



No.I19Z62127-WMD01



# TEST REPORT

No.I19Z62127-WMD01

for

**Remote Radio Unit AIR 6488 B41**

**FCC ID: TA8CKRD901108**

**In accordance with FCC CFR 47 Part 27**

**Issued Date: 2019-12-24**

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No.I19Z62127-WMD01

## **REPORT HISTORY**

| Report Number   | Revision | Description             | Issue Date |
|-----------------|----------|-------------------------|------------|
| I19Z62127-WMD01 | Rev.0    | 1 <sup>st</sup> edition | 2019-12-24 |

Note: the latest revision of the test report supersedes all previous version.

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## **1. Test Laboratory**

### **1.1. Introduction & Accreditation**

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

### **1.2. Testing Location**

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China 100191

Location 2: CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,  
Haidian District, Beijing, P. R. China 100191

**1.3. Project date**

Testing Start Date: 2019-12-11

Testing End Date: 2019-12-20

**1.4. Signature**

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Dong Yuan

(Prepared this test report)



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Zhou Yu

(Reviewed this test report)



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Liu Baodian

(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Ericsson (China) Communications Company Ltd.  
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### **2.2. Manufacturer Information**

Company Name: Ericsson AB  
Address /Post: Isafjordsgatan 10, 164 80 Stockholm  
Sweden  
Contact: /  
Email: /  
Telephone: /

### 3. Equipment Under Test (EUT)

#### 3.1. About EUT

|                                               |                                                                                                |
|-----------------------------------------------|------------------------------------------------------------------------------------------------|
| Description                                   | Remote Radio Unit                                                                              |
| Product Name                                  | AIR 6488 B41                                                                                   |
| Product Number                                | KRD 901 108/2, KRD 901 108/21, KRD 901 108/1, KRD 901 108/11 (note)                            |
| FCC ID                                        | TA8CKRD901108                                                                                  |
| Antenna                                       | YES                                                                                            |
| Antenna Gain                                  | 23dBi                                                                                          |
| Output power                                  | Maximum 32.73dBm (1.875W) per port of LTE 10M<br>Maximum 34.95dBm (3.125W) per port of LTE 20M |
| Power source                                  | -48V DC                                                                                        |
| Serial Number                                 | D828634051                                                                                     |
| Hardware Version                              | R1D                                                                                            |
| Software Version                              | UP: CXP2010053/1_R53B30; Radio SW: CXP2030020%5_R22B24                                         |
| Frequency range                               | TX/RX: 2496MHz-2690MHz                                                                         |
| Number of Antenna ports                       | 64TX /64 RX ports                                                                              |
| Maximum RF bandwidth (IBW)                    | 100MHz                                                                                         |
| Maximum Number of supported carriers per port | 3 carriers                                                                                     |
| Supported modulations                         | LTE: QPSK, 16QAM, 64QAM and 256QAM                                                             |
| Supported Channel bandwidth                   | LTE: 10MHz and 20MHz                                                                           |
| Date of receipt                               | 2019-12-10                                                                                     |

Note: The differences between the 4 variants are as below, and others are same.

KRD 901 108/2 with un-security software and RDNB board for testing purpose

KRD 901 108/21 with security software and RDNB board for testing purpose

KRD 901 108/1 with un-security software and antenna

KRD 901 108/11 with security software and antenna

### **3.2. General Description**

The Equipment Under Test (EUT) AIR 6488 B41 is an Ericsson Radio Unit working in the public mobile service 2496-2690 MHz band which provides communication connections to 2496-2690 MHz network. The AIR 6488 B41 operates from a -48V DC supply.

The EUT includes 64 TX/RX ports and it can be configured to transmit in MIMO mode for LTE carriers, and MIMO mode for LTE was used for measurements as the worst configuration. The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

A full technical description can be found in the Manufacturer's documentation.

### 3.3. Configuration Description

The following settings were used to represent all traffic scenarios. The output power was measured on the bottom, middle and top channel of all applicable antenna ports. By measuring the output power of QPSK, 16QAM, 64QAM and 256QAM for LTE on one of the antenna ports, it was determined that QPSK was the worst case modulation scheme and was used for all testing.

Complete testing was carried out on the worst case antenna port which was established as being the highest output power from the applicable measured ports on worst case modulation scheme. This antenna port was 55 for LTE mode.

The settings below were used for all measurements unless otherwise noted:

#### LTE

| Configuration          | Carrier    | Channel Bandwidth (MHz) | Carrier Frequency Configuration (MHz) |                |                |
|------------------------|------------|-------------------------|---------------------------------------|----------------|----------------|
|                        |            |                         | Bottom                                | Middle         | Top            |
| LTE-MIMO-1C<br>10M     | 1 Carrier  | LTE 10 MHz              | 2501.0                                | 2593.0         | 2685.0         |
| LTE-MIMO-1C<br>20M     | 1 Carrier  | LTE 20MHz               | 2506.0                                | 2593.0         | 2680.0         |
| LTE-MIMO-2C<br>10M     | 2 Carriers | LTE 10 MHz              | 2501+2591                             | 2548+2638      | 2595+2685      |
| LTE-MIMO-2C<br>20M     | 2 Carriers | LTE 20MHz               | 2506+2586                             | 2553+2633      | 2600+2680      |
| LTE-MIMO-3C<br>10M     | 3 Carriers | LTE 10 MHz              | 2501+2511+2591                        | 2548+2558+2638 | 2595+2605+2685 |
| LTE-MIMO-3C<br>20M     | 3 Carriers | LTE 20MHz               | 2506+2526+2586                        | 2553+2573+2633 | 2600+2620+2680 |
| LTE-MIMO-1C-<br>BE 10M | 1 Carrier  | LTE 10 MHz              | 2501.0                                | N/A            | 2685.0         |
| LTE-MIMO-1C-<br>BE 20M | 1 Carrier  | LTE 20MHz               | 2506.0                                | N/A            | 2680.0         |
| LTE-MIMO-2C-<br>BE 10M | 2 Carriers | LTE 10 MHz              | 2501+2511                             | N/A            | 2675+2685      |
| LTE-MIMO-2C-<br>BE 20M | 2 Carriers | LTE 20MHz               | 2506+2526                             | N/A            | 2660+2680      |

N/A – Not Applicable

## 4. Reference Documents

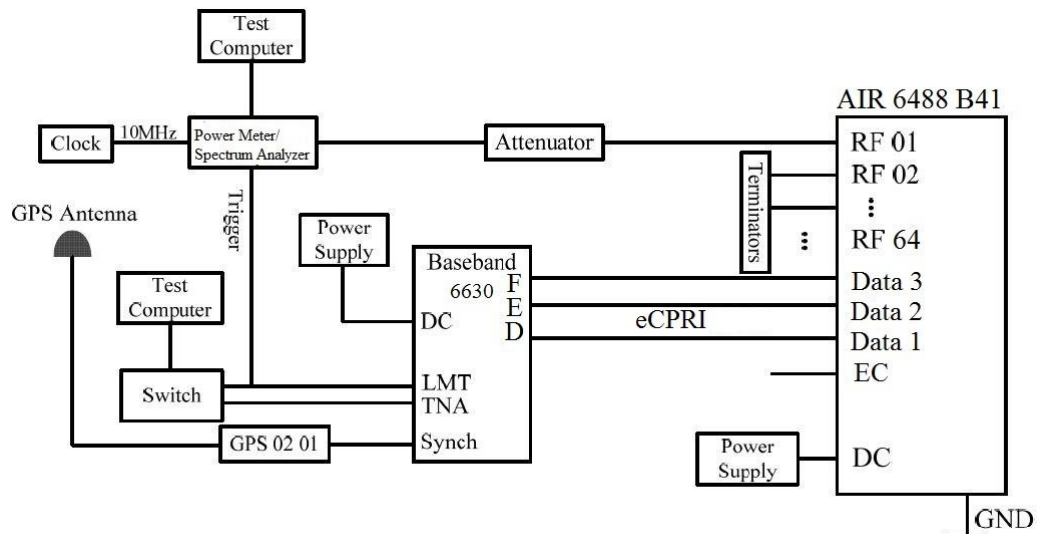
### 4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

| Reference      | Title                                                                               | Version         |
|----------------|-------------------------------------------------------------------------------------|-----------------|
| FCC Part 27    | MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES                                      | 10-1-18 Edition |
| FCC Part 2     | FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS       | 10-1-18 Edition |
| ANSI/TIA-603-E | Land Mobile FM or PM Communications Equipment Measurement and Performance Standards | 2016            |
| KDB 971168 D01 | MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS             | v03r01          |
| KDB 662911 D01 | Emissions Testing of Transmitters with Multiple Outputs in the Same Band            | v02r01          |

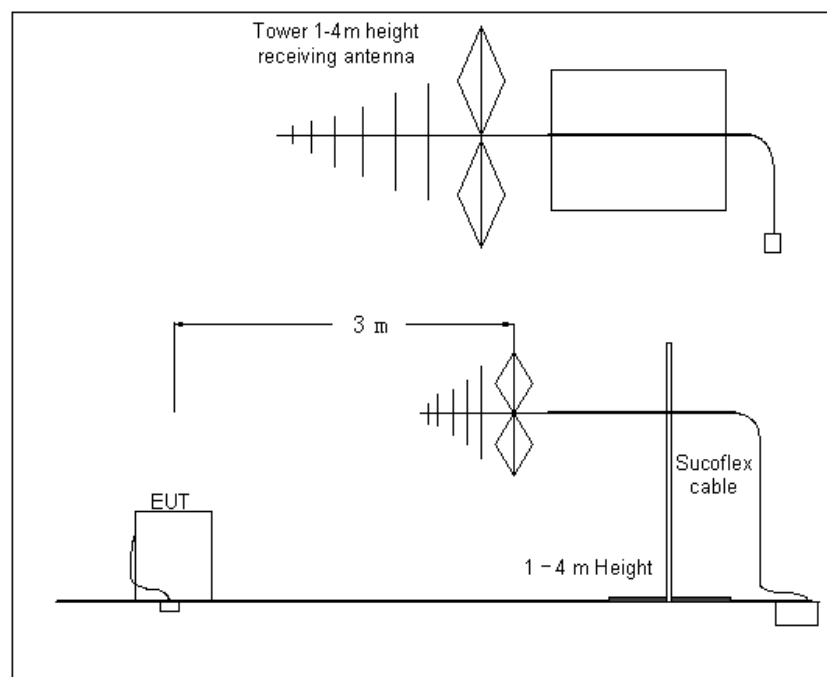
## 5. TEST SETUP

### Test Setup, Conducted Measurement:



| No. | Auxiliary Equipment | Model Type           | Version |
|-----|---------------------|----------------------|---------|
| 1   | Test Computer       | HP EliteBook 8540w   | -       |
| 2   | Baseband 6630       | KDU 137 848/1        | R2C     |
| 3   | Power supply unit   | PCR2000M             | -       |
| 4   | Terminator          | SHX 6G               | -       |
| 5   | Attenuator          | Aeroflex / Weinschel | -       |

### Test Setup, Radiated Measurement:



## 6. LABORATORY ENVIRONMENT

**Control room / conducted chamber** did not exceed following limits along the EMC testing:

|                          |                            |
|--------------------------|----------------------------|
| Temperature              | Min. = 15 °C, Max. = 35 °C |
| Relative humidity        | Min. = 20 %, Max. = 80 %   |
| Shielding effectiveness  | > 110 dB                   |
| Electrical insulation    | > 2 M $\Omega$             |
| Ground system resistance | < 0.5 $\Omega$             |

**Semi-anechoic chamber**(10 meters×6.7 meters×6.15 meters) did not exceed following limits along the EMC testing:

|                                                 |                                         |
|-------------------------------------------------|-----------------------------------------|
| Temperature                                     | Min. = 15 °C, Max. = 30 °C              |
| Relative humidity                               | Min. = 35 %, Max. = 60 %                |
| Shielding effectiveness                         | > 100 dB                                |
| Electrical insulation                           | > 2 M $\Omega$                          |
| Ground system resistance                        | < 0.5 $\Omega$                          |
| Normalised site attenuation (NSA)               | < $\pm 3.5$ dB, 3 m distance            |
| Site voltage standing-wave ratio ( $S_{VSWR}$ ) | Between 0 and 6 dB, from 1GHz to 18GHz  |
| Uniformity of field strength                    | Between 0 and 6 dB, from 80 to 3000 MHz |

## 7. SUMMARY OF TEST RESULTS

| Items | Test Name                                                               | Clause in FCC rules | Verdict |
|-------|-------------------------------------------------------------------------|---------------------|---------|
| 1     | Maximum Output Power and Peak to Average Power Ratio - EIRP calculation | 27.50(h),<br>2.1046 | Pass    |
| 2     | Occupied Bandwidth                                                      | 27.53(m),<br>2.1049 | Pass    |
| 3     | Spurious Emissions at Band Edge                                         | 27.53(m),<br>2.1051 | Pass    |
| 4     | Conducted Spurious Emission                                             | 27.53(m),<br>2.1051 | Pass    |
| 5     | Radiated Spurious Emission                                              | 27.53(m),<br>2.1053 | Pass    |
| 6     | Frequency Stability                                                     | 27.54,<br>2.1055    | Pass    |

### 7.1. Explanation of re-use of test data

The Equipment Under Test (EUT) AIR 6488 B41 has the same RF design as product of AIR 6488 B41 (FCC ID: TA8CKRD901108, test report I18Z62307-WMD04) according to the declaration provided by the applicant. Spot check measurements were performed on this device and the spot check test results are consistent with basic model. Maximum Output Power test results of LTE 20MHz of port 1-16 and 33-48 and Frequency Stability test results are derived from test report I18Z62307-WMD04.

## 8. Test Equipment Utilized

| NO. | Description       | TYPE            | series number | MANUFACTURE                | CAL DUE DATE |
|-----|-------------------|-----------------|---------------|----------------------------|--------------|
| 1   | AC Power Supply   | PCR2000M        | PJ000583      | Kikusui                    | 2020-02-22   |
| 2   | 40dB Attenuator   | 66-40-33        | CD4019        | Aeroflex / Weinschel       | -            |
| 3   | 40dB Attenuator   | TSG150R-4-40N11 | 1511040001    | Nanjing Jiexi Technologies | -            |
| 4   | Spectrum Analyzer | N9030           | MY57142378    | Keysight                   | 2020-02-02   |
| 5   | EMI Antenna       | 3117            | 00119024      | ETS                        | 2020-02-25   |
| 6   | Preamplifier      | MY39500449      | 83006A        | Agilent                    | /            |
| 7   | EMI Antenna       | VULB9163        | 9163-514      | Schwarzbeck                | 2020-01-27   |
| 8   | Preamplifier      | SCU18           | 102249        | R&S                        | /            |
| 9   | Test Receiver     | ESU26           | 100376        | R&S                        | 2020-11-26   |
| 10  | Test Receiver     | FSV40           | 101047        | R&S                        | 2020-06-16   |
| 11  | Preamplifier      | SCU40           | 1707/1708     | R&S                        | /            |
| 12  | EMI Antenna       | 3116            | 2661          | ETS                        | 2020-11-14   |

## 9. MEASUREMENT UNCERTAINTY

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

| Test Discipline                     | Measurement Uncertainty |
|-------------------------------------|-------------------------|
| Conducted Maximum Peak Output Power | 0.5dB                   |
| Occupied Bandwidth                  | 1.1Hz                   |
| Conducted Spurious Emissions        | 2.3dB                   |
| Band Edge                           | 2.3dB                   |
| Radiated Spurious Emissions         | 5.4dB                   |
| Frequency Stability                 | $<\pm 1 \times 10^{-7}$ |

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Maximum Output Power and Peak to Average Power Ratio - EIRP calculation**

#### **A.1.1 Reference**

FCC CFR 47 Part 2, Clause 2.1046

FCC CFR 47 Part 27, Clause 27.50(h)

#### **A.1.2 Method of Measurements**

During the process of testing, the EUT was configured to transmit on maximum power and proper modulation. The transmitter power shall be measured in terms of a root-mean-square (RMS) average value. In case of the EUT was configured to MIMO mode, since the EUT transmits on all antennas simultaneously in the same frequency range, using the Measure-and-Sum approach, the output power at all antennas were tested, and the total output power were then summed mathematically in linear power units according to FCC KDB 662911 D01.

A peak to average ratio measurement is performed at the conducted ports of the EUT for single carrier for single RAT mode. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) was used and 0.1% probability value recorded.

Two polarizations are generated for the beam, 32 ports are used to create each polarization, the antenna gain for each polarization is declared as 23 dBi. Therefore the EIRP for each polarization is calculated as the sum of the power over 32 ports plus the antenna gain. This calculation is applied for each polarization and then each polarization EIRP is summed to calculate the overall EIRP.

#### **A.1.3 Limit**

Output Power:

$$\text{EIRP} \leq 33 \text{ dBW} + 10\log(X/Y) \text{ dBW} + 10 \log(360/\text{Beamwidth}) \text{ dBW}$$

X is the actual channel width in MHz

Y = 5.5 or 6 MHz

Beamwidth = 12°

Peak to Average Ratio:  $\leq 13$  dB

### A.1.4 Measurement result

Configuration LTE-MIMO-1C (1LTE 10MHz QPSK)

Maximum Output Power 27.96dBm per port

| Port                    | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|-------------------------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|                         |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|                         |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 1                       | QPSK/10.0                                    | 27.17                                      | 17.17              | 8.56        | 27.06              | 17.10              | 8.56        | 27.05              | 17.06              | 8.57        |
| 2                       | QPSK/10.0                                    | 27.43                                      | 17.43              | 8.54        | 27.39              | 17.40              | 8.54        | 27.45              | 17.46              | 8.51        |
| 3                       | QPSK/10.0                                    | 27.11                                      | 17.11              | 8.56        | 27.07              | 17.03              | 8.58        | 27.14              | 17.14              | 8.54        |
| 4                       | QPSK/10.0                                    | 27.23                                      | 17.24              | 8.55        | 27.21              | 17.21              | 8.56        | 27.34              | 17.33              | 8.50        |
| 5                       | QPSK/10.0                                    | 27.54                                      | 17.52              | 8.49        | 27.52              | 17.51              | 8.50        | 27.67              | 17.67              | 8.39        |
| 6                       | QPSK/10.0                                    | 27.70                                      | 17.70              | 8.47        | 27.63              | 17.63              | 8.47        | 27.82              | 17.83              | 8.49        |
| 7                       | QPSK/10.0                                    | 27.67                                      | 17.67              | 8.47        | 27.63              | 17.63              | 8.49        | 27.83              | 17.83              | 8.45        |
| 8                       | QPSK/10.0                                    | 27.59                                      | 17.59              | 8.48        | 27.62              | 17.62              | 8.50        | 27.88              | 17.87              | 8.47        |
| 9                       | QPSK/10.0                                    | 27.01                                      | 17.01              | 8.55        | 27.10              | 17.11              | 8.55        | 26.96              | 16.96              | 8.54        |
| 10                      | QPSK/10.0                                    | 26.75                                      | 16.76              | 8.56        | 26.82              | 16.82              | 8.56        | 26.74              | 16.74              | 8.55        |
| 11                      | QPSK/10.0                                    | 26.69                                      | 16.69              | 8.56        | 26.68              | 16.69              | 8.56        | 26.60              | 16.61              | 8.56        |
| 12                      | QPSK/10.0                                    | 26.53                                      | 16.53              | 8.57        | 26.74              | 16.74              | 8.56        | 26.69              | 16.69              | 8.55        |
| 13                      | QPSK/10.0                                    | 27.43                                      | 17.41              | 8.49        | 27.42              | 17.42              | 8.48        | 27.59              | 17.59              | 8.49        |
| 14                      | QPSK/10.0                                    | 26.82                                      | 16.83              | 8.61        | 28.25              | 18.25              | 8.59        | 28.25              | 18.25              | 8.51        |
| 15                      | QPSK/10.0                                    | 27.25                                      | 17.26              | 8.47        | 27.19              | 17.18              | 8.49        | 27.27              | 17.27              | 8.47        |
| 16                      | QPSK/10.0                                    | 27.15                                      | 17.14              | 8.47        | 27.08              | 17.08              | 8.49        | 27.21              | 17.20              | 8.80        |
| 17                      | QPSK/10.0                                    | 28.27                                      | 18.27              | 8.61        | 27.82              | 17.82              | 8.58        | 27.82              | 17.82              | 8.52        |
| 18                      | QPSK/10.0                                    | 28.11                                      | 18.11              | 8.62        | 28.07              | 18.07              | 8.59        | 28.12              | 18.12              | 8.52        |
| 19                      | QPSK/10.0                                    | 27.71                                      | 17.71              | 8.47        | 28.14              | 18.14              | 8.58        | 28.14              | 18.14              | 8.52        |
| 20                      | QPSK/10.0                                    | 27.66                                      | 17.66              | 8.59        | 27.73              | 17.73              | 8.57        | 27.81              | 17.81              | 8.50        |
| 21                      | QPSK/10.0                                    | 27.68                                      | 17.68              | 8.69        | 27.65              | 17.65              | 8.65        | 27.82              | 17.82              | 8.56        |
| 22                      | QPSK/10.0                                    | 27.04                                      | 17.04              | 8.68        | 27.08              | 17.08              | 8.63        | 27.44              | 17.44              | 8.54        |
| 23                      | QPSK/10.0                                    | 27.92                                      | 17.93              | 8.67        | 27.92              | 17.92              | 8.63        | 28.00              | 18.00              | 8.55        |
| 24                      | QPSK/10.0                                    | 27.21                                      | 17.21              | 8.68        | 27.17              | 17.17              | 8.64        | 27.33              | 17.33              | 8.55        |
| 25                      | QPSK/10.0                                    | 28.15                                      | 18.15              | 8.61        | 28.06              | 18.07              | 8.59        | 28.06              | 18.06              | 8.51        |
| 26                      | QPSK/10.0                                    | 28.15                                      | 18.15              | 8.59        | 28.15              | 18.15              | 8.57        | 28.33              | 18.33              | 8.52        |
| 27                      | QPSK/10.0                                    | 28.05                                      | 18.05              | 8.60        | 28.05              | 18.05              | 8.59        | 28.18              | 18.18              | 8.53        |
| 28                      | QPSK/10.0                                    | 27.76                                      | 17.76              | 8.61        | 27.48              | 17.46              | 8.59        | 27.79              | 17.79              | 8.50        |
| 29                      | QPSK/10.0                                    | 27.51                                      | 17.51              | 8.59        | 27.51              | 17.51              | 8.64        | 27.58              | 17.58              | 8.57        |
| 30                      | QPSK/10.0                                    | 27.51                                      | 17.52              | 8.68        | 27.50              | 17.51              | 8.66        | 27.63              | 17.63              | 8.57        |
| 31                      | QPSK/10.0                                    | 27.75                                      | 17.75              | 8.68        | 27.71              | 17.71              | 8.64        | 27.79              | 17.79              | 8.56        |
| 32                      | QPSK/10.0                                    | 27.54                                      | 17.54              | 8.70        | 27.76              | 17.76              | 8.65        | 27.62              | 17.62              | 8.55        |
| Total Power 1-32        |                                              | 42.42                                      | 32.52              | -           | 42.46              | 32.56              | -           | 42.55              | 32.65              | -           |
| Total Power 1-32+23 dBi |                                              | 65.42                                      | 55.52              | -           | 65.46              | 55.56              | -           | 65.55              | 55.65              | -           |

| Port                        | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|-----------------------------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|                             |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|                             |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 33                          | QPSK/10.0                                    | 27.51                                      | 17.51              | 8.47        | 27.45              | 17.45              | 8.49        | 27.34              | 17.34              | 8.47        |
| 34                          | QPSK/10.0                                    | 27.37                                      | 17.37              | 8.49        | 27.43              | 17.44              | 8.48        | 27.93              | 17.93              | 8.47        |
| 35                          | QPSK/10.0                                    | 27.40                                      | 17.38              | 8.48        | 27.28              | 17.28              | 8.49        | 27.29              | 17.29              | 8.48        |
| 36                          | QPSK/10.0                                    | 27.35                                      | 17.35              | 8.51        | 27.52              | 17.52              | 8.51        | 27.45              | 17.45              | 8.50        |
| 37                          | QPSK/10.0                                    | 27.15                                      | 17.15              | 8.61        | 26.97              | 16.99              | 8.61        | 27.19              | 17.18              | 8.59        |
| 38                          | QPSK/10.0                                    | 27.04                                      | 17.04              | 8.61        | 27.14              | 17.14              | 8.63        | 27.00              | 17.00              | 8.60        |
| 39                          | QPSK/10.0                                    | 27.14                                      | 17.15              | 8.59        | 27.05              | 17.05              | 8.62        | 27.15              | 17.15              | 8.61        |
| 40                          | QPSK/10.0                                    | 27.03                                      | 17.04              | 8.59        | 27.07              | 17.08              | 8.61        | 27.03              | 17.03              | 8.57        |
| 41                          | QPSK/10.0                                    | 27.21                                      | 17.20              | 8.48        | 26.98              | 16.98              | 8.48        | 27.27              | 17.26              | 8.47        |
| 42                          | QPSK/10.0                                    | 28.00                                      | 18.00              | 8.47        | 27.94              | 17.94              | 8.48        | 27.97              | 17.97              | 8.46        |
| 43                          | QPSK/10.0                                    | 27.54                                      | 17.54              | 8.47        | 27.54              | 17.54              | 8.49        | 27.33              | 17.33              | 8.47        |
| 44                          | QPSK/10.0                                    | 27.99                                      | 18.00              | 8.48        | 27.60              | 17.61              | 8.50        | 27.43              | 17.43              | 8.48        |
| 45                          | QPSK/10.0                                    | 27.27                                      | 17.27              | 8.60        | 27.23              | 17.23              | 8.61        | 27.20              | 17.20              | 8.60        |
| 46                          | QPSK/10.0                                    | 27.30                                      | 15.54              | 8.61        | 27.15              | 15.39              | 8.62        | 27.13              | 15.37              | 8.61        |
| 47                          | QPSK/10.0                                    | 27.05                                      | 17.05              | 8.61        | 27.01              | 17.00              | 8.63        | 29.96              | 16.96              | 8.60        |
| 48                          | QPSK/10.0                                    | 27.08                                      | 17.08              | 8.61        | 27.17              | 17.17              | 8.61        | 27.03              | 17.03              | 8.59        |
| 49                          | QPSK/10.0                                    | 27.16                                      | 17.17              | 8.72        | 27.21              | 17.21              | 8.70        | 27.16              | 17.16              | 8.61        |
| 50                          | QPSK/10.0                                    | 27.55                                      | 17.56              | 8.76        | 27.44              | 17.44              | 8.70        | 27.71              | 17.71              | 8.58        |
| 51                          | QPSK/10.0                                    | 27.57                                      | 17.57              | 8.72        | 27.58              | 17.58              | 8.69        | 27.56              | 17.56              | 8.59        |
| 52                          | QPSK/10.0                                    | 27.57                                      | 17.57              | 8.72        | 27.57              | 17.57              | 8.69        | 27.60              | 17.60              | 8.56        |
| 53                          | QPSK/10.0                                    | 28.38                                      | 18.39              | 8.62        | 28.38              | 18.36              | 8.58        | 28.42              | 18.43              | 8.50        |
| 54                          | QPSK/10.0                                    | 28.05                                      | 18.06              | 8.62        | 28.12              | 18.12              | 8.59        | 28.14              | 18.13              | 8.51        |
| 55                          | QPSK/10.0                                    | 28.20                                      | 18.23              | 8.59        | 28.16              | 18.15              | 8.57        | 28.21              | 18.21              | 8.50        |
| 56                          | QPSK/10.0                                    | 28.24                                      | 18.24              | 8.59        | 28.17              | 18.16              | 8.57        | 28.32              | 18.32              | 8.50        |
| 57                          | QPSK/10.0                                    | 27.05                                      | 17.04              | 8.72        | 27.07              | 17.07              | 8.68        | 27.18              | 17.18              | 8.60        |
| 58                          | QPSK/10.0                                    | 27.16                                      | 17.16              | 8.73        | 27.15              | 17.15              | 8.68        | 27.23              | 17.23              | 8.58        |
| 59                          | QPSK/10.0                                    | 26.67                                      | 16.67              | 8.71        | 26.77              | 16.77              | 8.69        | 26.98              | 16.98              | 8.59        |
| 60                          | QPSK/10.0                                    | 26.86                                      | 16.87              | 8.73        | 26.82              | 16.81              | 8.68        | 27.04              | 17.04              | 8.64        |
| 61                          | QPSK/10.0                                    | 27.74                                      | 17.70              | 8.55        | 27.71              | 17.62              | 8.61        | 27.85              | 17.88              | 8.51        |
| 62                          | QPSK/10.0                                    | 27.53                                      | 17.85              | 8.61        | 28.18              | 18.18              | 8.58        | 28.21              | 18.20              | 8.52        |
| 63                          | QPSK/10.0                                    | 27.84                                      | 17.85              | 8.58        | 27.92              | 17.93              | 8.57        | 27.87              | 17.87              | 8.52        |
| 64                          | QPSK/10.0                                    | 27.92                                      | 17.91              | 8.60        | 27.95              | 17.95              | 8.58        | 27.88              | 17.88              | 8.50        |
| Total Power 33-64           |                                              | 42.41                                      | 32.47              | -           | 42.41              | 32.46              | -           | 42.57              | 32.51              | -           |
| Total Power 33-64+23<br>dBi |                                              | 65.41                                      | 55.47              | -           | 65.41              | 55.46              | -           | 65.57              | 55.51              | -           |
| EIRP                        |                                              | 68.43                                      | 58.51              | -           | 68.45              | 58.52              | -           | 68.57              | 58.59              | -           |

| Port | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|      |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|      |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 55   | 16QAM/10.0                                   | 28.16                                      | 18.17              | 8.43        | 28.13              | 18.14              | 8.42        | 28.19              | 18.19              | 8.38        |
| 55   | 64QAM/10.0                                   | 28.02                                      | 18.03              | 8.44        | 28.00              | 18.00              | 8.50        | 28.09              | 18.08              | 8.49        |
| 55   | 256QAM/10.0                                  | 28.20                                      | 18.23              | 8.41        | 28.16              | 18.15              | 8.44        | 28.21              | 18.21              | 8.40        |

# Configuration LTE-MIMO-1C (1LTE 20MHz QPSK)

Maximum Output Power 30.97dBm per port

| Port                   | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | LTE Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|------------------------|----------------------------------------------|------------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|                        |                                              | Channel position B                             |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|                        |                                              | POWER<br>(dBm)                                 | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 1                      | QPSK/20.0                                    | 30.39                                          | 17.38              | 8.68        | 30.31              | 17.29              | 8.73        | 30.27              | 17.26              | 8.41        |
| 2                      | QPSK/20.0                                    | 30.90                                          | 17.89              | 8.70        | 31.05              | 18.04              | 8.73        | 30.99              | 17.98              | 8.79        |
| 3                      | QPSK/20.0                                    | 30.30                                          | 17.29              | 8.69        | 30.24              | 17.23              | 8.77        | 30.98              | 17.97              | 8.43        |
| 4                      | QPSK/20.0                                    | 30.84                                          | 17.83              | 8.65        | 30.91              | 17.90              | 8.72        | 30.25              | 17.24              | 8.70        |
| 5                      | QPSK/20.0                                    | 31.20                                          | 18.19              | 8.70        | 30.83              | 17.82              | 8.72        | 31.11              | 18.10              | 8.43        |
| 6                      | QPSK/20.0                                    | 31.44                                          | 17.81              | 8.68        | 31.01              | 18.14              | 8.69        | 31.30              | 18.29              | 8.73        |
| 7                      | QPSK/20.0                                    | 30.95                                          | 17.94              | 8.71        | 30.92              | 17.91              | 8.72        | 30.97              | 17.96              | 8.42        |
| 8                      | QPSK/20.0                                    | 31.30                                          | 18.28              | 8.68        | 31.08              | 18.36              | 8.64        | 31.53              | 18.52              | 8.66        |
| 9                      | QPSK/20.0                                    | 30.02                                          | 17.01              | 8.36        | 30.16              | 17.15              | 8.49        | 30.21              | 17.20              | 8.41        |
| 10                     | QPSK/20.0                                    | 30.23                                          | 17.22              | 8.34        | 30.36              | 17.35              | 8.47        | 30.24              | 17.23              | 8.49        |
| 11                     | QPSK/20.0                                    | 30.12                                          | 17.11              | 8.50        | 30.17              | 17.16              | 8.51        | 30.33              | 17.32              | 8.43        |
| 12                     | QPSK/20.0                                    | 30.32                                          | 17.31              | 8.51        | 30.46              | 17.45              | 8.50        | 30.41              | 17.40              | 8.51        |
| 13                     | QPSK/20.0                                    | 30.69                                          | 17.68              | 8.47        | 30.75              | 17.74              | 8.50        | 30.83              | 17.83              | 8.42        |
| 14                     | QPSK/20.0                                    | 30.53                                          | 17.52              | 8.49        | 30.56              | 17.52              | 8.45        | 30.63              | 17.62              | 8.47        |
| 15                     | QPSK/20.0                                    | 30.69                                          | 17.68              | 8.50        | 30.58              | 17.56              | 8.51        | 30.64              | 17.63              | 8.42        |
| 16                     | QPSK/20.0                                    | 30.81                                          | 17.80              | 8.48        | 30.80              | 17.79              | 8.47        | 30.93              | 17.92              | 8.48        |
| 17                     | QPSK/20.0                                    | 30.85                                          | 17.85              | 8.50        | 30.83              | 17.81              | 8.52        | 30.79              | 17.79              | 8.48        |
| 18                     | QPSK/20.0                                    | 30.73                                          | 17.71              | 8.49        | 30.70              | 17.69              | 8.48        | 30.71              | 17.69              | 8.48        |
| 19                     | QPSK/20.0                                    | 30.64                                          | 17.63              | 8.50        | 30.72              | 17.71              | 8.50        | 30.79              | 17.80              | 8.47        |
| 20                     | QPSK/20.0                                    | 30.61                                          | 17.60              | 8.50        | 30.64              | 17.64              | 8.49        | 30.71              | 17.70              | 8.51        |
| 21                     | QPSK/20.0                                    | 30.65                                          | 17.65              | 8.62        | 30.62              | 17.63              | 8.53        | 30.12              | 17.10              | 8.57        |
| 22                     | QPSK/20.0                                    | 30.10                                          | 17.09              | 8.60        | 30.04              | 17.03              | 8.55        | 30.22              | 17.21              | 8.53        |
| 23                     | QPSK/20.0                                    | 30.91                                          | 17.89              | 8.59        | 30.82              | 17.81              | 8.56        | 30.80              | 17.79              | 8.55        |
| 24                     | QPSK/20.0                                    | 30.24                                          | 17.23              | 8.58        | 30.21              | 17.20              | 8.54        | 30.46              | 17.45              | 8.55        |
| 25                     | QPSK/20.0                                    | 30.71                                          | 17.70              | 8.49        | 30.59              | 17.59              | 8.49        | 30.64              | 17.63              | 8.48        |
| 26                     | QPSK/20.0                                    | 30.68                                          | 17.70              | 8.49        | 30.74              | 17.73              | 8.47        | 30.86              | 17.85              | 8.48        |
| 27                     | QPSK/20.0                                    | 30.57                                          | 17.58              | 8.50        | 30.58              | 17.57              | 8.49        | 30.67              | 17.66              | 8.48        |
| 28                     | QPSK/20.0                                    | 30.81                                          | 17.80              | 8.57        | 30.86              | 17.85              | 8.48        | 30.86              | 17.85              | 8.47        |
| 29                     | QPSK/20.0                                    | 30.46                                          | 17.45              | 8.58        | 30.49              | 17.48              | 8.55        | 30.50              | 17.49              | 8.54        |
| 30                     | QPSK/20.0                                    | 30.29                                          | 17.28              | 8.60        | 30.27              | 17.26              | 8.56        | 30.22              | 17.21              | 8.53        |
| 31                     | QPSK/20.0                                    | 30.78                                          | 17.77              | 8.59        | 30.73              | 17.72              | 8.54        | 30.80              | 17.79              | 8.55        |
| 32                     | QPSK/20.0                                    | 30.19                                          | 17.18              | 8.50        | 30.09              | 17.08              | 8.55        | 30.19              | 17.18              | 8.53        |
| Total Power 1-32       |                                              | 45.56                                          | 32.53              | -           | 45.54              | 32.61              | -           | 45.60              | 32.69              | -           |
| Total Power 1-32+23dBi |                                              | 68.56                                          | 55.53              | -           | 68.54              | 55.61              | -           | 68.60              | 55.69              | -           |

| Port                   | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                          |             |
|------------------------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------------|-------------|
|                        |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                          |             |
|                        |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz)<br>z) | PAR<br>(db) |
| 33                     | QPSK/20.0                                    | 30.75                                      | 17.74              | 8.68        | 30.79              | 17.77              | 8.66        | 30.66              | 17.65                    | 8.44        |
| 34                     | QPSK/20.0                                    | 31.02                                      | 18.01              | 8.71        | 31.01              | 18.10              | 8.71        | 31.12              | 18.11                    | 8.80        |
| 35                     | QPSK/20.0                                    | 31.03                                      | 18.02              | 8.72        | 30.62              | 17.61              | 8.71        | 31.09              | 18.08                    | 8.41        |
| 36                     | QPSK/20.0                                    | 30.66                                      | 17.65              | 8.71        | 31.06              | 18.11              | 8.79        | 30.51              | 17.49                    | 8.71        |
| 37                     | QPSK/20.0                                    | 30.15                                      | 17.14              | 8.71        | 30.14              | 17.24              | 8.77        | 30.26              | 17.25                    | 8.40        |
| 38                     | QPSK/20.0                                    | 30.21                                      | 17.20              | 8.67        | 30.35              | 17.34              | 8.71        | 30.21              | 17.20                    | 8.75        |
| 39                     | QPSK/20.0                                    | 30.25                                      | 16.84              | 8.68        | 30.30              | 17.30              | 8.72        | 29.86              | 16.83                    | 8.43        |
| 40                     | QPSK/20.0                                    | 30.28                                      | 17.27              | 8.72        | 30.32              | 17.31              | 8.69        | 30.29              | 17.28                    | 8.76        |
| 41                     | QPSK/20.0                                    | 30.65                                      | 17.64              | 8.50        | 30.90              | 18.01              | 8.49        | 30.61              | 17.61                    | 8.42        |
| 42                     | QPSK/20.0                                    | 31.02                                      | 18.01              | 8.50        | 31.06              | 18.09              | 8.50        | 31.15              | 18.14                    | 8.46        |
| 43                     | QPSK/20.0                                    | 30.76                                      | 17.75              | 8.52        | 30.75              | 17.72              | 8.48        | 30.62              | 17.61                    | 8.45        |
| 44                     | QPSK/20.0                                    | 30.95                                      | 17.99              | 8.50        | 31.03              | 18.09              | 8.52        | 31.10              | 18.09                    | 8.50        |
| 45                     | QPSK/20.0                                    | 30.22                                      | 17.17              | 8.45        | 30.37              | 17.32              | 8.49        | 30.21              | 17.20                    | 8.41        |
| 46                     | QPSK/20.0                                    | 30.19                                      | 17.16              | 8.50        | 30.28              | 17.27              | 8.49        | 30.22              | 17.21                    | 8.46        |
| 47                     | QPSK/20.0                                    | 30.25                                      | 17.22              | 8.49        | 30.42              | 17.41              | 8.49        | 30.21              | 17.20                    | 8.47        |
| 48                     | QPSK/20.0                                    | 30.31                                      | 17.29              | 8.50        | 30.43              | 17.39              | 8.48        | 30.19              | 17.18                    | 8.42        |
| 49                     | QPSK/20.0                                    | 29.69                                      | 16.88              | 8.59        | 29.73              | 16.77              | 8.58        | 29.70              | 16.68                    | 8.57        |
| 50                     | QPSK/20.0                                    | 30.19                                      | 17.18              | 8.54        | 30.08              | 17.07              | 8.57        | 30.69              | 17.68                    | 8.51        |
| 51                     | QPSK/20.0                                    | 30.08                                      | 17.07              | 8.58        | 30.08              | 17.07              | 8.57        | 29.98              | 16.98                    | 8.57        |
| 52                     | QPSK/20.0                                    | 30.26                                      | 17.24              | 8.57        | 30.18              | 17.18              | 8.55        | 30.23              | 17.22                    | 8.55        |
| 53                     | QPSK/20.0                                    | 30.87                                      | 17.72              | 8.51        | 30.95              | 17.94              | 8.49        | 31.02              | 18.01                    | 8.47        |
| 54                     | QPSK/20.0                                    | 30.60                                      | 17.61              | 8.50        | 30.67              | 17.66              | 8.52        | 30.69              | 17.67                    | 8.48        |
| 55                     | QPSK/20.0                                    | 31.14                                      | 18.09              | 8.49        | 31.09              | 18.08              | 8.49        | 31.10              | 18.09                    | 8.48        |
| 56                     | QPSK/20.0                                    | 30.97                                      | 17.96              | 8.47        | 30.90              | 17.88              | 8.47        | 31.07              | 18.07                    | 8.48        |
| 57                     | QPSK/20.0                                    | 29.49                                      | 16.50              | 8.59        | 29.60              | 16.59              | 8.57        | 29.62              | 16.63                    | 8.57        |
| 58                     | QPSK/20.0                                    | 29.85                                      | 16.84              | 8.59        | 29.82              | 16.76              | 8.57        | 29.89              | 16.88                    | 8.56        |
| 59                     | QPSK/20.0                                    | 29.21                                      | 16.20              | 8.58        | 29.28              | 16.20              | 8.59        | 29.53              | 16.52                    | 8.57        |
| 60                     | QPSK/20.0                                    | 29.54                                      | 16.47              | 8.60        | 29.52              | 16.47              | 8.62        | 29.58              | 16.55                    | 8.57        |
| 61                     | QPSK/20.0                                    | 30.35                                      | 17.34              | 8.48        | 30.33              | 17.32              | 8.49        | 30.45              | 17.44                    | 8.48        |
| 62                     | QPSK/20.0                                    | 30.75                                      | 17.74              | 8.48        | 30.63              | 17.56              | 8.60        | 30.77              | 17.69                    | 8.52        |
| 63                     | QPSK/20.0                                    | 30.42                                      | 17.42              | 8.48        | 30.45              | 17.43              | 8.49        | 30.40              | 17.39                    | 8.47        |
| 64                     | QPSK/20.0                                    | 30.39                                      | 17.39              | 8.48        | 30.45              | 17.42              | 8.49        | 30.27              | 17.34                    | 8.49        |
| Total Power 33-64      |                                              | 45.32                                      | 32.41              | -           | 45.36              | 32.46              | -           | 45.35              | 32.45                    | -           |
| Total Power33-64+23dBi |                                              | 68.32                                      | 55.41              | -           | 68.36              | 55.46              | -           | 68.35              | 55.45                    | -           |
| LTE EIRP               |                                              | 71.45                                      | 58.48              | -           | 71.46              | 58.55              | -           | 71.49              | 58.58                    | -           |

| Port | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|      |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|      |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 55   | 16QAM/20.0                                   | 31.00                                      | 17.99              | 8.62        | 30.96              | 17.94              | 8.62        | 31.11              | 18.10              | 8.40        |
| 55   | 64QAM/20.0                                   | 31.30                                      | 18.28              | 8.48        | 31.24              | 18.23              | 8.49        | 31.21              | 18.20              | 8.52        |
| 55   | 256QAM/20.0                                  | 31.45                                      | 18.45              | 8.51        | 31.40              | 18.39              | 8.49        | 31.36              | 18.35              | 8.48        |

Configuration LTE-MIMO-3C (3LTE 10MHz QPSK)

Maximum Output Power 32.73dBm per port

| Port                    | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|-------------------------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|                         |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|                         |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 1                       | QPSK/10.0                                    | 32.24                                      | -                  | -           | 32.35              | -                  | -           | 32.22              | -                  | -           |
| 2                       | QPSK/10.0                                    | 32.50                                      | -                  | -           | 32.70              | -                  | -           | 32.54              | -                  | -           |
| 3                       | QPSK/10.0                                    | 32.10                                      | -                  | -           | 32.27              | -                  | -           | 32.20              | -                  | -           |
| 4                       | QPSK/10.0                                    | 32.29                                      | -                  | -           | 32.47              | -                  | -           | 32.41              | -                  | -           |
| 5                       | QPSK/10.0                                    | 32.25                                      | -                  | -           | 32.56              | -                  | -           | 32.45              | -                  | -           |
| 6                       | QPSK/10.0                                    | 32.58                                      | -                  | -           | 32.75              | -                  | -           | 32.65              | -                  | -           |
| 7                       | QPSK/10.0                                    | 32.54                                      | -                  | -           | 32.71              | -                  | -           | 32.62              | -                  | -           |
| 8                       | QPSK/10.0                                    | 32.47                                      | -                  | -           | 32.71              | -                  | -           | 32.59              | -                  | -           |
| 9                       | QPSK/10.0                                    | 31.70                                      | -                  | -           | 32.06              | -                  | -           | 31.82              | -                  | -           |
| 10                      | QPSK/10.0                                    | 31.63                                      | -                  | -           | 31.74              | -                  | -           | 31.57              | -                  | -           |
| 11                      | QPSK/10.0                                    | 31.65                                      | -                  | -           | 32.05              | -                  | -           | 31.81              | -                  | -           |
| 12                      | QPSK/10.0                                    | 31.64                                      | -                  | -           | 31.84              | -                  | -           | 31.58              | -                  | -           |
| 13                      | QPSK/10.0                                    | 32.35                                      | -                  | -           | 32.55              | -                  | -           | 32.41              | -                  | -           |
| 14                      | QPSK/10.0                                    | 31.95                                      | -                  | -           | 32.07              | -                  | -           | 31.92              | -                  | -           |
| 15                      | QPSK/10.0                                    | 32.46                                      | -                  | -           | 32.47              | -                  | -           | 32.39              | -                  | -           |
| 16                      | QPSK/10.0                                    | 32.21                                      | -                  | -           | 32.30              | -                  | -           | 32.18              | -                  | -           |
| 17                      | QPSK/10.0                                    | 32.73                                      | -                  | -           | 32.85              | -                  | -           | 32.72              | -                  | -           |
| 18                      | QPSK/10.0                                    | 32.54                                      | -                  | -           | 32.67              | -                  | -           | 32.62              | -                  | -           |
| 19                      | QPSK/10.0                                    | 32.34                                      | -                  | -           | 32.57              | -                  | -           | 32.36              | -                  | -           |
| 20                      | QPSK/10.0                                    | 32.22                                      | -                  | -           | 32.53              | -                  | -           | 32.30              | -                  | -           |
| 21                      | QPSK/10.0                                    | 32.20                                      | -                  | -           | 32.38              | -                  | -           | 32.27              | -                  | -           |
| 22                      | QPSK/10.0                                    | 31.77                                      | -                  | -           | 31.97              | -                  | -           | 31.80              | -                  | -           |
| 23                      | QPSK/10.0                                    | 32.67                                      | -                  | -           | 32.83              | -                  | -           | 32.65              | -                  | -           |
| 24                      | QPSK/10.0                                    | 31.78                                      | -                  | -           | 31.97              | -                  | -           | 31.89              | -                  | -           |
| 25                      | QPSK/10.0                                    | 32.51                                      | -                  | -           | 32.66              | -                  | -           | 32.41              | -                  | -           |
| 26                      | QPSK/10.0                                    | 32.66                                      | -                  | -           | 32.82              | -                  | -           | 32.72              | -                  | -           |
| 27                      | QPSK/10.0                                    | 32.58                                      | -                  | -           | 32.85              | -                  | -           | 32.64              | -                  | -           |
| 28                      | QPSK/10.0                                    | 32.28                                      | -                  | -           | 32.23              | -                  | -           | 32.02              | -                  | -           |
| 29                      | QPSK/10.0                                    | 32.36                                      | -                  | -           | 32.52              | -                  | -           | 32.43              | -                  | -           |
| 30                      | QPSK/10.0                                    | 32.00                                      | -                  | -           | 32.22              | -                  | -           | 32.03              | -                  | -           |
| 31                      | QPSK/10.0                                    | 32.32                                      | -                  | -           | 32.51              | -                  | -           | 32.43              | -                  | -           |
| 32                      | QPSK/10.0                                    | 31.99                                      | -                  | -           | 32.61              | -                  | -           | 32.47              | -                  | -           |
| Total Power 1-32        |                                              | 47.16                                      | -                  | -           | 47.36              | -                  | -           | 47.22              | -                  | -           |
| Total Power 1-32+23 dBi |                                              | 70.16                                      | -                  | -           | 70.36              | -                  | -           | 70.22              | -                  | -           |

| Port                        | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|-----------------------------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|                             |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|                             |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 33                          | QPSK/10.0                                    | 32.54                                      | -                  | -           | 32.75              | -                  | -           | 32.62              | -                  | -           |
| 34                          | QPSK/10.0                                    | 32.45                                      | -                  | -           | 32.72              | -                  | -           | 32.51              | -                  | -           |
| 35                          | QPSK/10.0                                    | 32.28                                      | -                  | -           | 32.51              | -                  | -           | 32.42              | -                  | -           |
| 36                          | QPSK/10.0                                    | 32.39                                      | -                  | -           | 32.72              | -                  | -           | 32.56              | -                  | -           |
| 37                          | QPSK/10.0                                    | 32.25                                      | -                  | -           | 32.27              | -                  | -           | 32.39              | -                  | -           |
| 38                          | QPSK/10.0                                    | 32.09                                      | -                  | -           | 32.46              | -                  | -           | 32.14              | -                  | -           |
| 39                          | QPSK/10.0                                    | 32.30                                      | -                  | -           | 32.34              | -                  | -           | 32.32              | -                  | -           |
| 40                          | QPSK/10.0                                    | 32.19                                      | -                  | -           | 32.27              | -                  | -           | 32.16              | -                  | -           |
| 41                          | QPSK/10.0                                    | 32.71                                      | -                  | -           | 32.74              | -                  | -           | 32.70              | -                  | -           |
| 42                          | QPSK/10.0                                    | 32.54                                      | -                  | -           | 32.71              | -                  | -           | 32.56              | -                  | -           |
| 43                          | QPSK/10.0                                    | 32.51                                      | -                  | -           | 32.79              | -                  | -           | 32.48              | -                  | -           |
| 44                          | QPSK/10.0                                    | 32.51                                      | -                  | -           | 32.88              | -                  | -           | 32.61              | -                  | -           |
| 45                          | QPSK/10.0                                    | 31.92                                      | -                  | -           | 32.18              | -                  | -           | 32.01              | -                  | -           |
| 46                          | QPSK/10.0                                    | 31.88                                      | -                  | -           | 32.01              | -                  | -           | 31.99              | -                  | -           |
| 47                          | QPSK/10.0                                    | 32.27                                      | -                  | -           | 32.61              | -                  | -           | 32.26              | -                  | -           |
| 48                          | QPSK/10.0                                    | 32.11                                      | -                  | -           | 32.40              | -                  | -           | 32.16              | -                  | -           |
| 49                          | QPSK/10.0                                    | 31.68                                      | -                  | -           | 31.92              | -                  | -           | 31.76              | -                  | -           |
| 50                          | QPSK/10.0                                    | 31.86                                      | -                  | -           | 32.00              | -                  | -           | 31.92              | -                  | -           |
| 51                          | QPSK/10.0                                    | 32.06                                      | -                  | -           | 32.19              | -                  | -           | 32.09              | -                  | -           |
| 52                          | QPSK/10.0                                    | 32.03                                      | -                  | -           | 32.18              | -                  | -           | 32.08              | -                  | -           |
| 53                          | QPSK/10.0                                    | 32.75                                      | -                  | -           | 32.93              | -                  | -           | 32.82              | -                  | -           |
| 54                          | QPSK/10.0                                    | 32.48                                      | -                  | -           | 32.75              | -                  | -           | 32.66              | -                  | -           |
| 55                          | QPSK/10.0                                    | 32.99                                      | -                  | -           | 33.11              | -                  | -           | 33.03              | -                  | -           |
| 56                          | QPSK/10.0                                    | 32.92                                      | -                  | -           | 33.05              | -                  | -           | 32.95              | -                  | -           |
| 57                          | QPSK/10.0                                    | 31.58                                      | -                  | -           | 31.73              | -                  | -           | 31.52              | -                  | -           |
| 58                          | QPSK/10.0                                    | 31.65                                      | -                  | -           | 31.83              | -                  | -           | 31.68              | -                  | -           |
| 59                          | QPSK/10.0                                    | 31.15                                      | -                  | -           | 31.47              | -                  | -           | 31.35              | -                  | -           |
| 60                          | QPSK/10.0                                    | 31.31                                      | -                  | -           | 31.42              | -                  | -           | 31.24              | -                  | -           |
| 61                          | QPSK/10.0                                    | 32.27                                      | -                  | -           | 32.38              | -                  | -           | 32.26              | -                  | -           |
| 62                          | QPSK/10.0                                    | 32.66                                      | -                  | -           | 32.77              | -                  | -           | 32.57              | -                  | -           |
| 63                          | QPSK/10.0                                    | 32.41                                      | -                  | -           | 32.63              | -                  | -           | 32.38              | -                  | -           |
| 64                          | QPSK/10.0                                    | 32.50                                      | -                  | -           | 32.79              | -                  | -           | 32.42              | -                  | -           |
| Total Power 33-64           |                                              | 47.15                                      | -                  | -           | 47.35              | -                  | -           | 47.20              | -                  | -           |
| Total Power 33-64+23<br>dBi |                                              | 70.15                                      | -                  | -           | 70.35              | -                  | -           | 70.20              | -                  | -           |
| EIRP                        |                                              | 73.17                                      | -                  | -           | 73.37              | -                  | -           | 73.22              | -                  | -           |

| Port | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|      |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|      |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 55   | 16QAM/10.0                                   | 32.88                                      | 20.63              | -           | 32.99              | 20.34              | -           | 33.03              | 20.28              | -           |
| 55   | 64QAM/10.0                                   | 32.98                                      | 19.42              | -           | 33.04              | 19.13              | -           | 33.05              | 19.20              | -           |
| 55   | 256QAM/10.0                                  | 33.12                                      | 19.38              | -           | 33.18              | 19.13              | -           | 33.13              | 19.22              | -           |

## Configuration LTE-MIMO-3C (3LTE 20MHz QPSK)

Maximum Output Power 34.95dBm per port

| Port                  | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | LTE Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|-----------------------|----------------------------------------------|------------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|                       |                                              | Channel position B                             |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|                       |                                              | POWER<br>(dBm)                                 | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 1                     | QPSK/20.0                                    | 33.94                                          | -                  | -           | 33.84              | -                  | -           | 34.03              | -                  | -           |
| 2                     | QPSK/20.0                                    | 34.37                                          | -                  | -           | 34.31              | -                  | -           | 34.26              | -                  | -           |
| 3                     | QPSK/20.0                                    | 33.79                                          | -                  | -           | 34.07              | -                  | -           | 34.00              | -                  | -           |
| 4                     | QPSK/20.0                                    | 34.19                                          | -                  | -           | 33.97              | -                  | -           | 34.18              | -                  | -           |
| 5                     | QPSK/20.0                                    | 34.41                                          | -                  | -           | 34.39              | -                  | -           | 34.30              | -                  | -           |
| 6                     | QPSK/20.0                                    | 34.82                                          | -                  | -           | 34.55              | -                  | -           | 34.77              | -                  | -           |
| 7                     | QPSK/20.0                                    | 34.61                                          | -                  | -           | 34.64              | -                  | -           | 34.43              | -                  | -           |
| 8                     | QPSK/20.0                                    | 34.63                                          | -                  | -           | 34.69              | -                  | -           | 34.66              | -                  | -           |
| 9                     | QPSK/20.0                                    | 33.70                                          | -                  | -           | 33.58              | -                  | -           | 33.52              | -                  | -           |
| 10                    | QPSK/20.0                                    | 33.63                                          | -                  | -           | 33.50              | -                  | -           | 33.60              | -                  | -           |
| 11                    | QPSK/20.0                                    | 33.82                                          | -                  | -           | 33.74              | -                  | -           | 33.50              | -                  | -           |
| 12                    | QPSK/20.0                                    | 33.82                                          | -                  | -           | 33.77              | -                  | -           | 33.61              | -                  | -           |
| 13                    | QPSK/20.0                                    | 34.33                                          | -                  | -           | 34.34              | -                  | -           | 34.25              | -                  | -           |
| 14                    | QPSK/20.0                                    | 33.87                                          | -                  | -           | 33.91              | -                  | -           | 33.79              | -                  | -           |
| 15                    | QPSK/20.0                                    | 34.37                                          | -                  | -           | 34.19              | -                  | -           | 34.07              | -                  | -           |
| 16                    | QPSK/20.0                                    | 34.34                                          | -                  | -           | 34.19              | -                  | -           | 34.09              | -                  | -           |
| 17                    | QPSK/20.0                                    | 34.24                                          | -                  | -           | 34.30              | -                  | -           | 34.21              | -                  | -           |
| 18                    | QPSK/20.0                                    | 34.15                                          | -                  | -           | 34.22              | -                  | -           | 34.13              | -                  | -           |
| 19                    | QPSK/20.0                                    | 34.02                                          | -                  | -           | 34.20              | -                  | -           | 34.02              | -                  | -           |
| 20                    | QPSK/20.0                                    | 33.94                                          | -                  | -           | 34.09              | -                  | -           | 33.92              | -                  | -           |
| 21                    | QPSK/20.0                                    | 33.75                                          | -                  | -           | 33.81              | -                  | -           | 33.86              | -                  | -           |
| 22                    | QPSK/20.0                                    | 33.45                                          | -                  | -           | 33.57              | -                  | -           | 33.59              | -                  | -           |
| 23                    | QPSK/20.0                                    | 34.02                                          | -                  | -           | 34.09              | -                  | -           | 33.94              | -                  | -           |
| 24                    | QPSK/20.0                                    | 33.51                                          | -                  | -           | 33.68              | -                  | -           | 33.67              | -                  | -           |
| 25                    | QPSK/20.0                                    | 34.07                                          | -                  | -           | 34.13              | -                  | -           | 33.98              | -                  | -           |
| 26                    | QPSK/20.0                                    | 34.13                                          | -                  | -           | 34.23              | -                  | -           | 34.26              | -                  | -           |
| 27                    | QPSK/20.0                                    | 34.08                                          | -                  | -           | 34.20              | -                  | -           | 34.11              | -                  | -           |
| 28                    | QPSK/20.0                                    | 33.62                                          | -                  | -           | 33.93              | -                  | -           | 33.97              | -                  | -           |
| 29                    | QPSK/20.0                                    | 33.80                                          | -                  | -           | 33.97              | -                  | -           | 33.93              | -                  | -           |
| 30                    | QPSK/20.0                                    | 33.73                                          | -                  | -           | 33.73              | -                  | -           | 33.56              | -                  | -           |
| 31                    | QPSK/20.0                                    | 34.16                                          | -                  | -           | 34.06              | -                  | -           | 34.01              | -                  | -           |
| 32                    | QPSK/20.0                                    | 33.99                                          | -                  | -           | 33.77              | -                  | -           | 33.64              | -                  | -           |
| Total Power1-32       |                                              | 48.97                                          | -                  | -           | 48.99              | -                  | -           | 48.92              | -                  | -           |
| Total Power1-32+23dBi |                                              | 71.97                                          | -                  | -           | 71.99              | -                  | -           | 71.92              | -                  | -           |

| Port                   | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | LTE Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|------------------------|----------------------------------------------|------------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|                        |                                              | Channel position B                             |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|                        |                                              | POWER<br>(dBm)                                 | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 33                     | QPSK/20.0                                    | 34.38                                          | -                  | -           | 34.42              | -                  | -           | 34.21              | -                  | -           |
| 34                     | QPSK/20.0                                    | 34.39                                          | -                  | -           | 34.51              | -                  | -           | 34.26              | -                  | -           |
| 35                     | QPSK/20.0                                    | 34.19                                          | -                  | -           | 34.47              | -                  | -           | 34.03              | -                  | -           |
| 36                     | QPSK/20.0                                    | 34.40                                          | -                  | -           | 34.38              | -                  | -           | 34.26              | -                  | -           |
| 37                     | QPSK/20.0                                    | 33.41                                          | -                  | -           | 33.27              | -                  | -           | 33.31              | -                  | -           |
| 38                     | QPSK/20.0                                    | 33.57                                          | -                  | -           | 33.81              | -                  | -           | 33.42              | -                  | -           |
| 39                     | QPSK/20.0                                    | 33.51                                          | -                  | -           | 33.43              | -                  | -           | 33.32              | -                  | -           |
| 40                     | QPSK/20.0                                    | 33.63                                          | -                  | -           | 33.60              | -                  | -           | 33.47              | -                  | -           |
| 41                     | QPSK/20.0                                    | 34.31                                          | -                  | -           | 34.18              | -                  | -           | 34.10              | -                  | -           |
| 42                     | QPSK/20.0                                    | 34.51                                          | -                  | -           | 34.47              | -                  | -           | 34.31              | -                  | -           |
| 43                     | QPSK/20.0                                    | 34.29                                          | -                  | -           | 34.45              | -                  | -           | 34.08              | -                  | -           |
| 44                     | QPSK/20.0                                    | 34.45                                          | -                  | -           | 34.65              | -                  | -           | 34.31              | -                  | -           |
| 45                     | QPSK/20.0                                    | 33.48                                          | -                  | -           | 33.49              | -                  | -           | 33.30              | -                  | -           |
| 46                     | QPSK/20.0                                    | 33.56                                          | -                  | -           | 33.60              | -                  | -           | 33.51              | -                  | -           |
| 47                     | QPSK/20.0                                    | 33.42                                          | -                  | -           | 33.59              | -                  | -           | 33.29              | -                  | -           |
| 48                     | QPSK/20.0                                    | 33.60                                          | -                  | -           | 33.73              | -                  | -           | 33.52              | -                  | -           |
| 49                     | QPSK/20.0                                    | 33.18                                          | -                  | -           | 33.37              | -                  | -           | 33.33              | -                  | -           |
| 50                     | QPSK/20.0                                    | 33.33                                          | -                  | -           | 33.44              | -                  | -           | 33.39              | -                  | -           |
| 51                     | QPSK/20.0                                    | 33.34                                          | -                  | -           | 33.42              | -                  | -           | 33.34              | -                  | -           |
| 52                     | QPSK/20.0                                    | 33.48                                          | -                  | -           | 33.65              | -                  | -           | 33.64              | -                  | -           |
| 53                     | QPSK/20.0                                    | 34.24                                          | -                  | -           | 34.37              | -                  | -           | 34.34              | -                  | -           |
| 54                     | QPSK/20.0                                    | 34.02                                          | -                  | -           | 34.22              | -                  | -           | 34.19              | -                  | -           |
| 55                     | QPSK/20.0                                    | 34.58                                          | -                  | -           | 34.53              | -                  | -           | 34.49              | -                  | -           |
| 56                     | QPSK/20.0                                    | 34.53                                          | -                  | -           | 34.48              | -                  | -           | 34.45              | -                  | -           |
| 57                     | QPSK/20.0                                    | 33.15                                          | -                  | -           | 33.21              | -                  | -           | 33.08              | -                  | -           |
| 58                     | QPSK/20.0                                    | 33.25                                          | -                  | -           | 33.35              | -                  | -           | 33.19              | -                  | -           |
| 59                     | QPSK/20.0                                    | 32.78                                          | -                  | -           | 32.96              | -                  | -           | 32.61              | -                  | -           |
| 60                     | QPSK/20.0                                    | 32.82                                          | -                  | -           | 32.92              | -                  | -           | 32.78              | -                  | -           |
| 61                     | QPSK/20.0                                    | 33.78                                          | -                  | -           | 33.85              | -                  | -           | 33.84              | -                  | -           |
| 62                     | QPSK/20.0                                    | 34.17                                          | -                  | -           | 34.10              | -                  | -           | 34.06              | -                  | -           |
| 63                     | QPSK/20.0                                    | 33.98                                          | -                  | -           | 34.11              | -                  | -           | 33.94              | -                  | -           |
| 64                     | QPSK/20.0                                    | 33.86                                          | -                  | -           | 34.05              | -                  | -           | 33.79              | -                  | -           |
| Total Power33-64       |                                              | 48.73                                          | -                  | -           | 48.81              | -                  | -           | 48.65              | -                  | -           |
| Total Power33-64+23dBi |                                              | 71.73                                          | -                  | -           | 71.81              | -                  | -           | 71.65              | -                  | -           |
| LTE EIRP               |                                              | 74.86                                          | -                  | -           | 74.91              | -                  | -           | 74.80              | -                  | -           |

| Port | Modulation/<br>Carrier<br>Bandwidth<br>(MHz) | Output Power / Peak to Average Ratio (PAR) |                    |             |                    |                    |             |                    |                    |             |
|------|----------------------------------------------|--------------------------------------------|--------------------|-------------|--------------------|--------------------|-------------|--------------------|--------------------|-------------|
|      |                                              | Channel position B                         |                    |             | Channel position M |                    |             | Channel position T |                    |             |
|      |                                              | POWER<br>(dBm)                             | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) | POWER<br>(dBm)     | POWER<br>(dBm/MHz) | PAR<br>(db) |
| 55   | 16QAM/20.0                                   | 34.58                                      | 19.65              | -           | 34.31              | 18.78              | -           | 34.39              | 18.67              | -           |
| 55   | 64QAM/20.0                                   | 34.54                                      | 17.90              | -           | 34.56              | 17.68              | -           | 34.45              | 17.35              | -           |
| 55   | 256QAM/20.0                                  | 34.59                                      | 17.96              | -           | 34.60              | 17.82              | -           | 34.50              | 17.71              | -           |

## **A.2 Occupied Bandwidth**

### **A.2.1 Reference**

FCC CFR 47 Part 2, Clause 2.1049

FCC CFR 47 Part 27, Clause 27.53 (m)

### **A.2.2 Method of Measurements**

The EUT was set to transmit at maximum power and testing was carried out on bottom, middle and top channels. Using the Occupied Bandwidth measurement function in the spectrum analyzer, the 26dB bandwidth was measured in accordance with FCC KDB 971168 D01 Clause 4.2.

The measurement method is from KDB 971168 4.2:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least  $10\log (OBW / RBW)$  below the reference level.
- d) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

### A.2.3 Measurement result

Configuration LTE-MIMO-1C (1LTE 10MHz)

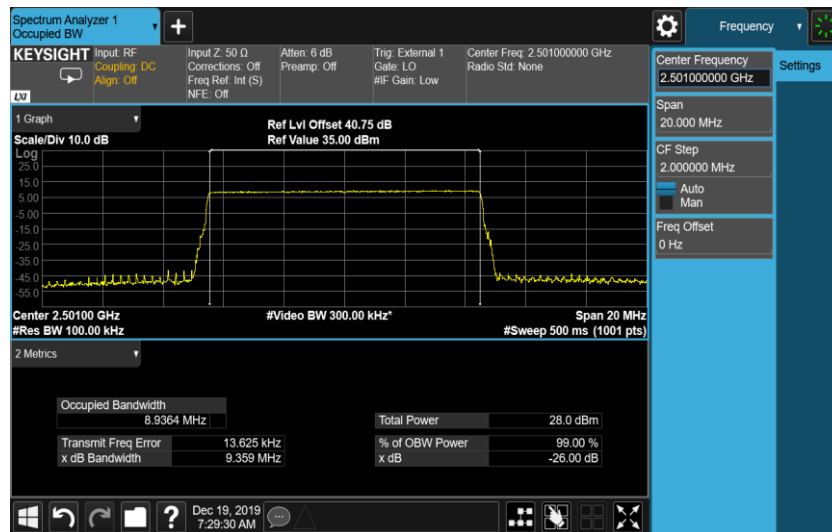
-26dBc Occupied Bandwidth, Port 55, LTE 10.0M

| Modulation /<br>Bandwidth | Occupied Bandwidth (MHz) |                    |                    |
|---------------------------|--------------------------|--------------------|--------------------|
|                           | Channel Position B       | Channel Position M | Channel Position T |
| QPSK/<br>10.0 MHz         | 9.359                    | 9.363              | 9.362              |
| 16QAM /<br>10.0 MHz       | 9.304                    | 9.320              | 9.319              |
| 64QAM /<br>10.0 MHz       | 9.346                    | 9.361              | 9.361              |
| 256QAM /<br>10.0 MHz      | 9.353                    | 9.362              | 9.363              |

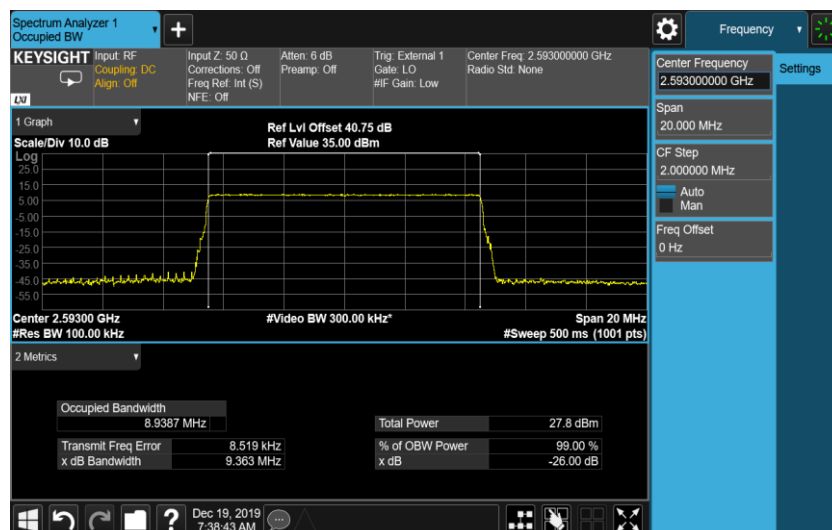
99% Occupied Bandwidth, Port 55, LTE 10.0M

| Modulation /<br>Bandwidth | Occupied Bandwidth (MHz) |                    |                    |
|---------------------------|--------------------------|--------------------|--------------------|
|                           | Channel Position B       | Channel Position M | Channel Position T |
| QPSK/<br>10.0 MHz         | 8.9364                   | 8.9387             | 8.9364             |
| 16QAM /<br>10.0 MHz       | 8.9062                   | 8.9135             | 8.9074             |
| 64QAM /<br>10.0 MHz       | 8.9326                   | 8.9342             | 8.9325             |
| 256QAM /<br>10.0 MHz      | 8.9356                   | 8.9369             | 8.9339             |

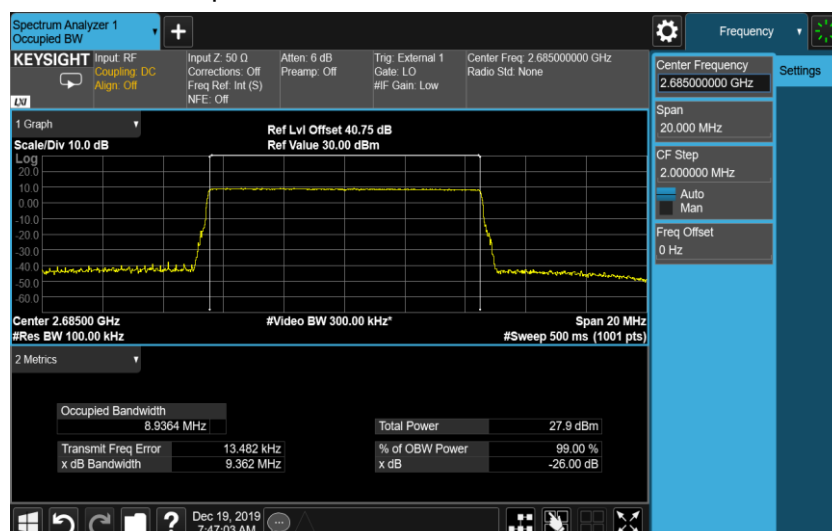
Port 55, QPSK 10.0M Channel position B, LTE



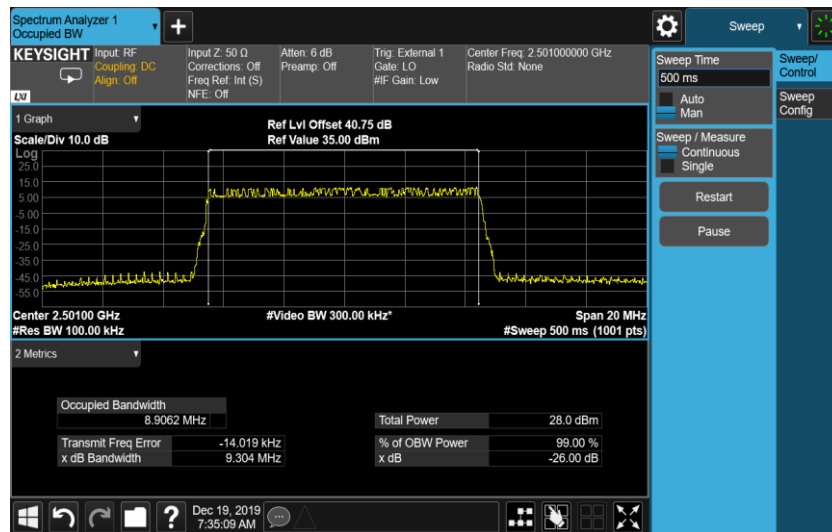
Port 55, QPSK 10.0M Channel position M, LTE



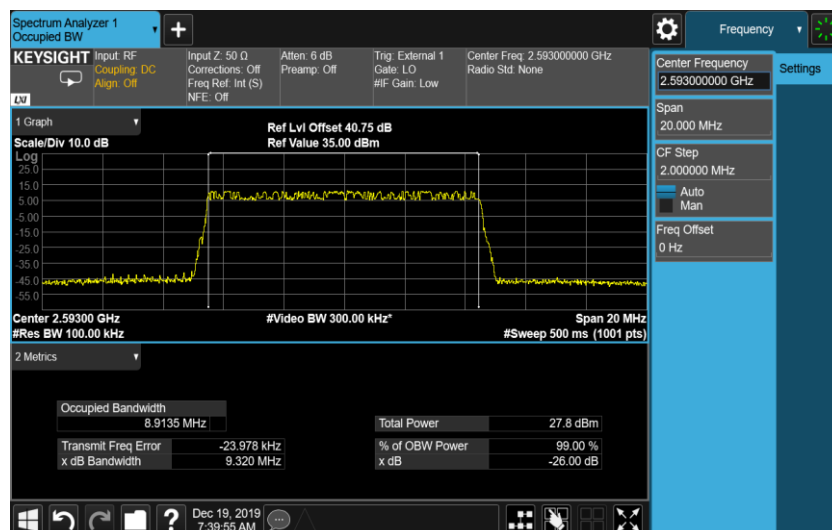
Port 55, QPSK 10.0M Channel position T, LTE



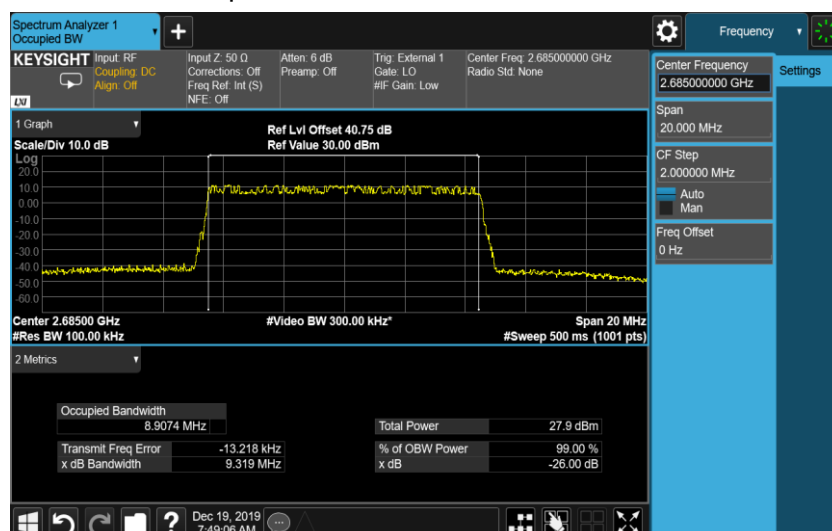
Port 55, 16QAM 10.0M Channel position B, LTE



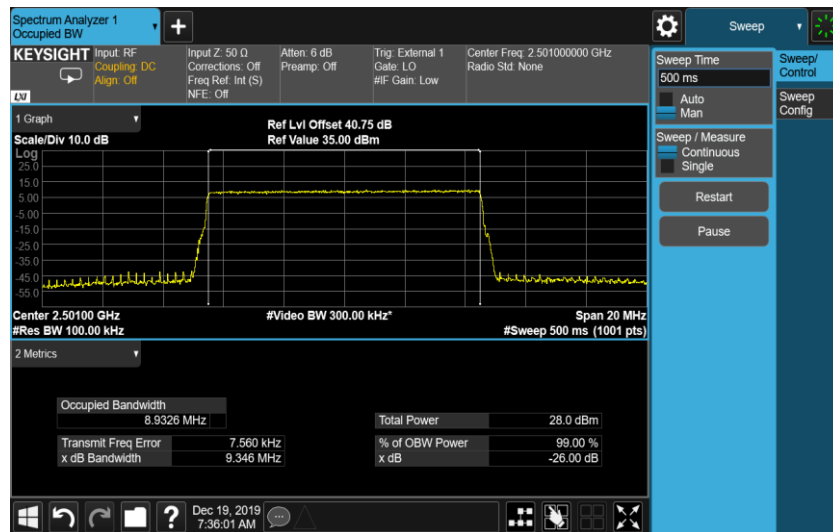
Port 55, 16QAM 10.0M Channel position M, LTE



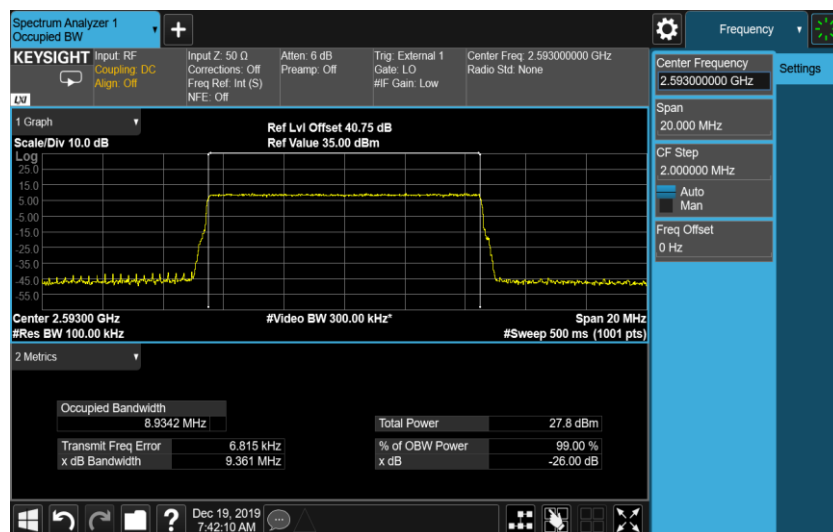
Port 55, 16QAM 10.0M Channel position T, LTE



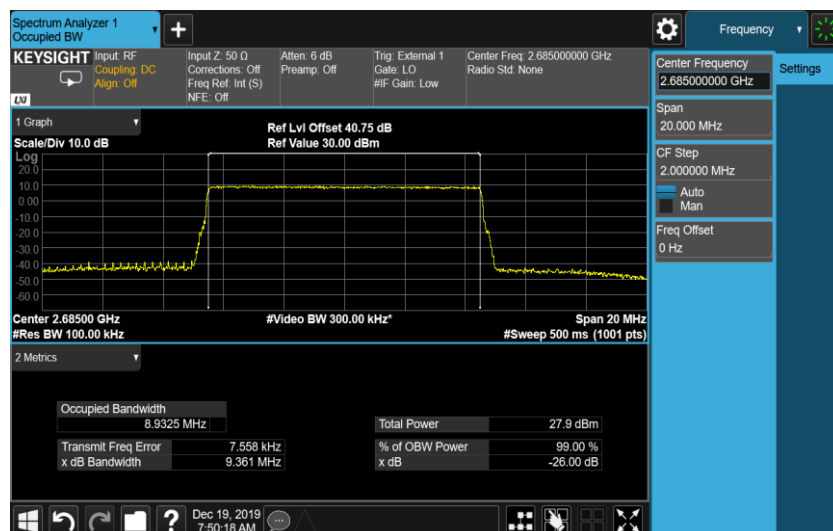
Port 55, 64QAM 10.0M Channel position B, LTE



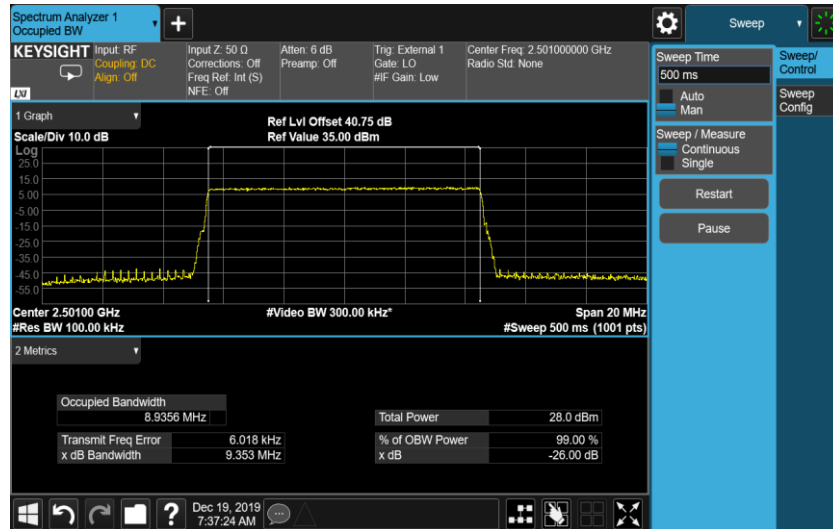
Port 55, 64QAM 10.0M Channel position M, LTE



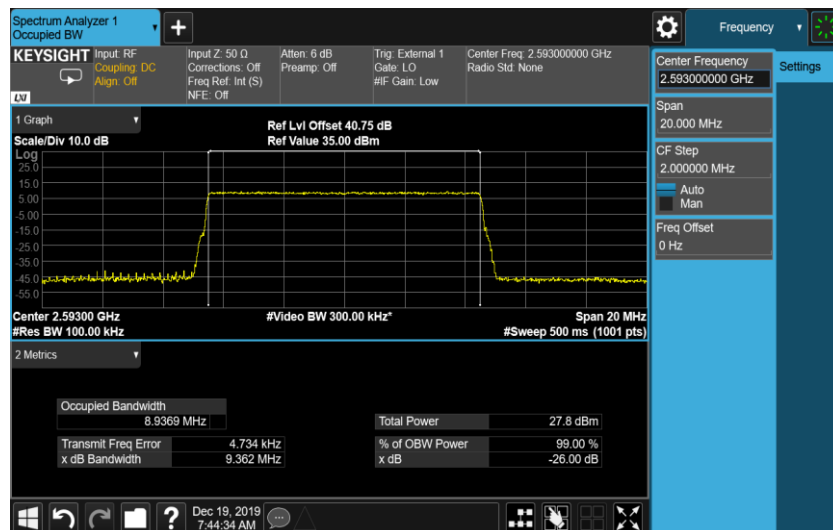
Port 55, 64QAM 10.0M Channel position T, LTE



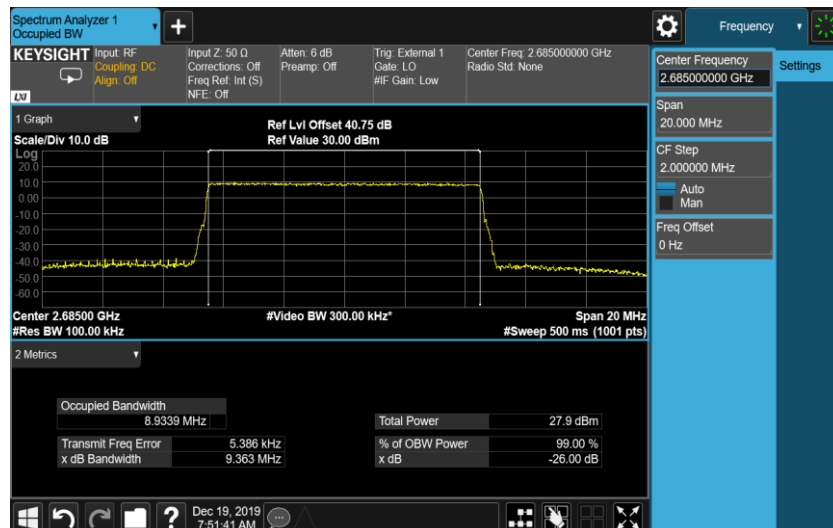
Port 55, 256QAM 10.0M Channel position B, LTE



Port 55, 256QAM 10.0M Channel position M, LTE



Port 55, 256QAM 10.0M Channel position T, LTE



## Configuration LTE-MIMO-1C (1LTE 20MHz)

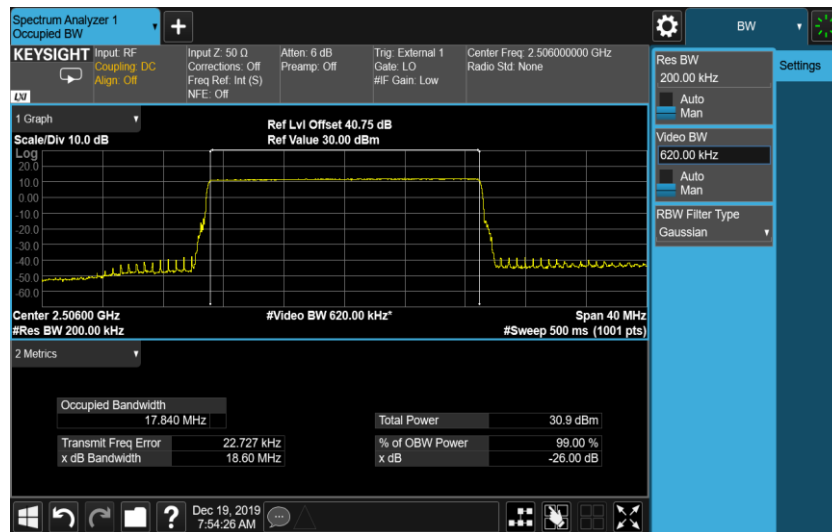
-26dBc Occupied Bandwidth, Port 55, LTE 20.0M

| Modulation /<br>Bandwidth | Occupied Bandwidth (MHz) |                    |                    |
|---------------------------|--------------------------|--------------------|--------------------|
|                           | Channel Position B       | Channel Position M | Channel Position T |
| QPSK/<br>20.0 MHz         | 18.60                    | 18.68              | 18.59              |
| 16QAM /<br>20.0 MHz       | 18.50                    | 18.49              | 18.49              |
| 64QAM /<br>20.0 MHz       | 18.60                    | 18.58              | 18.55              |
| 256QAM /<br>20.0 MHz      | 18.63                    | 18.55              | 18.55              |

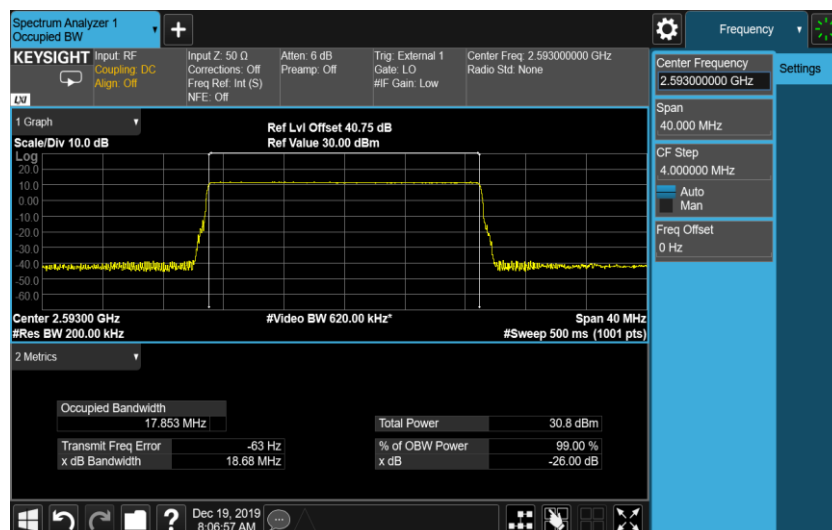
## 99% Occupied Bandwidth, Port 55, LTE 20.0M

| Modulation /<br>Bandwidth | Occupied Bandwidth (MHz) |                    |                    |
|---------------------------|--------------------------|--------------------|--------------------|
|                           | Channel Position B       | Channel Position M | Channel Position T |
| QPSK/<br>20.0 MHz         | 17.840                   | 17.853             | 17.844             |
| 16QAM /<br>20.0 MHz       | 17.778                   | 17.710             | 17.695             |
| 64QAM /<br>20.0 MHz       | 17.845                   | 17.854             | 17.843             |
| 256QAM /<br>20.0 MHz      | 17.847                   | 17.857             | 17.849             |

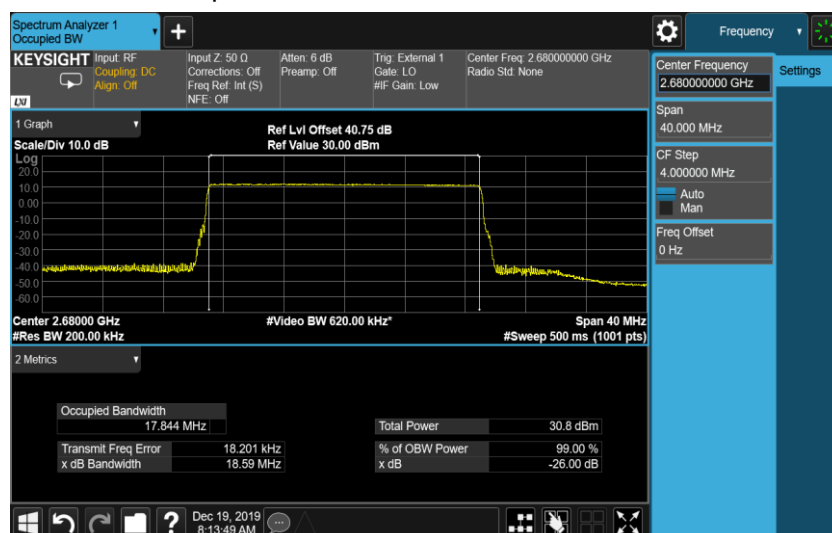
Port 55, QPSK 20.0M Channel position B, LTE



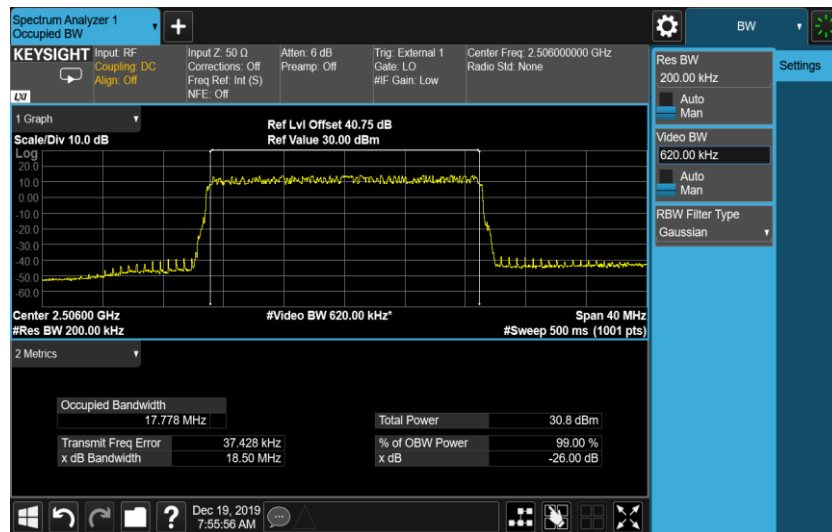
Port 55, QPSK 20.0M Channel position M, LTE



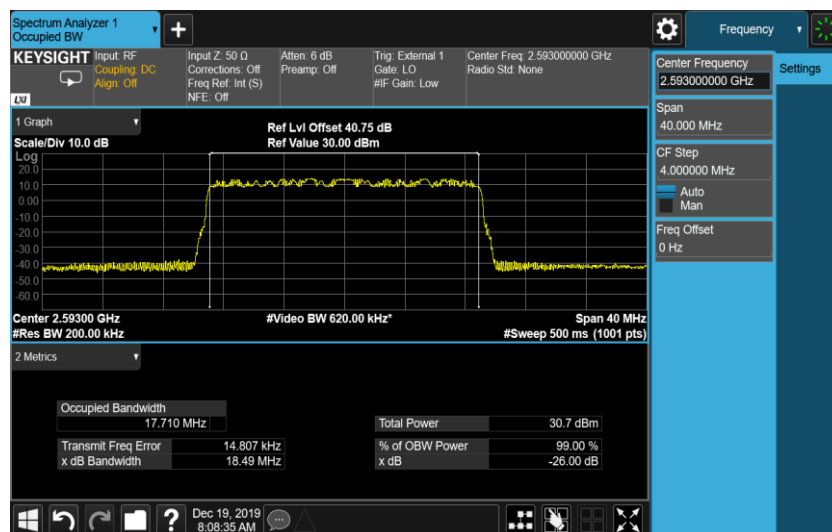
Port 55, QPSK 20.0M Channel position T, LTE



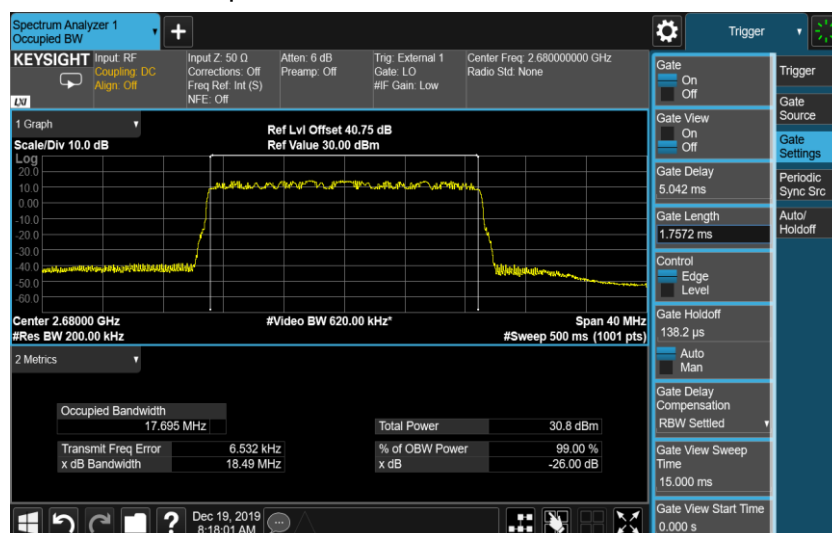
Port 55, 16QAM 20.0M Channel position B, LTE



Port 55, 16QAM 20.0M Channel position M, LTE



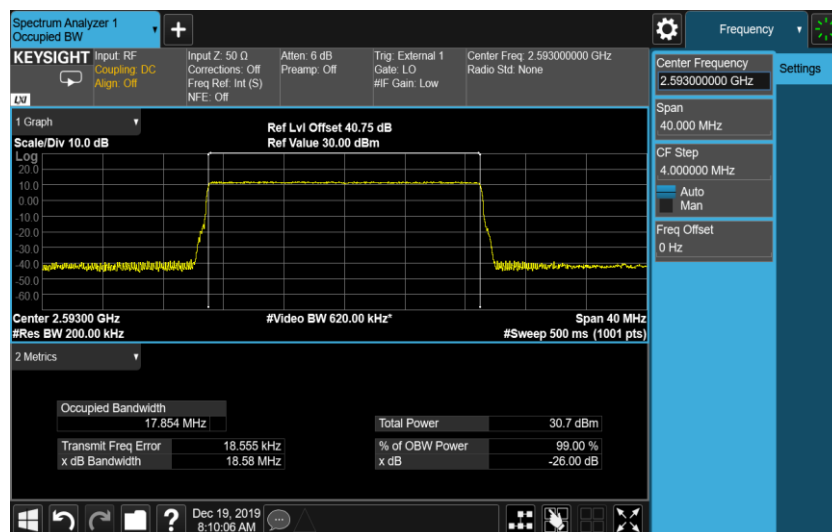
Port 55, 16QAM 20.0M Channel position T, LTE



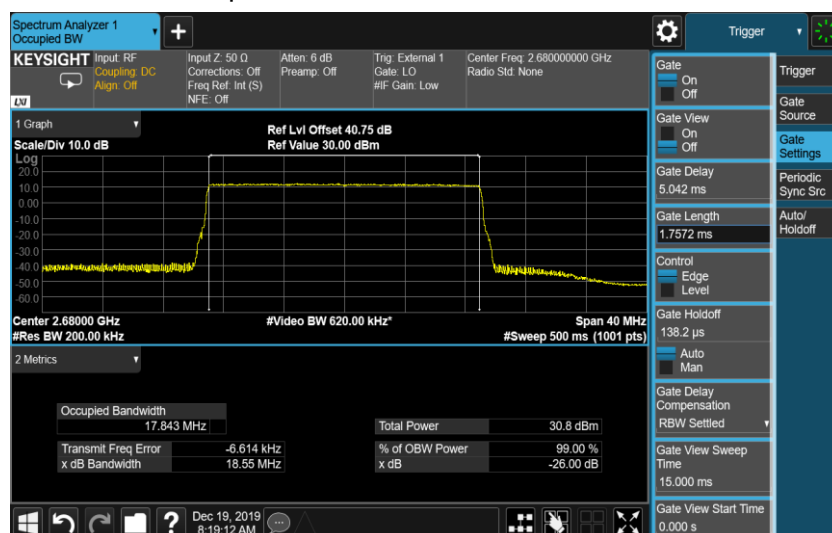
Port 55, 64QAM 20.0M Channel position B, LTE



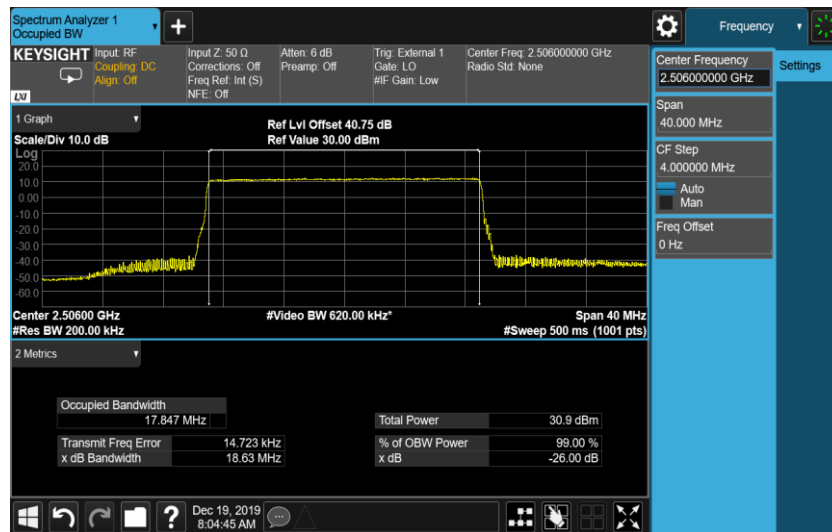
Port 55, 64QAM 20.0M Channel position M, LTE



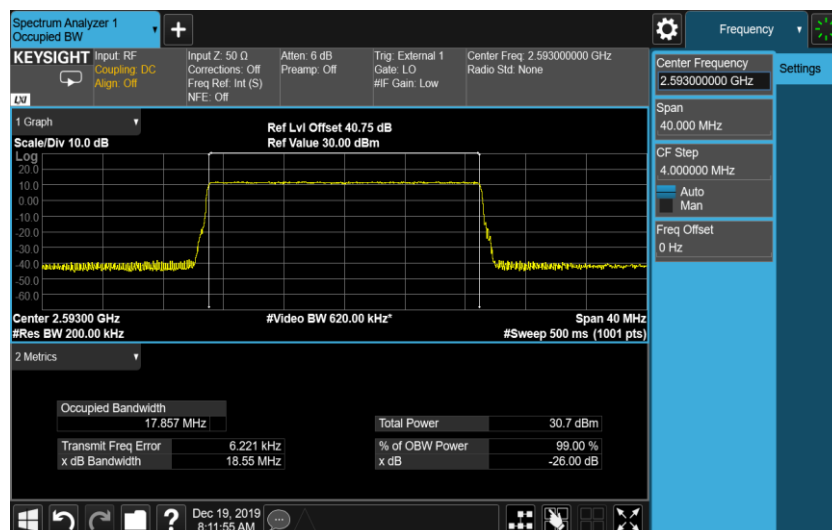
Port 55, 64QAM 20.0M Channel position T, LTE



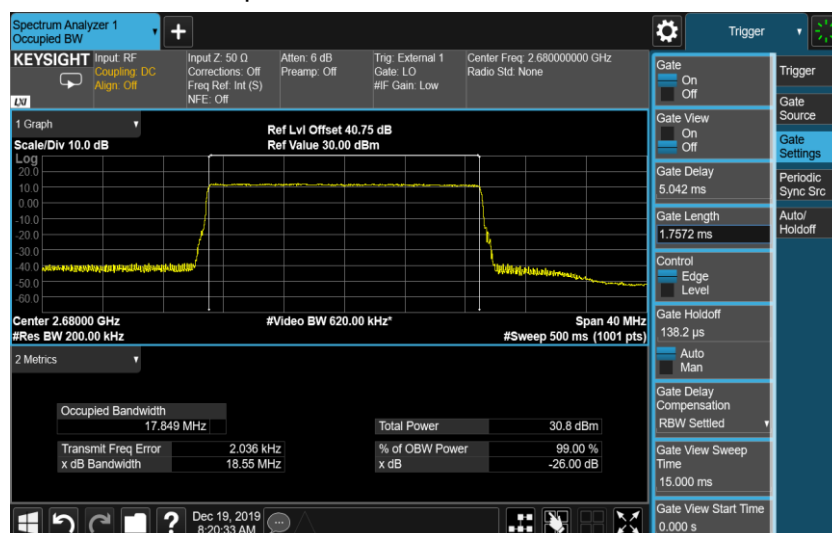
Port 55, 256QAM 20.0M Channel position B, LTE



Port 55, 256QAM 20.0M Channel position M, LTE



Port 55, 256QAM 20.0M Channel position T, LTE



### **A.3 Spurious Emissions at Band Edge**

#### **A.3.1 Reference**

FCC CFR 47 Part 2, Clause 2.1051

FCC CFR 47 Part 27, Clause 27.53(m)

#### **A.3.2 Method of measurement**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10\log(P)$  dB.

For MIMO mode configurations, the limit was adjusted with a correction of -18.06dB [ $10\log(1/64)$ ] by using the Measure and Add  $10\log(N)$  dB technique according to KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports . Then the limit was adjusted to -31.06dBm.

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed and a RBW of 1MHz for measurements of emissions > 1MHz away from the band edges.

The limit was adjusted with -13.01dB [ $10\log(50/1000)$ ] to compensate for the reduced measurement bandwidth 50KHz for emission more than 1MHz away from the band edges. For MIMO mode, the limit of -44.07dBm was used.

Spectrum analyzer detector was set as RMS.

#### **A.3.3 Measurement limit**

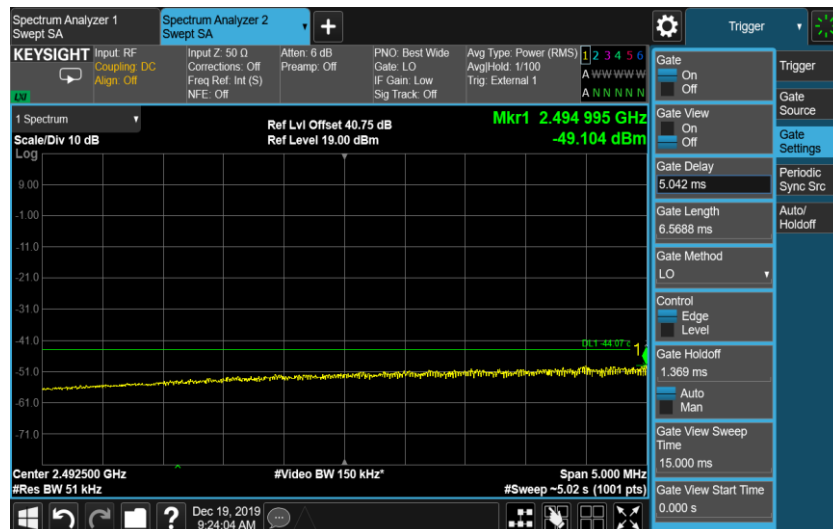
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10\log(P)$  dB.

### A.3.4 Measurement result

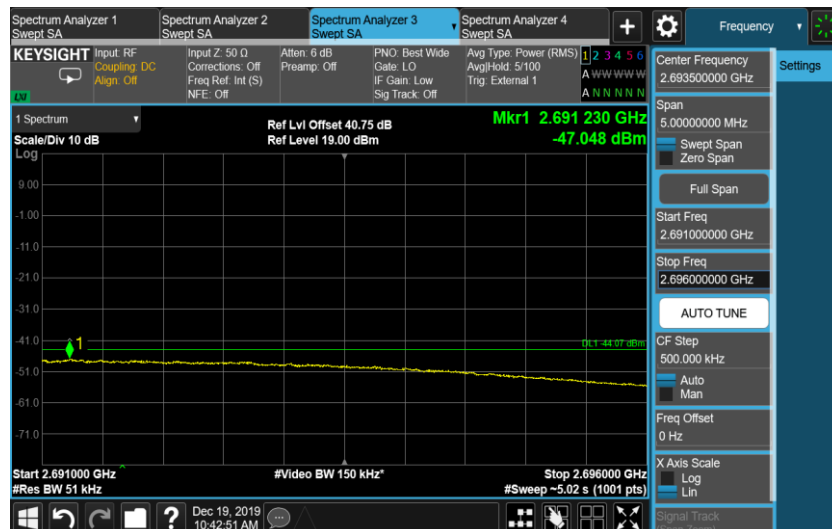
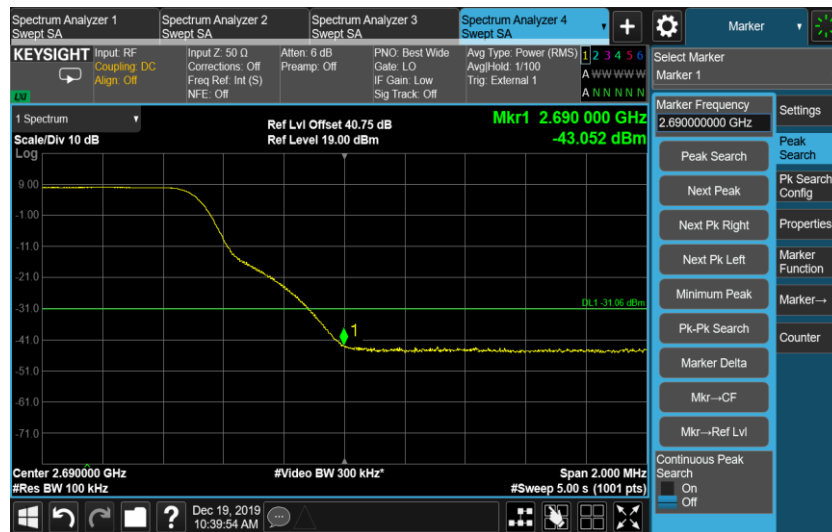
Configuration LTE-MIMO-1C-BE (1LTE QPSK 10M)

| Band Edge Frequency             | Channel Bandwidth | RBW(KHz) | Limit(dBm) |
|---------------------------------|-------------------|----------|------------|
| Channel Position B<br>2496.0MHz | LTE 10.0 MHz      | 100      | -31.06     |
|                                 |                   | 50       | -44.07     |
|                                 | LTE 20.0 MHz      | 200      | -31.06     |
|                                 |                   | 50       | -44.07     |
| Channel Position T<br>2690.0MHz | LTE 10.0 MHz      | 100      | -31.06     |
|                                 |                   | 50       | -44.07     |
|                                 | LTE 20.0 MHz      | 200      | -31.06     |
|                                 |                   | 50       | -44.07     |

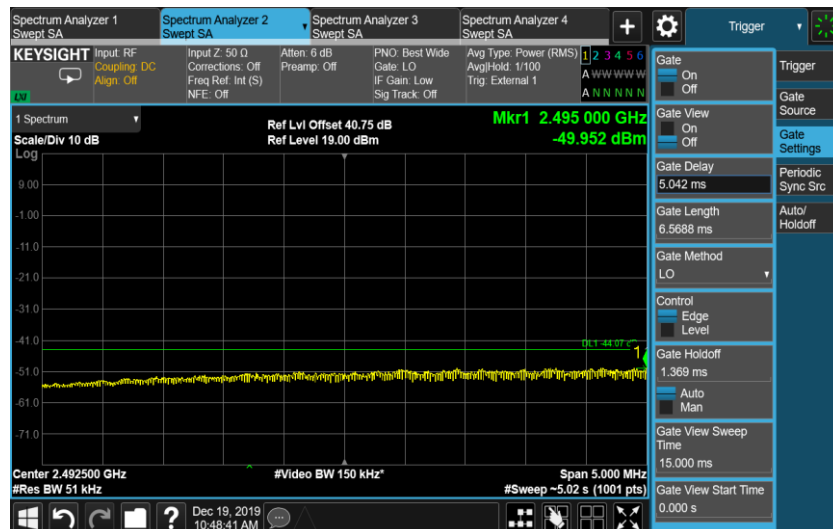
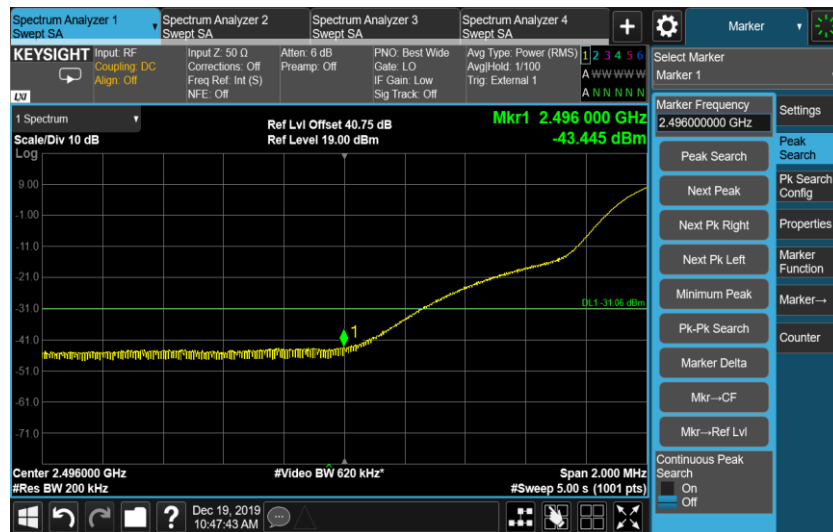
Port 55, Channel Position B, LTE 10M



Port 55, Channel Position T, LTE 10M



Port 55, Channel Position B, LTE 20M



Port 55, Channel Position T, LTE 20M



## Configuration LTE-MIMO-2C-BE (2LTE QPSK)

| Band Edge Frequency             | Channel Bandwidth | RBW(KHz) | Limit(dBm) |
|---------------------------------|-------------------|----------|------------|
| Channel Position B<br>2496.0MHz | LTE 10.0 MHz      | 100      | -31.06     |
|                                 |                   | 50       | -44.07     |
|                                 | LTE 20.0 MHz      | 200      | -31.06     |
|                                 |                   | 50       | -44.07     |
| Channel Position T<br>2690.0MHz | LTE 10.0 MHz      | 100      | -31.06     |
|                                 |                   | 50       | -44.07     |
|                                 | LTE 20.0 MHz      | 200      | -31.06     |
|                                 |                   | 50       | -44.07     |

Port 55, Channel Position B, LTE 10M

