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## Report On

FCC and ISED Permissive Change Report for the Ericsson Dot 2274 B25 B66, KRY 901 468/1 and Dot 2284 B25 B66, KRY 901 468/2, LTE, NR, WCDMA, LTE + NR, LTE + WCDMA, (1900 MHz), with compatible Main Unit in a Base Station configuration in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 24, ISED RSS-GEN and Industry Canada RSS-133.

COMMERCIAL-IN-CONFIDENCE

FCC: TA8AKRY901468-1 and TA8AKRY901468-2  
ISED: 287AB-AS9014681 and 287AB-AS9014682

PREPARED BY

Glen Westwell  
Senior Test Engineer

APPROVED BY

Scott Drysdale  
Authorised Signatory

DATED

March 21 2023

Document 75957631 Report 01 Issue 2

27-January-2023



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## **SECTION 1**

### **REPORT INFORMATION**



## 1.1 REPORT DETAILS

|   |  |
|---|--|
| Manufacturer  | Ericsson   |
| Address   | Torshamnsgatan 23<br>Kista<br>SE-16480<br>Stockholm<br>Sweden  |
| Product Name & Product Number                                   | Dot 2284 B25B66 - KRY 901 468/2  |
| IC Model Name   | AS9014682  |
| Serial Number(s)  | TD3W081157   |
| Software Version  | CXP 203 0045/25 R15B19   |
| Hardware Version  | R2C  |
| Non-Tested Variant<br>(See Section 1.11 Additional Information) | Dot 2274 B25B66 - KRY 901 468/1  |
| Test Specification/Issue/Date                                   | FCC CFR 47 Part 2: 2021<br>FCC CFR 47 Part 24: 2021<br>ISED RSS-GEN: Issue 5: March 2019 Amendment 1, 2021 Amendment 2<br>Industry Canada RSS-133: Issue 6: January 2018 Amendment 1 |
| Test Plan   | FCC C2PC_DOT 2274_2284 B25_B66 addition NR253040   |
| Start of Test   | 4-January-2023   |
| Finish of Test  | 5-January-2023   |
| Name of Engineer(s)   | Glen Westwell  |
| Related Document(s)   | KDB 971168 D01 v02r02<br>KDB 662911 D01 v02r01<br>ICES-003:Issue 7 (2020-10)<br>ANSI C63.26-2015   |

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### ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with and FCC CFR 47 Part 2: 2021, FCC CFR 47 Part 24: 2021, ISED RSS-GEN: Issue 5: March 2019 Amendment 1, 2021 Amendment 2, Industry Canada RSS-133: Issue 6: January 2018 Amendment 1 The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

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Glen Westwell



## 1.2 BRIEF SUMMARY OF RESULTS

The tests that have been selected are detailed in the customer Test Plan as defined in section 1.1 of this report. The Test Plan is based on the TÜV SÜD FCC Test Plan Rationale, available on request.

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 24, ISED RSS-GEN and Industry Canada RSS-133 is shown below.

| Section | Specification Clause |                    |         |         | Test Description  | Result |
|---------|----------------------|--------------------|---------|---------|---|--------|
|         | FCC CFR 47 Part 2    | FCC CFR 47 Part 24 | RSS-GEN | RSS-133 |   |        |
| 2.1     | 2.1046               | 24.232             | -       | 6.4     | Maximum Peak Output Power and Peak to Average Ratio - Conducted | Pass   |
| 2.2     | 2.1049               | 24.238 (b)         | 6.7     | 6.5     | Occupied Bandwidth  | Pass   |
| 2.3     | 2.1051               | 24.238 (b)         | -       | 6.5     | Band Edge   | Pass   |
| 2.4     | 2.1051               | 24.238 (a)         | 6.13    | 6.5     | Transmitter Spurious Emissions                                  | Pass   |

Testing in this Report covers only B25 (1900MHz)

For additional configurations and test cases not contained within this test report, refer to the following reports:

Test Report Ref 75957631 Report 02 – B66 (2100MHz)



### **1.3 TEST RATIONALE**

The tests that have been selected are detailed in the customer Test Plan as defined in section 1.1 of this report. The Test Plan is based on the TÜV SÜD FCC Test Plan Rationale, available on request.



#### 1.4 CONFIGURATION DESCRIPTION

| Configuration A |                 |                   |                                       |        |        |
|-----------------|-----------------|-------------------|---------------------------------------|--------|--------|
| RAT             | No. Of Carriers | Carrier Bandwidth | Carrier Frequency Configuration (MHz) |        |        |
|                 |                 |                   | Bottom                                | Middle | Top    |
| NR              | 1               | 25 MHz            | 1942.5                                | 1962.5 | 1982.5 |
|                 |                 | 30 MHz            | 1945.0                                | 1962.5 | 1980.0 |
|                 |                 | 40 MHz            | 1950.0                                | 1962.5 | 1975.0 |

| Configuration B – Contiguous Carriers |                 |                   |                                       |               |               |
|---------------------------------------|-----------------|-------------------|---------------------------------------|---------------|---------------|
| RAT                                   | No. Of Carriers | Carrier Bandwidth | Carrier Frequency Configuration (MHz) |               |               |
|                                       |                 |                   | Bottom                                | Middle        | Top           |
| NR                                    | 2               | 25 MHz            | 1942.5+1967.5                         | 1950+1975     | 1957.5+1982.5 |
|                                       |                 | 30 MHz            | 1945+1975                             | 1947.5+1977.5 | 1950+1980.0   |

| Configuration B – Non-Contiguous Carriers |                 |                   |                                       |        |               |
|---|-----------------|-------------------|---------------------------------------|--------|---------------|
| RAT                                       | No. Of Carriers | Carrier Bandwidth | Carrier Frequency Configuration (MHz) |        |               |
|   |                 |                   | Bottom                                | Middle | Top           |
| NR  | 2               | 25 MHz            | 1942.5+1977.5                         | -      | 1947.5+1982.5 |
|   |                 | 30 MHz            | 1945+1975                             | -      | 1950+1980.0   |



**1.5 DECLARATION OF BUILD STATUS**

| MAIN EUT   |   |
|--|---|
| <b>MANUFACTURING DESCRIPTION</b>   | Dot 2274 B25B66 and Dot 2284 B25B66   |
| <b>MANUFACTURER</b>  | Ericsson  |
| <b>TYPE</b>  | Remote Radio Base Station   |
| <b>PART NUMBER</b>   | Dot 2274 B25B66: KRY 901 468/1 (internal antennas)<br>Dot 2284 B25B66: KRY 901 468/2 (RF ports for external antennas)   |
| <b>SERIAL NUMBER</b>   | TD3W081157 (for the Dot 2284 B25B66 test sample)  |
| <b>HARDWARE VERSION</b>  | R2C   |
| <b>SOFTWARE VERSION</b>  | CXP2030045/25-R15B19  |
| <b>TRANSMITTER OPERATING RANGE</b>   | B25: 1930-1995 MHz, B66: 2110-2200MHz   |
| <b>RECEIVER OPERATING RANGE</b>  | B25: 1850-1915 MHz, B66: 1710-1780MHz   |
| <b>COUNTRY OF ORIGIN</b>   | China   |
| <b>INTERMEDIATE FREQUENCIES</b>  | None  |
| <b>EMISSION DESIGNATOR(S):<br/>(i.e. G1D, GXW)</b>                                   | <b>WCDMA:</b> 5M00F9W<br><b>LTE:</b> 5M00W7D, 10M0W7D, 15M0W7D, 20M0W7D<br><b>NB IoT Guardband:</b> 10M0W7D, 15M0W7D, 20M0W7D<br><b>NR:</b> 5M00F9W, 10M0F9W, 15M0F9W, 20M0F9W, 25M0F9W, 30M0F9W, 40M0F9W   |
| <b>MODULATION TYPES:<br/>(i.e. GMSK, QPSK)</b>                                       | <b>WCDMA:</b> QPSK, 16QAM, 64QAM<br><b>LTE:</b> QPSK, 16QAM, 64QAM, 256QAM<br><b>NR:</b> QPSK, 16QAM, 64QAM, 256QAM   |
| <b>HIGHEST INTERNALLY GENERATED FREQUENCY</b>  | 2.2 GHz   |
| <b>OUTPUT POWER (W or dBm)</b>   | B25: 2 x 0.200W (23dBm/port)<br>B66: 2 x 0.200W (23dBm/port)  |
| <b>ANTENNA GAIN</b>  | <b>Dot 2274 B25:</b> 2 port (MIMO) omni-directional (1850-1995 MHz) with 1.3 dBi maximum gain.<br><b>Dot 2274 B66:</b> 2 port (MIMO) omni-directional (1710-2200 MHz) with 1.1 dBi maximum gain.<br><b>Dot 2284:</b> This product includes no internal antennas. External antennas used on this product must have gains smaller or equal to the gains of the internal antenna variant of this product (Dot 2274 B25B66).  |
| <b>FCC ID</b>  | TA8AKRY901468-1 and TA8AKRY901468-2   |
| <b>INDUSTRY CANADA ID</b>  | 287AB-AS9014681 and 287AB-AS9014682   |
| <b>TECHNICAL DESCRIPTION (a brief description of the intended use and operation)</b> | The Dot 2274 B25B66 (KRY 901 468/1) and Dot 2284 B25B66 (KRY 901 468/2) are dual band Remote Radio Units forming part of the Ericsson Radio Base Station (RBS) equipment. The products provides radio access for mobile and fixed devices and are intended for the indoor environment. The radio operates over 4 Transmit ports in MRO; Single, Multi-Carrier, and MIMO transmission with a maximum rated RF Output of 0.200W per port over an operational temperature of 5°C to +40°C. The unit is designed to be ceiling or wall mounted. |

Signature:

.....

**Denis Lalonde**

**Date: 24 January 2023**

**Declaration of Build Status Serial Number: TD3W081157**





No responsibility will be accepted by TÜV SÜD as to the accuracy of the information declared in this document by the manufacturer.

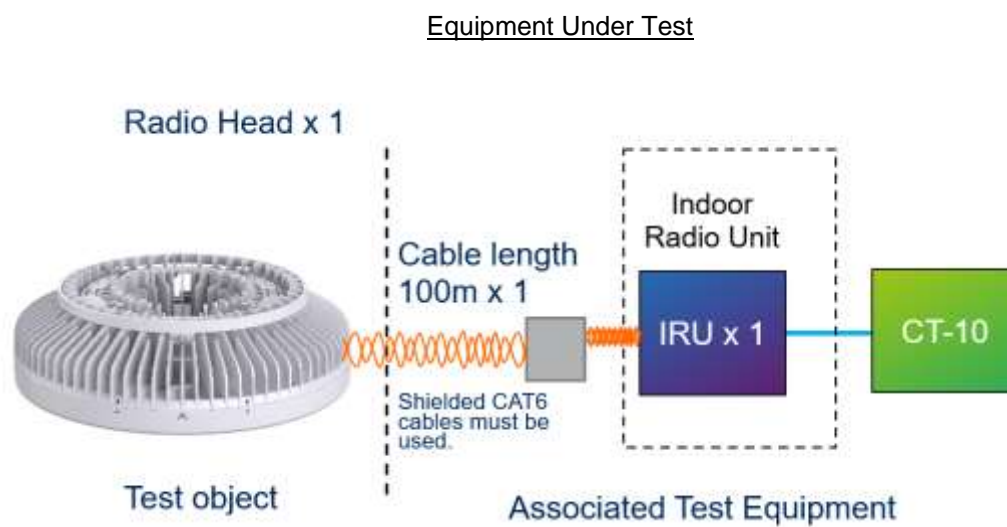
## 1.6 PRODUCT INFORMATION

### 1.6.1 Technical Description

The Equipment Under Test (EUT) Dot 2284 B25B66 - KRY 901 468/2 is an Ericsson AB Radio Unit working in the public mobile service Band 25 band which provides communication connections to Band 25 network.

The EUT is declared as operating from a nominal -48V DC supply.

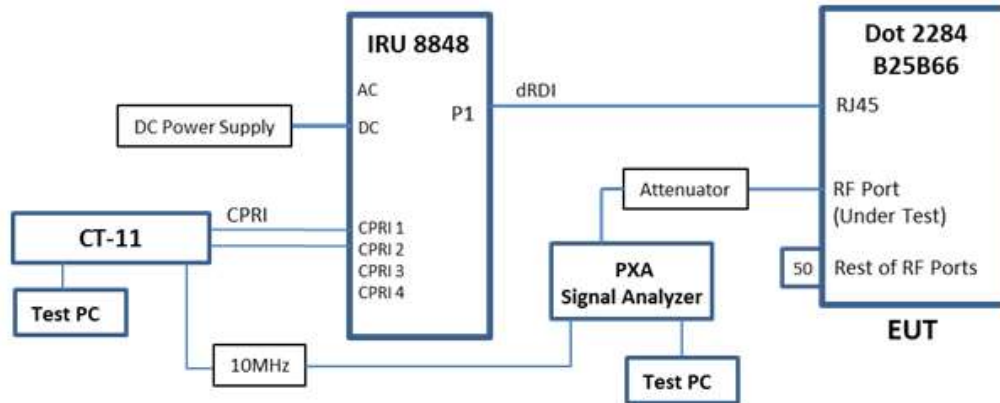
The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.





## 1.7 TEST SETUP

Conducted Test Set Up – Band Edge, Conducted Emissions





## 1.8 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated as described in the Test Method for each Test.

The EUT was powered from a -48V DC supply unless otherwise stated.

FCC Measurement Facility Registration Number  
CA4810 TUV SUD Ottawa, Canada, 1280 Teron Rd., Kanata On.

ISED Accreditation  
IC#24015 TUV SUD Ottawa, Canada, 1280 Teron Rd., Kanata On.

Under our A2LA Accreditation, TÜV SÜD Canada conducted the following tests Ericsson, Ottawa Laboratory: 349 Terry Fox Dr, Kanata, ON.

| Test Name   | Name of Engineer(s) |
|---|---------------------|
| Maximum Peak Output Power and Peak to Average Ratio - Conducted | Glen Westwell       |
| Occupied Bandwidth  | Glen Westwell       |
| Band Edge   | Glen Westwell       |
| Transceiver Spurious Emissions                                  | Glen Westwell       |

## 1.9 DEVIATION FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

## 1.10 MODIFICATION RECORD

No modifications were made to the EUT during testing.

## 1.11 ADDITIONAL INFORMATION

1. This filing is for a previous Radio Certification for use in the USA and Canada under the following ID's:

FCC: TA8AKRY901468-1 and TA8AKRY901468-2  
ISED: 287AB-AS9014681 and 287AB-AS9014682

2. The permissive change is requested for the addition of 3 new modulation channel bandwidths: NR 25 /NR 30 / NR 40 MHz.

3. Transmitter performance was measured for top, mid & bottom channels, where applicable, across all antenna ports as presented in the average power measurement tables. Typical performance is presented.



## **SECTION 2**

### **TEST DETAILS**



**2.1 MAXIMUM PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED**

**2.1.1 Specification Reference**

FCC CFR 47 Part 24, Clause 24.232  
 Industry Canada RSS-133, Clause 6.4  
 FCC CFR 47 Part 2, Clause 2.1046

**2.1.2 Date of Test and Modification State**

04 and 05-January-2023 - Modification State 0

**2.1.3 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

**2.1.4 Environmental Conditions**

Ambient Temperature 24.3 - 25.0°C  
 Relative Humidity 31.3 - 31.7%

**2.1.5 Test Method**

All measurements were made in accordance with FCC KDB 971168 D01, clause 5.2.1 and summed in accordance with FCC KDB 662911 D01.

**2.1.6 Test Results**

Configuration A

Maximum Output Power 23.00 dBm / Port

| Antenna Gain (dBi) | Modulation | Carrier Bandwidth | Peak to Average Ratio (PAR) / Output Power |               |       |       |              |
|--------------------|------------|-------------------|--|---------------|-------|-------|--------------|
|                    |            |                   | Channel Position B                         |               |       |       |              |
| Antenna Port       |            |                   | PAR (dB)                                   | Average Power |       |       | EIRP dBm/MHz |
|                    | dBm        | EIRP (dBm)        |  | dBm/MHz       |       |       |              |
| 1.30               |            |                   |  |               |       |       |              |
| A                  | NR: QPSK   | 25.0 MHz          | 8.26                                       | 22.44         | 23.74 | 9.94  | 11.24        |
| B                  | NR: QPSK   | 25.0 MHz          | -  | 22.32         | 23.62 | 9.94  | 11.24        |
| Total              |            |                   | -  | 25.39         | 26.69 | 12.95 | 14.25        |
| A                  | NR: QPSK   | 30.0 MHz          | 8.29                                       | 22.50         | 23.80 | 9.12  | 10.42        |
| B                  | NR: QPSK   | 30.0 MHz          | -  | 22.36         | 23.66 | 9.12  | 10.42        |
| Total              |            |                   | -  | 25.44         | 26.74 | 12.13 | 13.43        |
| A                  | NR: QPSK   | 40.0 MHz          | 8.26                                       | 22.54         | 23.84 | 7.73  | 9.03         |
| B                  | NR: QPSK   | 40.0 MHz          | -  | 22.32         | 23.62 | 7.73  | 9.03         |
| Total              |            |                   | -  | 25.44         | 26.74 | 10.74 | 12.04        |



| Antenna Gain (dBi) | Modulation | Carrier Bandwidth | Peak to Average Ratio (PAR) / Output Power |          |                    |         |              |  |
|--------------------|------------|-------------------|--|----------|--------------------|---------|--------------|--|
|                    |            |                   | Antenna Port                               | PAR (dB) | Channel Position M |         |              |  |
|                    |            |                   |  |          | Average Power      |         |              |  |
| 1.30               |            |                   |  | dBm      | EIRP (dBm)         | dBm/MHz | EIRP dBm/MHz |  |
| A                  | NR: QPSK   | 25.0 MHz          | 8.28                                       | 22.43    | 23.73              | 9.68    | 10.98        |  |
| B                  | NR: QPSK   | 25.0 MHz          | -  | 22.15    | 23.45              | 9.68    | 10.98        |  |
| Total              |            |                   | -  | 25.30    | 26.60              | 12.69   | 13.99        |  |
| A                  | NR: QPSK   | 30.0 MHz          | 8.31                                       | 22.54    | 23.84              | 8.89    | 10.19        |  |
| B                  | NR: QPSK   | 30.0 MHz          | -  | 22.28    | 23.58              | 8.89    | 10.19        |  |
| Total              |            |                   | -  | 25.42    | 26.72              | 11.90   | 13.20        |  |
| A                  | NR: QPSK   | 40.0 MHz          | 8.27                                       | 22.59    | 23.89              | 7.61    | 8.91         |  |
| B                  | NR: QPSK   | 40.0 MHz          | -  | 22.26    | 23.56              | 7.61    | 8.91         |  |
| Total              |            |                   | -  | 25.44    | 26.74              | 10.62   | 11.92        |  |

| Antenna Gain (dBi) | Modulation | Carrier Bandwidth | Peak to Average Ratio (PAR) / Output Power |          |                    |         |              |  |
|--------------------|------------|-------------------|--|----------|--------------------|---------|--------------|--|
|                    |            |                   | Antenna Port                               | PAR (dB) | Channel Position T |         |              |  |
|                    |            |                   |  |          | Average Power      |         |              |  |
| 1.30               |            |                   |  | dBm      | EIRP (dBm)         | dBm/MHz | EIRP dBm/MHz |  |
| A                  | NR: QPSK   | 25.0 MHz          | 8.25                                       | 22.43    | 23.73              | 10.00   | 11.30        |  |
| B                  | NR: QPSK   | 25.0 MHz          | -  | 22.39    | 23.69              | 10.00   | 11.30        |  |
| Total              |            |                   | -  | 25.42    | 26.72              | 13.01   | 14.31        |  |
| A                  | NR: QPSK   | 30.0 MHz          | 8.27                                       | 22.49    | 23.79              | 9.14    | 10.44        |  |
| B                  | NR: QPSK   | 30.0 MHz          | -  | 22.37    | 23.67              | 9.14    | 10.44        |  |
| Total              |            |                   | -  | 25.44    | 26.74              | 12.15   | 13.45        |  |
| A                  | NR: QPSK   | 40.0 MHz          | 8.27                                       | 22.47    | 23.77              | 7.81    | 9.11         |  |
| B                  | NR: QPSK   | 40.0 MHz          | -  | 22.32    | 23.62              | 7.81    | 9.11         |  |
| Total              |            |                   | -  | 25.41    | 26.71              | 10.82   | 12.12        |  |

**Remarks**

1. Transmitter performance has been presented for top, mid, bottom channels across all antenna ports as represented in the following tables.
2. Typical performance and measurement plot data has been presented for reference.
3. All plot data is on file and available upon request.



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 25.0 MHz - Channel Position B



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 25.0 MHz - Channel Position B







Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 25.0 MHz - Channel Position B



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 30.0 MHz - Channel Position B





Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 30.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 30.0 MHz - Channel Position B

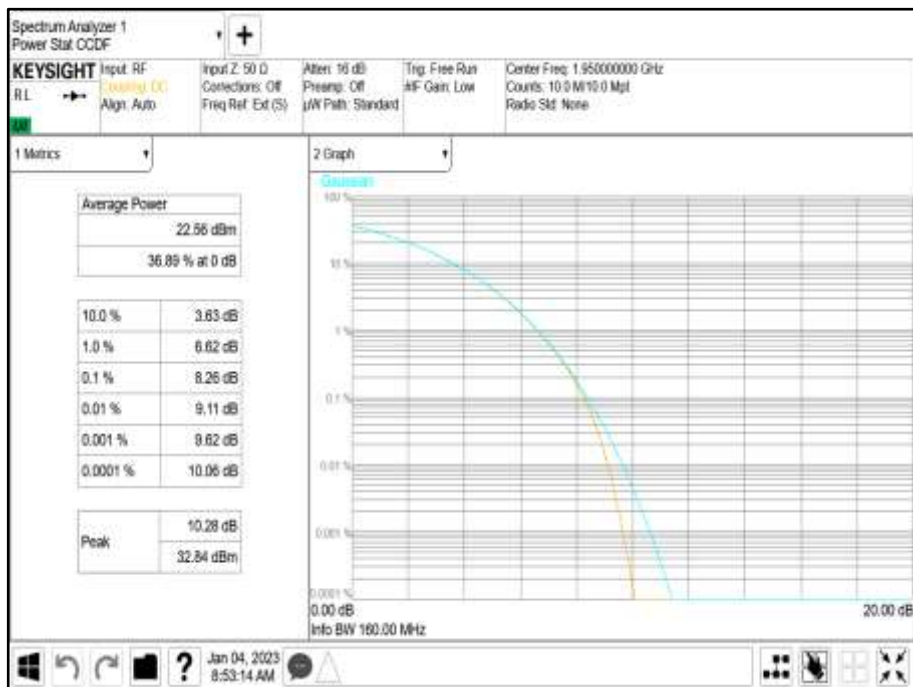




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 40.0 MHz - Channel Position B

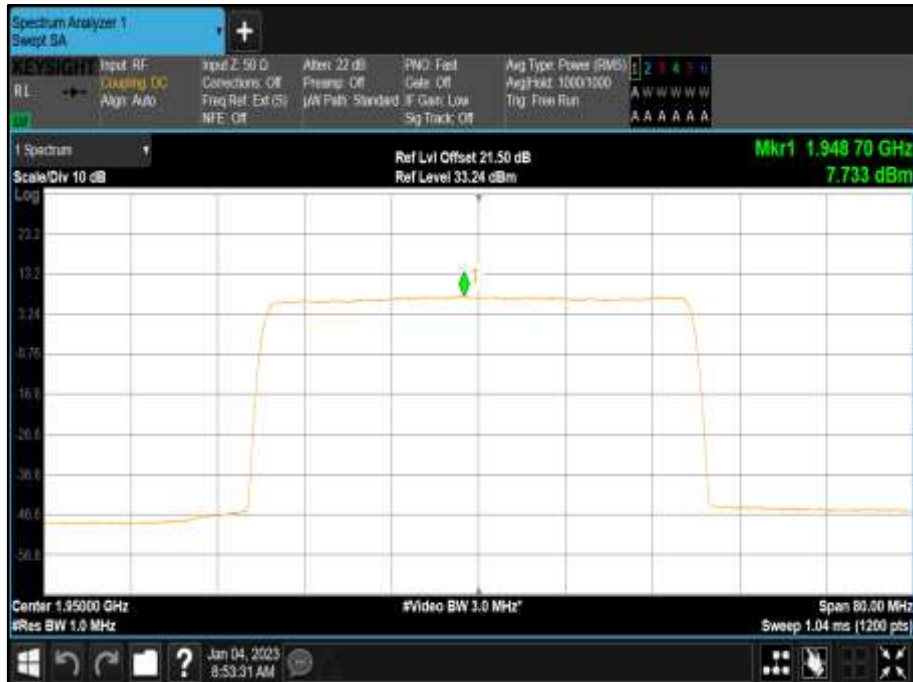


Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 40.0 MHz - Channel Position B





Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 40.0 MHz - Channel Position B





Configuration B

Maximum Output Power 23.00 dBm / Port

| Antenna Gain (dBi) | Modulation        | Carrier Bandwidth | Output Power        |            |
|--------------------|-------------------|-------------------|---------------------|------------|
|                    |                   |                   | Channel Position B  |            |
| 1.30               |                   |                   | Average Power (dBm) |            |
| Antenna Port       |                   |                   | dBm                 | EIRP (dBm) |
| A                  | NR25+NR25: QPSK   | 25+25 MHz         | 22.59               | 23.89      |
| B                  | NR25+NR25: QPSK   | 25+25 MHz         | 22.35               | 23.65      |
| Total              |                   |                   | 25.48               | 26.78      |
| A                  | NR30+NR30: QPSK   | 30+30 MHz         | 22.64               | 23.94      |
| B                  | NR30+NR30: QPSK   | 30+30 MHz         | 22.47               | 23.77      |
| Total              |                   |                   | 25.57               | 26.87      |
| A                  | * NR25+NR25: QPSK | 25+25 MHz         | 22.67               | 23.97      |
| B                  | * NR25+NR25: QPSK | 25+25 MHz         | 22.56               | 23.86      |
| Total              |                   |                   | 25.63               | 26.93      |
| A                  | * NR30+NR30: QPSK | 30+30 MHz         | 22.65               | 23.95      |
| B                  | * NR30+NR30: QPSK | 30+30 MHz         | 22.58               | 23.88      |
| Total              |                   |                   | 25.63               | 26.93      |

| Antenna Gain (dBi) | Modulation        | Carrier Bandwidth | Output Power        |            |
|--------------------|-------------------|-------------------|---------------------|------------|
|                    |                   |                   | Channel Position M  |            |
| 1.30               |                   |                   | Average Power (dBm) |            |
| Antenna Port       |                   |                   | dBm                 | EIRP (dBm) |
| A                  | NR25+NR25: QPSK   | 25+25 MHz         | 22.58               | 23.88      |
| B                  | NR25+NR25: QPSK   | 25+25 MHz         | 22.33               | 23.63      |
| Total              |                   |                   | 25.47               | 26.77      |
| A                  | NR30+NR30: QPSK   | 30+30 MHz         | 22.64               | 23.94      |
| B                  | NR30+NR30: QPSK   | 30+30 MHz         | 22.55               | 23.85      |
| Total              |                   |                   | 25.61               | 26.91      |
| A                  | * NR25+NR25: QPSK | 25+25 MHz         | 22.67               | 23.97      |
| B                  | * NR25+NR25: QPSK | 25+25 MHz         | 22.56               | 23.86      |
| Total              |                   |                   | 25.63               | 26.93      |
| A                  | * NR30+NR30: QPSK | 30+30 MHz         | 22.65               | 23.95      |
| B                  | * NR30+NR30: QPSK | 30+30 MHz         | 22.58               | 23.88      |
| Total              |                   |                   | 25.63               | 26.93      |

| Antenna Gain (dBi) | Modulation        | Carrier Bandwidth | Output Power        |            |
|--------------------|-------------------|-------------------|---------------------|------------|
|                    |                   |                   | Channel Position T  |            |
| 1.30               |                   |                   | Average Power (dBm) |            |
| Antenna Port       |                   |                   | dBm                 | EIRP (dBm) |
| A                  | NR25+NR25: QPSK   | 25+25 MHz         | 22.52               | 23.82      |
| B                  | NR25+NR25: QPSK   | 25+25 MHz         | 22.38               | 23.68      |
| Total              |                   |                   | 25.46               | 26.76      |
| A                  | NR30+NR30: QPSK   | 30+30 MHz         | 22.57               | 23.87      |
| B                  | NR30+NR30: QPSK   | 30+30 MHz         | 22.52               | 23.82      |
| Total              |                   |                   | 25.56               | 26.86      |
| A                  | * NR25+NR25: QPSK | 25+25 MHz         | 22.67               | 23.97      |
| B                  | * NR25+NR25: QPSK | 25+25 MHz         | 22.56               | 23.86      |
| Total              |                   |                   | 25.63               | 26.93      |
| A                  | * NR30+NR30: QPSK | 30+30 MHz         | 22.65               | 23.95      |
| B                  | * NR30+NR30: QPSK | 30+30 MHz         | 22.58               | 23.88      |
| Total              |                   |                   | 25.63               | 26.93      |

Remarks

1. The table results are measured at all antenna ports, worst-case performance presented.
2. The plot results represent typical radio performance across all channels.
3. Plot data performance for all transmitter ports and channels are available on request.
- 4 \* indicates a Non-Contiguous (NC) configuration.



Antenna Port A Carrier Power - Modulation NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position B



Antenna Port A Carrier Power - Modulation NR30+NR30: QPSK - Carrier Bandwidth 30+30 MHz - Channel Position B

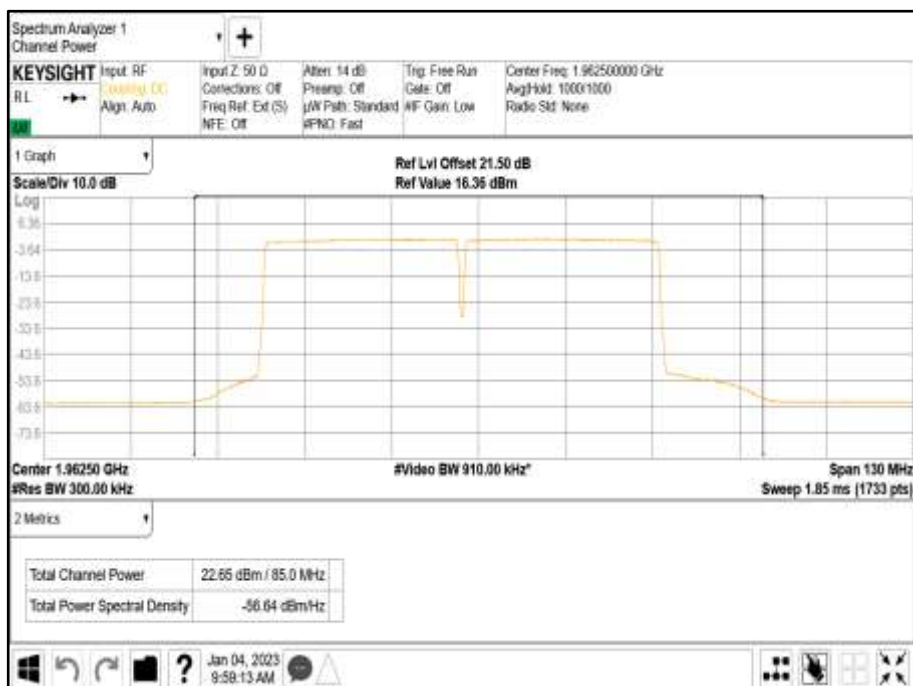




Antenna Port A Carrier Power - Modulation \* NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position B



Antenna Port A Carrier Power - Modulation \* NR30+NR30: QPSK - Carrier Bandwidth 30+30 MHz - Channel Position B





| Limit                 |  |
|-----------------------|--|
| Peak Power            | $\leq 1640 \text{ W/MHz}$ or $\leq +62.15 \text{ dBm / MHz}$ |
| Peak to Average Ratio | 13 dB  |





## **2.2 OCCUPIED BANDWIDTH**

### **2.2.1 Specification Reference**

FCC CFR 47 Part 24, Clause 24.238 (b)  
ISED RSS-GEN, Clause 6.7  
FCC CFR 47 Part 2, Clause 2.1049

### **2.2.2 Date of Test and Modification State**

04-January-2023 - Modification State 0

### **2.2.3 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.2.4 Environmental Conditions**

|                     |        |
|---------------------|--------|
| Ambient Temperature | 25.0°C |
| Relative Humidity   | 31.7%  |

### **2.2.5 Test Method**

Occupied bandwidth – power bandwidth (99 %) measurement procedure  
Subclause 5.4.4 of ANSI C63.26-2015 is applicable (wherein the recommendation is to use the 99 % power bandwidth function of a spectrum analyser).



## 2.2.6 Test Results

Configuration A

Maximum Output Power 23.00 dBm / Port

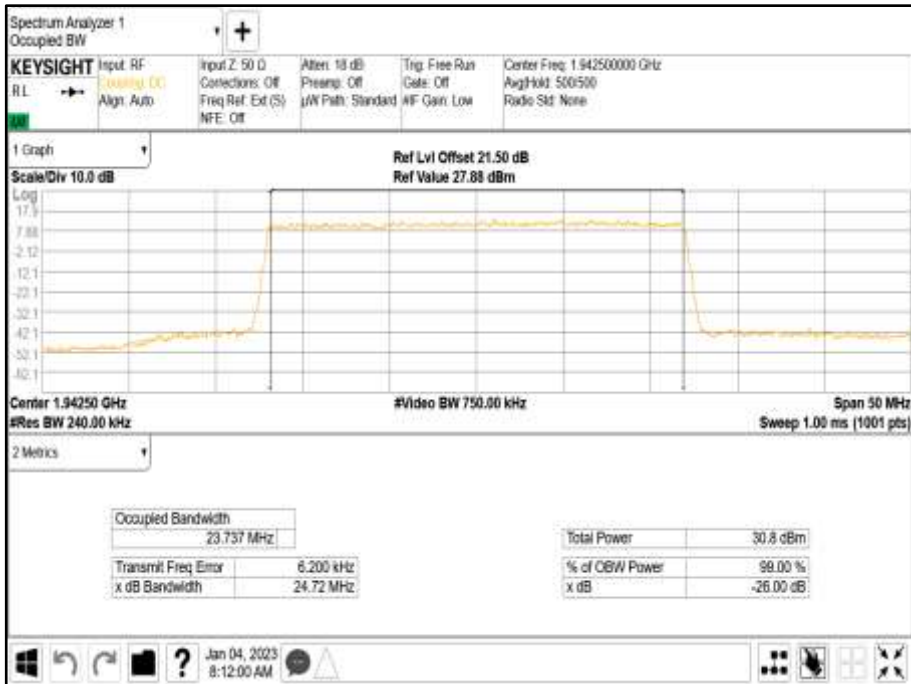
| Modulation | Carrier Bandwidth | Result (MHz)       |
|------------|-------------------|--------------------|
|            |                   | Channel Bandwidth  |
|            |                   | Occupied Bandwidth |
| NR: QPSK   | NR: 25.0 MHz      | 23.737             |
| NR: QPSK   | NR: 30.0 MHz      | 28.493             |
| NR: QPSK   | NR: 40.0 MHz      | 38.504             |

### Remarks

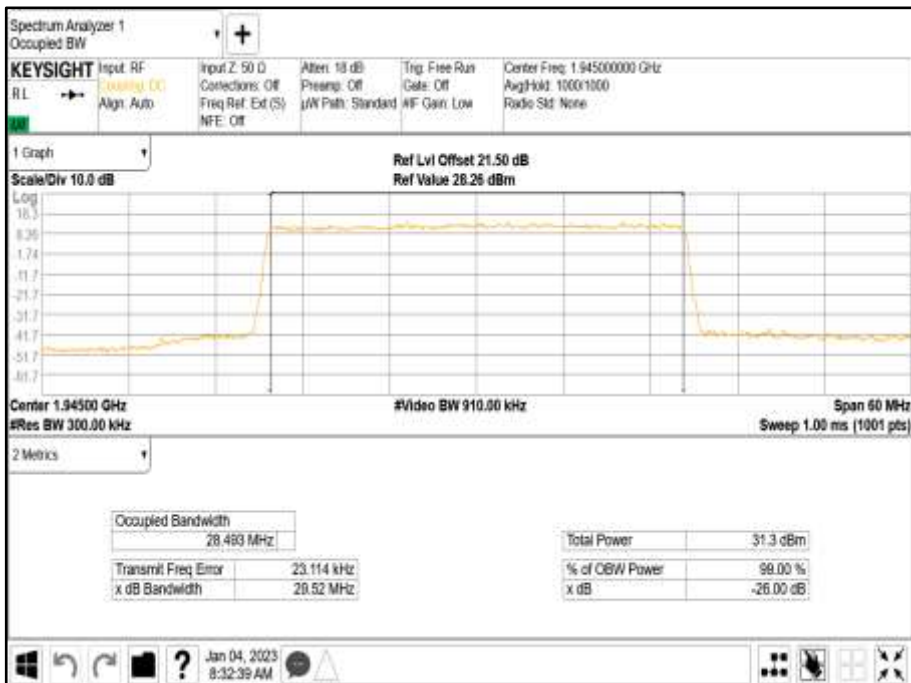
Representative occupied bandwidth performance results presented. Plot data performance for all transmitter ports and channel positions are on file and available on request.



Antenna A - Modulation NR: QPSK - LTE Carrier Bandwidth NR: 25.0 MHz - Channel Position B

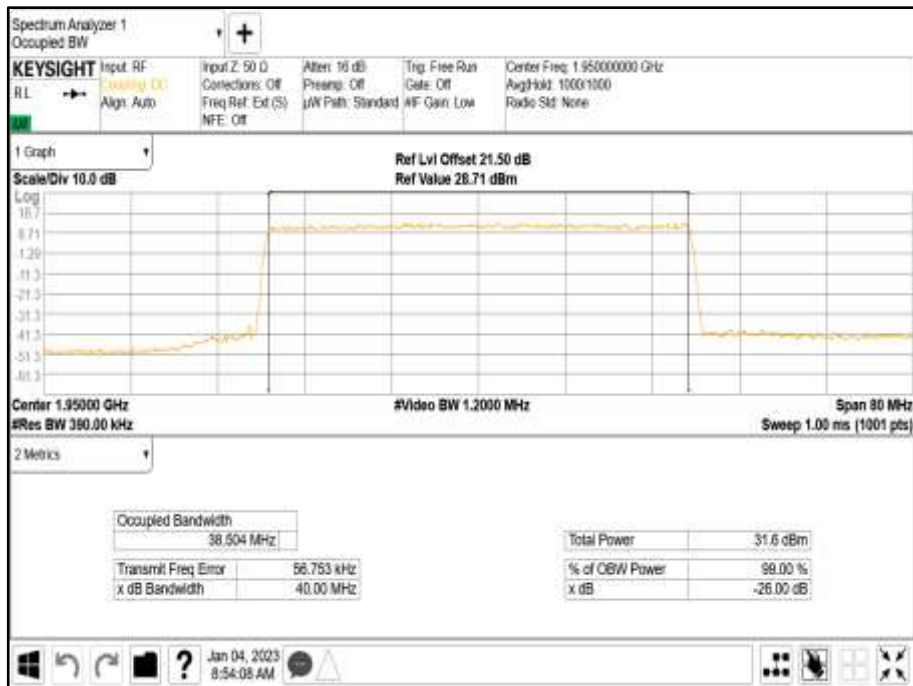


Antenna A - Modulation NR: QPSK - LTE Carrier Bandwidth NR: 30.0 MHz - Channel Position B





Antenna A - Modulation NR: QPSK - LTE Carrier Bandwidth NR: 40.0 MHz - Channel Position B





**2.3 BAND EDGE**

**2.3.1 Specification Reference**

FCC CFR 47 Part 24, Clause 24.238 (b)  
 Industry Canada RSS-133, Clause 6.5  
 FCC CFR 47 Part 2, Clause 2.1051

**2.3.2 Date of Test and Modification State**

05-January-2023 - Modification State 0

**2.3.3 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

**2.3.4 Environmental Conditions**

Ambient Temperature 24.3°C  
 Relative Humidity 31.3%

**2.3.5 Test Method**

All measurements were made in accordance with FCC KDB 971168 D01, Clause 6.0.

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by  $10 * \text{Log}(N)$ , where N is equal to the number of MIMO antenna ports.

For dual port, the limit was calculated as being  $-13 \text{ dBm} - 10 * \text{Log}(2) = -16 \text{ dBm}$ .

**2.3.6 Test Results**

Configuration A

Maximum Output Power 23.00 dBm / Port

| Modulation | Carrier Bandwidth | Band Edge (MHz)    |                    |
|------------|-------------------|--------------------|--------------------|
|            |                   | Channel Position B | Channel Position T |
| NR: QPSK   | NR: 25.0 MHz      | 1,942.5            | 1,982.5            |
| NR: QPSK   | NR: 30.0 MHz      | 1,945.0            | 1,980.0            |
| NR: QPSK   | NR: 40.0 MHz      | 1,950.0            | 1,975.0            |

Remarks

1. Bandedge data was captured from the transmit port with maximum measured power.
2. Worst case bandedge data presented.



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 25.0 MHz - Channel Position B



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 25.0 MHz - Channel Position T





Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 30.0 MHz - Channel Position B



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 30.0 MHz - Channel Position T





Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 40.0 MHz - Channel Position B



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 40.0 MHz - Channel Position T







## Configuration B

Maximum Output Power 23.00 dBm / Port

| Antenna | Modulation        | Carrier Bandwidth | Band Edge (MHz)    |                    |
|---------|-------------------|-------------------|--------------------|--------------------|
|         |                   |                   | Channel Position B | Channel Position T |
| 4A      | NR25+NR25: QPSK   | 25+25 MHz         | 1942.5+1967.5      | 1957.5+1982.5      |
| 4B      | NR30+NR30: QPSK   | 30+30 MHz         | 1945.0+1975.0      | 1950.0+1980.0      |
| 4A      | * NR25+NR25: QPSK | 25+25 MHz         | 1942.5+1977.5      | 1947.5+1982.5      |
| 4B      | * NR30+NR30: QPSK | 30+30 MHz         | 1945.0+1975.0      | 1950.0+1980.0      |

### Remarks

1. The plots results represent typical radio performace.
2. \* indicates a Non-Contiguous (NC) configuration.



Antenna Port A A - Modulation NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position B



Antenna Port A A - Modulation NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position T





Antenna Port A A - Modulation NR30+NR30: QPSK - Carrier Bandwidth 30+30 MHz - Channel Position B



Antenna Port A A - Modulation NR30+NR30: QPSK - Carrier Bandwidth 30+30 MHz - Channel Position T





Antenna Port A - Modulation \* NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position B, Non-Contiguous Channel Allocation



Antenna Port A A - Modulation \* NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position T, Non-Contiguous Channel Allocation





Antenna Port A A - Modulation \* NR30+NR30: QPSK - Carrier Bandwidth 30+30 MHz - Channel Position B, Non-Contiguous Channel Allocation



Antenna Port A A - Modulation \* NR30+NR30: QPSK - Carrier Bandwidth 30+30 MHz - Channel Position T, Non-Contiguous Channel Allocation



|       |         |
|-------|---------|
| Limit | -16 dBm |
|-------|---------|



## 2.4 TRANSMITTER SPURIOUS EMISSIONS

### 2.4.1 Specification Reference

FCC CFR 47 Part 24, Clause 24.238 (a)  
ISED RSS-GEN, Clause 6.13  
Industry Canada RSS-133, Clause 6.5  
FCC CFR 47 Part 2, Clause 2.1051

### 2.4.2 Date of Test and Modification State

05-January-2023 - Modification State 0

### 2.4.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

### 2.4.4 Environmental Conditions

|                     |        |
|---------------------|--------|
| Ambient Temperature | 24.3°C |
| Relative Humidity   | 31.3%  |

### 2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 6.1.

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by  $10 * \text{Log}(N)$ , where N is equal to the number of MIMO antenna ports.

For dual port, the limit was calculated as being  $-13 \text{ dBm} - 10 * \text{Log}(2) = -16 \text{ dBm}$ .

### 2.4.6 Test Results

Configuration A

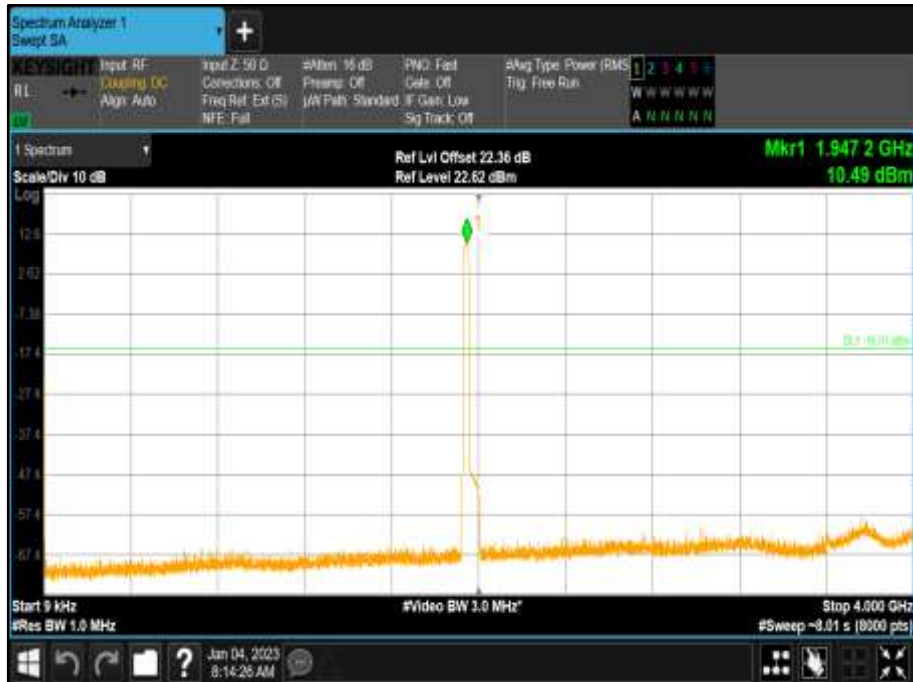
Maximum Output Power 23.00 dBm / Port

#### Remarks

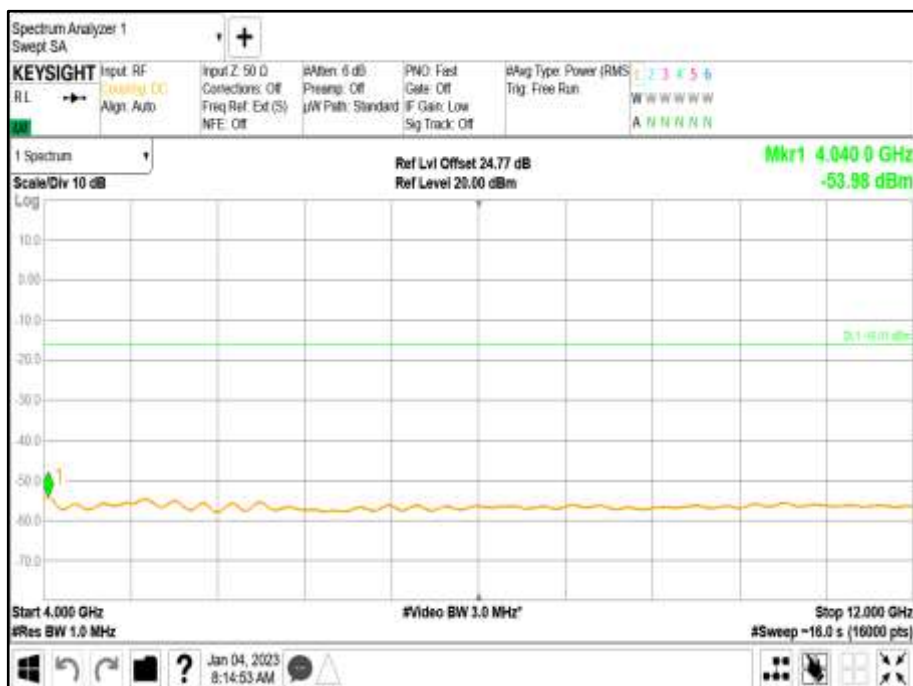
1. Transceiver spurious emissions have been searched for all channel bandwidths and antenna ports.
2. Representative spurious emissions performance using the most narrow channel bandwidth has been presented for all modulations. The smallest Ch BW has been found to result in the worst case performance.
3. Plot data performance for all channel bandwidths, and channel positions are on file and available on request.



Antenna A - Modulation NR: QPSK - Carrier Bandwidth 25.0 MHz - Channel Position B - Band 1 - Range 0.009 to 4000 MHz



Antenna A - Modulation NR: QPSK - Carrier Bandwidth 25.0 MHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz







Antenna A - Modulation NR: QPSK - Carrier Bandwidth 25.0 MHz - Channel Position B - Band 3  
- Range 12000 to 19950 MHz



Configuration B

Maximum Output Power 23.00 dBm / Port

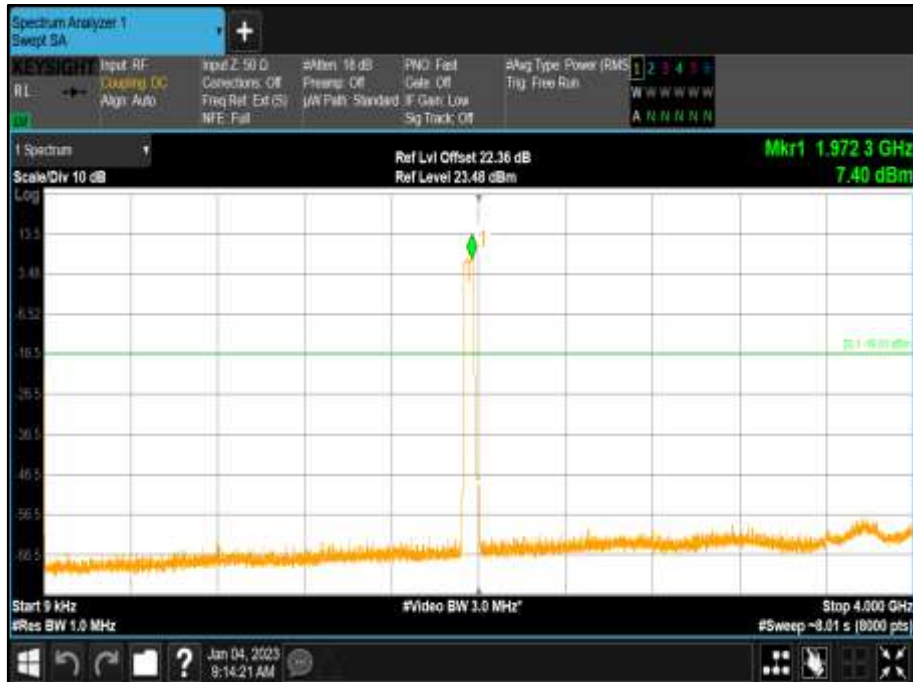
Remarks

1. Representative worst-case spurious emissions performance has been presented.
2. All channel BW plots are available upon request.

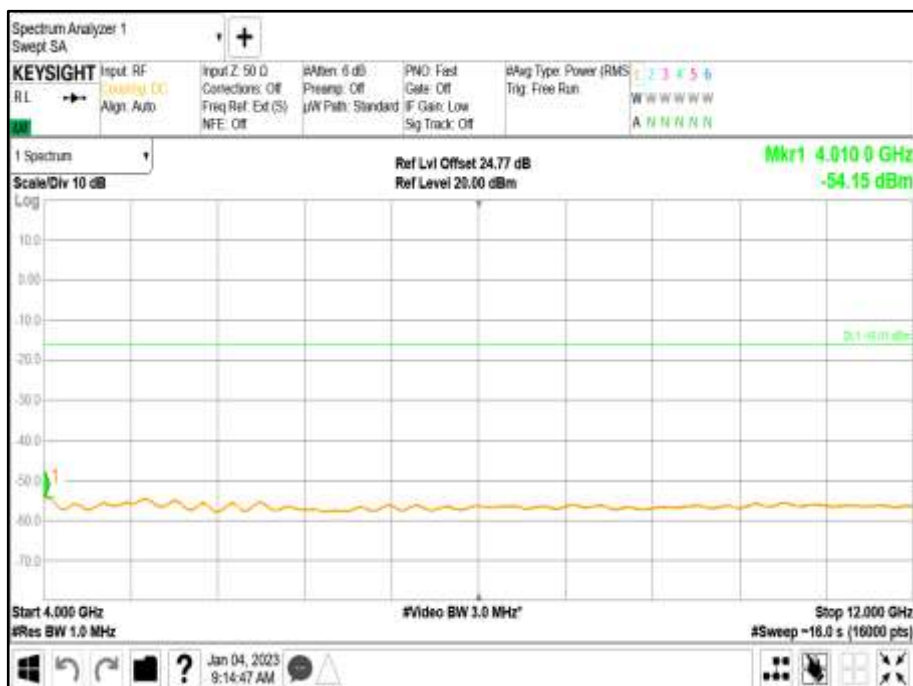




Antenna A - Modulation NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position  
B - Band 1 - Range 0.009 to 4000 MHz



Antenna A - Modulation NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position  
B - Band 2 - Range 4000 to 12000 MHz

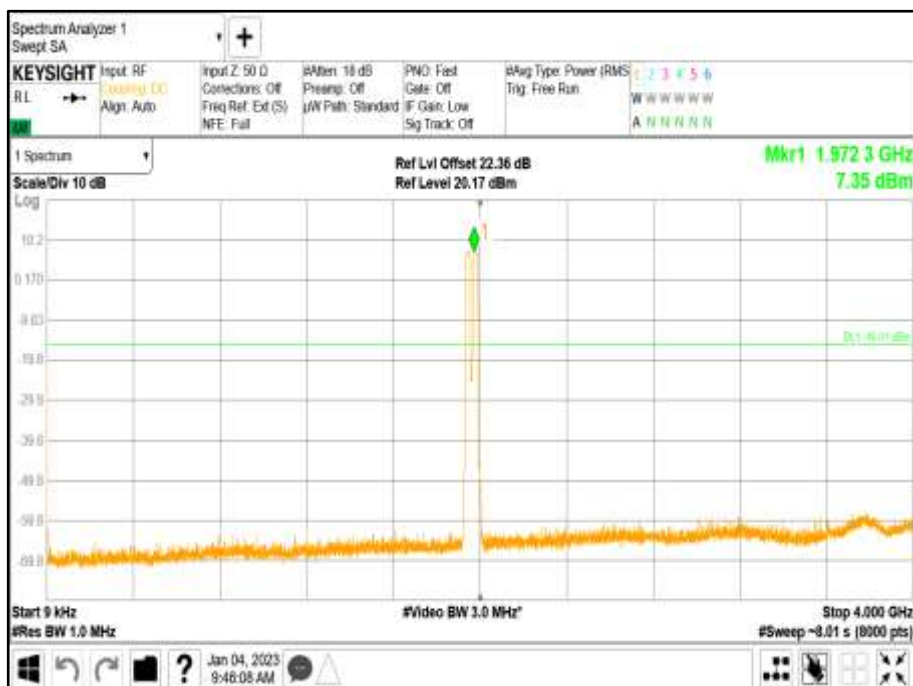




Antenna A - Modulation NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position B - Band 3 - Range 12000 to19950 MHz

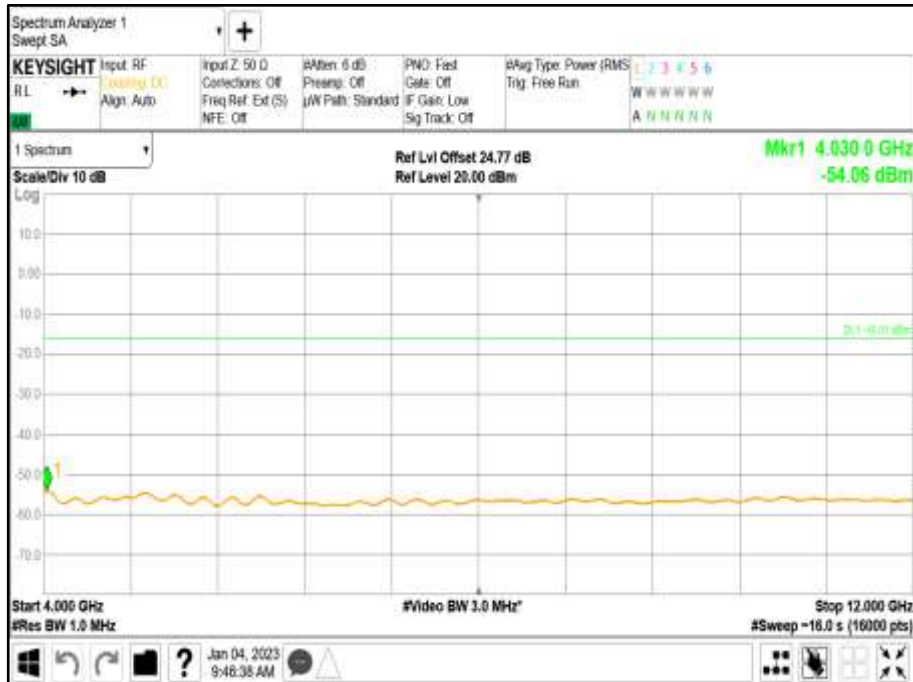


Antenna A - Modulation \* NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position B - Band 1 - Range 0.009 to 4000 MHz





Antenna A - Modulation \* NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz



Antenna A - Modulation \* NR25+NR25: QPSK - Carrier Bandwidth 25+25 MHz - Channel Position B - Band 3 - Range 12000 to 19950 MHz



|       |        |
|-------|--------|
| Limit | -16dBm |
|-------|--------|



### **SECTION 3**

#### **TEST EQUIPMENT USED**



### 3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

| Instrument                  | Manufacturer  | Type No.     | TE No.      | Calibration Period (months) | Calibration Due |
|-----------------------------|---------------|--------------|-------------|-----------------------------|-----------------|
| Spectrum Analyzer           | Keysight      | PXA N9030B   | MY57144347  | 12                          | 25/03/2023      |
| Thermometer / Refrigeration | VWR           | 89094-746    | 210697579   | 24                          | 13/08/2023      |
| PSU                         | Xantrex       | XKW60-50     | E00109862   | -                           | O/P Mon         |
| Attenuator (20dB)           | Mini-Circuits | BW-K10-2W44+ | -           | -                           | O/P Mon         |
| Switching Control Unit      | HP            | 11713A       | 3748A060876 | -                           | O/P Mon         |

O/P Mon – Output Monitored with Calibrated Equipment



### 3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

| Test Discipline                     | Frequency / Parameter      | MU               |            |
|-------------------------------------|----------------------------|------------------|------------|
| Conducted Maximum Peak Output Power | 30 MHz to 20 GHz Amplitude | ± 0.7 dB         |            |
| Conducted Emissions                 | 30 MHz to 20 GHz Amplitude | ± 2.1 dB         |            |
| Frequency Stability                 | 30 MHz to 2 GHz            | ± 5.0 Hz         |            |
| Occupied Bandwidth                  | Up to 20 MHz Bandwidth     | 5 MHz Bandwidth  | ± 11547 Hz |
|                                     |                            | 10 MHz Bandwidth | ± 23094 Hz |
|                                     |                            | 15 MHz Bandwidth | ± 34641 Hz |
|                                     |                            | 20 MHz Bandwidth | ± 46188 Hz |
| Band Edge                           | 30 MHz to 20 GHz Amplitude | ±0.8 dB          |            |
| Radiated Spurious Emissions         | 30 MHz to 1 GHz            | ± 5.2 dB         |            |
|                                     | 1 GHz to 40GHz             | ± 6.3 dB         |            |

#### Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the results of the compliance measurement and does not take into account measurement instrumentation uncertainty as defined in ANSI C63.26:2015 Clause 1.3.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8



## **SECTION 4**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**



#### 4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Certificate # 2955.19

This report relates only to the actual item/items tested.

Our A2LA Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our A2LA Accreditation.

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**ANNEX A**

**MODULE LIST**

| Configuration A/B |                 |         |             |
|-------------------|-----------------|---------|-------------|
| Product           | Product No      | R-State | Serial No   |
| CT11              | LPC 102 494/1   | R2A     | T01G4955060 |
| RD 2284 B25B66    | KRY 901 468/2   | R2C     | TD3W081157  |
| IRU 8848          | KRC 161 889/1   | R1C     | TD3F076678  |
| Software Version: |                 |         |             |
|                   | CXP 203 0045/25 | R15B19  |             |