



# TEST REPORT

**APPLICANT** : BLU Products, Inc.

**PRODUCT NAME** : Smart Phone

**MODEL NAME** : G91 MAX

**BRAND NAME** : BLU

**FCC ID** : YHLBLUG91MX

**STANDARD(S)** : 47 CFR Part 22, Subpart H  
47 CFR Part 27, Subpart M

**RECEIPT DATE** : 2021-10-20

**TEST DATE** : 2021-11-04 to 2021-12-02

**ISSUE DATE** : 2021-12-03

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Shen Junsheng ( Supervisor )

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# DIRECTORY

|                                                             |            |
|-------------------------------------------------------------|------------|
| <b>1. Technical Information</b>                             | <b>3</b>   |
| <b>1.1. Applicant and Manufacturer Information</b>          | <b>3</b>   |
| <b>1.2. Equipment Under Test (EUT) Description</b>          | <b>3</b>   |
| <b>1.3. Maximum ERP/EIRP and Emission Designator</b>        | <b>4</b>   |
| <b>1.4. Test Standards and Results</b>                      | <b>5</b>   |
| <b>1.5. Environmental Conditions</b>                        | <b>7</b>   |
| <b>2. 47 CFR Part 2, 22H and 27M Requirements</b>           | <b>8</b>   |
| <b>2.1. Transmitter Conducted Output Power And ERP/EIPR</b> | <b>8</b>   |
| <b>2.2. Occupied Bandwidth</b>                              | <b>14</b>  |
| <b>2.3. Conducted Spurious Emissions</b>                    | <b>48</b>  |
| <b>2.4. Band Edge</b>                                       | <b>86</b>  |
| <b>2.5. Radiated Spurious Emissions</b>                     | <b>101</b> |
| <b>Annex A Test Uncertainty</b>                             | <b>140</b> |
| <b>Annex B Testing Laboratory Information</b>               | <b>140</b> |

| Change History |            |                   |
|----------------|------------|-------------------|
| Version        | Date       | Reason for change |
| 1.0            | 2021-12-03 | First edition     |
|                |            |                   |



# 1. Technical Information

**Note:** Provide by applicant.

## 1.1. Applicant and Manufacturer Information

|                              |                                            |
|------------------------------|--------------------------------------------|
| <b>Applicant:</b>            | BLU Products, Inc.                         |
| <b>Applicant Address:</b>    | 10814 NW 33rd St # 100 Doral, FL 33172,USA |
| <b>Manufacturer:</b>         | BLU Products, Inc.                         |
| <b>Manufacturer Address:</b> | 10814 NW 33rd St # 100 Doral, FL 33172,USA |

## 1.2. Equipment Under Test (EUT) Description

|                           |                                               |                           |
|---------------------------|-----------------------------------------------|---------------------------|
| <b>Product Name:</b>      | Smart Phone                                   |                           |
| <b>Hardware Version:</b>  | KF7F2A                                        |                           |
| <b>Software Version:</b>  | BLU_G0690WW_V11.0.02.01_GENERIC_20211115_1050 |                           |
| <b>IMEI:</b>              | 860531038016997                               |                           |
| <b>Modulation Type:</b>   | QPSK, 16QAM, 64QAM                            |                           |
| <b>Operation Band:</b>    | Uplink: CA_5B; CA_7C; CA_38C                  |                           |
| <b>Frequency Range:</b>   | LTE Band 5                                    | Tx: 824 MHz – 849 MHz     |
|                           |                                               | Rx: 869 MHz – 894 MHz     |
|                           | LTE Band 7                                    | Tx: 2500 MHz – 2570 MHz   |
|                           |                                               | Rx: 2620 MHz – 2690 MHz   |
|                           | LTE Band 38                                   | Tx: 2570 MHz – 2620 MHz   |
|                           |                                               | Rx: 2570 MHz – 2620 MHz   |
| <b>Channel Bandwidth:</b> | LTE Band 5                                    | 1.4MHz, 3MHz, 5MHz, 10MHz |
|                           | LTE Band 7                                    | 5MHz, 10MHz, 15MHz, 20MHz |
|                           | LTE Band 38                                   | 5MHz, 10MHz, 15MHz, 20MHz |
| <b>Antenna Type:</b>      | PIFA Antenna                                  |                           |
| <b>Antenna Gain:</b>      | LTE Band 5                                    | -2.10 dBi                 |
|                           | LTE Band 7                                    | 0.80 dBi                  |
|                           | LTE Band 38                                   | 0.80 dBi                  |

**Note 1:** For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

### 1.3. Maximum ERP/EIRP and Emission Designator

| Channel bandwidth | Maximum ERP/EIRP (W) |       |       |        |
|-------------------|----------------------|-------|-------|--------|
| CA_5B             | QPSK                 | 16QAM | 64QAM | 256QAM |
| 10+10             | 0.027                | 0.200 | 0.021 | /      |
| CA_7C             | QPSK                 | 16QAM | 64QAM | 256QAM |
| 20+20             | 0.088                | 0.063 | 0.063 | /      |
| CA_38C            | QPSK                 | 16QAM | 64QAM | 256QAM |
| 20+20             | 0.104                | 0.082 | 0.078 | /      |

| Channel bandwidth | Emission Designator (99%OBW) |         |         |
|-------------------|------------------------------|---------|---------|
| LTE 5B            | QPSK                         | 16QAM   | 64QAM   |
| 3+5               | 7M13G7D                      | 7M14W7D | 7M44D7W |
| 5+3               | 7M17G7D                      | 7M14W7D | 7M17D7W |
| 5+10              | 13M8G7D                      | 13M8W7D | 13M8D7W |
| 10+5              | 13M8G7D                      | 13M8W7D | 13M8D7W |
| 10+10             | 18M7G7D                      | 18M8W7D | 18M7D7W |
| LTE 7C            | QPSK                         | 16QAM   | 64QAM   |
| 10+20             | 27M7G7D                      | 27M6W7D | 27M7D7W |
| 15+10             | 23M0G7D                      | 23M1W7D | 23M1D7W |
| 15+15             | 28M2G7D                      | 28M3W7D | 28M2D7W |
| 15+20             | 32M6G7D                      | 32M5W7D | 32M6D7W |
| 20+10             | 27M7G7D                      | 27M7W7D | 27M6D7W |
| 20+15             | 32M6G7D                      | 32M6W7D | 32M6D7W |
| 20+20             | 37M5G7D                      | 37M5W7D | 37M4D7W |
| LTE 38C           | QPSK                         | 16QAM   | 64QAM   |
| 15+15             | 28M2G7D                      | 28M2W7D | 28M2D7W |
| 20+20             | 37M5G7D                      | 37M5W7D | 37M5D7W |



## 1.4. Test Standards and Results

The objective of the report is to perform testing according to Part 2, Part 22 and Part 27 for the EUT FCC ID Certification:

| No | Identity       | Document Title                                                                |
|----|----------------|-------------------------------------------------------------------------------|
| 1  | 47 CFR Part 2  | Frequency Allocations and Radio Treaty Matters; General Rules and Regulations |
| 2  | 47 CFR Part 22 | Public Mobile Services                                                        |
| 3  | 47 CFR Part 27 | Miscellaneous Wireless Communications Services                                |



Test detailed items/section required by FCC rules and results are as below:

| Section                                                                                                                                                                                                                                                                                                                                                                 | Description                                              | Test Date                  | Test Engineer | Result | Method Determination /Remark |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------|---------------|--------|------------------------------|
| 2.1046,<br>22.913(a)(5),<br>27.50(h)(2),                                                                                                                                                                                                                                                                                                                                | Transmitter<br>Conducted Output<br>Power and<br>ERP/EIRP | Nov 4 to<br>Dec 2,<br>2021 | Li Huaijie    | PASS   | No<br>deviation              |
| 2.1049                                                                                                                                                                                                                                                                                                                                                                  | Occupied Bandwidth                                       | Nov 4 to<br>Nov 8,<br>2021 | Li Huaijie    | PASS   | No<br>deviation              |
| 2.1055,<br>22.355,<br>27.54                                                                                                                                                                                                                                                                                                                                             | Frequency Stability                                      | Nov 4 to<br>Nov 8,<br>2021 | Li Huaijie    | PASS   | No<br>deviation              |
| 2.1051,<br>22.917(a),<br>27.53(m),                                                                                                                                                                                                                                                                                                                                      | Conducted Spurious<br>Emissions                          | Nov 4 to<br>Nov 9,<br>2021 | Li Huaijie    | PASS   | No<br>deviation              |
| 2.1051,<br>22.917(a),<br>27.53(m),                                                                                                                                                                                                                                                                                                                                      | Band Edge                                                | Nov 4 to<br>Nov 9,<br>2021 | Li Huaijie    | PASS   | No<br>deviation              |
| 2.1053,<br>22.917(a),<br>27.53,                                                                                                                                                                                                                                                                                                                                         | Radiated Spurious<br>Emissions                           | Nov 4 to<br>Nov 8,<br>2021 | Gao Jianrou   | PASS   | No<br>deviation              |
| <p><b>Note 1:</b> The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 and ANSI/TIA-603-E-2016.</p> <p><b>Note 2:</b> The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 8dB contains two parts that cable loss 5dB and Attenuator 3dB.</p> |                                                          |                            |               |        |                              |



## 1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

|                             |          |
|-----------------------------|----------|
| Temperature (°C):           | 15 - 35  |
| Relative Humidity (%):      | 30 - 60  |
| Atmospheric Pressure (kPa): | 86 - 106 |



## **2.47 CFR Part 2, 22H and 27M Requirements**

### **2.1. Transmitter Conducted Output Power And ERP/EIPR**

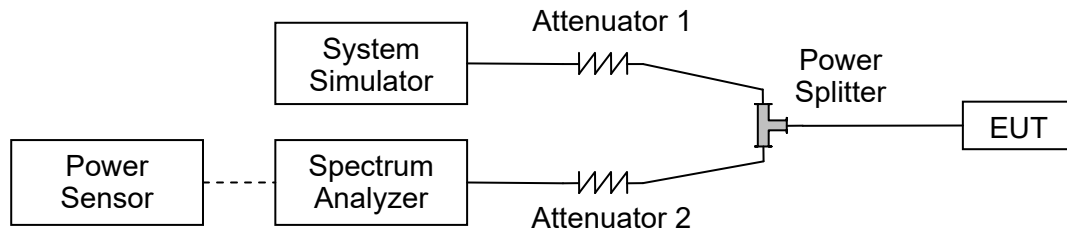
#### **2.1.1. Requirement**

According to FCC section 2.1046(a) for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

According to FCC section 22.913(a)(5) for LTE Band 5, the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC section 27.50 (h)(2) for LTE Band 7/38, Mobile and other user stations. Mobile stations are limited to 2 watts E.I.R.P. All user stations are limited to 2 watts transmitter output power

### 2.1.1. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

### 2.1.2. Test procedure

KDB 971168 D01v03 Section 5.2 and ANSI/TIA-603-E-2016.

$EIRP \text{ (dBm)} = \text{Conducted Output Power (dBm)} + \text{Antenna Gain (dBi)}$

$ERP \text{ (dBm)} = EIPR \text{ (dBm)} - 2.15$

**2.1.3. Result****Conducted Output Power**

| CA_5B                              |                |            |            |              |            |              |                     |                        |
|------------------------------------|----------------|------------|------------|--------------|------------|--------------|---------------------|------------------------|
| Combination:10MHz+10MHz(50RB+50RB) |                |            |            |              |            |              |                     |                        |
| PCC<br>Channel                     | SCC<br>Channel | Modulation | PCC        |              | SCC        |              | Total<br>RB<br>Size | Measured<br>Power(dBm) |
|                                    |                |            | RB<br>Size | RB<br>Offset | RB<br>Size | RB<br>Offset |                     |                        |
| 20450                              | 20549          | QPSK       | 1          | 0            | 0          | 0            | 1                   | 18.46                  |
| 20476                              | 20575          | QPSK       | 1          | 0            | 0          | 0            | 1                   | 18.57                  |
| 20501                              | 20600          | QPSK       | 1          | 0            | 0          | 0            | 1                   | 18.39                  |
| 20450                              | 20549          | 16QAM      | 1          | 0            | 0          | 0            | 1                   | 17.16                  |
| 20476                              | 20575          | 16QAM      | 1          | 0            | 0          | 0            | 1                   | 17.22                  |
| 20501                              | 20600          | 16QAM      | 1          | 0            | 0          | 0            | 1                   | 16.86                  |
| 20450                              | 20549          | 64QAM      | 1          | 0            | 0          | 0            | 1                   | 17.38                  |
| 20476                              | 20575          | 64QAM      | 1          | 0            | 0          | 0            | 1                   | 16.92                  |
| 20501                              | 20600          | 64QAM      | 1          | 0            | 0          | 0            | 1                   | 17.42                  |
| 20450                              | 20549          | QPSK       | 50         | 0            | 0          | 0            | 1                   | 16.72                  |
| 20476                              | 20575          | QPSK       | 50         | 0            | 0          | 0            | 1                   | 17.11                  |
| 20501                              | 20600          | QPSK       | 50         | 0            | 0          | 0            | 1                   | 16.99                  |



| CA_7C                                |             |            |         |           |         |           |               |                     |
|--------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|---------------------|
| Combination:20MHz+20MHz(100RB+100RB) |             |            |         |           |         |           |               |                     |
| PCC Channel (3GPP)                   | SCC Channel | Modulation | PCC     |           | SCC     |           | Total RB Size | Measured Power(dBm) |
|                                      |             |            | RB Size | RB Offset | RB Size | RB Offset |               |                     |
| 20850                                | 21048       | QPSK       | 1       | 0         | 0       | 0         | 1             | 18.64               |
| 21001                                | 21199       | QPSK       | 1       | 0         | 0       | 0         | 1             | 18.66               |
| 21152                                | 21350       | QPSK       | 1       | 0         | 0       | 0         | 1             | 18.52               |
| 20850                                | 21048       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 17.19               |
| 21001                                | 21199       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 17.21               |
| 21152                                | 21350       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 17.16               |
| 20850                                | 21048       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 17.21               |
| 21001                                | 21199       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 17.16               |
| 21152                                | 21350       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 17.11               |
| 20850                                | 21048       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.13               |
| 21001                                | 21199       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.22               |
| 21152                                | 21350       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.15               |

| CA_38C                               |             |            |         |           |         |           |               |                     |
|--------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|---------------------|
| Combination:20MHz+20MHz(100RB+100RB) |             |            |         |           |         |           |               |                     |
| PCC Channel (3GPP)                   | SCC Channel | Modulation | PCC     |           | SCC     |           | Total RB Size | Measured Power(dBm) |
|                                      |             |            | RB Size | RB Offset | RB Size | RB Offset |               |                     |
| 37850                                | 38048       | QPSK       | 1       | 0         | 0       | 0         | 1             | 19.21               |
| 37901                                | 38099       | QPSK       | 1       | 0         | 0       | 0         | 1             | 19.36               |
| 37952                                | 38150       | QPSK       | 1       | 0         | 0       | 0         | 1             | 19.28               |
| 37850                                | 38048       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 18.24               |
| 37901                                | 38099       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 18.35               |
| 37952                                | 38150       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 18.11               |
| 37850                                | 38048       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 18.12               |
| 37901                                | 38099       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 17.92               |
| 37952                                | 38150       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 17.99               |
| 37850                                | 38048       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.26               |
| 37901                                | 38099       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.13               |
| 37952                                | 38150       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.18               |

**Effective Radiated Power and Effective Isotropic Radiated Power**

| CA_5B                              |                |            |            |              |            |              |                     |                        |                     |
|------------------------------------|----------------|------------|------------|--------------|------------|--------------|---------------------|------------------------|---------------------|
| Combination:10MHz+10MHz(50RB+50RB) |                |            |            |              |            |              |                     |                        |                     |
| PCC<br>Channel                     | SCC<br>Channel | Modulation | PCC        |              | SCC        |              | Total<br>RB<br>Size | Measured<br>Power(dBm) | Measured<br>EIRP(W) |
|                                    |                |            | RB<br>Size | RB<br>Offset | RB<br>Size | RB<br>Offset |                     |                        |                     |
| 20450                              | 20549          | QPSK       | 1          | 0            | 0          | 0            | 1                   | 14.21                  | 0.026               |
| 20476                              | 20575          | QPSK       | 1          | 0            | 0          | 0            | 1                   | 14.32                  | 0.027               |
| 20501                              | 20600          | QPSK       | 1          | 0            | 0          | 0            | 1                   | 14.14                  | 0.026               |
| 20450                              | 20549          | 16QAM      | 1          | 0            | 0          | 0            | 1                   | 12.91                  | 0.020               |
| 20476                              | 20575          | 16QAM      | 1          | 0            | 0          | 0            | 1                   | 12.97                  | 0.020               |
| 20501                              | 20600          | 16QAM      | 1          | 0            | 0          | 0            | 1                   | 12.61                  | 0.018               |
| 20450                              | 20549          | 64QAM      | 1          | 0            | 0          | 0            | 1                   | 13.13                  | 0.021               |
| 20476                              | 20575          | 64QAM      | 1          | 0            | 0          | 0            | 1                   | 12.67                  | 0.018               |
| 20501                              | 20600          | 64QAM      | 1          | 0            | 0          | 0            | 1                   | 13.17                  | 0.021               |
| 20450                              | 20549          | QPSK       | 50         | 0            | 0          | 0            | 1                   | 12.47                  | 0.018               |
| 20476                              | 20575          | QPSK       | 50         | 0            | 0          | 0            | 1                   | 12.86                  | 0.019               |
| 20501                              | 20600          | QPSK       | 50         | 0            | 0          | 0            | 1                   | 12.74                  | 0.019               |



| CA_7C                                |             |            |         |           |         |           |               |                     |                  |
|--------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|---------------------|------------------|
| Combination:20MHz+20MHz(100RB+100RB) |             |            |         |           |         |           |               |                     |                  |
| PCC Channel                          | SCC Channel | Modulation | PCC     |           | SCC     |           | Total RB Size | Measured Power(dBm) | Measured EIRP(W) |
|                                      |             |            | RB Size | RB Offset | RB Size | RB Offset |               |                     |                  |
| 20850                                | 21048       | QPSK       | 1       | 0         | 0       | 0         | 1             | 19.44               | 0.088            |
| 21001                                | 21199       | QPSK       | 1       | 0         | 0       | 0         | 1             | 19.46               | 0.088            |
| 21152                                | 21350       | QPSK       | 1       | 0         | 0       | 0         | 1             | 19.32               | 0.086            |
| 20850                                | 21048       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 17.99               | 0.063            |
| 21001                                | 21199       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 18.01               | 0.063            |
| 21152                                | 21350       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 17.96               | 0.063            |
| 20850                                | 21048       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 18.01               | 0.063            |
| 21001                                | 21199       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 17.96               | 0.063            |
| 21152                                | 21350       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 17.91               | 0.062            |
| 20850                                | 21048       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.93               | 0.062            |
| 21001                                | 21199       | QPSK       | 50      | 0         | 0       | 0         | 1             | 18.02               | 0.063            |
| 21152                                | 21350       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.95               | 0.062            |

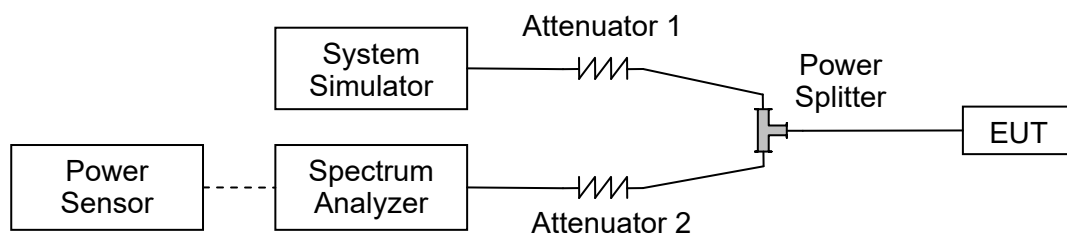
| CA_38C                               |             |            |         |           |         |           |               |                     |                  |
|--------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|---------------------|------------------|
| Combination:20MHz+20MHz(100RB+100RB) |             |            |         |           |         |           |               |                     |                  |
| PCC Channel                          | SCC Channel | Modulation | PCC     |           | SCC     |           | Total RB Size | Measured Power(dBm) | Measured EIRP(W) |
|                                      |             |            | RB Size | RB Offset | RB Size | RB Offset |               |                     |                  |
| 37850                                | 38048       | QPSK       | 1       | 0         | 0       | 0         | 1             | 20.01               | 0.100            |
| 37901                                | 38099       | QPSK       | 1       | 0         | 0       | 0         | 1             | 20.16               | 0.104            |
| 37952                                | 38150       | QPSK       | 1       | 0         | 0       | 0         | 1             | 20.08               | 0.102            |
| 37850                                | 38048       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 19.04               | 0.080            |
| 37901                                | 38099       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 19.15               | 0.082            |
| 37952                                | 38150       | 16QAM      | 1       | 0         | 0       | 0         | 1             | 18.91               | 0.078            |
| 37850                                | 38048       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 18.92               | 0.078            |
| 37901                                | 38099       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 18.72               | 0.074            |
| 37952                                | 38150       | 64QAM      | 1       | 0         | 0       | 0         | 1             | 18.79               | 0.076            |
| 37850                                | 38048       | QPSK       | 50      | 0         | 0       | 0         | 1             | 18.06               | 0.064            |
| 37901                                | 38099       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.93               | 0.062            |
| 37952                                | 38150       | QPSK       | 50      | 0         | 0       | 0         | 1             | 17.98               | 0.063            |

## 2.2. Occupied Bandwidth

### 2.2.1. Requirement

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission. Occupied bandwidth is also known as the 99% emission bandwidth.

### 2.2.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

### 2.2.3. Test procedure

KDB 971168 D01v03 Section 4.1 and ANSI/TIA-603-E-2016.

### 2.2.4. Test Result



| LTE Band 5B |               |            |             |              |
|-------------|---------------|------------|-------------|--------------|
| BW(MHz)     | Channel Level | Modulation | 99% BW(MHz) | 26dB BW(MHz) |
| 3M+5MHz     | Low           | QPSK       | 7.11        | 7.77         |
|             | Low           | 16QAM      | 7.09        | 7.80         |
|             | Low           | 64QAM      | 7.44        | 7.79         |
|             | Mid           | QPSK       | 7.13        | 7.75         |
|             | Mid           | 16QAM      | 7.14        | 7.41         |
|             | Mid           | 64QAM      | 7.15        | 7.74         |
|             | High          | QPSK       | 7.08        | 7.74         |
|             | High          | 16QAM      | 7.00        | 7.75         |
|             | High          | 64QAM      | 7.04        | 7.75         |
| 5M+3MHz     | Low           | QPSK       | 7.13        | 7.81         |
|             | Low           | 16QAM      | 7.10        | 7.79         |
|             | Low           | 64QAM      | 7.08        | 7.79         |
|             | Mid           | QPSK       | 7.17        | 7.80         |
|             | Mid           | 16QAM      | 7.08        | 7.79         |
|             | Mid           | 64QAM      | 7.17        | 7.80         |
|             | High          | QPSK       | 7.12        | 7.80         |
|             | High          | 16QAM      | 7.14        | 7.80         |
|             | High          | 64QAM      | 7.12        | 7.83         |
| 5M+10MHz    | Low           | QPSK       | 13.81       | 14.49        |
|             | Low           | 16QAM      | 13.81       | 14.37        |
|             | Low           | 64QAM      | 13.85       | 14.44        |
|             | Mid           | QPSK       | 13.86       | 14.37        |
|             | Mid           | 16QAM      | 13.83       | 14.49        |
|             | Mid           | 64QAM      | 13.86       | 14.42        |
|             | High          | QPSK       | 13.84       | 14.47        |
|             | High          | 16QAM      | 13.78       | 14.38        |
|             | High          | 64QAM      | 13.85       | 14.43        |
| 10M+5MHz    | Low           | QPSK       | 13.86       | 14.53        |
|             | Low           | 16QAM      | 13.81       | 14.49        |
|             | Low           | 64QAM      | 13.82       | 14.51        |
|             | Mid           | QPSK       | 13.87       | 14.50        |
|             | Mid           | 16QAM      | 13.85       | 14.48        |
|             | Mid           | 64QAM      | 13.89       | 14.52        |
|             | High          | QPSK       | 13.87       | 14.53        |
|             | High          | 16QAM      | 13.88       | 14.46        |
|             | High          | 64QAM      | 13.78       | 14.44        |



REPORT No.: SZ21100051W03

|           |      |       |       |       |
|-----------|------|-------|-------|-------|
| 10M+10MHz | Low  | QPSK  | 18.71 | 19.52 |
|           | Low  | 16QAM | 18.73 | 19.46 |
|           | Low  | 64QAM | 18.63 | 19.47 |
|           | Mid  | QPSK  | 18.73 | 19.60 |
|           | Mid  | 16QAM | 18.80 | 19.58 |
|           | Mid  | 64QAM | 18.71 | 19.51 |
|           | High | QPSK  | 18.73 | 19.59 |
|           | High | 16QAM | 18.69 | 19.52 |
|           | High | 64QAM | 18.70 | 19.52 |



| LTE Band 7C |               |            |             |              |
|-------------|---------------|------------|-------------|--------------|
| BW(MHz)     | Channel Level | Modulation | 99% BW(MHz) | 26dB BW(MHz) |
| 10M+20MHz   | Low           | QPSK       | 27.61       | 28.77        |
|             | Low           | 16QAM      | 27.68       | 28.63        |
|             | Low           | 64QAM      | 27.79       | 28.79        |
|             | Mid           | QPSK       | 27.62       | 28.59        |
|             | Mid           | 16QAM      | 27.59       | 28.73        |
|             | Mid           | 64QAM      | 27.73       | 28.63        |
|             | High          | QPSK       | 27.70       | 28.78        |
|             | High          | 16QAM      | 27.55       | 28.62        |
|             | High          | 64QAM      | 27.59       | 28.69        |
| 15M+10MHz   | Low           | QPSK       | 23.07       | 24.23        |
|             | Low           | 16QAM      | 23.10       | 23.99        |
|             | Low           | 64QAM      | 23.11       | 24.10        |
|             | Mid           | QPSK       | 23.03       | 24.07        |
|             | Mid           | 16QAM      | 22.98       | 24.11        |
|             | Mid           | 64QAM      | 23.07       | 24.06        |
|             | High          | QPSK       | 23.00       | 24.09        |
|             | High          | 16QAM      | 23.09       | 24.10        |
|             | High          | 64QAM      | 23.05       | 24.26        |
| 15M+15MHz   | Low           | QPSK       | 28.27       | 29.55        |
|             | Low           | 16QAM      | 28.30       | 29.31        |
|             | Low           | 64QAM      | 28.28       | 29.42        |
|             | Mid           | QPSK       | 25.62       | 26.82        |
|             | Mid           | 16QAM      | 25.50       | 26.83        |
|             | Mid           | 64QAM      | 25.58       | 26.80        |
|             | High          | QPSK       | 28.27       | 29.41        |
|             | High          | 16QAM      | 28.17       | 29.45        |
|             | High          | 64QAM      | 28.18       | 29.40        |
| 15M+20MHz   | Low           | QPSK       | 32.61       | 33.97        |
|             | Low           | 16QAM      | 32.49       | 33.84        |
|             | Low           | 64QAM      | 32.62       | 33.92        |
|             | Mid           | QPSK       | 32.60       | 33.86        |
|             | Mid           | 16QAM      | 32.43       | 33.85        |
|             | Mid           | 64QAM      | 32.55       | 33.91        |
|             | High          | QPSK       | 32.59       | 33.91        |
|             | High          | 16QAM      | 32.58       | 33.82        |
|             | High          | 64QAM      | 32.58       | 33.90        |



|           |      |       |       |       |
|-----------|------|-------|-------|-------|
| 20M+10MHz | Low  | QPSK  | 27.71 | 29.02 |
|           | Low  | 16QAM | 27.63 | 28.89 |
|           | Low  | 64QAM | 27.65 | 29.01 |
|           | Mid  | QPSK  | 27.61 | 28.87 |
|           | Mid  | 16QAM | 27.62 | 29.02 |
|           | Mid  | 64QAM | 27.66 | 28.97 |
|           | High | QPSK  | 27.73 | 29.03 |
|           | High | 16QAM | 27.70 | 28.93 |
|           | High | 64QAM | 27.69 | 28.90 |
| 20M+15MHz | Low  | QPSK  | 32.60 | 34.10 |
|           | Low  | 16QAM | 32.63 | 33.97 |
|           | Low  | 64QAM | 32.64 | 33.89 |
|           | Mid  | QPSK  | 32.50 | 34.08 |
|           | Mid  | 16QAM | 32.50 | 33.97 |
|           | Mid  | 64QAM | 32.47 | 33.96 |
|           | High | QPSK  | 32.56 | 33.90 |
|           | High | 16QAM | 32.56 | 33.87 |
|           | High | 64QAM | 32.58 | 34.13 |
| 20M+20MHz | Low  | QPSK  | 37.57 | 39.13 |
|           | Low  | 16QAM | 37.51 | 39.05 |
|           | Low  | 64QAM | 37.40 | 38.86 |
|           | Mid  | QPSK  | 37.47 | 39.05 |
|           | Mid  | 16QAM | 37.50 | 38.95 |
|           | Mid  | 64QAM | 37.36 | 38.96 |
|           | High | QPSK  | 37.52 | 38.87 |
|           | High | 16QAM | 37.35 | 39.03 |
|           | High | 64QAM | 37.25 | 39.14 |

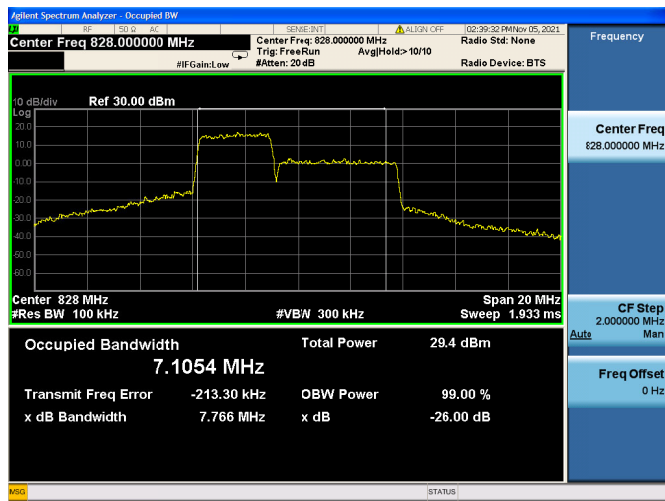


| LTE Band 38C |               |            |             |              |
|--------------|---------------|------------|-------------|--------------|
| BW(MHz)      | Channel Level | Modulation | 99% BW(MHz) | 26dB BW(MHz) |
| 15M+15MHz    | Low           | QPSK       | 28.27       | 29.53        |
|              | Low           | 16QAM      | 28.27       | 29.49        |
|              | Low           | 64QAM      | 28.27       | 29.34        |
|              | Mid           | QPSK       | 28.21       | 29.50        |
|              | Mid           | 16QAM      | 28.24       | 29.45        |
|              | Mid           | 64QAM      | 28.25       | 29.38        |
|              | High          | QPSK       | 28.18       | 29.29        |
|              | High          | 16QAM      | 28.15       | 29.32        |
|              | High          | 64QAM      | 28.16       | 29.35        |
| 20M+20MHz    | Low           | QPSK       | 37.47       | 38.93        |
|              | Low           | 16QAM      | 37.50       | 39.01        |
|              | Low           | 64QAM      | 37.54       | 38.79        |
|              | Mid           | QPSK       | 37.50       | 38.93        |
|              | Mid           | 16QAM      | 37.44       | 38.88        |
|              | Mid           | 64QAM      | 37.44       | 39.14        |
|              | High          | QPSK       | 37.42       | 38.92        |
|              | High          | 16QAM      | 37.39       | 38.76        |
|              | High          | 64QAM      | 37.38       | 39.04        |



## LTE Band 5B

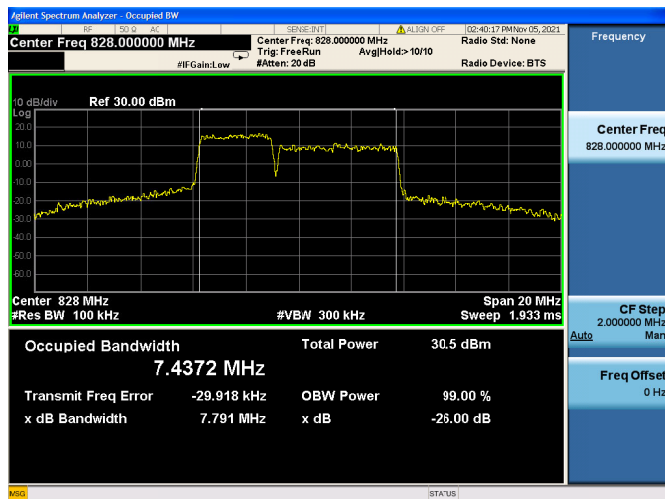
## 3MHz+5MHz / QPSK / LCH



## 3MHz+5MHz / 16QAM / LCH



## 3MHz+5MHz / 64QAM / LCH



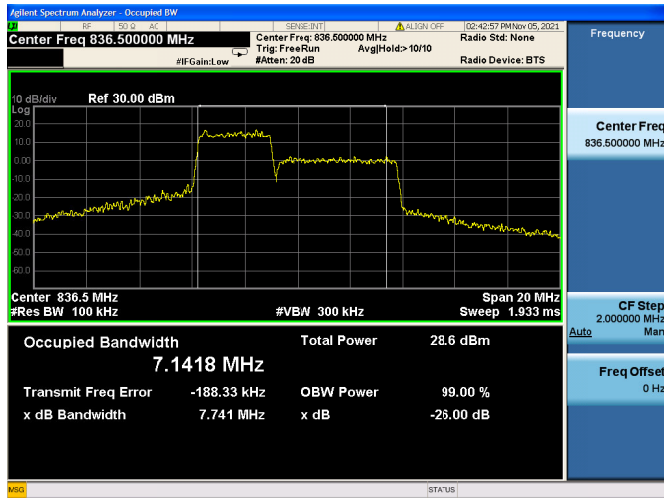
## 3MHz+5MHz / QPSK / MCH



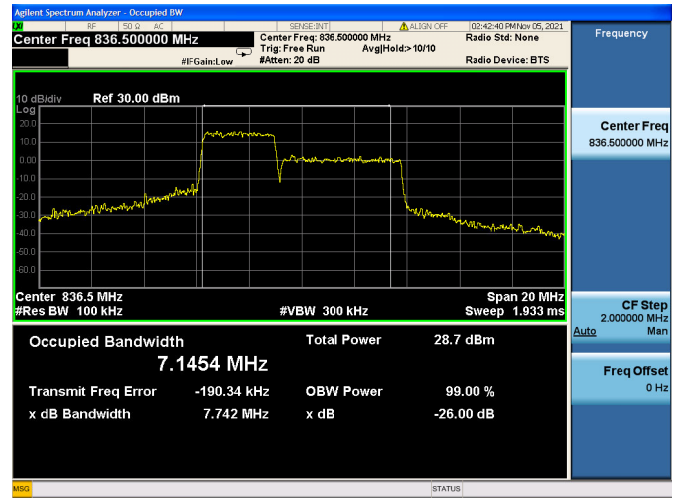


REPORT No.: SZ21100051W03

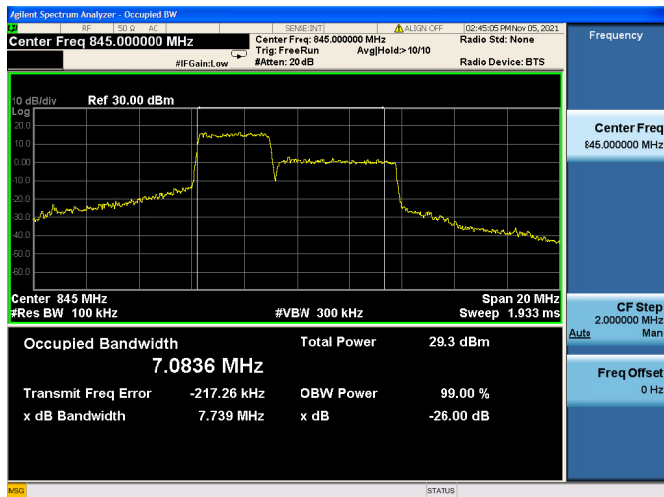
## 3MHz+5MHz / 16QAM / MCH



## 3MHz+5MHz / 64QAM / MCH



## 3MHz+5MHz / QPSK / HCH



## 3MHz+5MHz / 16QAM / HCH



## 3MHz+5MHz / 64QAM / HCH



N/A



## LTE Band 5B

## 5MHz+3MHz / QPSK / LCH



## 5MHz+3MHz / 16QAM / LCH



## 5MHz+3MHz / 64QAM / LCH

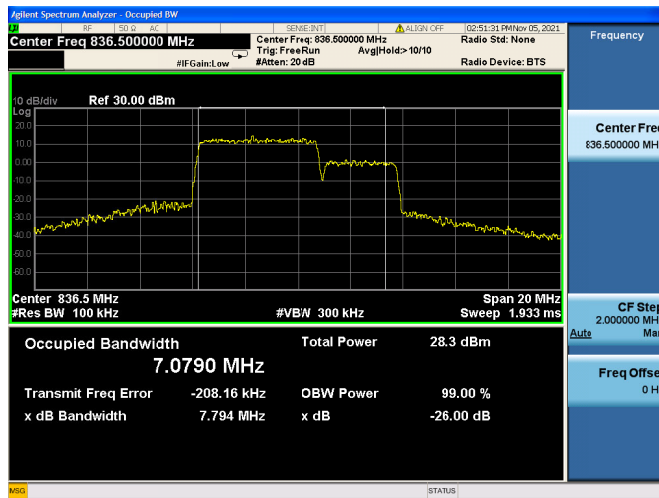


## 5MHz+3MHz / QPSK / MCH

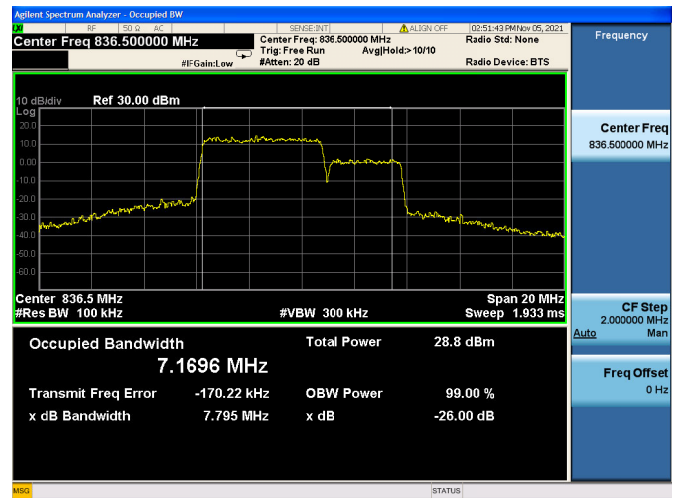




## 5MHz+3MHz / 16QAM / MCH



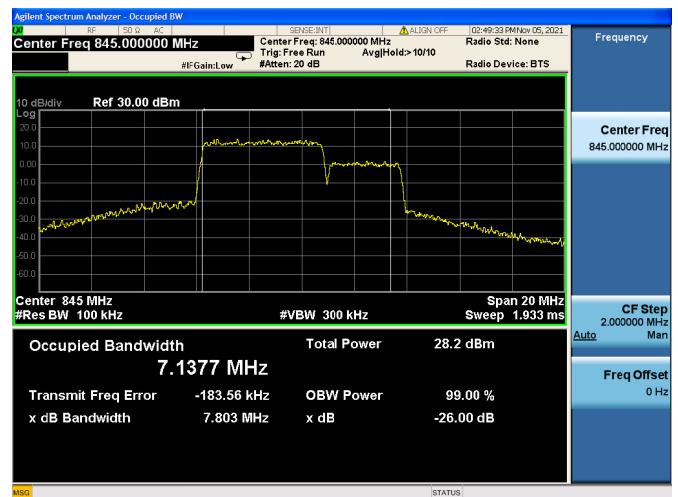
## 5MHz+3MHz / 64QAM / MCH



## 5MHz+3MHz / QPSK / HCH



## 5MHz+3MHz / 16QAM / HCH



## 5MHz+3MHz / 64QAM / HCH

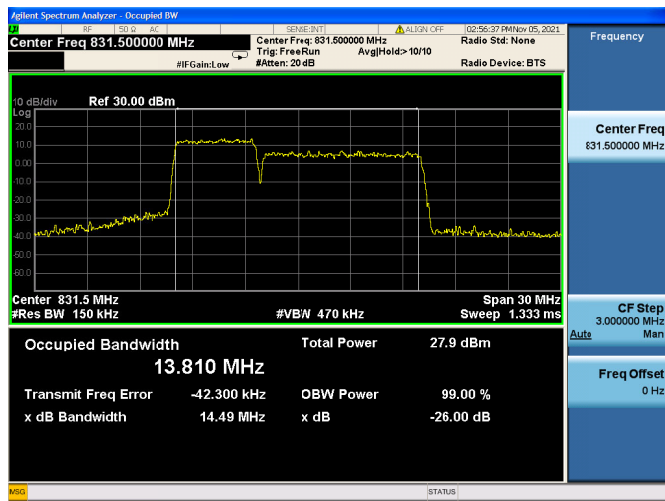


N/A

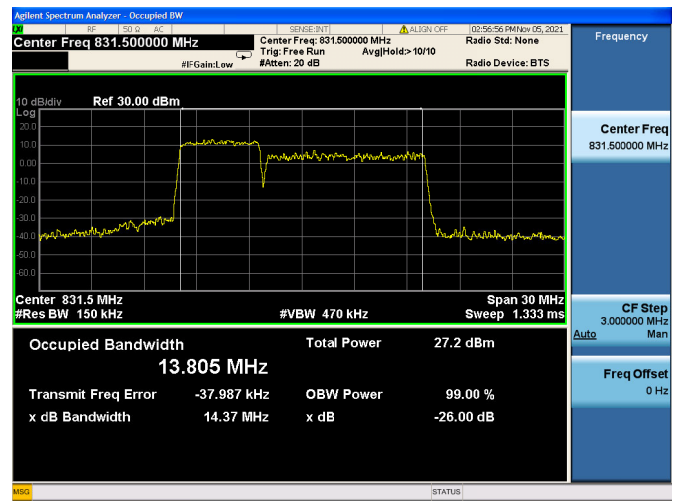


## LTE Band 5B

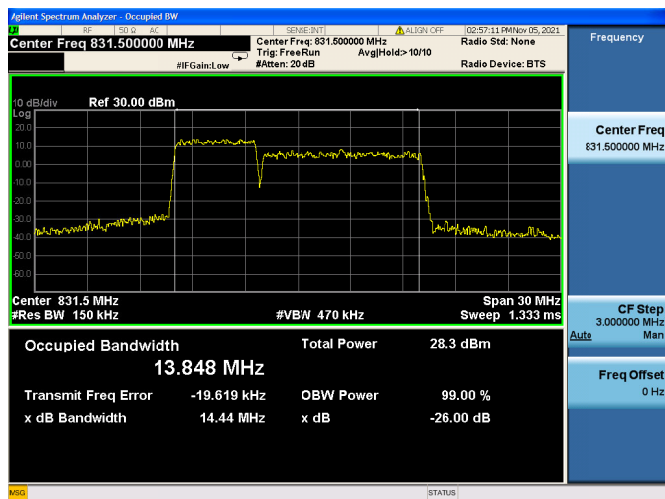
## 5MHz+10MHz / QPSK / LCH



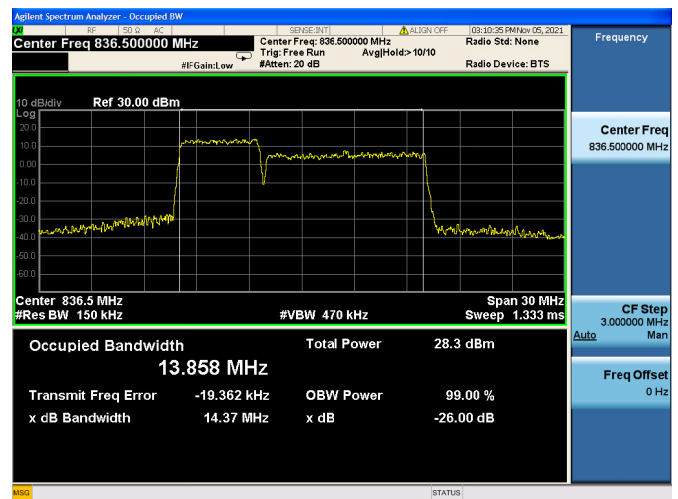
## 5MHz+10MHz / 16QAM / LCH



## 5MHz+10MHz / 64QAM / LCH

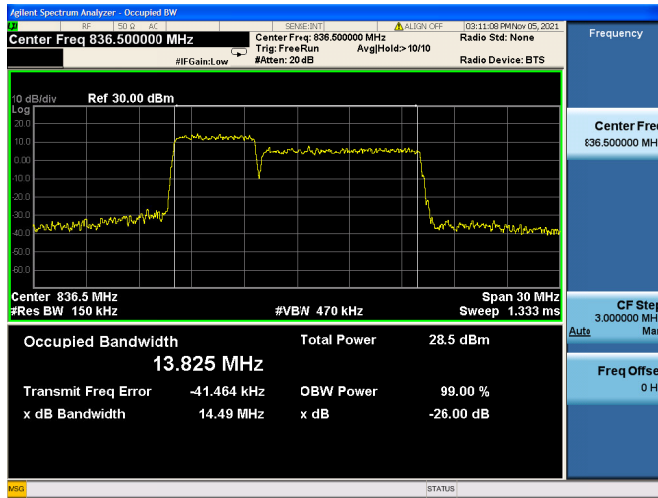


## 5MHz+10MHz / QPSK / MCH

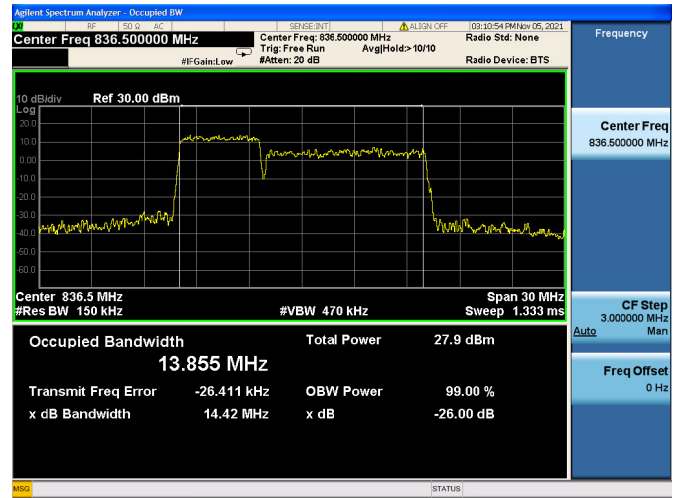




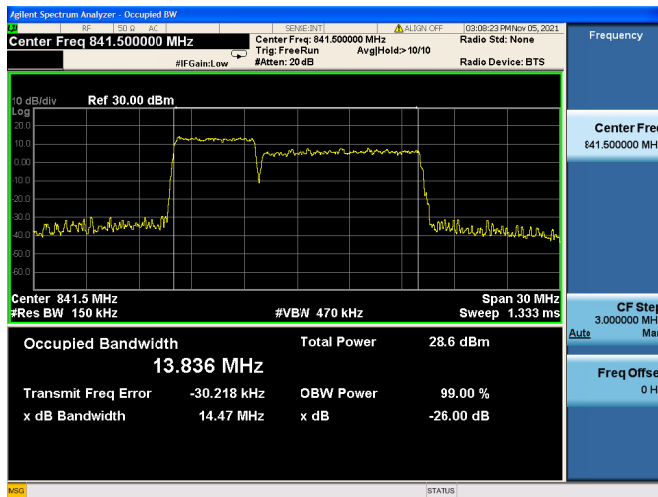
## 5MHz+10MHz / 16QAM / MCH



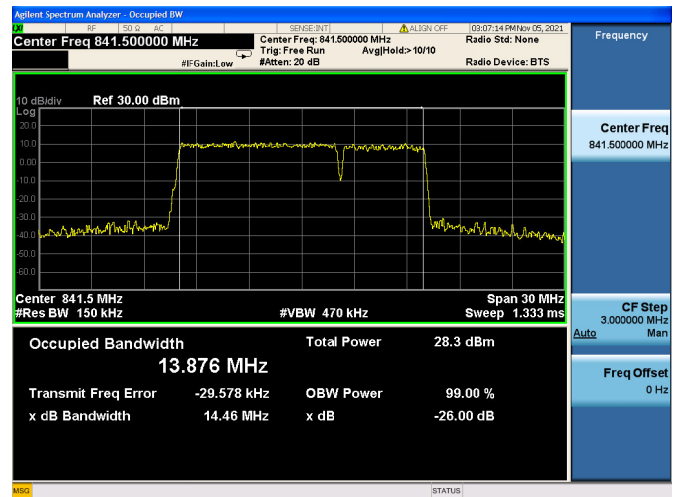
## 5MHz+10MHz / 64QAM / MCH



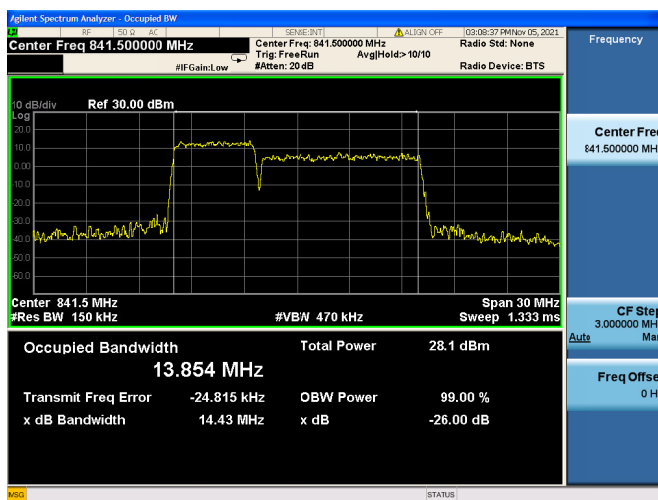
## 5MHz+10MHz / QPSK / HCH



## 5MHz+10MHz / 16QAM / HCH



## 5MHz+10MHz / 64QAM / HCH

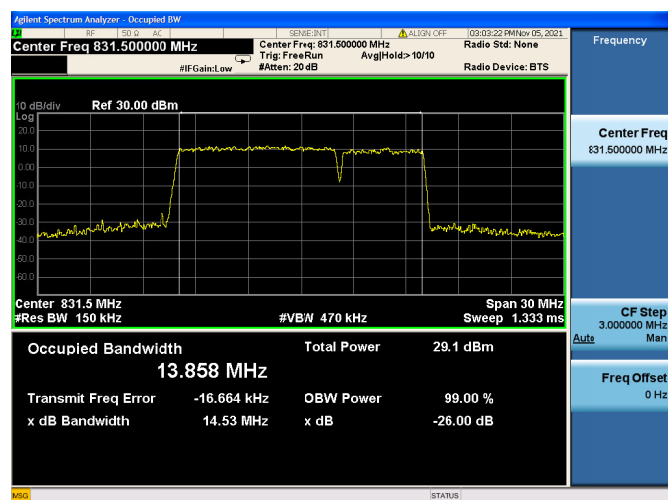


N/A

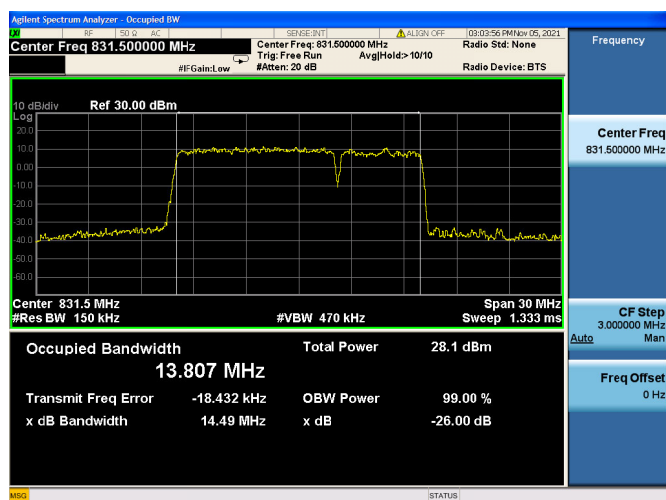


## LTE Band 5B

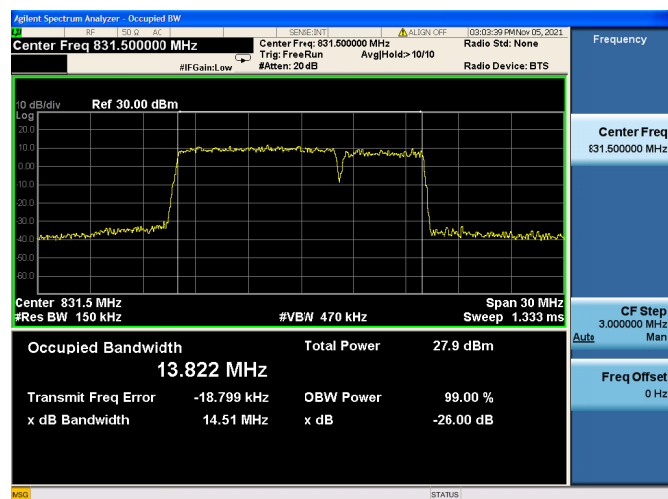
## 10MHz+5MHz / QPSK / LCH



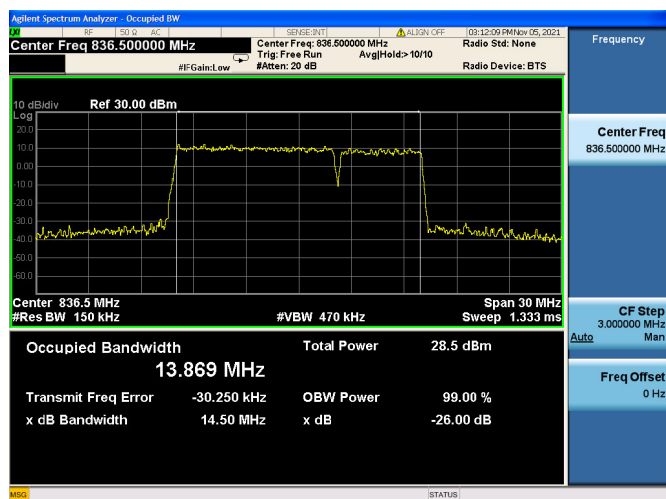
## 10MHz+5MHz / 16QAM / LCH



## 10MHz+5MHz / 64QAM / LCH

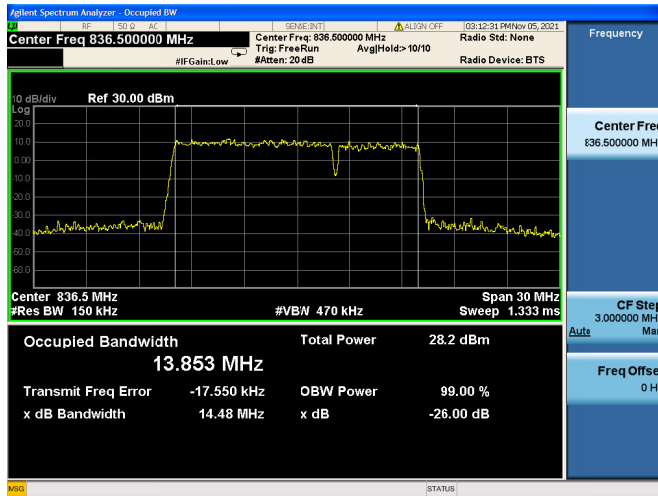


## 10MHz+5MHz / QPSK / MCH

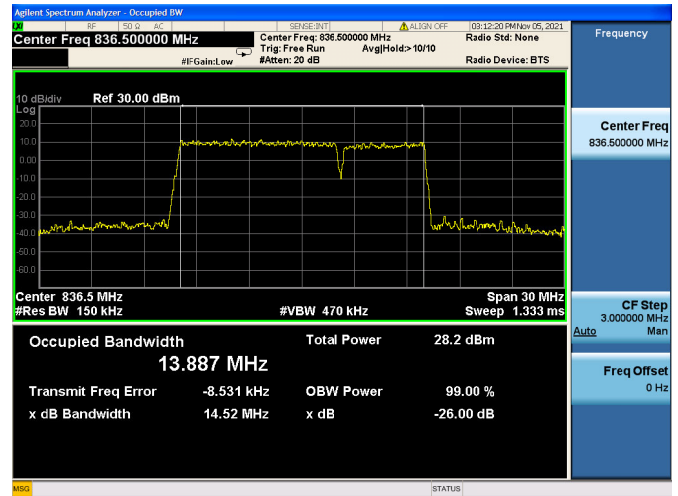




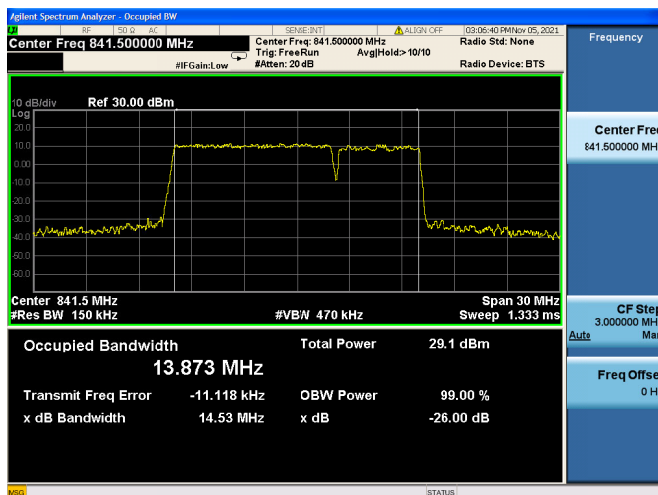
## 10MHz+5MHz / 16QAM / MCH



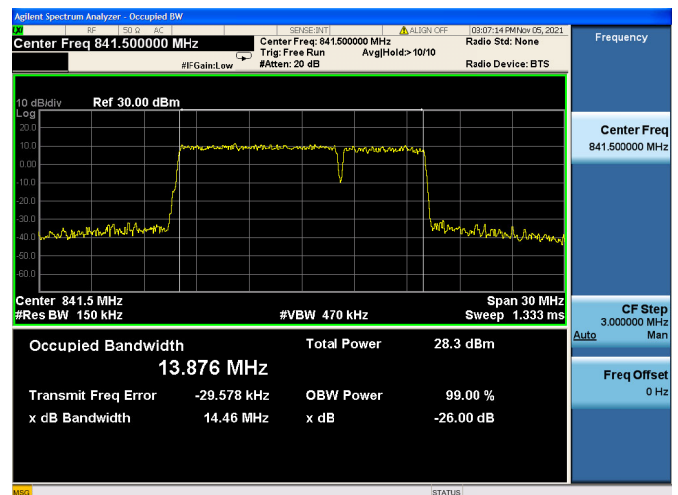
## 10MHz+5MHz / 64QAM / MCH



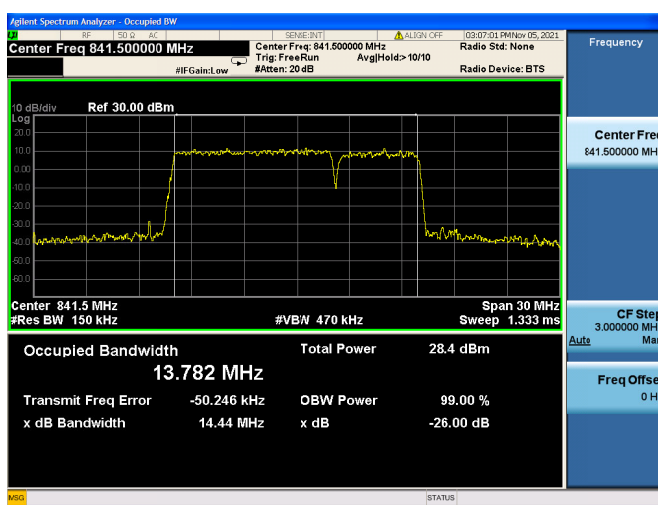
## 10MHz+5MHz / QPSK / HCH



## 10MHz+5MHz / 16QAM / HCH



## 10MHz+5MHz / 64QAM / HCH

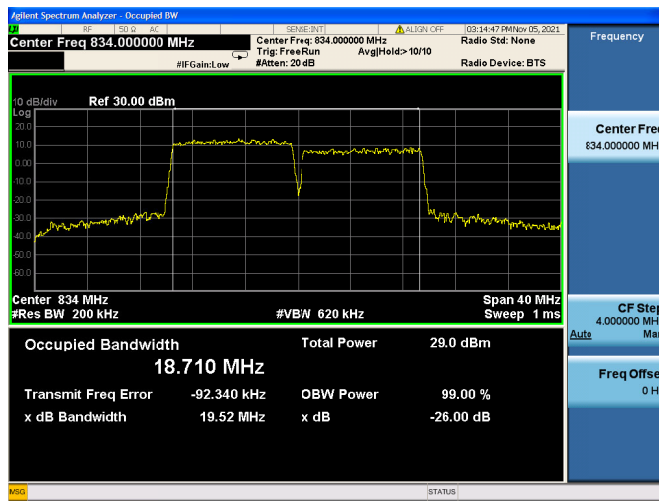


N/A

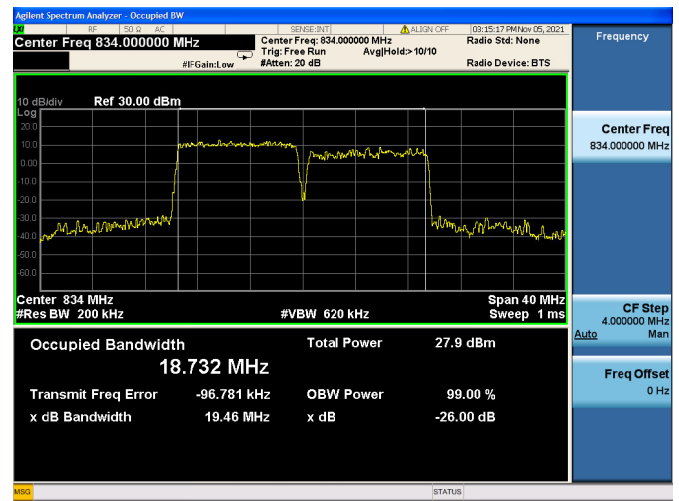


## LTE Band 5B

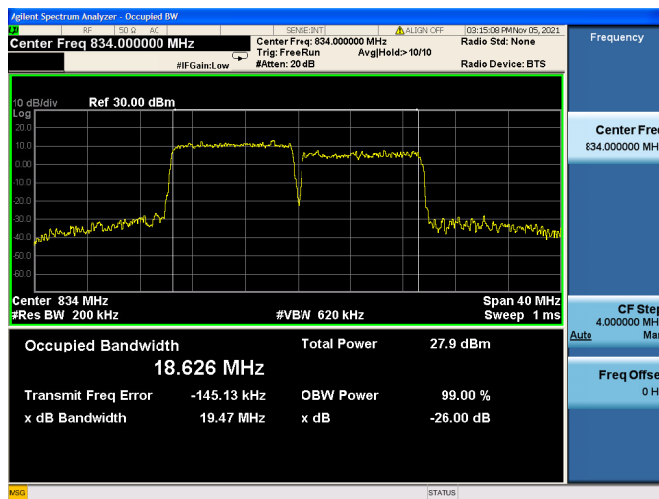
## 10MHz+10MHz / QPSK / LCH



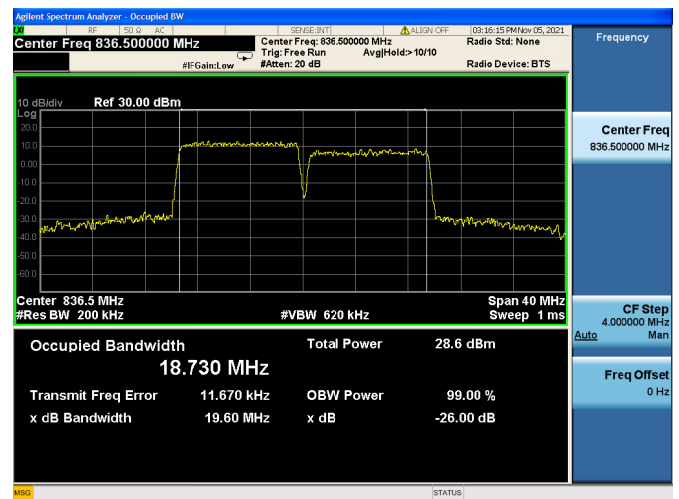
## 110MHz+10MHz / 16QAM / LCH



## 10MHz+10MHz / 64QAM / LCH



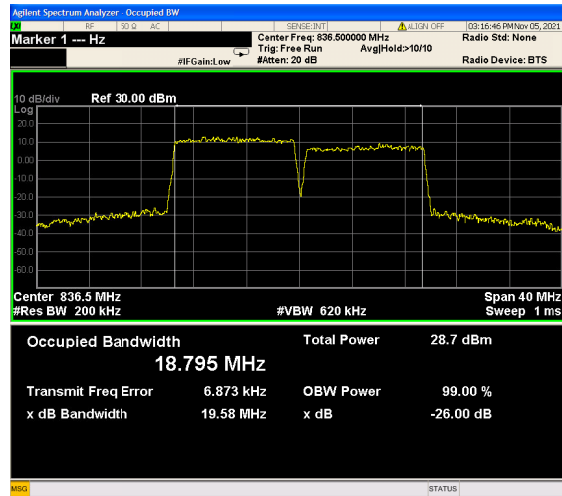
## 10MHz+10MHz / QPSK / MCH



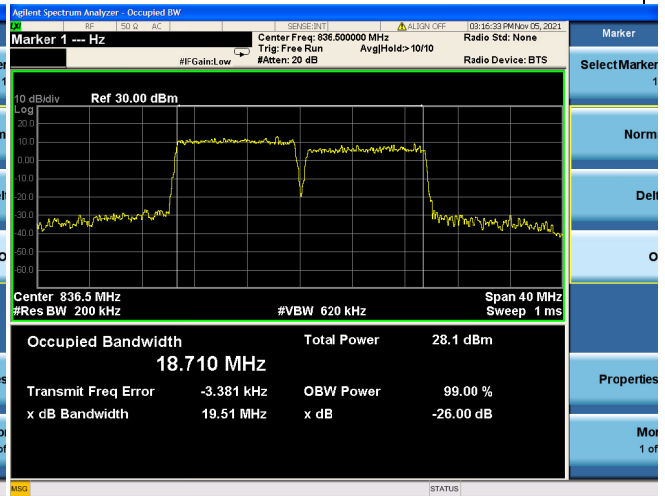


REPORT No.: SZ21100051W03

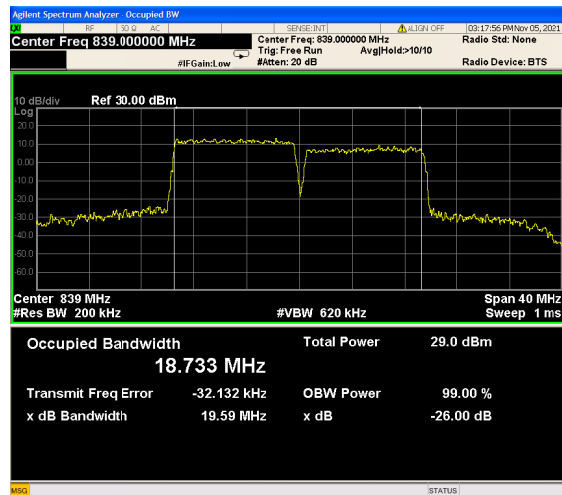
## 10MHz+10MHz / 16QAM / MCH



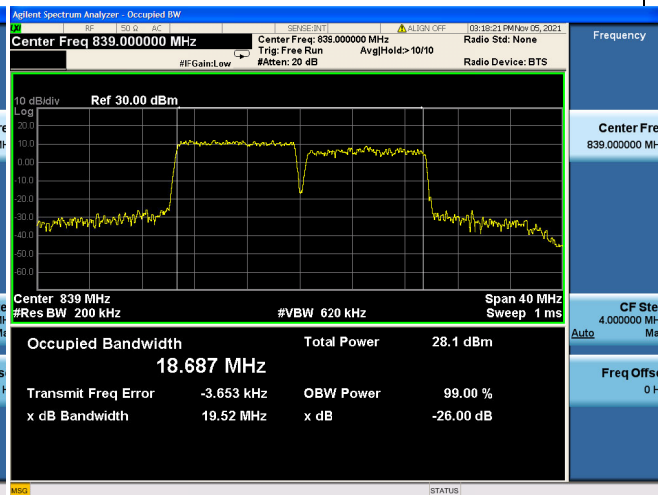
## 10MHz+10MHz / 64QAM / MCH



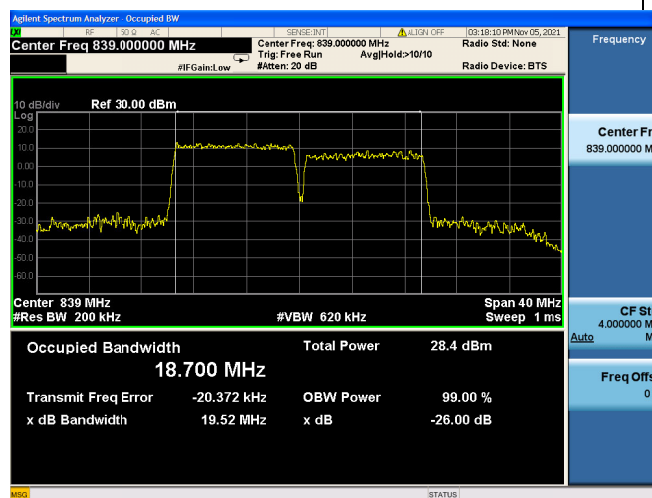
## 10MHz+10MHz / QPSK / HCH



## 10MHz+10MHz / 16QAM / HCH



## 10MHz+10MHz / 64QAM / HCH

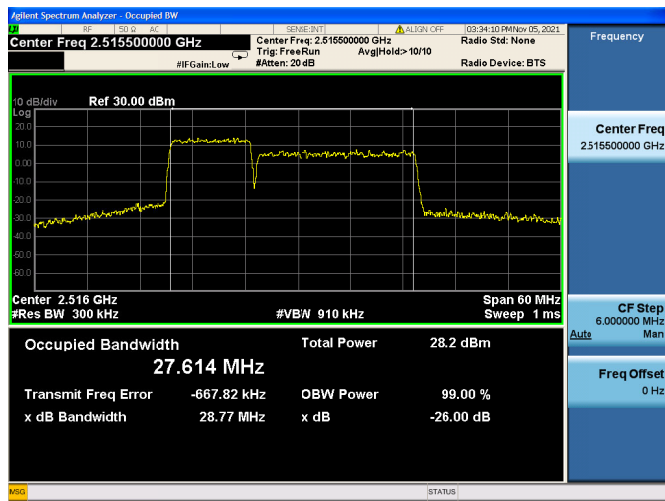


N/A

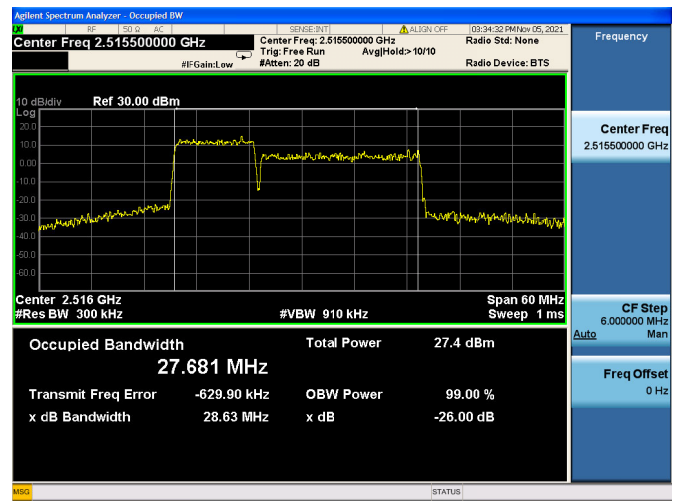


## LTE Band 7C

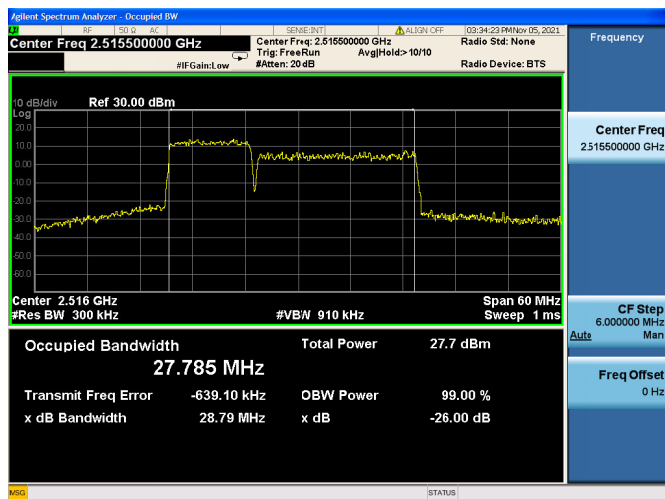
## 10MHz+20MHz /QPSK / LCH



## 10MHz+20MHz / 16QAM / LCH



## 10MHz+20MHz // L64QAMCH

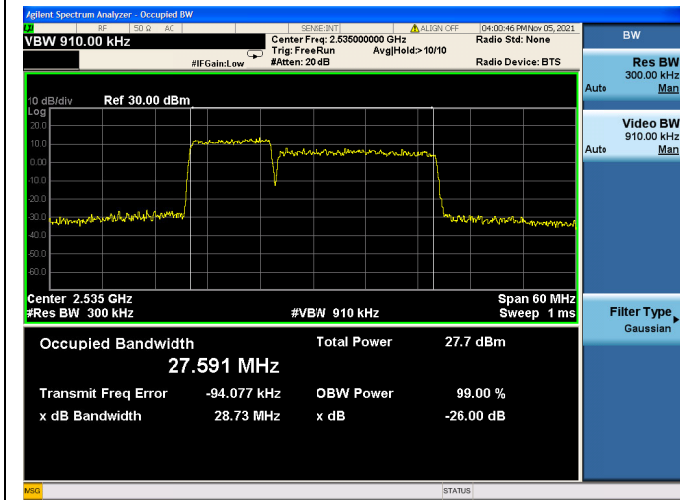


## 10MHz+20MHz / QPSK / MCH

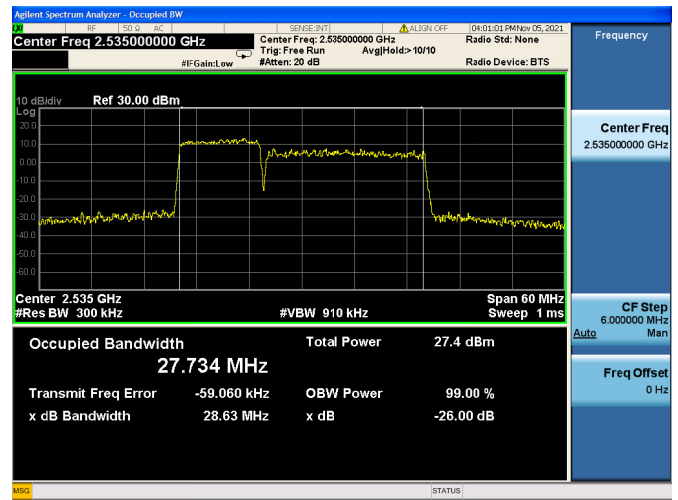




## 10MHz+20MHz / 16QAM / MCH



## 10MHz+20MHz / 64QAM / MCH



## 10MHz+20MHz / QPSK / HCH



## 10MHz+20MHz / 16QAM / HCH



## 10MHz+20MHz / 64QAM / HCH

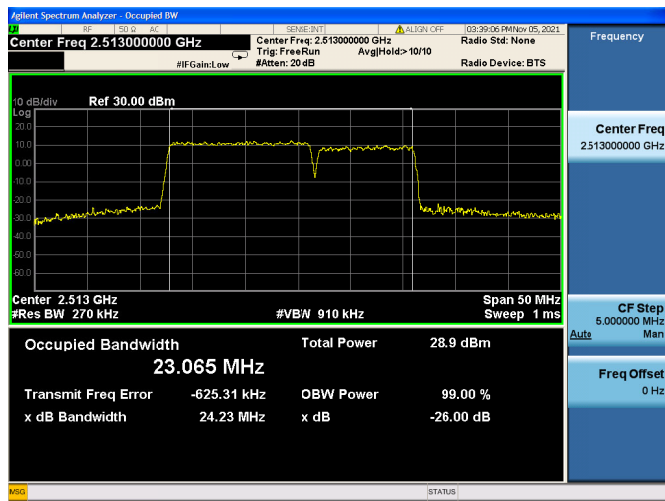


N/A

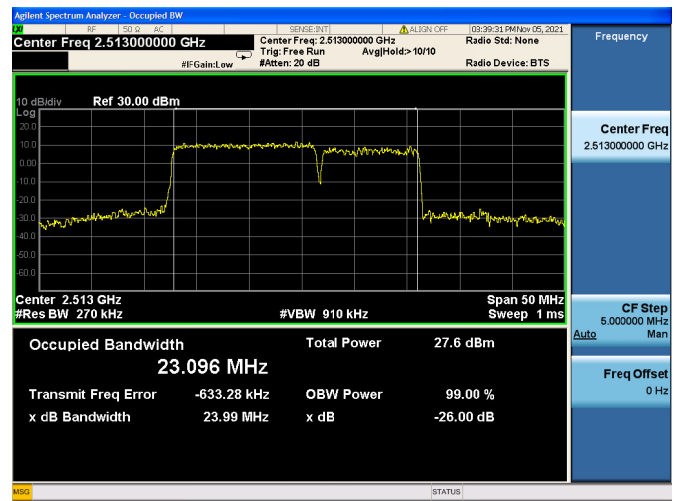


## LTE Band 7C

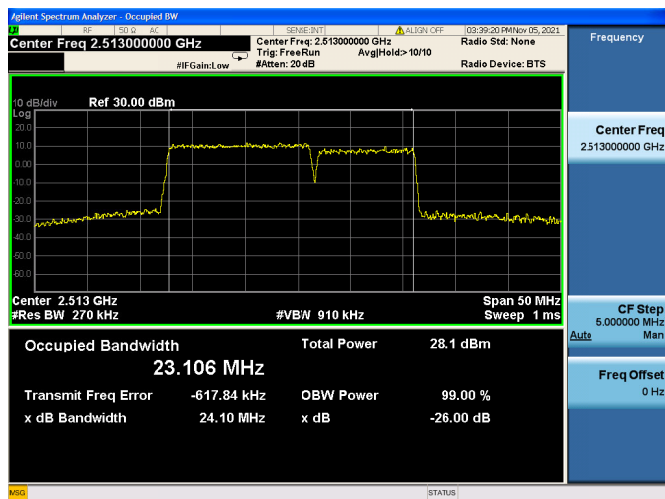
## 15MHz+10MHz / QPSK / LCH



## 15MHz+10MHz / 16QAM / LCH



## 15MHz+10MHz / 64QAM / LCH



## 15MHz+10MHz / QPSK / MCH

