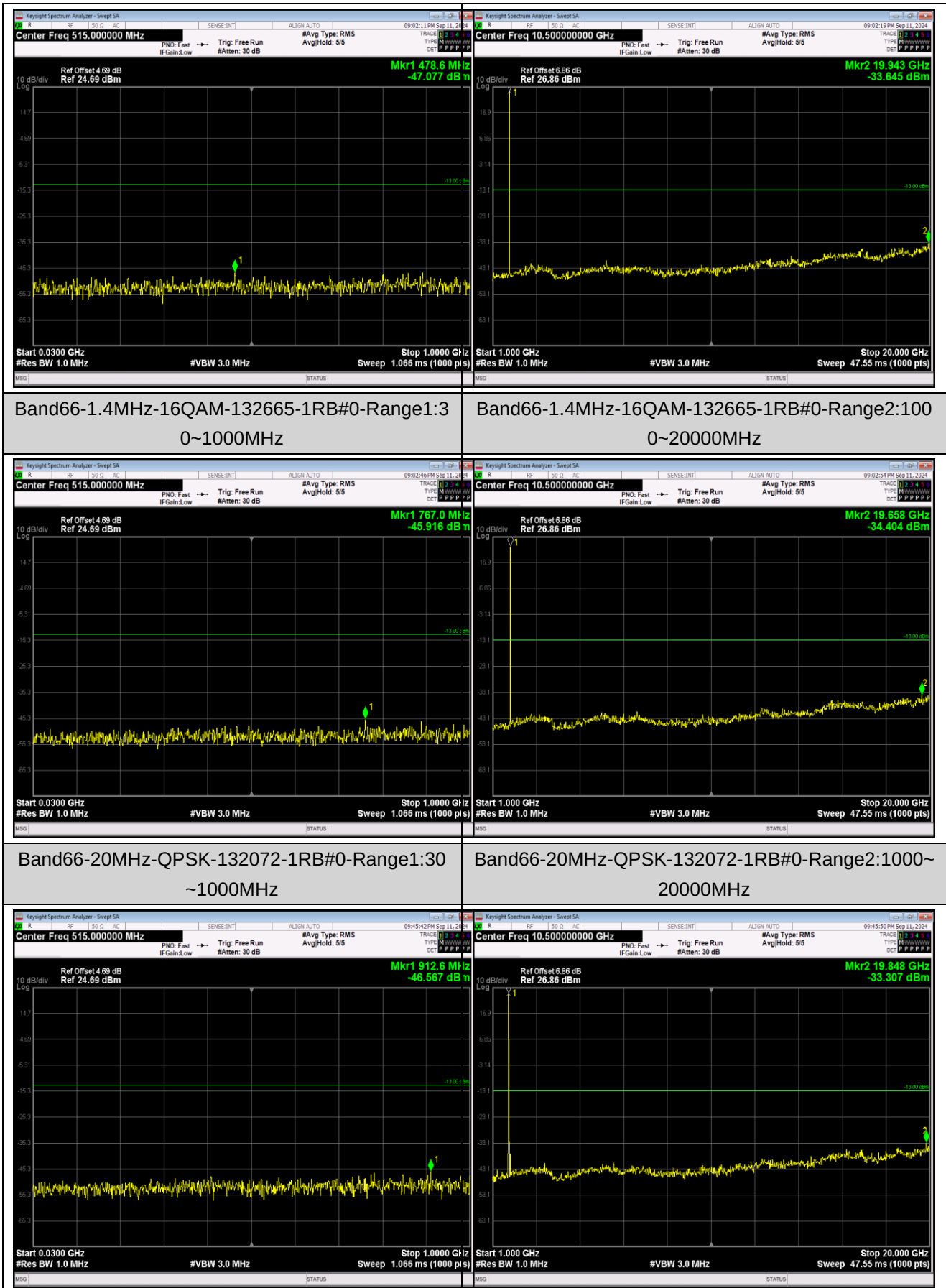
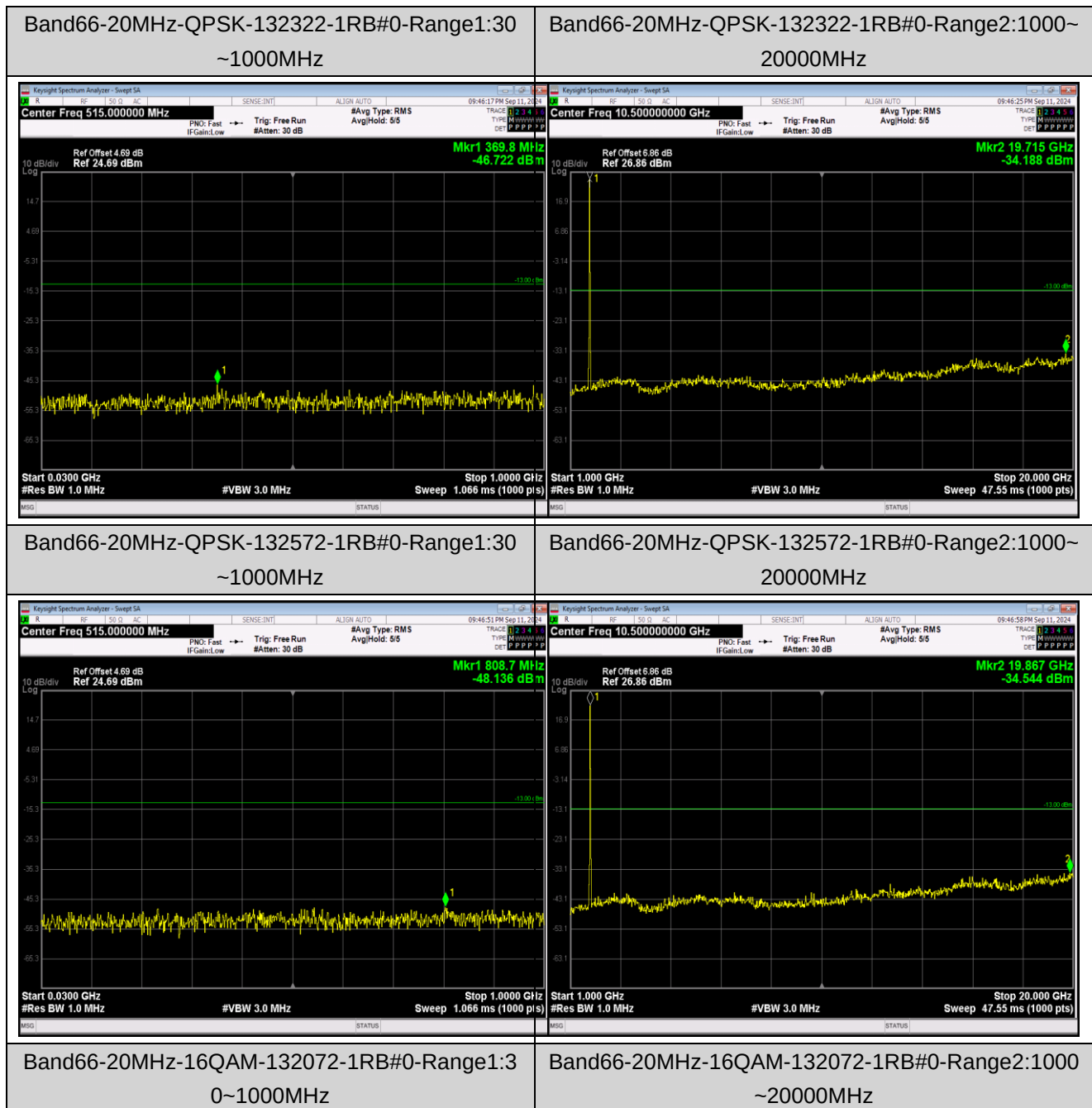


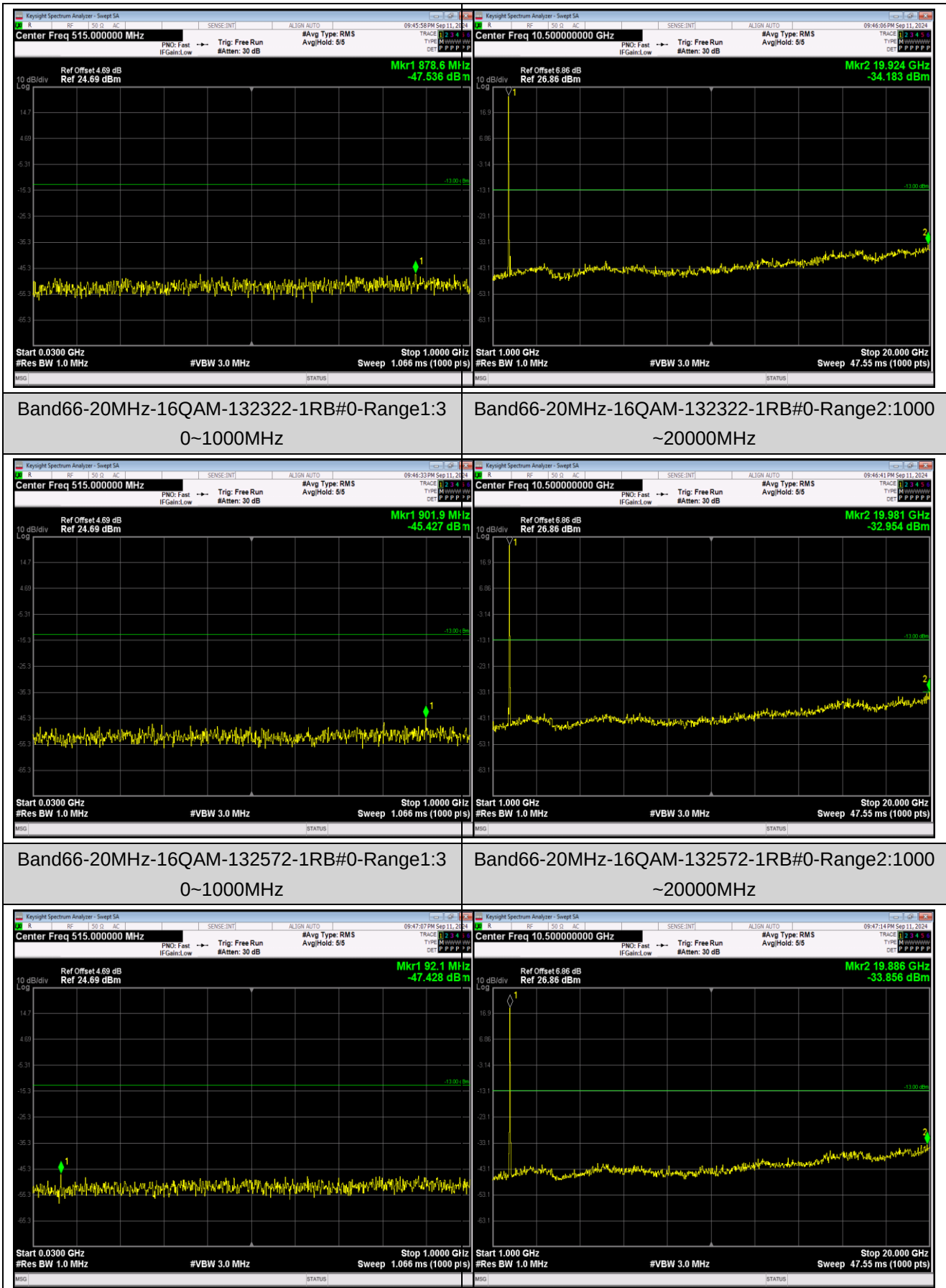












## Appendix F: Frequency Stability

### Test Result

LTE Band 2 part:

| Reference Frequency: LTE Band 2 (10MHz) Middle channel=18900 Frequency=1880.0MHz                                 |                      |                 |           |                                   |        |
|------------------------------------------------------------------------------------------------------------------|----------------------|-----------------|-----------|-----------------------------------|--------|
| Temperature                                                                                                      |                      |                 |           |                                   |        |
| Power supplied (Vdc)                                                                                             | Temperature (°C)     | Frequency error |           | Limit (ppm)                       | Result |
|                                                                                                                  |                      | Hz              | ppm       |                                   |        |
| QPSK                                                                                                             |                      |                 |           |                                   |        |
| 3.87                                                                                                             | -30                  | -15.88          | -0.008447 | Within authorized band for Band 2 | Pass   |
|                                                                                                                  | -20                  | -43.70          | -0.023245 |                                   |        |
|                                                                                                                  | -10                  | -36.25          | -0.019282 |                                   |        |
|                                                                                                                  | 0                    | -13.79          | -0.007335 |                                   |        |
|                                                                                                                  | 10                   | -34.22          | -0.018202 |                                   |        |
|                                                                                                                  | 20                   | -13.13          | -0.006984 |                                   |        |
|                                                                                                                  | 30                   | -30.17          | -0.016048 |                                   |        |
|                                                                                                                  | 40                   | -51.88          | -0.027596 |                                   |        |
|                                                                                                                  | 50                   | -20.50          | -0.010904 |                                   |        |
| 16QAM                                                                                                            |                      |                 |           |                                   |        |
| 3.87                                                                                                             | -30                  | -24.42          | -0.012989 | Within authorized band for Band 2 | Pass   |
|                                                                                                                  | -20                  | 22.70           | 0.012074  |                                   |        |
|                                                                                                                  | -10                  | 28.32           | 0.015064  |                                   |        |
|                                                                                                                  | 0                    | 34.60           | 0.018404  |                                   |        |
|                                                                                                                  | 10                   | 45.72           | 0.024319  |                                   |        |
|                                                                                                                  | 20                   | 25.99           | 0.013824  |                                   |        |
|                                                                                                                  | 30                   | 22.10           | 0.011755  |                                   |        |
|                                                                                                                  | 40                   | 27.79           | 0.014782  |                                   |        |
|                                                                                                                  | 50                   | 33.32           | 0.017723  |                                   |        |
| Voltage                                                                                                          |                      |                 |           |                                   |        |
| Temperature (°C)                                                                                                 | Power supplied (Vdc) | Frequency error |           | Limit (ppm)                       | Result |
|                                                                                                                  |                      | Hz              | ppm       |                                   |        |
| QPSK                                                                                                             |                      |                 |           |                                   |        |
| 25                                                                                                               | 3.00                 | -31.01          | -0.016495 | Within authorized band for Band 2 | Pass   |
|                                                                                                                  | 3.87                 | -10.09          | -0.005367 |                                   |        |
|                                                                                                                  | 4.45                 | -44.66          | -0.023755 |                                   |        |
| 16QAM                                                                                                            |                      |                 |           |                                   |        |
| 25                                                                                                               | 3.00                 | -31.91          | -0.016973 | Within authorized band for Band 2 | Pass   |
|                                                                                                                  | 3.87                 | -38.70          | -0.020585 |                                   |        |
|                                                                                                                  | 4.45                 | -37.41          | -0.019899 |                                   |        |
| Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report. |                      |                 |           |                                   |        |

LTE Band 4 part:

| Reference Frequency: LTE Band 4(10MHz) Middle channel=20175 Frequency=1732.5MHz                                  |                         |                 |           |                                      |        |
|------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------|--------------------------------------|--------|
| Temperature                                                                                                      |                         |                 |           |                                      |        |
| Power supplied<br>(Vdc)                                                                                          | Temperature<br>(°C)     | Frequency error |           | Limit (ppm)                          | Result |
|                                                                                                                  |                         | Hz              | ppm       |                                      |        |
| QPSK                                                                                                             |                         |                 |           |                                      |        |
| 3.87                                                                                                             | -30                     | -39.04          | -0.022534 | Within authorized<br>band for Band 4 | Pass   |
|                                                                                                                  | -20                     | -14.35          | -0.008283 |                                      |        |
|                                                                                                                  | -10                     | -24.82          | -0.014326 |                                      |        |
|                                                                                                                  | 0                       | -33.75          | -0.019481 |                                      |        |
|                                                                                                                  | 10                      | -35.31          | -0.020381 |                                      |        |
|                                                                                                                  | 20                      | -42.14          | -0.024323 |                                      |        |
|                                                                                                                  | 30                      | -18.30          | -0.010563 |                                      |        |
|                                                                                                                  | 40                      | -20.28          | -0.011706 |                                      |        |
|                                                                                                                  | 50                      | -23.62          | -0.013633 |                                      |        |
| 16QAM                                                                                                            |                         |                 |           |                                      |        |
| 3.87                                                                                                             | -30                     | 28.80           | 0.016623  | Within authorized<br>band for Band 4 | Pass   |
|                                                                                                                  | -20                     | 32.16           | 0.018563  |                                      |        |
|                                                                                                                  | -10                     | 13.28           | 0.007665  |                                      |        |
|                                                                                                                  | 0                       | 19.30           | 0.011140  |                                      |        |
|                                                                                                                  | 10                      | 26.16           | 0.015100  |                                      |        |
|                                                                                                                  | 20                      | 46.94           | 0.027094  |                                      |        |
|                                                                                                                  | 30                      | 52.04           | 0.030038  |                                      |        |
|                                                                                                                  | 40                      | 23.82           | 0.013749  |                                      |        |
|                                                                                                                  | 50                      | 31.81           | 0.018361  |                                      |        |
| Voltage                                                                                                          |                         |                 |           |                                      |        |
| Temperature<br>(°C)                                                                                              | Power supplied<br>(Vdc) | Frequency error |           | Limit (ppm)                          | Result |
|                                                                                                                  |                         | Hz              | ppm       |                                      |        |
| QPSK                                                                                                             |                         |                 |           |                                      |        |
| 25                                                                                                               | 3.00                    | -11.29          | -0.006517 | Within authorized<br>band for Band 4 | Pass   |
|                                                                                                                  | 3.87                    | 8.74            | 0.005045  |                                      |        |
|                                                                                                                  | 4.45                    | -22.12          | -0.012768 |                                      |        |
| 16QAM                                                                                                            |                         |                 |           |                                      |        |
| 25                                                                                                               | 3.00                    | -14.43          | -0.008329 | Within authorized<br>band for Band 4 | Pass   |
|                                                                                                                  | 3.87                    | -32.42          | -0.018713 |                                      |        |
|                                                                                                                  | 4.45                    | 13.29           | 0.007671  |                                      |        |
| Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report. |                         |                 |           |                                      |        |

LTE Band 5 part:

| Reference Frequency: LTE Band 5(10MHz) Middle channel=20525 Frequency=836.5MHz                                   |                         |                 |           |             |        |
|------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------|-------------|--------|
| Temperature                                                                                                      |                         |                 |           |             |        |
| Power supplied<br>(Vdc)                                                                                          | Temperature<br>(°C)     | Frequency error |           | Limit (ppm) | Result |
|                                                                                                                  |                         | Hz              | ppm       |             |        |
| QPSK                                                                                                             |                         |                 |           |             |        |
| 3.87                                                                                                             | -30                     | -48.28          | -0.057717 | ±2.5        | Pass   |
|                                                                                                                  | -20                     | -38.80          | -0.046384 |             |        |
|                                                                                                                  | -10                     | -25.62          | -0.030628 |             |        |
|                                                                                                                  | 0                       | -12.43          | -0.014860 |             |        |
|                                                                                                                  | 10                      | -36.18          | -0.043252 |             |        |
|                                                                                                                  | 20                      | -23.67          | -0.028296 |             |        |
|                                                                                                                  | 30                      | -46.55          | -0.055649 |             |        |
|                                                                                                                  | 40                      | -16.87          | -0.020167 |             |        |
|                                                                                                                  | 50                      | -33.60          | -0.040167 |             |        |
| 16QAM                                                                                                            |                         |                 |           |             |        |
| 3.87                                                                                                             | -30                     | -4.58           | -0.005475 | ±2.5        | Pass   |
|                                                                                                                  | -20                     | -6.98           | -0.008344 |             |        |
|                                                                                                                  | -10                     | -17.92          | -0.021423 |             |        |
|                                                                                                                  | 0                       | -19.37          | -0.023156 |             |        |
|                                                                                                                  | 10                      | -18.54          | -0.022164 |             |        |
|                                                                                                                  | 20                      | -19.77          | -0.023634 |             |        |
|                                                                                                                  | 30                      | -29.14          | -0.034836 |             |        |
|                                                                                                                  | 40                      | -38.72          | -0.046288 |             |        |
|                                                                                                                  | 50                      | -39.31          | -0.046993 |             |        |
| Voltage                                                                                                          |                         |                 |           |             |        |
| Temperature<br>(°C)                                                                                              | Power supplied<br>(Vdc) | Frequency error |           | Limit (ppm) | Result |
|                                                                                                                  |                         | Hz              | ppm       |             |        |
| QPSK                                                                                                             |                         |                 |           |             |        |
| 25                                                                                                               | 3.00                    | -51.61          | -0.061698 | ±2.5        | Pass   |
|                                                                                                                  | 3.87                    | -8.07           | -0.009647 |             |        |
|                                                                                                                  | 4.45                    | -8.14           | -0.009731 |             |        |
| 16QAM                                                                                                            |                         |                 |           |             |        |
| 25                                                                                                               | 3.00                    | 7.37            | 0.008811  | ±2.5        | Pass   |
|                                                                                                                  | 3.87                    | 4.42            | 0.005284  |             |        |
|                                                                                                                  | 4.45                    | 6.54            | 0.007818  |             |        |
| Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report. |                         |                 |           |             |        |

LTE Band 7 part:

| Reference Frequency: LTE Band 7(10MHz) Middle channel=21100 Frequency=2535.0MHz                                  |                         |                 |           |                                      |        |
|------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------|--------------------------------------|--------|
| Temperature                                                                                                      |                         |                 |           |                                      |        |
| Power supplied<br>(Vdc)                                                                                          | Temperature<br>(°C)     | Frequency error |           | Limit (ppm)                          | Result |
|                                                                                                                  |                         | Hz              | ppm       |                                      |        |
| QPSK                                                                                                             |                         |                 |           |                                      |        |
| 3.87                                                                                                             | -30                     | -38.97          | -0.015373 | Within authorized<br>band for Band 7 | Pass   |
|                                                                                                                  | -20                     | 9.23            | 0.003641  |                                      |        |
|                                                                                                                  | -10                     | -31.77          | -0.012533 |                                      |        |
|                                                                                                                  | 0                       | -47.08          | -0.018572 |                                      |        |
|                                                                                                                  | 10                      | -64.09          | -0.025282 |                                      |        |
|                                                                                                                  | 20                      | 15.06           | 0.005941  |                                      |        |
|                                                                                                                  | 30                      | -13.52          | -0.005333 |                                      |        |
|                                                                                                                  | 40                      | -20.51          | -0.008091 |                                      |        |
|                                                                                                                  | 50                      | -23.20          | -0.009152 |                                      |        |
| 16QAM                                                                                                            |                         |                 |           |                                      |        |
| 3.87                                                                                                             | -30                     | 67.33           | 0.026560  | Within authorized<br>band for Band 7 | Pass   |
|                                                                                                                  | -20                     | -10.46          | -0.004126 |                                      |        |
|                                                                                                                  | -10                     | 33.10           | 0.013057  |                                      |        |
|                                                                                                                  | 0                       | 42.80           | 0.016884  |                                      |        |
|                                                                                                                  | 10                      | 33.42           | 0.013183  |                                      |        |
|                                                                                                                  | 20                      | 48.24           | 0.019030  |                                      |        |
|                                                                                                                  | 30                      | -18.85          | -0.007436 |                                      |        |
|                                                                                                                  | 40                      | 25.48           | 0.010051  |                                      |        |
|                                                                                                                  | 50                      | 10.70           | 0.004221  |                                      |        |
| Voltage                                                                                                          |                         |                 |           |                                      |        |
| Temperature<br>(°C)                                                                                              | Power supplied<br>(Vdc) | Frequency error |           | Limit (ppm)                          | Result |
|                                                                                                                  |                         | Hz              | ppm       |                                      |        |
| QPSK                                                                                                             |                         |                 |           |                                      |        |
| 25                                                                                                               | 3.00                    | 13.23           | 0.005219  | Within authorized<br>band for Band 7 | Pass   |
|                                                                                                                  | 3.87                    | 18.53           | 0.007310  |                                      |        |
|                                                                                                                  | 4.45                    | -13.29          | -0.005243 |                                      |        |
| 16QAM                                                                                                            |                         |                 |           |                                      |        |
| 25                                                                                                               | 3.00                    | 30.63           | 0.012083  | Within authorized<br>band for Band 7 | Pass   |
|                                                                                                                  | 3.87                    | -28.95          | -0.011420 |                                      |        |
|                                                                                                                  | 4.45                    | 22.66           | 0.008939  |                                      |        |
| Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report. |                         |                 |           |                                      |        |

LTE Band 66 part:

| Reference Frequency: LTE Band 66 (10MHz) Middle channel=132322 Frequency=1745.0MHz                               |                      |                 |           |                                    |        |
|------------------------------------------------------------------------------------------------------------------|----------------------|-----------------|-----------|------------------------------------|--------|
| Temperature                                                                                                      |                      |                 |           |                                    |        |
| Power supplied (Vdc)                                                                                             | Temperature (°C)     | Frequency error |           | Limit (ppm)                        | Result |
|                                                                                                                  |                      | Hz              | ppm       |                                    |        |
| QPSK                                                                                                             |                      |                 |           |                                    |        |
| 3.87                                                                                                             | -30                  | -35.63          | -0.020418 | Within authorized band for Band 66 | Pass   |
|                                                                                                                  | -20                  | -33.49          | -0.019192 |                                    |        |
|                                                                                                                  | -10                  | -21.20          | -0.012149 |                                    |        |
|                                                                                                                  | 0                    | -40.73          | -0.023341 |                                    |        |
|                                                                                                                  | 10                   | -20.91          | -0.011983 |                                    |        |
|                                                                                                                  | 20                   | -15.31          | -0.008774 |                                    |        |
|                                                                                                                  | 30                   | -39.10          | -0.022407 |                                    |        |
|                                                                                                                  | 40                   | -16.59          | -0.009507 |                                    |        |
|                                                                                                                  | 50                   | -9.10           | -0.005215 |                                    |        |
| 16QAM                                                                                                            |                      |                 |           |                                    |        |
| 3.87                                                                                                             | -30                  | -33.57          | -0.019238 | Within authorized band for Band 66 | Pass   |
|                                                                                                                  | -20                  | -28.52          | -0.016344 |                                    |        |
|                                                                                                                  | -10                  | -28.51          | -0.016338 |                                    |        |
|                                                                                                                  | 0                    | -36.64          | -0.020997 |                                    |        |
|                                                                                                                  | 10                   | -35.16          | -0.020149 |                                    |        |
|                                                                                                                  | 20                   | -26.59          | -0.015238 |                                    |        |
|                                                                                                                  | 30                   | -21.04          | -0.012057 |                                    |        |
|                                                                                                                  | 40                   | -23.69          | -0.013576 |                                    |        |
|                                                                                                                  | 50                   | -29.97          | -0.017175 |                                    |        |
| Voltage                                                                                                          |                      |                 |           |                                    |        |
| Temperature (°C)                                                                                                 | Power supplied (Vdc) | Frequency error |           | Limit (ppm)                        | Result |
|                                                                                                                  |                      | Hz              | ppm       |                                    |        |
| QPSK                                                                                                             |                      |                 |           |                                    |        |
| 25                                                                                                               | 3.00                 | -9.61           | -0.005507 | Within authorized band for Band 66 | Pass   |
|                                                                                                                  | 3.87                 | 32.72           | 0.018751  |                                    |        |
|                                                                                                                  | 4.45                 | -42.40          | -0.024298 |                                    |        |
| 16QAM                                                                                                            |                      |                 |           |                                    |        |
| 25                                                                                                               | 3.00                 | -30.31          | -0.017370 | Within authorized band for Band 66 | Pass   |
|                                                                                                                  | 3.87                 | -25.49          | -0.014607 |                                    |        |
|                                                                                                                  | 4.45                 | -33.33          | -0.019100 |                                    |        |
| Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report. |                      |                 |           |                                    |        |

## Appendix G: Modulation Characteristics

### Test Result

| Band   | Bandwidth | Modulation | Channel | RB Configuration | Result | Verdict |
|--------|-----------|------------|---------|------------------|--------|---------|
| Band2  | 20MHz     | QPSK       | 18900   | 100RB#0          | PASS   | PASS    |
| Band2  | 20MHz     | 16QAM      | 18900   | 100RB#0          | PASS   | PASS    |
| Band4  | 20MHz     | QPSK       | 20175   | 100RB#0          | PASS   | PASS    |
| Band4  | 20MHz     | 16QAM      | 20175   | 100RB#0          | PASS   | PASS    |
| Band5  | 10MHz     | QPSK       | 20525   | 50RB#0           | PASS   | PASS    |
| Band5  | 10MHz     | 16QAM      | 20525   | 50RB#0           | PASS   | PASS    |
| Band7  | 20MHz     | QPSK       | 21100   | 100RB#0          | PASS   | PASS    |
| Band7  | 20MHz     | 16QAM      | 21100   | 100RB#0          | PASS   | PASS    |
| Band66 | 20MHz     | QPSK       | 132322  | 100RB#0          | PASS   | PASS    |
| Band66 | 20MHz     | 16QAM      | 132322  | 100RB#0          | PASS   | PASS    |

*Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.*

## Test Graphs

