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# Report On

FCC and ISED Testing of the  
Ericsson KRC 161 627/1 Radio 2219 B2 (1900 MHz) NR Base Station  
in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 24, Industry  
Canada RSS-GEN and Industry Canada RSS-133

COMMERCIAL-IN-CONFIDENCE

FCC: TA8AKRC161627-1

IC: 287AB-AS1616271

PREPARED BY

A handwritten signature in black ink, appearing to read 'D Fiedorowicz', written over a light blue textured background.

Daria Fiedorowicz  
Senior Administrator  
(Technical)

APPROVED BY

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Steve Scarfe  
Authorised Signatory

DATED

17 June 2020

Document 75949116 Report 06 Issue 1

June 2020



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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 | Radio 2219 B2 & KRC 161 627/1                                                                                                                                                      |
| IC Model Name                 | AS1616271                                                                                                                                                                          |
| Serial Number(s)              | D825905776                                                                                                                                                                         |
| Software Version              | CXP9013268/9 REV R78HT                                                                                                                                                             |
| Hardware Version              | R1B                                                                                                                                                                                |
| Test Specification/Issue/Date | FCC CFR 47 Part 2: 2019<br>FCC CFR 47 Part 24: 2019<br>Industry Canada RSS-GEN: Issue 5 March 2019<br>Amendment 1<br>Industry Canada RSS-133: Issue 6: January 2018<br>Amendment 1 |
| Test Plan                     | Test Plan FCC&IC NR legacy 20Q2                                                                                                                                                    |
| Start of Test                 | 10 June 2020                                                                                                                                                                       |
| Finish of Test                | 10 June 2020                                                                                                                                                                       |
| Name of Engineer(s)           | Neil Rousell                                                                                                                                                                       |
| Related Document(s)           | KDB 971168 D01 v02r02<br>KDB 662911 D01 v02r01                                                                                                                                     |

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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 FCC CFR 47 Part 24. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

---

Neil Rousell



## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 24, Industry Canada 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   |

### Measurement Uncertainty Decision Statement

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.



### 1.3 CONFIGURATION DESCRIPTION

| Configuration | RAT | No. Of carriers | Carrier Bandwidth                                   | Carrier Frequency Configuration (MHz) |                 |        |
|---------------|-----|-----------------|-----------------------------------------------------|---------------------------------------|-----------------|--------|
|               |     |                 |                                                     | Bottom                                | Middle          | Top    |
| 1             | NR  | 1               | 5 MHz – SCS 15kHz                                   | 1932.5                                | -               | 1987.5 |
|               | NR  | 1               | 10 MHz – SCS 15kHz                                  | 1935.0                                | -               | 1985.0 |
|               | NR  | 1               | 15 MHz – SCS 15kHz                                  | 1937.5                                | -               | 1982.5 |
|               | NR  | 1               | 20 MHz – SCS 15kHz                                  | 1940.0                                |                 | 1980.0 |
|               | NR  | 1               | 20 MHz – SCS 60kHz                                  | 1940.0                                |                 | 1980.0 |
| 2             | NR  | 2               | 20 MHz + 20 MHz SCS 15kHz using Carrier Aggregation | -                                     | 1950.0 + 1970.0 | -      |



#### 1.4 DECLARATION OF BUILD STATUS

|                                                                                          |                                                                                             |
|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <b>MAIN EUT</b>                                                                          |                                                                                             |
| <b>MANUFACTURING DESCRIPTION</b>                                                         | Radio Unit                                                                                  |
| <b>MANUFACTURER</b>                                                                      | Ericsson AB                                                                                 |
| <b>PRODUCT NAME</b>                                                                      | Radio 2219 B2                                                                               |
| <b>PART NUMBER</b>                                                                       | KRC 161 627/1                                                                               |
| <b>IC Model Name</b>                                                                     | AS1616271                                                                                   |
| <b>SERIAL NUMBER</b>                                                                     | D825905776                                                                                  |
| <b>HARDWARE VERSION</b>                                                                  | R1B                                                                                         |
| <b>SOFTWARE VERSION</b>                                                                  | CXP 901 3268/9 – R78HT                                                                      |
| <b>TRANSMITTER OPERATING RANGE</b>                                                       | 1930 - 1990 MHz                                                                             |
| <b>MODULATIONS</b>                                                                       | GSM: GMSK, AQPSK, 8PSK<br>WCDMA: QPSK, 16QAM, 64QAM<br>LTE & NR: QPSK, 16QAM, 64QAM, 256QAM |
| <b>ITU DESIGNATION OF EMISSION</b>                                                       | GSM: GMSK & AQPSK: 245KGXW, 245KG7W                                                         |
|                                                                                          | WCDMA 5 MHz BW channel: 5M00F9W                                                             |
|                                                                                          | LTE 1.4 MHz BW channel: 1M40F9W                                                             |
|                                                                                          | LTE 3 MHz BW channel: 3M00F9W                                                               |
|                                                                                          | LTE 5 MHz BW channel: 5M00F9W                                                               |
|                                                                                          | LTE 10 MHz BW channel: 10M0F9W                                                              |
|                                                                                          | LTE 15 MHz BW channel: 15M0F9W                                                              |
|                                                                                          | LTE 20 MHz BW channel: 20M0F9W                                                              |
|                                                                                          | NR 5 MHz BW channel: 5M00W7D                                                                |
|                                                                                          | NR 10 MHz BW channel: 10M0W7D                                                               |
|                                                                                          | NR 15 MHz BW channel: 15M0W7D                                                               |
|                                                                                          | NR 20 MHz BW channel: 20M0W7D                                                               |
|                                                                                          | NR 20+20 MHz CA channel: 40M0W7D                                                            |
| <b>OUTPUT POWER (RMS) (W or dBm)</b>                                                     | 2 ports, 80W per port                                                                       |
| <b>FCC ID</b>                                                                            | TA8AKRC161627-1                                                                             |
| <b>IC ID</b>                                                                             | 287AB-AS1616271                                                                             |
| <b>TECHNICAL DESCRIPTION<br/>(a brief description of the intended use and operation)</b> | Base station radio                                                                          |

Supports NB-IoT inband for LTE

Signature

Hua Yang

Date

2020-06-01

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

## 1.5 PRODUCT INFORMATION

### 1.5.1 Technical Description

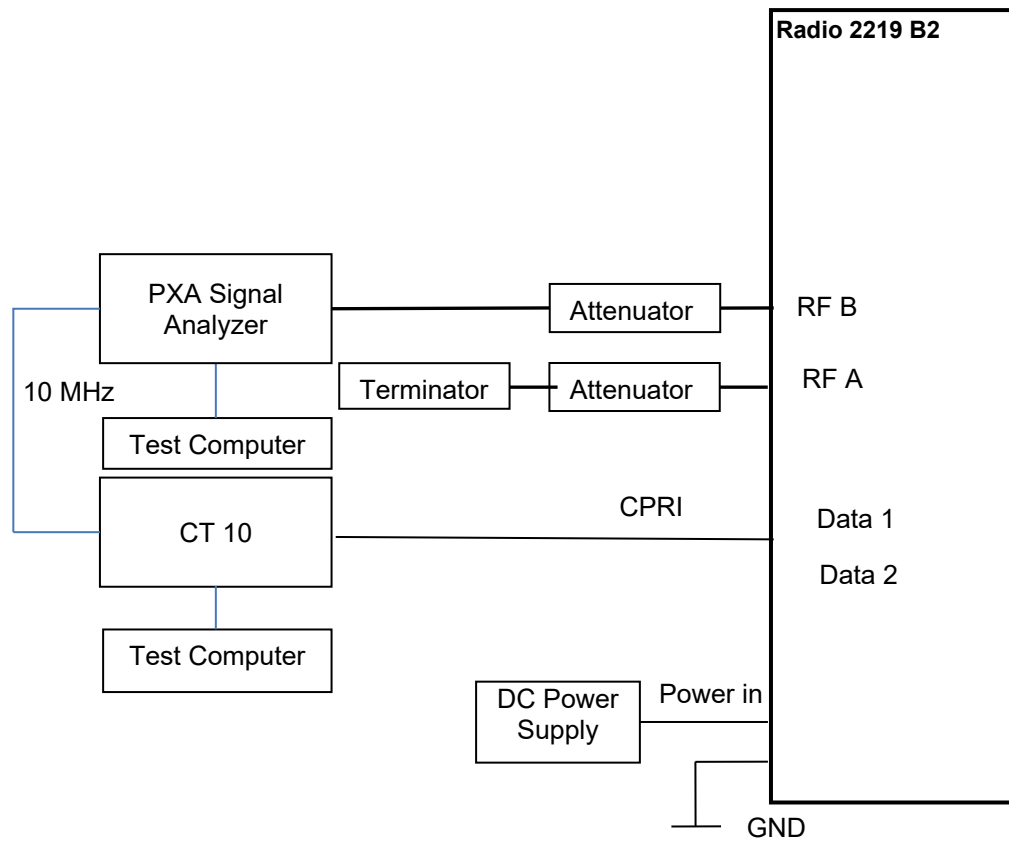
The Equipment Under Test (EUT) Radio 2219 B2 is an Ericsson AB Radio Unit working in the public mobile service 1900 MHz band which provides communication connections to 1900 MHz network. The Radio 2219 B2 operates from a -48V DC supply.

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



Equipment Under Test

## 1.6 TEST SETUP





## 1.7 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.

FCC Measurement Facility Registration Number  
90987 Octagon House, Fareham Test Laboratory

ISED Accreditation  
ISED#12669A Octagon House, Fareham Test Laboratory

| Test Name                                                       | Name of Engineer(s) |
|-----------------------------------------------------------------|---------------------|
| Broadband Transmitting Power Limits                             | Neil Rousell        |
| Occupied Bandwidth                                              | Neil Rousell        |
| Band Edge                                                       | Neil Rousell        |
| Transmitter Spurious Emissions                                  | Neil Rousell        |
| Maximum Peak Output Power and Peak to Average Ratio - Conducted | Neil Rousell        |

## 1.8 DEVIATION FROM THE STANDARD

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

## 1.9 MODIFICATION RECORD

No modifications were made to the EUT during testing.



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

### 2.1.2 Date of Test and Modification State

10 June 2020 - 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 23.1°C  
Relative Humidity 48.3%

### 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.

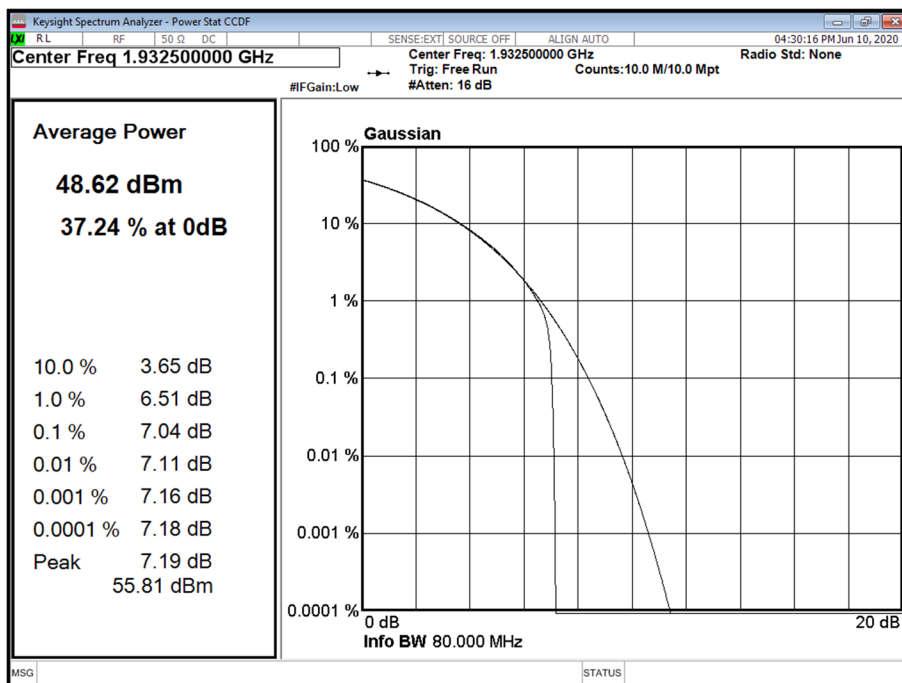
### 2.1.6 Test Results

Configuration 1

Maximum Output Power 49 dBm

| Antenna | NR Modulation | NR Carrier Bandwidth | Peak to Average Ratio (PAR) / Output Power |               |         |
|---------|---------------|----------------------|--------------------------------------------|---------------|---------|
|         |               |                      | Channel Position B                         |               |         |
|         |               |                      | PAR (dB)                                   | Average Power |         |
|         |               |                      |                                            | dBm           | dBm/MHz |
| A       | QPSK          | 5.0 MHz 15 kHz SCS   | 7.04                                       | 48.59         | 42.64   |
| A       | QPSK          | 10.0 MHz 15 kHz SCS  | -                                          | 48.65         | -       |
| A       | QPSK          | 15.0 MHz 15 kHz SCS  | -                                          | 48.68         | -       |
| A       | QPSK          | 20.0 MHz 15 kHz SCS  | -                                          | 48.71         | -       |
| A       | QPSK          | 20.0 MHz 60 kHz SCS  | -                                          | 48.83         | -       |

# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B



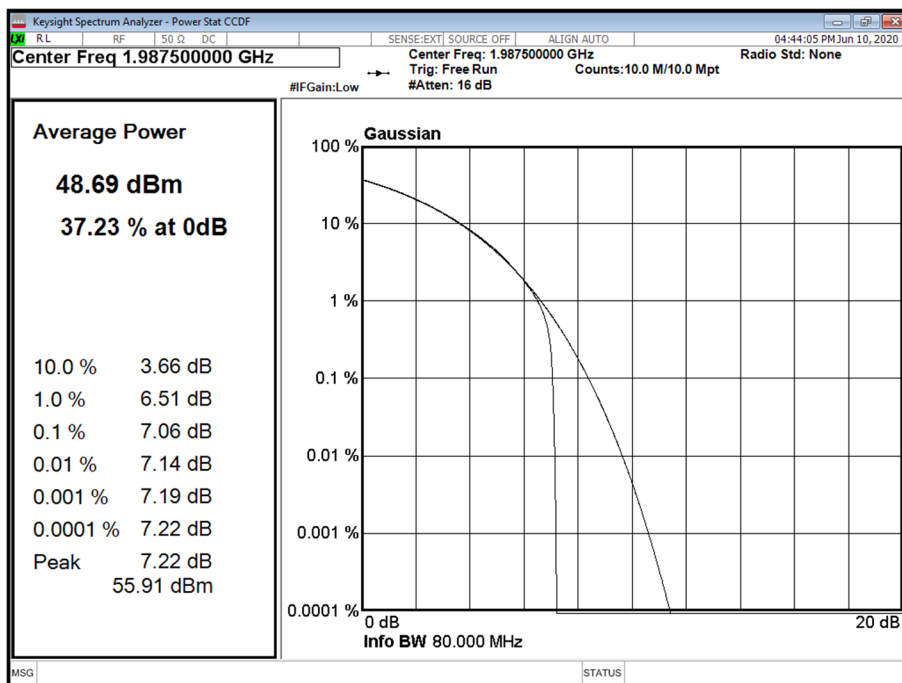
## Configuration 1

Maximum Output Power 49 dBm

| Antenna | NR Modulation | NR Carrier Bandwidth | Peak to Average Ratio (PAR) / Output Power |               |         |
|---------|---------------|----------------------|--------------------------------------------|---------------|---------|
|         |               |                      | Channel Position T                         |               |         |
|         |               |                      | PAR (dB)                                   | Average Power |         |
|         |               |                      |                                            | dBm           | dBm/MHz |
| A       | QPSK          | 5.0 MHz 15 kHz SCS   | 7.06                                       | 48.66         | 42.70   |
| A       | QPSK          | 10.0 MHz 15 kHz SCS  | -                                          | 48.66         | -       |
| A       | QPSK          | 15.0 MHz 15 kHz SCS  | -                                          | 48.63         | -       |
| A       | QPSK          | 20.0 MHz 15 kHz SCS  | -                                          | 48.82         | -       |
| A       | QPSK          | 20.0 MHz 60 kHz SCS  | -                                          | 48.79         | -       |



# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T



## Configuration 2

Maximum Output Power 49 dBm

| Antenna | NR Modulation | NR Carrier Bandwidth             | Peak to Average Ratio (PAR) / Output Power |               |         |
|---------|---------------|----------------------------------|--------------------------------------------|---------------|---------|
|         |               |                                  | Channel Position M                         |               |         |
|         |               |                                  | PAR (dB)                                   | Average Power |         |
|         |               |                                  |                                            | dBm           | dBm/MHz |
| A       | QPSK          | 20.0 + 20.0 MHz<br>CA 15 kHz SCS | -                                          | 49.02         | -       |

| Limit                 |                              |
|-----------------------|------------------------------|
| Peak Power            | ≤ 1640 W/MHz or ≤ +62.15 dBm |
| Peak to Average Ratio | 13 dB                        |



## 2.2 OCCUPIED BANDWIDTH

### 2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049  
FCC CFR 47 Part 24, Clause 24.238 (b)  
Industry Canada RSS-GEN, Clause 6.7  
Industry Canada RSS-133, Clause 6.5

### 2.2.2 Date of Test and Modification State

10 June 2020 - 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 23.1°C  
Relative Humidity 48.3%

### 2.2.5 Test Method

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

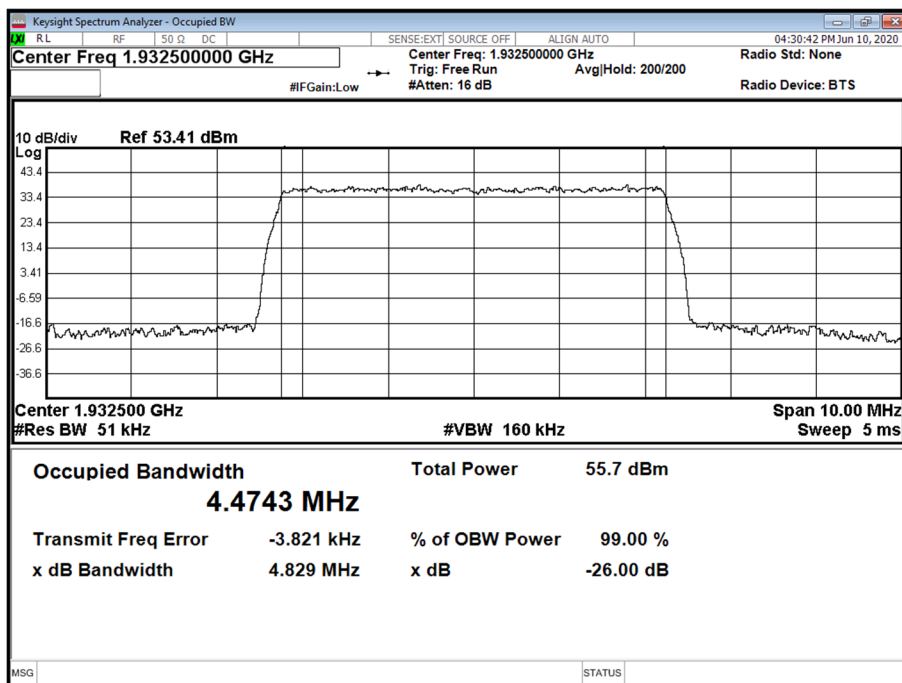
### 2.2.6 Test Results

Configuration 1

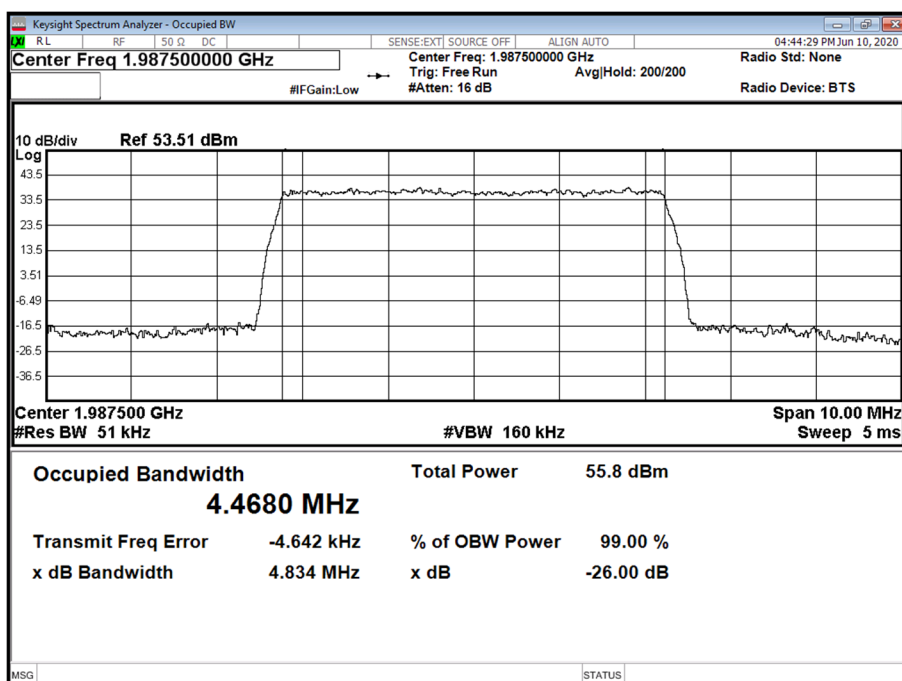
Maximum Output Power 49 dBm

| Antenna | NR Modulation | NR Carrier Bandwidth | Result (KHz)       |                  |                    |                  |
|---------|---------------|----------------------|--------------------|------------------|--------------------|------------------|
|         |               |                      | Channel Position B |                  | Channel Position T |                  |
|         |               |                      | Occupied Bandwidth | -26 dB Bandwidth | Occupied Bandwidth | -26 dB Bandwidth |
| A       | QPSK          | 5.0 MHz 15 kHz SCS   | 4,474.28           | 4,829.11         | 4,468.00           | 4,833.96         |
| A       | QPSK          | 10.0 MHz 15 kHz SCS  | 9,291.64           | 9,787.55         | 9,293.27           | 9,768.42         |
| A       | QPSK          | 15.0 MHz 15 kHz SCS  | 14,141.23          | 14,785.30        | 14,131.12          | 14,800.75        |
| A       | QPSK          | 20.0 MHz 15 kHz SCS  | 18,900.54          | 19,700.49        | 18,908.23          | 19,736.61        |
| A       | QPSK          | 20.0 MHz 60 kHz SCS  | 17,236.88          | 19,513.33        | 17,235.18          | 19,527.90        |

# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B

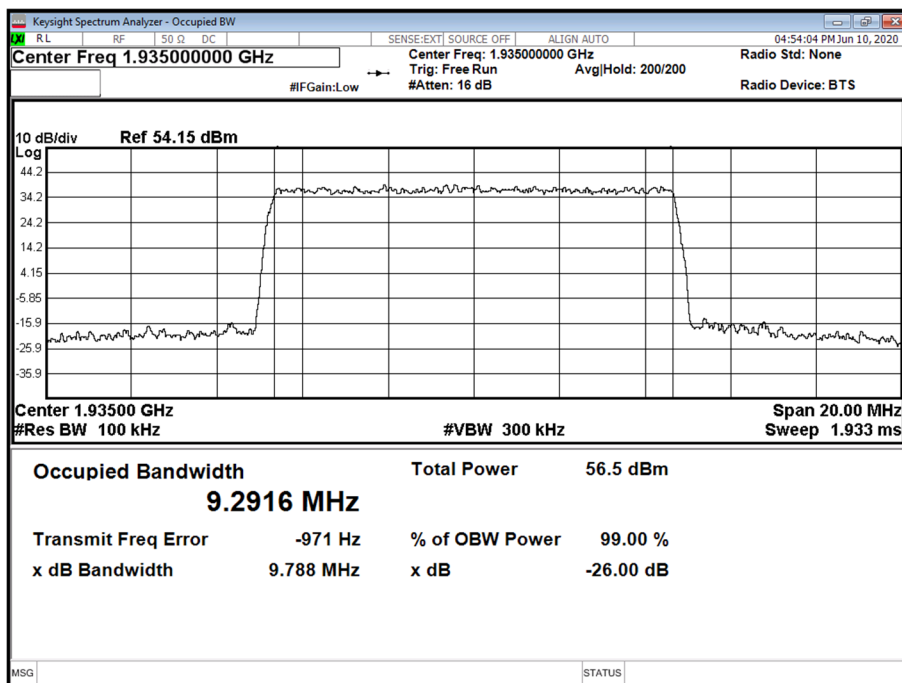


# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T

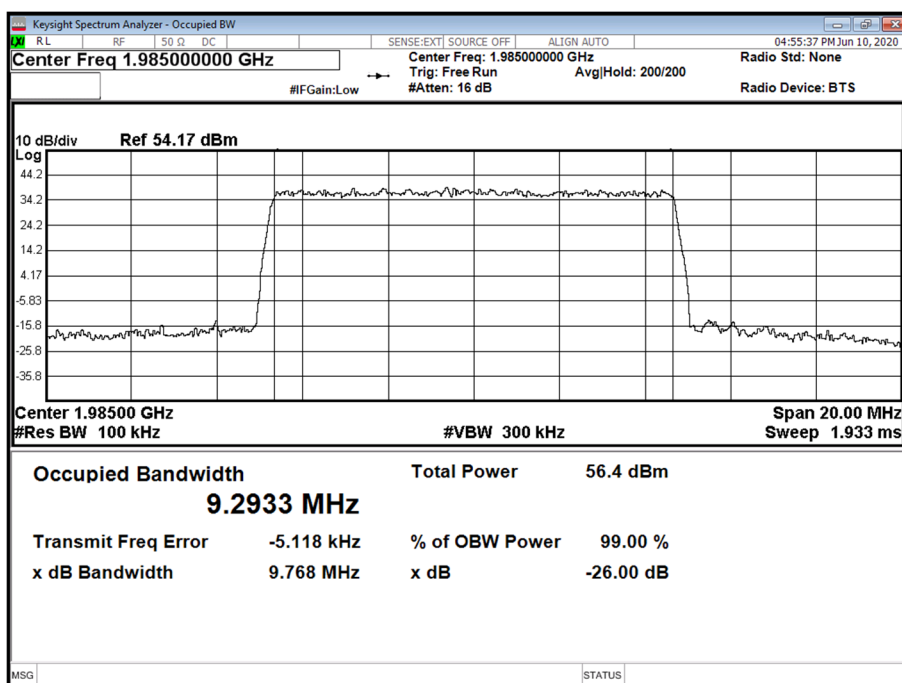




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B

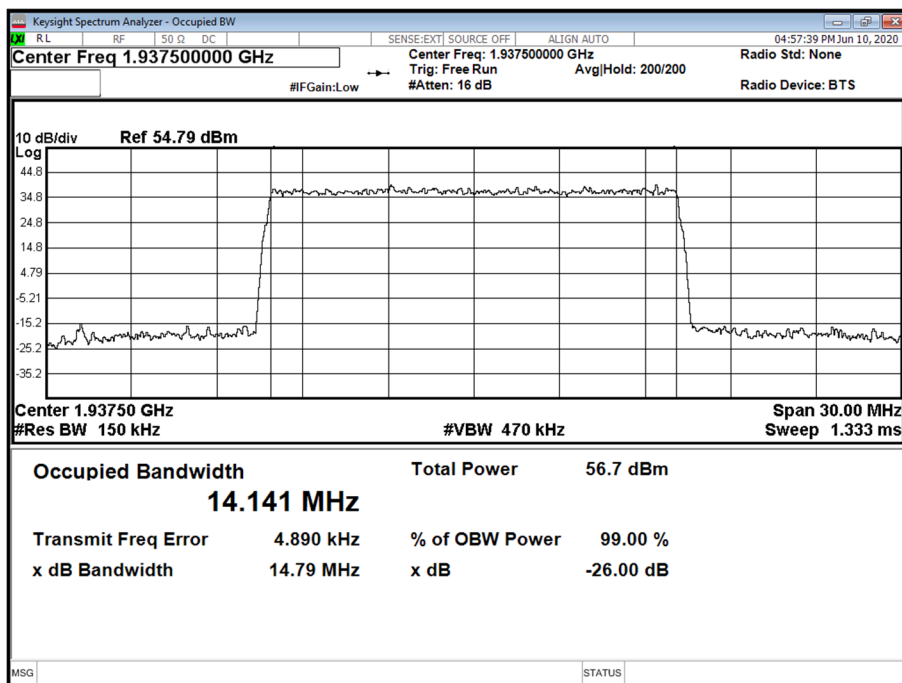


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T

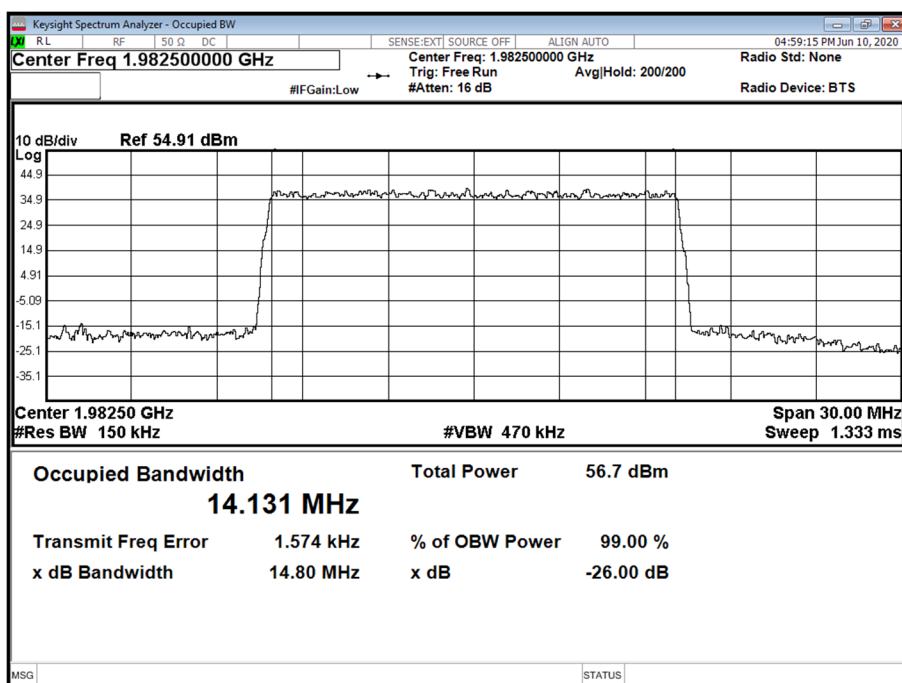




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B

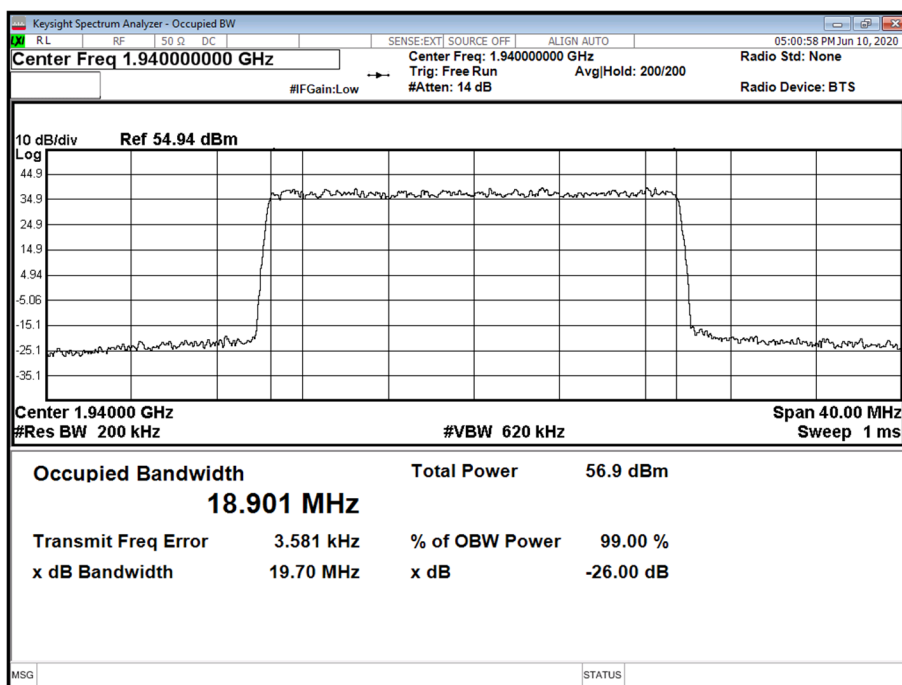


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T

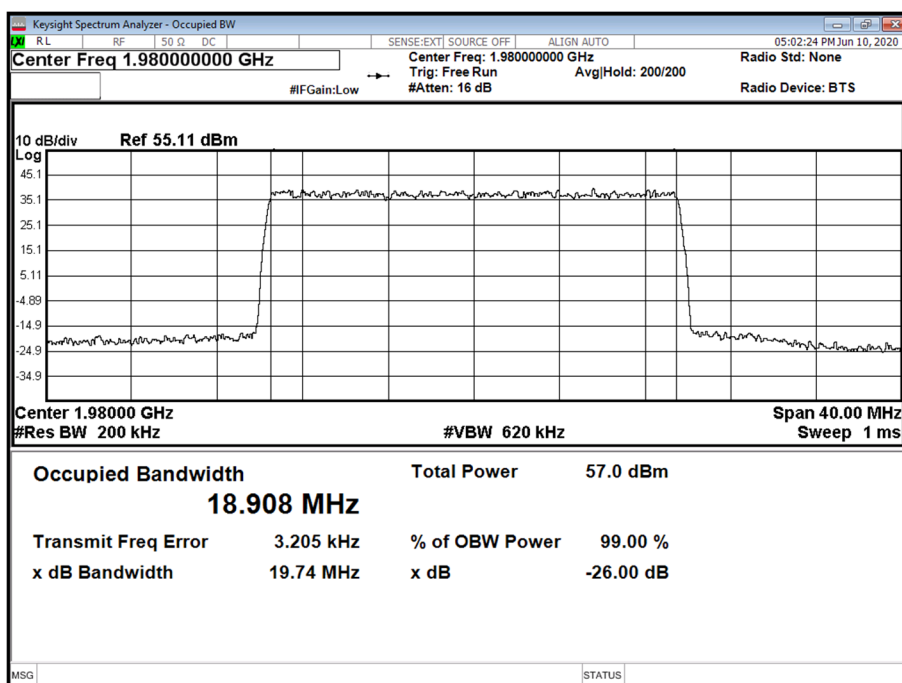




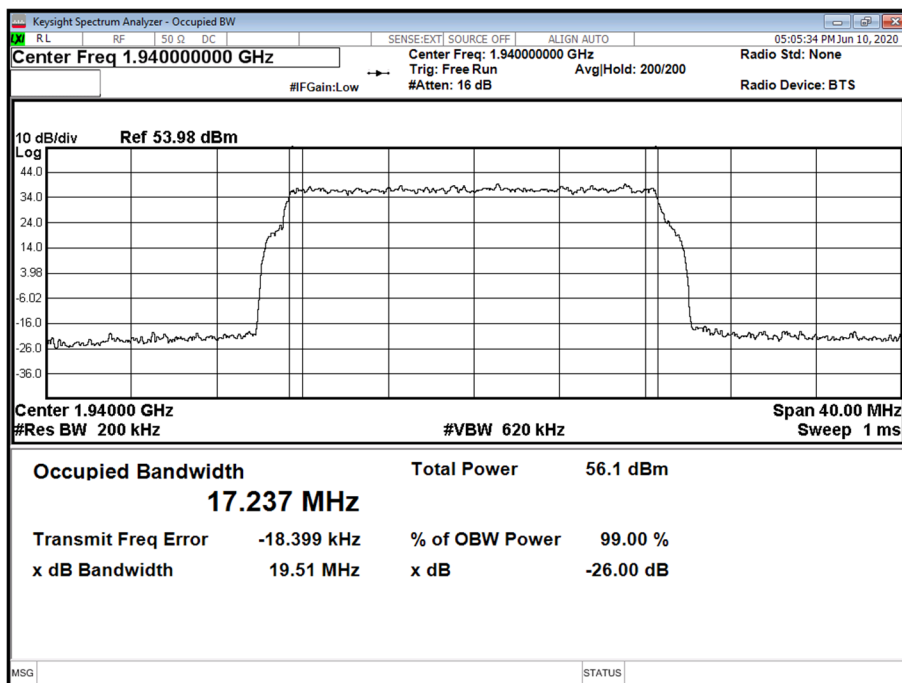
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B



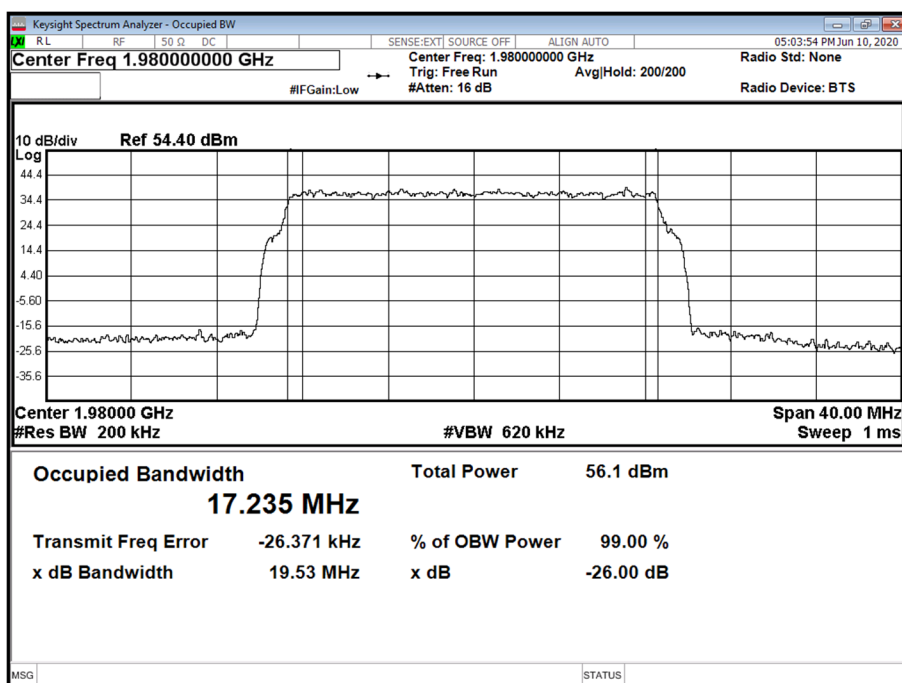
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T



# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position B



# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position T





## Configuration 2

Maximum Output Power 49 dBm

| Antenna | NR Modulation | NR Carrier Bandwidth          | Result (KHz)       |                  |
|---------|---------------|-------------------------------|--------------------|------------------|
|         |               |                               | Channel Position M |                  |
| A       | QPSK          | 20.0 + 20.0 MHz CA 15 kHz SCS | Occupied Bandwidth | -26 dB Bandwidth |
|         |               |                               | 38,770.56          | 40,015.55        |

Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 + 20.0 MHz CA 15 kHz SCS - Channel Position M

