

| Voltage                                                                                                          |                         |                 |           |                                       |        |
|------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------|---------------------------------------|--------|
| Temperature<br>(°C)                                                                                              | Power supplied<br>(Vdc) | Frequency error |           | Limit (ppm)                           | Result |
|                                                                                                                  |                         | Hz              | ppm       |                                       |        |
| QPSK                                                                                                             |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | 2.00            | 0.002817  | Within authorized<br>band for Band 17 | Pass   |
|                                                                                                                  | 3.92                    | -7.86           | -0.011070 |                                       |        |
|                                                                                                                  | 4.53                    | -3.39           | -0.004775 |                                       |        |
| 16QAM                                                                                                            |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | 2.40            | 0.003380  | Within authorized<br>band for Band 17 | Pass   |
|                                                                                                                  | 3.92                    | -2.54           | -0.003577 |                                       |        |
|                                                                                                                  | 4.53                    | -3.19           | -0.004493 |                                       |        |
| 64QAM                                                                                                            |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | -1.92           | -0.002704 | Within authorized<br>band for Band 17 | Pass   |
|                                                                                                                  | 3.92                    | -1.36           | -0.001915 |                                       |        |
|                                                                                                                  | 4.53                    | -2.96           | -0.004169 |                                       |        |
| Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report. |                         |                 |           |                                       |        |

LTE Band 38 part:

| Reference Frequency: LTE Band 38(10MHz) Middle channel=38000 Frequency=2595.0MHz |                  |                 |           |                                    |        |
|----------------------------------------------------------------------------------|------------------|-----------------|-----------|------------------------------------|--------|
| Temperature                                                                      |                  |                 |           |                                    |        |
| Power supplied (Vdc)                                                             | Temperature (°C) | Frequency error |           | Limit (ppm)                        | Result |
|                                                                                  |                  | Hz              | ppm       |                                    |        |
| QPSK                                                                             |                  |                 |           |                                    |        |
| 3.92                                                                             | -30              | -5.61           | -0.002162 | Within authorized band for Band 38 | Pass   |
|                                                                                  | -20              | -9.86           | -0.003800 |                                    |        |
|                                                                                  | -10              | -7.96           | -0.003067 |                                    |        |
|                                                                                  | 0                | -5.51           | -0.002123 |                                    |        |
|                                                                                  | 10               | 5.54            | 0.002135  |                                    |        |
|                                                                                  | 20               | 13.61           | 0.005245  |                                    |        |
|                                                                                  | 30               | 7.81            | 0.003010  |                                    |        |
|                                                                                  | 40               | -10.04          | -0.003869 |                                    |        |
|                                                                                  | 50               | 7.59            | 0.002925  |                                    |        |
| 16QAM                                                                            |                  |                 |           |                                    |        |
| 3.92                                                                             | -30              | -7.92           | -0.003052 | Within authorized band for Band 38 | Pass   |
|                                                                                  | -20              | -5.20           | -0.002004 |                                    |        |
|                                                                                  | -10              | -10.62          | -0.004092 |                                    |        |
|                                                                                  | 0                | -7.73           | -0.002979 |                                    |        |
|                                                                                  | 10               | -10.34          | -0.003985 |                                    |        |
|                                                                                  | 20               | -10.09          | -0.003888 |                                    |        |
|                                                                                  | 30               | 10.68           | 0.004116  |                                    |        |
|                                                                                  | 40               | -7.45           | -0.002871 |                                    |        |
|                                                                                  | 50               | 8.65            | 0.003333  |                                    |        |
| 64QAM                                                                            |                  |                 |           |                                    |        |
| 3.92                                                                             | -30              | 9.33            | 0.003595  | Within authorized band for Band 38 | Pass   |
|                                                                                  | -20              | -6.07           | -0.002339 |                                    |        |
|                                                                                  | -10              | -10.20          | -0.003931 |                                    |        |
|                                                                                  | 0                | -4.58           | -0.001765 |                                    |        |
|                                                                                  | 10               | -15.11          | -0.005823 |                                    |        |
|                                                                                  | 20               | -2.41           | -0.000929 |                                    |        |
|                                                                                  | 30               | -15.69          | -0.006046 |                                    |        |
|                                                                                  | 40               | -9.55           | -0.003680 |                                    |        |
|                                                                                  | 50               | -17.58          | -0.006775 |                                    |        |

| Voltage                                                                                                          |                         |                 |           |                                       |        |
|------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------|---------------------------------------|--------|
| Temperature<br>(°C)                                                                                              | Power supplied<br>(Vdc) | Frequency error |           | Limit (ppm)                           | Result |
|                                                                                                                  |                         | Hz              | ppm       |                                       |        |
| QPSK                                                                                                             |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | -16.03          | -0.006177 | Within authorized<br>band for Band 38 | Pass   |
|                                                                                                                  | 3.92                    | 7.11            | 0.002740  |                                       |        |
|                                                                                                                  | 4.53                    | 3.35            | 0.001291  |                                       |        |
| 16QAM                                                                                                            |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | 7.54            | 0.002906  | Within authorized<br>band for Band 38 | Pass   |
|                                                                                                                  | 3.92                    | 10.82           | 0.004170  |                                       |        |
|                                                                                                                  | 4.53                    | -13.72          | -0.005287 |                                       |        |
| 64QAM                                                                                                            |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | -14.58          | -0.005618 | Within authorized<br>band for Band 38 | Pass   |
|                                                                                                                  | 3.92                    | -17.11          | -0.006593 |                                       |        |
|                                                                                                                  | 4.53                    | -10.29          | -0.003965 |                                       |        |
| Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report. |                         |                 |           |                                       |        |

LTE Band 41 part:

| Reference Frequency: LTE Band 41 (10MHz) Middle channel=40640 Frequency=2595.0MHz |                  |                 |           |                                    |        |
|-----------------------------------------------------------------------------------|------------------|-----------------|-----------|------------------------------------|--------|
| Temperature                                                                       |                  |                 |           |                                    |        |
| Power supplied (Vdc)                                                              | Temperature (°C) | Frequency error |           | Limit (ppm)                        | Result |
|                                                                                   |                  | Hz              | ppm       |                                    |        |
| QPSK                                                                              |                  |                 |           |                                    |        |
| 3.92                                                                              | -30              | 13.66           | 0.005264  | Within authorized band for Band 41 | Pass   |
|                                                                                   | -20              | -3.70           | -0.001426 |                                    |        |
|                                                                                   | -10              | 13.42           | 0.005171  |                                    |        |
|                                                                                   | 0                | -22.82          | -0.008794 |                                    |        |
|                                                                                   | 10               | 10.81           | 0.004166  |                                    |        |
|                                                                                   | 20               | -7.22           | -0.002782 |                                    |        |
|                                                                                   | 30               | -9.68           | -0.003730 |                                    |        |
|                                                                                   | 40               | 6.03            | 0.002324  |                                    |        |
|                                                                                   | 50               | -18.46          | -0.007114 |                                    |        |
| 16QAM                                                                             |                  |                 |           |                                    |        |
| 3.92                                                                              | -30              | -13.05          | -0.005029 | Within authorized band for Band 41 | Pass   |
|                                                                                   | -20              | -11.49          | -0.004428 |                                    |        |
|                                                                                   | -10              | -12.95          | -0.004990 |                                    |        |
|                                                                                   | 0                | 6.64            | 0.002559  |                                    |        |
|                                                                                   | 10               | -9.39           | -0.003618 |                                    |        |
|                                                                                   | 20               | -15.46          | -0.005958 |                                    |        |
|                                                                                   | 30               | 7.17            | 0.002763  |                                    |        |
|                                                                                   | 40               | -12.85          | -0.004952 |                                    |        |
|                                                                                   | 50               | 13.73           | 0.005291  |                                    |        |
| 64QAM                                                                             |                  |                 |           |                                    |        |
| 3.92                                                                              | -30              | -18.45          | -0.007110 | Within authorized band for Band 41 | Pass   |
|                                                                                   | -20              | 14.87           | 0.005730  |                                    |        |
|                                                                                   | -10              | -13.09          | -0.005044 |                                    |        |
|                                                                                   | 0                | -10.17          | -0.003919 |                                    |        |
|                                                                                   | 10               | -15.93          | -0.006139 |                                    |        |
|                                                                                   | 20               | -5.94           | -0.002289 |                                    |        |
|                                                                                   | 30               | 20.23           | 0.007796  |                                    |        |
|                                                                                   | 40               | -13.22          | -0.005094 |                                    |        |
|                                                                                   | 50               | -4.97           | -0.001915 |                                    |        |

| Voltage                                                                                                          |                         |                 |           |                                       |        |
|------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------|---------------------------------------|--------|
| Temperature<br>(°C)                                                                                              | Power supplied<br>(Vdc) | Frequency error |           | Limit (ppm)                           | Result |
|                                                                                                                  |                         | Hz              | ppm       |                                       |        |
| QPSK                                                                                                             |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | -12.40          | -0.004778 | Within authorized<br>band for Band 41 | Pass   |
|                                                                                                                  | 3.92                    | -9.21           | -0.003549 |                                       |        |
|                                                                                                                  | 4.53                    | -11.28          | -0.004347 |                                       |        |
| 16QAM                                                                                                            |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | -18.03          | -0.006948 | Within authorized<br>band for Band41  | Pass   |
|                                                                                                                  | 3.92                    | -19.61          | -0.007557 |                                       |        |
|                                                                                                                  | 4.53                    | -7.34           | -0.002829 |                                       |        |
| 64QAM                                                                                                            |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | -11.72          | -0.004516 | Within authorized<br>band for Band41  | Pass   |
|                                                                                                                  | 3.92                    | -3.41           | -0.001314 |                                       |        |
|                                                                                                                  | 4.53                    | 12.46           | 0.004802  |                                       |        |
| 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                                                                               |                  |                 |           |                                    |        |
| 3.92                                                                               | -30              | -2.58           | -0.001479 | Within authorized band for Band 66 | Pass   |
|                                                                                    | -20              | -3.32           | -0.001903 |                                    |        |
|                                                                                    | -10              | 12.71           | 0.007284  |                                    |        |
|                                                                                    | 0                | 6.79            | 0.003891  |                                    |        |
|                                                                                    | 10               | 9.92            | 0.005685  |                                    |        |
|                                                                                    | 20               | -5.41           | -0.003100 |                                    |        |
|                                                                                    | 30               | -7.05           | -0.004040 |                                    |        |
|                                                                                    | 40               | 5.55            | 0.003181  |                                    |        |
|                                                                                    | 50               | 2.39            | 0.001370  |                                    |        |
| 16QAM                                                                              |                  |                 |           |                                    |        |
| 3.92                                                                               | -30              | 6.37            | 0.003650  | Within authorized band for Band 66 | Pass   |
|                                                                                    | -20              | 1.97            | 0.001129  |                                    |        |
|                                                                                    | -10              | 7.27            | 0.004166  |                                    |        |
|                                                                                    | 0                | 2.45            | 0.001404  |                                    |        |
|                                                                                    | 10               | -7.03           | -0.004029 |                                    |        |
|                                                                                    | 20               | 7.19            | 0.004120  |                                    |        |
|                                                                                    | 30               | -4.51           | -0.002585 |                                    |        |
|                                                                                    | 40               | -3.27           | -0.001874 |                                    |        |
|                                                                                    | 50               | 7.73            | 0.004430  |                                    |        |
| 64QAM                                                                              |                  |                 |           |                                    |        |
| 3.92                                                                               | -30              | 6.10            | 0.003496  | Within authorized band for Band 66 | Pass   |
|                                                                                    | -20              | 3.22            | 0.001845  |                                    |        |
|                                                                                    | -10              | -4.02           | -0.002304 |                                    |        |
|                                                                                    | 0                | -4.11           | -0.002355 |                                    |        |
|                                                                                    | 10               | 3.83            | 0.002195  |                                    |        |
|                                                                                    | 20               | 9.57            | 0.005484  |                                    |        |
|                                                                                    | 30               | -4.94           | -0.002831 |                                    |        |
|                                                                                    | 40               | 10.03           | 0.005748  |                                    |        |
|                                                                                    | 50               | 8.92            | 0.005112  |                                    |        |

| Voltage                                                                                                          |                         |                 |           |                                       |        |
|------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------|---------------------------------------|--------|
| Temperature<br>(°C)                                                                                              | Power supplied<br>(Vdc) | Frequency error |           | Limit (ppm)                           | Result |
|                                                                                                                  |                         | Hz              | ppm       |                                       |        |
| QPSK                                                                                                             |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | 3.08            | 0.001765  | Within authorized<br>band for Band 66 | Pass   |
|                                                                                                                  | 3.92                    | -2.64           | -0.001513 |                                       |        |
|                                                                                                                  | 4.53                    | 8.37            | 0.004797  |                                       |        |
| 16QAM                                                                                                            |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | -6.37           | -0.003650 | Within authorized<br>band for Band 66 | Pass   |
|                                                                                                                  | 3.92                    | 5.77            | 0.003307  |                                       |        |
|                                                                                                                  | 4.53                    | 7.33            | 0.004201  |                                       |        |
| 64QAM                                                                                                            |                         |                 |           |                                       |        |
| 25                                                                                                               | 3.45                    | -6.96           | -0.003989 | Within authorized<br>band for Band 66 | Pass   |
|                                                                                                                  | 3.92                    | 3.58            | 0.002052  |                                       |        |
|                                                                                                                  | 4.53                    | -4.32           | -0.002476 |                                       |        |
| 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    |
| Band2  | 20MHz     | 64QAM      | 18900   | 100RB#0          | PASS   | PASS    |
| Band4  | 20MHz     | QPSK       | 20175   | 100RB#0          | PASS   | PASS    |
| Band4  | 20MHz     | 16QAM      | 20175   | 100RB#0          | PASS   | PASS    |
| Band4  | 20MHz     | 64QAM      | 20175   | 100RB#0          | PASS   | PASS    |
| Band5  | 10MHz     | QPSK       | 20525   | 50RB#0           | PASS   | PASS    |
| Band5  | 10MHz     | 16QAM      | 20525   | 50RB#0           | PASS   | PASS    |
| Band5  | 10MHz     | 64QAM      | 20525   | 50RB#0           | PASS   | PASS    |
| Band7  | 20MHz     | QPSK       | 21100   | 100RB#0          | PASS   | PASS    |
| Band7  | 20MHz     | 16QAM      | 21100   | 100RB#0          | PASS   | PASS    |
| Band7  | 20MHz     | 64QAM      | 21100   | 100RB#0          | PASS   | PASS    |
| Band12 | 10MHz     | QPSK       | 23095   | 50RB#0           | PASS   | PASS    |
| Band12 | 10MHz     | 16QAM      | 23095   | 50RB#0           | PASS   | PASS    |
| Band12 | 10MHz     | 64QAM      | 23095   | 50RB#0           | PASS   | PASS    |
| Band17 | 10MHz     | QPSK       | 23790   | 50RB#0           | PASS   | PASS    |
| Band17 | 10MHz     | 16QAM      | 23790   | 50RB#0           | PASS   | PASS    |
| Band17 | 10MHz     | 64QAM      | 23790   | 50RB#0           | PASS   | PASS    |
| Band38 | 20MHz     | QPSK       | 38000   | 100RB#0          | PASS   | PASS    |
| Band38 | 20MHz     | 16QAM      | 38000   | 100RB#0          | PASS   | PASS    |
| Band38 | 20MHz     | 64QAM      | 38000   | 100RB#0          | PASS   | PASS    |
| Band41 | 20MHz     | QPSK       | 40640   | 100RB#0          | PASS   | PASS    |
| Band41 | 20MHz     | 16QAM      | 40640   | 100RB#0          | PASS   | PASS    |
| Band41 | 20MHz     | 64QAM      | 40640   | 100RB#0          | PASS   | PASS    |
| Band66 | 20MHz     | QPSK       | 132322  | 100RB#0          | PASS   | PASS    |
| Band66 | 20MHz     | 16QAM      | 132322  | 100RB#0          | PASS   | PASS    |
| Band66 | 20MHz     | 64QAM      | 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









